WHARF MINE
LEAD, SOUTH DAKOTA
NIRATE/ARSENIC GEOCHEMICAL MIXING CELL MODEL
Area - Trojan Rock Facility

INPUT BLOCK

CHEMICAL	Nitrate	

INFILTRATION	Total Drainage Area:	2,561,328	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	20,147,209	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	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
	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	19,116	0	3,155,450	4,187,032	0	0	0	0	0	0	0	0	0	0	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	19,116	19,116	3,174,566	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598
	Material Added	B1		tons	19,116	0	3,155,450	4,187,032	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Solids in Cell	C1	A1 + B1	tons	19,116	19,116	3,174,566	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	765	765	126,983	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
	Inflow from Infiltration	E1	infiltration rate x area x conversion factor	tons	59,954	59,954	59,954	59,954	59,954	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
	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	765	0	126,218	167,481	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Water in Cell	H1	D1 + E1 + F1 + G1	tons	60,719	60,719	186,937	354,418	354,418	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441
CHEMICALS	Initial Chemicals	I1	Z1 from previous year	tons	0.000	0.000	0.000	3.052	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944
	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	0.027	0.000	4.493	5.962	0.000	0.000	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 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	0.027	0.000	4.493	5.962	0.000	0.000	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 on Solids	O1	I1 + M1	tons	0.000	0.000	0.000	3.052	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944
	Total Chemicals in Cell	P1	O1 + N1	tons	0.027	0.000	4.493	9.015	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944
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	0.027	0.000	4.493	9.015	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	0.448	0.006	24.037	25.435	21.132	19.180	17.408	15.799	14.339	13.014	11.812	10.721	9.730	8.831	8.015	7.275	6.602	5.992
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	765	765	126,983	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
	Water Out	W1	H1 - V1	tons	59,954	59,954	59,954	59,954	59,954	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
	Chemicals Out in Water	X1	W1 x U1 / 10e6	tons	0.027	0.000	1.441	1.525	1.267	0.575	0.522	0.474	0.430	0.390	0.354	0.321	0.292	0.265	0.240	0.218	0.198	0.180
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.000	0.000	3.052	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944	1.765
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.000	0.000	3.052	7.490	6.223	5.648	5.126	4.652	4.222	3.832	3.478	3.157	2.865	2.600	2.360	2.142	1.944	1.765

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	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209
WATER	Initial Mass Water in Cell	D2	V2 from previous year	tons	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
	Inflow from Cell Above	E2	W1	tons	59,954	59,954	59,954	59,954	59,954	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
	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	261,426	261,426	261,426	261,426	261,426	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449
CHEMICALS	Initial Chemicals	I2	Z2 from previous year	tons	0.000	0.021	0.016	1.123	2.041	2.549	2.719	2.821	2.868	2.871	2.839	2.779	2.699	2.603	2.497	2.382	2.264	2.143
	Chemicals from Above	J2	X1	tons	0.027	0.000	1.441	1.525	1.267	0.575	0.522	0.474	0.430	0.390	0.354	0.321	0.292	0.265	0.240	0.218	0.198	0.180
	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	0.027	0.021	1.457	2.648	3.308	3.124	3.241	3.295	3.298	3.261	3.193	3.101	2.991	2.868	2.737	2.601	2.462	2.322
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	0.027	0.021	1.457	2.648	3.308	3.124	3.241	3.295	3.298	3.261	3.193	3.101	2.991	2.868	2.737	2.601	2.462	2.322
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.103	0.081	5.575	10.129	12.653	13.498	14.004	14.237	14.250	14.090	13.795	13.397	12.922	12.392	11.825	11.236	10.636	10.034
OUTFLOW	Water Remaining	V2	D2	tons	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
	Water Out	W2	H2 - V2	tons	59,954	59,954	59,954	59,954	59,954	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
	Chemicals Out in Water	X2	W2 x U2 / 10e6	tons	0.006	0.005	0.334	0.607	0.759	0.405	0.420	0.427	0.427	0.422	0.414	0.402	0.387	0.371	0.354	0.337	0.319	0.301
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.021	0.016	1.123	2.041	2.549	2.719	2.821	2.868	2.871	2.839	2.779	2.699	2.603	2.497	2.382	2.264	2.143	2.022
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.021	0.016	1.123	2.041	2.549	2.719	2.821	2.868	2.871	2.839	2.779	2.699	2.603	2.497	2.382	2.264	2.143	2.022

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

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	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
7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598
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
7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598

294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
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
324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441

1.765	1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.765	1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156
1.765	1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.765	1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156
5.439	4.936	4.480	4.066	3.690	3.349	3.040	2.759	2.504	2.273	2.063	1.872	1.699	1.542	1.400	1.270	1.153	1.046	0.950	0.862	0.782	0.710	0.644	0.585	0.531	0.482

294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
0.163	0.148	0.134	0.122	0.111	0.100	0.091	0.083	0.075	0.068	0.062	0.056	0.051	0.046	0.042	0.038	0.035	0.031	0.028	0.026	0.023	0.021	0.019	0.018	0.016	0.014
1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156	0.142
1.601	1.454	1.319	1.197	1.087	0.986	0.895	0.812	0.737	0.669	0.607	0.551	0.500	0.454	0.412	0.374	0.340	0.308	0.280	0.254	0.230	0.209	0.190	0.172	0.156	0.142

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
20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209

201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
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
231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449

2.022	1.902	1.784	1.670	1.560	1.454	1.353	1.257	1.166	1.081	1.000	0.924	0.853	0.787	0.726	0.668	0.615	0.565	0.519	0.477	0.438	0.401	0.368	0.337	0.309	0.283
0.163	0.148	0.134	0.122	0.111	0.100	0.091	0.083	0.075	0.068	0.062	0.056	0.051	0.046	0.042	0.038	0.035	0.031	0.028	0.026	0.023	0.021	0.019	0.018	0.016	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
2.185	2.050	1.919	1.792	1.670	1.555	1.444	1.340	1.241	1.149	1.062	0.980	0.904	0.833	0.767	0.706	0.649	0.597	0.548	0.503	0.461	0.423	0.387	0.355	0.325	0.297

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.185	2.050	1.919	1.792	1.670	1.555	1.444	1.340	1.241	1.149	1.062	0.980	0.904	0.833	0.767	0.706	0.649	0.597	0.548	0.503	0.461	0.423	0.387	0.355	0.325	0.297
9.439	8.856	8.289	7.742	7.217	6.716	6.240	5.789	5.364	4.964	4.588	4.236	3.908	3.601	3.316	3.051	2.805	2.577	2.367	2.172	1.992	1.826	1.673	1.532	1.402	1.283

201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
0.283	0.265	0.248	0.232	0.216	0.201	0.187	0.174	0.161	0.149	0.138	0.127	0.117	0.108	0.099	0.091	0.084	0.077	0.071	0.065	0.060	0.055	0.050	0.046	0.042	0.038
1.902	1.784	1.670	1.560	1.454	1.353	1.257	1.166	1.081	1.000	0.924	0.853	0.787	0.726	0.668	0.615	0.565	0.519	0.477	0.438	0.401	0.368	0.337	0.309	0.283	0.258
1.902	1.784	1.670	1.560	1.454	1.353	1.257	1.166	1.081	1.000	0.924	0.853	0.787	0.726	0.668	0.615	0.565	0.519	0.477	0.438	0.401	0.368	0.337	0.309	0.283	0.258

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
7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598	7,361,598

294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
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
324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441	324,441

0.142	0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.142	0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027
0.142	0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.142	0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027
0.437	0.397	0.360	0.327	0.297	0.269	0.244	0.222	0.201	0.183	0.166	0.151	0.137	0.124	0.113	0.102	0.093	0.084

294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464	294,464
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
0.013	0.012	0.011	0.010	0.009	0.008	0.007	0.007	0.006	0.005	0.005	0.005	0.004	0.004	0.003	0.003	0.003	0.003
0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027	0.025
0.129	0.117	0.106	0.096	0.087	0.079	0.072	0.065	0.059	0.054	0.049	0.044	0.040	0.037	0.033	0.030	0.027	0.025

2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209	20,147,209

201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449	231,449

0.258	0.236	0.216	0.198	0.181	0.165	0.151	0.137	0.125	0.114	0.104	0.095	0.087	0.079	0.072	0.066	0.060	0.055
0.013	0.012	0.011	0.010	0.009	0.008	0.007	0.007	0.006	0.005	0.005	0.005	0.004	0.004	0.003	0.003	0.003	0.003
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.272	0.248	0.227	0.207	0.189	0.173	0.158	0.144	0.131	0.120	0.109	0.100	0.091	0.083	0.075	0.069	0.063	0.057

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.272	0.248	0.227	0.207	0.189	0.173	0.158	0.144	0.131	0.120	0.109	0.100	0.091	0.083	0.075	0.069	0.063	0.057
1.174	1.073	0.981	0.896	0.818	0.747	0.682	0.623	0.568	0.518	0.472	0.431	0.393	0.358	0.326	0.297	0.271	0.246

201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472	201,472
29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977	29,977
0.035	0.032	0.029	0.027	0.025	0.022	0.020	0.019	0.017	0.016	0.014	0.013	0.012	0.011	0.010	0.009	0.008	0.007
0.236	0.216	0.198	0.181	0.165	0.151	0.137	0.125	0.114	0.104	0.095	0.087	0.079	0.072	0.066	0.060	0.055	0.050
0.236	0.216	0.198	0.181	0.165	0.151	0.137	0.125	0.114	0.104	0.095	0.087	0.079	0.072	0.066	0.060	0.055	0.050