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

INPUT BLOCK

CHEMICAL	Nitrate	

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

BARREN ROCK	Porewater Concentration:	35.6	ppm
	Moisture at Offload:	0.04	wt %

CELLS	Cell No.	Material	Mass (tons)	Kd (L/kg)	Moisture (wt%)	GW Inflow (tons)	GW Conc. (ppm)
	1	Barren Rock	Time Dependent	0.000	0.04	0	0
	2	Unsaturated Bedrock	9,032,502	0.000	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	221,362	1,438,855	2,280,032	332,043	0	0	0	0

CALCULATION BLOCK

CELL 1 - Barren Rock

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	221,362	1,660,217	3,940,249	4,272,293	4,272,293	4,272,293	4,272,293
	Material Added	B1		tons	0	0	0	0	0	0	0	0	0	0	221,362	1,438,855	2,280,032	332,043	0	0	0	0
	Total Solids in Cell	C1	A1 + B1	tons	0	0	0	0	0	0	0	0	0	0	221,362	1,660,217	3,940,249	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	0	0	0	0	0	0	0	0	0	0	8,854	66,409	157,610	170,892	170,892	170,892	170,892
	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	8,854	57,554	91,201	13,282	0	0	0	0
	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	28,054	85,608	176,809	190,091	190,091	190,091	190,091	190,091
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	0.099	1.667	4.380	4.363	3.922	3.526	3.170
	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	0.315	2.049	3.247	0.473	0.000	0.000	0.000	0.000
	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	0.000	0.000	0.000	0.000	0.000
	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	0.315	2.049	3.247	0.473	0.000	0.000	0.000	0.000
	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	0.099	1.667	4.380	4.363	3.922	3.526	3.170
	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	0.315	2.148	4.913	4.853	4.363	3.922	3.526	3.170
PARTITION CHEMICALS	Kd	Q1		L/kg	0.000	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
	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	0.000	0.000	0.000	0.000	0.000
	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	0.000	0.000	0.000	0.000	0.000
	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	0.315	2.148	4.913	4.853	4.363	3.922	3.526	3.170
	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	11.236	25.096	27.789	25.528	22.950	20.632	18.548	16.675
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	0	0	0	0	0	0	0	0	0	0	8,854	66,409	157,610	170,892	170,892	170,892	170,892	170,892
	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	19,199	19,199	19,199	19,199	19,199
	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	0.216	0.482	0.534	0.490	0.441	0.396	0.356	0.320
	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	0.099	1.667	4.380	4.363	3.922	3.526	3.170	2.850
	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	0.099	1.667	4.380	4.363	3.922	3.526	3.170	2.850

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	19,199	19,199	19,199	19,199	19,199
	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	109,524	109,524	109,524	109,524	109,524
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	0.178	0.544	0.889	1.137	1.301	1.400	1.448
	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	0.216	0.482	0.534	0.490	0.441	0.396	0.356	0.320
	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	0.216	0.660	1.078	1.379	1.578	1.697	1.756	1.768
PARTITION CHEMICALS	Kd	Q2		L/kg	0.000	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
	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	0.000	0.000	0.000	0.000	0.000
	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	0.000	0.000	0.000	0.000	0.000
	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	0.216	0.660	1.078	1.379	1.578	1.697	1.756	1.768
	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	1.970	6.024	9.839	12.589	14.405	15.497	16.032	16.144
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	19,199	19,199	19,199	19,199	19,199
	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	0.038	0.116	0.189	0.242	0.277	0.298	0.308	0.310
	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	0.178	0.544	0.889	1.137	1.301	1.400	1.448	1.458
	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	0.178	0.544	0.889	1.137	1.301	1.400	1.448	1.458

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
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

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
4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293
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
4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293

170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892
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
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
190,091	190,091	190,091	190,091	190,091	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491

2.850	2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561
0.000	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	0.000	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
2.850	2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561
2.850	2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561

0.000	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
2.850	2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561
14.990	13.476	12.115	10.892	9.792	9.271	8.778	8.311	7.869	7.450	7.054	6.679	6.324	5.987	5.669	5.367	5.082	4.812	4.556	4.313	4.084	3.867	3.661	3.466	3.282	3.107

170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892
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
0.288	0.259	0.233	0.209	0.188	0.089	0.084	0.080	0.076	0.072	0.068	0.064	0.061	0.057	0.054	0.052	0.049	0.046	0.044	0.041	0.039	0.037	0.035	0.033	0.032	0.030
2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561	0.531
2.562	2.303	2.070	1.861	1.673	1.584	1.500	1.420	1.345	1.273	1.205	1.141	1.081	1.023	0.969	0.917	0.868	0.822	0.779	0.737	0.698	0.661	0.626	0.592	0.561	0.531

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
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
109,524	109,524	109,524	109,524	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

1.458	1.440	1.401	1.347	1.283	1.214	1.177	1.140	1.103	1.065	1.028	0.990	0.953	0.916	0.880	0.845	0.810	0.777	0.744	0.712	0.681	0.651	0.622	0.594	0.567	0.541
0.288	0.259	0.233	0.209	0.188	0.089	0.084	0.080	0.076	0.072	0.068	0.064	0.061	0.057	0.054	0.052	0.049	0.046	0.044	0.041	0.039	0.037	0.035	0.033	0.032	0.030
0.000	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
1.746	1.699	1.634	1.556	1.471	1.303	1.262	1.220	1.179	1.137	1.095	1.054	1.014	0.974	0.935	0.896	0.859	0.823	0.787	0.753	0.720	0.688	0.657	0.627	0.598	0.571

0.000	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
1.746	1.699	1.634	1.556	1.471	1.303	1.262	1.220	1.179	1.137	1.095	1.054	1.014	0.974	0.935	0.896	0.859	0.823	0.787	0.753	0.720	0.688	0.657	0.627	0.598	0.571
15.942	15.510	14.915	14.210	13.435	13.035	12.626	12.212	11.794	11.377	10.962	10.550	10.144	9.745	9.353	8.970	8.597	8.233	7.880	7.537	7.206	6.885	6.575	6.276	5.989	5.712

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
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
0.306	0.298	0.286	0.273	0.258	0.125	0.121	0.117	0.113	0.109	0.105	0.101	0.097	0.094	0.090	0.086	0.083	0.079	0.076	0.072	0.069	0.066	0.063	0.060	0.057	0.055
1.440	1.401	1.347	1.283	1.214	1.177	1.140	1.103	1.065	1.028	0.990	0.953	0.916	0.880	0.845	0.810	0.777	0.744	0.712	0.681	0.651	0.622	0.594	0.567	0.541	0.516
1.440	1.401	1.347	1.283	1.214	1.177	1.140	1.103	1.065	1.028	0.990	0.953	0.916	0.880	0.845	0.810	0.777	0.744	0.712	0.681	0.651	0.622	0.594	0.567	0.541	0.516

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
4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293	4,272,293

170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892
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
180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491	180,491

0.531	0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210
0.000	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
0.531	0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210
0.531	0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210

0.000	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
0.531	0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210
2.942	2.786	2.638	2.497	2.364	2.239	2.120	2.007	1.900	1.799	1.703	1.613	1.527	1.446	1.369	1.296	1.227	1.162

170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892	170,892
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
0.028	0.027	0.025	0.024	0.023	0.021	0.020	0.019	0.018	0.017	0.016	0.015	0.015	0.014	0.013	0.012	0.012	0.011
0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210	0.199
0.503	0.476	0.451	0.427	0.404	0.383	0.362	0.343	0.325	0.307	0.291	0.276	0.261	0.247	0.234	0.221	0.210	0.199

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

0.516	0.492	0.469	0.447	0.425	0.405	0.386	0.367	0.349	0.332	0.316	0.300	0.285	0.271	0.258	0.245	0.233	0.221
0.028	0.027	0.025	0.024	0.023	0.021	0.020	0.019	0.018	0.017	0.016	0.015	0.015	0.014	0.013	0.012	0.012	0.011
0.000	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
0.544	0.519	0.494	0.471	0.448	0.427	0.406	0.386	0.367	0.349	0.332	0.316	0.300	0.285	0.271	0.257	0.244	0.232

0.000	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
0.544	0.519	0.494	0.471	0.448	0.427	0.406	0.386	0.367	0.349	0.332	0.316	0.300	0.285	0.271	0.257	0.244	0.232
5.446	5.190	4.945	4.710	4.485	4.269	4.062	3.865	3.676	3.496	3.324	3.159	3.002	2.853	2.710	2.574	2.445	2.322

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
0.052	0.050	0.047	0.045	0.043	0.041	0.039	0.037	0.035	0.034	0.032	0.030	0.029	0.027	0.026	0.025	0.023	0.022
0.492	0.469	0.447	0.425	0.405	0.386	0.367	0.349	0.332	0.316	0.300	0.285	0.271	0.258	0.245	0.233	0.221	0.210
0.492	0.469	0.447	0.425	0.405	0.386	0.367	0.349	0.332	0.316	0.300	0.285	0.271	0.258	0.245	0.233	0.221	0.210