Ore Body Plan

Year	Ore body feed	Ore Grade	Water	Solids	Fines (<44um)	Coarse (>44um)	ore to Overburden	Construction Suitable OB
	tonne/year	%	%	%	%	%	ratio	%
0	600147	0	0.055	1	0.5	0.5	0.1	1
1	1004000	0	0.055	1	0.5	0.5	0.1	1
2	1071000	0	0.055	1	0.5	0.5	0.1	1
3	1174000	0	0.055	1	0.5	0.5	0.1	1
4	1590000	0	0.055	1	0.5	0.5	0.1	1
5	1674000	0	0.055	1	0.5	0.5	0.1	1
6	1930000	0	0.055	1	0.5	0.5	0.1	1
7	2000000	0	0.055	1	0.5	0.5	0.1	1
8	2000000	0	0.055	1	0.5	0.5	0.1	1
9	2000000	0	0.055	1	0.5	0.5	0.1	1
10	2000000	0	0.055	1	0.5	0.5	0.1	1
11	2000000	0	0.055	1	0.5	0.5	0.1	1
12	2000000	0	0.055	1	0.5	0.5	0.1	1
13	2000000	0	0.055	1	0.5	0.5	0.1	1
14	2000000	0	0.055	1	0.5	0.5	0.1	1
15	2000000	0	0.055	1	0.5	0.5	0.1	1
16	2000000	0	0.055	1	0.5	0.5	0.1	1
17	2000000	0	0.055	1	0.5	0.5	0.1	1
18	2000000	0	0.055	1	0.5	0.5	0.1	1
19	2000000	0	0.055	1	0.5	0.5	0.1	1
20	1502000	0	0.055	1	0.5	0.5	0.1	1
21	1363000	0	0.055	1	0.5	0.5	0.1	1
22	1349000	0	0.055	1	0.5	0.5	0.1	1
23	1343000	0	0.055	1	0.5	0.5	0.1	1
24	1140000	0	0.055	1	0.5	0.5	0.1	1
25	795000	0	0.055	1	0.5	0.5	0.1	1
26	732000	0	0.055	1	0.5	0.5	0.1	1
27	732000	0	0.055	1	0.5	0.5	0.1	1
28	381000	0	0.055	1	0.5	0.5	0.1	1
29	1	0	0.055	1	0.5	0.5	0.1	1

Site Data

Specify climatic data pertanent to evaporation and precipitation events.

Month	month	Pond evaporation (mm/day)	Pond evaporation (mm)
April	1	3.18	95.4
May	2	3.06	91.9
June	3	3.83	114.8
July	4	4.46	133.7
August	5	4.83	144.8
September	6	4.66	139.9
October	7	4.40	132.1
November	8	2.83	85
December	9	3.27	98.2
January	10	3.01	90.2
February	11	2.72	81.5
March	12	3.85	115.5

These data would come from local weather data or estiamted

pan factor 1

Month	month	Rainfall (mm/day)	Rainfall (mm)
April	1	5.90	177.1
May	2	2.71	81.4
June	3	0.27	8.1
July	4	0.16	4.9
August	5	0.72	21.6
September	6	1.46	43.9
October	7	2.56	76.8
November	8	4.52	135.5
December	9	4.35	130.5
January	10	3.79	113.7
February	11	3.44	103.3
March	12	4.99	149.8

such as sewage, mine pit water etc.

Max reclaim rate 415 m3/hr

Seepage Collection Pond Data

Area 5625 m2

runoff catchment 150000 m2

determines if ppt is available as runoff or trapped as snow/ice

Month	month	temp C
April	1	15
May	2	15
June	3	15
July	4	15
August	5	15
September	6	15
October	7	15
November	8	15
December	9	15
January	10	15
February	11	15
March	12	15

Extraction/Processing Properties

Extraction efficiency is specified as a triangular distribution with most likey value, ext_eff used in deterministic simulations. User must also specify the min and max values possible.
Value defined is fraction of ore (dry mass) that is converted to extracted mineral

	Type	A			
ext_eff	most likely	0.108799	reject solids %		0.8
ext_eff	min	0.108799	tailings solids %		0.285
ext_eff	max	0.108799	mill loss	per tonne ore	0.01
concentrate water	%	0.08	amount of water lost to concentrate		

Fraction of ore that is sent to disposal area is calcuated direclty in GOLDSIM. Calculated as 1-ext_eff-bk_eff.
Calculating in GOLDSIM allows the probability function be used, i.e. If low extraction efficiency than tails fraction will be greater as more ore is diverted to the disposal area.

reject_eff	0.085782	Fraction of ore stream remaining less minerals and tailings fraction This material is sent to backfill in the mine or in waste pile. May also include oversize screened material also referred to as rejects

Mill/Mine Water Requirements

Specify the water requirements in the process plant. These are required to calculate the reclaim water needed from the impoundment.

process_reclaim (AVG)	2.005762	process water needed per tonne of ore (m3/tonne)

Month	month	**Process reclaim by month m3/tonne**	from model	Seepage pond pump back to etf1
April	1	0.000	1.997	2102.00
May	2	0.000	1.974	1116.00
June	3	0.000	2.072	218.00
July	4	0.000	2.007	77.00
August	5	0.000	2.000	191.00
September	6	0.000	2.056	452.00
October	7	0.000	1.976	841.00
November	8	0.000	2.015	1723.00
December	9	0.000	1.952	1596.00
January	10	0.000	1.960	1465.00
February	11	0.000	2.175	1404.00
March	12	0.000	1.944	1701.00

Max reclaim rate (startup)	369.90	m3/hr	Time	7.00	year	369.90
Max reclaim rate (Full)	409.30	m3/hr	Time	22.00	year	409.30
Max reclaim rate (Final)	295.90	m3/hr	TIme	29.00	year	295.90

Water Cover	8.00	m
Start up in TDF	0.00	m3
Min water cap	3.00	m

mIsc. Mine Flows	11.70	m3/hr

such as sewage, mine pit water etc.

chemical	0	fraction of ore feed rate (t/yr)

Extraction Ore schedule

If more than one ore type is expected, the user can specify the time line of each ore type. Then an if statement can be used to determine which tailings properties to use.

Ore A	7.00	year
Ore B	22.00	year
Ore C	29.00	year

Fresh water source timeline

Source A	29.00	year
Source B	29.00	year

Tailings Properties

Specify tailings properties. Currently these values are constant with time. If these values are function of time or of ore grade, user must modfiy GOLDSIM to reflect time series.

TYPE		A	B	C
dens_water	kg/m3	1000	1000	1000
dens_solid	kg/m3	2270	2270	2270
Sg_ore		2.1		
Sg_tails		4.09	4.09	4.09
eo		10.261	0	0
ef		0.801	0.47	0.47
Sg_fines		4.09		
Sg_coarse		4.09		
Sg_bitumen		1.01		

Sedimentation data

eslurry(eo)		10.261		
esed(ef)		0.801		
time	months	1		
eslurry(eo)	S%	28.5		
esed	s%	72.5		

Consolidation Parameters

e=A*sigma^B+M

	A	B	C
A	1.2649	1.2649	1.2649
B	-0.111	-0.111	-0.111
M	0	0	0

k=C*3^D

C	1.00E-06	1.00E-06	1.00E-06
D	7.2167	7.2167	7.2167

Deposition Properties

Specify tailings depositional properties. Currently these values are constant with time. If these values are function of time or of ore grade, user must modfiy GOLDSIM to reflect time series.

TYPE		A	Min	Max	
cell dry density	tonne/m3	1.45			
beach dry density	tonne/m3	1.45			
Engineered Tailings (i.e. CT)	tonne/m3	1.6			
beach capture		0.5			
sand runoff decision		0			1 if true, 0 if no runoff
Target CT S% in pipe		0.65	0.68	0.62	

Stage Curve Data - ETF 1

Stage curve data - Goldsim will read the stage curve data into a look up table that will interpolate between points user can implement any form of stage relationship in excel. Max height in stage curve must be greater thant the height in the actual disposal area

Volume	Height	area	area		
m3	m	m2	km2		
0.0	0.0	0.0	0	h	Area (km2)
237166.0	8.7	55125.8	0.055126	2.5	0.027562893
260589.0	9.2	62296.0	0.062296	2.5	0.027562893
267804.0	9.3	66106.3	0.066106	2.5	0.069961666
273322.0	9.4	67389.7	0.06739	2.5	0.097566797
284742.0	9.6	68225.1	0.068225	2.5	0.122844027
299789.0	9.9	69928.5	0.069929	2.5	0.146916335
322898.0	10.2	72483.0	0.072483	2.5	0.171553049
362962.0	10.7	74823.5	0.074824	2.5	0.198712089
401907.0	11.1	78258.7	0.078259	2.5	0.229141702
438947.0	11.5	81729.5	0.081729	2.5	0.261352311
475577.0	11.9	84797.5	0.084798	2.5	0.294862818
520630.0	12.3	87818.2	0.087818	2.5	0.331732811
575184.0	13.0	91247.4	0.091247	2.5	0.369591471
608451.0	13.3	95799.8	0.0958	2.5	0.403445880
622292.0	13.5	98858.9	0.098859	2.5	0.433217817
633446.0	13.6	100037.4	0.100037	2.5	0.464221573
647460.0	13.8	100787.3	0.100787	2.5	0.493938137
667589.1	14.0	101951.4	0.101951	2.5	0.527708961
699700.4	14.3	103504.9	0.103505	2.5	0.562390566
747762.4	14.8	106129.4	0.106129	2.5	0.593133521
793432.4	15.3	110336.0	0.110336	2.5	0.623143321
836152.4	15.6	113580.9	0.113581	2.5	0.650499197
877237.4	15.9	116049.1	0.116049	2.5	0.673207792
925767.4	16.3	118883.1	0.118883	2.5	
983906.4	16.7	121750.5	0.121751	2.5	
1017977.4	17.0	125408.1	0.125408	2.5	
1029841.4	17.1	127473.9	0.127474		
1053250.8	17.2	128332.1	0.128332		
1099280.2	17.6	129551.1	0.129551		
1145309.7	17.9	132444.6	0.132445		
1184763.5	18.2	135352.0	0.135352		
1234268.5	18.6	137752.9	0.137753		
1280607.5	19.0	141048.9	0.141049		
1323565.5	19.3	143980.0	0.14398		
1364995.5	19.6	146871.2	0.146871		
1414275.5	20.0	149281.4	0.149281		
1474510.5	20.3	152138.4	0.152138		
1508034.5	20.5	155963.0	0.155963		
1516586.5	20.6	157465.2	0.157465		
1521024.5	20.6	158003.0	0.158003		
1545184.8	20.7	158480.7	0.158481		
1598198.5	21.0	159492.5	0.159492		
1642376.6	21.3	162490.5	0.162491		
1692984.6	21.6	164882.4	0.164882		
1739972.6	21.8	167861.5	0.167862		
1783746.4	22.1	170898.0	0.170898		
1827924.4	22.3	172883.4	0.172883		

1880938.1	22.6	175290.0	0.17529
1948219.1	23.0	178228.5	0.178229
1995801.1	23.3	182132.8	0.182133
2039979.1	23.5	184625.4	0.184625
2084157.2	23.8	187142.9	0.187143
2137170.8	24.1	189592.5	0.189593
2181348.9	24.3	192580.4	0.19258
2225527.0	24.6	195102.2	0.195102
2282377.0	24.9	197470.6	0.197471
2334994.0	25.2	200947.0	0.200947
2386072.4	25.3	203824.8	0.203825
2455522.4	25.7	206257.7	0.206258
2513397.3	25.9	209800.9	0.209801
2583894.3	26.3	212798.7	0.212799
2640722.2	26.5	216964.1	0.216964
2710172.1	26.8	219390.2	0.21939
2768047.1	27.0	223074.0	0.223074
2837497.0	27.3	226070.4	0.22607
2895372.0	27.6	229721.2	0.229721
2964821.9	27.8	232793.3	0.232793
3024400.9	28.2	236305.9	0.236306
3079058.9	28.3	239938.9	0.239939
3129568.9	28.6	242450.1	0.24245
3178453.9	28.8	245484.7	0.245485
3236101.9	29.1	247809.5	0.24781
3330142.9	29.5	250796.6	0.250797
3396115.9	29.8	255560.4	0.25556
3433259.9	29.9	259198.6	0.259199
3464162.9	30.1	261084.5	0.261085
3522337.7	30.2	263011.0	0.263011
3597076.6	30.5	265289.5	0.265289
3671815.6	30.7	269099.2	0.269099
3756866.6	31.0	272705.9	0.272706
3836734.6	31.3	277220.0	0.27722
3913441.6	31.6	281818.2	0.281818
3989261.6	31.8	285582.8	0.285583
4070818.6	32.1	289229.4	0.289229
4180673.6	32.5	292935.0	0.292935
4258840.6	32.7	298835.7	0.298836
4304221.6	32.8	302604.5	0.302605
4344466.2	33.0	304928.9	0.304929
4404257.3	33.2	306401.9	0.306402
4464048.5	33.3	309435.3	0.309435
4527539.5	33.6	312505.7	0.312506
4627265.5	33.9	316094.1	0.316094
4721032.5	34.3	320611.0	0.320611
4811317.5	34.6	325975.6	0.325976
4900683.5	34.8	330490.8	0.330491
4996220.5	35.2	334865.8	0.334866
5109317.5	35.5	339664.6	0.339665
5186742.5	35.7	344787.8	0.344788
5227222.5	35.8	348292.7	0.348293
5259518.5	35.8	350127.2	0.350127
5294350.5	35.9	350959.9	0.35096
5339559.5	36.1	352744.8	0.352745
5400445.5	36.2	355435.3	0.355435
5501887.5	36.5	357870.6	0.357871
5596620.5	36.7	362240.3	0.36224

5687537.5	37.0	366729.5	0.366729
5777494.5	37.2	371104.3	0.371104
5873996.5	37.5	375307.4	0.375307
5989862.5	37.8	379601.7	0.379602
6066642.5	38.0	384711.6	0.384712
6102839.5	38.1	388223.0	0.388223
6129978.5	38.1	390059.8	0.39006
6159829.5	38.2	390897.8	0.390898
6201082.5	38.3	392680.5	0.39268
6259597.5	38.5	394511.7	0.394512
6362642.5	38.8	396929.4	0.396929
6458301.5	39.0	402179.2	0.402179
6549839.5	39.2	406674.1	0.406674
6640364.5	39.5	410184.0	0.410184
6737796.5	39.7	414381.0	0.414381
6856370.5	40.1	418668.8	0.418669
6932502.5	40.2	424787.8	0.424788
6964441.5	40.3	427918.1	0.427918
6986543.5	40.3	429065.1	0.429065
7011511.5	40.3	430055.2	0.430055
7048954.5	40.5	431143.7	0.431144
7105114.5	40.6	433308.1	0.433308
7209729.5	40.8	435152.9	0.435153
7306250.5	41.0	439317.7	0.439318
7398361.5	41.2	443603.1	0.443603
7489433.5	41.3	447766.9	0.447767
7587755.5	41.6	451722.9	0.451723
7708904.5	41.8	455775.7	0.455776
7784454.5	42.0	460805.2	0.460805
7812420.5	42.1	464965.2	0.464965
7850083.5	42.1	466118.2	0.466118
7883957.5	42.2	467169.4	0.467169
7937931.5	42.3	469341.4	0.469341
8044025.5	42.6	471176.5	0.471176
8141405.5	42.8	476364.6	0.476365
8234091.5	43.0	480676.3	0.480676
8325702.5	43.1	484834.4	0.484834
8424883.5	43.3	487748.9	0.487749
8548600.5	43.6	492830.2	0.49283
8623552.5	43.8	497845.5	0.497845
8647654.5	43.8	500984.3	0.500984
8676172.5	43.8	502146.6	0.502147
8706477.5	43.9	503195.1	0.503195
8758326.5	44.1	504352.8	0.504353
8865898.5	44.3	507200.0	0.5072
8964090.5	44.5	511354.4	0.511354
9057320.5	44.7	515676.3	0.515676
9149441.5	44.8	519840.5	0.51984
9249480.5	45.1	523774.9	0.523775
9375645.5	45.3	528134.2	0.528134
9450024.5	45.4	533340.6	0.533341
9489537.5	45.5	537412.9	0.537413
9516302.5	45.5	538920.7	0.538921
9565964.5	45.6	540393.6	0.540394
9674999.5	45.8	542811.8	0.542812
9774046.5	46.0	548217.9	0.548218
9867847.5	46.1	552450.1	0.55245
9960501.5	46.3	556515.3	0.556515

10061412.5	46.5	560337.7	0.560338
10190177.5	46.7	565618.4	0.565618
10263949.5	46.8	570827.0	0.570827
10290406.5	46.8	573562.7	0.573563
10313590.5	46.8	575075.1	0.575075
10361056.5	47.0	576563.2	0.576563
10471575.5	47.1	578964.7	0.578965
10571429.5	47.3	583034.6	0.583035
10665792.5	47.5	588614.2	0.588614
10758972.5	47.6	592687.1	0.592687
10860744.5	47.8	596493.5	0.596494
10992016.5	48.0	601771.5	0.601771
11065205.5	48.1	606964.1	0.606964
11078608.5	48.2	609703.8	0.609704
11098209.5	48.2	611236.6	0.611237
11143481.5	48.3	612725.2	0.612725
11255430.5	48.5	613764.7	0.613765
11356122.5	48.6	619185.3	0.619185
11451025.5	48.8	623447.9	0.623448
11544731.5	49.0	628858.9	0.628859
11647365.5	49.1	632649.4	0.632649
11781051.5	49.3	636582.8	0.636583
11854346.5	49.5	643101.2	0.643101
11870499.5	49.5	646047.2	0.646047
11913658.5	49.6	647547.3	0.647547
12027035.5	49.8	648576.5	0.648576
12128535.5	49.9	653991.9	0.653992
12223978.5	50.1	658270.5	0.658271
12318165.5	50.2	661914.1	0.661914
12421556.5	50.3	664415.6	0.664416
12557356.5	50.6	667075.5	0.667075
12634120.5	50.7	670544.1	0.670544
12675745.5	50.7	672816.0	0.672816
12790142.5	50.8	673400.0	0.6734
12892157.5	51.0	676201.6	0.676202
12987925.5	51.2	679212.9	0.679213
13082405.5	51.3	682000.0	0.682
13186275.5	51.5	684502.2	0.684502
13323468.5	51.7	687148.8	0.687149
13390872.5	51.7	692700.1	0.6927
13398862.5	51.8	690620.2	0.69062
13431333.5	51.8	691990.9	0.691991
13546554.5	52.0	693482.4	0.693482
13649035.5	52.1	696283.1	0.696283
13745115.5	52.3	699301.6	0.699302
13839886.5	52.3	702098.2	0.702098
13944212.5	52.5	703671.0	0.703671
14082735.5	52.7	706320.8	0.706321
14131182.5	52.8	711809.4	0.711809
14168544.8	52.8	711672.5	0.711672
14239145.0	52.9	712074.2	0.712074
14355191.0	53.1	713552.9	0.713553
14458157.0	53.3	717270.9	0.717271
14554561.0	53.3	720299.3	0.720299
14649623.0	53.5	722184.0	0.722184
14768646.8	53.7	724666.7	0.724667
14771689.0	53.7	729214.7	0.729215
14839247.1	53.8	730836.2	0.730836

14874547.2	53.8	729424.7	0.729425
14886318.0	53.8	729847.7	0.729848
14952070.2	54.0	729988.2	0.729988
15015834.2	54.1	732790.2	0.73279
15071664.2	54.1	734911.3	0.734911
15125357.2	54.2	735877.3	0.735877
15192347.2	54.3	737445.9	0.737446
15262848.6	54.3	741077.0	0.741077
15298148.7	54.4	740103.6	0.740104
15333448.8	54.5	740805.2	0.740805
15368748.9	54.5	742202.9	0.742203
15444915.9	54.7	742764.7	0.742765
15507094.9	54.7	745570.3	0.74557
15561228.9	54.8	746773.8	0.746774
15613226.9	54.8	748662.6	0.748663
15678619.9	55.0	749307.4	0.749307
15721750.1	55.0	754166.0	0.754166
15761995.0	55.1	751037.7	0.751038
15776669.9	55.2	755450.4	0.75545
15842484.8	55.3	756152.9	0.756153
15882729.7	55.4	759429.7	0.75943
15963441.7	55.5	760787.1	0.760787
16030300.7	55.6	762993.9	0.762994
16090250.7	55.7	763783.5	0.763784
16148821.7	55.7	768032.9	0.768033
16217494.7	55.8	768893.7	0.768894
16285178.8	55.8	767747.6	0.767748
16325423.7	55.8	769326.3	0.769326
16365668.6	56.0	770023.5	0.770024
16405913.5	56.1	772230.1	0.77223
16486084.5	56.2	774667.4	0.774667
16552134.5	56.2	776858.9	0.776859
16611192.5	56.3	777653.7	0.777654
16668860.5	56.3	782761.3	0.782761
16736757.5	56.5	781610.4	0.78161
16808362.5	56.6	787464.0	0.787464
16848607.4	56.7	788334.5	0.788335
16888852.3	56.7	786023.5	0.786024
16963647.3	56.8	788601.2	0.788601
17006754.3	56.8	792572.9	0.792573
17025175.3	56.9	791352.9	0.791353
17077013.3	57.0	794634.0	0.794634
17094718.3	57.0	796768.0	0.796768
17164256.3	57.1	800037.4	0.800037
17177478.3	57.3	800888.5	0.800889

Other ETF Data

Evaporation and Precipitation data

pan factor	1	
TDF Cathcment	0.83	km2
Runoff Factor	0.07	
Active cell area in TDF	0.816	km2
Water Cover	8	m
Start up in TDF	0	m3
mIsc. Mine Flows	11.7	m3/hr

Water Cover	8.00	m
Start up in TDF	0.00	m3
Min water cap	3.00	m
seepage	778.00	m3

0.0581

Seepage pond pump back to etf1

	m3
1	2102.00
2	1116.00
3	218.00
4	77.00
5	191.00
6	452.00
7	841.00
8	1723.00
9	1596.00
10	1465.00
11	1404.00
12	1701.00

User must specify the values in the yellow boxes	value

Model Properties			
Display Units	year		
Duration	29	year	
	348	months	(calculated)
Time Step	348		
	0.0833333	year	(calculated)
Model Type		Probabilistic	
	X	Deterministic	
Metal Mine	1	if true enter 1, else 0	