APPENDIX E

OPEN PIT AND UNDERGROUND MINING

TETRA TECH WARDROP

SEABRIDGE GOLD

Appendix E1

Open Pit – Design Basis Memorandum

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

2012/06/12

Foreign Exchange Rate $US : $C				0.95	$US/$C	Wardrop (Tysen) email - 13 Dec 2011
				$C	**Units**	**Source**
CONSUMABLE - STANDARD PRICES						
Fuel cost				0.897	$C/litre	Neil Brazier Email 10 Feb 2012
Electricity (Energy Charge)				0.0577	$C/kWhr	Neil Brazier Email 8 Feb 2012
METAL PRICES						
Copper	$3.21	$US/lb.		3.38	$C/lb.	Wardrop (Tysen) email - 13 Dec 2011
Gold	$1 244.00	$US/oz		1309.47	$C/oz	Wardrop (Tysen) email - 13 Dec 2011
Silver	$22.98	$US/oz		24.19	$C/oz	Wardrop (Tysen) email - 13 Dec 2011
Molybdenum	$14.14	$US/lb.		14.88	$C/lb.	Wardrop (Tysen) email - 13 Dec 2011
TOPOGRAPHY						
NAD 83 - 2009 Lidar						McElhanney 2010

PRODUCTION TARGETS		**Mitchell**	**Sulphurets**	**Kerr**	**Iron Cap**	
AVG Metallurgical Process Daily thoughput	tpd	130 000	130 000	130 000	130 000	
Metallurgical Process Production days	days	365	365	365	365	
Relative production rate	%	115%	88%	123%	112%	
Annual Throughput	Mtpa	**54.6**	**41.8**	**58.4**	**53.1**	
Mill annual throughput	**tpd**	**130 000**		**tpa**	**47 450 000**	
Rate Item for MSSP		0.870	1.136	0.813	0.893	
Available mine production days	days/yr	355				
Ramp Up:	**Year1**	**Year 2**	**Year 3**			from Schedule 2.2b
	58%	94%	100%			

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

PROCESS - Mitchell

Recovery and Grade Relationships

Copper	Copper Head	Copper Recovery		
	> 1.0% Cu	95%		2011 PFS update
	0.8 - 1.0% Cu	92%		2011 PFS update
	0.227 - 0.8% Cu	= 90.68 x (Cu Head, %)^0.027		2011 PFS update
	0.05 - 0.227% Cu	= 18.02 x ln(Cu Head, %) + 113.5		2011 PFS update
	0.02 - 0.05% Cu	20%		2011 PFS update
	< 0.02%	3%		2011 PFS update

Gold	Gold Head	Gold Recovery		
to Copper Concentrate	n/a	= 0.054 x (Cu Recovery, %) ^1.575		2011 PFS update
+				2011 PFS update
To Dore	< 0.1 g/t	0		2011 PFS update
	0.1 - 5 g/t	= (87.491 x (Au Head, g/t)^ 0.051 - (0.054 x (Cu Recovery, %) ^1.575)) x 68% x 99%		2011 PFS update
	5 - 10 g/t Au	= (95 - (0.054 x (Cu Recovery, %)^ 1.575)) x 75% x 99%		2011 PFS update
	> 10 g/t Au	= (98 - (0.054 x (Cu Recovery, %)^ 1.575)) x 80% x 99%		

Total Gold Recovery = Recovery to Copper Concentrate + Recovery to Dore

Moly	Moly Head	Moly Recovery		
	> 0.010%	47%		2011 PFS update
	0.005-0.010% Mo	35%		2011 PFS update
	0.0025-0.005% Mo	25%		2011 PFS update
	<0.0025% Mo	0%	25	2011 PFS update

Silver	Silver Head	Silver Recovery		
to Copper Concentrate	n/a	= 1.496 x (Cu Recovery, %) - 76.58		2011 PFS update
To Dore	< 1 g/t Ag	0%		2011 PFS update
	1 - 8 g/t Ag	= (43.16 x (Ag Head, g/t)^0.329) - (1.496 x (Cu Recovery, %) - 76.58); if <0, use 0%		2011 PFS update
	8 - 15 g/t Ag	= 86 - (1.496 x (Cu Recovery, %) - 76.58)		2011 PFS update
	> 15 g/t Ag	= 88 - (1.496 x (Cu Recovery, %) - 76.58)		2011 PFS update

Total Silver Recovery = Recovery to Copper Concentrate + Recovery to Dore

Process Costs ($/tonne ORE)

Mitchell	$US/tonne ore	$C / tonne	
Process	6.88	7.24	Email From J Huang - Wardrop - 10 February 2012
G&A	1.09	1.15	Email From J Huang - Wardrop - 10 February 2012
Surface Service	0.29	0.31	Email From J Huang - Wardrop - 10 February 2012
Tailing Costruction	0.44	0.46	Email From J Huang - Wardrop - 10 February 2012
Total	8.70	9.16	
Water Treatment Costs		0.41	Email From J Huang - Wardrop - 10 February 2012
TOTAL		**9.57**	
		$CDN/tonne ORE	

PRODUCTION TARGETS

AVG Metallurgical Process Daily thoughput	130 000	tpd	
Metallurgical Process Production days	365	days	estimate
Relative production rate	115%		
Annual Throughput	**54 567 500**	tpa	estimate
Available mine production days	355	days/yr	estimate

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

Moose Mountain Technical Services

PROCESS - Sulphurets

Recovery and Grade Relationships

Copper	Copper Head	Copper Recovery	
	> 1.0% Cu	93%	2011 PFS update
	0.8 - 1.0% Cu	90%	2011 PFS update
	0.227 - 0.8% Cu	= 90.68 x (Cu Head, %)^0.027 - 3.5	2011 PFS update
	0.05 - 0.227% Cu	= 18.02 x ln(Cu Head, %) + 110	2011 PFS update
	0.02 - 0.05% Cu	20%	2011 PFS update
	< 0.02%	3%	2011 PFS update

Gold	Gold Head	Gold Recovery	
to Copper Concentrate	n/a	= 0.054 x (Cu Recovery, %) ^1.575 -2	2011 PFS update
+			2011 PFS update
To Dore	< 0.1 g/t	0	2011 PFS update
	0.1 - 5 g/t	= ((87.491 x (Au Head, g/t) ^ 0.051 + 3) - (0.054 x (Cu Recovery, %) ^ 1.575 - 2)) x 49% x 99%	2011 PFS update
	5 - 10 g/t Au	= (95 - (0.054 x (Cu Recovery, %)^ 1.575)) x 60% x 99%	2011 PFS update
	> 10 g/t Au	= (98 - (0.054 x (Cu Recovery, %)^ 1.575)) x 70% x 99%	

Total Gold Recovery = Recovery to Copper Concentrate + Recovery to Dore

Moly	Moly Head	Moly Recovery	
	> 0.010%	47%	2011 PFS update
	0.005-0.010% Mo	35%	2011 PFS update
	0.0025-0.005% Mo	25%	2011 PFS update
	<0.0025% Mo	0%	2011 PFS update

Silver	Silver Head	Silver Recovery	
to Copper Concentrate	n/a	35%	2011 PFS update
To Dore	< 1 g/t Ag	0%	2011 PFS update
	1 - 8 g/t Ag	= (43.16 x (Ag Head, g/t)^0.329) - 35.3	2011 PFS update
	8 - 15 g/t Ag	50.7%	2011 PFS update
	> 15 g/t Ag	52.7%	2011 PFS update

Total Silver Recovery = Recovery to Copper Concentrate + Recovery to Dore

Process Costs ($/tonne ORE)

Sulphurets	$US/tonne ore	$C / tonne	
Process	7.45	7.84	Email From J Huang - Wardrop - 10 February 2012
G&A	1.09	1.15	Email From J Huang - Wardrop - 10 February 2012
Surface Service	0.29	0.31	Email From J Huang - Wardrop - 10 February 2012
Tailing Costruction	0.44	0.46	Email From J Huang - Wardrop - 10 February 2012
Total	9.27	9.76	
Water Treatment Costs		0.41	Email From J Huang - Wardrop - 10 February 2012
TOTAL		**10.17**	
		$CDN/tonne ORE	

PRODUCTION TARGETS

AVG Metallurgical Process Daily thoughput	130 000	tpd	
Metallurgical Process Production days	365	days	estimate
Relative production rate	88%		
Annual Throughput	**41 756 000**	tpa	estimate
Available mine production days	355	days/yr	estimate

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

Moose Mountain Technical Services

PROCESS - Mitchell

Recovery and Grade Relationships

Copper	Copper Head	Copper Recovery	
	> 1.0% Cu	84%	2011 PFS update
	0.8 - 1.0% Cu	81%	2011 PFS update
	0.227 - 0.8% Cu	= 90.68 x (Cu Head, %) ^ 0.027 - 9	2011 PFS update
	0.05 - 0.227% Cu	= 18.02 x ln(Cu Head, %) + 104.5	2011 PFS update
	0.02 - 0.05% Cu	20%	2011 PFS update
	< 0.02%	3%	2011 PFS update

Gold	Gold Head	Gold Recovery	
to Copper Concentrate	n/a	= 0.054 x (Cu Recovery, %) ^1.575 - 18	2011 PFS update
+			2011 PFS update
To Dore	< 0.1 g/t	0%	2011 PFS update
	0.1 - 5 g/t	= ((87.491 x (Au Head, g/t)^0.051 + 8) – (0.054 x (Cu Recovery, %) ^1.575 - 18)) x 68% x 99%	2011 PFS update
	5 - 10 g/t Au	= (95 - (0.054 x (Cu Recovery, %) ^1.575 - 18)) x 75% x 99%	2011 PFS update
	> 10 g/t Au	= (98 - (0.054 x (Cu Recovery, %) ^1.575 - 18)) x 80% x 99%	

Total Gold Recovery = Recovery to Copper Concentrate + Recovery to Dore

Moly	Moly Head	Moly Recovery	
	> 0.010%	47%	2011 PFS update
	0.005-0.010% Mo	35%	2011 PFS update
	0.0025-0.005% Mo	25%	2011 PFS update
	<0.0025% Mo	0%	2011 PFS update

Silver	Silver Head	Silver Recovery	
to Copper Concentrate	n/a	37%	2011 PFS update
To Dore	< 1 g/t Ag	0%	2011 PFS update
	1 - 8 g/t Ag	= (21.26 x ln(Ag Head, g/t) + 40.74) - 37	2011 PFS update
	8 - 15 g/t Ag	49%	2011 PFS update
	> 15 g/t Ag	51%	2011 PFS update

Total Silver Recovery = Recovery to Copper Concentrate + Recovery to Dore

Process Costs ($/tonne ORE)

Kerr	$US/tonne ore	$C / tonne	
Process	6.92	7.28	Email From J Huang - Wardrop - 10 February 2012
G&A	1.09	1.15	Email From J Huang - Wardrop - 10 February 2012
Surface Service	0.29	0.31	Email From J Huang - Wardrop - 10 February 2012
Tailing Costruction	0.44	0.46	Email From J Huang - Wardrop - 10 February 2012
Total	8.74	9.20	
Water Treatment Costs		0.41	Email From J Huang - Wardrop - 10 February 2012
TOTAL		**9.61**	
		$CDN/tonne ORE	

PRODUCTION TARGETS

AVG Metallurgical Process Daily thoughput	130 000	tpd	
Metallurgical Process Production days	365	days	estimate
Relative production rate	123%		
Annual Throughput	**58 363 500**	tpa	estimate
Available mine production days	355	days/yr	estimate

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

Moose Mountain Technical Services

PROCESS - Mitchell

Recovery and Grade Relationships

Copper	Copper Head	Copper Recovery	
	> 1.0% Cu	95%	2011 PFS update
	0.8 - 1.0% Cu	92%	2011 PFS update
	0.227 - 0.8% Cu	= 90.68 x (Cu Head, %)^0.027	2011 PFS update
	0.05 - 0.227% Cu	= 18.02 x ln(Cu Head, %) + 113.5	2011 PFS update
	0.02 - 0.05% Cu	20%	2011 PFS update
	< 0.02%	3%	2011 PFS update

Gold	Gold Head	Gold Recovery	
to Copper Concentrate	< 8 g/t Au	= 7.457 x ln(Au Head, g/t) + 53.88	2011 PFS update
+	> 8 g/t Au	70%	2011 PFS update
To Dore	< 0.1 g/t	0	2011 PFS update
	0.1 - 8 g/t	= (4.278 x ln(Au Head, g/t) + 69.62) - (7.457 x ln(Au Head, g/t) + 53.88)	2011 PFS update
	8 - 20 g/t Au	= (4.278 x ln(Au Head, g/t) + 69.62) - 70	2011 PFS update
	> 20 g/t Au	20%	

Total Gold Recovery = Recovery to Copper Concentrate + Recovery to Dore

Moly	Moly Head	Moly Recovery	
	> 0.010%	47%	2011 PFS update
	0.005-0.010% Mo	35%	2011 PFS update
	0.0025-0.005% Mo	25%	2011 PFS update
	<0.0025% Mo	0%	2011 PFS update

Silver	Silver Head	Silver Recovery	
to Copper Concentrate	n/a	61%	2011 PFS update
To Dore	< 1 g/t Ag	0%	2011 PFS update
	1 - 8 g/t Ag	= (21.26 x ln(Ag Head, g/t) + 40.74) - 61	2011 PFS update
	8 - 15 g/t Ag	25%	2011 PFS update
	> 15 g/t Ag	27%	2011 PFS update

Total Silver Recovery = Recovery to Copper Concentrate + Recovery to Dore

Process Costs ($/tonne ORE)

Iron Cap	$US/tonne ore	$C / tonne	
Process	6.88	7.24	Email From J Huang - Wardrop - 10 February 2012
G&A	1.09	1.15	Email From J Huang - Wardrop - 10 February 2012
Surface Service	0.29	0.31	Email From J Huang - Wardrop - 10 February 2012
Tailing Costruction	0.44	0.46	Email From J Huang - Wardrop - 10 February 2012
Total	8.70	9.16	
Water Treatment Costs		0.41	Email From J Huang - Wardrop - 10 February 2012
TOTAL		**9.57**	
		$CDN/tonne ORE	

PRODUCTION TARGETS

AVG Metallurgical Process Daily thoughput	130 000	tpd		
Metallurgical Process Production days	365	days	estimate	
Relative production rate	112%			
Annual Throughput	**53 144 000**	tpa	estimate	
Available mine production days	355	days/yr	estimate	

Seabridge Gold Inc.

Moose Mountain Technical Services

Pit Optimization - Net Smelter Revenues and Prices

Description	Variable	Calculation	Values	Previous	Units
Average Mill Feed Grades					
Gold	Au	Input	0.546	0.586	g/t
Copper	Cu	Input	0.207	0.199	%
Silver	Ag	Input	3.04	2.58	g/t
Molybdenum	Mo	Input	53.2	59.4	ppm
Process Recovery to Copper Concentrate					
Gold	CCAuRec	= 0.054 x (Cu Recovery, %) ^1.575	61.1	58.5	**%**
Copper	CCCuRec	= 90.68 x (Cu Head, %)^0.027	86.9	83.5	**%**
Silver	CCAgRec	= 1.496 x (Cu Recovery, %) - 76.58	53.4	55.0	**%**
Process Recovery to Gold Dore					
Gold	GDAuRec	= (87.491 x (Au Head, g/t)^ 0.051 - (0.054 x (Cu Recovery, %) ^1.575)) x 68%	15.9	19.0	**%**
Silver	GDAgRec	= (43.16 x (Ag Head, g/t)^0.329) - (1.496 x (Cu Recovery, %) - 76.58)	8.8	18.0	**%**
Concentrate Specs					
Copper grade	ConCu	constant (Head Grade 0.15 - 0.4% Cu)	24.0		%
Gold Grade	ConAu	=(CCAuRec / 100 x Au) / (Cu x (CCCuRec/100) / ConCu)	44.5		gpt
Silver Grade	ConAg	=(CCAgRec / 100 x Ag) / (Cu x (CCCuRec/100) / ConCu)	217		gpt
Molybdenum	ConMo	constant	50%		%
Moisture Cu Con	cmoiCu	Input	9%		%
Moisture Mo Con	cmoiMo	Input	5%		%
Prices					
Gold Price	AUPRC	Input	$1 244	$990	US$/oz
Copper Price	CUPRC	Input	$3.21	$2.91	US$/lb
Silver Price	AGPRC	Input	$22.98	$15.40	US$/oz
Molybdenum Price	MoPRC	Input	$14.14	$15.00	US$/lb
US Exchange rate	XRATE	Input	0.950	0.93	US$/CDN$
Gold Price	AUCDN	=AUPRC/XRATE/gpoz	42.10		CDN$/g
Copper Price	CUCDN	=CUPRC/XRATE	3.379		CDN$/lb
Silver Price	AGCDN	=AGPRC/XRATE/gpoz	0.778		CDN$/g
Molybdenum Price	MoCDN	=MoPRC/XRATE	14.88		CDN$/lb
Conversions					
Pounds per tonne conversion	ppt	Constant	2204.62		lb/tonne
Grams per ounce conversion	gpoz	Constant	31.10348		gr/oz
MoS2 to Mo		Constant	0.599		Mo/MoS2
Smelter Terms					
Copper Conc					
cu unit deductions	dedcu	Input	1.0%		%
au payable	payau	Input	97.5%		%
ag payable	payag	Input	90%		%
smelting	smelt	Input	85.000		US$/DMT
cu refining - base	refcua	Input	0.085		US$/lb
price participation (cu floor)	prpart	Input	1.500		US$/lb
price participation % for amount above prpart	prpart%	Input	1.5%		%
Price Participation Cap	prpartCAP	Input	0.040		US$/lb
Price Participation	PP	MIN((CUPRC-prpart)*prpart%	0.026		US$/lb
cu refining - with participation	refcu	refcua + PP	0.111		US$/lb
au refining	refau	Input	8.000		US$/oz
ag refining	refag	Input	0.600		US$/oz
Moly Conc					
Mo payable	paymo	Input	99.0%		%
Losses in handling and roasting unit deduction	dedMo	Input	4.20%		%
Roasting	smelt	Input	2.00		US$/lb
Mo refining - base	refmoa	Input	0.000		US$/lb
Dry Concentrate tonnes					
Copper Conc	DMTCu	= 1-cmoiCu	91%		%
Moly Conc	DMTMo	= 1-cmoiMo	95%		%

Net Copper Revenue per Tonne Copper Conc.					
Cu in Conc	NetCu	= DMTCu*ConCu*ppt	481.49		lb/WMT
Net payable Cu in Concentrate	NPyCu	= DMTCu*(ConCu-dedcu)*ppt	461.43		lb/WMT
Net payment Cu in Concentrate	PayCu	= NPyCu*CUCDN	$1 559.14		CDN$/WMT
Refining Cu	CuRef	= NetCu*refcu/XRATE	$56.08		CDN$/WMT
Net Revenue Copper	NRCu	= PayCu-CuRef	$1 503.06		CDN$/WMT
Net Gold Revenue per Tonne Copper Conc.					
Au in Conc	NetAu	= DMTCu*ConAu	40.53		g/WMT
Net payable Au in Concentrate	NPyAu	= payau*NetAu	39.52		g/WMT
Net payment Au in Concentrate	PayAu	=NPyAu*AUCDN	$1 663.84		CDN$/WMT
Refining Au	AuRef	= NetAu*refau/XRATE/gpoz	$10.70		CDN$/WMT
Net Revenue Gold	NRAu	= PayAu-AuRef	$1 653.14		CDN$/WMT
Net Silver Revenue per Tonne Copper Conc.					
Ag in Conc	NetAg	= DMT*ConAg	197.19		g/WMT
Net payable Ag in Concentrate	NPyAg	= payag*NetAg	177.47		g/WMT
Net payment Ag in Concentrate	PayAg	=NPyAg*AGCDN	$138.02		CDN$/WMT
Refining Au	AgRef	= NetAg*refag/XRATE/gpoz	$3.60		CDN$/WMT
Net Revenue Silver	NRAg	= PayAg-AgRef	$134.42		CDN$/WMT
Net Revenue Total Copper Conc	TRev	= NRCu + NRAu + NRAg	$3 290.61		CDN$/WMT
Proportion Copper	TRCu	= NRCu/TRev	45.68%		%
Proportion Gold	TRAu	= NRAu/TRev	50.24%		%
Proportion Silver	TRAg	= NRAg/TRev	4.08%		%
Offsites, Freight, and Distribution Copper Conc					
Smelting	Smelt	=smelt*DMT/XRATE	$81.42		CDN$/WMT
freight for trucking	ftruck	Input	$32.94		CDN$/WMT
freight for rail	frail	Input			CDN$/WMT
Stevedoring	fsteve	Input			US$/WMT
freight for ships	focean	Input	$67.99		US$/WMT
Other Offsite Costs (Losses, Ins,Sell,supv,Assay)	other	Input	$16.47		CDN$/WMT
Offsites, Frgt, Distr. Total	OFD	= Sum (Smelt : Other)	$202.40		CDN$/WMT
Proportion Copper	OFDCu	=OFD*TRCu	$92.45		CDN$/WMT
Proportion Gold	OFDAu	=OFD*TRAu	$101.68		CDN$/WMT
Proportion Silver	OFDAg	=OFD*TRAg	$8.27		CDN$/WMT
Net Moly Revenue per Tonne Moly Conc.					
Mo in Conc	NetMo	= DMT*ConMo*ppt	1047.19		lb/WMT
Net payable Mo in Concentrate	NPyMo	= (paymo-dedMo)*NetMo	992.74		lb/WMT
Net payment Mo in Concentrate	paymo	=NPyMo*MoCDN	$14 776.16		CDN$/WMT
Refining Mo	MoRef	= NetMo*refmo	$0.00		CDN$/WMT
Net Revenue Moly	NRMo	= paymo-MoRef	$14 776.16		CDN$/WMT
Offsites, Freight, and Distribution Moly Conc					
Roasting & Smelting	smelt	smelt*ppt/DMT/XRATE	$4 409.24		CDN$/WMT
Trucking	ftruck	Input	$66.96		CDN$/WMT
Rail	frail	Input			CDN$/WMT
Ocean Freight	focean	Input	$88.93		US$/WMT
Other Offsite Costs (Losses, Ins,Sell,supv,Assay)	other	Input	$50.00		CDN$/WMT
Offsites, Frgt, Distr. Total	OFD	= Sum (Smelt : Other)	$4 619.81		CDN$/WMT
Proportion Molybdenum	OFDMo	=OFD	$4 619.81		CDN$/WMT
Gold Dore'					
Au Payable	auDpay	Input	99.6		%
au refining + transport	auDref	Input	2.00		US$/oz
	auDTr	Input			CDN$/Tonne
Au Dore NSP	auDNsp	=AUCDN*AuDpay/100-AuDref/XRATE/gpoz-auDTr/1000	41.88		CDN$/g
Ag Dore NSP	agDNsp		0.707		CDN$/g
Au distribution to Dore	AuDR	Au in Dore / (Au in Dore + Au in Cu Conc.)	21%		%
Ag Distribution to Dore	AgDR	Ag in Dore / (Ag in Dore + Ag in Cu Conc.)	14%		%
Net Smelter Return per Tonne Cu Conc. (Wet)					
NSR Copper	NSRCu	= NRCu - OFDCu	$1 410.61		CDN$/WMT
NSR Gold	NSRAu	= NRAu - OFDAu	$1 551.45		CDN$/WMT
NSR Silver	NSRAg	= NRAg - OFDAg	$126.15		CDN$/WMT
NSR Total	NSR	= NSRCu + NSRAu + NSRAg + NSGMo	$3 088.21		CDN$/WMT
Net Smelter Return per Tonne Mo Conc. (Wet)					
NSR Moly	NSRMo	= NRMo - OFDMo	$10 156.35		CDN$/WMT
Net Smelter Price (to Mine Gate)					
Copper	NSPCu	= NSRCu/NetCu	**$2.93**		CDN$/lb
Gold	NSPAu	= NSRAu/NetAu x AuCR/(AuDR + AuCR) + auDNsp x AuDR/(AuDR + AuCR)	**$39.02**		CDN$/g
Silver	NSPAg	= NSRAg/NetAg	**$0.649**		CDN$/g
Moly	NSPMo	= NSRMo/NetMo	**$9.70**		CDN$/lb
	NSR = RCU*22.046*2.93+RAU*39.0+RAG*0.649+RMO/10000*22.046*9.70				

Net Copper Revenue per Tonne Copper Conc.			Values		Units
Cu in Conc	NetCu	= DMTCu*ConCu*ppt	481.49		lb/WMT
Net payable Cu in Concentrate	NPyCu	= DMTCu*(ConCu-dedcu)*ppt	461.43		lb/WMT
Net payment Cu in Concentrate	PayCu	= NPyCu*CUCDN	$1 559.14		CDN$/WMT
Refining Cu	CuRef	= NetCu*refcu/XRATE	$56.08		CDN$/WMT
Net Revenue Copper	NRCu	= PayCu-CuRef	$1 503.06		CDN$/WMT
Net Gold Revenue per Tonne Copper Conc.					
Au in Conc	NetAu	= DMTCu*ConAu	40.53		g/WMT
Net payable Au in Concentrate	NPyAu	= payau*NetAu	39.52		g/WMT
Net payment Au in Concentrate	PayAu	=NPyAu*AUCDN	$1 663.84		CDN$/WMT
Refining Au	AuRef	= NetAu*refau/XRATE/gpoz	$10.70		CDN$/WMT
Net Revenue Gold	NRAu	= PayAu-AuRef	$1 653.14		CDN$/WMT
Net Silver Revenue per Tonne Copper Conc.					
Ag in Conc	NetAg	= DMT*ConAg	197.19		g/WMT
Net payable Ag in Concentrate	NPyAg	= payag*NetAg	177.47		g/WMT
Net payment Ag in Concentrate	PayAg	=NPyAg*AGCDN	$138.02		CDN$/WMT
Refining Au	AgRef	= NetAg*refag/XRATE/gpoz	$3.60		CDN$/WMT
Net Revenue Silver	NRAg	= PayAg-AgRef	$134.42		CDN$/WMT
Net Revenue Total Copper Conc	TRev	= NRCu + NRAu + NRAg	$3 290.61		CDN$/WMT
Proportion Copper	TRCu	= NRCu/TRev	45.68%		%
Proportion Gold	TRAu	= NRAu/TRev	50.24%		%
Proportion Silver	TRAg	= NRAg/TRev	4.08%		%
Offsites, Freight, and Distribution Copper Conc					
Smelting	Smelt	=smelt*DMT/XRATE	$81.42		CDN$/WMT
freight for trucking	ftruck	Input	$32.94		CDN$/WMT
freight for rail	frail	Input			CDN$/WMT
Stevedoring	fsteve	Input			US$/WMT
freight for ships	focean	Input	$67.99		US$/WMT
Other Offsite Costs (Losses, Ins,Sell,supv,Assay)	other	Input	$16.47		CDN$/WMT
Offsites, Frgt, Distr. Total	OFD	= Sum (Smelt : Other)	$202.40		CDN$/WMT
Proportion Copper	OFDCu	=OFD*TRCu	$92.45		CDN$/WMT
Proportion Gold	OFDAu	=OFD*TRAu	$101.68		CDN$/WMT
Proportion Silver	OFDAg	=OFD*TRAg	$8.27		CDN$/WMT
Net Moly Revenue per Tonne Moly Conc.					
Mo in Conc	NetMo	= DMT*ConMo*ppt	1047.19		lb/WMT
Net payable Mo in Concentrate	NPyMo	= (paymo-dedMo)*NetMo	992.74		lb/WMT
Net payment Mo in Concentrate	paymo	=NPyMo*MoCDN	$14 776.16		CDN$/WMT
Refining Mo	MoRef	= NetMo*refmo	$0.00		CDN$/WMT
Net Revenue Moly	NRMo	= paymo-MoRef	$14 776.16		CDN$/WMT
Offsites, Freight, and Distribution Moly Conc					
Roasting & Smelting	smelt	smelt*ppt/DMT/XRATE	$4 409.24		CDN$/WMT
Trucking	ftruck	Input	$66.96		CDN$/WMT
Rail	frail	Input			CDN$/WMT
Ocean Freight	focean	Input	$88.93		US$/WMT
Other Offsite Costs (Losses, Ins,Sell,supv,Assay)	other	Input	$50.00		CDN$/WMT
Offsites, Frgt, Distr. Total	OFD	= Sum (Smelt : Other)	$4 619.81		CDN$/WMT
Proportion Molybdenum	OFDMo	=OFD	$4 619.81		CDN$/WMT
Gold Dore'					
Au Payable	auDpay	Input	99.6		%
au refining + transport	auDref	Input	2.00		US$/oz
	auDTr	Input			CDN$/Tonne
Au Dore NSP	auDNsp	=AUCDN*AuDpay/100-AuDref/XRATE/gpoz-auDTr/1000	41.88		CDN$/g
Ag Dore NSP	agDNsp		0.707		CDN$/g
Au distribution to Dore	AuDR	Au in Dore / (Au in Dore + Au in Cu Conc.)	21%		%
Ag Distribution to Dore	AgDR	Ag in Dore / (Ag in Dore + Ag in Cu Conc.)	14%		%
Net Smelter Return per Tonne Cu Conc. (Wet)					
NSR Copper	NSRCu	= NRCu - OFDCu	$1 410.61		CDN$/WMT
NSR Gold	NSRAu	= NRAu - OFDAu	$1 551.45		CDN$/WMT
NSR Silver	NSRAg	= NRAg - OFDAg	$126.15		CDN$/WMT
NSR Total	NSR	= NSRCu + NSRAu + NSRAg + NSGMo	$3 088.21		CDN$/WMT
Net Smelter Return per Tonne Mo Conc. (Wet)					
NSR Moly	NSRMo	= NRMo - OFDMo	$10 156.35		CDN$/WMT
Net Smelter Price (to Mine Gate)					
Copper	NSPCu	= NSRCu/NetCu	**$2.93**		CDN$/lb
Gold	NSPAu	= NSRAu/NetAu x AuCR/(AuDR + AuCR) + auDNsp x AuDR/(AuDR + AuCR)	**$39.02**		CDN$/g
Silver	NSPAg	= NSRAg/NetAg	**$0.649**		CDN$/g
Moly	NSPMo	= NSRMo/NetMo	**$9.70**		CDN$/lb
	NSR = RCU*22.046*2.93+RAU*39.0+RAG*0.649+RMO/10000*22.046*9.70				

Pit Optimization Net Smelter Price Comparison	2011 PFS	2012 PFS Update before Smelter Schedule Update	Diff	Var
Copper	$2.684	**$2.94**	$0.255	10%
Gold	$31.60	**$39.3**	$7.656	24%
Silver	$0.437	**$0.658**	$0.221	51%
Moly	$10.79	**$9.70**	-$1.091	-10%

Salaried Positions

	POSITION	Base Salary	Payroll Burden	Salary With Burden	
	MINE OPERATIONS				Values used in MMTS report are based on 2011 values
	Operations General Foreman	$115 000	45%	$166 750	
	Shift Foreman	$105 000	45%	$152 250	
	Area Foreman	$90 000	45%	$130 500	
	Training General Foreman	$90 000	45%	$130 500	
	Shift Trainers	$80 000	45%	$116 000	
	Drilling & Blasting Foreman	$105 000	45%	$152 250	
	Maintenance General Foreman	$115 000	45%	$166 750	
	Maintenance Planner	$80 000	45%	$116 000	
	Maintenance Planning Clerk	$51 000	45%	$ 73 950	
	Maintenance Shift Foreman	$105 000	45%	$152 250	
	Mechanical Foreman	$90 000	45%	$130 500	
	Electrical Foreman	$90 000	45%	$130 500	
	Services Foreman	$90 000	45%	$130 500	
	Administration Assitant	$55 000	45%	$ 79 750	
	Mining Superintendent	$150 000	45%	$217 500	
	TECHNICAL SERVICES				
	Senior Geologist	$110 000	45%	$159 500	
	Pit Geologist	$70 000	45%	$101 500	
	Ore Grade Technicians	$60 000	45%	$ 87 000	
	Project Engineer	$90 000	45%	$130 500	
	Senior Environmental Engineer				(covered in other part of org chart)
	Environmental Technician				(covered in other part of org chart)
	Senior Mining Engineer	$110 000	45%	$159 500	
	Mine Engineer	$85 000	45%	$123 250	
	Drilling & Blasting Engineer	$85 000	45%	$123 250	
	Drilling & Blasting Technician	$60 000	45%	$ 87 000	
	Surveyor	$60 000	45%	$ 87 000	
	Senior Surveyor	$70 000	45%	$101 500	(Not in J Huangs List)
	Engineering Clerk	$60 000	45%	$ 87 000	
	Dispatch Engineer	$75 550	45%	$109 548	
	Senior Geotechnical Engineer	$110 000	45%	$159 500	
-->	Dispatchers				(make sure this is added to cost model GME)
	Chief Engineer	$125 000	45%	$181 250	

Hourly Labour Rates

Position	Base Rate $/hr	(Burden) %	$/ManHr worked
MINE OPERATIONS			
Drill Operator	$31.2	45%	45.24
Blasters	$31.2	45%	45.24
Shovel Operator	$32.2	45%	46.69
Haul Truck Driver	$29.1	45%	42.20
Grader Operator	$30.2	45%	43.79
Excavator Operator	$30.2	45%	43.79
Loader Operator	$31.2	45%	45.24
Track Dozer Operator	$30.2	45%	43.79
Scraper Operator	$29.1	45%	42.20
Crusher Operator	$29.1	45%	42.20
Water Truck Operator	$29.1	45%	42.20
Fuel Truck Operator	$29.1	45%	42.20
MINE MAINTENANCE			
Electrician	$36.5	45%	52.93
HD Mechanic	$36.5	45%	52.93
LD Mechanic	$33.0	45%	47.85
Machinist	$36.5	45%	52.93
Crane Operator	$29.1	45%	42.20
Welder	$36.5	45%	52.93
Tireman	$32.2	45%	46.69
Labourer Service man	$25.0	45%	36.25

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

ECONOMIC PIT LIMITS

MS-EP Costs	Waste Haul min	Ore Haul min	Waste $/t	Ore $/t	
Mitchell :	28	18	**1.83**	**1.55**	M4 mid point between top and rim
Kerr	22	22	**1.66**	**1.66**	mid between rim and bottom
Sulphurets	34	30	**2.00**	**1.89**	mid between rim and top
Iron Cap	30	34	**1.89**	**2.00**	

MMTS - February 2012

Process, G&A , Tailings Treatment, Site Services and Water Treatment Costs (NSR cut-off grade)

Mitchell	9.57	$C/t ore
Sulphurets	10.17	$C/t ore
Kerr	9.61	$C/t ore
Iron Cap	9.57	$C/t ore

Pit#	CASE	Net Price for Mine, Plant, & O/H			
		Copper	Gold	Silver	Moly
		$C/lb	$C/g	$C/g	$C/lb
1	30.0%	$0.88	$11.7	$0.195	$2.91
2	35.0%	$1.03	$13.7	$0.227	$3.39
3	40.0%	$1.17	$15.6	$0.260	$3.88
4	45.0%	$1.32	$17.6	$0.292	$4.36
5	50.0%	$1.46	$19.5	$0.325	$4.85
6	55.0%	$1.61	$21.5	$0.357	$5.33
7	60.0%	$1.76	$23.4	$0.390	$5.82
8	65.0%	$1.90	$25.4	$0.422	$6.30
9	70.0%	$2.05	$27.3	$0.454	$6.79
10	75.0%	$2.20	$29.3	$0.487	$7.27
11	80.0%	$2.34	$31.2	$0.519	$7.76
12	85.0%	$2.49	$33.2	$0.552	$8.24
13	90.0%	$2.64	$35.1	$0.584	$8.73
14	95.0%	$2.78	$37.1	$0.617	$9.21
15	**100.0%**	**$2.93**	**$39.0**	**$0.649**	**$9.70**
16	105.0%	$3.08	$41.0	$0.682	$10.18
17	110.0%	$3.22	$42.9	$0.714	$10.67
18	115.0%	$3.37	$44.9	$0.747	$11.15
19	120.0%	$3.52	$46.8	$0.779	$11.64
20	125.0%	$3.66	$48.8	$0.812	$12.12
21	130.0%	$3.81	$50.7	$0.844	$12.61
22	135.0%	$3.96	$52.7	$0.877	$13.09
23	140.0%	$4.10	$54.6	$0.909	$13.58
24	145.0%	$4.25	$56.6	$0.941	$14.06
25	150.0%	$4.39	$58.5	$0.974	$14.55

ksmp13.m1	Mitchell (base case - MI only)
ksmp13.m2	Iron Cap (base case - MI only)
ksmp13.m3	Sulphurets (base case - MI only)
ksmp13.m4	Kerr (base case - MI only)
ksmp13.m5	Mitchell (MII blocks included)
ksmp13.m6	Iron Cap (MII blocks included)
ksmp13.m7	Sulphurets (MII blocks included)
ksmp13.m8	Kerr (MII blocks included)
ksmp13.m9	Mitchell (pit slopes -5 degrees)
ksmp13.m10	Iron Cap (pit slopes -5 degrees)
ksmp13.m11	Sulphurets (pit slopes -5 degrees)
ksmp13.m12	Kerr (pit slopes -5 degrees)
ksmp13.m13	Mitchell (pit slopes +5 degrees)
ksmp13.m14	Iron Cap (pit slopes +5 degrees)
ksmp13.m15	Sulphurets (pit slopes +5 degrees)
ksmp13.m16	Kerr (pit slopes +5 degrees)

MMTS - Tracey (Feb 9, 2012)

Results are in KSM LG Pits 09 Feb 2012.xlsm

reviewed by Jesse Aarsen on Apr 29 2012

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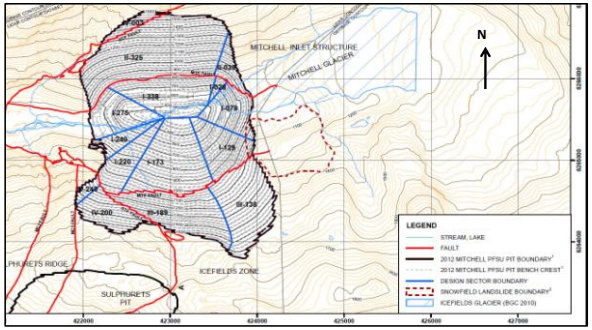
MINE DESIGN BASIS - KSM PFS UPDATE 2012

PIT SLOPE ANGLES

Mitchell

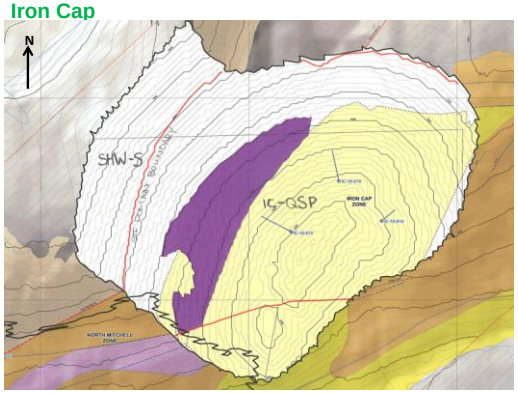


file: "20110222 DRAFT Mitchell Design Parameters rev2.pdf"
BGC (Derek Kinakin) - Feb 23, 2011

IRA item	Domain	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
3	I-173	135	210	36	36	34.5
3	I-220	210	230	40	40	38
3	I-240	230	250	48	48	45
3	I-275	250	300	53	52	50
3	I-338	300	015	53	46	44
3	I-028	015	040	53	46	44
3	I-078	040	115	48	48	46
3	I-125	115	135	46	45	43
2	II-325	270	020	53	44	44
2	II-035	020	050	46	47	46
2	II-058	050	065	40	42	40
2	II-078	065	090	36	41	36
2	III-099	090	108	54	55	54
2	III-138	108	168	34	35	34
2	III-189	168	210	46	47	46
1	IV-168	145	190	46	47	46
1	IV-200	190	210	39	40	39
1	IV-240	210	270	34	36	34
1	IV-003	325	040	46	47	46

Domain	Description
I	Below Mitchell fault
II	Between Mitchell and Sulphurets fault, north side of Mitchell pit
III	Between Mitchell and Sulphurets fault, south side of Mitchell pit
IV	Above Sulphurets fault

Iron Cap



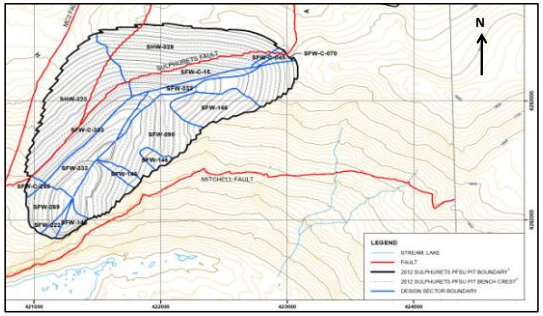
file: "IRON CAP Design Criteria 20110210 Double Bench DRAFT.pdf"
BGC (Derek Kinakin) - Feb 14, 2011

IRA item	Domain	Design Sector	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
5	IC-QSP	IC-QSP-182	165	198	37	40	34
5		IC-QSP-214	198	230	50	50	47
5		IC-QSP-263	230	295	40	41	37
5		IC-QSP-310	295	325	50	49	46
5		IC-QSP-335	325	345	40	41	37
5		IC-QSP-353	345	000	36	37	36
5		IC-QSP-028	000	055	34	35	34
5		IC-QSP-110	055	165	34	35	34
4	SHW-S	SHW-S-315	270	000	44	46	44

BGC recommends 45 degrees when mining through ice

Sulphurets

file: "20110211 DRAFT SULPHURETS Design Criteria.pdf"
BGC (Derek Kinakin) - Feb 14, 2011

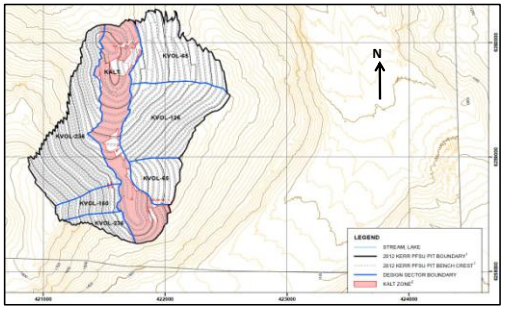


Sulpurets Pit Slope Angles

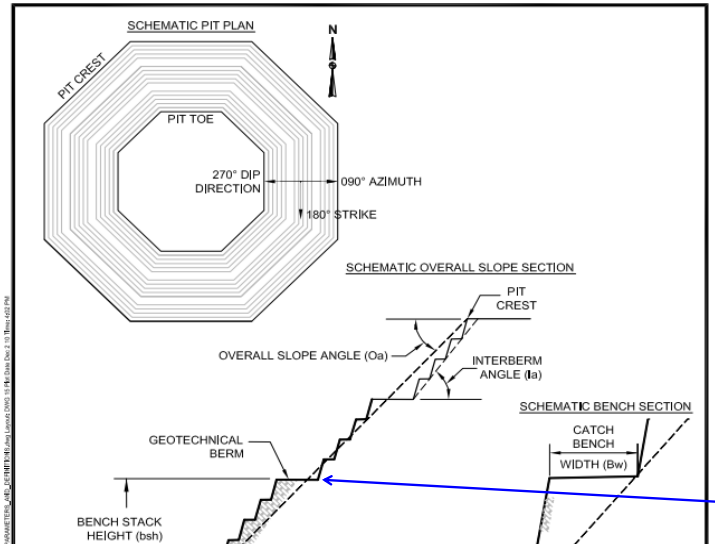
IRA item	Domain	Design Sector	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
6	SHW-V	SHW-V-280	270	290	49	50	46
6		SHW-V-323	290	355	40	42	37
6		SHW-V-028	355	060	45	45	42
6		SHW-V-075	060	090	36	41	36
7	SFW-C	SFW-C-265	220	310	45	49	45
7		SFW-C-333	310	355	49	53	49
7		SFW-C-015	355	035	50	53	50
7		SFW-C-045	035	055	45	49	45
7		SFW-C-070	055	085	40	45	40
8	SFW-V	SFW-V-190	172	207	40	44	37
8		SFW-V-222	207	237	47	50	44
8		SFW-V-269	237	300	37	41	35
8		SFW-V-333	300	005	40	44	37
8		SFW-V-033	005	060	36	37	34
8		SFW-V-090	060	120	40	41	38
8		SFW-V-146	120	172	36	40	34

Kerr

BGC (Derek Kinakin) - Feb 15, 2011

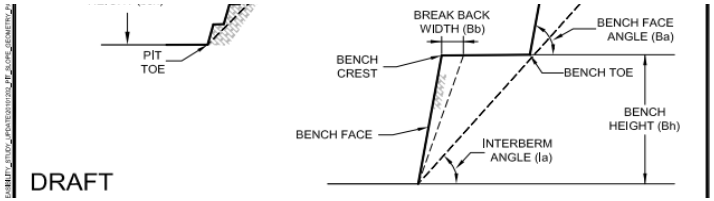


IRA item	Domain	Design Sector	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
9	KVOL	KVOL-236	180	292	50	49	46
9		KVOL-335	292	017	36	37	34
9		KVOL-065	017	112	34	36	34
9		KVOL-126	112	140	40	41	37
9		KVOL-160	140	180	45	45	41
10	KALT	KALT-180	135	225	36	25	25
10		KALT-000	225	135	36	40	34



file: "20101206 GEOMETRY PARAMETERS AND DEFINITIONS.pdf"
BGC (Derek Kinakin) - Dec 07, 2010

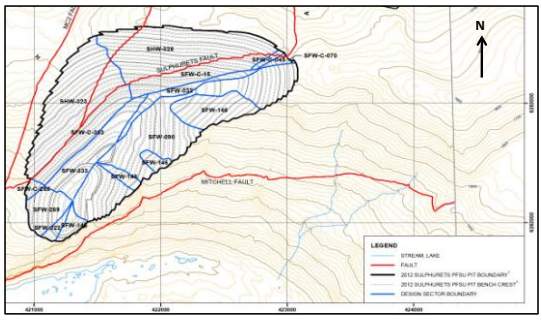
For ALL pits, a geotechnical berm is required every 150m in elevation (minimum 20m wide)


PIT
TOE

BREAK BACK
WIDTH (Bb)
BENCH FACE
ANGLE (Ba)
BENCH
CREST
BENCH TOE
BENCH
HEIGHT (Bh)
BENCH FACE
INTERBERM
ANGLE (Ia)

DRAFT

Sulphurets

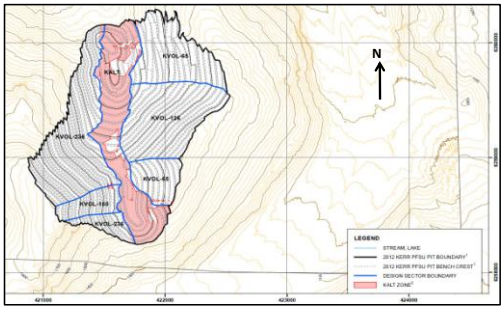


file: "20110211 DRAFT SULPHURETS Design Criteria.pdf"
BGC (Derek Kinakin) - Feb 14, 2011

Sulpurets Pit Slope Angles

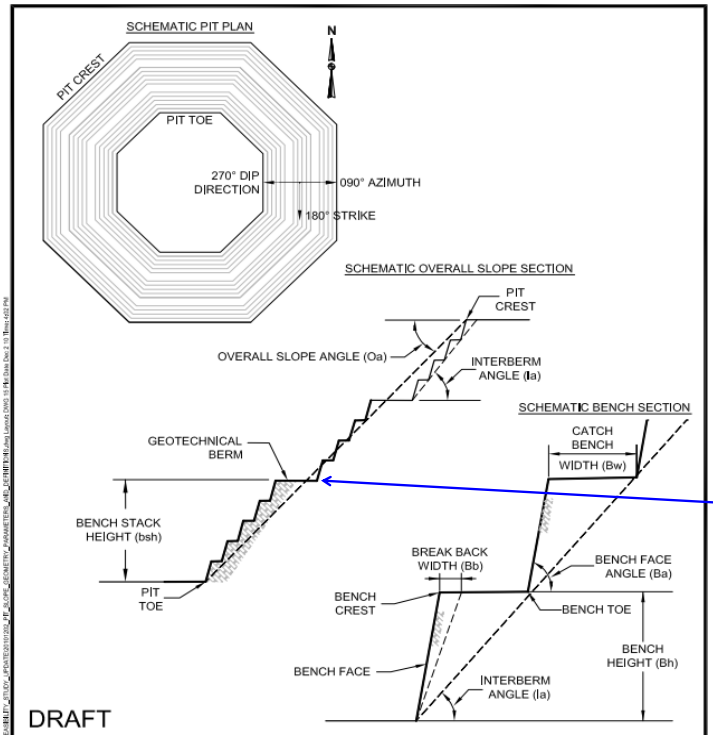
IRA item	Domain	Design Sector	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
6	SHW-V	SHW-V-280	270	290	49	50	46
6		SHW-V-323	290	355	40	42	37
6		SHW-V-028	355	060	45	45	42
6		SHW-V-075	060	090	36	41	36
7	SFW-C	SFW-C-265	220	310	45	49	45
7		SFW-C-333	310	355	49	53	49
7		SFW-C-015	355	035	50	53	50
7		SFW-C-045	035	055	45	49	45
7		SFW-C-070	055	085	40	45	40
8	SFW-V	SFW-V-190	172	207	40	44	37
8		SFW-V-222	207	237	47	50	44
8		SFW-V-269	237	300	37	41	35
8		SFW-V-333	300	005	40	44	37
8		SFW-V-033	005	060	36	37	34
8		SFW-V-090	060	120	40	41	38
8		SFW-V-146	120	172	36	40	34

Kerr



BGC (Derek Kinakin) - Feb 15, 2011

IRA item	Domain	Design Sector	Azimuth start	Azimuth end	Iba degrees	Oa degrees	LG SLOPE
9	KVOL	KVOL-236	180	292	50	49	46
9		KVOL-335	292	017	36	37	34
9		KVOL-065	017	112	34	36	34
9		KVOL-126	112	140	40	41	37
9		KVOL-160	140	180	45	45	41
10	KALT	KALT-180	135	225	36	25	25
10		KALT-000	225	135	36	40	34



file: "20101206 GEOMETRY PARAMETERS AND DEFINITIONS.pdf"
BGC (Derek Kinakin) - Dec 07, 2010

For ALL pits, a geotechnical berm is required every 150m in elevation (minimum 20m wide)

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

PIT SLOPE MATRIX (from wall azimuth) - Iba values from BGC

All Pits

BGC Domain	ksmp15.dat	Azimuth		transition angles manually added to help with smoothing of the wall																																		
or domain description	IRA value	0	5	17	20	35	40	50	55	60	65	108	112	115	120	135	140	165	168	172	180	190	198	207	210	220	225	230	237	250	270	280	290	292	295	300	310	325	345	355
Above STF (IV)	1	46																			42	39			34						34						46	46		
Between STF and MTF (II and III)	2	44			46			40			36	34						40	46												44									
Below MTF (I)	3	46					48							45	42	36									40		44	48		52						46				
IC above STF (SHW-S)	4	44																																						
IC below STF (IC-QSP)	5	34																37				44	50		44			40				44		49	44		40	36		
SHW-V	6	45							40	36																		43			49	45	40							45
SFW-C	7	50				45			40														45			45											49			50
SFW-V	8	40	36							40					36					40				47		42			37							40				
KVOL	9	36		34									40				45				49											43		36						
KALT	10	36													30	25									30		36													

BENCH FACE MATRIX (from wall azimuth) - Ba values from BGC

All Pits

BGC Domain	ksmp15.dat	Azimuth		
or domain description	IRA value	0	115	210
Above STF (IV)	1	70		
Between STF and MTF (II and III)	2	70		
Below MTF (I)	3	70	60	70
IC above STF (SHW-S)	4	65		
IC below STF (IC-QSP)	5	65		
SHW-V	6	65		
SFW-C	7	65		
SFW-V	8	65		
KVOL	9	65		
KALT	10	60		

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

2012

RESERVE/RESOURCE ESTIMATION

Pit Delineated Reserve Calculation - Using MineSight PITRES and GNDLN routines

		TOTAL LOSS	
MINING RECOVERY			
MITCHELL	97.8%	2.2%	Feb 15, 2012 MMTS calculation (JA)
SULPHURETS	94.7%	5.3%	Feb 15, 2012 MMTS calculation (JA)
KERR	95.5%	4.5%	Feb 15, 2012 MMTS calculation (JA)
WHOLE BLOCK DILUTION			
MITCHELL	0.8%		Feb 15, 2012 MMTS calculation (JA)
SULPHURETS	3.9%		Feb 15, 2012 MMTS calculation (JA)
KERR	3.2%		Feb 15, 2012 MMTS calculation (JA)
			Loss and Dilution calculations on FTP

Cut-Off Grade - NSR			
MITCHELL + IC	9.57	$C/t	from Wardrop process costs
SULPHURETS	10.17	$C/t	from Wardrop process costs
KERR	9.61	$C/t	from Wardrop process costs
Default SG:			
MITCHELL	2.78	t/m^3	pitres run on Feb 22, 2011
SULPHURETS	2.77	t/m^3	pitres run on Feb 22, 2011
KERR	2.85	t/m^3	pitres run on Feb 22, 2011
IRON CAP	2.74	t/m^3	pitres run on Feb 22, 2011

NSR = RCU*22.046*2.93 + RAU*39.02 + RAG*0.649 + RMO/10000*22.046*9.7

updated from 2012 metal prices

Ore NSR Cut off

COG (covers process)	9.57	$C/t ore
Sub grade (Covers milling plus S/P R/H + 20% rec loss)	11.48	$C/t ore
Mid Grade (Covers milling + mining costs + 10% premium) rounded up	11.00	$C/t ore
High Grade 1	14.00	$C/t ore
High Grade 2	16.00	$C/t ore
High Grade 3	18.00	$C/t ore
High Grade 4	20.00	$C/t ore
High Grade 5	24.00	$C/t ore
High Grade 6	28.00	$C/t ore
Based on:		
Mining		$C/t ore
Process	9.568	$C/t ore
Stockpile rehandle		$C/t ore

Dilution Grades

MMTS pitres runs on Feb 15, 2012 (checked by JA)

	5<NSR<9.57	5<NSR<10.17	5<NSR<9.61
	M685	Sulphurets PIT13	Kerr PIT13
output file	mdln.rpt	sdiln.rpt	kdln.rpt
NSR	7.55	8.19	7.60
CUIDW	0.043	0.056	0.106
AUIDW	0.229	0.333	0.141
RCU	0.021	0.028	0.069
RAU	0.136	0.160	0.077
AGIDW	1.45	0.59	0.78
MOIDW	59.4	19.0	0.0
RAG	0.67	0.18	0.24
RMO	20.6	3.3	0.0

PFS Reserves Based on Mitchell Series 8 Pits and Kerr, Sulphurets Series 9 in "KSM RESERVE 19 April 2012.xlsx"

Check files on FTP

Area	Ore (mt)	Diluted Grades NSR (Cdn$/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	Waste (mt)	S/R (t:t)	MineSight Files .out	.rpt	.scd
Mitchell Pit											
M681	88	39.7	0.839	0.227	3.40	24.6	67	0.8	M1		M1
M682i	239	31.4	0.689	0.177	2.58	64.0	423	1.8	M2		M2i
M683i	116	28.9	0.643	0.155	3.38	53.0	287	2.5	M3		M3i
M684i	209	24.3	0.544	0.136	2.34	86.4	257	1.2	M4		M4i
M685i	322	28.2	0.618	0.157	3.24	62.3	486	1.5	M5		M5i
Subtotal	973	29.3	0.642	0.163	2.92	63.4	1 519	1.6			
Kerr Pit											
K691	242	30.6	0.244	0.454	1.20	0.0	665	2.7	K1		K1
Sulphurets Pit											
S691	101	31.4	0.654	0.261	0.59	54.9	167	1.7	S1		S1
S692i	217	25.0	0.553	0.200	0.88	48.6	683	3.2	S2		S2i
Subtotal	318	27.0	0.585	0.219	0.79	50.6	850	2.7			
Subtotal Pit	**1 533**	**29.0**	**0.567**	**0.221**	**2.20**	**50.7**	**3 035**	**2.0**			
Underground Mining											
Mitchell	438	26.4	0.529	0.165	3.48	33.6	-	-			
Iron Cap	193	25.3	0.450	0.196	5.32	21.5	-	-			
Subtotal	**631**	**26.1**	**0.505**	**0.174**	**4.05**	**29.9**	-	-			
Grand Total	**2 164**	**28.1**	**0.549**	**0.207**	**2.74**	**44.7**	**3 035**	**1.4**			

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

PIT DESIGN

Equipment Fleet
Major Mining Fleet

Shovels	100 tonne dipper cable shovels (P&H 4100)		
Trucks	345 tonne truck (CAT 797)	Drills	Primary = 12 1/4 inch electric drill (P&H 120A) high wall = 150 mm diesel - (Sandvick D2455)

Equipment Selection

Bunching Maximum (dependant on fleet match)	15%		CAT
Shift eff for tkph calc	75%		CAT
TKPH limit (797 59/80R63)	2218		Michelin XDR C4
Fleet Matching factor	<1		MMTS
Minimum 3 passes to load a truck.			
Max pit ramp slope	8%		For winter conditions
Min haul road radius	75	m	CAT Handbook
Waste Dump Angle of Repose	37°		Blasted rock
Largest Vehicle Overall Width (CAT 797B)	9.8	m	CAT 797 Spec
Maximum Tire Height (59/80R63)	4.0	m	Michelin
Minimum Haul road outside berm height	3.0	m	Mines Act based on tire height
Minimum Shoulder / Berm Width	8.9	m	
Double lane highwall haul road allowance	38.2	m	BC Mines Act
Double lane external haul road allowance	47.2	m	BC Mines Act
Single lane highwall haul road allowance	28.5	m	BC Mines Act
Single lane external haul road allowance	37.4	m	BC Mines Act
Runaway lanes or retardation barriers where conditions/risk warrant on roadways where			BC Mines Act
Speed Limits Around Corners	40.00	kph	CAT Handbook

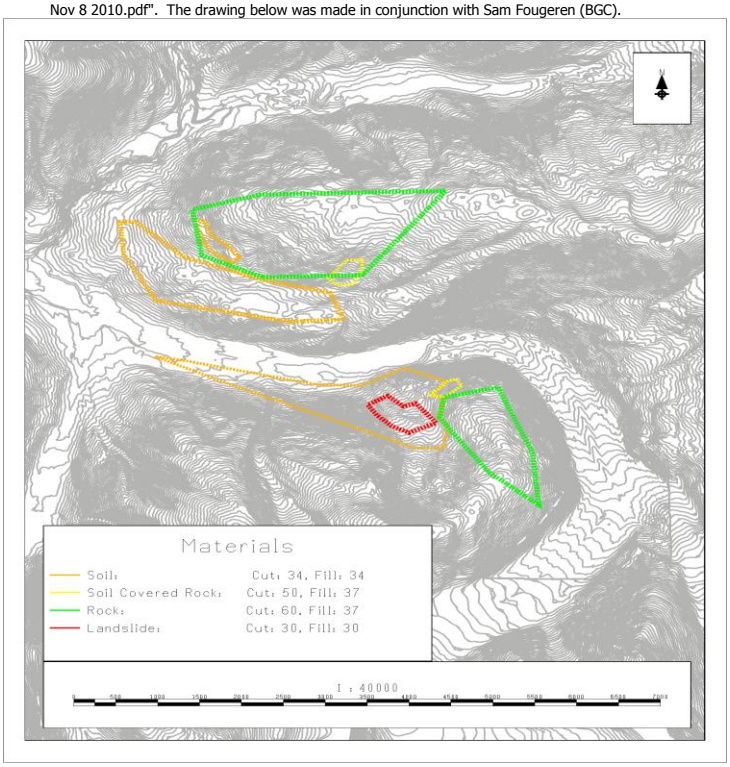
Last bench will not need haul road. Temporary internal ramps will be used
Last 2 haul benches have single lane haul roads
Minimum pit base width is shovel operating width. 50 m *JA estimate, Jan 2011*

	# of lanes	Grade
Main Ramp	2	8%
Last 2 benches of Ramp	1	8%
Last 2 benches of Pit Phase	No ramp	

Current Road Series **Series 8 - 5** *msr objects built by Jesse, Feb 2012 and Matt in Apr 2012*

Sulphurets Valley Design Criteria *Added January 4 2011*

Based on "KSM_MineSiteRoads_Draft.pdf", and "Summary of Geotech Cut Fill Prescriptions Nov 8 2010.pdf". The drawing below was made in conjunction with Sam Fougeren (BGC).



Mitchell Valley North Design Criteria *added October 13, 2010*

Cuts under 30m high	60 Degrees	BGC (Sept 2010)
Cuts over 30m high	50 Degrees	
MSE fill	85 Degrees	Must be less than 25m high

Road Design (External to pit, Non-Haul Road) *added March 3, 2010*

	Lanes	Width	Max Grade	Description
Type I	2	20	10%	Well traveled, main access roads: all vehicles, can accomodate limited un-loaded haul truck access
Type II	1	10	10%	Light traveled, main access roads: light trucks, tractor trailers, and service vehicles
Type III	1	12	15%	Infrastructure service roads: pick-up trucks and service/parts vehicles, tractor trailers may require chains
Type IV	1	6	15%	Remote facility access road: pick-up trucks
Type V	1	10	15%	Pioneering road: limited use, construction equipment

Berms

20m berm every 5 double benches (150m) vertical height
(as recommended to BGC by Pete Stacey)

receved in email from Derek Kinakin (BGC) on Dec 7, 2010

Waste Dump Engineering Based on Rescan's "KSM RSF Closure Criteria Memo 21JAN11.pdf"

Natural angle of repose	37°	*Updated January 4 ,2011*
Maximum free dumping height	300 m	
Dumped waste swell factor	1.2	
Reclaimed dump slopes	26°	

Type A: Reclaimed Slopes

- Approximately 3m service roads will be built in the slope every 30m vertically (insignificant effect on overall slope)
- Dump face angle (26 Deg.)
- Overall slope angle (26 Deg.)
- Cover will be placed on entire slope

Type B: Reclaimed Flats Only

- Flat benches will be provided at 15m vertical intervals
- Dump face angle (37 Deg)
- Overall slope angle (26 Deg)
- Cover will be placed on flat benches only

McTagg RSF

Below 1100m
- Overall Slope 26°
- Reclamation **Type A or B**

Above 1100m
- Face Slope 37°
- Overall Slope 37° plus ramps and 3m benches
- Reclamation none
- **Maximum 50m vertical interval of continuous slope**

Mitchell RSF

Below 840m
- Overall Slope 26°
- Reclamation **Type A or B**

Above 840m
- Face Slope 37°
- Overall Slope 26°
- Reclamation Till on flats up to 1100m elev.
- **Maximum 50m vertical interval of continuous slope** (50m lift heights)

Sulphurets RSF

Below 1100m (entire RSF)
- Overall Slope 26°
- Reclamation Type A or B

Production Drilling and Blasting

Drilling - Primary Drill (P&H 120A)

Pattern - m2 (8.5m square equivalent)	72.25	m2	from Orica Sabrex report
SG - t/m3	2.77	t/m3	
Bench Height - m	15	m	
Yield (t/hole)	3 002	t/hole	
Sub-drill	2	m	from Orica Sabrex report
Penetration Rate - m/hr	25	m/hr	estimation (based on other studies and actual numbers)
Hole depth	17	m	
Setup Time - minutes	2.0	min	
Drill Time - minutes	40.5	min	
Move Time - minutes	2.0	min	
Total Cycle Time - minutes	44.5	min	
Holes per Hour	1.35		

Blasting

Spacing / Burden	8.5	m	from Orica Sabrex report
Hole Size	311	mm	from Orica Sabrex report
	12.25	inch hole	
Explosive In-Hole Density	1.25	g/cc	from Orica Sabrex report
	95.0	kg/m	
Bench Height	15	m	
Sub-drill	2.0	m	from Orica Sabrex report
Collar	6	m	from Orica Sabrex report
Charge per hole	**1046**	**kg/hole**	
Tons per hole	3 002	t/hole	
Powder factor	0.35	kg/t	from Orica Sabrex report
	0.97	kg/m3	
% ANFO	0.30		from Orica Sabrex report
Bulk Explosive - $/ kg	$ 0.70	$/kg	
Initiation Systems - $/ hole	$ 15.55	$/hole	"Seabridge Gold Operation with capital costs October 2009.doc"
Booster - $ each	$ 6.50	$ each	"Seabridge Gold Operation with capital costs October 2009.doc"
highwall hole spacing	1.80	m	"KSM - Mitchell Pit - Wall Control PFS.xls"

No drilling and blasting differentiation between rocktypes

Seabridge Gold Inc.

MINE DESIGN BASIS - KSM PFS UPDATE 2012

SCHEDULING

A Minimum mill feed Cu grade of 0.15% is required

Phase Names

M681	Mitchell starter pit
M682	Incremental pushback to the south
M683	First mining phase on the north side
M684	Incremental pushback to south final limits
M685	Pushback to north final limits - Mitchell ultimate open pit (1200m highwall)
S691	Sulphurets starter pit
S692	Sulphurets final pit
K691	Kerr ultimate pit

Times

Spot & DumpTime	0.5	min
Delay Time	1.0	min
Truck Factor	363	Tonne per load

Haul Cycles

Rolling Resistance In Pit	5	%
Rolling Resistance On Ramp	3	%
Rolling Resistance Haul Road	3	%
Rolling Resistance On Dump	8	%

Loading Time

PFS Production Schedule

Shovel	Truck	Cycle Time per pass sec	# Passes	Job Efficiency %	Spot and Wait time per load sec	Operating Efficiency	Utilization Efficiency	MS-SP Loading Time min / load	MS-SP Efficiency factor	Productivity tonne/ ophr
RH400 85t	CAT 797	35	4	84%	10	80%	96%	2.94	80%	5918
P&H 4100 104t	CAT 797	35	4	84%	10	80%	96%	2.94	80%	5918
EX5500	CAT 797	35	7	84%	10	80%	96%	5.03	80%	3466

Truck Haul Times

Spot & Dump Time	1.5	min	MMTS Estimate
Truck Operating Efficiency (to MSSP)	83%		MMTS Estimate
Truck Factor Waste and ORE	363	tonne per load	CAT spec

Haul Cycles

Rolling Resistance In Pit	5	%	MMTS Estimate
Rolling Resistance On Ramp	3	%	MMTS Estimate
Rolling Resistance Haul Road	3	%	MMTS Estimate
Rolling Resistance On Dump	5	%	MMTS Estimate
Haul Operator Efficiency	90%		MMTS Estimate
Max speed	50 km/h		MMTS Estimate

Weather Studies

MEMORANDUM

To: Jim Gray, GR Technical Services
From: W. Scott Dunbar
Date: May 20, 2010
Subject: Simulation of KSM Storm Production Scenarios

Table 2
Results of Simulation
Expected Hours at Each Level during Storm Season

	Level 2	Level 3	Level 4	Level 5
Average (hrs)	47.4	84.6	55.8	26.2
Standard deviation (hrs)	0.9	8.5	14.9	13.6

Operation Level	Duration *D* (hrs)	Description
L1	na	Normal snow season operation (derated for snow)
L2	$D \leq 6$	5 shovels, 2 scrapers, 2 graders
L3	$6 < D \leq 12$	4 shovels, 4 scrapers
L4	$12 < D \leq 18$	2 shovels, 6 scrapers
L5	$D > 18$	0 shovels (Full pit shutdown, mill fed from stockpile)

For a 5 Shovel Operation

Visibility less than 1 km days	4.75	Days	Rescan Memo :11/19/2010
Days down required for Extreme Weather (Level 5)	1.5	Days	
time at level 4	55.8	Hours	
time at level 3	84.6	Hours	
time at level 2	47.4	Hours	
Mine Load And Haul Utilization adjustment at Level 4	40%		
Mine Load And Haul Utilization adjustment at Level 3	60%		
Mine Load And Haul Utilization adjustment at Level 2	80%		
Weighted Lost hours Ajustment for Extreme Weather L2 to L4	-76.8		
Weighted Utilization Ajustment for Extreme Weather L2 to L4	-1.0%		(TM: I allowed an -3% reduction in the cost model)

Waste classification

(values imported into ksmp15.dat)

received file "06-04-10 KSM ABA Model-CSV.zip" from Mike Lechner
Updated by ME based on April 2 2012 report
ABA model was generated on April 2, 2012

SNPRA	Label	ABA	
0-1.2	PAG	1	
1.2-2	Uncertain	2	
2+	NAG	3	
	Ice	4	(coded from BGC and KCB ice solids)
	Rehandle	5	

PRODUCTION AND LABOUR ASSUMPTIONS

Crews	4
Shifts per Day	2
Hours per Shift	12
Calendar days per year	365
Non scheduled days (shutdowns, weather etc.)	5
Scheduled working days per year	360
Total Mine Calendar Hours	8 640
Shift Utilisation (10.5/12)	0.875
Scheduled working hours	7560
Efficiency (50 min hours)	0.83
Based on two 12 hr shifts/day, 7 days/week	

Plans Construction fill from material with SNPRA > 1.9. (From Borrow Pit)

Waste Needed for Waster Storage Dam during PP :

6.5 Mm3 of random rockfill and 0.7 Mm3 of non acid reactive (ie intrusive) rockfill, 1.4 Mm3 of competent angular rock fill.

Table 8.1 Borrow Materials Required for Construction of Ultimate WSD

Zone	Material	To 706 m (Km^3)	To 716 m (Km^3)*	Source
1	Random Rockfill	5 674	912	Pit run of nearby quarrying or impoundment area quarry. Mine prestripping rock is also a potential source of rockfill.
2	Non Reactive (NR) Rockfill	597	96	Select quarried rock (Intrusives or phyllites)
3	Clean Rockfill	1 194	192	Select free draining coarse rockfill
4	Drain	337	-	Screened alluvial sands and gravels – Ted Morris Valley
5	Non-Reactive (NR) Filter /Transition	225	15	Screened alluvial material or crushed intrusives
6	Random Moraine Central Earth Zone	1 528	73	Moraine area at McTagg-Mitchell confluence
7	Aggregate for Asphalt Core Zones	44.2	4.2	Screened moraine material
	SubTotals	**9 599**	**1 292**	
	Total Fill	**10 891**		

* Additional volume to raise to 716 m

drillhole file: ksmp11.012
3d surface model: ksmp13.011
3d block model: ksmp15.dat

ksmp15.dat

ITEM	MIN	MAX	PREC	Description
TOPO	0	100	1	percentage of the block that is below topography
SG	0	5.09	0.01	SG t/m3
AUIDW	0	8.19	0.001	Au grade g/t
CUIDW	0	2.05	0.001	Cu grade %
MOIDW	0	2045	1	Mo Grade ppm
AGIDW	0	409.3	0.1	Ag grade g/t
LITH	0	29	1	Lithologic Code
AREA	0	5	1	provided by Mike Lechner (1=Kerr, 2=Sulphurets, 3=Mitchell, 4=Iron Cap)
FAULT	0	5	1	(Not loaded)
CLASS	0	5	1	Class 1= measured, 2 = indicated, 3 = inferred
ORTYP	0	29	1	provided by Mike Lechner (codes outlined in table below)
AUREC	0	100	0.1	Au recovery %
CUREC	0	100	0.1	Cu recovery %
MOREC	0	100	0.1	Mo recovery %
AGREC	0	100	0.1	Ag recovery %
RAU	0	8.19	0.001	Au recovered grade g/t
RCU	0	2.05	0.001	Cu recovered grade %
RMO	0	2045	1	Mo recovered Grade ppm
RAG	0	410	0.1	Ag recovered grade g/t
NSR	0	500	0.01	NSR $/t
IRA	0	90	1	Inter ramp angle code (see pit slope sheet)
BFA	0	90	0.1	Bench Face angle code (see pit slope sheet)
SNPRA	0	200	0.1	Neutralizing potential, imported into model from Jun 4, 2010 ard file provided by Mike Lechner (will be updated mid February 2012)
ABA	0	5	1	1=PAG, 2=Uncertain, 3=NPAG, 4=Ice, 5=Rehandle (will be updated mid February 2012)
ROCK	0	200	1	(Used to distinguish rock type and ABA data, see table below)
ALTER	0	100	1	Alteration Code (not loaded)
SPABA	0	100	0.1	
CLAS1	0	1000	0.1	
REHAN	0	100	0.001	
MABA	0	100	1	Mitchell ABA
KABA	0	100	1	Kerr ABA
SABA	0	100	1	Sulphure ABA
IABA	0	100	1	Iron Cap ABA
RESCA	0	10000	0.01	Used to find ABA values of the pit surface
RATE	0	1000	0.001	
AROCK	0	100	0.1	
XTRA2	0	100	0.1	
XTRA3	0	100	0.1	
NSR11	0	500	0.01	
AUEQ	0	8.19	0.001	Gold Equivalent Grade

ROCK	AROCK	Description	ABA
1	11	Kerr - overburden	SNPRA<1.2
2	12	Kerr - CL-PR	SNPRA<1.2
3	13	Kerr - QSP	SNPRA<1.2
4	14	Kerr - weak CLQSP	SNPRA<1.2
5	15	Kerr - dikes (Premier & hornblende)	SNPRA<1.2
6	19	Kerr - undefined	SNPRA<1.2
7	21	Sulphurets - overburden	SNPRA<1.2
8	22	Sulphurets - Au, leach & Raewyn zones	SNPRA<1.2
9	23	Sulphurets - lower Au zone	SNPRA<1.2
10	24	Sulphurets - lower plate Hazelton	SNPRA<1.2
11	25	Sulphurets - upper plate Hazelton	SNPRA<1.2
12	26	Sulphurets - monzonite	SNPRA<1.2
13	29	Sulphurets - undefined	SNPRA<1.2
14	31	Mitchell - overburden	SNPRA<1.2
15	32	Mitchell - glacial ice	SNPRA<1.2
16	33	Mitchell - upper plate Hazelton	SNPRA<1.2
17	34	Mitchell - lower plate Hazelton	SNPRA<1.2
18	35	Mitchell - monzonite	SNPRA<1.2
19	36	Mitchell - bornite/leach breccia	SNPRA<1.2
20	39	Mitchell - undefined	SNPRA<1.2
21	41	Iron Cap - overburden	SNPRA<1.2
22	42	Iron Cap - glacial ice	SNPRA<1.2
23	43	Iron Cap - Hazelton	SNPRA<1.2
24	44	Iron Cap - diorite	SNPRA<1.2
25	45	Iron Cap - monzonite	SNPRA<1.2
26	49	Iron Cap - undefined	SNPRA<1.2
27	11	Kerr - overburden	1.2<=SNPRA<2
28	12	Kerr - CL-PR	1.2<=SNPRA<2
29	13	Kerr - QSP	1.2<=SNPRA<2
30	14	Kerr - weak CLQSP	1.2<=SNPRA<2
31	15	Kerr - dikes (Premier & hornblende)	1.2<=SNPRA<2
32	19	Kerr - undefined	1.2<=SNPRA<2
33	21	Sulphurets - overburden	1.2<=SNPRA<2
34	22	Sulphurets - Au, leach & Raewyn zones	1.2<=SNPRA<2
35	23	Sulphurets - lower Au zone	1.2<=SNPRA<2
36	24	Sulphurets - lower plate Hazelton	1.2<=SNPRA<2
37	25	Sulphurets - upper plate Hazelton	1.2<=SNPRA<2
38	26	Sulphurets - monzonite	1.2<=SNPRA<2
39	29	Sulphurets - undefined	1.2<=SNPRA<2
40	31	Mitchell - overburden	1.2<=SNPRA<2
41	32	Mitchell - glacial ice	1.2<=SNPRA<2
42	33	Mitchell - upper plate Hazelton	1.2<=SNPRA<2
43	34	Mitchell - lower plate Hazelton	1.2<=SNPRA<2
44	35	Mitchell - monzonite	1.2<=SNPRA<2
45	36	Mitchell - bornite/leach breccia	1.2<=SNPRA<2
46	39	Mitchell - undefined	1.2<=SNPRA<2
47	41	Iron Cap - overburden	1.2<=SNPRA<2
48	42	Iron Cap - glacial ice	1.2<=SNPRA<2
49	43	Iron Cap - Hazelton	1.2<=SNPRA<2
50	44	Iron Cap - diorite	1.2<=SNPRA<2
51	45	Iron Cap - monzonite	1.2<=SNPRA<2
52	49	Iron Cap - undefined	1.2<=SNPRA<2
53	11	Kerr - overburden	2<=SNPRA
54	12	Kerr - CL-PR	2<=SNPRA
55	13	Kerr - QSP	2<=SNPRA
56	14	Kerr - weak CLQSP	2<=SNPRA
57	15	Kerr - dikes (Premier & hornblende)	2<=SNPRA
58	19	Kerr - undefined	2<=SNPRA
59	21	Sulphurets - overburden	2<=SNPRA
60	22	Sulphurets - Au, leach & Raewyn zones	2<=SNPRA
61	23	Sulphurets - lower Au zone	2<=SNPRA
62	24	Sulphurets - lower plate Hazelton	2<=SNPRA
63	25	Sulphurets - upper plate Hazelton	2<=SNPRA
64	26	Sulphurets - monzonite	2<=SNPRA
65	29	Sulphurets - undefined	2<=SNPRA
66	31	Mitchell - overburden	2<=SNPRA
67	32	Mitchell - glacial ice	2<=SNPRA
68	33	Mitchell - upper plate Hazelton	2<=SNPRA
69	34	Mitchell - lower plate Hazelton	2<=SNPRA
70	35	Mitchell - monzonite	2<=SNPRA
71	36	Mitchell - bornite/leach breccia	2<=SNPRA
72	39	Mitchell - undefined	2<=SNPRA
73	41	Iron Cap - overburden	2<=SNPRA
74	42	Iron Cap - glacial ice	2<=SNPRA
75	43	Iron Cap - Hazelton	2<=SNPRA
76	44	Iron Cap - diorite	2<=SNPRA
77	45	Iron Cap - monzonite	2<=SNPRA
78	49	Iron Cap - undefined	2<=SNPRA

Ore Type	
ORTYP	Description
1	Mitchell - QSP
2	Mitchell - IARG
3	Mitchell - CL-PR
4	Mitchell - High quartz
5	Mitchell - Hornfels (upper plate)
6	Mitchell - Hornfels (lower plate)
7	Monzonite - Mitchell and Sulphurets
8	Mitchell - Bornite breccia
9	Sulphurets - Gold breccia
10	Sulphurets - Gold leach breccia
11	Sulphurets - Raewyn Copper
12	Sulphurets - Hazelton volcanics
13	Sulphurets - Late mafic intrusions
14	Kerr - all material
15	Iron Cap – all material
29	Undefined