

# Memorandum

То:	Alexco Keno Hill Mining Corp.
From:	Matt Corriveau
CC:	Scott Davidson
Date:	March 21, 2013
Re:	QZ09-092 Tailings Characterization Plan 2012 Reporting

#### **1** INTRODUCTION

The Tailings Characterization Plan (The TC Plan) for the Bellekeno Mine was submitted on December 31, 2010 as a requirement under Water Licence QZ09-092. The TC Plan provides a method by which the geochemical and physical characterization of tailings generated by the Mill can be evaluated.

The site assay lab prepares both monthly and quarterly composites for various analyses based on daily tailings production rates.

#### **2 X-RAY DIFFRACTION ANALYSIS**

Quantitative Reitveld-X-ray Diffraction (XRD) analysis was conducted on mill tailings composites on a quarterly basis in 2012 by the University of British Columbia Department of Earth and Ocean Science to determine mineralogy of the mill throughput. The quarterly mill composite was reduced to optimal grain-size range for analysis and step-scan X-ray powder-diffraction data were collected by diffractometer. The X-ray diffractogram was analyzed using the International Centre for Diffraction Database PDF-4.

The results of the 2012 quarterly mill composites are shown in Table 2-1. These amounts represent the relative amount of crystalline phases by weight normalized to 100%.

	FMT Comp 2012	FMT Comp 2012	FMT Comp 2012	FMT Comp 2012	
Minerals	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Average
	Jan/Feb/Mar	Apr/May/June	July/Aug/Sept	Oct/Nov/Dec	
Quartz	50.4	53.7	56.6	59.6	55.1
Siderite	35.4	31.3	29	26.6	30.6
Calcite	2.7	3.5	3.3	2.5	3.0
Muscovite	4.7	5.4	4.7	4.6	4.9
K-Feldspar	0	0	0	1.7	0.4
Plagioclase	0	0	0	1	0.3
Sphalerite	3.5	2.2	2.4	1.9	2.5
Pyrite	2.2	2.6	2.7	1.9	2.4
Galena	0.9	1.3	1.2	0.3	0.9
Total	100	100	100	100	100

Table 2-1 Results of XRD quantitative phase analysis for quarterly final mill tailing composites (wt. %),2012.

The most abundant mineral by weight in the 2012 tailings composites is quartz. The proportion of quartz in the tailings increased from 50 to 60% through 2012. Siderite decreased by roughly the same amount from 35 to 26% of total tailings weight. Calcite ranged from 2.5 to 3.5% of total tailings weight in 2012. Sulphides (sphalerite, pyrite and galena) comprised on average 5.75% of the tailings by weight in 2012. The lowest proportion of sulphides occurred in the fourth quarter composite. K-feldspar and plagioclase is reported present in the fourth quarter but were not present in the other composites.

The 2012 XRD findings are largely similar to 2011 results. Galena was higher in the first three quarters of 2012 compared to the 2011 average but reported a similar value in Q4 2012 as the 2011 average. Arsenopyrite was identified in quarter 1 and 2 of 2011 but was not identified in 2012. All other minerals were identified in very similar abundances in 2012 as 2011.

#### **3 PETROGRAPHIC ANALYSIS**

Detailed petrographic descriptions and quantitative estimates of the quarterly composites of tailings produced by the mill were analysed by Craig H.B. Leitch, Ph.D, P. Eng. of Vancouver Petrographic Ltd.

The final mill tailing composites submitted for petrographic analysis were generally described as finely ground quartz, carbonate (dolomite and ankerite), minor sericite, significant sulfides (sphalerite, pyrite lesser galena and chalcopyrite, rare arsenopyrite, trace sulfosalt) and trace rutile. Trace limonite is after sulfides and/or Fe-carbonates.



A polished thin-section prepared from the coarser particles in the grain mount was analyzed to estimate modal mineralogy. The results are shown in Table 3-1.

Mineral	1st Quarter - 2012	2nd Quarter - 2012	3rd Quarter - 2012	4th Quarter - 2012
	FIMI Composite	FIMIT Composite	FMT Composite	FIMI Composite
Carbonate (dolomite, ankerite)	50	50	50	45
Quartz	40	40	40	45
Pyrite	3	3	4-5	3
Sphalerite	5	5	3-4	4
Galena	<1	<1	1-2	~1
Chalcopyrite	<1	<1	0	<1
Arsenopyrite	<1	<1	<1	<1
Sericite	<1	<1	<1	~1
Limonite	trace	trace	<1	~1
Rutile	<1	<<1	<<1	<1
Sulfosalt (tetrahydrite), native gold/electrum	trace	trace	0	trace

## Table 3-1 Modal mineralogy of quarterly final mill tailings samples submitted for petrographic description and analysis, 2012.

Quartz and carbonate minerals compose about 90% of the mill tailing composite samples. There are trace amounts of sericite, limonite and rutile (all <1%). The remainder of the samples are composed of sulphides, primarily pyrite (3-5%) and sphalerite (3-5%), with galena (<1 – 2%), chalcopyrite and arsenopyrite (<1%) and occasional trace sulfosalts.

The estimated mineralogy from the petrographic descriptions in 2012 is fairly consistent with 2011 3<sup>rd</sup> and 4<sup>th</sup> quarter results. The 2011 3<sup>rd</sup> quarter composite varied from 2012 due to a higher amount of pyrite and sphalerite (8% and 7%, respectively) and a larger component of sericite and limonite (1-2% each). The 2011 4<sup>th</sup> quarter composite had slightly higher chalcopyrite than 2012 (1-2%).

These results are also fairly consistent with the XRD quantitative phase analysis in 2012. The carbonate minerals identified as dolomite and ankerite in the petrographic report are similar to siderite and calcite identified by XRD, with related mineral compositions. Muscovite is identified in the XRD report and is not identified in the petrographic report, which also reports the occurrence of trace limonite, sericite and rutile. Similar sulfides are identified except for the trace amounts of arsenopyrite and chalcopyrite which are not reported as present in the XRD. It is important to note that XRD provides a quantitative description of a material by weight percent of each mineral and that petrography is a qualitative description of rock in thin section. Thus, minerals identified in petrography reporting that are absent in XRD reporting represent a very small proportion of the total material weight and are not a significant weight to be identified by XRD.



#### **4** ACID BASE ACCOUNTING

The acid base accounting (ABA) was conducted on a monthly composite of the tailings produced by the mill. ABA testing was conducted by ALS Environmental in Burnaby, BC. 2012 ABA data is provided in Table 4-1.

#### Table 4-1 ABA data, 2012

	Maximum Potential Acidity	Fizz Rating	Net Neutralization Potential	Neutralization Potential	рН	NPR (NP:MPA)	Total Sulfur	Total Sulfate (Carbonate Leach)	HCI- Leachable Sulfate	Sulfide Sulfur (Calculated)	Inorganic Carbon (C)	Inorganic Carbon (C as CO2)
Unit	Kg CaCO₃/t	Unit	Kg CaCO₃/t	Kg CaCO₃/t	Unit	Unit	%	%	%	%	%	%
Jan-12	83.8	3	23	107	8.3	1.28	2.68	0.02	0.01	2.66	3.88	14.2
Feb-12	84.1	3	-3	81	8.4	0.96	2.69	0.05	0.005	2.64	3.62	13.3
Mar-12	100.5	3	7	107	8.2	1.07	3.21	0.04	0.04	3.17	4.33	15.9
Apr-12	69.7	3	14	84	8.3	1.21	2.23	0.005	0.005	2.23	3.33	12.2
May-12	86.9	3	14	101	8.1	1.16	2.78	0.03	0.03	2.75	3.54	13
Jun-12	91.3	3	36	127	8.1	1.39	2.92	0.04	0.005	2.88	4.17	15.3
Jul-12	81.3	3	26	107	8.1	1.32	2.6	0.01	0.02	2.59	3.77	13.8
Aug-12	113	3	-29	84	8.2	0.74	3.62	0.01	0.02	3.61	3.16	11.6
Sep-12	61.6	3	6	68	8.1	1.1	1.97	0.01	0.005	1.97	2.04	7.5
Oct-12	63.4	3	13	76	8.2	1.2	2.03	0.04	0.03	1.99	2.86	10.5
Nov-12	61.6	3	27	89	8.1	1.45	1.97	0.03	0.005	1.94	2.61	9.6
Dec-12	65.3	3	17	82	8	1.26	2.09	0.02	0.03	2.07	0.64	2.4
Average	80.2	3	13	93	8.2	1.18	2.57	0.03	0.02	2.54	3.16	11.6

Total sulfur ranged between 1.97 and 3.62% with an average of 2.57% in 2012. The maximum sulphur content was in August 2012 but was followed by four consecutive lower sulphur concentrations at around 2%. Sulphide sulphur is the dominant form of sulphur in the tailings with sulphate sulphur often below the method detection level. Total sulphur going back to the January 2011 monthly composite is plotted in Figure 4-1. The maximum potential acidity (MPA) of the tailings composites ranged from 61.6 to 113 kg CaCO<sub>3</sub>/tonne.





Figure 4-1 Mill tailings composite testing, total sulphur.

The results of mineralogical testing of the tailings composite using X-Ray Diffraction (XRD) has shown that Bellekeno tailings contain significant siderite (29 to 35.4 wt.%). As a result of this determination the ABA package was switched in July 2011 from standard ABA to a siderite corrected ABA analytical package to remove any potential neutralization potential (NP) contributions from the siderite. All 2012 NP was calculated using the siderite correction. The NP in 2012 ranged from 68 to 127 kg CaCO<sub>3</sub>/tonne which is slightly lower than in 2011 (average of 144 kg CaCO<sub>3</sub>/tonne) after the siderite correction but with no obvious trend to continue decreasing. NP since January 2011 is shown in Figure 4-2.



Figure 4-2 Mill tailings composite testing, neutralization potential (NP)



The neutralization potential ratio (NPR – NP:MPA ratio) of the tailings composite in 2012 ranged from 0.74 to 1.45. This range is slightly lower than 2011 which had a range of from 1.29 to 2.35 (July to December 2011, after siderite correction was implemented). However, there does not appear to be an obvious downward trend in NPR in 2012. Net neutralization potential (NNP), the difference between NP and MPA, of the tailings composites have ranged between -29 and 36 kg CaCO<sub>3</sub>/tonne, with two values below zero in 2012. The median NNP in 2012 was 14 kg CaCO<sub>3</sub>/tonne and was lower in 2012 than 2011 (July to December, after siderite correction median of 43.5 kg CaCO<sub>3</sub>/tonne). There appears to be no obvious downward trend in NNP in 2012. NNP since January 2011 is shown in Figure 4-4.



Figure 4-3 Mill tailings composite testing, NPR (NP:MPA ratio)



Figure 4-4 Mill tailings composite testing, net neutralization potential (NNP)



#### **5** INITIAL PORE WATER COMPOSITION

Samples of water from the filter press were collected on a quarterly basis in 2012 and were submitted to ALS Environmental, in Burnaby, BC for testing. These samples reflect the chemical composition of residual process related water contained within in the tailings that are transported to the dry stack tailings facility (DSTF) or backfilled underground. These samples provide information on the initial pore water chemical composition of the DSTF. It should be noted that the water that is sampled is reused in the milling process.

Sulphate in filter press water ranged from 2090 to 2340 mg/L, within the 2011 range for sulphate. Arsenic ranged from below method detection level and 0.0092 mg/L and was within the 2011 range for arsenic. Cadmium increased from 0.00233 to 0.01350 mg/L in 2012 surpassing the 2011 maximum of 0.0116 mg/L. However, with only four values of ten total values since March, 2011 contributing to this increase, it is uncertain if this is a trend or part of natural variation in water chemistry. Copper ranged between 0.252 to 0.857 mg/L in 2012 and was within the 2011 range for copper. Lead in quarters 2 through 4 had lower concentrations than the first quarter (maximum value of 0.206 mg/L) but display a potential upward trend. Filter press water nickel concentrations are below method detection levels for all quarters of 2012. Silver ranges from 0.0267 to 0.253 mg/L and is elevated compared to the 2011 range of 0.00767 to 0.0332 mg/L. Zinc ranged from 0.042 to 0.132 mg/L and was slightly elevated compared to 2011 (below method detection level to 0.0759 mg/L).

#### 6 HUMIDITY CELL

#### 6.1 SOURCE MATERIAL

A weighted composite for the first six months of tailings generated (January to June 2011) based on monthly mill throughput from the Bellekeno Mine was created for the implementation of humidity cell kinetic testing. The management and subsequent testing on the humidity cells were conducted by ALS Environmental in Burnaby, BC. ABA testing was conducted on the monthly mill tailings composites. The results of ABA testing for the first 6 months are reported in Table 6-1. It is important to note that the method of determining NP from January to June 2011 did not take into account the presence of siderite and are not properly corrected. Therefore the NP and related NNP and NPR are reported artificially high.

	Proportion of composite	Maximum Potential Acidity (MPA)	Net Neutralizing Potential (NNP)	Neutralizing Potential (NP)	рН	NPR NP: MPA	T – S	T – SO₄	Leachable SO4	S as S <sup>2-</sup> (Leco)	Inorganic C as C	Inorganic C as CO <sub>2</sub>
Description	%	Kg CaCO3/t	Kg CaCO3/t	Kg CaCO3/t	Unit	Unit	%	%	%	%	%	%
Jan-11	16	75.9	209	285	8	3.75	2.43	0.06	0.03	2.33	3.85	14.1
Feb-11	14	73.4	212	285	8	3.88	2.35	0.07	0.02	2.3	3.82	14
Mar-11	19	78.8	196	275	8.1	3.49	2.52	0.07	0.03	2.43	3.9	14.3
Apr-11	18	87.8	194	282	8.2	3.21	2.81	0.06	0.01	2.75	4.17	15.3
May-11	17	92.2	162	254	8.2	2.76	2.95	0.03	<0.01	2.91	3.82	14
Jun-11	16	50.3	226	276	8	5.49	1.61	0.03	0.03	1.581 <sup>1</sup>	3.76	13.8

#### Table 6-1 ABA testing results for the first six months of mill tailings composites through the mill

<sup>1</sup> Sulfur as sulfide for June 2011 was calculated and not determined by Leco analysis.



The six monthly composites were used to create quarterly composite samples on which a quantitative phase analysis by x-ray diffraction was conducted to determine the mineralogy of mill throughput. These amounts represent the relative amounts of crystalline phases normalized to 100%. The results of the first two quarterly results are reported in Table 6-2.

Table 6-2 Results of XRD quantitative phase analysis of first and second quarter 2011 final mill tailings
composites (wt. %)

Mineral	First Quarter 2011 (Jan/Feb/Mar) (%)	Second Quarter 2011 (Apr/May/June) (%)
Quartz	53.1	49.5
Siderite	32	35.2
Muscovite	5	4.6
Calcite	2.2	3.1
Sphalerite	2.3	2.8
Pyrite	2.2	1.9
Plagioclase	1.1	1.2
Ankerite – Dolomite	0.9	0.8
Arsenopyrite	0.8	0.6
Galena	0.3	0.2
Total	100	100

Quartz is the most abundant mineral in the mill throughput comprising about half of the composites by weight. Siderite is the second most abundant mineral comprising about a third of the composites by weight. Muscovite comprises roughly 5% of mineralization. Calcite is 2.65% of mineralization by weight, while dolomite, which contributes to NP, and ankerite, which does not contribute to NP, are a combined 0.85% of mineralization by weight on average. Sulphides sphalerite, pyrite, arsenopyrite and galena are a combined 5.5% by weight.

#### 6.2 HUMIDITY CELL RESULTS

The humidity cell was initiated on August 10, 2011 and the results up to week 80 (February 27, 2013). The humidity cell consists of weighted composite tailings generated from the first 6 months of operation of the District Mill running Bellekeno Mine ore. The results below represent the first 80 weeks of leachate collected from the humidity cell.

#### 6.2.1 pH

Leachate pH from the humidity cell testing has been very consistent ranging from 7.7 to 7.99 with no obvious trend in the data. Humidity cell data for pH is shown in Figure 6-1.





Figure 6-1 Humidity cell testing, pH

#### 6.2.2 Alkalinity and Acidity

An initial spike was observed in total alkalinity increasing the values from 43.0 mg CaCO<sub>3</sub>/L in the first leach cycle (Week 1) to 78.3 mg CaCO<sub>3</sub>/L in Week 7. Alkalinity remained relatively high (71.3 to 78.3 mg CaCO<sub>3</sub>/L) until Week 17. Moving forward from Week 17, alkalinity has varied between 47.4 mg CaCO<sub>3</sub>/L (Week 45) to 66.3 mg CaCO<sub>3</sub>/L (Week 22). A flat to slightly decreasing trend is somewhat apparent, with data being fairly consistent between 50 and 60 mg CaCO<sub>3</sub>/L since Week 31. Acidity peaks were observed between Week 33 and Week 48 reaching a maximum of 15 mg CaCO<sub>3</sub>/L in Week 36. However, outside those weeks, acidity has been fairly consistent ranging between 2.9 and 11 mg CaCO<sub>3</sub>/L. Humidity cell data for alkalinity and acidity are shown in Figure 6-2.



Figure 6-2 Humidity cell testing, acidity and alkalinity



#### 6.2.3 Sulphate

Sulphate was highest at the beginning of the humidity cell testing with a maximum concentration of 1150 mg/L in the first cycle, but decreasing quickly to 158 mg/L by Week 7. Sulphate increased slightly to 206 mg/L in Week 20 and since then has gradually trended downwards and was 39.9 mg/L at Week 80. Humidity cell data for sulphate concentrations are shown in Figure 6-3.



Figure 6-3 Humidity cell testing, sulphate

#### 6.2.4 Zinc

Dissolved zinc in the humidity cell leachate displayed a slight increasing trend from 0.5 mg/L in Week 0 of humidity cell testing to 4.25 mg/L in Week 29. Zinc varied between 2.63 and 4.28 mg/L between Week 29 and Week 51. Since Week 51, a downward trend has been observed with a minimum value of 1.28 mg/L in Week 79 and a zinc concentration of 1.91 mg/L in Week 80. All values are well above the CCME guideline (0.03 mg/L for 90 mg/L hardness) and EQS (0.5 mg/L), but well below the predicted pore water zinc concentration (20.31 mg/L) from the initial metallurgical testing program. Humidity cell data for dissolved zinc is shown in Figure 6-4.

#### 6.2.5 Lead

Dissolved lead concentrations in the humidity cell leachate were highest at the beginning of humidity cell testing with a maximum of 0.2 mg/L in Week 0 but decreased quickly to less than 0.1 mg/L by Week 7. All data after Week 10 is less than 0.1 mg/L and fairly consistent with a minimum dissolved lead concentration of 0.074 mg/L recorded in Week 74 and 0.0785 mg/L in Week 80. All dissolved lead values are higher than the CCME guideline (0.00278 mg/L for 90 mg/L hardness), but are lower than the EQS (0.2 mg/L). Humidity cell data for dissolved lead is shown in Figure 6-5.





Figure 6-4 Humidity cell testing, dissolved zinc





#### 6.2.6 Arsenic

A maximum arsenic concentration of 0.00248 mg/L in humidity cell leachate was observed in Week 2 followed by consistently low arsenic concentrations averaging 0.0008 mg/L between weeks 5 and 22. A minimum concentration of 0.00075 mg/L was encountered in Week 12. A slight increasing trend is observed after Week 22 with arsenic concentration reaching 0.00192 mg/L in Week 74. All arsenic concentrations are well below the CCME guideline of 0.005 mg/L (for 90 mg/L hardness) and the EQS of 0.1 mg/L. Humidity cell data for dissolved arsenic is shown in Figure 6-6.





Figure 6-6 Humidity cell testing, dissolved arsenic

#### 6.2.7 Nickel

Nickel concentrations have been low throughout the humidity cell testing. A slight increasing trend can be observed beginning roughly in Week 24 where the concentration increases from 0.00145 mg/L to 0.00501 mg/L in Week 66. A maximum nickel concentration of 0.00576 mg/L was reached in Week 78. Dissolved nickel is well below the CCME guideline of 0.08822 mg/L (for 90 mg/L hardness) and the EQS of 0.5 mg/L. Humidity cell data for dissolved nickel is shown in Figure 6-7.







#### 6.2.8 Cadmium

Dissolved cadmium exhibits a similar trend to dissolved zinc with an increasing trend from 0.0264 mg/L in Week 0 to 0.0614 mg/L in Week 41. The maximum concentration of 0.0638 mg/L was reached in Week 51 followed by a decreasing trend with a minimum value of 0.0303 mg/L in Week 79 and a dissolved cadmium concentration of 0.0394 mg/L in Week 80. Dissolved cadmium is consistently above the CCME guideline (0.00003 mg/L for 90 mg/L hardness) and the EQS (0.01 mg/L), but is well below the predicted pore water cadmium concentration from the initial metallurgical testing program. Humidity cell data for dissolved cadmium is shown in Figure 6-8.



Figure 6-8 Humidity cell testing, dissolved cadmium

#### 6.2.9 Copper

The maximum dissolved copper concentration of 0.0049 mg/L was observed in Week 0 of humidity cell testing. Week 1 through Week 13 report dissolved copper concentrations below detection limit (0.0005 mg/L in Weeks 1,2 and 13 and 0.00025 in Weeks 3 through 12). Concentrations were equal to the detection limit in Week 19 and 20 followed by an increasing trend through to Week 68 with peaks of 0.00463 mg/L in Week 48 and 0.0045 in Week 68. Weeks 70 through 76 appear to indicate a downward trend with four consecutively decreasing copper values. However, this trend was succeeded by a higher concentration in Week 78. Dissolved copper was well below the EQS of 0.1 mg/L throughout humidity cell testing. Humidity cell data for dissolved copper is shown in Figure 6-9.





Figure 6-9 Humidity cell testing, dissolved copper

#### 6.2.10 Leachate Metal Correlations

A positive correlation between zinc and cadmium in the leachate is evident and is demonstrated by plotting zinc versus cadmium (Figure 6-10). This is most likely attributed to the substitution of cadmium for zinc in Sphalerite.



Figure 6-10 Dissolved zinc vs. dissolved cadmium in leachate



A positive correlation was also evident between arsenic and nickel and between copper and nickel. These relationships were more obvious after week 19 of humidity cell testing when more distinct trends began to develop. These are demonstrated in Figure 6-11 and Figure 6-12.



Figure 6-11 Dissolved arsenic vs. dissolved nickel in leachate



Figure 6-12 Dissolved copper vs. dissolved nickel in leachate



#### **6.3 PHYSICAL CHARACTERIZATION**

Physical characterization tests for the tailings were completed by EBA Engineering Ltd., which include: soil water characteristic curves, gradation, specific gravity and shear strength. The 2012 results of the physical characterisation tests is presented in Appendix 1.

### **APPENDIX 1**

2012 TAILINGS PHYSICAL CHARACTERISATION RESULTS













			P	ARTIC	LE S	IZE /	ANAI	LYSI	S (Hy	ydro	omet	er) T	EST	REPO	ORT					
								AS	IMD	422										
Project:		201	2 Tai	ilings (	Chara	cteri	izatio	n Te	sting	- K	eno		S	ample	No.:	Ja	nuary	201	2	
Client:		Ale	xco K	(eno H	ill Mir	ning	Corp	oratio	on				В	orehol	e/ TP:					
Project I	No.:	W1	4101	702									D	epth:						
Location	:												D	ate Te	sted	Ap	oril 13,	201	2	
Descript	ion **:	SAI	ND and SILT, trace clay											ested	By:	Cł	4			
Particle	Percent		Clay	, cizo		eil	4 6170			<u> </u>			Sor			<u> </u>				
Size	Passing		Ciay	Size		31	l Size	;		+	Fine	е	Sai N	ledium	Coarse	;	Fine		oarse	+
100		1	100												<b>†</b>					
75 mm		1	0.0																	
50 mm		P	90																	
38 mm		r	00									/								
25 mm		с	80																	
19 mm		e	70																	
13 mm		t	70								1									
10 mm			60																	
5 mm		F	00								/									
2 mm	100	n	50																	
850 µm	100	е								/										
425 µm	99	r	40						_/	1										
250 µm	87	b																		
150 µm	68	у	30												┼┎┷┍	/ate	rial De	escri	ntion	
75 µm	47															Pr	roporti	on (S	%)	
32 µm	27	a	20													ay S	Size *		3	
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12 µm	14	s	10													Grav	vel		0	
9 µm	13															obb 	oles		0	┛
6 µm	10	1	0	•																
3 µm	4	4		2		Pa	rticlo	Size	. (um	80 1)		40	)0		2 Dorti	5 10 9	Size/~	20		75
1 µm	1			、—		ra		JIZE	ε (μπ	') '		$\rightarrow$			Partic	ie S	size(m	iiii)		
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Reviewed By:

P.Eng.



		Р	ARTICLE	SIZE ANALYSIS (Hyd	lrometer) T	EST REPORT		
				ASTM D42	22			
Project:		2012 Ta	ilings Cha	racterization Testing -	Keno	Sample No.:	February 20 <sup>-</sup>	12
Client:		Alexco k	Keno Hill M	lining Corporation		Borehole/ TP:		
Project I	No.:	W14101	702			Depth:		
Location	n:					Date Tested	April 13, 201	2
Descript	tion **:	SAND a	nd SILT, ti	race clay		Tested By:	CH	
·			,	,		,		
Particle	Percent	Clav	v size	Silt Size		Sand	Gravel	
Size	Passing	100			Fine	Medium Coarse	Fine C	oarse
100 mm		100						
75 mm		<b>D</b> 90						
50 mm		e			1			
38 mm		r <sub>80</sub>						
25 mm		c						
19 mm		<b>e</b> <b>n</b> 70						
13 mm		t						
10 mm		60						
5 mm		F						
2 mm	100	<b>n</b> 50			/			
850 µm	100	е						
425 µm	99	<b>r</b> 40		····				
250 µm	88	b						
150 µm	70	<b>y</b> 30					/aterial Descri	otion
75 µm	49						Proportion (%	6)
32 µm	28	$a^{20}$				Cli	ay Size *	3
21 µm	22	s					Silt Size Sand	46 51
12 µm	16	<b>s</b> 10					Gravel	0
9 µm	12						obbles	0
6 µm	7	0						
3 µm	3		2	8 Dortiola Siza ()	0 40	0 2	5 20	75
1 µm	3		<	- Particle Size (µm)	$\longrightarrow$	ertic	le Size(mm)	$\rightarrow$

**Remarks:** \* The upper clay size of 2 µm is as per the Canadian Foundation Manual. \*\* The description is behaviour based & subject to EBA description protocols

Reviewed By:

P.Eng.



Project: Client: Project No.: Location: Description **: Particle Size Percent Passing	2012 Tailings Alexco Keno W14101702 SILT & SANE	ASTM D42 Characterization Testing - Hill Mining Corporation , trace clay.	Keno San Bor Dep Date	nple No.: ehole/ TP: th:	March 20	12						
Project: Client: Project No.: Location: Description **: Particle Size Percent Passing	2012 Tailings Alexco Keno W14101702 SILT & SANE	Characterization Testing - Hill Mining Corporation , trace clay.	Keno San Bord Dep Date	nple No.: ehole/ TP: th:	March 20	12						
Client: Project No.: Location: Description **: Particle Size Percent Passing 100 mm	Alexco Keno W14101702 SILT & SANE	Hill Mining Corporation	Bord Dep Date	ehole/ TP: th:								
Project No.: Location: Description **: Particle Percent Size Passing	W14101702 SILT & SANE	), trace clay.	Dep Date	oth:								
Location: Description **: Particle Percent Size Passing 100 mm	SILT & SANE	), trace clay.	Date									
Description **: Particle Percent Size Passing 100 mm	SILT & SANE	), trace clay.		e Tested	June 7.2	.012						
Particle Percent Size Passing		, aldee elayi	Tes	ted By:	07 & KTI	<u></u> P						
Particle Percent Size Passing 100 mm												
100 mm	Clay size	Silt Size	Sand		Gra	vel						
100 mm	100		Fine Med	um Coarse	Fine	Coarse						
75 mm	P 90											
50 mm	e		<b>f</b>									
38 mm	r <sub>80</sub>		/ / / / / / / / / / / / / / / / / / / /									
25 mm	C											
19 mm	n 70		/									
13 mm	t		<i>∲</i>									
10 mm	<b>–</b> 60 –											
5 mm	r   i											
2 mm	<b>n</b> 50 —		/									
850 μm 100	е											
425 μm 99	<b>- </b> 40											
250 µm 87	b											
150 µm 67	<b>y</b> 30				laterial Des	scription						
75 µm 46	M				Proportio	n (%)						
32 µm 26	<b>a</b> <sup>20</sup>				iy Size * ilt Size	3 43						
21 µm 20	s				Sand	54						
12 µm 14	<b>s</b> 10				Gravel	0						
9 µm 11	╡											
6 µm 9			0 400									
3 μm 5	- ←	8 Particle Size (um)	0 400 ────────────	2 : - Partic	o 2 <b>le Size</b> (mr	$\frac{1}{20} \qquad \frac{75}{2}$						
1 µm 2				i artic								
Remarks: * The up ** The do	oper clay size o escription is be	f 2 μm is as per the Canadi haviour based & subject to	an Foundation Ma EBA description p	anual. protocols.	Jus F							



			P/	ARTIC	LE SIZ	ZE AN	IALY	SIS (	(Hyd	romet	ter) T	EST	REPO	RT				
								ASTM	1 D42	2								
Project:		201	2 Tai	lings (	Charac	teriza	tion 7	Гesti	ng -	Keno		Sa	mple	No.:	April 20	12		
Client:		Alex	co K	eno H	lill Mini	ng Co	orpora	ation	0			Bo	orehole	e/ TP:	_ <b>.</b>			
Project I	No.:	W14	4101 <sup>.</sup>	702		0						De	epth:					
Locatior	1:											Da	' ate Tes	sted	Januarv	/ 30. 2 <sup>/</sup>	013	
Descript	tion **:	SILT	T and	ISAN	D trac	e clav	,					Te	ested F	8	KTP			
Desempt		OIL		0, 11	D, 1100	c oldy	•						.5100 E	y.				
		1																
Particle	Percent		Clay	size		Silt S	bize					San	d		G	ravel		
Size	Fassing		100							Fin	e	Me	edium	Coarse	Fine	Coa	arse	
100 mm																		
75 mm		Р	90		_											+	$\square$	
50 mm		е									1							
38 mm		r	80								$\vdash$						+++	
25 mm		с е								/								
19 mm		n	70							+								
13 mm		t																
10 mm		F	60							/							+++	
5 mm		i								/								
2 mm	100	n	50						1									
850 μm	100	e r																
425 μm	99	-	40														+++	+++
250 μm	70	b																
75 um	50	У	30					/						N	laterial D	escript	ion	-
31 um	20	М	•											Cla	Proporti v Size *	on (%)	) >	-
20 um	23	а	20											S	lt Size	4	9	
12 um	15	S S	10				•								Sand	4	9 ว	
9 um	10	1	10												obbles	(	, )	
6 um	7	-	0	•														
3 µm	2		U	2					8	)	40	)0		2 5	5	20	7	'5
1 µm	1			←		Partio	cle Si	ize (	µm)		$\rightarrow$	←		Partic	l <b>e Size</b> (n	nm)		$\rightarrow$
Remarks:	* The up ** The de	per c escrip	lay si otion	ze of : is beh	2 µm is aviour	s as p base	er the d & s	e Ca ubje	nadia ct to	an Fou EBA c	undat lescri	ion N iption	lanual i proto	cols	Jusi	A.		
									Rev	iewed	By:				/	//	P.	.Eng.



			P	ARTIC	LE S	IZE	ANA	LYSI	S (H	ydro	omete	er) T	EST	REP	ORT					
								AS	TM D	422										
Project:		201	2 Tai	ilings (	Chara	acter	izatio	n Te	sting	- K	eno		S	ample	No.:	N	lay 20	12		
Client:		Ale	xco K	(eno H	ill Mi	ning	Corp	oratio	on				В	oreho	le/ TP:					
Project I	No.:	W1	4101	702									D	epth:						
Location	:												D	ate Te	ested	Ja	anuar	y 30,	2013	\$
Descript	ion **:	SAI	ND ar	nd SIL	T, tra	ice c	lay.						Т	ested	By:	KTP				
Particle	Percent		Clay	size		Si	It Size						Sar	nd			G	irave		$\overline{\top}$
Size	Passing		100								Fine	•	Ν	ledium	Coars	e	Fine		Coarse	土
100 mm		1	100															T		
75 mm		Р	90																	
50 mm		e										/								
38 mm		r	80								_/									
25 mm		C																		
19 mm		n	70								1									
13 mm		t									/									
10 mm		-	60							+	/									
5 mm		i																		
2 mm		n	50							1										
850 µm	100	e								/										
425 µm	100	-	40																	
250 µm	89	b																		
150 μm	72	У	30					-								Mat	erial D	)esci	iption	
75 μm	50	м														P Vel	ropor	tion (	<u>%)</u> 2	
20 μm	20	а	20				/	1							Τľ	Silt S	Size		48	
20 μm	15	S c	10													Sa	nd		50	
Ω	10		10													Gra Cob	lvei bles		0	
ο μm	8	1	Ο	•																
3 um	3	1	0	2						80		40	0		2	5		20		75
1 um	2	1		←		Ра	rticle	Size	e (µn	ר) -		$\rightarrow$	←		Parti	cle	Size(I	mm)		$\rightarrow$
Demost	* The a					le -		44 - 1		ما: د		رم. ماريد ('		1						
Remarks:	** The de	per c escri	ption	ize of 2 is beha	2 μm avioι	is a: ir ba	s per sed &	tne C & sub	ject	diar to E	n ⊢ou BA d	ndati escri	on I ptio	vianua n prote	aı. ocols.	2	The second	P		
									-								01			



			PAR	RTICLE	E SIZE	e ana	LYSI	S (Hy	drom	eter) T	EST	REPC	RT			
							AS	TM D4	22							
Project:		201	2 Tailin	ngs Ch	aracte	erizatio	on Tes	sting	- Ken	0	Sa	ample	No.:	June 20	12	
Client:		Ale	xco Ker	no Hill	Minin	g Corp	oratio	on			В	orehole	e/ TP:			
Project	No.:	W1	410170	)2							D	epth:				
Locatior	า:										D	ate Te	sted	January	30, 20	13
Descrip	tion **:	SA	ND and	SILT.	trace	clav.					Τe	ested E	Bv:	KTP		
				- ,							-		<b>J</b>			
Particle	Percent		Clay si	ize		Silt Siz	e				San	d		Gi	ravel	$\overline{\top}$
Size	Passing		100						F	ine	М	edium	Coarse	Fine	Coars	se
100 mm											<b>r</b>					
75 mm		Р	90 —													
50 mm		е														
38 mm		r	80							+					_	
25 mm		e								/						
19 mm		n	70 –						1							
13 mm		t														
10 mm		F	60													
5 mm	100	i							$\boldsymbol{V}$							
2 mm	100	n	50 —						1							
425 μm	99	r														
250 µm	88		40													
150 µm	71	b	20													
75 um	49	У	30 _				k						N	Aaterial D	escriptio	on 🗍
31 µm	27	М	20										Cla	ay Size *	<u>011 (78)</u> 2	
20 µm	21	a	20										l s	Silt Size	47	
12 µm	14	s	10										Ц,	Sand Gravel	51 0	
9 µm	10		10											obbles	0	
6 μm	7		0	•												
3 μm	3			2					80	40	00		2	5	20	75
1 µm	2		+		— P	article	e Size	e (µm	) —	$\longrightarrow$	<u>&lt;                                    </u>		Partic	:le Size(m	າm)	$\rightarrow$
Remarks	* The up ** The de	per c escri	clay size	e of 2 µ behav	ım is iour b	as per based {	the C & sub	Canac ject to	lian Fo EBA	oundat descr	ion N iptior	/anual n proto	cols	Jusi	O'	
								Re	viewe	ed By:				0	//	P.Eng



			P	ARTIC	LE S	IZE	ANA	LYSI	S (H	ydr	ometei	r) TE	EST	REPC	ORT						
								AS	TM D	422											
Project:		201	2 Ta	ilings (	Chara	acter	izatio	n Te	sting	- K	eno		Sa	mple	No.:		July	201	2		
Client:		Ale	xco K	eno H	lill Mir	ning	Corp	oratio	on -				Bo	rehole	e/ TF	»:					
Project	No.:	W1	4101	702									De	epth:							
Locatior	ו:												Da	ite Te	sted		Jan	uary	30,	2013	
Descript	tion **:	SAI	ND ai	nd SIL	T, tra	ice c	lay.						Те	sted E	By:		KTF	2			
·																					
Particle	Percent		Clay	/ size		Si	lt Size	•					San	d				Gr	avel		T
Size	Passing		100								Fine		Me	edium	Coa	irse	F	ine	C	oarse	
100 mm		]	100									$\boldsymbol{\Lambda}$									
75 mm		Р	90									Д									
50 mm		е																			
38 mm		r	80								-+										
25 mm		C e																			
19 mm		n	70								-1										_
13 mm		t																			
10 mm		F	60				+			+						_					
5 mm		- i																			
2 mm	100	n	50							1											
850 µm	100	e r																			
425 μm	99	1	40																	_	
250 μm	72	b							/												
75 um	50	У	30					4							ΤĒ	Μ	ateri	al De	escri	ption	
31 um	28	м	20													Cla	Pro v Siz	portio ze *	on (9	<u>6)</u> 2	
20 um	20	а	20													Si	lt Siz	ze		48	
12 um	15	s s	10													S C	Sanc	- -		50 0	
9 um	11	1	10												L	Co	bble	es		0	
6 µm	7	1	0	•	-																
3 µm	3	1	5	2						80		40	0		2	5			20	,	75
1 µm	2			<u> </u>		Pa	rticle	Size	• (µm	ר)		<u> </u>	<		Par	ticl	e Si	<b>ze</b> (m	ım)		$\rightarrow$
Remarks:	* The up ** The de	per c escri	clay s	ize of 2 is beh	2 µm aviou	is as ır ba	s per sed 8	the C k sub	Cana ject 1	diai to E	n Foun BA de	dati scrip	on N ption	lanua proto	l. ocols		Ju	8/			
									Re	evie	ewed E	By:							//	F	.Eng



			PA	RTIC	LE S	IZE	ANAI	AST	<mark>6 (Ну</mark> ГМ D4	dro 122	ometer)	TE	ST	REPC	ORT						
Project:		201	2 Taili	nas (	hara	acter	izatio	n Tes	tina	- K	eno		Sa	mole	No ·	Δ	มดบร	st 201	12		
Client:				ngo C ano H	ill Mi	nina	Corp	oratio	n	1.	5110		Bo	rehol	_/ TP·		ugut	. 20			
Drojoct	No ·	M/1	11017			mig	Colp	oratio							5/11.						
	NU		41017	02									De	pun.	otod	-		m / 20	201	<u> </u>	
Location	l. 												Da		sieu		anua	iry 30	, 201	3	
Descript	tion **:	d SIL	I , tra	ice c	clay.						le	sted I	Зу:	K	IP						
Particle	Percent		Clays	size		Si	lt Size	•				;	Sano	d				Grav	el	$\overline{\top}$	_
Size	Passing		100 -								Fine		Me	dium	Coar	se	Fine		Coarse	;	_
100 mm				]								T									
75 mm		Р	90 -								/	1								$\downarrow \parallel$	
50 mm		e									7										
38 mm		r	80 -																	$+ \parallel$	_
25 mm		C																			
19 mm		n	70 -																		_
13 mm		t																			
10 mm			60 -							$\parallel$										$\parallel$	_
5 mm																					
2 mm	100	n	50 -							/		_									_
850 µm	100	е								1											
425 µm	99	r	40 -																		_
250 µm	89	b																			
150 µm	69	у	30 -						/						┼┏┷	Mat	erial	Desc	riptio		1-
75 µm	49															F	Propo	ortion	(%)		
31 µm	26	W    a	20 -									_			L c	lay	Size	*	2		ŀ
20 µm	20	s														Silt Sa	Size		47 51		
12 µm	14	s	10 -		+							+			+	Gra	avel		0		ŀ
9 µm	10															Cob	bles	1	0		
6 µm	7		<sub>0</sub> L	•																	
3 µm	3			2		De	Minic	e:	(1	80		400	)		2	5	0.	20	<b>`</b>	75	
1 µm	2		•			Pa	TICIE	Size	(htt)	) -		→			Part	cie	Size	(mm	)		-
Remarks:	* The up ** The de	per c escrij	clay siz ption is	e of 2 s beh	2 µm aviou	is a ır ba	s per Ised 8	the C subj	anac ect to	liar b E	Found BA desc	atic crip	on N otion	lanua protc	l. ocols	(	Jus	P	1		
									Re	vie	wed By	<i>ı</i> :				1		1		P.E	r

Reviewed By:

P.Eng.



		F	ARTIC	CLE <u>SIZ</u> E	ANALYS	SIS (Hyc	lrometer)	TEST RE	PORT			
					A	STM D42	22					
Project:		2012 Ta	ailings	Characte	rization T	esting -	Keno	Samp	le No.:	Septemb	er 2012	
Client:		Alexco	Keno H	lill Mining	Corpora	tion		Boreh	ole/ TP:			
Project	No.:	W1410	1702	_	-			_ Depth	:			
Locatior	n:							 Date <sup>-</sup>	Fested	Januarv	30. 2013	
Descrip	tion **:	SAND	and SII	T trace	rlav				d By:	KTP		
Descrip					Jidy.				u by.			
		<u> </u>										
Particle	Percent	Cla	y size	S	ilt Size			Sand		Gra	avel	
Size	Passing	100					Fine	Medium	Coarse	Fine	Coarse	
100 mm												
75 mm		<b>P</b> 90										
50 mm		e										
38 mm		<b>r</b> 80										
25 mm		C										
19 mm		n 70					•					
13 mm		t										
10 mm		_ 60										
5 mm		l F										
2 mm		<b>n</b> 50										
850 µm	100	е										
425 µm	100	r 40										
250 µm	89	b										
150 µm	71	<b>y</b> 30								l IIII /aterial De	scription	
75 µm	50					⊭				Proportio	on (%)	
31 µm	27	$a^{20}$							Cla	ay Size *	2	
20 µm	20	S								silt Size Sand	48 50	
12 µm	13	<b>s</b> 10							(	Gravel	0	
9 µm	9				1					obbles	0	╓┛║
6 µm	6	0	•									
3 um	2		2			8	0 4	400	2	5	20 7	5

**Remarks:** \* The upper clay size of 2 μm is as per the Canadian Foundation Manual. \*\* The description is behaviour based & subject to EBA description protocols

 $\leftarrow$ 

1

1 µm

Particle Size (µm) -

Reviewed By:

 $\rightarrow \leftarrow$ 

P.Eng.

Particle Size(mm)



			PA	RTICL	E SIZ	e ana	LYSIS	s (Hy	/dro	meter)	) TE	ST	REPC	ORT					
							AST	-M D4	422										
Project:		201	2 Tailir	ngs Ch	naract	erizatio	on Tes	ting	- Ke	eno		Sa	mple	No.:	00	tober	201	2	
Client:		Ale	xco Ke	no Hill	Minir	ng Corp	ooratio	n				Во	rehole	e/ TP:					
Project	No.:	W1	410170	02								De	pth:						
Locatior	ו:											Da	te Te	sted	Ja	nuary	30, 2	2013	
Descript	tion **:	SAI	ND and	SILT,	, trace	e clay.						Te	sted E	By:	KT	Р			
Particle	Percent		Clay s	size		Silt Siz	e.				;	Sanc	1			Gr	avel		Τ
Size	Passing		100 -							Fine		Me	dium	Coars	e	Fine	С	oarse	
100 mm		]																	
75 mm		Р	90 –							/	/								
50 mm		e								1									
38 mm		r	80 —							_/_									
25 mm		C																	
19 mm		n	70 –							<b>/</b>									
13 mm		t								/									
10 mm		-	60 —						$\parallel$	/							+		
5 mm		- r																	
2 mm		n	50 —						Å								$\square$		
850 µm	100	е						/	1										
425 µm	99	ľ	40 —					+									+		
250 µm	88	b																	
150 µm	71	У	30 —				+/	<u>'</u>						╞╌	Mate	rial De	escri	ption	
75 µm	50	м													Pr	oporti	on (%	<u>%)</u>	
31 µm	27	a	20 –												lay S Silt S	ize * ize		2 48	-
20 µm	20	s													Sar	nd		50	
12 µm	12	S	10 –					++++						H	Grav	/el		0	H
9 µm	9	4		•		•													┯┛│
6 μm	6	-	0 ∟	- - -					90 80	I		<u></u>		า ว	5		20		 75
3 μm	2	-	÷		— F	Particle	e Size	(µm	00 I) -		400 →←	,		∠ Parti	् cle S	Size(m	∠ບ າm)	_	$\rightarrow$
1 µm	2								,										
Remarks:	* The up ** The de	per c escrij	clay size ption is	e of 2 behav	µm is ⁄iour t	as per based	<sup>.</sup> the C & subj <sup>,</sup>	anac ect te	dian o El	Found 3A des	latic crip	on M otion	anua proto	l. cols	Q	1251			
								Re	evie	wed B	y:				0		//	F	.Eng



			PAR	RTIC	LE S	SIZE	ANA	LYS	IS (	Hy	dr	omet	er) 1	<b>TES</b>	T F	REPO	RT							
								AS	STM	D4	22													
Project:		201	12 Tailin	igs C	hara	acte	rizatio	n Te	estir	ng -	·Κ	leno		S	Sar	nple l	No.:	Ν	love	embe	ər 20	012		
Client:		Ale	xco Ker	no Hi	ill Mi	ning	g Corp	orat	ion					E	Bor	ehole	/ TP:							
Project No.: W14101702													Dep	oth:										
Location:													Dat	e Tes	sted	J	anı	Jary 3	30, 2	201	3			
Description **: SILT and SAND, trace clay.											7	es	sted B	sy:	k	ΤР	1							
-														-			-							
Dortiolo	Doroont			. 1							I										_		_	_
Size	Passing		Clay si	ze		S	ilt Size	9				Fine	j	Sa	nd Mec	lium	Coars	se.	Fi	Gra	avel	oarse	<u>,</u>	_
	<u> </u>		100	-	$\neg \uparrow$												0 0 0 are							П
100 mm														1										
75 mm		Р	90 —										1											-
50 mm		e											/											
38 mm		r	80									/												
25 mm		С	00																					
19 mm		e n	70																					Ц
13 mm		t	/0																					
10 mm			60									/												Ц
5 mm		F									Y													
2 mm		n	50 –			$\parallel$				/										<u> </u>				
850 µm	100	е																						
425 µm	100	r	40							/														



**Reviewed By:** 

Data presented hereon is for the sole use of the stipulated client. EBA Engineering Consultants Ltd. operating as EBA A Tetra Tech Company is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

40

b

Μ

**y** 30

250 µm

150 µm

75 µm

91

75

53



P.Eng.

Material Description

Proportion (%)

			P	ARTI	CLE	SIZ	ZE .	ANAI	YS	IS (	Hy	dro	omet	er) 1	TES	ST F	REPO	RT							
									AS	STM	ID4	22													
Project:		201	2 Tai	ilings	Cha	rac	ter	izatio	n Te	estir	ng -	- K	eno			Sar	nple	No.:		De	ecen	nbe	r 20 <sup>-</sup>	12	
Client:		Ale	xco K	(eno l	Hill M	1ini	ng	Corp	orati	ion						Bor	ehole	e/ TP	:						
Project	No.:	W1	4101	702											-	Dep	oth:								
Locatior	ו:															Dat	e Tes	sted	-	Fe	brua	ary	11, 2	201:	3
Descrip	tion **:	SA	ND a	nd SI	LT. t	rac	ce (	clav.							-	Тез	sted E	Bv:	-	кт	Р				
•															-			5	-						
Particle	Percent		Clay	size			Si	lt Size	)						S	and					(	Gra	vel		
Size	rassing		100		1		 		1 1		1 1 1		Fine			Med	lium	Coa	rse		Fine		Coa	arse	
100 mm															T										
75 mm		Р	90				Щ							$\square$											
50 mm		е												1											
38 mm		r	80											-											
25 mm		C																							
19 mm		n	70										-												
13 mm		t																							
10 mm	100	F	60				₩					+		_	$\left  \right $					+					+
5 mm	100	i																							
2 mm	100	n	50				$\square$				<b> </b>				$\vdash$					+				$\square$	+
850 µm	99	e r																							
425 µm	98	{ '	40			$\left  \right $	++			/	$\mid \mid$				+				+	+				++	+
∠50 µm	88	b																							
150 µm	70	У	30				++		1	$\vdash$					+			┼┲╧	M	ate	rial	Des	cript	ion	
/5 μm	49	м																		Pr	оро	rtior	ר (%) ג	)	
30 µm	29	a	20				+++	$\parallel$							+			Ηʻ	aر Sil	y S It S	ize ' ize		: 4	د 6	
20 µm	23	s																	S	Sar	d		5	1	
12 µm	16	S	10				K		-		+++	++			++	+++		+	G	ira	/el		(	)	

**Remarks:** \* The upper clay size of 2 µm is as per the Canadian Foundation Manual. \*\* The description is behaviour based & subject to EBA description protocols

Particle Size (µm)

12

9

4

2

0

2

~

9 µm

6 µm

3 µm

1 µm

Reviewed By:

80

400

 $\rightarrow \leftarrow$ 

P.Eng.

75

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Cobbles

Particle Size(mm)

20

5

2



	SPECIFIC G	RAVITY OF SOIL S	SOLIDS BY WATER PYCNOMETER
		AST	TM D854
Project:	2012 Tailings Charact	erization Testing - ł	Keno Date Tested:
Project No.:	W14101702		Tested By:
Client:	Alexco Keno Hill Minin	g Corporation	
Tachlala			Soil Description
Number	Depth (m)	Gravity @ 20°C	Type, constituants/composition, structure, moisture, consistency, plasticity, colour, odour, inclusions.
Jan. 2012	-	3.077	SAND and SILT, trace clay
Feb. 2012	-	3.133	SAND and SILT, trace clay
Mar. 2012	-	3.191	SILT and SAND, trace clay
Apr. 2012	-	3.003	SILT and SAND, trace clay
May 2012	-	3.042	SAND and SILT, trace clay
Jun. 2012	-	3.115	SAND and SILT, trace clay
Jul. 2012	-	3.112	SAND and SILT, trace clay
Aug. 2012	-	3.109	SAND and SILT, trace clay
Sep. 2012	-	3.033	SAND and SILT, trace clay
Oct. 2012	-	3.017	SAND and SILT, trace clay
Nov. 2012	-	2.997	SILT and SAND, trace clay
Dec. 2012	-	2.971	SAND and SILT, trace clay
			Reviewed By:
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