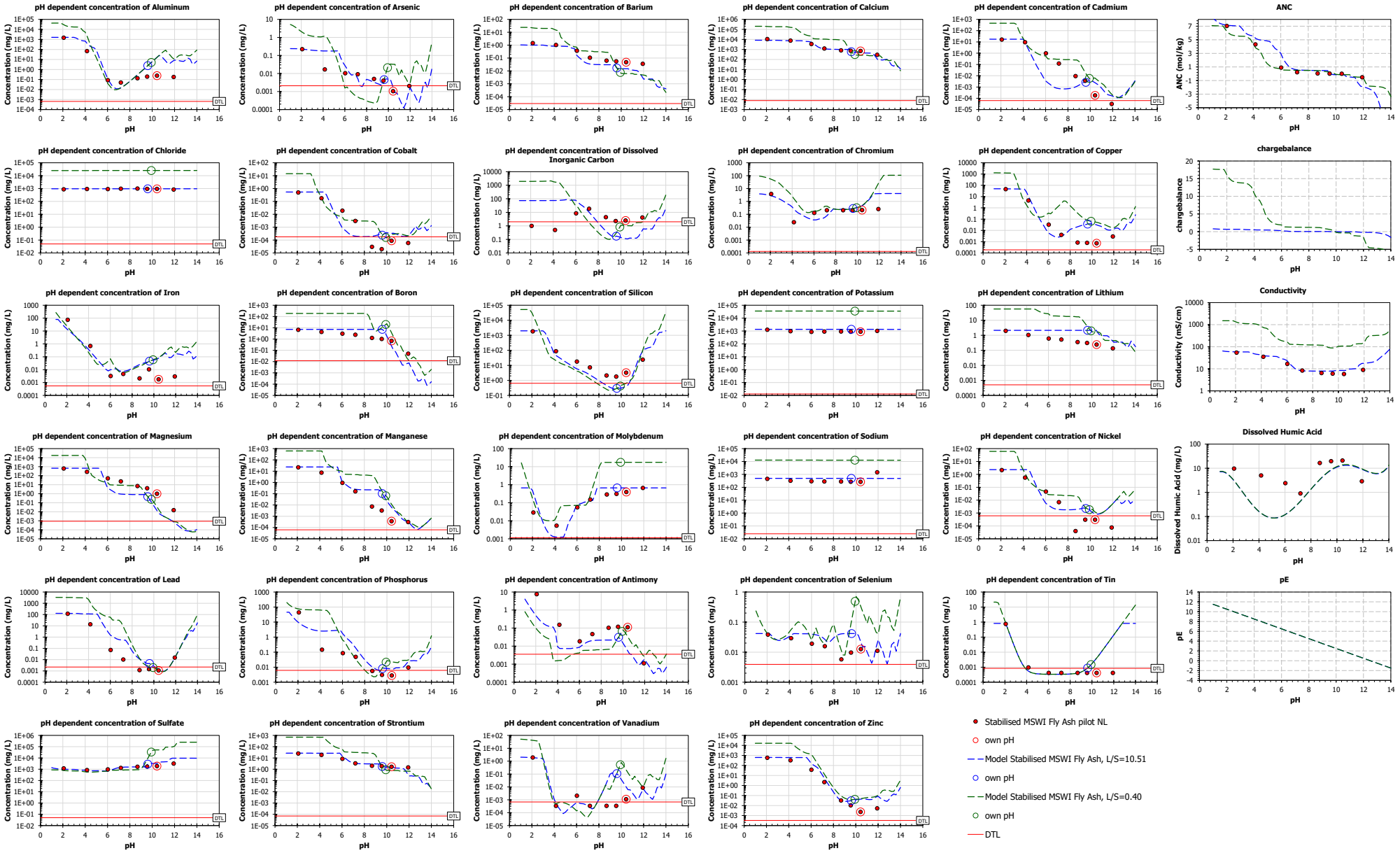
Comparison pH Dependence data and Model



Name **Stabilised MSWI Fly Ash NL**

pH Dependent Leaching Test Scenario

Lab Test

Extra L/S Simulation

Lab Test

Model Parameters

Entity	Unit	Default
c0		-6.304
c1		1.800
c2		-1.148
c3		0.2232
c4		-0.01709
c5		0.0004555
Clay	mg/kg	1001
Hydrous Ferric Oxid	mg/kg	400.0
L/S	L/kg	10.51
pE		0.4000
pH		12.10
Solid Humic Acid	mg/kg	1900
Simulated Low L/S	L/kg	0.4000

Available Content

Entity	Unit	Default	Entity	Unit	Default	Entity	Unit	Default	Entity	Unit	Default
Al	mg/kg	1.700E+04	B	mg/kg	75.70	Sb	mg/kg	87.01			
As	mg/kg	2.542	Si	mg/kg	2.089E+04	Se	mg/kg	0.4374			
Ba	mg/kg	16.38	Hg	mg/kg	2.006E-07	Sn	mg/kg	8.571			
Br	mg/kg	251.0	K	mg/kg	1.423E+04	SO4	mg/kg	9.946E+04			
Ca	mg/kg	1.236E+05	Li	mg/kg	22.59	Sr	mg/kg	281.4			
Cd	mg/kg	184.5	Mg	mg/kg	7092	Th	mg/kg	2.320E-07			
Cl	mg/kg	1.010E+04	Mn	mg/kg	249.7	U	mg/kg	2.380E-07			
Co	mg/kg	5.676	Mo	mg/kg	6.966	V	mg/kg	21.79			
CO32-	mg/kg	1.204E+05	Na	mg/kg	5160	Zn	mg/kg	6572			
Cr	mg/kg	43.30	Ni	mg/kg	24.71						
Cu	mg/kg	520.1	NO3	mg/kg	6.200E-08						
F	mg/kg	1876	Pb	mg/kg	1352						
Fe	mg/kg	839.9	PO4	mg/kg	1533						

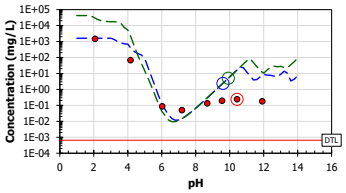
Solid Solutions

Name	End Member	Log(K)	Reaction
ettr_ss	AsO4_Ettringite_ss	26.79	AsO4_Ettringite_ss + 1 H+ + 8 H2O -> 2 Al[OH]4- + 3 AsO4-3 + 6 Ca+2 + 1 ettr_ss
	Ba_Ettringite_ss	4.008	Ba_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ba+2 + 3 SO4-2 + 1 ettr_ss
	BO3_Ettringite_ss	-46.87	BO3_Ettringite_ss + 7 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 H2BO3- + 1 ettr_ss
	CrO4_Ettringite_ss	-8.592	CrO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 CrO4-2 + 1 ettr_ss
	Ettringite_ss	-10.99	Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SO4-2 + 1 ettr_ss
	MoO4_Ettringite_ss	-9.592	MoO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 MoO4-2 + 1 ettr_ss
	PO4_Ettringite_ss	39.10	PO4_Ettringite_ss + 1 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 PO4-3 + 1 ettr_ss
	Sb[OH]6-_Ettringite	-33.80	Sb[OH]6-_Ettringite_ss + 7 H+ + 17 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 Sb[OH]6- + 1 ettr_ss
	SeO4-2_Ettringite_s	-8.592	SeO4-2_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SeO4-2 + 1 ettr_ss
	Sr_Ettringite_ss	4.008	Sr_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 3 SO4-2 + 6 Sr+2 + 1 ettr_ss
	VO3_Ettringite_ss	-53.79	VO3_Ettringite_ss + 13 H+ + 2 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 VO2+ + 1 ettr_ss

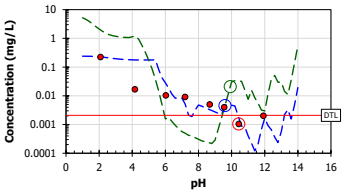
Minerals	> 1E-13 mol/kg	Log(K)	Reaction
AA_Fe[OH]3[am]	Yes	16.60	AA_Fe[OH]3[am] + 1 H2O -> 1 Fe[OH]4- + 1 H+
Antimocrandallite-e	Yes	63.00	Antimocrandallite-exp + 8 H2O -> 3 Al[OH]4- + 1 Ca+2 + 3 H+ + 2 Sb[OH]6-
Austinite-therm	Yes	11.47	Austinite-therm + 1 H+ -> 1 AsO4-3 + 1 Ca+2 + 1 H2O + 1 Zn+2
Ba[SCr]O4[96%SO4]	Yes	9.790	Ba[SCr]O4[96%SO4] -> 1 Ba+2 + 0.04 CrO4-2 + 0.96 SO4-2
BaSrSO4[50%Ba]	Yes	8.221	BaSrSO4[50%Ba] -> 0.5 Ba+2 + 1 SO4-2 + 0.5 Sr+2
beta-TCP	Yes	28.93	beta-TCP -> 3 Ca+2 + 2 PO4-3
Ca[OH]2.Cd[OH]2	Yes	-34.00	Ca[OH]2.Cd[OH]2 + 4 H+ -> 1 Ca+2 + 1 Cd+2 + 4 H2O
Ca[OH]2.Co[OH]2	Yes	-32.40	Ca[OH]2.Co[OH]2 + 4 H+ -> 1 Ca+2 + 1 Co+2 + 4 H2O
Ca[OH]2.Cu[OH]2	Yes	-28.52	Ca[OH]2.Cu[OH]2 + 4 H+ -> 1 Ca+2 + 1 Cu+2 + 4 H2O
Ca[OH]2.Ni[OH]2	Yes	-32.00	Ca[OH]2.Ni[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Ni+2
Ca[OH]2.Pb[OH]2	Yes	-30.00	Ca[OH]2.Pb[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Pb+2
Ca[OH]2.Zn[OH]2	Yes	-30.52	Ca[OH]2.Zn[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Zn+2
Ca2[OH][AsO4][c]	Yes	4.000	Ca2[OH][AsO4][c] + 1 H+ -> 1 AsO4-3 + 2 Ca+2 + 1 H2O
Ca2[OH]2.2Sb[OH]6	Yes	5.000	Ca2[OH]2.2Sb[OH]6[c]_exp1 + 2 H+ -> 2 Ca+2 + 2 H2O + 2 Sb[OH]6-
Ca3[BO3]2	Yes	-24.52	Ca3[BO3]2 + 4 H+ -> 3 Ca+2 + 2 H2BO3-
Ca3[OH]2[SeO4]2[c	Yes	6.477	Ca3[OH]2[SeO4]2[ccc] + 2 H+ -> 3 Ca+2 + 2 H2O + 2 SeO4-2
Ca5[OH][VO4]3[cc]	Yes	-53.00	Ca5[OH][VO4]3[cc] + 13 H+ -> 5 Ca+2 + 7 H2O + 3 VO2+
CaCO3_BaCO3	Yes	22.00	CaCO3_BaCO3 -> 1 Ba+2 + 2 CO3-2 + 1 Ca+2
CaCO3_Li2CO3	Yes	21.30	CaCO3_Li2CO3 -> 2 CO3-2 + 1 Ca+2 + 2 Li+
CaCO3_MgCO3	Yes	19.84	CaCO3_MgCO3 -> 2 CO3-2 + 1 Ca+2 + 1 Mg+2
CaCO3_MnCO3-exp	Yes	20.78	CaCO3_MnCO3-exp -> 2 CO3-2 + 1 Ca+2 + 1 Mn+2
CaCO3_SrCO3	Yes	19.85	CaCO3_SrCO3 -> 2 CO3-2 + 1 Ca+2 + 1 Sr+2
CaSb[OH]6[s]2_exp	Yes	19.41	CaSb[OH]6[s]2_exp -> 1 Ca+2 + 2 Sb[OH]6-
Cd2SiO4	Yes	6.059	Cd2SiO4 + 2 H+ -> 2 Cd+2 + 1 H2SiO4-2
Cem07_Al[OH]3[am	Yes	13.76	Cem07_Al[OH]3[am] + 1 H2O -> 1 Al[OH]4- + 1 H+
Cem07_C2ASH8	Yes	17.40	Cem07_C2ASH8 -> 2 Al[OH]4- + 2 Ca+2 + 3 H2O + 1 H2SiO4-2
Cem07_C2FSH8	Yes	21.41	Cem07_C2FSH8 -> 2 Ca+2 + 2 Fe[OH]4- + 3 H2O + 1 H2SiO4-2
Cem07_C4AcH11	Yes	-24.50	Cem07_C4AcH11 + 4 H+ -> 2 Al[OH]4- + 1 CO3-2 + 4 Ca+2 + 9 H2O

Minerals	> 1E-13 mol/kg	Log(K)	Reaction
Cem07_C4FcH12	Yes	-20.47	Cem07_C4FcH12 + 4 H+ -> 1 CO3-2 + 4 Ca+2 + 2 Fe[OH]4- + 10 H2O
Cem07_Calcite	Yes	8.485	Cem07_Calcite -> 1 CO3-2 + 1 Ca+2
Cem07_Gypsum	Yes	4.583	Cem07_Gypsum -> 1 Ca+2 + 2 H2O + 1 SO4-2
Cem07_M4AH10	Yes	-27.94	Cem07_M4AH10 + 6 H+ -> 2 Al[OH]4- + 9 H2O + 4 Mg+2
Cem07_Portlandite	Yes	-22.79	Cem07_Portlandite + 2 H+ -> 1 Ca+2 + 2 H2O
Cem07_Tob_I	Yes	23.87	Cem07_Tob_I -> 2 Ca+2 + 0.8 H+ + 1.2 H2O + 2.4 H2SiO4-2
Cerrusite	Yes	13.13	Cerrusite -> 1 CO3-2 + 1 Pb+2
Co2SiO4	Yes	6.289	Co2SiO4 + 2 H+ -> 2 Co+2 + 1 H2SiO4-2
Cr[OH]3[C]	Yes	65.68	Cr[OH]3[C] + 1 H2O -> 1 CrO4-2 + 5 H+ + 3 e-
Fe2[SeO3]3:2H2O_exp	Yes	180.0	Fe2[SeO3]3:2H2O_exp + 7 H2O -> 2 Fe[OH]4- + 14 H+ + 3 SeO4-2 + 6 e-
Fluorite	Yes	10.96	Fluorite -> 1 Ca+2 + 2 F-
Laumontite	Yes	118.0	Laumontite + 8 H2O -> 2 Al[OH]4- + 1 Ca+2 + 8 H+ + 4 H2SiO4-2
LDH_Cd_zc	Yes	60.06	LDH_Cd_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 3 Cd+2 + 1 H+
LDH_Co_zc	Yes	60.01	LDH_Co_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 3 Co+2 + 1 H+
LDH_Cu_zc	Yes	58.21	LDH_Cu_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 3 Cu+2 + 1 H+
LDH_Ni_zc	Yes	57.91	LDH_Ni_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 1 H+ + 3 Ni+2
Li2_CaO_Al2O3_SiO2_8H2O[s]	Yes	22.69	Li2_CaO_Al2O3_SiO2_8H2O[s] -> 2 Al[OH]4- + 1 Ca+2 + 3 H2O + 1 H2SiO4-2 + 2 Li+
Manganite	Yes	-25.27	Manganite + 3 H+ + 1 e- -> 2 H2O + 1 Mn+2
Ni[OH]2[s]	Yes	-10.80	Ni[OH]2[s] + 2 H+ -> 2 H2O + 1 Ni+2
Pb[OH]2[C]	Yes	-8.150	Pb[OH]2[C] + 2 H+ -> 2 H2O + 1 Pb+2
Pb2V2O7	Yes	0.9500	Pb2V2O7 + 3 H+ -> 1.5 H2O + 1 Pb+2 + 1 VO2+
Pb3[VO4]2	Yes	-3.070	Pb3[VO4]2 + 4 H+ -> 2 H2O + 1.5 Pb+2 + 1 VO2+
PbMoO4[cc]	Yes	13.36	PbMoO4[cc] -> 1 MoO4-2 + 1 Pb+2
Sn[OH]2[s]	Yes	1.447	Sn[OH]2[s] + 2 H+ -> 2 H2O + 1 Sn+2
Strengite	Yes	48.00	Strengite + 2 H2O -> 1 Fe[OH]4- + 4 H+ + 1 PO4-3
Tenorite	Yes	-7.620	Tenorite + 2 H+ -> 1 Cu+2 + 1 H2O
Willemite	Yes	6.289	Willemite + 2 H+ -> 1 H2SiO4-2 + 2 Zn+2
ZnCO3:1H2O	Yes	10.26	ZnCO3:1H2O -> 1 CO3-2 + 1 H2O + 1 Zn+2

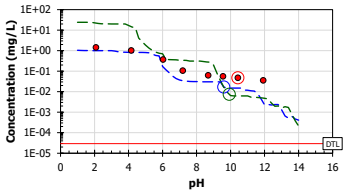
pH dependent concentration of Aluminum



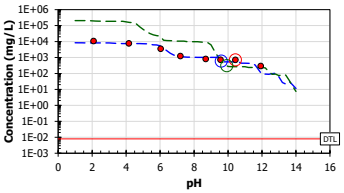
pH dependent concentration of Arsenic



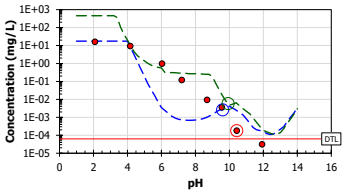
pH dependent concentration of Barium



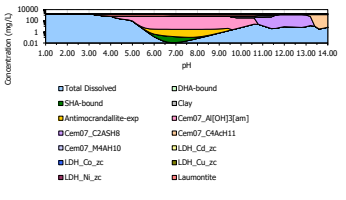
pH dependent concentration of Calcium



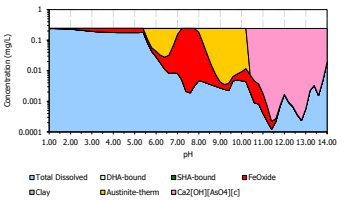
pH dependent concentration of Cadmium



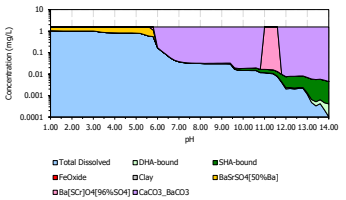
Al Profile at L/S=10.5 L/kg



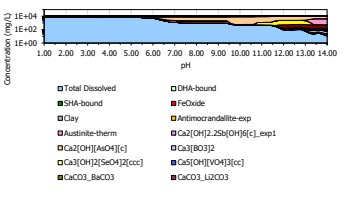
As Profile at L/S=10.5 L/kg



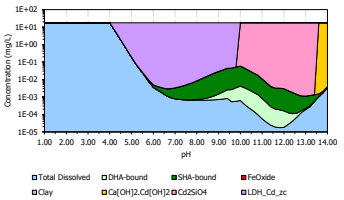
Ba Profile at L/S=10.5 L/kg



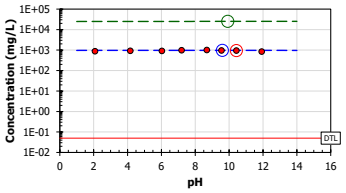
Ca Profile at L/S=10.5 L/kg



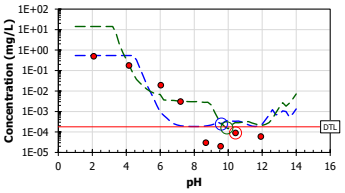
Cd Profile at L/S=10.5 L/kg



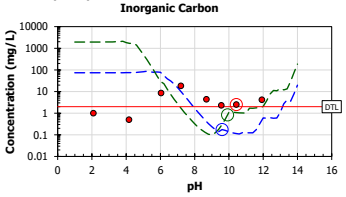
pH dependent concentration of Chloride



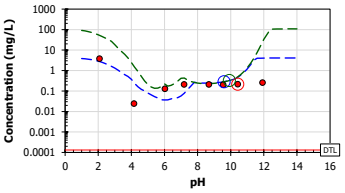
pH dependent concentration of Cobalt



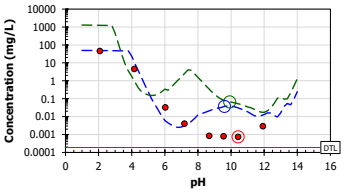
pH dependent concentration of Dissolved Inorganic Carbon



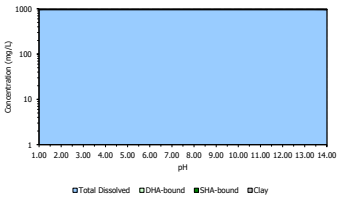
pH dependent concentration of Chromium



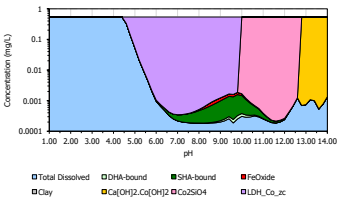
pH dependent concentration of Copper



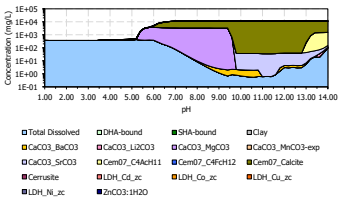
Cl Profile at L/S=10.5 L/kg



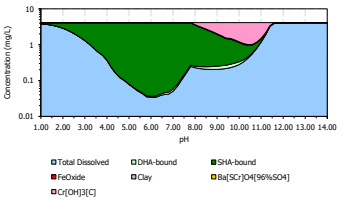
Co Profile at L/S=10.5 L/kg



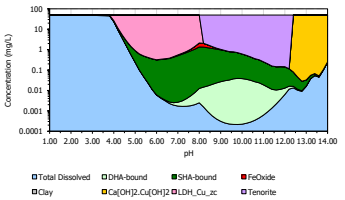
CO32- Profile at L/S=10.5 L/kg



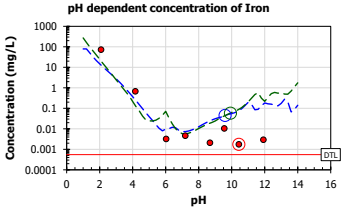
Cr Profile at L/S=10.5 L/kg



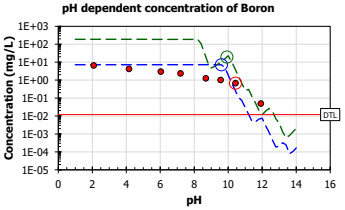
Cu Profile at L/S=10.5 L/kg



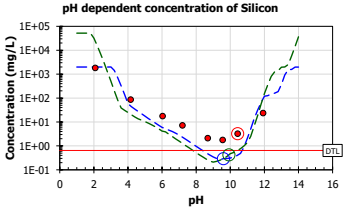
pH dependent concentration of Iron



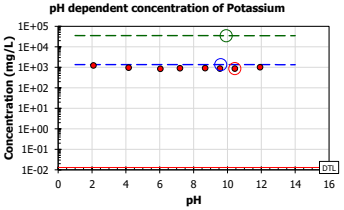
pH dependent concentration of Boron



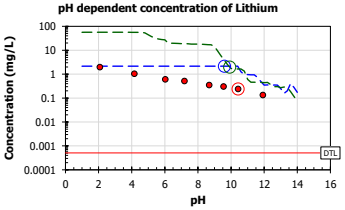
pH dependent concentration of Silicon



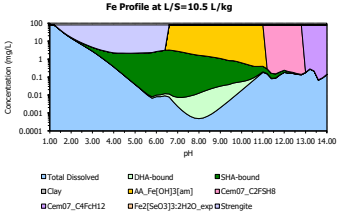
pH dependent concentration of Potassium



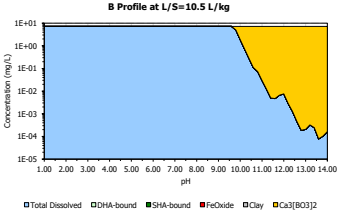
pH dependent concentration of Lithium



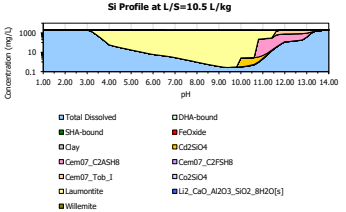
Fe Profile at L/S=10.5 L/kg



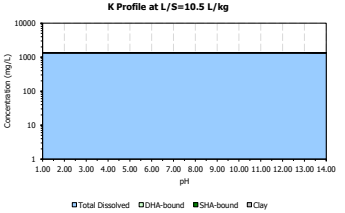
B Profile at L/S=10.5 L/kg



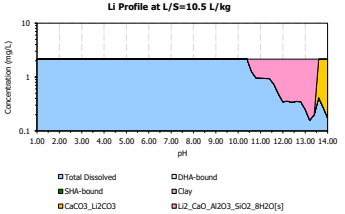
Si Profile at L/S=10.5 L/kg



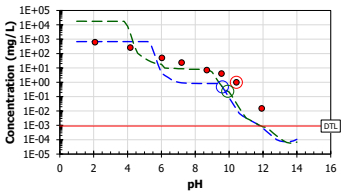
K Profile at L/S=10.5 L/kg



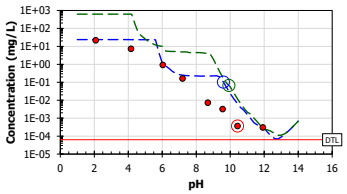
Li Profile at L/S=10.5 L/kg



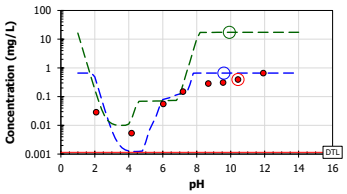
pH dependent concentration of Magnesium



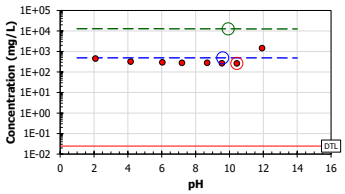
pH dependent concentration of Manganese



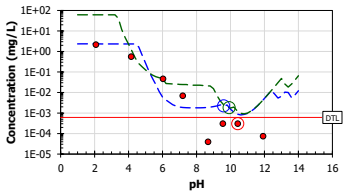
pH dependent concentration of Molybdenum



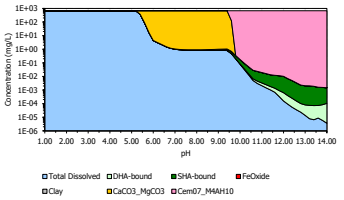
pH dependent concentration of Sodium



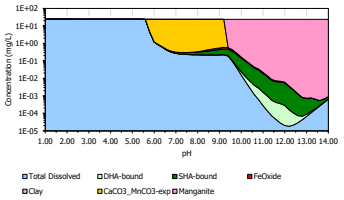
pH dependent concentration of Nickel



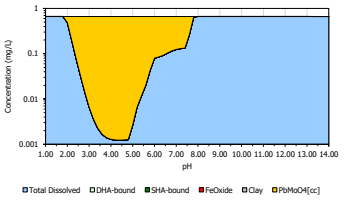
Mg Profile at L/S=10.5 L/kg



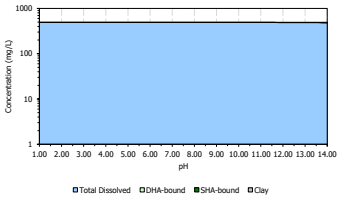
Mn Profile at L/S=10.5 L/kg



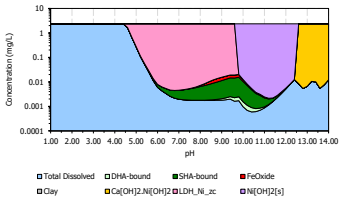
Mo Profile at L/S=10.5 L/kg



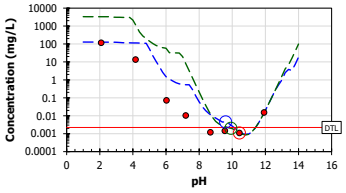
Na Profile at L/S=10.5 L/kg



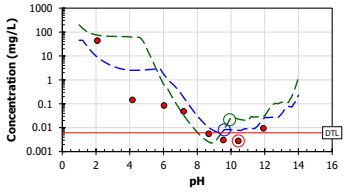
Ni Profile at L/S=10.5 L/kg



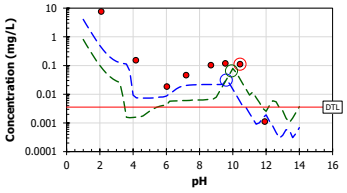
pH dependent concentration of Lead



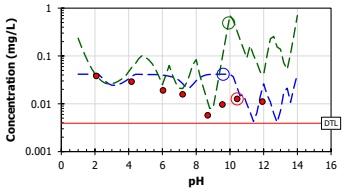
pH dependent concentration of Phosphorus



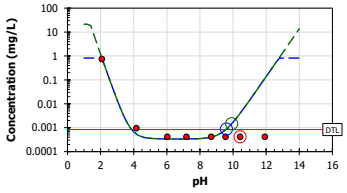
pH dependent concentration of Antimony



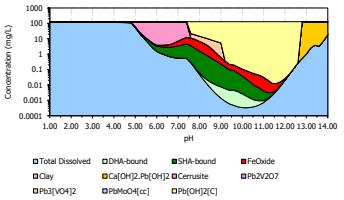
pH dependent concentration of Selenium



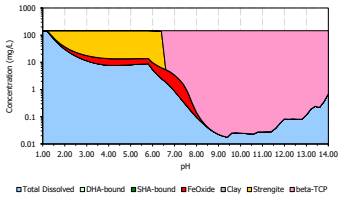
pH dependent concentration of Tin



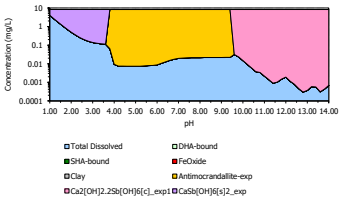
Pb Profile at L/S=10.5 L/kg



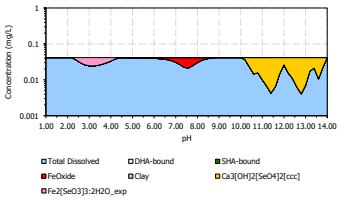
PO4 Profile at L/S=10.5 L/kg



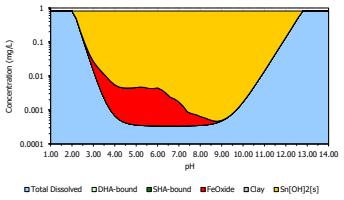
Sb Profile at L/S=10.5 L/kg



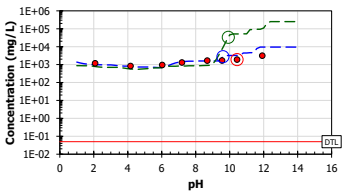
Se Profile at L/S=10.5 L/kg



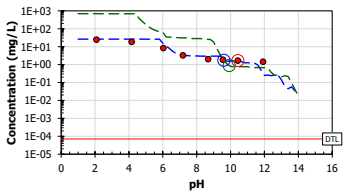
Sn Profile at L/S=10.5 L/kg



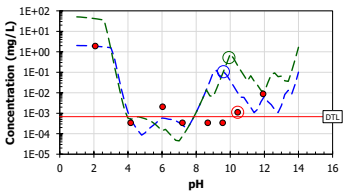
pH dependent concentration of Sulfate



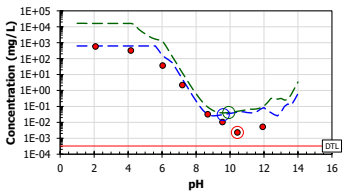
pH dependent concentration of Strontium



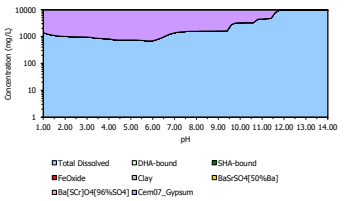
pH dependent concentration of Vanadium



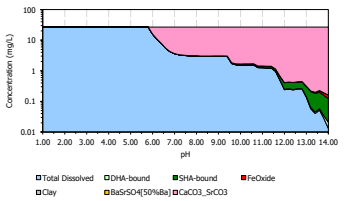
pH dependent concentration of Zinc



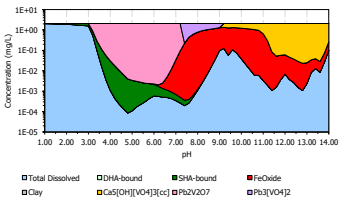
SO4 Profile at L/S=10.5 L/kg



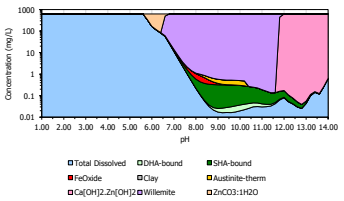
Sr Profile at L/S=10.5 L/kg



V Profile at L/S=10.5 L/kg



Zn Profile at L/S=10.5 L/kg



Name MSWI BA TW Alkaline for Lite

Residual details, concentrations

Residuals as log(model/sample)

Fraction	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*Total Avg*
pH	*2.12*	*3.71*	*5.24*	*6.75*	*7.20*	*9.88*	*11.3*	*12.9*	*Deviation*
Al	-0.04	-0.07	-2.34	0.11	-0.09	-2.14	-0.15	0.86	0.41
As	-0.04	0.14	0.30	-1.47	-1.15	0.36	0.16	2.33	0.38
B	-0.04	0.11	0.25	0.43	0.46	0.77	0.95	0.81	0.20
Ba	0.01	0.45	0.57	0.22	0.02	-0.27	0.06	-0.97	0.16
Br	-	-	-	-	-	-	-	-	-
Ca	-0.04	0.02	0.06	-0.01	0.01	0.02	-0.11	-0.53	0.07
Cd	-0.01	-0.04	0.45	1.02	1.33	0.86	0.51	0.83	0.27
Cl	-	-	-	-	-	-	-	-	-
Co	0.54	-0.04	0.51	0.95	0.24	-1.37	0.02	-0.57	0.24
CO32-	-	-	-	-	-	-	-	-	-
Cr	-0.08	0.90	1.67	0.83	0.68	-0.69	-0.30	0.21	0.29
Cu	-0.04	0.43	1.69	0.64	-0.14	-0.63	-0.73	-0.47	0.27
F	-	-	-	-	-	-	-	-	-
Fe	-1.96	-0.28	0.13	1.97	1.54	0.94	0.73	0.62	0.43
Hg	-	-	-	-	-	-	-	-	-
K	-0.32	-0.23	-0.12	-0.06	-0.03	-0.02	-0.01	-0.04	0.05
Li	-0.04	0.00	0.21	0.35	0.43	0.46	0.25	-0.29	0.11
Mg	-0.04	0.04	0.15	0.28	0.31	-0.38	-0.78	-0.55	0.14
Mn	-0.04	0.11	0.39	0.79	1.07	0.60	-0.29	-1.33	0.25
Mo	0.31	-1.92	-0.82	-0.47	-0.40	-0.03	-0.26	0.18	0.28
Na	-0.44	-0.37	-0.23	-0.14	-0.11	-0.07	-0.04	-0.04	0.08
Ni	-0.04	0.41	0.51	0.92	1.18	-1.26	-0.21	-0.91	0.28
NO3	-	-	-	-	-	-	-	-	-
P	-0.05	0.45	-0.19	-0.64	-0.46	-0.39	-0.15	0.73	0.16
Pb	0.19	1.99	0.75	0.68	0.69	-0.45	-0.85	-1.19	0.35
S	-0.05	-0.13	-0.17	-0.10	-0.10	-0.04	-0.68	-0.18	0.09
Sb	-0.55	-0.99	-0.18	-0.38	-0.60	-0.34	0.53	-0.18	0.19
Se	-0.04	0.19	0.36	0.03	-0.04	0.48	0.41	0.77	0.14
Si	-0.04	0.01	0.73	0.87	1.13	0.20	-0.52	0.84	0.24
Sn	-0.04	-1.03	-0.90	-0.72	-0.18	-0.26	1.73	1.35	0.34
Sr	-0.06	-0.01	0.14	0.24	0.27	0.31	0.15	-0.79	0.12
Th	-	-	-	-	-	-	-	-	-
U	-	-	-	-	-	-	-	-	-
V	-0.06	1.98	0.57	-1.51	-1.99	-0.95	-0.53	-0.62	0.43
Zn	-0.04	0.23	1.38	0.93	0.03	1.50	0.59	-2.15	0.40
Avg Deviation	0.08	0.15	0.16	0.15	0.15	0.15	0.11	0.18	0.24