APPENDIX 3: GEOCHEMISTRY DATA

Table A3.1: XRD results for rock and soil samples.

Sample	Interpretation	Calcite %	Aragonite%	Quartz %	Kaolinite%	Clay(illite /smectite) %	Feldspar %	Gypsum %	Goethite %	Halite %	Eugsterite %	Rutile %	Pyrite %	Bassenite%	Birnessite%
Billa Kalina Springs															
MSRS001	Phytoherm tufa	>60	-	5-20		-	-	-	-	<5	-	-	-		-
MSRS002	Ooidal phytoherm tufa	20-60	-	<5		-	-	<5	-	-	-	-	-		-
MSRS003	Stromatolitic tufa with calcrete overprint	>60	5-20	5-20		-	-	5-20	-	<5	-	-	-		-
MSRS004	Oncoidal tufa	>60	-	5-20		-	-	5-20	-	<5	-	-	-		-
MSRS005	Oncoidal tufa	>60	-	5-20		-	-	-	-	<5	-	-	-		-
MSRS006	Unconsolidated clastic tufa	20-60	-	20-60		-	-	5-20	-	20-60	-	-	-		-
MSRS007	Calcrete	20-60	-	20-60		-	-	-	-	-	-	-	-		-
MSRS008	Clastic Tufa	75-95	-	5-15		-	-	-	-	-	-	-	-		-
MSRS009	Clastic Tufa	60-80	-	15-25		-	-	-	-	-	-	-	-		1-5
MSRS010	Clastic Tufa	60-80	-	15-30		-	-	-	1-5	-	-	-	-		-
MSRS011_1	Phytoherm Tufa	80-100	-	1-5		-	-	-	-	-	-	-	-		-
MSRS011_40	Tail Sediment	40-60	-	40-60		-	-	-	-	-	-	<3	-		-
MSRS011_80	Tail Sediment	25-45	-	55-75		-	-	-	-	-	-	<3	<1		-
MSRS014_40	Unconsolidated Pool Sediment	20-30		30-50	1-3	<3	20-30			1-3			7-15		
MSRS014_80	Unconsolidated Pool Sediment	30-40		20-40	1-3	<3	10-20			1-3			10-15		
MSRS015_40	Unconsolidated Pool Sediment	20-30		40-60			4-10	10-15		7-15	<3				

[a]: Includes <1% Cristobalite

Table A3.1: XRD results for rock and soil samples (cont.).

Sample	Interpretation	Calcite %	Dolomite %	Quartz %	Clay %	Feldspar %	Halite %	Pyrite %
MSRS015_80	Unconsolidated Pool Sediment 20-30	40-50[a]	1-2	<4	7-15	7-15	<3	<2
Beresford Hill Springs – Beresford Springs								
LBSRS001	Oncoidal tufa	20-60	20-60	5-20	-	-	-	
LBSRS002	Clastic/ Stromatolitic tufa	>60	5-20	5-20	-	-	-	-
LBSRS003	Stromatolitic tufa	>60	5-20	5-20	<5	-	-	-
LBSRS005	Stromatolitic tufa	70-90	1-5	5-10	<3	-	-	-
LBSRS006	Clastic Tufa	40-60	<3	40-60	-	-	-	-
LBSRS007	Stromatolitic tufa	70-90	5-10	5-10	-	-	-	-
LBSRS008	Clastic tufa/ calcrete	70-90	-	5-10	<1	-	-	-
LBSRS009	Clastic tufa/ calcrete	70-90	2-8	5-10	<3	-	-	-
LBSRS010	Sparry Fracture fill	70-90	<3	5-10	<1	-	-	-
LBSRS011_40	Unconsolidated Pool Sediment	40-60	1-5	40-60	-	<3	-	1-5
LBSRS011_80	Unconsolidated Pool Sediment	40-60	1-5	40-60	-	<3	-	1-5
LBSRS012	Ooidal phytoherm tufa	70-90	1-5	1-5	-	-	5-10	-

Table A3.1: XRD results for rock and soil samples (cont.).

Sample	Interpretation	Calcite %	Aragonite %	Dolomite %	Quartz %	Kaolinite %	Illite/ Smectite %	Feldspar %	Goethite %	Halite %	Thenardite %	Rutile %	Pyrite %
WSRS001	Ooidal phytoherm tufa	>60		-	5-20		-	-	-	5-20	-	-	-
WSRS002	Phytoherm tufa	>60		-	<5		-	-	-	<5	-	-	-
WSRS003	Ooidal phytoherm tufa	20-60		-	<5		-	-	-	20-60	5-20	-	-
WSRS004	Goethitic calcrete	>60		-	≥40		<5	-	<5	<5	-	-	-
WSRS005	Oncoidal tufa	>60		-	≥40		-	-	-	-	-	-	-
WSRS006	Unconsolidated pool sediment	5-20		5-20	>60		<5	-	-	<5	<5	-	-
WSRS007	Phytoherm tufa	>60		5-20	≥40		-	-	-	-	-	-	-
WSRS008	Oncoidal tufa	>60			5-20		<5	-	-	<5	-	-	-
WSRS009_40	Unconsolidated Pool Sediment	60-80		-	20-40		-	-	-	-	-	-	<5
WSRS009_80	Unconsolidated Pool Sediment	30-50		1-5	50-70		-	-	-	-		<3	<5
WSRS010	Phytoherm Tufa	80-100		-	1-5		-	-	-	-		-	-
WSRS013_40	Unconsolidated Pool Sediment	<2			>65[a]	1-5	<8	10-20		1-5			3-7
WSRS013_80	Unconsolidated Pool Sediment	1-2			>65[a]	1-5	<8	14-30		1-5			3-7
WSRS014	Phytoherm tufa	70-90	5-10		10-20								
WSRS015	Goethitic Phytoherm tufa	70-90		5-10	3-7				5-10	<3			

[a]: Includes <2% Cristobalite

Table A3.1: XRD results for rock and soil samples (cont.).

Sample	Interpretation	Calcite %	Aragonite %	Dolomite %	Quartz %	Kaolinite %	Illite/ Smectite %	Feldspar %	Goethite %	Halite %	Thenardite %	Jarosite %	Anhydrite %
WSRS016	Sparry Fracture fill	>80		1-5	1-5					1-3			
WSRS017	Goethitic calcrete	>80			5-10				1-5				
WSRS018	Sparry Fracture fill	30-40	50-70	1-5									
Coward Springs													
CSRS001	Microbial tufa/ Fracture fill	20-60		20-60	<5								
Strangways Springs													
SSRS001	Pool sediment	-		-	>80					-		5-10	-
SSRS002	Phytoherm tufa	>80		-						1-5		-	-
SSRS005	Ooidal phytoherm tufa	>80		-	5-10					-		-	1-3

Table A3.2: XRF results for rock and soil samples.

Sample	SiO_2 %	TiO_2 %	Al_2O_3 %	Fe_2O_3 %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	P_2O_5 %	SO_3 %	Cl ppm	Total %
MSRS001	3.540	0.030	0.410	0.280	0.080	1.220	45.740	1.030	0.510	0.040	0.770	7520	53.6
MSRS002	1.790	0.020	0.340	0.370	0.270	0.680	48.730	0.180	0.090	0.030	1.170	1035	53.7
MSRS003	3.580	0.030	0.480	0.330	0.070	1.650	44.430	0.680	0.150	0.040	1.390	3538	52.8
MSRS004	0.730	0.000	0.120	1.290	0.280	0.880	49.440	0.190	0.040	0.030	1.300	1431	54.3
MSRS005	3.920	0.030	0.520	5.220	2.560	0.70	43.080	0.440	0.210	0.050	0.360	4088	57.1
MSRS006	17.720	0.140	1.620	0.840	0.070	1.170	26.370	7.640	0.920	0.080	3.230	73304	59.8
MSRS007	16.340	0.060	0.970	0.550	0.030	0.820	40.690	0.020	0.290	0.050	0.270	341	60.1
MSRS008	8.133	0.072	1.092	1.729	0.158	0.934	46.076	0.095	0.267	0.141	0.464	156	59.2
MSRS009	10.464	0.052	0.628	0.885	5.806	1.120	40.888	0.349	0.271	0.075	0.862	1304	61.5
MSRS010	8.093	0.059	0.920	5.50	0.229	0.886	44.382	0.069	0.230	0.123	0.452	214	61.0
MSRS011-1	2.084	0.012	0.298	0.315	0.05	0.747	49.174	0.254	0.085	0.060	0.513	814	53.7
MSRS011-2_40	35.659	0.185	2.160	1.026	0.057	0.719	27.511	0.592	0.645	0.115	0.435	2491	69.4
MSRS011-2_80	39.506	0.195	2.117	1.054	0.055	0.654	25.452	0.614	0.672	0.111	0.432	1834	71.0
MSRS0014_40	39.907	0.258	3.355	3.595	0.073	0.803	22.690	0.667	0.903	0.180	0.960	1891	73.6
MSRS0014_80	44.477	0.298	3.901	3.982	0.075	0.784	19.739	0.667	1.019	0.099	0.968	1497	76.2
MSRS0015_40	30.010	0.194	2.415	1.454	0.051	1.440	22.518	7.233	0.931	0.191	1.750	48038	73.0
MSRS0015_80	29.746	0.193	2.332	1.391	0.045	1.459	22.463	7.328	0.917	0.190	2.110	46571	72.8
LBSRS001	2.510	0.010	0.190	0.170	0.020	9.440	37.650	0.130	0.070	0.030	0.120	249	50.3
LBSRS002	4.890	0.020	0.340	0.210	0.010	3.820	43.840	0.090	0.130	0.120	0.300	651	53.8
LBSRS003	7.810	0.090	1.740	0.970	0.100	3.940	40.010	0.050	0.310	0.080	0.120	124	55.2
LBSRS005	6.560	0.068	1.303	0.720	0.041	3.063	45.155	0.079	0.314	0.106	0.118	244	57.6

Table A3.2: XRF results for rock and soil samples (cont.).

Sample	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	SO_3	Cl	Total
	%	%	%	%	%	%	%	%	%	%	%	ppm	%
LBSRS006	28.239	0.090	1.046	0.507	0.031	1.663	35.610	0.135	0.386	0.182	0.251	127	68.2
LBSRS007	3.074	0.010	0.241	0.312	0.009	4.868	37.321	0.434	0.083	0.034	0.195	898	46.7
LBSRS008	6.713	0.058	1.407	0.80	0.027	3.113	44.812	0.116	0.245	0.085	0.272	285	57.7
LBSRS009	8.36	0.079	1.679	0.842	0.025	3.756	42.999	0.127	0.312	0.112	0.132	292	58.5
LBSRS010	4.333	0.042	0.983	1.131	0.107	2.371	47.723	0.166	0.250	0.103	0.210	1189	57.5
LBSRS011_40	25.524	0.14	1.415	1.428	0.034	2.258	32.824	0.396	0.450	0.086	0.566	606	65.2
LBSRS011_80	24.149	0.124	1.353	1.318	0.032	2.163	32.594	0.378	0.434	0.079	0.573	640	63.3
LBSRS012	2.425	0.011	0.208	0.162	0.022	2.482	45.745	3.487	0.30	0.024	0.623	29174	58.4
WSRS001	3.170	0.030	0.500	0.240	0.020	1.590	42.920	3.580	0.260	0.020	0.530	30963	52.9
WSRS002	2.530	0.020	0.420	0.260	0.060	2.270	46.260	0.490	0.230	0.200	0.280	3825	53.0
WSRS003	4.600	0.050	0.880	0.500	0.030	0.830	20.570	23.710	0.570	0.050	2.140	219141	53.9
WSRS004	17.360	0.140	1.960	3.630	0.030	1.460	35.410	0.910	0.600	0.020	0.230	6541	61.8
WSRS005	5.970	0.040	0.560	0.560	0.060	1.360	45.360	0.100	0.210	0.110	0.350	243	54.7
WSRS006	53.410	0.310	3.880	2.06	0.020	0.940	8.310	4.120	1.340	0.050	1.200	24506	75.6
WSRS007	12.070	0.060	0.680	0.360	0.020	2.990	39.790	0.380	0.270	0.030	0.210	2047	56.9
WSRS008	8.050	0.070	1.550	0.670	0.050	4.280	40.020	0.170	0.30	0.130	0.110	471	55.4
WSRS009_40	20.637	0.077	0.728	0.390	0.033	1.337	38.594	0.263	0.242	0.061	0.264	809	62.7
WSRS009_80	26.700	0.090	0.902	0.434	0.039	1.654	34.909	0.268	0.308	0.062	0.293	713	65.7
WSRS010	1.828	0.005	0.250	0.319	0.018	1.377	49.277	0.208	0.071	0.036	0.224	692	53.7
WSRS013_40	64.217	0.575	7.441	6.702	0.023	0.622	1.906	1.368	2.074	0.162	0.883	1258	86.1
WSRS013_80	63.350	0.567	7.515	6.851	0.024	0.628	1.862	1.381	2.038	0.164	1.069	1431	85.6

Table A3.2: XRF results for rock and soil samples (cont.).

Sample	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	SO_3	Cl	Total
	%	%	%	%	%	%	%	%	%	%	%	ppm	%
WSRS014	6.486	0.042	0.843	0.624	0.070	1.369	50.206	0.135	0.218	0.031	0.164	317	60.2
WSRS015	2.082	0.016	0.370	5.637	0.073	2.906	46.749	0.527	0.102	0.058	0.257	2415	58.8
WSRS016	1.326	0.003	0.117	0.114	3.122	3.122	50.982	0.740	0.056	0.027	0.326	2930	56.9
WSRS017	4.893	0.035	0.601	1.689	1.198	1.198	50.747	0.305	0.195	0.034	0.207	734	60.0
WSRS018	0.103	0.000	0.009	0.032	1.963	1.936	51.581	0.272	0.015	0.036	0.094	423	54.1