



January 18, 2011

REPORT ON

Phase 1 - Tailings Investigation Giant Mine Remediation Project

Submitted to:

Northern Contaminated Sites, Western Region
Public Works and Government Services Canada
4th Floor Greenstone Building, 5101 – 50th Ave
P.O. Box 518
Yellowknife, NT X1A 2N4

REPORT



Project Number: 09-1427-0006/2100
AECOM Doc. No.: 7-R.014204.307-RPT-0001-
Rev0_20110118
GAL Doc. No.: 034

Distribution:

2 Copies - Public Works and Government Services Canada
1 Copy - Golder Associates (Edmonton)
2 Copies - Golder Associates (Burnaby)





Study Limitations

Golder Associates Ltd. (Golder) has prepared this document in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this document. No warranty, express or implied, is made.

This document, including all text, data, tables, plans, figures, drawings and other documents contained herein, has been prepared by Golder for the sole benefit of Public Works and Government Services Canada. It represents Golder's professional judgement based on the knowledge and information available at the time of completion. Golder is not responsible for any unauthorized use or modification of this document. All third parties relying on this document do so at their own risk.

The factual data, interpretations, suggestions, recommendations and opinions expressed in this document pertain to the specific project, site conditions, design objective, development and purpose described to Golder by Public Works and Government Services Canada, and are not applicable to any other project or site location. In order to properly understand the factual data, interpretations, suggestions, recommendations and opinions expressed in this document, reference must be made to the entire document.

This document, including all text, data, tables, plans, figures, drawings and other documents contained herein, as well as all electronic media prepared by Golder are considered its professional work product and shall remain the copyright property of Golder. Public Works and Government Services Canada may make copies of the document in such quantities as are reasonably necessary for those parties conducting business specifically related to the subject of this document or in support of or in response to regulatory inquiries and proceedings. Electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore no party can rely solely on the electronic media versions of this document.



Table of Contents

1.0 INTRODUCTION..... 1

2.0 PREVIOUS INVESTIGATIONS 2

 2.1 Tailings and Settling Pond Field Investigations, Giant Mine Yellowknife, NWT, Canada (SRK 2007) 2

3.0 FIELD PROGRAM 3

4.0 RESULTS 4

5.0 DISCUSSION..... 5

6.0 CLOSURE..... 6

FIGURES

Figure 1: Test Pit Locations at the Northwest Pond

Figure 2: Test Pit Locations at the North Pond

Figure 3: Test Pit Locations at South and Central Ponds

APPENDICES

APPENDIX A

Record of Test Pit Sheets

APPENDIX B

Test Pit Photos

APPENDIX C

Laboratory Test Results



1.0 INTRODUCTION

As part of the Giant Mine Remediation, Golder Associates Ltd. (Golder) undertook an investigation to supplement previous studies of the tailings pond facilities. The purpose of the investigation was to confirm conditions and further characterize the upper surface of the tailings ponds to assist in the Giant Mine Remediation Project.

This study, as well as previous investigation programs of the tailings ponds, is limited to the upper 6 m of the tailings, in areas that are accessible for mobile equipment. Thus, the areas of the ponds with permanently ponded water and the deeper areas of the ponds have not been investigated to date. It has been proposed to complete these investigations using auger drilling techniques in the winter of 2011.

The investigation included the advancement of test pits and collection of samples for laboratory testing. The following factual report details the findings of the investigation.



2.0 PREVIOUS INVESTIGATIONS

2.1 Tailings and Settling Pond Field Investigations, Giant Mine Yellowknife, NWT, Canada (SRK 2007)

A field investigation program of the tailings and settling ponds incorporating test pits, penetration and shear vane and Guelph permeameter testing, and drilling (within the settling pond) was completed. Laboratory testing included grain size, standard Proctor testing, specific gravity, constant head permeability, Atterberg limits, as well as triaxial, consolidation and geochemical testing of the sludge from the settling pond. For the tailings ponds, the investigation was limited to the upper surface of the tailings (generally 2 to 6 m depth), due to equipment restrictions and in areas accessible for the excavator.



3.0 FIELD PROGRAM

The geotechnical field investigation was completed in the Fall of 2010. The investigation consisted of a series of test pits advanced in the Northwest, North, Central and South tailings ponds to identify and characterize the materials present. A total of 11 test pits were advanced using a rubber-tired SK100W excavator provided and operated by Weatherby Trucking Ltd. The test pits were completed as follows:

- In the Northwest Tailings Pond, four test pits were advanced to depths ranging from 3.1 m to 3.5 m below ground level (m bgl);
- In the North Tailings Pond, two test pits were advanced to depths of 3.0 m and 3.1 m bgl;
- In the Central Tailings Pond, one test pit was advanced to a depth of 3.1 m bgl; and
- In the South Tailings Pond, three test pits were advanced to depths ranging from 1.9 m to 3.6 m bgl.

Test pits were generally advanced to the practical reach of the excavator which was limited by the soft tailings surface. Samples were collected for grain size testing at regular intervals and as necessary to distinguish stratigraphy. Select photographs of test pits are provided in Appendix B.

Prior to mobilization, the preferred locations of the test pits were identified based on the availability of information from previous investigations. Due to access restrictions at the time of the investigation and the limitations of the excavator equipment, several locations could not be investigated. The locations of each test pit are provided in Figures 1, 2, and 3.



4.0 RESULTS

Detailed descriptions of the subsurface conditions encountered in each of the test pits are presented in the Record of Test Pit sheets provided in Appendix A.

The stratigraphic boundaries shown on the Record of Test Pit sheets represent transitions between soil types rather than distinct lithological boundaries. It should be recognized that subsurface conditions often vary both with depth and laterally between individual test pit locations.

Laboratory testing consisted of wash sieves, to determine sand size and percent silt/clay sizes, primarily to confirm that the upper tailings material in areas not previously investigated was of similar grain size to that previously investigated.

Previous investigations within the tailings ponds indicated that the upper tailings materials were predominantly fine grained sands and silts. The distribution of sand sized particles ranged from 0% to 74% and silt sized particles ranged from 24% to 99% (SRK 2007). The particle size distribution testing completed on 16 samples collected during the supplemental investigation indicated sand sized particles from 0% to 86% and silt/clay sized particles from 14% to 100%. The results of the particle size distribution tests are provided in Appendix C and shown on the Record of Test Pit sheets.

Comparisons of visual descriptions for the SRK investigation and this investigation program are generally similar for each of the tailings ponds. There are minor variations in the visual descriptions provided for secondary and minor constituents. This may be attributed to the variability of the material or the methods of classification.

Frozen materials were not encountered in any of the test pits during this investigation. Comparison with findings of previous investigations indicates that the depth to frozen material likely exceeded the reach of the available excavator.

As discussed above, the flooded zones and the intermediate zones were not accessible with the available equipment or the equipment used during the previous investigations. As a result, limited information is available for the tailings in these areas.



5.0 DISCUSSION

Additional investigations will be required to adequately characterize and delineate the materials in the tailings ponds. Future investigations should be completed with equipment capable of reaching the base of the tailings deposits in the ponds. The use of amphibious capable equipment for accessing and working in soft, saturated and/or fully flooded areas may be worth consideration. Alternatively, investigations may be completed when the thickness of ice cover in the winter is capable of supporting heavy equipment.



6.0 CLOSURE

We trust the information presented in this report meets your present requirements. Should you have any questions or need further assistance regarding foundation design, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

Dave Caughill, P.Eng.
Associate, Senior Engineer

JPH/DC/JAH/rs

ORIGINAL SIGNED

John Hull, P.Eng.
Principal, Senior Engineer

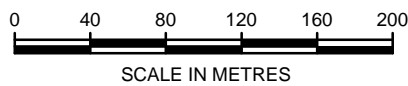
\\bur1-s-filesrv2\final\2009\1427\09-1427-0006\3. correspondence\2 issued documents\word\phase 2\doc 034 rep 0118_11\7-r.014204.307-rpt-0001-rev0_20110118.doc



LEGEND
 TEST PIT LOCATIONS (2010)

NOTES
 1. BATHYMETRIC CONTOURS SHOWN ARE IN METRES TO GMRP DATUM AT 2.5m INTERVALS.
 2. COORDINATES SHOWN ARE IN METRES GMRP GRID.

REFERENCES
 1. PWGSC, CAD FILE: GIANT MINE - CONTOURS (0.5m) - 2009 - GMRP.dwg, DATE RECEIVED: JANUARY 10, 2011
 2. PWGSC, CAD FILE: GiantMine_GRP.sid, DATE RECEIVED: JANUARY 10, 2011



PRELIMINARY
 NOT FOR CONSTRUCTION



DO NOT SCALE DRAWINGS

0	DESIGN COMPLETION	
Revision/Revision	Description/Description	Date/Date

Client/client
PUBLIC WORKS
GOVERNMENT SERVICES
CANADA

Project title/Titre du projet
GIANT MINE
REMEDICATION PROJECT
YELLOWKNIFE, N.W.T.

TAILINGS REHAB
TASK NO. 7

Approved by/Approuvé par
 D.C.

Designed by/Concept par
 M.R.

Drawn by/Dessiné par
 PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/
 Ressources Architectural et de Directeur d'Ingénierie, TPSGC

Client/client
 PWGSC

Drawing title/Titre du dessin
TEST PIT LOCATIONS
AT THE NORTHWEST POND

Project No./No. du projet
R.014204

Sheet/Feuille
FIGURE 1
 OF 3

Revision no./La Révision no.
0



LEGEND

TEST PIT LOCATIONS (2010)

NOTES

1. BATHYMETRIC CONTOURS SHOWN ARE IN METRES TO GMRP DATUM AT 2.5m INTERVALS.
2. COORDINATES SHOWN ARE IN METRES GMRP GRID.

REFERENCES

1. PWGSC, CAD FILE: GIANT MINE - CONTOURS (0.5m) - 2009 - GMRP.dwg, DATE RECEIVED: JANUARY 10, 2011
2. PWGSC, CAD FILE: GiantMine_GRP.sid, DATE RECEIVED: JANUARY 10, 2011

PRELIMINARY
NOT FOR CONSTRUCTION



DO NOT SCALE DRAWINGS

Revision/Revision	Description/Description	Date/Date
0	DESIGN COMPLETION	

Client/client
**PUBLIC WORKS
 GOVERNMENT SERVICES
 CANADA**

Project title/Titre du projet
**GIANT MINE
 REMEDIATION PROJECT
 YELLOWKNIFE, N.W.T.**

**TAILINGS REHAB
 TASK NO. 7**

Approved by/Approuvé par

Designed by/Concept par
D.C.

Drawn by/Dessiné par
M.R.

PWGSC Project Manager/Administrateur de Projets TPSGC

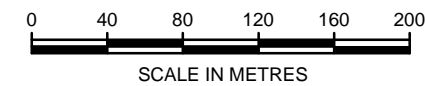
PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

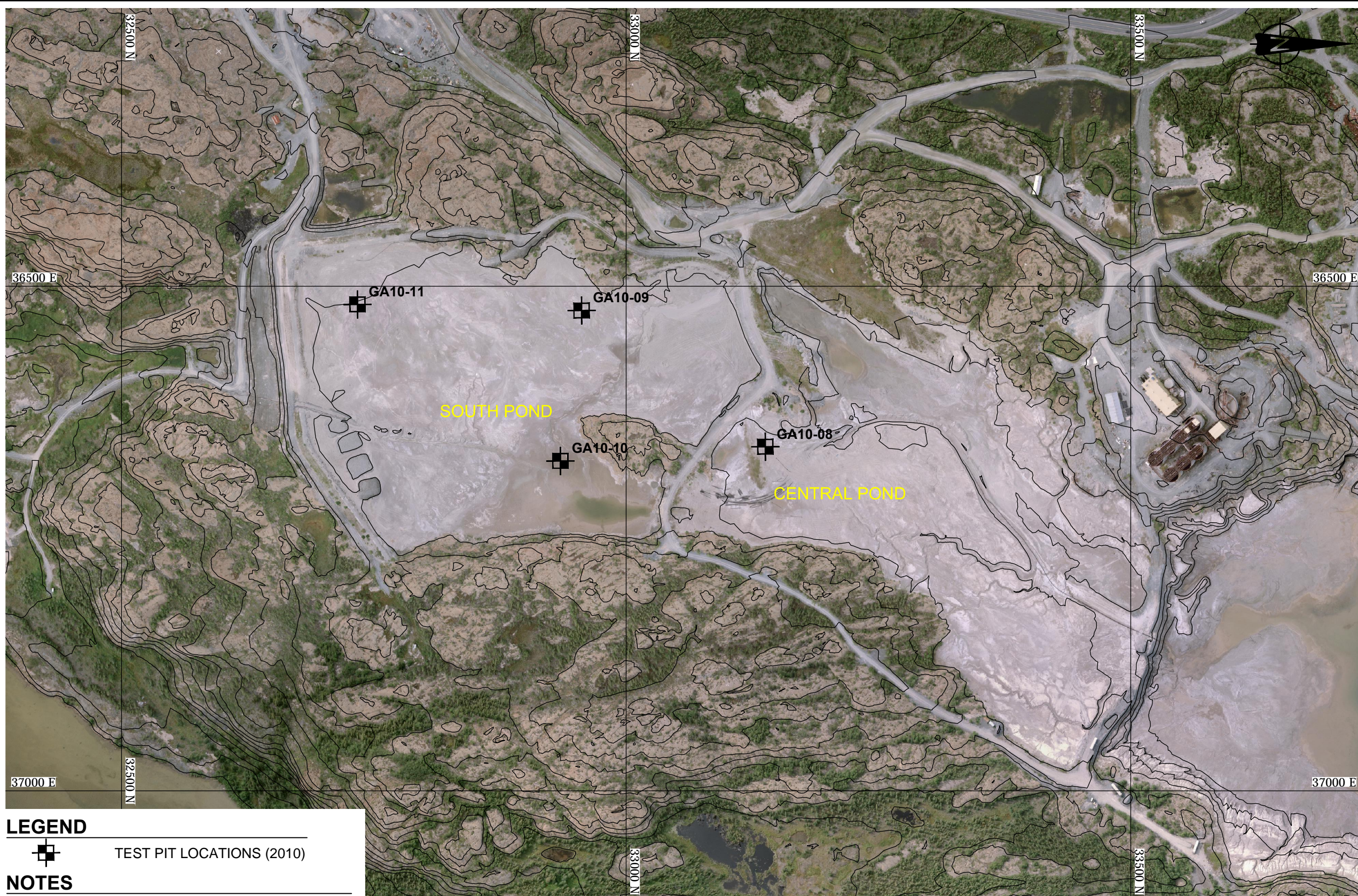
Client/client
PWGSC

Drawing title/Titre du dessin

**TEST PIT LOCATIONS
 AT THE NORTH POND**

Project No./No. du projet R.014204	Sheet/Feuille FIGURE 2 OF 3	Revision no./ La Révision no. 0
--	--	--





LEGEND
 TEST PIT LOCATIONS (2010)

NOTES
 1. BATHYMETRIC CONTOURS SHOWN ARE IN METRES TO GMRP DATUM AT 2.5m INTERVALS.
 2. COORDINATES SHOWN ARE IN METRES GMRP GRID.

REFERENCES
 1. PWGSC, CAD FILE: GIANT MINE - CONTOURS (0.5m) - 2009 - GMRP.dwg, DATE RECEIVED: JANUARY 10, 2011
 2. PWGSC, CAD FILE: GiantMine_GRP.sid, DATE RECEIVED: JANUARY 10, 2011

PRELIMINARY
 NOT FOR CONSTRUCTION



DO NOT SCALE DRAWINGS

Revision/Revision	Description/Description	Date/Date
0	DESIGN COMPLETION	

Client/client
**PUBLIC WORKS
 GOVERNMENT SERVICES
 CANADA**

Project title/Titre du projet
**GIANT MINE
 REMEDIATION PROJECT
 YELLOWKNIFE, N.W.T.**

**TAILINGS REHAB
 TASK NO. 7**

Approved by/Approuvé par

Designed by/Concept par
 D.C.

Drawn by/Dessiné par
 M.R.

PWGSC Project Manager/Administrateur de Projets TPSC

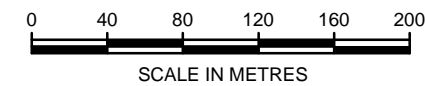
PWGSC, Architectural and Engineering Resources Manager/
 Ressources Architectural et de Directeur d'ingénierie, TPSC

Client/client
 PWGSC

Drawing title/Titre du dessin

**TEST PIT LOCATIONS
 AT SOUTH AND CENTRAL PONDS**

Project No./No. du projet R.014204	Sheet/Feuille FIGURE 3 OF 3	Revision no./ La Révision no. 0
--	--	--





APPENDIX A

Record of Test Pit Sheets

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-01

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 26, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6935365 E: 636121

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	10 ⁻⁶	10 ⁻⁵			10 ⁻⁴	10 ⁻³
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose, moist, grey, silty SAND (TAILINGS)			1	GS											
1		Loose to compact, wet, grey, SILT, little sand, trace clay (TAILINGS)		0.80													
2					2	GS											
3					3	GS											
3.10		End of TEST PIT.		3.10													
4		NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.															
5																	

9% Sand
91% Silt/Clay

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-02

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 26, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6934950 E: 635864

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³		nat V. + Q - ●				rem V. ⊕ U - ○	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose, moist, grey, silty SAND (TAILINGS)			1	GS											
1						2	GS										
2		Loose to compact, wet, grey, SILT and SAND, trace clay (TAILINGS)		2.30													
					3	GS											
3		End of TEST PIT.		3.10													
		NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.															
4																	
5																	

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-03

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 26, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6934516 E: 635839

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20		40		60				80	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose, moist, brown to grey, SILT and SAND (TAILINGS)			1	GS											
1																	
						2	GS										
2																	
		--- pockets of light grey silty SAND, trace to little clay from 2.4 m bgl			3	GS								45% Sand 55% Silt/Clay			
3																	
4																	
5																	
		End of TEST PIT. NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.		3.20													

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-05

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 27, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6934716 E: 636288

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	20	40	60	80	10 ⁻⁶	10 ⁻⁵			10 ⁻⁴
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00												
		Loose to compact, moist, brown to grey, silty SAND to SAND some silt, contains layers of brown SILT (TAILINGS)			1	GS										
1						2	GS									
2						3	GS									
3		Compact, moist, brown, sandy SILT (TAILINGS)		3.10												
					4	GS										
4		End of TEST PIT. NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.		3.50												
5																

86% Sand
14% Silt/Clay

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-06

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 27, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6934110 E: 637118

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. + rem V. ⊕ ⊙		Q - U				Wp	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose, moist, brown to grey, sandy SILT to SILT some sand, contains layers of brown SILT (TAILINGS)			1	GS									27% Sand 73% Silt/Clay		
1		Compact, moist, brown and grey, SILT, trace sand, trace clay (TAILINGS)		0.80												1% Sand 99% Silt/Clay	
2		Compact, moist to wet, brown and grey, SILT, trace sand, little clay (TAILINGS)		1.90											100% Silt/Clay		
3		End of TEST PIT.		3.00													
4		NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.															
5																	

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-07

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 27, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6934108 E: 637239

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+				Q - U	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose to compact, moist, brown to grey, SAND, some silt, contains layers of brown SILT (TAILINGS)															
1					1	GS											
2					2	GS											
3				3	GS												
3.10		End of TEST PIT. NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.															
4																	
5																	

85% Sand
15% Silt/Clay

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-08

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 27, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6933138 E: 636659

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20		40		60				80	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Compact, moist, brown to grey, silty SAND to SAND and SILT, contains layers of brown SILT (TAILINGS)			1	GS										56% Sand 44% Silt/Clay	
1						2	GS										
2						3	GS										
3		Compact, wet, brown to grey, SILT, trace sand, trace clay (TAILINGS)		2.90													
					4	GS									100% Silt/Clay		
4		End of TEST PIT. NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.		3.60													
5																	

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-09

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 28, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6932956 E: 636524

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+				Q - U	
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose to compact, moist, brown to grey, silty SAND, contains layers of brown SILT (TAILINGS)			1	GS											
1					2	GS										77% Sand 23% Silt/Clay	
2		--- increased moisture content			3	GS											
3		End of TEST PIT. NOTES: EOH at practical extent of excavator reach. No ponded water observed upon completion.		3.00													
4																	
5																	

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC

DATA ENTRY: JPH

PROJECT No.: 09-1427-0006

RECORD OF TEST PIT: GA10-10

SHEET 1 OF 1

LOCATION: See Location Plan

EXCAVATION DATE: October 28, 2010

DATUM: UTM Zone 11
(Nad 83)

N: 6932935 E: 636673

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20		40		60		80			10 ⁻⁶
0	SK100W Weatherby Trucking Ltd.	Ground Surface		0.00													
		Loose to compact, moist, brown to grey, SILT, some sand (TAILINGS)			1	GS										44% Sand 64% Silt/Clay	
1		Soft, brown, CLAYEY SILT (TAILINGS)		0.80													
		Loose to compact, moist, brown to grey, silty SAND, contains layers of brown SILT (TAILINGS)		1.10													
		Loose, wet, brown and grey, SILT, trace sand, trace clay (TAILINGS)		1.30												100% Silt/Clay	
				2	GS												
2		End of TEST PIT. NOTES: EOH due to extremely soft conditions under excavator.		1.90													
3																	
4																	
5																	

TESTPIT - EXP ADD LAB TESTING 09-1427-0006.GPJ GLDR_CAN.GDT 1/14/11

DEPTH SCALE

1 : 25



LOGGED: JPH

CHECKED: DC



APPENDIX B

Test Pit Photos



APPENDIX B

Tailings Test Pit Photographs



Photograph 1:

Test pit excavation pile from Northwest Tailings Pond.



Photograph 2:

Test pit excavation pile from North Tailings Pond.



Photograph 3:

Test pit excavation pile from Central Tailings Pond.



APPENDIX B

Tailings Test Pit Photographs



Photograph 4:

Test pit excavation pile from South Tailings Pond.

\\bur1-s-filesrv2\final\2009\1427\09-1427-0006\3. correspondence\2 issued documents\word\phase 2\doc 034 rep 0118_11\appendix b - tailings test pit photographs.docx



APPENDIX C

Laboratory Test Results

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Ltd.
500 - 4260 Still Creek Drive
Burnaby, British Columbia, V5C 6C6
Canada
T: +1 (604) 296 4200

