
Appendix 5.3.3C **Dry Return Period –** **Water Quality Prediction Summaries**

Plunge Pool - Extreme Dry Events

		Post-Closure			Year 33 - annual average
		September - Year 33	September - Year 33	September - Year 33	1 in 50 Dry
		Best Estimate	7dQ10	7dQ20	
Unit					
pH	pH unit	7.68	7.67	7.67	7.64
Conductivity	mS/cm	585	670	674	593
TDS	mg/L	66	67	68	69
TSS	mg/L	2.5	2.6	2.6	3.7
Turbidity	mg/L	0.7	0.7	0.7	0.8
Total_hardness	mg/L as CaCO ₃	44	44	44	43
Total_alkalinity	mg/L	51	52	52	51
Fluoride	mg/L	0.05	0.05	0.05	0.06
Sulphate	mg/L	206.8	242.1	243.7	211.6
Chloride	mg/L	0.27	0.30	0.30	0.36
Ammonia	mg/L	0.244	0.282	0.284	0.249
Nitrate	mg/L	0.018	0.021	0.021	0.028
Nitrite	mg/L	0.003	0.004	0.004	0.004
TKN	mg/L	0.169	0.173	0.173	0.187
Ortho_P	mg/L	0.015	0.010	0.010	0.009
Total_Diss_P	mg/L	0.014	0.015	0.015	0.015
TOC	mg/L	7.159	7.101	7.098	7.141
DOC	mg/L	1.677	1.813	1.819	1.646
T_Aluminum	mg/L	0.0567	0.0487	0.0483	0.0610
T_Antimony	mg/L	0.0019	0.0023	0.0023	0.0020
T_Arsenic	mg/L	0.0013	0.0014	0.0014	0.0013
T_Barium	mg/L	0.0158	0.0172	0.0173	0.0160
T_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
T_Boron	mg/L	0.0073	0.0084	0.0084	0.0074
T_Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001
T_Calcium	mg/L	13.1	13.2	13.2	12.9
T_Chromium	mg/L	0.0003	0.0003	0.0003	0.0003
T_Cobalt	mg/L	0.00049	0.00057	0.00057	0.00050
T_Copper	mg/L	0.0015	0.0018	0.0018	0.0016
T_Iron	mg/L	0.0522	0.0521	0.0522	0.0612
T_Lead	mg/L	0.0003	0.0003	0.0003	0.0002
T_Lithium	mg/L	0.0029	0.0032	0.0033	0.0030
T_Magnesium	mg/L	2.75	2.80	2.80	2.72
T_Manganese	mg/L	0.0074	0.0081	0.0081	0.0078
T_Mercury	mg/L	0.000007	0.000008	0.000008	0.000008
T_molybdenum	mg/L	0.0299	0.0350	0.0352	0.0306
T_Nickel	mg/L	0.0005	0.0006	0.0006	0.0006
T_Phosphorus	mg/L	0.0211	0.0224	0.0225	0.0220
T_Potassium	mg/L	14.57	17.00	17.11	14.91
T_Selenium	mg/L	0.0006	0.0006	0.0006	0.0006
T_Silicon	mg/L	4.40	4.06	4.05	4.26
T_Silver	mg/L	0.000048	0.000047	0.000047	0.000048
T_Sodium	mg/L	3.0	3.0	3.0	3.0
T_Strontium	mg/L	0.1923	0.2107	0.2115	0.1898
T_Thallium	mg/L	0.0002	0.0002	0.0002	0.0002
T_Tin	mg/L	0.0001	0.0001	0.0001	0.0001
T_Titanium	mg/L	0.0007	0.0008	0.0008	0.0013
T_Uranium	mg/L	0.0012	0.0013	0.0013	0.0012
T_Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002
T_Zinc	mg/L	0.0011	0.0012	0.0012	0.0014
D_Aluminum	mg/L	0.0272	0.0293	0.0294	0.0391
D_Antimony	mg/L	1.93E-03	2.26E-03	2.27E-03	1.98E-03
D_Arsenic	mg/L	0.0012	0.0014	0.0014	0.0012
D_Barium	mg/L	0.0157	0.0170	0.0170	0.0156
D_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
D_Boron	mg/L	0.0072	0.0083	0.0084	0.0073
D_Cadmium	mg/L	0.000026	0.000028	0.000029	0.000027
D_Calcium	mg/L	12.86	12.87	12.87	12.64
D_Chromium	mg/L	0.000313	0.000316	0.000316	0.000316
D_Cobalt	mg/L	0.000488	0.000569	0.000573	0.000500
D_Copper	mg/L	0.001527	0.001766	0.001777	0.001577
D_Iron	mg/L	0.040	0.039	0.039	0.043
D_Lead	mg/L	1.78E-04	1.92E-04	1.92E-04	1.74E-04
D_Lithium	mg/L	0.002847979	0.003166945	0.003181166	0.002888964
D_Magnesium	mg/L	2.70	2.74	2.74	2.68
D_Manganese	mg/L	0.0065	0.0071	0.0071	0.0065
D_Mercury	mg/L	0.0000074	0.0000076	0.0000076	0.0000076
D_Molybdenum	mg/L	0.02992	0.03495	0.03518	0.03052
D_Nickel	mg/L	0.00053	0.00061	0.00061	0.00055
D_Phosphorus	mg/L	0.019	0.020	0.020	0.019
D_Potassium	mg/L	14.57	17.00	17.11	14.91
D_Selenium	mg/L	0.00060	0.00060	0.00060	0.00059
D_Silicon	mg/L	4.33	3.97	3.96	4.13
D_Silver	mg/L	4.8E-05	4.7E-05	4.7E-05	4.8E-05
D_Sodium	mg/L	2.96	2.95	2.95	2.90
D_Strontium	mg/L	0.192	0.210	0.211	0.189
D_Thallium	mg/L	1.6E-04	1.8E-04	1.8E-04	1.6E-04
D_Tin	mg/L	0.00011	0.00011	0.00011	0.00011
D_Titanium	mg/L	0.00040	0.00045	0.00046	0.00056
D_Uranium	mg/L	1.15E-03	1.32E-03	1.33E-03	1.18E-03
D_Vanadium	mg/L	0.00018	0.00018	0.00018	0.00015
D_Zinc	mg/L	0.0026	0.0030	0.0030	0.0022
Cyanide_T	mg/L	0.0091	0.0106	0.0107	0.0093
Cyanide_WAD	mg/L	0.0033	0.0039	0.0039	0.0034
Cyanate	mg/L	14.07	16.46	16.56	14.35
Thiocyanate	mg/L	13.67	16.02	16.12	14.00

WQ7 - Extreme Dry Events

		Post-Closure			Year 33 - annual average 1 in 50 Dry
		September - Year 33	September - Year 33	September - Year 33	
		Best Estimate	7dQ10	7dQ20	
Unit					
pH	pH unit	7.69	7.68	7.68	7.64
Conductivity	mS/cm	492	586	590	537
TDS	mg/L	77	76	76	69
TSS	mg/L	2.4	2.5	2.5	3.9
Turbidity	mg/L	0.8	0.7	0.7	1.0
Total_hardness	mg/L as CaCO ₃	45	45	45	43
Total_alkalinity	mg/L	52	53	53	50
Fluoride	mg/L	0.05	0.05	0.05	0.06
Sulphate	mg/L	166.7	206.4	207.9	188.0
Chloride	mg/L	0.26	0.28	0.28	0.35
Ammonia	mg/L	0.202	0.245	0.246	0.223
Nitrate	mg/L	0.015	0.018	0.019	0.027
Nitrite	mg/L	0.003	0.003	0.003	0.004
TKN	mg/L	0.151	0.159	0.159	0.182
Ortho_P	mg/L	0.013	0.009	0.009	0.009
Total_Diss_P	mg/L	0.014	0.014	0.014	0.020
TOC	mg/L	7.490	7.362	7.358	7.054
DOC	mg/L	1.543	1.691	1.697	1.564
T_Aluminum	mg/L	0.0502	0.0449	0.0446	0.0672
T_Antimony	mg/L	0.0016	0.0019	0.0019	0.0018
T_Arsenic	mg/L	0.0011	0.0013	0.0013	0.0012
T_Barium	mg/L	0.0144	0.0159	0.0160	0.0152
T_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
T_Boron	mg/L	0.0060	0.0073	0.0073	0.0067
T_Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001
T_Calcium	mg/L	13.4	13.4	13.4	12.9
T_Chromium	mg/L	0.0003	0.0003	0.0003	0.0003
T_Cobalt	mg/L	0.00040	0.00049	0.00050	0.00045
T_Copper	mg/L	0.0013	0.0016	0.0016	0.0015
T_Iron	mg/L	0.0747	0.0693	0.0692	0.0793
T_Lead	mg/L	0.0002	0.0002	0.0002	0.0002
T_Lithium	mg/L	0.0025	0.0029	0.0029	0.0028
T_Magnesium	mg/L	2.85	2.87	2.87	2.76
T_Manganese	mg/L	0.0102	0.0101	0.0101	0.0097
T_Mercury	mg/L	0.000007	0.000007	0.000007	0.000008
T_molybdenum	mg/L	0.0242	0.0299	0.0301	0.0272
T_Nickel	mg/L	0.0005	0.0005	0.0005	0.0005
T_Phosphorus	mg/L	0.0194	0.0210	0.0210	0.0229
T_Potassium	mg/L	11.81	14.54	14.65	13.30
T_Selenium	mg/L	0.0006	0.0006	0.0006	0.0006
T_Silicon	mg/L	4.78	4.40	4.39	4.47
T_Silver	mg/L	0.000048	0.000048	0.000048	0.000048
T_Sodium	mg/L	3.1	3.0	3.0	3.0
T_Strontium	mg/L	0.1722	0.1926	0.1934	0.1775
T_Thallium	mg/L	0.0001	0.0002	0.0002	0.0001
T_Tin	mg/L	0.0001	0.0001	0.0001	0.0001
T_Titanium	mg/L	0.0007	0.0008	0.0008	0.0016
T_Uranium	mg/L	0.0010	0.0012	0.0012	0.0011
T_Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002
T_Zinc	mg/L	0.0011	0.0012	0.0012	0.0022
D_Aluminum	mg/L	0.0240	0.0266	0.0267	0.0390
D_Antimony	mg/L	1.56E-03	1.93E-03	1.94E-03	1.76E-03
D_Arsenic	mg/L	0.0011	0.0012	0.0012	0.0011
D_Barium	mg/L	0.0142	0.0157	0.0158	0.0147
D_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
D_Boron	mg/L	0.0060	0.0072	0.0073	0.0066
D_Cadmium	mg/L	0.000025	0.000027	0.000027	0.000026
D_Calcium	mg/L	13.17	13.11	13.10	12.68
D_Chromium	mg/L	0.000311	0.000314	0.000314	0.000315
D_Cobalt	mg/L	0.000401	0.000491	0.000494	0.000447
D_Copper	mg/L	0.001276	0.001540	0.001550	0.001454
D_Iron	mg/L	0.058	0.053	0.053	0.049
D_Lead	mg/L	1.53E-04	1.71E-04	1.71E-04	1.61E-04
D_Lithium	mg/L	0.002485643	0.002843881	0.002857522	0.002676188
D_Magnesium	mg/L	2.80	2.81	2.81	2.71
D_Manganese	mg/L	0.0091	0.0090	0.0091	0.0075
D_Mercury	mg/L	0.0000072	0.0000075	0.0000075	0.0000075
D_Molybdenum	mg/L	0.02419	0.02985	0.03007	0.02715
D_Nickel	mg/L	0.00045	0.00054	0.00054	0.00051
D_Phosphorus	mg/L	0.017	0.019	0.019	0.029
D_Potassium	mg/L	11.81	14.54	14.65	13.31
D_Selenium	mg/L	0.00060	0.00060	0.00060	0.00059
D_Silicon	mg/L	4.72	4.32	4.31	4.33
D_Silver	mg/L	4.8E-05	4.8E-05	4.8E-05	4.8E-05
D_Sodium	mg/L	3.02	3.00	3.00	2.99
D_Strontium	mg/L	0.172	0.192	0.193	0.176
D_Thallium	mg/L	1.4E-04	1.6E-04	1.6E-04	1.5E-04
D_Tin	mg/L	0.00011	0.00011	0.00011	0.00011
D_Titanium	mg/L	0.00039	0.00044	0.00044	0.00056
D_Uranium	mg/L	9.57E-04	1.15E-03	1.15E-03	1.06E-03
D_Vanadium	mg/L	0.00019	0.00019	0.00019	0.00016
D_Zinc	mg/L	0.0022	0.0027	0.0027	0.0026
Cyanide_T	mg/L	0.0073	0.0090	0.0091	0.0082
Cyanide_WAD	mg/L	0.0027	0.0033	0.0034	0.0030
Cyanate	mg/L	11.35	14.03	14.14	12.76
Thiocyanate	mg/L	11.00	13.64	13.74	12.44

WQ9 - Extreme Dry Events

		Post-Closure			Year 33 - annual average
		September - Year 33	September - Year 33	September - Year 33	1 in 50 Dry
		Best Estimate	7dQ10	7dQ20	
Unit					
pH	pH unit	7.79	7.79	7.78	7.78
Conductivity	mS/cm	183	267	225	245
TDS	mg/L	116	112	112	85
TSS	mg/L	3.5	3.9	3.3	6.7
Turbidity	mg/L	1.8	1.7	1.7	3.3
Total_hardness	mg/L as CaCO ₃	64	61	63	62
Total_alkalinity	mg/L	68	66	67	67
Fluoride	mg/L	0.07	0.06	0.06	0.07
Sulphate	mg/L	24.2	61.7	42.8	52.5
Chloride	mg/L	0.23	0.23	0.24	0.39
Ammonia	mg/L	0.043	0.084	0.063	0.073
Nitrate	mg/L	0.007	0.009	0.008	0.034
Nitrite	mg/L	0.003	0.003	0.003	0.004
TKN	mg/L	0.295	0.328	0.275	0.224
Ortho_P	mg/L	0.010	0.009	0.010	0.010
Total_Diss_P	mg/L	0.013	0.014	0.013	0.018
TOC	mg/L	13.833	12.514	13.355	8.618
DOC	mg/L	1.310	1.402	1.356	1.273
T_Aluminum	mg/L	0.0292	0.0342	0.0292	0.0505
T_Antimony	mg/L	0.0002	0.0006	0.0004	0.0005
T_Arsenic	mg/L	0.0006	0.0007	0.0007	0.0007
T_Barium	mg/L	0.0080	0.0094	0.0088	0.0093
T_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
T_Boron	mg/L	0.0016	0.0028	0.0022	0.0029
T_Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001
T_Calcium	mg/L	18.8	17.9	18.4	18.3
T_Chromium	mg/L	0.0003	0.0003	0.0003	0.0003
T_Cobalt	mg/L	0.00008	0.00016	0.00012	0.00015
T_Copper	mg/L	0.0004	0.0006	0.0005	0.0007
T_Iron	mg/L	0.1318	0.0983	0.1305	0.0991
T_Lead	mg/L	0.0001	0.0001	0.0001	0.0001
T_Lithium	mg/L	0.0012	0.0015	0.0014	0.0016
T_Magnesium	mg/L	4.24	4.04	4.12	4.12
T_Manganese	mg/L	0.0182	0.0146	0.0180	0.0191
T_Mercury	mg/L	0.000007	0.000007	0.000007	0.000007
T_molybdenum	mg/L	0.0036	0.0090	0.0063	0.0076
T_Nickel	mg/L	0.0003	0.0003	0.0003	0.0003
T_Phosphorus	mg/L	0.0153	0.0171	0.0158	0.0199
T_Potassium	mg/L	2.17	4.73	3.43	4.13
T_Selenium	mg/L	0.0006	0.0006	0.0006	0.0006
T_Silicon	mg/L	3.92	3.74	3.95	4.53
T_Silver	mg/L	0.000050	0.000049	0.000050	0.000050
T_Sodium	mg/L	3.3	3.3	3.3	3.4
T_Strontium	mg/L	0.1064	0.1235	0.1155	0.1185
T_Thallium	mg/L	0.0001	0.0001	0.0001	0.0001
T_Tin	mg/L	0.0001	0.0001	0.0001	0.0001
T_Titanium	mg/L	0.0011	0.0012	0.0011	0.0018
T_Uranium	mg/L	0.0002	0.0004	0.0003	0.0004
T_Vanadium	mg/L	0.0003	0.0003	0.0003	0.0002
T_Zinc	mg/L	0.0006	0.0007	0.0007	0.0020
D_Aluminum	mg/L	0.0064	0.0099	0.0083	0.0179
D_Antimony	mg/L	2.41E-04	5.89E-04	4.13E-04	5.02E-04
D_Arsenic	mg/L	0.0006	0.0007	0.0006	0.0006
D_Barium	mg/L	0.0079	0.0092	0.0087	0.0086
D_Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001
D_Boron	mg/L	0.0016	0.0028	0.0022	0.0027
D_Cadmium	mg/L	0.000016	0.000018	0.000017	0.000018
D_Calcium	mg/L	18.80	17.81	18.35	17.79
D_Chromium	mg/L	0.000301	0.000304	0.000303	0.000304
D_Cobalt	mg/L	0.000070	0.000156	0.000113	0.000134
D_Copper	mg/L	0.000359	0.000594	0.000482	0.000598
D_Iron	mg/L	0.087	0.061	0.087	0.046
D_Lead	mg/L	6.29E-05	8.46E-05	7.33E-05	8.01E-05
D_Lithium	mg/L	0.001187542	0.001528248	0.001356116	0.001440528
D_Magnesium	mg/L	4.16	3.96	4.05	4.02
D_Manganese	mg/L	0.0158	0.0123	0.0158	0.0087
D_Mercury	mg/L	0.0000066	0.0000068	0.0000067	0.0000069
D_Molybdenum	mg/L	0.00359	0.00897	0.00626	0.00751
D_Nickel	mg/L	0.00018	0.00025	0.00022	0.00028
D_Phosphorus	mg/L	0.011	0.012	0.012	0.019
D_Potassium	mg/L	2.17	4.73	3.43	4.10
D_Selenium	mg/L	0.00060	0.00060	0.00060	0.00057
D_Silicon	mg/L	3.92	3.72	3.94	4.35
D_Silver	mg/L	5.0E-05	4.9E-05	5.0E-05	4.9E-05
D_Sodium	mg/L	3.22	3.18	3.20	3.30
D_Strontium	mg/L	0.106	0.123	0.115	0.116
D_Thallium	mg/L	6.1E-05	8.0E-05	7.1E-05	7.5E-05
D_Tin	mg/L	0.00010	0.00010	0.00010	0.00010
D_Titanium	mg/L	0.00024	0.00029	0.00026	0.00037
D_Uranium	mg/L	2.00E-04	3.91E-04	2.95E-04	3.48E-04
D_Vanadium	mg/L	0.00020	0.00021	0.00020	0.00014
D_Zinc	mg/L	0.0008	0.0011	0.0010	0.0017
Cyanide_T	mg/L	0.0009	0.0026	0.0017	0.0022
Cyanide_WAD	mg/L	0.0003	0.0010	0.0006	0.0008
Cyanate	mg/L	1.61	4.16	2.87	3.50
Thiocyanate	mg/L	1.43	3.94	2.67	3.40