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Investigation of hydrochemistry and uranium radioactivity in the groundwater of Namaqualand, Northern Cape, South Africa

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CATCHMENT D82B DATA

SampleID	JL 07-01	JL 07-02	JL 07-09	JL 07-11	JL 07-13	JL 07-15	JL 07-17
pH	7.29	7.91	4.90	6.72	7.11	7.64	7.78
Eh (mV)	2.1-	40.3-	117.4+	2.3+	1.0+	38.7+	34.5-
Temperature (˚C)	22.30	23.60	23.20	20.90	21.50	17.20	19.10
EC (mS/cm)	3.36	3.73	3.60	5.82	2.75	12.13	1.49
TDS (mg/l)	1678	1879	1814	2920	1375	6070	746
Total Alk (mg/L) CaCO3	190.00	200.00	250.00	220.00	280.00	250.00	190.00
Na (mg/l)	350.34	605.91	303.61	652.63	318.09	1802.00	178.20
Mg (mg/l)	55.49	52.18	78.02	109.15	51.25	217.34	34.13
K (mg/l)	19.92	30.59	25.04	39.73	17.46	55.14	21.01
Ca (mg/l)	162.07	154.91	267.22	398.53	173.17	579.32	71.38
U (µg/l)	45.86	66.46	145.99	24.26	49.66	88.29	19.72
Cr (µg/l)	2.50	2.50	174.00	207.17	207.58	188.13	208.16
Li (µg/l)	143.52	180.06	65.07	116.84	46.92	235.68	46.87
Be (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
B (µg/l)	1025.82	2208.65	752.92	1479.74	1072.46	2091.40	608.48
Al (µg/l)	216.60	138.75	50.00	50.00	50.00	50.00	50.00
V (µg/l)	8.09	7.98	8.46	14.08	6.64	35.89	19.14
Mn (µg/l)	29.17	23.35	21.50	28.45	16.61	15.45	15.04
Co (µg/l)	1.00	1.00	1.26	1.72	1.00	2.31	1.00
Ni (µg/l)	50.00	50.00	82.19	101.17	89.43	104.81	88.80
Cu (µg/l)	47.53	24.19	20.84	31.95	21.89	53.86	26.28
Zn (µg/l)	395.83	584.13	300.00	300.00	667.80	300.00	300.00
Fe (µg/l)	434.43	1011.18	693.21	556.32	585.47	692.77	708.99
Ga (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
As (µg/l)	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Se (µg/l)	31.43	51.36	45.09	75.65	37.18	172.64	11.95
Rb (µg/l)	8.73	8.43	3.40	6.55	2.89	15.02	1.31
Sr (µg/l)	1597.98	1932.25	2266.16	5708.40	1597.74	7805.18	645.17
Mo(µg/l)	1.00	10.06	18.24	25.35	18.62	21.15	17.43
Ag (µg/l)	1.60	1.06	27.68	15.46	4.65	7.69	1.00
Cd (µg/l)	1.00	1.18	1.00	1.00	1.00	1.00	1.00
Te (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ba(µg/l)	20.00	20.00	41.92	36.37	20.00	32.24	20.00
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	88.68	42.32	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	6.00	6.05	5.70	4.87	3.68	14.15	1.81
Cl (mg/l)	820.78	875.27	800.15	1553.45	556.69	2591.91	308.61
Br (µg/l)	0.00	3257.19	5340.78	9068.03	3241.15	0.00	1303.98
NO3 (mg/l)	70.86	114.66	167.66	128.17	141.06	238.23	83.48
PO4 (mg/l)	267.95	14.19	32.42	0.00	8.46	0.00	4.22
SO_4 (mg/l)	210.71	309.99	433.23	602.87	290.32	666.98	103.41

SampleID	JL 07-19	JL 07-21	JL 07-23	JL 07-25	JL 07-27	JL 07-29	JL 07-41
pH	7.20	7.22	7.17	7.37	7.92	7.42	7.27
Eh (mV)	1.7-	2.4-	11.7-	11.1-	52.9-	16.4-	22.8-
Temperature (˚C)	22.70	17.00	31.70	18.40	16.80	23.50	33.20
EC (mS/cm)	4.58	3.72	6.41	10.29	4.62	3.33	1.17
TDS (mg/l)	2290	1863	3180	5150	2320	1667	585
Total Alk (mg/L) CaCO3	220.00	270.00	220.00	230.00	260.00	130.00	240.00
Na (mg/l)	568.26	383.29	960.26	1463.81	535.42	422.30	111.99
Mg (mg/l)	84.87	69.65	101.02	147.74	111.37	72.30	31.64
K (mg/l)	22.71	26.26	44.30	56.99	26.78	18.47	4.08
Ca (mg/l)	300.19	277.65	268.33	602.81	227.63	169.72	57.00
U (µg/l)	104.41	27.18	69.24	60.81	11.98	11.64	2.84
Cr (µg/l)	211.61	224.49	213.79	218.32	198.13	228.56	214.02
Li (µg/l)	152.91	69.08	197.44	200.39	29.59	78.11	18.27
Be (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
B (µg/l)	1859.79	1053.95	2150.35	3018.95	1326.42	1832.13	250.37
Al (µg/l)	50.00	50.00	50.00	50.00	50.00	50.00	132.11
V (µg/l)	13.84	24.78	20.41	29.96	23.74	14.04	8.63
Mn (µg/l)	22.86	22.62	22.55	28.36	16.71	31.87	37.55
Co (µg/l)	1.70	1.21	1.39	2.07	1.81	1.80	1.00
Ni (µg/l)	101.00	100.14	95.32	115.28	91.22	93.69	85.78
Cu (µg/l)	26.97	34.73	42.18	46.49	36.60	32.03	24.00
Zn (µg/l)	300.00	300.00	568.90	300.00	300.00	1178.11	300.00
Fe (µg/l)	789.91	894.39	727.83	835.11	526.98	1113.74	846.87
Ga (µg/l)	1.00	1.06	1.00	1.00	1.00	1.00	1.63
As (µg/l)	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Se (µg/l)	56.28	36.39	88.26	143.18	61.09	30.90	4.09
Rb (µg/l)	2.71	1.36	23.27	5.42	5.87	2.89	1.00
Sr (µg/l)	3063.69	1950.89	3601.74	8307.77	2253.86	1409.97	293.09
Mo(µg/l)	19.86	14.49	27.41	21.61	17.45	26.66	13.98
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Te (µg/l)	1.12	1.00	1.09	2.14	1.27	1.23	1.00
Ba(µg/l)	20.00	40.49	20.00	29.02	37.32	20.61	62.45
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	5.46	3.72	7.95	0.00	3.46	5.10	2.03
Cl (mg/l)	1074.98	896.11	1785.41	2994.41	1291.23	707.56	240.23
Br (µg/l)	4701.27	0.00	0.00	0.00	5284.58	0.00	0.00
NO3 (mg/l)	256.87	225.44	161.91	448.86	42.90	139.60	32.04
PO4 (mg/l)	11.16	13.49	56.47	34.69	10.15	5.81	0.00
SO_4 (mg/l)	468.78	306.33	792.64	879.11	366.18	372.30	83.63

SampleID	JL 07-47	JL 07-49	JL 07-51	JL 08-01	JL 08-03	JL 08-05	JL 08-07
pH	7.42	7.10	7.22	6.39	5.75	6.27	6.22
Eh (mV)	14.1-	3.0-	2.9-	46.3+	87.2+	68+	75.5+
Temperature (˚C)	19.80	20.20	20.70	19.10	21.20	26.60	22.80
EC (mS/cm)	5.64	12.88	10.62	1.71	6.57	1.38	2.06
TDS (mg/l)	2820	6430	5310	856	3270	689	1032
Total Alk (mg/L) CaCO3	230.00	290.00	270.00	111.00	167.00	223.00	220.00
Na (mg/l)	609.69	1960.35	1523.02	217.94	901.37	155.41	203.86
Mg (mg/l)	139.05	269.36	156.41	41.30	127.27	23.38	49.71
K (mg/l)	30.40	75.62	47.51	10.93	38.66	14.42	13.35
Ca (mg/l)	332.32	451.13	536.18	89.48	450.99	110.39	167.87
U (µg/l)	11.14	34.47	23.86	10.36	32.14	22.09	41.43
Cr (µg/l)	215.80	198.49	470.72	2.50	2.50	2.50	2.50
Li (µg/l)	91.50	191.77	89.54	33.50	105.56	46.39	24.56
Be (µg/l)	1.00	1.00	1.00	1.55	1.00	1.32	1.00
B (µg/l)	1233.74	4494.86	3102.13	307.19	1319.09	422.97	518.81
Al (µg/l)	50.00	50.00	50.00	50.00	50.00	72.14	50.00
V (µg/l)	16.91	36.51	26.13	9.50	16.23	15.65	18.55
Mn (µg/l)	29.80	62.96	41.29	10.00	10.00	10.00	10.00
Co (µg/l)	1.56	1.76	1.99	1.00	1.00	1.00	1.00
Ni (µg/l)	98.05	106.25	110.48	50.00	50.00	50.00	50.00
Cu (µg/l)	30.59	49.20	73.44	20.00	20.00	20.00	20.00
Zn (µg/l)	387.84	1609.70	454.42	1014.04	300.00	982.92	314.97
Fe (µg/l)	876.61	817.69	962.24	50.00	50.00	50.00	50.00
Ga (µg/l)	1.00	1.00	1.00	1.55	1.06	1.00	1.00
As (µg/l)	20.00	20.00	20.00	40.04	45.10	39.40	44.90
Se (µg/l)	75.21	212.60	142.47	36.26	78.45	26.12	36.17
Rb (µg/l)	3.24	12.65	20.43	7.14	3.48	2.50	1.94
Sr (µg/l)	2716.36	8051.17	6899.02	950.37	4131.47	647.37	1170.44
Mo(µg/l)	13.43	22.21	18.11	6.89	6.59	1.98	2.71
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	1.00	1.00	1.00	1.04	1.00	1.00	1.00
Te (µg/l)	1.00	16.61	6.19	1.00	1.00	1.00	1.00
Ba(µg/l)	26.92	34.66	22.91	58.10	40.87	20.00	20.00
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	30.00	30.00	40.00	50.21	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	3.24	16.23	15.26	0.00	0.00	1.12	1.28
Cl (mg/l)	1638.20	4070.03	3149.20	424.22	2057.66	288.96	468.47
Br (µg/l)	5280.19	15270.63	0.00	0.00	0.00	0.00	0.00
NO3 (mg/l)	60.79	206.98	232.85	50.58	56.07	70.34	97.18
PO4 (mg/l)	7.37	0.00	0.00	0.00	0.00	0.00	0.00
SO4 (mg/l)	296.44	993.65	1005.32	152.12	319.98	90.25	174.18

SampleID	JL 08-09	JL 08-11	JL 08-15	JL 08-19	JL-09-07	JL-09-09	JL-09-11
pH	5.75	6.18	6.40	6.74	6.04	6.84	7.42
Eh (mV)	81.6+	72.2+	55.6+	42.1+	64-	29.4+	17.2+
Temperature (˚C)	27.20	23.60	5.30	24.90	13.70	20.70	11.90
EC (mS/cm)	3.41	8.22	23.60	7.74	7.89	11.54	4.33
TDS (mg/l)	1694	4150	2640.00	3920	3960	5780	2160
Total Alk (mg/L) CaCO3	195.00	217.00	206.00	220.00	208.00	192.00	176.00
Na (mg/l)	420.00	1108.91	747.09	1183.48	1157.04	1895.85	629.60
Mg (mg/l)	82.61	197.07	142.59	169.37	110.07	186.72	108.26
K (mg/l)	18.19	39.67	28.35	53.10	43.62	55.78	39.53
Ca (mg/l)	232.11	602.65	252.36	411.59	431.45	559.99	160.30
U (µg/l)	30.70	87.88	42.94	50.11	31.88	38.85	12.53
Cr (µg/l)	2.50	2.50	5.00	2.50	2.50	2.50	8.06
Li (µg/l)	42.02	105.63	71.62	97.61	160.97	241.71	97.56
Be (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
B (µg/l)	1164.28	1759.53	1013.80	1495.08	2888.85	4184.92	1467.16
Al (µg/l)	50.00	50.00	50.00	50.00	362.78	50.00	50.00
V (µg/l)	37.01	20.13	16.42	18.53	19.40	33.17	19.07
Mn (µg/l)	10.00	10.00	10.00	10.00	47.29	31.35	39.07
Co (µg/l)	1.00	1.00	1.00	1.00	4.70	3.41	3.69
Ni (µg/l)	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Cu (µg/l)	20.00	20.00	20.00	20.00	44.67	51.96	27.38
Zn (µg/l)	300.00	300.00	592.00	7284.97	1844.28	1365.60	1504.06
Fe (µg/l)	50.00	50.00	100.00	50.00	962.86	282.56	889.78
Ga (µg/l)	1.00	1.00	1.00	1.00	1.07	1.00	1.34
As (µg/l)	40.92	45.53	43.00	46.88	20.00	20.00	20.00
Se (µg/l)	52.11	112.13	68.00	92.94	97.20	155.12	40.81
Rb (µg/l)	1.36	4.61	8.00	7.11	8.68	22.43	12.52
Sr (µg/l)	1610.28	4666.44	2251.00	3684.67	5644.96	11200.81	2107.87
Mo(µg/l)	19.80	10.51	17.00	7.76	9.01	10.95	7.48
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	1.00	1.00	1.00	1.05	2.75	2.90	2.48
Te (µg/l)	1.00	1.00	1.00	1.25	1.39	1.47	1.00
Ba(µg/l)	20.00	27.23	29.00	39.66	42.61	42.33	52.66
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	0.00	0.00	0.00	0.00	0.00	31.80	0.00
Cl (mg/l)	519.50	2576.21	1810.82	2608.95	2586.92	4104.57	1332.71
Br (µg/l)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO3 (mg/l)	91.03	144.24	64.35	107.32	190.23	138.66	41.76
PO4 (mg/l)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SO4 (mg/l)	151.39	669.36	324.04	516.10	666.59	1021.98	214.66

SampleID	JL-09-13	JL-09-15
pH	7.20	7.08
Eh (mV)	14.3+	19+
Temperature (˚C)	18.10	19.00
EC (mS/cm)	5.98	6.55
TDS (mg/l)	2990	3250
Total Alk (mg/L) CaCO3	192.00	192.00
Na (mg/l)	686.82	995.29
Mg (mg/l)	187.45	129.36
K (mg/l)	30.03	40.40
Ca (mg/l)	414.92	348.13
U (µg/l)	24.09	24.08
Cr (µg/l)	2.50	6.09
Li (µg/l)	134.37	178.27
Be (µg/l)	1.00	1.00
B (µg/l)	1372.47	2611.50
Al (µg/l)	50.00	50.00
V (µg/l)	17.64	18.52
Mn (µg/l)	33.52	46.17
Co (µg/l)	3.54	4.59
Ni (µg/l)	50.00	50.00
Cu (µg/l)	28.39	36.53
Zn (µg/l)	1429.45	1579.79
Fe (µg/l)	445.23	1100.72
Ga (µg/l)	2.15	1.06
As (µg/l)	20.00	20.00
Se (µg/l)	59.53	66.08
Rb (µg/l)	11.57	6.43
Sr (µg/l)	3897.80	3748.27
Mo(µg/l)	5.20	13.32
Ag (µg/l)	1.00	1.00
Cd (µg/l)	2.73	2.69
Te (µg/l)	1.62	1.41
Ba(µg/l)	91.48	52.38
Tl (µg/l)	1.00	1.00
Pb (µg/l)	30.00	30.00
Bi (µg/l)	1.00	1.00
F (mg/l)	0.00	0.00
Cl (mg/l)	1875.70	2240.02
Br (µg/l)	0.00	0.00
NO3 (mg/l)	177.07	129.61
PO4 (mg/l)	0.00	0.00
SO_4 (mg/l)	1187.61	509.65

CATCHMENT F30A DATA

SampleID	JL 07-31	JL 07-33	JL 07-35	JL 07-37	JL 07-39	JL 08-13	JL 08-21	JL 08-25
pH	7.75	7.77	7.62	8.84	7.27	5.87	6.63	7.11
Eh (mV)	31.2-	44.4-	31.8-	98.9-	0.8+	51.3+	44.3+	24.9+
Temperature (˚C)	19.20	19.90	28.00	18.60	23.40	24.50	17.60	20.40
EC (mS/cm)	1.86	2.28	4.23	2.32	2.02	1.76	1.30	2.26
TDS (mg/l)	932	1144	2110	1156	1009	601	646	1136
Total Alk (mg/L) CaCO3	310.00	220.00	240.00	170.00	260.00	200.00	227.00	186.00
Na (mg/l)	305.90	241.60	587.74	353.45	222.76	146.23	145.30	308.30
Mg (mg/l)	22.34	63.35	82.84	37.81	68.53	34.74	36.87	81.61
K (mg/l)	15.72	4.30	3.53	19.01	1.75	9.89	9.35	5.10
Ca (mg/l)	40.28	91.88	89.37	31.19	81.37	70.56	82.92	86.08
U (µg/l)	20.37	6.51	1.00	1.00	1.00	3.41	31.81	1.00
Cr (µg/l)	212.13	199.32	205.64	196.55	194.64	2.50	2.50	2.50
Li (µg/l)	18.42	136.00	116.10	35.13	28.39	21.06	46.57	18.38
Be (µg/l)	13.28	1.64	1.00	1.00	1.00	1.00	1.34	1.00
B (µg/l)	869.94	273.58	342.96	832.15	554.41	216.01	334.31	328.23
Al (µg/l)	50.00	50.00	50.00	50.00	50.00	55.45	50.00	50.00
V (µg/l)	8.87	7.51	14.98	7.71	10.75	9.88	9.51	5.49
Mn (µg/l)	33.42	80.66	40.86	27.77	15.69	10.00	10.00	10.00
Co (µg/l)	2.27	1.46	3.75	1.00	1.00	1.00	1.00	1.00
Ni (µg/l)	78.62	84.58	84.61	79.11	83.69	50.00	50.00	50.00
Cu (µg/l)	41.00	23.79	35.95	26.27	20.00	20.00	20.00	20.00
Zn (µg/l)	487.78	300.00	556.42	300.00	518.65	300.00	442.68	496.92
Fe (µg/l)	881.06	707.59	865.79	598.27	732.56	50.00	50.00	50.00
Ga (µg/l)	1.64	1.00	1.86	1.15	1.39	1.43	1.00	1.36
As (µg/l)	20.00	20.00	20.00	20.00	20.00	38.42	40.50	39.53
Se (µg/l)	20.98	12.43	28.57	13.31	17.17	20.97	27.77	21.85
Rb (µg/l)	5.55	2.15	26.50	27.77	1.00	2.78	1.48	6.96
Sr (µg/l)	374.62	831.90	681.94	502.12	426.51	500.68	561.84	827.54
Mo(µg/l)	24.62	19.68	31.36	17.59	14.25	1.00	3.42	8.88
Ag (µg/l)	76.65	24.24	11.04	3.97	1.00	1.00	1.00	1.00
Cd (µg/l)	1.27	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Te (µg/l)	1.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ba(µg/l)	20.00	23.71	75.91	43.20	55.09	54.20	20.00	49.05
Tl (µg/l)	1.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	3.61	1.87	5.91	2.98	3.38	0.00	0.00	1.76
Cl (mg/l)	411.17	600.80	1206.78	543.98	447.21	209.72	298.38	649.28
Br (µg/l)	1584.21	2506.63	0.00	1973.13	1985.43	0.00	0.00	0.00
NO3 (mg/l)	7.61	4.37	4.55	8.26	20.20	28.58	9.64	18.78
PO4 (mg/l)	2.57	0.00	7.07	0.00	5.00	0.00	0.00	0.00
SO_4 (mg/l)	112.05	187.06	242.23	191.29	162.32	54.74	69.43	123.66

SampleID	JL 08-27	JL 08-29	JL 08-31	JL 08-33	JL 08-37	JL-09-17	JL-09-23
pH	6.86	6.39	6.38	6.42	6.01	7.94	8.17
Eh (mV)	40.2+	70.8+	58.3+	61.9+	85.6+	24.1-	34.1-
Temperature (˚C)	27.10	24.40	26.60	19.20	25.10	12.50	13.90
EC (mS/cm)	1.70	1.29	2.64	1.45	2.81	0.99	1.62
TDS (mg/l)	854	643	1316	721	1385	497	811
Total Alk (mg/L) CaCO3	172.00	73.00	168.00	128.00	134.00	132.00	192.00
Na (mg/l)	262.60	177.64	270.79	117.01	220.36	123.10	241.80
Mg (mg/l)	47.45	35.82	94.02	58.79	124.53	23.42	31.66
K (mg/l)	2.08	1.65	9.67	1.92	4.98	3.68	1.10
Ca (mg/l)	54.33	42.81	161.52	102.74	189.47	53.61	68.59
U (µg/l)	3.43	1.00	5.67	1.00	8.74	3.14	8.98
Cr (µg/l)	2.50	2.50	2.50	2.50	2.50	2.50	4.74
Li (µg/l)	36.23	17.92	29.49	40.54	35.65	21.98	27.84
Be (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	0.06
B (µg/l)	404.18	200.00	386.86	200.00	200.00	254.99	366.82
Al (µg/l)	50.00	50.00	50.00	50.00	50.00	50.00	20.35
V (µg/l)	5.96	2.95	6.98	5.12	7.15	10.06	14.28
Mn (µg/l)	10.00	10.00	10.00	10.00	10.00	24.99	32.11
Co (µg/l)	1.00	1.00	1.00	1.00	1.00	2.51	2.87
Ni (µg/l)	50.00	50.00	50.00	50.00	50.00	50.00	19.11
Cu (µg/l)	20.00	20.00	20.00	20.00	20.00	20.00	26.79
Zn (µg/l)	2023.55	569.94	641.84	1327.91	1097.43	1619.41	1487.63
Fe (µg/l)	50.00	50.00	50.00	50.00	50.00	50.00	316.64
Ga (µg/l)	1.00	2.23	1.16	1.86	1.00	1.79	0.81
As (µg/l)	39.79	37.94	40.26	37.95	40.19	20.00	252.86
Se (µg/l)	22.23	20.66	36.44	20.90	32.14	6.87	2.22
Rb (µg/l)	1.30	3.86	2.27	2.40	1.34	1.00	0.44
Sr (µg/l)	352.23	273.05	910.58	680.16	906.78	340.31	331.77
Mo(µg/l)	3.01	1.00	4.87	1.00	1.00	4.68	14.56
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	1.72	1.00	1.00	1.00	1.00	2.61	2.11
Te (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	0.18
Ba(µg/l)	20.00	103.63	49.58	85.67	28.04	88.84	41.13
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	0.30
Pb (µg/l)	30.00	30.00	30.32	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	0.02
F (mg/l)	2.05	0.00	1.18	0.00	0.00	1.38	2.94
Cl (mg/l)	426.08	364.46	695.36	331.67	645.07	220.00	411.52
Br (µg/l)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO3 (mg/l)	20.75	6.56	82.62	123.18	49.06	26.77	19.21
PO4 (mg/l)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SO_4 (mg/l)	115.04	97.98	124.25	90.63	159.03	67.38	112.18

CONTROL SAMPLES DATA

SampleID	JL 07-03	JL 07-04	JL 07-43	JL 07-45	JL 08-17	JL 08-23	JL 08-35
pH	7.45	7.28	7.40	7.49	6.80	6.42	6.42
Eh (mV)	14.3-	1.5+	9.8-	22.4-	44.3+	6.4+	71.2+
Temperature (˚C)	33.40	24.80	21.70	23.80	25.00	18.80	19.40
EC (mS/cm)	1.51	1.36	1.57	2.05	4.09	6.50	3.68
TDS (mg/l)	752	682	786	1027	2050	3240	162
Total Alk (mg/L) CaCO3	200.00	114.00	270.00	310.00	202.00	259.00	64.00
Na (mg/l)	218.36	169.88	153.79	241.50	419.63	1081.32	27.92
Mg (mg/l)	35.45	45.87	53.06	55.84	112.56	171.70	6.20
K (mg/l)	4.75	3.57	2.66	9.94	18.02	28.67	1.09
Ca (mg/l)	63.08	72.20	73.26	76.82	349.92	253.05	37.23
U (µg/l)	12.93	32.91	5.56	8.20	46.75	76.74	3.21
Cr (µg/l)	2.50	2.50	222.52	214.62	2.50	2.50	2.50
Li (µg/l)	24.46	74.94	36.24	37.55	60.18	63.77	24.85
Be (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
B (µg/l)	738.44	544.84	418.81	490.14	707.10	1635.10	200.00
Al (µg/l)	145.22	155.35	50.00	50.00	50.00	50.00	50.00
V (µg/l)	19.13	6.44	8.52	11.71	18.01	25.94	1.00
Mn (µg/l)	52.57	83.06	32.86	22.82	10.00	10.00	185.04
Co (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ni (µg/l)	50.00	50.00	90.93	86.90	50.00	50.00	50.00
Cu (µg/l)	20.57	40.05	20.00	21.29	20.00	20.00	20.00
Zn (µg/l)	603.55	1753.95	329.74	300.00	457.57	579.16	300.00
Fe (µg/l)	383.38	387.16	939.99	779.94	50.00	50.00	50.00
Ga (µg/l)	1.57	2.74	1.00	1.00	1.00	1.00	1.00
As (µg/l)	20.00	20.00	20.00	20.00	43.06	45.02	37.86
Se (µg/l)	18.14	9.84	7.89	12.93	64.03	82.94	6.08
Rb (µg/l)	1.32	1.00	1.28	3.39	1.91	12.38	2.76
Sr (µg/l)	330.42	388.20	350.80	457.39	2405.05	2691.46	68.84
Mo(µg/l)	1.00	1.00	15.21	18.10	1.23	12.72	1.00
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	1.00	2.60	1.00	1.00	1.00	1.51	1.00
Te (µg/l)	1.00	1.00	1.00	1.00	1.00	1.53	1.00
Ba(µg/l)	41.21	73.75	20.75	20.00	20.00	21.39	20.00
Tl (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pb (µg/l)	110.12	294.83	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F (mg/l)	3.64	3.29	3.81	4.34	0.00	0.00	1.49
Cl (mg/l)	305.97	284.64	312.18	500.50	1278.26	1949.07	62.08
Br (µg/l)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO3 (mg/l)	6.36	28.95	25.81	12.91	72.35	29.41	0.00
PO4 (mg/l)	16.53	10.65	0.00	6.06	0.00	0.00	0.00
SO_4 (mg/l)	98.51	142.23	123.49	148.39	264.23	404.76	43.29

SampleID	JL-09-01	JL-09-03	JL-09-05	JL-09-19	JL-09-21
pH	7.33	6.92	6.45	7.84	7.32
Eh (mV)	174+	25+	38.3+	22-	10.4+
Temperature (˚C)	15.30	11.10	11.40	14.90	15.90
EC (mS/cm)	5.60	6.85	6.87	2.80	11.75
TDS (mg/l)	2800	3430	3430	1403	5870
Total Alk (mg/L) CaCO3	192.00	232.00	236.00	180.00	308.00
Na (mg/l)	692.84	1068.89	1063.46	416.02	1539.73
Mg (mg/l)	86.25	113.09	110.56	62.70	433.17
K (mg/l)	37.88	55.78	53.44	3.85	7.75
Ca (mg/l)	326.51	268.55	261.08	102.99	731.09
U (µg/l)	42.02	51.05	51.83	4.57	48.18
Cr (µg/l)	2.50	2.50	2.50	2.50	2.27
Li (µg/l)	121.86	151.47	156.76	15.70	90.63
Be (µg/l)	1.00	1.00	1.00	1.00	-0.18
B (µg/l)	1783.02	2979.53	3004.03	537.61	978.99
Al (µg/l)	50.00	50.00	50.00	50.00	68.84
V (µg/l)	12.60	16.86	17.28	13.62	47.08
Mn (µg/l)	1300.26	66.83	45.48	32.42	118.42
Co (µg/l)	53.05	4.76	4.13	3.15	5.18
Ni (µg/l)	134.05	50.00	50.00	50.00	54.53
Cu (µg/l)	29.40	40.03	42.92	31.96	48.04
Zn (µg/l)	1403.19	1414.59	1330.58	1796.50	1377.56
Fe (µg/l)	53893.58	1836.80	1090.78	364.60	833.90
Ga (µg/l)	1.00	1.00	1.00	1.27	3.60
As (µg/l)	20.00	20.00	20.00	20.00	240.01
Se (µg/l)	65.75	102.24	79.02	15.80	97.27
Rb (µg/l)	9.76	8.59	8.28	1.00	2.72
Sr (µg/l)	4366.99	4034.12	3976.71	742.02	4953.01
Mo(µg/l)	17.57	13.86	13.35	8.97	10.95
Ag (µg/l)	1.00	1.00	1.00	1.00	1.00
Cd (µg/l)	2.63	2.42	2.83	2.70	2.96
Te (µg/l)	1.47	1.50	1.10	1.00	0.74
Ba(µg/l)	35.02	40.63	40.38	54.63	145.73
Tl (µg/l)	1.00	1.00	1.00	1.00	0.52
Pb (µg/l)	30.00	30.00	30.00	30.00	30.00
Bi (µg/l)	1.00	1.00	1.00	1.00	0.01
F (mg/l)	0.00	0.00	0.00	0.00	0.00
Cl (mg/l)	1661.56	2219.31	2305.06	872.28	4715.76
Br (µg/l)	0.00	0.00	0.00	0.00	0.00
NO3 (mg/l)	223.58	129.35	124.29	20.80	98.71
PO4 (mg/l)	0.00	66.78	0.00	0.00	0.00
SO_4 (mg/l)	769.77	580.81	579.70	196.12	756.35