WHARF MINE
LEAD, SOUTH DAKOTA
NIRATE/ARSENIC GEOCHEMICAL MIXING CELL MODEL
Area - Central American Eagle Pit 02 Spent Ore

INPUT BLOCK

CHEMICAL	Arsenic	

INFILTRATION	Total Drainage Area:	820,220	ft^2
	Unreclaimned Infiltration Rate:	9	in/yr
	Reclaimed Infilgration Rate:	4.5	in/yr

SPENT ORE	Porewater Concentration:	1.6	ppm
	Moisture at Offload:	0.06	wt %

CELLS	Cell No.	Material	Mass (tons)	Kd (L/kg)	Moisture (wt%)	GW Inflow (tons)	GW Conc. (ppm)
	1	Spent Ore	Time Dependent	0.750	0.04	0	0
	2	Unsaturated Bedrock	9,032,502	3.000	0.01	0	0
	3	Unused	0	0.000	0	0	0
	4	Unused	0	0.000	0	0	0
	5	Unused	0	0.000	0	0	0
	6	Unused	0	0.000	0	0	0
	7	Unused	0	0.000	0	0	0

TIME																					
	Start Time		yrs	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
	Time Step		yrs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	End Time		yrs	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
	Calendar Year		year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

TIME DEPENDENT DATA																					
	Infiltration Rate		in/yr	3	3	3	3	3	3	3	3	3	9	9	9	9	9	9	9	9	9
	Chemicals in Infiltration		ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Backfill Added		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	742,948	742,948	742,948	742,948	742,948

CALCULATION BLOCK

CELL 1 - Spent Ore

DATA	VARIABLE		FORMULA	UNITS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ROCK	Initial Solids in Cell	A1	C1 from previous year	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	742,948	1,485,896	2,228,844	2,971,792
	Material Added	B1		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	742,948	742,948	742,948	742,948	742,948
	Total Solids in Cell	C1	A1 + B1	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	742,948	1,485,896	2,228,844	2,971,792	3,714,740
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29,718	59,436	89,154	118,872
	Inflow from Infiltration	E1	infiltration rate x area x conversion factor	tons	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	19,199	19,199	19,199	19,199	19,199	19,199	19,199	19,199	19,199
	Inflow from Groundwater	F1		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New ore Moisture	G1	B1 x % moisture at offload	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	44,577	44,577	44,577	44,577	44,577
	Total Water in Cell	H1	D1 + E1 + F1 + G1	tons	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	19,199	19,199	19,199	19,199	63,776	93,494	123,212	152,930	182,648
CHEMICALS	Initial Chemicals	I1	Z1 from previous year	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.910	1.820	2.730	3.640
	Chemicals from Above	J1	E1 x infiltration chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Chemicals from Groundwater	K1	F1 x groundwater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Chemicals in New Porewater	L1	G1 x porewater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071	0.071	0.071	0.071	0.071
	Adsorbed Chemicals in Ore	M1	B1 x Q1 x porewater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.892	0.892	0.892	0.892	0.892
	Total Chemicals in Liquid	N1	J1 + K1 + L1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071	0.071	0.071	0.071	0.071
	Total Chemicals on Solids	O1	I1 + M1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.892	1.802	2.712	3.622	4.532
	Total Chemicals in Cell	P1	O1 + N1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.963	1.873	2.783	3.693	4.603
PARTITION CHEMICALS	Kd	Q1		L/kg	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	Adsorbed Chemicals	R1	(Q1 x C1 x P1) / (Q1 x C1 + H1)	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.864	1.728	2.592	3.456	4.320
	Solid Concentration	S1	R1 / C1 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.163	1.163	1.163	1.163	1.163
	Dissolved Chemicals	T1	P1 - R1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.099	0.145	0.191	0.237	0.283
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.551	1.551	1.551	1.551	1.551
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	29,718	59,436	89,154	118,872	148,590
	Water Out	W1	H1 - V1	tons	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	19,199	19,199	19,199	19,199	34,058	34,058	34,058	34,058	34,058
	Chemicals Out in Water	X1	W1 x U1 / 10e6	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.053	0.053	0.053	0.053
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.092	0.138	0.184	0.230
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.910	1.820	2.730	3.640	4.550

CELL 2 - Unsaturated Bedrock

DATA	VARIABLE		FORMULA	UNITS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ROCK	Total Solids in Cell	C2		tons	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502
WATER	Initial Mass Water in Cell	D2	V2 from previous year	tons	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
	Inflow from Cell Above	E2	W1	tons	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	19,199	19,199	19,199	19,199	34,058	34,058	34,058	34,058	34,058
	Inflow from Groundwater	F2		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Water in Cell	H2	D2 + E2 + F2	tons	96,725	96,725	96,725	96,725	96,725	96,725	96,725	96,725	96,725	109,524	109,524	109,524	109,524	124,383	124,383	124,383	124,383	124,383
CHEMICALS	Initial Chemicals	I2	Z2 from previous year	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.105	0.158	0.211
	Chemicals from Above	J2	X1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.053	0.053	0.053	0.053
	Chemicals from Groundwater	K2	F2 x groundwater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Chemicals in Cell	P2	I2 + J2 + K2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.106	0.158	0.211	0.263
PARTITION CHEMICALS	Kd	Q2		L/kg	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
	Adsorbed Chemicals	R2	(Q2 x C2 x P2) / (Q2 x C2 + H2)	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.105	0.158	0.210	0.262
	Solid Concentration	S2	R2 / C2 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.012	0.017	0.023	0.029
	Dissolved Chemicals	T2	P2 - R2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.004	0.006	0.008	0.010
OUTFLOW	Water Remaining	V2	D2	tons	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
	Water Out	W2	H2 - V2	tons	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	19,199	19,199	19,199	19,199	34,058	34,058	34,058	34,058	34,058
	Chemicals Out in Water	X2	W2 x U2 / 10e6	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.105	0.158	0.211	0.263

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	41.00	42.00	43.00
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	41.00	42.00	43.00	44.00
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042

9	9	9	9	9	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742,948	742,948	742,948	742,948	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
3,714,740	4,457,688	5,200,636	5,943,584	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532
742,948	742,948	742,948	742,948	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4,457,688	5,200,636	5,943,584	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532

148,590	178,308	208,025	237,743	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461
19,199	19,199	19,199	19,199	19,199	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44,577	44,577	44,577	44,577	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212,366	242,084	271,802	301,520	286,661	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061

4.550	5.460	6.370	7.280	8.190	8.161	8.146	8.131	8.116	8.102	8.087	8.072	8.058	8.043	8.029	8.014	7.999	7.985	7.970	7.956	7.942	7.927	7.913	7.898	7.884	7.870
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.071	0.071	0.071	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.892	0.892	0.892	0.892	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.071	0.071	0.071	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5.442	6.352	7.262	8.172	8.190	8.161	8.146	8.131	8.116	8.102	8.087	8.072	8.058	8.043	8.029	8.014	7.999	7.985	7.970	7.956	7.942	7.927	7.913	7.898	7.884	7.870
5.513	6.423	7.333	8.243	8.190	8.161	8.146	8.131	8.116	8.102	8.087	8.072	8.058	8.043	8.029	8.014	7.999	7.985	7.970	7.956	7.942	7.927	7.913	7.898	7.884	7.870

0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
5.184	6.048	6.912	7.776	7.748	7.734	7.720	7.706	7.692	7.678	7.664	7.650	7.636	7.622	7.608	7.594	7.581	7.567	7.553	7.539	7.526	7.512	7.498	7.485	7.471	7.458
1.163	1.163	1.163	1.163	1.159	1.157	1.154	1.152	1.150	1.148	1.146	1.144	1.142	1.140	1.138	1.136	1.134	1.132	1.130	1.128	1.126	1.123	1.121	1.119	1.117	1.115
0.329	0.375	0.421	0.468	0.443	0.427	0.426	0.426	0.425	0.424	0.423	0.423	0.422	0.421	0.420	0.420	0.419	0.418	0.417	0.417	0.416	0.415	0.414	0.414	0.413	0.412
1.551	1.551	1.551	1.551	1.545	1.542	1.539	1.537	1.534	1.531	1.528	1.525	1.523	1.520	1.517	1.514	1.512	1.509	1.506	1.503	1.501	1.498	1.495	1.493	1.490	1.487

178,308	208,025	237,743	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461
34,058	34,058	34,058	34,058	19,199	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0.053	0.053	0.053	0.053	0.030	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
0.276	0.323	0.369	0.415	0.413	0.412	0.412	0.411	0.410	0.409	0.409	0.408	0.407	0.407	0.406	0.405	0.404	0.404	0.403	0.402	0.401	0.401	0.400	0.399	0.398	0.398
5.460	6.370	7.280	8.190	8.161	8.146	8.131	8.116	8.102	8.087	8.072	8.058	8.043	8.029	8.014	7.999	7.985	7.970	7.956	7.942	7.927	7.913	7.898	7.884	7.870	7.856

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502

90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
34,058	34,058	34,058	34,058	19,199	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124,383	124,383	124,383	124,383	109,524	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925

0.263	0.315	0.368	0.420	0.472	0.502	0.516	0.531	0.545	0.560	0.574	0.589	0.603	0.618	0.632	0.646	0.661	0.675	0.689	0.703	0.718	0.732	0.746	0.760	0.774	0.788
0.053	0.053	0.053	0.053	0.030	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.316	0.368	0.421	0.473	0.502	0.516	0.531	0.546	0.560	0.575	0.589	0.604	0.618	0.632	0.647	0.661	0.675	0.689	0.704	0.718	0.732	0.746	0.760	0.774	0.788	0.802

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
0.314	0.367	0.419	0.471	0.500	0.515	0.529	0.544	0.558	0.572	0.587	0.601	0.616	0.630	0.644	0.659	0.673	0.687	0.701	0.715	0.729	0.743	0.757	0.771	0.785	0.799
0.035	0.041	0.046	0.052	0.055	0.057	0.059	0.060	0.062	0.063	0.065	0.067	0.068	0.070	0.071	0.073	0.074	0.076	0.078	0.079	0.081	0.082	0.084	0.085	0.087	0.088
0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
0.012	0.014	0.015	0.017	0.018	0.019	0.020	0.020	0.021	0.021	0.022	0.022	0.023	0.023	0.024	0.024	0.025	0.025	0.026	0.026	0.027	0.027	0.028	0.028	0.029	0.029

90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
34,058	34,058	34,058	34,058	19,199	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
0.315	0.368	0.420	0.472	0.502	0.516	0.531	0.545	0.560	0.574	0.589	0.603	0.618	0.632	0.646	0.661	0.675	0.689	0.703	0.718	0.732	0.746	0.760	0.774	0.788	0.802

44.00	45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00	61.00
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00
2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060

4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532	6,686,532

267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461
9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061	277,061

7.856	7.841	7.827	7.813	7.799	7.785	7.770	7.756	7.742	7.728	7.714	7.700	7.686	7.672	7.658	7.644	7.631	7.617
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7.856	7.841	7.827	7.813	7.799	7.785	7.770	7.756	7.742	7.728	7.714	7.700	7.686	7.672	7.658	7.644	7.631	7.617
7.856	7.841	7.827	7.813	7.799	7.785	7.770	7.756	7.742	7.728	7.714	7.700	7.686	7.672	7.658	7.644	7.631	7.617

0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
7.444	7.431	7.417	7.404	7.390	7.377	7.364	7.350	7.337	7.324	7.310	7.297	7.284	7.271	7.257	7.244	7.231	7.218
1.113	1.111	1.109	1.107	1.105	1.103	1.101	1.099	1.097	1.095	1.093	1.091	1.089	1.087	1.085	1.083	1.081	1.079
0.411	0.411	0.410	0.409	0.408	0.408	0.407	0.406	0.405	0.405	0.404	0.403	0.402	0.402	0.401	0.400	0.399	0.399
1.484	1.482	1.479	1.476	1.474	1.471	1.468	1.466	1.463	1.460	1.458	1.455	1.452	1.450	1.447	1.445	1.442	1.439

267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461	267,461
9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
0.397	0.396	0.396	0.395	0.394	0.393	0.393	0.392	0.391	0.391	0.390	0.389	0.388	0.388	0.387	0.386	0.386	0.385
7.841	7.827	7.813	7.799	7.785	7.770	7.756	7.742	7.728	7.714	7.700	7.686	7.672	7.658	7.644	7.631	7.617	7.603

2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502	9,032,502

90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925	99,925

0.802	0.816	0.830	0.844	0.858	0.872	0.885	0.899	0.913	0.927	0.940	0.954	0.968	0.981	0.995	1.008	1.022	1.035
0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.816	0.830	0.844	0.858	0.872	0.886	0.899	0.913	0.927	0.941	0.954	0.968	0.981	0.995	1.009	1.022	1.036	1.049

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
0.813	0.827	0.841	0.855	0.869	0.882	0.896	0.910	0.924	0.937	0.951	0.964	0.978	0.991	1.005	1.018	1.032	1.045
0.090	0.092	0.093	0.095	0.096	0.098	0.099	0.101	0.102	0.104	0.105	0.107	0.108	0.110	0.111	0.113	0.114	0.116
0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
0.030	0.031	0.031	0.032	0.032	0.033	0.033	0.034	0.034	0.035	0.035	0.036	0.036	0.037	0.037	0.038	0.038	0.039

90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325	90,325
9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
0.816	0.830	0.844	0.858	0.872	0.885	0.899	0.913	0.927	0.940	0.954	0.968	0.981	0.995	1.008	1.022	1.035	1.049