Appendix A

Constituent Screening

Table A-1. Constituents considered significantly leachable (Kd <20)

Constituent	Kd (L/kg)	Reference
1,1,1-Trichloroethane	0.41	1
1,1,2,2-Tetrachloroethane	0.24	1
1,1,2-Trichloroethane	0.23	1
1,1-Dichloroethane	0.16	1
1,1-Dichloroethene	0.20	1
1,2,4-Trichlorobenzene	4.98	1
1,2-Dichlorobenzene	1.14	1
1,2-Dichloroethane	0.11	1
1,2-Dichloroethene (total)	0.11	1
1,3-Dichlorobenzene	4.44	2
1,4-Dichlorobenzene	1.85	1
1,4-Dioxane	0.00	2
2,4,5-Trichlorophenol	2.12	2
2,4,6-Trichlorophenol	7.54	2
2,4-Dichlorophenol	1.04	2
2,4-Dimethylphenol	0.63	1
2,4-Dinitrophenol	0.06	2
2,4-Dinitrotoluene	0.29	1
2,6-Dinitrotoluene	0.21	1
2-Butanone	0.04	2
2-Chlorophenol	0.26	2
2-Hexanone	0.04	2
2-Methylnaphthalene	unknown	none
2-Methylphenol	0.27	1
2-Nitroaniline	0.05	2
2-Nitrophenol	0.13	2
3,3'-Dichlorobenzidine	1.94	2
3-Methyl Butanal	unknown	none
3-Nitroaniline	0.04	2
4,6-Dinitro-2-methylphenol	unknown	none
4-Chloro-3-methylphenol	2.33	2
4-Chloroaniline	0.13	2
4-Methyl-2-Pentanone	unknown	none
4-Methylphenol	0.02	2
4-Nitroaniline	unknown	none
4-Nitrophenol	0.15	2
Acenaphthene	14.69	1
Acetone	0.00	1
Acetonitrile	0.00	2
Acrolein	0.00	2
Acrylonitrile	0.00	2
Aramite	unknown	none
As	3.00	1
At	0.00	1
B	5.00	1
Benzene	0.19	1
Benzidine	0.04	2
Benzoic acid	0.14	2
bis(2-Chloroethoxy)methane	0.01	2

bis(2-Chloroethyl)ether	0.23	1
bis(2-Chloroisopropyl)ether	0.70	2
bis(2-Ethylhexyl)phthalate	18.00	1
Butane,1,1,3,4-Tetrachloro-	unknown	none
C-14	5.00	1
Ca	5.00	1
Carbazole	10.17	1
Carbon Disulfide	0.14	1
Cd	6.00	1
Chlorobenzene	0.67	1
Chloroethane	0.05	2
Chloromethane	0.02	2
Cl	0.00	1
Co	10.00	1
Cu	20.00	1
Cyanide	0.00	1
Decane, 3,4-Dimethyl	unknown	none
Diacetone alcohol	unknown	none
Dibenzofuran	unknown	none
Diethylphthalate	0.25	1
Dimethyl Disulfide	0.11	2
Dimethylphthalate	0.07	2
Di-n-butylphthalate	4.70	1
Eicosane	unknown	none
Ethyl cyanide	unknown	none
Ethylbenzene	0.61	1
Famphur	unknown	none
Fluoride	0.00	1
Heptadecane, 2,6,10,15-Tetra	unknown	none
Hexachlorobutadiene	10.17	2
Hexachloroethane	5.34	1
I	0.00	1
Isobutyl alcohol	unknown	none
Isophorone	0.14	1
Isopropyl Alcohol/2-propanol	unknown	none
K	15.00	1
Kepone	unknown	none
Kr	0.00	1
Mesityl oxide	unknown	none
Methyl Acetate	0.00	2
Methylene Chloride	0.03	1
Mg	5.00	1
Mo	10.00	1
Naphthalene	3.57	1
Nitrate	0.00	1
Nitrate/Nitrite-N	0.00	1
Nitrite	0.00	1
Nitrobenzene	0.36	1
N-Nitroso-di-n-propylamine	0.07	1
N-Nitrosodiphenylamine	3.87	1
Np	8.00	1
Octane,2,3,7-Trimethyl	unknown	none

o-Toluenesulfonamide	unknown	none
P	5.00	1
Phenol	0.09	1
Phenol,2,6-Bis(1,1-Dimethyl)	unknown	none
p-Toluenesulfonamide	unknown	none
Rn	0.00	1
Se	4.00	1
Styrene	2.74	1
Sulfate	14.00	1
Sulfide	14.00	1
Tc	0.20	1
Tetrachloroethene	0.80	1
Toluene	1.00	1
Tributylphosphate	unknown	none
Trichloroethene	0.28	1
Tritium	0.00	1
U	6.00	1
Undecane,4,6-Dimethyl-	unknown	none
V	6.00	1
Xe	0.00	1
Xylene (ortho)	0.72	1
Xylene (total)	0.59	1
Zn	16.00	1

References:

1= DOE Letter, EM-ER-01-115, 2001.

2= Verschueren, Karel, 1983, Handbook of Environmental Data on Organic Chemicals, Second Edition, Van Nostrand Reinhold pub. New York, New York; and Callahan, et.al, 1979, Water -Related Environmental Fate of 123 Priority Pollutants, EPA-440/4-79-029 a and b.

Table A-2. Constituents not considered significantly leachable (Kd>20 L/kg).

Constituent	Kd (L/kg)	Reference
2-Chloronaphthalene	2.44E+01	2
4-Bromophenyl-phenylether	3.52E+01	2
4-Chlorophenyl-phenylether	2.22E+01	2
Ac	4.50E+02	1
Acenaphthylene	2.17E+01	2
Ag	9.00E+01	1
Al	2.50E+02	1
Am	3.40E+02	1
Anthracene	7.05E+01	1
Aroclor-1016	1.00E+02	1
Aroclor-1254	1.00E+02	1
Aroclor-1260	1.00E+02	1
Aroclor-1268	1.00E+02	1
Ba	5.00E+01	1
Be	2.50E+02	1
Benzo(a)anthracene	1.07E+03	1
Benzo(a)pyrene	1.20E+03	1
Benzo(b)fluoranthene	3.69E+03	1
Benzo(g,h,i)perylene	3.14E+04	2
Benzo(k)fluoranthene	3.69E+03	1
Bi	1.00E+02	1
Bk	4.00E+03	1
Butylbenzylphthalate	4.12E+01	1
Ce	5.00E+02	1
Cf	5.10E+02	1
Chrysene	1.19E+03	1
Cm	4.00E+03	1
Cr	3.00E+01	1
Cs	5.00E+02	1
Dibenz(a,h)anthracene	5.37E+03	1
Di-n-octylphthalate	2.50E+05	1
Dysprosium	2.40E+02	1
Er	2.40E+02	1
Eu	2.40E+02	1
Fe	2.20E+02	1
Fluoranthene	1.47E+02	1
Fluorene	2.31E+01	1
Fr	5.00E+02	1
Gd	2.40E+02	1
Hexachlorobenzene	2.40E+02	1
Hexachlorocyclopentadiene	6.00E+02	1
Hf	4.50E+02	1
Hg	1.00E+02	1
Ho	2.50E+02	1
In	3.90E+02	1
Indeno(1,2,3-cd)pyrene	1.04E+04	1
La	1.20E+03	1
Mn	5.00E+01	1
Na	7.60E+01	1

Nb	1.60E+02	1
Nd	2.40E+02	1
Ni	1.00E+02	1
Pa	5.50E+02	1
Pb	1.00E+02	1
Pd	5.50E+01	1
Pentachlorophenol	2.38E+03	2
Phenanthrene	1.89E+02	2
Pm	2.40E+02	1
Po	1.50E+02	1
Pr	2.40E+02	1
Pu	1.40E+02	1
Pyrene	2.04E+02	1
Ra	1.00E+02	1
Rb	5.50E+01	1
Ru	5.50E+01	1
Sb	5.00E+01	1
Sc	3.10E+02	1
Sm	2.45E+02	1
Sn	1.30E+02	1
Sr	2.40E+01	1
Ta	2.20E+02	1
Tb	2.40E+02	1
Te	1.25E+02	1
Th	1.00E+02	1
Tl	1.00E+02	1
Tm	2.40E+02	1
Y	1.70E+02	1
Zr	6.00E+02	1

References:

1= DOE Letter, EM-ER-01-115, 2001.

2= Verschueren, Karel, 1983, Handbook of Environmental Data on Organic Chemicals, Second Edition, Van Nostrand Reinhold pub. New York, New York; and Callahan, et.al, 1979, Water -Related Environmental Fate of 123 Priority Pollutants, EPA-440/4-79-029 a and b.

Table A-3. Screened constituents used in geochemical modeling.

Cations	Element	Symbol	Element Quantity from Design Inventory (kg)	Percent of Total Design Inventory Mass (1)
	Calcium	Ca	1.24E+07	2.12E+00
	Iron	Fe	6.00E+06	1.03E+00
	Aluminum	Al	4.16E+06	7.11E-01
	Magnesium	Mg	2.62E+06	4.48E-01
	Potassium	K	6.73E+05	1.15E-01
	Terbium	Tb	3.35E+05	5.73E-02
	Sodium	Na	1.25E+05	2.14E-02
	Zinc	Zn	1.22E+05	2.08E-02
	Manganese	Mn	1.21E+05	2.06E-02
	Ytterbium	Yb	1.14E+05	1.95E-02
	Barium	Ba	1.06E+05	1.80E-02
Anions (2)	Carbon (rad)	C	4.90E-09	N/A
	Iodine (rad)	I	4.30E+00	N/A
	Technitium (rad)	Tc	1.99E-01	N/A
	Tellurium (rad)	Te	1.13E-08	N/A
	Plutonium (rad)	Pu	7.50E-02	N/A
	Uranium (rad)	U	3.47E+03	N/A
	Phosphorus	P	5.70E+04	N/A
	Vanadium	V	1.26E+04	N/A
	Sulfate	SO4	1.20E+04	N/A
	Arsenic	As	3.33E+03	N/A
	Nitrate	NO3	2.30E+03	N/A
	Fluoride	F	2.26E+03	N/A
	Chloride	Cl	1.09E+03	N/A
	Selenium	Se	4.99E+02	N/A
	Cyanide	CN	1.97E+02	N/A
	Nitrite	NO2	4.97E+00	N/A
	Boron	B	1.08E+05	N/A
	Sulfide	S	4.44E+05	N/A

Notes: (1) Calculated by dividing the kg of each constituent by 5.85E+08 kg, the total inventory mass.
(2) Radioactive anions expressed as total mass of all reported isotopes.

Table A-4. Organic and cationic constituents eliminated during screening process (1).

Organics	Constituent	kg	% of total
	1,1,1-Trichloroethane	7.43E+00	1.27E-06
	1,1,2,2-Tetrachloroethane	2.34E-02	4.01E-09
	1,1,2-Trichloroethane	1.15E-01	1.96E-08
	1,1-Dichloroethane	1.11E+00	1.89E-07
	1,1-Dichloroethene	7.01E-01	1.20E-07
	1,2,4-Trichlorobenzene	5.39E+00	9.21E-07
	1,2-Dichlorobenzene	5.39E+00	9.21E-07
	1,2-Dichloroethane	2.55E-03	4.36E-10
	1,2-Dichloroethene (total)	1.54E-01	2.62E-08
	1,3-Dichlorobenzene	5.39E+00	9.21E-07
	1,4-Dichlorobenzene	2.13E+02	3.64E-05
	1,4-Dioxane	8.91E-03	1.52E-09
	2,4,5-Trichlorophenol	2.11E+01	3.61E-06
	2,4,6-Trichlorophenol	8.65E+00	1.48E-06
	2,4-Dichlorophenol	1.02E+01	1.75E-06
	2,4-Dimethylphenol	8.65E+00	1.48E-06
	2,4-Dinitrophenol	2.41E+01	4.12E-06
	2,4-Dinitrotoluene	5.39E+00	9.21E-07
	2,6-Dinitrotoluene	9.80E+00	1.67E-06
	2-Butanone	1.17E+01	2.00E-06
	2-Chloronaphthalene	5.39E+00	9.21E-07
	2-Chlorophenol	8.65E+00	1.48E-06
	2-Hexanone	1.28E+00	2.18E-07
	2-Methylnaphthalene	2.42E+02	4.14E-05
	2-Methylphenol	9.78E+00	1.67E-06
	2-Nitroaniline	1.29E+01	2.20E-06
	2-Nitrophenol	8.65E+00	1.48E-06
	3,3'-Dichlorobenzidine	5.39E+00	9.21E-07
	3-Methyl Butanal	1.06E-01	1.81E-08
	3-Nitroaniline	1.29E+01	2.20E-06
	4,6-Dinitro-2-methylphenol	2.11E+01	3.61E-06
	4-Bromophenyl-phenylether	5.39E+00	9.21E-07
	4-Chloro-3-methylphenol	8.65E+00	1.48E-06
	4-Chloroaniline	1.93E+01	3.30E-06
	4-Chlorophenyl-phenylether	5.39E+00	9.21E-07
	4-Methyl-2-Pentanone	1.40E+01	2.40E-06
	4-Methylphenol	1.83E+01	3.12E-06
	4-Nitroaniline	1.29E+01	2.20E-06
	4-Nitrophenol	2.44E+01	4.17E-06
	Acenaphthene	9.58E+01	1.64E-05
	Acenaphthylene	9.80E+00	1.67E-06
	Acetone	2.94E+02	5.02E-05
	Acetonitrile	8.91E-03	1.52E-09
	Acrolein	4.29E-03	7.33E-10
	Acrylonitrile	4.29E-03	7.33E-10
	Anthracene	1.52E+02	2.59E-05
	Aramite	5.42E-02	9.27E-09
	Aroclor-1016	3.64E+00	6.22E-07
	Aroclor-1254	6.08E+01	1.04E-05

Aroclor-1260	3.41E+02	5.84E-05
Aroclor-1268	2.94E+01	5.03E-06
Benzene	2.86E+02	4.89E-05
Benzidine	1.38E-01	2.35E-08
Benzo(a)anthracene	1.20E+02	2.05E-05
Benzo(a)pyrene	4.97E+01	8.49E-06
Benzo(b)fluoranthene	8.50E+01	1.45E-05
Benzo(g,h,i)perylene	5.39E+00	9.21E-07
Benzo(k)fluoranthene	8.81E+00	1.51E-06
Benzoic acid	4.05E+00	6.93E-07
bis(2-Chloroethoxy)methane	5.39E+00	9.21E-07
bis(2-Chloroethyl)ether	5.39E+00	9.21E-07
bis(2-Chloroisopropyl)ether	5.39E+00	9.21E-07
bis(2-Ethylhexyl)phthalate	6.97E+01	1.19E-05
Butane,1,1,3,4-Tetrachloro-	3.74E+00	6.39E-07
Butylbenzylphthalate	3.22E+01	5.50E-06
Carbazole	1.53E+01	2.62E-06
Carbon Disulfide	2.16E+01	3.69E-06
Chlorobenzene	3.11E+00	5.32E-07
Chloroethane	1.43E-03	2.44E-10
Chloromethane	1.67E-01	2.86E-08
Chrysene	1.26E+02	2.15E-05
Decane, 3,4-Dimethyl	7.64E-02	1.31E-08
Diacetone alcohol	2.05E+03	3.50E-04
Dibenz(a,h)anthracene	5.39E+00	9.21E-07
Dibenzofuran	1.54E+02	2.62E-05
Diethylphthalate	5.39E+00	9.22E-07
Dimethyl Disulfide	1.40E+00	2.40E-07
Dimethylphthalate	5.39E+00	9.21E-07
Di-n-butylphthalate	1.13E+01	1.93E-06
Di-n-octylphthalate	1.24E+01	2.12E-06
Eicosane	1.34E+00	2.29E-07
Ethyl cyanide	8.91E-03	1.52E-09
Ethylbenzene	3.70E+01	6.32E-06
Famphur	2.75E-02	4.71E-09
Fluoranthene	3.61E+02	6.17E-05
Fluorene	8.70E+01	1.49E-05
Heptadecane, 2,6,10,15-Tetra	1.63E+00	2.78E-07
Hexachlorobenzene	5.39E+00	9.21E-07
Hexachlorobutadiene	9.80E+00	1.67E-06
Hexachlorocyclopentadiene	5.39E+00	9.21E-07
Hexachloroethane	5.39E+00	9.21E-07
Indeno(1,2,3-cd)pyrene	5.39E+00	9.21E-07
Isobutyl alcohol	8.91E-03	1.52E-09
Isophorone	5.39E+00	9.22E-07
Isopropyl Alcohol/2-propanol	1.01E+00	1.72E-07
Kepone	4.70E+01	8.03E-06
Mesityl oxide	4.01E+01	6.86E-06
Methyl Acetate	2.29E-01	3.92E-08
Methylene Chloride	3.96E+01	6.77E-06
Naphthalene	2.01E+02	3.44E-05
Nitrobenzene	5.39E+00	9.21E-07

N-Nitroso-di-n-propylamine	5.39E+00	9.21E-07
N-Nitrosodiphenylamine	5.39E+00	9.21E-07
Octane,2,3,7-Trimethyl	7.64E-02	1.31E-08
o-Toluenesulfonamide	2.40E+00	4.09E-07
Pentachlorophenol	2.65E+01	4.53E-06
Phenanthrene	5.53E+02	9.46E-05
Phenol	3.78E+01	6.46E-06
Phenol,2,6-Bis(1,1-Dimethyl)	1.92E+00	3.28E-07
p-Toluenesulfonamide	2.40E+00	4.09E-07
Pyrene	1.20E+02	2.05E-05
Styrene	4.86E-04	8.30E-11
Tetrachloroethene	4.56E+00	7.80E-07
Toluene	4.65E+02	7.95E-05
Tributylphosphate	1.72E+02	2.94E-05
Trichloroethene	3.41E+01	5.83E-06
Undecane,4,6-Dimethyl-	7.64E-02	1.31E-08
Xylene (ortho)	1.84E+00	3.14E-07
Xylene (total)	1.64E+03	2.80E-04

Cations	kg	% of total
Antimony	3.41E+03	0.000583
Arsenic	3.33E+03	0.000569
Beryllium	1.70E+02	2.9E-05
Cadmium	2.11E+03	0.00036
Chloride	1.09E+03	0.000187
Chromium	2.41E+04	0.004128
Cobalt	3.53E+03	0.000603
Copper	1.75E+04	0.002989
Cyanide	1.97E+02	3.37E-05
Dysprosium	3.47E+04	0.005934
Fluoride	2.26E+03	0.000387
Lead	3.38E+04	0.005769
Mercury	5.53E+03	0.000945
Molybdenum	5.95E+03	0.001018
Nickel	1.15E+04	0.00197
Nitrate	2.30E+03	0.000393
Nitrate/Nitrite-N	1.30E+02	2.22E-05
Nitrite	4.97E+00	8.49E-07
Phosphorus	5.70E+04	0.00974
Selenium	4.99E+02	8.52E-05
Silver	5.75E+03	0.000984
Strontium	1.06E+04	0.00182
Sulfate	1.20E+04	0.002053
Thallium	2.17E+02	3.7E-05
Vanadium	1.26E+04	0.002149
Zirconium	4.04E+04	0.006905

Notes: (1) Criterion for organics to be included was a mass concentration greater than 1% of total waste mass; criterion for cations to be included was a mass concentration greater than 0.01% of total waste mass; Total waste mass assumed to be 5.85E+08 kg.

Table A-5. Quantities of mineral phases used in geochemical modeling.

Constituent (1)	Chemical Formula	Constituent Molar Mass (g/mol)	Mass Concentration from Design Inventory (mg/kg) (2)	Moles of Constituent per kg	Mineral Source(s)	Moles of Mineral Sources Exposed to 1L Leachate (3)	Mineral(s) Controlling Solubility	mineral stochiom
Aluminum	Al	27.0	7.11E+03	2.64E-01	Albite (NaAlSi3O8), Orthoclase (KAlSi3O8), Illite (K0.6Mg0.25Al2.3Si3.5O10(OH)2)	5.3, 2.9, 1.5 (4)	Kaolinite (Al2Si2O5(OH)4)	1
Arsenic	As	74.9	5.69E+00	7.59E-05	Ca3(AsO4)2	2E-04	none	1
Barium	Ba	137.0	1.80E+02	1.32E-03	Barite (BaSO4)	8E-03	Barite (BaSO4)	1
Boron	B	10.8	1.85E+02	1.71E-02	Borax (Na2B4O5(OH)4.8H2O)	3E-02	Borax (Na2B4O5(OH)4.8H2O)	1
Calcium	Ca	40.0	2.12E+04	5.30E-01	Calcite (CaCO3)	2.3 (4)	Calcite (CaCO3)	1
Carbon (rad)	C	14.0	1.03477E-11	7.39E-16	not considered (5)	not considered (5)	not considered (5)	2
Chloride	Cl	35.5	1.87E+00	5.26E-05	Halite (NaCl)	3E-04	none	2
Cyanide	CN	26.0	3.37E-01	1.29E-05	NaCN	8.01E-05	oxidized to NO3	1
Fluoride	F	19.0	3.87E+00	2.03E-04	Fluoroapatite (Ca5(PO4)3F)	6E-03	Fluoroapatite (Ca5(PO4)3F)	1
Iodine (rad)	I	129.0	0.007347321	5.70E-08	NaI	3.52E-07	none	8
Iron	Fe	55.8	1.03E+04	1.84E-01	Fe(OH)3, pyrite (FeS2)	1.07, 0.06	Fe(OH)3	1
Magnesium	Mg	24.3	4.48E+03	1.84E-01	Enstatite (MgSiO3), Illite (K0.6Mg0.25Al2.3Si3.5O10(OH)2)	8.0, 1.5 (4)	dolomite	4
Manganese	Mn	54.9	2.06E+02	3.76E-03	Birnessite (Mn8O14.5H2O)	3E-03	Birnessite (Mn8O14.5H2O)	1
Nitrate	NO3	62.0	3.93E+00	6.33E-05	Niter (KNO3)	4E-04	none	
Nitrite	NO2	46.0	8.49E-03	1.84E-07	not considered (6)	not considered (6)	oxidized to NO3	1
Phosphorus	P	31.0	9.74E+01	3.14E-03	Fluoroapatite (Ca5(PO4)3F)	6E-03	Fluoroapatite (Ca5(PO4)3F)	1
Plutonium (rad)	Pu	244.0	0.000128282	5.26E-10	PuO2	3.25E-09	PuO2	
Potassium	K	39.1	1.15E+03	2.94E-02	Orthoclase (KAlSi3O8), Illite (K0.6Mg0.25Al2.3Si3.5O10(OH)2)	2.9, 1.5 (4)	none	1
Selenium	Se	79.0	8.52E-01	1.08E-05	CaSeO4	6.7E-05	none	1
Sodium	Na	23.0	2.14E+02	9.31E-03	Albite (NaAlSi3O8), Halite (NaCl), NaI, NaCN	5.3(4), 3E-04, 2.85E-07, 8.01E-05	none	3
Sulfate	SO4	96.0	2.05E+01	2.14E-04	Gypsum (CaSO4.2H2O), Barite (BaSO4)	0.0013, 0.008	none	2
Sulfide	S	32.1	7.59E+02	2.36E-02	Pyrite (FeS2), Sphalerite (ZnS)	0.06, 0.02	oxidized to SO4	1
Technitium (rad)	Tc	98.9	0.000339545	3.43E-09	TcO2.2H20(amorphous)	2.12E-08	none	2
Tellurium (rad)	Te	128.0	2.38333E-11	1.86E-16	not considered (7)	not considered (7)	not considered (7)	1
Terbium	Tb	158.9	5.73E+02	3.61E-03	Tb2O3	1E-02	none	1
Uranium (rad)	U	238.0	5.9358966	2.49E-05	CaUO4	1.54E-04	CaUO4	1
Vanadium	V	50.9	2.15E+01	4.22E-04	Ca2V2O7	1.3E-03	Ca2V2O7	1
Ytterbium	Yb	173.0	1.95E+02	1.13E-03	Yb2O3	3.5E-03	Yb(OH)3	1
Zinc	Zn	65.4	2.08E+02	3.18E-03	Sphalerite (ZnS)	2E-02	Zincite (ZnCO3)	

Notes:

(1) Radioactive constituents expressed as total mass of all reported isotopes.
(2) Calculated by dividing the kg of each constituent by 5.85E+08 kg, the total inventory mass.
(3) Calculated by multiplying the moles/kg value by 6.18 (the number of kg soil exposed to 1L of leachate) and dividing by constituent's stochiometry in the mineral. Input into PHREEQC.
(4) Moles of these minerals were derived from observed mineral abundance and not from design inventory (see text).
(5) Radioactive carbon could not be considered separately from non-radioactive carbon, and was assumed to be completely soluble.
(6) Nitrite was not considered stable in soil, and was not considered in the analysis.
(7) No solubility data was found for tellurium, so it was assumed to be completely soluble.

Table A-6. Results of PHREEQC simulation: calculated constituent concentrations in leachate (no partitioning applied).

	Constituent	mol/kg H2O (1)	mol/L	Molar Mass	mg/L
Aluminum	Al	7.83E-08	7.67E-08	26.98	2.1E-03
Arsenic	As	4.09E-04	4.00E-04	74.9	3.0E+01
Boron	B	1.23E-01	1.20E-01	10.8	1.3E+03
Barium	Ba	2.11E-08	2.07E-08	137	2.8E-03
Carbon (rad) (2)	C	Not Calculated	Not Calculated	14	6.4E-11
Carbon (non-rad)	C	1.33E-03	1.31E-03	12	1.6E+01
Calcium	Ca	3.96E-03	3.88E-03	40	1.6E+02
Chlorine	Cl	4.77E-04	4.67E-04	35.5	1.7E+01
Fluoride	F	2.38E-03	2.33E-03	19	4.4E+01
Iron	Fe	4.70E-07	4.60E-07	55.847	2.6E-02
Iodine (rad)	I	3.60E-07	3.52E-07	129	4.5E-02
Potassium	K	2.19E-04	2.14E-04	39.1	8.4E+00
Magnesium	Mg	3.36E-04	3.29E-04	24.3	8.0E+00
Manganese	Mn	2.45E-13	2.40E-13	54.9	1.3E-08
Sodium	Na	2.25E-01	2.21E-01	23	5.1E+03
Nitrate	NO3	4.90E-04	4.80E-04	62	3.0E+01
Phosphorus	P	7.15E-03	7.00E-03	31	2.2E+02
Plutonium (rad)	Pu	4.34E-10	4.25E-10	244	1.0E-04
Selenium	Se	6.84E-05	6.70E-05	79	5.3E+00
Sulfate	SO4	1.24E-01	1.21E-01	96	1.2E+04
Tellurium (rad) (2)	Te	Not Calculated	Not Calculated	128	1.5E-10
Silicon	Si	1.08E-04	1.05E-04	28	3.0E+00
Terbium	Tb	2.04E-02	2.00E-02	158.9	3.2E+03
Technitium (rad)	Tc	2.17E-08	2.12E-08	98.9	2.1E-03
Uranium (rad)	U	9.71E-06	9.51E-06	238	2.3E+00
Vanadium	V	2.66E-03	2.60E-03	50.9	1.3E+02
Ytterbium	Yb	7.15E-03	7.00E-03	173	1.2E+03
Zinc	Zn	4.88E-05	4.78E-05	65.4	3.1E+00

Notes:

(1) Due to dissolution of significant quantities of mineral phases, the density of leachate is calculated to be 1.021 kg/L.

(2) These constituents were not modeled in PHREEQC; concentration represents complete dissolution.