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

INPUT BLOCK

CHEMICAL	Nitrate	

INFILTRATION	Total Drainage Area:	726,533	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	11,429,705	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	18.00	19.00	20.00
Time Step	yrs	1	1	1	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	19.00	20.00	21.00
Calendar Year	year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007

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	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	0	0	0
Backfill Added	tons	733,200	733,200	733,200	733,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CALCULATION BLOCK

CELL 1 - Barren Rock

DATA	VARIABLE		FORMULA	UNITS	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
ROCK	Initial Solids in Cell	A1	C1 from previous year	tons	0	733,200	1,466,400	2,199,600	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800
	Material Added	B1		tons	733,200	733,200	733,200	733,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Solids in Cell	C1	A1 + B1	tons	733,200	1,466,400	2,199,600	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	29,328	58,656	87,984	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
	Inflow from Infiltration	E1	infiltration rate x area x conversion factor	tons	17,006	17,006	17,006	17,006	17,006	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
	Inflow from Groundwater	F1		tons	0	0	0	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	29,328	29,328	29,328	29,328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Water in Cell	H1	D1 + E1 + F1 + G1	tons	46,334	75,662	104,990	134,318	134,318	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815
CHEMICALS	Initial Chemicals	I1	Z1 from previous year	tons	0.000	0.661	1.322	1.983	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808
	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	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	0.000	0.000	0.000
	Chemicals in New Porewater	L1	G1 x porewater chemical concentration	tons	1.044	1.044	1.044	1.044	0.000	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000
	Total Chemicals in Liquid	N1	J1 + K1 + L1	tons	1.044	1.044	1.044	1.044	0.000	0.000	0.000	0.000	0.000	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	0.661	1.322	1.983	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808
	Total Chemicals in Cell	P1	O1 + N1	tons	1.044	1.705	2.366	3.027	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808
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	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	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	0.000	0.000	0.000
	Dissolved Chemicals	T1	P1 - R1	tons	1.044	1.705	2.366	3.027	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	22,534	22,534	22,534	22,534	19,681	18,350	17,110	15,954	14,876	13,870	12,933	12,059	11,244	10,484	9,775	9,115	8,499	7,924	7,389	6,889	6,424
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	29,328	58,656	87,984	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
	Water Out	W1	H1 - V1	tons	17,006	17,006	17,006	17,006	17,006	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
	Chemicals Out in Water	X1	W1 x U1 / 10e6	tons	0.383	0.383	0.383	0.383	0.335	0.156	0.145	0.136	0.126	0.118	0.110	0.103	0.096	0.089	0.083	0.078	0.072	0.067	0.063	0.059	0.055
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.661	1.322	1.983	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808	0.754
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.661	1.322	1.983	2.643	2.309	2.153	2.007	1.872	1.745	1.627	1.517	1.415	1.319	1.230	1.147	1.069	0.997	0.930	0.867	0.808	0.754

CELL 2 - Unsaturated Bedrock

DATA	VARIABLE		FORMULA	UNITS	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
ROCK	Total Solids in Cell	C2		tons	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705
WATER	Initial Mass Water in Cell	D2	V2 from previous year	tons	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
	Inflow from Cell Above	E2	W1 x 10%	tons	1,701	1,701	1,701	1,701	1,701	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
	Inflow from Groundwater	F2		tons	0	0	0	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	115,998	115,998	115,998	115,998	115,998	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147
CHEMICALS	Initial Chemicals	I2	Z2 from previous year	tons	0.000	0.038	0.075	0.112	0.148	0.179	0.193	0.206	0.218	0.229	0.239	0.248	0.256	0.264	0.271	0.277	0.283	0.288	0.292	0.296	0.300
	Chemicals from Above	J2	X1 x 10%	tons	0.038	0.038	0.038	0.038	0.033	0.016	0.015	0.014	0.013	0.012	0.011	0.010	0.010	0.009	0.008	0.008	0.007	0.007	0.006	0.006	0.005
	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	0.000	0.000	0.000
	Total Chemicals in Cell	P2	I2 + J2 + K2	tons	0.038	0.076	0.113	0.150	0.181	0.194	0.207	0.219	0.230	0.240	0.250	0.258	0.266	0.273	0.279	0.285	0.290	0.294	0.298	0.302	0.305
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	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	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	0.000	0.000	0.000
	Dissolved Chemicals	T2	P2 - R2	tons	0.038	0.076	0.113	0.150	0.181	0.194	0.207	0.219	0.230	0.240	0.250	0.258	0.266	0.273	0.279	0.285	0.290	0.294	0.298	0.302	0.305
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.330	0.656	0.977	1.293	1.562	1.686	1.800	1.905	2.000	2.088	2.168	2.241	2.308	2.368	2.423	2.472	2.517	2.557	2.592	2.624	2.652
OUTFLOW	Water Remaining	V2	D2	tons	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
	Water Out	W2	H2 - V2	tons	1,701	1,701	1,701	1,701	1,701	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
	Chemicals Out in Water	X2	W2 x U2 / 10e6	tons	0.001	0.001	0.002	0.002	0.003	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
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.038	0.075	0.112	0.148	0.179	0.193	0.206	0.218	0.229	0.239	0.248	0.256	0.264	0.271	0.277	0.283	0.288	0.292	0.296	0.300	0.303
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.038	0.075	0.112	0.148	0.179	0.193	0.206	0.218	0.229	0.239	0.248	0.256	0.264	0.271	0.277	0.283	0.288	0.292	0.296	0.300	0.303

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	45.00	46.00	47.00	48.00
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	1	1
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	45.00	46.00	47.00	48.00	49.00
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035

4.5	4.5	4.5	4.5	9	9	9	9	9	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
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	0	0	0	0

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800
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
2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800

117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
8,503	8,503	8,503	8,503	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
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	0	0	0	0
125,815	125,815	125,815	125,815	134,318	134,318	134,318	134,318	134,318	134,318	134,318	134,318	134,318	134,318	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815

0.754	0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.754	0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059
0.754	0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.754	0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059
5.990	5.585	5.207	4.855	4.241	3.704	3.235	2.825	2.468	2.155	1.882	1.644	1.436	1.254	1.169	1.090	1.017	0.948	0.884	0.824	0.768	0.716	0.668	0.623	0.581	0.542	0.505	0.471

117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
8,503	8,503	8,503	8,503	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	17,006	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
0.051	0.047	0.044	0.041	0.072	0.063	0.055	0.048	0.042	0.037	0.032	0.028	0.024	0.021	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.004
0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059	0.055
0.703	0.655	0.611	0.570	0.497	0.434	0.379	0.331	0.289	0.253	0.221	0.193	0.168	0.147	0.137	0.128	0.119	0.111	0.104	0.097	0.090	0.084	0.078	0.073	0.068	0.064	0.059	0.055

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705

114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
850	850	850	850	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	850	850	850	850	850	850	850	850	850	850	850	850	850	850
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
115,147	115,147	115,147	115,147	115,998	115,998	115,998	115,998	115,998	115,998	115,998	115,998	115,998	115,998	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147

0.303	0.306	0.308	0.311	0.312	0.315	0.316	0.317	0.317	0.317	0.316	0.314	0.312	0.310	0.308	0.307	0.305	0.304	0.302	0.301	0.299	0.298	0.296	0.295	0.293	0.291	0.290	0.288
0.005	0.005	0.004	0.004	0.007	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.308	0.311	0.313	0.315	0.320	0.321	0.322	0.322	0.321	0.320	0.319	0.317	0.315	0.312	0.309	0.307	0.306	0.305	0.303	0.302	0.300	0.298	0.297	0.295	0.293	0.292	0.290	0.288

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.308	0.311	0.313	0.315	0.320	0.321	0.322	0.322	0.321	0.320	0.319	0.317	0.315	0.312	0.309	0.307	0.306	0.305	0.303	0.302	0.300	0.298	0.297	0.295	0.293	0.292	0.290	0.288
2.677	2.698	2.717	2.733	2.755	2.769	2.775	2.776	2.772	2.763	2.750	2.733	2.714	2.693	2.682	2.670	2.658	2.645	2.632	2.619	2.605	2.591	2.577	2.563	2.548	2.533	2.518	2.503

114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
850	850	850	850	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	1,701	850	850	850	850	850	850	850	850	850	850	850	850	850	850
0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	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
0.306	0.308	0.311	0.312	0.315	0.316	0.317	0.317	0.317	0.316	0.314	0.312	0.310	0.308	0.307	0.305	0.304	0.302	0.301	0.299	0.298	0.296	0.295	0.293	0.291	0.290	0.288	0.286
0.306	0.308	0.311	0.312	0.315	0.316	0.317	0.317	0.317	0.316	0.314	0.312	0.310	0.308	0.307	0.305	0.304	0.302	0.301	0.299	0.298	0.296	0.295	0.293	0.291	0.290	0.288	0.286

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	63.00	64.00	65.00	66.00	67.00	68.00	69.00	70.00	71.00	72.00	73.00
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
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	63.00	64.00	65.00	66.00	67.00	68.00	69.00	70.00	71.00	72.00	73.00	74.00
2036	2037	2038	2039	2040	2041	2042	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	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

2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800
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
2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800	2,932,800

117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
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
125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815	125,815

0.055	0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.055	0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010
0.055	0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.055	0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010
0.439	0.409	0.382	0.356	0.332	0.309	0.288	0.269	0.251	0.234	0.218	0.203	0.190	0.177	0.165	0.154	0.143	0.134	0.125	0.116	0.108	0.101	0.094	0.088	0.082

117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312	117,312
8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503
0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010	0.010
0.051	0.048	0.045	0.042	0.039	0.036	0.034	0.032	0.029	0.027	0.026	0.024	0.022	0.021	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010	0.010

2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705	11,429,705

114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
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
115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147	115,147

0.286	0.284	0.283	0.281	0.279	0.277	0.275	0.274	0.272	0.270	0.268	0.267	0.265	0.263	0.261	0.259	0.258	0.256	0.254	0.252	0.250	0.249	0.247	0.245	0.243
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.286	0.285	0.283	0.281	0.279	0.278	0.276	0.274	0.272	0.270	0.268	0.267	0.265	0.263	0.261	0.259	0.258	0.256	0.254	0.252	0.251	0.249	0.247	0.245	0.244

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.286	0.285	0.283	0.281	0.279	0.278	0.276	0.274	0.272	0.270	0.268	0.267	0.265	0.263	0.261	0.259	0.258	0.256	0.254	0.252	0.251	0.249	0.247	0.245	0.244
2.488	2.472	2.457	2.441	2.426	2.410	2.395	2.379	2.363	2.347	2.332	2.316	2.300	2.285	2.269	2.253	2.238	2.222	2.207	2.191	2.176	2.161	2.145	2.130	2.115

114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297	114,297
850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
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	0.002	0.002	0.002	0.002	0.002	0.002
0.284	0.283	0.281	0.279	0.277	0.275	0.274	0.272	0.270	0.268	0.267	0.265	0.263	0.261	0.259	0.258	0.256	0.254	0.252	0.250	0.249	0.247	0.245	0.243	0.242
0.284	0.283	0.281	0.279	0.277	0.275	0.274	0.272	0.270	0.268	0.267	0.265	0.263	0.261	0.259	0.258	0.256	0.254	0.252	0.250	0.249	0.247	0.245	0.243	0.242