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Mount Polley Mine Project: Tailings Storage Facility 2011 Geotechnical Site Investigation – FINAL Likely, B.C.

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### **1.0 INTRODUCTION**

Mount Polley is a copper and gold mine owned by Imperial Metals Corporation and operated by the Mount Polley Mining Corporation (MPMC). The design and construction monitoring of the Tailings Storage Facility (TSF) embankment from mine start up to early 2011 had been completed under the direction of Knight Piesold Limited (KP). AMEC Environment and Infrastructure, a division of AMEC Americas (AMEC), assumed the role of engineer-of-record for the TSF embankment as of 28 January 2011.

A geotechnical investigation was undertaken in October 2011, based on the review of existing site instrumentation and as required to conform to TSF monitoring recommendations. The investigation comprised geotechnical drilling, installation of three slope indicators, eleven vibrating wire piezometers (VWP) and was followed up by laboratory testing on selected samples. In conjunction with the investigation, the installation of four groundwater monitoring wells was also completed at the request of MPMC to address issues not related to geotechnical stewardship of the TSF.

#### 2.0 BACKGROUND

#### 2.1 General

The Mount Polley mine is located 56 km northeast of Williams Lake, British Columbia. Operations began in 1997 and have continued to the present, with the exception of a prolonged shutdown for economic reasons occurring between 2001 and 2005. The mine currently processes ore at a mill throughput rate of approximately 20,000 tonnes per day. Tailings from this process are deposited as slurry into a TSF comprised of a 4.2 km long earth and rockfill embankment, as shown in Drawing 2011.01. The embankment, being raised annually via modified centerline geometry, is formed of three sections:

- 1. Main, up to 45 m high;
- 2. Perimeter, up to 27 m high; and
- 3. South, up to 17 m high.

The Stage 7 embankment raise, constructed in the summer of 2011, uniformly increased the TSF embankment crest elevation to approximately 960.1 m, a height increase of 2.0 m relative to the previous year's crest raise.

As of June 2011, 93 piezometers had been installed along nine monitoring planes within the three embankment sections. Also as of June 2011, of the 93 piezometers, approximately 40% were functioning. Piezometers have been installed in the TSF embankment fills, foundations, and the impounded tailings upstream of the compacted till core zone. Five slope inclinometers were installed near the downstream toe of the Main embankment, four of which currently function. Given the nature of the TSF, monitoring embankment response to raising and ongoing



tailings placement is an essential component of sound tailings management. A full review of the nature and number of instruments present in the dam was originally completed by AMEC during a dam safety review (DSR) completed in 2006 (AMEC, 2006). Based upon that review, replacement of non-functioning instrumentation in key locations was recommended in the 2006 DSR (AMEC, 2006). This recommendation was reiterated in the 2011 TSF review and recommendations memorandum (AMEC, 2011). Both these documents also recommended further characterization of glaciolacustrine soils within the foundations of the dams as this had been postulated from very early in the mine life as being a potential stability concern but was not effectively addressed prior to the 2011 TSF review and recommendations.

#### 2.2 Basis for 2011 Investigation

Based on AMEC's review of the existing Mount Polley TSF information, and instrumentation coverage (AMEC, 2011), it was determined there was need for an improved characterization of foundation soil conditions, pore pressures and potential movements within foundation glaciolacustrine soils. The 2011 investigation was proposed to MPMC on that basis and was approved. The investigation as specifically undertaken with efforts focussed on enhancing the understanding of these issues and in particular, the following three geotechnical issues:

- 1. Glaciolacustrine foundation soils (GLU): The 2006 Dam Safety Review (AMEC, 2006) and 2010 Dam Safety Inspection (KP, 2011) both highlighted the significance of any potential for pre-shearing (i.e. low strength) within the glaciolacustrine soils present within the Mount Pollev TSF foundation soils and recommended additional investigation and testing be undertaken to improve characterisation of these soils. Specifically, the concern would be associated with any laterally continuous, high plastic clay varves within the glaciolacustrine soils that, if pre-sheared to a low residual shear strength, would represent a weak planar feature within the foundation that would largely govern dam stability. Further, even if not pre-sheared, such clay varves could be driven to a low shear strength as a result of movements induced by the ongoing raising of the dam, thus making it important to monitor displacement patterns within these soils. Movement (about 4 mm) within this foundation soil type was noted by KP (2011) to have occurred in inclinometer SI01-02.
- 2. Perimeter embankment crack: The 2010 Dam Safety Inspection (KP, 2011) observed a longitudinal crack (i.e. parallel to the axis of the dam) at the eastern portion of the Perimeter embankment (at station 3+400 m) within the downstream rockfill shell. It is unknown whether this crack is indicative of embankment slope movement (possibly related to till borrow excavation operations to the downstream, and/or foundation glaciolacustrine soils), or merely reflects localized rockfill settlement. No further cracking has been observed in this area.
- 3. South embankment foundation conditions: AMEC's review of foundation conditions concluded little information existed within the ultimate South embankment downstream toe area.



#### 2.3 **Previous Investigations**

A review of previous site investigations was carried out for the Tailings Storage Facility which included the following:

- Geotechnical Drilling, November 1989 (Wright 1990)
- Geotechnical Investigation, 1995 (KP 1995)
- Groundwater Monitoring Well Installation, February 1997 (KP 1997a)
- Geological Investigations, 1997 (KP 1997b)
- Slope Inclinometer Installation, May 2006 (KP 2007)
- Borrow Site Investigation, May 2008 (KP 2009)

The previous investigations consisted of excavating test pits and advancing drill holes by various drilling methods including air rotary, diamond drilling and sonic drilling. Complete detailed report information for all of the previous investigations was not available for AMEC's review. This includes the following investigations:

- 1989 Test Pit Investigation
- 1995 Test Pit Investigation
- 1996 CPT Program and Pressure Relief Well Installations
- 1997 Borehole Investigation
- 2001 Slope Inclinometer Installation
- 1996-2010 Piezometer Installations

A plan illustrating the location of previous site investigations is presented on Drawing 2011.11.

#### 3.0 SITE INVESTIGATION PROGRAM

#### 3.1 Scope

The site investigation program was carried out from September 29 to October 11, 2011, inclusive. The investigation was carried out using a Sonic drill rig and included completion and installation of 11 vibrating wire piezometers, and 3 slope inclinometers. The Sonic drilling method utilises a rotary vibratory drill head to introduce both rotary motion and high frequency resonant vibrations to advance the drill hole and return a relatively continuous core sample.

The piezometer and inclinometer holes were advanced to final depths ranging from 11.0 m to 48.0 m, and from 43.0 m to 50.0 m, respectively. In each of the holes, retrieval of continuous overburden core samples was undertaken. The sample retrieval allowed characterisation of foundation soils (in particular, examination of the glaciolacustrine unit) and identification of appropriate piezometer tip installation locations.



Characterisation of the GLU within the field was based on various observations including (but not limited to), the presence of fine grained soil as the primary constituent, presence of varves and laminations, and separation between till and/or fluvial units. Photographs of the core samples characterised as GLU are presented in Appendix C.

A summary of the completed site investigation program is presented in Table 3.1, and a summary of installed instrumentation details in Table 3.2.

Laboratory tests including Atterberg Limits, moisture content determinations and grain size distributions for samples of overburden soil were carried out in AMEC's Prince George Materials Lab and are presented in Appendix A. Detailed visual inspection was also performed in the lab on selected samples. Results from laboratory testing are presented in Section 3.3 as well as in the drill hole logs provided in Appendix B.

#### 3.2 Drilling

All holes were advanced within the TSF in the three embankments: Main, Perimeter and South. The drill holes were advanced in the following locations based on the three geotechnical conditions mentioned in Section 2.1:

- 1. *Glaciolacustrine foundation soils*: Six piezometers and two inclinometers were advanced in the downstream toe area of the Main embankment, using the existing rockfill buttress as a platform. Two piezometers were advanced in the downstream toe area of the Perimeter embankment.
- 2. *Perimeter embankment crack:* Drill holes were advanced both on the embankment crest and adjacent to the downstream embankment toe at chainage 3+400. One inclinometer was installed at the crest while one piezometer was installed at the toe.
- 3. *South embankment foundation conditions:* Two piezometers were installed adjacent to the downstream toe area of the South embankment.

Locations of the drill holes are shown in plan view on Drawing 2011.01. Instrumentation sections are presented on Drawings 2011.02 through 2011.09.



	Coordinates			Surface	Total		
Hole ID	Northing Easting		Instrumentation	Elevation (m)	Drillhole Depth (m)	Location	
VW11-01	5818480	594463	Piezometer	941.0	11.1	Ocuth Each and a state	
VW11-02	5818343	594786	Piezometer	945.1	17.4	South Empankment	
VW11-03	5818272	595467	Piezometer	927.0	23.2		
VW11-04	5818309	595533	Piezometer	921.6	29.3		
VW11-05	5818410	595605	Piezometer	920.6	32.3	Main Embankmant	
VW11-06	5818423	595686	Piezometer	916.3	35.4	Main Embankment	
VW11-07	5818554	595850	Piezometer	919.8	43.3		
VW11-08	5818697	596027	Piezometer	927.7	47.5		
VW11-09	5819415	595928	Piezometer	936.6	41.7	Perimeter Embankment	
VW11-10	5819783	595410	Piezometer	931.8	42.4	Perimeter	
VW11-11	5820031	594892	Piezometer	940.9	23.5	Embankment	
SI11-01	5818353	595527	Inclinometer	921.1	44.8	Main Embankment	
SI11-02	5818716	595998	Inclinometer	928.3	49.4	Main Embankment	
SI11-04	5819780	595408	Inclinometer	931.9	43.3	Perimeter Embankment	

Table 3.1:2011 Drill Holes Summary



Hole ID	Instrumentation ID	Instrumentation Serial No.	Installation Depth (m)	Tip Location (Soil Unit)
<b>VW11-01</b> (FX3)	F5	1119797	7.0	Foundation Till
VW11-02	15	1119796	7.6	Foundation Till
(IX3)	16	1119792	10.4	Glaciolacustrine
VW11-03	E6	1119794	15.2	Glaciolacustrine
(EX4)	E7	1119801	18.9	Glaciofluvial
VW11-04	C11	1119798	12.5	Glaciolacustrine
(CX4)	C12	1119795	21.0	Foundation Till
	A16	1119799	12.2	Glaciolacustrine
VW11-05	A17	09-2810	16.8	Glaciolacustrine
(100)	A18	09-2808	24.4	Foundation Till
	A19	09-2811	10.7	Glaciolacustrine
VW11-06	A20	09-2809	15.2	Glaciolacustrine
(77,0)	A21	1119786	22.9	Foundation Till
	B11	1119793	13.7	Glaciolacustrine
VW11-07 (BX4)	B12	1119791	25.9	Foundation Till
(0,4)	B13	1119785	31.1	Glaciolacustrine
VW11-08	K1	1119788	15.2	Glaciofluvial
(KX2)	K2	1119784	33.8	Glaciofluvial
<b>VW11-09</b> (JX1)	J1	1119800	19.4	Foundation Till
VW11-10	D6	1119790	18.4	Glaciolacustrine
(DX4)	D7	1119802	24.4	Glaciofluvial
VW11-11	G4	1119789	6.1	Foundation Till
(GX2)	G5	1119787	10.7	Glaciolacustrine

Note: ID in brackets (eg. (FX3)) corresponds with existing Mount Polley instrumentation identification.

Drill hole depths ranged from 11.1 m to 49.4 m below ground surface (at the drill hole collar). Each of the inclinometer holes was terminated a minimum of 2 m into the weathered rock or bedrock unit to ensure the instrumentation was installed in a secure unit. The vibrating wire piezometers were grouted in, allowing for rapid installation of multiple VWP's in a single borehole. Slope inclinometers were grouted into completed sonic drill holes. Typical piezometer installation details are shown on Figure 3.1.



Calibration reports for the VWP's are provided in Appendix D. Readings of new instrumentation are presented in Appendix E. A summary of piezometer readings from February 4, 2012 are shown in Table 3.3.



Figure 3.1: Typical Piezometer Installation Details



Location	Hole ID	Instrumentation ID	Tip Material	Tip Elevation (m)	Fill Elevation (m)	Elevation Head (m)			
7+52	VW11-01	F5	Foundation Till	934.0	941	942.3			
11.00		15	Foundation Till	937.5	045.4	946.6			
11+00	VVV11-02	16	Glaciolacustrine	934.7	945.1	946.6			
47.00		E6	Glaciolacustrine	911.8	007	917.7			
17+60	VVV11-03	E7	Glaciofluvial	908.1	927	918.1			
10,15		C11	Glaciolacustrine	909.1	021.6	914.8			
18+45	VVV11-04	C12	Foundation Till	900.6	921.0	906.2			
		A16	Glaciolacustrine	908.4		913.7			
19+60	VW11-05	A17	Glaciolacustrine	903.8	920.6	913.5			
		A18	Foundation Till	896.2		915.4			
	VW11-06	A19	Glaciolacustrine	905.7		910.2			
20+30		VW11-06	VW11-06	VW11-06	A20	Glaciolacustrine	901.1	916.3	911.7
		A21	Foundation Till	893.5		914.5			
		B11	Glaciolacustrine	906.1		916.7			
22+40	VW11-07	B12	Foundation Till	893.9	919.8	918.1			
		B13	Glaciolacustrine	888.7		917.8			
24,70		K1	Glaciofluvial	912.4	027.7	934.7			
24+70	VVV11-08	K2	Glaciofluvial	893.8	927.7	937.3			
32+80	VW11-09	J1	Foundation Till	917.2	936.6	921.6*			
20,15	\/\//11_10	D6	Glaciolacustrine	913.4	021.9	916.1			
39+13	VVVII-10	D7	Glaciofluvial	907.4	931.0	915.6			
44,60		G4	Foundation Till	934.8	040.0	941.8			
44+60	VVV11-11	G5	Glaciolacustrine	930.2	940.9	938.4			

Table 3.3:	Summary of Piezometer Data (February 4, 2012)
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\*Piezometer inaccessible, last reading from November 27, 2011

#### 3.3 Index Property Testing – Overburden Samples

#### 3.3.1 General

Index property testing conducted on collected samples included moisture content tests, grain size analyses (including hydrometer analysis on selected samples), and Atterberg limits testing on samples with measurable plasticity. Detailed visual inspection was also performed in the lab on selected samples from various drill holes.



Laboratory results are presented in Appendix A as well as in the drill hole logs in Appendix B. A summary of laboratory testing for each drill hole is presented below in Table 3.4.

			No. of samples Tested						
Hole ID	Total Drillhole Depth (m)	Grain size Analysis	Moisture Content	Atterberg Limits	Detailed Visual Inspection				
VW11-01	11.1	1	4	0	0				
VW11-02	17.4	0	5	1	0				
VW11-03	23.2	0	5	1	3				
VW11-04	29.3	1	10	2	0				
VW11-05	32.3	0	9	2	0				
VW11-06	35.4	0	19	1	7				
VW11-07	43.3	0	17	3	0				
VW11-09	41.7	3	18	0	1				
VW11-10	42.4	2	25	4	2				
VW11-11	23.5	1	18	0	2				
SI11-01	44.8	3	8	1	3				
SI11-02	49.4	2	26	5	9				
SI11-04	43.3	1	4	0	3				

 Table 3.4:
 Summary of Laboratory Tests Undertaken

**Note**: 23 samples were tested from collected boxed core or Shelby tubes at VW11-06, VW11-08 and SI11-04. All other samples were grab samples.

#### 3.3.2 Detailed Visual Inspection

A detailed visual inspection was performed by a qualified soil technician on selected samples in AMEC's Prince George laboratory following the investigation program. The inspections involved observations of soil composition, varve thickness, plasticity, consistency, colour, moisture content and structure. These observations are included within the drill hole logs in Appendix B.

#### 3.3.3 Atterberg Limits

Atterberg Limits testing gives numerical values to soil plastic and liquid limits, thus classifying the type of fine-grained soil. From these values, the plasticity index (PI) and liquidity index (LI) can be determined. Plasticity index indicates the range of moisture contents where a soil exhibits plastic properties (typically, if PI=0, the soil is classified as non-plastic). Liquidity index is a measure of the stiffness within the soils plasticity index range (soils with LI>1, typically exhibit a very low shear strength). Liquidity index values have been reported to classify as



over-consolidated clay when the LI=0 and as highly over-consolidated clay if the LI is a negative value. (Means and Parcher, 1963)

Out of a total of 20 Atterberg limits tests completed, 19 were performed on samples from within the GLU. Samples chosen for Atterberg limits testing were generally selected from areas indicating a thick GLU. The testing interval was decreased in some holes where similar units were observed and in close proximity to each other. Results from Atterberg limits testing are discussed below and are also presented in Table 3.5.

- Samples tested from within the glaciolacustrine unit which appeared to have a varved structure, yielded plasticity index results ranging from 1 to 33%, the majority of fines generally classifying as clay of intermediate plasticity (CI). The highest plasticity index result of 33%, fines classifying as clay of high plasticity (CH), occurred in a sample from drill hole SI11-02 (Main Embankment) at approximate elevation 900.6 m. Moisture contents typically ranged from 20% to 32% (with the exception of sample C2 from VW11-06 with a moisture content of 38%).
- Samples tested from within the glaciolacustrine unit which appeared to have a massive structure, yielded plasticity index results ranging from 0 to 16%, the fines generally classifying as either silt with low plasticity (ML) or clays with low to intermediate plasticity (CL-CI).
- One sample was tested within a glaciofluvial unit in VW11-03. The sample yielded a moisture content of 22.2% with fines classifying as non-plastic.

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Hole ID	Sample Depth (m)	Location	Soil Classification	Moisture Content	Plastic Limit (%)	Liquid Limit (%)	Plasticity Index	Liquidity Index	Comments
VW11-03	18		SM*	22.2	0	0	0	-	Non-plastic
	10		CI	23.4	21	44	23	0.10	Varved
VVV11-04	15		СМ	32.4	26	16	-10	-	Non-plastic
	13.7		CI	29.8	20	43	23	0.43	Varved
VW11-05	16.6		ML	24.8	24	27	3	0.27	
VW11-06	11		CI	37.9	24	48	24	0.58	Varved
	13.2		CI	26.1	24	37	13	0.16	
VW11-07	20.2	Main Embankment	СМ	26.7	25	0	0	-	Non-plastic
	30.8	Embankment	CL-ML	25.5	22	27	5	0.70	Varved
VW11-08	17.2		ML	26.4	23	29	6	0.57	
SI11-01	11.7		CI	27.6	21	34	13	0.51	Varved
	16.5		ML	18.4	18	19	1	0.40	Varved
0144.00	21.5 27.6		CL	15.4	16	25	9	-	
5111-02		СН	31.8	24	57	33	0.24	Varved	
	31.3		CI	30.4	21	37	16	0.59	
	17		CI	23	22	39	17	0.06	Varved
	18.2	Perimeter	CI	24.7	23	38	15	0.11	Varved
VVV11-10	20	Embankment	СМ	22.4	25	0	0	-	Non-plastic
	35.8		CL	20.1	18	28	10	0.21	
VW11-02	10.5	South Embankment	CL	17.3	20	28	8	-	

#### Table 3.5: Summary of Atterberg Limits Testing Results

\*Sample from Glaciofluvial unit. All other samples are from Glaciolacustrine unit.







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#### 3.3.4 Grain Size Analyses

Grain size analyses were conducted on selected samples from the each of the glaciolacustrine, glaciofluvial and till units.

- Hydrometer analyses conducted on samples from the glaciolacustrine unit (massive structure) indicated clay contents (% by dry weight finer than 2 microns) in the range of 8.1% to 33.7% with total fines contents (% by dry weight finer than 74 microns) typically in the range of 72.9% to 99.5%, based on the 75-mm minus sample fraction.
- Hydrometer analyses conducted on samples from the glaciofluvial unit indicated sand contents (% by dry weight between 74 microns and 4.75mm) of approximately 35% to 68% with total fines contents in the range of 26.2% to 52.4%.
- Hydrometer analyses conducted on samples from the till unit indicated clay contents in the range of 4.7% to 21.6% with total fines contents in the range of 40.7% to 88.1%.

#### 4.0 KEY RESULTS AND IMPLICATIONS

Key information obtained from the investigation is discussed below.

#### 4.1 Main Embankment

Information obtained from the investigation indicates that within the foundation soils there exists a continuous glaciolacustrine unit with interbedded glaciofluvial units between an upper and lower till unit overlying bedrock.

The GLU is generally characterised as:

- 1. Silty CLAY to Clayey SILT to SILT
  - Occasional sand layers (2-20 mm thick)
  - o Low to high plasticity
  - o Stiff to hard
  - Moist to wet (moisture content = 15-32%)
  - Clay varves (3-30 mm thick) and silt varves (1-50 mm thick)

#### overlying,

- 2. SILT to Sandy SILT
  - o Non-plastic to low plasticity
  - o Dense
  - Wet to saturated (moisture content = 20-34%)
  - Massive structure with occasional clay varves

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The glaciofluvial unit is generally characterised as:

- SAND to Silty SAND
  - Trace to some gravel, trace clay
  - o Non-plastic
  - o Compact to dense
  - Moist to wet (moisture content = 4-28%)

The till is generally characterised as:

- Sandy SILT to Clayey SILT
  - Trace to some gravel
  - Occasional sand seams and/or lenses
  - Non-plastic to low plasticity
  - o Dense to stiff-hard
  - Moist (moisture content = 7-30%)

Photographs of samples collected within the GLU from the Main embankment drill holes are presented in Appendix C, Photos 2 through 36 and 47 through 62. Sections displaying interpreted stratigraphic profiles of the drill holes are presented in Drawings 2011.02 through 2011.06.

#### 4.1.1 Glaciolacustrine Foundation Soils

The GLU within the main embankment foundation appears to be thickest along the east and central regions of the embankment (approx. Sta.22+40 to 24+70 m) with thicknesses ranging from 15.0 m to 18.1 m. The unit appears to thin moving west towards the south embankment (approx. Sta. 20+30 to 17+60 m) with thicknesses decreasing from 8.7 m to 2.5 m.

#### **Consistency**

The GLU containing a greater percentage of clay was generally considered to have a consistency of very stiff to hard. This conclusion is consistent with that of historical data from previous Knight Piesold investigations. Table 4.1 provides a summary of foundation soil characteristics of selected nearby holes encountering the GLU.



Hole ID/Location	Elevation (m)/ Depth (mbgs*)	Consistency/Density	Soil Unit	
	907	Stiff to yony stiff	Silt, some clay to clayey	
$CW06.2^{1}$	900		(GLU)	
Gvv90-3	900	Very stiff to bard	Silt, trace sand (GLU)	
	895	very still to hard		
GW/96-9 <sup>1</sup>	911	Stiff to yory stiff	Silt, trace sand (GLU)	
Gvv90-9	910	Sun to very sun		
SI06-1 <sup>2</sup>	909	Compact to very dense	Silt, trace clay	
5100-1	901	Compact to very dense		
SI06-2 <sup>2</sup>	909	Compact to dense	Silt, trace clay	
	900	Compact to dense		
SI06-3 <sup>2</sup>	911	Dansa ta yary dansa	Silt_trace_clay_trace_sand	
	901	Dense to very dense	Sill, trace clay, trace sand	
TPB11 <sup>3</sup>	1.8	Donso	Silt, some sand	
	3.7	Delise		
TPB13 <sup>3</sup>	1.1	Donso	Silt, trace to some sand, trace	
	4.9	Dense	gravel, trace clay	
TPB14 <sup>3</sup>	1.1	Donco	Silt some cond to condu	
	4.9	Dense	Sin, some sand to sandy	
MP89-234 <sup>4</sup>	909	Donco	Clay and Silt, trace pebbles	
	900	Delise		
Cross Section 3 <sup>5</sup>	varies	Very stiff	Silt, lesser Clay, rare sand seams (GLU)	

Table 4.1	Summary of Foundation Soil Characteristics – Main Embankment
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\*Meters below ground surface

1 Air rotary drilled Ground water monitoring well holes (KP 1997a)

2 Air rotary drilled Slope Inclinometer holes (KP 2007)

3 Test Pit excavation (Wright 1990)

4 Diamond Drill holes. Report notes "It was not possible to distinguish between the dense alluvial silts and glacial tills in the drilling program". (Wright 1990)

5 Geological summary cross-section through Main embankment centerline (KP 1997b)

Where the GLU consists primarily of non-plastic silts (typically below the upper, more clay-rich portion of the unit), it was generally observed to be loose to compact upon sample retrieval. An example of this material unit was found in samples G4 and G5 in drill hole VW11-05 (See Photos 12 and 13). This condition was found in a majority of the drill holes along the main embankment and is also described in the following historical investigations:



- Drill logs from the 1996 investigation (GW96-3) note a "coarse silt, quickens under vibration" (KP 1997a).
- A cone penetration testing (CPT) program was conducted in 1996 due to low SPT N-values (encountered during a prior investigation) within a non-plastic silt layer. The CPT investigations confirmed that the N-values were due to drilling disturbance and not weak foundation soils. (KP 1997b)

It should be noted that, during the 2011 drilling program, at least three attempts were made to push a Shelby tube sampler (0.76 m length) within the GLU closer to the east end of the main embankment, obtaining only 0.15 m - 0.25 m of recovery due to high penetration resistance. Based on the above information, the apparently loose condition within the recovered sonic core is not reflective of the in situ condition, but is instead a result of vibration and sample disturbance caused by the sonic drilling method. The relatively low moisture contents of the silt further attest to this conclusion.

#### **Over-consolidated condition**

There are a number of indications to suggest that GLU along the main embankment is in an over-consolidated state. Soils that are over-consolidated typically have higher peak strength (at a given effective stress), than normally consolidated soils. Moreover, for heavily over-consolidated soils with high fines contents (such as the GLU) that will shear in an undrained manner due to low hydraulic conductivity, the undrained shear strength will typically exceed the drained shear strength, owing to negative shear-induced pore pressures.

Figure 4.1 presents a plot of liquidity index results for various drill holes along the main embankment. The plot shows a number of samples with a liquidity index (LI) near zero (moisture content = plastic limit), which is typically consistent with an overconsolidated condition. For example, in VW11-04, testing of the silt GLU near elevation 911.5 m (top of the unit) resulted in a LI equal to 0.1(See Photo 4). This condition was also found to exist in several other locations along the Main Embankment from the 2011 investigation as well as earlier investigations. Table 4.2 presents a summary of available lab data for investigation holes located along the main embankment, 2011 and earlier. Note that some negative LI values were obtained, indicating natural moisture contents below the plastic limit.

A summary of GLU descriptions from Stage 2A Tailings Facility Construction report indicates that the "glaciolacustrine (silt, clay) sediments are often highly overconsolidated and very stiff to hard'. (KP 1997b)







\*Note: SI06 drill holes are from the 2006 slope inclinometer installation program.



Hole ID	Location	Sample Elevation (m)	Moisture Content (%)	Plasticity Index	Liquidity Index	Friction Angle (Φ)	Cohesion (c')	Soil Description
TP95-37 <sup>2</sup>	16+55 <sup>4</sup>	-	18.8	11	0.2	35	0	Sand and Silt, some gravel and clay (Till)
TP95-39 <sup>2</sup>	17+90 <sup>4</sup>	-	28.5	-	-	33	0	Silt, some clay and sand, trace gravel (Till)
	10,15	911.6	23.4	23	0.1	-	-	Silt, some clay to clayey, trace sand (GLU)
VVV11-04	10+40	906.6	32.4	-	-	-	-	Silt, trace clay, trace sand (GLU)
SI11-01	18+65	909.3	27.6	13	0.5	-	-	Silty Clay to Clayey Silt (GLU)
TP95-38 <sup>2</sup>	19+20 <sup>4</sup>	-	28.4	14	0.7	-	-	Silt, some clay, trace sand and gravel (GLU)
	10,00	906.9	29.8	23	0.4	-	-	Silty Clay, trace gravel (GLU)
00011-05	19+60	904	24.8	3	0.3	-	-	Silt (GLU)
	10,95	907	16	4	0.0	-	-	Sandy Silt, some clay (GLU)
5106-01	19+65	904	30.7	12.8	0.3	-	-	Silt, some clay, trace sand (GLU)
VW11-06	20+30	905.3	37.9	24	0.6	-	-	Silty Clay to Clayey Silt, trace sand (GLU)
TPB13/14 <sup>1</sup>	20+30	-	25.1	14	0.6	-	-	Clayey Silt, some sand, trace gravel (Till)
	20+95	908.7	24.2	17.6	-0.1	-	-	Silt and Clay (GLU)
SI06-02 <sup>3</sup> 20+95		905.3	40.3	23.2	0.5	-	-	Silt and Clay (GLU)
		900.4	27.3	0	-	-	-	Silt, trace clay (GLU)
		918	13.6	7.9	-0.4	-	-	Silt, some Gravel, sand, clay (GLU)
SI06-03 <sup>3</sup>	21+95	909.2	14.4	10.2	-0.3	-	-	Clayey Silt, trace sand, gravel (GLU)
		906.4	23.3	13.5	0.0	-	-	Clayey Silt, trace sand (GLU)
		903.4	25.9	17.7	0.1	-	-	Clayey Silt (GLU)
		900.3	23.6	0	-	-	-	Silt, trace clay (GLU)
		906.6	26.1	13	0.2	-	-	Silt, trace clay to clayey (GLU)
VW11-07	22+40	899.6	26.7	0	-	-	-	Silt, some sand, trace clay (GLU)
		889	25.5	5	0.7	-	-	Silt, trace to some clay (GLU)

#### Table 4.2 Summary of Available Lab Results – Main Embankment

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Hole ID	Location	Sample Elevation (m)	Moisture Content (%)	Plasticity Index	Liquidity Index	Friction Angle (Φ)	Cohesion (c')	Soil Description
SI11-02 24+55	911.8	18.4	1	0.4	-	-	Silty Clay, trace sand (GLU)	
	24,55	906.9	15.4	9	-0.1	-	-	Silty Clay, trace sand (GLU)
	24+55	900.9	31.8	33	0.2	-	-	Clay, some silt to silty, some sand (GLU)
		897.1	30.4	16	0.6	-	-	Clayey Silt, trace sand (GLU)
VW11-08	24+70	910.5	26.4	6	0.6	-	-	Silty Clay to Clayey Silt (GLU)
TPB1 <sup>1</sup>	25+30 <sup>4</sup>	-	13.7	10	-0.5	-	-	Silt, some clay and sand, trace gravel (Till)

<sup>1</sup> Geotechnical Investigation (Wright 1990) <sup>2</sup> Geotechnical Investigation (KP 1995)

<sup>3</sup> Slope Inclinometer Installation (KP 2007)

<sup>4</sup> Locations are approximate



#### Soil Structure and Slickenside Features

The presence of laterally extensive and continuous clay varves (high plasticity) of any appreciable thickness within the unit, if pre-sheared to a low residual shear strength, would represent a weak planar feature within the foundation. Slickenside features within the clay varves would constitute evidence of pre-shearing, and if continuous and pervasive would result in an operative shear strength near the residual strength of the clay. Further, even if not pre-sheared, such clay varves could be driven to low shear strength as a result of movements induced by the ongoing raising of the dam.

Prior to the 2011 investigation, there was limited description of specifics regarding these aspects of the GLU. For example, there was little to no information found during the review of previous investigations describing the soil type, thickness, quantity or continuity of laminations/varves present within the foundation soils.

The follow layering features were noted during the 1996 investigation:

- Within the silt GLU in drill hole **GW96-3** 
  - Coarse silt-fine sand laminations, light grey to brown, overlying irregular layers of slight composition change and color change (grey to grey-brown), overlying laminated with rare fine sand/coarse silt layers (1mm thick) overlying silt and clay (1 mm - 3 mm thick).
- Within the silt GLU in drill hole **GW96-9** 
  - Layered silt with lesser thin fine sand and silt laminations, as well as silt and clay layers.

The follow layering features were noted during the 2011 investigation:

- Within the upper silt unit in drill hole VW11-04
   Few alternating brown and grey varves
- Within the upper silty clay unit in drill hole VW11-05
   Moderate number of brown and grey varves
  - o moderate number of brown and grey valves
- Within the silty clay to clayey silt unit in drill hole **VW11-06** 
  - Changing with depth, clay layers (3 mm thick), overlying clay, silt, and sand layers (10 mm 15 mm thick), overlying silt and sand layers (50 mm thick), overlying clay layers (10 mm 30 mm thick) and silt (1 mm 5 mm thick), overlying silt layers (5 mm thick)
- Within the lower clayey silt unit in drill hole **VW11-07** 
  - o Few silt and clay layers.
- Within the lower silt GLU VW11-08
  - Distinct sand (2 mm 20 mm thick) and silt (2 mm 10 mm thick) layers within silt unit overlying few varves



- Within the lower clayey silt GLU in drill hole SI11-02
   Distinct sand and silt layers within silty clay unit overlying few varves
- Within the GLU in drill holes **VW11-04** through **VW11-07** 
  - Sand layers (300 mm 600 mm thick)

It appears that the main concentration of clay layers occurs within the area of station 19+00 to 21+00 m, with thicknesses ranging from approximately 3 mm to 30 mm (see Photos 11 and 16). The samples were closely examined, peeling them apart along the varves by a pocket knife, to check for any indications of slickenside features: none were found in any of the samples. The clay layers appear to become fewer, with sand layers increasing in occurrence and thickness, moving northeast along the Main Embankment. The sand layers are particularly noted in drill holes VW11-08 and SI11-02 (See Photos 29, 52-54). The sand and silt layers were typically 2 mm - 20 mm thick and 2 mm - 10 mm thick, respectively. This change might suggest a depositional environment transitional between glaciolacustrine and glaciofluvial moving from southwest to northeast along the Main Embankment alignment.

#### Inclinometer Records

The central region of the main embankment encompasses slope inclinometer SI01-02, which recorded movement (about 4 mm), at an approximate depth of 10 m below ground in the lacustrine silts (KP, 2011). The 2011 investigation indicates that the GLU in this area consists of soils of low to medium plasticity with a liquidity index ranging from approximately 0.3 to 0.4. Comparing the inclinometer displacement plot with the closest drill hole log in this location (VW11-05), the section of recorded movement occurred within the glaciolacustrine silty clay unit, at about Elev. 908 m. A plot of recent cumulative displacement data from SI01-02 and stratigraphy from VW11-05 is presented on Figure 4.2. Photographs of the GLU within the section of movement (represented by VW11-05) are presented in Photos 11 and 12.

Inclinometer SI01-02 has indicated a total of about 10 mm of cumulative displacement over a depth interval of 1 m over a period of about 5 years, an average rate of displacement of about 2 mm/year, and a cumulative shear strain of about 1%. This degree of movement is well within tolerable limits, and is inconsistent with pre-sheared weak planes within the GLU.

Inclinometer SI06-01 is located near SI01-02, and has indicated essentially zero movement over about a five year period, suggesting that the movement within SI01-02 is limited in extent. Other inclinometers along the Main Embankment (SI06-02 and SI06-03), installed prior to 2011 and for which there is sufficient record to discern trends, show zero movement (SI06-02), and cumulative displacement of about 3 mm (in the GLU) over five years (SI06-03), with a cumulative shear strain of about 0.6%.

In summary, inclinometer data to date is consistent with the GLU comprising a competent foundation for the dams. This is no indication of pervasive pre-shearing nor is there indication there would be significant brittle behaviour upon shearing (loss of strength and, as a result, accelerated movements induced by shear strains).





### Figure 4.2: Cumulative Displacement vs. Depth (SI01-02) and VW11-05 stratigraphy



#### GLU Shear Strength

The GLU is in an over-consolidated state, but based on detailed visual inspections (field and lab), there appears to be no evidence of pre-shearing (slickensided structure) within the GLU induced by glacial drag. Stability analyses to date have assigned the GLU a drained shear strength value as follows:

- Effective cohesion (c') = 0
- Effective friction angle  $(\phi') = 28^{\circ}$

The 2011 investigation program, information from previous geotechnical investigations undertaken by KP, and the inclinometer data to date indicate that these shear strength parameters remain appropriate, and potentially somewhat conservative. Continued monitoring of inclinometer displacements within the GLU are required to provide ongoing evaluation and, if necessary, reassessment of the operative shear strength within the foundations of the dams.

#### 4.2 Perimeter Embankment

The details below give a description of the general units encountered during the investigation. The GLU encountered below the Perimeter Embankment is generally characterised as follows:

- Clayey SILT to Silty CLAY to SILT
  - Trace sand
  - o Low to medium plasticity
  - Very stiff to hard
  - Moist to wet (moisture content = 16-29%)
  - Clay and silt varves (< 5 mm thick)

The glaciofluvial unit is generally characterised as:

- SAND to Silty SAND
  - Trace to some gravel, trace clay
  - Non-plastic
  - Compact to dense
  - Moist to wet (moisture content = 15-29%)

The till is generally characterised as:

- Sandy SILT to Silty CLAY
  - Trace to some gravel
  - o Non-plastic to low plasticity
  - o Dense, stiff to hard
  - Moist (moisture content = 8-21%)
  - o Occasional sand and silt seams



Photographs of samples collected within the GLU from the Perimeter embankment drill holes are presented in Appendix C, Photos 38 through 46. Sections displaying drill hole stratigraphy conditions are presented on Drawings 2011.07 and 2011.08.

Investigation results indicate that discontinuous glaciolacustrine and glaciofluvial units exist within the glacial till units of the Perimeter Embankment foundation soils. A review of previous investigations confirms these observations. Table 4.3 provides a summary of foundation soil characteristics of selected nearby holes encountering a GLU. Drawing 2011.11 presents a plan view of the location of these drill holes.

Hole ID	Elevation (m)/ Depth (mbgs)	Consistency/Density	Soil Unit	
	922.8	Firm	Clay and Silt (GLU)	
	919.4			
Gw90-1	900.2	Vony stiff	Silt, trace fine sand and clay	
	897.7	very suit	(GLU)	
	920.4	Von donce	Silt, trace fine sand, some clay	
	913.1	very dense	(GLU)	
Gw90-2	907.2	Vonvetiff	Sand and Silt (GLU)	
	904.6	very suit		
	916.5	Vory doppo	Clayov Silt (CLU)	
KP08-01	916	very dense	Clayey Slit (GEO)	
	924.5	Danaa	Sand with some clay (CLLI)	
KP00-02	920.4	Dense	Sand with Some day (GLU)	
KP08-06 <sup>2</sup>	931.5	Dense	Clay and Silt (CLU)	
	930.9	Dense	Clay and Silt (GLO)	
	930.5	Dense	Sand and Silt (CLU)	
	926	Dense	Sanu anu Sill (GLU)	
	920.5		Silty Sond (CLU)	
NFU0-12	909.2	very dense	Silly Salid (GLU)	

#### Table 4.3: Summary of Foundation Soil Characteristics – Perimeter Embankment

1 Air rotary drilled Ground water monitoring well holes (KP 1997a)

2 Sonic drilled borrow drill holes (KP 2008)

Based on the information presented in Table 4.3, the GLU along the Perimeter embankment is described as very stiff and dense to very dense, with one exception. The upper GLU in GW96-1 is described as firm, but is not of significant concern in this instance as the drill hole location is approximately 140 m further downstream from the current toe of the dam.

The following were noted during the 1996 and 2006 investigations with respect to soil structure and stratigraphy along the Perimeter Embankment alignment:

• Within the clay and silt unit in drill hole **GW96-1** 



- Fine silty sand laminations (1 mm 100 mm thick), contains till-like layers (20 mm 100 mm thick)
- Within the silt unit in drill hole **GW96-2** 
  - May contain thin fine sand laminations, overlying thinly to irregular laminated (2 mm -10 mm thick) fine sand layers, some clay in thin layers, overlying fine-medium grained silt with laminations of more clay rich layers (1 mm - 2 mm thick), occasional (20 mm - 30 mm) layers of till-like sand/silt layers with fine gravel, overlying horizontally stratified, light brown, fine-medium grained sand seams (<20 mm thick).</li>
- Within the sand and silt unit in drill hole **KP08-06** 
  - Stratified, 150 mm clay seam is present in center of interval, dividing wet and dry portions of unit.

Layering of clay and silt (<5 mm thick) was observed in only one of the three drill holes along the Perimeter Embankment, VW11-10(See Photos 38 through 41). In general clay layers within the GLU appear to be discontinuous and less than 5 mm in thickness with the GLU along the embankment generally observed as having a massive structure. These observations suggest a distinct facies change relative to the GLU along the Main Embankment alignment.

In general, the results above present no indication that the crack observed in the downstream rockfill near station 3+400 m (KP, 2011) was due to the presence of weak soil conditions in the area. Based upon available information, foundation conditions along the Perimeter Embankment appear more favourable than those along the Main Embankment, in terms of the presence and extent of clay-rich zones within the GLU.

#### 4.3 South Embankment

The foundation soils along the south embankment generally consisted of a glacial till unit overlain by a thin GLU, approximately 0.6 m thick (observed in the hole closest to the main embankment).

The overlying till unit ranged from 6 m to 10 m in thickness, and is described as a brown to grey sandy silt of low plasticity, compact to dense with moisture contents ranging from about 11 to 16%. The GLU generally consists of brown clayey silt, trace sand, low plasticity with occasional varves. The consistency was hard with a moisture content of about 17%. Clay rich zones were not present.

A photograph of the sample collected within the GLU from the South embankment is presented in Appendix C, Photo 1. A stratigraphic profile section of the drill holes displaying these conditions is presented on Drawing 2011.09.



#### 4.4 Summary

In summary, the 2011 investigations, previous investigations, and the inclinometer records indicate that the GLU is over-consolidated, not extensively pre-sheared if it is at all, has not exhibited displacements of any concern in response to the loading imposed by the dam construction. For stability evaluation purposes, the GLU can be characterized, and perhaps conservatively so, with drained shear strength parameters of c' = 0 and  $\phi'$  = 28°. Continued regular monitoring of inclinometer displacements is important going forward to validate this conclusion and re-evaluate it should increased rates of displacement be noted.

#### 5.0 MONITORING WELLS

At the request of MPMC, the installation of four monitoring wells was completed during the site investigation program. These four wells were comprised of one deep and one shallow monitoring well installed at each of the two drill sites, designated G1 and G2. Site G1 is located along the Bootjack Access road while G2 is located along the old Polley Lake pump road. The well locations are presented in Drawing 2011.12.

Drill hole logs describing the encountered soil stratigraphy and well installation details are presented in Appendix F.



#### 6.0 LIMITATIONS AND CLOSURE

This report has been prepared for the exclusive use of Mount Polley Mining Corporation for specific application to the area within this report.

Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. AMEC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

Respectfully submitted,

AMEC Environment & Infrastructure, a division of AMEC Americas Limited

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Todd E. Martin, P.Eng., P.Geo. Principal Geotechnical Engineer



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DRAWINGS



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APPENDIX A

2011 Laboratory Testing Data





APPENDIX B

2011 Drill hole Site Investigation Logs

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CLIEN	LIENT: Mount Polley Mining Corporation						PROJECT: Tailings Storage Facility SI program			E	BOREHOLE NO: SI11-01				
DRILLI	ER: Mud Bay					Mount Polley - Likely, BC P				ROJECT NO: VM00560.200.3					
DRILL	TYPE/METHOD	: Tracke	d SR-125/	Sonic		NORTH	ING: 5818353 E	ASTING:	595527			E	ELE	VATION: 921.077 m	
SAMPI	LE TYPE	TI	JBE			VERY		DON	GRAB			ШN	ЛUD	RETURN CORE RETU	IRN
DEPTH (m)		M.C.		SOIL SYMBOL		I	SOIL DESCRIP	TION		SAMPLE TYPE	SAMPLE NO	INSTALLATION	DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
E 0		+U OU	00		ROCKFIL	L. [NAG]									-
Ē,				23											
E-1 E															920-
E,															
<b>E</b> <sup>4</sup>				<b>* *</b>											919-
E-3				×											010
Ē	· · · · · · · · · · · · · · · · · · ·	; ;;													910-
-4		; ; ; ;													917_
Ē															
-5												•	۲		916-
Ē															
-6		·····	••••	12											915-
Ē	····	···· · · · · · · · · · · · · · · · · ·	••••	12											
E-7		· · · · · · · · · · · · · · · · · · ·										۲	۲		914
Ē					CLAY, silt	y, trace sa brown, mo	and, trace gravel, l bist. [Till]	low plastici	ty to non plastic,						
E-8				090							C1				913-
Ē,		·····			Silty CLA	to Claye	y SILT, trace grav	el, trace co	bble, low plasticity	1	GI				
₽ <b>₽</b>					[Glaciolac	ustrine]	sun, grey, moist, u	race grey s	iit layers, varved.			۲	۲		912-
															911-
	•	; ;;			_ at 10.9m	silt clave	av sandv till-lika	moist			G2			Hydrometer (GRABG2):	010
	····;····;····;····;	; ;			- at 11.0m	, medium	plasticity, grey to	light brown	, varved			•	٠	Gravel <1% Sand:27% Silt:44% Clay:28%	510
₩  -12	<b>⊢</b> ●+	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · ·								G3		•	Atterberg (GRAB G3):	909-
					- at 12.2m	, silt, trace	e to some clay lay	ers, non-pl	astic, wet					Liquid Limit:34%	
≝E-13	•	· · · · · · · · · · · · · · · · · · ·									G4				908-
			· · ·									•	•		
ä ⊨-14		:: :	••••										•		907-
AME															
a E-15					 -at 15.2m	. 300mm I	thick grev sand ar	nd gravel la	ver, coarse sand						906-
					\moist to w	ret				1					
	_				SILT, trac dense, da	e to some mp. [Till]	sand, trace clay,	trace grave	el, low plasticity,		_		•		905-
				00							G5				
					- at 17.1m	, trace col	oble, trace fine sa	nd pocket,	moist						904-
300 18	•										G6				003
0260		· · · · · · · · · · · · · · · · · · ·													503
≶ ≥ = 19		; ;;			- below 18 clay, hard	8.6m, trace , reddish c	e to some sand, tr arev. damp	ace to som	e gravel, trace						902-
200 E					- at 10 5m	sand eil	tv some arevel +	ace clay			G7			Hydrometer (GRABG7): Gravel:13% Sand:46% Silt:33%	
5 <u>= 20</u>				AMEC Fr	vironmen	t & Infras	structure								
-OR O	200	0		Suite 600	, 4445 Loi	ugheed I	Hwy	ENTER	ED BY: DO				+	COMPLETION DATE: 10/7/11	
HB (	JIIC	L		Tel: (604)	294-3811	L7								Page	1 of 3

CLIEN	NT: Mount Polley Mining Corporat	tion	PROJECT: Tailings Sto	rage Facility SI program			BOF	REHOLE NO: SI11-01	
DRILL	ER: Mud Bay		Mount Polley - Likely, BC	)			PRC	DJECT NO: VM00560.200.3	
DRILL	TYPE/METHOD: Tracked SR-12	25/Sonic	NORTHING: 5818353 E	ASTING: 595527			ELE	VATION: 921.077 m	
SAMP	TUBE TUBE		NO RECOVERY SPLIT SPC	OON GRAB			MUE	D RETURN	RN
DEPTH (m)	PLASTIC M.C. LIQUID	Solt SYMBOL	SOIL DESCRIP	ΓΙΟΝ	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
20			SILT, clayey, trace sand (coarse grain medium plasticity, stiff to very stiff mo	ed), trace gravel, low to			•		-
-21			[Glaciolacustrine] Sandy SILT to Silty SAND and GRAV sand pockets. [Till]	EL, compact, moist, trace					900-
-22	•					G8	•		899-
-23			- at 23.0m, compact to dense, reddish	grey, moist				Gravel:39% Sand:35% Fines (Silt & Clay):26%	898-
-24 			- at 24.7m, trace cobble, trace weather	red rock pieces, dense to		G9	•		897-
20			very dense, damp WEATHERED BEDROCK, reddish gr	ey to red.					895-
-27			- at 24.7m, some medium grained sar	d, compact to dense					894-
-28						G10			893-
29									892-
105.1GD1 3/14									891-
									890-
									889-
									888-
11111111111111111111111111111111111111									886-
26 20 20 20 20 20 20 20 20 20 20 20 20 20									885-
37 1901 - 37							•		884-
309500 3005000 300500000000						•			883-
39 10 10 10 10 10 10 10 10 10 10 10 10 10									882-
<u> </u>		AMEC Env	ironment & Infrastructure	LOGGED BY: I W		!·	<u>:  :</u> 	COMPLETION DEPTH: 44.8 m	<u> </u>
FOR	amar	Suite 600, 4	4445 Lougheed Hwy C V5C 0E4	ENTERED BY: DO				COMPLETION DATE: 10/7/11	
В		Tel: (604) 2	294-3811					Page	2 of 3

CLIEN	T: Mount Polley M	ining Corpora	ation			PROJECT: Tailings Storage Facility SI program			BO	30REHOLE NO: SI11-01					
DRILLE	ER: Mud Bay					Mount P	olley - Likely, B	0				PR	OJECT NO: VI	/00560.200.3	
DRILL	TYPE/METHOD:	Tracked SR-	125/Soni	c	_	NORTH	ING: 5818353 E	EASTING:	595527			ELI	EVATION: 921.	077 m	
SAMPL	LE TYPE	TUBE			NO RECO	OVERY		NOC	GRAB			MU	D RETURN	CORE RETU	RN
	1									_		1			1
DEPTH (m)			D 80	SOIL SYMBOL		[	SOIL DESCRIP	TION		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADD INFOI	ITIONAL RMATION	ELEVATION (m)
40	20 40				WEATHE	RED BEDI	ROCK, reddish gi	rey to red(c	ontinued)	1		•			-
41															880-
-42					BEDROC	K, brown.				_		• •	V		879-
43															878-
44															877-
45					END of B - installed	OREHOLE slope incli	at 44.8m inometer								876-
-46					- backfille	d with grou	ut								875-
47				•											874-
48															873-
49															872-
															072
2 <b>—50</b>															871-
51															870-
52															869-
53															868-
2 54	···· ···· ··· ··· ··· ··· ··· ··· ···	•••••••••••••••••••••••••••••••••••••••													867-
55															866-
56															865-
57															000-
															864-
1 <b>–58</b>		•••••••••••													863-
59															862-
i = 60			AMI	EC En	vironmen	t & Infras	structure		D BY· I W					DEPTH 44.8 m	<u> </u>
,	amo	-0	Suit	e 600	, 4445 Lo	ugheed I	Hwy	ENTER	ED BY: DO				COMPLETION	DATE: 10/7/11	
		Tel:	(604)	294-381	1								Page	3 of 3	

CLIEN	IT: Mount Polley M	ining Corporatio	on	PROJECT: Tailings Sto	rage Facility SI program			BOF	REHOLE NO: SI11-02		
DRILL	ER: Mud Bay			Mount Polley - Likely, Bo	0			PRC	ROJECT NO: VM00560.200.3		
DRILL	TYPE/METHOD:	Tracked SR-12	5/Sonic	NORTHING: 5818716 E	EASTING: 595998			ELE	VATION: 928.268 m		
SAMP	LE TYPE	TUBE		NO RECOVERY SPLIT SP	DON GRAB			MUE	) RETURN CORE RETL	JRN	
	T								-		
DEPTH (m)	PLASTIC	M.C. LIQUID 60 80	SOIL SYMBOL	SOIL DESCRIP	TION	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)	
0			<u> </u>	ROCKFILL (NAG)			0		a 19	928-	
2 3 4 5 7 8	•		<u> </u>	SILT to CLAY, sand to sandy, some t gravel, medium to low plasticity, hard zones. [Till] - from 6.7m to 7.0m, sand and silt, so	o trace clay, trace to some , brown, moist, trace silt me gravel, some clay		G1 G2 G3		<b>Hydrometer</b> (GRABG3): Gravel:15% Sand:38% Silt:36% Clay:11%	927- 926- 925- 924- 923- 922- 922- 921-	
ATATEMPLATE.GDT 3/14/12 01 11 11 12 13 14/12 13 14/12	•			CLAY, silty, trace fine sand, low to me stiff, grey to brown, varved [Glaciolac SAND, medium grained, trace fines, i very dense, brown, moist to wet. [Gla - below 10.4m, fine grained sand	edium plasticity, stiff to very ustrine] uniformly graded, dense to ciofluvial]		G4 G5 G6 G7			920- 919- 918- 917-	
-D-TIMETT-D- -U-TIMETT-D- -U-TIMETT-D- -14	•			CLAY, silty, trace to some fine sand, grey to brown, varved [Glaciolacustring]	low to medium plasticity, stiff ne]	;	G8		• • •	916-	
ARCH.GPJ AMEC	•			SAND, fine grained, trace fines, unifo	rm, dense to very dense,		G9			914–	
10 17 17 17 17 17 17 17 17 17 17 17 17 17				brown, moist to wet. [Glaciofluvial] CLAY, silty, trace fine sand, low plast brown, varved. [Glaciolacustrine] - below 17.1m, some to trace silt, low grey, moist to wet	icity, stiff to hard, grey to to medium plasticity, hard,		G11		Atterberg (GRAB G11): Plastic Limit:18% Liquid Limit:19%	912- 911- 910-	
≶E-19 ≍E										909-	
	<u> </u>		AMEC Env	vironment & Infrastructure	LOGGED BY: DO			نمليك ا	. <u>.</u> COMPLETION DEPTH: 49.4 m	<u>ຼ່</u> 1	
Б	amor		Suite 600,	4445 Lougheed Hwy 3C V5C 0E4	ENTERED BY: DO				COMPLETION DATE: 10/1/11		
H	JUIC		Tel: (604) 2	294-3811					Page	€ 1 of 3	

CLIEN	T: Mount Polley Mining Corpora	ation	PROJECT: Tailings Store	age Facility SI program			B	OREHOLE NO: SI11-02	
DRILL	ER: Mud Bay		Mount Polley - Likely, BC				PF	ROJECT NO: VM00560.200.3	
DRILL	TYPE/METHOD: Tracked SR-	125/Sonic	NORTHING: 5818716 E	ASTING: 595998			El	_EVATION: 928.268 m	
SAMP	LE TYPE TUBE		OVERY SPLIT SPO	ON GRAB			∭м	UD RETURN	JRN
DEPTH (m)	PLASTIC M.C. LIQUII	SOIL SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE	SAMPLE NO	INSTALLATION		ELEVATION (m)
20		CLAY, s brown, v	ilty, trace fine sand, low plastic arved. [Glaciolacustrine∦ <i>contii</i>	ity, stiff to hard, grey to nued)	F	G12	•	Hydrometer (GRABG12): Sand:14% Silt:70% Clay:16%	908-
-21	•••••		1.3m to 21.5m, trace gravel, tra	ace sand		G13		Atterberg (GRAB G13)	907-
-22			-					Plastic Limit:16% Liquid Limit:25%	906-
-23									905-
-24	•	CLAY, s	ome silt to silty, some sand, fir , hard, grev to brown, varved.	e grained, medium to high [Glaciolacustrine]		G14			904-
-25			, , <b>.</b> . , ,				•		002
26									902
-27							•		001
-28	F				Ħ	G15		Atterberg (GRAB G15): Plastic Limit:24%	901
-29							•		900-
30	•	- below 2 medium	29.3m, silt, some clay seams, s grained, medium plasticity, ha	some to trace sand seams rd, brown, varved	,	G16			899-
		SILT, cla	ayey, trace fine grained sand, r	nedium plasticity, stiff,	-		•		898
	<b>}−</b> ●1	GRAVE	(fine grained) some medium	grained sand gap graded		G17		Atterberg (GRAB G17): Plastic Limit:21%	897
140-1-32		dense to	very dense, subrounded, moi ine to medium grained, trace fi	st to wet. [Glaciofluvial] nes, uniformly graded,	, /				896-
33		dense to	very dense, brown, wet to sat	urated. [Glaciofluvial]		G18	•		895-
-94-34		· · · · · · · · · · · · · · · · · · ·							894-
101-11-11-11-11-11-11-11-11-11-11-11-11-	•					G19	•	k ● 	893-
36									892-
37 37	•				Ħ	G20	•		801
38 38	•	- at 37.5	m, silt layer, 300mm thick, trac vet.	e gravel, low plastic, hard,	Ħ	G21			001
9600MA		· · · · · · · · · · · · · · · · · · ·				000			890-
						G22			889-
		AMEC Environme	ent & Infrastructure LOGGED BY: DO				COMPLETION DEPTH: 49.4 m		
ġ	amer	Burnaby, BC V5C	0E4	ENTERED BY: DO				COMPLETION DATE: 10/1/11	• • •
H		Tel: (604) 294-381	1					Page	e 2 of 3

CLIEN	T: Mount Polley Mining Corporat	ion	PROJECT: Tailings Sto	rage Facility SI program			BO	REHOLE NO: SI11-02			
DRILL	ER: Mud Bay		Mount Polley - Likely, B	C			PR	PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Tracked SR-12	25/Sonic	NORTHING: 5818716	EASTING: 595998			ELE	EVATION: 928.268 m			
SAMP	E TYPE TUBE		D RECOVERY SPLIT SP	DON GRAB			∭м∪	D RETURN	URN		
					ш	0	Z		(F		
E)		MBO	5011		μ	E NC	UTIO		NC		
PTH		SYI			빌	<b>IPLE</b>	CS	INFORMATION	ATIC		
DE	PLASTIC M.C. LIQUID		DESCRIP		AMF	SAN	STA				
	20 40 60 8	0			S		ΞΞ		ш		
E 40	•	GF	RAVEL (fine grained), some sand t es uniformly graded dense to ver	o sandy, coarse grained, trac / dense_wet_occasional		G23	<b>•</b>		888-		
E_41		<ul> <li>CO</li> </ul>	bble. [Glaciofluvial](continued)					•			
Ē		A SA	ND, trace fines, medium grained.	dense to very dense, brown.	-				887-		
E_42		sa Internet	turated. [Glaciofluvial]								
		IG	.AY, some silt to silty, low plasticity laciolacustrine]	, hard, grey to brown, varved	E	G24	• •		886-		
E_13											
Ē			T sandy to some sand some or	vel some to trace clay low	+				885-		
Ē,		o o pla	asticity, grey to brown, moist, occas	ional cobble. [Till]	Ц	005					
Ē		9961 - fr	rom 43.6m to 44.5m, sand seam, n	ecium grained, trace gravel	F	G25			884-		
Ē "E		090				G26	Ť				
-40		090				020			883-		
F 46		090									
E 40		WI	EATHERED BEDROCK.						882-		
Ē 47		BE	DROCK.		1						
E-4/								•	881-		
Ē						0.07					
-48						G27			880-		
Ē							•	r			
∾E 49								•	879-		
		EN	ND of BOREHOLE at 49.4m.								
≊⊑-50 ⊐E		- b	ackfilled with grout						878-		
		·····									
≤ <u></u> -51									877-		
52									876-		
≧ <u>⊨</u> -53 ⊣⊨									875-		
54 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7									874-		
55									873-		
56									872-		
57									871-		
58 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									870-		
> <u>-</u> -59 ≤ -									869-		
ξE ω											
		AMEC Enviro	nment & Infrastructure	LOGGED BY: DO	1			COMPLETION DEPTH: 49.4 r	n		
Ϋ́Ε	amer	Suite 600, 44 Burnabv. BC	45 Lougheed Hwy V5C 0E4	ENTERED BY: DO				COMPLETION DATE: 10/1/11			
H		Tel: (604) 294	4-3811					Pag	e 3 of 3		

	CLIEN	T: Mount Polley	Vining Corp	oration			PROJECT: Tailings	Storage Faci	lity SI program			BC	DREHOLE NO	: SI11-04	
	DRILLE	ER: Mud Bay					Mount Polley - Likely	y, BC				PF	ROJECT NO:	VM00560.200.3	
	DRILL	TYPE/METHOD:	Tracked S	R-125/Sc	onic	7.00.000	NORTHING: 58197	80 EASTING	595408				EVATION: 93	1.932 m	
+	SAMPL	LE TYPE	TUBE			JNO RECO	OVERY XISPLII	SPOON	GRAB		L	Шм	JD RETURN		IRN
	DEPTH (m)	PLASTIC	M.C. LIC 60	QUID <b>1</b> 80	SOIL SYMBOL		SC DESCR	)IL IPTION		SAMPLE TYPE	SAMPLE NO	INSTALLATION	AC INF	DITIONAL ORMATION	ELEVATION (m)
Ē	0					SAND an	d GRAVEL, silty, trace	clay, brown, roo	otlets. [Fill]				N N		
	-1					- below 0.	.9m, some clay, mottled	, trace black or	ganics, moist			•	•		931
	-2					SILT, san to non pla	nd to sandy, some to trad astic, brown, moist, trace	ce clay, trace g e grey silt zone	ravel, low plasticity s. [Till]						930-
	-3											•	• • •		929
	-4														928
	-5					- at 4.9m,	trace cobble, brownish	grey				•	∳.		927-
	-6														926-
	-7											•	•		925-
	-8														924-
	-9											•	•		923-
1 3/14/1	-10														922-
	-11				000								•		921-
	-12														920-
	-13														919
014-91-01	-14	·····				- below 14	4.0m, increasing sand c	ontent with dep	oth				▼. . •		918-
GFJ AIME	-15	15													917-
DIMARCH.	-16	6 7				- at 15.5m	n, 300 mm thick silty sar	nd and gravel la	ayer, moist			•	<ul> <li>↓</li> <li>↓</li></ul>		916
	-17					- <u>- at 16.8,</u>	150 mm thick silty sand	and gravel lay	er, moist						915-
60.200.3 L	-18	8					rved. [Glaciolacustrine]	i piasuoity, ver	, sun to naru, yrey,			•	• • Hydrometer	(CORE C1).	914
	-19	•				- below 18 Silty SAN medium p	8.6m, sandy, low plastic D to Sandy SILT, trace plasticity silt, loose to co viall	ity clay, trace grav mpact, brown,	vel (fine grained), moist.		C1		Sand:1% Sil	t:65% Clay:34%	913-
Ś	- 20	<u> </u>		A	MEC En	vironmen	it & Infrastructure	LOGGE	DBY: LW			<u> </u>		ON DEPTH: 43.3 m	·
Ę		ame		Si   Bi	ute 600, urnaby, l	, 4445 Lo BC V5C (	ugheed Hwy )E4	ENTER	ED BY: DO				COMPLETIC	ON DATE: 10/5/11	
Ë				I Te	el (604)	294-381	1	1					1	Page	1 of 3

CLIENT: Mount	Polley Mining Corpor	ration		PROJECT: Tailing	s Storage Faci	ity SI program			BC	REHOLE NO: S	111-04	
DRILLER: Mud B	Bay			Mount Polley - Like	ely, BC				PF	ROJECT NO: VN	100560.200.3	
DRILL TYPE/ME	THOD: Tracked SR-	-125/Sonic		NORTHING: 5819	780 EASTING:	595408			EL	EVATION: 931.	932 m	
SAMPLE TYPE	TUBE		NO RECO		T SPOON	GRAB			∭мι	JD RETURN	CORE RETU	IRN
		I	1									
DEPTH (m)		SOIL SYMBOL		S( DESCF	oil Ription		SAMPLE TYPE	SAMPLE NO		ADD INFOI	ITIONAL RMATION	ELEVATION (m)
20	40 60							C2	•	•		
21			SILT, trace moist. [Till	e sand, trace gravel, l ]	ow plasticity to n	on plastic, grey,				j∙ €		911 <sup>.</sup>
22			- at 21.9m	, 1.0m thick sand and	gravel layer							910
-23			SAND (me saturated.	edium to fine grained) [Glaciofluvial]	, some silt, trace	gravel, brown,	-			▼. . •		909
-24		· · · · · · · · · · · · · · · · · · ·	•									908
25			•									907
-26			SILT, sand	dy, some to trace clay ddish grey to grey. mo	r, trace gravel, lo bist. [Till]	w plasticity to non						906
-27										♥. . ●		905
-28												904
-29									•	•		903
30			-at 29.9m,	sand, medium graine	ed							902
31			- below 31	.1m, trace cobble, gr	эу				•	•		901
-32												900
33			SAND (me	edium to coarse grain	ed), trace silt, tra	ce to some gravel			•	•		899
34	· · · · · · · · · · · · · · · · · · ·		(tine grain occasiona	ea), uniformly graded I silt layers. [Glacioflu	, brown to grey, vial]	noist to wet,						898
-35			• •	Ann English 1	d				•	• • • ● • • •		897
36			<ul> <li>below 35</li> <li>below 36</li> <li>cape(coord)</li> </ul>	.4m, tine grained san .0m, trace clay lense:	d, grey s, trace gravel(fir	e grained), trace						896
37			sanu(coar	se yranieu), moist					•	•		895
38			• • •									894
39			SILT, sand plastic, bro	dy, some to trace clay ownish grey to grey, n	r, trace gravel, lo noist. [Till]	w plasticity to non			•	•		893
40			- at 39.6m	, silt zones, brown						•		
		AMEC Er Suite 600	nvironment ), 4445 Lou	& Infrastructure	LOGGE	D BY: LW					DEPTH: 43.3 m	1
am	ec	Burnaby,	BC V5C 0	Ĕ4	ENTER	ED RA: DO					IDAIE: 10/5/11	2 of
		I el: (604)	) 294-3811							1	rage	;∠ 0ľ

CLIEN	T:	Мо	un	t Po	olle	ey	Miı	nir	١g	Сс	orp	or	ati	on						PRC	JEC	CT:	Tailin	gs St	orag	ge Fa	cilit	y SI	prog	gram			E	BOF	REHOL	E NC	): SI	11-0	4			
DRILLI	ER	: M	lud	Ba	iy															Mou	int P	olley	/ - Lik	ely, E	BC								F	PRO	DJECT	NO:	VM	0056	60.20	0.3		
DRILL	TY	PE	/M	ETI	HC	D	: T	ra	ick	ec	1 S	R-	12	5/8	Son	ic		_	1			ING:	581	9780	EAS	STIN	G: {	5954	408			 -	E	ELE	VATIO	N: 9	31.9	32 n	n			
SAMPI	LE	IY	PE					_		IU	JRF	-						_	JNO REC	JVER	Y	Ľ	JSPI	II SP	00	N			JRAE	3		 L	Шг	NUL	DRETU	KN			COR	EREI	URN	1
DEPTH (m)			F	PLA	STI	C	N 0	И.С •	).	60	LI		ID 8(				SOIL SYMBOL				[	DE	S SC	oil Rip	- PTI	ON	l					SAMPLE NO	INSTALLATION	DETAILS		A	DDI <sup>-</sup> FOR	fion Mat	ial Ton			ELEVATION (m)
40														, 					SILT, sar plastic, b	idy, so rownis	ome t sh gre	to tra ey to	ce cla grey,	y, trac moist	ce gi . [Til	ravel, I <i>]con</i>	low tinue	plas ed)	ticity	to no	n		•	۲								
-41			;		 										: 				- at 40.9r WEATHE	n, silt z	zones	s, wh ROC	iite K. wh	ite lav	vers.										•							891-
42		• • • •		 	••••••					••••					· · · ·			VVVVVV	- below 4	2.4m,	light	grey	, verv	dense	e								•	•	2							890-
-43															 	 אי			END of B			E at /	3.3m												•							889-
44																			- installed - backfille	I slope d with	incli grou	inom ut	eter																			888-
45				•••	· · · ·					· · · ·			• • •		· · · ·																											887-
46																														886-												
47		• • • •		· · · ·	: :	• • •					• • •				· · · ·																											885-
48															· · · · · · · · · · · · · · · · · · ·																											884-
					 										· · · ·																											883-
																																										882
2 <b>50</b>										·····																																002-
5E-51		· · · ·		•••	  	•••		•		· · · ·		· · ·			9 																											881-
52 E	 	•		· · · ·		• • •	• • •		• • •		• • •				· · ·																											880-
53			;	· · · ·							• • •				· · · ·																											879-
54				•••																																						878-
55																																										877-
56																																										876-
57		• • • •	••••												· · · · · · · · · · · · · · · · · · ·	• •																										875-
58			,	•••	:																																					874-
59																															873-											
60						• • •																																				
	AMEC Environmer Suite 600, 4445 Lc					it & Ir	ofras	struc Hwv	cture		L	OG	GED	BY	: LW	V					COMP		ON	DEF	PTH:	43.3 r	n															
	<b>anec</b> Suite 600, 4445 Lo Burnaby, BC V5C ( Tel: (604) 294-381				)Ĕ4 1		,			H	=N FE	:RE	ט B,	Y: D	U		 			COMP	LETI	UN	UAT	<b>⊢</b> : 1	0/5/11 Pad	e 3	of 3															
	_	_	_	Tel: (604) 294-381					<u> </u>																						0, 0											

ſ	CLIEN	NT: Mount Polley M	lining Corporatio	n	PROJE	CT: Tailings Storage	Facility SI progra	am		BO	REHOLE NO: VW11-	01 (FX3)	
ſ	DRILL	ER: Mud Bay			Mount F	Polley - Likely, BC				PR	OJECT NO: VM0056	0.200.3	
	DRILL	TYPE/METHOD:	Tracked SR-125	/Sonic	NORTH	IING: 5818480 EAS	TING: 594463			ELE	EVATION: 941.009 m	1	
	SAMP	PLE TYPE	TUBE		NO RECOVERY	SPLIT SPOON	GRAB		[	ШМU	D RETURN	CORE RETUR	RN
-				٥٢				Ш	0	N			(m)
	DEPTH (m	PLASTIC	M.C. LIQUID 60 80	SOIL SYMBO		SOIL DESCRIPTIC	DN	SAMPLE TYF	SAMPLE NO		ADDITION INFORMAT	AL ION	ELEVATION
SOIL/ROCK VM00560.200.3_BH LOGS_SMARCH.GPJ AMEC-PG-MULTIWELL-DATATEMPLATE.GDT 3/14/12	$\begin{array}{c} 0 \\ -1 \\ -2 \\ -3 \\ -4 \\ -5 \\ -6 \\ -7 \\ -8 \\ -9 \\ -10 \\ -11 \\ -12 \\ -13 \\ -14 \\ -15 \\ -16 \\ -17 \\ -18 \\ -19 \\ -20 $				FILL.         SILT, sand to sand to non plastic, dens         WEATHERED BED         END of BOREHOL - installed 1 vibratin - backfilled with gro	y, some to trace clay, t e, brown to grey, mois PROCK. E at 11.1m. g wire (7.0m) ut	ace gravel, low pla ; occasional cobble	isticity =. [Till]	G1 G2 G3 G4 G5 G6		Hydrometer (GRABC Gravel:5% Sand:36% Clay:14% Vibrating Wire-F5 (11	52): Silt:45% 19797)	940 939 938 937 936 935 934 933 932 931 930 930 930 929 929 928 929 928 927 928 927 928 922 922
OR (		2000		Suite 600	, 4445 Lougheed	Hwy FI	ITERED BY: DO	1			COMPLETION DAT	E: 10/3/11	
ЯН F	(	diiiE(		Burnaby, Tel: (604)	BC V5C 0E4 294-3811							Page	1 of 1
												- 0 -	

CLIEN	T: Mount Polley I	Mining Corporation			PROJEC	CT: Tailings S	Storage Fac	ility SI program			BO	Rehole no: <b>V</b>	W11-02 (IX3)	
DRILLI	ER: Mud Bay				Mount P	olley - Likely,	BC				PR	DJECT NO: VM	00560.200.3	
DRILL	TYPE/METHOD:	Tracked SR-125/Soni	°		NORTH	NG: 581834	3 EASTING	: 594786			ELE	EVATION: 945.0	)93 m	
SAMPI	LE TYPE	TUBE		NO RECO	VERY	SPLIT S	POON	GRAB			MU	D RETURN	CORE RETU	RN
	1									1	1	1		
DEPTH (m)			SOIL SYMBOL		[	SOI DESCRII	l Ption		SAMPI F TYPF	SAMPLE NO	INSTALLATION DETAILS	ADDI INFOF	TIONAL RMATION	ELEVATION (m)
E 0				SILT, sand	d to sandy	, some to trace	e clay, trace g	gravel, low	00					
1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 10 11 12 13 14 15 16 10 10 11 12 13 14 15 16 10 10 10 10 10 10 10 10 10 10				SILT, som hard, brow Glaciolaci BEDROCH	e clay to c <i>n</i> , moist, <u>ustrine]</u> <i>C</i> , brown to DREHOLE 2 vibrating	some to trace o dense, brown playey, trace sa varved, occatio o redish grey.	and, low plas onal gravel do	icity to non plast op stone.		G1 G2 G3 G4 G5 G6 G6 G7 G8		Vibrating Wire-I Atterberg (GRA Plastic Limit:20 Liquid Limit:289	5 (1119796) 6 (1119792) 8 G5): %	944 943 942 941 940 939 938 937 938 937 938 937 938 937 938 937 937 936 937 937 936 937 937 936 937 937 936 937 937 936 937 937 936 937 936 937 937 937 937 936 937 937 937 937 937 937 937 937 937 936 937 937 937 937 937 937 937 937 937 937
		· · · · · · · · · · · · · · · · · · ·		- backfilled	d with grou	it	)							927
≸E-19														926
	<u> </u>	AME	EC Envi	ronment	& Infras	structure	LOGGE	ED BY: DO		1	<u> </u>	COMPLETION	DEPTH: 17.4 m	
5 ·	amo	Suite Burr	e 600, 4 naby, B0	445 Loι C V5C 0	ugheed I E4	Чwy	ENTER	ED BY: DO				COMPLETION	DATE: 10/4/11	
	JIIE	Tel:	(604) 2	94-3811									Page	1 of 1

CLIEN	T: Mount Polley Mining Corporat	ion	PROJECT: Tailing	is Storage Fac	lity SI program			BO	REHOLE NO: VW11-03 (EX4)	
DRILLE	ER: Mud Bay		Mount Polley - Like	ely, BC				PR	OJECT NO: VM00560.200.3	
DRILL	TYPE/METHOD: Tracked SR-12	25/Sonic	NORTHING: 5818	272 EASTING	595467			ELE	EVATION: 926.997 m	
SAMPL	E TYPE TUBE			IT SPOON	GRAB		Π	]MUI	D RETURN	IRN
	-									_
DEPTH (m)	PLASTIC M.C. LIQUID	SOIL SYMBOL	Si DESCF	oil Ription		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0		ROCK	FILL. [NAG]							
E-1										926-
Ē		¥3								0.05
<u>–</u> 2										925-
-3										924-
								•	· ·	
-4		22								923-
Ē		¥¥								000
<b>-</b> 3								• •		922-
6									•	921-
-7		22								920-
E_8		55								919-
Ě										
<u>-</u> 9									•	918
/14/12								•		
°° ⊟-10									•	917-
		000 moist,	silty, trace sand and gra- mottled. [Till]	vel (fine grained	), low plasticity,					916-
EMPL										
		SAND	, medium to coarse grain moist to wet. [Glaciofluv	ed, trace to som ial]	e silt, trace gravel,				•	915-
≧ <u>⊢</u> 13 ⊐⊢	•						G1		4	914-
2- 14 14								•		913-
AMEC			and SILT, silty to clavev.	stiff to verv stiff.	grey to brown.	$\left  \right $			•	
15 15	•	varved	. [Glaciolacustrine]	<b>,</b> ,		Ħ	G2		Vibrating Wire-E6 (1110704)	912-
ARCH		Sandy	SII T trace coaree cand	arey varved w	et	$\left  \right $		•	· · · · · · · · · · · · · · · · · · ·	011
		[Glacio	blacustrine]	, groy, varvea, w	<b></b>		G3		•	911-
			sandy to some sand som	ne gravel trace o	lav non plastic		00			910-
0.3 B		dense	brown grey, moist, trace	sand pockets. [	Till]					
18		e e e	, silly, trace coarse sand,	grey, wet. [Gla	cioliuvialj	$\models$	G4		Atterberg (GRAB G4):	909-
ioow10			and to come could be a	a aroual terror	lou pos slastis			; • •		908
A COCK	•	o SILI, o o dense	brown, damp, occasiona	al weather bedro	ciay, non plastic, ck. [Till]		G5 G6	•	viorating wire-E/ (1119801)	500-
원기 <u>은 20</u>		AMEC Environm	ent & Infrastructure							
-OR S	amar	Suite 600, 4445	Lougheed Hwy	ENTER	ED BY: DO				COMPLETION DATE: 10/8/11	
H	コリビし	Tel: (604) 294-38	311						Page	1 of 2

CLIEN	T: Mount Polley I	Mining Corporat	on		PROJE	CT: Tailings Stor	rage Facili	ty SI program			BO	REHOLE NO:	VW11-03 (EX4)	
DRILLE	ER: Mud Bay				Mount F	Polley - Likely, BC	;				PR	OJECT NO: V	M00560.200.3	
DRILL	TYPE/METHOD:	Tracked SR-12	25/Sonic	7	NORTH	ING: 5818272 E	ASTING:	595467		r	EL	EVATION: 926	6.997 m	
SAMPL	LE TYPE	TUBE		/ NO RECO	OVERY	SPLIT SPO	ON	GRAB			Шми	D RETURN	CORE RETU	RN
														T
DEPTH (m)	PLASTIC		SOIL SYMBOL			SOIL DESCRIPT	ΓΙΟΝ		SAMPLE TYPE	SAMPLE NO	INSTALLATION	ADE INFC	Ditional Rmation	ELEVATION (m)
20	20 10			SILT, san dense, br	idy to som own, dam	e sand, some grav o, occasional weat	el, trace cl her bedroc	ay, non plastic, k. [Til <b>l</b> ]continued)			•			
-21														906-
-22				WEATHE	RED DED	ROCK, led to grey					•			905–
-23				END of B	OREHOLE	E at 23.2m.						•		904-
-24				- installed - backfille	2 vibratin d with gro	g wire (15.2m, 18.9 ut	9m)							903-
-25														902-
-26														901-
														000
-21														900-
-28														899-
29														898-
1 													897-	
5 - <b>31</b>														896-
32														895-
33														894-
34														893-
35														892-
36														891-
37	· · · · · · · · · · · · · · · · · · ·													890-
38														889-
<b>39</b>														888-
5 <u>= 40</u>	<u>  : : : :</u>		AMEC Er	 ivironmen	t & Infra	structure	LOGGF	D BY: LW	1				N DEPTH: 23.2 m	<u> </u>
5	amo		Suite 600 Burnaby	, 4445 Lo BC V5C (	ugheed )E4	Hwy	ENTER	D BY: DO				COMPLETIO	N DATE: 10/8/11	
	JIIC		Tel: (604)	294-381	1								Page	2 of 2

CLIEN	T: Mount Po	lley Mi	ning Cor	poration			PROJE	CT: Tailings Sto	rage Facil	ity SI program			E	BOR	EHOLE NO: VW11-04 (CX4)	
DRILL	ER: Mud Ba	у					Mount F	olley - Likely, BC	2				F	PRC	JECT NO: VM00560.200.3	
DRILL	TYPE/METH	IOD: T	racked S	SR-125/S	Sonic		NORTH	ING: 5818309 E	ASTING:	595533			E	ELE	VATION: 921.594 m	
SAMPL	LE TYPE		TUB	E		NO RECO	OVERY		DON	GRAB			M	/UD	RETURN CORE RETL	JRN
	1												-		-	1
DEPTH (m)	PLAS F 20	TIC N	1.C. L €	IQUID <b>I</b> 80	SOIL SYMBOL			SOIL DESCRIP	TION		SAMPLE TYPE	SAMPLE NO	INSTALLATION	DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0	20				~~	ROCKFIL	L. [NAG]							$\mathbb{X}$		
Ē,																921-
Ē																020
<u>-</u> 2													۲	۲		920
Ē														•		919
-3			•	• • • • • • • • • • • • • • • • • • • •												
Ē					22											918-
<b>-</b> 4					22								•	•		
Ē					22											917-
5					11											
Ē,					11											916-
Ē																015
-7						SAND an	d SILT iso	me to trace clay t	race grave	trace cobble low	,					915
Ē					000	plasticity I	to non plas	stic, brown to grey	, moist. [Ti	li]						914-
8					000								٠	۲		
Ē					010											913-
9	•			• • • • • • • • • • • • • • • • • • • •								G1			Hydrometer (GRABG1)	
14/12						SILT, son	ne clay to	clayey, trace coars	se sand, lo	w to medium	1				Gravel:6% Sand:43% Silt:38%	912-
™E-10	•	T				varved. [	Glaciolacu	istrine]	ayey Siit) , i	orown, moist,		G2	۲	۲	Atterberg (GRAB G2):	
DEF 11														•	Liquid Limit:44%	911-
						-at 11 3m	1 300 mm	thick sand laver	medium to	coarse grained						0.40
	•					trace grav	rel 1 6m light	brown to grey va	rved trace	cand coam	F	G3				910-
						below 1	) Em arou	otiff wot	iveu, irace	Sanu Seam			<b>I</b>	) 	Vibrating Wire C11 (1110709)	909
≝⊑_13						- below 12	2.3m, grey 2.8m, trace	e clay, some sand	, non plasti	ic			•	•		
MUL-												04				908-
94-14		•				- below 13	3./m, silt,	trace clay, non-pla	astic, grey			64				
AME																907-
		•										G5	•	•	Atterberg (GRABG5): Non Plastic	
ARCH 14					000	SILT, san	dy, trace o	clay, trace gravel, l	low plastici	ty to non plastic,	1			•		906-
S 5M						- at 15.5m	n, 200mm	thick coarse sand	and gravel	seam		06				005
90 						h-1- 4-	7.7	. <b>to operate</b> (		alesta too a		GD				905-
-13 BF					000	- below 1 weathered	d rock pied	e το some clay, tra ces, moist	ice sand po	ockets, trace			•			904-
18					000										lludromater (ODADOZ)	
10056					000	- at 19.0m	n clavev t	race sand				G7			Sand:1% Silt:65% Clay:34%	903-
≶E-19 ≍E					000	at 10.311	, orayey, l						•	•		
																902-
los E				, ,	AMEC En	vironmen	t & Infra	structure Hwy	LOGGE	D BY: LW					COMPLETION DEPTH: 29.3 m	1
H FO	am	20		E	Burnaby,	BC V5C 0	)E4	····· ,	ENTER	ED BY: DO				_	COMPLETION DATE: 10/8/11	1 of ?
ш									1						, ugu	2

CLIEN	T: Mount Polley N	Vining	Corp	oratio	n			PROJE	ECT: Tailing	s Storage Fa	acility SI pro	ogram			В	OR	EHOLE NO: VW11-04 (CX4)	
DRILLE	ER: Mud Bay							Mount	Polley - Like	ly, BC					P	RO	JECT NO: VM00560.200.3	
DRILL	TYPE/METHOD:	Track	ed S	R-125	5/Soni	0		NORT	HING: 5818	309 EASTIN	G: 595533	}			E	LE	/ATION: 921.594 m	
SAMPL	E TYPE		TUBE					OVERY		T SPOON	GRA	AB		[	M	IUD		RN
	I														1			
DEPTH (m)		M.C.	LIC	2UID - <b>1</b> 80		SOIL SYMBOL			S( DESCF	)IL Ription	1		SAMPLE TYPE	SAMPLE NO	INSTALLATION	DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
20							SILT, san dense, gr	dy, trace ey, moist	clay, trace g t, occasional o	avel, low plas cobble, silt len	ticity to non ses.[Till]con	plastic, <i>tinued)</i>			•	•		901-
-21	•						varved - below 2	0.4m, soi	me gravel			••••,		G8	•	•	Vibrating Wire-C12 (1119795)	900-
-22							Silty CLA non plast	Y to SIL I c, stiff, g	, some sand, rey, varved. (	some clay ler Glaciolacustrir	nses, low pla ne)	asticity to						000
-23	•					000	compact - at 22.7r	dy, trace to dense, 1, 200mn	, grey, trace g , grey, moist, n thick sand a	avel, low plas occasional col nd gravel sea	bble, silt lens m	-plastic, ses. [Till]		G9				099
-24						000	- below 2	3.2m, tra	ce cobble							•		898-
-25	•	· · · · · · · · · · · · · · · · · · ·				0000	- below 2	4.4m, tra	ce sand sean	ıs, reddish gre	зу			G10				897-
-26	····						WEATHE	RED BE	DROCK, trac	e sand seams	, red to grey	<i>י</i> .		G11		۲		896
-27																		895-
-28															•	•		894-
0																		893-
29							END of B - installec	OREHOL 2 vibrati	_E at 29.3m. ng wire (12.5	m, 21.0m)			_					892-
2 <b>—30</b>						•	- backfille	d with gr	out									891-
31		· · · ; · · · ·				•												890-
32																		889-
33																		888-
34																		007
35																		00/-
36																		886
37																		885-
38																		884
39																		883-
40								1011			055 51							882-
					AME	e 600	vironmen , 4445 Lo	t & Infra ugheed	astructure I Hwy		JED BY: L	.W					COMPLETION DEPTH: 29.3 m	
	ame	C			Burr	aby,	BC V5C (	)Ē4	-			υU				+	JUNIFLETIUN DATE: 10/8/11 Page	2 of 2
		-			iel.	(004)	234-301	I									i dye	

CLIEN	T: Mount Polley	Mining C	Corporat	ion			PROJE	CT: Tailings	Storage Fac	ility SI program			E	BOR	EHOLE NO: VW11-05 (AX5)	
DRILLI	ER: Mud Bay						Mount F	olley - Likely	, BC				F	RO	JECT NO: VM00560.200.3	
DRILL	TYPE/METHOD	): Tracke	d SR-12	25/Son	ic		NORTH	ING: 581841	0 EASTING	: 595605			E	ELE	VATION: 920.601 m	
SAMP	LE TYPE	Т	UBE				OVERY		SPOON	GRAB			ШN	/UD	RETURN CORE RETU	JRN
DEPTH (m)	PLASTIC	M.C. 40 61		0	SOIL SYMBOL			SO DESCRI	IL IPTION		SAMPLE TYPE	SAMPLE NO	INSTALLATION	DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0	20			:	44	ROCKFIL	l. [NAG]						$\mathbb{X}$	$\mathbb{N}$	1	
1																920-
2													I			919-
3													•	۲		910
4																016
5													•	•		015
6				····;··												014
7					11 11 11								•	•		013-
8				····;··		CLAY, sill silt layers	ty, trace gi , trace sar	ravel, low plas nd layers, trace	ticity, stiff to h e rootlets. [Gla	ard, brown, trace aciolacustrine]						012
9 1175						- below 8. varved.	.8m, trace	sand, low plas	sticity, very sti	ff to hard, grey,				•		012
10 10 10 10	•										-	G1				910
ан- Тан- Тан- Тан- Тан- Тан- Тан- Тан- Т				· · · · · · · · · · · · · · · · · · ·												909-
12 12 12	•					- at 11.9m grey	n, 600m th	ick sandy zone	e, non plastic,	stiff to very stiff,		G2			Vibrating Wire-A16 (1119799)	908-
13 10 10				·····;··												907-
						- at 13.7m	n, medium	plasticity				G3			Atterberg (GRAB G3): Plastic Limit:20% Liquid Limit:43%	906-
15 15	•					- below 1	5.0m, silt,	clayey, mediu	m plasticity, v	ery stiff		G4				905-
	•	•				SILT, low	plasticity,	loose, grey, w	et. [Glaciolac	ustrine]		G5			Vibrating Wire-A17 (09-2810)	904-
						- below 17	7.1m, trace	e clay, saturate	ed					≥ •	Plastic Limit:24% Liquid Limit:27%	003-
18 11111111111111111111111111111111111				· · · · · · · · · · · · · · · · · · ·												000
00 19 19	•					SAND, co	oarse grair	ned, trace grav	el, grey. [Glad	ciofluvial]	╞	G6	•	•		302
<u>5 20</u>		: : :	:			•	10 1-1							Ŀ		301-
Х К				Sui	te 600	), 4445 Lo	ugheed	Hwy						-	COMPLETION DEPTH: 32.3 m	1
Ц Ц	ame	C		Bur	naby,	BC V5C 0	)E4 1							+	Page	e 1 of 2
и <b>—</b> ———————————————————————————————————				101	+	, 001			1						. ugo	

CLIEN	T: Mount Polley Mining Corporat	ion	PROJE	ECT: Tailings Stora	ge Facility SI program	ı		BO	REHOLE NO: <b>V</b>	/W11-05 (AX5)	
DRILL	ER: Mud Bay		Mount	Polley - Likely, BC				PR	OJECT NO: VI	100560.200.3	
DRILL	TYPE/METHOD: Tracked SR-12	25/Sonic	NORTH	HING: 5818410 EA	STING: 595605			ELE	EVATION: 920.	601 m	
SAMP	LE TYPE TUBE	NO	RECOVERY	SPLIT SPOO	N GRAB			MU	D RETURN	CORE RETU	RN
DEPTH (m)	PLASTIC M.C. LIQUID	SOIL SYMBOL		SOIL DESCRIPTI	ON	SAMPI F TYPF	SAMPLE NO	NSTALLATION ETAILS	ADD INFOI	ITIONAL RMATION	ELEVATION (m)
20	20 40 60 8		Γ, some sand to	o sandy, some gravel	trace clay, low plastici	ity	07	<ul> <li>≤ □</li> <li>●</li> <li>●</li> <li>●</li> <li>●</li> </ul>			
-21			on plastic, grey	y, occasional cobble. [	1111]		- 67		•		900
-22		SAN brov	ID, medium to vnish grey. [Gla	coarse grained, trace aciofluvial]	fines, trace gravel,			•			899-
-23		OD SIL OD to n	Γ, some sand to on plastic, grey	to sandy, some gravel y to brown, moist to we	trace clay, low plastici et, occasional cobble. [	ity Till]			•		897-
24									Vibrating Wire-	A18 (09-2808)	896-
25	•						G8		) - - -		895-
-26		000 000 000 000	low 26.2m, sar	nd and gravel, silty							894-
-2/	•			DDOCK and to grow			G9		∑ - - -		893-
-28				DROCK, led to gley.							892-
14/15 14/15		- at	29.3m, sand a	nd gravel, silty, reddis	h grey, till-like			•			891-
© 100 100 100 100 100 100 100 100 100 100											890-
								•	•		889-
MELL-DAT		ENI - ins	of BOREHOL talled 3 vibration	_E at 32.3m. ng wire (12.2m, 16.8m	ı, 24.4m)				· 		888
170W-594-	·····	- Da		out							887-
11111111111111111111111111111111111111											886-
SMARCH.G											885-
37 1901 1901 1901 1901 1901 1901 1901 190	···· ··· ··· ··· ··· ··· ··· ··· ··· ·										884
60.200.3 E											883
390WV 390WV 39	····										882
		AMEC Enviror	ment & Infra	astructure						I DEPTH- 32.3 m	881
H FOR S	amec <sup>o</sup>	Suite 600, 444 Burnaby, BC V	5 Lougheed 5C 0E4	I Hwy	ENTERED BY: DO				COMPLETION	DATE: 10/9/11	2 of 2
mi 🔄 🔪		1 el. (604) 294	୰ଡ଼୲୲							гауе	2 UI Z

CLIEN	T: Mount Polley Mining (	Corporation	PROJECT: Tai	lings Storage Facili	ty SI program			BO	REHOLE NO: VW11-	06 (AX6)	
DRILL	ER: Mud Bay		Mount Polley - I	Likely, BC				PR	OJECT NO: VM0056	0.200.3	
DRILL	TYPE/METHOD: Tracke	ed SR-125/Sonic	NORTHING: 58	818423 EASTING:	595686			ELI	EVATION: 916.337 m		
SAMP	LE TYPE	UBE	NO RECOVERY S	PLIT SPOON	GRAB			ШМИ	D RETURN	ORE RETURN	
DEPTH (m)	PLASTIC M.C.	Solt SYMBOL	DES	SOIL CRIPTION		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITION. INFORMATI	AL FON	ELEVATION (m)
E0			ROCKFILL. [NAG]					X		ç	916-
-1										g	915
										g	914-
3		1						•		g	913-
-4										g	912-
5			SILT, sand to sandy, some to non plastic, very dense to	to trace clay, trace gra b hard, brown, moist, t	avel, low plasticity race grey silt			•	· · ·	g	911-
6			fissures. [Till] Clayey SILT to Silty CLAY, t	trace to some sand, lo	ow plasticity, stiff				• <b>•</b> • •	g	910-
-7	•		to very stiff (clay) to loose to moist, varved. [Glaciolacust - at 7.4m, clay layers (3mm	o compact (silt), light b rine] thick), stiff	prown to grey,		G1			g	909-
8	•		- below 7.9m, clay, silty, sar silty sand layers (5-10mm th	ndy, silty clay layers (* nick)	10-15mm thick),				•	g	908-
9 14/17 17/17	•		<ul> <li>below 0.5m, sitt and sand 1</li> <li>gravel, low plasticity, grey to</li> <li>below 9.0m, silt, clayey, trassiff, light brown, sand layers</li> </ul>	b brown ace sand, low to medi s (2mm thick)	um plasticity,		C1	•	· · · · · · · · · · · · · · · · · · ·	g	907-
10 III (%)			- below 10.9m, alternating c	lay (10 to 30mm thick	i), silt (1 to 5mm					9	906-
	•		content in clay varves with c	lepth	, moledang and			•	<ul> <li>Vibrating Wire-A19 (0)</li> <li>Atterberg (CORE C2)</li> <li>Plastic Limit:24%</li> <li>Liquid Limit:48%</li> </ul>	9-2811) <sup>):</sup> g	905-
	••••••••••••••••••••••••••••••••••••••						C2			g	904-
	•		<ul> <li>below 12.8m, silt, clayey, le layers (5mm thick)</li> </ul>	ow plasticity, very stif	f, grey, moist, silt			•		g	903-
	•••••••••••••••••••••••••••••••••••••••		- below 14.0m, silt, sandy, tr wet	race clay, low plasticit	y to non-plastic,		C3		• • •	g	902-
	•		SAND, fine grained, silty to grey. [Glaciofluvial]	some silt, uniformly g	raded, loose,				Vibrating Wire-A20 (0	9-2809) 9	901-
							C4		■	g	900-
	•		- below 16.5m, sand, fine to gravelly, trace fines, moist	coarse grained, trace	e gravel to					8	899-
18 177.09900	•		- DEIOW 17.Um, gravel, sand SILT, sandy, some to trace plasticity to non plastic, grey	y, trace slit, moist to v clay, trace to some gr y, moist, trace sand se	vet ravel, low eams. [Till]		C5		₹.	в	898-
MA L 19	•		- at 19.2m, 100 mm thick sa	nd seam						8	897-
<u>5 = 20</u>			vironment & Infrastructur					•		TH: 35 1 ~	
л Но	2000	Suite 600	), 4445 Lougheed Hwy	ENTER	D BY: DO				COMPLETION DATE	E: 10/10/11	
H H	dillec	Burnaby, Tel: (604	BC V5C 0E4 ) 294-3811							Page 1 (	of 2

CLIEN	T: Mount Polley Mining Corpor	ration	PROJECT: Tailings Storage Facility SI program BC				OREHOLE NO: VW11-06 (AX6)				
DRILL	ER: Mud Bay		Mount Polley - Likely, BC F				PR	PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Tracked SR-	-125/Sonic	NORTHING: 581	NORTHING: 5818423 EASTING: 595686			ELE	ELEVATION: 916.337 m			
SAMP	E TYPE TUBE	NO RE		IT SPOON	GRAB		[	∭м∪	D RETURN	CORE RETUR	RN
DEPTH (m)	PLASTIC M.C. LIQU	Solt SYMBOL	S DESC	oil Ription		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITI INFORM	ONAL IATION	ELEVATION (m)
20		80 P P SILT, s	andy, some to trace cla	y, trace to some g	gravel, low			•			896-
-21	•	of contin of contin	ty to non plastic, grey, n <i>ued)</i> 20.1m, trace clay 20.6m, trace cobble	noist, trace sand s	seams. [1ill]		G2		•		895-
-22								•			894-
23		000 000 000 000 000 000	23.2m, trace sand sea	ms, reddish grey					Vibrating Wire-A2	1 (1119786)	893-
-24											892-
25	•	000 000 000 000 000	25.6m, occasional wea	athered bedrock p	ieces		G3	•	•		891-
-27		0 0 belov	26.2m, some gravel								890-
-28								•			889-
29	····										888-
3/14/12 11/11/130								•	•		886-
9.918 1919 1919 1919 1919 1919 1919 1919	•	000 000 000 000 - at 31	1m, sand, gravelly, trac	e fines			G4				885-
DATATE		WEAT	HERED BEDROCK, trac	ce fine sand sean	n, red to grey.			<ul> <li>•</li> <li>•</li></ul>	•		884-
IMULTIME 33											883-
BHEC-34									•		882-
19.HOH		END o	BOREHOLE at 35.4m.	7	<u></u>	-			4 -		881-
36 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	···· ··· ··· ··· ··· ··· ··· ··· ··· ·	- instal - backt	ea 3 vibrating wire (10.7 illed with grout	rm, 15.2m, 22.9m	1)						880-
37 BH TC	· · · · · · · · · · · · · · · · · · ·										879-
100260.20	· · · · · · · · · · · · · · · · · · ·										878-
39 1900 1900 1900 1900											877-
		AMEC Environm	ent & Infrastructure	LOGGF	D BY: LW		<u> </u>	<u> </u>		EPTH: 35.4 m	
HO	amar	Suite 600, 4445 Burnaby, BC V50	Lougheed Hwy C 0F4	ENTER	ED BY: DO				COMPLETION D	ATE: 10/10/11	
H	コリビし	Tel: (604) 294-38	11							Page	2 of 2

CLIENT: Mount Polley Mining Corporation					PROJECT: Tailings Storage Facility SI program Bo			BO	BOREHOLE NO: VW11-07 (BX4)						
DRILLER: Mud Bay					Mount Polley - Likely, BC				PR	ROJECT NO: VM00560.200.3					
DRILL TYP	DRILL TYPE/METHOD: Tracked SR-125/Sonic						NORTHING: 5818554 EASTING: 595850 E				ELE	ELEVATION: 919.779 m			
SAMPLE T	YPE	TUB	E			OVERY		NOC	GRAB		[	∭м∪і	O RETURN	CORE RETU	JRN
DEPTH (m)	PLASTIC	M.C. LI 60		SOIL SYMBOL		C	SOIL DESCRIP	TION		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	AD INF(	DITIONAL DRMATION	ELEVATION (m)
0					ROCKFII	.L. [NAG]									
-1 ····															919-
2															918-
3												•			917-
4													•		916-
5	•				SILT, cla	yey, some s ccasional sa	and, some grave and seam. [Till]	el, low plasti	city, stiff to hard,		G1				915
6	· · · · · · · · · · · · · · · · · · ·			000									•		914-
7				000											913-
8					SILT, trac compact	ce clay to cla (silt) and sti	ayey, low plastici ff to very stiff (cla	ity to non pla avey silt), bro	astic, loose to own, moist.	-			•		912
9	•				[Glaciola - below 8	custrine] .4m, trace to	o some clay, gre	y, occasiona	al silty sand zone		G2				911-
											~		•		910
					- at 10.4r gravel, lo	n, 500mm th ose, grey	nick sand seam,	trace to som	e silt, trace fine		G3				909-
	•				- below 1 plasticity,	very stiff	y, trace sand, va	rved, low to	meaium		G4	•	•		908-
	<b>D</b>				- below 1	2.5m, mediı	um plasticity, ligh	it brown			G5		Atterberg (G	RAB G5):	907-
₩-54-54-54-54-54-54-54-54-54-54-54-54-54-				····	- below 1	4.0m, trace	silt layers, trace	fine grained	sand layers, ligh	t			Plastic Limit: Liquid Limit:3 Vibrating Wir	24% 87% e-B11 (1119793)	906-
אד ביין אד ביין 15				····	brown to	grey							•		905-
	•			····							G6				904-
	•			····	- below 1	7.0m, silt la	yers, low plastici	ty to non pla	stic, very stiff to				•		903-
	•			····	stiff, light	brown to da	ark grey	·	-		G7				902-
xmm/ 19 ····				····									•		901-
DE															900-
			A	MEC E	nvironmer	nt & Infras	tructure	LOGGED	DBY: LW				COMPLETIC	ON DEPTH: 43.3 m	າ
	mea		B	urnaby	, BC V5C	0E4		ENTERE	DBY: DO				COMPLETIC	ON DATE: 10/6/11	1 05 0
			- T	el: (604	) 294-381	1								rage	; 1013

CLIEN	T: Mount Polley Mining Corpora	ation	PROJECT: Tailings Storage Facility SI program			BOF	BOREHOLE NO: VW11-07 (BX4)				
DRILLE	ER: Mud Bay		Mount Polley - Likely, BC				PRO	PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Tracked SR-	125/Sonic	NORTHING: 5818554 E	ASTING: 595850				EVATION: 919.779 m			
SAMPL	E TYPE TUBE		ECOVERY SPLIT SPO	ON GRAB		L		CORE RETURN	JRN		
									1		
DEPTH (m)	PLASTIC M.C. LIQUI	Soll SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)		
20		SILT, s plastic	some sand, fine grained, trace c , loose to compact, grey, varved	ay, low plasticity to non . [Glaciolacustrine]	=	G8	•	Atterberg (GRABG8): Non Plastic			
-21		(contin	ued)						899-		
-22							•		007		
-23	• • •	OO SILT, s	some sand, some to trace clay, astic, dense, grey, occasional sa	race gravel, low plasticity ind zones. [Till]	to	G9 G10			897-		
24		000 - at 23 000 - at 23 000 - belov	.211, sand, fine graned, sitty, tra .8m, 100 mm thick sand and gra v 23.9m, silt, clayey, some sand	vel layer, trace cobble and gravel					896		
-25	•					G11		•	895		
-26		00 00 00 00 00 00 00 00 00 00 00 00 00	v 26.2 clav siltv				()	Vibrating Wire-B12 (1119791)	894-		
-27			20.2, oldy, oldy				•		893		
-28	•••••••••••••••••••••••••••••••••••••••					G12			892-		
-29		0 yo 0 0 0 0 0 0 0 0 0 0 0 0	.7m, boulder				•		891-		
30			irace to some clay, low plasticity	, grey, wet, varved, trace					890-		
-31	H.					G13	•	Vibrating Wire-B13 (1119785) Atterberg (GRAB G13): Plastic Limit:22%	889-		
-32	···· · · · · · · · · · · · · · · · · ·		v 32 2m sand and gravel fine to	coarse grained sand silt	v		•	Liquid Limit:27%	888-		
-33		OC SILT, s OC Compa	sand to sandy, trace gravel, low ict to dense, grey. [Till]	plasticity to non plastic,					887-		
-34	····	070 000 000 - belov	v 33.5m, sandy, some gravel				•		886-		
35		090 000 - belov 000 pieces	v 34.4m, dark grey, occasional b	lack weathered bedrock		G14			885-		
	•					G15	•		884-		
	•••••••••••••••••••••••••••••••••••••••					G16			883-		
-37									000		
-38									882-		
E-39	•	ood ood ood	v 38.7m, sand, coarse grained, t	race gravel, grey		G17			881-		
E 40			ont & Infrastructure				•		880-		
		Suite 600, 4445	Lougheed Hwy					COMPLETION DEPTH: 43.3 m COMPLETION DATE: 10/6/11	I		
	JIIEC	Burnaby, BC V50 Tel: (604) 294-38	J UE4 311					Page	2 of 3		

CLIEN	IT: Mount Polley Mining Corporat	ion	PROJECT: Tailings Sto	rage Facility SI program			BOF	REHOLE NO: VW11-07 (BX4)		
DRILL	ER: Mud Bay		Mount Polley - Likely, BC					PROJECT NO: VM00560.200.3		
DRILL	. TYPE/METHOD: Tracked SR-12	25/Sonic	NORTHING: 5818554 I	EASTING: 595850			ELE	EVATION: 919.779 m		
SAMP	TUBE		ECOVERY SPLIT SP	DON GRAB		[		D RETURN	RN	
	1							1		
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIP	TION	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)	
40		WEAT	THERED BEDROCK, grey to bl	ack.	-		• •			
-41								•	879-	
-42									878-	
43		END C	of BOREHOLE at 43.3m.		_			•	877-	
44		- insta - back	alled 3 vibrating wire (13.7m, 25 filled with grout	.9m, 31.1m)					876-	
45									875	
46									874-	
47									873-	
48									872-	
49									871-	
50 100 100 100 100 100 100 100									860	
51		·····							868-	
52 1									867-	
									866-	
									865-	
									864-	
									863-	
									862-	
									861-	
									860-	
		AMEC Environm Suite 600. 4445	nent & Infrastructure	LOGGED BY: LW				COMPLETION DEPTH: 43.3 m		
	amec	Burnaby, BC V5	C 0Ĕ4	ENTERED BY: DO				COMPLETION DATE: 10/6/11	3 of 3	
		iel. (004) 294-3						r dye	0 01 0	

CLIEN	IT: Mount Polley Mining Corpora	ation	PROJECT: Tailings Storage Facility SI program B6				BOREHOLE NO: VW11-08 (KX2)			
DRILL	ER: Mud Bay		Mount Polley - Likely, BC				PROJECT NO: VM00560.200.3			
DRILL	. TYPE/METHOD: Tracked SR-	125/Sonic	NORTHING: 5818697 E	NORTHING: 5818697 EASTING: 596027			ELEVATION: 927.659 m			
SAMP	TUBE TYPE	NO REC		ON GRAB		אטנ	O RETURN	JRN		
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)		
0		ROCKF	ill. [NAG]			3 8				
1 2	•	C C SILT, sa	and to sandy, some to trace cla lastic, very stiff to hard, brown Till]	y, trace gravel, low plasticit to grey, moist, trace silt	y G1			927– 926–		
3	•				G2		Hydrometer (GRABG2): Gravel:8% Sand:44% Silt:34% Clav:14%	925– 924–		
-4 -5								923-		
6	•				<b>G</b> 3			922- 921-		
8	•	O O - from 7 O O wet O O - below	.3m to 7.5m, fine grain sand se 7.5m, grey	am, silty, trace clay, brown,	G4 G5 G6			920-		
6 14/12 9	•	SILT, Cl sand an	ayey, trace sand, low plasticity, id clay lenses (5-10mm thick). [ trace to some fines, dense, bro	rlard, brown, moist to wet, Glaciolacustrine] wn, wet. [Glaciofluvial]			Sand:5% Silt:73% Clay:22%	919– 918–		
2 TATE.GUI		· · · · · · · · · · · · · · · · · · ·						917-		
12 12 12	•				G8		Sieve (GRAB G8)	916-		
⊐MI113 10W-9d- 14		SILT, sa SILT, sa Varved, Glaciol	andy, trace clay, non plastic, de sand layers (2-20mm thick), sil acustrine]	nse, brown, moist to wet, t layers (2-10mm thick).	C2		Gravel:0% Sand:68% Fines (Silt & Clay):32%	914-		
15 11 11 15	•	\$1.5 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	and SILT, trace clay, low plastic ard, brown, wet. [Glaciofluvial]	ity to non plastic,	G9	<b>X</b>	Vibrating Wire-K1 (1119788)	913-		
068_5MARC	•	A Silty CL	AY to Clayey SILT, low to med	um plasticity, stiff to hard.	G10		Sand:48% Silt:47% Clay:5%	912-		
0.200.3 BH L		grey, m	oist to wet. [Glaciolacustrine]		U2		Atterberg (TUBE U2): Plastic Limit:23% Liquid Limit:29%	910-		
000056 111111111111111111111111111111111								909-		
<u> </u>						•		908-		
R SC		AMEC Environme Suite 600, 4445 L	ent & Infrastructure ougheed Hwy	LUGGED BY: DO			COMPLETION DEPTH: 47.6 m	۱		
E E	amec	Burnaby, BC V5C	0Ĕ4	ENTERED BY: DO			COMPLETION DATE: 9/30/11	1 of 3		

CLIEN	T: Mount Polley Mining Corporat	ion	PROJECT: Tailings Storage Facility SI program BC			BOREHOLE NO: VW11-08 (KX2)			
DRILLE	ER: Mud Bay		Mount Polley - Likely, BC		PROJECT NO: VM00560.200.3				
DRILL	TYPE/METHOD: Tracked SR-1	25/Sonic	NORTHING: 5818697 E	ASTING: 596027		ELEVATION: 927.659 m			
SAMPL	LE TYPE TUBE		COVERY SPLIT SPO	ON GRAB		MUD RETURN	CORE RETURN		
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIPT	TION	SAMPLE TYPE SAMPLE NO INSTALLATION	ADD INFO	DITIONAL RMATION		
20		Silty CL	AY to Clayey SILT, low to med	ium plasticity, stiff to har	d, G12	•			
-21	•	grey, mo	oist to wet. [Glaciolacustrine∦c	ontinued)	C3		907-		
-22		- below	21.8m, moist to dry, varved				906-		
-23							905-		
-24	•				G13 •		904-		
25	•	- below	25m, hard		C4		903-		
-26	···· ···· ··· ··· ··· ··· ··· ··· ···					<ul> <li>↓</li> <li>↓</li> </ul>	901-		
-27	•	- at 27.4	Im, 20mm thick sand seam, me	edium to coarse grained	G14		900-		
-28		SILT, cla	ayey, some some, low plasticit	y, hard, brown, moist to v	wet,		899-		
29	····	varved,	sand/gravel lenses. [Glaciolac	ustrine]	G15		898-		
30 30	•	- at 30.5	5m, 300mm thick sand seam, s	ome gravel	G16 G	•	897-		
		SILT, tra	ace sand, trace clay, low plasti	city to non plastic, dense			896-		
32 11-11-11-11-11-11-11-11-11-11-11-11-11-		Glaciof	luvial]	and, some siit with deptr		•	895-		
	•		troop finan fina arainad troopit	oning to course grained.	G18 •		894-		
	•	depth, d	lense, wet to saturated. [Glacic	ofluvial]	G19		893-		
ARCH.GP		- below	35.2m, medium grained sand,	trave fine gravel			892-		
30 DOCS 20	•••••				G20 •		891-		
200.3 BH	•	• • • • • • • at 37.0	)m, 450mm thick silt layer, som	ie clay, brown	G21		890-		
00260.2	•				G22	<ul> <li>●</li> <li>●</li> <li>●</li> <li>●</li> </ul>	889-		
39 2008/1 40	•	••••••••••••••••••••••••••••••••••••••	0m, 300mm thick silt layer, som 39.3m, coarse grained sand, s	e clay, brown ome gravel	G23		888-		
S		AMEC Environme	ent & Infrastructure	LOGGED BY: DO		COMPLETION	N DEPTH: 47.6 m		
E L	amec	Burnaby, BC V5C	0E4	ENTERED BY: DO		COMPLETIO	N DATE: 9/30/11		
商		l el: (604) 294-38	11				Page 2 of 3		
CLIEN	IT: Mount Polley Mining C	Corporation	PROJECT: Tailings Stor	BOREHOLE NO: VW11-08 (KX2)					
-------------	---------------------------	---------------------------------------	---	---	---	--	---------------	--	--
DRILL	ER: Mud Bay		Mount Polley - Likely, BC	;	PR	PROJECT NO: VM00560.200.3			
DRILL	. TYPE/METHOD: Tracke	d SR-125/Sonic	NORTHING: 5818697 E	ASTING: 596027	ELI	EVATION: 927.659 m			
SAMP	TIE TYPE	UBE	NO RECOVERY ∑SPLIT SPC	ON GRAB	ШMU	D RETURN	JRN		
DEPTH (m)	PLASTIC M.C.	Solt SYMBOL	SOIL DESCRIPT		SAMPLE TYPE SAMPLE NO INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)		
40	<u>20 40 60</u>	J 00	SAND, trace fines, fine grained transit depth, dense, wet to saturated. [Glacio	oning to coarse grained with fluvial <i>continued</i>	G24 •	r ·	897		
-41						•	007-		
42			- below 41.5m, gravelly coarse grained	d sand, occasional cobble			886-		
-43	•		CLAY, some silt, some sand, some gr brown, moist. [Till]	avel, low plasticity, hard,	G25	•	884-		
44			WEATHERED BEDROCK				883-		
45 46				Ē	G26		882-		
47			BEDROCK, grey		<b>G</b> 27 ●		881-		
48			END of BOREHOLE at 47.5m. - installed 2 vibrating wire (15.2m, 33.1 bookfilled with arout	3m)		_	880-		
-49 ≊			- Dacklined with grout				879		
50							878-		
							876-		
52 11-52							875-		
							874-		
							873-		
19.HOHM							872-		
57							871-		
							870-		
300MA 400		· · · · · · · · · · · · · · · · · · ·					869-		
<u>5 60</u>			wironmont & Infractivisticity				868-		
л Н С	2000	Suite 600	, 4445 Lougheed Hwy			COMPLETION DEPTH: 47.6 m COMPLETION DATE: 9/30/11	1		
H H	dillec	Burnaby, Tel: (604)	BC V5C 0E4 294-3811			Page	e 3 of 3		

CLIEN	CLIENT: Mount Polley Mining Corporation							PROJECT: Tailings Storage Facility SI program					BC	BOREHOLE NO: VW11-09 (JX1)				
DRILLE	ER: Mud Bay						Mount P	olley - Likely	, BC				PF	PROJECT NO: VM00560.200.3				
DRILL	TYPE/METHOD	: Tracked	SR-125/	Sonic	_		NORTH	ING: 58194	15 EASTING	: 595928			EL	ELEVATION: 936.589 m				
SAMPL	_E TYPE	TUE	BE			NO RECO	OVERY		SPOON	GRAB			M	JD RETURN	CORE RETU	JRN		
													1					
DEPTH (m)		M.C. I			SUIL SYMBUL		I	SO DESCR	IL IPTION		SAMPLE TYPE	SAMPLE NO		AE INF	DDITIONAL ORMATION	ELEVATION (m)		
0	20 4	0 00			$\otimes$	CLAY, sil	ty, some s et, organic	and, some gra s. [Fill]	avel, low plast	icity, firm to stiff,				S.		936-		
-1					$\bigotimes$	- below 1	.5m, organ	ic rich layer					•	•		000		
2						SILT, san to non pla	d to sandy istic, dense	r, some to trac e, brown to gr	e clay, trace g ey, moist, trac	gravel, low plasti e silt zones. [Till	city ]	- G1				935-		
-3	•			0. 								G2	•	•		934-		
-4				0 												933-		
5																932		
6						- below 5	.5m, mediu	ım to high pla	sticity, grey				•	•		931-		
-7	•			9 0 0								G3				930-		
				0									•	•		929-		
				0		- below 8	.0m, browr	ı, moist to dry								928-		
9 1 1 1 1 1	•											G4	•	Hydromete	r(GRABG4):	927-		
														Gravel:9% S Clay:9%	Sand:41% Silt:41%	926-		
11				0		- below 1	0.0m, occa	sional cobble								025		
12	•											G5	•	•		920-		
13																924		
14		· · · · · · · · · · · · · · · · · · ·	•	000									•	•		923		
					000											922-		
	•										F	G6	•	•		921-		
																920		
				000												919		
	•				000	bolow 4	8.6m				F	G7		▼. . •		918-		
19	•			00	0000	- below 1	n, 400mm	glaciolacustrir	ne seam, silt, d	clayey, trace san	d,	G8	► ⊗	Vibrating Wi Hydromete	ire-J1 (1119800) r(GRABG8): Sand:11% Silt:67%	017		
5 <u>5</u> 20			<u>:</u> :		<u>}</u> d∬ F∽	iow plasti	t & Infra	structure	1000					Clay:21%				
	2000	0		Suite 6	i00,	4445 Lo		Hwy	ENTER	RED BY: DO				COMPLETI	ON DATE: 10/6/11	1		
	JIIE			Tel: (6	א, ו 04)	294-381	/⊑4 1			-					Page	e 1 of 3		

CLIEN	T: Mount Polley Mining Cor	rporation	PROJECT: Tailings St	orage Facility SI program	BOREHOLE NO: VW11-09 (JX1)				
DRILLI	ER: Mud Bay		Mount Polley - Likely, B	C	PR	PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Tracked	SR-125/Sonic	NORTHING: 5819415	EASTING: 595928	EL	EVATION: 936.589 m			
SAMPI	LE TYPE	BE 🛛 🗌 NO RI	ECOVERY SPLIT SP	OON GRAB	Шми	ID RETURN	JRN		
	1					1			
DEPTH (m)	PLASTIC M.C. L		SOIL DESCRIP	TION	SAMPLE TYPE SAMPLE NO INSTALLATION	ADDITIONAL INFORMATION	ELEVATION (m)		
20			v 19.6m, till, trace gravel, brow	/N Nav. trace gravel low plastic	ity 🔶	•			
-21	•	O C to non	plastic, dense, brown to grey, nued)	moist, trace silt zones. [Till]	G9 G9		916-		
-22	•				G10 •		915-		
23							914-		
-24	•				G11		912-		
-25							911-		
26		ood ood ood ood ood ood ood ood ood	v 25.9m, grey v 26.2m, gravelly, brown to gre	ey .	G12		910-		
E-27						1 1 1			
-28					G13		909-		
29			w 20.1m .crov				908-		
77 10 10 10 10 10 10 10 10 10 10 10 10 10 1			v 23. mi, gr <del>o</del> y				907-		
31	•				G14 •	<ul> <li>Hydrometer (GRABG14): Gravel:6% Sand:49% Silt:40%</li> <li>Clay:5%</li> </ul>	906-		
31 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							905-		
							904-		
-54-534					G15		902-		
35 19.11 19.11							901-		
		898 0 0 0 0 0 0 0 0					900-		
37 19 20 20 20 20 20 20 20 20 20 20 20 20 20		896 00 00 00 00 00			G16		899-		
							898-		
39 11 11 11 11 11 10 10 10 10 10 10 10 10	•	WEAT	HERED BEDROCK		G17		897-		
5 = 40			ent & Infrastructure				 n		
Ë,	amod	Suite 600, 4445	Lougheed Hwy	ENTERED BY: DO		COMPLETION DATE: 10/6/11			
Ha (	סווופנ	Tel: (604) 294-3	0 0∟4 811			Page	e 2 of 3		

CLIEN	T: Mount Polley Mining Corporat	tion	PROJECT: Tailings Stor	age Facility SI program	BOREHOLE NO	REHOLE NO: VW11-09 (JX1)				
DRILLI	ER: Mud Bay		Mount Polley - Likely, BC			PROJECT NO:	PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Tracked SR-1	25/Sonic	NORTHING: 5819415 E	ASTING: 595928		ELEVATION: 9	36.589 m			
SAMPI	LE TYPE TUBE		COVERY SPLIT SPO	ON GRAB		MUD RETURN		N		
DEPTH (m)		Solt SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE SAMPLE NO	INSTALLATION DETAILS	DDITIONAL FORMATION	ELEVATION (m)		
<b>4</b> 0		BEDRO	СК			• •				
-41	•				G18			896		
42		END of - installe	BOREHOLE at 41.7m. ad 1 vibrating wire (19.4m)					000		
43		- backfil	led with grout					894-		
								893-		
- 44								892-		
45								891-		
46										
47								890-		
48								889		
	·····							888		
49								887-		
7 - 50								886-		
51										
52								885-		
53								884-		
54								883-		
								882-		
19:00 19:00								881-		
14MC 0								000		
57								00U-		
58								879		
1111111 50		·····						878-		
								877-		
		AMEC Environme	nt & Infrastructure	LOGGED BY: DO		COMPLET	ION DEPTH: 41.7 m			
	amer	Burnaby, BC V5C	0E4	ENTERED BY: DO		COMPLET	ION DATE: 10/6/11			
		Tel: (604) 294-38	11				Page 3	i of 3		

CLIEN	T: Mount Polley Mining Corpor	ration	PROJECT: Tailings Stora	ge Facility SI program	BC	BOREHOLE NO: VW11-10 (DX4)				
DRILLE	ER: Mud Bay		Mount Polley - Likely, BC		PR	PROJECT NO: VM00560.200.3				
DRILL	TYPE/METHOD: Tracked SR-	-125/Sonic	NORTHING: 5819783 EA	STING: 595410		EL	ELEVATION: 931.804 m			
SAMPL	LE TYPE TUBE		COVERY SPLIT SPOC	N GRAB		ШML	ID RETURN	RN		
						-		1		
DEPTH (m)		Soll SYMBOL	SOIL DESCRIPT	ON	SAMPLE TYPE		ADDITIONAL INFORMATION	ELEVATION (m)		
ĒO	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	80 CLAY, s	ilty, some sand, some gravel, lo	w plasticity, stiff, brown,						
-1		Wet, org	anics, tree roots. [Fill]	trace gravel low plasticity		•		931–		
-2	•	to non p	lastic, compact to dense, brown Till]	to grey, moist, trace silt		2		930-		
3	•	000 000 000 - at 3.1n	n, 10mm thick infilling, orange		G	3		929-		
4	·····							928-		
5	·····	- below	4.9m, occasional cobble		G G	4		927-		
6								926-		
7						•		925		
8								924-		
9	•				G G	5		923-		
								922-		
								921-		
12 12 12 12 12	•				G G	6 <b>●</b>	Hydrometer (GRABG6):	920-		
13 14 15							Gravel:8% Sand:45% Silt:39% Clay:8%	919		
₩-5 								918		
25-15	•				G G	7		917-		
								916-		
2001 L	•	O O OO CLAY, s	ilty to silt, trace to some sand, n	nedium plasticity, hard,	G G	в	Atterberg (GRABG8): Plastic Limit:22%	915-		
	•	brown to	o grey, moist to wet, varved. [Gla	aciolacustrinej	G G	9  .    . 0	Sieve (GRABG9): Sand:0.5% Fines (Silt & Clav):99.5%	914-		
	······································					•	Atterberg (GRABG10): Plastic Limit:23%	913-		
					G	1	Vibrating Wire-D6 (1119790)	912		
		AMEC Environme Suite 600, 4445 Lo	nt & Intrastructure ougheed Hwy				COMPLETION DEPTH: 42.4 m			
	amec	Burnaby, BC V5C Tel: (604) 294-381	0E4				Page	1 of 3		

	1: Mount Polley Mining Corpor	ation	PROJECT: Tailings Storage Facility SI program					BOREHOLE NO: VW11-10 (DX4)			
	TYPE/METHOD: Tracked SP	125/Sonic		ASTINC: 505/10				ELEVATION: 931 804 m			
						г					
SAIVIP			COVERT SPLIT SPC	GRAB		L			JKN		
DEPTH (m)		Solt SYMBOL	SOIL DESCRIPT	ΓΙΟΝ	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)		
20			silty some sand, some gravel	low plasticity, bard, grov		G12	•	Atterberg (GRABG12):			
-21	•		occasional cobble. [Till]	iow plasticity, riard, groy,	=	G13			911		
-22	•	0 40 0 0 0 0 0 0 0 0 - below	v 22.3m, brown			G14	• •		910		
-23	•	AQA SAND, brown,	medium grained, trace fines, u wet, occasional coarse sand s	niformly graded, very dense eam 10 to 20mm thick.	), <u> </u>	G15		· • •	909		
24			iiuviaij			G16		Vibrating Wire-D7 (1119802)	908		
-25									907		
-26	•	POP CLAY,	some silt, some sand, some gr	avel, low plasticity, hard,	-	G17			906		
-27		G 9 grey to	brown, moist, occasional cobb	le. [11  ]				•	905		
-28						G18			904		
29							•		903		
30									902		
31 							•		901		
32						G20			900		
33							.  ●	· · •	899		
34	•	aQd¶ SAND, ••••• graded	medium grained, trace gravel, l, very dense, brown, wet. [Glac	trace fines, uniformly iofluvial]		G21			898		
35							•	· . · . V	897		
36		SILT, s	ome clay, low plasticity, hard, ç . [Glaciolacustrine]	grey to brown, wet to moist.		G22		■ Atterberg (GRAB G22): Plastic Limit:18%	896		
37	•	CLAY,	silty, some sand, some gravel, brown, occasional sand seams	low plasticity, stiff to hard, s, occasional silt seams. [Till		G23		Liquid Limit:28%	895		
38	•	0 40 0 0 0 0 0 0 0 0 0 1 0 2 0 - at 38.	.1m, 200mm thick sand seam. I	prown to grey	╞	G24			894		
39		0 0 0 0 0 0 - at 38.	.7m, 200mm thick sand seam, b	prown to grey					893		
5E 40		000 000 - at 39.	.6m, 400mm thick silt seam						892		
3		AMEC Environme	ent & Infrastructure	LOGGED BY: DO				COMPLETION DEPTH: 42.4 n	n		
5	amer	Burnaby, BC V50		ENTERED BY: DO				COMPLETION DATE: 10/1/11	0 1		
		Tel: (604) 294-38	311					Page	e 2 of		

CLIEN	IENT: Mount Polley Mining Corporation									PROJECT: Tailings Storage Facility SI program BO					OR	OREHOLE NO: VW11-10 (DX4)														
DRILL	ER: M	ud Ba	ay											Mount	Polley	/ - Likely	, BC							P	RO	OJECT NO: VM00560.200.3				
DRILL	TYPE	MET	HOE	): Ti	rack	ed	SR	-12	5/S	onic	;	_	7	NORT	HING:	581978	33 EAS	STING:	5954	10				E	LE\	VATION: 9	31.804	1 m		
SAMP	LE TYF	PE				TUE	3E					_	JNO RECO	OVERY		SPLIT	SPOO	N	G	GRAB				M	IUD	RETURN		COR	E RETU	RN
DEPTH (m)		PLA	STIC	M	.C.	l		IID			SOIL SYMBOL				DE	SO SCR	IL IPTI	ON				SAMPLE TYPE	SAMPLE NO	INSTALLATION	DETAILS	AI INF	) Dition Orm	onal Ation		ELEVATION (m)
40	:	20	:	40 :	:	:	÷	80			0		CLAY, sil	ty, some	sand,	some gra	avel, lov	v plastic	ity, sti	ff to ha	ard,			•	•					+
-41				 							000	0000	grey to br (continue	own, oco d)	casiona	al sand se	eams, o	ccasion	al silt	seams	5. [ I III]		G25							891-
42	•		· · · · · ·	· · · · ·		·····						XXXX	BEDROC	K, grey		0.4							G26							890-
43									· · · · · · ·				END of B - installed - backfille	OREHO 2 vibrat d with gi	LE at 4 ing wire rout	2.4m. e (18.4m,	, 24.4m	)												889-
44						·····																								888-
45																														887-
46					 				· · ·																					886-
47			· · · · · ·		· · · · · ·	:			· · · ·																					885-
48									· · · ·																					884-
49					· · · · ·				· · · ·																					883-
50									· · ·																					881-
51									· · ·																					880-
52			****** * *						• • • •																					879-
54				· · · · ·																										878-
55																														877-
56			· · · · · ·						· · · ·																					876-
57			· · · · · ·	· · ·	· · · · ·				· · · ·																					875-
58									· · · ·																					874-
59			· · · · · ·						· · · ·																					873-
	<u>.</u>	· · · · · ·	; ;	: :	: :		•																							872-
	<u> </u>						•	İ	A	ME	CE	Inv	/ironmen	t & Infr	astruc	cture	L	OGGE	D BY:	DO						COMPLETI	ON D	EPTH:	42.4 m	1
Suite 600, 44 Burnaby, BC			4445 Lo 3C V5C (	ugheed )E4	a Hwy		E	NTER	ED BY	r: DC	)				(	COMPLETI	ON D	ATE: 1	0/1/11											
	dille					Т	el:	(604	1) 2	294-381 <sup>-</sup>	1															Page	3 of 3			

CLIEN	T: Mount Polley Mining Corpo	oration	PROJECT: Tailings S	Storage Facility SI program	n BC	BOREHOLE NO: VW11-11 (GX2)					
DRILL	ER: Mud Bay		Mount Polley - Likely,	BC	PF	OJECT NO: VM005	60.200.3				
DRILL	TYPE/METHOD: Tracked SF	R-125/Sonic	NORTHING: 582003	1 EASTING: 594892	EL	EVATION: 940.887	m				
SAMP	LE TYPE TUBE		IO RECOVERY SPLIT S	GRAB	ШМЦ	ID RETURN	CORE RETURN				
DEPTH (m)		Soll SYMBOL	SOI DESCRI	L PTION	SAMPLE TYPE SAMPLE NO INSTALLATION	ADDITIO	NAL ROIT				
0			CLAY, some sand to sandy, trace lastic, stiff to hard, brown to grey,	gravel, low plasticity to non moist, trace silt zones. [Till]	G1 G2 G3	3					
-1 -2	•		at 1.5m, 20mm thick yellowish inf below 1.8m, brown at 2.1m, 300mm thick sand seam	illing, sandy , coarse to medium grained	G5 , G6		940- 939-				
3			ace fines, uniformly graded, grey			•	938-				
4			below 3.7m, grey, occasional cob	ble	G7		937-				
5							936-				
6	•				G8 G8	Vibrating Wire-G4 (	935-				
7							934-				
8	•		GILT, some clay, trace to some fine lense, grey, moist. [Glaciolacustrir	e grained sand, low plasticity ne]	y, G9		933-				
<b>9</b>	•				G10		932-				
105 3/14/	•	-	at 9.4m, 150mm sand lense, trace below 10.1m, increasing sand co	e gravel ntent, medium grained	G12	Hydrometer (GRAB Gravel: 12% Sand:8	G12): 931- % Silt:72%				
	••••••••••••••••••••••••••••••••••••••	·····	below 11.3m. sand lense, mediur	n grained, trace gravel	G13 G14	↓ Vibrating Wire-G5 (1	1119787) 930-				
	•	OC C	CLAY, silty, some gravel to gravelly ard, brown to grey, moist. [Till]	y, some sand, low plasticity,	G15		929-				
					I = 1		928-				
14 14 14					G16		927-				
™ 15 15		v	VEATHERED BEDROCK				926-				
16					G17		925-				
					C18		924-				
18 11111111111111111111111111111111111					G19		923-				
19 NOCK NOCK						· · · · · · · · · · · · · · · · · · ·	922-				
<u> </u>			BEDROCK	1	G20		921-				
N SC		Suite 600, 4	445 Lougheed Hwy	LOGGED BY: DO		COMPLETION DE	PIH: 23.5 m				
ы Ш	amec	Burnaby, BC	V5C 0E4				Page 1 of 2				
ш		101. (004) 20									

Suite 600, 4445 Burnaby, BC V57 Tel: (604) 294-37			BC V5C 0 294-3811	E4	ENT	ERED BY: DO	)			COMPLETION	IDATE: 9/29/11 Page	2 of 2		
			A	MEC Er	vironmen	t & Infrast	ructure LOG	GED BY: DO				COMPLETION	DEPTH: 23.5 m	
E 40							· · · · ·							901-
39														
E 30			· · · · · · · · · · · · · · · · · · ·											902-
E-38			· · · · · · · · · · · · · · · · · · ·											903-
E-37			: :											904-
		· · · · · · · · · · · · · · · · · · ·												
E-36														905-
2 <b>⊟</b> -35			· · · · · · · · · · · · · · · · · · ·											906-
		: : : : : : : : : : : : : : : : : : : :	: : : : :											000
-34		· · · · · · · · · · · · · · · · · · ·												907-
33														
-33				;										908-
<b>–</b> 32		· · · · · · · · · · · · · · · · · · ·												909-
														000
E-31		· · · · · · · · · · · · · · · · · · ·	 											910-
E-30														911-
E-29		····												912-
Ē		;; :	····											040
-28		;; ;;;	· · · · · · · · · · · · · · · · · · ·											913-
E_97		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·											914-
E-26		;;; ;;	····											915-
		: : : :												_
-25		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·											916-
<u>–</u> 24		} · · · · · · · · · · · · · · · · · · ·	 		- Installed - backfilled	d with grout	wire (6.1m, 10.7m)							517
Ē				<del>555</del>	END of B		at 23.5m.							917-
-23				×						G22				918-
Ē														
-22		} · · · · [ · · · · · · · · · · · · · ·												919-
E-21		· · · · · · · · · · · · · · · · · · ·										1		920-
E 20					BEDROC	K (continued	1)			G21	• •			
		M.C. LIG	QUID 	S					SAN	S	DET			ELE
EPTH				IL SYI		D	ESCRIPTION	١	APLE	MPLE		INFO	RMATION	VATIO
(E)				MBOL			SOIL		TYPE	No	VIO	400		س) NC
											7			2
SAMPI	LE TYPE	TUBE	=		NO RECO	OVERY		GRAB				) RETURN	CORE RETU	IRN
DRILL	TYPE/METHOD	: Tracked S	R-125/S	onic		NORTHIN	IG: 5820031 EASTIN	IG: 594892				VATION: 940	887 m	
DRILLE	ER: Mud Bay					Mount Po	lley - Likely, BC				PRC	DJECT NO: VN	/00560.200.3	
CLIEN	IT: Mount Polley	Mining Corp	oration			PROJECT: Tailings Storage Facility SI program BOREHOLE					REHOLE NO: N	/W11-11 (GX2)		



APPENDIX C

Drill Core Photographs

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Photo 2	
Sample G2	
Depth :	
13.8m (45.4ft	
	and and a set
	The second se
	The second
Photo 3	
Sample G3	A STATE OF THE STA
Deptn :	56
16.5m (54ft)	
	and the second
	and the second of the second s
	and the second se
	A A A A A A A A A A A A A A A A A A A
	A DECEMBER AND A DECEMBER



Photo 9 Sample G1 Depth : 10m (33ft)	
Photo 10 Sample G2 Depth : 12.5m (41ft)	
Photo 11 Sample G3 Depth : 13.7m (45ft)	
Photo 12 Sample G4 Depth : 15.2m (50ft)	
Photo 13 Sample G5 Depth : 16.5m (54ft)	

Photo 14	and a start of the			C . C . C . C . C . C . C . C . C . C .
Sample G1 Depth : 7.3m (24ft)				
Photo 15	VA00560,200.5 Box   VW11-04	1/1		AND DESCRIPTION OF THE OWNER OF T
Sample C1 Depth : 7.9m (26ft)				
Photo 16				31
Deptn : 9.7m (32ft)				
Sample C2		10x 2 3/ J VW11-06	38.1	39.5'
Depth : 11.0m (36ft)				
Photo 18	Box 3 VWH-06 143'	щU	<b>म</b> ऽर्थ	146.
Sample C3 Depth : 13.1m (43ft)				46
	DELE # 2 B S B S Z LARKE B I B S S S S S S S S S S S S S S S S S		the second s	





Photo 27 Sample G6/C1 Depth : 8.2m (27ft)	
Photo 28 Sample C2 Depth : 13.1m (43ft)	
Photo 29 Sample U1 Depth : 14m (46ft)	
Photo 30 Sample G11 Depth : 16.8m (55ft)	
Photo 31 Sample G12/C3 Depth : 19.8m (65ft)	

Photo 32 Sample G13 Depth : 24.4m (80ft)	
Photo 33 Sample C4 Depth : 25m (82ft)	
Photo 34 Sample G14 Depth : 27.4m (90ft)	
Photo 35 Sample G15 Depth : 28.7m (94ft)	
Photo 36 Sample G16 Depth : 29.9m (98ft)	



Photo 38 Sample G8 Depth : 16.9m (55.5ft)	
Photo 39 Sample G9 Depth : 17.4m (57ft)	
Photo 40 Sample G10 Depth : 18m (59ft)	
Photo 41 Sample G11 Depth : 19.2m (63ft)	
Photo 42 Sample G12 Depth : 20m (65.5ft)	
Photo 43 Sample G22 Depth : 35.8m (117.5ft)	





Photo 51 Sample G6 Depth : 10m (33ft)	
Photo 52 Sample G8 Depth : 13.6m (44.5ft)	
Photo 53 Sample U1 Depth : 14m (46ft)	
Photo 54 Sample G9 Depth : 14.9m (49ft)	
Photo 55 Sample G11 Depth : 16.5m (54ft)	
Photo 56 Sample G12 Depth : 20.1m (66ft)	





APPENDIX D

Vibrating Wire Calibration Reports

GEOKON 48 Spencer St. Lebanon, NH 03766 USA Alb								
Vibrating Wire Pressure Transducer Calibration Report								
	Model Number: 4500S-350 kPa Date of Calibration: August 10, 2011							
	Serial Number:	11197	99	Temp	erature:	23.6 °C		
	Cable Length:	30 n	n	Barometric Pi	ressure: 9	80.7 mbar		
				Tec	hnician:	pag		
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)	
0.0 70.0 140.0 210.0 280.0 350.0	8772 8118 7460 6797 6132 5469	8773 8119 7461 6797 6133 5470	8773 8119 7461 6797 6133 5470	0.582 69.84 139.5 209.8 280.1 350.3	0.17 -0.05 -0.14 -0.06 0.04 0.10	0.105 69.89 139.8 210.1 280.2 349.9	0.03 -0.03 -0.05 0.03 0.06 -0.04	
(kPa) Linear	Gage Factor (G)	: 0.1059	(kPa/ digit)		Re	gression Zero: _	8778	
Polynomi	al Gage factors:	A:_	-3.073E-07	В:	-0.1015	C:		
	Calculate C by se	Thermal	Factor (K): <u>-(</u> R <sub>1</sub> = initial field :	).09582 (kPa/ ' zero reading into	°C) o the polynom	ial equation		
(psi) Linear (	Gage Factor (G):_	0.01536	(psi/ digit)					
Polynomi	al Gage Factors:	A:_	-4.457E-08	B:	-0.01472	C:		
		Therma	al Factor (K):	<u>0.01390 (</u> psi/ °	C)			
	Calculate C by se	etting P=0 and	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation		
Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$								
	Polynomial, $P = AR_1^2 + BR_1 + C + K(I_1 - T_0) - (S_1 - S_0)^*$							
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.							
	The above nam	The abov ned instrument has been o	e instrument was found to be calibrated by comparison wit	e in tolerance in all operating h standards traceable to the	ranges. NIST, in compliance with	n <b>ANSI Z5</b> 40-1.		
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Serial #: 09-2810	Part #: 52611024
Range: 50 psi	Cable Part # : 50613524
Cable Length: 30 m	Calibrated by: KB
Date of Calibration: 11/3/2009	Note:
·	

#### **ABC Calibration Factors**

	A	в	С
kPa	-1.001898E-4	-1.074016E-1	1.111567E+3
psi	-1.453130E-5	-1.557728E-2	1.612191E+2

Pressure in kPa/psi =  $(A \times Hz^2) + (B \times Hz) + C$ , where Hz is frequency in Hertz.

#### **TI Calibration Factors**

	CO	C1	C2	C3	C4	C5
kPa	1.100319E+3	-9.874667E-2	-2.251975E-2	-1.021410E-4	7.353697E-5	-2.134806E-3
psi	1.595822E+2	-1.432149E-2	-3.266098E-3	-1.481378E-5	1.066526E-5	-3.096166E-4
Pressure in kPa/psi = C0 + (C1 x Hz) + (C2 x T) + (C3 x Hz <sup>2</sup> ) + (C4 x Hz x T) + (C5 x T <sup>2</sup> )						

Where Hz is the frequency reading in Hertz and T is the Thermistor reading in degrees C. TI factors are calculated from temperatures at 5.0, 15.0 and 25.0 degrees C.

Applied pressure and temperature are NIST traceable.

## Summary of Test Results at 15°C

Thermistor reading is 14.4 °C.

Applied	Equivalent	Frequency	Calcu	lated	Error
(psi)	(kPa)	(Hz)	(psi)	(kPa)	(%FS)
0.00	0.0	2838.0	-0.03	-0.2	0.06
5.00	34.5	2786.2	5.01	34.5	-0.02
10.00	68.9	2733.9	10.02	69.1	-0.04
15.00	103.4	2681.0	15.01	103.5	-0.02
20.00	137.9	2627.2	20.00	137.9	0.01
25.00	172.4	2572.2	25.01	172.4	-0.02
30.00	206.8	2516.6	29.99	206.8	0.03
35.00	241.3	2459.8	34.98	241.2	0.04
40.00	275.8	2401.7	39.99	275.7	0.02
45.00	310.3	2342.4	45.00	310.3	0.00
50.00	344.7	2281.8	50.02	344.9	-0.03

Serial #: 09-2808	Part #: 52611024
Range: 50 psi	Cable Part # : 50613524
Cable Length: 30 m	Calibrated by: KB
Date of Calibration: 11/3/2009	Note:

#### **ABC Calibration Factors**

	A	В	С
kPa	-9.377097E-5	-1.359561E-1	1.182552E+3
psi	-1.360033E-5	-1.971877E-2	1.715147E+2

Pressure in kPa/psi =  $(A \times Hz^2) + (B \times Hz) + C$ , where Hz is frequency in Hertz.

#### **TI Calibration Factors**

	CO	C1	C2	C3	C4	C5
kPa	1.176037E+3	-1.304717E-1	-1.740900E-1	-9.524043E-5	1.318424E-4	-7.348788E-4
psi	1.705638E+2	-1.892265E-2	-2.524873E-2	-1.381297E-5	1.912145E-5	-1.065814E-4
Pressure in kPa/psi = C0 + (C1 x Hz) + (C2 x T) + (C3 x Hz <sup>2</sup> ) + (C4 x Hz x T) + (C5 x T <sup>2</sup> )						
1. 医水杨素 化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化						

Where Hz is the frequency reading in Hertz and T is the Thermistor reading in degrees C. TI factors are calculated from temperatures at 5.0, 15.0 and 25.0 degrees C. Applied pressure and temperature are NIST traceable.

## Summary of Test Results at 15°C

Thermistor reading is 14.2 °C.

$(x_{i}) \in (x_{i})^{1/2}$	and the second	·				
Applied	Equivalent	Frequency	Calcu	lated	Error	
(psi)	(kPa)	(Hz)	(psi)	(kPa)	(%FS)	
0.00	0.0	2899.6	-0.01	-0.1	0.02	mite,
5.00	34.5	2848.5	4.99	34.4	0.01	
10.00	68.9	2796.4	10.02	69.1	~0.04	
15.00	103.4	2743.9	15.01	103.5	-0.02	1 a.
20.00	137.9	2690.5	20.01	138.0	-0.02	÷ ;
25.00	172.4	2636.5	24.99	172.3	0.02	1.1
30.00	206.8	2581.1	30.01	206.9	-0.02	· .
35.00	241.3	2525.3	34.99	241.2	0.02	
40.00	275.8	2468.4	39.97	275.6	0.05	
45.00	310.3	2410.1	44.99	310.2	0.02	
50.00	344.7	2350.6	50.02	344.9	-0.04	

Serial #: 09-2811 Pail #: 02	2611024
Range: 50 psi Cable Par	t#:50613524
Cable Length: 30 m Calibrated	l by: KB
Date of Calibration: 11/3/2009 Note:	

**ABC Calibration Factors** 

-	Α	B	С
kPa	-5.482865E-5	-1.610882E-1	8.489390E+2
psi	-7.952223E-6	-2.336387E-2	1.231282E+2

Pressure in kPa/psi =  $(A \times Hz^2) + (B \times Hz) + C$ , where Hz is frequency in Hertz.

#### **TI Calibration Factors**

	CO	C1	C2	C3	C4	C5
kPa	8.498067E+2	-1.622674E-1	-3.172800E-2	-5.474878E-5	5.735595E-5	-6.924600E-5
psi	1.232497E+2	-2.353407E-2	-4.601595E-3	-7.940359E-6	8.318484E-6	-1.004293E-5
Pressure in	kPa/psi = C0 + (	(C1 x Hz) + (C2 x	(T) + (C3 x Hz <sup>2</sup> )	+ (C4 x Hz x T) +	(C5 x T <sup>2</sup> )	

Where Hz is the frequency reading in Hertz and T is the Thermistor reading in degrees C. TI factors are calculated from temperatures at 5.0, 15.0 and 25.0 degrees C. Applied pressure and temperature are NIST traceable.

### Summary of Test Results at 15°C

Thermistor reading is 14.3 °C.

Applied	Applied Equivalent		Calcul	Error	
(psi)	(kPa)	(Hz)	(psi)	(kPa)	(%FS)
0.00	0.0	2731.1	0.00	0.0	-0.01
5.00	34.5	2655.6	5.00	34.5	0.00
10.00	68.9	2578.6	10.01	69.0	-0.01
15.00	103.4	2500.4	14.99	1 <b>03.4</b>	0.02
20.00	137.9	2420.4	19.99	137.8	0.02
25.00	172.4	2338.7	24.99	172.3	0.02
30.00	206.8	2255.2	29.99	206.8	0.01
35.00	241.3	2169.5	35.01	241.4	-0.02
40.00	275.8	2081.9	40.02	275.9	-0.04
45.00	310.3	1992.6	45.00	310.3	0.00
50.00	344.7	1900.8	49.99	344.7	0.03

ADD

Serial #: 09-2809	Part #: 52611024
Range : 50 psi	Cable Part # : 50613524
Cable Length: 30 m	Calibrated by: KB
Date of Calibration: 11/3/2009	Note:

#### **ABC Calibration Factors**

	Α	В	С
kPa	-1.216316E-4	-1.581648E-3	1.004004E+3
psi	-1.764117E-5	-2.293986E-4	1.456185E+2

Pressure in kPa/psi =  $(A \times Hz^2) + (B \times Hz) + C$ , where Hz is frequency in Hertz.

#### **TI Calibration Factors**

	CO	C1	C2	C3	<b>C4</b>	C5
kPa	1.006982E+3	-4.540170E-3	6.769090E-3	-1.211797E-4	4.749271E-5	-1.009650E-3
psi	1.460452E+2	-6.584728E-4	9.817390E-4	-1.757501E-5	6.887993E-6	-1.464322E-4
Pressure ir	n kPa/psi  = C0 + i	(C1 x Hz) + (C2 x	$(T) + (C3 \times Hz^2)$	+ (C4 x Hz x T) +	$(C5 \times T^{2})$	la su a

Where Hz is the frequency reading in Hertz and T is the Thermistor reading in degrees C. TI factors are calculated from temperatures at 5.0, 15.0 and 25.0 degrees C. Applied pressure and temperature are NIST traceable.

## Summary of Test Results at 15°C

Thermistor reading is 14.3 °C.

Applied	Equivalent	Frequency	Calcu	Calculated		
(psi)	(kPa)	(Hz)	(psi)	(kPa)	(%FS)	
0.00	0.0	2866.5	0.01	0.1	-0.01	
5.00	34.5	2816.8	5.00	34.5	0.00	
10.00	68.9	2766.2	10.00	68.9	0.01	
15.00	103.4	2714.7	14.99	103.4	0.03	
20.00	137.9	2662.2	19.98	137.8	0.04	
25.00	172.4	2608.2	25.01	172.4	-0.02	
30.00	206.8	2553.6	30.00	206.8	0.01	
35.00	241.3	2497.4	35.02	241.5	-0.04	
40.00	275.8	2440.2	40.01	275.9	-0.03	
45.00	310.3	2381.8	44.99	310.2	0.01	
50.00	344.7	2321.8	49.99	344.7	0.03	

	KON 48 Spencer	St. Lebanon, NH 03766 t	USA	A21			
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	libration	Report	
	Model Number:	45008-350	0 kPa	Date of Cali	bration: <u>A</u> u	igust 10, 2011	
	Serial Number:	111978	36	Temp	erature:	24.5 °C	
	Cable Length:	35 m	<u> </u>	Barometric Pr	essure:	979.3 mbar	
Technician:							
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)
0.0 70.0 140.0 210.0 280.0 350.0	8728 8070 7412 6750 6086 5418	8730 8071 7413 6750 6086 5418	8729 8071 7413 6750 6086 5418	0.423 70.05 139.6 209.7 279.9 350.5	0.12 0.01 -0.11 -0.09 -0.03 0.15	-0.054 70.11 140.0 210.0 279.9 350.0	-0.02 0.03 -0.01 0.00 -0.02 0.01
(kPa) Linea	r Gage Factor (G):	0.1057	(kPa/ digit)		R	egression Zero: _	8733
Polynom	ial Gage factors:	A:	-3.08E-07	В:	-0.1014	C:	
		Thermal	Factor (K):	 0.1136(kPa/ °	C)		
psi) Linear	Calculate C by set Gage Factor (G):_	Thermal ting P=0 and F 0.01534	Factor (K): R <sub>1</sub> = initial field (psi/ digit)	0.1136 (kPa/ ° zero reading into	C) o the polynor	nial equation	
psi) Linear Polynom	Calculate C by set Gage Factor (G):_ ial Gage Factors:	Thermal ting P=0 and F 0.01534 A:	Factor (K): R <sub>1</sub> = initial field (psi/ digit) 4.467E-08	0.1136 (kPa/ ° zero reading into	C) o the polynor -0.01470	nial equation	
psi) Linear Polynom	Calculate C by set Gage Factor (G):_ ial Gage Factors:	Thermal ting P=0 and F 0.01534 A: Therma	Factor (K): R <sub>1</sub> = initial field (psi/ digit) <u>4.467E-08</u> I Factor (K):	<u>0.1136 (</u> kPa/ ° zero reading into B:	C) o the polynor -0.01470 C)	nial equation	
psi) Linear Polynom	Calculate C by set Gage Factor (G):_ ial Gage Factors: Calculate C by set	Thermal ting P=0 and F 0.01534 A: Therma ting P=0 and F	Factor (K): R <sub>1</sub> = initial field (psi/ digit) 4.467E-08 I Factor (K): R <sub>1</sub> = initial field	0.1136 (kPa/ ° zero reading into B:	C) o the polynor -0.01470 C) o the polynor	nial equation C: nial equation	
psi) Linear Polynom Calcula	Calculate C by set Gage Factor (G):_ ial Gage Factors: Calculate C by set ted Pressures:	Thermal ting P=0 and F 0.01534 A: Therma ting P=0 and F	Factor (K): R <sub>1</sub> = initial field (psi/ digit) 4.467E-08 I Factor (K): R <sub>1</sub> = initial field Linear, P = G(I	0.1136 (kPa/ ° zero reading into B:	C) 5 the polynor -0.01470 C) 5 the polynor )-(S <sub>1</sub> -S <sub>0</sub> )*	nial equation C:	
psi) Linear Polynom Calcula	Calculate C by set Gage Factor (G):_ ial Gage Factors: Calculate C by set ted Pressures: *Barometric press	Thermal ting P=0 and F 0.01534 A: Therma ting P=0 and F	Factor (K): R <sub>1</sub> = initial field (psi/ digit) <u>4.467E-08</u> I Factor (K): R <sub>1</sub> = initial field Linear, P = G(I Polynomial, P = KPa or psi. Barometr	<u>0.1136</u> (kPa/ ° zero reading into B: <u>0.01648</u> (psi/ °C zero reading into $R_0 - R_1$ )+K( $T_1 - T_0$ A $R_1^2$ + B $R_1$ + C ic compensation is no	C) the polynor -0.01470 C) the polynor )-(S <sub>1</sub> -S <sub>0</sub> )* + K(T <sub>1</sub> -T <sub>0</sub> )-(S <sub>1</sub> )	nial equation C: nial equation $S_1 - S_0$ )* ented transducers.	
psi) Linear Polynom Calcula	Calculate C by set Gage Factor (G):_ ial Gage Factors: Calculate C by set ted Pressures: *Barometric press	Thermal ting P=0 and F 0.01534 A: Therma ting P=0 and F	Factor (K): R <sub>1</sub> = initial field (psi/ digit) 4.467E-08 I Factor (K): R <sub>1</sub> = initial field Linear, P = G(I Polynomial, P = kPa or psi. Barometre instrument was found to balibrated by comparison with	<u>0.1136</u> (kPa/ ° zero reading into <u>2ero reading into</u> <u>0.01648</u> (psi/ °C zero reading into $R_0 - R_1$ )+K( $T_1 - T_0$ $AR_1^2 + BR_1 + C$ ic compensation is no a in tolerance in all operating h standards traceable to the	C) the polynor -0.01470 C) the polynor $(S_1 - S_0)^*$ + K(T <sub>1</sub> - T <sub>0</sub> )-( trequired with vertices NIST, in compliance w	nial equation C: nial equation $S_1 - S_0$ )* ented transducers. th ANSI 2540-1.	

GEO	KON 48 Spance	er St. Lebanon, NH 03766	USA	BII				
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report		
Model Number: 4500S-350 kPa Date of Calibration: August 10, 2011								
Serial Number: <u>1119793</u> Temperature: <u>23.6 °C</u>								
	Cable Length:	30 m	1	Barometric P	ressure:	980.7 mbar		
	Technician:							
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)	
0.0 70.0 140.0 210.0 280.0 350.0	8841 8239 7635 7029 6429 5828	8842 8240 7636 7029 6429 5828	8842 8240 7636 7029 6429 5828	-0.058 69.82 139.9 210.3 280.0 349.8	-0.02 -0.05 -0.02 0.10 0.00 -0.07	0.120 69.83 139.9 210.3 280.0 349.9	0.03 -0.05 -0.04 0.07 0.00 -0.02	
(kPa) Linear	Gage Factor (G)	0.1161	(kPa/ digit)		R	Regression Zero: _	8841	
Polynomi	al Gage factors:	A:	1.198E-07	B:	-0.1178	C:		
	Calculate C by se	Thermal tting P=0 and I	Factor (K): R <sub>1</sub> = initial field	-0.1387 (kPa/ ° zero reading into	°C) o the polynoi	mial equation		
(psi) Linear G	Sage Factor (G):_	0.01684	(psi/ digit) 1 738E-08	B.	-0 01709	C.		
Polynomia	al Gage Factors:	A:	1./ 302-00	в:	-0.01709			
		Therma	I Factor (K):	0.02012 (psi/ °0	C)			
c c	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field	zero reading into	o the polynoi	mial equation		
Calculate	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$							
		I	Polynomial, P ≃	AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(T <sub>1</sub> -T <sub>0</sub> )-(	S <sub>1</sub> -S <sub>0</sub> )*		
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.							
	The above nam	The above ed instrument has been ca	a instrument was found to b alibrated by comparison wit	e in tolerance in all operating h standards traceable to the l	ranges. NIST, în compliance w	ith ANSI 2540-1.		
		This report shall no	ot be reproduced except in	full without written permission	of Geokon Inc.			

GEO	KON 48 Spence	er St. Lebanon, NH 03766	USA	B12				
Vibrating Wire Pressure Transducer Calibration Report								
Model Number: 4500S-350 kPa Date of Calibration: August 10, 2011								
	Serial Number:	11197	91	Temp	erature:	23.6 °C		
	Cable Length:	30 m	<u>1</u>	Barometric Pi	ressure: <u>9</u>	980.7 mbar		
				Tec	hnician: 👭	pera		
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)	
0.0 70.0 140.0 210.0 280.0 350.0	8858 8217 7575 6933 6293 5651	8859 8218 7575 6934 6293 5651	8859 8218 7575 6934 6293 5651	-0.055 69.89 140.0 210.0 279.9 349.9	-0.02 -0.03 0.00 0.00 -0.03 -0.02	0.020 69.94 140.0 210.0 279.9 350.0	0.01 -0.02 0.01 0.01 -0.02 0.01	
(kPa) Linear	Gage Factor (G)	0.1091	(kPa/ digit)		Re	egression Zero: _	8858	
Polynomi	al Gage factors:	A:	1.42E-08	B:	-0.1093	C:		
C	Calculate C by se	Thermal tting P=0 and f	Factor (K): <u>-(</u> R <sub>1</sub> = initial field z	).1387 (kPa/ ° ero reading into	'C) o the polynom	ial equation		
(psi) Linear G Polynomia	age Factor (G): al Gage Factors:	0.01583 A:	(psi/ digit) 2.06E-09	В:	-0.01586	C:		
		Therma	I Factor (K):	).02011 (psi/ °(	C)			
c	Calculate C by setting P=0 and R <sub>1</sub> = initial field zero reading into the polynomial equation							
Calculate	Calculated Pressures: Linear, P = G(R <sub>0</sub> -R <sub>1</sub> )+K(T <sub>1</sub> -T <sub>0</sub> )-(S <sub>1</sub> -S <sub>0</sub> )*							
	<b>Polynomial,</b> $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$ *Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.							
	The above name	The above ed instrument has been ca	instrument was found to be alibrated by comparison with	in tolerance in all operating standards traceable to the	ranges. NIST, in compliance with	ANSI Z540-1.		
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GEOI	KON 48 Spence	r St. Lebanon, NH 03766	BB									
Vibrating Wire Pressure Transducer Calibration Report												
	Model Number:	45008-35	0 kPa	Date of Cali	ibration: <u>Aug</u>	gust 10, 2011						
	Serial Number:	l Number: 1119785		Temp	erature:	24.5 °C						
	Cable Length:	35 m		Barometric Pressure:		79.3 mbar						
				Technician:								
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8920 8276 7619 6970 6319 5669	8919 8276 7620 6970 6320 5670	8920 8276 7620 6970 6320 5670	0.269 69.51 140.2 210.0 280.0 350.0	0.08 -0.14 0.04 0.01 0.01 -0.01	0.219 69.52 140.2 210.1 280.0 349.9	0.06 -0.14 0.06 0.02 0.01 -0.02					
(kPa) Linear Gage Factor (G): 0.1076 (kPa/ digit) Regression Zero: 8922												
Polynomi	al Gage factors:	A:	-3.776E-08	В:	-0.1071	C:	·					
Thermal Factor (K): <u>-0.1189</u> (kPa/ °C) Calculate C by setting P=0 and R <sub>1</sub> = initial field zero reading into the polynomial equation												
(psi) Linear Gage Factor (G): 0.01561 (psi/ digit)												
Polynomial Gage Factors: A: -5.4//E-09 B:0.01553 C:												
		Therma	I Factor (K):	0.01724 (psi/ °	C)							
•	Calculate C by setting P=0 and R <sub>1</sub> = initial field zero reading into the polynomial equation											
Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$												
	Polynomial, $P = AR_1^2 + BR_1 + C + K(I_1 - T_0) - (S_1 - S_0)^*$											
*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.												
	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.											
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GEORON 48 Spencer St. Lebanon, NH 03766 USA												
Vibrating Wire Pressure Transducer Calibration Report												
Model Number:4500S-350 kPa				Date of Cal	ibration: Au	gust 10, 2011						
	Serial Number: 1119798		98	Temperature:		23.6 °C						
	Cable Length: 30 m		1	Barometric Pressure:		80.7 mbar						
Technician:												
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8773 8210 7643 7080 6514 5947	8774 8211 7645 7081 6514 5947	8774 8211 7644 7081 6514 5947	0.186 69.90 140.0 209.8 280.0 350.2	0.05 -0.03 0.01 -0.05 -0.01 0.05	0.018 69.91 140.1 209.9 280.0 350.0	0.01 -0.03 0.04 -0.02 0.00 0.00					
(kPa) Linear	(kPa) Linear Gage Factor (G): 0.1238 (kPa/ digit) Regression Zero: 8775											
Polynomi	al Gage factors:	A:	-1.383E-07	В:	-0.1218	C:						
Thermal Factor (K): <u>-0.08229</u> (kPa/ °C) Calculate C by setting P=0 and R <sub>1</sub> = initial field zero reading into the polynomial equation												
(psi) Linear Gage Factor (G): 0.01796 (psi/ digit)												
		Therma	I Factor (K):	<u>0.01194 (</u> psi/ °(	C)							
c	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading inte	o the polynom	ial equation						
Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$												
			Polynomial, P =	AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(T <sub>1</sub> -T <sub>0</sub> )-(S	( <sub>1</sub> -S <sub>0</sub> )*						
*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.												
	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.											
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GEOK	KON 48 Spenc	er St. Lebanon, NH 03766	USA	CIZ								
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	Vibrat	ting Wire P	ressure Tra	ansducer Ca	alibration l	Report						
	Model Number	: <u>4500S-35</u>	0 kPa	Date of Cali	ibration: Aug	just 10, 2011						
	Serial Number	11197	95	Temp	erature:	23.6 °C						
	Cable Length:	30 n	n	Barometric Pi	ressure: 9	80.7 mbar						
				Tec	hnician:	Ders-						
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8816 8165 7519 6877 6236 5593	8817 8166 7519 6878 6236 5593	8817 8166 7519 6878 6236 5593	-0.489 70.25 140.5 210.2 279.9 349.8	-0.14 0.07 0.14 0.06 -0.03 -0.07	-0.122 70.15 140.2 209.9 279.8 350.1	-0.03 0.04 0.05 -0.04 -0.06 0.04					
(kPa) Linear	Gage Factor (G)	: 0.1087	(kPa/ digit)		Re	gression Zero: _	8812					
Polynomia	Polynomial Gage factors: A: <u>2.805E-07</u> B: <u>-0.1127</u> C:											
c	Calculate C by se	Thermal etting P=0 and l	Factor (K): R <sub>1</sub> = initial field :	0.1280 (kPa/ ° zero reading inte	°C) o the polynom	ial equation						
(psi) Linear G	age Factor (G):	0.01576	(psi/ digit)									
Polynomia	al Gage Factors:	A:_	4.068E-08	В:	-0.01635	C:						
		Therma	Il Factor (K): -	0.01856 (psi/ °(	C)							
c	alculate C by se	etting P=0 and I	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation						
Calculate	ed Pressures:		Linear, P = G(F	R <sub>0</sub> -R <sub>1</sub> )+K(T <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*							
<b>Polynomial,</b> $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$ *Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.												
The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.												
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GEOR	KON 48 Spence	r St. Lebanon, NH 03766	USA DE	>							
	Vibrat	ing Wire P	ressure Tra	nsducer Ca	alibration I	Report					
	Model Number:	4500S-35	0 kPa	Date of Cali	bration: Aug	just 10, 2011					
	Serial Number:	11197	90	Temp	erature:	23.6 °C					
	Cable Length:	30 m	1	Barometric Pr	essure: 9	80.7 mbar					
				Tec	hnician:	pro-					
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)				
0.0 70.0 140.0 210.0 280.0 350.0	8937 8230 7518 6807 6101 5390	8937 8231 7520 6808 6101 5390	8937 8231 7519 6808 6101 5390	0.099 69.80 140.0 210.2 279.9 350.0	0.03 -0.06 0.00 0.05 -0.04 0.00	0.094 69.81 140.0 210.2 279.9 350.0	0.03 -0.05 0.00 0.06 -0.03 0.00				
(kPa) Linear	Gage Factor (G):	0.09865	(kPa/ digit)		Re	gression Zero: _	8938				
Polynomia	Polynomial Gage factors: A: -8.689E-09 B: -0.09853 C:										
, c	Calculate C by se	Thermal tting P=0 and I	Factor (K): <u>-</u> { R <sub>1</sub> = initial field 2	0.1248 (kPa/ ° ero reading into	C) b the polynomi	ial equation					
(psi) Linear G Polynomia	age Factor (G):_ al Gage Factors:	0.01431 A:_	(psi/ digit) -1.26E-09	В:	-0.01429	C:					
		Therma	I Factor (K): <u>-(</u>	).01810 (psi/ °C	<b>)</b>						
c	Calculate C by set	tting P=0 and I	R <sub>1</sub> = initial field z	ero reading into	the polynomi	ial equation					
Calculate	ed Pressures:		Linear, P = G(R	<sup>2</sup> 0 -R <sub>1</sub> )+K(1 <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*						
<b>Polynomial,</b> $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$ *Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.											
The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.											
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GEOI	KON 48 Spence	r St. Lebanon, NH 03766 I	USA	D7						
	Vibrat	ing Wire P	ressure Tra	insducer Ca	alibration	Report				
	Model Number:	45008-35	0 kPa	Date of Cal	ibration: Aug	gust 10, 2011				
	Serial Number:	11198	)2	Temp	erature:	23.6 °C				
	Cable Length:	30 m	<u> </u>	Barometric P	ressure: 9	80.7 mbar				
					hnician:	para				
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)			
0.0 70.0 140.0 210.0 280.0 350.0	8699 8049 7404 6751 6104 5454	8700 8050 7405 6752 6104 5454	8700 8050 7405 6752 6104 5454	0.054 70.16 139.7 210.1 280.0 350.1	0.02 0.04 -0.08 0.04 -0.01 0.02	-0.030 70.15 139.7 210.2 280.0 350.0	-0.01 0.04 -0.07 0.05 -0.01 0.00			
(kPa) Linear Gage Factor (G): 0.1078 (kPa/ digit) Regression Zero: 8700										
Polynomial Gage factors: A: _4.562E-08 B:0.1072 C:										
	Calculate C by se	Thermal I tting P=0 and F	Factor (K): <u>-0</u> R <sub>1</sub> = initial field z	.08917 (kPa/ ° zero reading into	°C) o the polynom	ial equation				
(psi) Linear G Polynomia	Gage Factor (G):_ al Gage Factors:	0.01564 ( A:	psi/ digit) 6.617E-09	В:	-0.01555	C:				
		Thermal	Factor (K):	0.01293 (psi/ °(	C)					
C	Calculate C by se	tting P=0 and F	R <sub>1</sub> = initial field z	ero reading into	o the polynom	ial equation				
Calculate	ed Pressures:		Linear, P = G(R	<sup>2</sup> <sub>0</sub> -R <sub>1</sub> )+K(T <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*					
<b>Polynomial,</b> $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$ *Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.										
The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.										
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GEOI	KON 48 Spence	er St. Lebanon, NH 03766	USA	<b>E6</b>			
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report	
	Model Number:	4500S-35	0 kPa	Date of Cali	bration: Aug	gust 10, 2011	
	Serial Number:	11197	94	Temp	erature:	23.6 °C	
	Cable Length:	30 m	<u>1</u>	Barometric Pr	ressure: 9	80.7 mbar	
				Tec	hnician: K	pas	
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)
0.0 70.0 140.0 210.0 280.0 350.0	8680 7998 7316 6633 5951 5268	8681 7998 7316 6633 5951 5268	8681 7998 7316 6633 5951 5268	0.051 70.05 140.0 210.1 280.0 350.1	0.01 0.02 0.00 0.02 0.00 0.00 0.02	-0.005 70.02 140.0 210.0 280.0 350.0	0.00 0.00 -0.01 0.01 -0.01 0.00
(kPa) Linear	Gage Factor (G)	: 0.1026	(kPa/ digit)		Re	gression Zero: _	8681
Polynomi	al Gage factors:	<b>A:</b>	-9.833E-09	B:	-0.1024	C:	
c	Calculate C by se	Thermal tting P=0 and I	Factor (K): R <sub>1</sub> = initial field ;	0.1238 (kPa/ ° zero reading into	C) o the polynom	ial equation	
(psi) Linear G	Gage Factor (G):_	0.01488	(psi/ digit)	в.	0 01496	C.	
Polynomia	al Gage Factors:	A:	<u>1.420E-U9</u>	В:	-0.01460	U:	
		Therma	I Factor (K):	0.01796 (psi/ °(	C)		
C	Calculate C by se	tting P=0 and F	₹ <sub>1</sub> = initial field <b>z</b>	zero reading into	o the polynom	ial equation	
Calculate	ed Pressures:	<u> </u>	Linear, P = G(F	R <sub>0</sub> -R <sub>1</sub> )+K(1 <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*		
		I	Polynomial, P =	AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(1 <sub>1</sub> -T <sub>0</sub> )-(S	<sub>1</sub> -S <sub>0</sub> )*	
	*Barometric press	sures expressed in I	kPa or psi. Barometri	ic compensation is no	t required with ver	ited transducers.	
	The above nam	The above ed instrument has been cr	instrument was found to be alibrated by comparison with	in tolerance in all operating a standards traceable to the l	ranges. NIST, in compliance with	e ANSt Z540-1.	
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GEOK	KON 48 Spend	er St. Lebanon, NH 03766	USA	E7						
	Vibra	ting Wire P	Pressure Tra	ansducer Ca	alibration	Report	,			
	Model Number	:4500S-35	i0 kPa	Date of Cal	ibration: Aug	gust 10, 2011				
	Serial Number	:11198	01	Temperature: 23.6 °C						
	Cable Length: 30 m			Barometric P	ressure: 9	80.7 mbar				
	Technician:									
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)			
0.0 70.0 140.0 210.0 280.0 350.0	8968 8312 7660 7000 6345 5691	8969 8313 7661 7001 6345 5691	8969 8313 7661 7001 6345 5691	0.053 70.08 139.7 210.1 280.1 349.9	0.02 0.02 -0.09 0.04 0.03 -0.02	0.023 70.08 139.7 210.2 280.1 349.9	0.01 0.02 -0.08 0.05 0.03 -0.03			
(kPa) Linear	Gage Factor (G)	: 0.1068	(kPa/ digit)		Re	gression Zero: _	8969			
Polynomia	Polynomial Gage factors: A: -1.773E-08 B: -0.1065 C:									
c	Calculate C by se	Thermal	Factor (K):	0.1169 (kPa/ ° zero reading inte	°C) o the polynom	ial equation				
(psi) Linear G	age Factor (G):	0.01548	(psi/ digit)							
Polynomia	al Gage Factors:	A:_	-2.572E-09	B:	-0.01545	C:				
		Therma	Il Factor (K):	0.01695 (psi/ °(	C)					
c	Calculate C by setting P≂0 and R <sub>1</sub> = initial field zero reading into the polynomial equation									
Calculate	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$									
	Polynomial, $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$									
*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.										
The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NiST, in compliance with ANSI Z540-1.										
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GEOR	KON 48 Spence	er St. Lebanon, NH 03766	USA	F5						
	Vibrat	ting Wire P	ressure Tra	nsducer Ca	alibration I	Report				
	Model Number:	4500S-35	0 kPa	Date of Cali	ibration: <u>Aug</u>	just 10, 2011				
	Serial Number:	11197	97	Temp	erature:	23.6 °C				
	Cable Length:	30 m	1	Barometric Pr	ressure: 9	80.7 mbar				
					hnician: 18	No. S				
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)			
0.0 70.0 140.0 210.0 280.0 350.0	8848 8267 7682 7093 6505 5917	8850 8268 7683 7093 6506 5918	8849 8268 7683 7093 6506 5918	0.358 69.74 139.5 209.9 280.0 350.1	0.10 -0.07 -0.13 -0.03 0.00 0.04	0.115 69.86 139.8 210.2 280.1 349.9	0.03 -0.04 -0.05 0.05 0.03 -0.03			
(kPa) Linear	Gage Factor (G)	: 0.1193	(kPa/ digit)	<b> </b>	Re	gression Zero: _	8852			
Polynomial Gage factors: A: <u>-2.631E-07</u> B: <u>-0.1154</u> C:										
c	Calculate C by se	Thermal tting P=0 and I	Factor (K): <u>-0.</u> R <sub>1</sub> = initial field z	.08899 (kPa/ ° ero reading into	°C) o the polynom	ial equation				
(psi) Linear G Polynomia	age Factor (G):_ al Gage Factors:	0.01731 A:	(psi/ digit) -3.816E-08	В:	-0.01674	C:				
		Therma	I Factor (K):0	).01291 (psi/ °(	C)					
c	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field z	ero reading into	o the polynom	ial equation				
Calculate	ed Pressures:		Linear, P = G(R	0 -R 1 )+K(T1 -T 0	)-(S <sub>1</sub> -S <sub>0</sub> )*	<u> </u>				
Polynomial, $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$										
	The above nam	The above ed instrument has been ca	instrument was found to be alibrated by comparison with	in tolerance in all operating standards traceable to the	ranges. NIST, in compliance with	ANSI 2540-1.				
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GEOI	KON 48 Spence	r St. Lebanon, NH 03766	USA	G4							
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report					
	Model Number:	4500S-35	0 kPa	Date of Cali	ibration: <u>Au</u>	gust 10, 2011					
	Serial Number:	11197	89	Temp	erature:	23.6 °C					
	Cable Length:	30 m	1	Barometric Pi	ressure:	980.7 mbar					
				Tec	hnician:	pas					
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)				
0.0 70.0 140.0 210.0 280.0 350.0	8892 8193 7495 6797 6100 5406	8893 8193 7496 6797 6100 5406	8893 8193 7496 6797 6100 5406	-0.151 70.06 140.1 210.2 280.1 349.8	-0.04 0.02 0.02 0.05 0.04 -0.06	0.016 70.01 139.9 210.0 280.1 350.0	0.00 0.00 -0.02 0.01 0.02 -0.01				
(kPa) Linear	(kPa) Linear Gage Factor (G): 0.1004 (kPa/ digit) Regression Zero: 8891										
Polynomi	Polynomial Gage factors: A: 1.087E-07 B: -0.1019 C:										
	Calculate C by se	Thermal tting P=0 and I	Factor (K): <u> </u>	0.1511 (kPa/ ° zero reading inte	°C) o the polynom	nial equation					
(psi) Linear (	Gage Factor (G):_	0.01456 A:	(psi/ digit) 1.576E-08	в:	-0.01478	C:					
FOIYNOITH	ai Gaye I actors.	· · · ·		<u> </u>		Ŭ.	<u> </u>				
		Therma	I Factor (K):	<u>0.02192 (</u> psi/ °(	C)						
(	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading inte	o the polynon	nial equation					
Calculat	ed Pressures:		Linear, P = G(F	R <sub>0</sub> -R <sub>1</sub> )+K(T <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*						
	<b>Polynomial,</b> $P = AR_1^2 + BR_1^2 + C + K(T_1 - T_0) - (S_1 - S_0)^*$ *Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.										
	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.										
		This report shail n	ot be reproduced except in f	ull without written permission	n of Geokon Inc.						

GEOI	KON 48 Spence	r St. Lebanon, NH 03766	USA	G5							
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report					
	Model Number:	4500S-35	0 kPa	Date of Cali	ibration: <u>Au</u>	gust 10, 2011					
	Serial Number:1119787			Temp	erature:	23.6 °C					
	Cable Length:	30 m	30 m		ressure: 9	80.7 mbar					
				Тес	hnician: K	para					
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)				
0.0 70.0 140.0 210.0 280.0 350.0	8980 8327 7672 7018 6360 5701	8981 8328 7673 7018 6360 5701	8981 8328 7673 7018 6360 5701	0.267 69.96 139.9 209.7 280.0 350.3	0.08 -0.01 -0.04 -0.08 -0.01 0.08	-0.015 70.00 140.1 209.9 280.0 350.0	0.00 0.00 -0.02 0.00 0.00				
(kPa) Linear	(kPa) Linear Gage Factor (G): 0.1067 (kPa/ digit) Regression Zero: 8983										
Polynomi	Polynomial Gage factors: A: -1.861E-07 B: -0.1040 C:										
	Calculate C by se	Thermal tting P=0 and I	Factor (K):	0.1342(kPa/ ° zero reading into	°C) o the polynom	ial equation					
(psi) Linear (	Gage Factor (G):	0.01548	(psi/ digit)		0.04500	2	**************************************				
Polynomi	al Gage Factors:	A:	-2.699E-08	В:	-0.01508	C:					
		Therma	I Factor (K):	<u>0.01946 (</u> psi/ °(	C)						
	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation					
Calculat	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$										
	Polynomial, $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$										
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.										
	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI 2540-1.										
		This report shall no	ot be reproduced except in f	ull without written permission	n of Geokon Inc.						

GEOI	KON 48 Spence	r St. Lebanon, NH 03766	USA	I5								
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration I	Report						
	Model Number:	4500S-35	0 kPa	Date of Cali	bration: Aug	just 10, 2011						
	Serial Number:	11197	96	Temp	erature:	23.6 °C						
	Cable Length:	30 m	1	Barometric Pr	essure: 9	80.7 mbar						
				Тес	hnician: K	per .						
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8830 8187 7544 6901 6256 5610	8831 8187 7545 6900 6257 5610	8831 8187 7545 6901 6257 5610	0.054 70.01 139.8 209.9 279.9 350.1	0.02 0.00 -0.04 -0.04 -0.04 0.04	-0.043 70.07 140.0 210.0 279.9 350.0	-0.01 0.02 0.00 0.00 -0.02 0.01					
(kPa) Linear Gage Factor (G): 0.1087 (kPa/ digit) Regression Zero: 8831												
Polynomi	Polynomial Gage factors: A: -9.831E-08 B: -0.1073 C:											
	Calculate C by se	Thermal tting P=0 and I	Factor (K):	0.1400 (kPa/ ° zero reading into	C) o the polynom	ial equation						
(psi) Linear G Polynomi	Gage Factor (G):_ al Gage Factors:	0.01577 A:	(psi/ digit) -1.426E-08	В:	-0.01556	C;						
		Therma	Il Factor (K):	0.02030 (psi/ °(	C)							
	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation						
Calculat	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$											
	Polynomial, $P = AR_1^2 + BR_1 + C + K(T_1 - T_0) - (S_1 - S_0)^*$											
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.											
	The above nam	The above ed instrument has been c	e instrument was found to be alibrated by comparison with	in tolerance in all operating standards traceable to the	ranges. NIST, in compliance with	ANSI Z540-1.						
		This report shall no	ot be reproduced except in f	ull without written permission	of Geokon Inc.							

GEOK	KON 48 Spence	n St. Lebanon, NH 03766	USA	<u>I6</u>								
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report						
	Model Number:	4500S-35	0 kPa	Date of Cal	ibration: Au	gust 10, 2011						
	Serial Number:	11197	92	Temp	erature:	23.6 °C						
	Cable Length: 30 m				ressure: 9	180.7 mbar						
				Tec	hnician: $\mathcal{W}$	pas						
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8919 8245 7571 6897 6222 5543	8919 8247 7571 6897 6222 5543	8919 8246 7571 6897 6222 5543	0.207 70.00 140.0 209.9 279.9 350.3	0.06 0.00 -0.03 -0.03 0.08	-0.022 69.99 140.1 210.0 279.9 350.1	-0.01 0.00 0.03 0.00 -0.03 0.02					
(kPa) Linear	Gage Factor (G)	0.1037	(kPa/ digit)		Re	gression Zero: _	8921					
Polynomia	Polynomial Gage factors: A: -1.22E-07 B: -0.1019 C:											
c	Calculate C by se	Thermal tting P=0 and I	Factor (K): <u>-(</u> R <sub>1</sub> = initial field :	0.08441 (kPa/ ° zero reading into	°C) o the polynom	ial equation	÷					
(psi) Linear G	age Factor (G):_	0.01504	(psi/ digit)									
Polynomia	al Gage Factors:	A:	-1.769E-08	B:	-0.01478	C:						
		Therma	I Factor (K):	0.01224 (psi/ °	C)							
C	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading inte	o the polynom	ial equation						
Calculate	ed Pressures:		Linear, P = G(ł	R <sub>0</sub> -R <sub>1</sub> )+K(1 <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*							
		I	Polynomial, P =	• AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(1 <sub>1</sub> -T <sub>0</sub> )-(S	1-S <sub>0</sub> )*						
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.											
	The above nam	The above ed instrument has been c	instrument was found to be alibrated by comparison wit	e in tolerance in all operating h standards traceable to the	ranges. NIST, in compliance with	a ANSI Z540-1.						
		This report shall no	at be reproduced except in f	full without written permission	n of Geokon Inc.		······································					

GEOR	KON 48 Spence	r St. Lebanon, NH 03766 (	JSA	JI							
	Vibrat	ing Wire P	ressure Tra	insducer Ca	alibration I	Report					
	Model Number:	45008-350	) kPa	Date of Cali	bration: Aug	just 10, 2011					
	Serial Number: 1119800			Temp	erature:	23.6 °C					
	Cable Length:	30 m	l	Barometric Pr	ressure: 9	80.7 mbar					
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gag <del>e</del> Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)				
0.0 70.0 140.0 210.0 280.0 350.0	8754 8118 7486 6847 6211 5575	8755 8119 7487 6847 6212 5575	8755 8119 7487 6847 6212 5575	0.055 70.06 139.6 210.0 280.0 350.0	0.02 0.02 -0.11 0.01 -0.01 0.01	-0.013 70.12 139.8 210.1 280.0 350.0	0.00 0.03 -0.07 0.04 0.01 -0.01				
(kPa) Linear	(kPa) Linear Gage Factor (G): 0.1101 (kPa/ digit) Regression Zero: 8755										
Polynomi	Polynomial Gage factors: A: -8.012E-08 B: -0.1089 C:										
c	Calculate C by se	Thermal tting P=0 and F	Factor (K):	0.1086 (kPa/ ° zero reading into	C) o the polynom	ial equation					
(psi) Linear G	Bage Factor (G):_	0.01596	psi/ digit)								
Polynomia	al Gage Factors:	A:	1.162E-08	B:	-0.01580	C:	<u> </u>				
		Therma	Factor (K):	0.01575 (psi/ °(	C)						
c	Calculate C by se	tting P=0 and F	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation					
Calculate	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$										
	Polynomial, P = AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C + K(I <sub>1</sub> -T <sub>0</sub> )-(S <sub>1</sub> -S <sub>0</sub> )*										
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.										
· · · ·	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been celibrated by comparison with standards traceable to the NIST, in compliance with ANSI 2540-1.										
		This report shall no	t be reproduced except in f	ull without written permission	of Geokon inc.	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>					

GEOI	KON 48 Spence	r St. Lebanon, NH 03766	USA	KI								
	Vibrat	ing Wire P	ressure Tra	insducer Ca	alibration I	Report						
	Model Number:	4500S-35	0 kPa	Date of Cali	bration: Aug	just 10, 2011						
	Serial Number:	11197	88	Temp	erature:	23.6 °C						
	Cable Length:	30 n	1	Barometric Pr	ressure: 9	80.7 mbar						
				Tec	hnician:	person						
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)					
0.0 70.0 140.0 210.0 280.0 350.0	8937 8259 7580 6899 6217 5531	8937 8260 7581 6900 6216 5531	8937 8260 7581 6900 6217 5531	0.308 69.93 139.7 209.7 279.9 350.3	0.09 -0.02 -0.08 -0.09 -0.03 0.10	-0.014 70.02 140.0 210.0 280.0 350.0	0.00 0.01 0.00 0.00 -0.01 0.00					
(kPa) Linear	(kPa) Linear Gage Factor (G): 0.1028 (kPa/ digit) Regression Zero: 8940											
Polynomi	Polynomial Gage factors: A: -2.215E-07 B: -0.09956 C:											
	Calculate C by se	Thermal tting P=0 and I	Factor (K):	0.1017 (kPa/ ° zero reading into	°C) o the polynom	ial equation						
(psi) Linear ( Polynomi	Gage Factor (G):_ al Gage Factors:	0.01491 A:	(psi/ digit) -3.213E-08	В:	-0.01444	C:						
		Therma	Il Factor (K): 🖃	0.01475 (psi/ °(	C)							
(	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading into	o the polynom	ial equation						
Calculat	Calculated Pressures: Linear, $P = G(R_0 - R_1) + K(T_1 - T_0) - (S_1 - S_0)^*$											
	Polynomial, P = AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C + K(1 <sub>1</sub> -T <sub>0</sub> )-(S <sub>1</sub> -S <sub>0</sub> )*											
	*Barometric pressures expressed in kPa or psi. Barometric compensation is not required with vented transducers.											
	The above instrument was found to be in tolerance in all operating ranges. The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI 2540-1.											
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GEOI	KON 48 Spence	or St. Lebanon, NH 03766	USA	K2							
	Vibrat	ing Wire P	ressure Tra	ansducer Ca	alibration	Report					
	Model Number:	4500S-35	0 kPa	Date of Cal	ibration: Aug	gust 10, 2011					
	Serial Number:1119784				erature:	24.5 °C					
	Cable Length:	35 m	1	Barometric Pi	ressure: 9	79.3 mbar					
				Tec	nnician:	para					
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)				
0.0 70.0 140.0 210.0 280.0 350.0	8908 8280 7653 7019 6388 5755	8909 8281 7653 7019 6389 5755	8909 8281 7653 7019 6389 5755	0.277 69.97 139.6 210.0 279.9 350.2	0.08 -0.01 -0.11 -0.01 -0.02 0.07	0.023 70.03 139.8 210.2 280.0 350.0	0.01 0.01 -0.05 0.05 0.00 -0.01				
(kPa) Linear	r Gage Factor (G)	. 0.1110	(kPa/ digit)		Re	gression Zero: _	8911				
Polynomi	ial Gage factors:	A:	-1.967E-07	B:	-0.1081	C:					
	Calculate C by se	Thermal tting P=0 and I	Factor (K): <u>-</u> R <sub>1</sub> = initial field :	0.1137 (kPa/ <sup>c</sup>	°C) o the polynom	ial equation					
(psi) Linear ( Polynomi	Gage Factor (G):_ ial Gage Factors:	0.01610 A:	(psi/ digit) -2.853E-08	B:	-0.01568	C:					
		Therma	I Factor (K):	<u>0.01649 (</u> psi/ °(	C)						
	Calculate C by se	tting P=0 and I	R <sub>1</sub> = initial field :	zero reading inte	o the polynom	ial equation					
Calculat	ted Pressures:		Linear, P = G(F	₹₀ -R ₁ )+K(ĭ₁ -ĩ ₀	)-(S <sub>1</sub> -S <sub>0</sub> )*	·					
		:	Polynomial, P =	AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(1 <sub>1</sub> -T <sub>0</sub> )-(S	<sub>1</sub> -S <sub>0</sub> )*					
	*Barometric pres	sures expressed in	kPa or psi. Barometr	ic compensation is no	ot required with ver	ted transducers.					
	The above nam	The above ned instrument has been c	e instrument was found to be alibrated by comparison wit	e in tolerance in all operating h standards traceable to the	ranges. NIST, in compliance with	ANSI Z540-1.					
· · · · · · · · · · · · · · · · · · ·	This report shall not be reproduced except in full without written permission of Geckon Inc.										

	Vibrat	r St Lebanon, NH 03766	verse Tra	ansducer Ca	alibratio	n Report	·
	Model Number:	4500S-35	i0 kPa	Date of Cal	ibration:	August 10, 2011	
	Serial Number:	11197	83	Temp	erature:	24.5 °C	
	Cable Length:	35 n	35 m		ressure:	979.3 mbar	
		· · ·		Tec	hnician:	Repair	х
Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomia (%FS)
0.0 70.0 140.0 210.0 280.0 350.0	8993 8342 7690 7038 6385 5730	8994 8342 7691 7038 6385 5730	8994 8342 7691 7038 6385 5730	0.161 70.04 139.9 209.9 280.0 350.2	0.05 0.01 -0.02 -0.02 -0.01 0.06	-0.025 70.04 140.0 210.0 280.0 350.0	-0.01 0.01 0.00 0.00 -0.01 0.01
(kPa) Linea Polynom	r Gage Factor (G): ial Gage factors:	0.1073 A:_	(kPa/ digit) -1.057E-07	B:	-0.1057	Regression Zero: _ C:	8995
- (B-1)	Calculate C by se	tting P=0 and	R <sub>1</sub> = initial field	zero reading inte	o the polyn	omial equation	
psi) Linear Polynom	Gage Factor (G):_ ial Gage Factors:	0.01556 A:_	<u>(</u> psi/ digit) -1.533E-08	B:	-0.01533	C:	
:	Calculate C by se	Therma tting P≕0 and	al Factor (K): R <sub>1</sub> = initial field	-0.01585 (psi/ °	C) o the polyne	omial equation	
	ted Pressures:		Linear, P = G(	R <sub>0</sub> -R <sub>1</sub> )+K(T <sub>1</sub> -T <sub>0</sub>	)-(S <sub>1</sub> -S <sub>0</sub> )*		
Calcula			Polynomial P =	• AR <sub>1</sub> <sup>2</sup> + BR <sub>1</sub> + C	+ K(T <sub>1</sub> -T <sub>0</sub> )	-(S <sub>1</sub> -S <sub>0</sub> )*	
Calcula	*Barometric press	sures expressed in	kPa or psi. Baromet	ric compensation is n	ot required with	vented transducers.	
Calcula	*Barometric press	Sures expressed in The above ed instrument has been o	kPa or psi. Baromet	ric compensation is no e in tolerance in all operating th standards traceable to the	ot required with ranges. NIST, in compliance	vented transducers.	

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APPENDIX E

Instrumentation Readings

Mt. Polley Cumulative & Time Displacement SI11-01 A-Axis







Mt. Polley Cumulative & Time Displacement SI11-01 AB-Axis







Mt. Polley Cumulative & Time Displacement SI11-01 B-Axis







Mt. Polley Cumulative & Time Displacement SI11-02 A-Axis







Mt. Polley Cumulative & Time Displacement SI11-02 AB-Axis







Mt. Polley Cumulative & Time Displacement SI11-02 B-Axis







Mt. Polley Cumulative & Time Displacement SI11-04 A-Axis







Mt. Polley Cumulative & Time Displacement SI11-04 AB-Axis







Mt. Polley Cumulative & Time Displacement SI11-04 B-Axis









APPENDIX F

Monitoring Well Drill Hole Logs

CLIEI	NT: Mount Polley Mi	ining Corporati	on	PROJECT: Monitori	ing Well Installations				BO	REHOLE NO: GW11-1A	
DRIL	LER: Mud Bay			Mount Polley - Likely	Mount Polley - Likely, BC			PR	PROJECT NO: VM00560.200.3		
DRIL	L TYPE/METHOD: S	Sonic		NORTHING: 58238	45 EASTING: 590766	6			ELE	EVATION: 1030.00 m	
SAM	PLE TYPE	TUBE		IO RECOVERY	SPOON GR	AB			Шми	D RETURN	RN
											1
DEPTH (m)			SOIL SYMBOL	SC DESCR	DIL IPTION		SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0				SILT and GRAVEL, some sand, I	brown to light brown, mo	oist, trace				Estimated Ground Elevation	
			NN '	boliets, trace organics.					24 2	Well Details: Well casing in	1029-
Ē										j-plug.	1020
2				SILT, sandy, some gravel, trace or race cobbles. [Till]	clay, compact, brown to	grey,				0.3-0.6m, Slough	1028-
Ē										11.7-15.4m, Sand	
-3										12.4-15.4m, Slotted PVC pipe 15.4-15.9m, Sand	1027-
4			0,0								1026-
5											1025-
Ē											
6			000								1024-
-7											1023-
Ē											
8											1022-
				CLAY, silty, trace coarse sand, tr Glaciolacustrine]	ace gravel, firm, grey, m	nottled.					
E-9				VEATHERED BEDROCK, grey t	to greenish grey, oxidize	ed zones,					1021-
			t t	ace white calcite infilling.							1020-
5E 11 11											1019-
									•.• •.	4	
											1018-
											1017-
											1016-
₹ <u></u> –15											1015-
				ND of BOREHOLE at 15.9m					••••••	•	1014-
				ND OF BOREHOLE at 13.51							
₹E-17											1013-
7.099											1012-
											1011-
ŞE .											
5 <u>E 20</u>			AMEC Envir	onment & Infrastructure	LOGGED BY- I	LW				COMPLETION DEPTH: 15.9 m	
HOL HOL	amer	-0	3456 Opie O Prince Geor	Crescent ge, BC V2N 2P9	ENTERED BY:	LW				COMPLETION DATE: 10/11/11	
ЦП			Tel: (250) 56	54-3243						Page	1 of 1

CLIEN	T: Mount Polley Mining Corporation	on	PROJECT: Monitoring We	I Installations			BOF	REHOLE NO: GW11-1B			
DRILLI	ER: Mud Bay		Mount Polley - Likely, BC					PROJECT NO: VM00560.200.3			
DRILL	TYPE/METHOD: Sonic		NORTHING: 5823845 EAS	TING: 590766			ELE	VATION: 1030.00 m			
SAMPI	LE TYPE TUBE	$\square$	NO RECOVERY SPLIT SPOOI	GRAB				ORETURN	RN		
	-										
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIPTI	NC	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)		
0		NN.	SILT and GRAVEL, some sand, brown to	light brown, moist, trace				Estimated Ground Elevation			
Ē,		NN	rootiets, trace organics.					Well Details: Well casing in	1000		
Ē		NN						concrete at surface with locking j-plug.	1029-		
E_2			SILT, some fine sand, some gravel, trace	clay, compact, brown to				0-0.3m, Sand	1028		
=			grey, trace cobbles. [Till]					4.6-8.1m, Sand	1020		
E_3								8.1-8.2m, Slotted PVC pipe 8.1-8.2m, Sand	1027-		
Ē											
-4									1026-		
Ē											
-5								•	1025-		
Ē								9 9 9			
-6						ŀ		•	1024-		
Ē								a a			
E-7						·		•	1023-		
Ē								9 4			
<b>-8</b>						-		•	1022-		
Ē			END OF BOREHOLE at 0.211								
E-9 E									1021-		
212									1000		
									1020-		
									1010		
									1019-		
									1018		
		,							1017-		
₽ ₩ ± 14									1016-		
EC-P											
₹ <u></u> _15									1015		
- GP											
Sec. 16									1014-		
000 U											
 ≩E17									1013-		
ю. Е											
21 <b>8</b>									1012-		
									1014		
ŠE 19											
20											
R SC		AMEC Env 3456 Opie	Crescent	OGGED BY: LW				COMPLETION DEPTH: 8.2 m			
E E	amec	Prince Geo	orge, BC V2N 2P9	NIERED BY: LW				COMPLETION DATE: 10/11/11 Page	1 of 1		
		161. (200) 3	007 0290					, uge			

CLIEN	T: Mount Polley Mining C	orporation	PROJECT: Monitoring W	ell Installations		BOF	REHOLE NO: GW11-2A	
DRILLI	ER: Mud Bay		Mount Polley - Likely, BC			PRO	DJECT NO: VM00560.200.3	
DRILL	TYPE/METHOD: Sonic		NORTHING: 5821020 E	ASTING: 594910		ELE	EVATION: 938.00 m	
SAMPI	LE TYPE	UBE	NO RECOVERY SPLIT SPO	ON GRAB		]MU[	ORETURN CORE RETUR	RN
								•
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0			SILT, clayey, trace coarse sand, trace	fine gravel, low plasticity,		•	Estimated Ground Elevation	
1 1 AMEC-06-MULIMET-DATA REMEATERING 113137 1 AMEC-06-MULIMET-DATA REMEATERING 1131312 11 11 11 11 11 11 11 11 11 11 11 11 11			SILT, trace clay, trace fine sand, trace cobbles. [Till] - at 5.5m, silty sand, moist to wet - at 6.1m, saturated - at 7.3m, 50mm thick coarse sand zor SILT, sandy, trace clay, trace gravel, g cobbles. - at 13.4m, coarse sand, fine gravel, da SILT, trace fine sand, black, saturated organics. [Glaciofluvial] - at 14.9m, dark grey to grey, moist to	gravel, grey, moist, trace le rey, moist to wet, trace ark grey, wet trace rootlets, some brown wet, layered			Well Details: Well casing in concrete at surface with locking j-plug. 0-0.3m, Sand 0.3-0.6m, Bentonite 0.6-23.8m, Grout 23.8-25.3m, Bentonite 25.3-29.3m, Sand 26.2-29.3m, Slotted PVC pipe 29.3-29.5m, Sand	937 936 935 934 933 932 931 930 930 929 928 928 928 928 928 928 928 928 928
165 6JAN.GP								922-
17 17 17 17 18 19 19 20 20			<ul> <li>at 16.8m, trace clay, black, layered</li> <li>at 17.1m, sandy silt, some clay, dark some organics</li> <li>at 18.3m, clayey silt, grey, layered, tr</li> </ul>	grey, moist to wet, trace to ace black organics				921- 920- 919-
OS		AMEC Er	vironment & Infrastructure	LOGGED BY: LW			COMPLETION DEPTH: 29.5 m	•
Ϋ́Ξ	amar	3456 Opi Prince Ge	e Grescent eorge, BC V2N 2P9	ENTERED BY: LW			COMPLETION DATE: 10/4/11	-
H		Tel: (250)	) 564-3243				Page	1 of 2

CLIEN	NT: Mount Polley Mining Corpora	tion	PROJECT: Monitoring Well In	stallations			BOR	REHOLE NO: GW11-2A	
DRILL	ER: Mud Bay		Mount Polley - Likely, BC				PROJECT NO: VM00560.200.3		
DRILL	TYPE/METHOD: Sonic		NORTHING: 5821020 EASTIN	NG: 594910			ELE	VATION: 938.00 m	
SAMP	TUBE TYPE	NO RE	ECOVERY SPLIT SPOON	GRAB		$\square$	MUD	RETURN CORE RETUR	RN
		1 1							
		5			빒	0			(E
H (m		MB	SOIL		Σ		Ĭ,	ADDITIONAL	NO
EPT		L S	DESCRIPTION	N	<b>MPL</b>	IdW	ALLS	INFORMATION	VAT
		SOI			SAN	SA NCT			
= 20		CLAY t	to SILT, silty to clayey, medium plastic	city, grey, trace red					
Ē		mottled	d zones, brown silt layers.(continued)						
E-21									917-
Ē									
E-22									916-
Ē									045
E <sup>-23</sup>		- at 23.	.2m, trace fine gravel				] []		915-
21			silty, some gravel trace clay, reddish	grev, moist [Till]	$\left  \right $				Q1/_
<b>1</b>				5 - J,					514
-25		676							913-
Ē						°.°			
-26		WEATH	HERED BEDROCK, red, moist.			•			912-
Ē							E:		
-27						• • •			911-
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E-28						• • •			910-
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E-29		- al 20.	./III, giey			• • • • • •			909-
		END of	f BOREHOLE at 29.5m			<u>`</u> •`	<u>``````</u> `		
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Jo E		AMEC Environme 3456 Opie Cresc	ent & Intrastructure					COMPLETION DEPTH: 29.5 m	
н Ц	amec	Prince George, B Tel: (250) 564-32	3C V2N 2P9				-+	Page	2 of 2
			-					~ <u>9</u> *	

CLIEN	T: Mount Polley Mining Corporat	ion	PROJECT: Monitoring	Well Installations			BO	REHOLE NO: GW11-2B	
DRILLE	ER: Mud Bay		Mount Polley - Likely, B	0			PR	OJECT NO: VM00560.200.3	
DRILL	TYPE/METHOD: Sonic		NORTHING: 5821020 I	ASTING: 594910			ELE	EVATION: 938.00 m	
SAMPL	E TYPE TUBE			DON GRAB				D RETURN	RN
	-								
DEPTH (m)		SOIL SYMBOL	SOIL DESCRIP	TION	SAMPLE TYPE	SAMPLE NO	INSTALLATION DETAILS	ADDITIONAL INFORMATION	ELEVATION (m)
0			SILT, clayey, trace coarse sand, trace	e fine gravel, low plasticity,	+			Estimated Ground Elevation	
СК VM00560.200.3. MW LOGS_GUAN.GPJ AMEC-PG-MULTIWELL-DATATEMPLATE.GDT 2/13/12 Пиприлитирии политирии политирии политирии политирии политирии политирии политирии политирии политирии политири 61 81 11 01 61 82 20 84 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			SILT, trace clay, trace fine sand, trac cobbles. [Till] - at 5.5m, silty sand, moist to wet - at 6.1m, saturated - at 7.3m, 50mm thick coarse sand zu SILT, sandy, trace clay, trace gravel, SILT, sandy, trace clay, trace gravel, SILT, trace fine sand, black, saturate organics. [Glaciofluvial] END of BOREHOLE at 14.3m	e gravel, grey, moist, trace one grey, moist to wet. dark grey, wet d, rootlets, some brown				Well Details: Well casing in concrete at surface with locking j-plug. 0-10.4m, Bentonite 10.4-14.2m, Sand 11.1-14.2m, Slotted PVC pipe 14.2-14.3m, Sand	937- 936- 935- 934- 933- 932- 931- 930- 929- 928- 929- 928- 927- 926- 922- 922- 922- 922- 922- 921- 922- 921- 922- 921- 922- 921-
ĔĒ 20									
No.		AMEC Er	vironment & Infrastructure	LOGGED BY: LW				COMPLETION DEPTH: 14.3 m	
FOR	amer	3456 Opi Prince Ge	e Grescent eorge, BC V2N 2P9	ENTERED BY: LW				COMPLETION DATE: 10/5/11	
на <b>С</b>	JIICL	Tel: (250)	) 564-3243					Page	1 of 1