

## APPENDIX 4 - PHYSICAL AND CHEMICAL LABORATORY RESULTS

Map Unit	Site Number	Laboratory Number	Horizon	Horizon Depth mm	Air Dry Water Content %	Particle Size Distribution						Emerson Dispersion Test	Soil Plasticity				1:5 Soil Water Suspension			Organic Carbon (W & B) %	Total Nitrogen %	Available K ug/g	Available P ug/g	Exchangeable Cations								
						Gravel >2mm %	Coarse sand %	Fine Sand %	Silt %	Clay %	Fines <74um %		Liquid Limit %	Plastic Limit %	Plasticity Index %	Linear Shrinkage %	pH	EC 25 C ds/m	Cl %					Ca++ meq/100g	Mg++ meq/100g	K+ meq/100g	Na+ meq/100g	Tot. Ex. Base meq/100g	Al+++ ug/g	Mn++ ug/g	H+ meq/100g	Cat. Ex. Cap. meq/100g
Qap	1	91 1233 A1	0 - 150	0.8	<1.0	9.0	77	7	7	E3(2)					5.4	0.077		1.27	0.09	215	2.7	1.8	1.0	0.4	<0.1	16	21	6.0				
		91 1234 A2	150 - 340	0.4	<1.0	6.0	80	14	2	E3(2)					5.3	0.063		0.50	<0.05	170	1.4	0.8	0.6	0.3	<0.1	11	7	2.8				
		91 1235 B21	340 - 720	1.9	<1.0	4.0	58	15	23	71 E2(4)	24.9	13.5	11.4	7.5	6.3	0.344	0.220	0.49	<0.05	188	<1.0	2.7	4.8	0.5	1.0	<5	<5	4.2				
		91 1236 B22	720 - 900	2.6	<1.0	2.0	51	23	25	E2(3)	28.4	16.7	11.7	8.7	8.2	0.444	0.040	0.29	<0.05	306	1.1	3.5	9.8	1.6	3.2	<5	<5	1.8				
		91 1237 B23	900 - 1080	1.2	1.8	11.0	43	32	13	E2(3)	19.7	14.4	5.3	4.7	8.7	0.351	0.040	0.56	<0.05	270	<1.0	2.2	6.0	0.6	2.0	<5	<5	1.0				
91 1238 B24	1080 - 1500	3.9	5.8	7.0	29	13	52	E2(4)	47.6	24.0	23.6	14.6	8.8	0.868	0.080	0.38	<0.05	654	<1.0	5.3	16.9	0.9	8.9	<5	<5	0.6						
Qa1	2	91 1239 A1	0 - 180	1.7	<1.0	1.0	49	29	20	E3(3)					5.4	0.066		2.02	0.17	403	3.5	3.6	1.4	0.9	<0.1	11	14	9.8				
		91 1240 B1	180 - 330	1.3	<1.0	1.0	59	33	7	73 E2(4)	18.4	15.8	2.6	3.9	5.7	0.051		1.07	0.06	192	1.4	2.4	1.9	0.4	<0.1	<5	7	4.2				
		91 1241 B2	330 - 850	2.7	<1.0	1.0	45	17	35	E2(4)	32.8	16.6	16.2	11.8	6.0	0.078		0.61	0.05	257	2.8	4.6	4.7	0.6	0.1	<5	6	5.4				
Qag	3	91 1242 A1	0 - 100	8.3	6.7	6.0	34	29	27	E3(2)					6.6	0.196	0.010	16.89	0.90	466	27.0	44.8	6.0	0.9	0.1	<5	6	18.0				
		91 1243 A2	100 - 260	1.9	1.3	1.0	42	37	21	E2(4)					6.6	0.057		0.96	0.09	379	6.8	5.7	2.3	0.7	0.1	<5	6	6.6				
		91 1244 B21	260 - 1150	3.6	<1.0	0.5	16	30	54	93 E3(4)	49.7	22.9	26.8	15.0	6.9	0.091		0.56	0.07	510	2.8	10.8	6.4	1.2	0.3	<5	5	7.0				
		91 1245 B22	1150 - 1560	2.5	<1.0	0.5	44	19	36	E3(3)	31.4	16.7	14.7	11.0	7.1	0.100	0.010	0.38	<0.05	277	5.5	7.0	8.0	0.4	0.3	<5	<5	3.8				
Qa2	4	91 1246 A11	0 - 260	2.5	<1.0	<0.5	23	60	19	E3(3)					6.8	0.061		1.78	0.17	376	5.8	6.7	5.7	0.6	0.1	<5	<5	6.5				
		91 1247 A12	260 - 385	2.5	<1.0	<0.5	36	53	15	E3(3)					7.2	0.063		1.34	0.11	248	4.7	5.5	7.6	0.7	0.1	<5	<5	5.0				
		91 1248 A2	385 - 710	2.3	<1.0	<0.5	47	35	18	E3(3)					7.2	0.062		1.40	0.10	219	7.5	5.0	7.4	0.6	0.3	<5	<5	5.6				
		91 1249 A3	710 - 890	2.9	<1.0	<0.5	42	31	27	E2(4)					7.2	0.067		1.03	0.08	202	13.4	6.2	7.7	0.6	0.5	<5	<5	5.8				
		91 1250 B	890 - 1400+	3.1	<1.0	<0.5	44	28	27	80 E2(4)	30.6	17.1	13.5	8.5	7.2	0.047		0.73	0.07	229	20.0	8.0	8.6	0.3	1.0	<5	<5	5.5				
Qbd	5	91 1251 A/B	0 - 220	2.7	6.3	8.0	59	21	12	67 E3(2)					6.0	0.027		1.63	0.12	572	1.7	5.2	1.7	1.1	<0.1	<5	9	8.9				
Qbg	7	91 1252 A1	0 - 115	3.1	0.7	7.0	46	24	21	E3(2)					6.9	0.159	0.001	4.91	0.37	383	13.9	11.2	4.7	0.8	0.8	<5	6	10.0				
		91 1253 A2	115 - 265	0.8	5.8	10.0	59	16	15	E2(4)					6.1	0.042		1.09	<0.05	124	3.4	1.8	1.4	0.2	0.3	<5	<5	4.4				
		91 1254 B21	265 - 520	4.4	0.9	5.0	25	8	62	84 E2(4)	51.7	23.8	27.9	14.2	5.4	0.038		0.88	0.06	312	1.4	6.9	7.0	0.8	1.4	38	<5	14.6				
		91 1255 B22	520 - 730	4.8	0.4	6.0	32	6	56	E2(4)	49.2	23.1	26.1	15.7	5.7	0.030		0.87	<0.05	332	1.3	7.8	7.2	0.9	0.9	11	<5	11.0				
		91 1256 B23	730 - 900	4.7	2.4	3.0	28	9	60	E2(4)	53.4	26.3	27.1	15.7	6.9	0.164	0.013	0.89	<0.05	484	2.4	11.8	9.4	1.2	0.9	<5	<5	6.6				
91 1257 B3	900 - 1070	7.1	43.0	2.0	17	17	65	E2(4)	71.2	36.1	35.1	18.9	7.4	0.313	0.030	0.76	<0.05	675	3.6	17.6	13.6	1.6	1.4	<5	<5	5.9						
Dga	9	91 1258 A1	0 - 95	1.8	21.2	35.0	40	15	10	E3(2)					5.5	0.055		5.02	0.22	120	2.6	4.0	0.8	0.3	<0.1	25	10	13.5				
		91 1259 B21	95 - 545	0.7	29.0	58.0	29	6	8	30 E3(2)	6.0	N/A	N/A	1.6	5.4	0.045		1.12	<0.05	106	2.3	0.1	0.3	0.3	<0.1	83	<5	5.5				
		91 1260 B22	545 - 700	0.2	28.7	33.0	51	11	5	E3(2)	N/A	N/A	N/A	0.8	5.9	0.076		0.71	<0.05	121	<1.0	<0.1	0.9	0.3	<0.1	28	<5	2.7				
		91 1261 B23	700 - 930	1.5	30.0	31.0	34	24	12	E2(3)	23.4	22.6	0.8	3.9	5.8	0.202	0.015	0.59	<0.05	113	<1.0	<0.1	2.6	0.4	0.1	60	<5	5.0				
		91 1262 B3	930 - 1500	3.4	33.7	19.0	16	20	45	E5c	48.7	27.8	20.9	10.6	5.4	0.324	0.023	0.66	<0.05	134	<1.0	<0.1	3.2	0.2	0.1	222	<5	11.9				

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						Gravel >2mm %	Course sand %	Fine Sand %	Silt %	Clay %		Fines <74um %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Linear Shrinkage %	pH	EC 25 C ds/m					Cl %	Ca++ meq/100g	Mg++ meq/100g	K+ meq/100g	Na+ meq/100g	Tot. Ex. Bases meq/100g	Al+++ ug/g	Mn++ ug/g	Fe+ meq/100g	Cat. Ex. Cap. meq/100g
Dgc	10	91 1263 A1	0 - 90	0.8	3.1	28.0	56	13	3	E3(2)					5.0	0.058		2.34	0.09	169	1.8	0.5	0.3	0.2	<0.1		97	<5	9.1			
		91 1264 A21	90 - 230	0.3	7.3	31.0	54	9	6	E3(2)					5.3	0.790	0.070	0.82	<0.05	138	<1.0	<0.1	0.2	0.2	<0.1		67	<5	3.7			
		91 1265 A22	230 - 380	0.3	15.1	36.0	51	7	5	E3(2)					5.7	1.673	0.124	0.79	<0.05	76	<1.0	<0.1	0.3	0.2	<0.1		31	<5	2.3			
		91 1266 B2	380 - 755	3.6	6.3	9.0	18	4	68	82 E2(4)	53.8	25.7	28.1	14.2	5.6	1.581	0.112	0.52	<0.05	58	<1.0	0.3	8.0	1.1	2.1		210	<5	13.5			
		91 1267 B3	755 - 1000	3.9	14.4	30.0	32	7	31	E2(3)	42.5	26.3	16.2	8.7	5.1	1.765	0.187	0.42	<0.05	116	2.3	0.1	10.8	0.9	3.9		241	<5	13.6			
Dgg	11	91 1268 A11	0 - 190	0.8	3.1	28.0	56	13	3	E3(2)					6.6	0.109	0.003	1.14	0.06	169	1.8	2.2	0.8	0.2	<0.1		<5	<5	3.0			
		91 1269 A12	190 - 620	0.3	7.3	31.0	54	9	6	E3(2)					7.0	0.304	0.023	0.85	<0.05	138	<1.0	2.5	1.0	0.2	<0.1		<5	<5	2.2			
		91 1270 A13	620 - 860	0.3	15.1	36.0	51	7	5	E3(2)					7.4	0.337	0.034	0.95	<0.05	76	<1.0	1.8	1.9	0.2	0.1		<5	<5	2.2			
		91 1271 A14	860 - 1010	3.6	6.3	9.0	18	4	68	E3(2)					7.8	0.206	0.015	0.93	<0.05	58	<1.0	1.8	2.2	0.1	0.4		<5	<5	2.0			
		91 1272 B	1010 - 1300	3.9	14.4	30.0	32	7	31	66 E2(3)	28.3	17.1	11.2	5.9	7.4	0.088		1.57	0.07	116	2.3	3.2	4.0	0.2	1.0		<5	<5	3.8			
Tfe1	12	91 1273 A	0 - 155	1.9	22.7	14.0	59	11	17	E3(3)					5.8	0.057		2.55	0.10	221	<1.0	2.6	3.2	0.5	0.2		39	<5	11.6			
		91 1274 B21	155 - 580	4.5	5.6	7.0	34	7	52	78 E1	56.4	23.2	33.2	14.6	8.0	0.793	0.08	0.77	<0.05	327	<1.0	3.9	19.8	1.2	9.8		<5	<5	3.7			
		91 1275 B22	580 - 740	4.8	8.3	5.0	33	9	53	E3(2)	61.4	24.3	37.1	16.5	9.0	1.717	0.20	0.71	<0.05	203	<1.0	3.9	21.5	1.0	11.6		<5	<5	<0.1			
		91 1276 B23	740 - 1210	4.1	14.0	9.0	35	9	47	E2(2)	57.4	22.6	34.8	18.9	9.2	1.589	0.13	0.61	<0.05	210	<1.0	4.0	23.8	0.8	11.9		<5	<5	<0.1			
		91 1277 B24	1210 - 1570	4.6	7.6	4.0	28	8	59	E2(2)	61.2	27.6	33.6	16.5	9.0	1.812	0.02	0.63	<0.05	269	<1.0	3.6	22.4	1.1	12.8		<5	<5	<0.1			
Osd	13	91 1278 A1	0 - 85	2.5	30.1	5.0	57	18	22	E3(2)					4.7	0.089		5.70	0.20	225	1.7	0.5	0.9	0.5	0.1		194	<5	21.9			
		91 1279 B1	85 - 180	1.5	31.0	6.0	42	29	23	76 E2(3)	26.3	21.3	5.0	4.7	4.7	0.192	0.02	2.85	0.09	92	<1.0	0.1	2.0	0.2	0.2		206	<5	12.7			
		91 1280 B21	180 - 375	1.4	26.9	3.0	29	35	32	E2(4)	30.8	21.1	9.7	6.5	4.8	0.340	0.04	1.42	0.08	85	<1.0	0.1	3.4	0.2	0.2		112	<5	8.3			
		91 1281 B22	375 - 500	1.4	22.7	4.0	26	27	43	E1	33.8	23.0	10.8	13.4	5.3	0.303	0.03	1.23	0.07	94	<1.0	<0.1	4.5	0.2	0.7		56	<5	7.7			
Osf	14	91 1282 A1	0 - 135	2.3	2.6	6.0	55	18	21	E3(2)					6.2	0.108	0.003	3.37	0.19	342	<1.0	6.8	5.4	0.7	0.1		<5	<5	9.3			
		91 1283 B	135 - 540	3.3	2.9	5.0	36	16	43	79 E1	45.2	18.1	27.1	14.2	7.3	0.852	0.078	0.89	0.06	298	<1.0	4.2	14.3	1.0	3.3		<5	<5	3.8			
		91 1284 B3	540 - 800	3.7	62.9	4.0	34	14	44	E3(1)	48.7	22.1	26.6	7.1	9.0	1.389	0.090	0.52	<0.05	222	<1.0	3.9	19.5	1.0	7.7		<5	<5	<0.1			
Osa	15	91 1285 A1	0 - 170	2.5	68.9	11.0	59	16	13	E3(2)					5.2	0.067		3.99	0.16	253	1.9	1.8	1.5	0.5	0.1		196	16	20.9			
		91 1286 B	170 - 360	1.9	57.1	15.0	62	14	9	58 E3(2)	23.1	22.9	0.2	1.6	5.3	0.052		2.53	0.07	169	<1.0	0.4	2.7	0.4	0.1		184	<5	15.9			
Osc	16	91 1287 A1	0 - 95	2.4	39.7	8.0	67	15	11	E3(2)					5.4	0.046		3.08	0.14	247	<1.0	1.0	1.5	0.6	0.1		160	14	18.1			
		91 1288 A2	95 - 380	1.7	10.0	8.0	65	12	15	E3(2)					5.8	0.031		1.52	<0.05	253	<1.0	0.1	2.7	0.5	0.1		133	<5	11.9			
		91 1289 B	380 - 520	3.1	10.7	4.0	58	13	25	71 E2(3)	27.6	21.6	6.0	6.3	6.0	0.051		0.72	<0.05	384	<1.0	<0.1	5.2	0.8	0.6		71	<5	9.3			

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						Gravel >2mm %	Coarse sand %	Fine Sand %	Silt %	Clay %	Fines <74um %		Liquid Limit %	Plastic Limit %	Plasticity Index %	Linear Shrinkage %	pH	EC 25 C dS/m	Cl %					Cat+ meq/100g	Mg++ meq/100g	K+ meq/100g	Na+ meq/100g	Tot. Ex. Base meq/100g	Al+++ ug/g	Mn++ ug/g	Zn++ meq/100g	Cat. Ex. Cap. meq/100g
Qeg	17	91 1290 A1	A1	0-90	1.8	3.0	5.0	70	17	8	E3(2)					5.0	0.063		2.53	0.11	193	1.2	0.2	0.7	0.3	0.1	188	5	14.5			
		91 1291 A2	A2	90-325	1.2	3.0	2.0	65	23	10	E3(2)					5.4	0.046		1.15	<0.05	144	<1.0	0.1	1.0	0.2	0.1	52	<5	6.3			
		91 1292 B21	B21	325-545	2.0	0.7	1.0	49	20	30	78 E2(4)	27.7	15.8	11.9	8.3	6.1	0.070		0.79	<0.05	247	<1.0	0.1	4.8	0.5	0.3	20	<5	5.7			
		91 1293 B22	B22	545-805	2.0	4.3	2.0	48	20	30	E2(4)	33.2	18.6	14.6	10.2	6.2	0.191	0.010	0.58	<0.05	385	<1.0	<0.1	5.8	0.7	0.5	<5	<5	4.1			
		91 1294 B3	B3	805-1110	0.9	21.9	17.0	61	12	10	E3(3)	17.9	14.9	3.0	3.5	6.8	0.021	0.015	0.48	<0.05	237	<1.0	<0.1	3.7	0.4	0.4	<5	<5	2.6			
Ts0	18	91 1295 A1	A1	0-180	3.1	18.1	10.0	55	14	21	E3(3)					7.1	0.063		1.52	0.08	944	<1.0	9.5	2.6	3.0	0.2	<5	<5	6.5			
		91 1296 B1	B1	180-355	4.4	3.9	6.0	28	15	51	82 E3(4)	43.1	23.3	19.8	11.4	7.6	0.073		0.86	0.07	1164	<1.0	12.8	4.5	3.4	0.2	<5	<5	5.5			
		91 1297 B21	B21	355-810	5.4	1.5	2.0	13	8	76	E3(3)	63.2	34.5	28.7	16.2	8.6	0.175	<0.001	0.57	0.05	1192	<1.0	14.0	10.7	4.1	0.6	<5	<5	1.9			
		91 1298 B22	B22	810-1460	6.6	28.3	3.0	18	18	61	E3(3)	70.2	27.7	42.5	16.5	9.2	0.376	<0.001	0.33	<0.05	1452	<1.0	5.5	17.4	4.5	4.2	<5	<5	<0.1			
		91 1299 B3	B3	1460+	6.0	6.4	2.0	13	13	72	E3(4)	73.6	38.0	35.6	18.9	9.3	0.491	0.010	0.28	<0.05	1260	<1.0	4.0	17.5	3.9	5.0	<5	<5	1.7			
Ts12	19	91 1300 A1	A1	0-80	1.9	4.9	9.0	61	12	18	E3(2)					5.4	0.076		4.07	0.17	177	2.2	2.3	3.5	0.4	0.2	68	6	17.1			
		91 1301 A2	A2	80-170	1.2	9.3	12.0	62	13	13	E3(3)					5.4	0.101	<0.001	1.65	0.07	98	<1.0	1.0	3.6	0.2	0.2	59	<5	10.4			
		91 1302 B21	B21	170-305	2.4	11.1	8.0	51	12	29	69 E1	31.6	28.6	3.0	9.8	5.8	0.214	0.010	1.10	0.06	138	<1.0	1.0	7.1	0.3	1.0	13	<5	8.5			
		91 1303 B22	B22	305-800	2.5	9.5	7.0	50	9	34	E1	34.6	15.7	18.9	11.8	8.0	0.644	0.010	0.68	<0.05	181	<1.0	1.3	9.9	0.6	3.7	<5	<5	2.4			
Qbf	20	91 1304 A1	A1	0-100	2.2	3.9	8.0	52	19	21	E3(3)					5.4	0.052		1.52	0.11	408	1.9	2.4	2.5	1.1	0.1	36	30	10.8			
		91 1305 B21	B21	100-380	3.0	1.9	6.0	36	11	47	78 E3(3)	33.2	19.6	13.6	9.8	6.5	0.052		0.95	0.06	370	1.3	2.6	4.3	1.1	0.5	<5	<5	8.7			
		91 1306 B22	B22	380-585	4.6	<1.0	1.0	6	2	91	E3(4)	53.6	32.1	21.5	13.8	6.9	0.079		0.62	0.06	450	<1.0	2.6	7.5	1.4	2.1	<5	<5	12.3			
		91 1307 B23	B23	585-900	4.8	0.5	2.0	14	2	82	E2(4)	62.1	29.2	32.9	14.2	8.0	0.141	0.090	0.66	0.06	780	<1.0	3.6	9.8	2.5	3.5	<5	<5	7.3			
		91 1308 B3	B3	900-1500	6.5	22.8	1.0	21	11	66	E2(3)	61.5	39.4	22.1	14.2	9.3	0.371	0.004	0.29	<0.05	846	<1.0	4.8	15.5	2.8	2.7	<5	<5	0.9			
Qa3	21	91 1309 A11	A11	0-70	3.6	1.4	4.0	57	24	15	E3(2)					6.7	0.075		3.31	0.21	292	4.0	8.6	3.9	0.6	0.1	<5	7	7.2			
		91 1310 A12	A12	70-190	0.9	<1.0	5.0	72	13	8	E3(2)					6.7	0.043		1.16	0.05	163	<1.0	2.3	1.6	0.3	<0.1	<5	<5	2.1			
		91 1311 A2	A2	190-680	0.2	<1.0	5.0	80	11	4	E3(2)					6.7	0.030		0.49	<0.05	143	<1.0	0.5	0.8	0.2	<0.1	<5	<5	0.9			
		91 1312 B	B	680-1600	0.7	<1.0	4.0	70	10	16	66 E2(3)	19.6	17.0	2.6	1.6	6.7	0.047		0.37	<0.05	116	<1.0	2.1	2.6	0.2	0.1	<5	<5	2.5			
Tfe2	22	N/A	A1	0-145	1.0	43.7					E2(2)					6.2	0.054															
		N/A	A2	145-445	1.0	18.9						E2(2)					5.3	0.048														
		N/A	B	445-1120	1.9	33.9						E5d	37.8	20.0	17.8	12.4	4.6	0.450														
Qa4	23	N/A	A11	0-130	1.9	0					E5a					6.8	0.175															
		N/A	A12	130-380	1.4	0					E2(2)					6.6	0.053															
		N/A	A13	380-840	0.6	0					E5b					7.4	0.053															
		N/A	A14	840-1000	1.0	0					E3(3)					7.4	0.041															
		N/A	B	1000-1200	2.6	0					E2(4)	32.8	19.1	13.7	10.4	7.5	0.122															