



INSPECTORATE

2014 PROJECT REPORT FOR METALLURGICAL TESTING ON SAMPLES FROM THE NEW DISCOVERY PROJECT

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1 SUMMARY

1.1 OBJECTIVE

A laboratory testing program was conducted on a composite ore sample collected by Dave Webb from the New Discovery project to determine its amenability to gold recovery via centrifugal gravity concentration followed by a comparison between direct cyanide leaching and sulphide flotation processes on the gravity tails.

The study covers the following major topics: head assay, gravity concentration at three grind sizes followed by; a) cyanide leaching on one half of the gravity tailings; b) rougher flotation kinetic assessment on the other half of the gravity tailings and; c) intensive cyanide leaching of the flotation concentrate. Environmental tests including ABA and SWEP tests were also run on the tailings products to evaluate their potential for acid generation and leaching of metal species.

1.2 CONCLUSIONS

- i) The New Discovery composite sample responded very well to gravity concentration, recovering 52.8% of the total gold in a single pass, in a concentrate Au grade of 11.5%.
- ii) The bottle-roll leach of the gravity test tails indicated gold extraction was 98.0% after 24hrs.
- iii) The gravity tails also responded very well to sulphide flotation, recovering 98.0% of the remaining gold in a concentrate representing 7.5% of the feed.
- iv) The intensive leaching of the combined rougher flotation concentrates resulted in a gold extraction of 99.1% in just 7 hours of leaching.

- v) The combined results of both gravity-flotation-intensive leaching and gravity-cyanidation process routes proved that >99% of the gold can be recovered in either case.
- vi) The tails grades from the cyanidation and flotation tests were 1.12 and 1.26 g/t Au, respectively. With the addition of the intensive leach residues to the flotation tails, it is expected that the combined tails grade from these tests to be about 2.0g/t Au.
- vii) The environmental tests suggest that the gravity-flotation process route will produce tailings that are unlikely to generate acid due to the removal of the majority of the sulphides, and produce lower levels of dissolved species in tails leachate when compared to the gravity-cyanidation method.

1.3 RECOMMENDATIONS

- i) It is recommended to pursue variability testing on samples from various areas of the ore deposit to gauge their metallurgical response to the chosen processing method.

2 INTRODUCTION

Inspectorate – Metallurgical Division was retained by Dr. Dave Webb to perform metallurgical testing on gold-bearing samples originating from the New Discovery project in the Yukon.

This report summarizes the laboratory test procedures and results of the scoping study, which involves:

- Head assay characterization;
- Comminution testing to measure the Bond Ball Mill Work Index (BWi) of the ore;
- Gravity separation tests at a grind size of P₈₀ 106 microns to determine if the coarse gold is recoverable;
- Baseline cyanide leaching tests over a 72 hour period on the gravity tailings;
- Rougher kinetic flotation to determine if a bulk sulphide float will recover the remaining precious metal content from the gravity tailings.
- Intensive cyanide leaching on the combined rougher flotation concentrates to evaluate this method of processing.
- Environmental testing including ABA and SWEP tests to evaluate the potential leaching behavior of the tailings products from both cyanide leaching and flotation processes.

3 DISCUSSION OF RESULTS

Various sub-topics will be addressed, as organized in the following sections. Details of the individual test results are presented in the appendices, and major findings only are highlighted in the text.

3.1 HEAD SAMPLE CHARACTERIZATION

A shipment consisting of four sample bags containing rock samples, with a total weight of 57.9 kg was received at Inspectorate's laboratory on November 25, 2013. A greywacke core sample labeled "GWK1" was also received as part of the test program to perform an ABA test separately.

The samples were received into inventory, air dried, combined into one composite, crushed, blended and split into the required sample aliquots for testing. The sample listing is presented in Appendix I.

Precious metal contents were determined for each composite by fire assay Au, Ag, Leco (S), ICP-MS30 and Whole Rock Analysis as shown in Tables 1, 2 and 3.

Table 1. Precious Metal Head Assays

Element	Unit	Assays	
		Comp 1	
Gold	Au	ppm	122.56
Silver	Ag	ppm	24.60
Sulphur (total)	S	%	1.40

Table 2. ICP-MS30 Head Assays

Element	Unit	Assays		Element	Unit	Assays	
		Comp 1	Comp 1			Comp 1	Comp 1
Aluminum	Al	%	1.11	Manganese	Mn	ppm	175
Antimony	Sb	ppm	<5	Molybdenum	Mo	ppm	5.0
Arsenic	As	ppm	81.0	Nickel	Ni	ppm	25.5
Barium	Ba	ppm	70.0	Phosphorus	P	ppm	59.0
Bismuth	Bi	ppm	9.5	Potassium	K	%	0.30
Cadmium	Cd	ppm	5.7	Scandium	Sc	ppm	4.0
Calcium	Ca	ppm	0.71	Sodium	Na	%	0.36
Chromium	Cr	ppm	235.5	Strontium	Sr	ppm	30.0
Cobalt	Co	ppm	19.0	Titanium	Ti	%	0.1
Copper	Cu	ppm	134.0	Thallium	Tl	ppm	<10
Iron	Fe	ppm	2.53	Tungsten	W	ppm	10.5
Lanthanum	La	ppm	<10	Vanadium	V	ppm	54.0
Lead	Pb	ppm	2284	Zinc	Zn	ppm	1321
Magnesium	Mg	%	0.82	Zirconium	Zr	ppm	8.5

Table 3. Whole Rock Analysis

Compound	Unit	Assays		Compound	Unit	Assays	
		Comp 1	Comp 1			Comp 1	Comp 1
Al ₂ O ₃	%	2.13		MnO	%	0.03	
BaO	%	0.01		Na ₂ O	%	0.49	
CaO	%	1.11		P ₂ O ₅	%	0.01	
Cr ₂ O ₃	%	0.04		SiO ₂	%	85.55	
Fe ₂ O ₃	%	3.86		TiO ₂	%	0.16	
K ₂ O	%	0.38		LOI	%	1.68	
MgO	%	1.41		Total	%	96.78	

3.2 TEST GRINDS

A set of three 2 kg samples of composite 1 were ground at 65% solids in a stainless steel rod mill for varying times from 11 to 25 minutes in order to establish a grind size versus time curve. These results are listed in Figure 1 below. These grind time estimates were used to target specific grind sizes throughout the testing campaign. Complete details are shown in Appendix III.

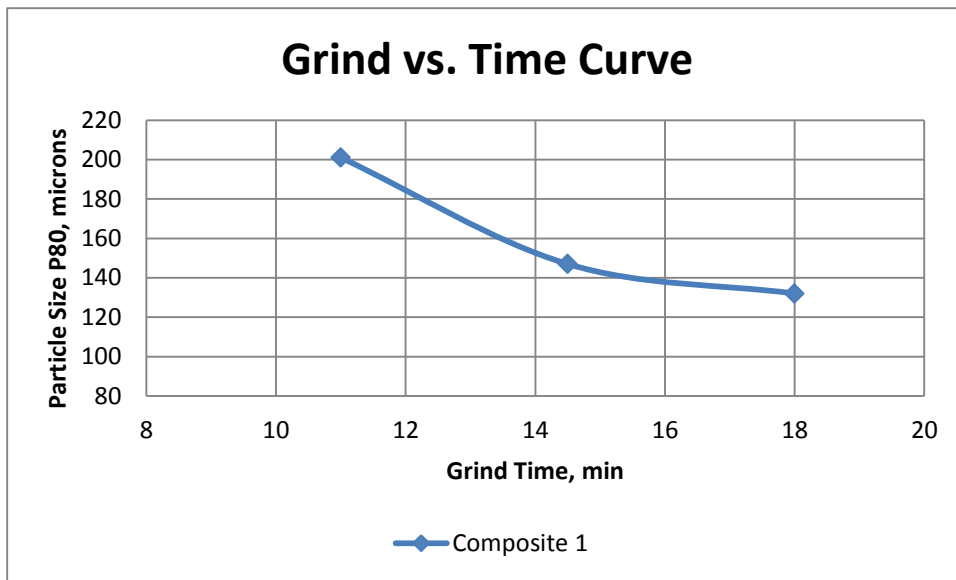


Figure 1. P₈₀ vs. Grind time for Composite 1

3.3 BOND BALL MILL WORK INDEX

A BWi test was completed on the composite sample using ~10kg of sample and a closing screen size of 150 µm.

The calculated ball mill work index for the New Discovery sample is **13.5 kWh/tonne**. The full results sheet is attached in Appendix II at the back of this report.

3.4 GRAVITY RECOVERY TEST

The centrifugal gravity test was carried out to evaluate the New Discovery sample's response to gravity concentration to recover gold at grind P₈₀ size of 106 µm. For this test, a 4 kg sample was slurried to 20% solids and fed through a 3" laboratory Knelson concentrator in two stages, as shown in the test flowsheet in Figure 2 below. The concentrates from both passes were panned and tails from the pans were combined with the Knelson tails. All 3 products were assayed for Au. The test details are available in Appendix II.

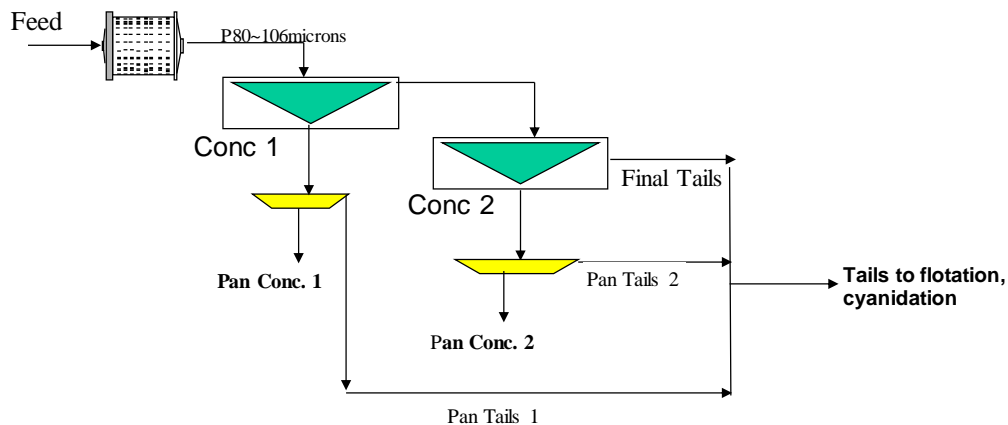


Figure 2. Single-Stage Gravity Separation Test with Panning

Table 4 outlines the results of the 2-stage gravity separation test.

Table 4. Gravity Test Summary for Au

Products	Weight		Assay (g/t) Au	Distribution (%) Au
	(g)	(%)		
Pan Concentrate 1	2.28	0.1	115099.90	52.8
Pan Concentrate 2	0.83	0.0	5038.13	0.8
Total Pan Concentrates	3.11	0.1	85750.09	53.6
Final Tails	3986.00	99.9	57.81	46.4
Calculated Head	3989.11	100.0	124.51	100.0
Measured Head			122.56	

The gravity concentration test shows that the first pass recovered most of the coarse gravity gold in a concentrate grade of 11.5% Au, representing 52.8% of the total gold. The ICP and WRA scans of the gravity test tails are shown in Tables 5 and 6 below.

Table 5. ICP-MS Analysis on Gravity Tails

Element	Unit	Assays		Element	Unit	Assays	
		Comp 1	Comp 1			Comp 1	Comp 1
Aluminum	Al	%	1.08	Manganese	Mn	ppm	214
Antimony	Sb	ppm	<5	Molybdenum	Mo	ppm	6.0
Arsenic	As	ppm	55.5	Nickel	Ni	ppm	226.5
Barium	Ba	ppm	74.5	Phosphorus	P	ppm	61.0
Bismuth	Bi	ppm	10.0	Potassium	K	%	0.30
Cadmium	Cd	ppm	6.3	Scandium	Sc	ppm	4.0
Calcium	Ca	ppm	0.69	Sodium	Na	%	0.33
Chromium	Cr	ppm	399.5	Strontium	Sr	ppm	25.0
Cobalt	Co	ppm	20.0	Titanium	Ti	%	0.1
Copper	Cu	ppm	134.5	Thallium	Tl	ppm	<10
Iron	Fe	ppm	2.43	Tungsten	W	ppm	13.0
Lanthanum	La	ppm	<10	Vanadium	V	ppm	45.0
Lead	Pb	ppm	2140	Zinc	Zn	ppm	1335
Magnesium	Mg	%	0.75	Zirconium	Zr	ppm	6.5

Table 6. Whole Rock Analysis on Gravity Tails

Compound	Unit	Assays	Compound	Unit	Assays
		Comp 1			Comp 1
Al ₂ O ₃	%	2.15	MnO	%	0.03
BaO	%	0.01	Na ₂ O	%	0.56
CaO	%	1.01	P ₂ O ₅	%	<0.01
Cr ₂ O ₃	%	0.06	SiO ₂	%	85.94
Fe ₂ O ₃	%	4.23	TiO ₂	%	0.15
K ₂ O	%	0.33	LOI	%	1.47
MgO	%	1.11	Total	%	96.97

3.5 CYANIDE LEACH TESTS ON GRAVITY TAILS

The purpose of the bottle-roll direct cyanide leach test was to evaluate gold extraction rates on a representative 2kg split of the gravity test tailings. The test was conducted over 72 hours in 1.0g/L NaCN with solution samples taken at 2, 4, 7, 24, 48 and 72 hours and assayed along with the leach residues for Au, from which a mass balance was completed for each test.

Cyanide leach results are summarized in Table 7 as well as Figure 3 below. Complete test details are provided in Appendix II.

Table 7. Cyanide Leach Test Summary

Test No	Sample ID	P80 µm	NaCN g/L	Meas. Head	Calc. Head	Recovery Au (%)	Residue Au (g/t)	Consumption (kg/t)	
				Au (g/t)	Au (g/t)			NaCN	Lime
GC1	G1 tails	95	1.0	57.8	59.1	98.1	1.12	1.65	0.31

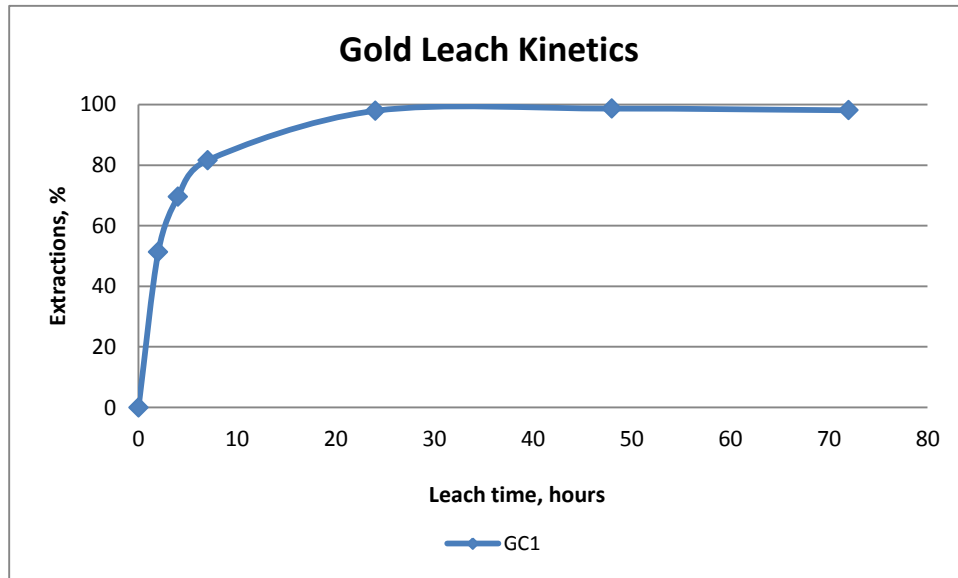


Figure 3. Cyanide Leach Kinetics for Au

The results show that maximum Au extraction of 98.0% was achieved just after 24 hours of leaching. The cyanide leach residue gold grade was 1.12g/t. The ICP and WRA of the cyanide leach residue are shown in Tables 8 and 9.

Table 8. ICP-MS Analysis on Cyanide Leach Tails

Element	Unit	Assays		Element	Unit	Assays	
		Comp 1	Comp 1			Comp 1	Comp 1
Aluminum	Al	%	1.07	Manganese	Mn	ppm	242
Antimony	Sb	ppm	<5	Molybdenum	Mo	ppm	8.5
Arsenic	As	ppm	60.0	Nickel	Ni	ppm	259.5
Barium	Ba	ppm	76.5	Phosphorus	P	ppm	73.5
Bismuth	Bi	ppm	9.0	Potassium	K	%	0.28
Cadmium	Cd	ppm	5.7	Scandium	Sc	ppm	4.0
Calcium	Ca	ppm	0.76	Sodium	Na	%	0.31
Chromium	Cr	ppm	710.0	Strontium	Sr	ppm	35.0
Cobalt	Co	ppm	23.5	Titanium	Ti	%	0.1
Copper	Cu	ppm	148.0	Thallium	Tl	ppm	<10
Iron	Fe	ppm	2.82	Tungsten	W	ppm	10.0
Lanthanum	La	ppm	<10	Vanadium	V	ppm	58.0
Lead	Pb	ppm	2168	Zinc	Zn	ppm	1470
Magnesium	Mg	%	0.75	Zirconium	Zr	ppm	8.0

Table 9. Whole Rock Analysis on Cyanide Leach Tails

Compound	Unit	Assays		Compound	Unit	Assays	
		Comp 1	Comp 1			Comp 1	Comp 1
Al ₂ O ₃	%	2.03		MnO	%	0.04	
BaO	%	0.01		Na ₂ O	%	0.52	
CaO	%	0.98		P ₂ O ₅	%	<0.01	
Cr ₂ O ₃	%	0.10		SiO ₂	%	85.17	
Fe ₂ O ₃	%	5.47		TiO ₂	%	0.15	
K ₂ O	%	0.34		LOI	%	1.60	
MgO	%	1.16		Total	%	97.45	

3.6 ROUGHER FLOTATION TESTS

A baseline rougher kinetic flotation test was conducted on the other 2kg split of the gravity test tails. Each of the four rougher stages was conducted over four minutes, and for a total of 16 minutes of flotation. The test was run at a natural pH, which varied from 6.1 to 7.9, using potassium amyl xanthate (PAX) and Aeropromoter 208 as collectors, along with frother methyl isobutyl carbinol (MIBC).

A summary of the test results is shown in Table 6 and Figure 4 below. The detailed procedure and mass balance can be found in Appendix II.

Table 10. Flotation Test Summary for Au

Product	Weight		Assay		Distribution	
	(g)	(%)	Au (g/t)	S (%)	Au (%)	S (%)
Rougher Concentrate 1	39.0	2.1	1292.40	8.41	47.4	12.2
Rougher Concentrate 2	43.0	2.3	1055.58	25.51	42.7	40.9
Rougher Concentrate 1+2	81.9	4.4	1168.22	17.38	90.1	53.1
Rougher Concentrate 3	37.7	2.0	190.89	19.97	6.8	28.0
Rougher Concentrate 1+2+3	119.6	6.4	860.51	18.19	96.8	81.1
Rougher Concentrate 4	20.6	1.1	58.91	7.90	1.1	6.1
Total Rougher Concentrate	140.2	7.5	742.71	16.68	98.0	87.2
Flotation Tailings	1721.9	92.5	1.26	0.20	2.0	12.8
Calculated Feed	1862.0	100.0	57.08	1.44	100.0	100.0
Measured Feed			57.81			

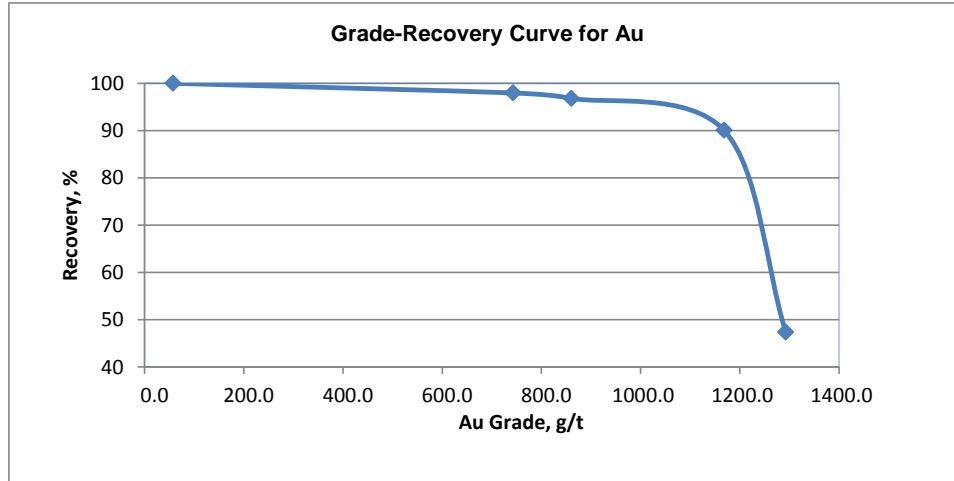


Figure 4. Flotation Grade-Recovery Curve

The results indicate that Composite 1 responded very well to sulphide flotation, with a maximum gold recovery of 98.0% achieved after 16 minutes. The concentrate grade produced was 742.7 g/t Au, in a mass pull of 7.5%. The flotation tails gold grade was 1.26 g/t.

The ICP and WRA scans of the rougher flotation tails are shown in Tables 11 and 12 below.

Table 11. ICP-MS Analysis on Flotation Tails

Element	Unit	Assays		Element	Unit	Assays	
		Comp 1				Comp 1	
Aluminum	Al	%	1.05	Manganese	Mn	ppm	197
Antimony	Sb	ppm	6.0	Molybdenum	Mo	ppm	7.0
Arsenic	As	ppm	13.0	Nickel	Ni	ppm	189.0
Barium	Ba	ppm	75.0	Phosphorus	P	ppm	68.0
Bismuth	Bi	ppm	<2	Potassium	K	%	0.30
Cadmium	Cd	ppm	<0.5	Scandium	Sc	ppm	3.0
Calcium	Ca	ppm	0.76	Sodium	Na	%	0.34
Chromium	Cr	ppm	357.0	Strontium	Sr	ppm	28.0
Cobalt	Co	ppm	7.0	Titanium	Ti	%	0.1
Copper	Cu	ppm	90.0	Thallium	Tl	ppm	<10
Iron	Fe	ppm	1.37	Tungsten	W	ppm	12.0
Lanthanum	La	ppm	<10	Vanadium	V	ppm	46.0
Lead	Pb	ppm	216	Zinc	Zn	ppm	98
Magnesium	Mg	%	0.70	Zirconium	Zr	ppm	7.0

Table 12. Whole Rock Analysis on Flotation Tails

Compound	Unit	Assays	Compound	Unit	Assays
		Comp 1			Comp 1
Al ₂ O ₃	%	2.08	MnO	%	0.03
BaO	%	0.01	Na ₂ O	%	0.71
CaO	%	1.04	P ₂ O ₅	%	0.01
Cr ₂ O ₃	%	0.05	SiO ₂	%	88.25
Fe ₂ O ₃	%	2.05	TiO ₂	%	0.15
K ₂ O	%	0.38	LOI	%	0.80
MgO	%	1.07	Total	%	96.56

3.7 INTENSIVE CYANIDE LEACH TEST ON FLOTATION CONCENTRATE

The purpose of the intensive cyanide leach tests was to simulate the gold extraction from the combined rougher flotation concentrates that would be possible through a commercial leach reactor. The results are summarized in Table 13 and Figure 5 below.

Table 13. Intensive Leach Test Summary

Test No	Sample ID	P80 µm	NaCN g/L	Meas. Head Au (g/t)	Calc. Head Au (g/t)	Recovery Au (%)	Residue Au (g/t)	Consumption (kg/t)	
								NaCN	Lime
CF1	Combined F1 Concentrates	n/a	20.0	742.7	753.1	98.6	10.42	31.68	0.75

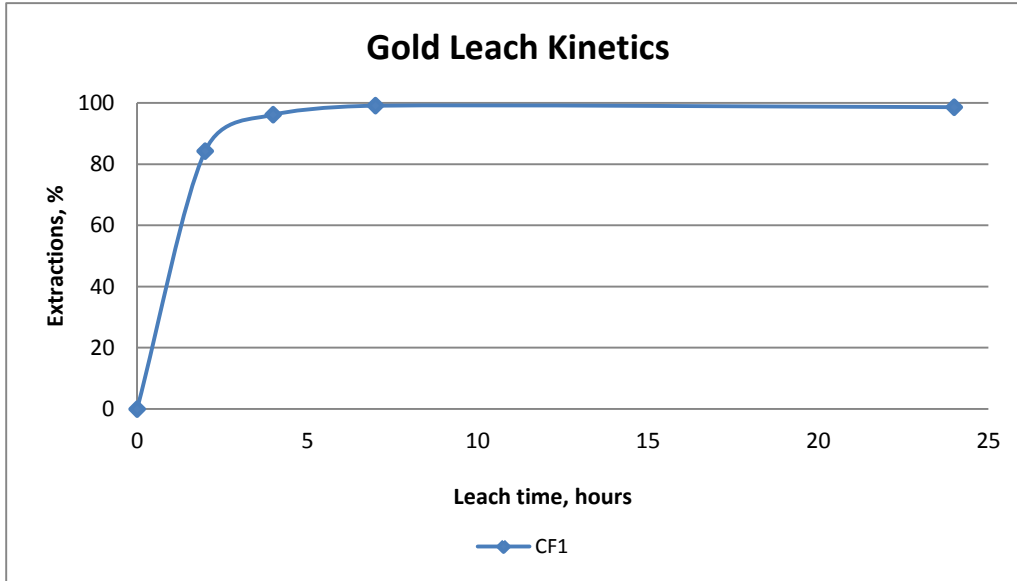


Figure 5. Intensive Leach Kinetics for Au

The intensive leach results show that Au extraction of 99.1% was achieved after just 7 hrs. The intensive leach residue gold grade was 10.4 g/t. With the addition of the intensive leach residues to the flotation tails, it is expected that the combined tails grade is about 2.0 g/t Au.

The cyanide consumption relative to plant feed was equivalent to about 2.2 kg/t. Complete test details are attached in Appendix II.

3.8 ENVIRONMENTAL TESTS

3.8.1 ABA TESTS ON TAILS PRODUCTS

Static ARD testing following the modified Sobek Acid-Base-Accounting (ABA) procedure was performed on both the cyanide leach test (GC-1) tailings and the flotation test (GF-1) tailings to evaluate the samples' acid generation characteristics. A third test was conducted on a separate sample identified as GWK-1, which was not part of the metallurgical test campaign. The results from all three samples are shown in Table 14 15 below. The full test reports are attached in Appendix II.

Table 14. ABA Test Summary on GC-1 Tails

Item	Sample ID	Total Sulfur S, %	Sulfate Sulfur S(SO4), %	Fizz Rating	Paste pH	Acid Potential kg CaCO ₃ /t	Neutralization Potential (NP)		
							Actual NP kg CaCO ₃ /t	NP/AP Ratio	Net kg CaCO ₃ /t
1	GC 1 Residue	1.39	0.07	None	5.6	41.3	12.2	0.3	- 29.1
1	F1 Flotation Tails	0.21	0.05	None	7.6	5.0	9.9	2.0	4.9
3	GWK 1	0.13	<0.01	None	9.6	4.1	11.0	2.7	7.0

Results are shown the GC-1 residue has a relatively high acid generating potential, whereas the flotation tails are quite neutral. This is to be expected due to the significantly lower sulphur levels in the flotation tails. The GWK-1 samples also exhibited a low acid generating potential.

3.8.2 SWEP TESTS ON TAILS PRODUCTS

Special Waste Extraction Procedure (SWEP) testing was completed on the GC-1 and GF-1 tails products following the standard (low pH) and modified (neutral pH) methods to evaluate natural leaching characteristics. The resulting leachate ICP scans are shown in Table 15.

Table 15. SWEP Test Leachate Analysis

Items	Unit	Sample ID				Method
		SWEP-01 Leachate (GC 1 Residue)	SWEP-02 Leachate (F1 Flotation Tails)	Modified SWEP-01 Leachate (GC 1 Residue)	Modified SWEP-02 Leachate (F1 Flotation Tails)	
pH		5.11	5.16	8.04	8.24	Env
<u>Dissolved</u>						
Ag	mg/L	<0.00006	<0.00006	<0.00006	<0.00006	ICPMS
Al	mg/L	0.07	0.08	0.04	<0.04	ICPMS
As	mg/L	<0.05	<0.05	<0.05	<0.05	ICPMS
B	mg/L	<0.01	<0.01	<0.01	<0.01	ICPMS
Ba	mg/L	0.198	0.079	0.018	0.008	ICPMS
Be	mg/L	<0.005	<0.005	<0.005	<0.005	ICPMS
Bi	mg/L	<0.001	<0.001	<0.001	<0.001	ICPMS
Ca	mg/L	98.54	78.84	18.81	11.12	ICPMS
Cd	mg/L	0.00518	0.00457	<0.00009	<0.00009	ICPMS
Co	mg/L	0.020	0.006	<0.001	<0.001	ICPMS
Cr	mg/L	<0.01	<0.01	0.01	<0.01	ICPMS
Cu	mg/L	<0.01	0.75	<0.01	0.01	ICPMS
Fe	mg/L	0.54	0.91	<0.03	<0.03	ICPMS
Hg	mg/L	<0.0001	0.0003	0.0002	0.0001	ICPMS
K	mg/L	<2	2	<2	<2	ICPMS
Li	mg/L	<0.007	<0.007	<0.007	<0.007	ICPMS
Mg	mg/L	9.2	7.7	0.6	0.7	ICPMS
Mn	mg/L	1.562	1.428	0.049	0.016	ICPMS
Mo	mg/L	<0.02	<0.02	<0.02	<0.02	ICPMS
Na	mg/L	2	<2	2.00	<2	ICPMS
Ni	mg/L	0.05	0.05	<0.03	<0.03	ICPMS
Pb	mg/L	3.71	0.42	<0.07	<0.07	ICPMS
Sb	mg/L	0.0003	0.0013	0.0005	0.0004	ICPMS
Se	mg/L	<0.002	<0.002	0.020	0.005	ICPMS
Sc	mg/L	0.001	0.001	0.001	0.001	ICPMS
Si	mg/L	1.07	1.01	0.26	0.46	ICPMS
Sn	mg/L	<0.002	<0.002	<0.002	<0.002	ICPMS
Sr	mg/L	0.097	0.059	0.042	0.018	ICPMS
Ti	mg/L	<0.01	<0.01	<0.01	<0.01	ICPMS
Tl	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	ICPMS
V	mg/L	0.019	0.019	<0.007	<0.007	ICPMS
Zn	mg/L	0.78	0.39	<0.02	<0.02	ICPMS

The results indicate that the flotation tails sample generally produced lower levels of dissolved species in solution versus the cyanide leach tails.

4 CONCLUSIONS AND RECOMMENDATIONS

The New Discovery composite sample responded very well to gravity concentration, recovering 52.8% of the total gold in a single pass, in a concentrate Au grade of 11.5%.

The bottle-roll leach of the gravity test tails indicated gold extraction was >98% after 72hrs. The leach kinetics indicated that maximum extraction occurred in about 24hrs.

The gravity tails also responded very well to sulphide flotation, with a gold recovery of 98.0% attained on the gravity test tails.

The intensive leaching of the combined rougher flotation concentrates resulted in a gold extraction of 99.1% in just 7 hours of leaching.

The combined results of both gravity-flotation-intensive leaching and gravity-cyanidation process routes proved that >99% of the gold can be recovered in either case. The tails grades from the cyanidation and flotation tests were 1.12 and 1.26 g/t Au, respectively. With the addition of the intensive leach residues to the flotation tails, it is expected that the combined tails grade from these tests to be about 2.0g/t Au.

The environmental tests suggest that the gravity-flotation process route will produce tailings that are unlikely to generate acid due to the removal of the majority of the sulphides, and produce lower levels of dissolved species in tails leachate. This process also has the advantage of greatly reduced solids contact with cyanide, which can significantly reduce the capital and operating costs involved with destroying cyanide in the final tails.

It is recommended to pursue variability testing on samples from various areas of the ore deposit to gauge their metallurgical response to the chosen processing method.

**METALLURGICAL TESTING OF SAMPLES FROM THE
NEW DISCOVERY PROPERTY**

APPENDIX I

SAMPLE RECEIVING AND PREPARATION LOG

	Page
Sample Description	1
Sample Receiving Logs	2

Sample Description:

A shipment consisting of four sample bags containing rock samples, with a total weight of 57.9 kg was received at Inspectorate's laboratory on November 25, 2013. A greywacke core sample labeled "GWK1" was also received as part of the test program to perform an ABA test separately.

The samples were received into inventory, air dried, combined into one composites, crushed, blended and split into the required samples aliquots for testing.

The receiving log sheets are attached on page 2.

SAMPLE RECEIVING LOG SHEET

Receiving Date: 25-Nov-13	Project No: 1306111
Carrier: N/A	Client: Dave Webb
Receiver:	Page: 1

Count	Sample Label	Container Type	Sample Type (C, R, P, Sl, S)	Wet /Dry	Top Size	Weight (kg)
1	#1	Rice Bag	R		5"	15.8
2	#2	Rice Bag	R		5"	17.0
3	#3	Rice Bag	R		5"	13.8
4	#4	Rice Bag	R		5"	11.3
5	GWK1 (in bag #4)	Plastic bag	C		1"	1.3
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

59.2

Location:

Note :

Core, Rock, Pulp, Slurry, Solution

**METALLURGICAL TESTING OF SAMPLES FROM THE
NEW DISCOVERY PROPERTY**

APPENDIX II

TEST RESULTS and BALANCES

Test	Comp.	Data	Page
BI-1	1	Bond Ball Mill (BWi) Test	1
G1	1	Centrifugal Gravity Concentration Metallurgical Balance	2
GC-1	1	Cyanide Leaching Metallurgical Balance	3
GF-1	1	Flotation – Metallurgical Balance Testing Parameters	4 5
CF-1	1	Cyanide Leaching Metallurgical Balance	6
ABA1,2	1	ABA Metallurgical Test Results	7
ABA 3	GWK-1	ABA Metallurgical Test Results	8

BOND MILL GRINDABILITY TEST REPORT

1

Client: Dave Webb
 Test: BI-1
 Sample: Composite 1

Date: 19-Dec-13
 Project: 1306111

TEST CONDITIONS

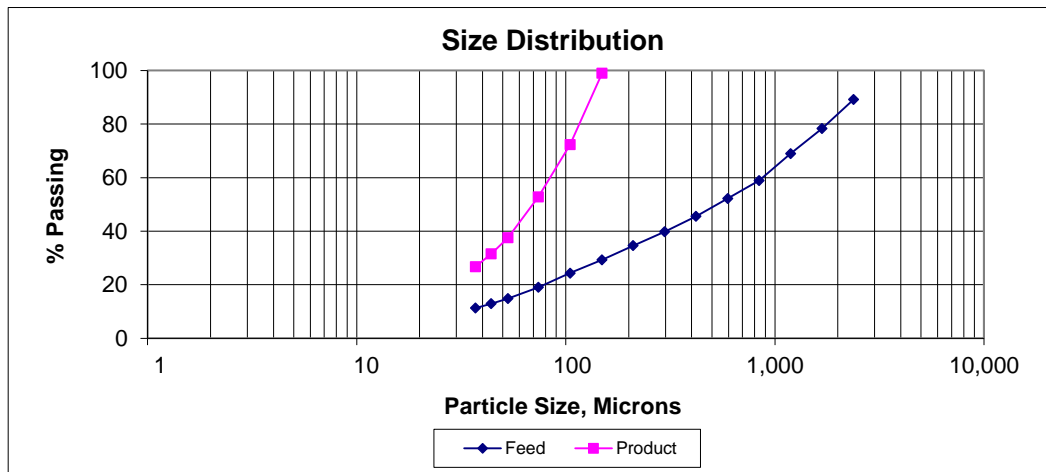
Cycle	Oversize Wt. grams	Product Wt. grams	Feed Undersize grams	Net Product grams	Product per Rev. grams/rev.	Required Rev. rev.
1	864.55	488.85	396.60	92.25	0.9225	100
2	765.26	588.14	143.25	444.89	1.6852	264
3	958.68	394.72	172.35	222.37	1.7509	127
4	933.52	419.88	115.67	304.21	1.9626	155
5	985.20	368.20	123.04	245.16	1.8295	134
6	961.56	391.84	107.90	283.94	1.8680	152
7	964.18	389.22	114.83	274.39	1.8794	146

SIZE ANALYSIS

Sieve Size		% Passing	
Tyler mesh	µm	Feed	Product
8	2,380	89.2	
10	1,680	78.3	
14	1,190	69.0	
20	841	58.9	
28	595	52.2	
35	420	45.5	
48	297	39.8	
65	210	34.6	
100	149	29.3	99.0
150	105	24.3	72.3
200	74	19.1	52.8
270	53	14.8	37.6
325	44	12.9	31.5
400	37	11.3	26.7

TEST RESULTS

Material Charge Wt.-700 mL(g) = 1,353.4
 Test Screen (µm) = 149
 Undersize in Feed (%) = 29.30
 Circulating Load (%) = 248
 Gbp (ave.) = 1.87
 Product P₈₀ (µm) = 118
 Feed F₈₀ (µm) = 1,779
W (kWh/ton) = 12.3
W (kWh/tonne) = 13.5



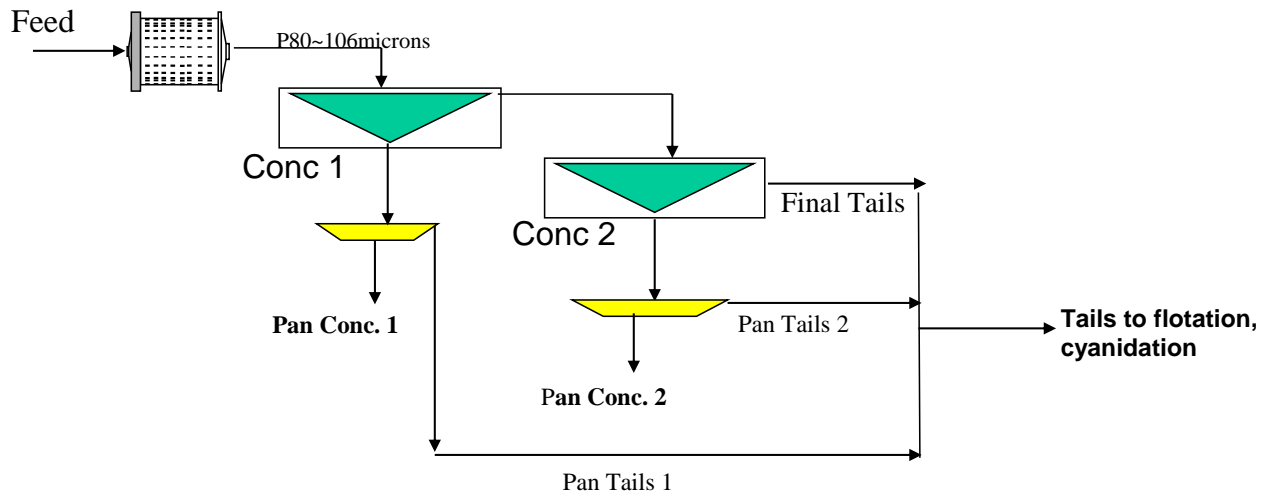
GRAVITY CONCENTRATION TEST REPORT

Client: Dave Webb
Test: G1
Sample: Composite 1

Date: 12-Dec-13
Project: 1306111

Objective: To determine gold recovery by gravity on sample ground to target P80 of 106 microns

Products	Weight		Assay (g/t) Au	Distribution (%) Au
	(g)	(%)		
Pan Concentrate 1	2.28	0.1	115099.90	52.8
Pan Concentrate 2	0.83	0.0	5038.13	0.8
Total Pan Concentrates	3.11	0.1	85750.09	53.6
Final Tails	3986.00	99.9	57.81	46.4
Calculated Head	3989.11	100.0	124.51	100.0
Measured Head			122.56	



CYANIDATION TEST REPORT

3

Client: Dave Webb
Test: GC1
Sample: G1 tails

Date: 19-Dec-13
Project: 1306111

Objective: 72 hours bottle roll cyanide leach in 1 g/L NaCN on G1 tails

TEST CONDITIONS

Solids: 1,997 g
 Solution: 3,000 g
 Solids: 40 %
 Grind Size - P₈₀: 95 µm
 Initial NaCN: 1.0 g/L
 Target pH: 10.5
 Test Duration: 72 hours

TEST DESCRIPTION

- repulped to 40% solids
- adjusted to and maintained pH 10.5 with hydrated lime
- adjusted to and maintained at 1.0g/L NaCN
- sampled at 2, 4, 7, 24 and 48 hours
- test ended after 72 hours
- filtered and displacement washed with hot cyanide solution followed by two hot water displacement washes
- solution and solids assayed for Au content

HEAD GRADE

Au

Calculated Total: 59.1 g/t
 Measured Total: 57.8 g/t

LEACH TEST DATA

Time (hours)	NaCN		Lime (g)	pH		dO ₂ (mg/L)	Slurry Weight (g)	Solution				
	(g/L)	(g)		before	after			Vol. (mL)	Assay Vol. (mL)	Au (mg/L) (mg)		
0	1.00	3.00	0.62	7.1	10.9		5,000	3,003				
2	0.94	0.18		11.2			4,996	2,999	30	20.22	60.6	
4	0.94	0.18		11.1		6.2	5,000	3,003	30	27.16	82.2	
7	0.92	0.24		11.0			4,998	3,001	30	31.66	96.4	
24	0.80	0.60		11.0		7.4	4,986	2,989	30	37.9	115.7	
30	0.90	0.30		11.0					5			
48	0.72	0.84		11.0		7.3	4,996	2,999	30	37.64	116.6	
54	0.90	0.30		11.1					5			
72	0.78			11.1		7.6	5,010	3,013		36.81	115.9	
Total		5.64	0.62									

SOLIDS

Time (hours)	Total Residue		
	Weight (g)	Au (g/t) (mg)	
72	1,997	1.12	2.23

CYANIDATION RESULTS

Time (hours)	Distribution	Reagent Consumption		Reducing Power
	Au (%)	NaCN (kg/t)	Ca(OH) ₂ (kg/t)	0.1 N KMnO ₄ /L (mL)
2	51.3	0.09		
4	69.5	0.18		
7	81.6	0.30		
24	97.9	0.61		
48	98.7	1.17		
72	98.1	1.65	0.31	75
Residue	1.9			
Total	100.0			

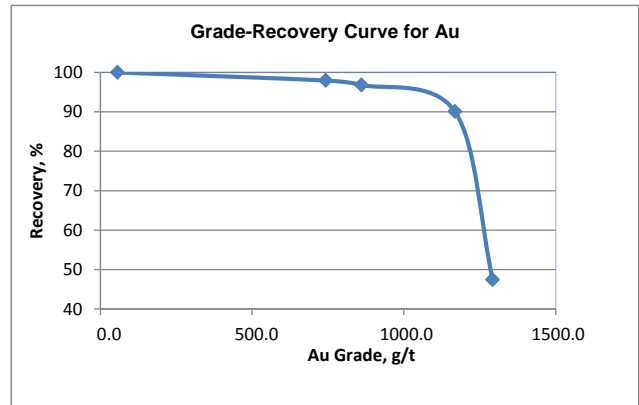
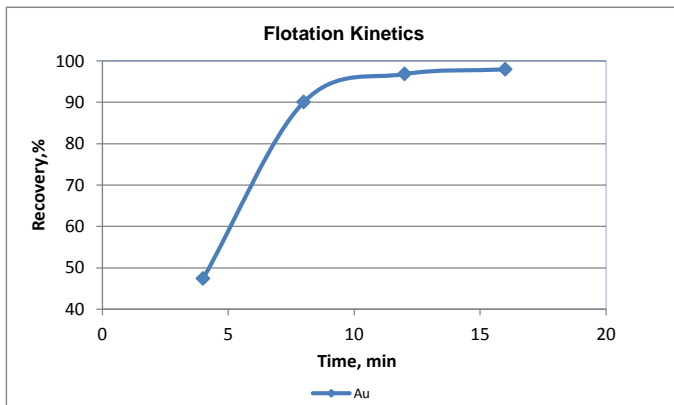
Client: Dave Webb
Test: F1
Sample: Composite 1 Gravity Tailings G1

Date: 19-Dec-13
Project: 1306111
Operator: BB

Objective: Baseline rougher kinetic flotation test on G1 combined Knelson tails to investigate gold recovery

Flotation Balance

Product	Weight		Assay		Distribution	
	(g)	(%)	Au (g/t)	S (%)	Au (%)	S (%)
Rougher Concentrate 1	39.0	2.1	1292.40	8.41	47.4	12.2
Rougher Concentrate 2	43.0	2.3	1055.58	25.51	42.7	40.9
Rougher Concentrate 1+2	81.9	4.4	1168.22	17.38	90.1	53.1
Rougher Concentrate 3	37.7	2.0	190.89	19.97	6.8	28.0
Rougher Concentrate 1+2+3	119.6	6.4	860.51	18.19	96.8	81.1
Rougher Concentrate 4	20.6	1.1	58.91	7.90	1.1	6.1
Total Flotation Concentrate	140.2	7.5	742.71	16.68	98.0	87.2
Flotation Tailings	1721.9	92.5	1.26	0.20	2.0	12.8
Calculated Feed	1862.0	100.0	57.08	1.44	100.0	100.0
Measured Feed			57.81			



FLOTATION TEST PROCEDURE

Client: Dave Webb
Test: F1
Sample: Composite 1 Gravity Tailings G1

Date: 12-Dec-13
Project: 1306111

Objective: Baseline rougher kinetic flotation test on G1 combined Knelson tails to investigate gold recovery

Stage	Reagent (g/t)				Time, minutes			pH	Comments
	PAX	A208	CuSO4	MIBC	Grind	Cond.	Float		
G1 Tails								7.2	Starting dry weight: 1915 g
					N/A				
ROUGHER FLOTATION			250			3		6.1	
Condition 1	25	25				2			at natural pH
Rougher Float 1				8			4.0	7.0	Brown/greyish color froth, thick & consistent
Condition 2	25	25				1			
Rougher Float 2				3			4.0	7.4	Similar to Ro. Float 1
Condition 3	25	25				1			
Rougher Float 3				-			4.0	7.7	
Condition 4	25	25				1			
Rougher Float 4				-			4.0	7.9	
									Assay products for: Au, S
									Combine cons 1-4, assay for ICP-MS-50
									Assay final tails for WRA, ICP-AES
TOTAL REAGENTS ADDITION	100	100		12					

Flotation Stage	Cell Size (L)	RPM	Air Rate, L/min
Rougher	5	1700	10

Observations (settling filtration)

Final Tail Good

Final Conc

Water Source & temp. = Municipal Potable 19 °C

CYANIDATION TEST REPORT

6

Client: Dave Webb
Test: CF1
Sample: Combined F1 Concentrates

Date: 6-Jan-14
Project: 1306111

Objective: to recover gold from combined F1 concentrates by intensive cyanide leaching

TEST CONDITIONS

Solids: 80 g
 Solution: 246 g
 Solids: 25 %
 Grind Size - P₈₀: n/a µm
 Initial NaCN: 20.0 g/L
 Target pH: 10.5
 Test Duration: 24 hours

TEST DESCRIPTION

- repulped to 25% solids
- adjusted to and maintained pH 10.5 with hydrated lime
- adjusted to and maintained at 20.0g/L NaCN
- sampled at 2, 4 and 7 hours
- at each sampling time dO₂ increased by H₂O₂ addition to 42mg/L
- test ended after 24 hours
- filtered and displacement washed with hot cyanide solution followed by two hot water displacement washes
- solution and solids assayed for Au content

HEAD GRADE

Au

Calculated Total: 753.1 g/t
 Measured Total: 742.7 g/t

LEACH TEST DATA

Time (hours)	NaCN		Lime (g)	pH		dO ₂ (mg/L)	H ₂ O ₂ added (ml)	Slurry Weight (g)	Solution				
	(g/L)	(g)		before	after				Vol. (mL)	Assay Vol. (mL)	Au (mg/L) (mg)		
0	20.00	4.92	0.06	7.6	10.5	1.9		328	248				
2	18.20	0.44		11.8		7.4	0.8	330	250	30	204.43	51.03	
4	17.08	0.72		11.5		8.9	0.6	328	248	30	210.30	58.21	
7	17.40	0.64		11.5		8.8	0.6	328	248	30	192.02	59.99	
24	16.08			11.8		8.8		340	260		159.86	59.70	
Total		6.72	0.06										

SOLIDS

Time (hours)	Weight (g)	Total Residue	
		Au (g/t)	(mg)
24	80	10.42	0.84

CYANIDATION RESULTS

Time (hours)	Distribution	Reagent Consumption		Reducing Power
	Au (%)	NaCN (kg/t)	Ca(OH) ₂ (kg/t)	0.1 N KMnO ₄ /L (mL)
2	84.3	4.69		
4	96.1	14.10		
7	99.1	22.05		
24	98.6	31.68	0.75	335
Residue	1.4			
Total	100.0			

ACID BASE ACCOUNTING TEST REPORT

7

Modified Method

Client: Dave Webb
Test: Modified ABA
Sample: As per id

Date: 13-Jan-14
Project: 1306111

Item	Sample ID	Total Sulfur S, %	Sulfate Sulfur S(SO4), %	Fizz Rating	Paste pH	Acid Potential kg CaCO ₃ /t	Neutralization Potential (NP)		
							Actual NP kg CaCO ₃ /t	NP/AP Ratio	Net kg CaCO ₃ /t
1	GC 1 Residue	1.39	0.07	None	5.6	41.3	12.2	0.3	- 29.1
2	F1 Flotation Tails	0.21	0.05	None	7.6	5.0	9.9	2.0	4.9

ACID BASE ACCOUNTING TEST REPORT

8

Modified Method

Client: Dave Webb
Test: Modified ABA
Sample: GWK 1

Date: 31-Jan-14
Project: 1306111

Item	Sample ID	Total Sulfur	Sulfate Sulfur	Fizz	Paste	Acid Potential	Neutralization Potential (NP)		
		S, %	S(SO4), %	Rating	pH	kg CaCO ₃ /t	Actual NP kg CaCO ₃ /t	NP/AP Ratio	Net kg CaCO ₃ /t
1	GWK 1	0.13	<0.01	None	9.6	4.1	11.0	2.7	7.0
2	DUP GWK 1	0.14	<0.01	None	9.6	4.4	11.5	2.6	7.1

**METALLURGICAL TESTING OF SAMPLES FROM THE
NEW DISCOVERY PROPERTY**

APPENDIX III

SIZE ANALYSIS DATA

Test	Composite	Product	P₈₀ (µm)	Page
GF1	1	GF1 Tails	94	1

Test Grinds

Test	Composite	Product	Grind Time (min:sec)	P₈₀ (µm)	Page
TG 1	1	Feed	11:00	201	2
TG 2	1	Feed	14:30	147	3
TG 3	1	Feed	18:00	132	4

SIZE ANALYSIS REPORT

Client: Dave Webb
Test: F1

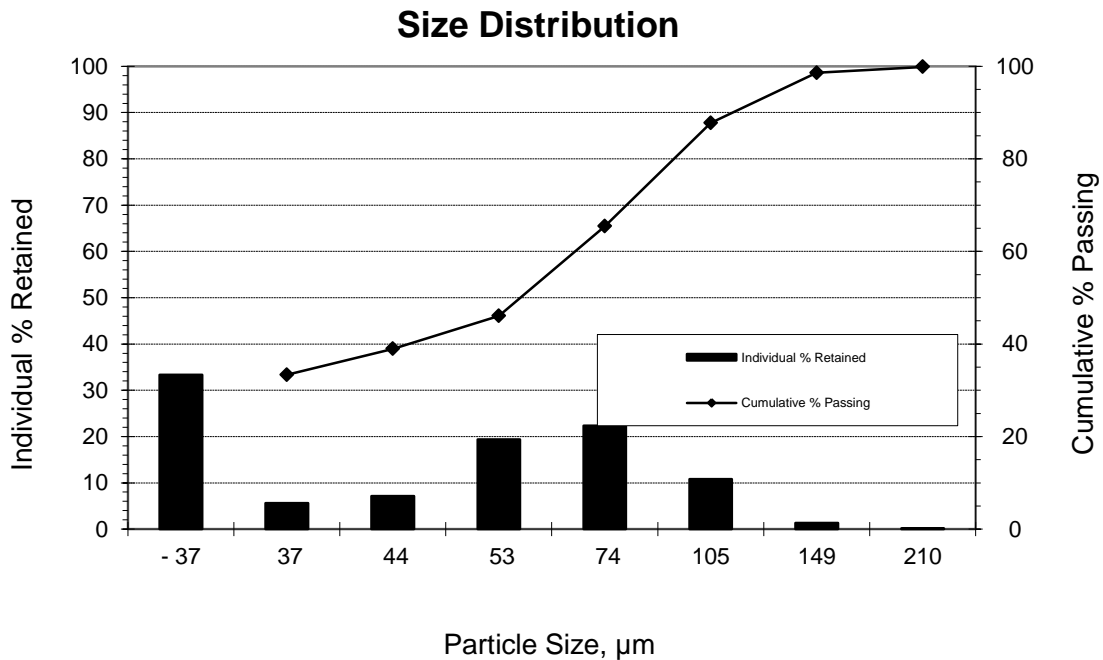
Date: 12-Dec-13
Project: 1306111

Sample: Composite 1 Gravity Tailings G1

Grind: 2kg sample for 25 minutes @65%solids in stainless steel mill #3

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	0.1	99.9
100	149	1.3	98.6
150	105	10.8	87.8
200	74	22.3	65.4
270	53	19.4	46.1
325	44	7.1	39.0
400	37	5.6	33.3
Undersize	- 37	33.3	-
TOTAL:		100.0	

80 % Passing Size (μm) = 94



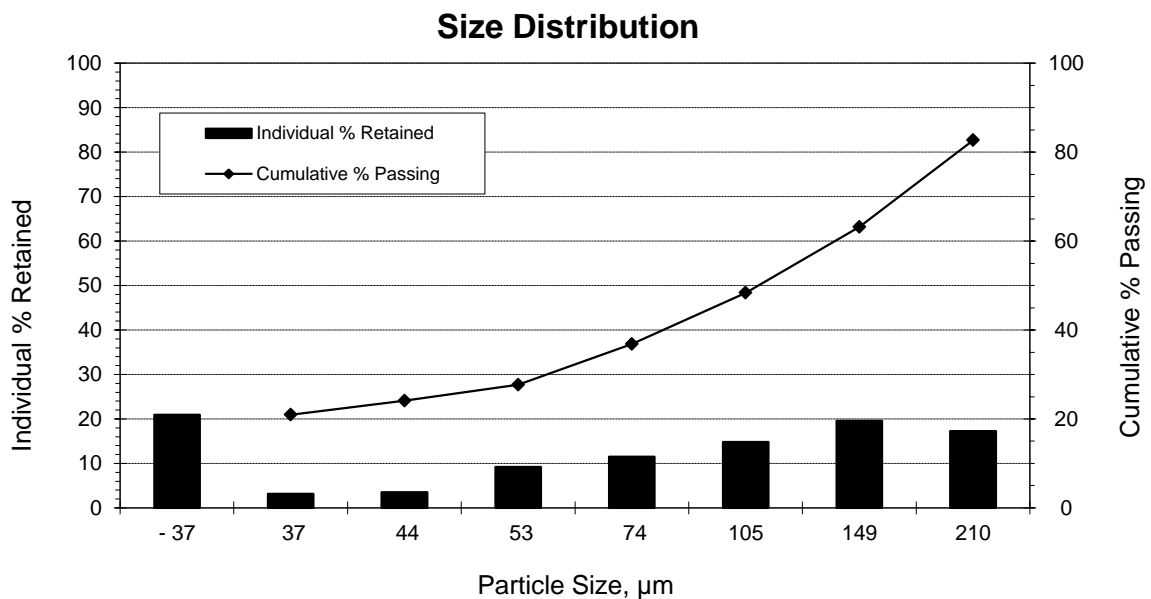
SIZE ANALYSIS REPORT

Client: Dave Webb
Test: TG-1
Sample: Composite 1
Grind: 2kg sample ground @65%solids for 11 minutes in stainless steel rod Mill #3

Date: 4-Dec-13
Project: 1306111

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	17.3	82.7
100	149	19.6	63.1
150	105	14.8	48.4
200	74	11.5	36.9
270	53	9.2	27.7
325	44	3.5	24.1
400	37	3.2	21.0
Undersize	- 37	21.0	-
TOTAL:		100.0	

80 % Passing Size (µm) = 201



SIZE ANALYSIS REPORT

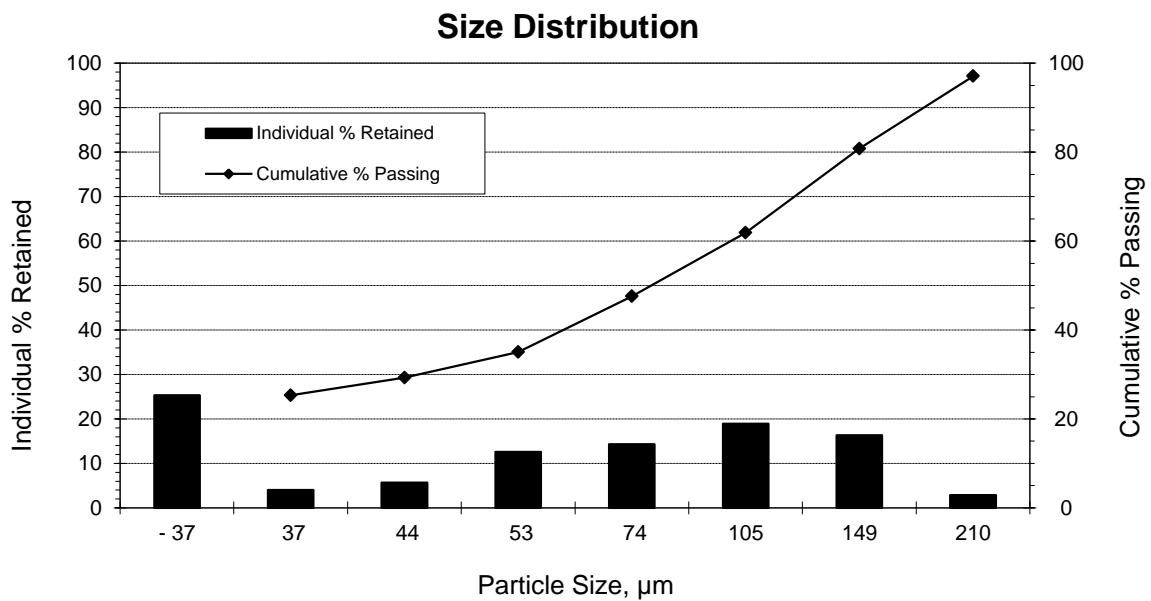
Client: Dave Webb
Test: TG-2
Sample: Composite 1

Date: 4-Dec-13
Project: 1306111

Grind: 2kg sample ground @65%solids for 14'30" minutes in stainless steel rod Mill #3

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	2.9	97.1
100	149	16.3	80.8
150	105	18.9	61.9
200	74	14.3	47.6
270	53	12.6	35.0
325	44	5.7	29.3
400	37	4.0	25.3
Undersize	- 37	25.3	-
TOTAL:		100.0	

80 % Passing Size (µm) = 147



SIZE ANALYSIS REPORT

Client: Dave Webb
Test: TG-3
Sample: Composite 1
Grind: 2kg sample ground @65%solids for 18 minutes in stainless steel rod Mill #3

Date: 4-Dec-13
Project: 1306111

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	1.8	98.2
100	149	9.9	88.3
150	105	21.5	66.9
200	74	20.2	46.7
270	53	14.6	32.1
325	44	5.6	26.5
400	37	4.7	21.8
Undersize	- 37	21.8	-
TOTAL:		100.0	

80 % Passing Size (μm) = 132

