

TECHNICAL MEMO

ISSUED FOR USE

TO: Vanessa Benwood
C:
FROM: Justin Pigage
DATE: December 20, 2012
MEMO NO.: 002
EBA FILE: W14103025-01

SUBJECT: 2012 Annual Tailings Sampling
Keno Hill District Mill Site, Keno City, Yukon

1.0 INTRODUCTION

Alexco Resource Corp. (Alexco) retained EBA, A Tetra Tech Company (EBA) to coordinate and complete a four borehole tailings sampling drill program within the Dry Stack Tailings Facility (DSTF) at the Keno Hill District Mill Site, Keno City, Yukon.

In partial fulfillment of their Type A Water Licence, Alexco is required to collect samples and conduct particle size and moisture content testing over the full depth of the tailings pile annually. The drill program and subsequent laboratory testing was undertaken to confirm the placed tailings have physical properties consistent with design assumptions.

2.0 WORK COMPLETED

EBA representative, Mr. Ian MacIntyre, arrived on site July 29, 2012 and selected the borehole locations. Four boreholes W14103025-BH37 through -BH40 were advanced to varying depths using a Driltech M5 air rotary drill rig operated by Midnight Sun Drilling Co. Ltd. of Whitehorse, Yukon. The locations of the boreholes are shown on the attached Figure 1. Disturbed grab samples were collected from the drill cuttings at 1.5 m intervals over the depth of each borehole. The samples were returned to EBA's Whitehorse laboratory for particle size and moisture content testing. Detailed borehole logs and laboratory test results are attached to this memo.

3.0 DISCUSSION

Four samples (one from each borehole) representing various depths of the DSTF were selected for particle size testing. The particle size distribution of the four samples is similar to the particle size distribution assumed in the design of the DSTF (Section 5.8.2 Operation, Maintenance, and Surveillance Manual DSTF, 2010). Moisture contents were determined for the 24 tailings samples collected during the drill program. The moisture contents are consistent with the moisture content assumed in the design of the DSTF (Section 6.5.1.4 DSTF Detailed Design, 2011).

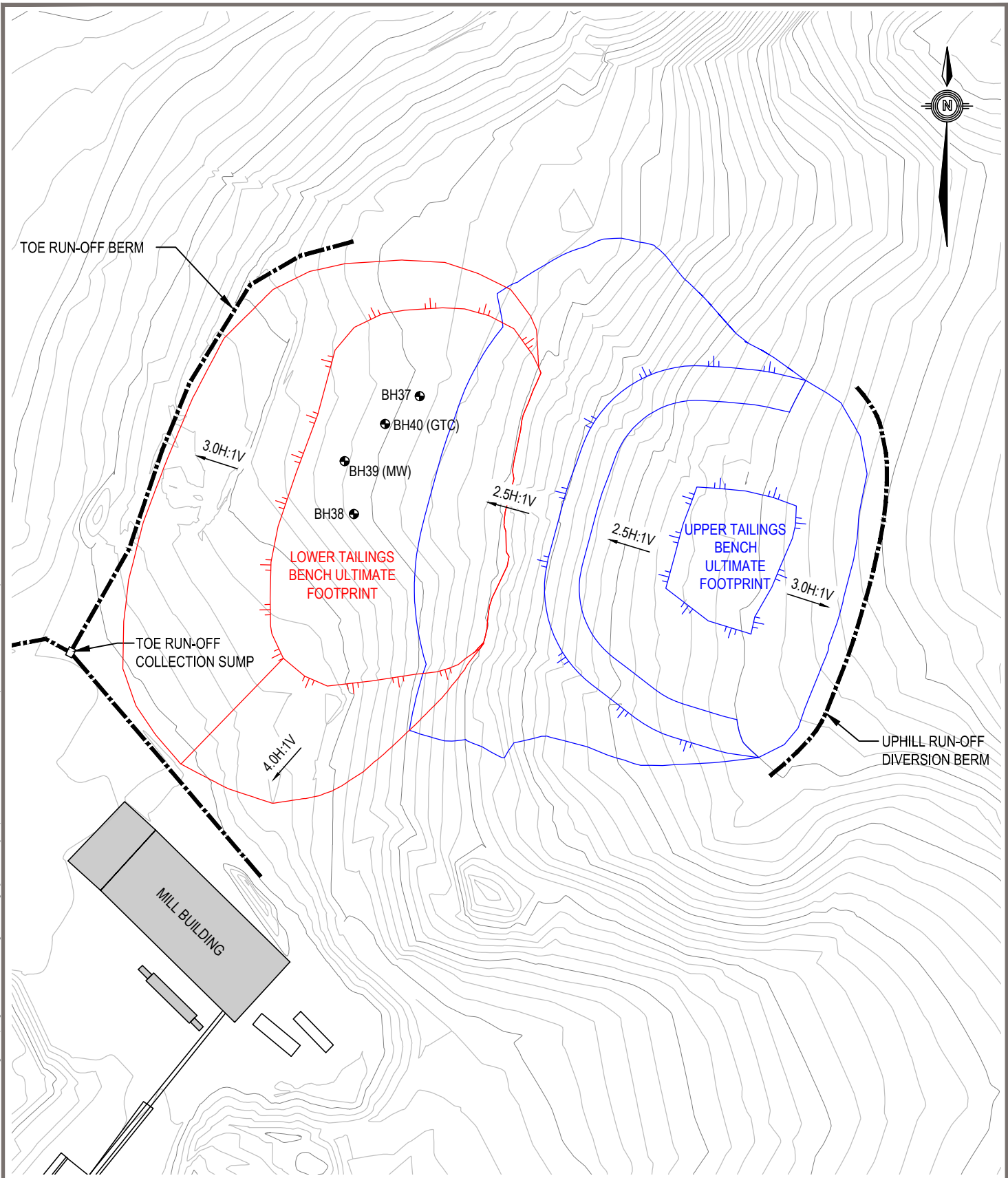
4.0 CONCLUSION

The drill program and laboratory testing confirms that the placed tailings have physical properties consistent with the design assumptions. We trust this memo meets your current requirements. Should you have any questions or comments, please contact us.

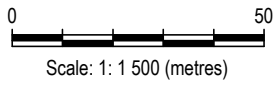
REFERENCES

- EBA Engineering Consultants Ltd. 2010. Revision 2010-1 Operation, Maintenance, and Surveillance Manual, Dry Stack Tailings Facility, Keno Hill District Mill, YT.
- EBA Engineering Consultants Ltd. 2011. Detailed Design Dry-Stacked Tailings Facility, Keno Hill District Mill Site, Yukon.

C:\Whitehorse\Drawings\Keno\W14103025-01 Instrumentation & Tailings Sampling\W14103025-01 Fig_1_RO.dwg [FIGURE 1] September 13, 2012 - 10:07:02 am (BY: BUCHAN, CAMERON)



STATUS
 ISSUED FOR USE



CLIENT



DRY STACKED TAILINGS FACILITY
KENO HILL DISTRICT MILL SITE, YUKON

SITE PLAN SHOWING
TAILINGS SAMPLING BOREHOLE LOCATIONS


PROJECT NO. W14103025-01	DWN CB	CKD JTP	REV 0
OFFICE EBA-WHSE	DATE September 11, 2012		

Figure 1

Dry Stack Tailings Facility GTC Installation	CLIENT: Alexco Resource Corp. Ltd.	BOREHOLE NO: W14103025-BH37
Keno Hill District Mill Site	DRILL: Air Rotary (MS Drlitech)	PROJECT NO: W14103025-01
Keno City, YT	7086952N; 483993E; Zone 8	

SAMPLE TYPE	<input type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND


Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C. LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
					20	40	60	80	20	40	60	80	20	40	60	80	
0	SAND and SILT (TAILINGS) - trace clay, moist, light grey		SA01	- unfrozen													0
1			SA02														5
2			SA03														10
3																	15
4			SA04	- frozen, Nbe													20
5	END OF BOREHOLE @ 4.5 m (Base of Tailings)																25
6																	30
7																	35
8																	40
9																	45
10																	50

 A TETRA TECH COMPANY	LOGGED BY: IM	COMPLETION DEPTH: 4.5m
	REVIEWED BY: JTP	COMPLETE: 7/31/2012
	DRAWING NO:	Page 1 of 1

Dry Stack Tailings Facility GTC Installation	CLIENT: Alexco Resource Corp. Ltd.	BOREHOLE NO: W14103025-BH38
Keno Hill District Mill Site	DRILL: Air Rotary (MS Drlitech)	PROJECT NO: W14103025-01
Keno City, YT	7086918N; 483974E; Zone 8	

SAMPLE TYPE	<input type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

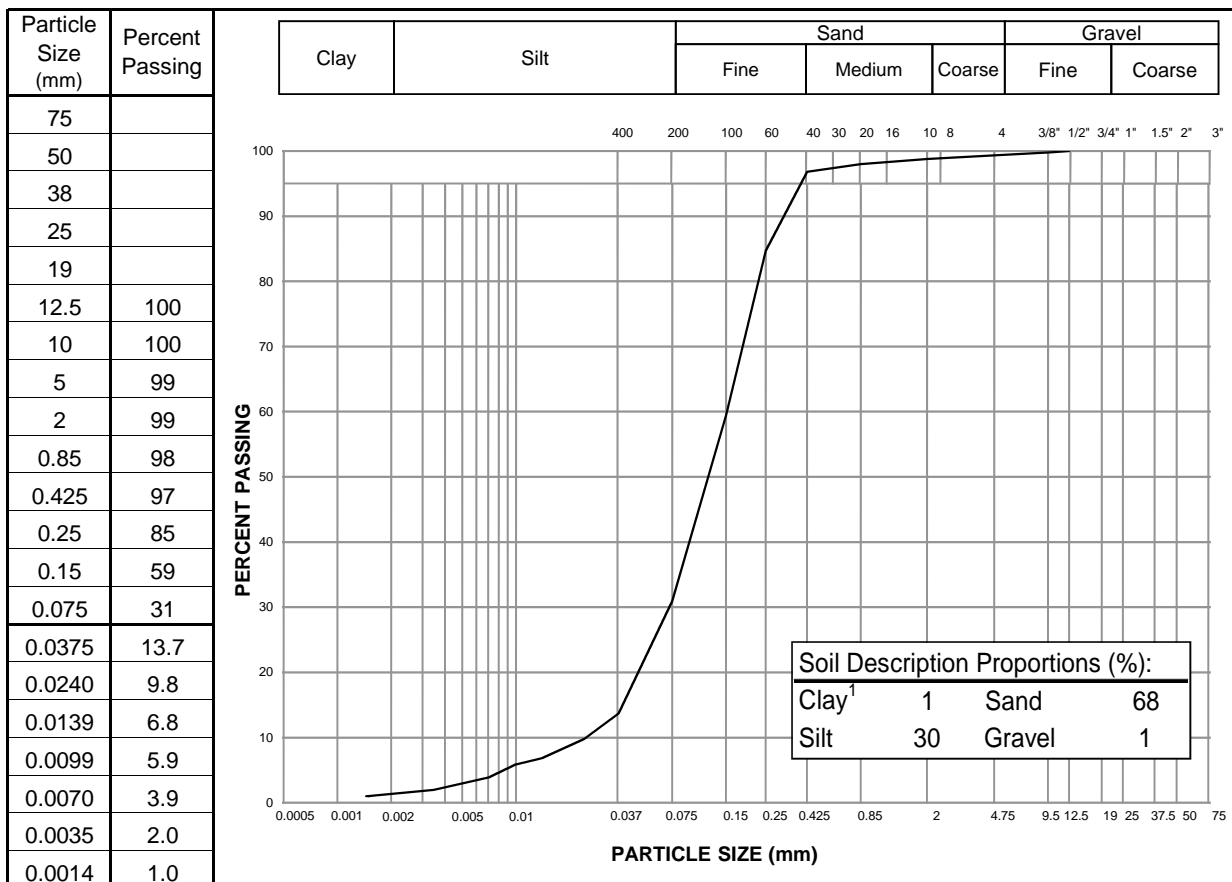
Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
					20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	SAND (TAILINGS) - silty, trace gravel, trace clay, moist, light grey		SA01	- unfrozen	●														0
1																			5
2			SA02		●														10
3			SA03		●														15
4			SA04		●				■	●	▲								20
5			SA05		●														25
6			SA06		●														30
7			SA07		●														35
8			SA08		●														40
9			SA09		●														45
10	END OF BOREHOLE @ 8.2 m (Base of Tailings)																		50

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	REVIEWED BY: JTP	COMPLETE: 8/1/2012
	DRAWING NO:	Page 1 of 1

PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project:	DSTF GTC Installation	Sample No.:	SA04
Project No.:	W14103025-01	Material Type:	Tailings
Site:	Keno Hill District Mill Site	Sample Loc.:	BH38
Client:	Alexco Resource Corp. Ltd.	Sample Depth:	3.6 - 3.8 m
Client Rep.:	Vanessa Benwood	Sampling Method:	Grab
Date Tested:	August 10, 2012	By:	SMS
		Date sampled:	August 6, 2012
Soil Description ² :	SAND - silty, trace gravel, trace clay	Sampled By:	IM
		USC Classification:	Cu: 6.2 Cc: 1.4
Moisture Content:	6.2%		



Notes: ¹ The upper clay size of 2 um, per the Canadian Foundation Engineering Manual
² The description is visually based & subject to EBA description protocols

Specification: _____

Remarks: _____

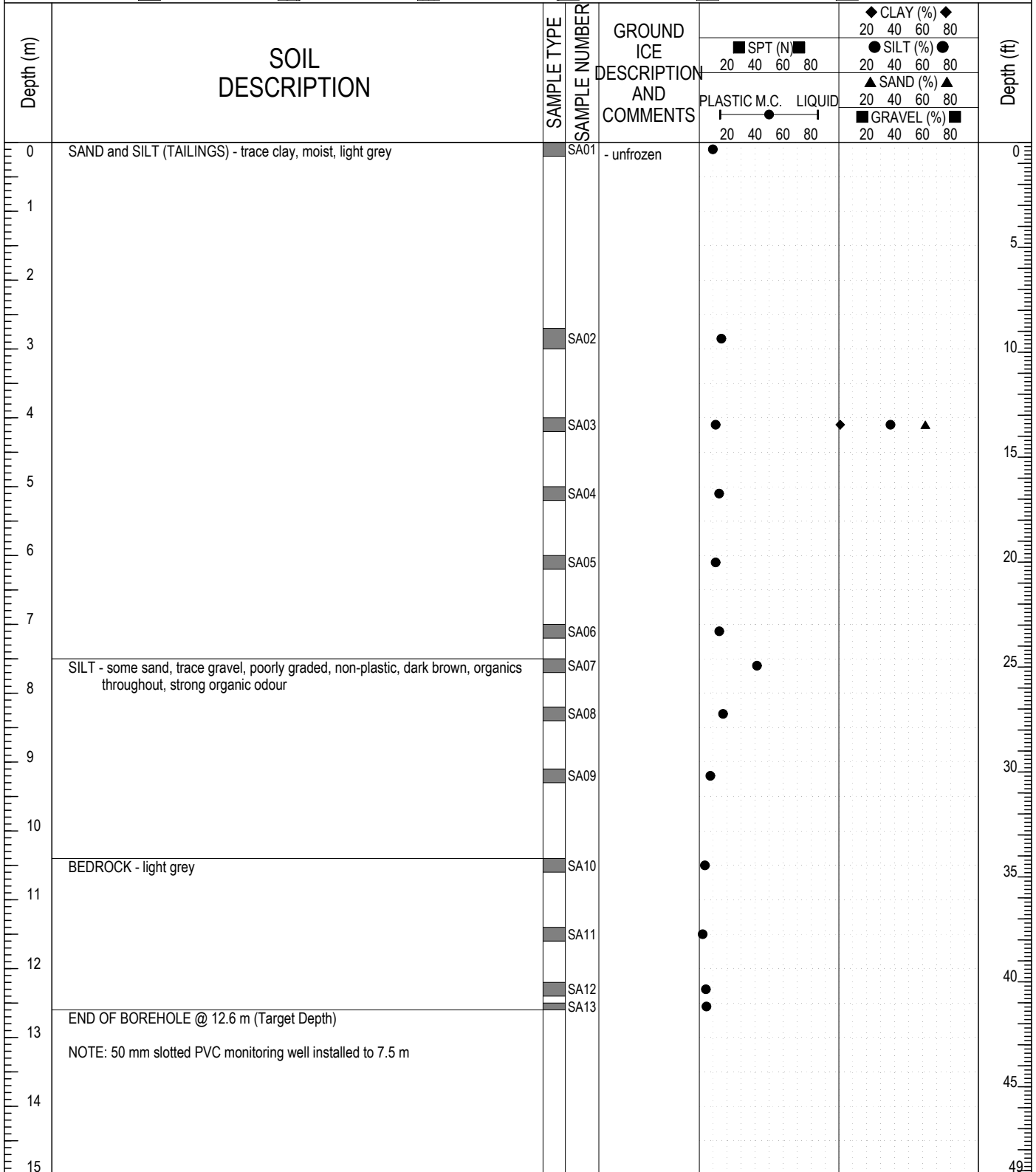
Reviewed By: _____ *[Signature]*


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Dry Stack Tailings Facility GTC Installation	CLIENT: Alexco Resource Corp. Ltd.	BOREHOLE NO: W14103025-BH39
Keno Hill District Mill Site	DRILL: Air Rotary (MS Driteltech)	PROJECT NO: W14103025-01
Keno City, YT	7086938N; 483973E; Zone 8	

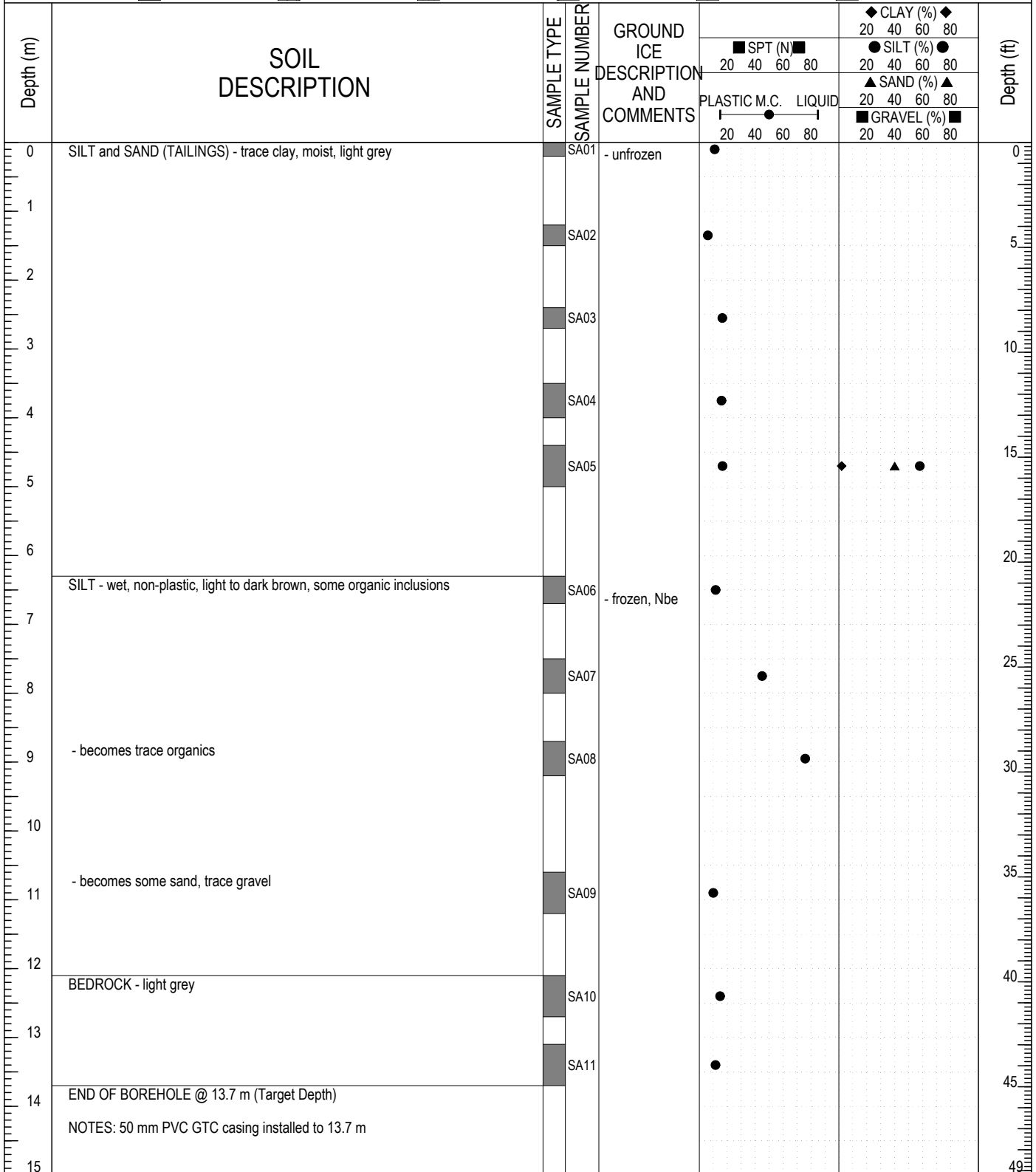
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BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND



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	REVIEWED BY: JTP	COMPLETE: 8/1/2012
	DRAWING NO:	Page 1 of 1

Dry Stack Tailings Facility GTC Installation	CLIENT: Alexco Resource Corp. Ltd.	BOREHOLE NO: W14103025-BH40
Keno Hill District Mill Site	DRILL: Air Rotary (MS Drlitech)	PROJECT NO: W14103025-01
Keno City, YT	7086944N; 483983E; Zone 8	

SAMPLE TYPE	<input type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

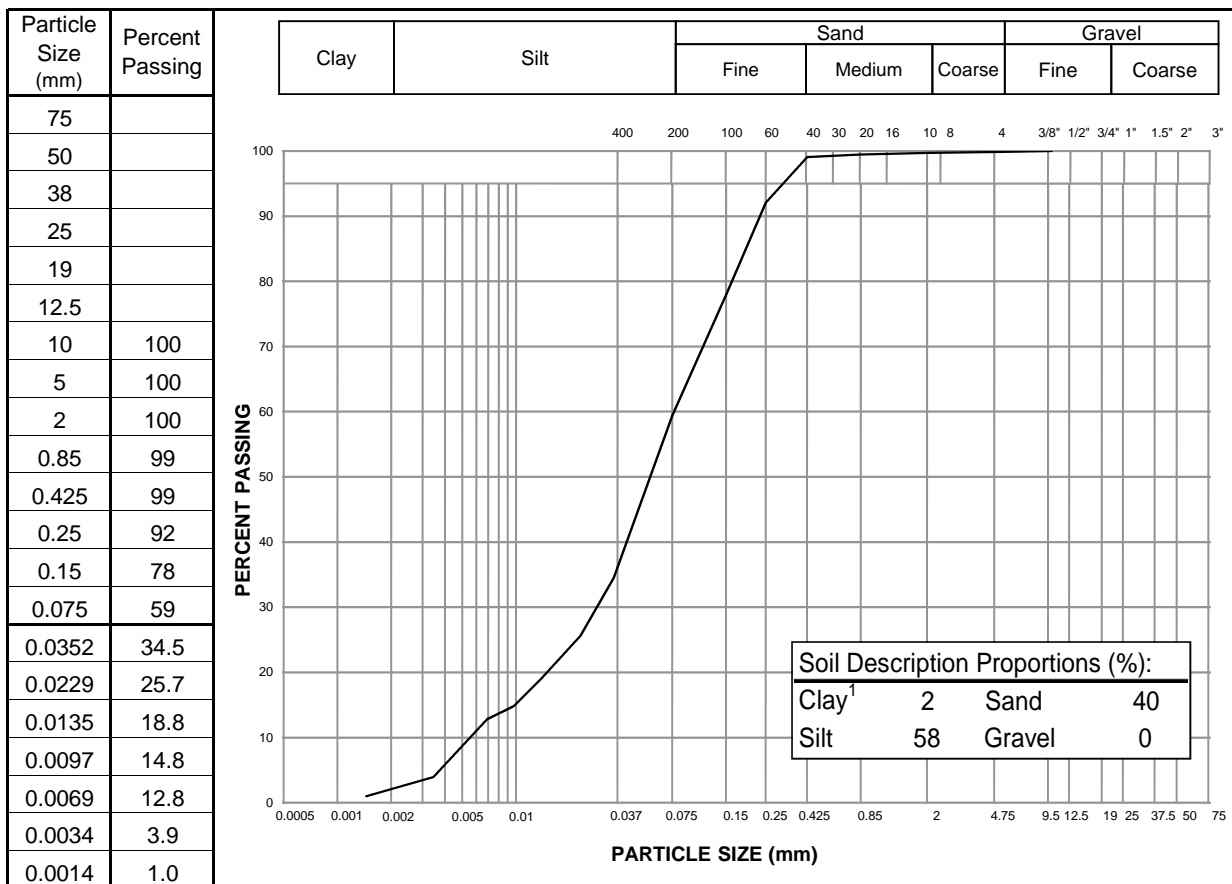


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	REVIEWED BY: JTP	COMPLETE: 8/2/2012
	DRAWING NO:	Page 1 of 1

PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project:	DSTF GTC Installation	Sample No.:	SA05
Project No.:	W14103025-01	Material Type:	Tailings
Site:	Keno Hill District Mill Site	Sample Loc.:	BH40
Client:	Alexco Resource Corp. Ltd.	Sample Depth:	4.4 - 5.0 m
Client Rep.:	Vanessa Benwood	Sampling Method:	Grab
Date Tested:	August 10, 2012	By:	SMS
Soil Description ² :	SILT and SAND - trace clay	Date sampled:	August 6, 2012
		Sampled By:	IM
		USC Classification:	Cu: 13.4
Moisture Content:	16.6%		Cc: 1.9



Notes: ¹ The upper clay size of 2 um, per the Canadian Foundation Engineering Manual
² The description is visually based & subject to EBA description protocols

Specification: _____

Remarks: _____

Reviewed By: *[Signature]*

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