Appendix X-27
Surveillance Network Program Data

RioTinto | Diavik

Summary of Diavik Diamond Mine Collection Pond Surveillance Network Program (SNP) water quality, toxicity samples, and sediment sample results

Result Section	Page
Statistical Summary of SNP Results	3-17
Temporal Graphs of SNP Results	18
Pond 1	19-72
Pond 2	73-126
Pond 3	127-180
Pond 4	181-234
Pond 5	235-288
Pond 7	289-342
Pond 10	343-396
Pond 11	397-450
Pond 12	451-504
Pond 13	505-558
Sump E21	559-612
North Inlet	613-666
PKC Pond	667-720
PKC Interception Wells	721-760
Toxicity Sample Summary	761-774
Toxicity Sample Lab Results	775-1395
Pond Sediment Results	1895-1896
Pond Sediment Lab Results	1897-1928
Total vs Dissolved Graphs of SNP Results	1929-1940

RioTinto | Diavik

Statistical Summary of SNP Results

Summary statistics of water quality data collected as part of the Surveillance Network Program. Data summarized is from the 11 catchments in the Drainage Collection and Control network and covers the period of approximately summer 2011 through summer 2024.

Pond 1 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	74	0.31	3.30
Bicarbonate	mg/L	73	99	156
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	5	0.13	0.13
Calcium	mg/L	63	38.9	68.6
Carbonate	mg/L	73	0.25	3.04
Chloride	mg/L	74	16.5	85.7
Dissolved Organic Carbon (C)	mg/L	10	6.55	7.8
Fecal coliform	CFU	0	-	-
Field Temperature	°C	57	10.3	21.2
Fluoride	mg/L	74	0.11	0.16
Hardness - Total	mg/L	76	199.5	551
Magnesium	mg/L	63	24.2	104.9
Nitrate as N	mg/L	76	7.5	26.5
Nitrite as N	mg/L	76	0.08	0.5
pH	pH units	57	8.01	9.16
Phosphorus	mg/L	76	0.014	0.117
Potassium	mg/L	63	25.2	145.9
Sodium	mg/L	63	31.5	128.0
Sulphate	mg/L	74	140	654
Sulphur	mg/L	63	52.7	235.2
Total Alkalinity as CaCO3	mg/L	73	81	127.8
Total Dissolved Solids	mg/L	74	398	1230
Total Kjeldahl Nitrogen	mg/L	62	0.90	3.94
Total Organic Carbon	mg/L	6	6.2	7.9
Total Suspended Solids	mg/L	91	6.1	190
Turbidity	NTU	74	6.6	163
Dissolved Metals				
Aluminium	mg/L	63	0.042	0.234
Antimony	mg/L	63	0.00045	0.00154
Arsenic	mg/L	63	0.00090	0.00157
Barium	mg/L	63	0.045	0.073
Beryllium	mg/L	63	0.000005	0.000024
Bismuth	mg/L	63	0.0000163	0.000112
Boron	mg/L	63	0.046	0.069
Cadmium	mg/L	63	0.000028	0.000113
Chromium	mg/L	63	0.00047	0.00467
Cobalt	mg/L	63	0.0012	0.0068
Copper	mg/L	63	0.0030	0.0042
Iron	mg/L	63	0.19	1.13
Lead	mg/L	63	0.00009	0.00039
Lithium	mg/L	63	0.021	0.031
Manganese	mg/L	63	0.053	0.574
Mercury	mg/L	35	0.0000010	0.0000050
Molybdenum	mg/L	63	0.018	0.220
Nickel	mg/L	63	0.021	0.046
Selenium	mg/L	63	0.00045	0.00114
Silicon	mg/L	63	2.51	5.15
Silver	mg/L	63	0.0000025	0.0000125
Strontium	mg/L	63	0.34	1.43
Thallium	mg/L	63	0.000025	0.000056
Tin	mg/L	63	0.000012	0.000147
Titanium	mg/L	63	0.0010	0.0190
Uranium	mg/L	63	0.0437	0.0948
Vanadium	mg/L	63	0.00040	0.00189
Zinc	mg/L	63	0.0053	0.0220
Zirconium	mg/L	63	0.00023	0.00052

Pond 2 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	71	0.16	0.92
Bicarbonate	mg/L	71	37	75
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	7	0.13	0.13
Calcium	mg/L	60	19.4	40.9
Carbonate	mg/L	71	0.25	0.25
Chloride	mg/L	71	4.8	13.5
Dissolved Organic Carbon (C)	mg/L	9	9.9	20.0
Fecal coliform	CFU	0	-	-
Field Temperature	°C	57	11.5	20.5
Fluoride	mg/L	71	0.10	0.13
Hardness - Total	mg/L	72	106	249
Magnesium	mg/L	60	14.4	35.9
Nitrate as N	mg/L	72	0.8	15.0
Nitrite as N	mg/L	72	0.01	0.1
pH	pH units	57	7.40	8.73
Phosphorus	mg/L	70	0.014	0.045
Potassium	mg/L	60	9.8	21.2
Sodium	mg/L	60	8.2	21.7
Sulphate	mg/L	71	93.8	195
Sulphur	mg/L	60	28.8	72.1
Total Alkalinity as CaCO3	mg/L	71	29.9	61.45
Total Dissolved Solids	mg/L	71	204	428
Total Kjeldahl Nitrogen	mg/L	60	1.045	2.49
Total Organic Carbon	mg/L	7	8.5	14.2
Total Suspended Solids	mg/L	83	2	30
Turbidity	NTU	72	2.2	39
Dissolved Metals				
Aluminium	mg/L	60	0.065	0.215
Antimony	mg/L	60	0.00006	0.00020
Arsenic	mg/L	60	0.00079	0.00153
Barium	mg/L	60	0.024	0.051
Beryllium	mg/L	60	0.000016	0.000043
Bismuth	mg/L	60	0.00001385	0.000048
Boron	mg/L	60	0.022	0.030
Cadmium	mg/L	60	0.000055	0.000249
Chromium	mg/L	60	0.00034	0.00085
Cobalt	mg/L	60	0.0021	0.0136
Copper	mg/L	60	0.0061	0.0108
Iron	mg/L	60	0.34	0.95
Lead	mg/L	60	0.00007	0.00036
Lithium	mg/L	60	0.042	0.066
Manganese	mg/L	60	0.085	0.353
Mercury	mg/L	34	0.0000022	0.0000053
Molybdenum	mg/L	60	0.001	0.023
Nickel	mg/L	60	0.047	0.119
Selenium	mg/L	60	0.00021	0.00084
Silicon	mg/L	60	0.87	2.78
Silver	mg/L	60	0.0000025	0.0000070
Strontium	mg/L	60	0.17	0.36
Thallium	mg/L	60	0.000010	0.000024
Tin	mg/L	60	0.000005	0.000100
Titanium	mg/L	60	0.0014	0.0055
Uranium	mg/L	60	0.0025	0.0071
Vanadium	mg/L	60	0.00034	0.00085
Zinc	mg/L	60	0.0123	0.0583
Zirconium	mg/L	60	0.00018	0.00047

Pond 3 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	68	0.09	1.47
Bicarbonate	mg/L	67	60	132
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	7	0.13	0.13
Calcium	mg/L	57	57.5	135.0
Carbonate	mg/L	67	0.25	0.25
Chloride	mg/L	67	71.0	157.0
Dissolved Organic Carbon (C)	mg/L	13	3	5.1
Fecal coliform	CFU	0	-	-
Field Temperature	°C	48	11.1	19.8
Fluoride	mg/L	67	0.08	0.26
Hardness - Total	mg/L	69	493	1094
Magnesium	mg/L	57	86.6	193.0
Nitrate as N	mg/L	69	14.7	41.6
Nitrite as N	mg/L	69	0.11	1.5
pH	pH units	48	7.83	8.70
Phosphorus	mg/L	68	0.004	0.033
Potassium	mg/L	57	91.3	189.8
Sodium	mg/L	57	88.1	176.2
Sulphate	mg/L	67	550	1170
Sulphur	mg/L	57	200	444.6
Total Alkalinity as CaCO3	mg/L	67	49.9	107.3
Total Dissolved Solids	mg/L	68	1080	1778
Total Kjeldahl Nitrogen	mg/L	58	0.72500001	5.69
Total Organic Carbon	mg/L	8	3.05	4.90
Total Suspended Solids	mg/L	80	8.85	56
Turbidity	NTU	68	5.8	52
Dissolved Metals				
Aluminium	mg/L	57	0.014	0.215
Antimony	mg/L	57	0.00121	0.00535
Arsenic	mg/L	57	0.00091	0.00329
Barium	mg/L	57	0.044	0.124
Beryllium	mg/L	58	0.000005	0.000069
Bismuth	mg/L	57	0.0000061	0.000014
Boron	mg/L	57	0.042	0.128
Cadmium	mg/L	57	0.000071	0.000600
Chromium	mg/L	57	0.00021	0.00110
Cobalt	mg/L	57	0.0022	0.0299
Copper	mg/L	57	0.0016	0.0047
Iron	mg/L	57	0.02	0.31
Lead	mg/L	57	0.00003	0.00010
Lithium	mg/L	57	0.017	0.064
Manganese	mg/L	57	0.205	1.316
Mercury	mg/L	34	0.0000010	0.0000250
Molybdenum	mg/L	57	0.22	0.43
Nickel	mg/L	57	0.037	0.171
Selenium	mg/L	57	0.00053	0.00154
Silicon	mg/L	57	1.37	3.61
Silver	mg/L	57	0.0000025	0.0000125
Strontium	mg/L	57	1.44	2.93
Thallium	mg/L	57	0.000070	0.000153
Tin	mg/L	57	0.000005	0.000500
Titanium	mg/L	57	0.0013	0.0085
Uranium	mg/L	57	0.036	0.082
Vanadium	mg/L	57	0.00046	0.00149
Zinc	mg/L	57	0.0021	0.0826
Zirconium	mg/L	57	0.00005	0.00025

Pond 4 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	33	0.04	0.74
Bicarbonate	mg/L	33	79	122
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	6	0.13	0.13
Calcium	mg/L	27	41.9	59.7
Carbonate	mg/L	33	0.25	0.25
Chloride	mg/L	33	110	154.0
Dissolved Organic Carbon (C)	mg/L	9	3	3.8
Fecal coliform	CFU	0	-	-
Field Temperature	°C	30	5	12.1
Fluoride	mg/L	33	0.06	0.10
Hardness - Total	mg/L	33	457	634
Magnesium	mg/L	27	88.1	113.4
Nitrate as N	mg/L	34	11.0	32.4
Nitrite as N	mg/L	34	0.01	0.1
pH	pH units	30	7.30	8.03
Phosphorus	mg/L	34	0.006	0.032
Potassium	mg/L	27	130	182.9
Sodium	mg/L	27	113.0	142.0
Sulphate	mg/L	33	570	901
Sulphur	mg/L	27	188	282.6
Total Alkalinity as CaCO3	mg/L	33	64.4	100.8
Total Dissolved Solids	mg/L	33	1110	1628
Total Kjeldahl Nitrogen	mg/L	27	1.5	3.16
Total Organic Carbon	mg/L	5	-	-
Total Suspended Solids	mg/L	37	2.9	72
Turbidity	NTU	33	1.44	17
Dissolved Metals				
Aluminium	mg/L	27	0.009	0.112
Antimony	mg/L	27	0.00071	0.00144
Arsenic	mg/L	27	0.00051	0.00072
Barium	mg/L	27	0.024	0.033
Beryllium	mg/L	27	0.000011	0.000025
Bismuth	mg/L	27	0.0000125	0.000039
Boron	mg/L	27	0.024	0.033
Cadmium	mg/L	27	0.000188	0.000518
Chromium	mg/L	27	0.00013	0.00095
Cobalt	mg/L	27	0.0044	0.0063
Copper	mg/L	27	0.0055	0.0087
Iron	mg/L	27	0.02	0.20
Lead	mg/L	27	0.00007	0.00033
Lithium	mg/L	27	0.011	0.017
Manganese	mg/L	27	0.262	0.429
Mercury	mg/L	14	0.0000010	0.0000250
Molybdenum	mg/L	27	0.27	0.43
Nickel	mg/L	27	0.030	0.047
Selenium	mg/L	27	0.00035	0.00162
Silicon	mg/L	27	2.73	3.62
Silver	mg/L	27	0.000006	0.0000125
Strontium	mg/L	27	1.14	2.14
Thallium	mg/L	27	0.000047	0.000074
Tin	mg/L	27	0.000013	0.000194
Titanium	mg/L	27	0.0013	0.0074
Uranium	mg/L	27	0.085	0.125
Vanadium	mg/L	27	0.00027	0.00055
Zinc	mg/L	27	0.0084	0.0161
Zirconium	mg/L	27	0.00009	0.00024

Pond 5 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	53	0.07	0.51
Bicarbonate	mg/L	52	129	217
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	7	0.13	0.13
Calcium	mg/L	47	35.3	63.3
Carbonate	mg/L	52	0.25	6.72
Chloride	mg/L	53	13	53.6
Dissolved Organic Carbon (C)	mg/L	12	7.05	9.5
Fecal coliform	CFU	0	-	-
Field Temperature	°C	45	10.6	21.5
Fluoride	mg/L	53	0.11	0.16
Hardness - Total	mg/L	54	274.5	509
Magnesium	mg/L	47	43.9	84.1
Nitrate as N	mg/L	54	4.60	17.70
Nitrite as N	mg/L	54	0.05	0.2
pH	pH units	45	8.29	9.09
Phosphorus	mg/L	54	0.006	0.065
Potassium	mg/L	47	31.0	64.6
Sodium	mg/L	47	30.7	66.4
Sulphate	mg/L	53	210	458
Sulphur	mg/L	47	74.7	158.4
Total Alkalinity as CaCO3	mg/L	52	107	193.05
Total Dissolved Solids	mg/L	53	538	869
Total Kjeldahl Nitrogen	mg/L	42	0.515	1.45
Total Organic Carbon	mg/L	8	7.0	9.6
Total Suspended Solids	mg/L	67	5.1	125
Turbidity	NTU	54	3.32500005	89
Dissolved Metals				
Aluminium	mg/L	47	0.017	0.136
Antimony	mg/L	47	0.00035	0.00142
Arsenic	mg/L	47	0.00076	0.00207
Barium	mg/L	47	0.077	0.111
Beryllium	mg/L	47	0.000005	0.000016
Bismuth	mg/L	47	0.0000065	0.000064
Boron	mg/L	47	0.036	0.063
Cadmium	mg/L	47	0.000010	0.000062
Chromium	mg/L	47	0.00036	0.00136
Cobalt	mg/L	47	0.00066	0.00311
Copper	mg/L	47	0.0020	0.0031
Iron	mg/L	47	0.05	0.46
Lead	mg/L	47	0.00003	0.00023
Lithium	mg/L	47	0.021	0.029
Manganese	mg/L	47	0.023	0.148
Mercury	mg/L	21	0.0000010	0.0000050
Molybdenum	mg/L	47	0.031	0.132
Nickel	mg/L	47	0.024	0.045
Selenium	mg/L	47	0.00065	0.00207
Silicon	mg/L	47	2.31	4.20
Silver	mg/L	47	0.0000025	0.0000044
Strontium	mg/L	47	0.50	0.80
Thallium	mg/L	47	0.000023	0.000036
Tin	mg/L	47	0.000005	0.000087
Titanium	mg/L	47	0.0007	0.0092
Uranium	mg/L	47	0.15	0.40
Vanadium	mg/L	47	0.00045	0.00092
Zinc	mg/L	47	0.0010	0.0065
Zirconium	mg/L	47	0.00015	0.00035

Pond 7 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	70	0.05	0.27
Bicarbonate	mg/L	69	16	37
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	7	0.13	0.13
Calcium	mg/L	59	7.0	14.4
Carbonate	mg/L	69	0.25	0.25
Chloride	mg/L	70	2.7	5.0
Dissolved Organic Carbon (C)	mg/L	9	10	13.0
Fecal coliform	CFU	0	-	-
Field Temperature	°C	53	12.3	19.4
Fluoride	mg/L	70	0.05	0.07
Hardness - Total	mg/L	70	48	97
Magnesium	mg/L	59	6.7	13.7
Nitrate as N	mg/L	71	0.52	6.00
Nitrite as N	mg/L	71	0.00	0.0
pH	pH units	54	7.08	7.80
Phosphorus	mg/L	71	0.009	0.027
Potassium	mg/L	59	3.3	5.5
Sodium	mg/L	59	5.4	10.1
Sulphate	mg/L	70	34	83
Sulphur	mg/L	59	11	27.0
Total Alkalinity as CaCO3	mg/L	69	12.8	30.08
Total Dissolved Solids	mg/L	70	105	166
Total Kjeldahl Nitrogen	mg/L	59	0.70	1.09
Total Organic Carbon	mg/L	6	7.3	13.3
Total Suspended Solids	mg/L	82	1.35	6
Turbidity	NTU	71	1.4	4
Dissolved Metals				
Aluminium	mg/L	59	0.071	0.154
Antimony	mg/L	59	0.00004	0.00005
Arsenic	mg/L	59	0.00040	0.00075
Barium	mg/L	59	0.022	0.040
Beryllium	mg/L	59	0.000010	0.000020
Bismuth	mg/L	56	0.00001065	0.000031
Boron	mg/L	59	0.011	0.025
Cadmium	mg/L	59	0.000014	0.000029
Chromium	mg/L	59	0.00050	0.00084
Cobalt	mg/L	59	0.00038	0.00145
Copper	mg/L	59	0.0038	0.0055
Iron	mg/L	59	0.20	0.83
Lead	mg/L	59	0.00005	0.00018
Lithium	mg/L	59	0.008	0.010
Manganese	mg/L	59	0.016	0.095
Mercury	mg/L	35	0.0000039	0.0000063
Molybdenum	mg/L	59	0.0003	0.001
Nickel	mg/L	59	0.008	0.012
Selenium	mg/L	59	0.00008	0.00018
Silicon	mg/L	59	1.29	4.24
Silver	mg/L	59	0.0000025	0.0000096
Strontium	mg/L	59	0.06	0.12
Thallium	mg/L	59	0.000022	0.000045
Tin	mg/L	59	0.000005	0.000100
Titanium	mg/L	59	0.0009	0.0023
Uranium	mg/L	59	0.0012	0.0024
Vanadium	mg/L	59	0.00020	0.00048
Zinc	mg/L	59	0.0040	0.0098
Zirconium	mg/L	59	0.00017	0.00027

Pond 10 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	70	0.03	0.17
Bicarbonate	mg/L	70	197	312
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	6	0.13	0.30
Calcium	mg/L	59	30.7	54.3
Carbonate	mg/L	70	0.25	12.83
Chloride	mg/L	71	5.6	43.5
Dissolved Organic Carbon (C)	mg/L	11	8.9	43.0
Fecal coliform	CFU	0	-	-
Field Temperature	°C	52	11.1	21.3
Fluoride	mg/L	71	0.12	0.17
Hardness - Total	mg/L	71	187	329
Magnesium	mg/L	59	27.5	62.4
Nitrate as N	mg/L	72	0.01	0.83
Nitrite as N	mg/L	72	0.003	0.1
pH	pH units	52	8.17	9.09
Phosphorus	mg/L	72	0.011	0.056
Potassium	mg/L	59	17.7	52.1
Sodium	mg/L	59	17.7	65.0
Sulphate	mg/L	71	61.1	200
Sulphur	mg/L	59	24	64.4
Total Alkalinity as CaCO3	mg/L	70	166.5	283.25
Total Dissolved Solids	mg/L	71	291	589
Total Kjeldahl Nitrogen	mg/L	58	0.6385	1.66
Total Organic Carbon	mg/L	6	12.5	48.8
Total Suspended Solids	mg/L	88	3.9	86
Turbidity	NTU	71	6.7	99
Dissolved Metals				
Aluminium	mg/L	60	0.019	0.251
Antimony	mg/L	60	0.00033	0.00081
Arsenic	mg/L	60	0.00145	0.00404
Barium	mg/L	60	0.083	0.184
Beryllium	mg/L	60	0.000005	0.000015
Bismuth	mg/L	60	0.00000695	0.000041
Boron	mg/L	60	0.103	0.223
Cadmium	mg/L	60	0.000003	0.000020
Chromium	mg/L	60	0.00024	0.00161
Cobalt	mg/L	60	0.00019	0.00084
Copper	mg/L	60	0.0019	0.0035
Iron	mg/L	60	0.13	1.13
Lead	mg/L	60	0.00004	0.00026
Lithium	mg/L	60	0.022	0.043
Manganese	mg/L	60	0.007	0.183
Mercury	mg/L	33	0.0000010	0.0000050
Molybdenum	mg/L	60	0.011	0.027
Nickel	mg/L	60	0.018	0.031
Selenium	mg/L	60	0.00010	0.00019
Silicon	mg/L	60	1.53	3.59
Silver	mg/L	60	0.0000025	0.0000061
Strontium	mg/L	60	0.34	0.71
Thallium	mg/L	60	0.000015	0.000027
Tin	mg/L	59	0.000010	0.000121
Titanium	mg/L	60	0.0006	0.0164
Uranium	mg/L	60	0.024	0.080
Vanadium	mg/L	60	0.00023	0.00086
Zinc	mg/L	60	0.0007	0.0032
Zirconium	mg/L	60	0.00020	0.00052

Pond 11 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	71	0.07	0.49
Bicarbonate	mg/L	70	150	212
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	6	0.13	0.13
Calcium	mg/L	60	35.9	50.0
Carbonate	mg/L	70	0.25	0.25
Chloride	mg/L	71	4.9	13.6
Dissolved Organic Carbon (C)	mg/L	11	8.7	12.5
Fecal coliform	CFU	0	-	-
Field Temperature	°C	55	11.9	20.5
Fluoride	mg/L	71	0.10	0.14
Hardness - Total	mg/L	71	187	245
Magnesium	mg/L	60	22.7	31.9
Nitrate as N	mg/L	72	0.43	2.52
Nitrite as N	mg/L	72	0.01	0.0
pH	pH units	55	7.98	8.45
Phosphorus	mg/L	71	0.014	0.055
Potassium	mg/L	60	9.7	15.4
Sodium	mg/L	60	9.3	14.0
Sulphate	mg/L	71	85	154
Sulphur	mg/L	60	26.45	47.0
Total Alkalinity as CaCO3	mg/L	70	123	174.2
Total Dissolved Solids	mg/L	71	266	354
Total Kjeldahl Nitrogen	mg/L	59	0.651	1.40
Total Organic Carbon	mg/L	7	8.8	17.7
Total Suspended Solids	mg/L	82	1.95	29
Turbidity	NTU	72	2.8	60
Dissolved Metals				
Aluminium	mg/L	60	0.023	0.200
Antimony	mg/L	60	0.00019	0.00034
Arsenic	mg/L	60	0.00072	0.00111
Barium	mg/L	60	0.071	0.106
Beryllium	mg/L	60	0.000005	0.000019
Bismuth	mg/L	60	0.000016	0.000089
Boron	mg/L	60	0.035	0.066
Cadmium	mg/L	60	0.000009	0.000023
Chromium	mg/L	60	0.00041	0.00131
Cobalt	mg/L	60	0.00031	0.00125
Copper	mg/L	60	0.0021	0.0037
Iron	mg/L	60	0.25	1.35
Lead	mg/L	60	0.00007	0.00036
Lithium	mg/L	60	0.016	0.022
Manganese	mg/L	60	0.020	0.214
Mercury	mg/L	36	0.0000024	0.0000050
Molybdenum	mg/L	60	0.003	0.008
Nickel	mg/L	60	0.019	0.030
Selenium	mg/L	60	0.00010	0.00016
Silicon	mg/L	60	1.87	3.57
Silver	mg/L	60	0.0000025	0.0000140
Strontium	mg/L	60	0.27	0.39
Thallium	mg/L	60	0.000010	0.000019
Tin	mg/L	60	0.000011	0.000100
Titanium	mg/L	60	0.0009	0.0095
Uranium	mg/L	60	0.0114	0.0285
Vanadium	mg/L	60	0.00025	0.00069
Zinc	mg/L	60	0.0014	0.0061
Zirconium	mg/L	60	0.00024	0.00070

Pond 12 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	75	0.10	3.79
Bicarbonate	mg/L	74	45	80
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	40	0.13	0.22
Calcium	mg/L	63	24.4	33.7
Carbonate	mg/L	74	0.25	0.25
Chloride	mg/L	75	10.0	20.0
Dissolved Organic Carbon (C)	mg/L	9	7.3	10.2
Fecal coliform	CFU	0	-	-
Field Temperature	°C	55	12.2	21.0
Fluoride	mg/L	75	0.08	0.11
Hardness - Total	mg/L	75	130	201
Magnesium	mg/L	63	16.4	28.5
Nitrate as N	mg/L	76	2.15	9.08
Nitrite as N	mg/L	75	0.01	0.1
pH	pH units	57	7.45	8.53
Phosphorus	mg/L	76	0.007	0.029
Potassium	mg/L	63	11.3	19.1
Sodium	mg/L	63	12.8	22.2
Sulphate	mg/L	75	110	191
Sulphur	mg/L	63	36.3	68.3
Total Alkalinity as CaCO3	mg/L	74	36.55	65.42
Total Dissolved Solids	mg/L	75	243	380
Total Kjeldahl Nitrogen	mg/L	63	0.63	6.21
Total Organic Carbon	mg/L	6	6.9	10.2
Total Suspended Solids	mg/L	84	2.75	29
Turbidity	NTU	75	2.0	22
Dissolved Metals				
Aluminium	mg/L	63	0.031	0.129
Antimony	mg/L	63	0.00026	0.00088
Arsenic	mg/L	63	0.00039	0.00070
Barium	mg/L	63	0.041	0.067
Beryllium	mg/L	63	0.000005	0.000020
Bismuth	mg/L	63	0.000003	0.000031
Boron	mg/L	63	0.028	0.075
Cadmium	mg/L	63	0.000014	0.000055
Chromium	mg/L	63	0.00027	0.00084
Cobalt	mg/L	63	0.00050	0.00165
Copper	mg/L	63	0.0022	0.0038
Iron	mg/L	63	0.19	0.50
Lead	mg/L	63	0.00004	0.00062
Lithium	mg/L	63	0.018	0.039
Manganese	mg/L	63	0.030	0.126
Mercury	mg/L	36	0.0000022	0.0000067
Molybdenum	mg/L	63	0.003	0.008
Nickel	mg/L	63	0.014	0.025
Selenium	mg/L	63	0.00018	0.00055
Silicon	mg/L	63	1.34	3.56
Silver	mg/L	63	0.0000025	0.0000089
Strontium	mg/L	63	0.21	0.30
Thallium	mg/L	63	0.000020	0.000035
Tin	mg/L	63	0.000005	0.000100
Titanium	mg/L	63	0.0005	0.0081
Uranium	mg/L	63	0.0024	0.0055
Vanadium	mg/L	63	0.00019	0.00051
Zinc	mg/L	63	0.0035	0.0215
Zirconium	mg/L	63	0.00010	0.00026

Pond 13 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	68	0.88	7.23
Bicarbonate	mg/L	67	118	170
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	4	0.13	0.13
Calcium	mg/L	57	39.0	55.5
Carbonate	mg/L	67	0.25	0.25
Chloride	mg/L	68	19	31.3
Dissolved Organic Carbon (C)	mg/L	10	10.7	18.2
Fecal coliform	CFU	0	-	-
Field Temperature	°C	57	10.8	20.9
Fluoride	mg/L	68	0.12	0.16
Hardness - Total	mg/L	68	184	261
Magnesium	mg/L	57	19.4	24.8
Nitrate as N	mg/L	70	8.77	33.93
Nitrite as N	mg/L	70	0.11	0.7
pH	pH units	57	7.54	8.29
Phosphorus	mg/L	69	0.019	0.068
Potassium	mg/L	57	18.9	24.7
Sodium	mg/L	57	30.3	42.3
Sulphate	mg/L	68	109.5	149
Sulphur	mg/L	57	33.4	47.0
Total Alkalinity as CaCO3	mg/L	67	96.5	139.5
Total Dissolved Solids	mg/L	68	378	539
Total Kjeldahl Nitrogen	mg/L	57	1.35	8.10
Total Organic Carbon	mg/L	6	13.5	20.1
Total Suspended Solids	mg/L	78	2.65	18
Turbidity	NTU	68	2.975	46
Dissolved Metals				
Aluminium	mg/L	57	0.052	0.123
Antimony	mg/L	57	0.00036	0.00099
Arsenic	mg/L	57	0.00099	0.00162
Barium	mg/L	57	0.047	0.064
Beryllium	mg/L	57	0.000005	0.000018
Bismuth	mg/L	57	0.000023	0.000072
Boron	mg/L	57	0.049	0.089
Cadmium	mg/L	57	0.000032	0.000109
Chromium	mg/L	57	0.00095	0.00199
Cobalt	mg/L	57	0.0011	0.0047
Copper	mg/L	57	0.0037	0.0065
Iron	mg/L	57	0.37	1.07
Lead	mg/L	57	0.00011	0.00038
Lithium	mg/L	57	0.023	0.036
Manganese	mg/L	57	0.118	0.388
Mercury	mg/L	32	0.0000022	0.0000050
Molybdenum	mg/L	57	0.007	0.014
Nickel	mg/L	57	0.025	0.040
Selenium	mg/L	57	0.00032	0.00068
Silicon	mg/L	57	3.73	5.38
Silver	mg/L	57	0.0000025	0.0000118
Strontium	mg/L	57	0.28	0.42
Thallium	mg/L	57	0.000017	0.000033
Tin	mg/L	57	0.000005	0.000100
Titanium	mg/L	57	0.0020	0.0061
Uranium	mg/L	57	0.035	0.060
Vanadium	mg/L	57	0.00050	0.00117
Zinc	mg/L	57	0.0035	0.0098
Zirconium	mg/L	57	0.00053	0.00153

E21 Sump Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	38	0.12	1.23
Bicarbonate	mg/L	38	35	71
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	5	0.13	0.13
Calcium	mg/L	38	17.6	26.4
Carbonate	mg/L	38	0.25	0.25
Chloride	mg/L	38	4.75	7.4
Dissolved Organic Carbon (C)	mg/L	10	6.75	10.8
Fecal coliform	CFU	0	-	-
Field Temperature	°C	38	10.8	19.9
Fluoride	mg/L	38	0.06	0.09
Hardness - Total	mg/L	38	90.55	138
Magnesium	mg/L	38	10.6	16.9
Nitrate as N	mg/L	40	1.80	14.07
Nitrite as N	mg/L	40	0.02	0.2
pH	pH units	38	7.61	8.16
Phosphorus	mg/L	40	0.004	0.023
Potassium	mg/L	38	7.4	10.0
Sodium	mg/L	38	7.4	11.3
Sulphate	mg/L	38	60	97
Sulphur	mg/L	38	16.85	31.0
Total Alkalinity as CaCO3	mg/L	38	28.55	58.63
Total Dissolved Solids	mg/L	38	168	251
Total Kjeldahl Nitrogen	mg/L	26	0.502	1.62
Total Organic Carbon	mg/L	5	7.9	12.1
Total Suspended Solids	mg/L	44	7.5	65
Turbidity	NTU	38	8.6	108
Dissolved Metals				
Aluminium	mg/L	38	0.054	0.475
Antimony	mg/L	38	0.00008	0.00018
Arsenic	mg/L	38	0.00068	0.00139
Barium	mg/L	38	0.031	0.064
Beryllium	mg/L	38	0.000005	0.000025
Bismuth	mg/L	38	0.0000094	0.000030
Boron	mg/L	38	0.015	0.026
Cadmium	mg/L	38	0.000016	0.000056
Chromium	mg/L	38	0.00026	0.00177
Cobalt	mg/L	38	0.00070	0.00319
Copper	mg/L	38	0.0030	0.0046
Iron	mg/L	38	0.14	0.78
Lead	mg/L	38	0.00009	0.00032
Lithium	mg/L	38	0.011	0.016
Manganese	mg/L	38	0.090	0.587
Mercury	mg/L	13	0.0000010	0.0000031
Molybdenum	mg/L	38	0.0018	0.0046
Nickel	mg/L	38	0.007	0.014
Selenium	mg/L	38	0.00010	0.00042
Silicon	mg/L	38	1.56	3.57
Silver	mg/L	38	0.0000025	0.0000031
Strontium	mg/L	38	0.13	0.22
Thallium	mg/L	38	0.000030	0.000053
Tin	mg/L	38	0.000005	0.000038
Titanium	mg/L	38	0.0014	0.0350
Uranium	mg/L	38	0.0044	0.0096
Vanadium	mg/L	38	0.00039	0.00094
Zinc	mg/L	38	0.0014	0.0128
Zirconium	mg/L	38	0.00012	0.00034

1645-13 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	768	0.31	0.61
Bicarbonate	mg/L	770	65.7	84.3
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	472	0.13	0.22
Calcium	mg/L	252	30.6	45.8
Carbonate	mg/L	770	0.25	13.26
Chloride	mg/L	767	93	210.0
Dissolved Organic Carbon (C)	mg/L	224	1.65	2.8
Fecal coliform	CFU	184	1	1
Field Temperature	°C	557	3.3	14.9
Fluoride	mg/L	770	0.14	0.18
Hardness - Total	mg/L	772	127	189
Magnesium	mg/L	252	10.5	17.1
Nitrate as N	mg/L	768	2.59	5.80
Nitrite as N	mg/L	767	0.08	0.3
pH	pH units	556	9.36	10.25
Phosphorus	mg/L	769	0.226	0.483
Potassium	mg/L	252	12.4	25.4
Sodium	mg/L	252	46.4	89.0
Sulphate	mg/L	767	44	120
Sulphur	mg/L	252	15.25	34.8
Total Alkalinity as CaCO3	mg/L	770	58	72.765
Total Dissolved Solids	mg/L	770	326	552
Total Kjeldahl Nitrogen	mg/L	644	0.391	1.03
Total Organic Carbon	mg/L	221	1.7	3.1
Total Suspended Solids	mg/L	1389	4	17
Turbidity	NTU	781	4.27	15
Dissolved Metals				
Aluminium	mg/L	252	0.068	0.255
Antimony	mg/L	252	0.00035	0.00121
Arsenic	mg/L	252	0.00437	0.00580
Barium	mg/L	252	0.058	0.145
Beryllium	mg/L	252	0.000005	0.000005
Bismuth	mg/L	252	0.0000025	0.000003
Boron	mg/L	252	0.030	0.044
Cadmium	mg/L	252	0.000003	0.000011
Chromium	mg/L	252	0.00102	0.00208
Cobalt	mg/L	252	0.0002	0.0005
Copper	mg/L	252	0.0004	0.0009
Iron	mg/L	252	0.00	0.16
Lead	mg/L	252	0.00001	0.00008
Lithium	mg/L	252	0.014	0.017
Manganese	mg/L	252	0.017	0.100
Mercury	mg/L	240	0.0000010	0.0000050
Molybdenum	mg/L	252	0.026	0.066
Nickel	mg/L	252	0.004	0.009
Selenium	mg/L	252	0.00011	0.00023
Silicon	mg/L	252	5.53	6.93
Silver	mg/L	252	0.0000025	0.0000063
Strontium	mg/L	252	0.62	1.20
Thallium	mg/L	252	0.000005	0.000010
Tin	mg/L	252	0.000005	0.000100
Titanium	mg/L	252	0.0003	0.0066
Uranium	mg/L	252	0.0039	0.0112
Vanadium	mg/L	252	0.00142	0.00223
Zinc	mg/L	252	0.0002	0.0014
Zirconium	mg/L	252	0.00003	0.00006

1645-16 Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	144	2.10	5.29
Bicarbonate	mg/L	146	69	102
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	72	0.14	0.63
Calcium	mg/L	142	29.1	72.8
Carbonate	mg/L	146	0.25	11.78
Chloride	mg/L	144	99.5	178.5
Dissolved Organic Carbon (C)	mg/L	115	2.83	5.0
Fecal coliform	CFU	0	-	-
Field Temperature	°C	97	3.7	16.6
Fluoride	mg/L	146	0.18	0.38
Hardness - Total	mg/L	145	188	662
Magnesium	mg/L	142	23.1	66.4
Nitrate as N	mg/L	146	22.10	48.10
Nitrite as N	mg/L	146	1.61	4.0
pH	pH units	97	9.21	10.08
Phosphorus	mg/L	143	0.012	0.274
Potassium	mg/L	142	123.5	199.0
Sodium	mg/L	142	107.0	208.8
Sulphate	mg/L	144	299	499
Sulphur	mg/L	142	113	176.0
Total Alkalinity as CaCO3	mg/L	146	57.9	85.5
Total Dissolved Solids	mg/L	143	846	1229
Total Kjeldahl Nitrogen	mg/L	123	1.49	8.65
Total Organic Carbon	mg/L	117	3.4	5.9
Total Suspended Solids	mg/L	183	8	150
Turbidity	NTU	143	5.25	214
Dissolved Metals				
Aluminium	mg/L	143	0.005	0.103
Antimony	mg/L	143	0.00372	0.00824
Arsenic	mg/L	143	0.00260	0.00589
Barium	mg/L	143	0.101	0.191
Beryllium	mg/L	144	0.000005	0.000025
Bismuth	mg/L	143	0.0000025	0.000013
Boron	mg/L	143	0.058	0.126
Cadmium	mg/L	142	0.000007	0.000085
Chromium	mg/L	142	0.00063	0.00345
Cobalt	mg/L	142	0.0002	0.0013
Copper	mg/L	142	0.0004	0.0009
Iron	mg/L	142	0.00	0.24
Lead	mg/L	142	0.00001	0.00011
Lithium	mg/L	142	0.006	0.017
Manganese	mg/L	142	0.008	0.059
Mercury	mg/L	140	0.0000010	0.0000050
Molybdenum	mg/L	142	0.276	0.506
Nickel	mg/L	142	0.010	0.035
Selenium	mg/L	142	0.00073	0.00162
Silicon	mg/L	142	2.66	6.69
Silver	mg/L	142	0.0000025	0.0000125
Strontium	mg/L	142	0.80	1.46
Thallium	mg/L	142	0.000015	0.000071
Tin	mg/L	142	0.000010	0.000485
Titanium	mg/L	142	0.0003	0.0051
Uranium	mg/L	142	0.0014	0.0100
Vanadium	mg/L	142	0.00107	0.00306
Zinc	mg/L	142	0.0003	0.0084
Zirconium	mg/L	142	0.00005	0.00025

PKC Well Summary Statistics

Constituent	Units	Count	Median	95th Percentile
Major Ions/Nutrients/Conventional Constituents				
Ammonia as N	mg/L	317	0.10	1.60
Bicarbonate	mg/L	323	62	105
Biological Oxygen Demand	mg/L	0	-	-
C6-C50 Hydrocarbons (Calculated)	mg/L	3	0.13	0.13
Calcium	mg/L	317	39.5	88.2
Carbonate	mg/L	323	0.25	0.25
Chloride	mg/L	320	120	160
Dissolved Organic Carbon (C)	mg/L	316	3.3	4.7
Fecal coliform	CFU	0	-	-
Field Temperature	°C	271	2.6	8.3
Fluoride	mg/L	323	0.07	0.21
Hardness - Total	mg/L	320	447	881
Magnesium	mg/L	317	81.5	165.6
Nitrate as N	mg/L	323	24.00	39.66
Nitrite as N	mg/L	322	0.03	0.5
pH	pH units	273	7.10	7.63
Phosphorus	mg/L	320	0.013	0.030
Potassium	mg/L	317	159.0	223.8
Sodium	mg/L	317	138.0	218.2
Sulphate	mg/L	320	625	1200
Sulphur	mg/L	317	207	387.6
Total Alkalinity as CaCO3	mg/L	323	51	85.7
Total Dissolved Solids	mg/L	318	1320	2063
Total Kjeldahl Nitrogen	mg/L	262	1.39	7.19
Total Organic Carbon	mg/L	314	3.6	4.9
Total Suspended Solids	mg/L	423	1	5
Turbidity	NTU	317	0.33	3
Dissolved Metals				
Aluminium	mg/L	317	0.004	0.015
Antimony	mg/L	317	0.00113	0.00315
Arsenic	mg/L	317	0.00073	0.00196
Barium	mg/L	317	0.021	0.032
Beryllium	mg/L	320	0.000005	0.000025
Bismuth	mg/L	317	0.0000025	0.000013
Boron	mg/L	317	0.030	0.070
Cadmium	mg/L	317	0.000083	0.000512
Chromium	mg/L	317	0.00005	0.00032
Cobalt	mg/L	317	0.0023	0.0098
Copper	mg/L	317	0.0036	0.0102
Iron	mg/L	317	0.02	0.23
Lead	mg/L	317	0.00004	0.00019
Lithium	mg/L	317	0.008	0.019
Manganese	mg/L	317	0.173	0.559
Mercury	mg/L	310	0.0000010	0.0000015
Molybdenum	mg/L	317	0.322	0.422
Nickel	mg/L	317	0.019	0.060
Selenium	mg/L	317	0.00054	0.00136
Silicon	mg/L	317	2.39	3.59
Silver	mg/L	317	0.0000025	0.0000125
Strontium	mg/L	317	1.24	3.13
Thallium	mg/L	317	0.000033	0.000068
Tin	mg/L	317	0.000014	0.000500
Titanium	mg/L	317	0.0003	0.0013
Uranium	mg/L	317	0.0272	0.1160
Vanadium	mg/L	317	0.00044	0.00112
Zinc	mg/L	317	0.0095	0.0371
Zirconium	mg/L	317	0.00003	0.00025

Temporal Graphs of SNP Results

Water quality data collected as part of the Surveillance Network Program is displayed against date the sample is collected and covers the period of approximately summer 2011 through summer 2024. The upper graph displays data relative to proposed benchmarks (if available), while the bottom chart displays the same SNP data with the post-closure catchment prediction.

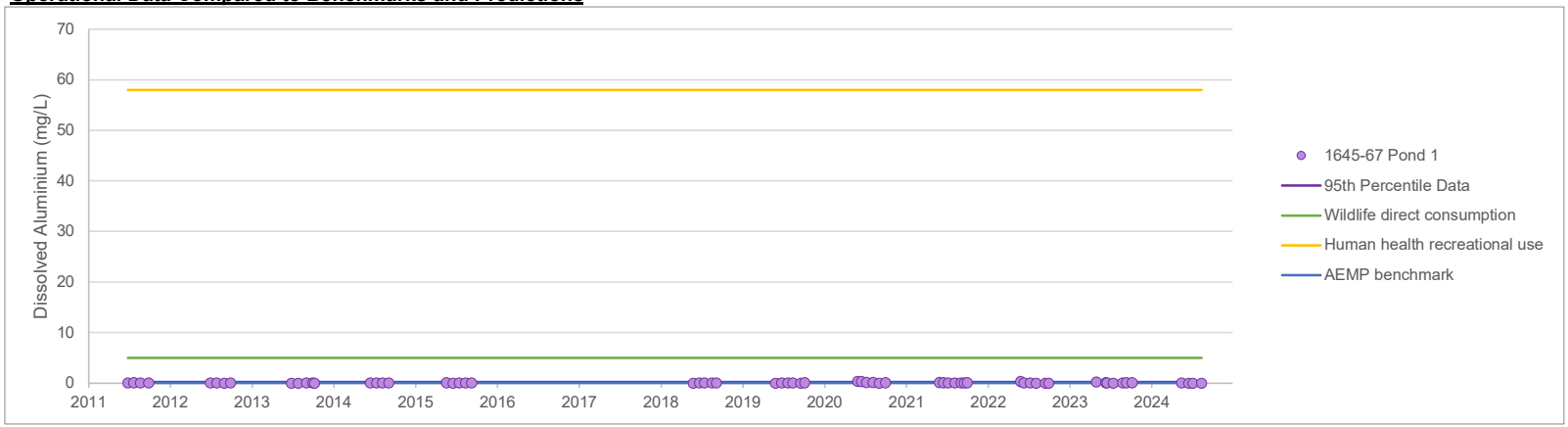
Pond 1

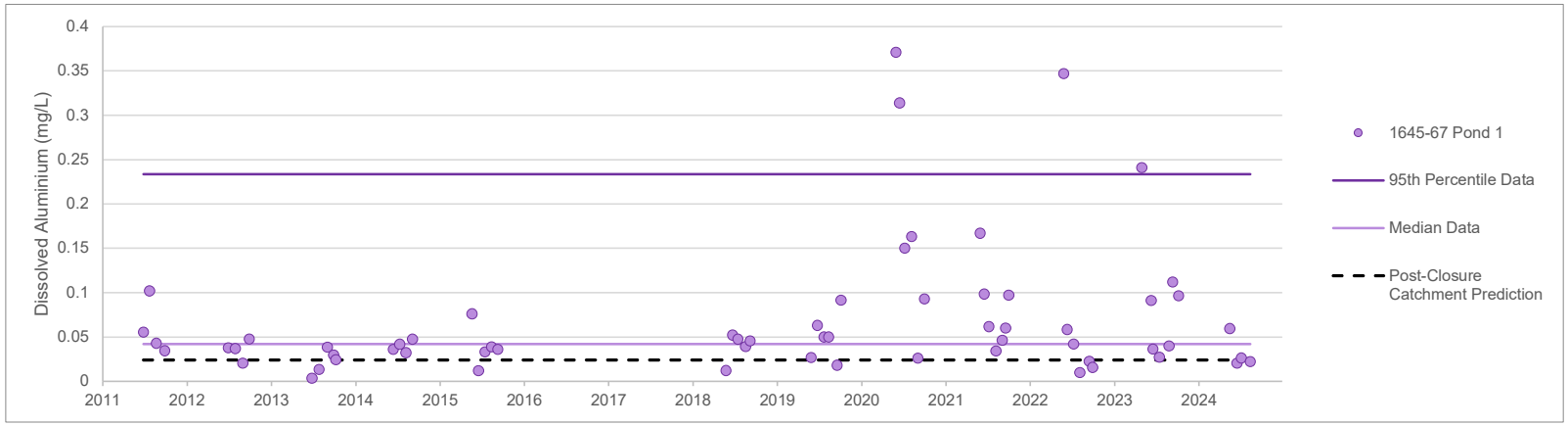
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



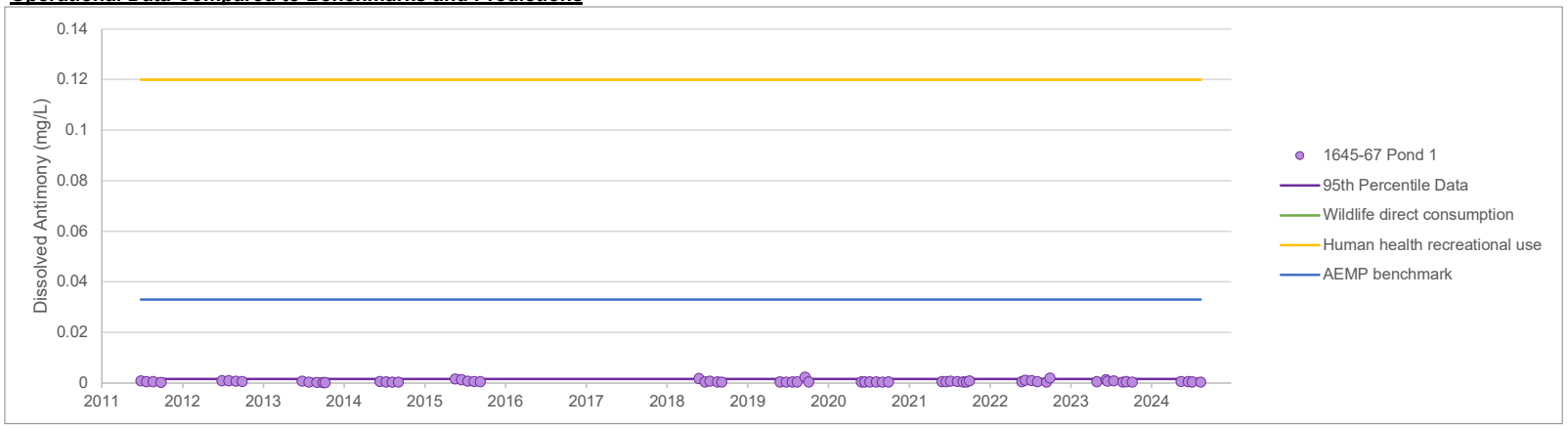


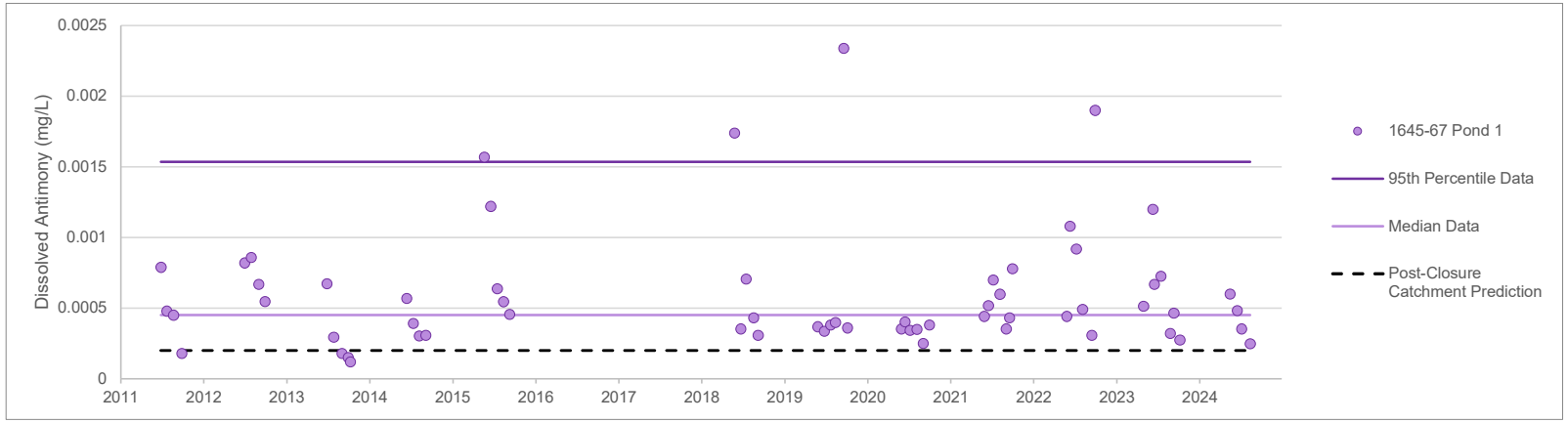
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.234	Wildlife	5.0
Median	0.042	Human recreational	58.0
Count	63	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



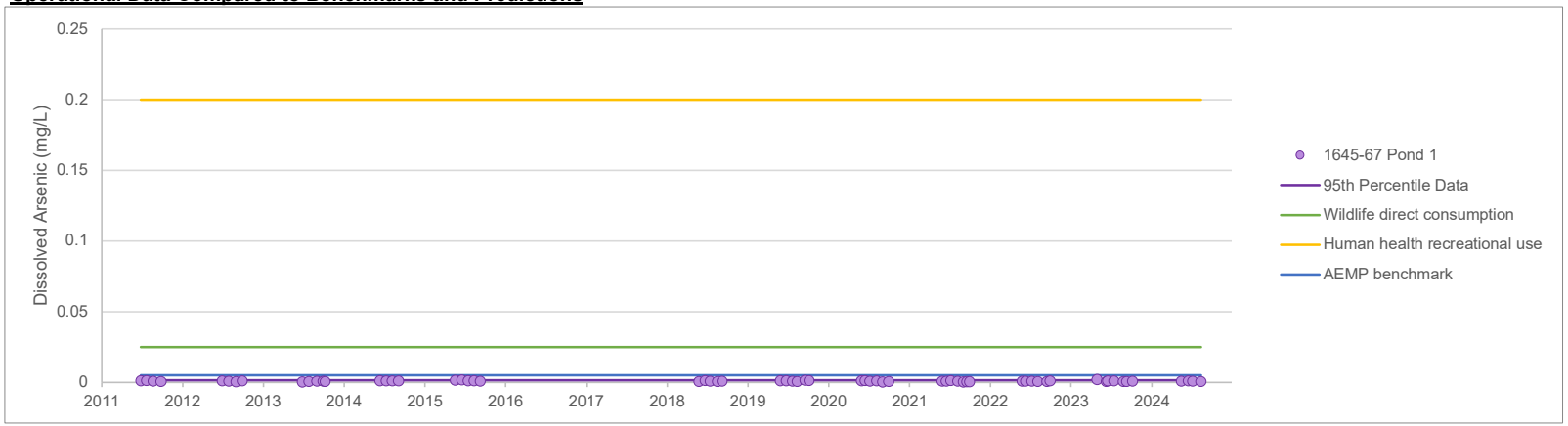


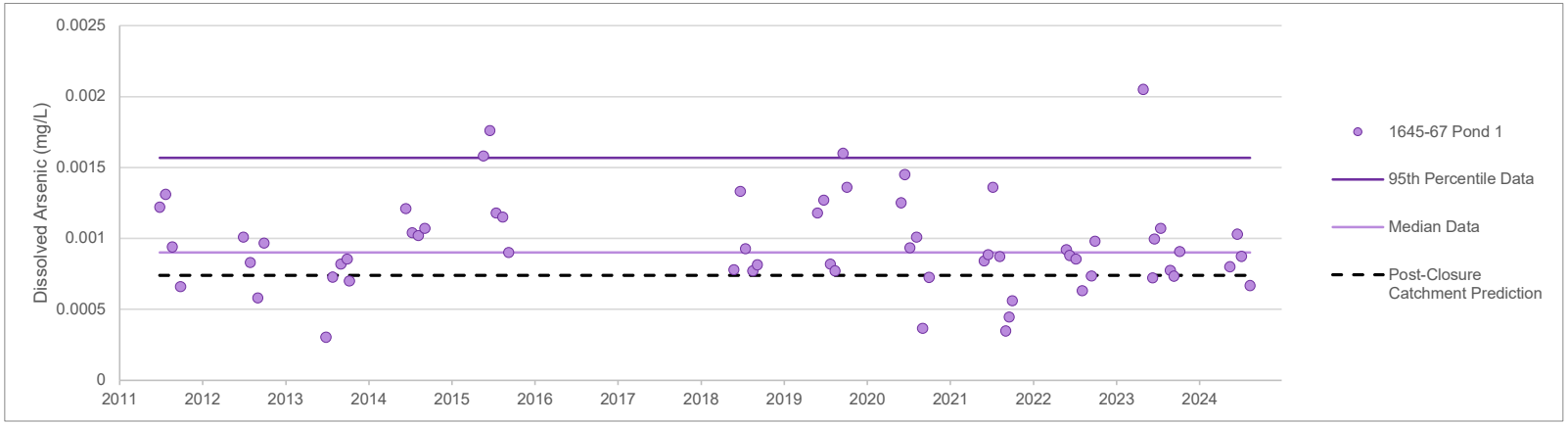
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00154	Wildlife	None
Median	0.00045	Human recreational	0.12
Count	63	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



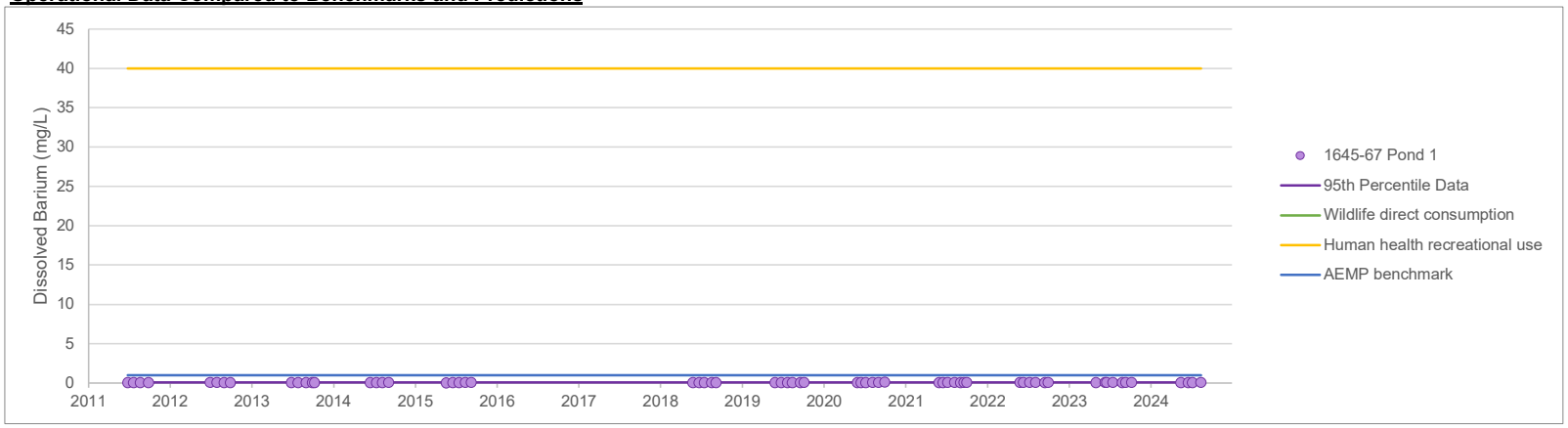


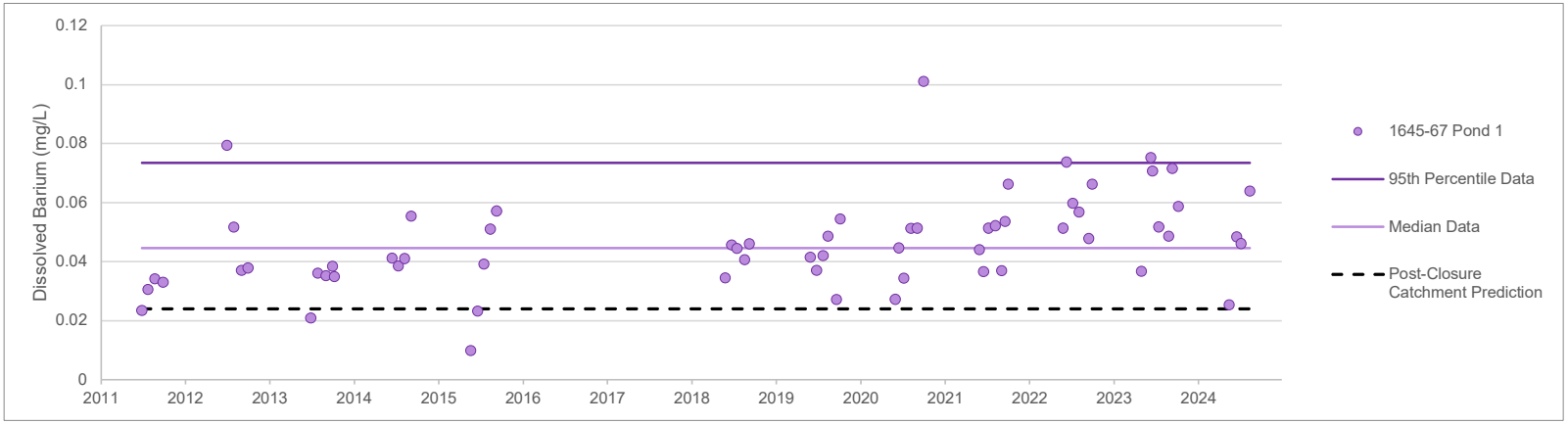
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0016	Wildlife	0.03
Median	0.0009	Human recreational	0.20
Count	63	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



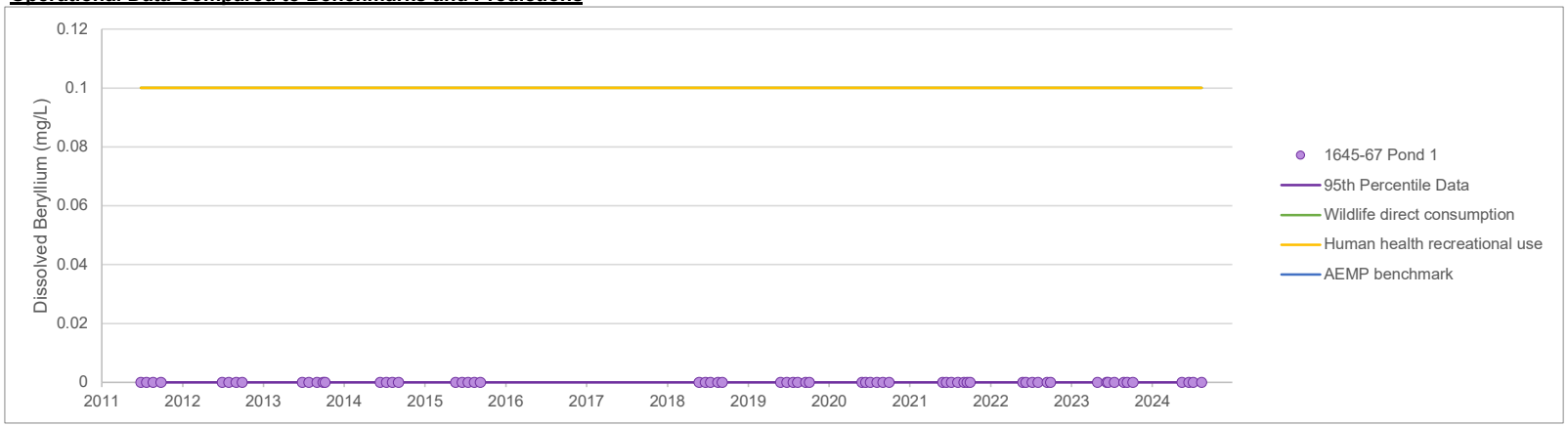


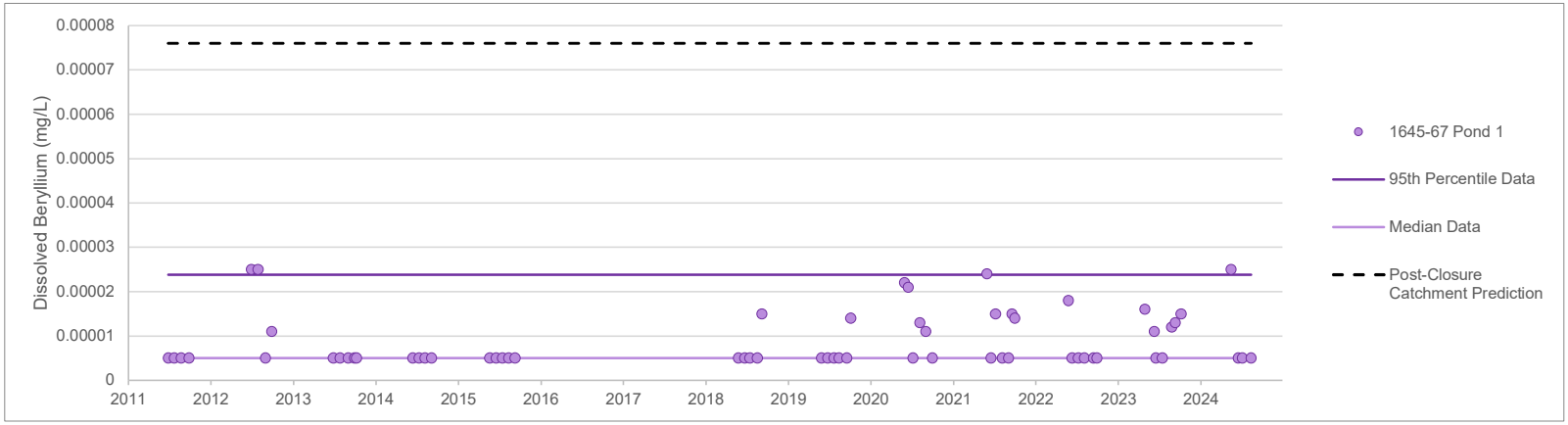
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.073	Wildlife	None
Median	0.045	Human recreational	40.0
Count	63	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



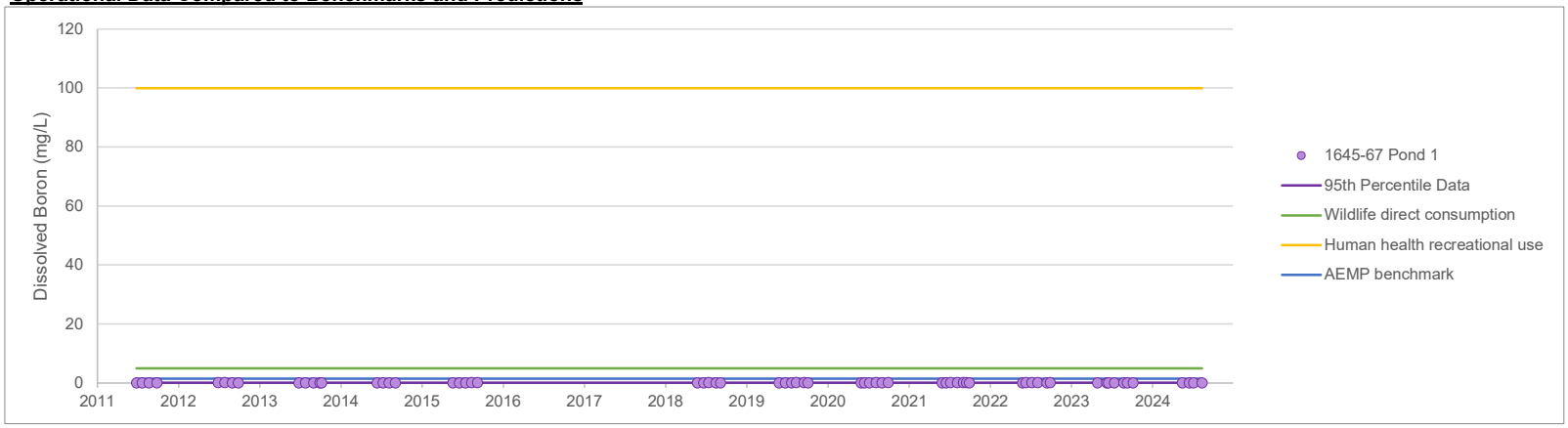


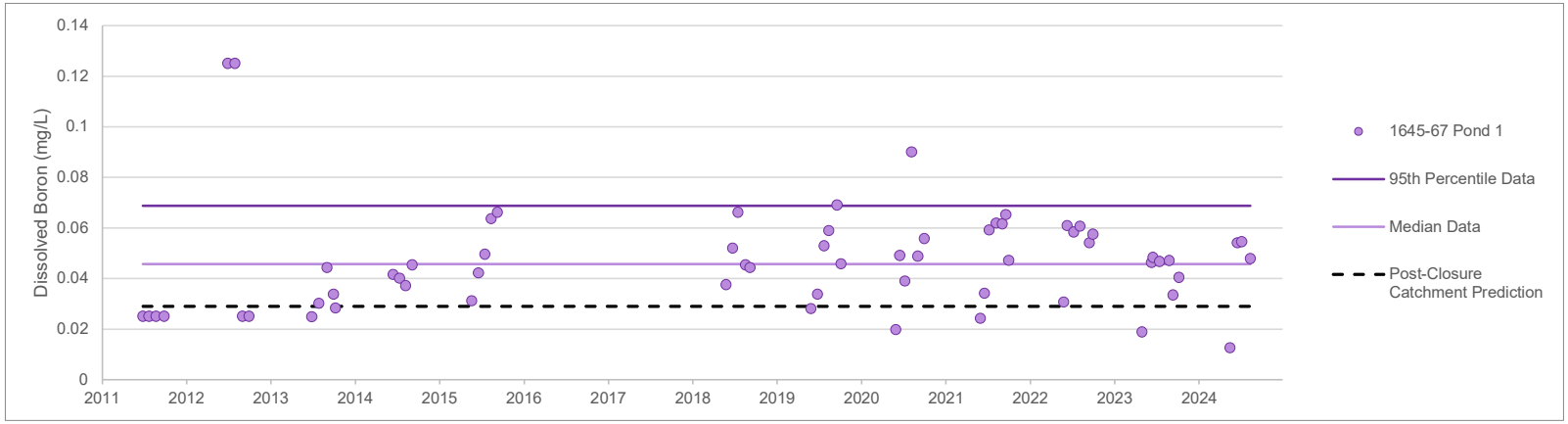
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000024	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



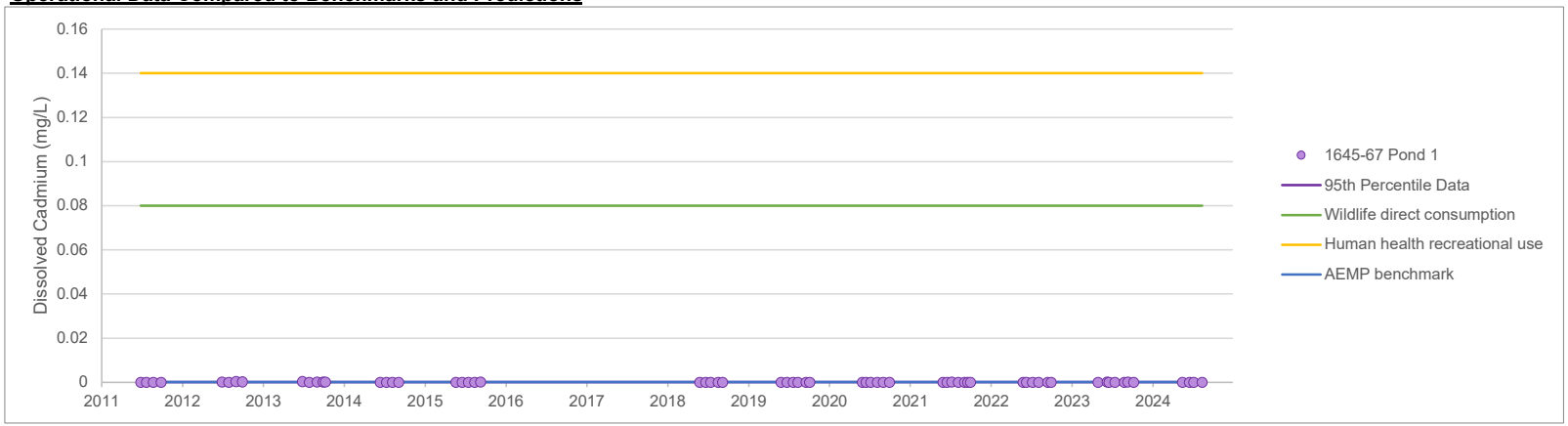


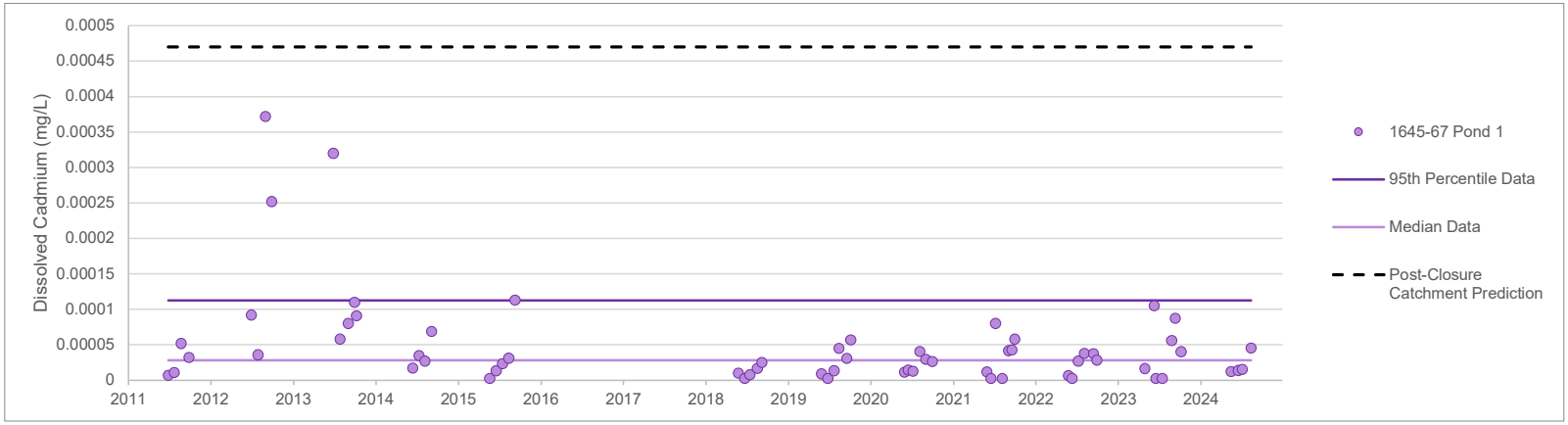
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.069	Wildlife	5.0
Median	0.046	Human recreational	100.0
Count	63	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



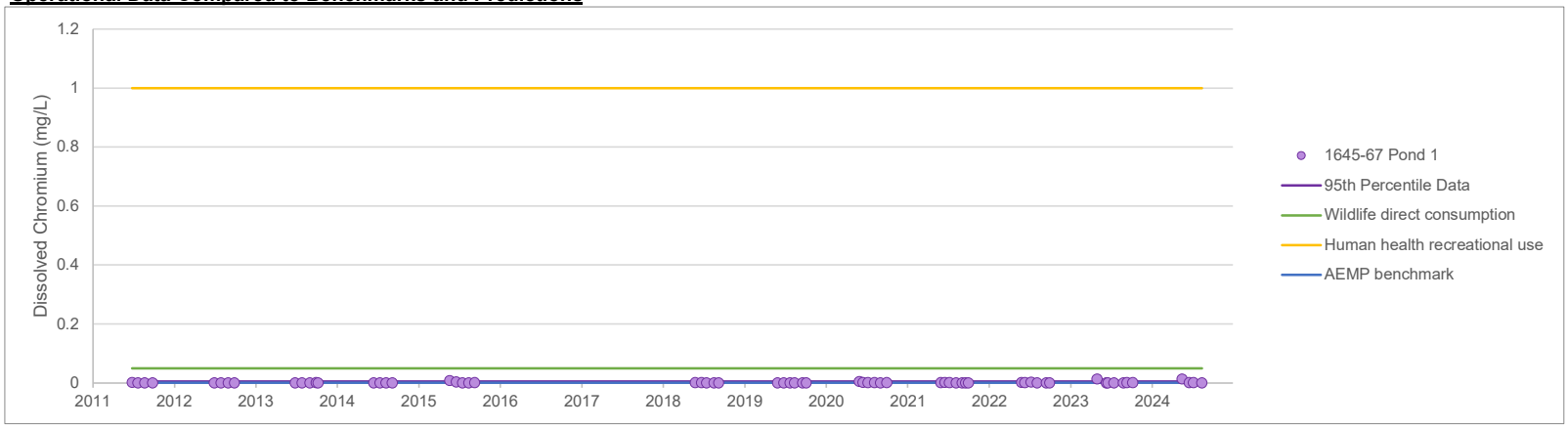


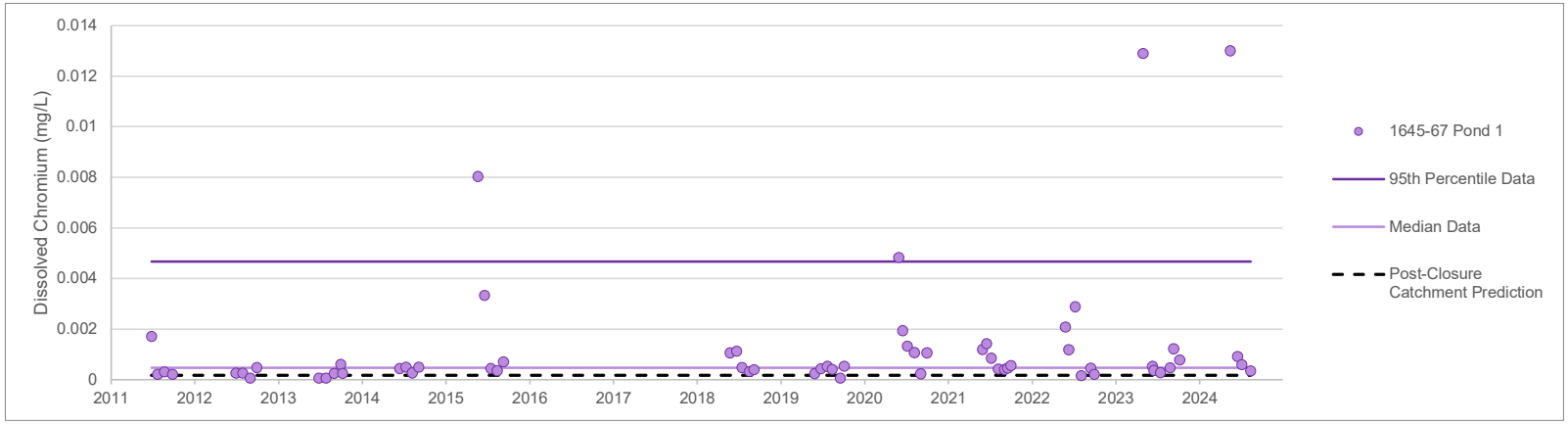
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00011	Wildlife	0.08
Median	0.00003	Human recreational	0.14
Count	63	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



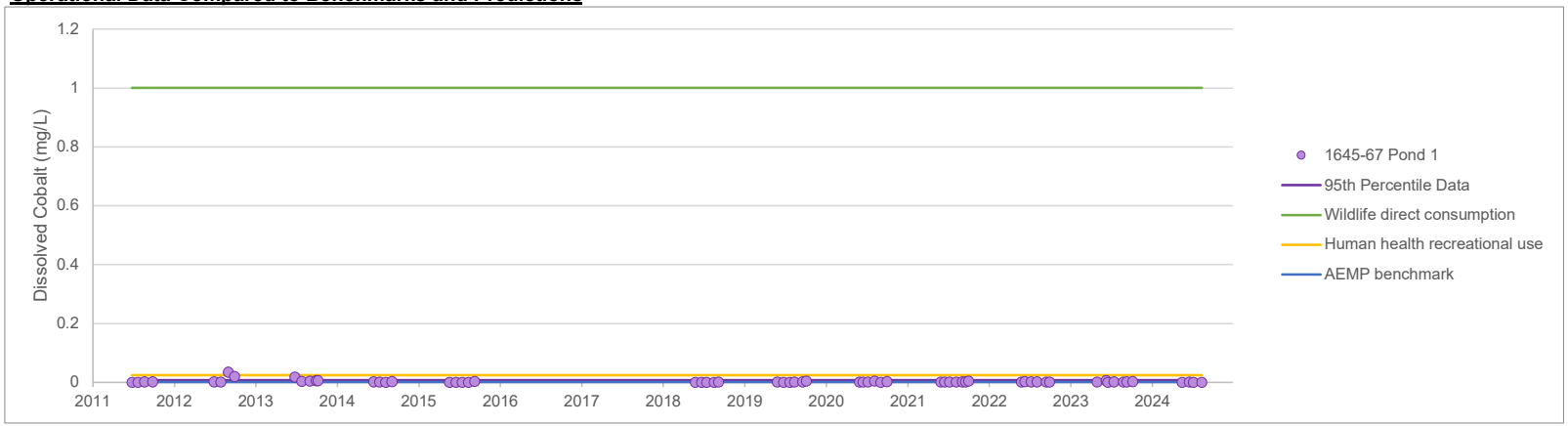


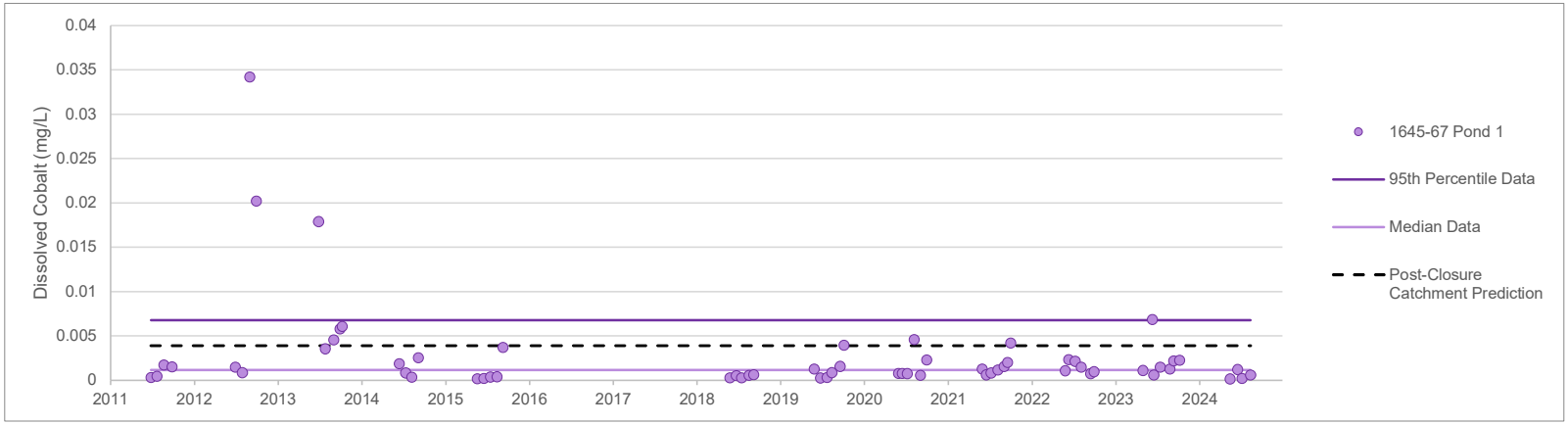
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00467	Wildlife	0.05
Median	0.00047	Human recreational	1.0
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



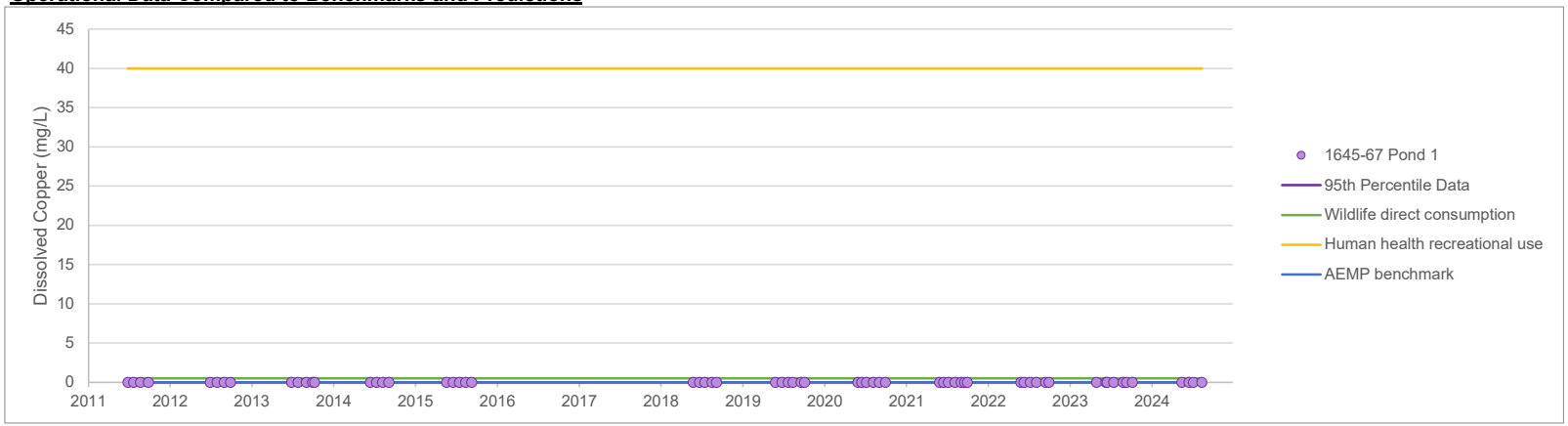


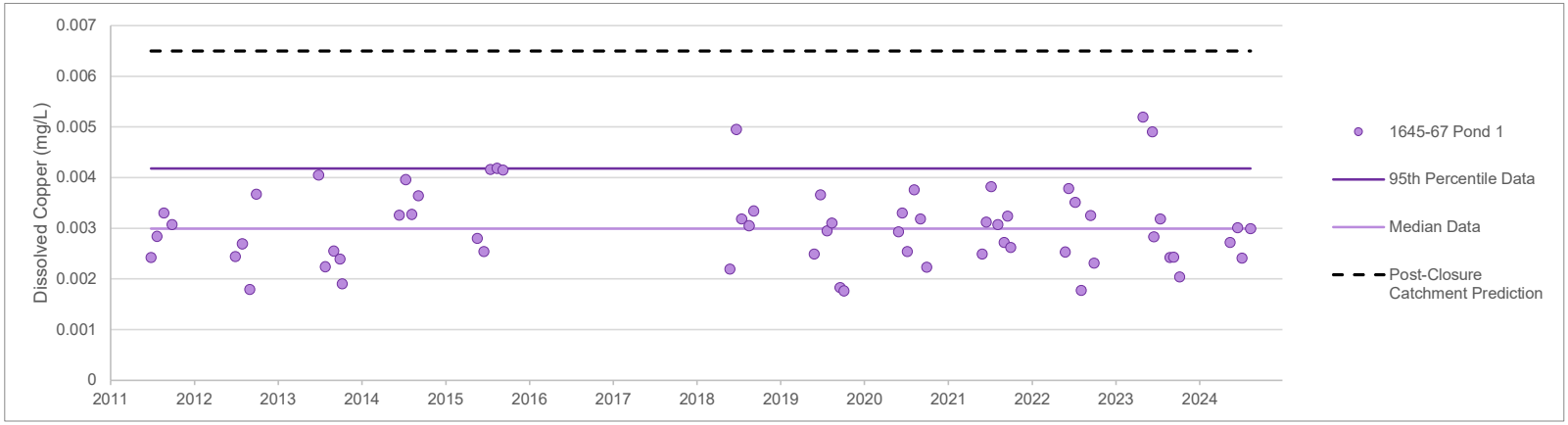
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0068	Wildlife	1.0
Median	0.0012	Human recreational	0.02
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



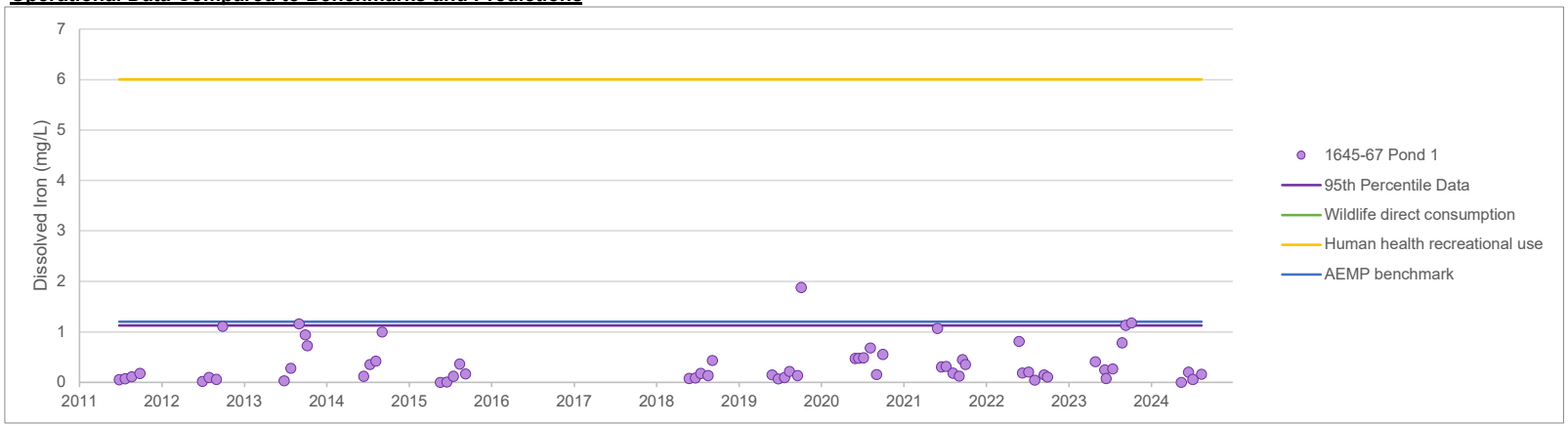


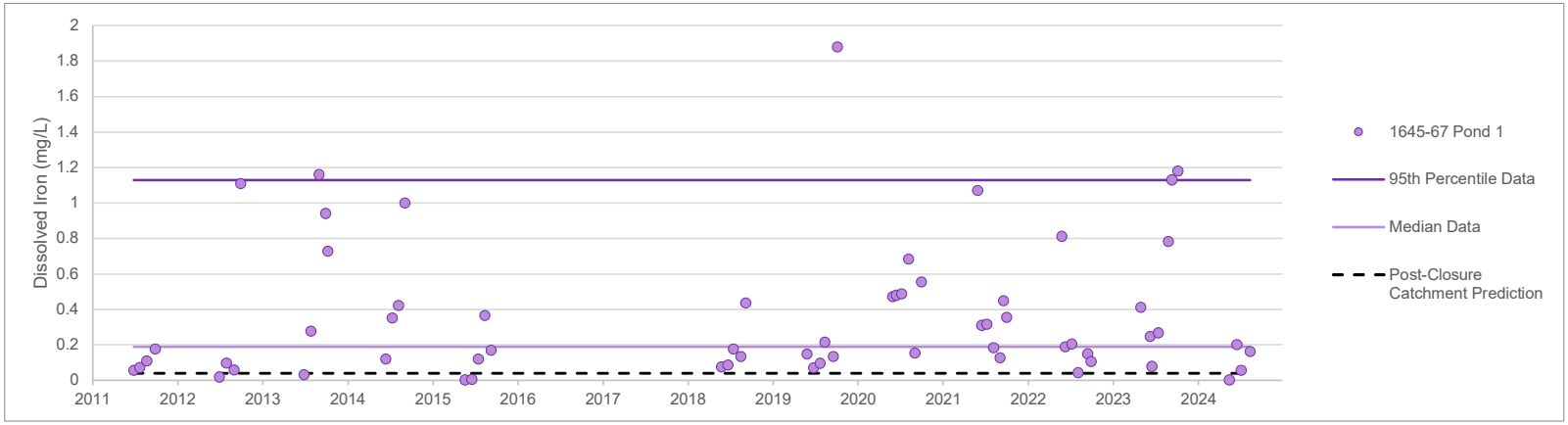
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0042	Wildlife	0.5
Median	0.0030	Human recreational	40.0
Count	63	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



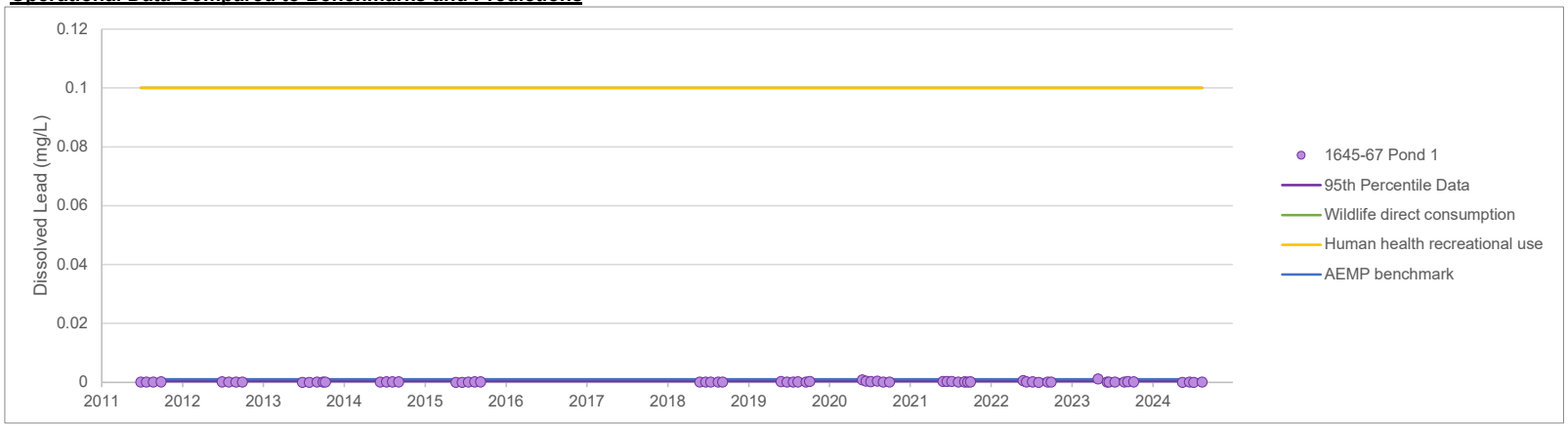


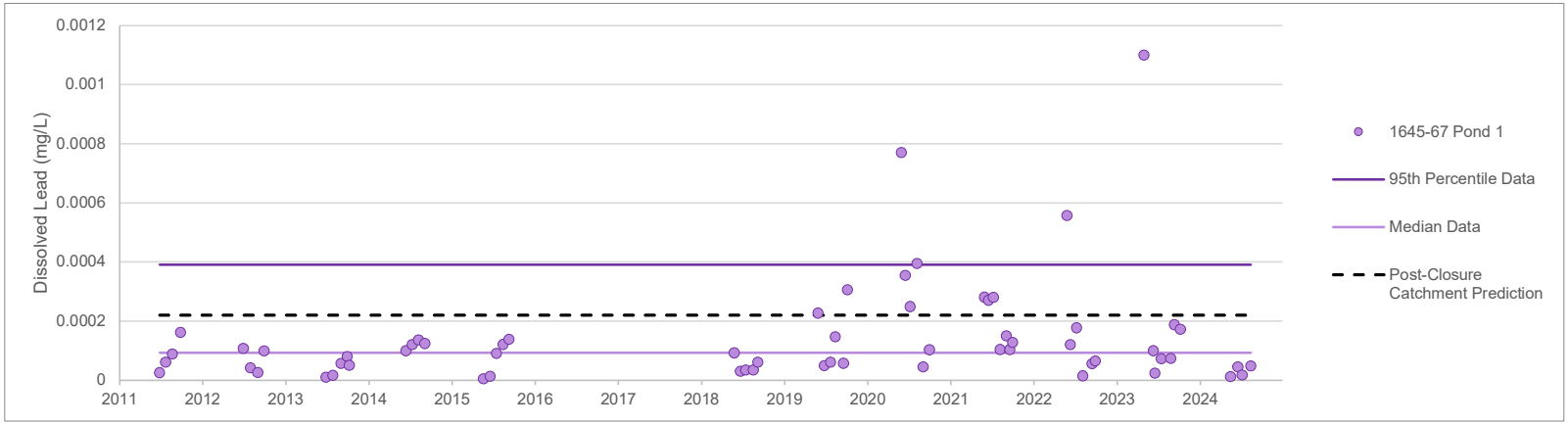
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	1.13	Wildlife	None
Median	0.19	Human recreational	6.0
Count	63	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



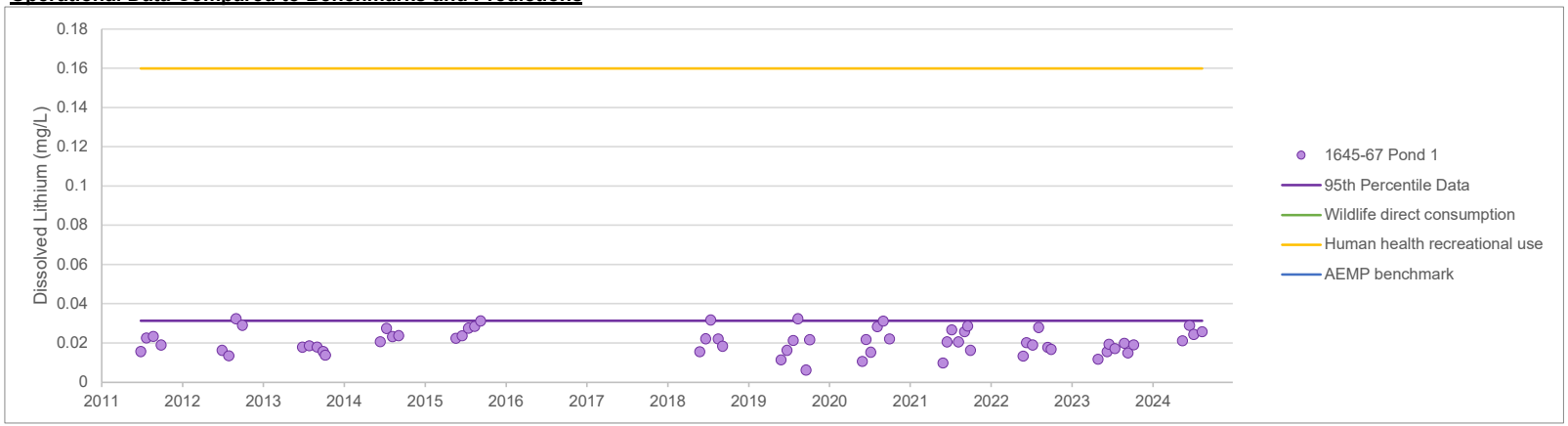


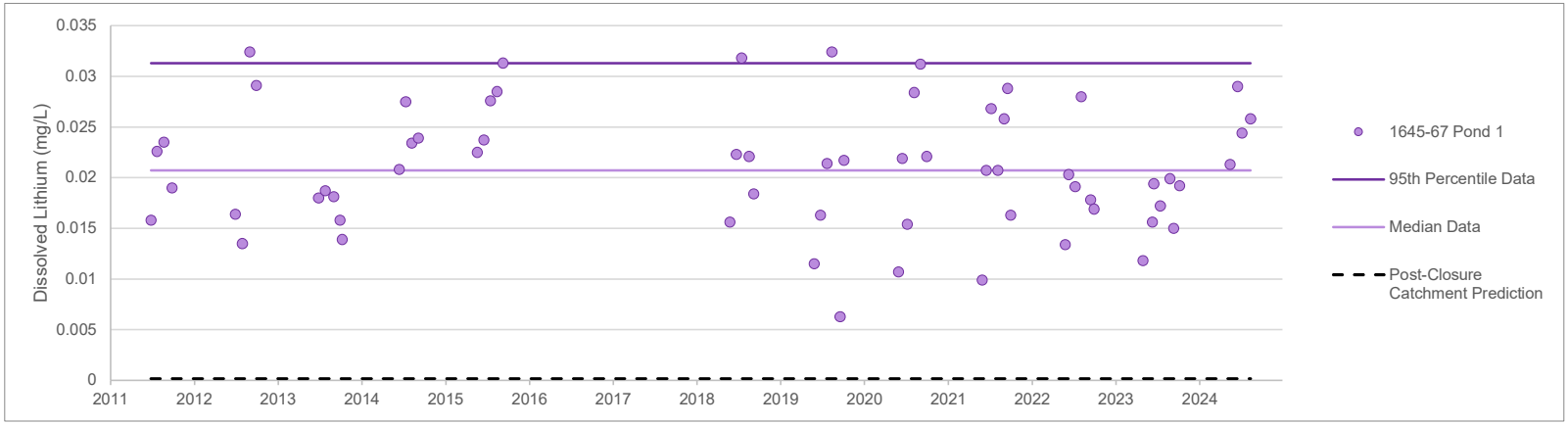
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00039	Wildlife	0.10
Median	0.00009	Human recreational	0.10
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



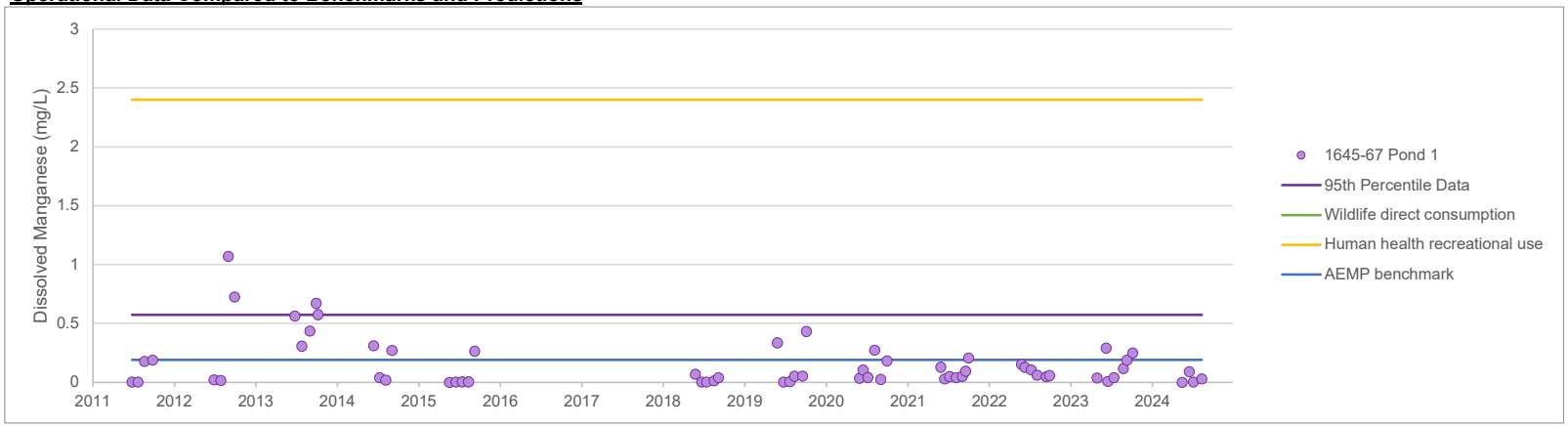


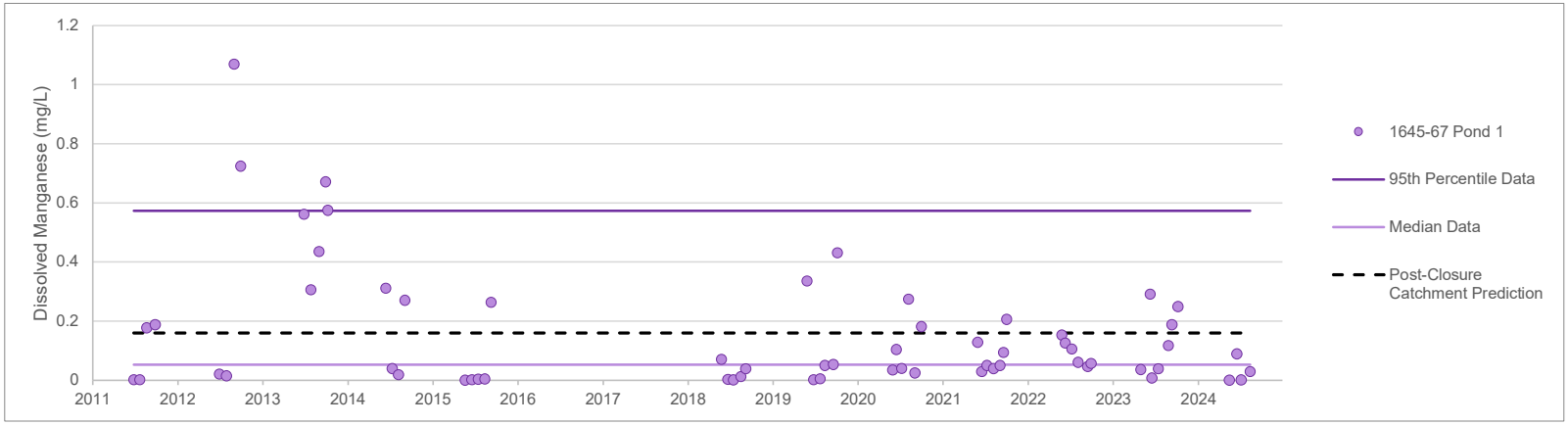
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.031	Wildlife	None
Median	0.021	Human recreational	0.16
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



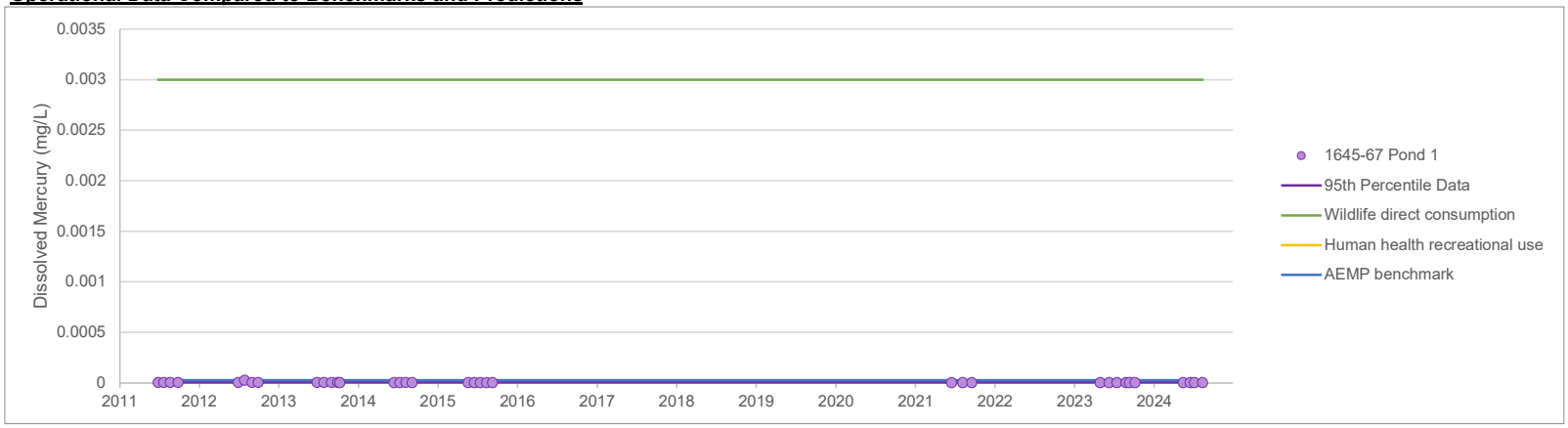


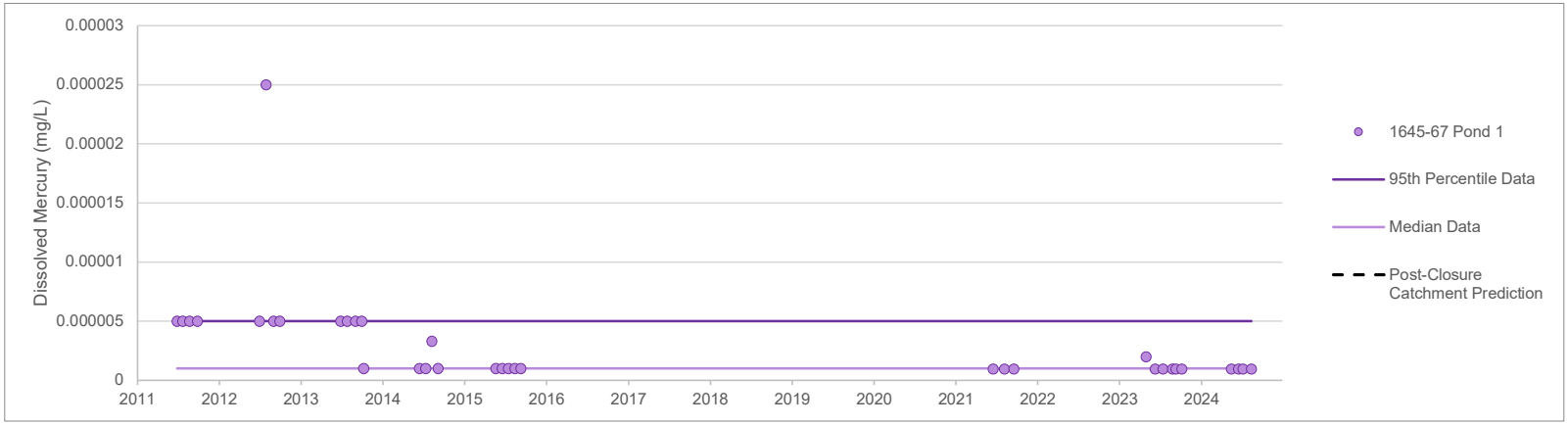
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.574	Wildlife	None
Median	0.053	Human recreational	2.4
Count	63	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



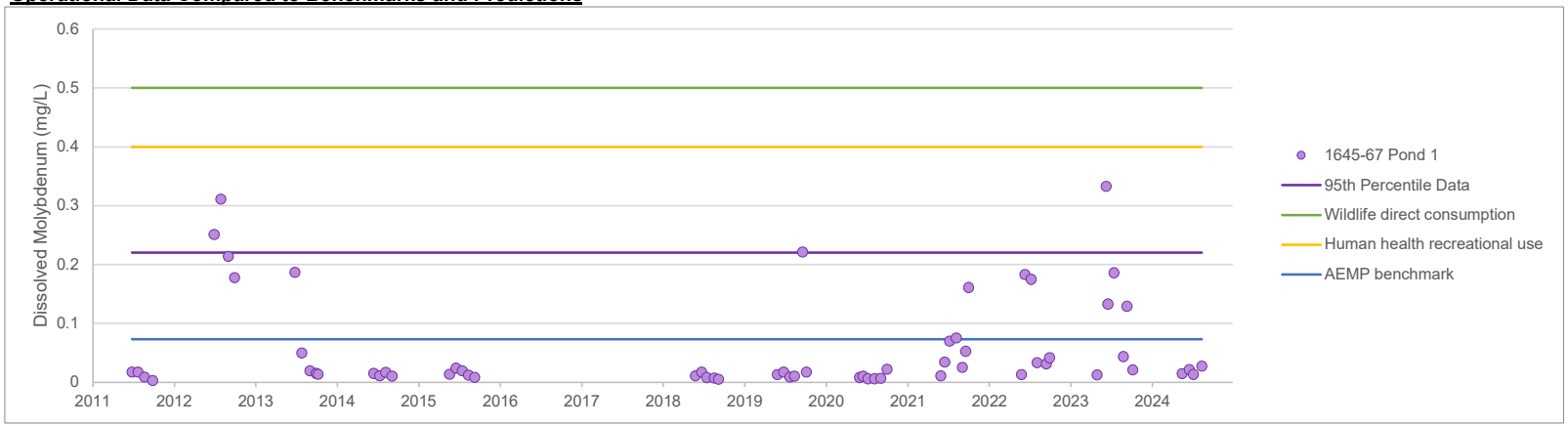


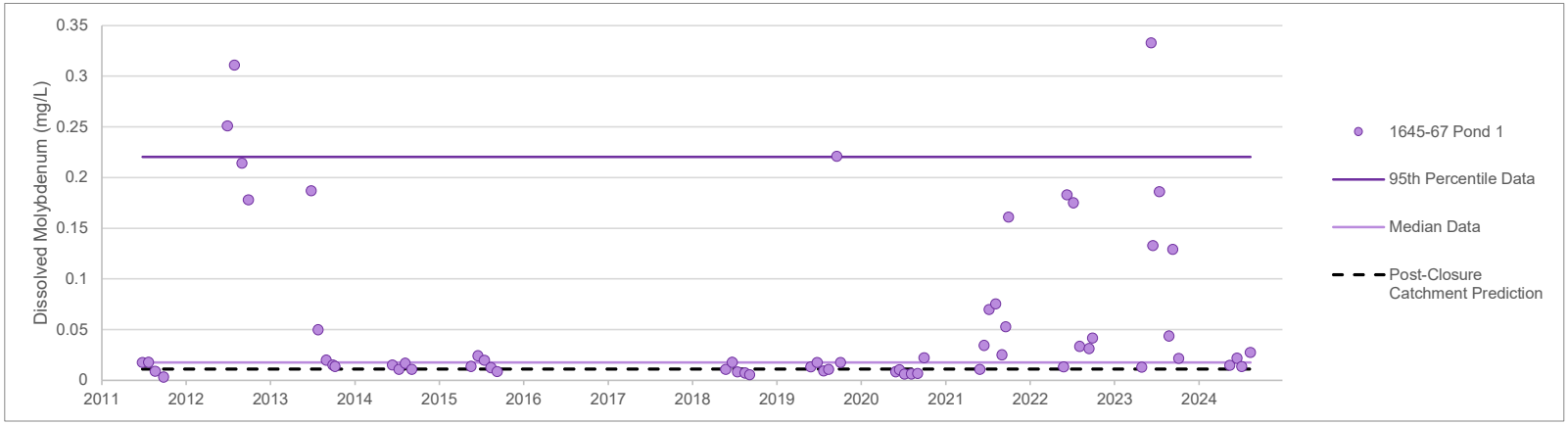
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	35	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



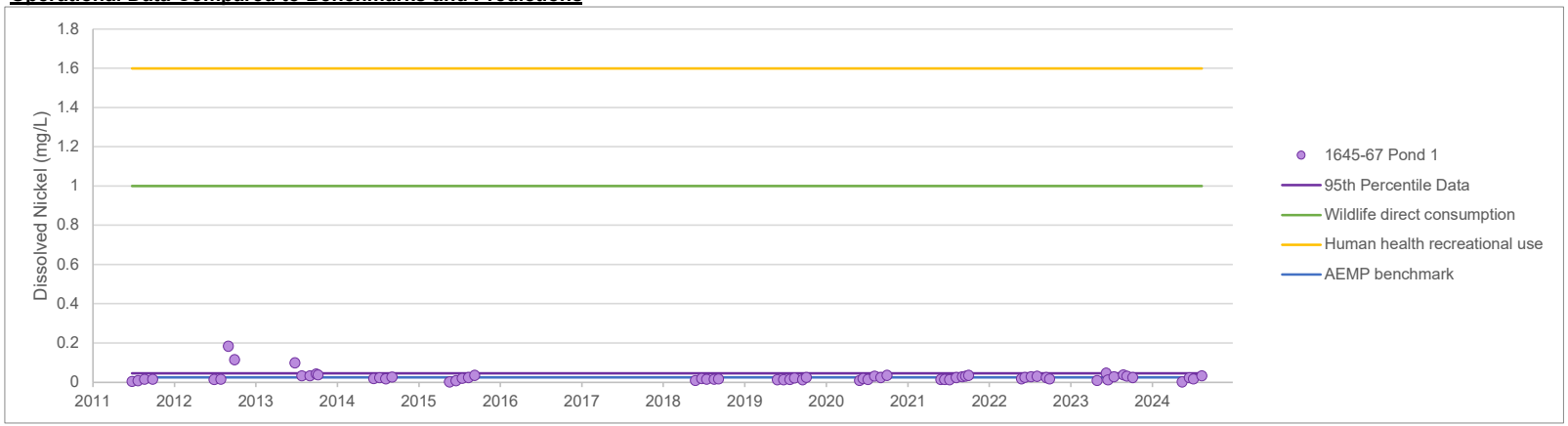


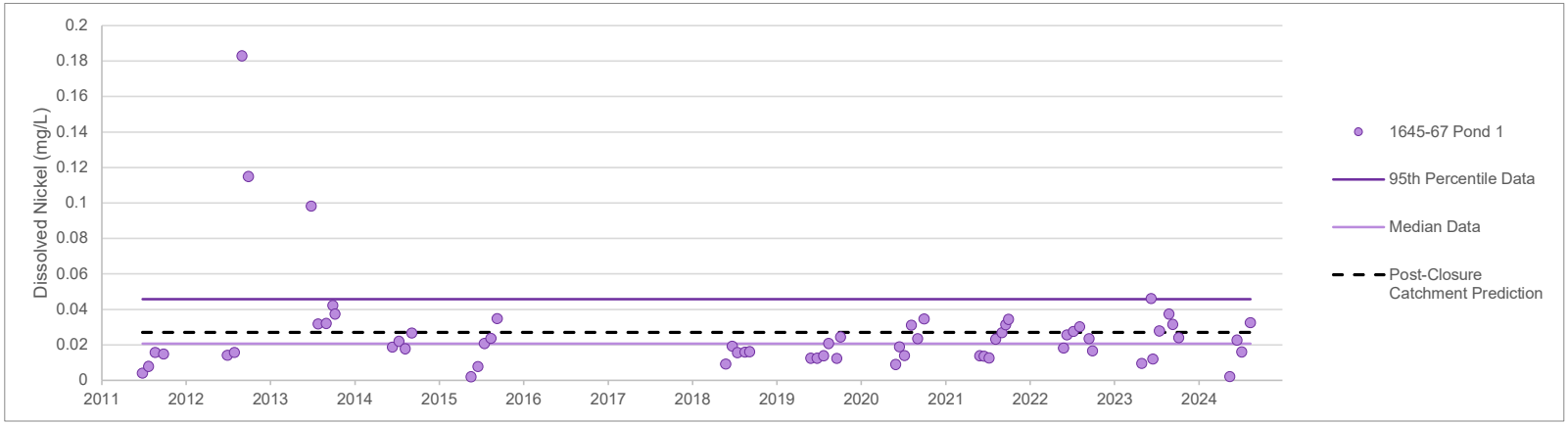
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.2203	Wildlife	0.5
Median	0.0176	Human recreational	0.4
Count	63	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



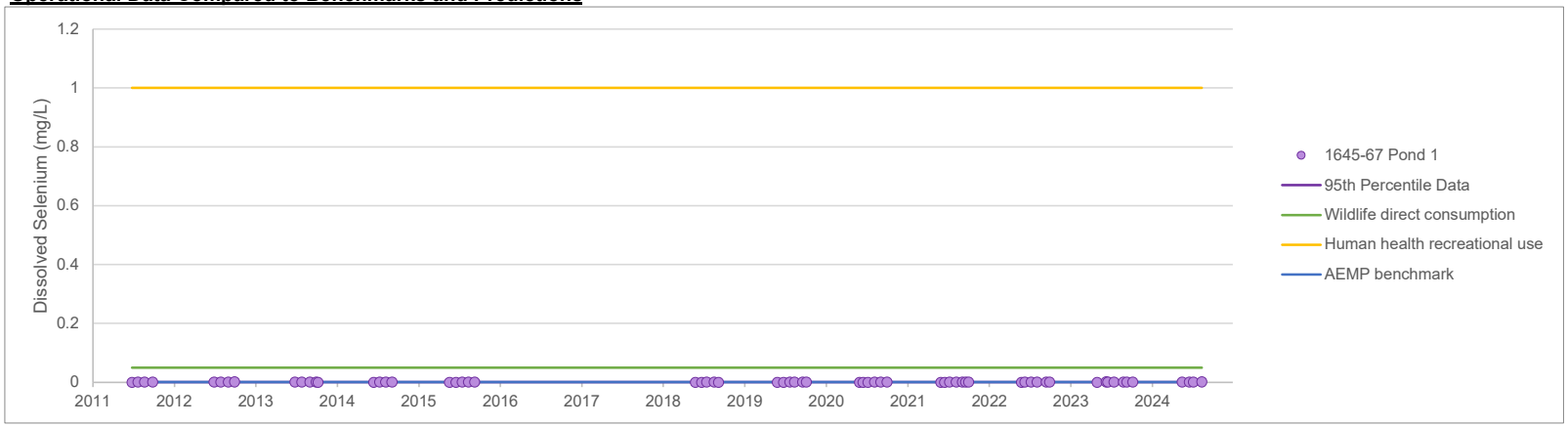


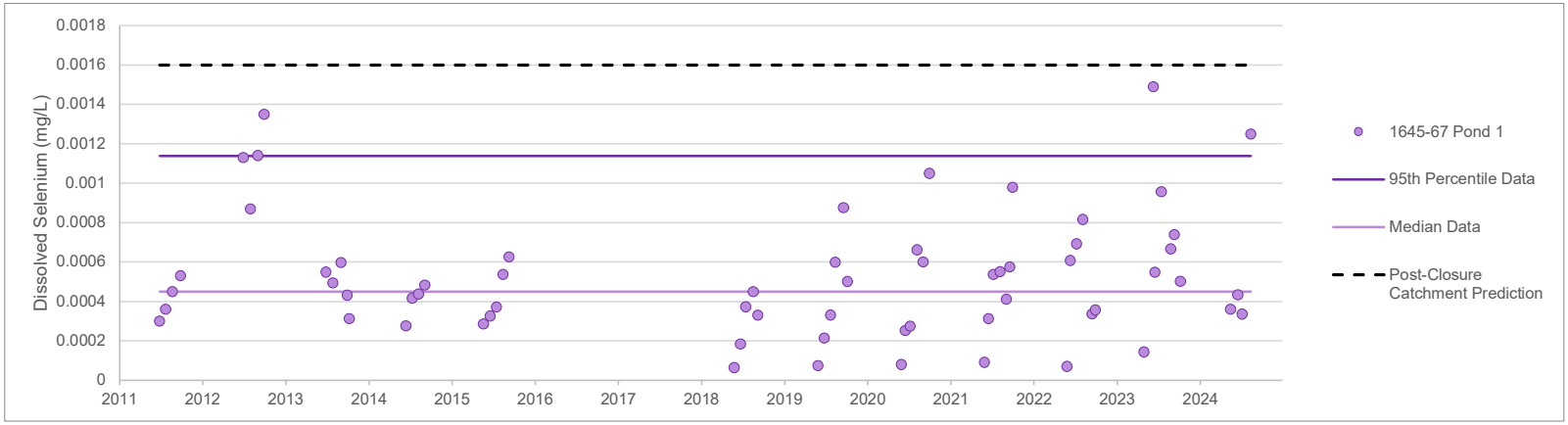
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.046	Wildlife	1.0
Median	0.021	Human recreational	1.6
Count	63	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



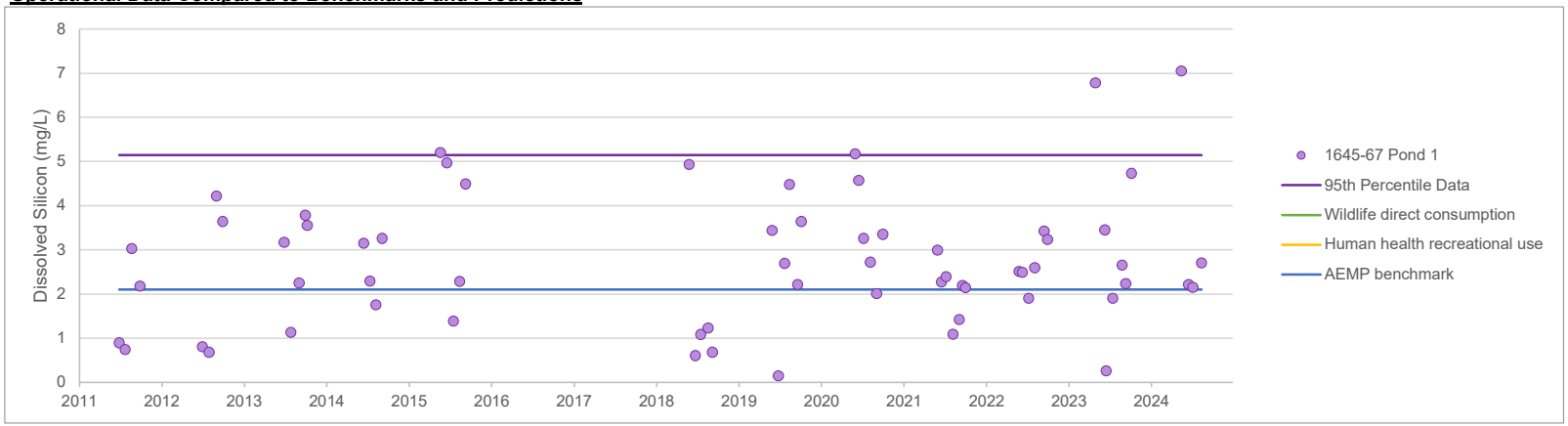


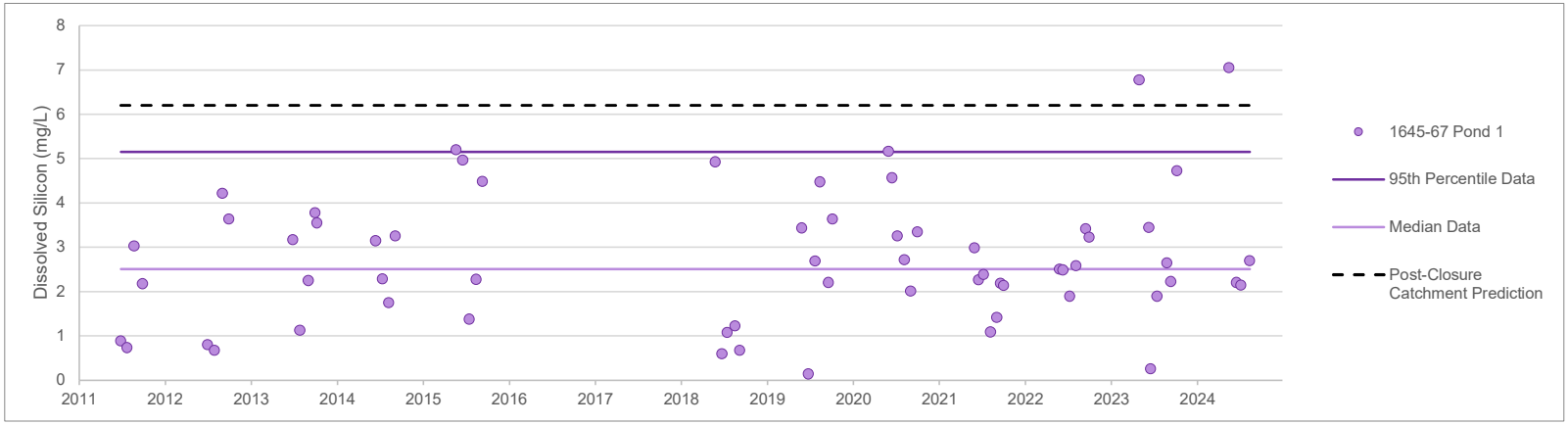
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00114	Wildlife	0.1
Median	0.00045	Human recreational	1.0
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



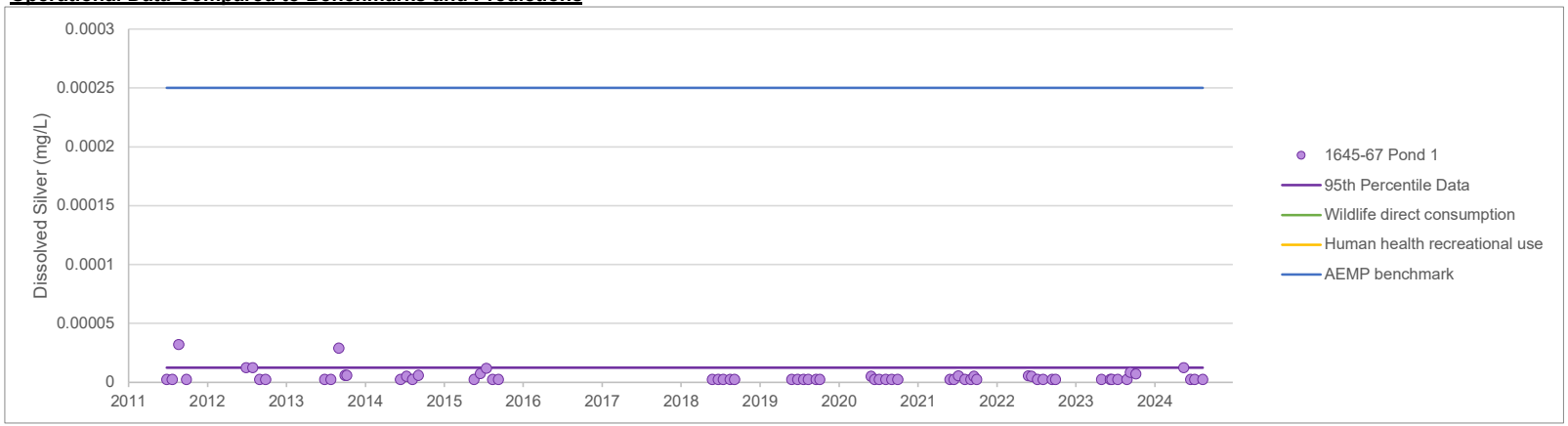


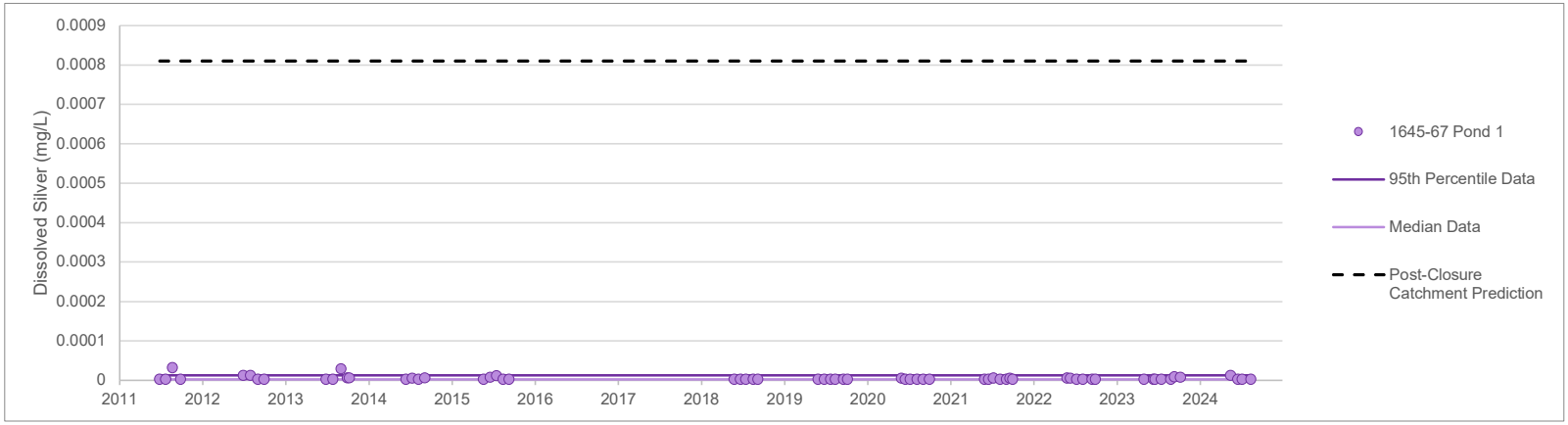
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	5.15	Wildlife	None
Median	2.51	Human recreational	None
Count	63	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



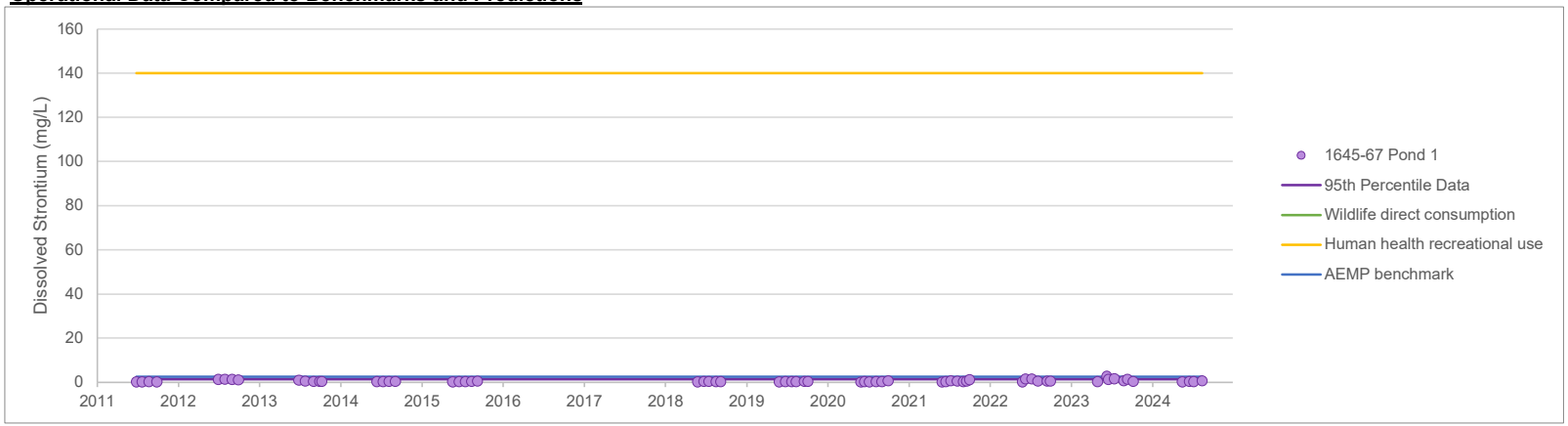


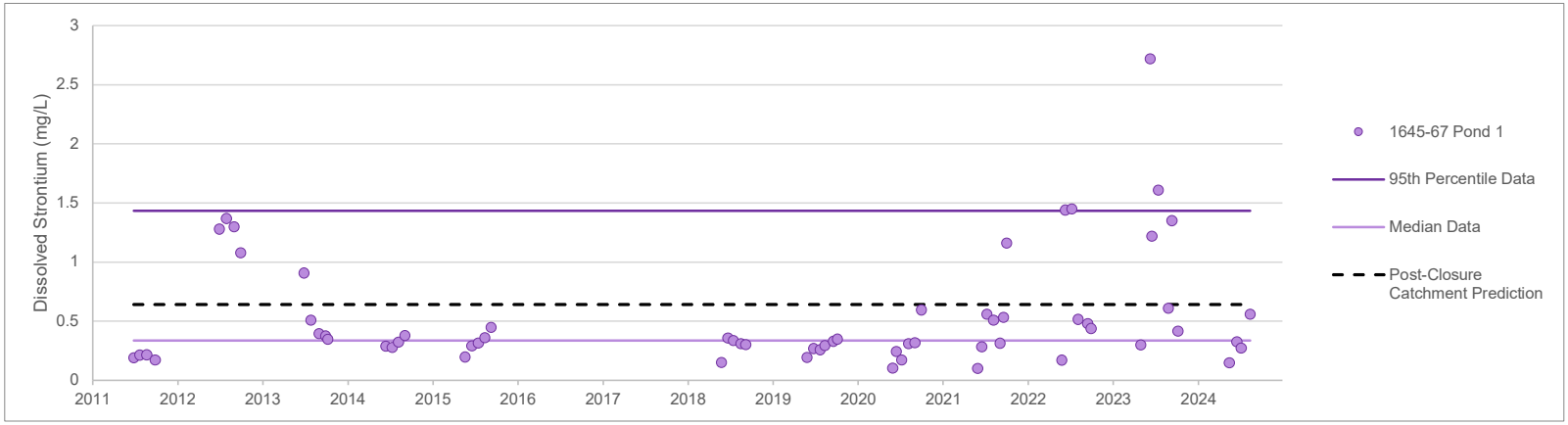
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000013	Wildlife	None
Median	0.000003	Human recreational	None
Count	63	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



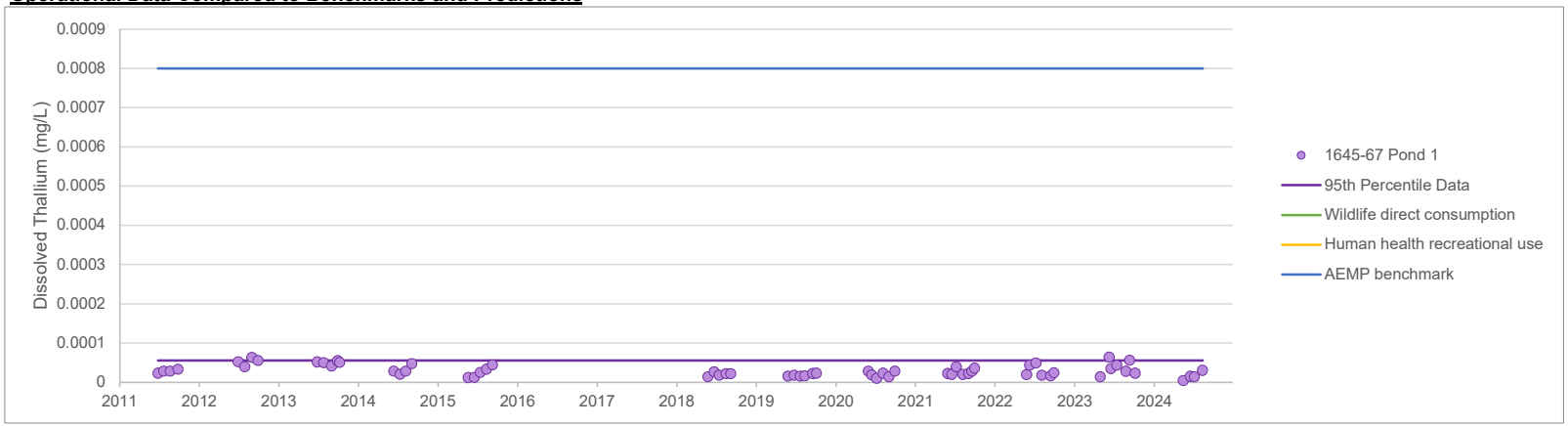


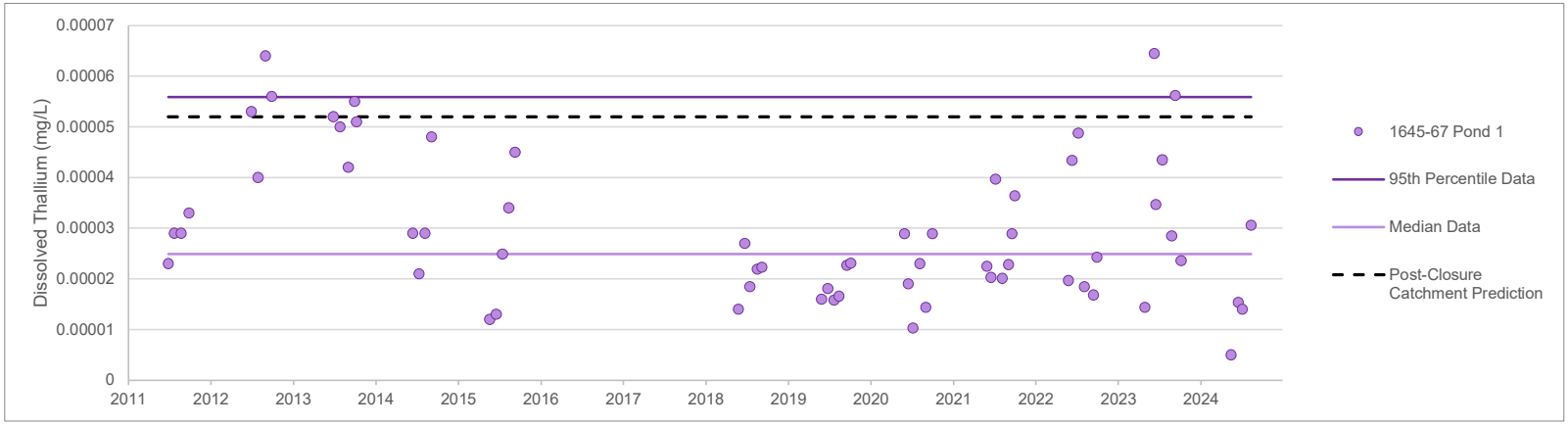
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	1.43	Wildlife	None
Median	0.34	Human recreational	140
Count	63	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



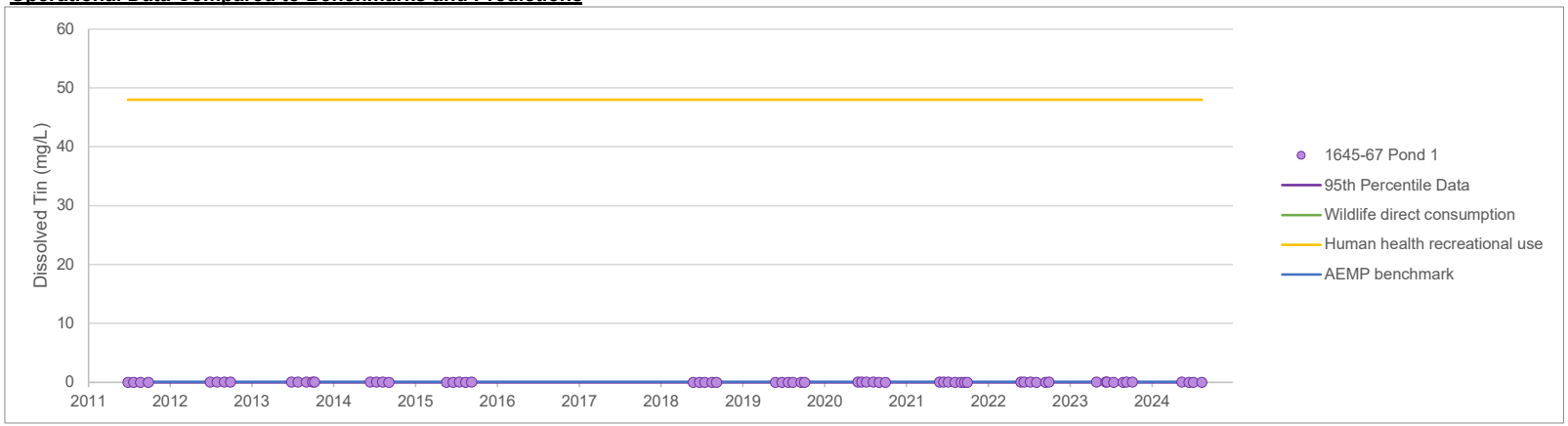


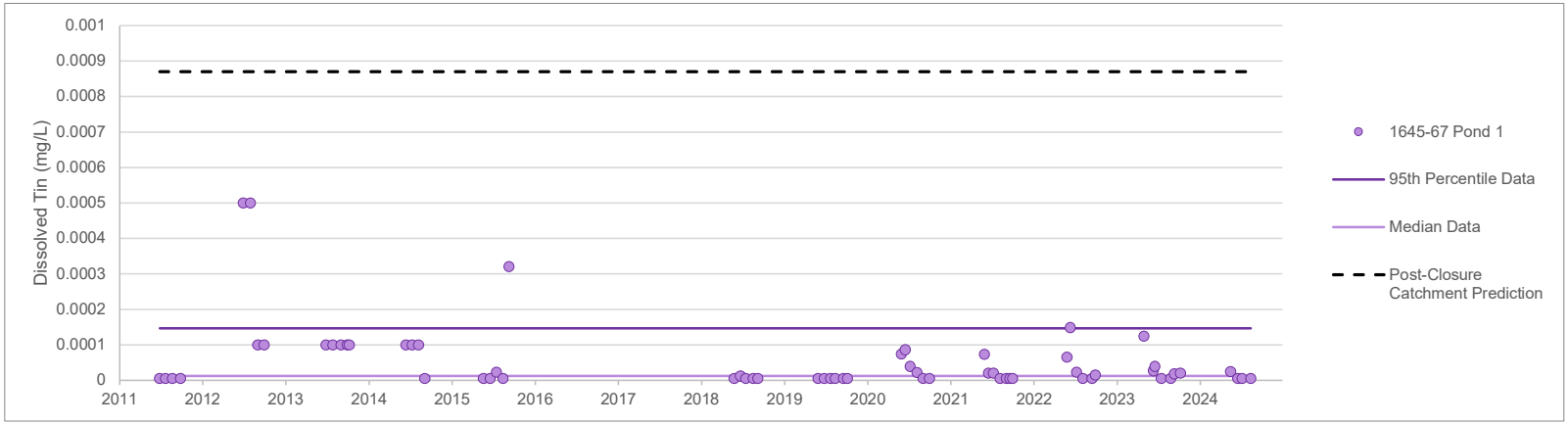
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00006	Wildlife	None
Median	0.00002	Human recreational	None
Count	63	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



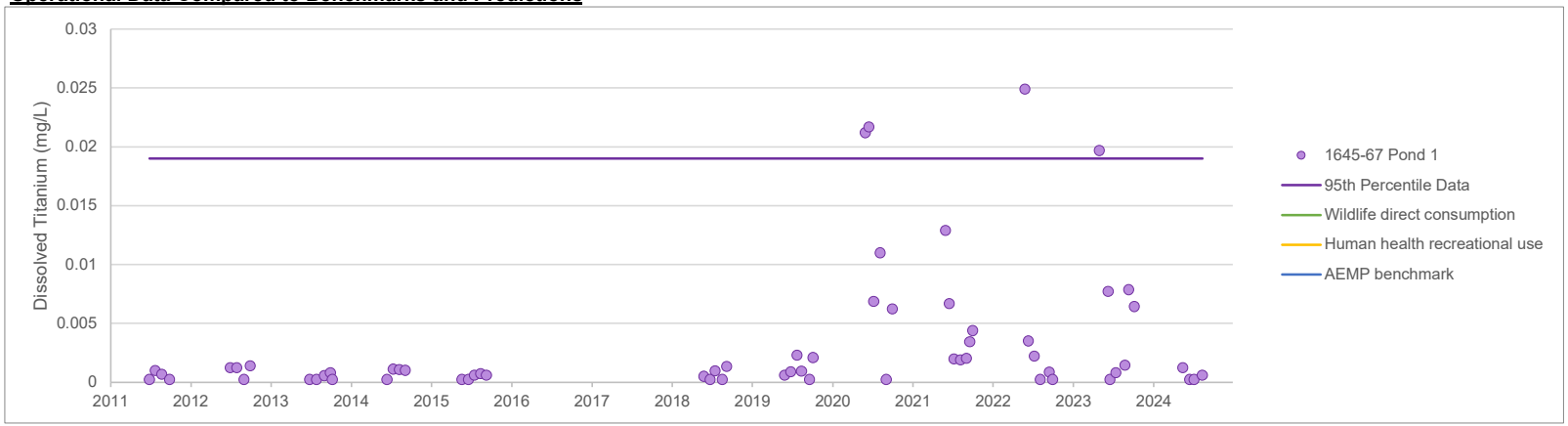


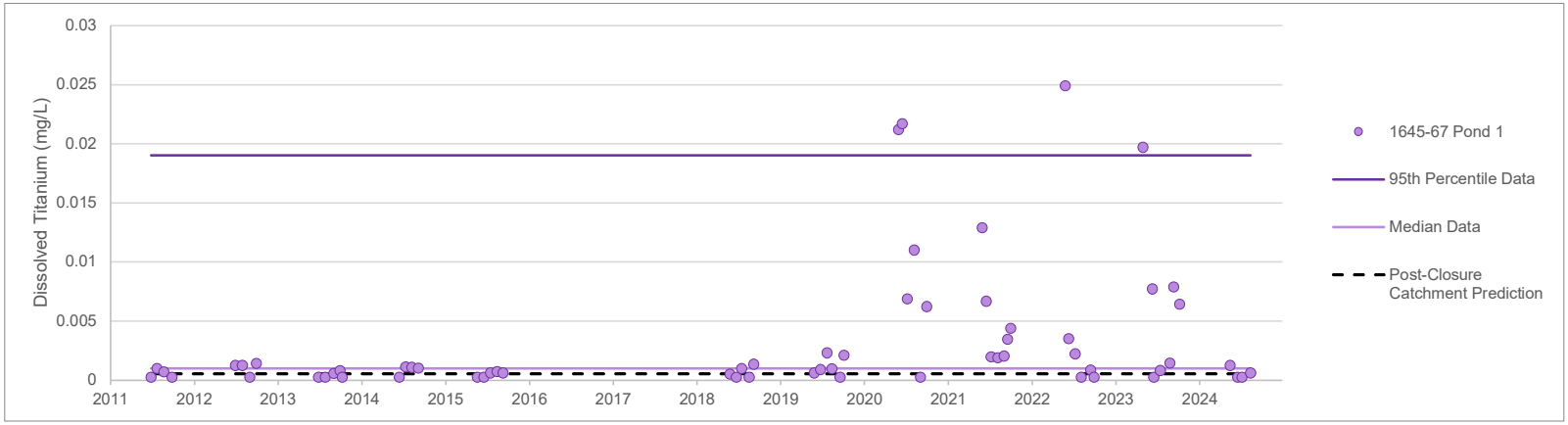
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00015	Wildlife	None
Median	0.00001	Human recreational	48
Count	63	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



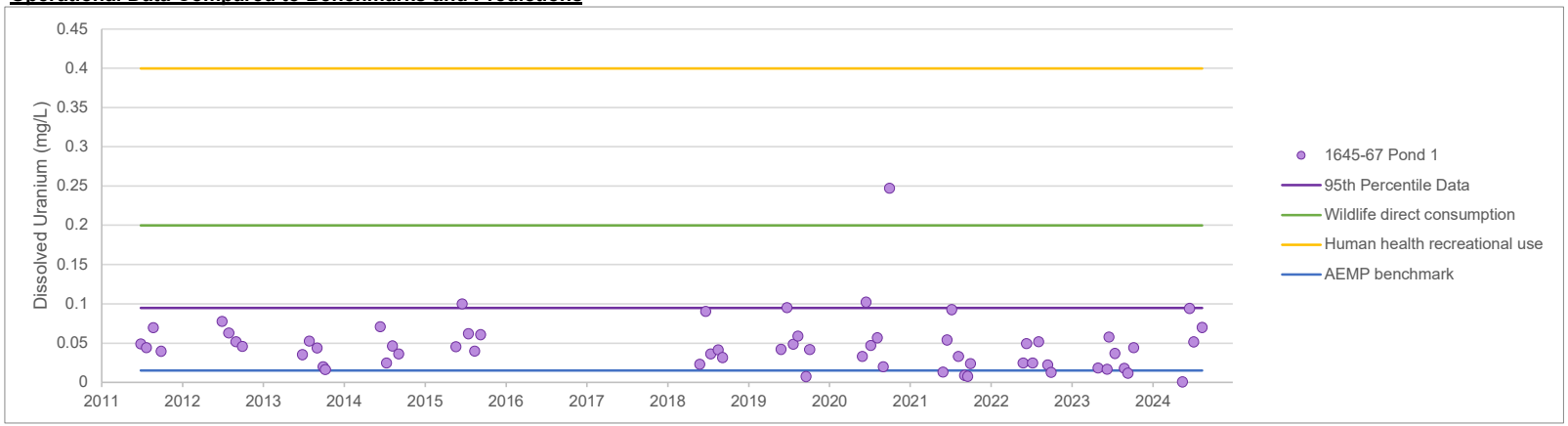


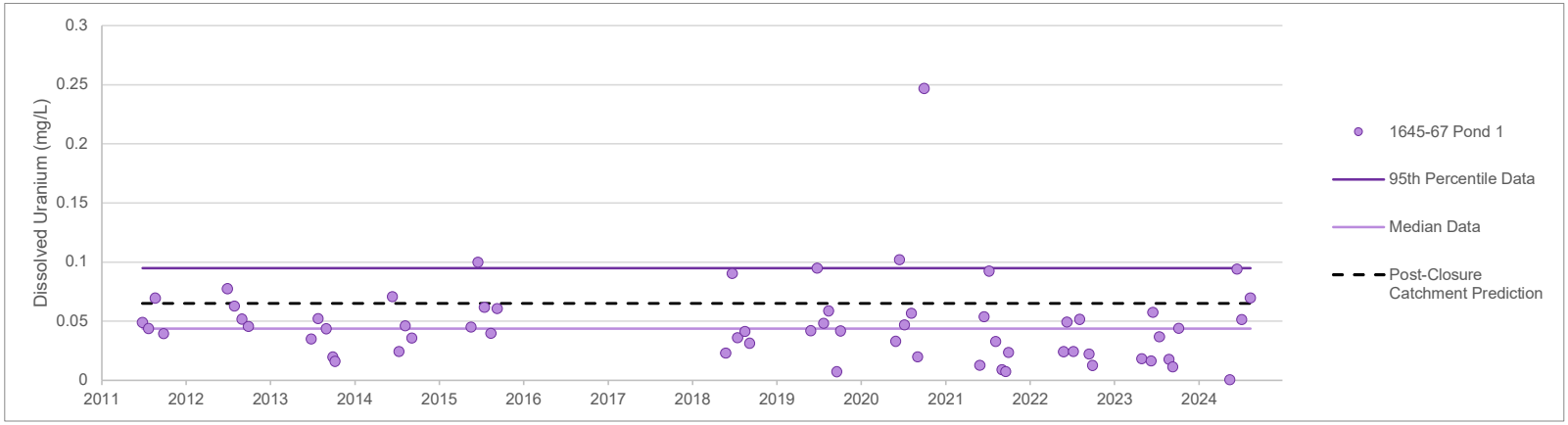
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0190	Wildlife	None
Median	0.0010	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



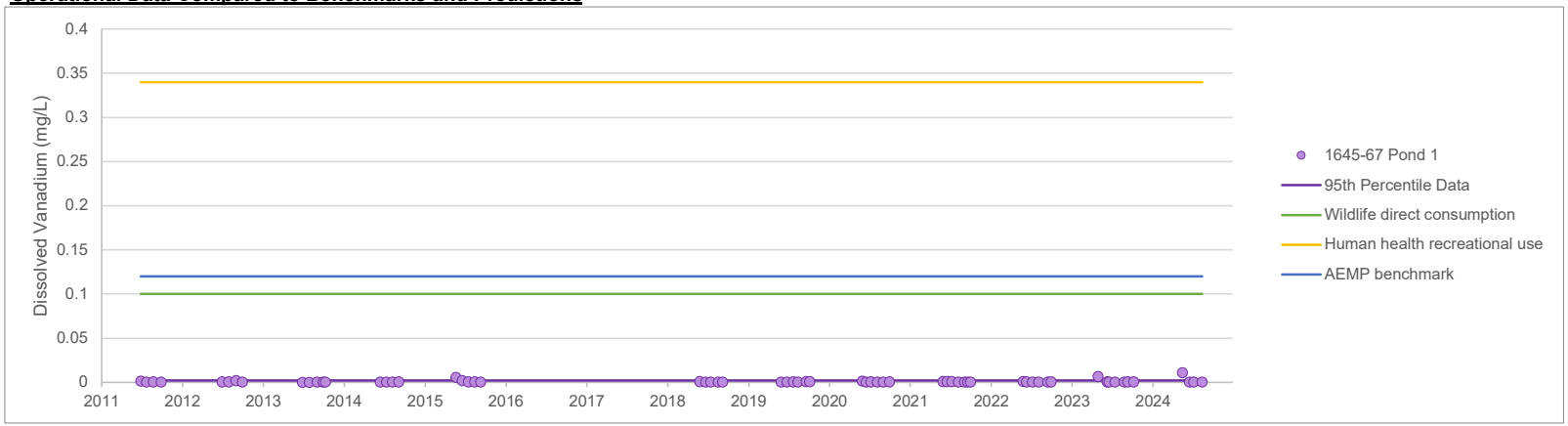


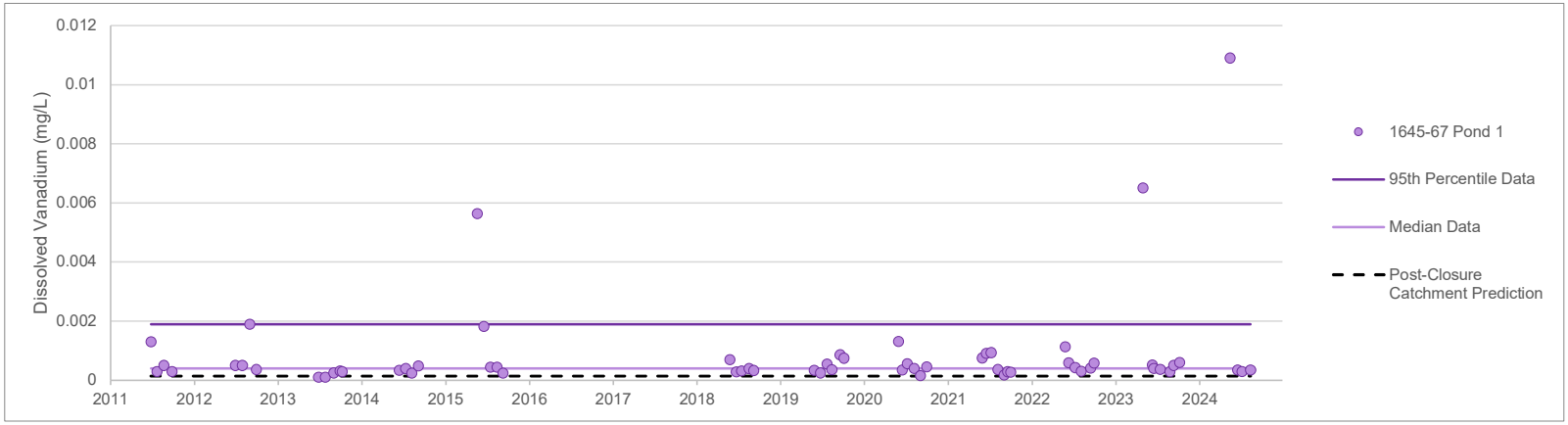
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0948	Wildlife	0.2
Median	0.0437	Human recreational	0.4
Count	63	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



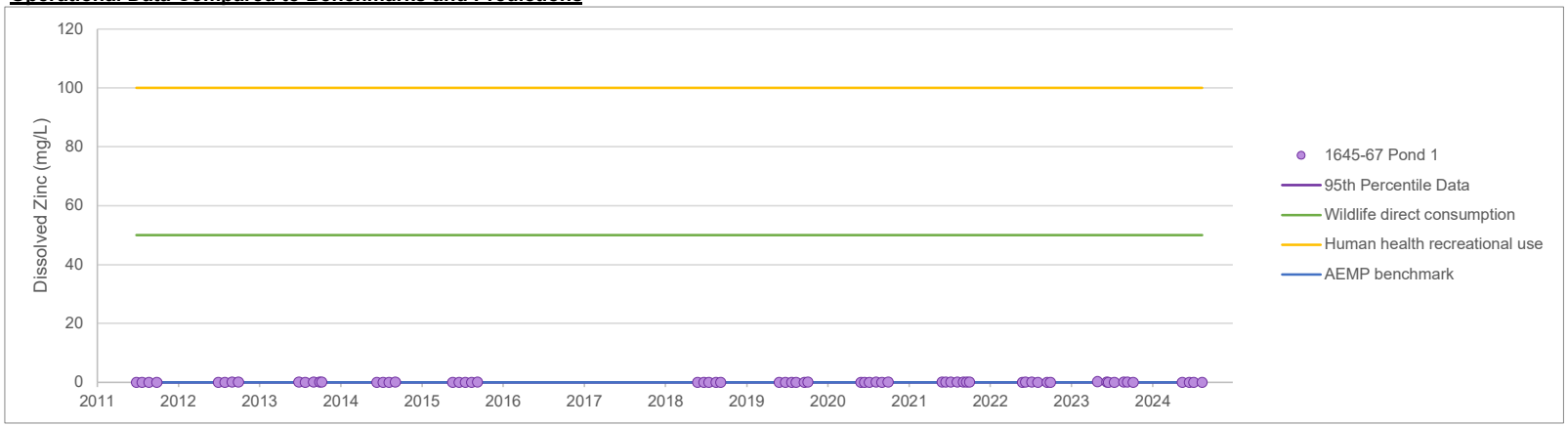


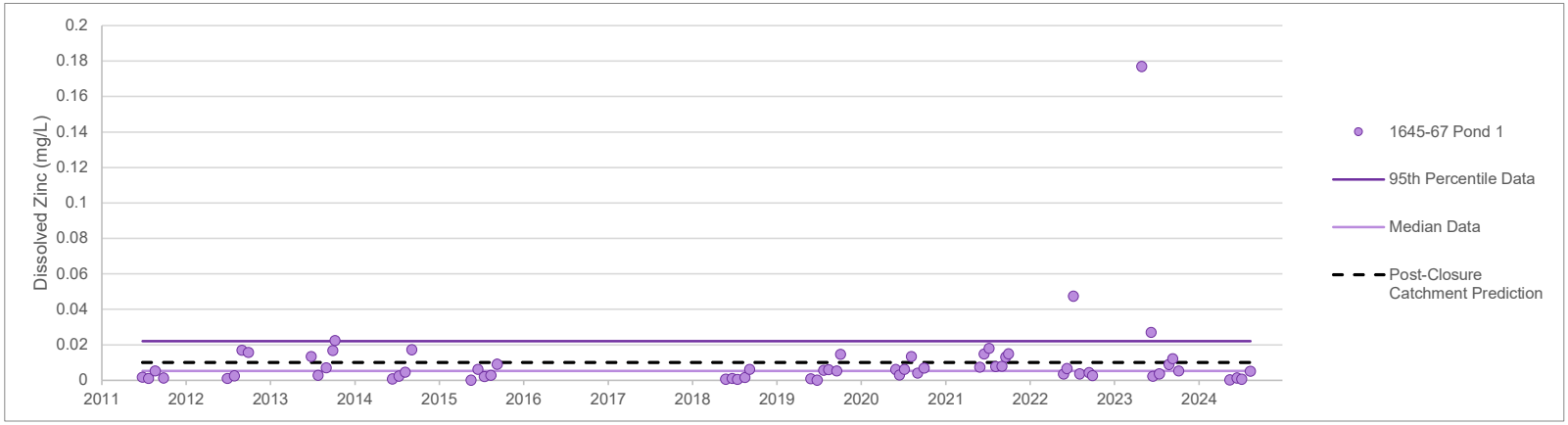
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0019	Wildlife	0.1
Median	0.0004	Human recreational	0.3
Count	63	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



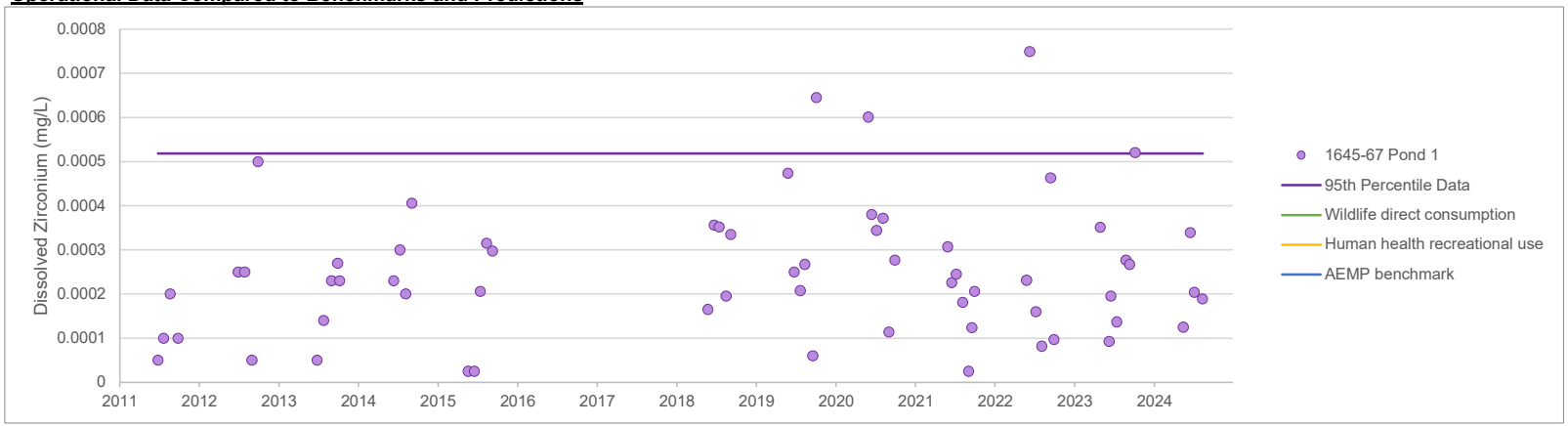


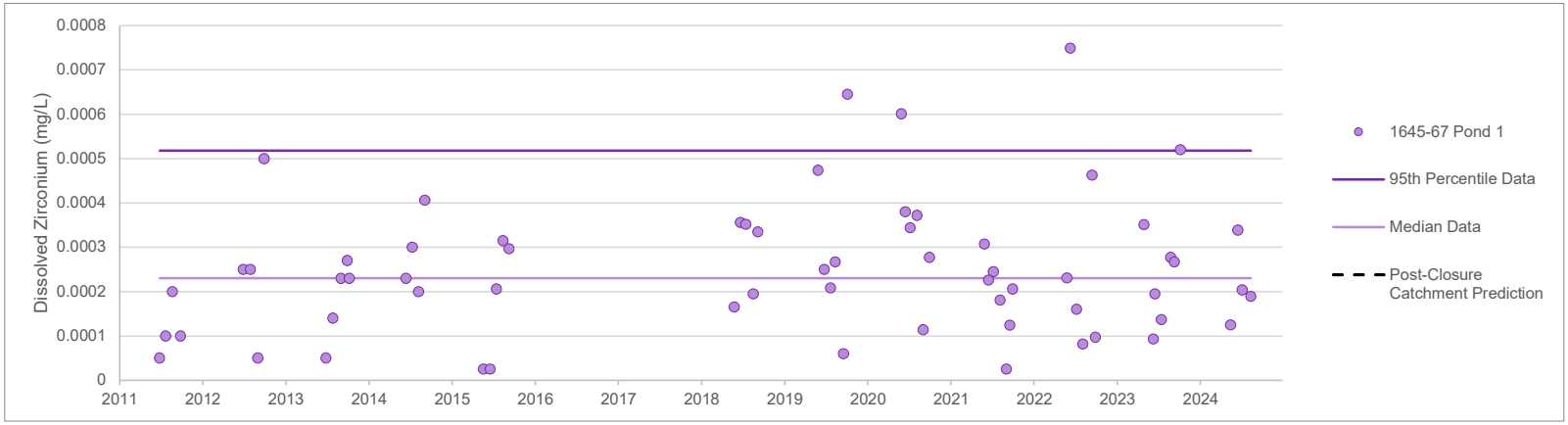
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.022	Wildlife	50
Median	0.005	Human recreational	100
Count	63	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0005	Wildlife	None
Median	0.0002	Human recreational	None
Count	63	AEMP	None

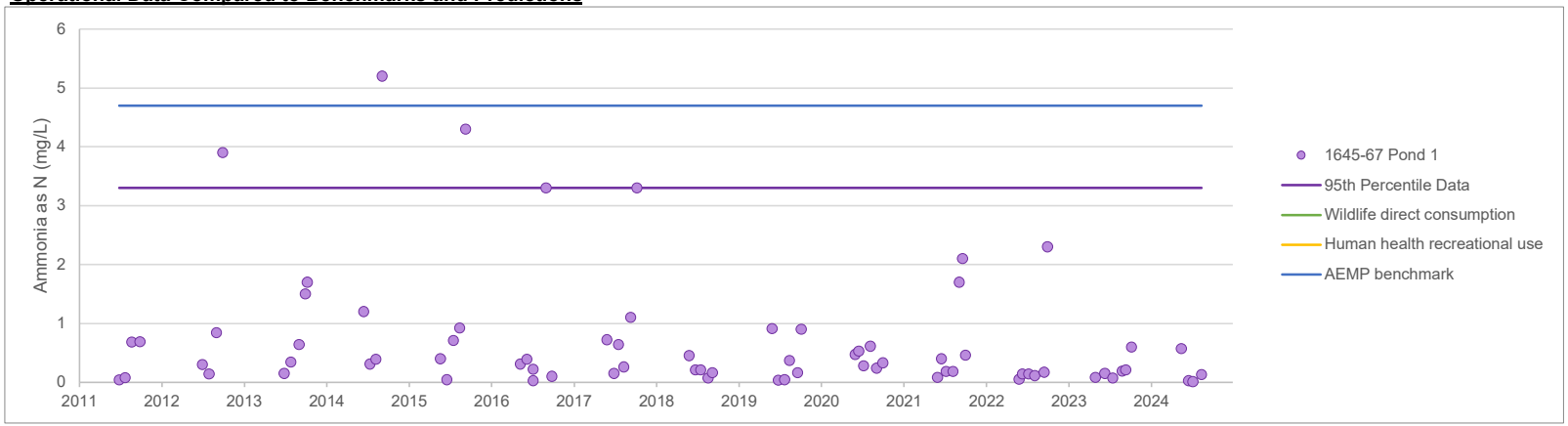
RioTinto | Diavik

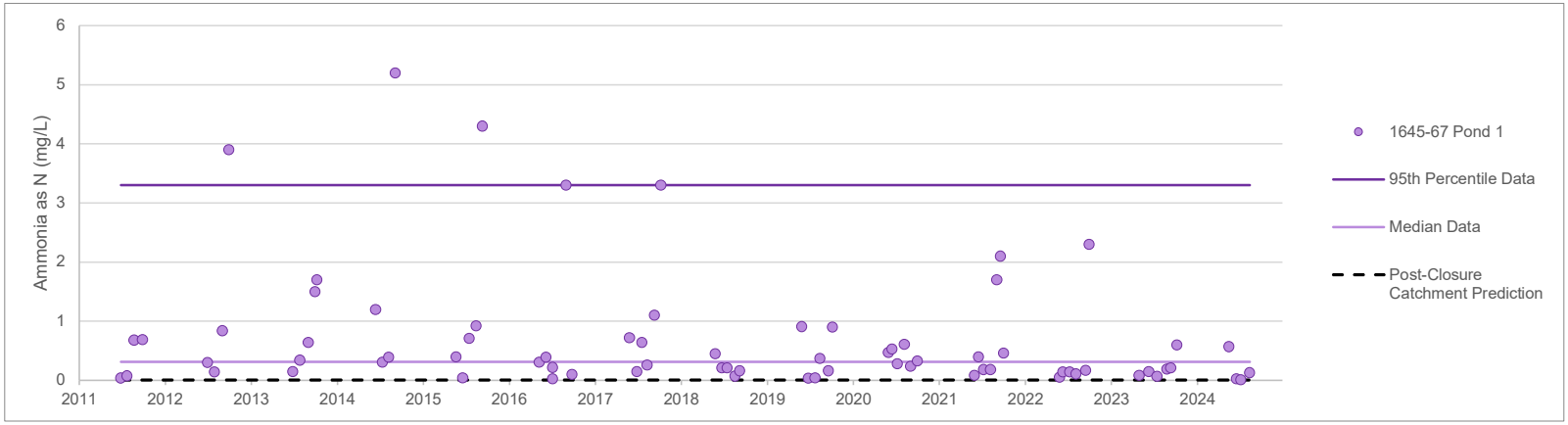
Pond 1

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



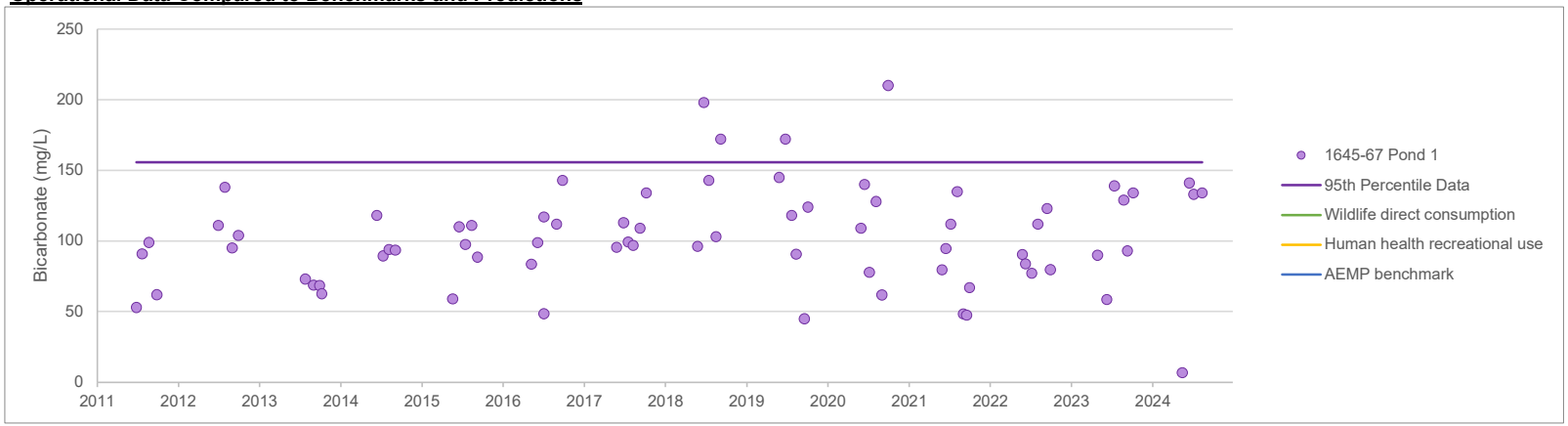


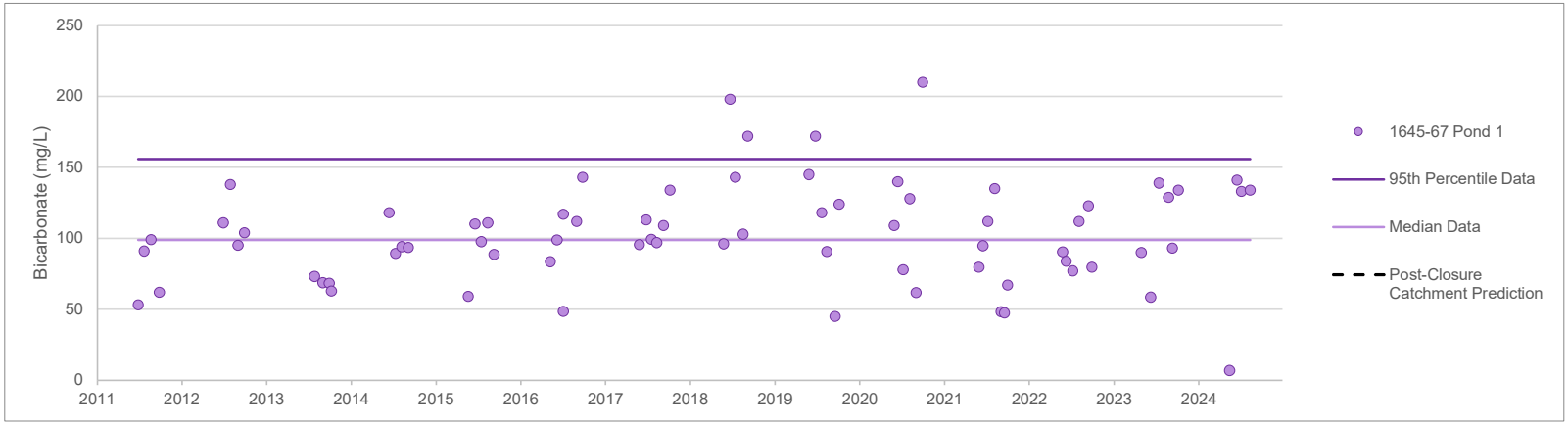
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	3.30	Wildlife	None
Median	0.31	Human recreational	None
Count	74	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



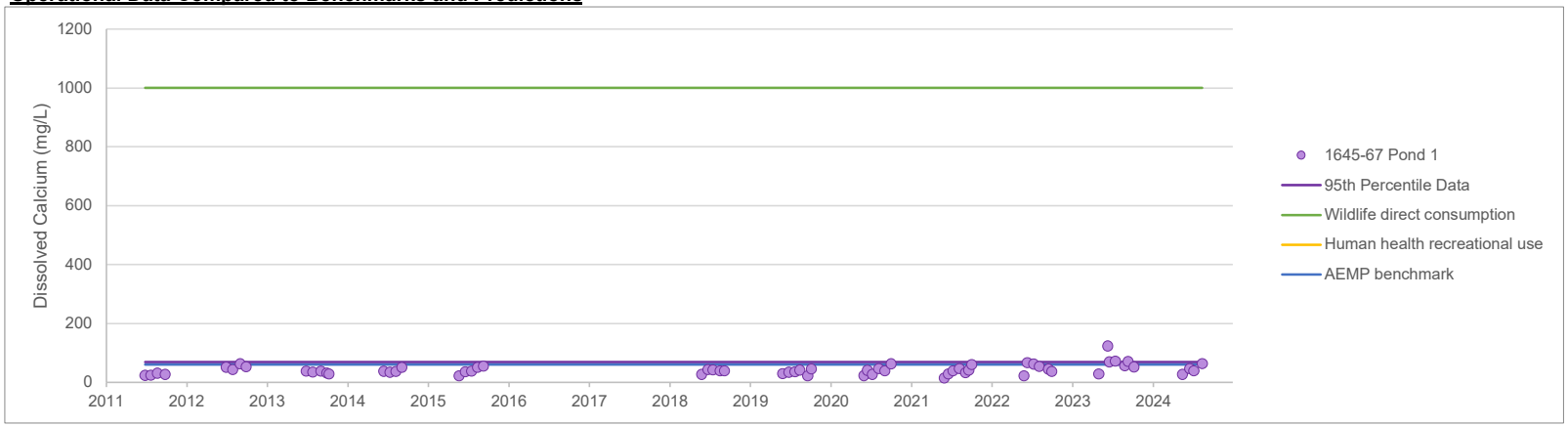


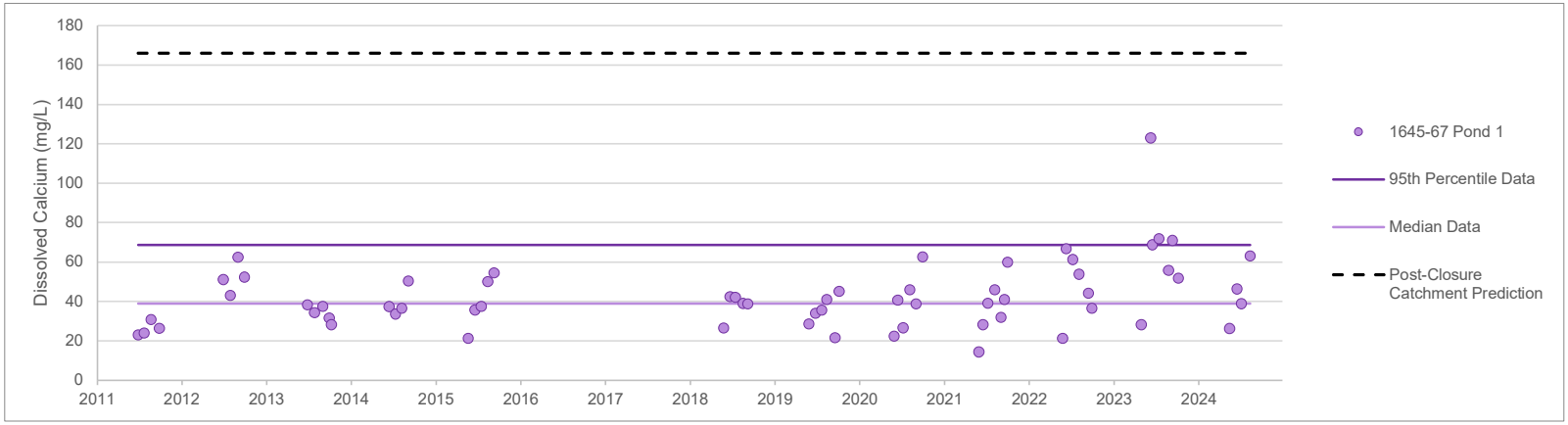
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	155.8	Wildlife	None
Median	98.8	Human recreational	None
Count	73	AEMP	None

Operational Data Compared to Benchmarks and Predictions



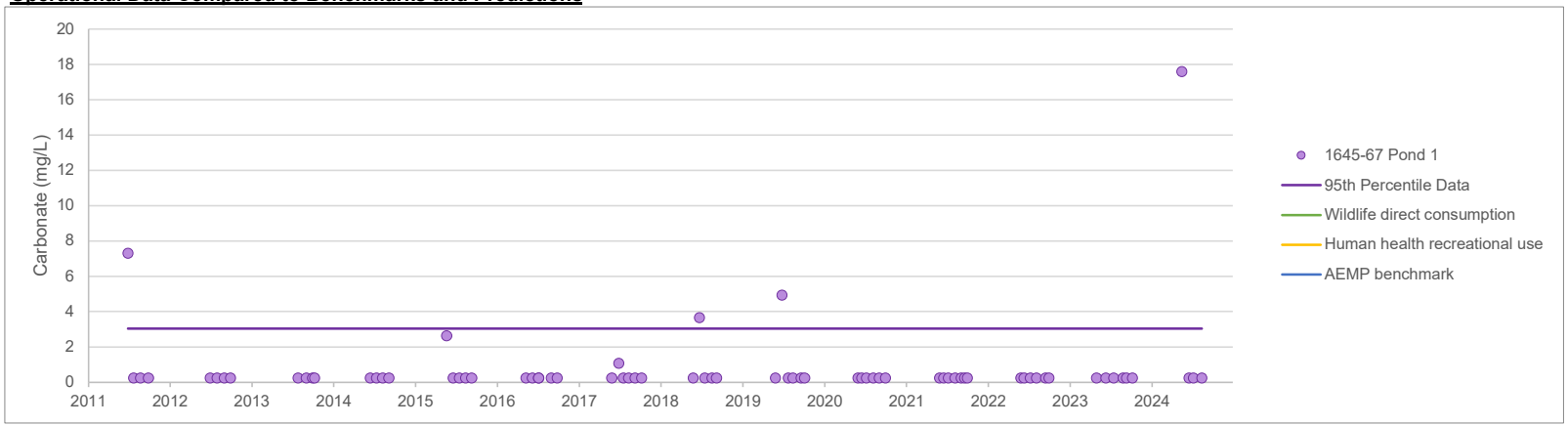


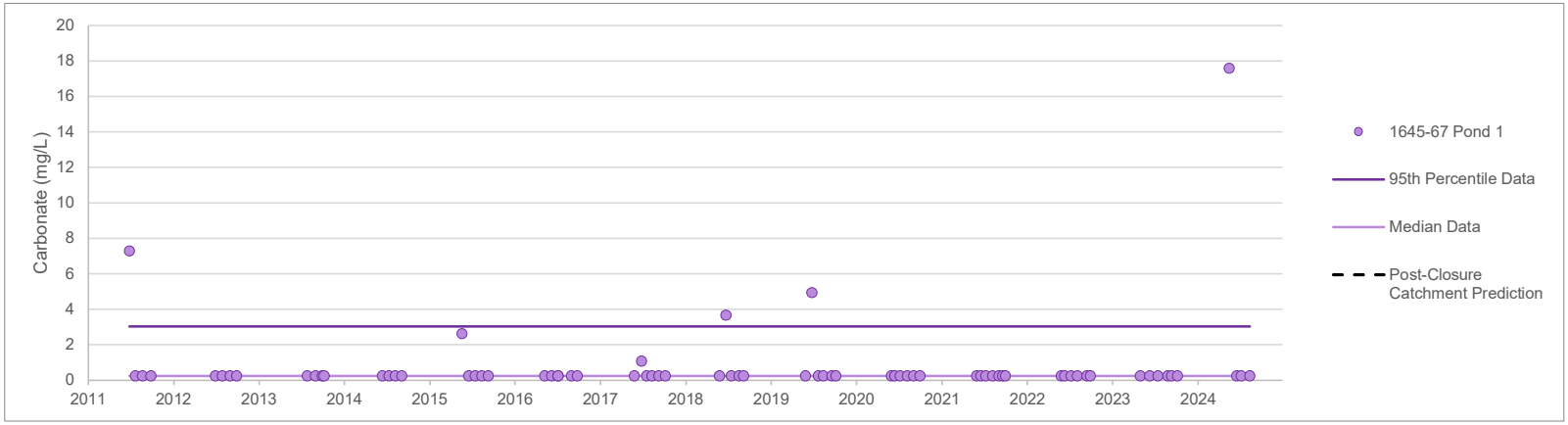
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	68.6	Wildlife	1000
Median	38.9	Human recreational	None
Count	63	AEMP	60

Operational Data Compared to Benchmarks and Predictions



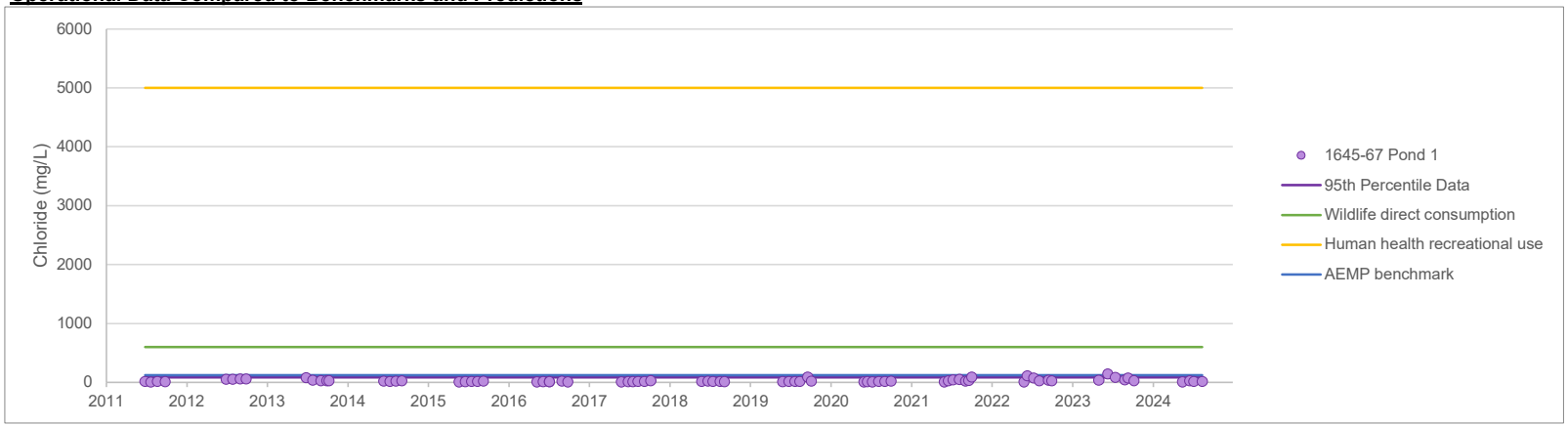


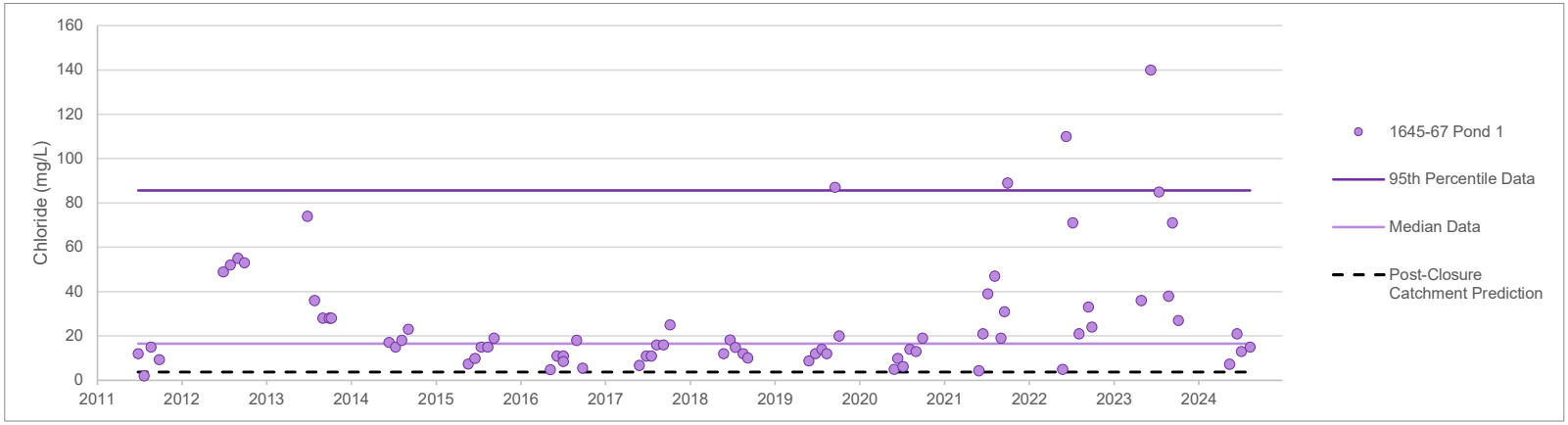
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	3.04	Wildlife	None
Median	0.25	Human recreational	None
Count	73	AEMP	None

Operational Data Compared to Benchmarks and Predictions



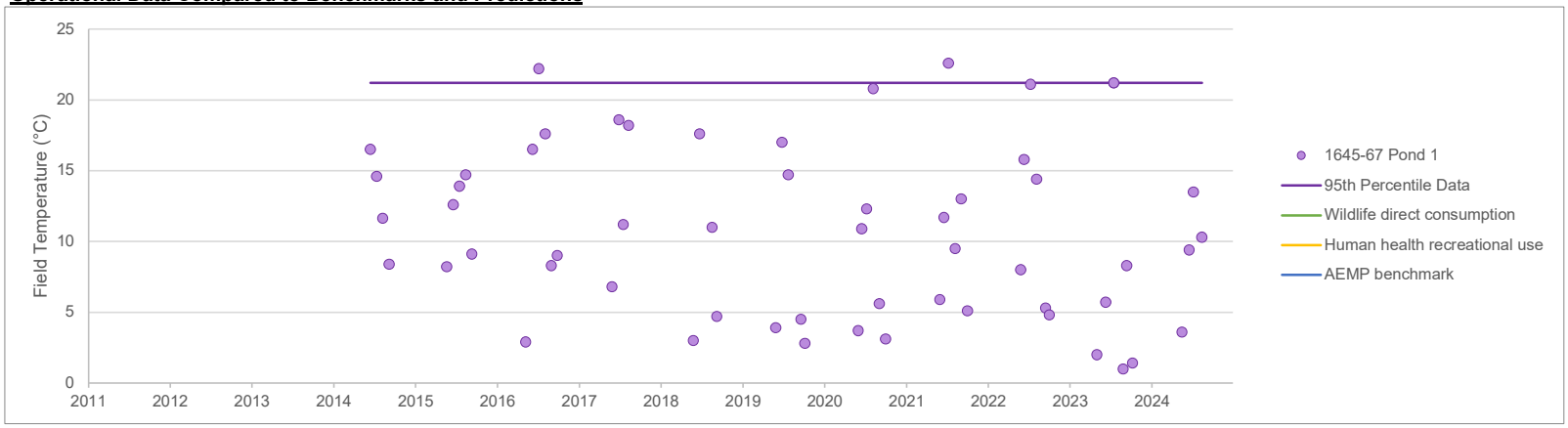


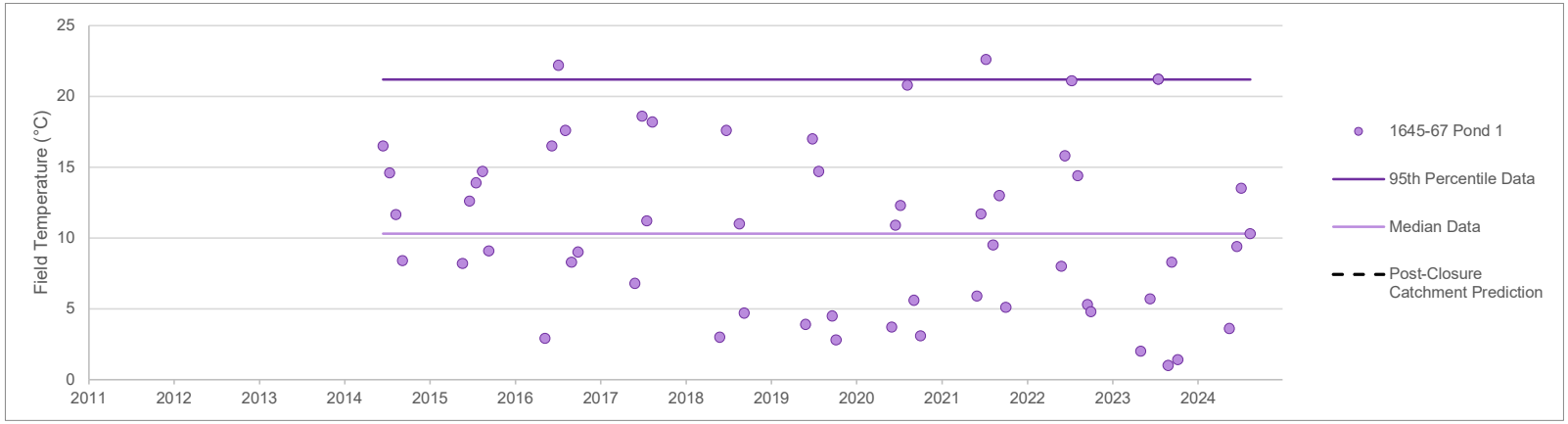
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	85.7	Wildlife	600
Median	16.5	Human recreational	5000
Count	74	AEMP	120

Operational Data Compared to Benchmarks and Predictions



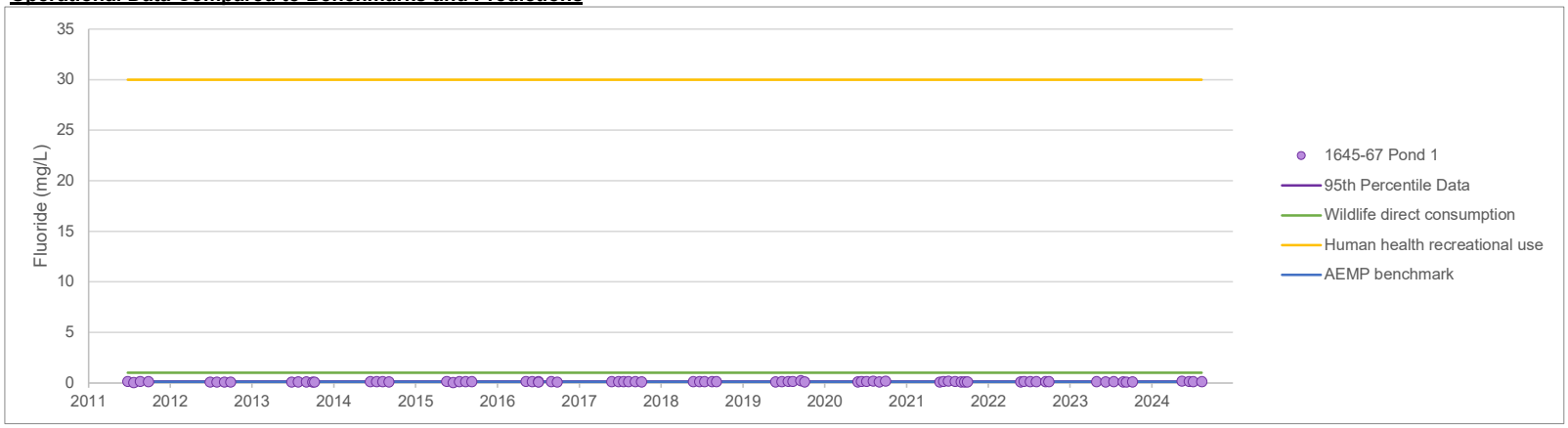


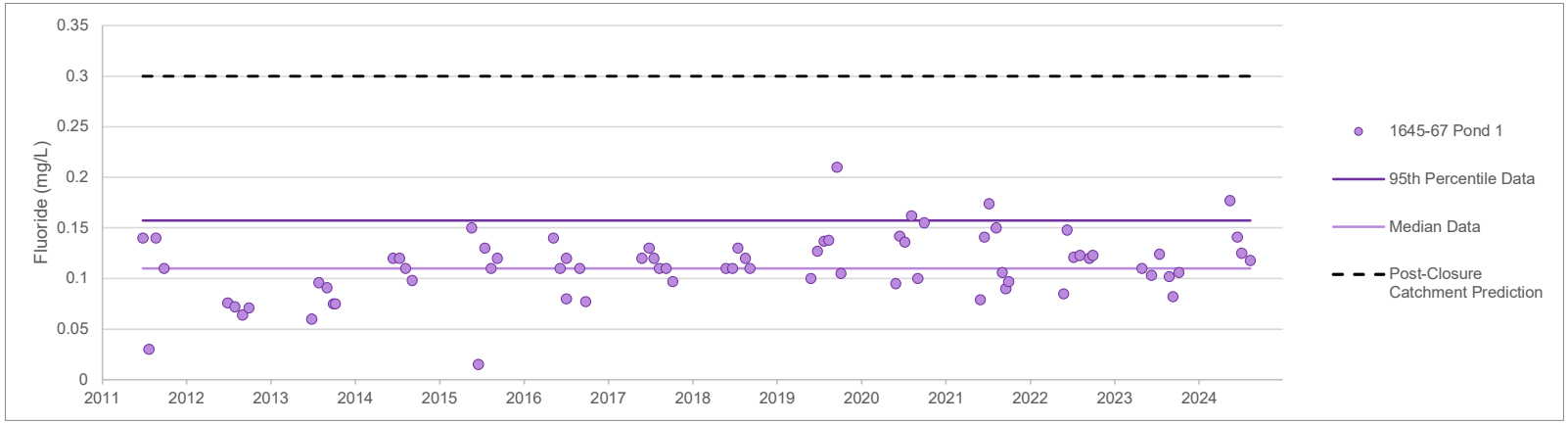
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	21.2	Wildlife	None
Median	10.3	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



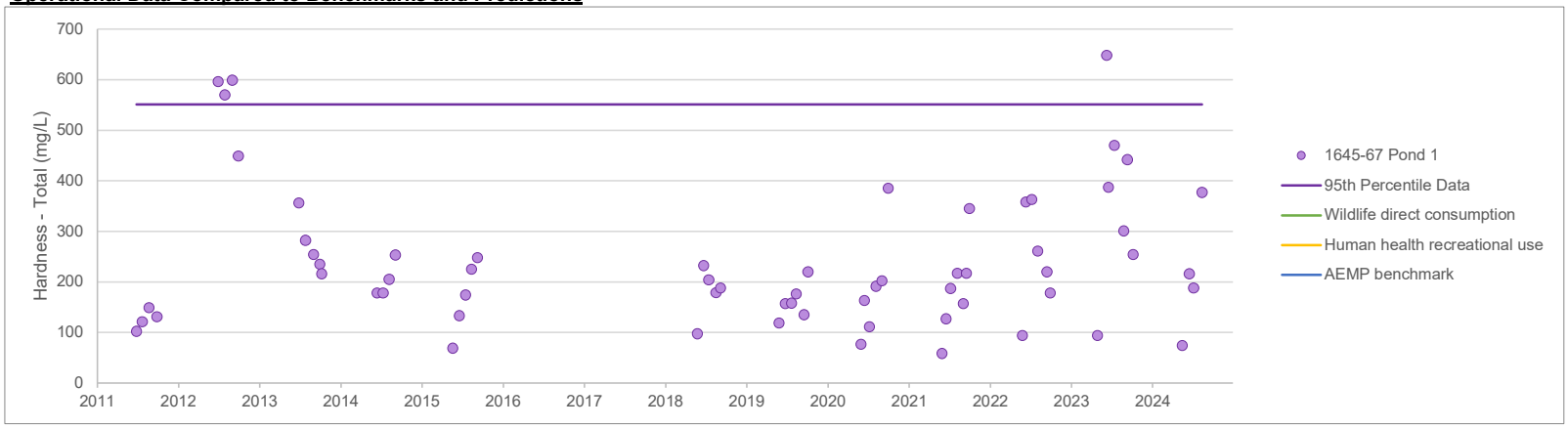


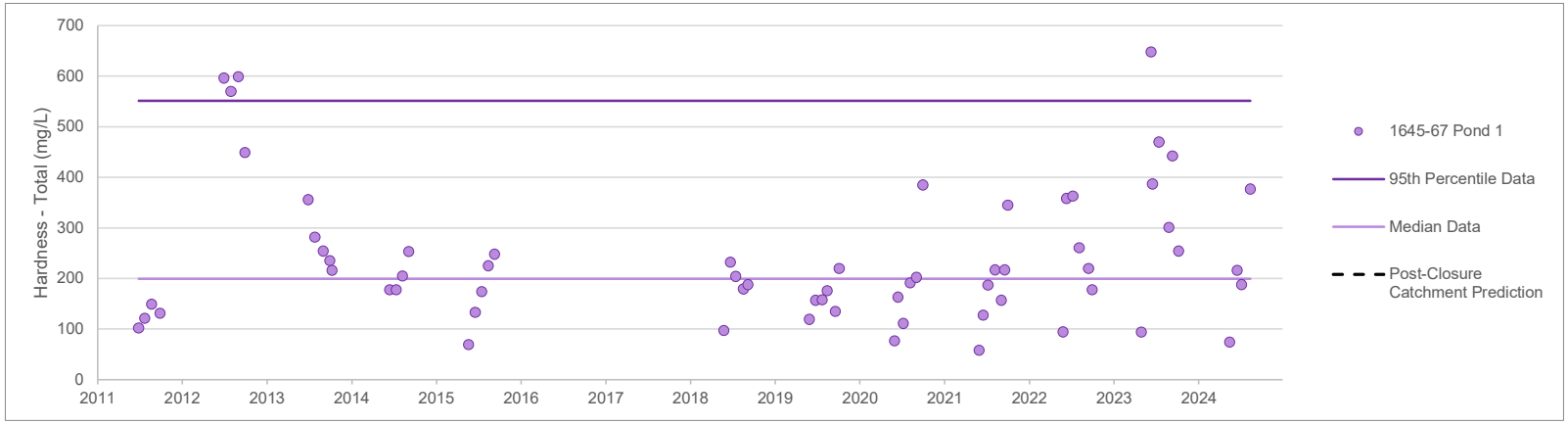
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.16	Wildlife	1
Median	0.11	Human recreational	30
Count	74	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



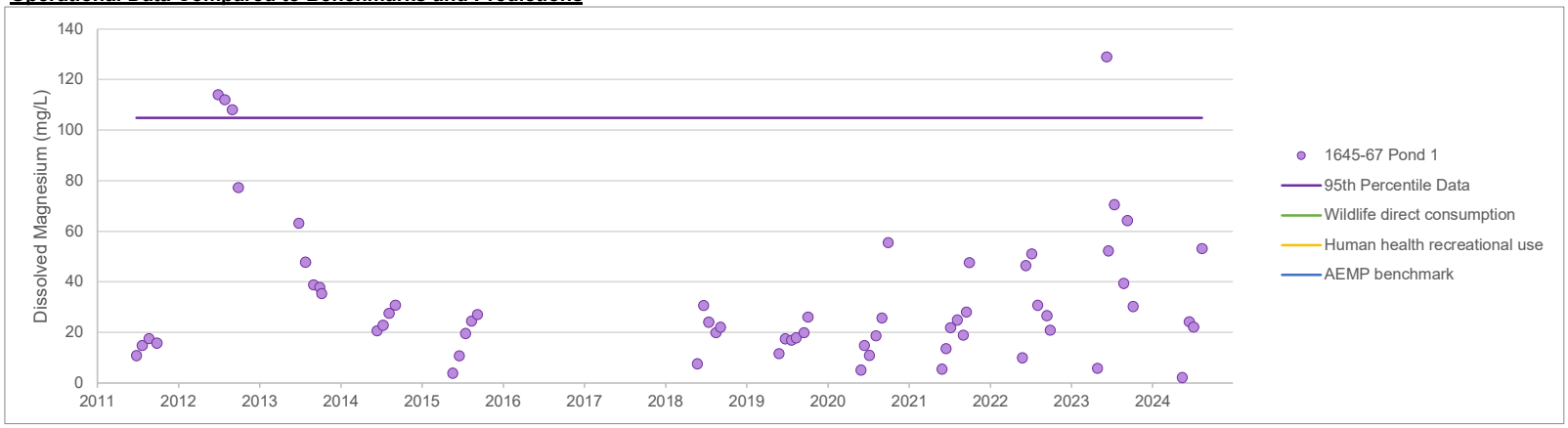


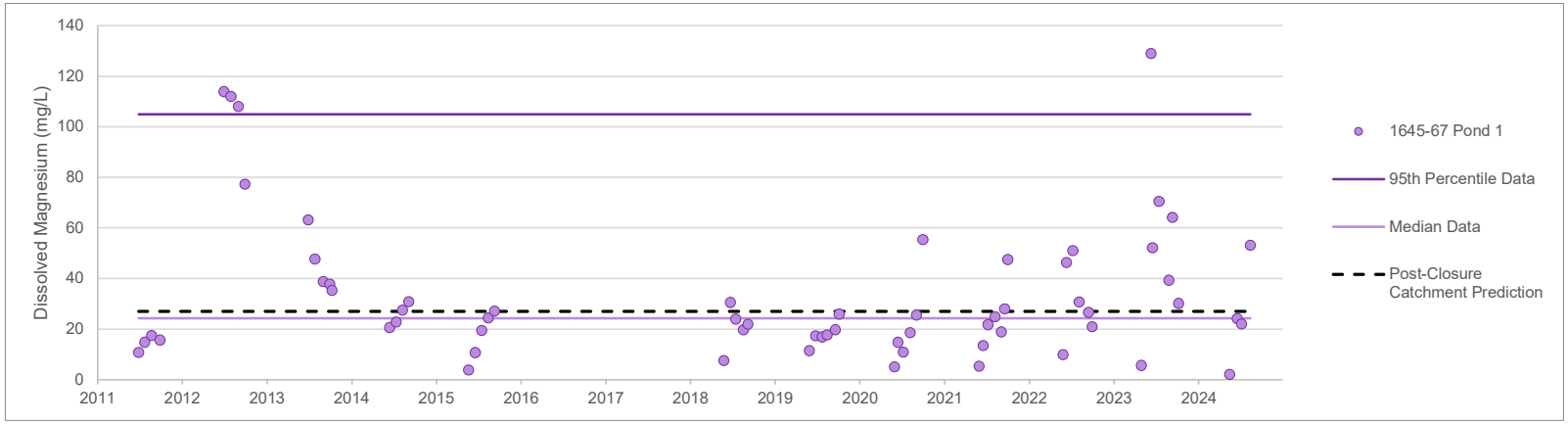
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	551	Wildlife	None
Median	200	Human recreational	None
Count	76	AEMP	None

Operational Data Compared to Benchmarks and Predictions



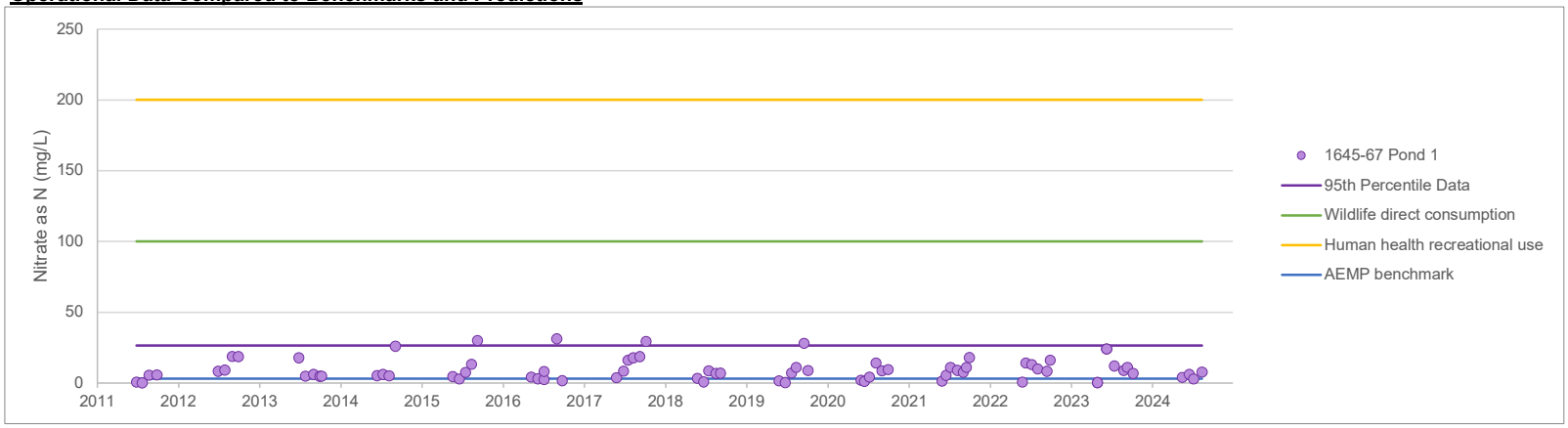


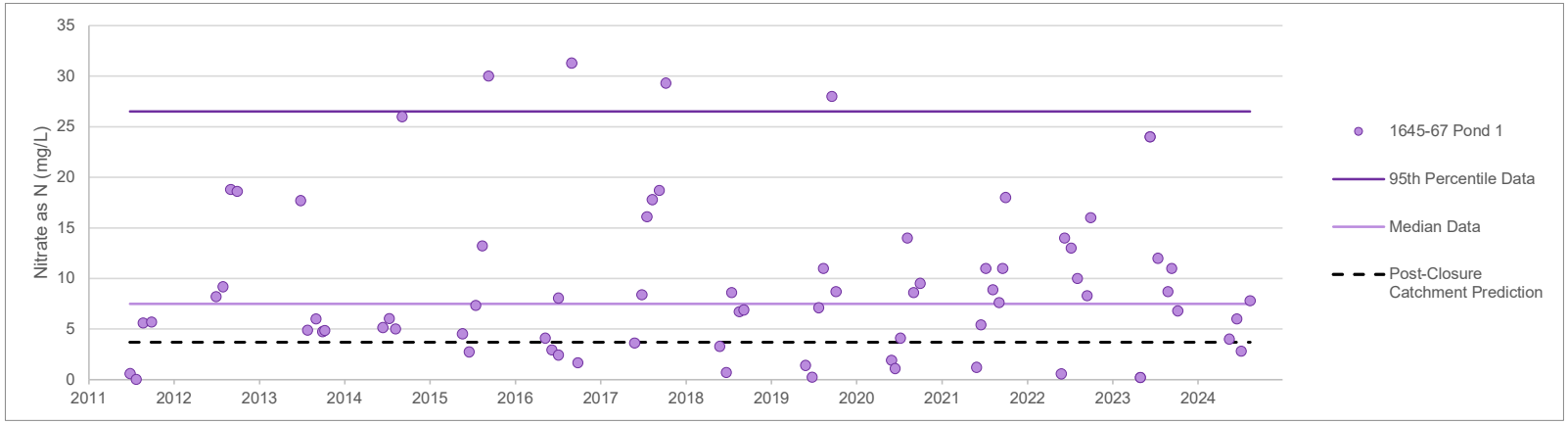
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	104.9	Wildlife	None
Median	24.2	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



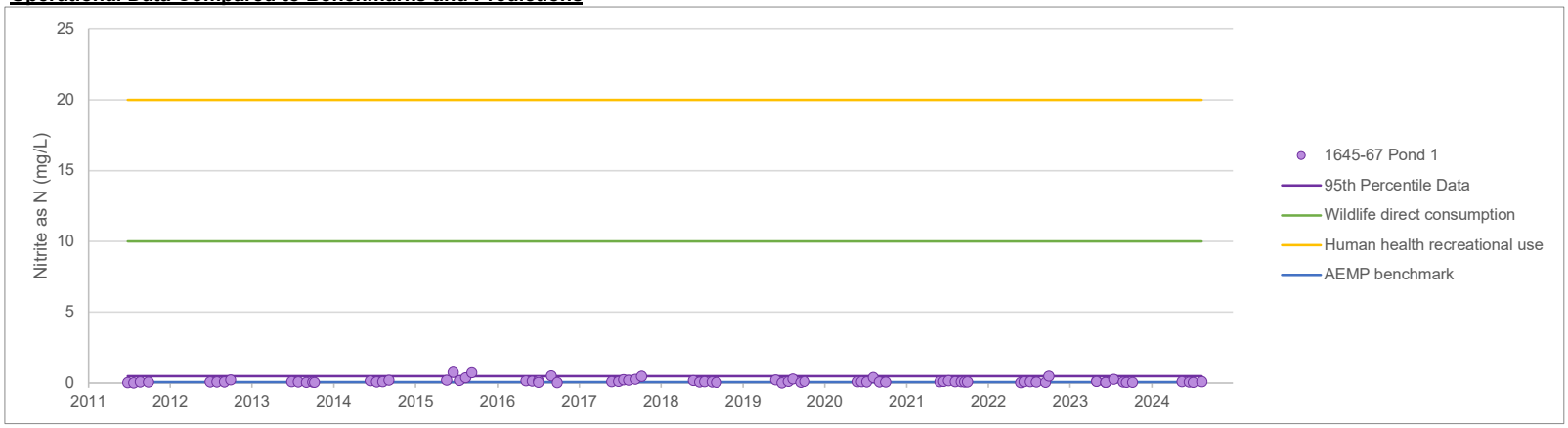


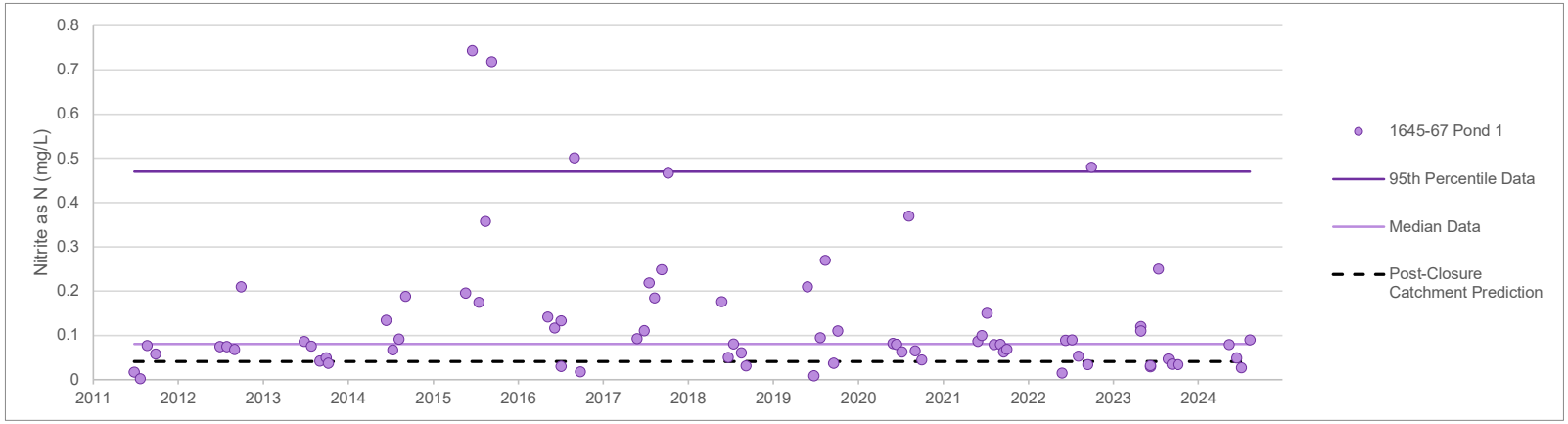
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	26.5	Wildlife	100
Median	7.5	Human recreational	200
Count	76	AEMP	3

Operational Data Compared to Benchmarks and Predictions



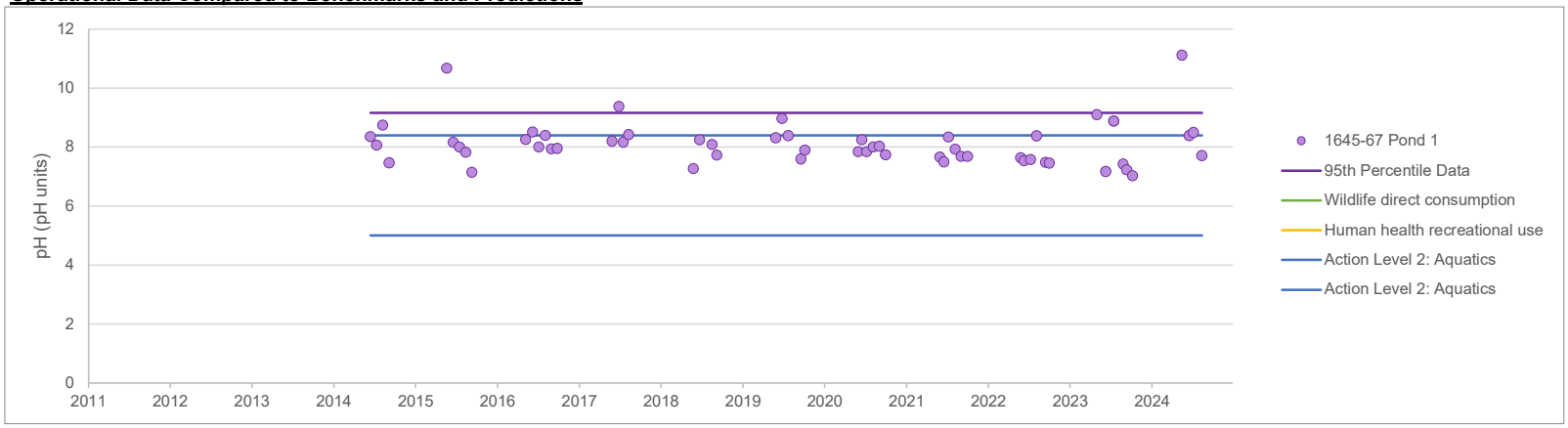


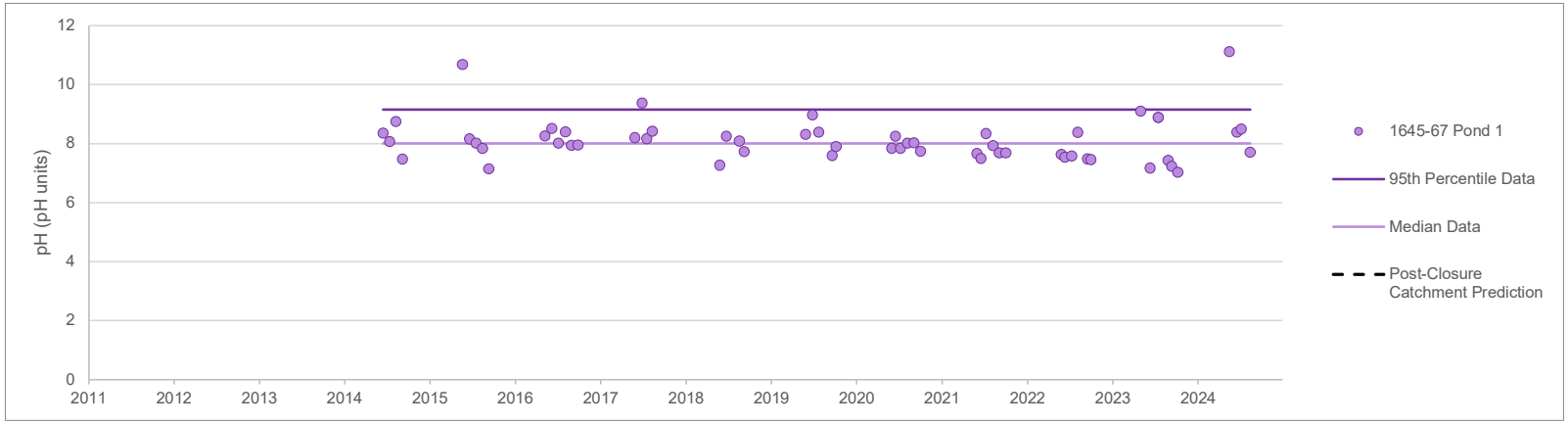
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.470	Wildlife	10.0
Median	0.081	Human recreational	20.0
Count	76	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



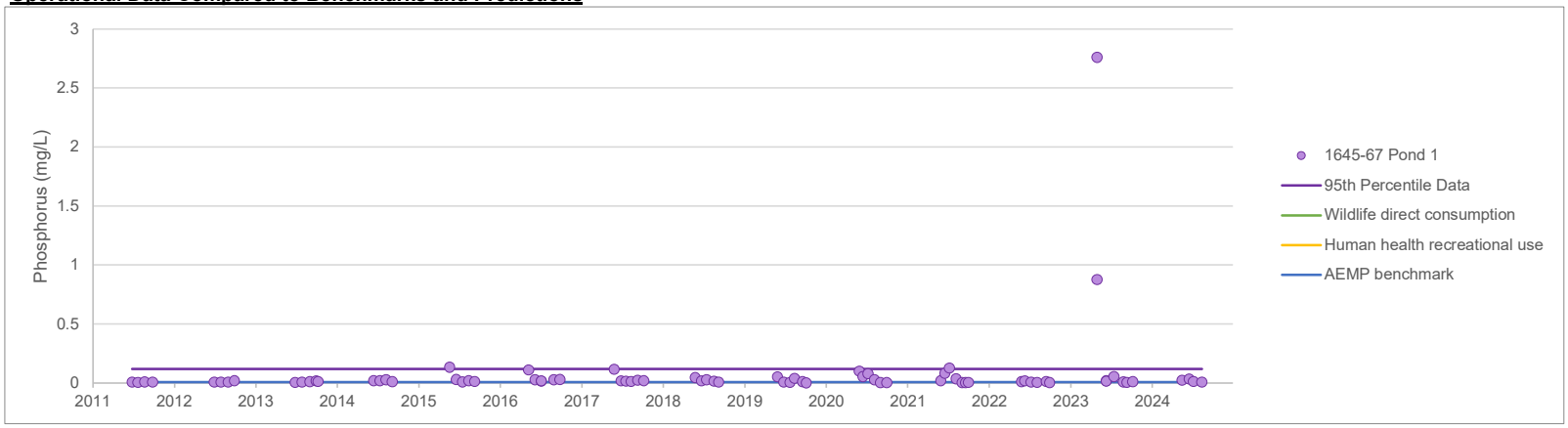


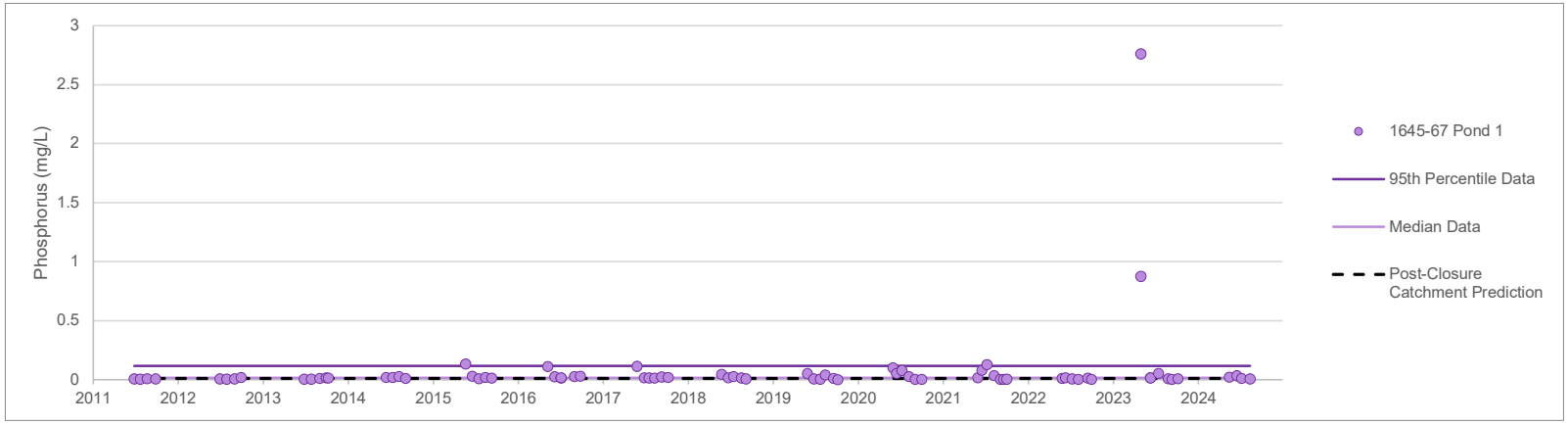
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	9.2	Wildlife	None
Median	8.0	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



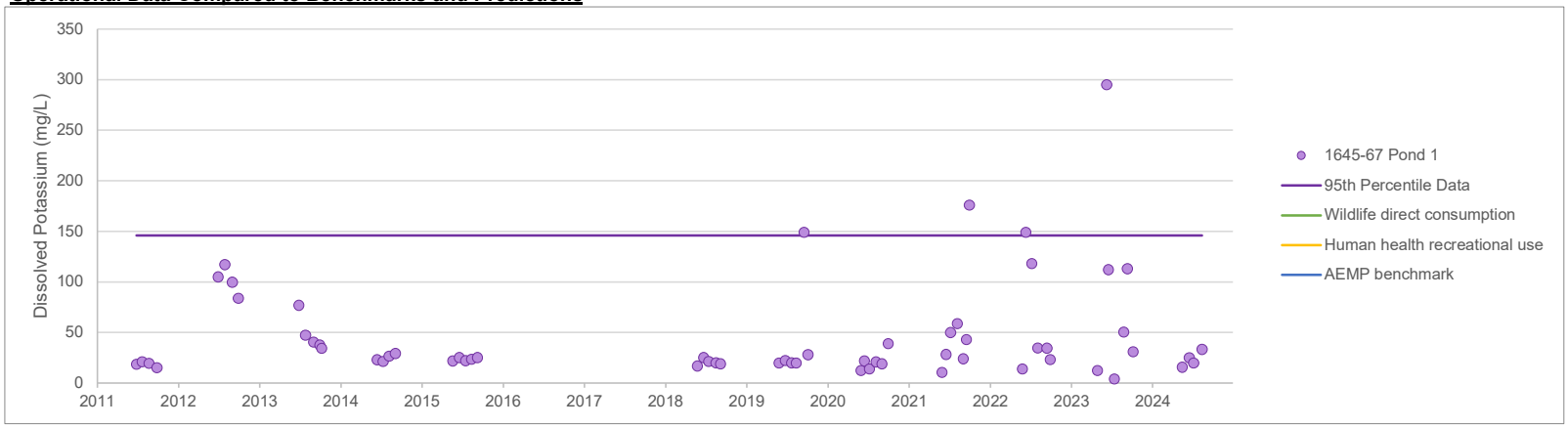


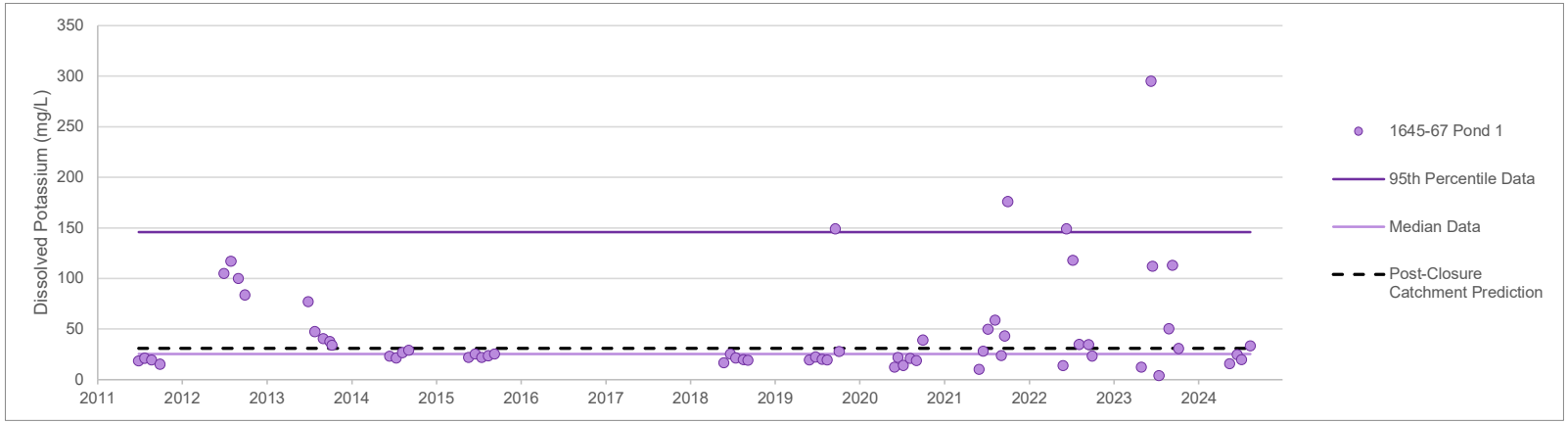
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.117	Wildlife	None
Median	0.014	Human recreational	None
Count	76	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



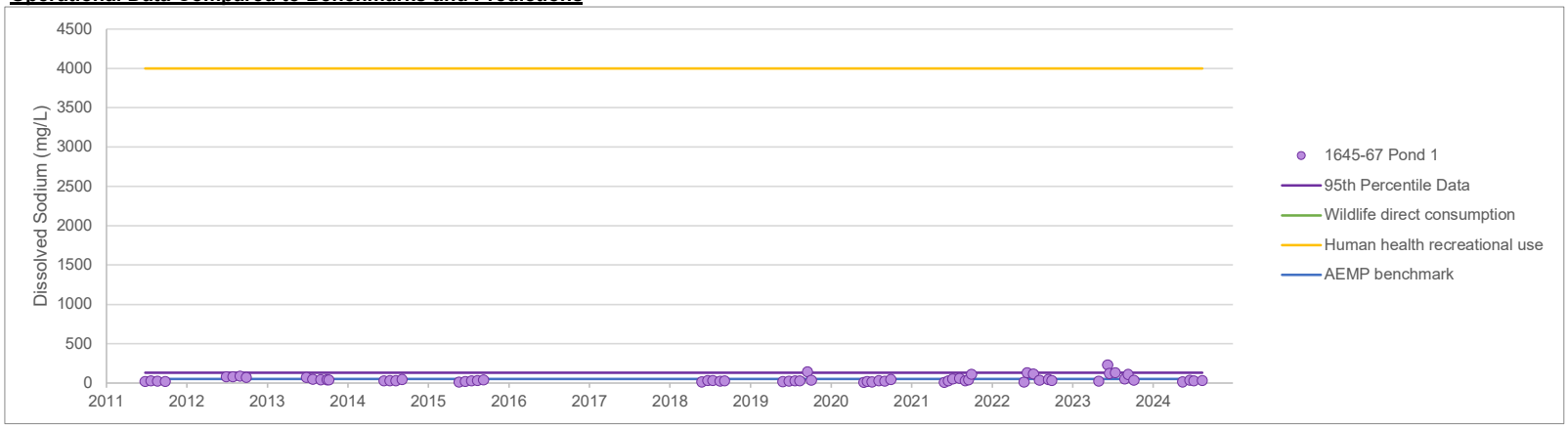


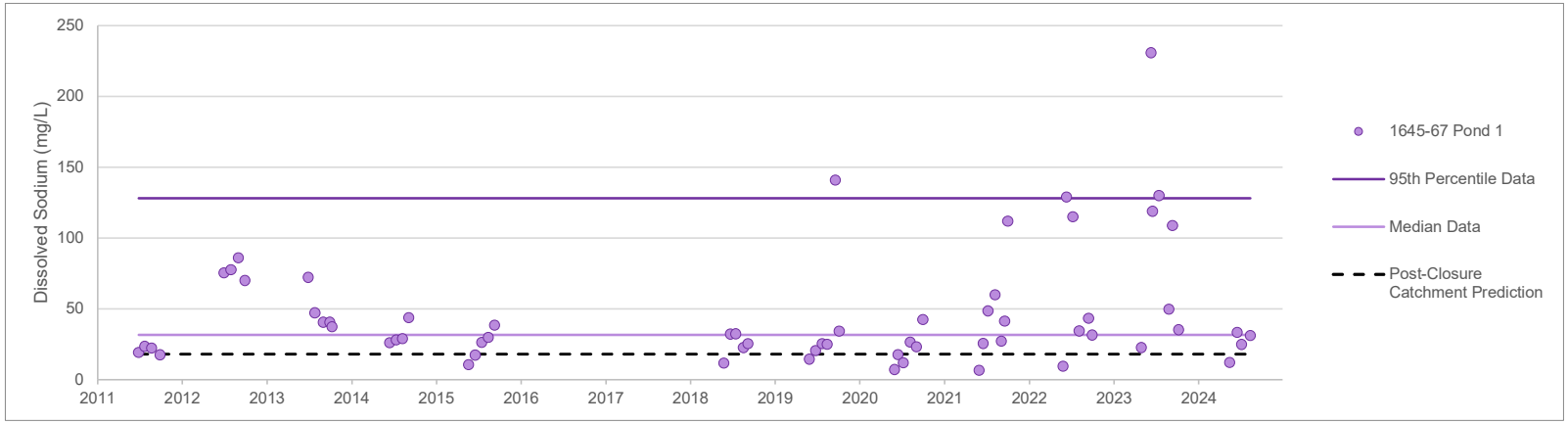
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	145.9	Wildlife	None
Median	25.2	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



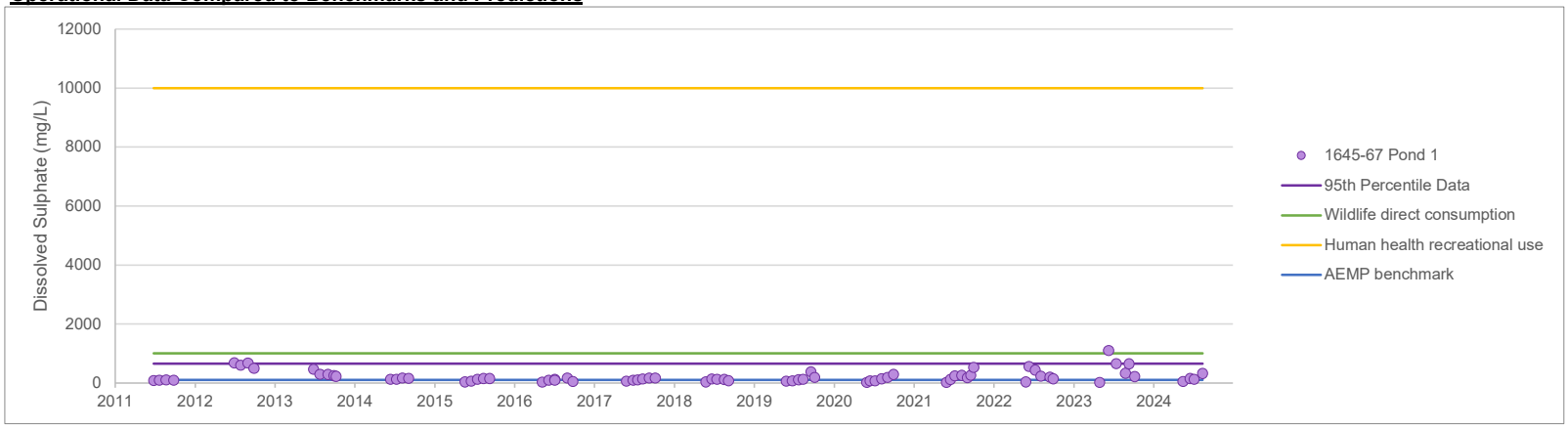


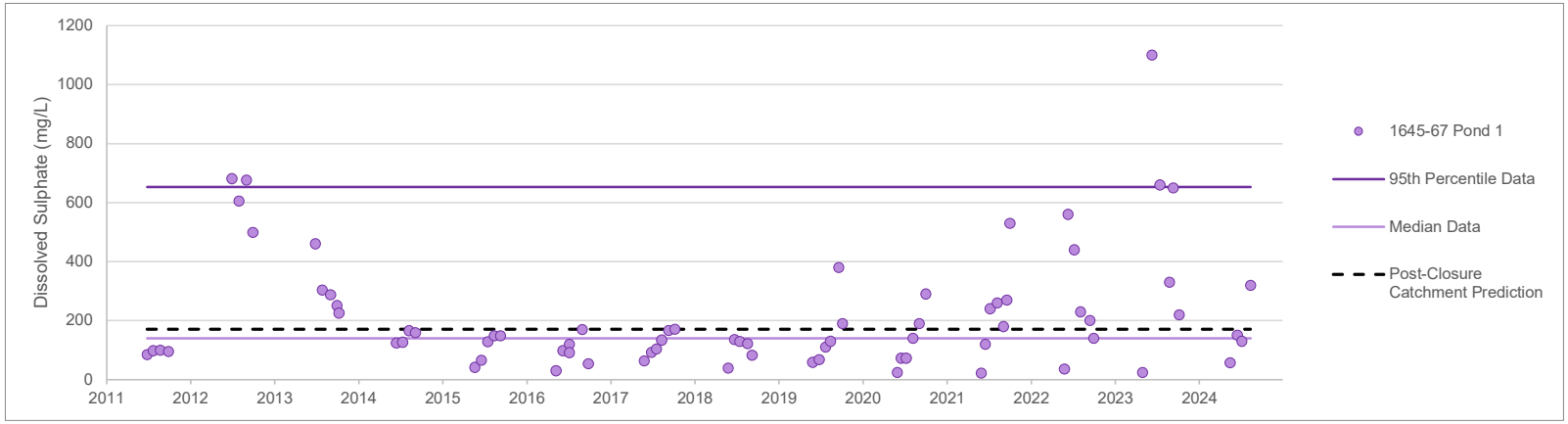
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	128.0	Wildlife	None
Median	31.5	Human recreational	4000
Count	63	AEMP	52

Operational Data Compared to Benchmarks and Predictions



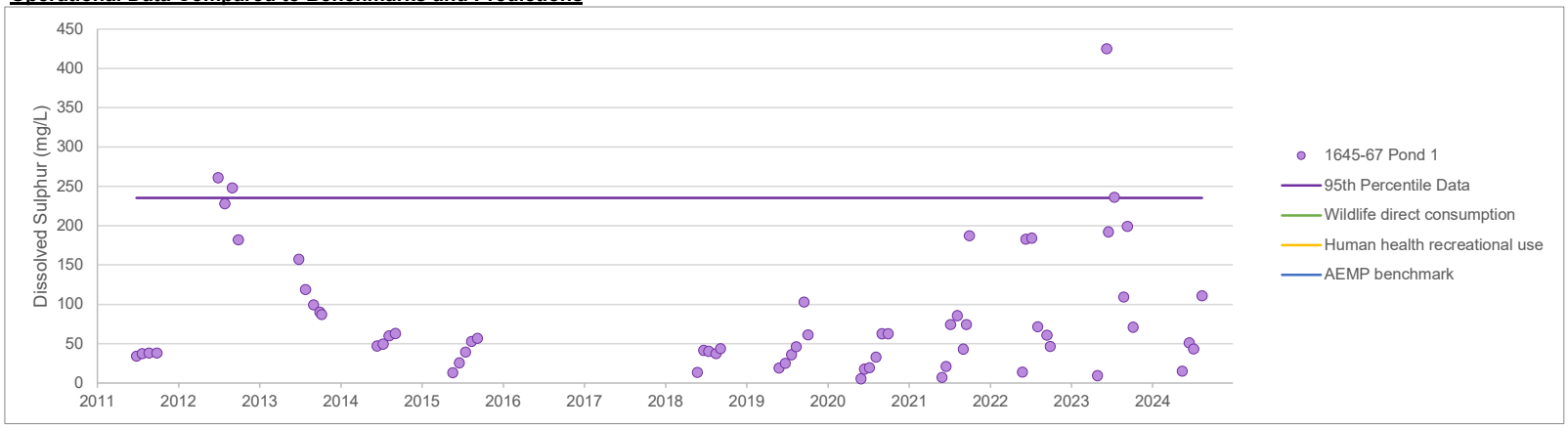


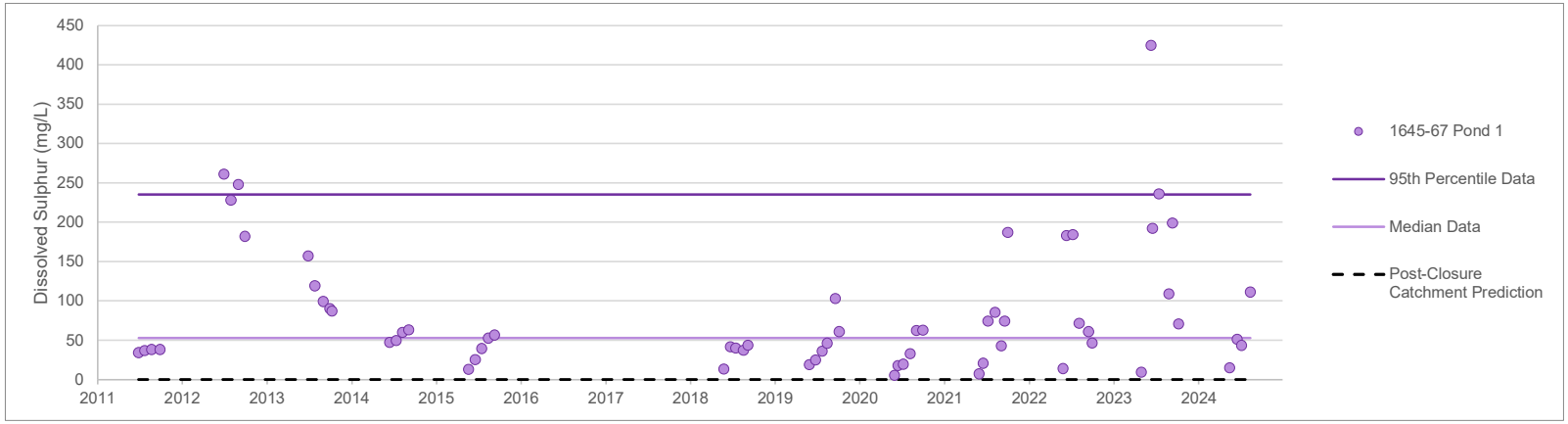
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	654	Wildlife	1000
Median	140	Human recreational	10000
Count	74	AEMP	100

Operational Data Compared to Benchmarks and Predictions



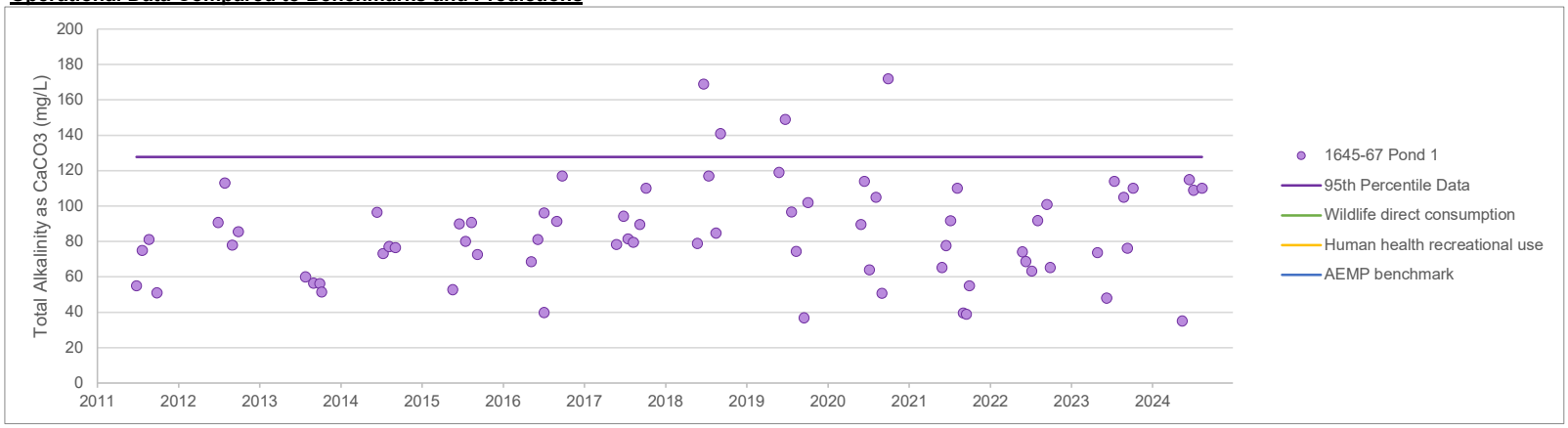


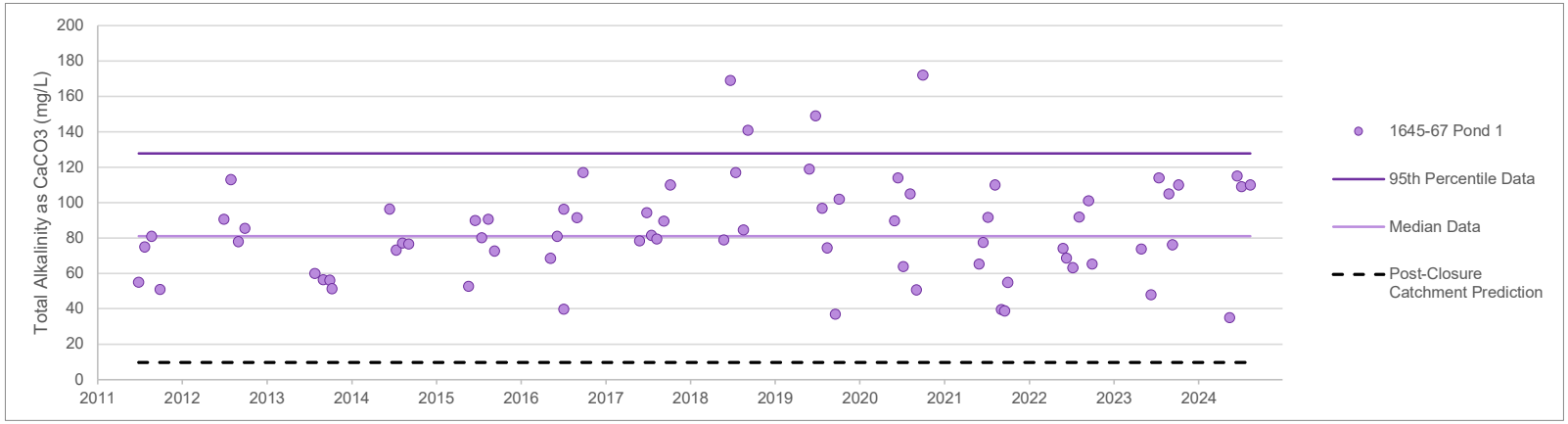
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	235.2	Wildlife	None
Median	52.7	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



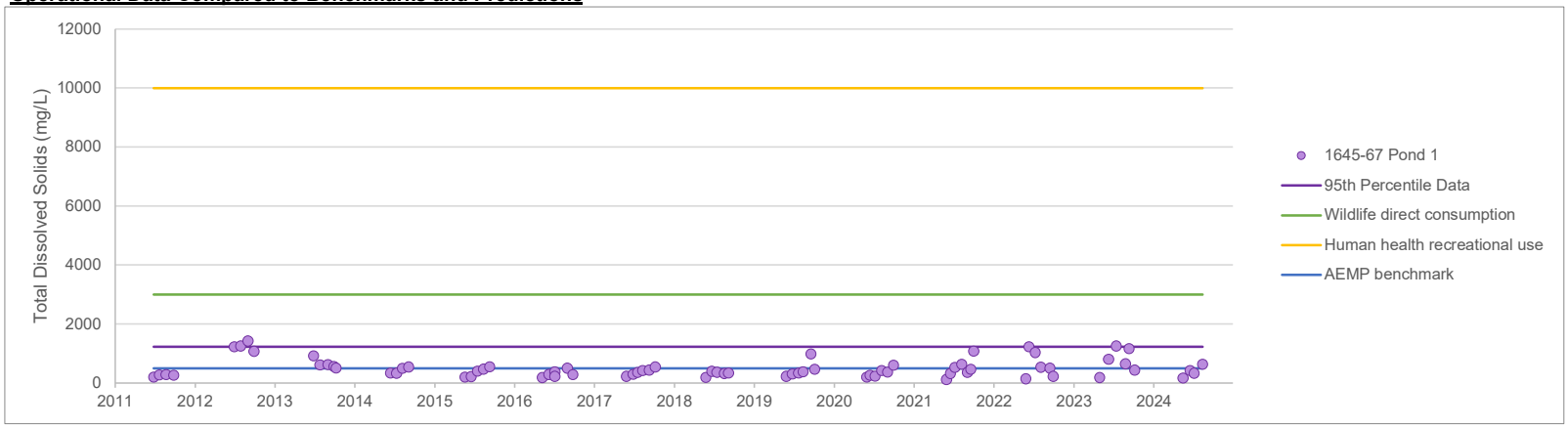


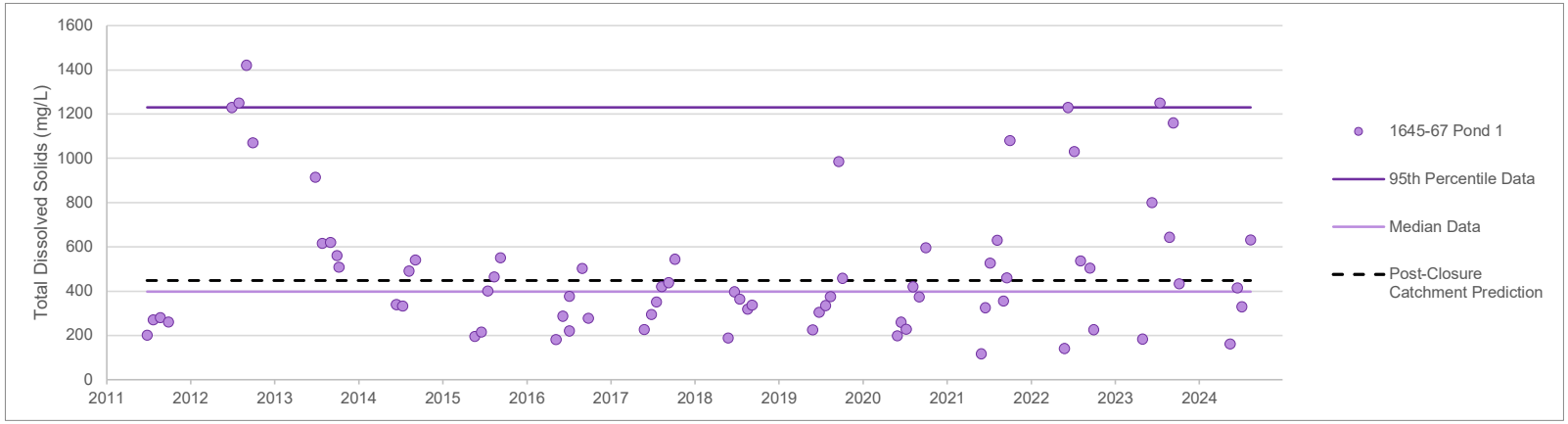
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	127.8	Wildlife	None
Median	81.0	Human recreational	None
Count	73	AEMP	None

Operational Data Compared to Benchmarks and Predictions



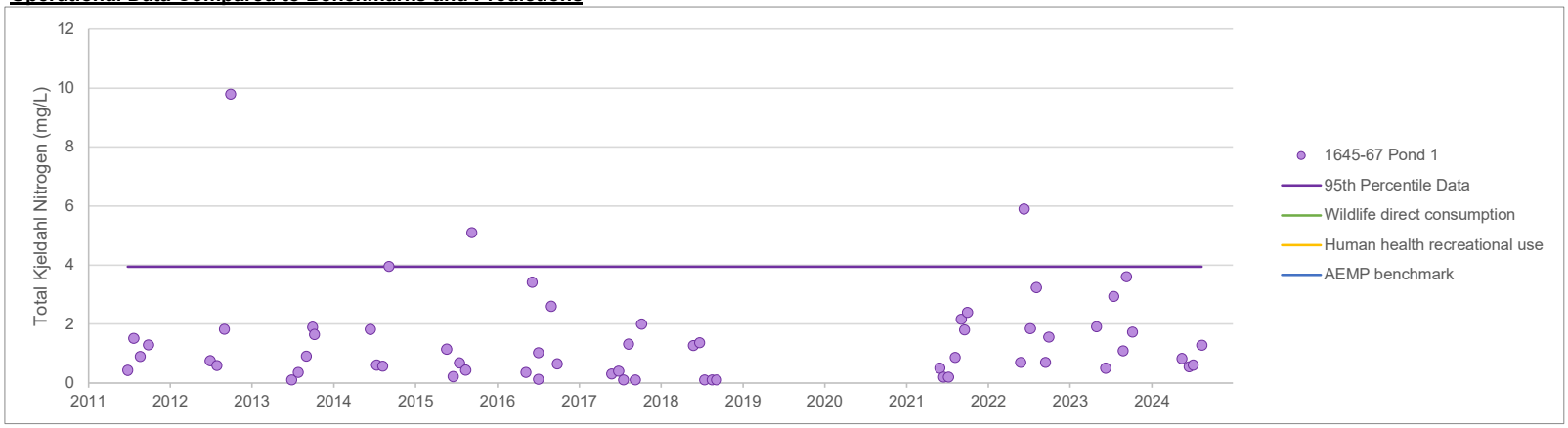


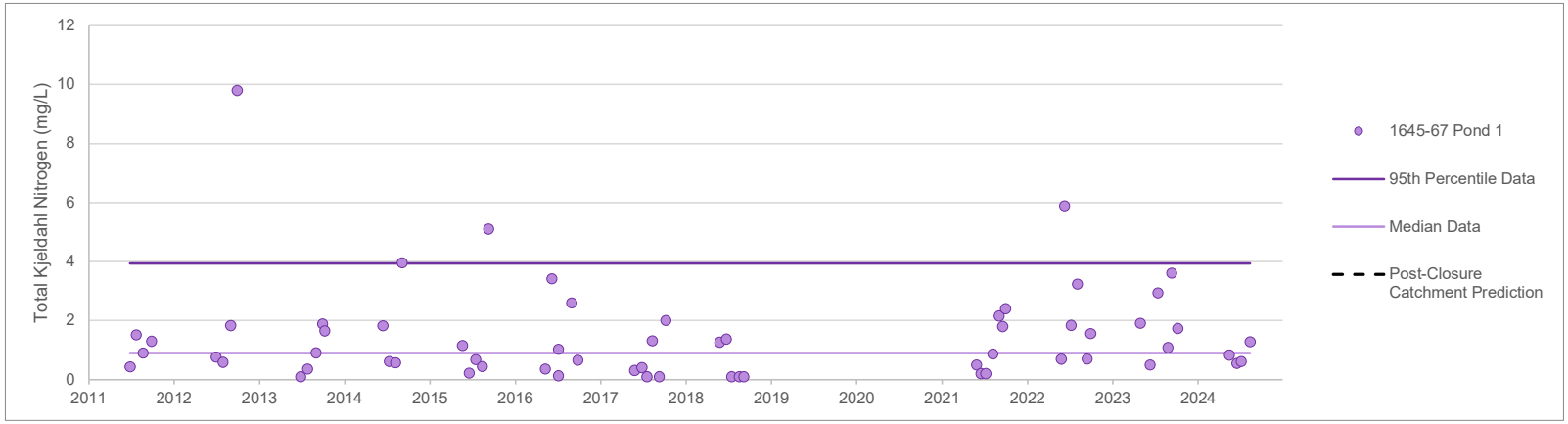
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	1230	Wildlife	3000
Median	398	Human recreational	10000
Count	74	AEMP	500

Operational Data Compared to Benchmarks and Predictions



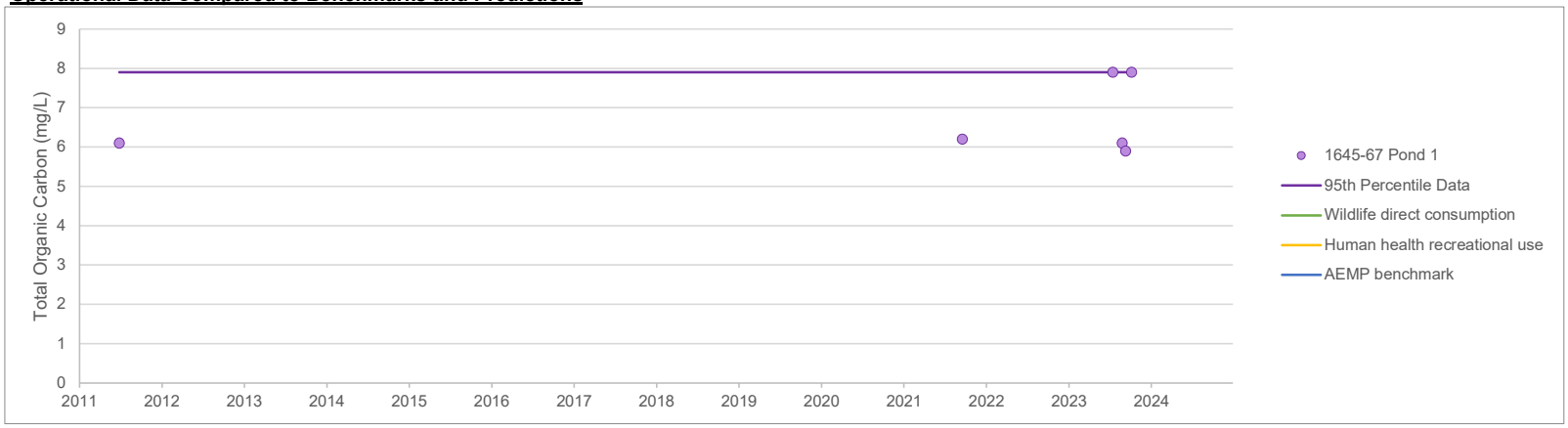


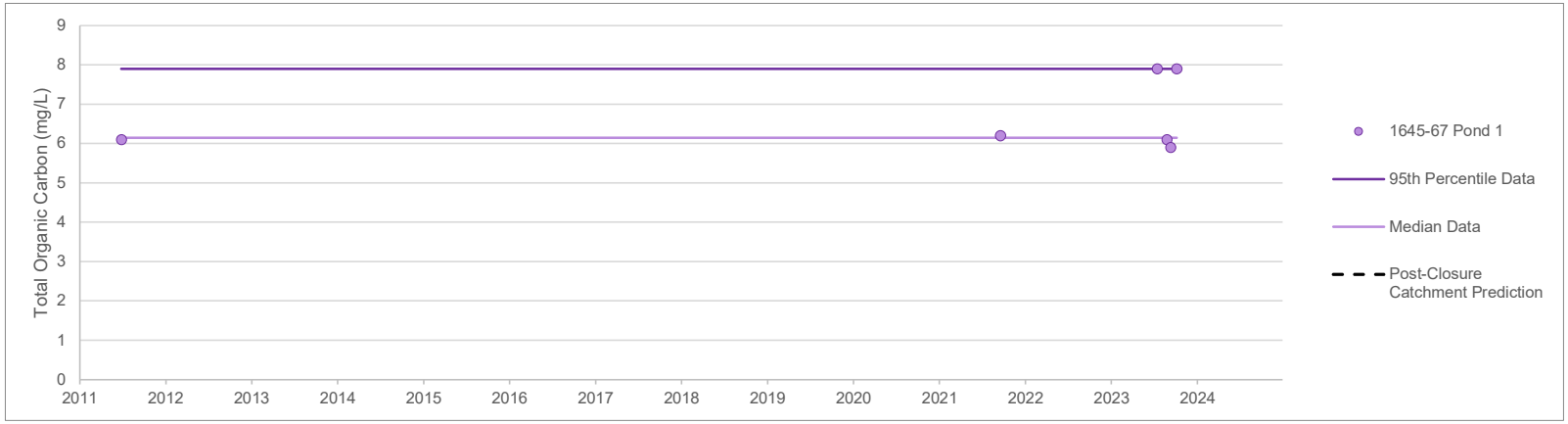
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	3.9	Wildlife	None
Median	0.9	Human recreational	None
Count	62	AEMP	None

Operational Data Compared to Benchmarks and Predictions



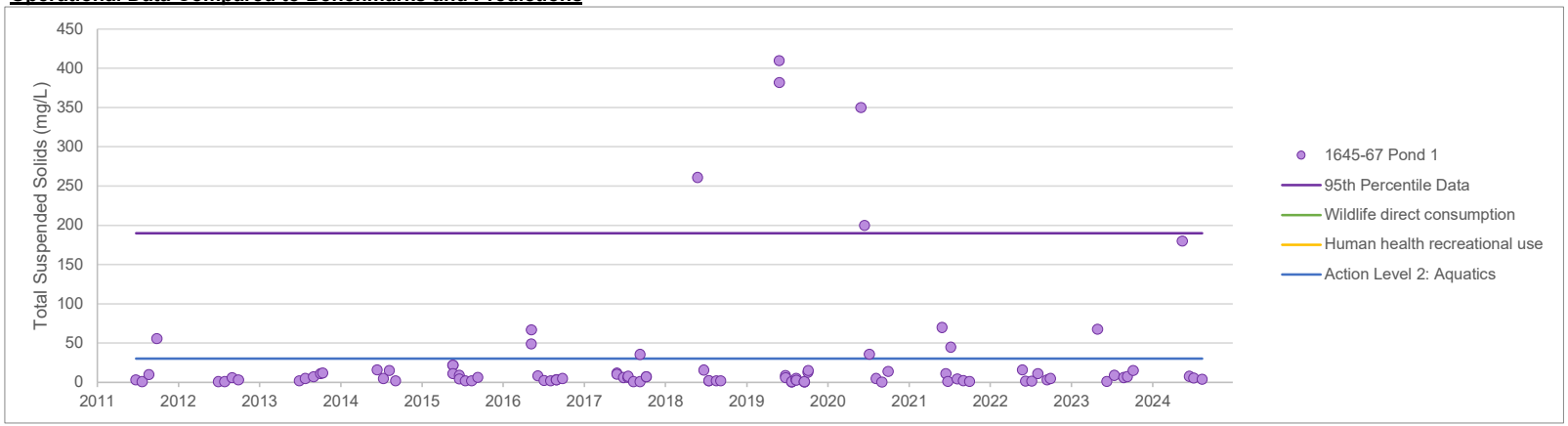


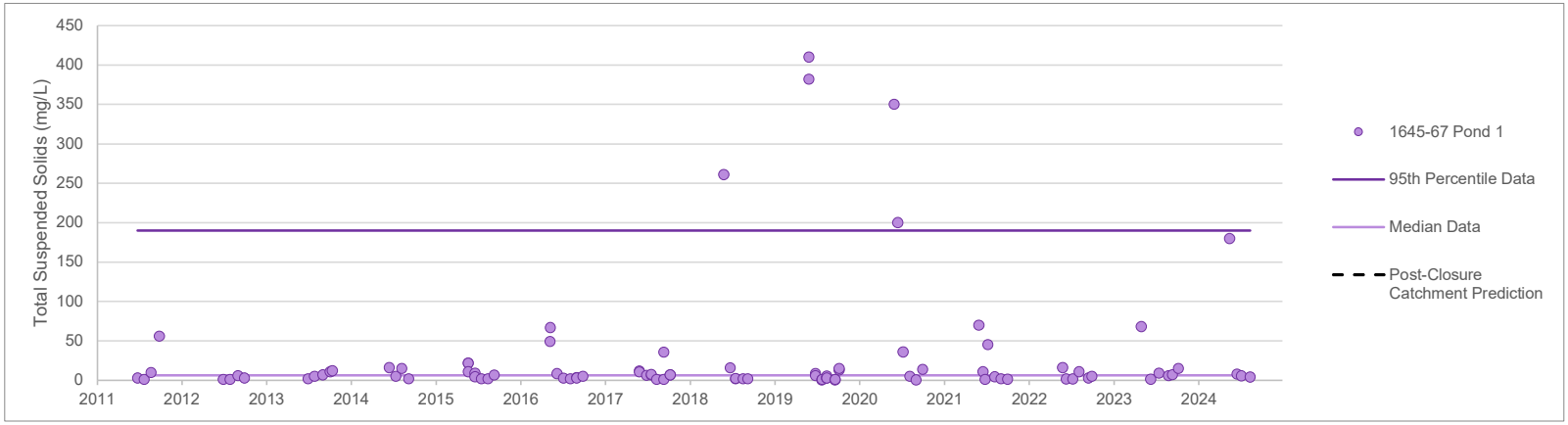
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	7.9	Wildlife	None
Median	6.2	Human recreational	None
Count	6	AEMP	None

Operational Data Compared to Benchmarks and Predictions



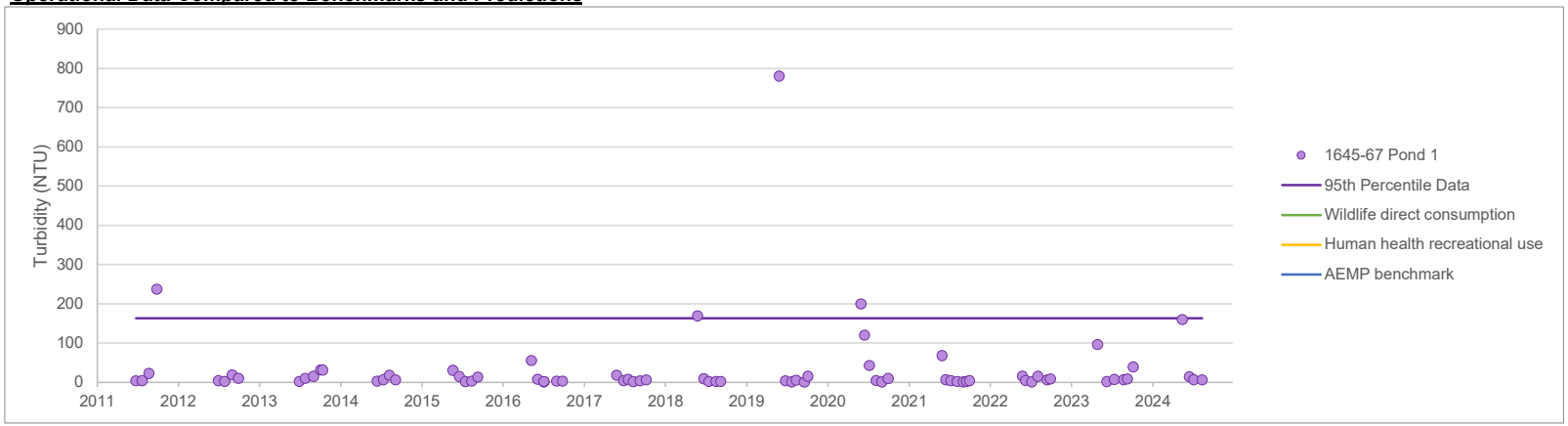


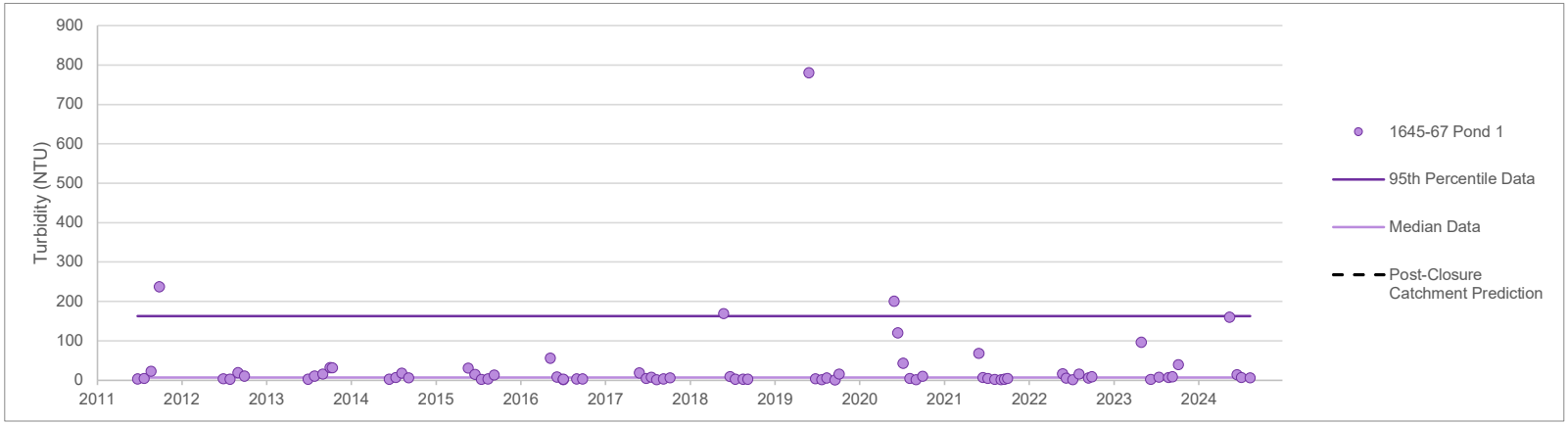
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	190.0	Wildlife	None
Median	6.1	Human recreational	None
Count	91	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



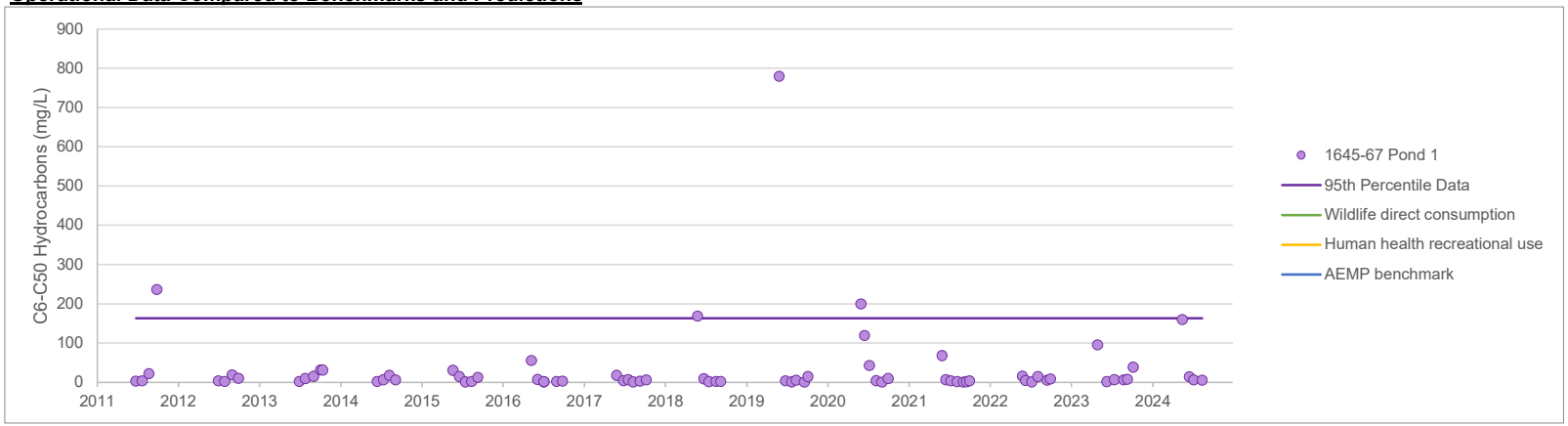


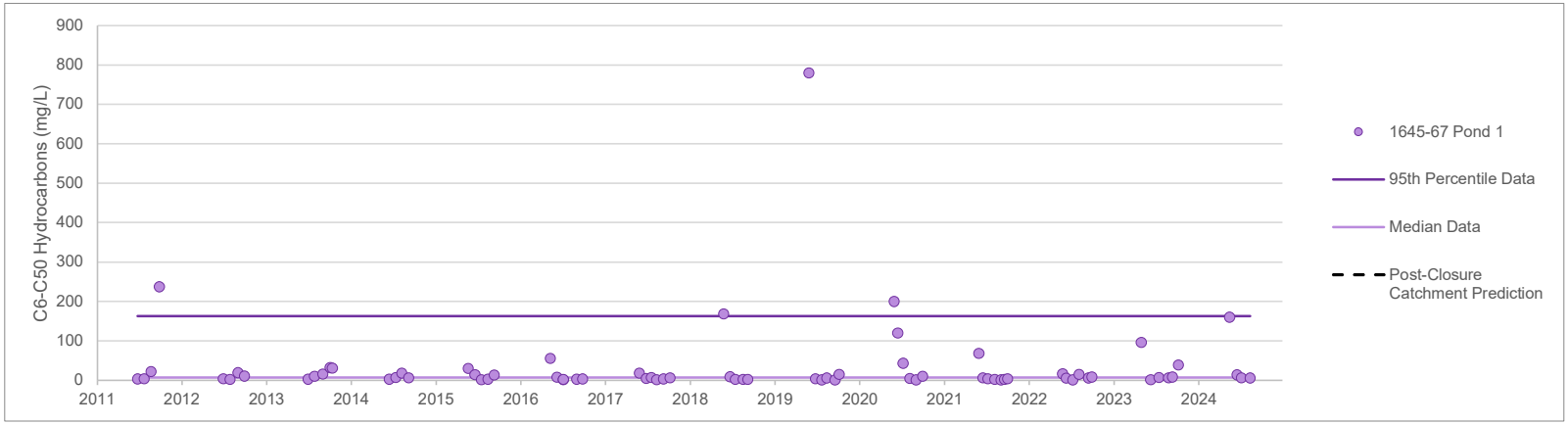
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	163.2	Wildlife	None
Median	6.6	Human recreational	None
Count	74	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	5	AEMP	None

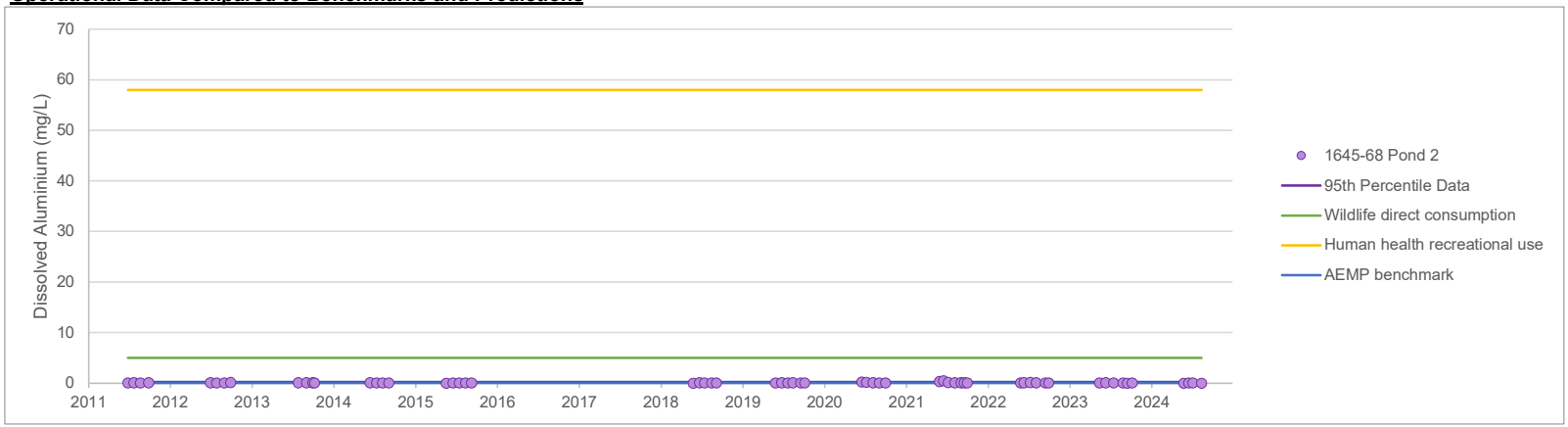
Pond 2

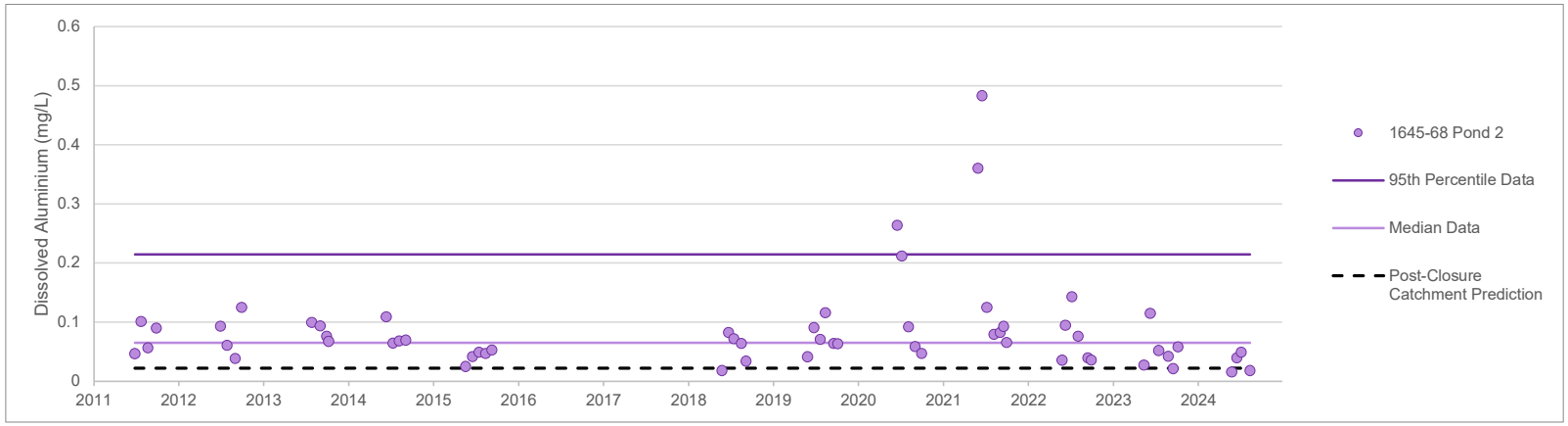
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



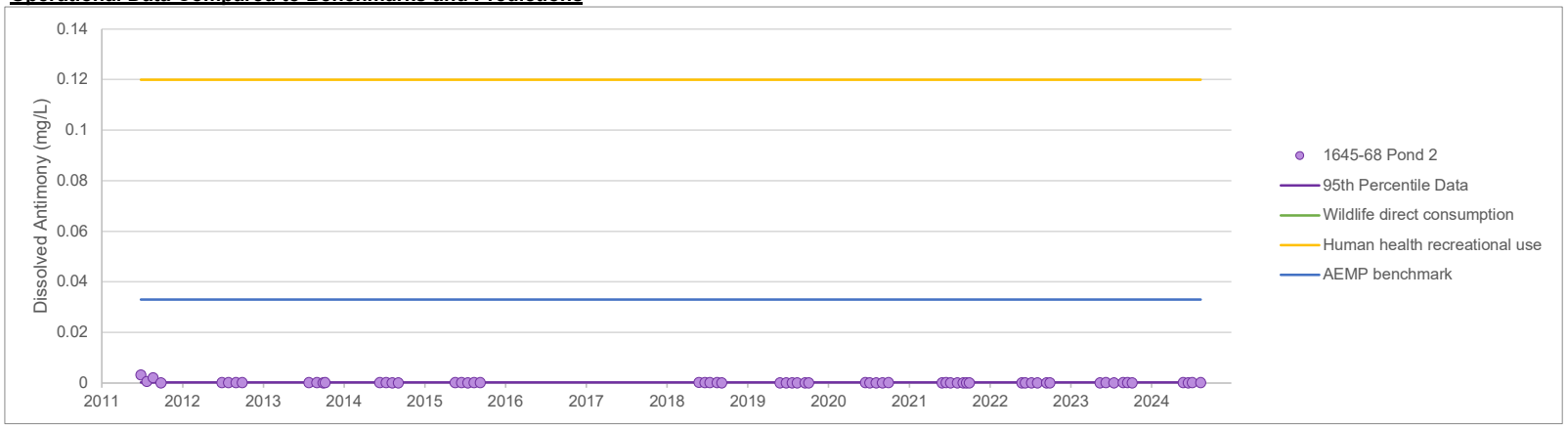


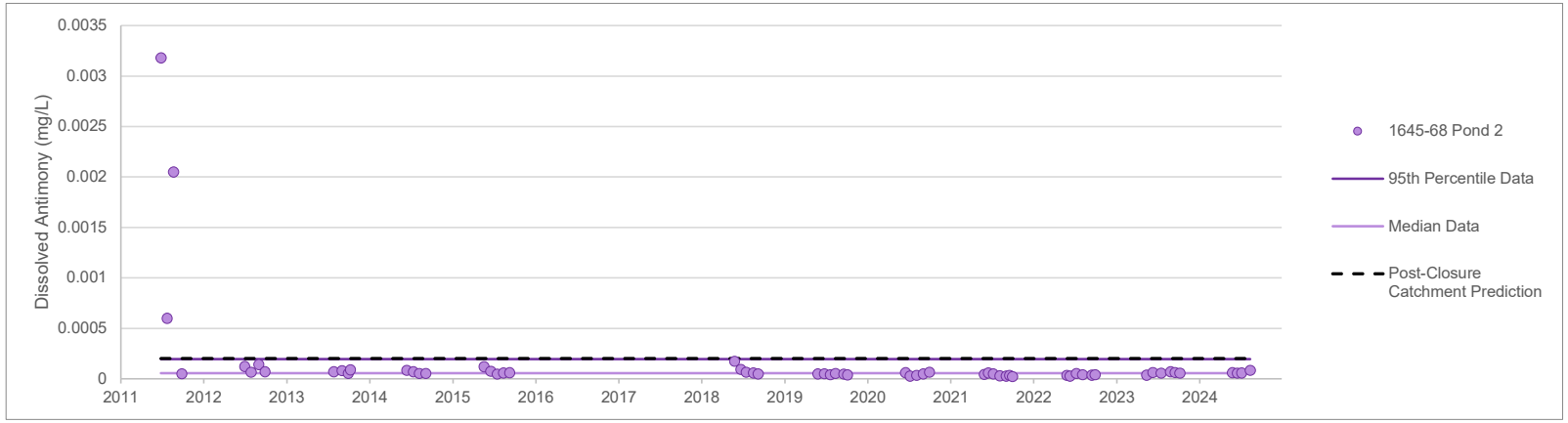
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.215	Wildlife	5.0
Median	0.065	Human recreational	58.0
Count	60	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



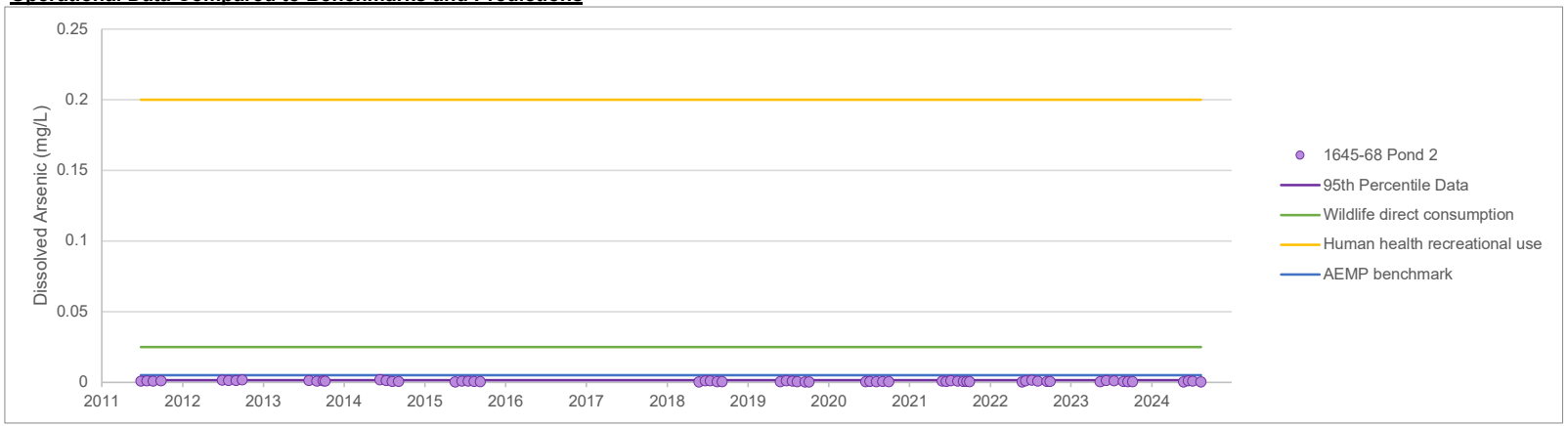


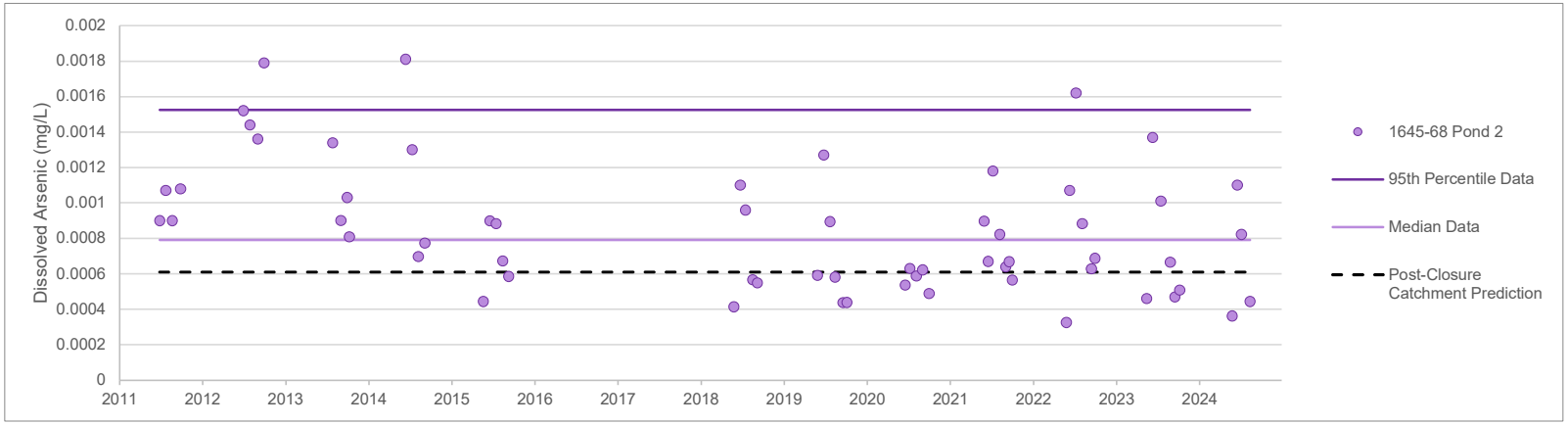
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00020	Wildlife	None
Median	0.00006	Human recreational	0.12
Count	60	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



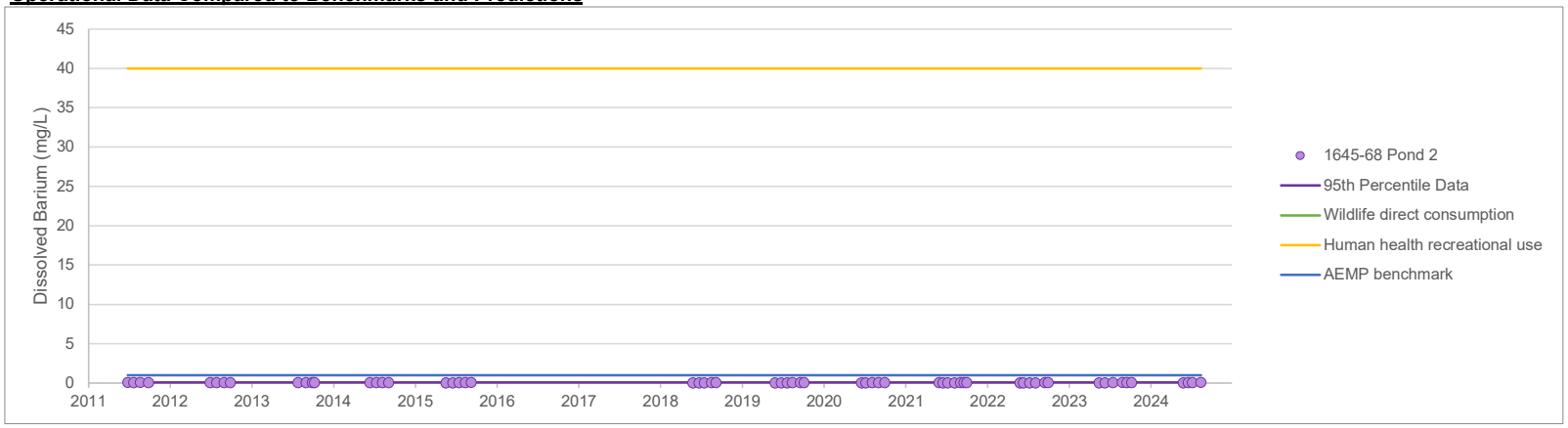


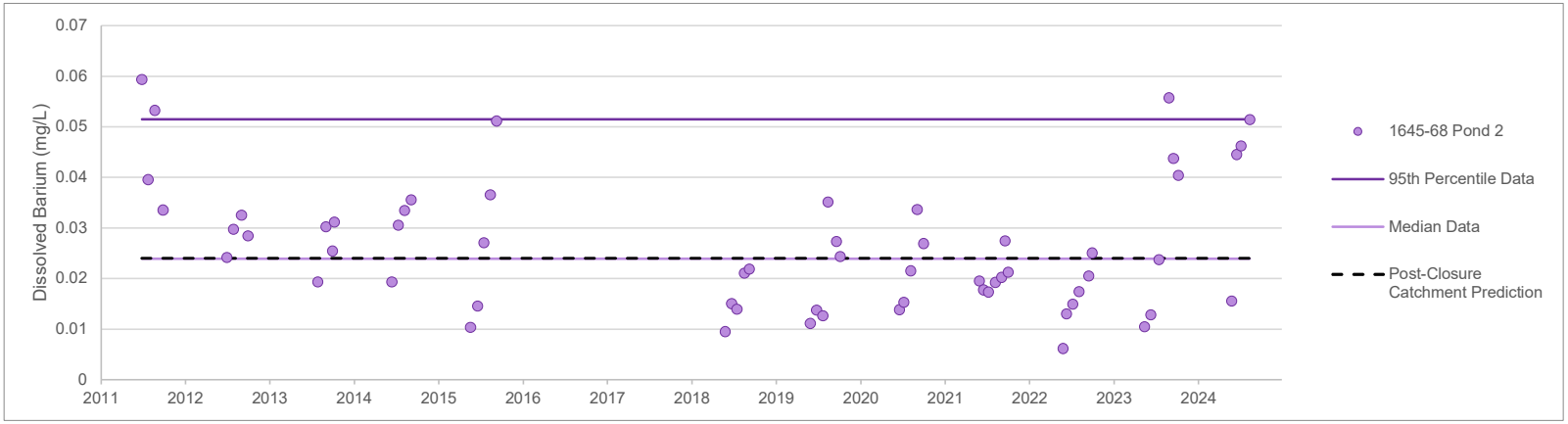
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0015	Wildlife	0.03
Median	0.0008	Human recreational	0.20
Count	60	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



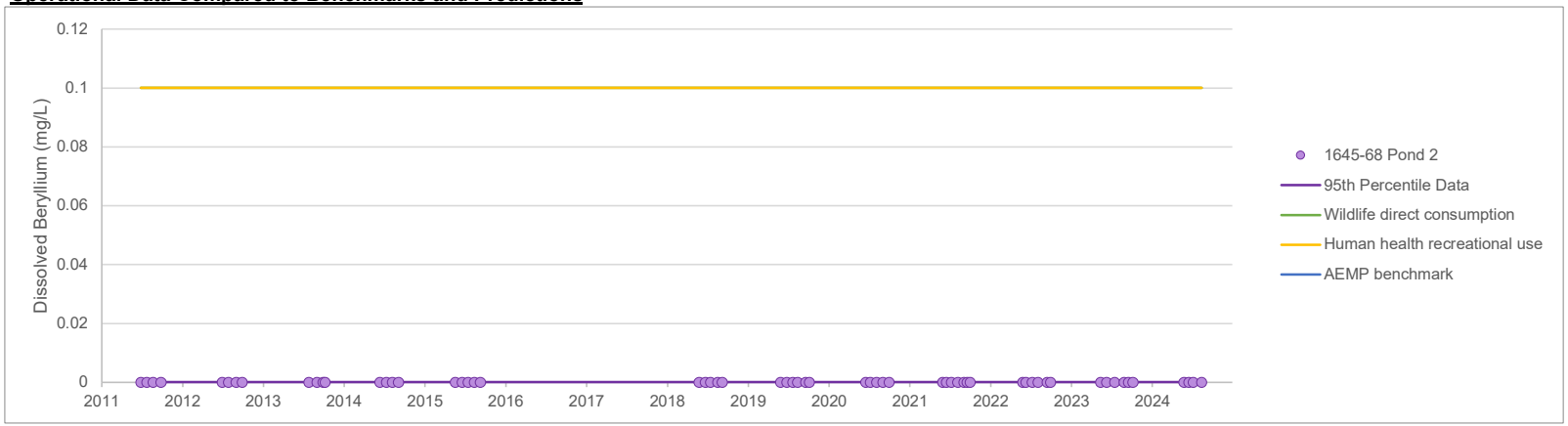


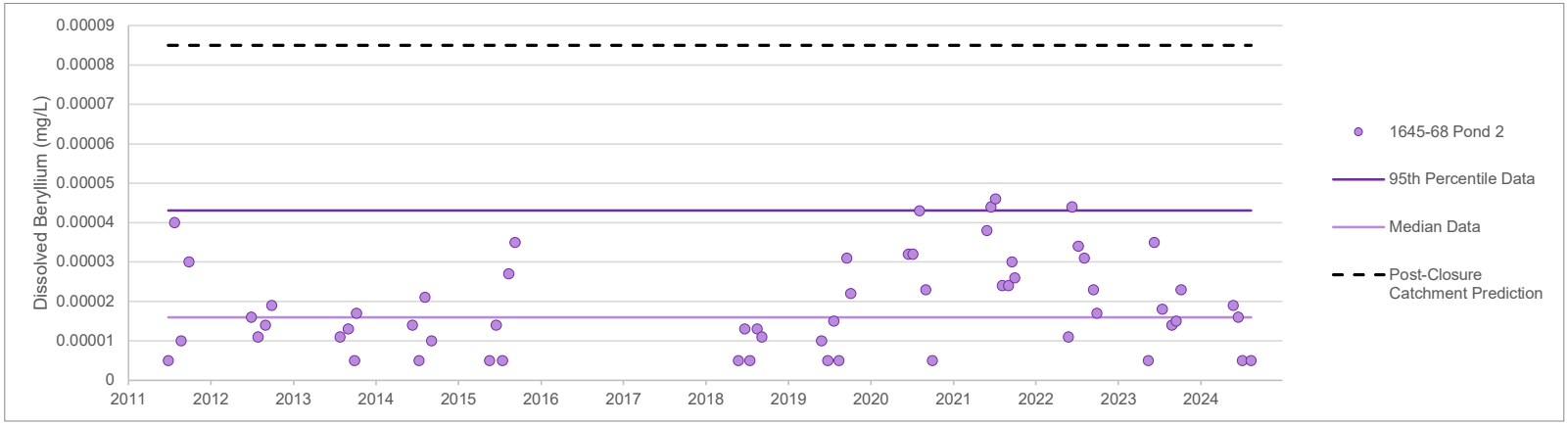
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.051	Wildlife	None
Median	0.024	Human recreational	40.0
Count	60	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



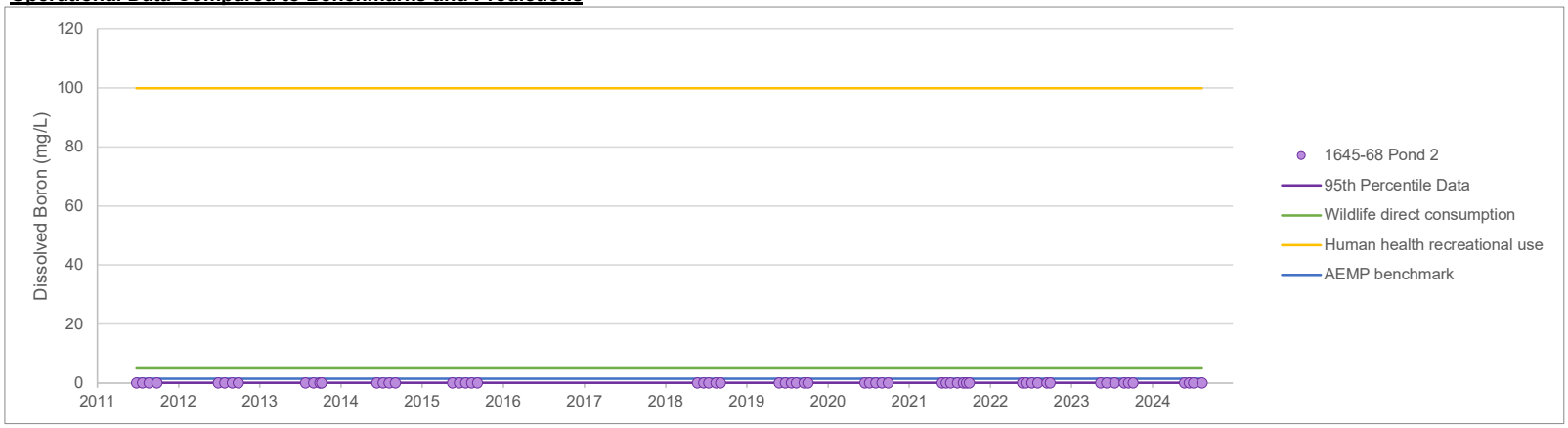


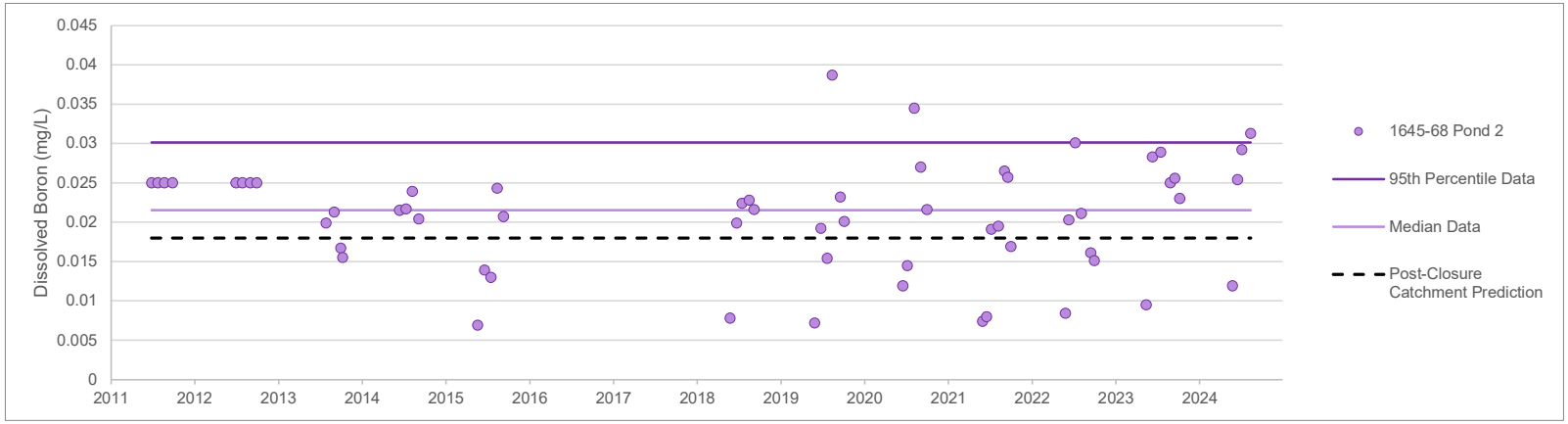
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000043	Wildlife	0.10
Median	0.000016	Human recreational	0.10
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



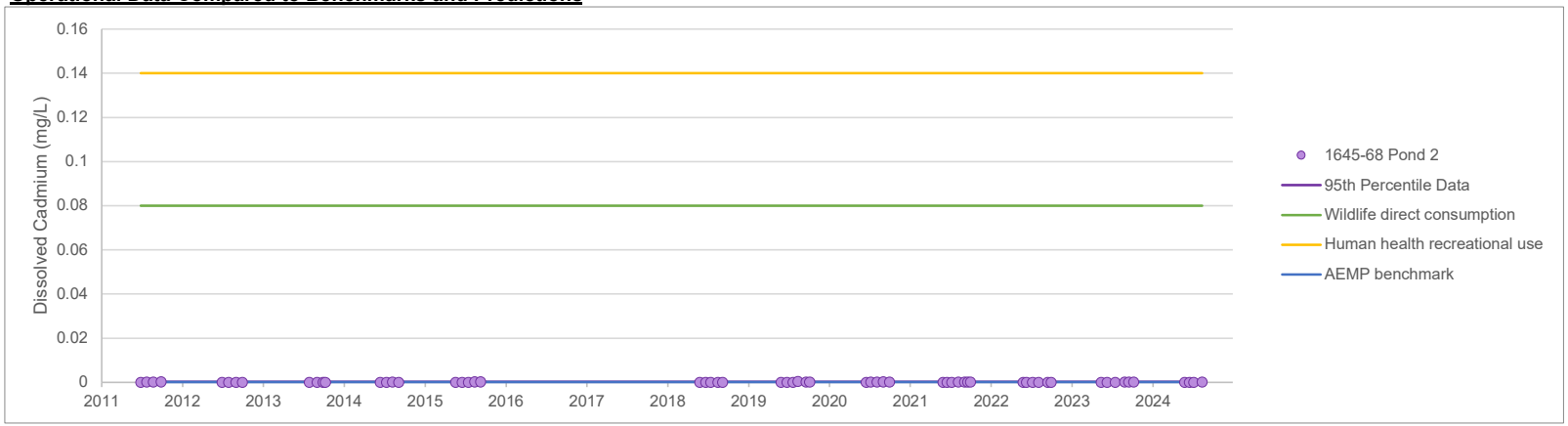


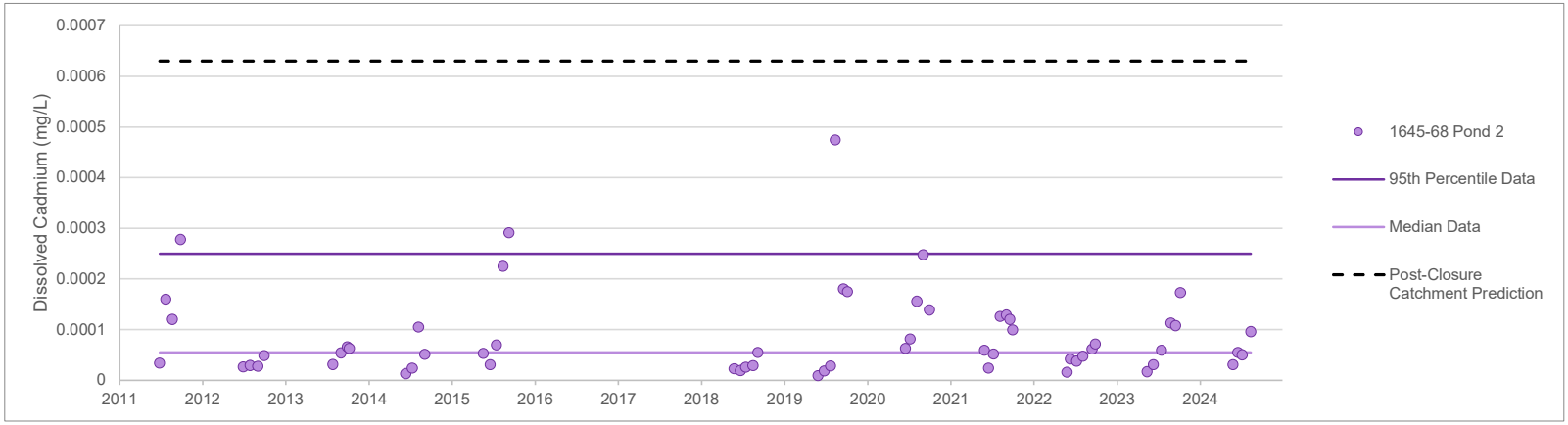
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.030	Wildlife	5.0
Median	0.022	Human recreational	100.0
Count	60	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



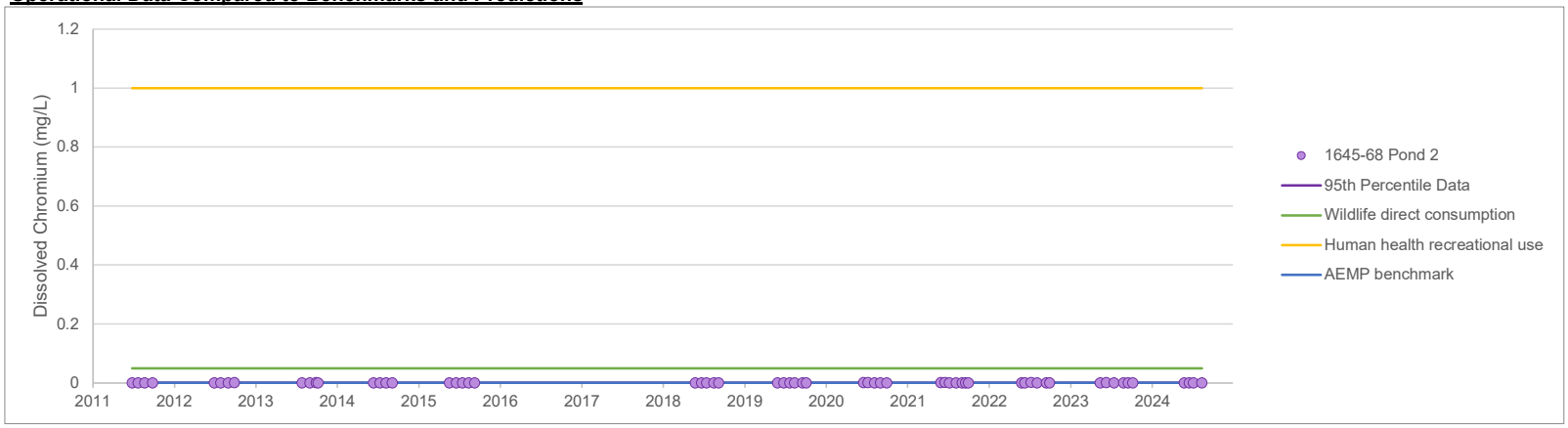


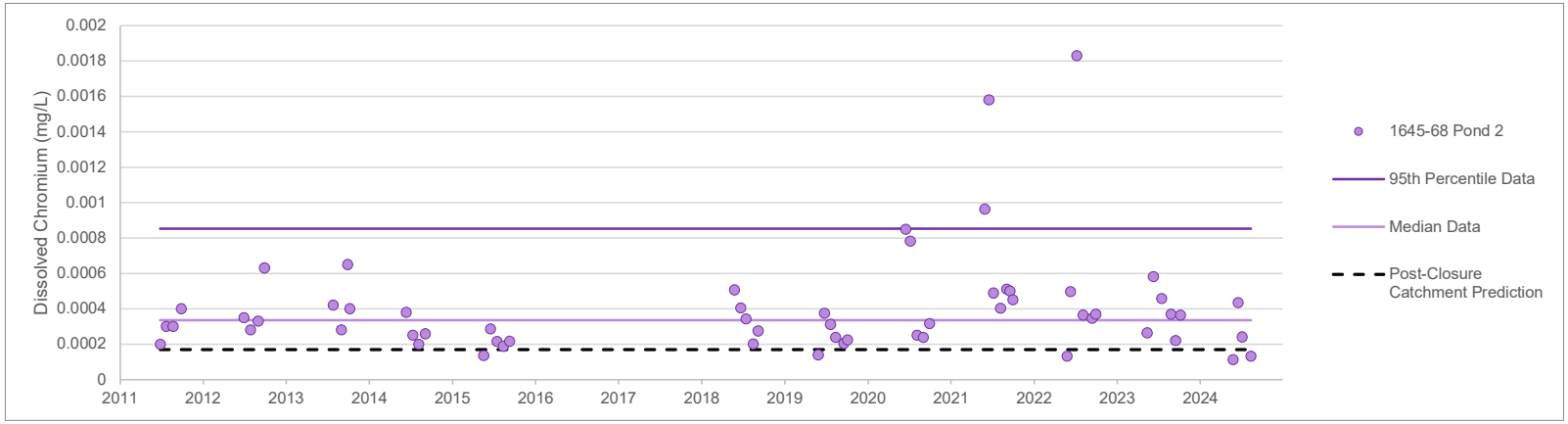
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00025	Wildlife	0.08
Median	0.00005	Human recreational	0.14
Count	60	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



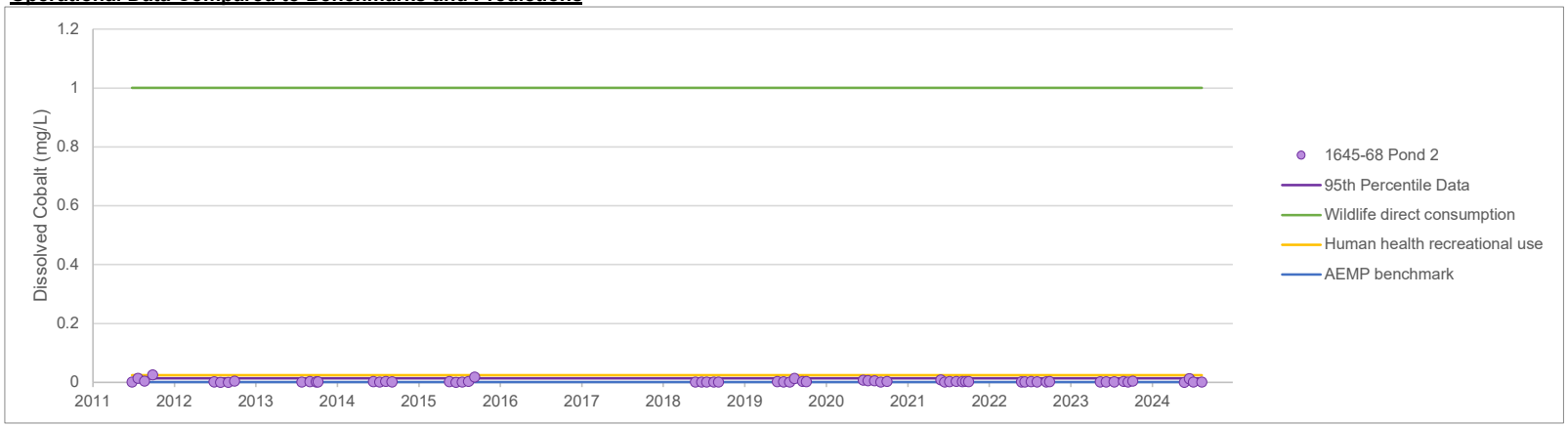


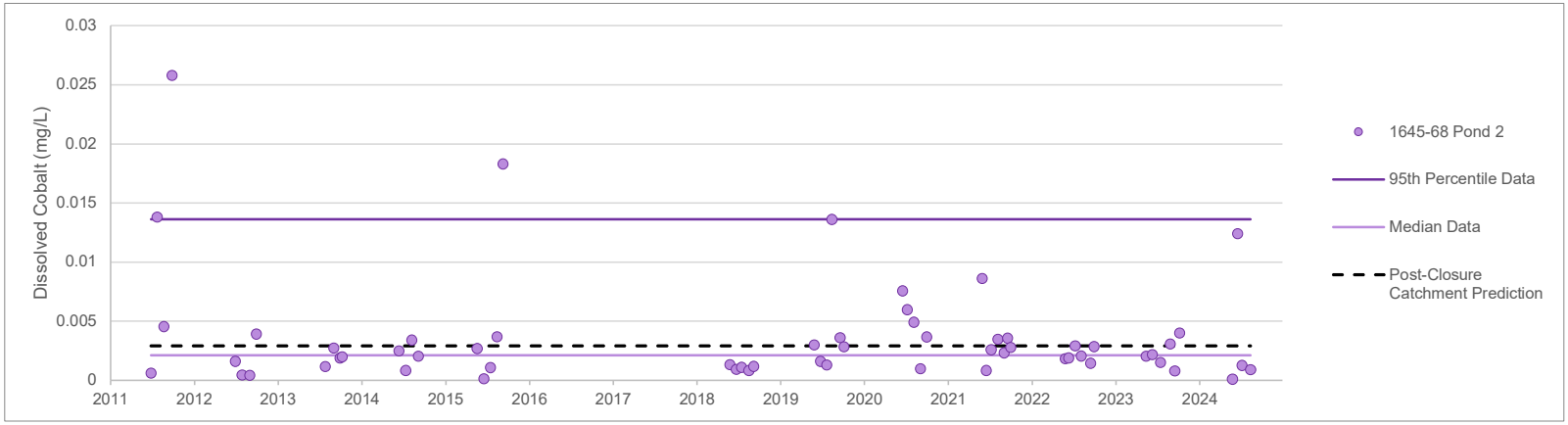
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00085	Wildlife	0.05
Median	0.00034	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



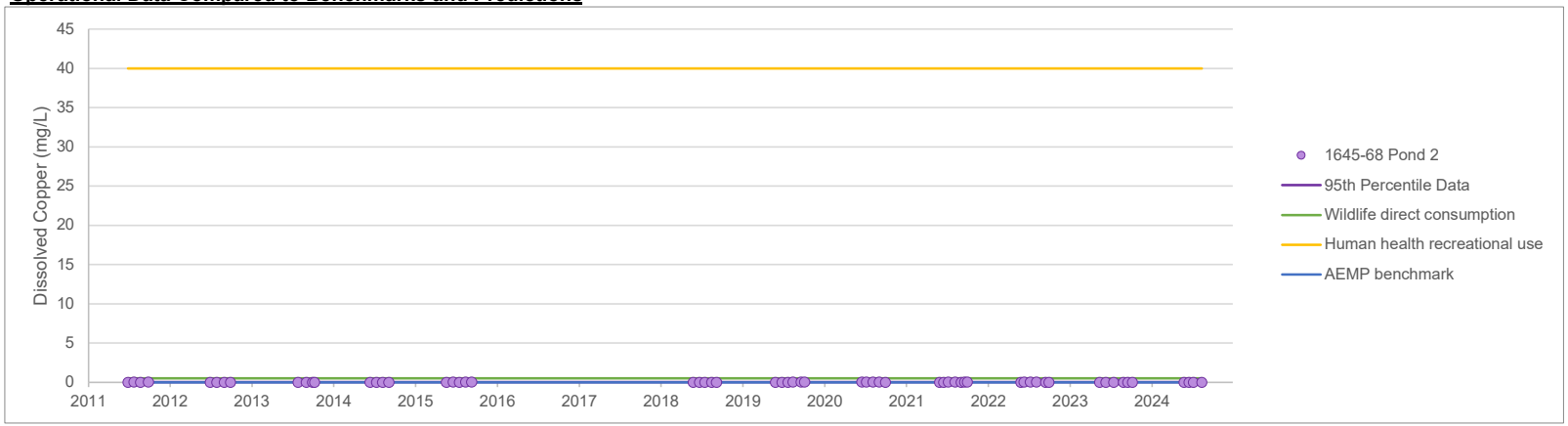


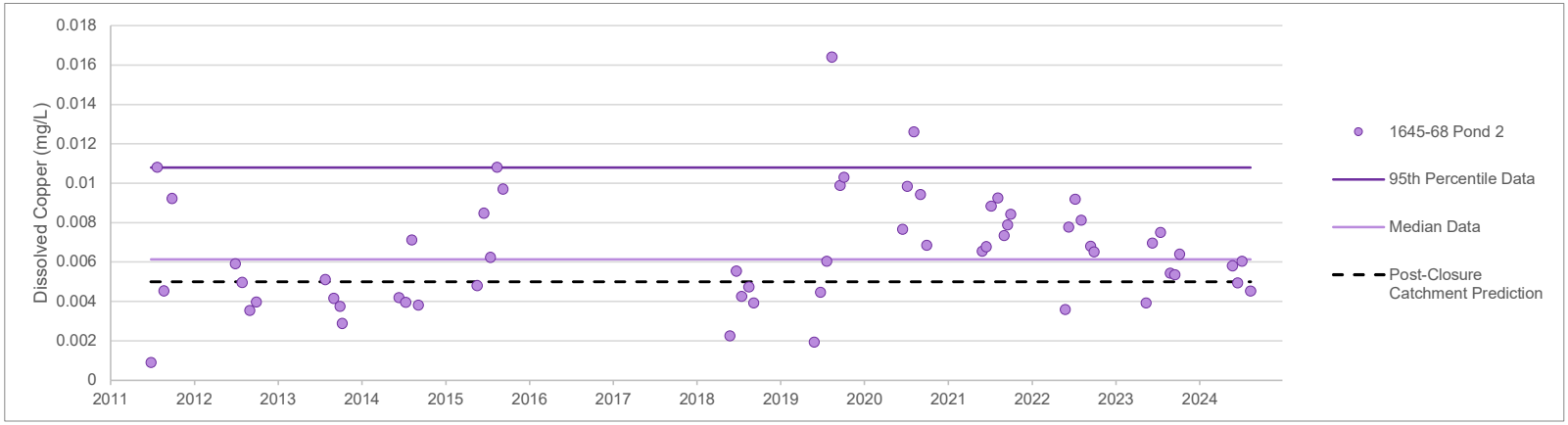
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0136	Wildlife	1.0
Median	0.0021	Human recreational	0.02
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



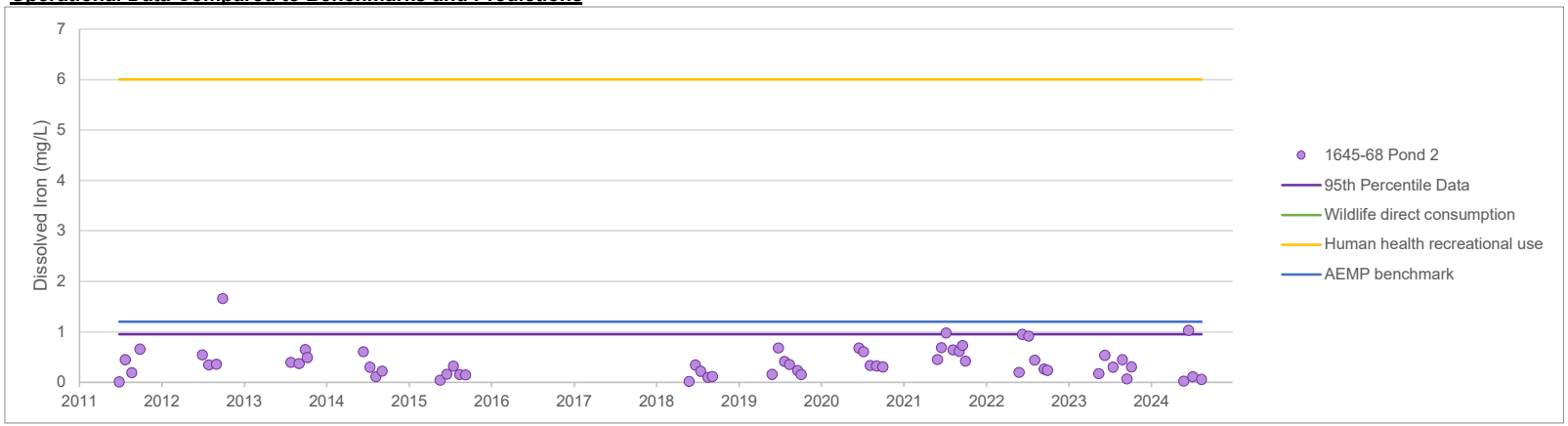


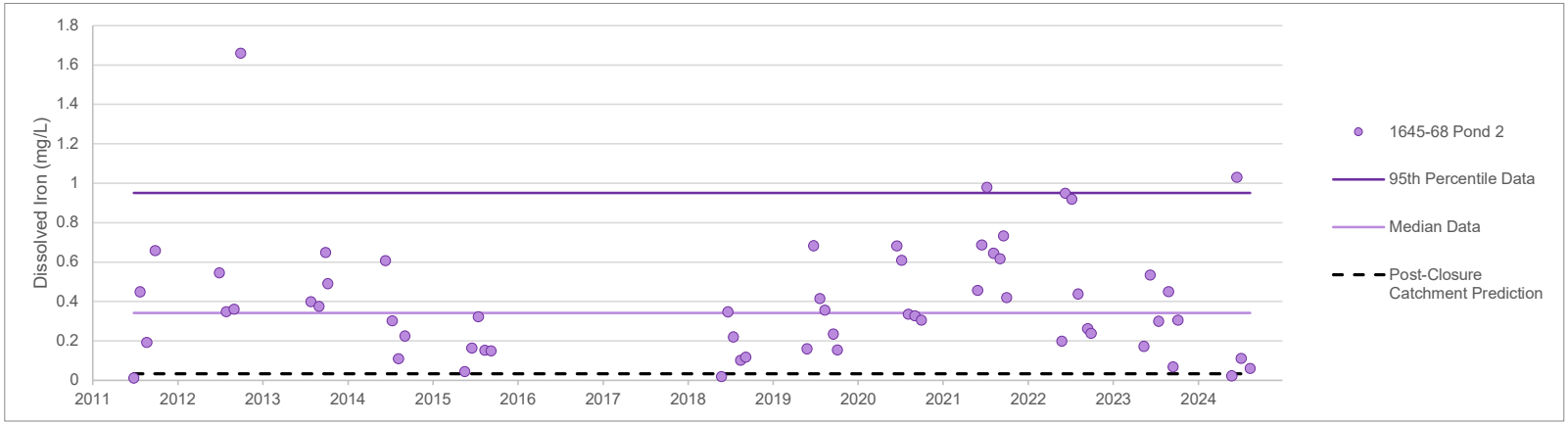
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0108	Wildlife	0.5
Median	0.0061	Human recreational	40.0
Count	60	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



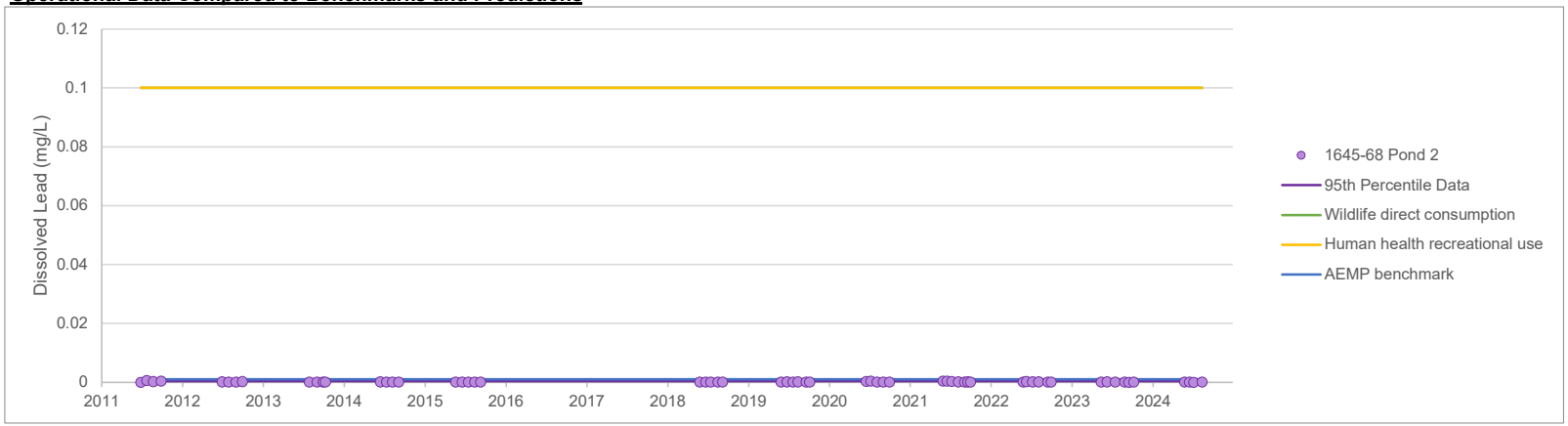


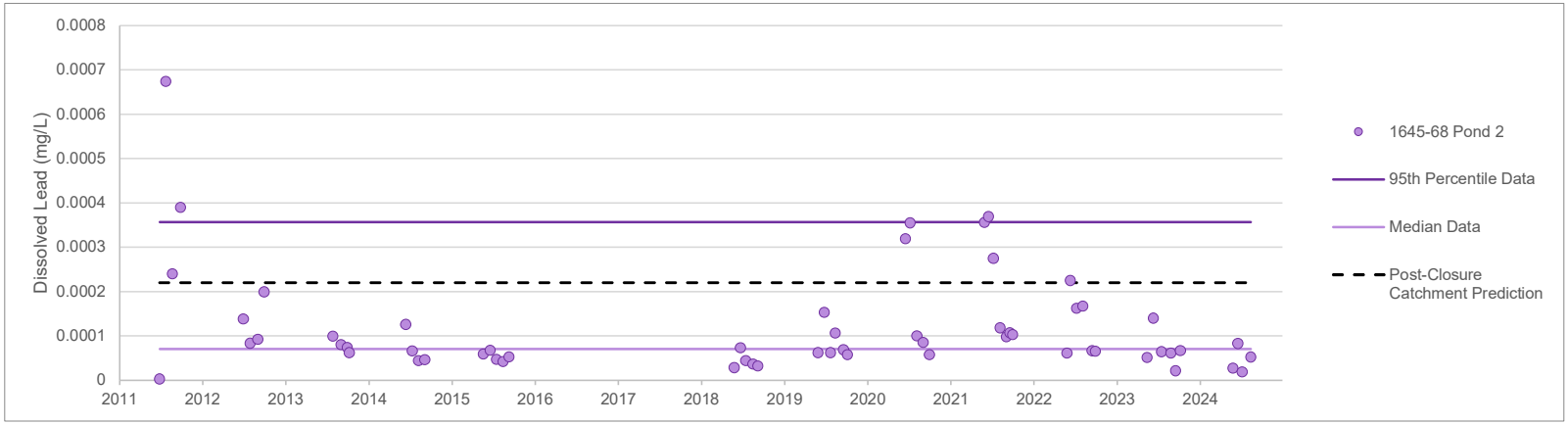
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.95	Wildlife	None
Median	0.34	Human recreational	6.0
Count	60	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



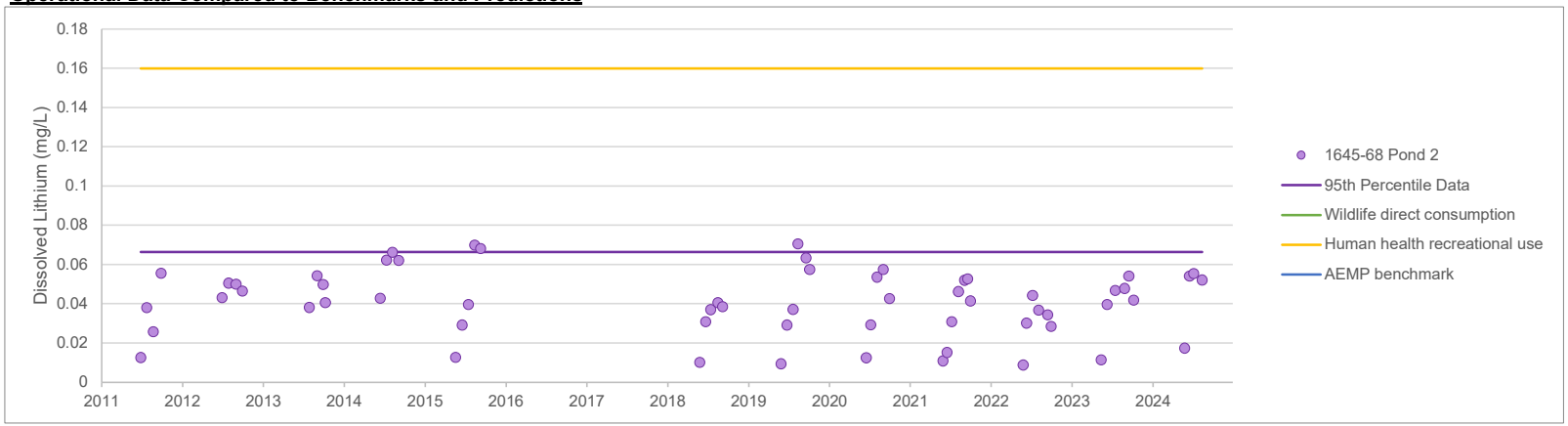


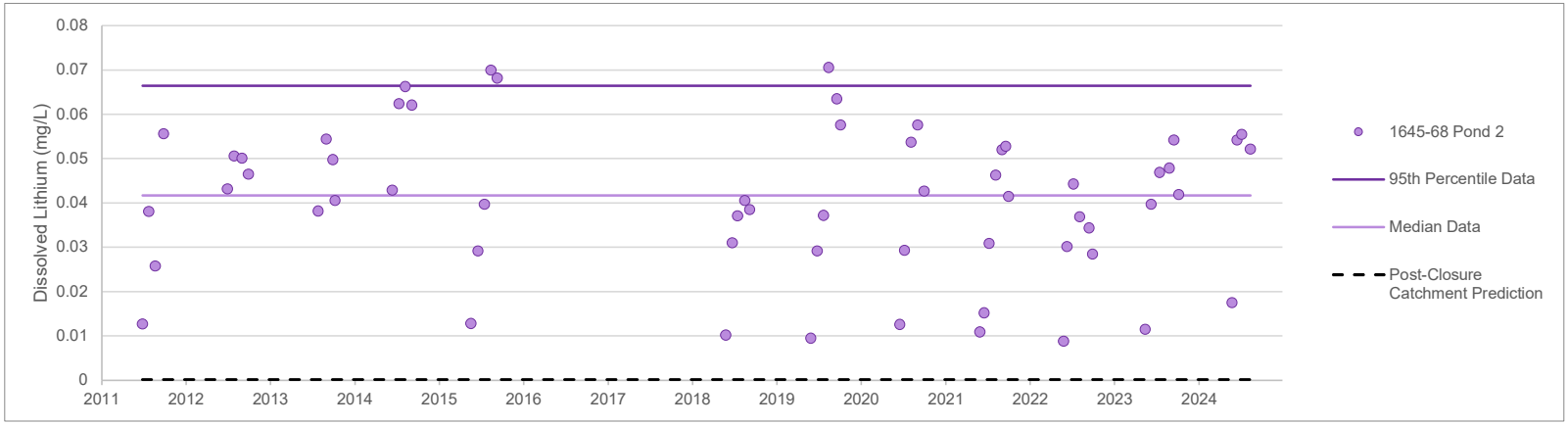
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00036	Wildlife	0.10
Median	0.00007	Human recreational	0.10
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



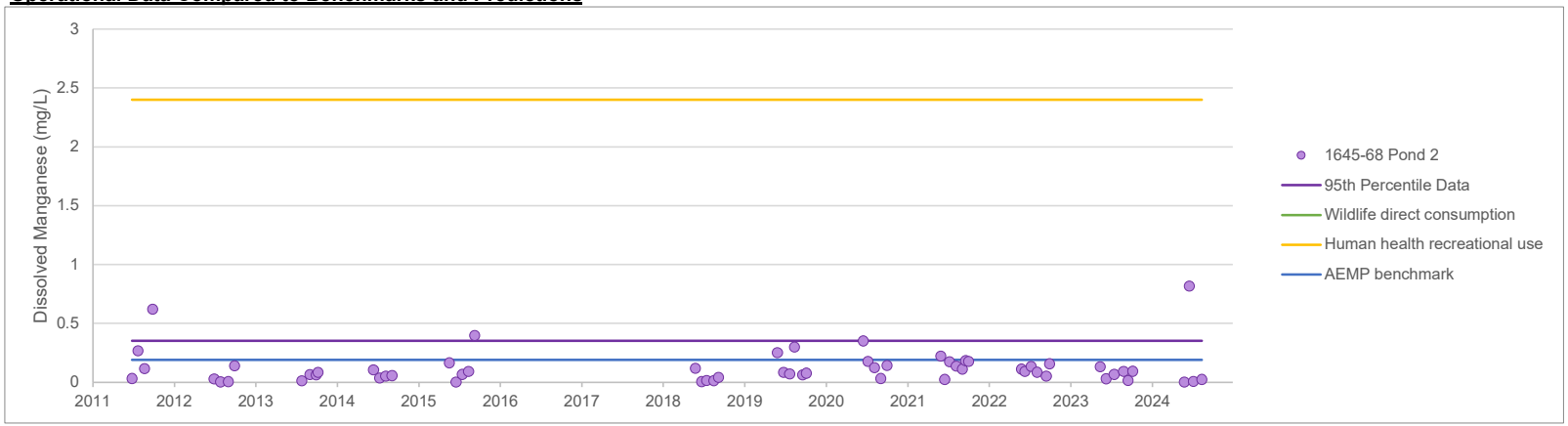


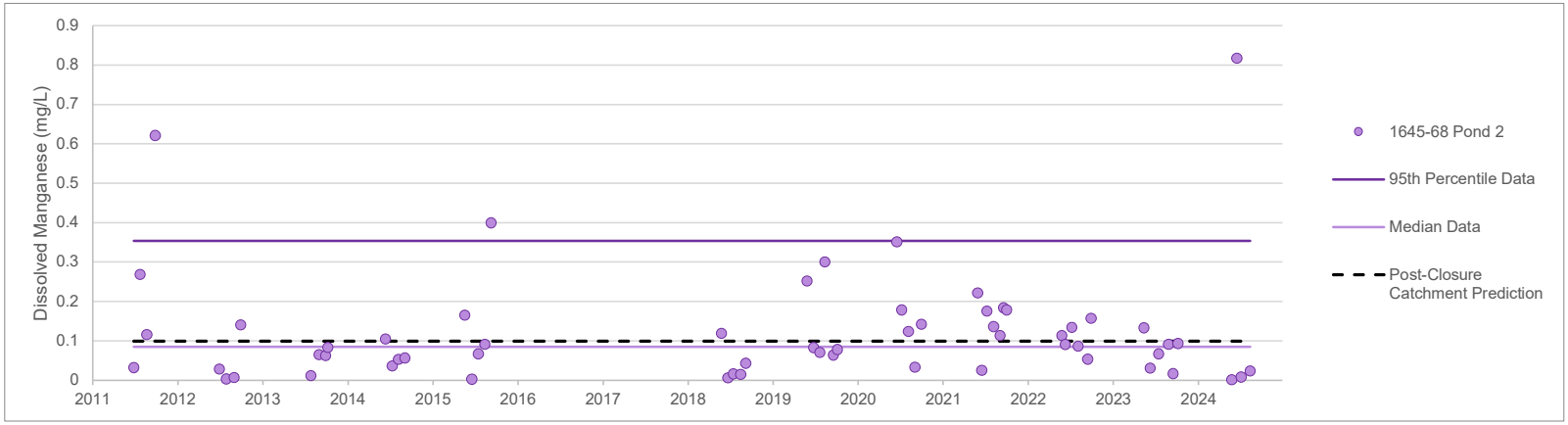
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.066	Wildlife	None
Median	0.042	Human recreational	0.16
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



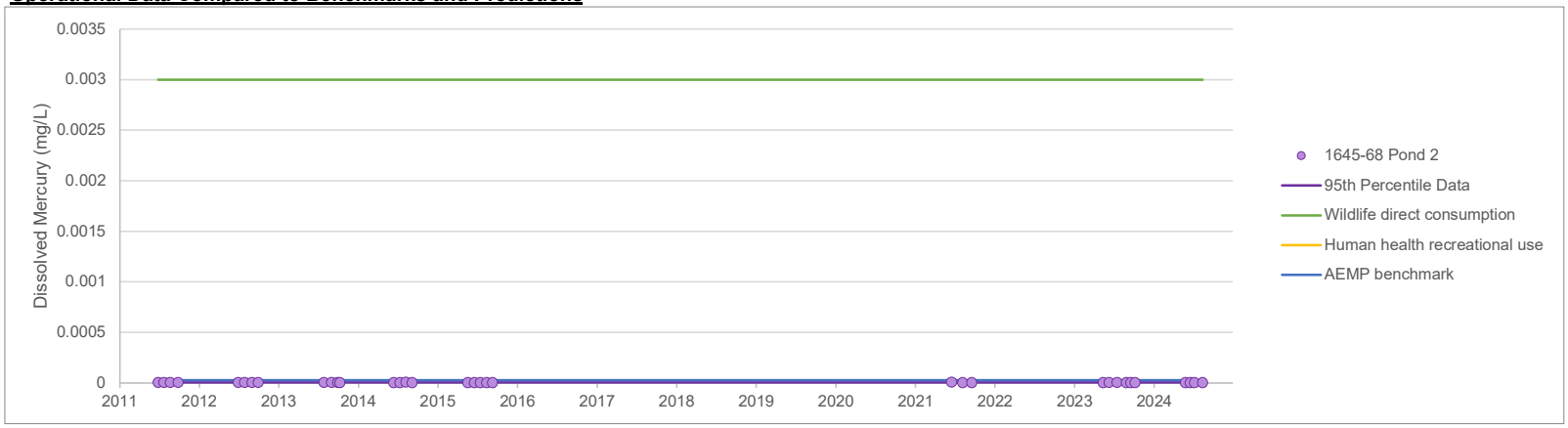


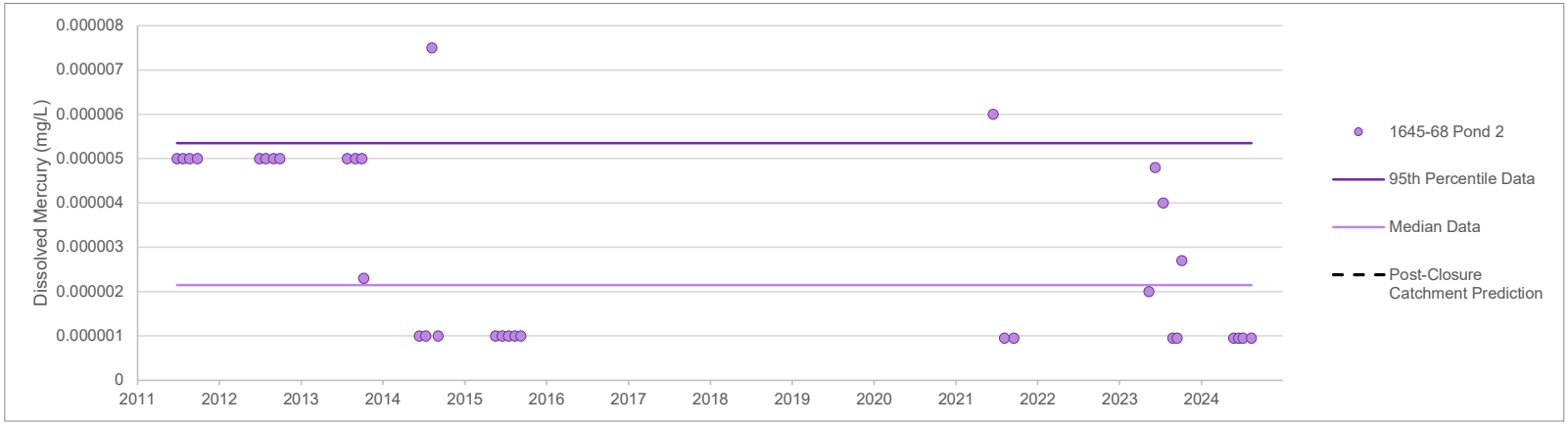
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.353	Wildlife	None
Median	0.085	Human recreational	2.4
Count	60	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



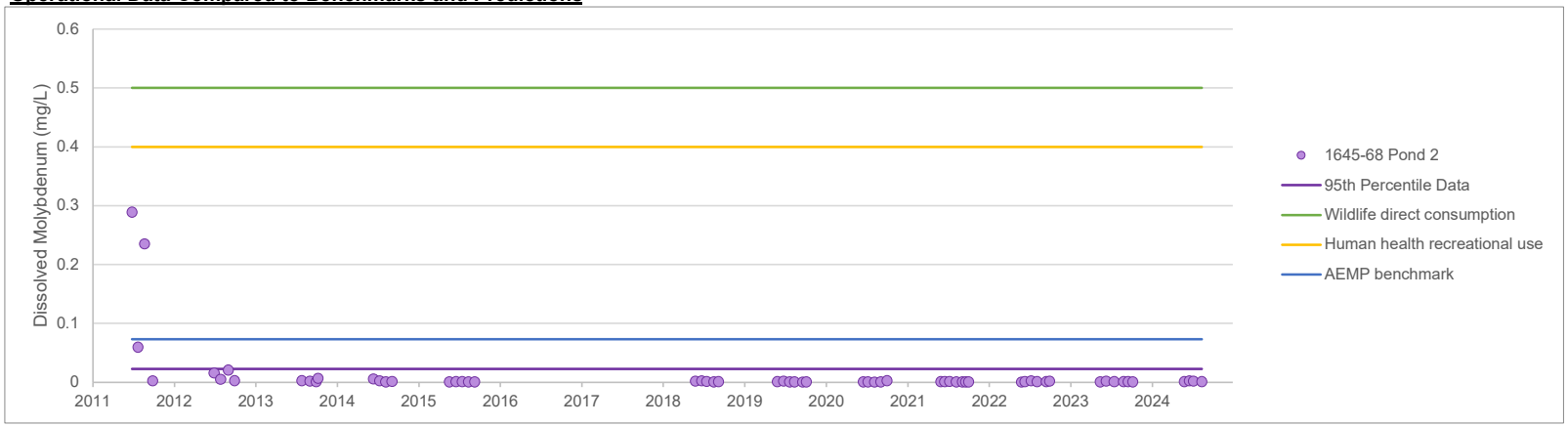


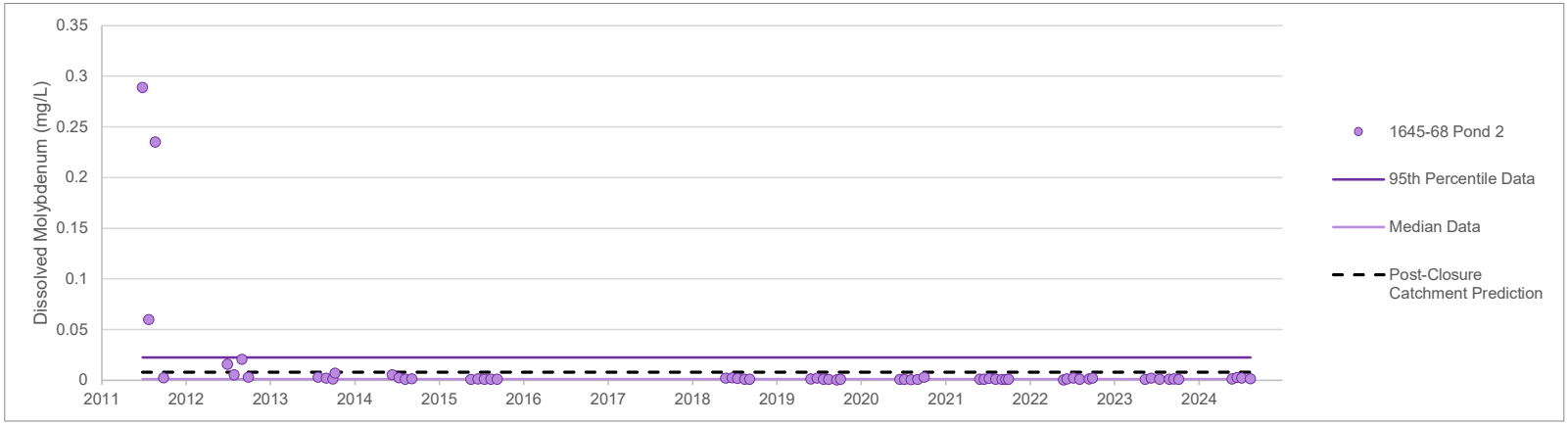
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000053	Wildlife	0.003
Median	0.0000022	Human recreational	None
Count	34	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



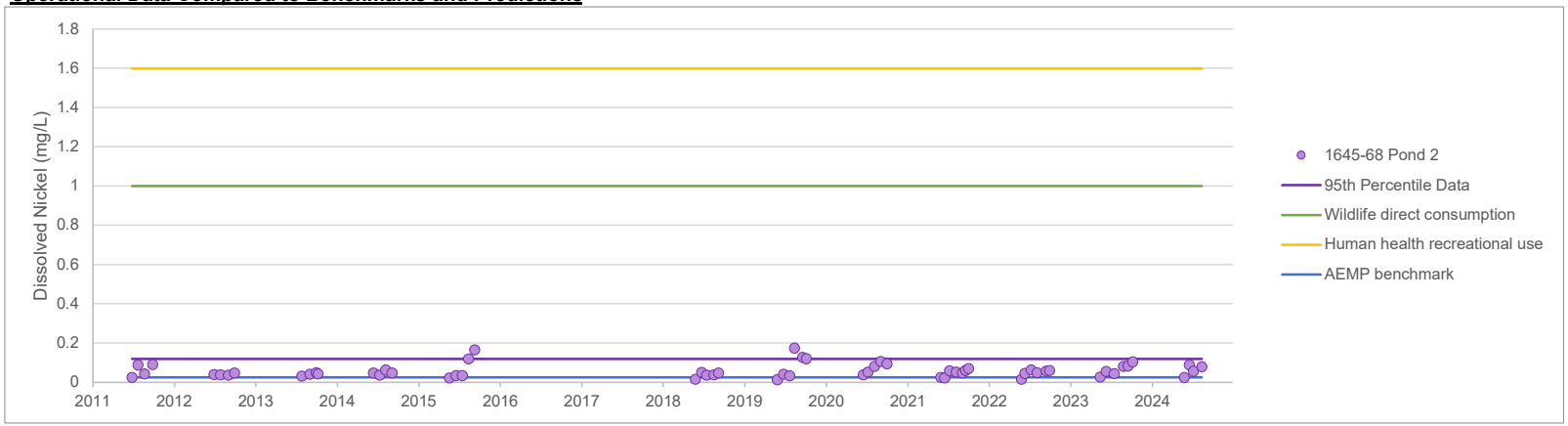


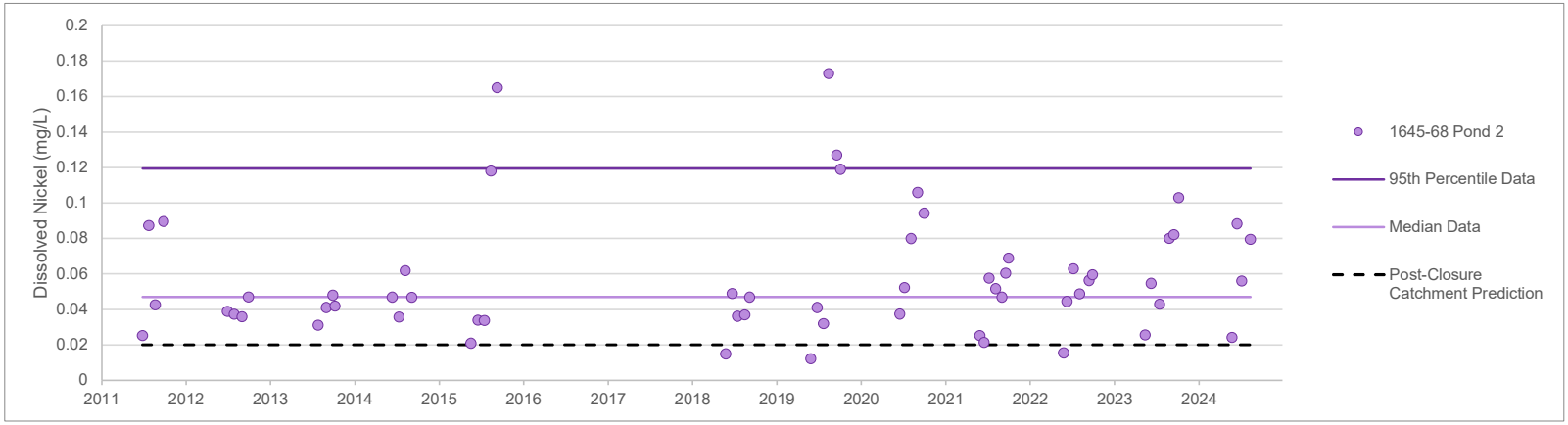
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0226	Wildlife	0.5
Median	0.0012	Human recreational	0.4
Count	60	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



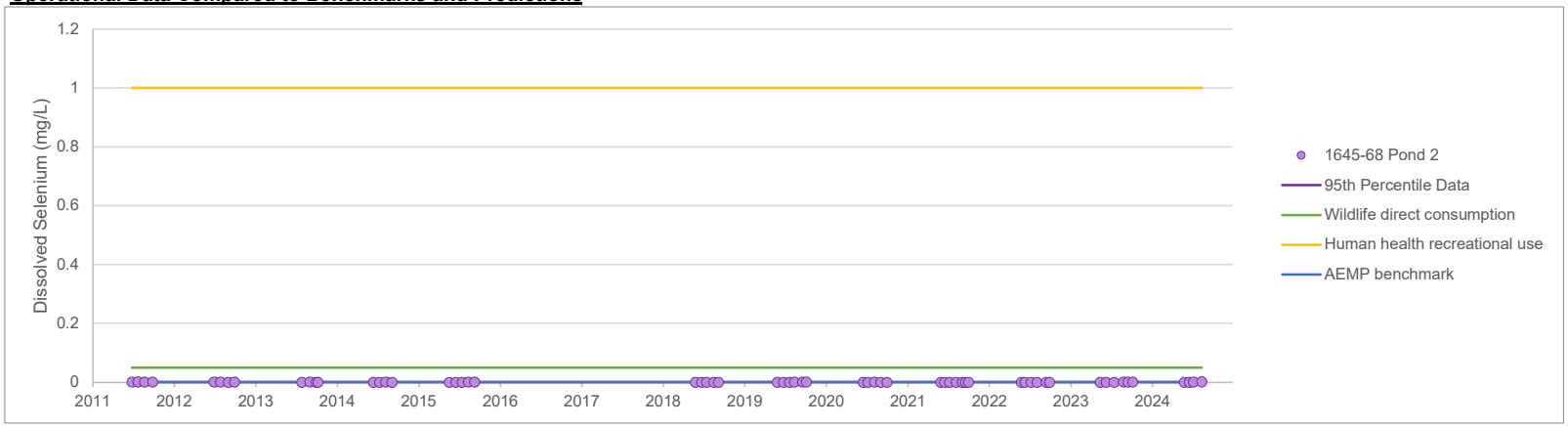


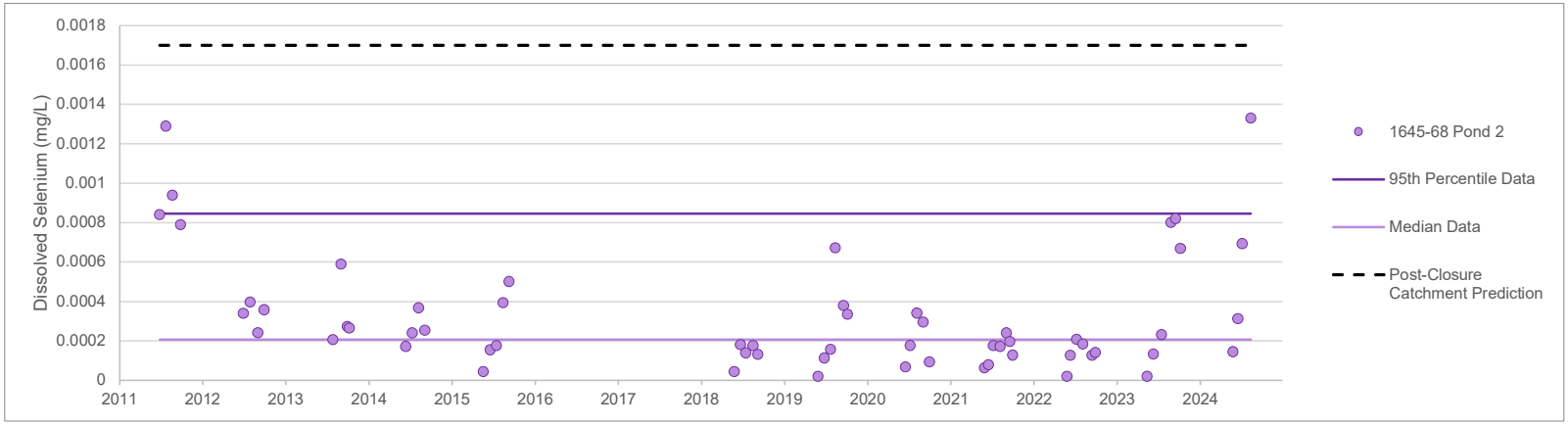
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.119	Wildlife	1.0
Median	0.047	Human recreational	1.6
Count	60	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



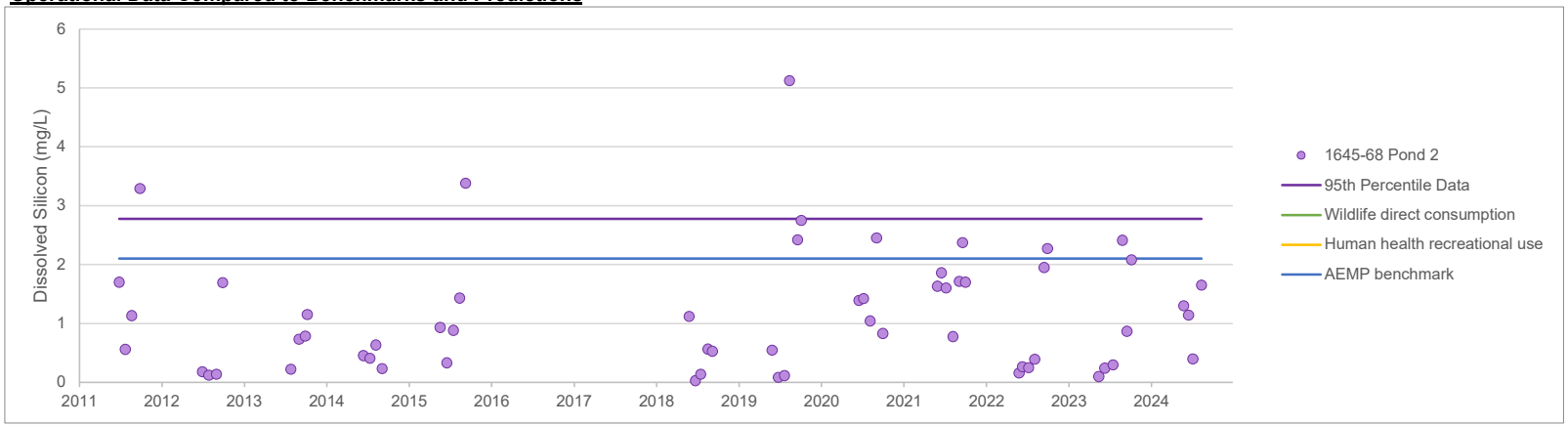


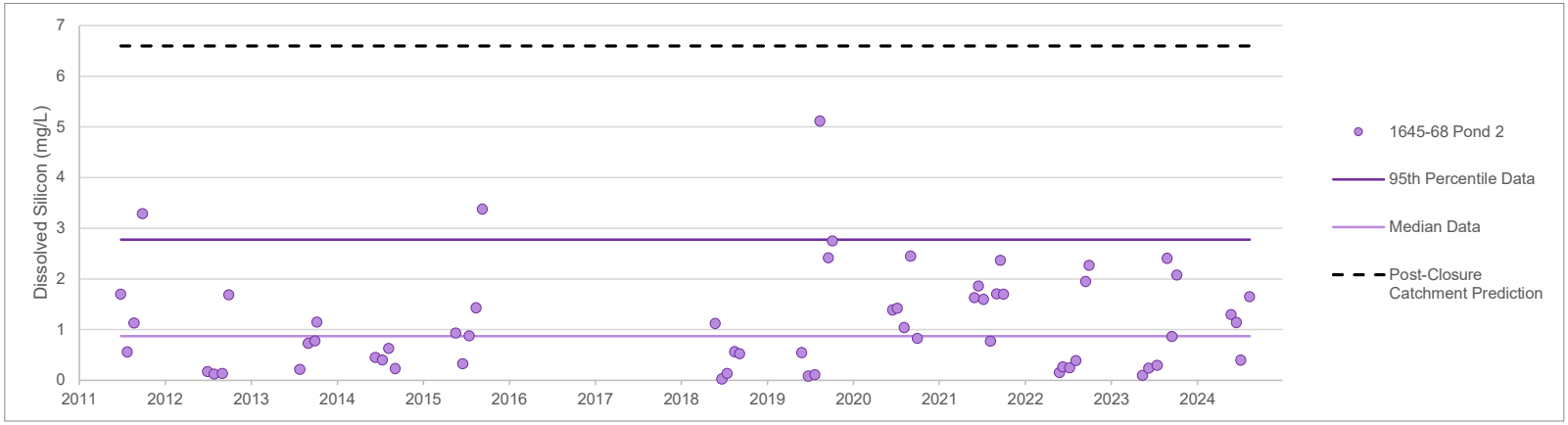
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00084	Wildlife	0.1
Median	0.00021	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



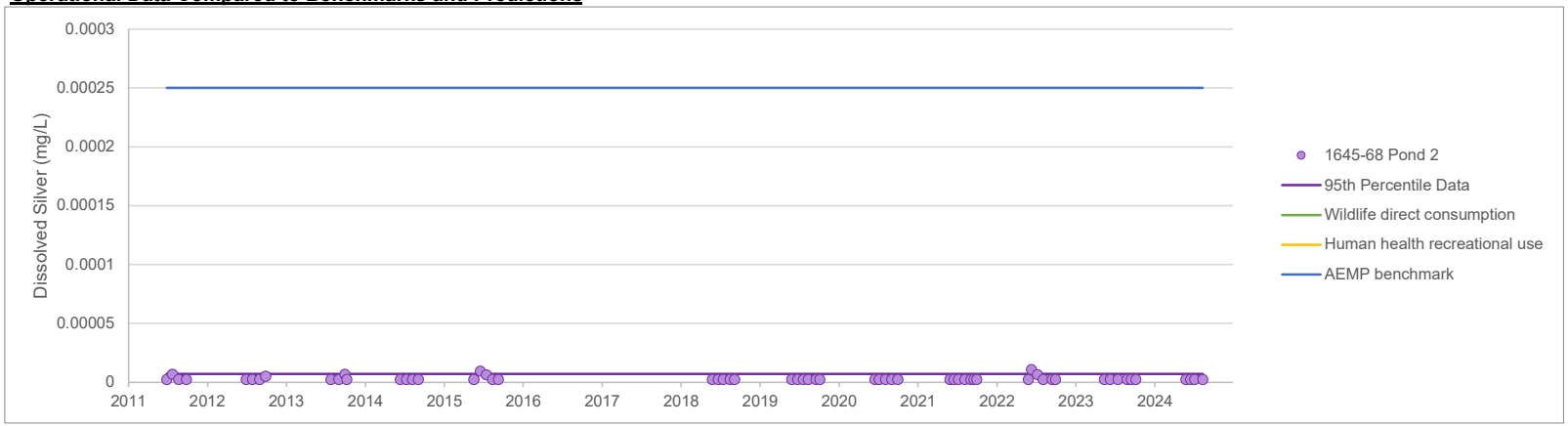


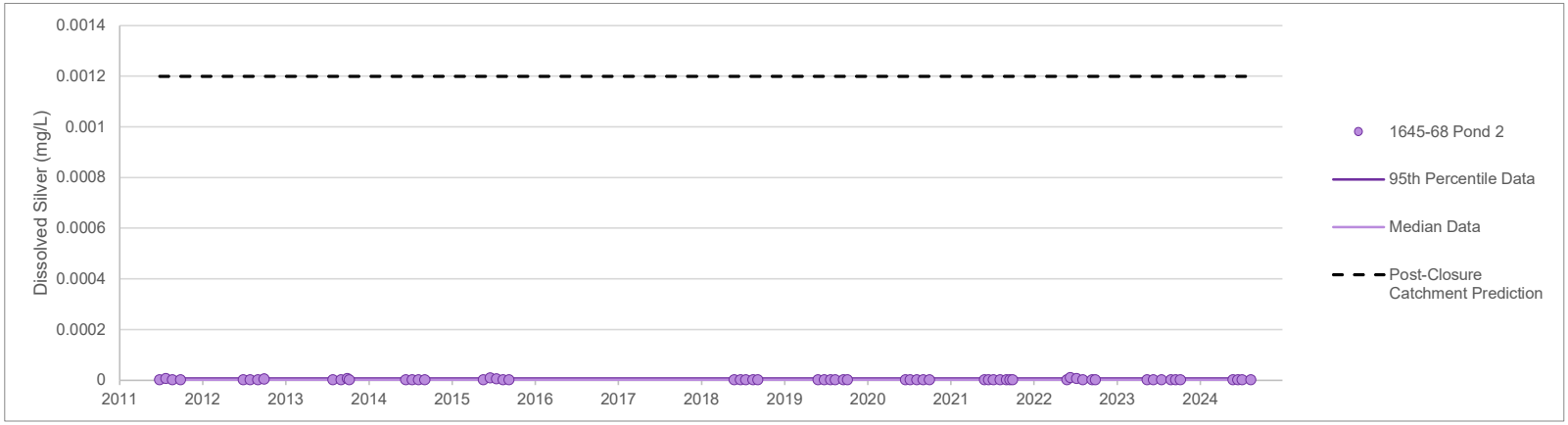
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	2.78	Wildlife	None
Median	0.87	Human recreational	None
Count	60	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



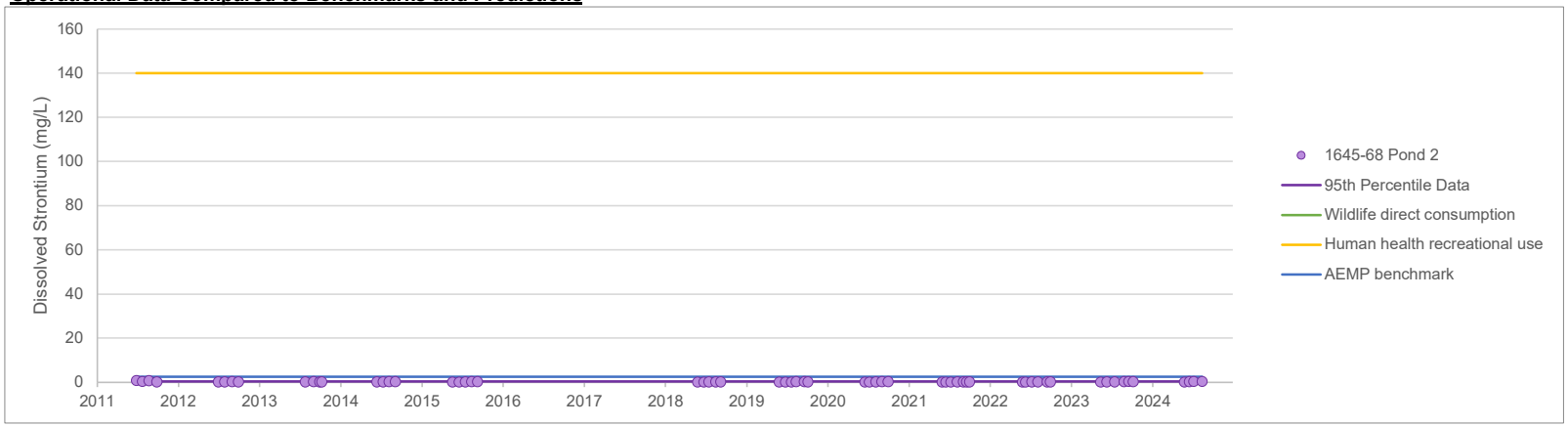


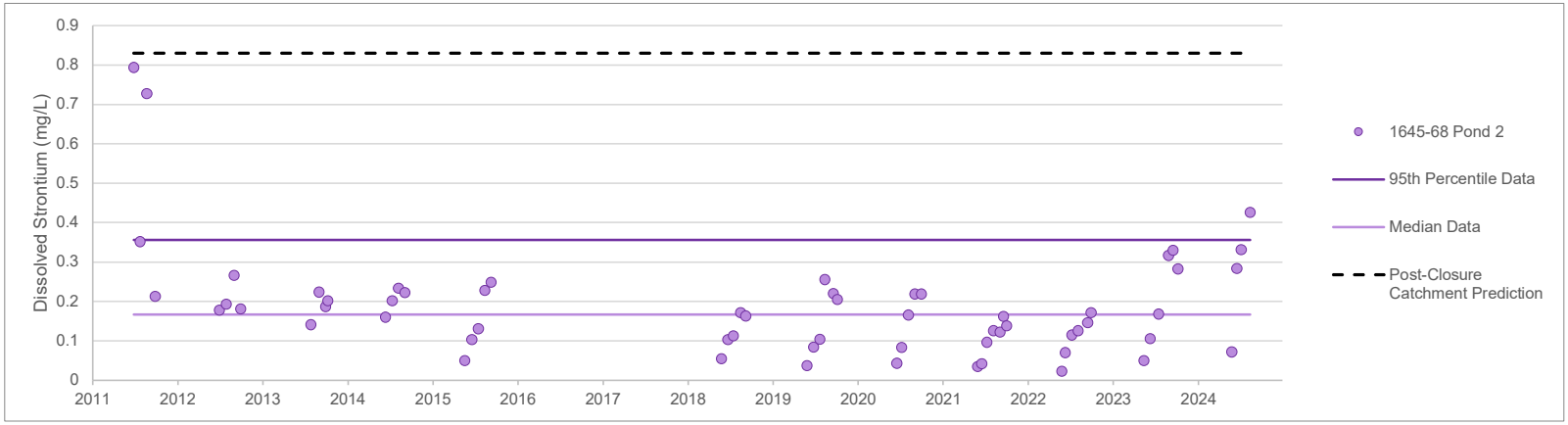
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000007	Wildlife	None
Median	0.000003	Human recreational	None
Count	60	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



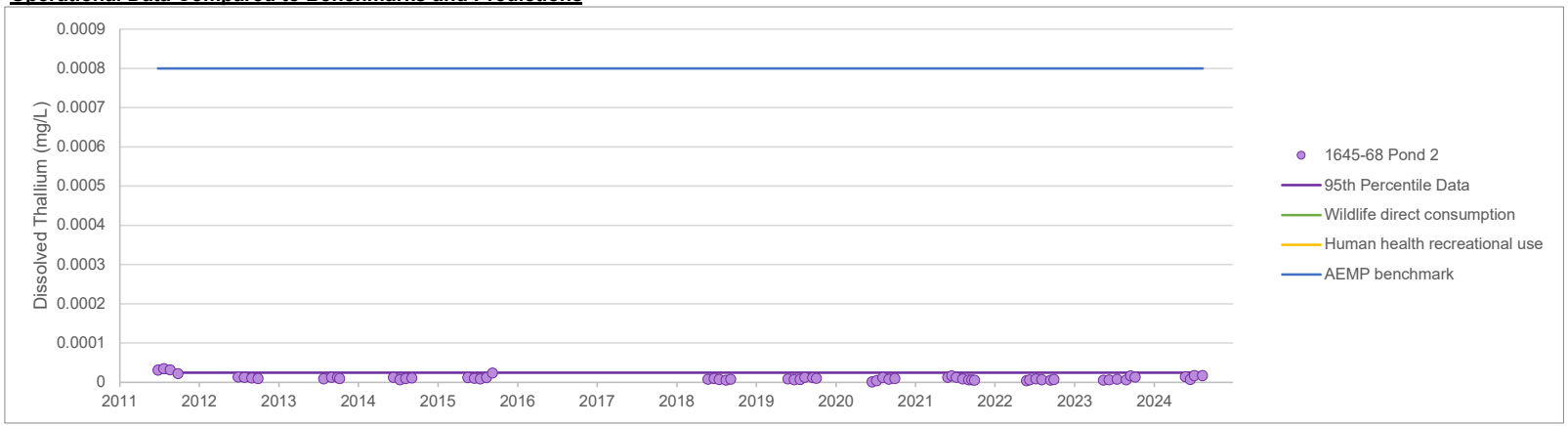


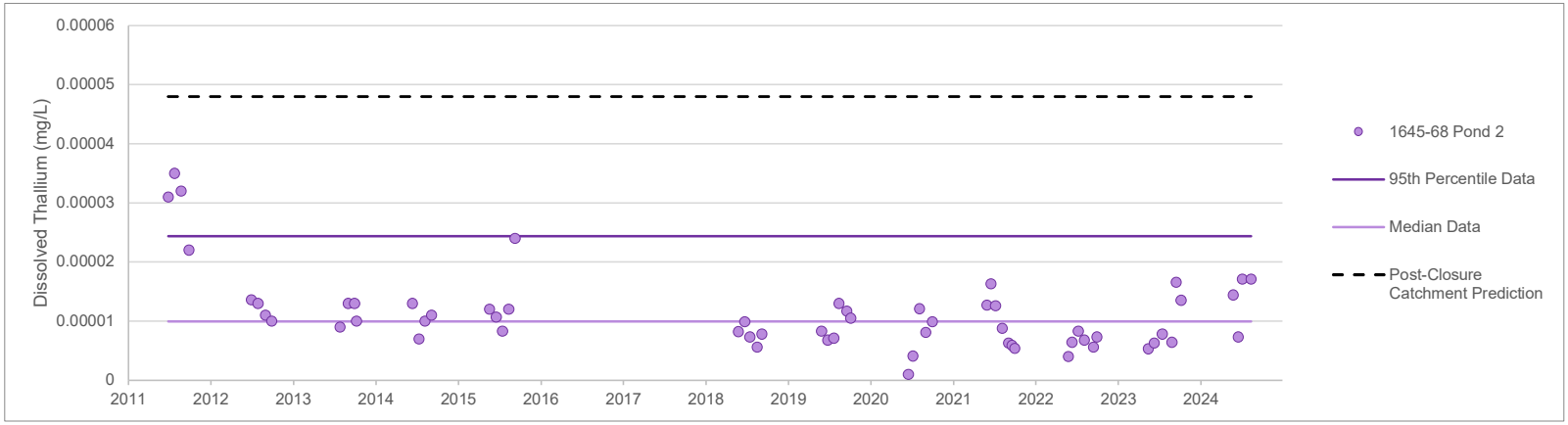
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.36	Wildlife	None
Median	0.17	Human recreational	140
Count	60	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



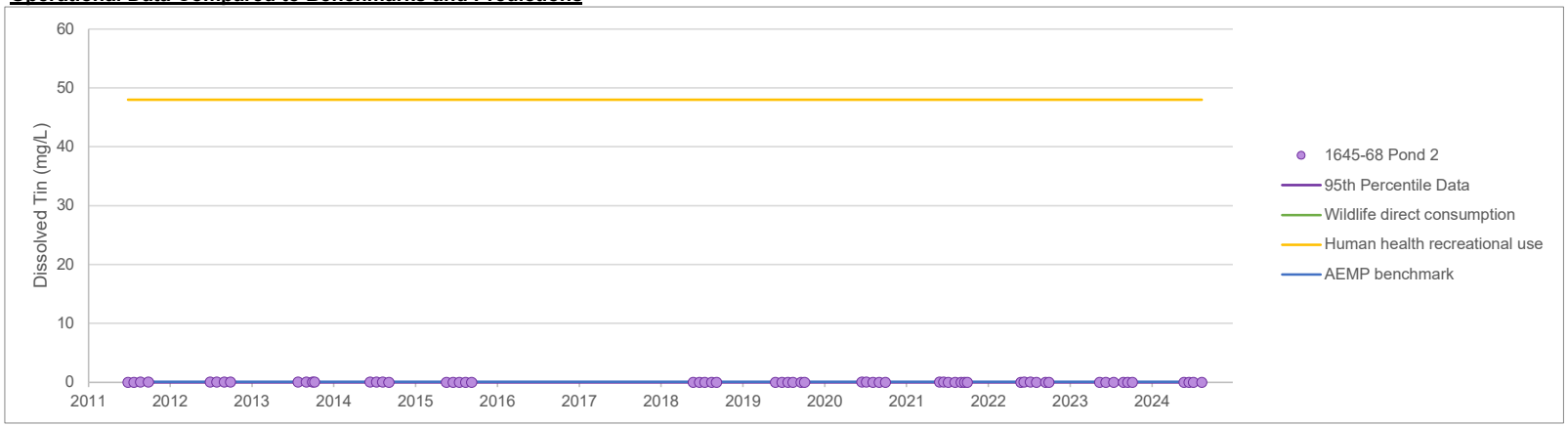


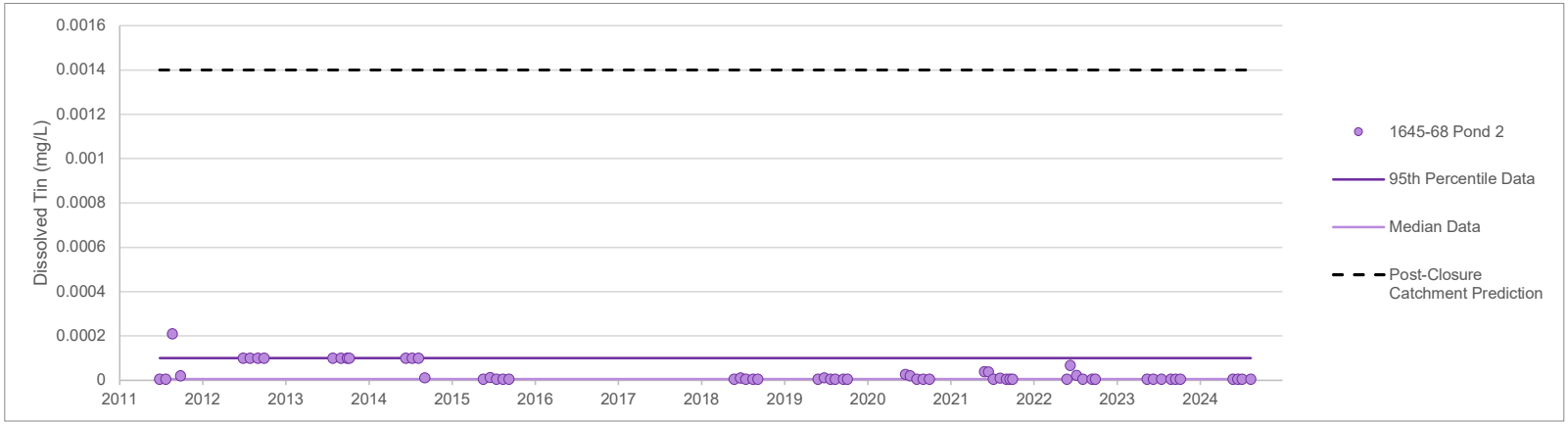
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00002	Wildlife	None
Median	0.00001	Human recreational	None
Count	60	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



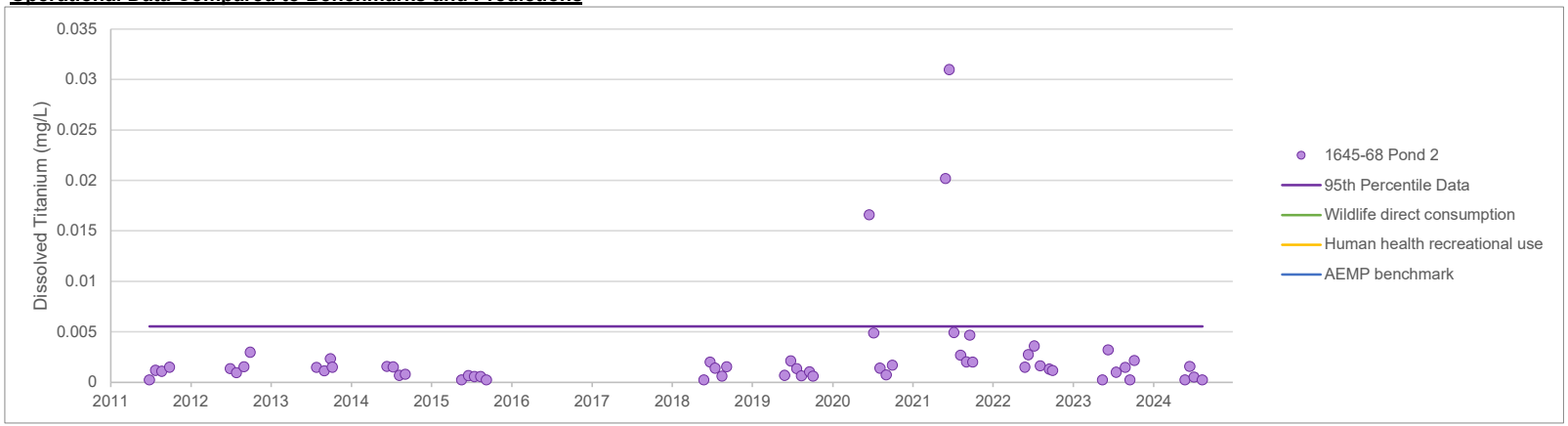


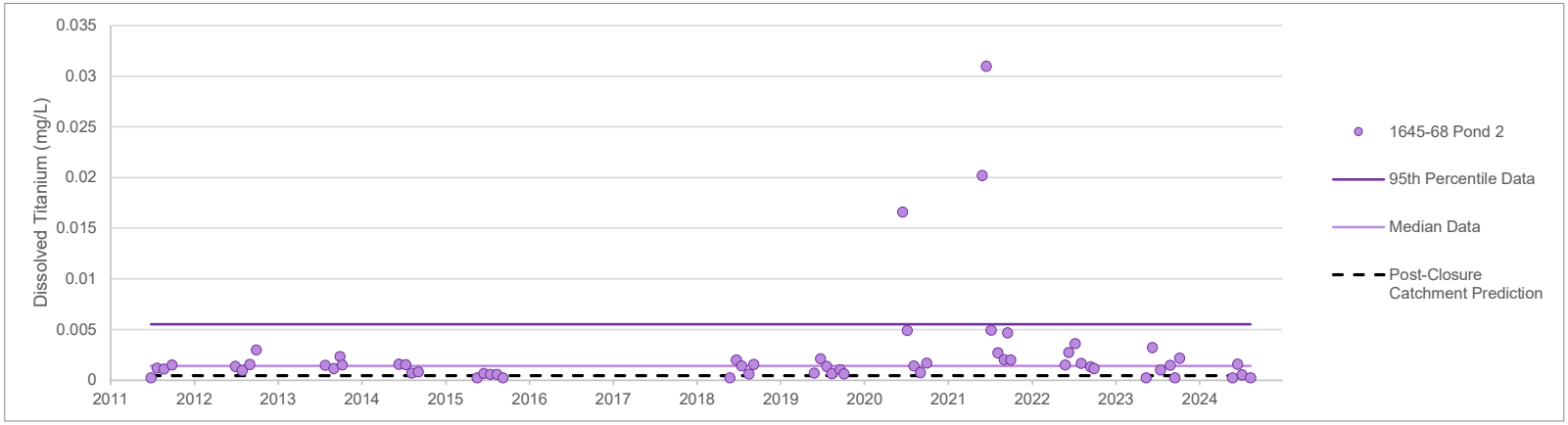
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	60	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



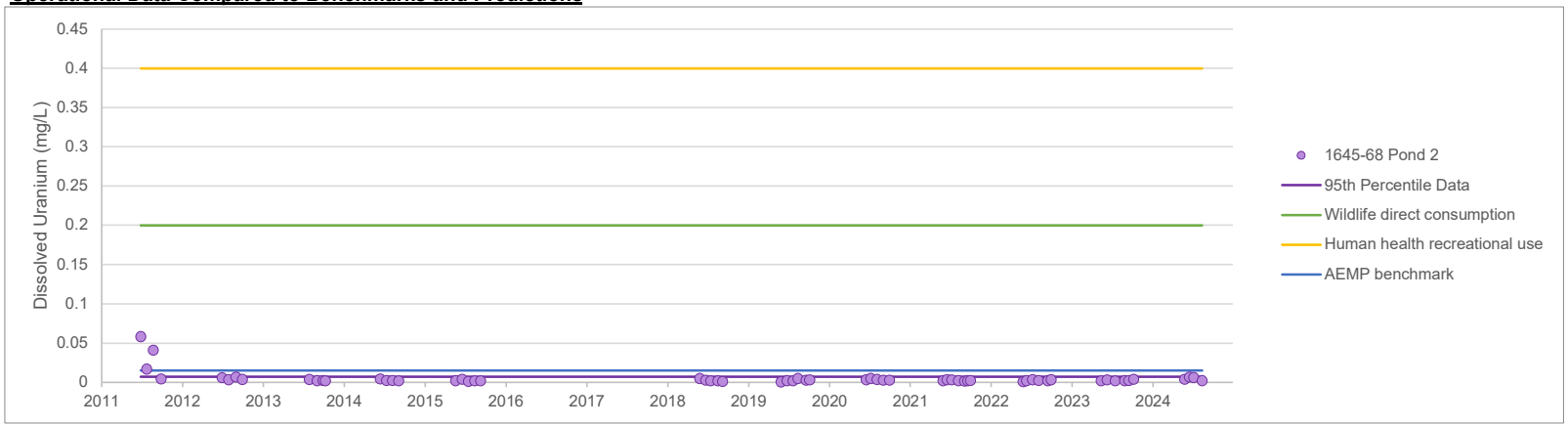


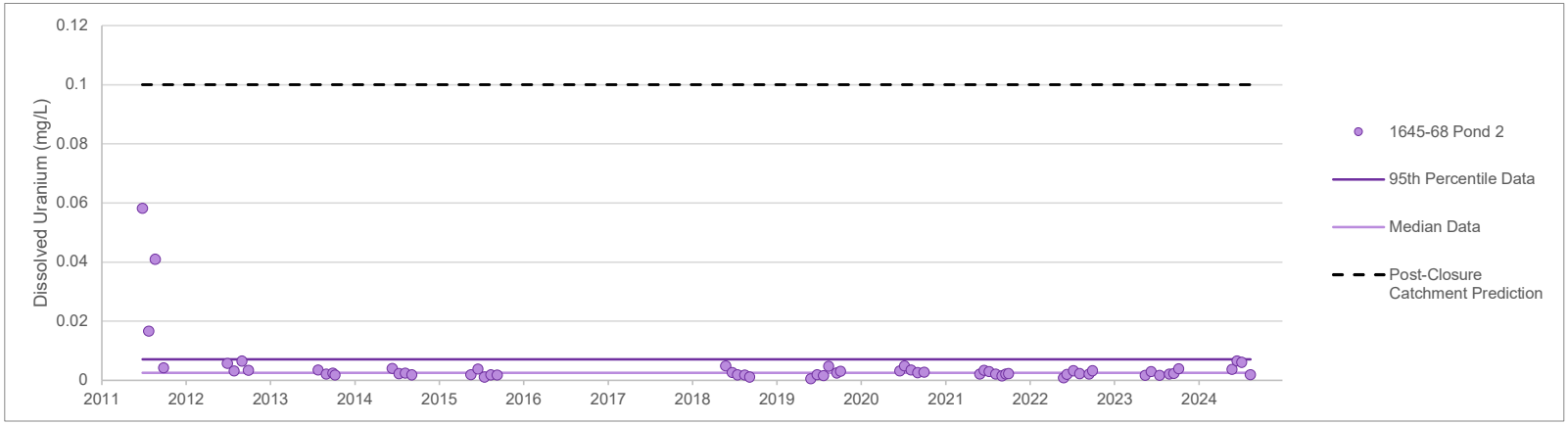
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0055	Wildlife	None
Median	0.0014	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



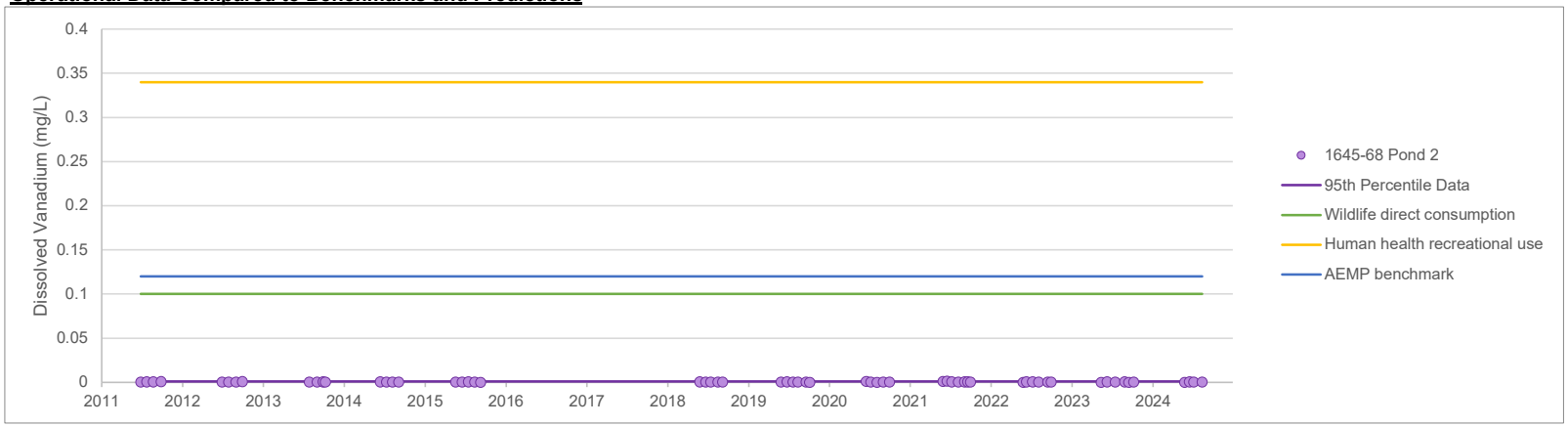


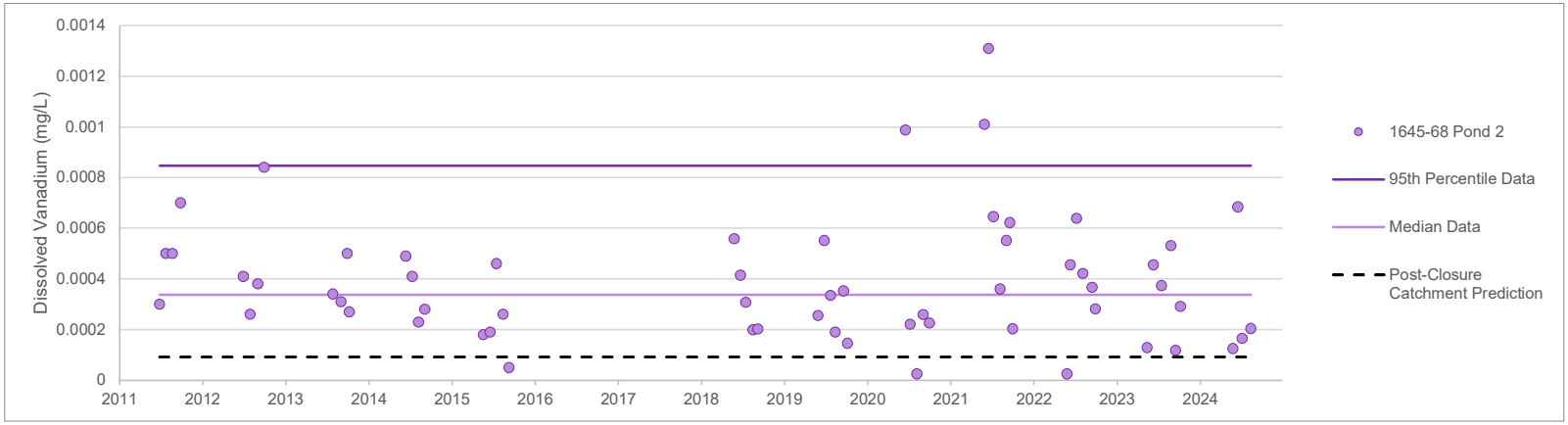
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0071	Wildlife	0.2
Median	0.0025	Human recreational	0.4
Count	60	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



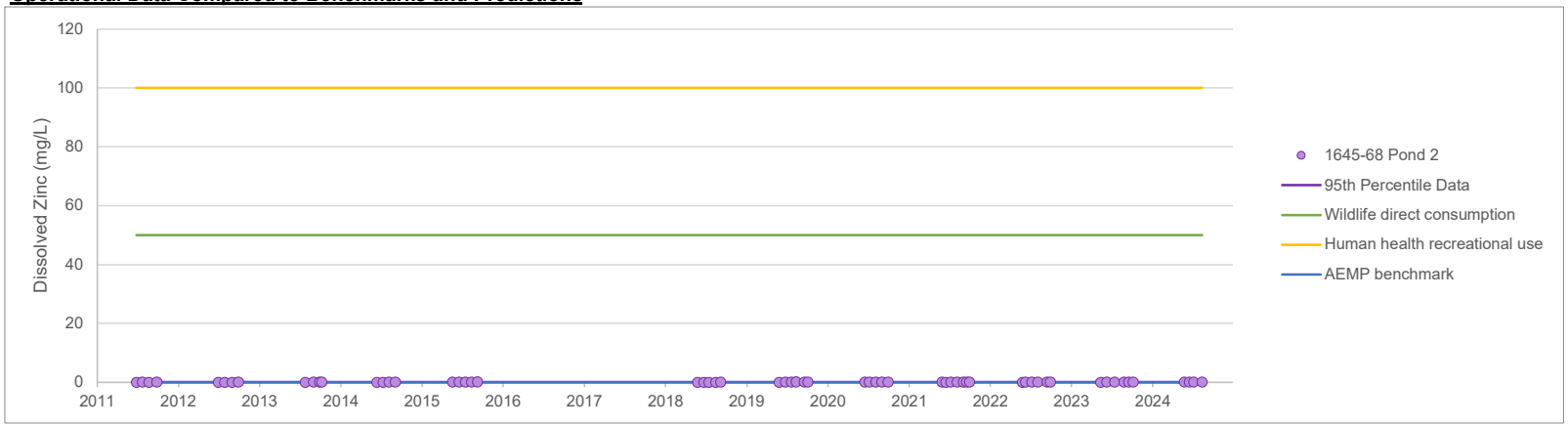


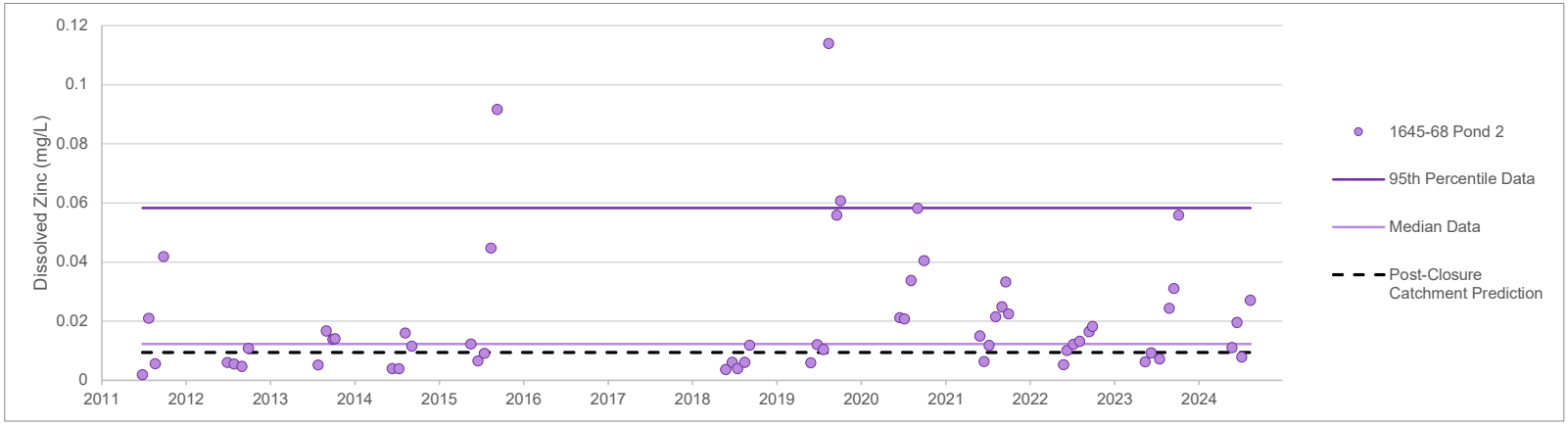
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0008	Wildlife	0.1
Median	0.0003	Human recreational	0.3
Count	60	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



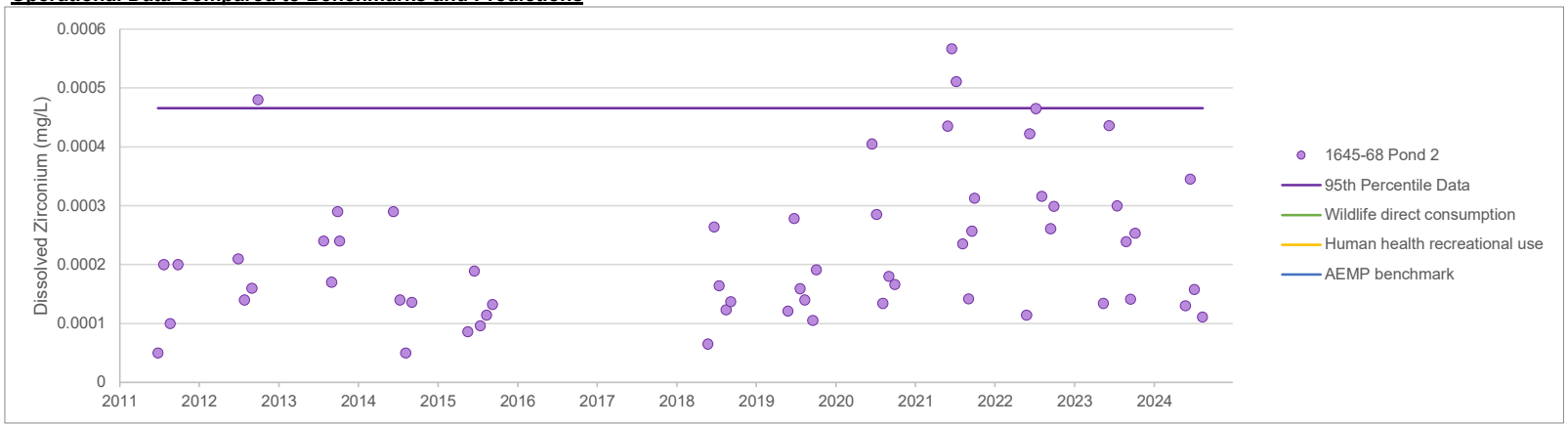


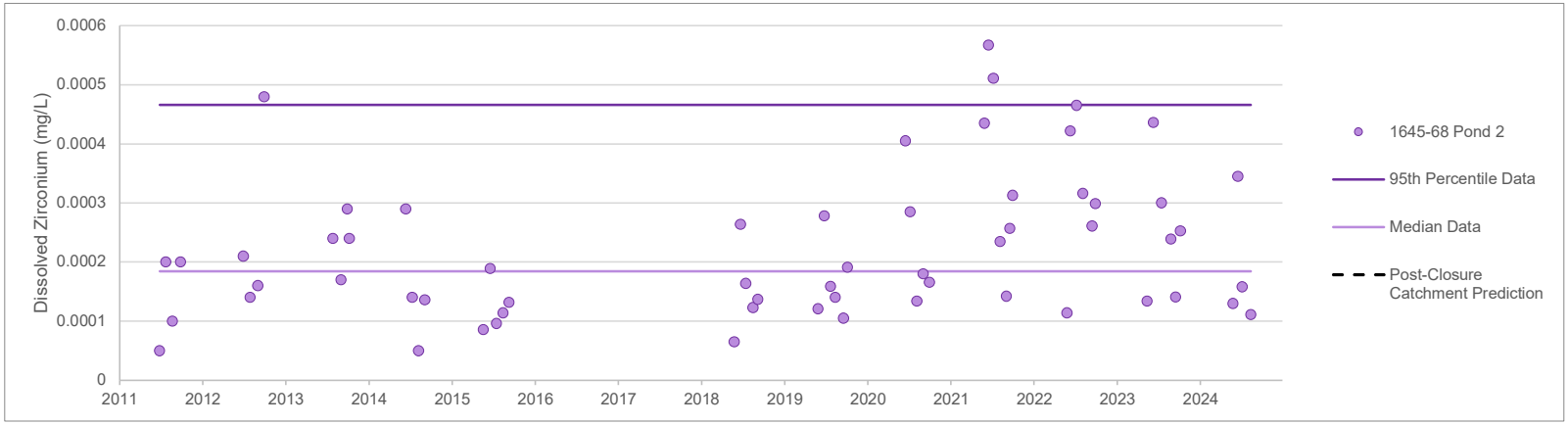
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.058	Wildlife	50
Median	0.012	Human recreational	100
Count	60	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0005	Wildlife	None
Median	0.0002	Human recreational	None
Count	60	AEMP	None

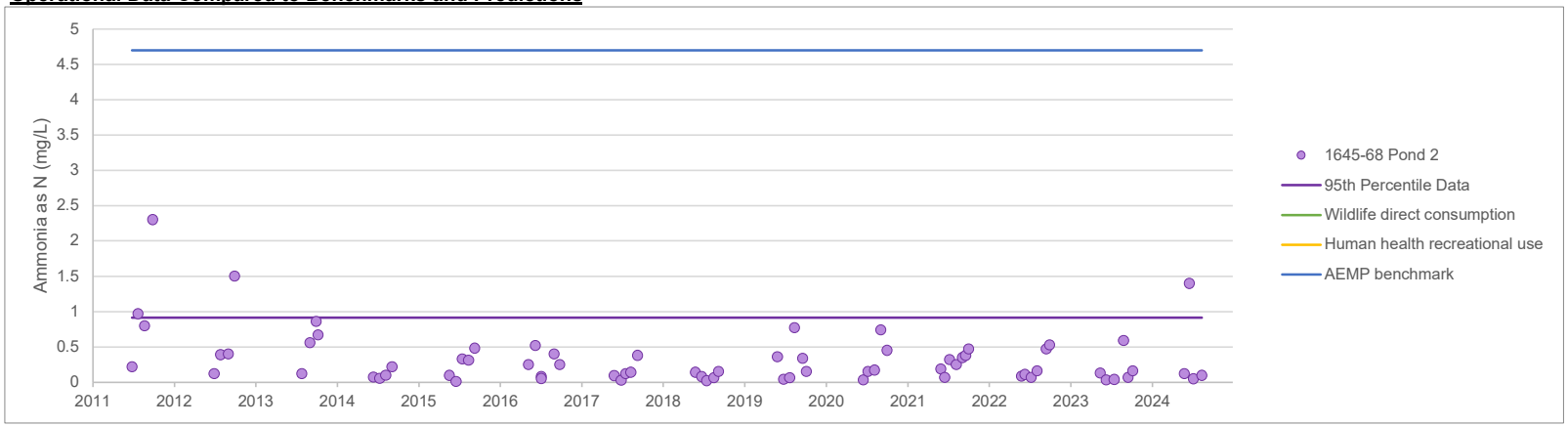
RioTinto | Diavik

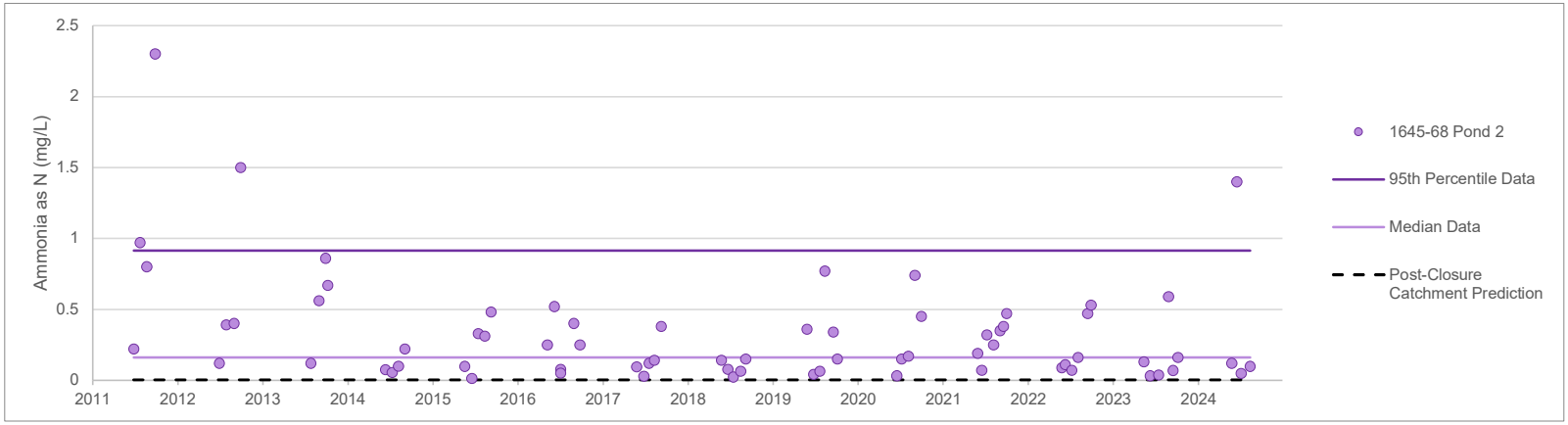
Pond 2

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



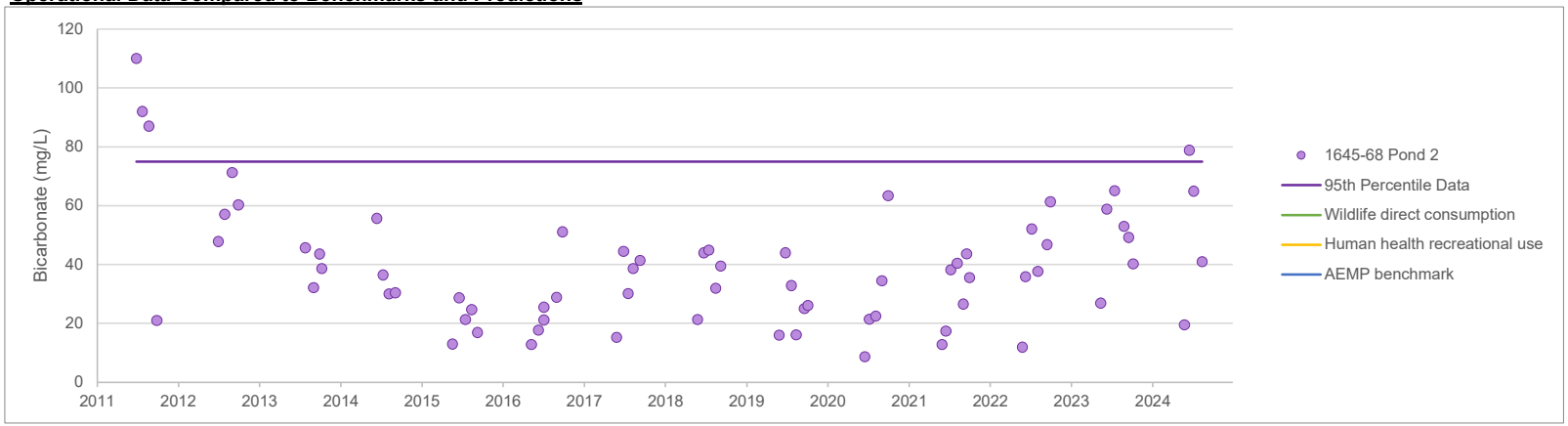


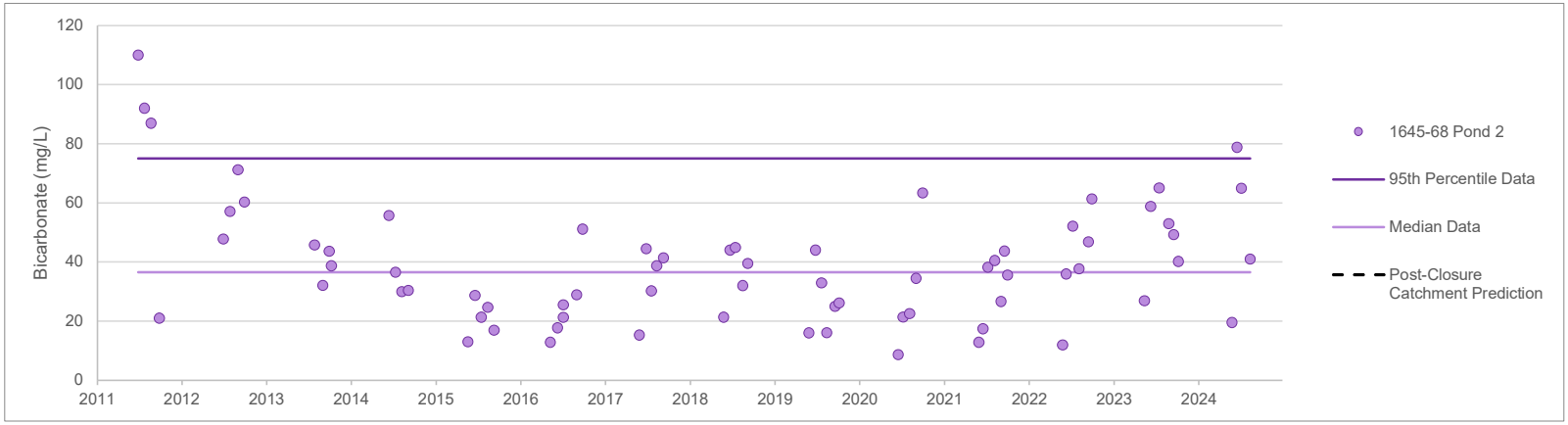
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.92	Wildlife	None
Median	0.16	Human recreational	None
Count	71	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



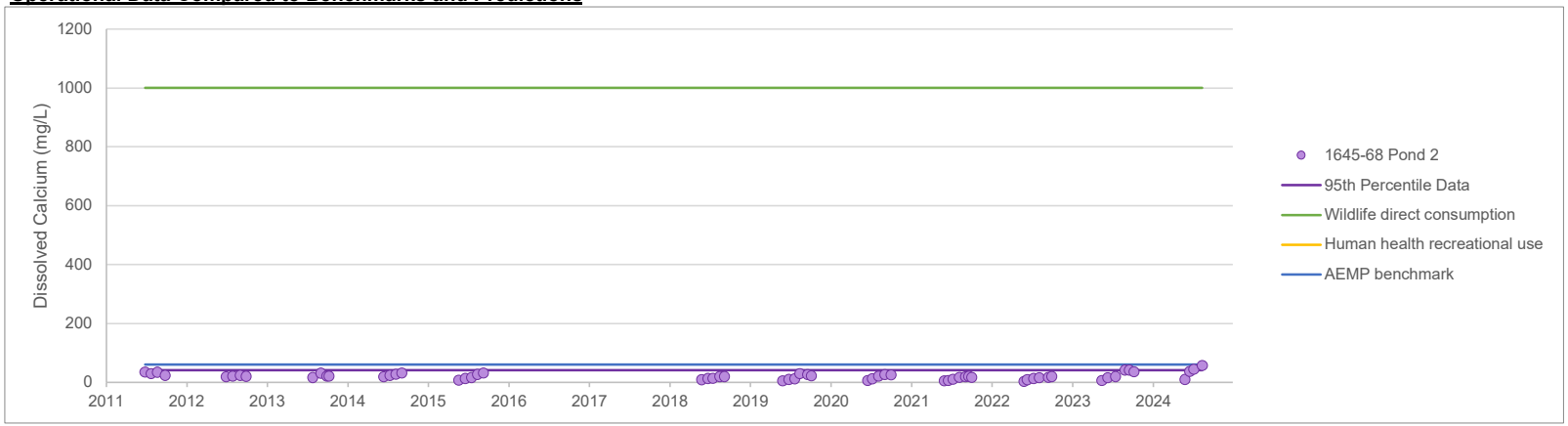


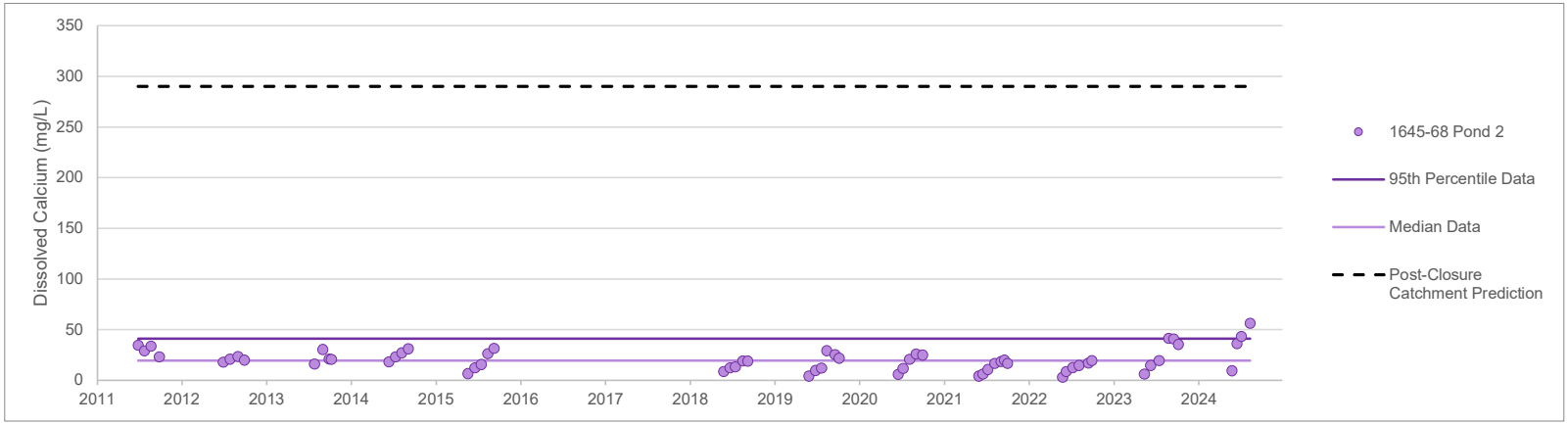
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	75.0	Wildlife	None
Median	36.5	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions



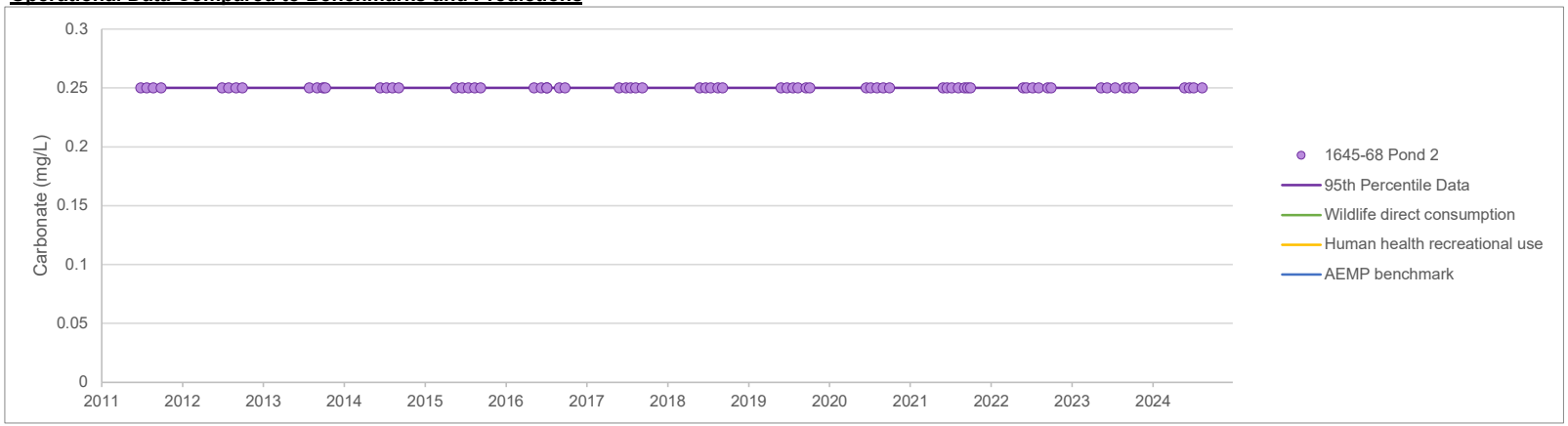


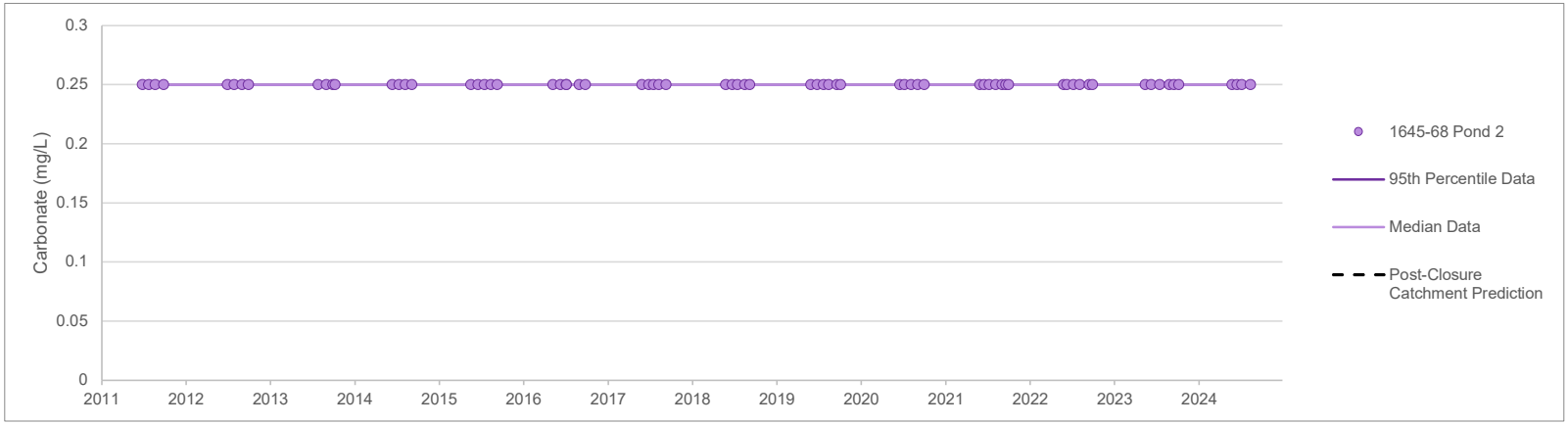
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	40.9	Wildlife	1000
Median	19.4	Human recreational	None
Count	60	AEMP	60

Operational Data Compared to Benchmarks and Predictions



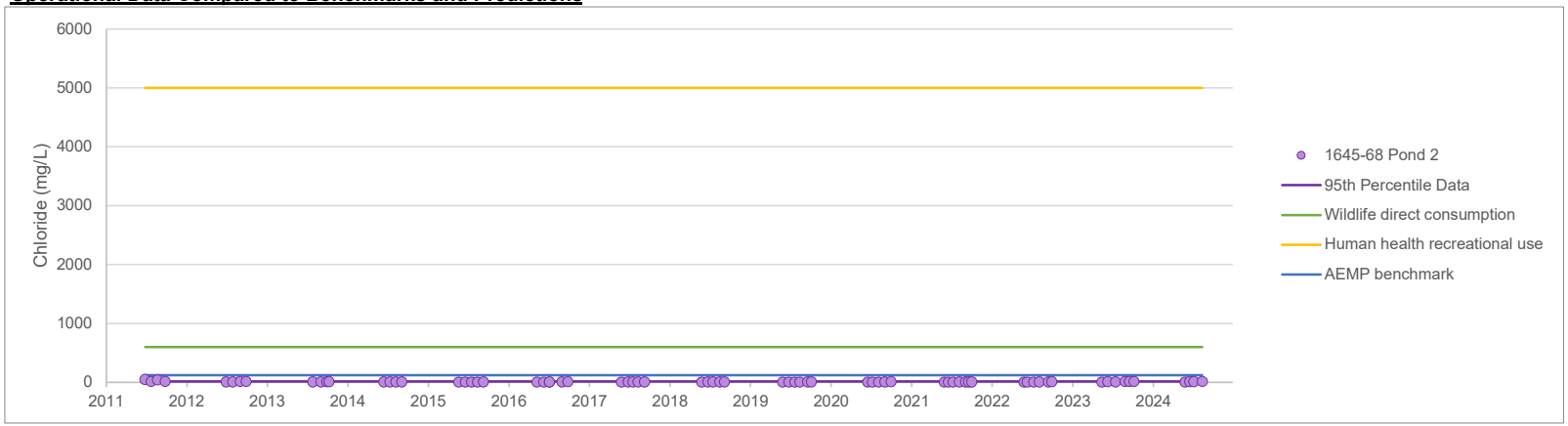


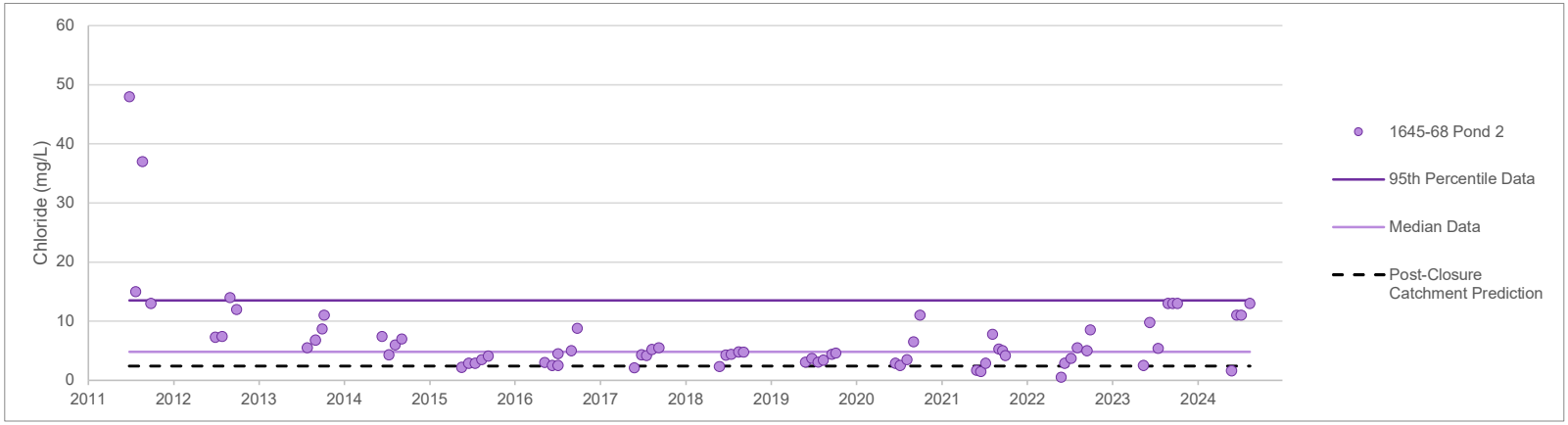
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions



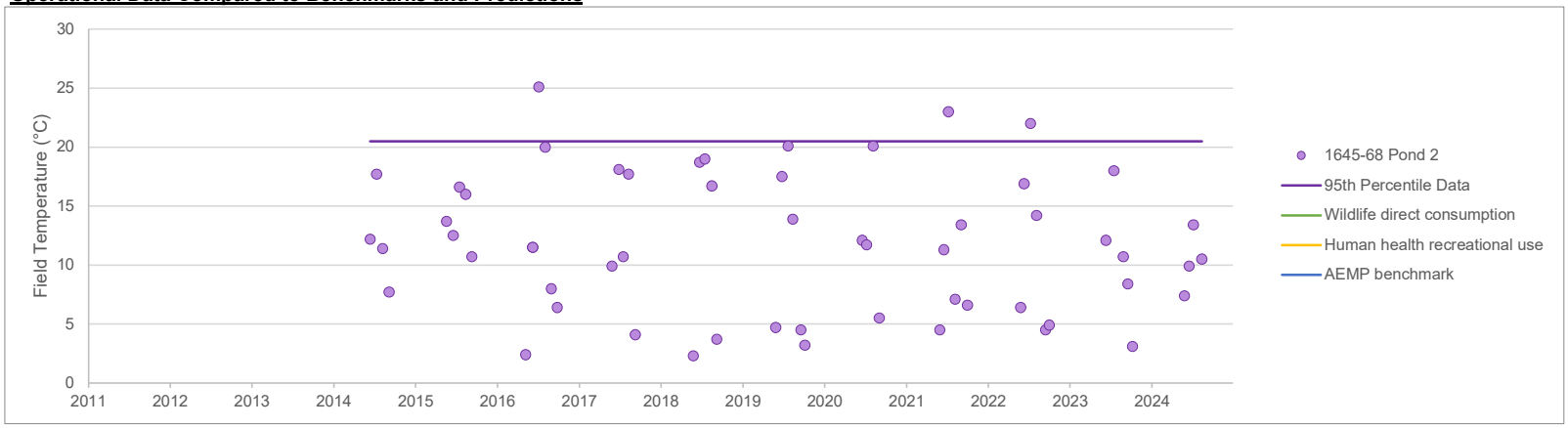


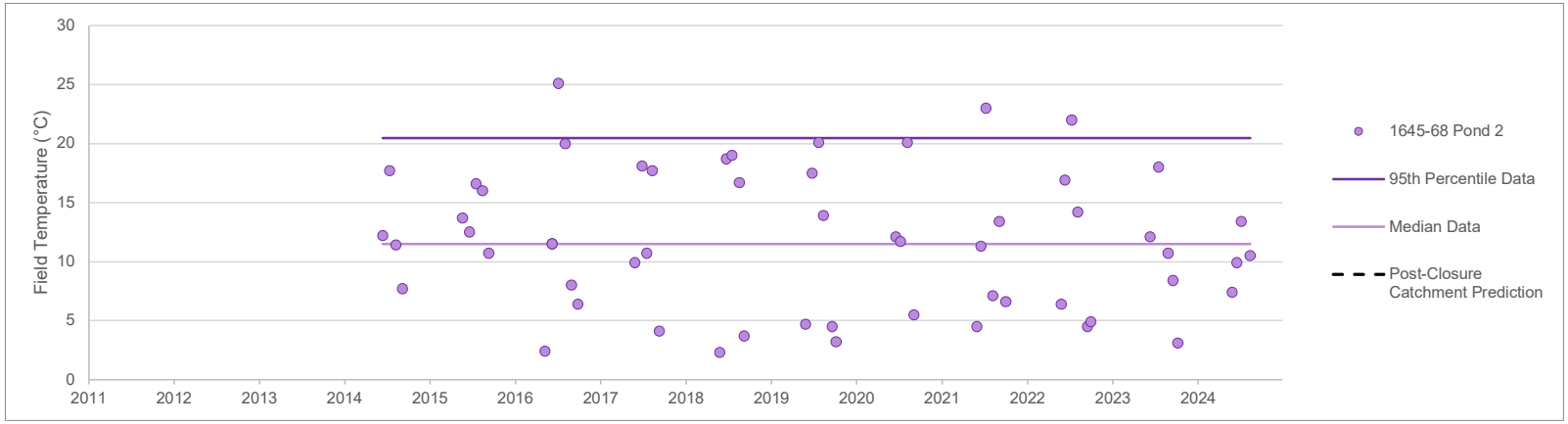
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	13.5	Wildlife	600
Median	4.8	Human recreational	5000
Count	71	AEMP	120

Operational Data Compared to Benchmarks and Predictions



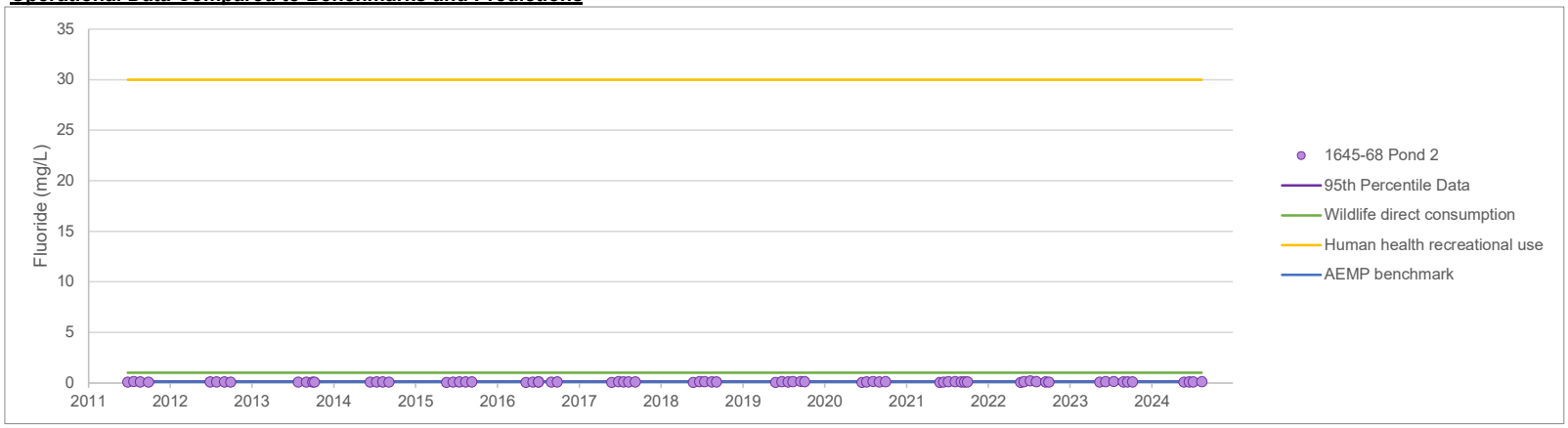


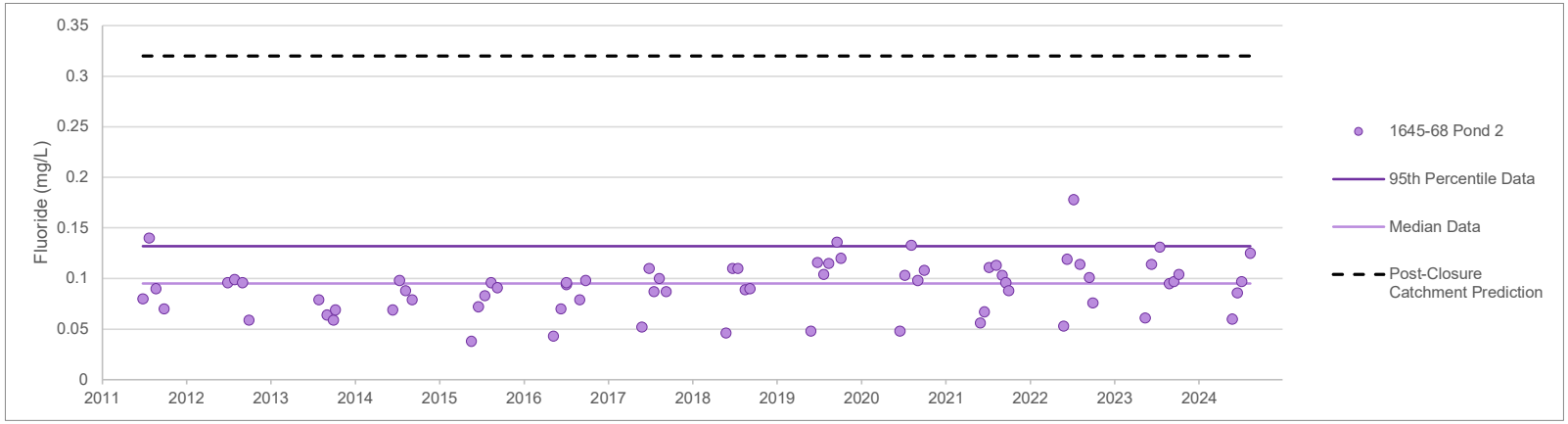
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	20.5	Wildlife	None
Median	11.5	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



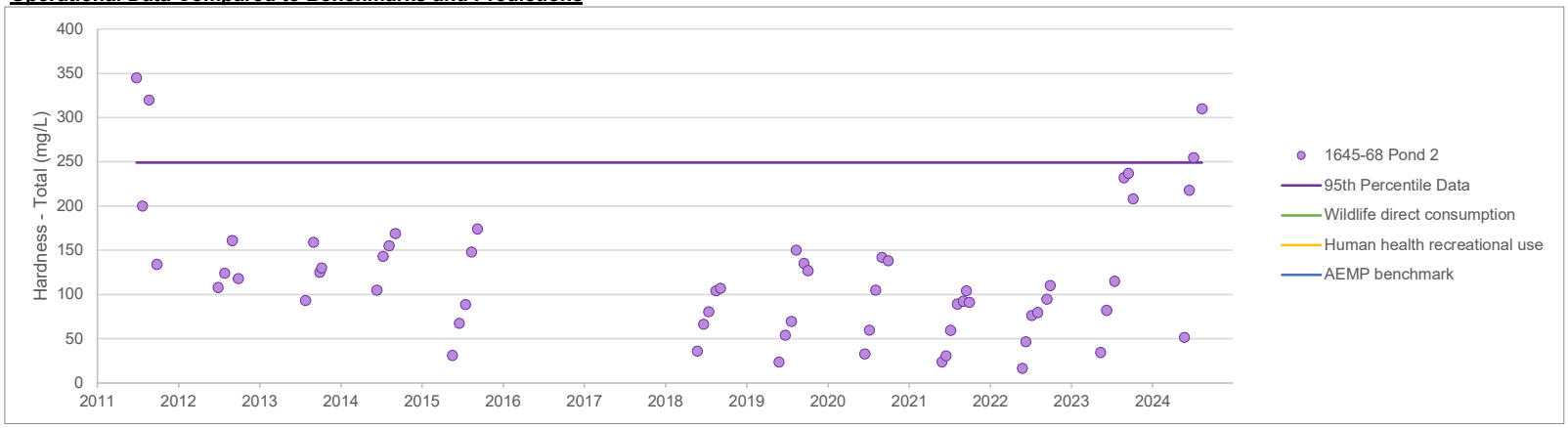


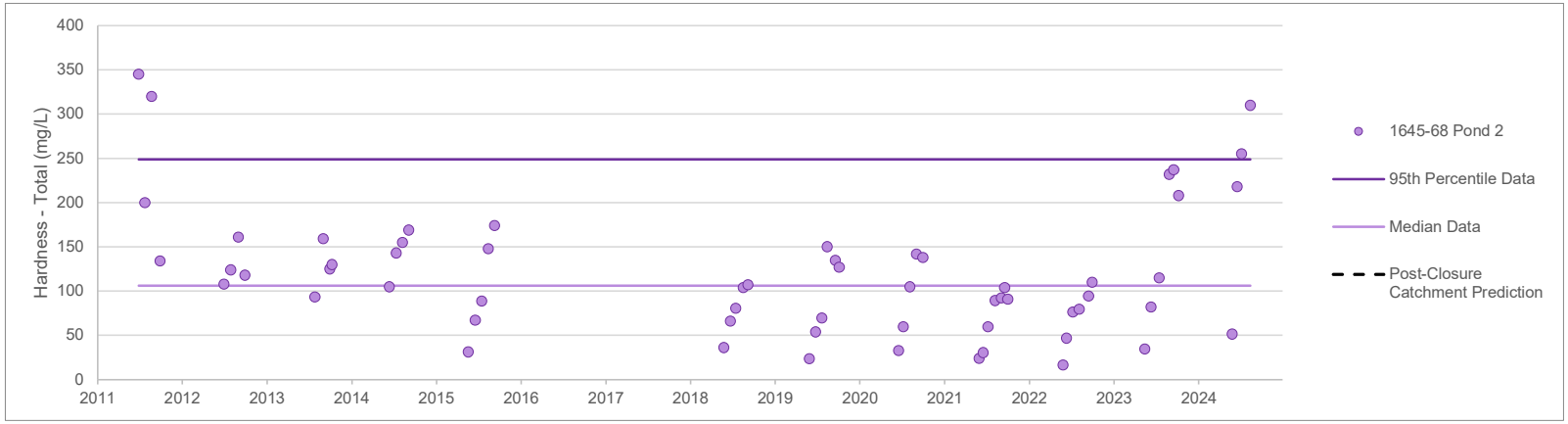
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.13	Wildlife	1
Median	0.10	Human recreational	30
Count	71	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



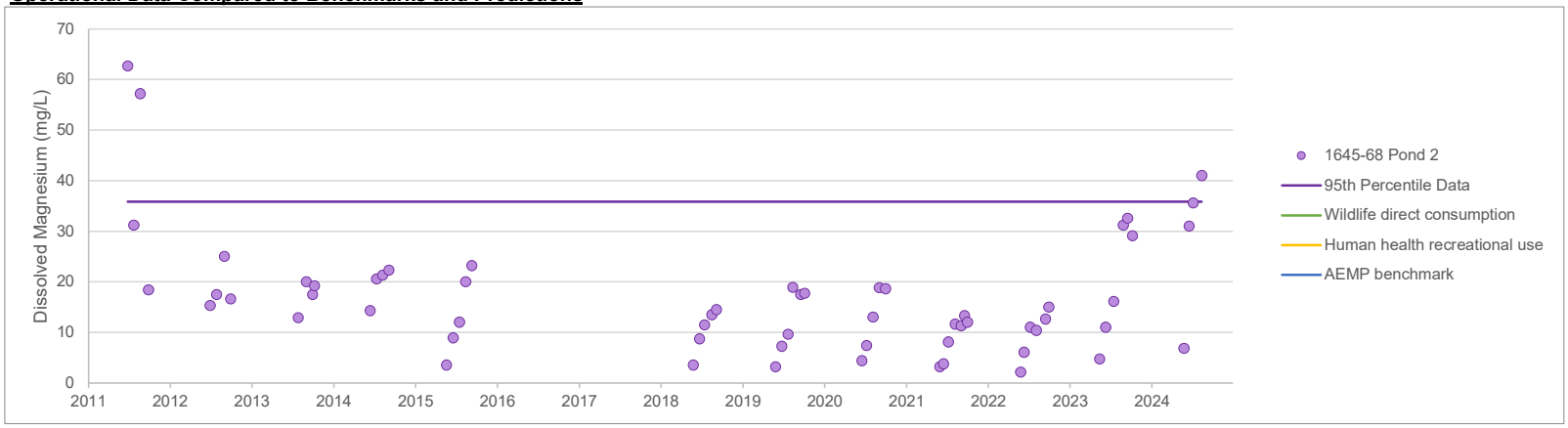


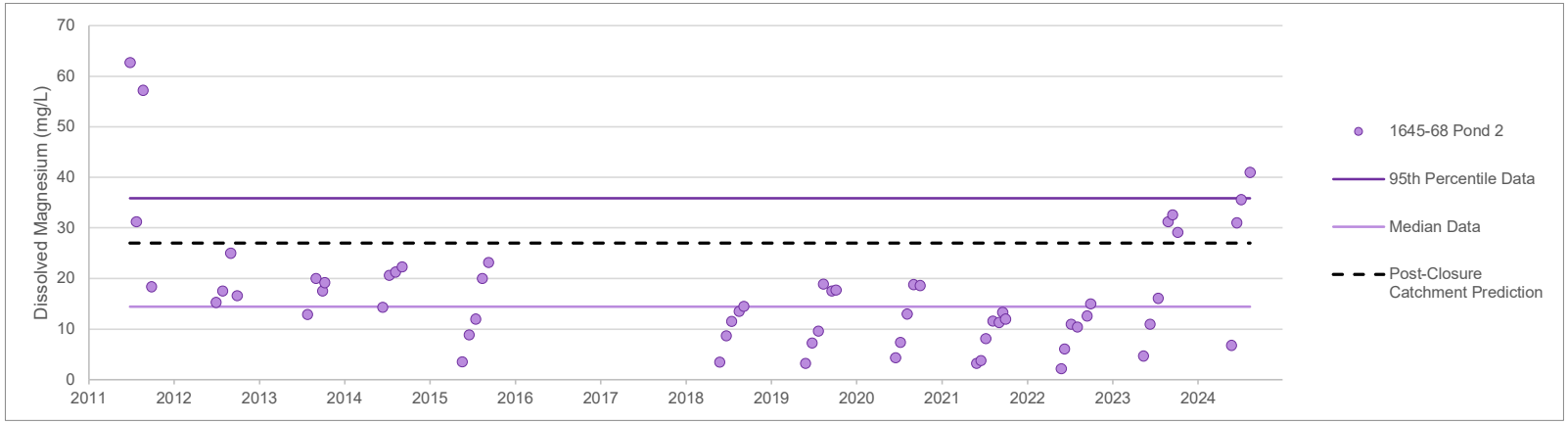
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	249	Wildlife	None
Median	106	Human recreational	None
Count	72	AEMP	None

Operational Data Compared to Benchmarks and Predictions



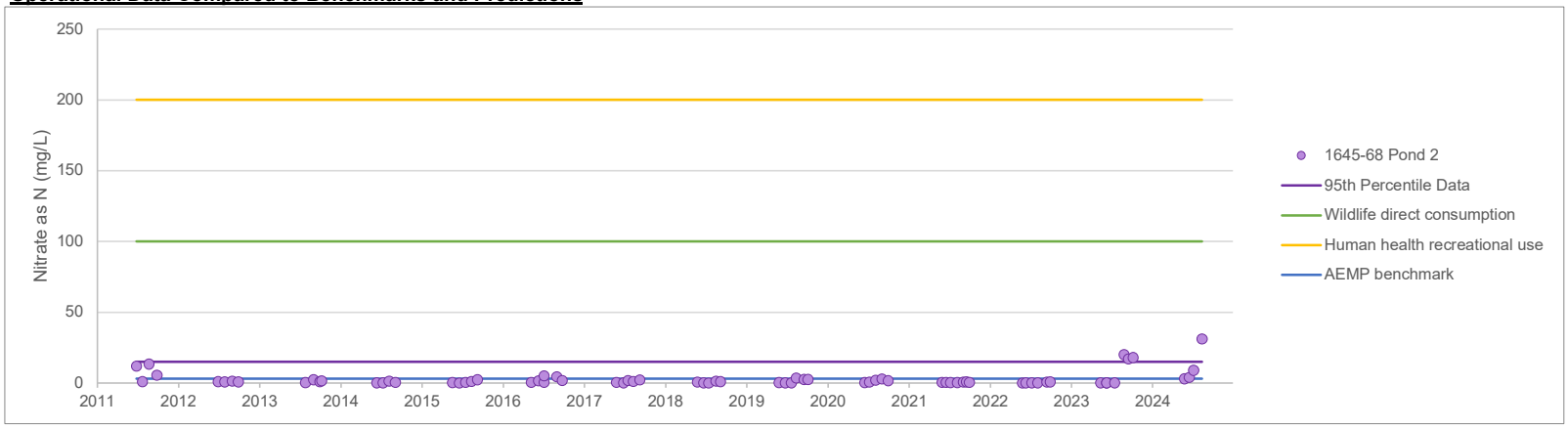


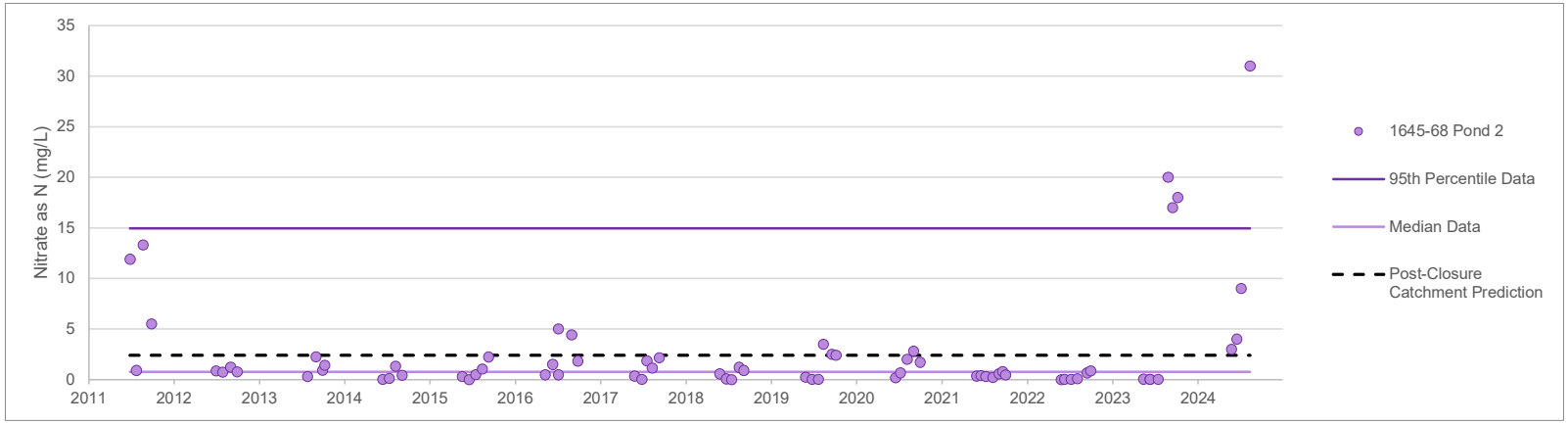
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	35.9	Wildlife	None
Median	14.4	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



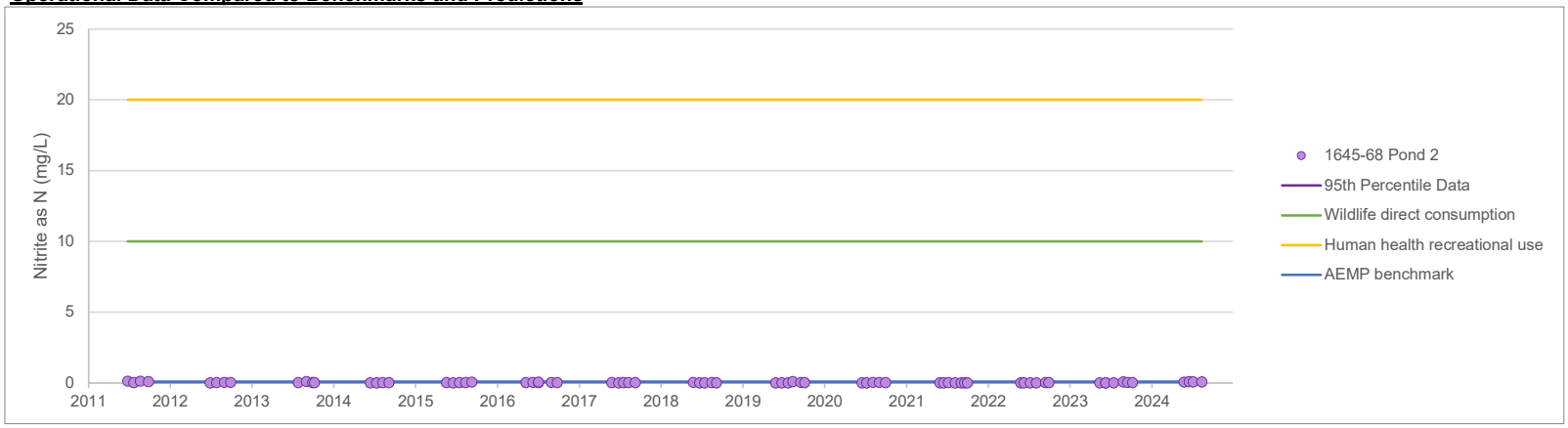


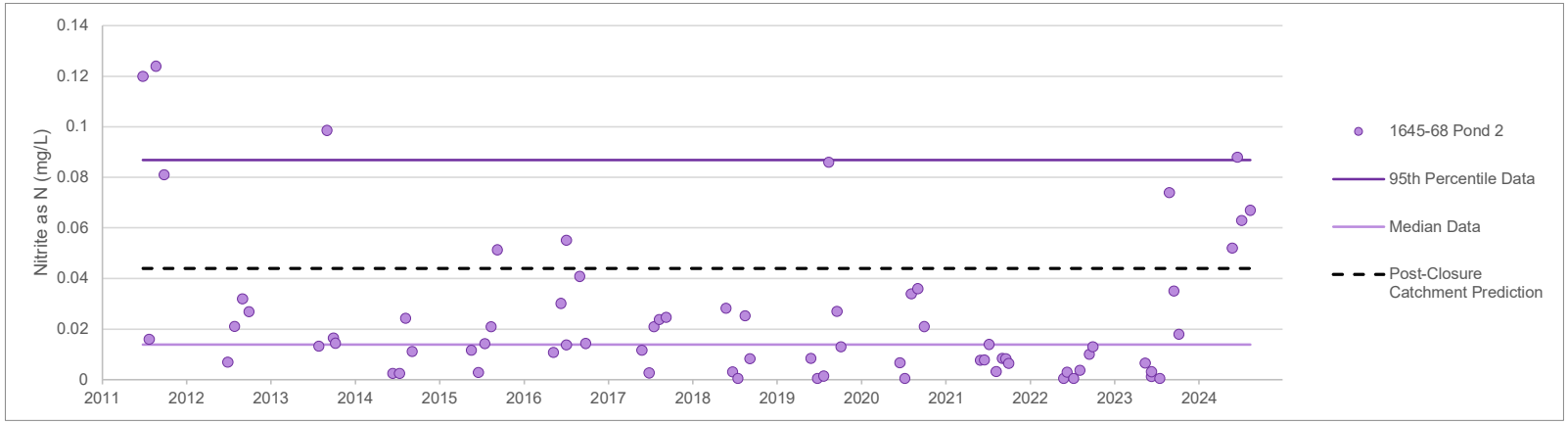
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	15.0	Wildlife	100
Median	0.8	Human recreational	200
Count	72	AEMP	3

Operational Data Compared to Benchmarks and Predictions



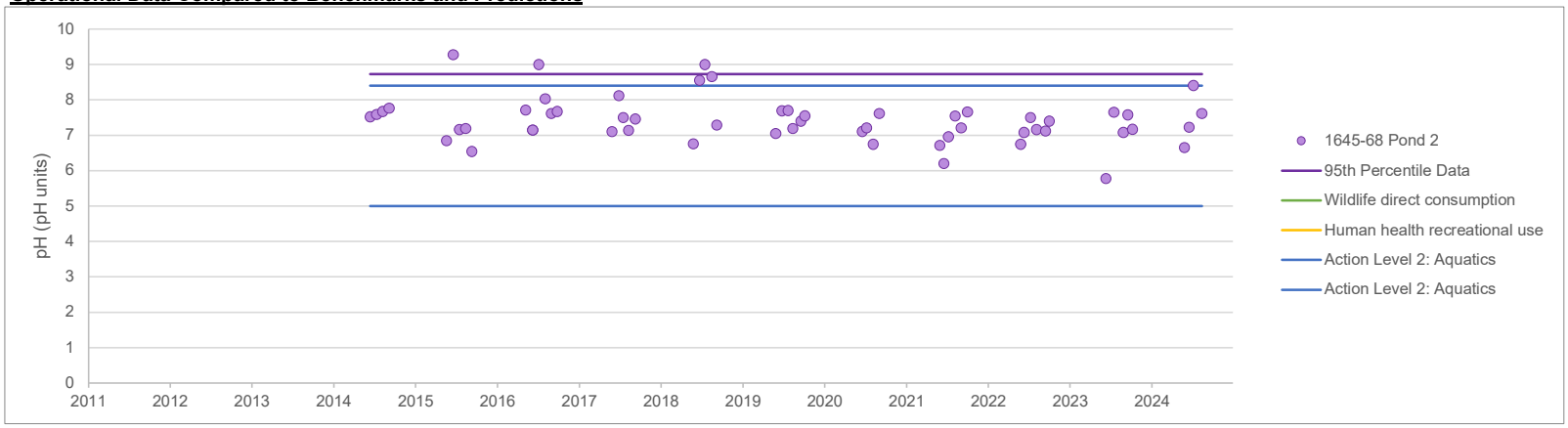


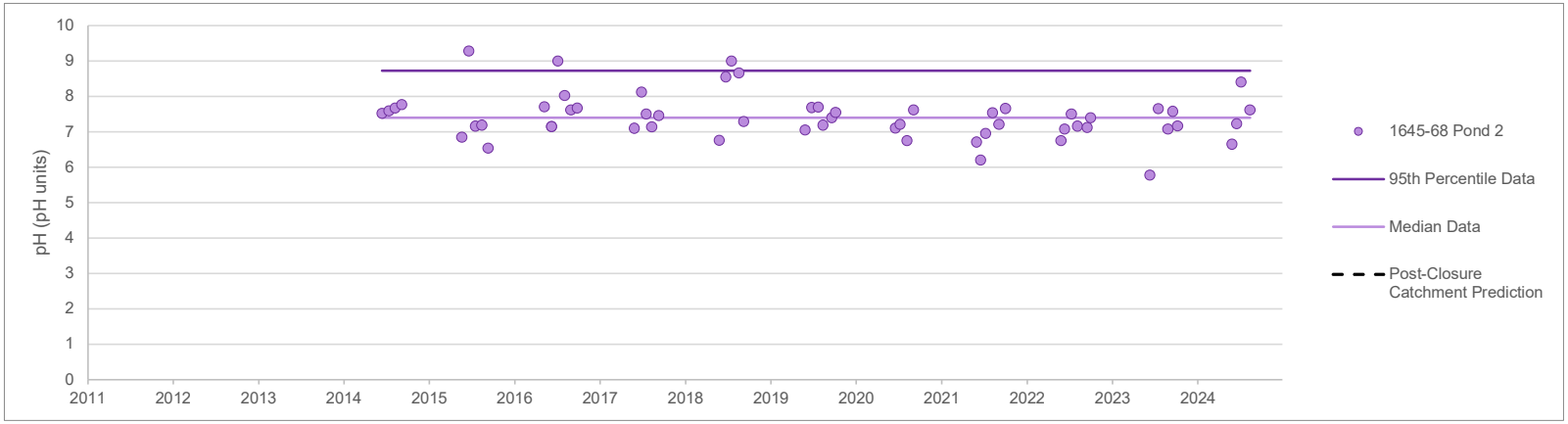
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.087	Wildlife	10.0
Median	0.014	Human recreational	20.0
Count	72	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



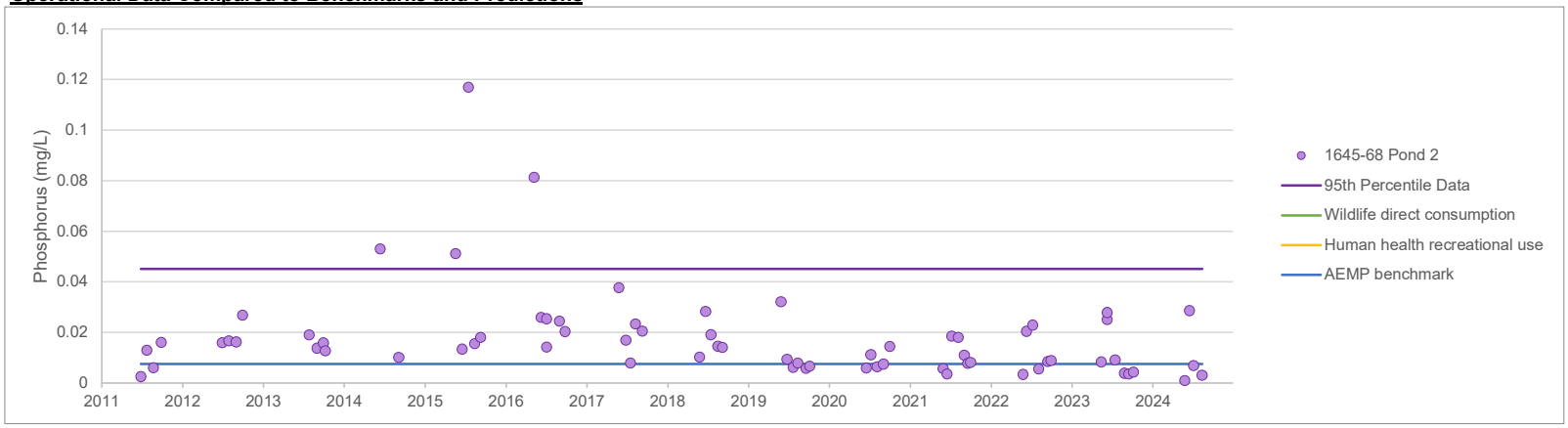


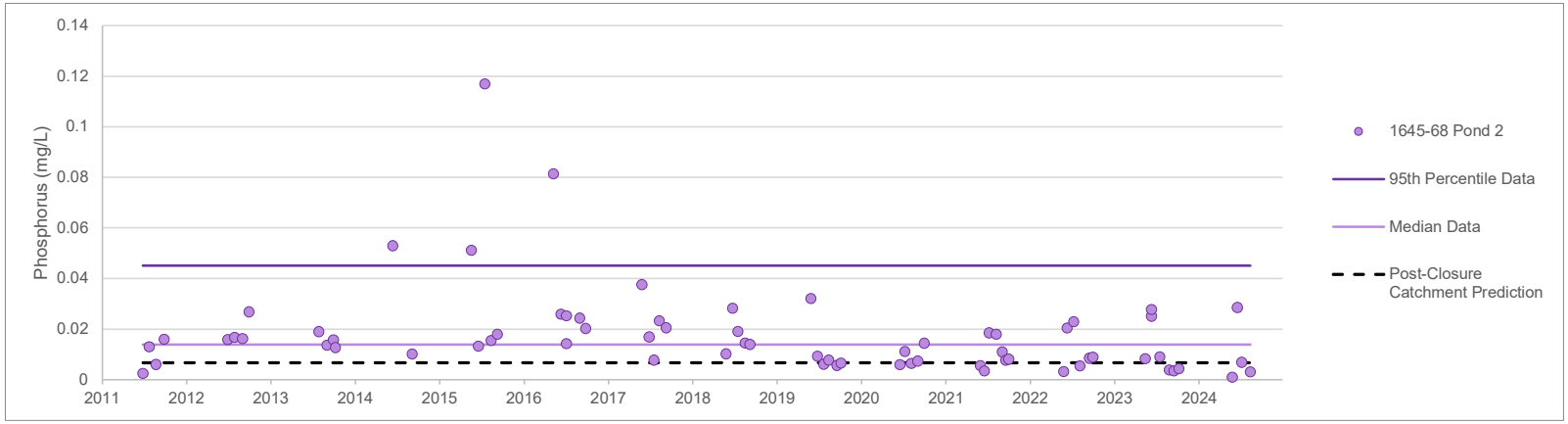
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.7	Wildlife	None
Median	7.4	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



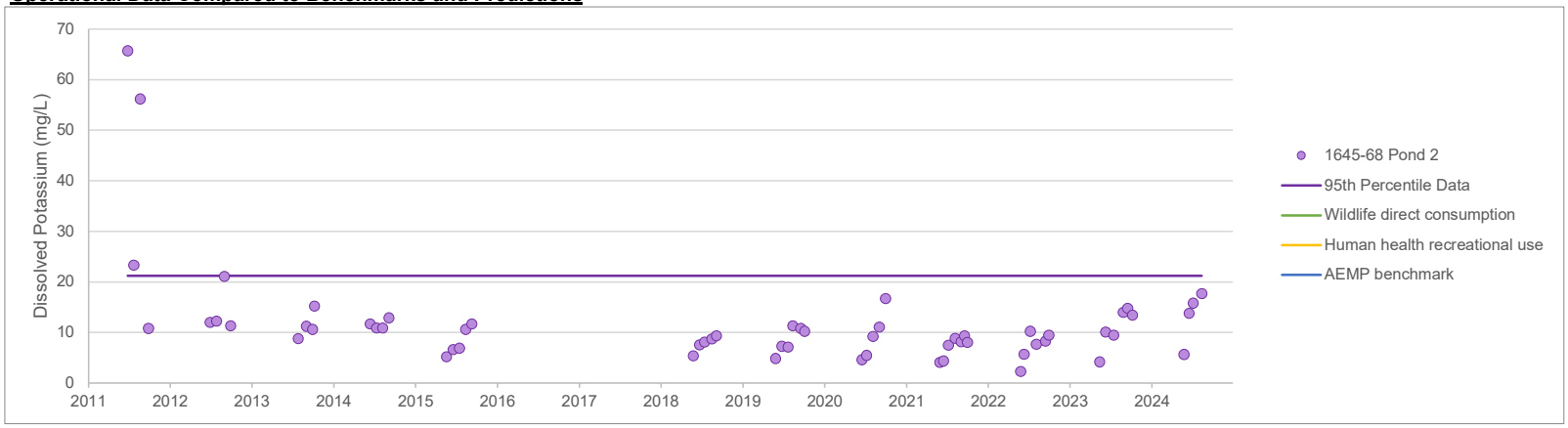


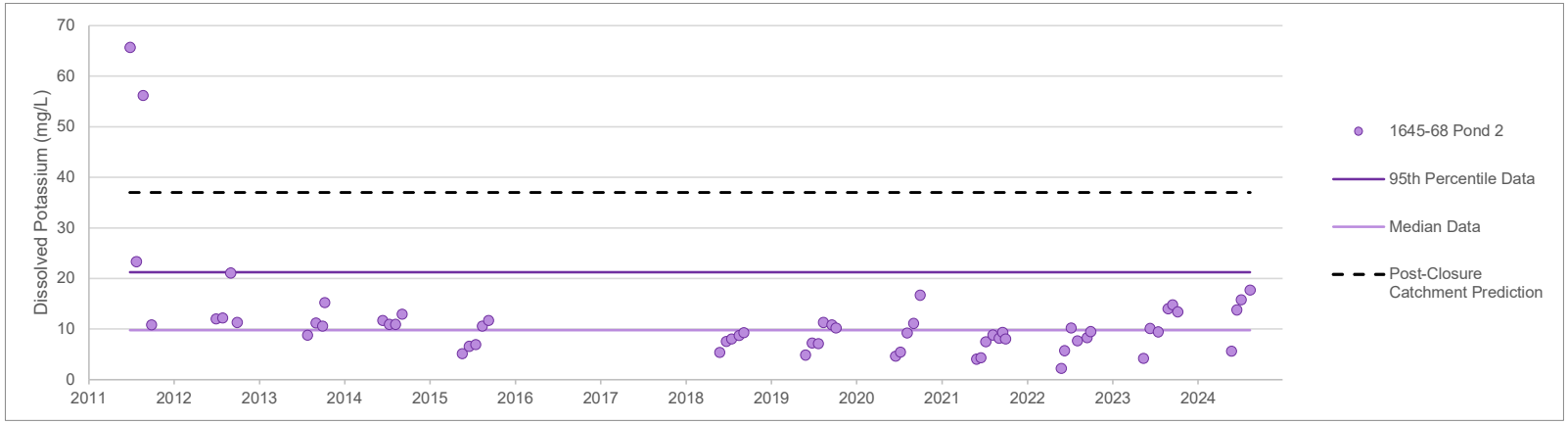
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.045	Wildlife	None
Median	0.014	Human recreational	None
Count	70	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



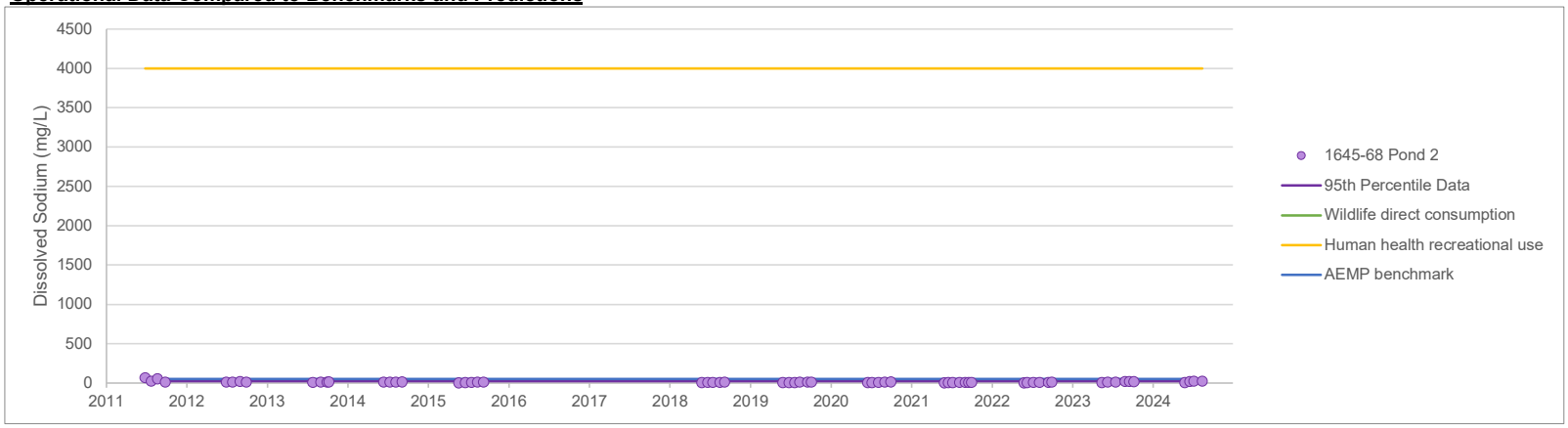


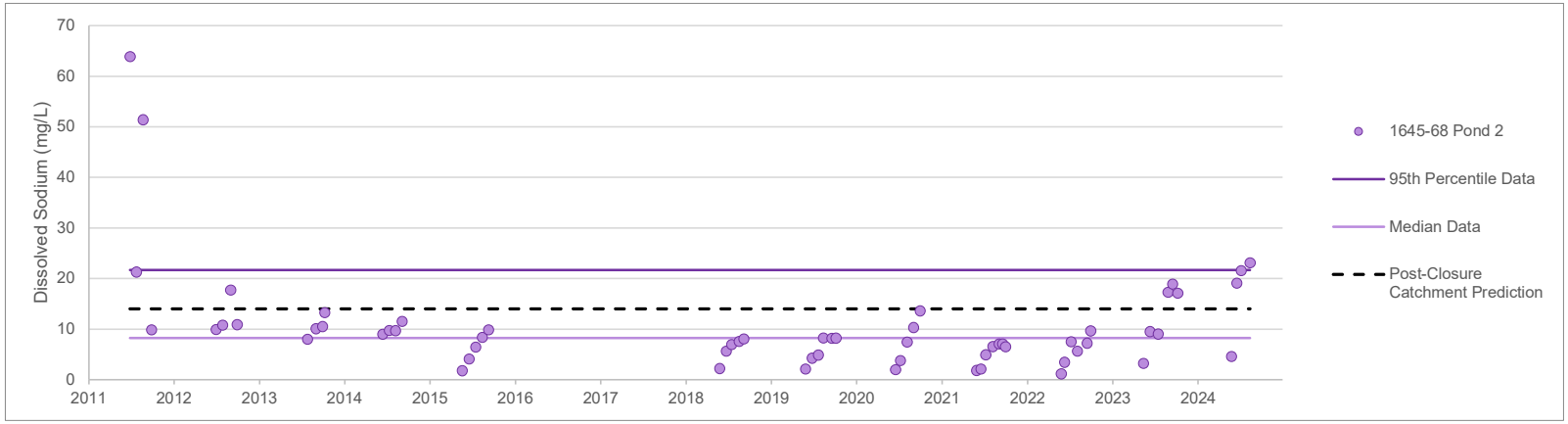
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	21.2	Wildlife	None
Median	9.8	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



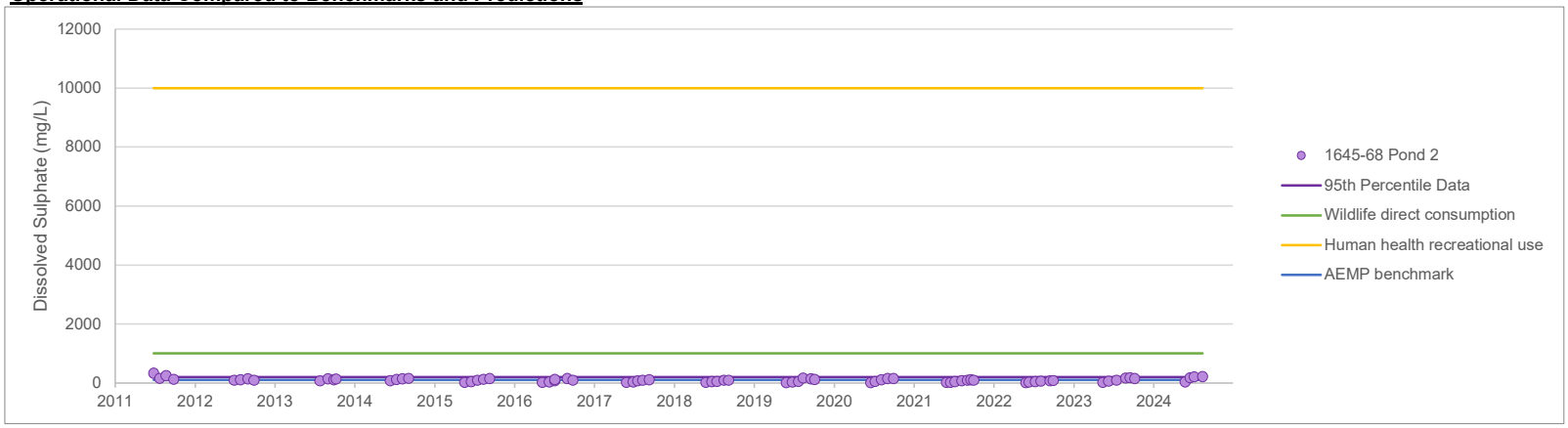


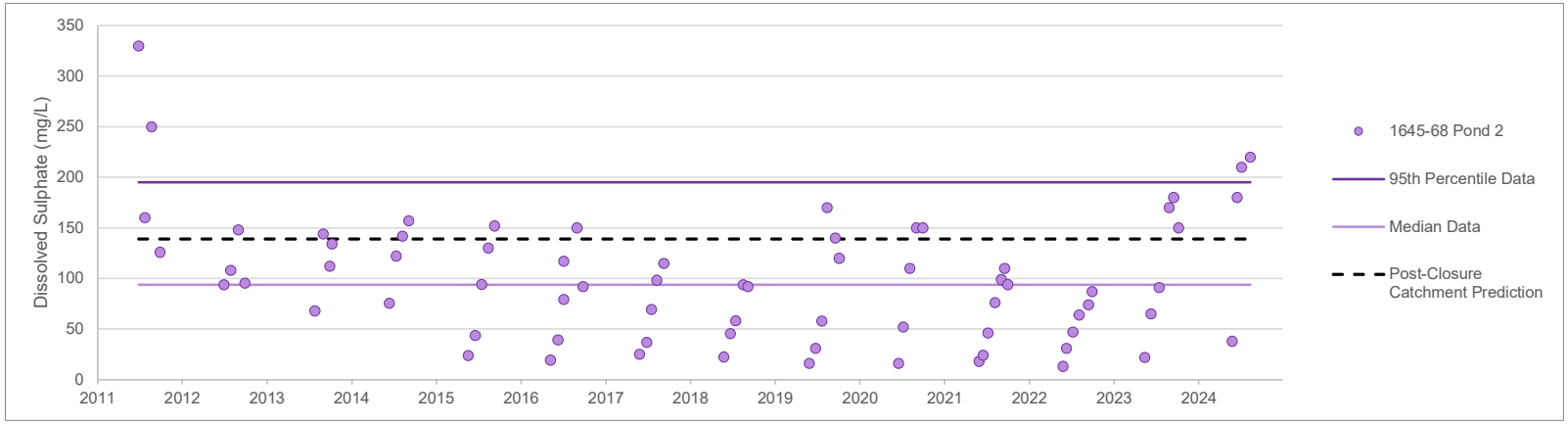
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	21.7	Wildlife	None
Median	8.2	Human recreational	4000
Count	60	AEMP	52

Operational Data Compared to Benchmarks and Predictions



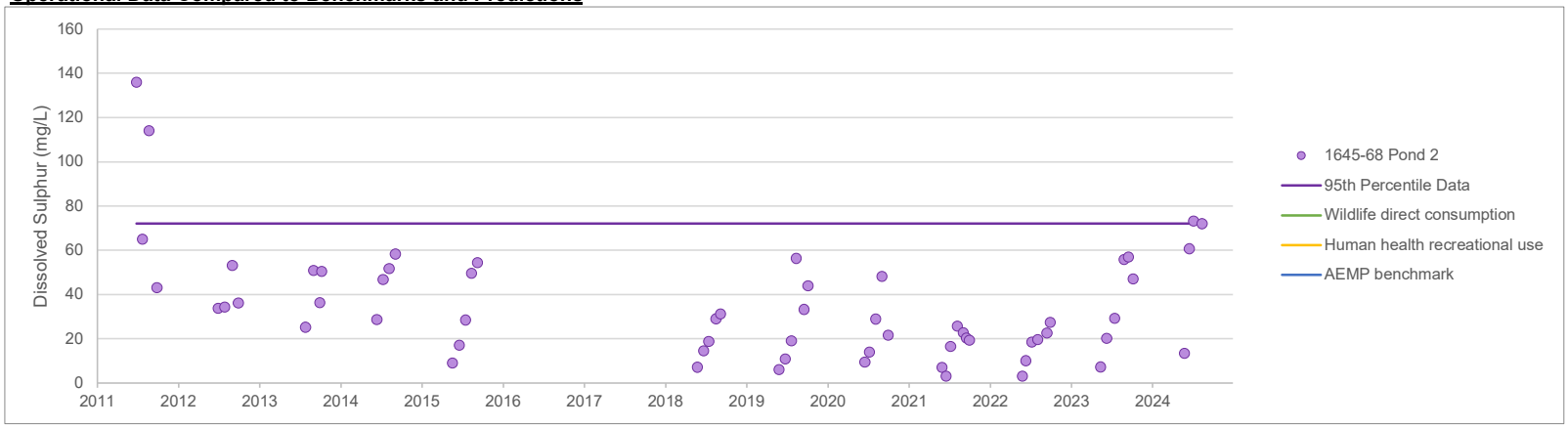


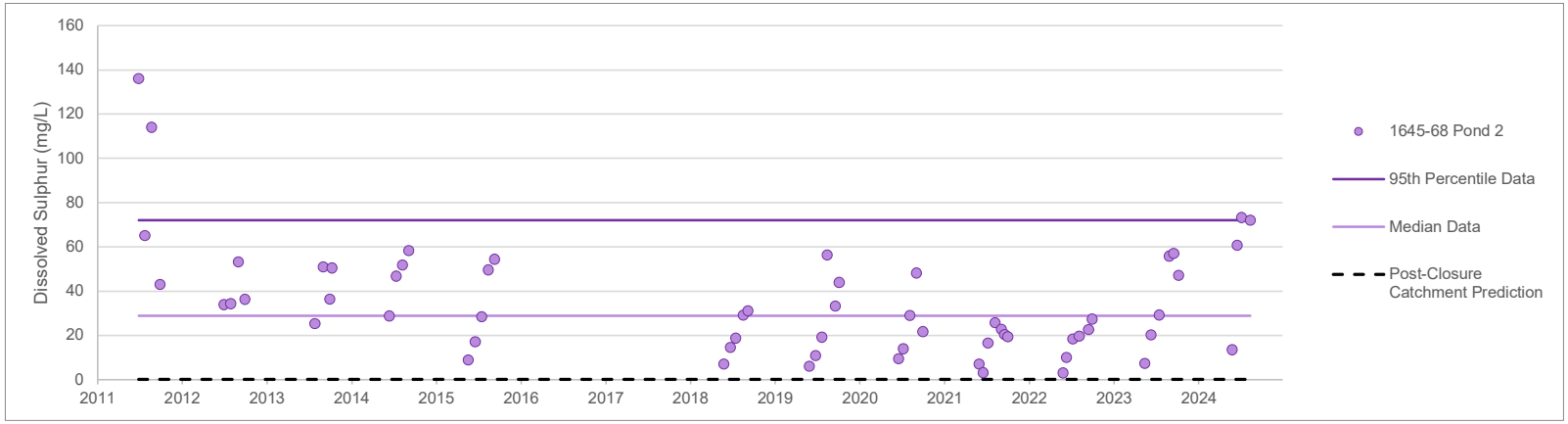
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	195	Wildlife	1000
Median	94	Human recreational	10000
Count	71	AEMP	100

Operational Data Compared to Benchmarks and Predictions



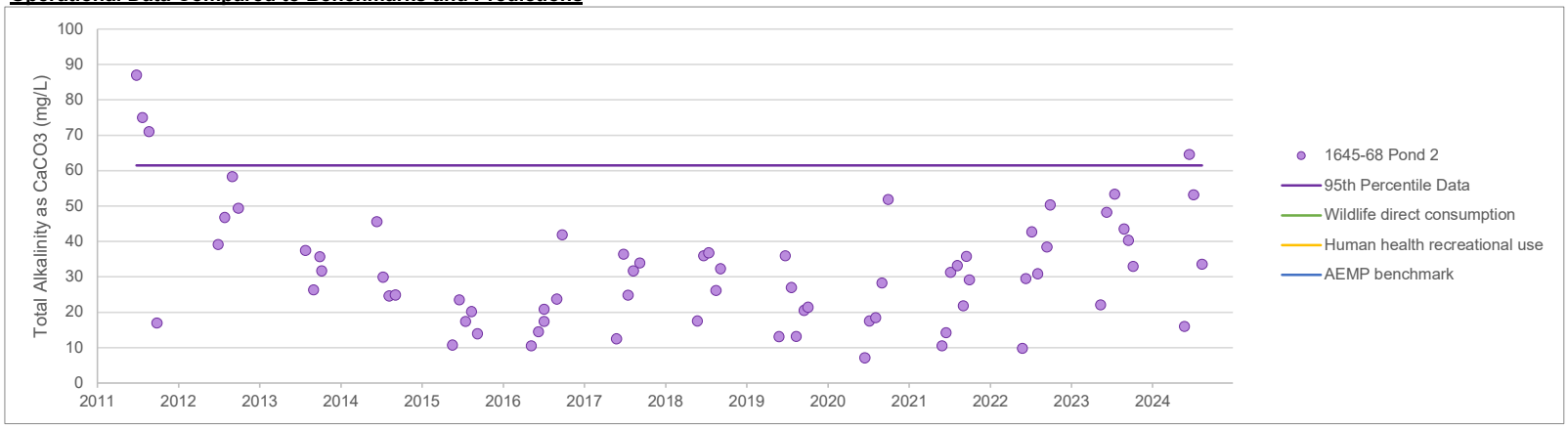


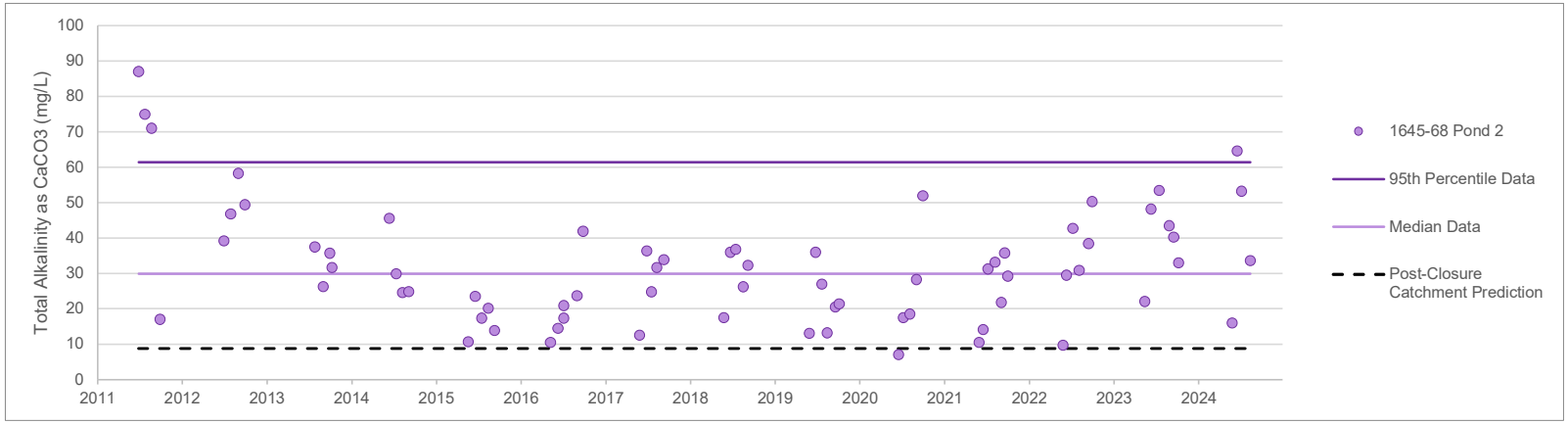
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	72.1	Wildlife	None
Median	28.8	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



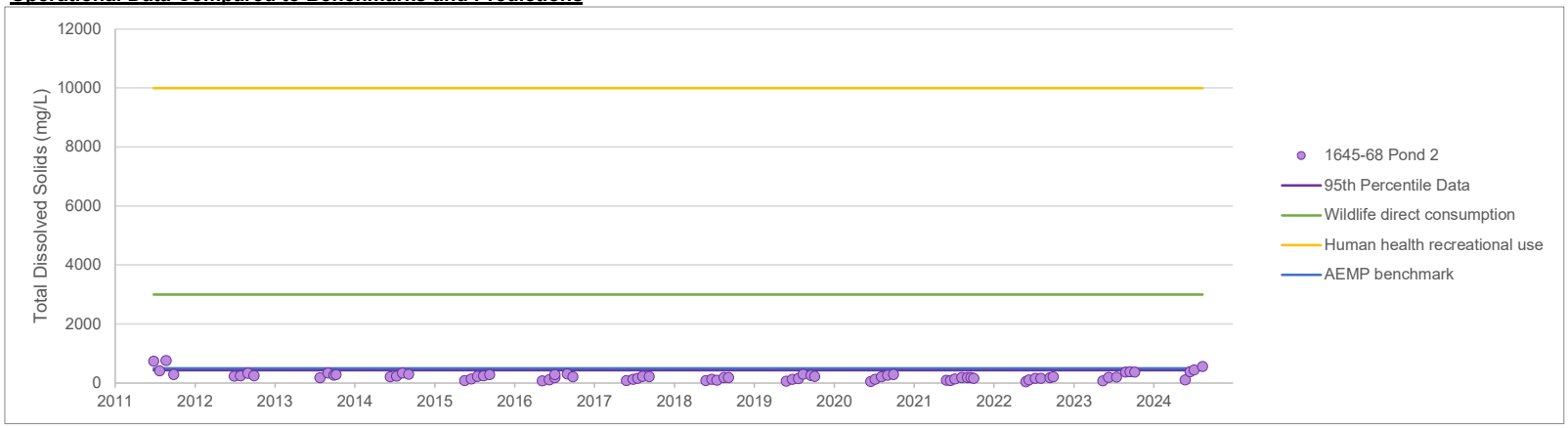


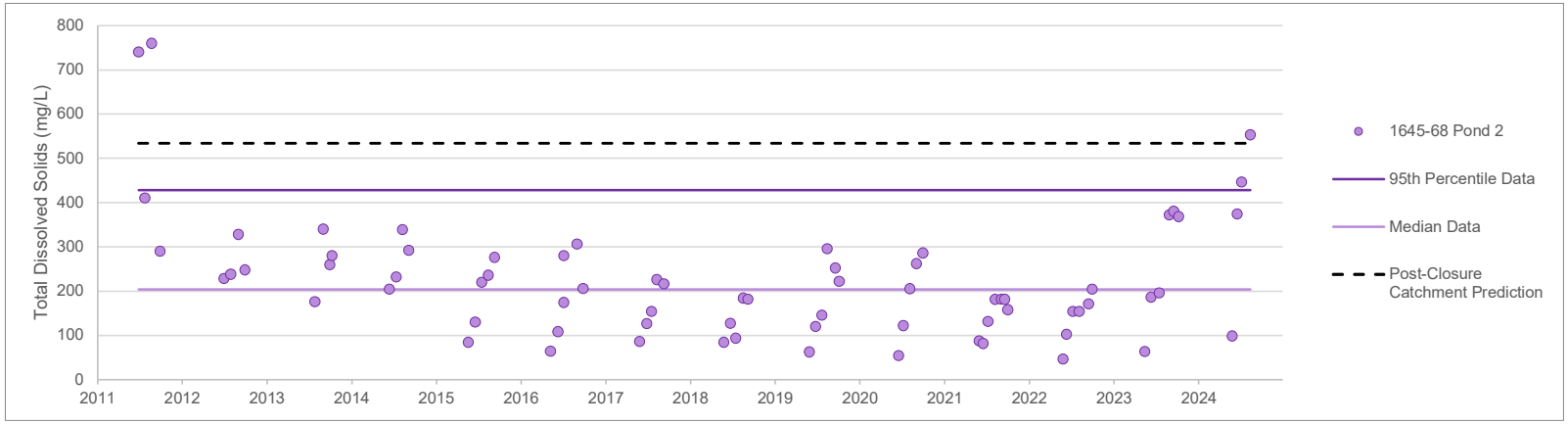
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	61.5	Wildlife	None
Median	29.9	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions



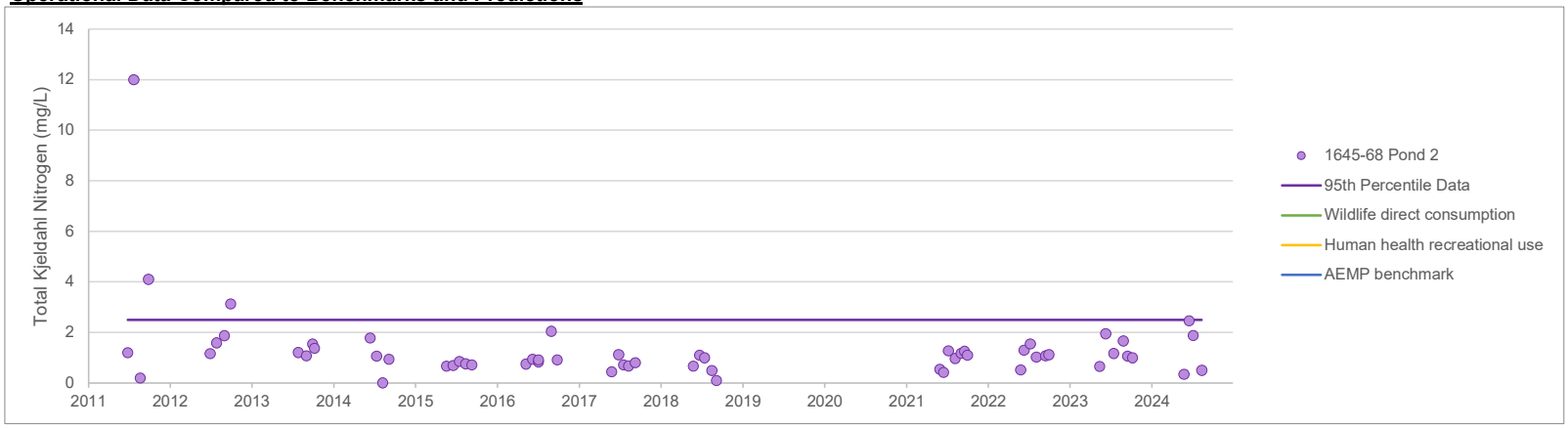


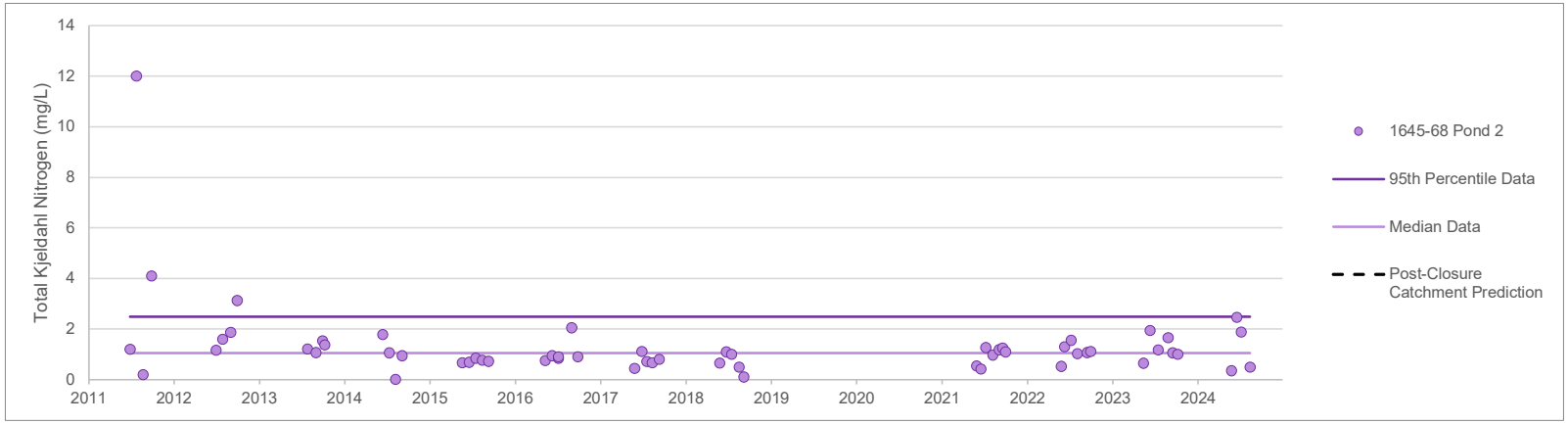
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	428	Wildlife	3000
Median	204	Human recreational	10000
Count	71	AEMP	500

Operational Data Compared to Benchmarks and Predictions



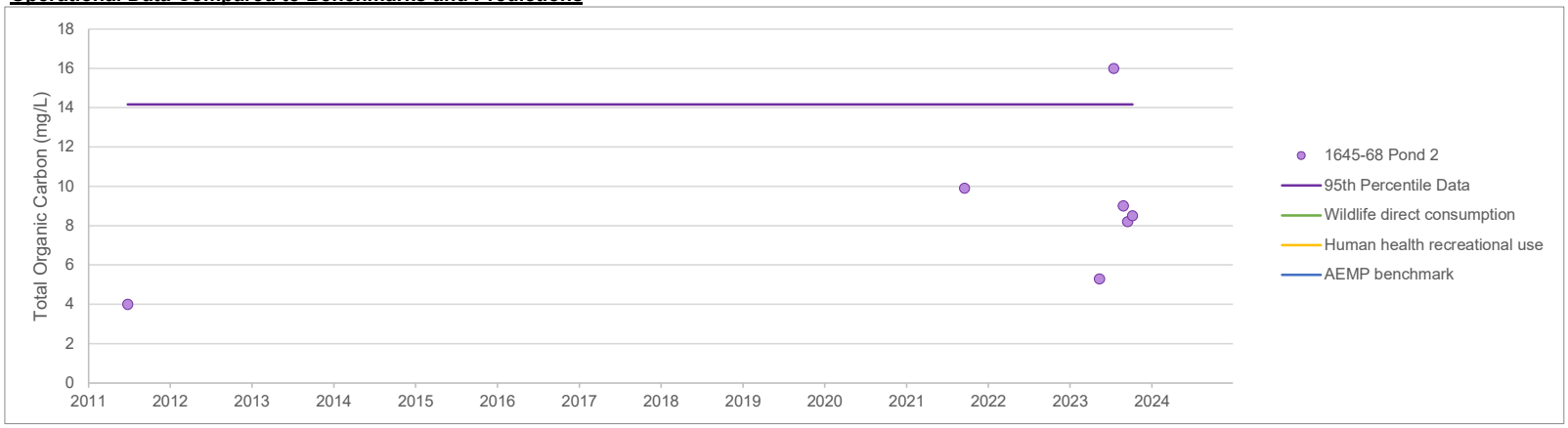


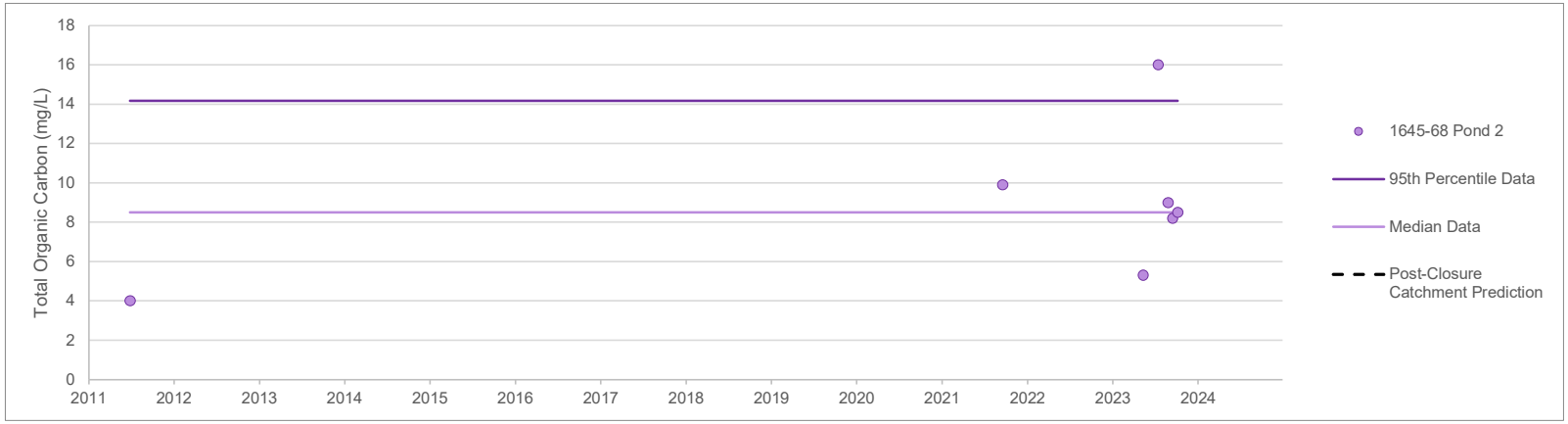
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	2.5	Wildlife	None
Median	1.0	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



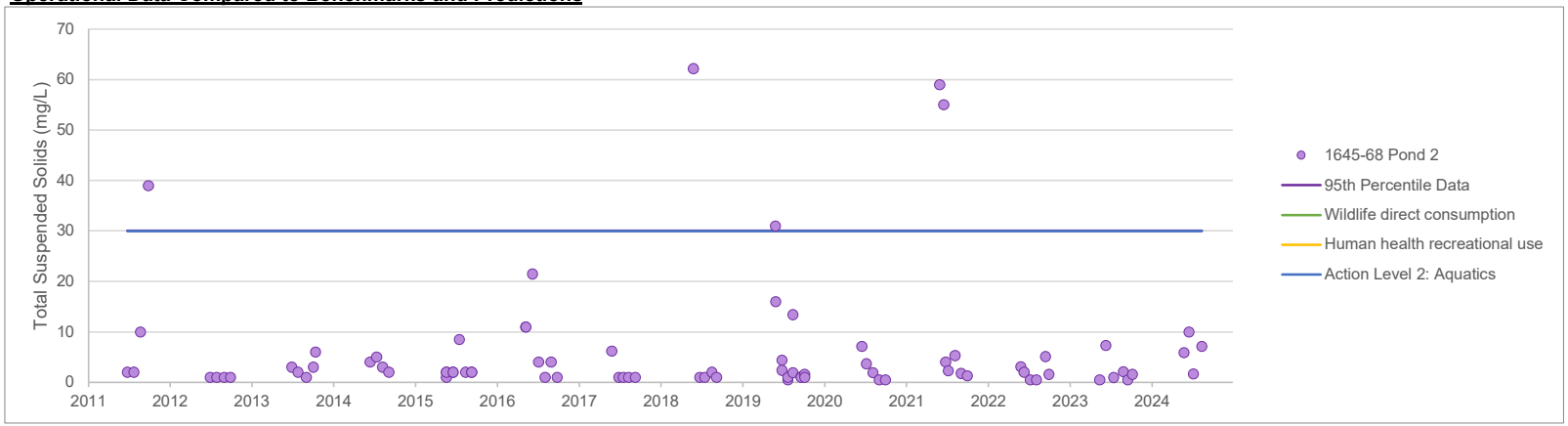


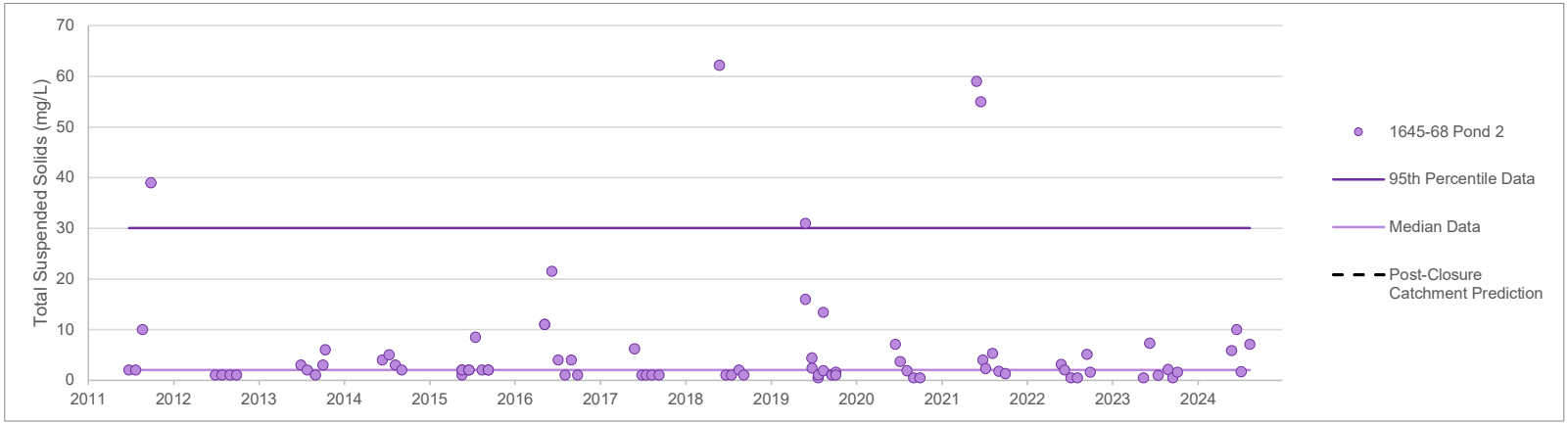
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	14.2	Wildlife	None
Median	8.5	Human recreational	None
Count	7	AEMP	None

Operational Data Compared to Benchmarks and Predictions



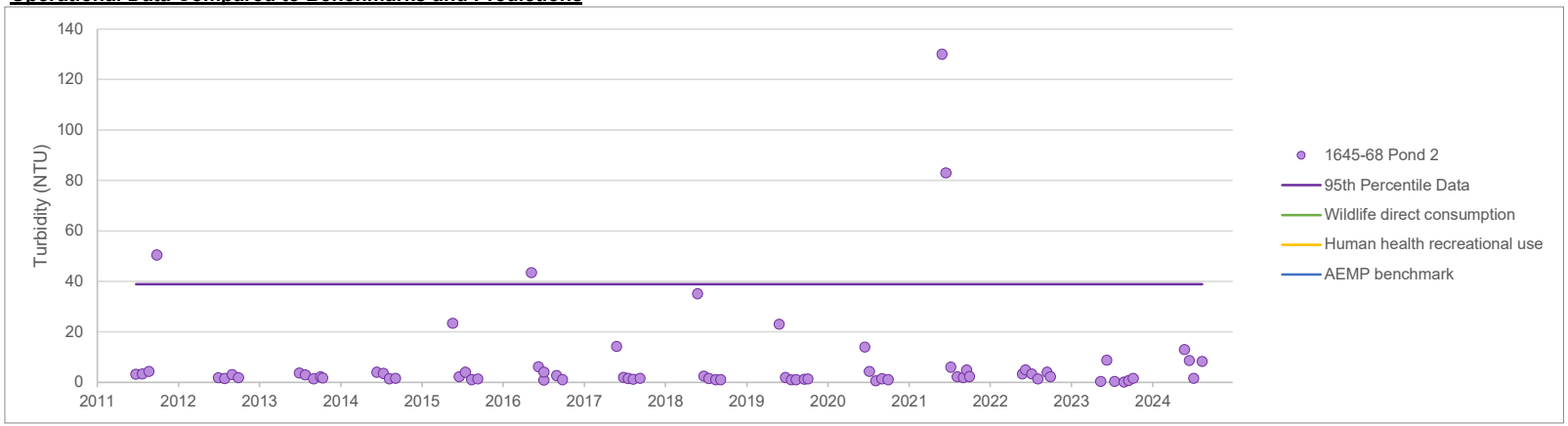


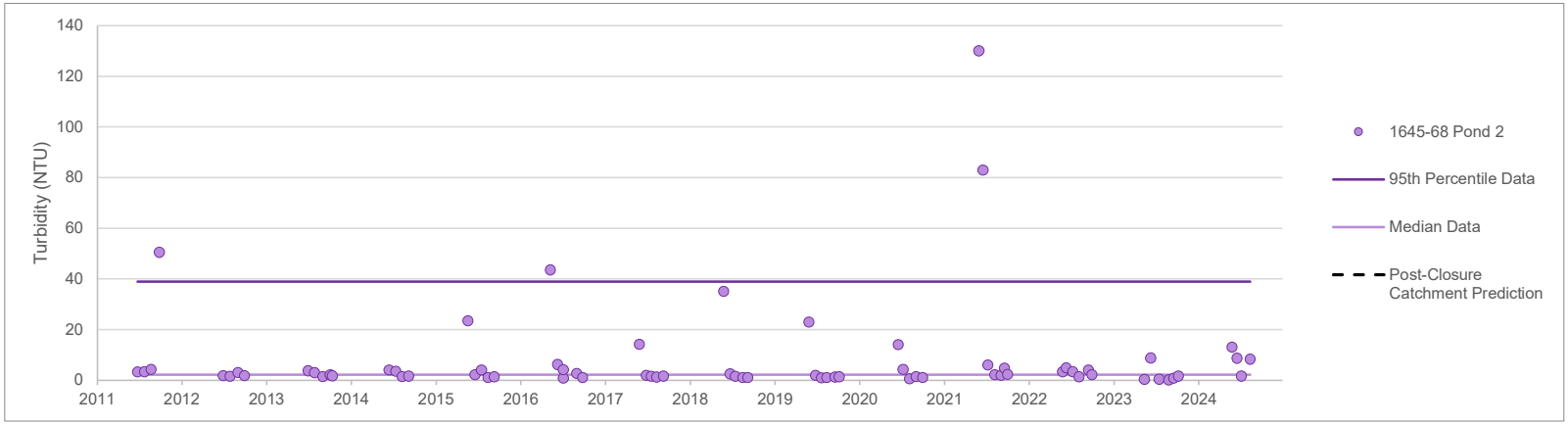
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	30.0	Wildlife	None
Median	2.0	Human recreational	None
Count	83	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



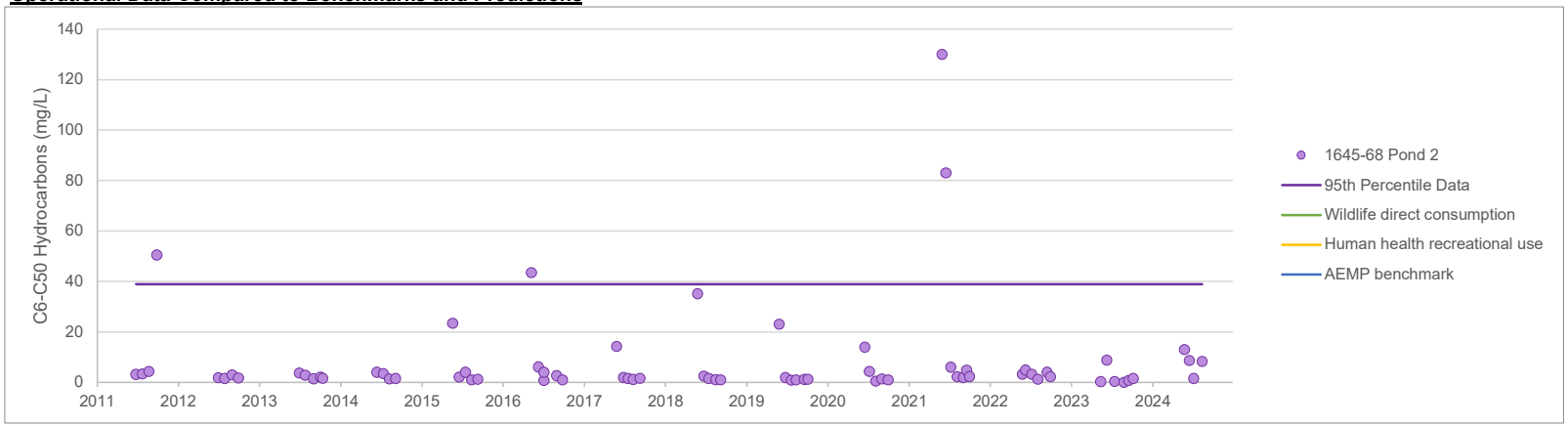


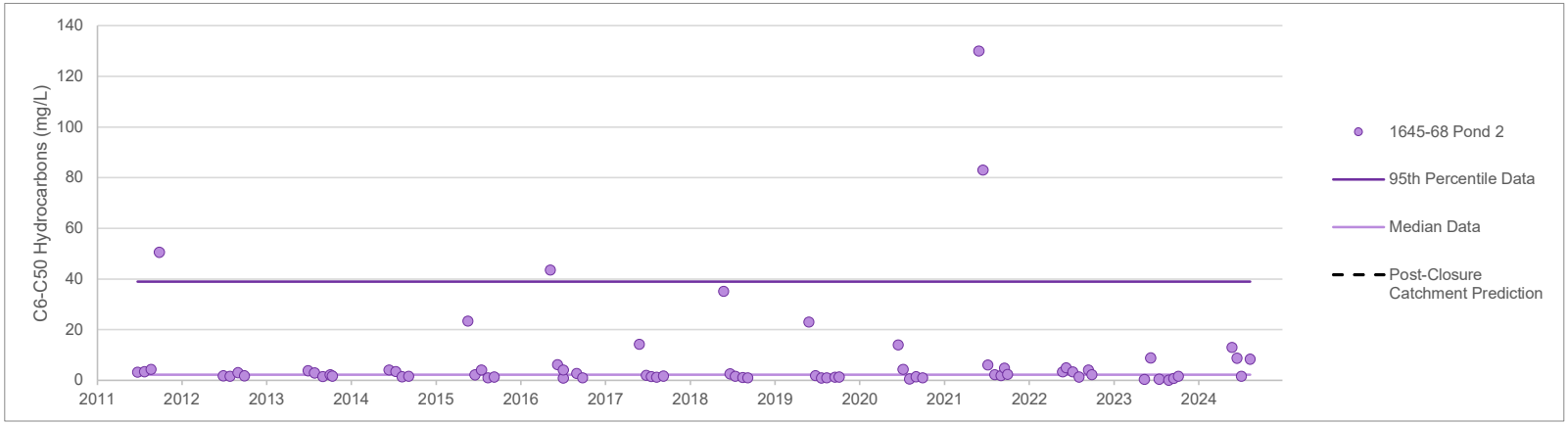
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	38.9	Wildlife	None
Median	2.2	Human recreational	None
Count	72	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	7	AEMP	None

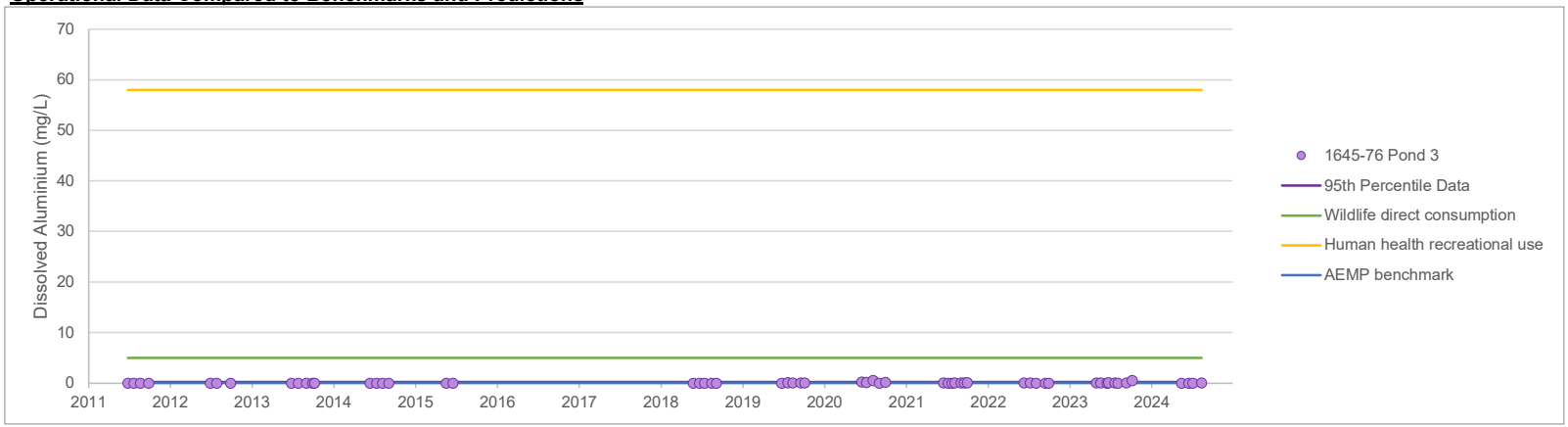
Pond 3

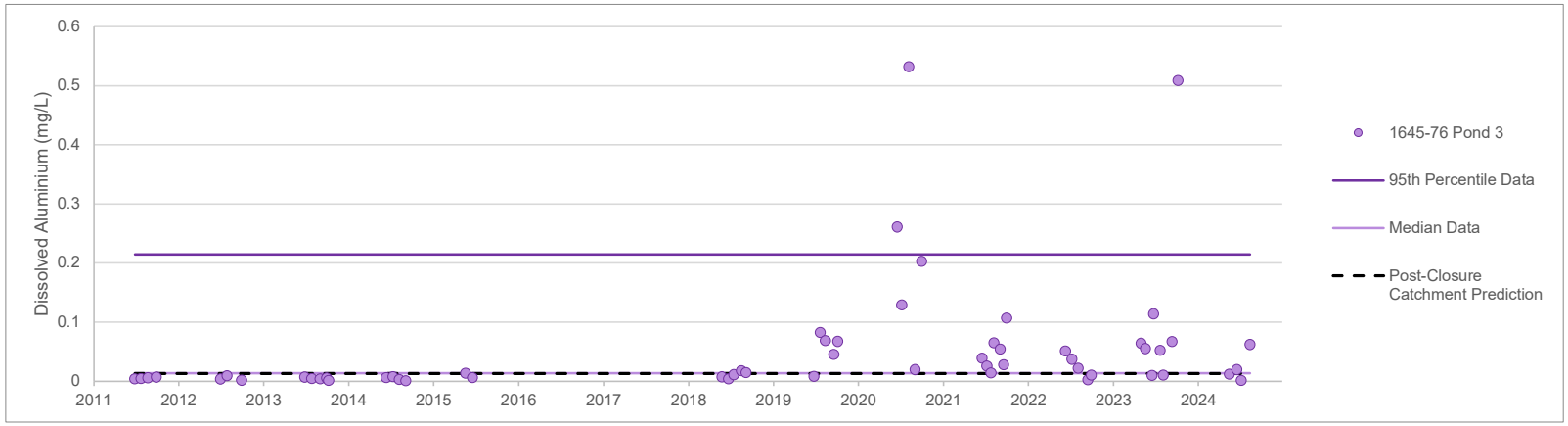
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



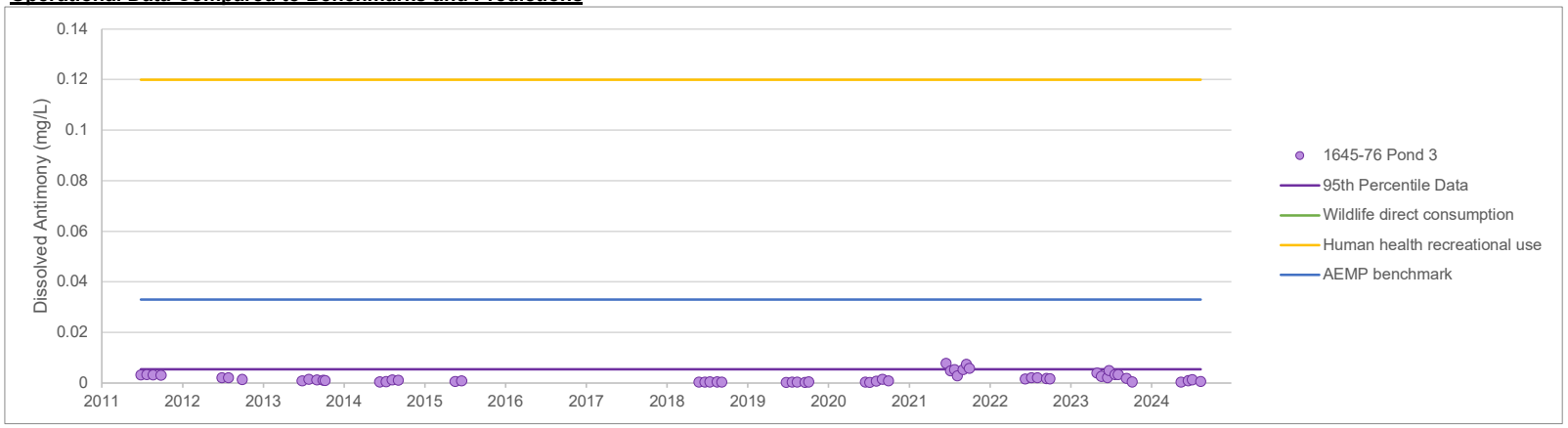


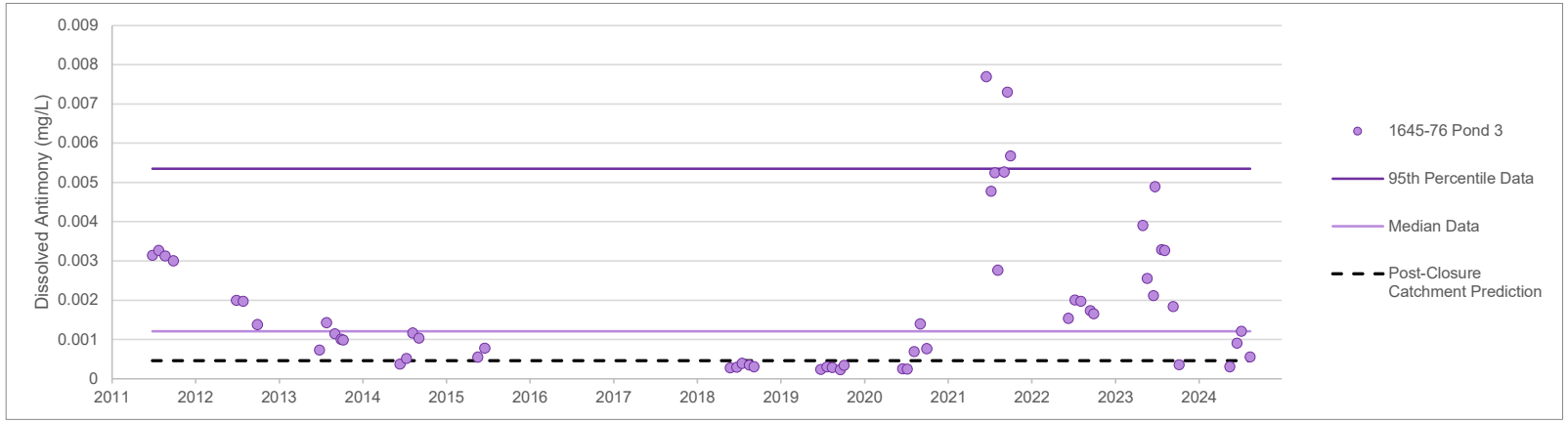
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.215	Wildlife	5.0
Median	0.014	Human recreational	58.0
Count	57	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



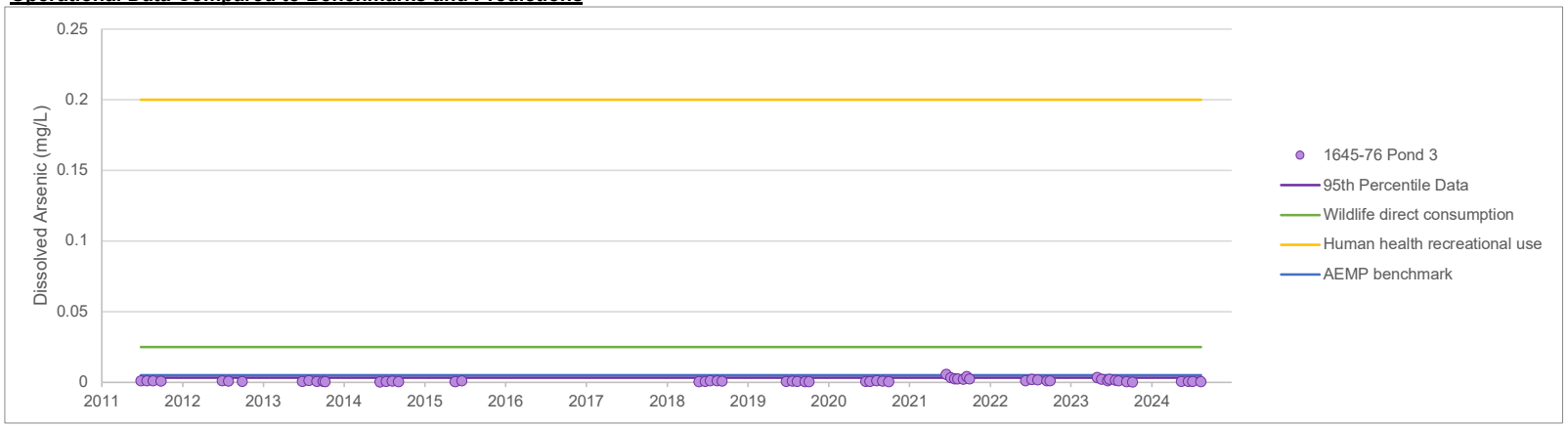


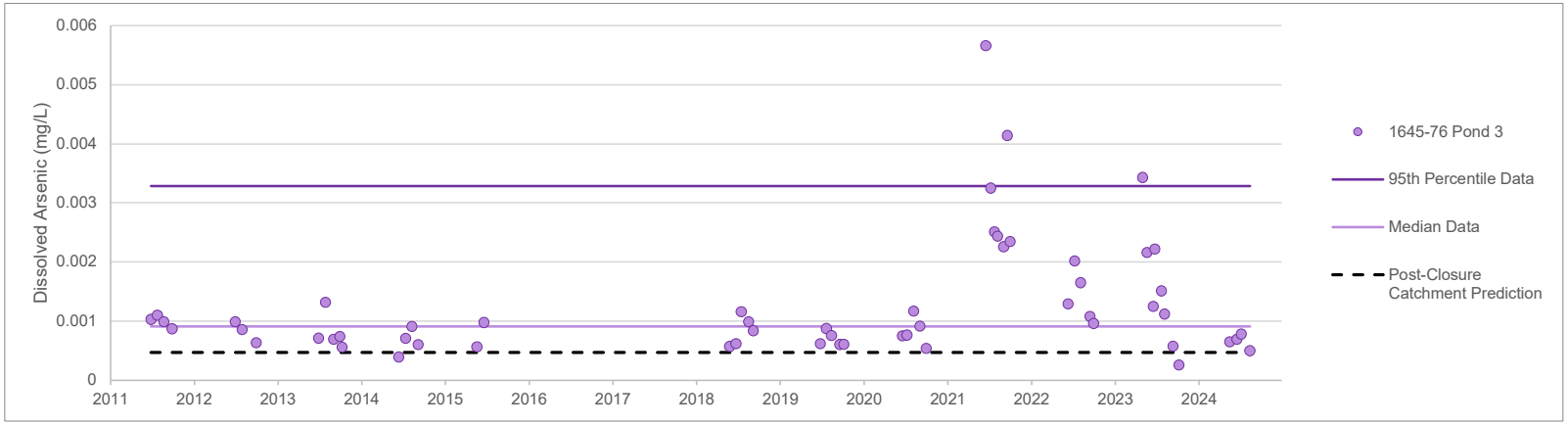
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00535	Wildlife	None
Median	0.00121	Human recreational	0.12
Count	57	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



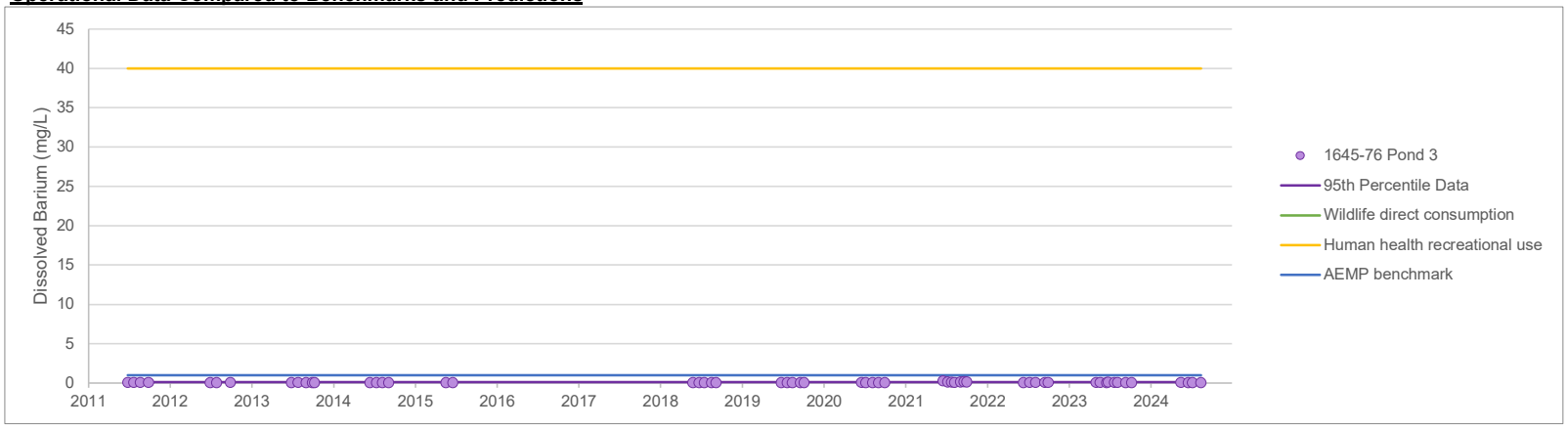


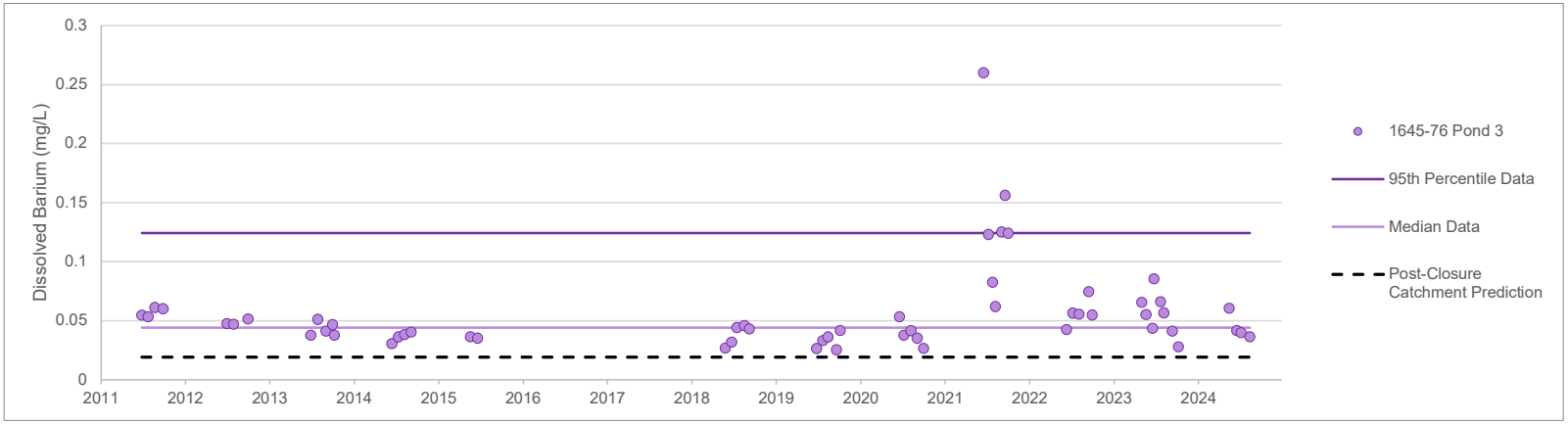
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0033	Wildlife	0.03
Median	0.0009	Human recreational	0.20
Count	57	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



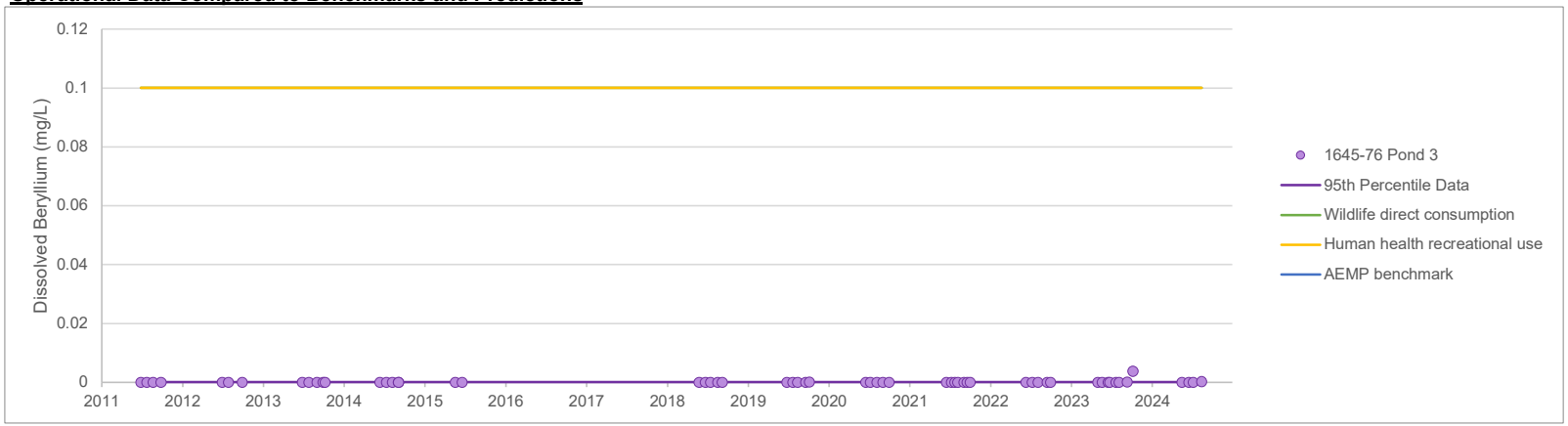


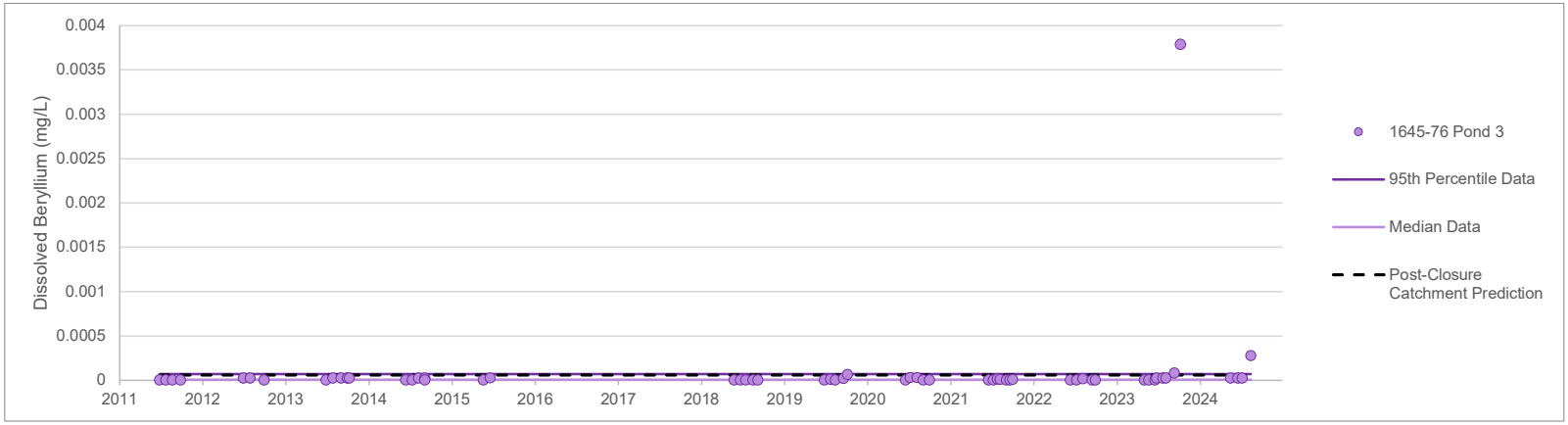
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.124	Wildlife	None
Median	0.044	Human recreational	40.0
Count	57	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



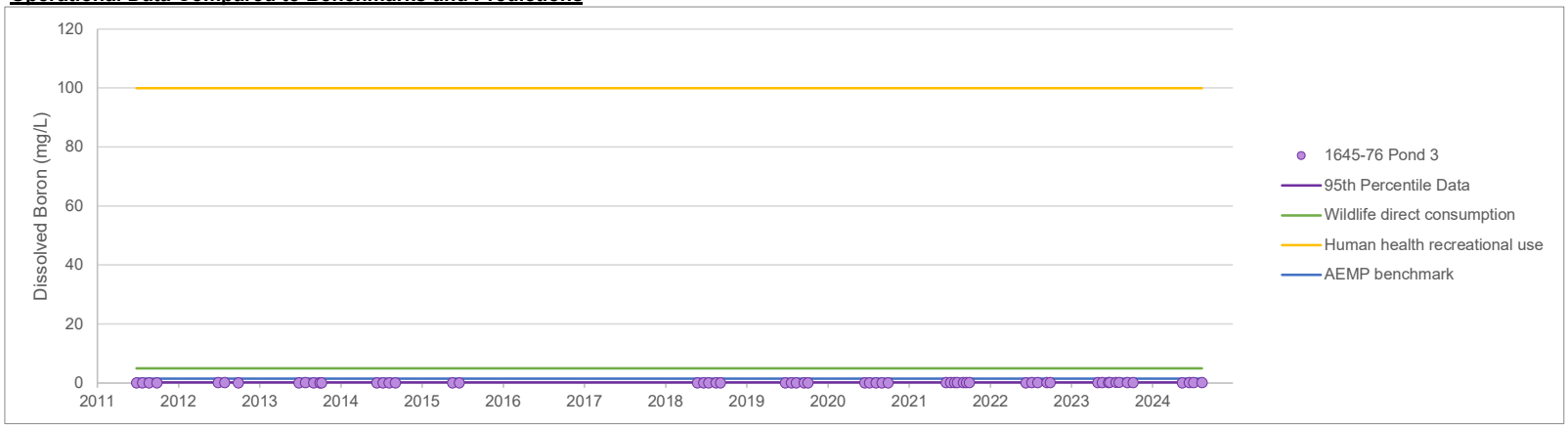


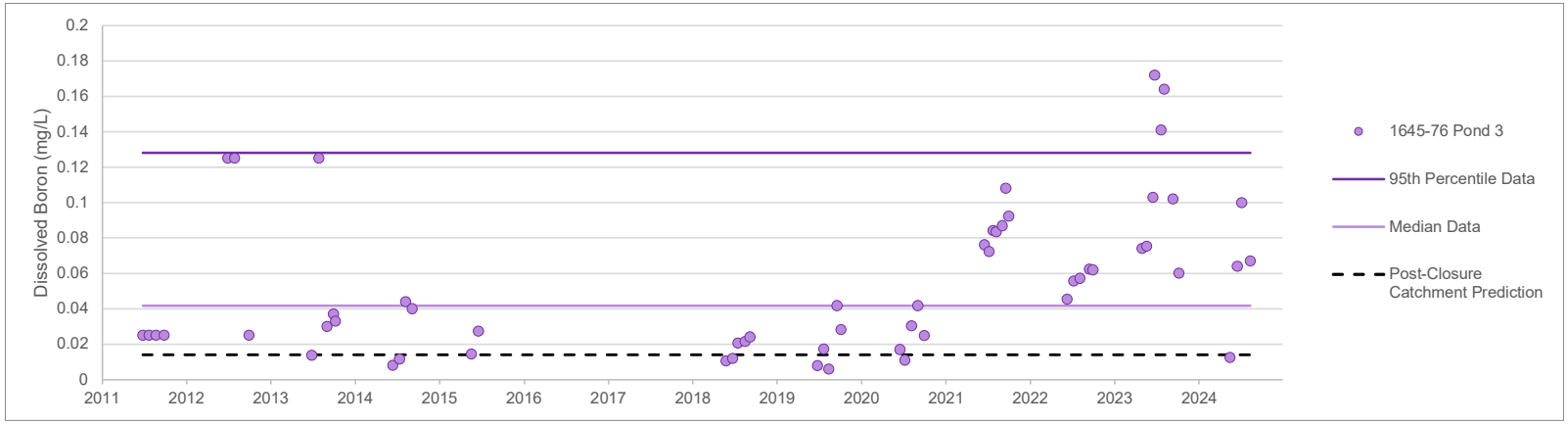
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000069	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	58	AEMP	None

Operational Data Compared to Benchmarks and Predictions



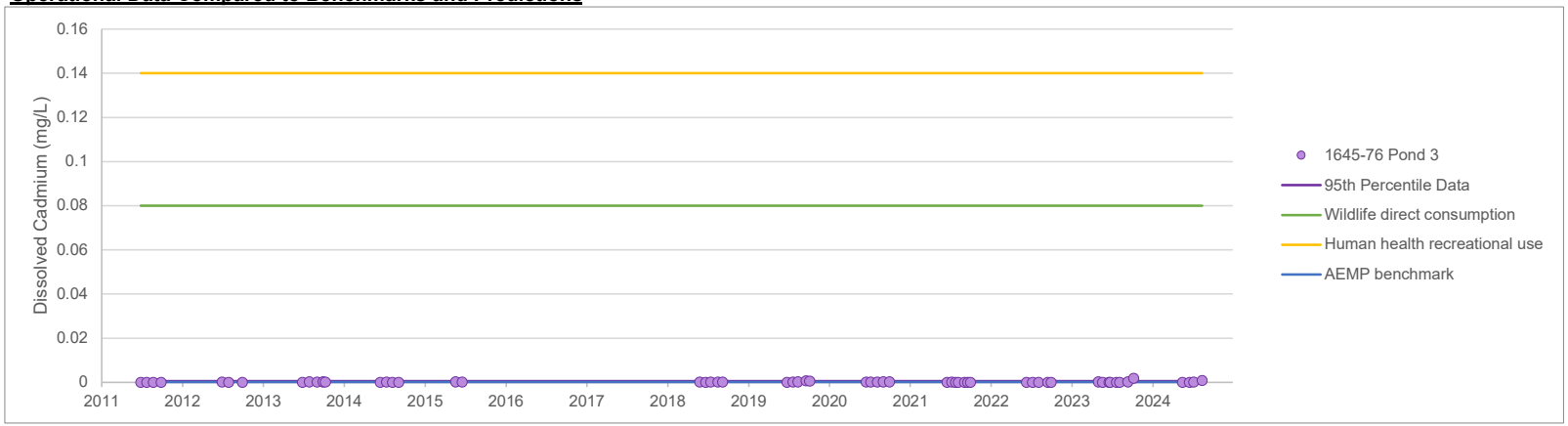


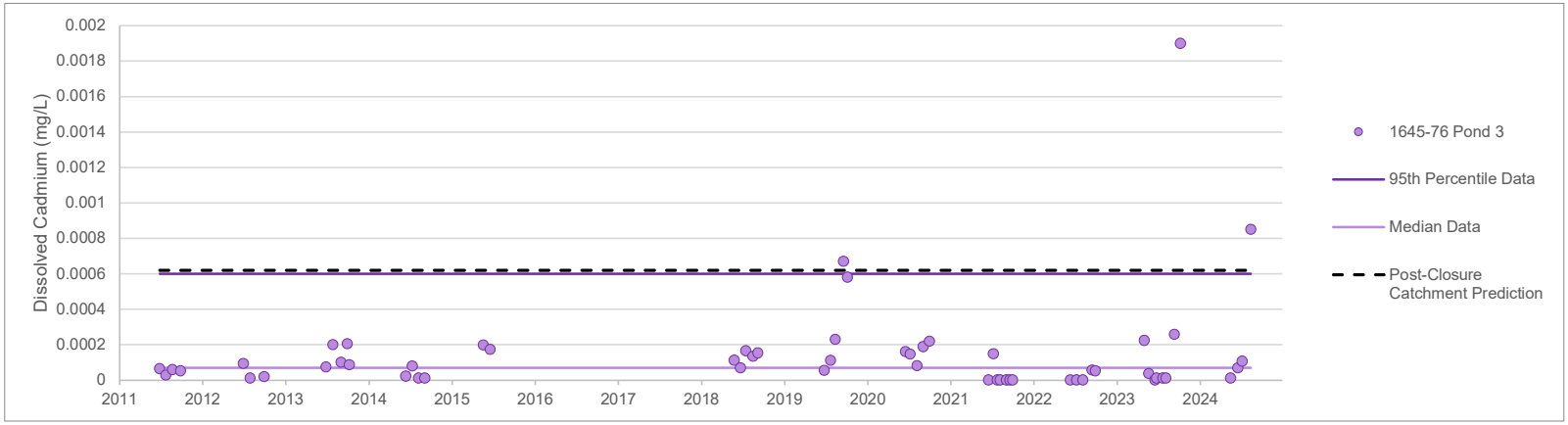
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.128	Wildlife	5.0
Median	0.042	Human recreational	100.0
Count	57	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



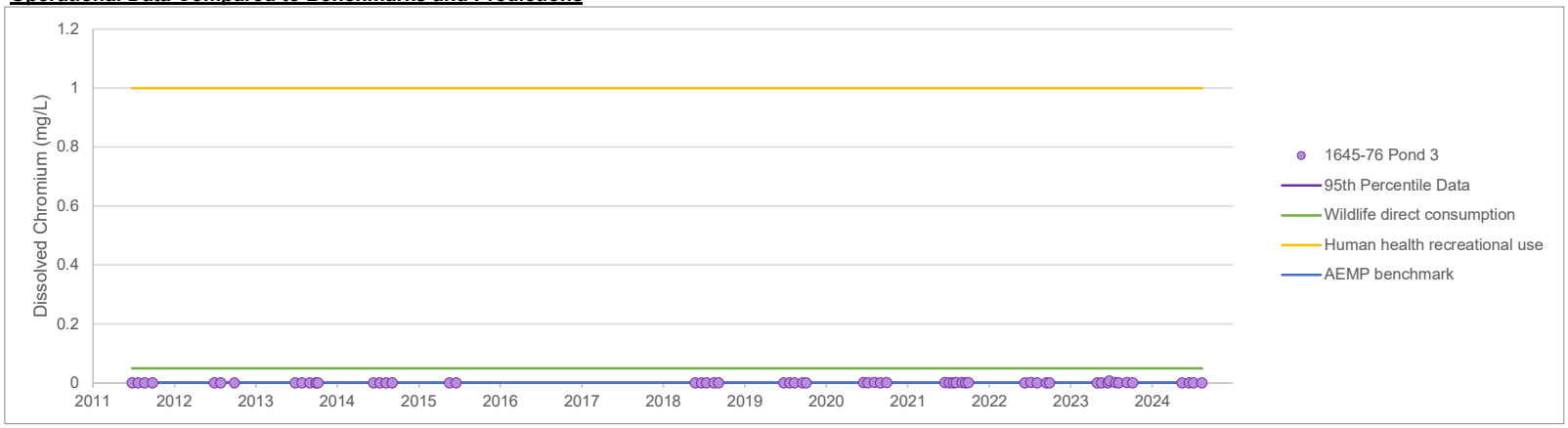


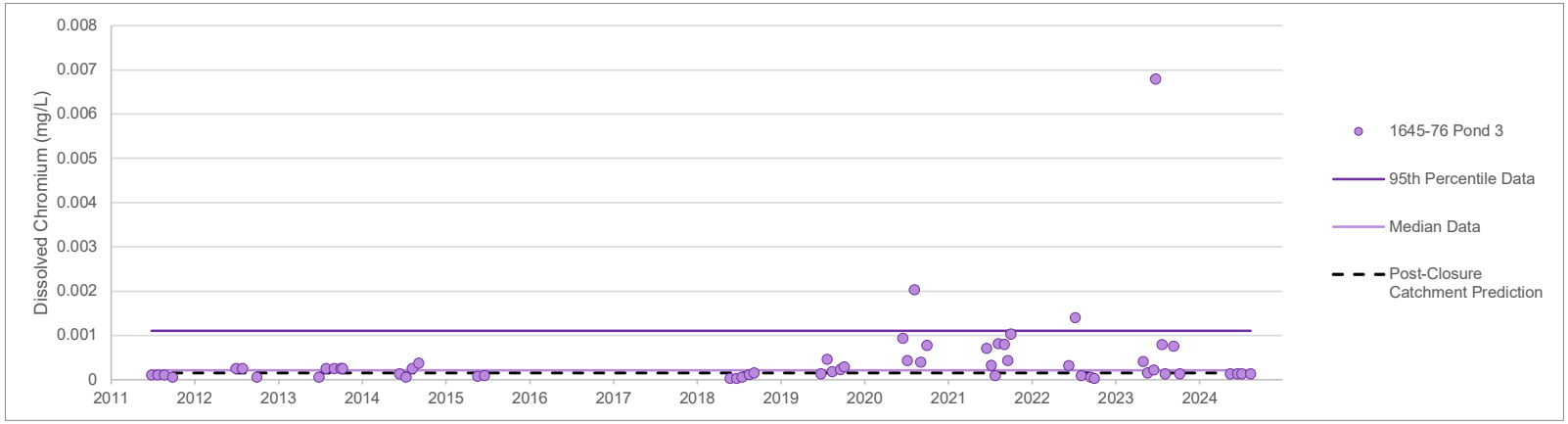
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00060	Wildlife	0.08
Median	0.00007	Human recreational	0.14
Count	57	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



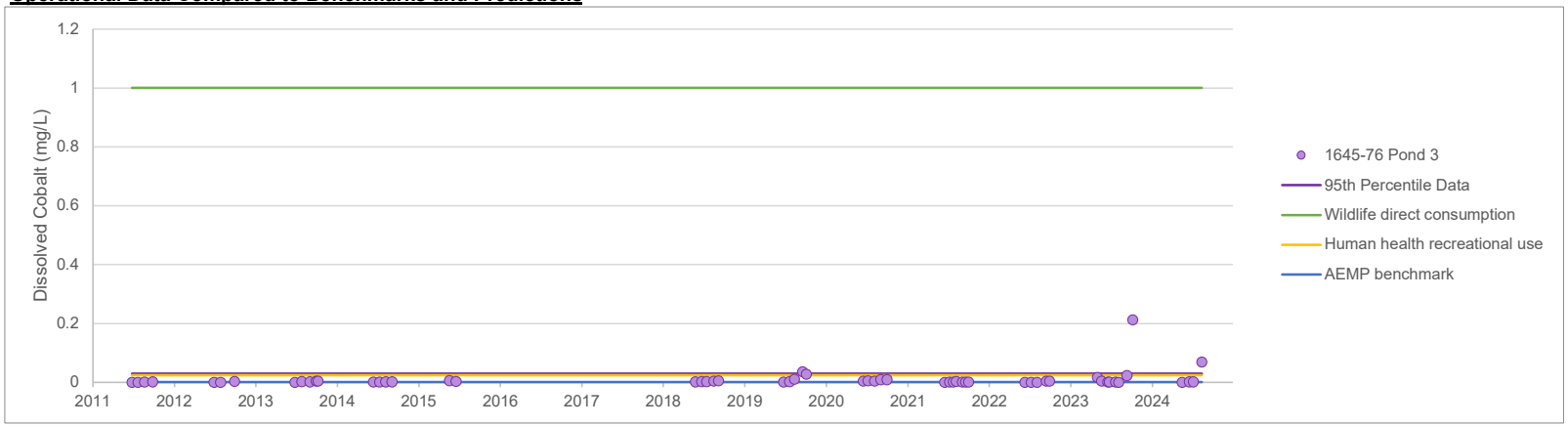


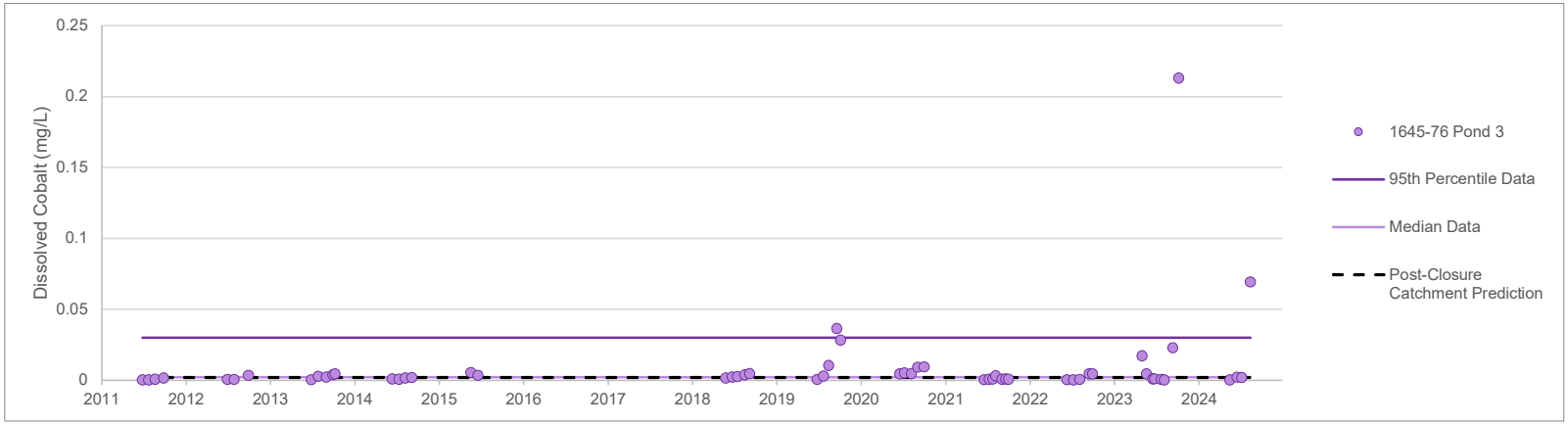
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00110	Wildlife	0.05
Median	0.00021	Human recreational	1.0
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



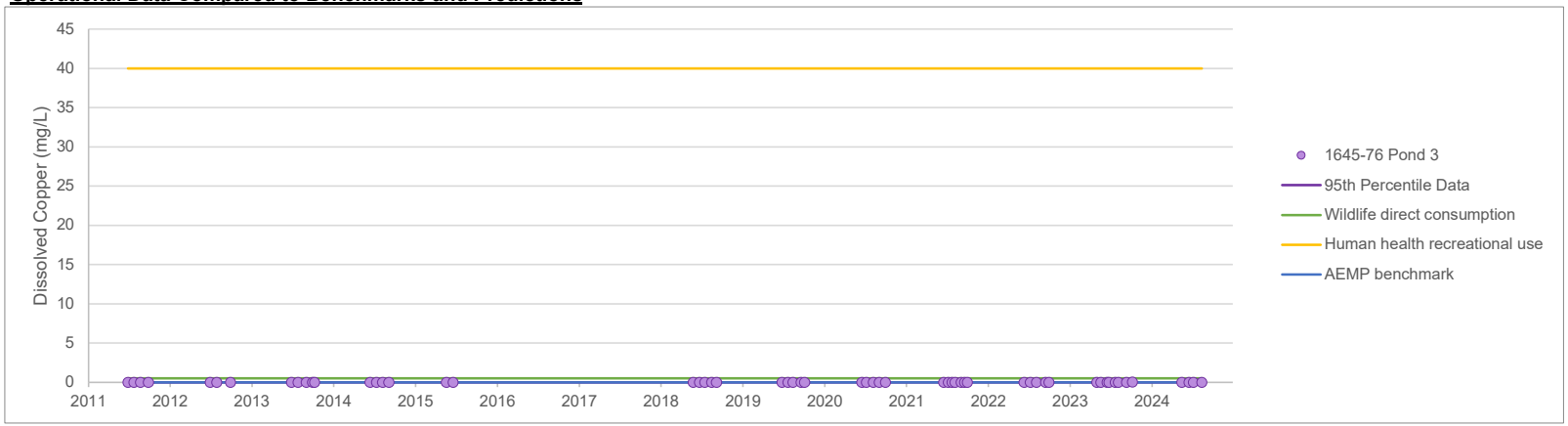


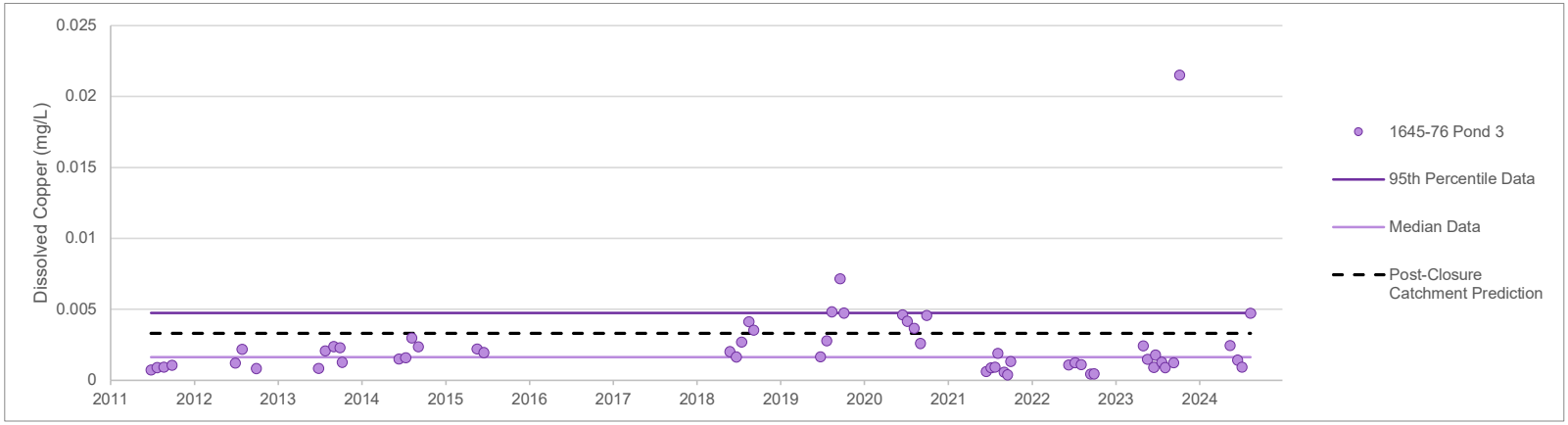
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0299	Wildlife	1.0
Median	0.0022	Human recreational	0.02
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



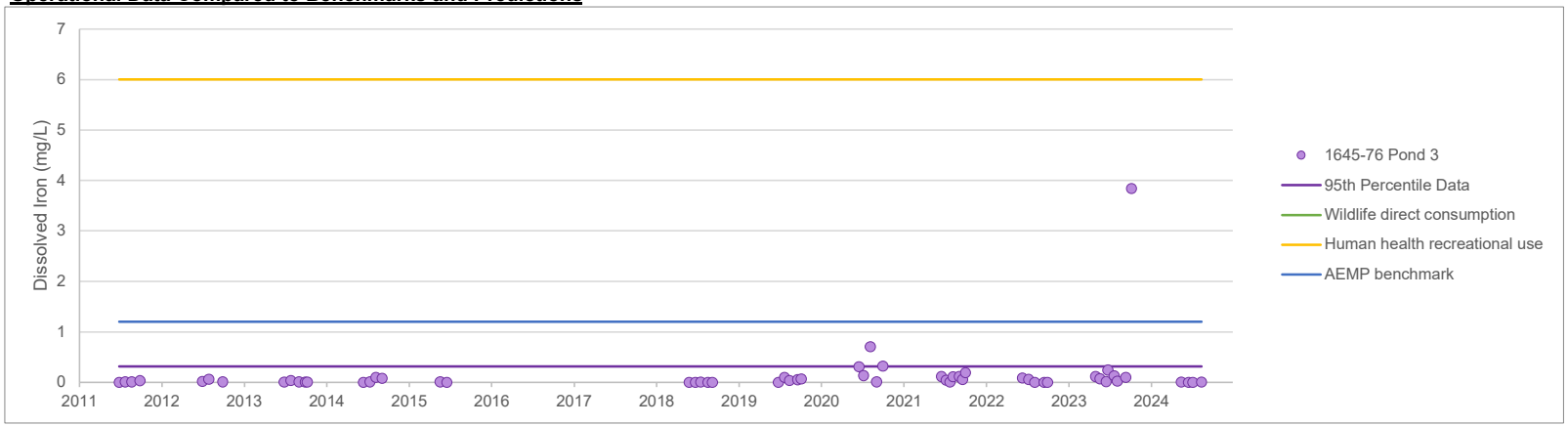


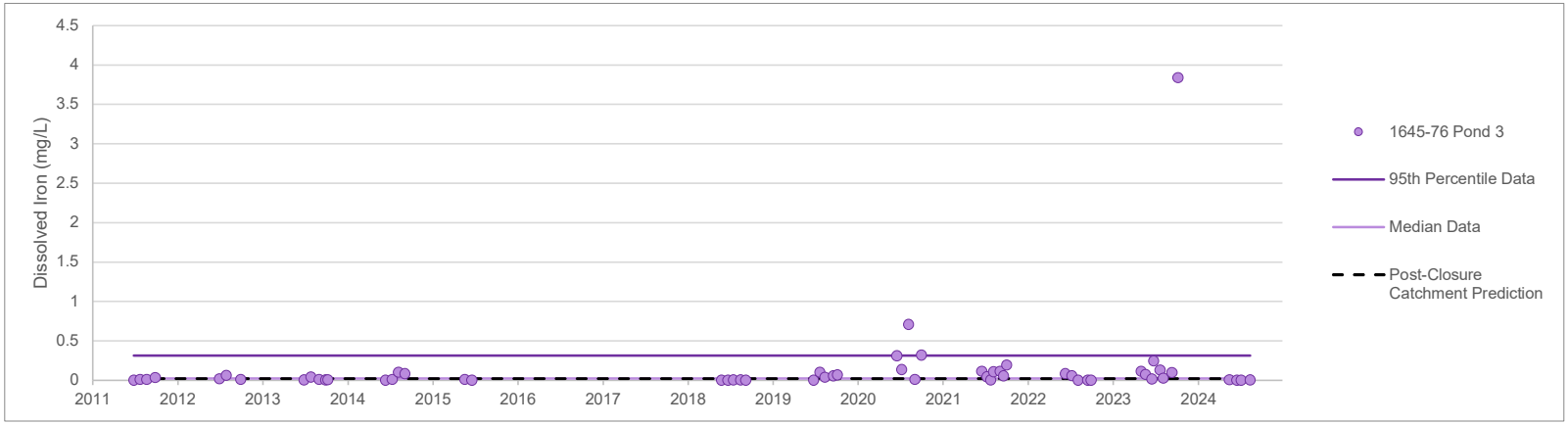
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0047	Wildlife	0.5
Median	0.0016	Human recreational	40.0
Count	57	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



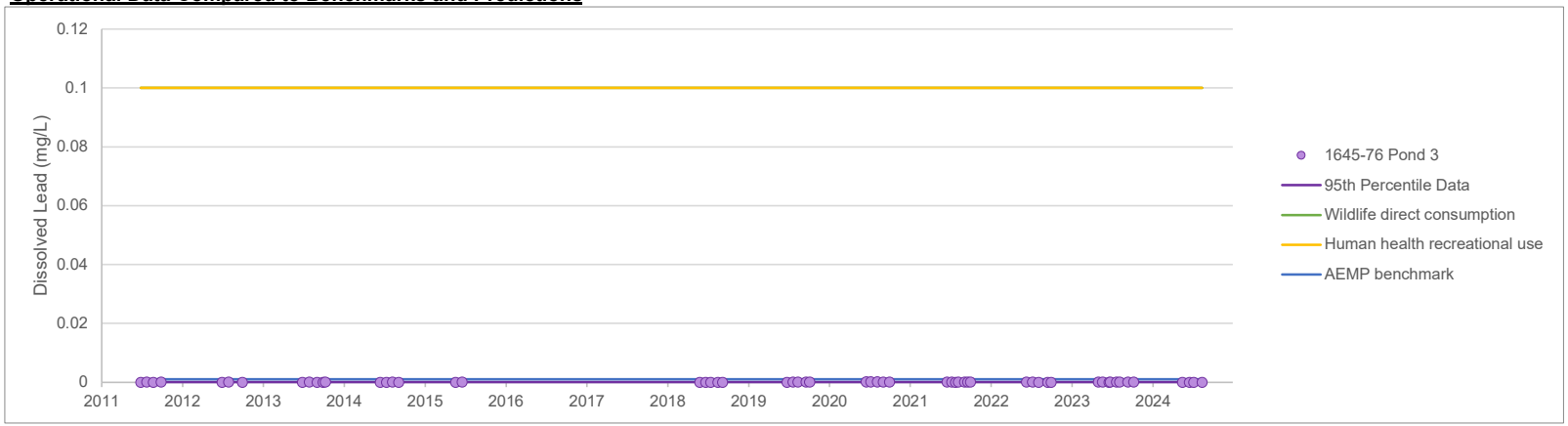


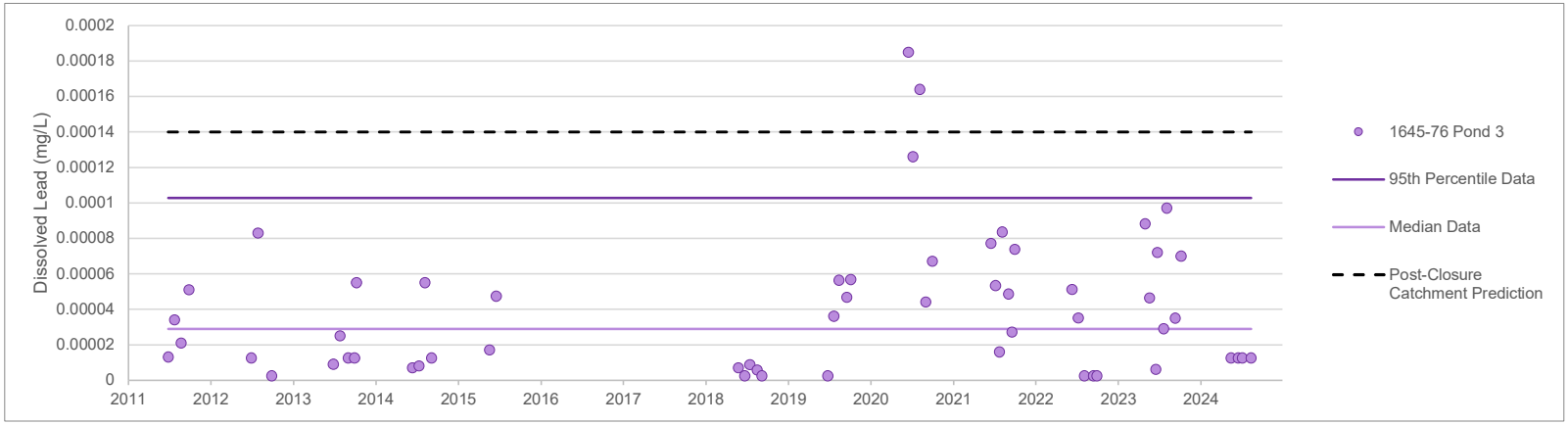
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.31	Wildlife	None
Median	0.02	Human recreational	6.0
Count	57	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



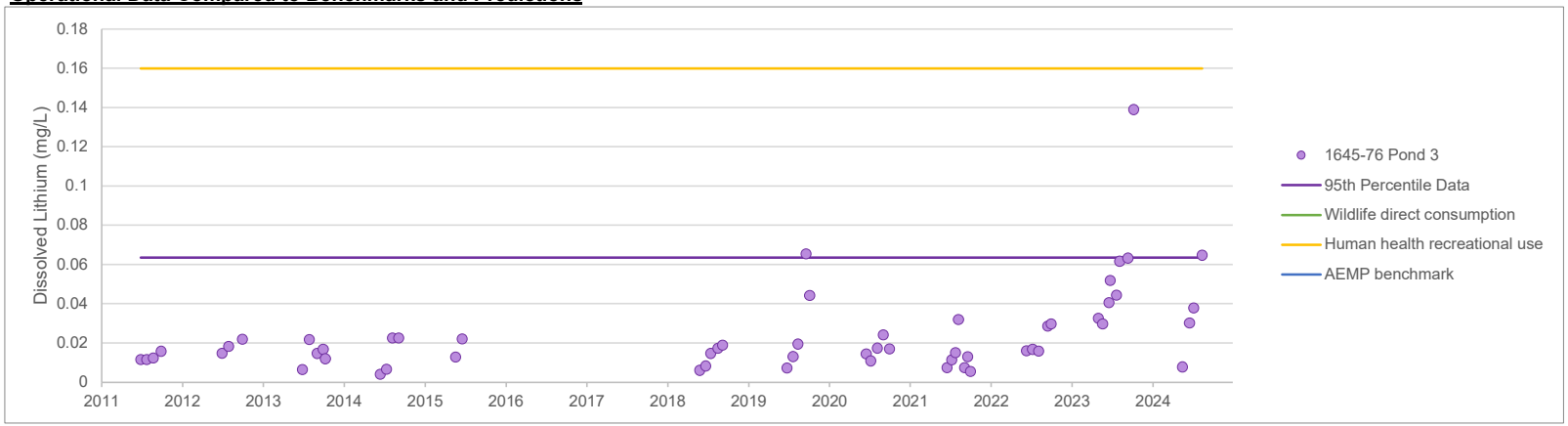


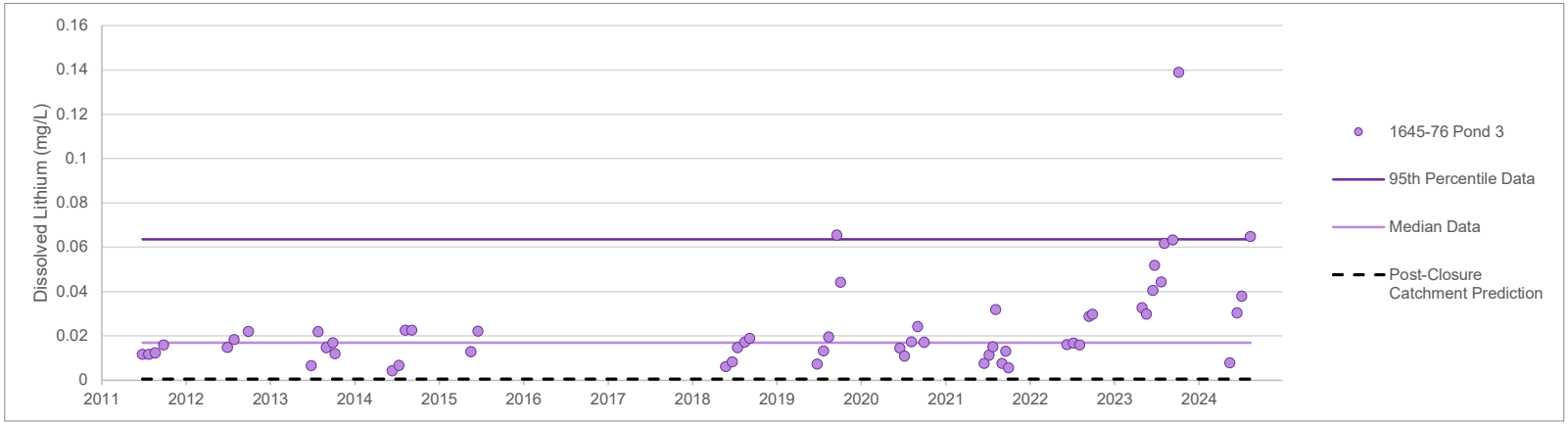
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00010	Wildlife	0.10
Median	0.00003	Human recreational	0.10
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



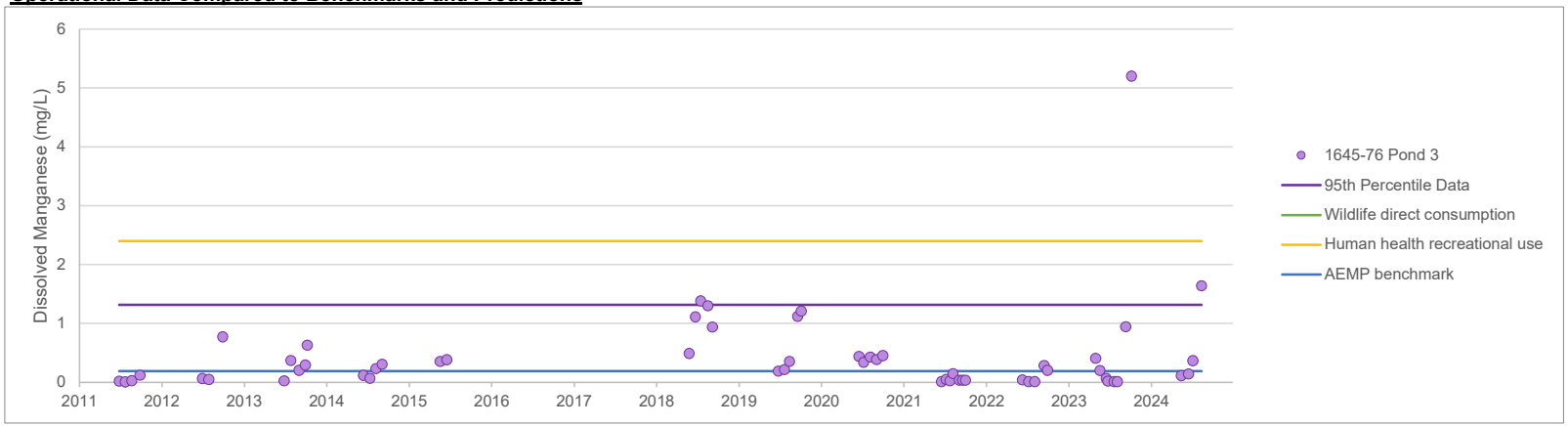


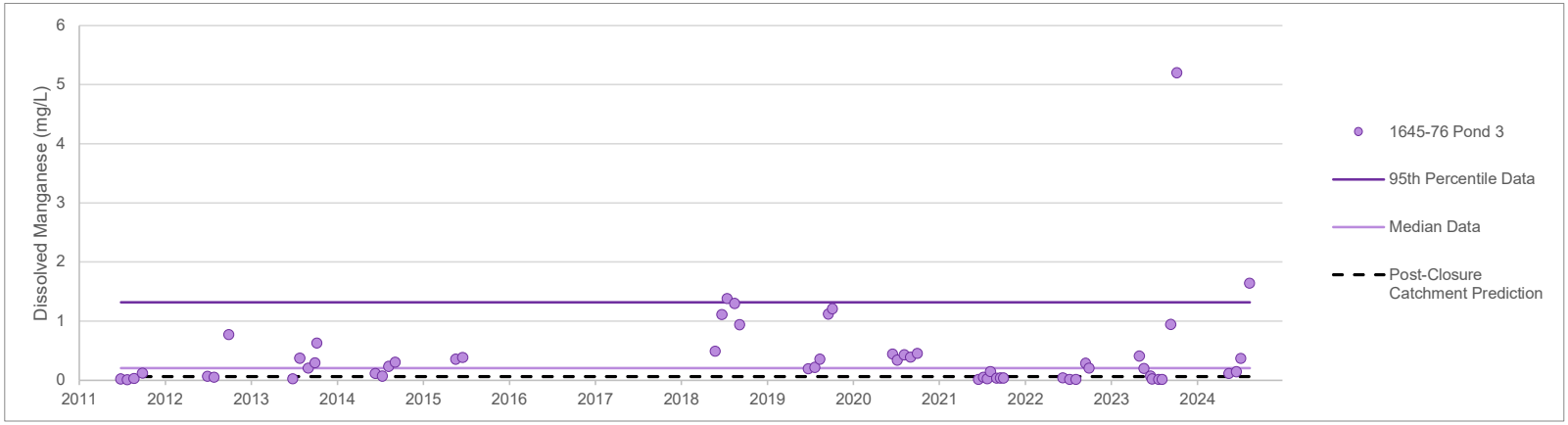
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.064	Wildlife	None
Median	0.017	Human recreational	0.16
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



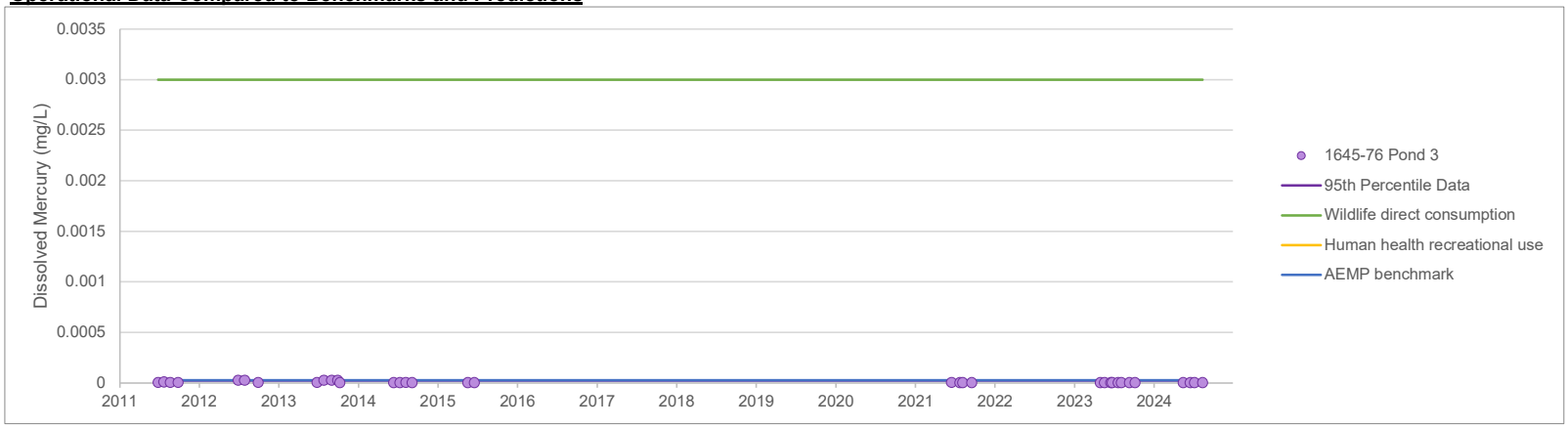


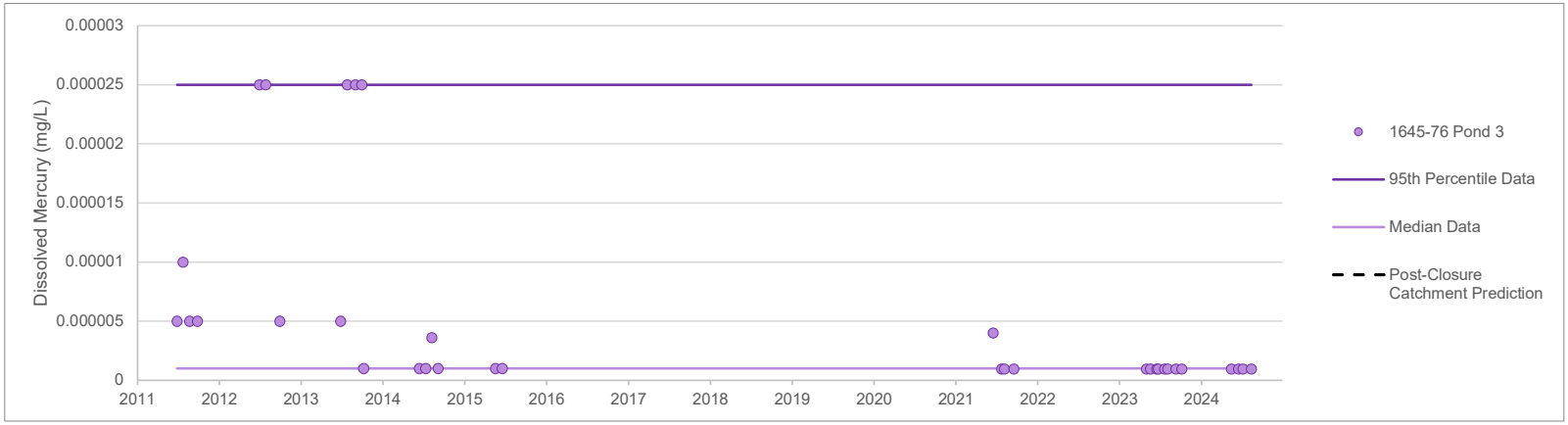
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	1.316	Wildlife	None
Median	0.205	Human recreational	2.4
Count	57	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



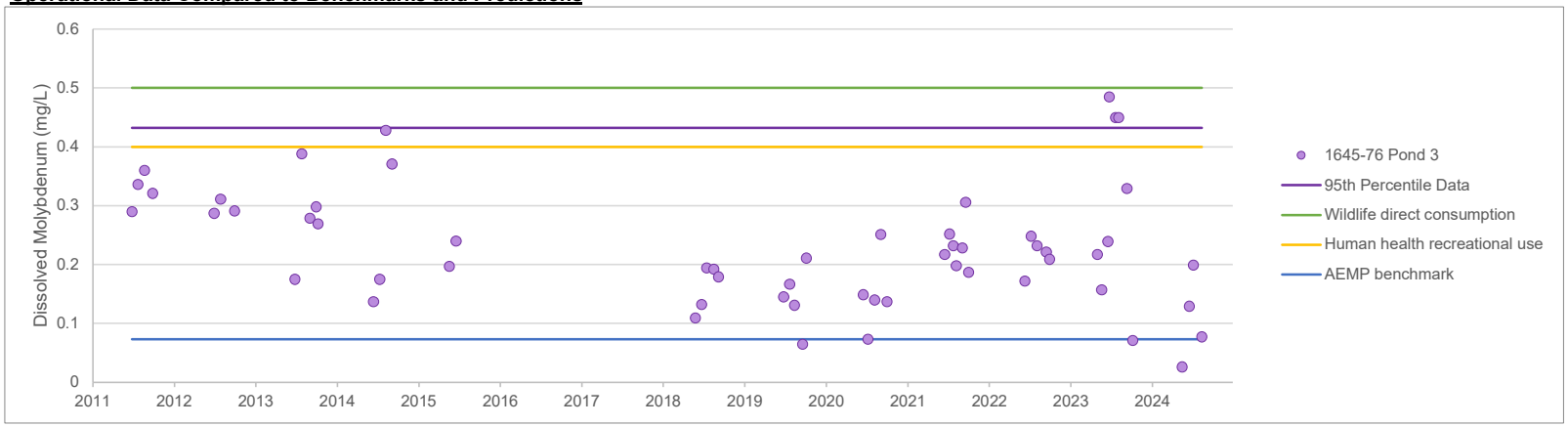


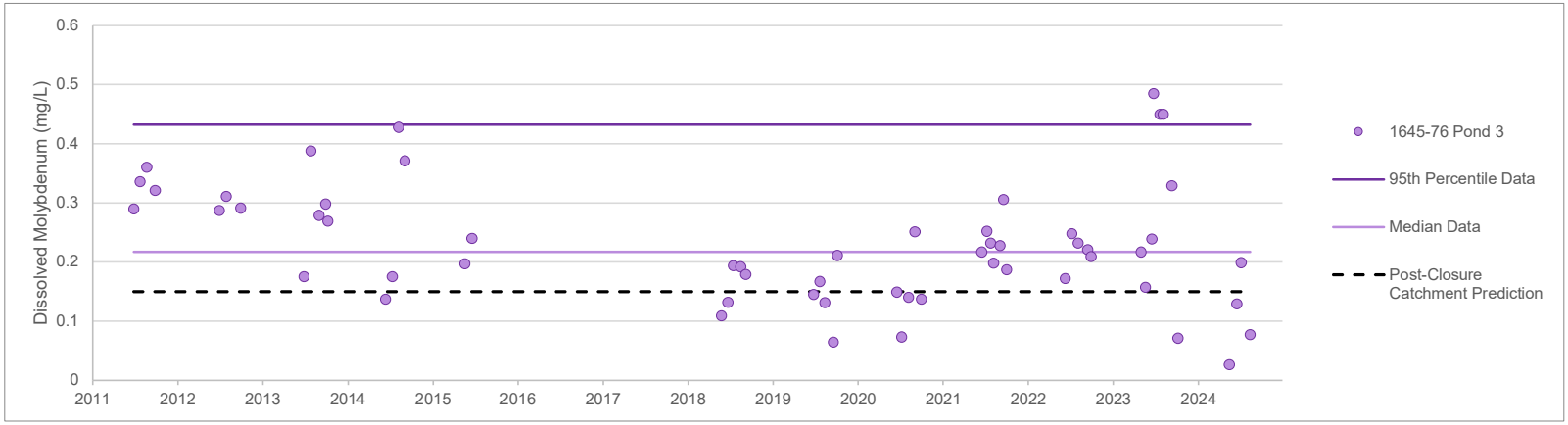
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000250	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	34	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



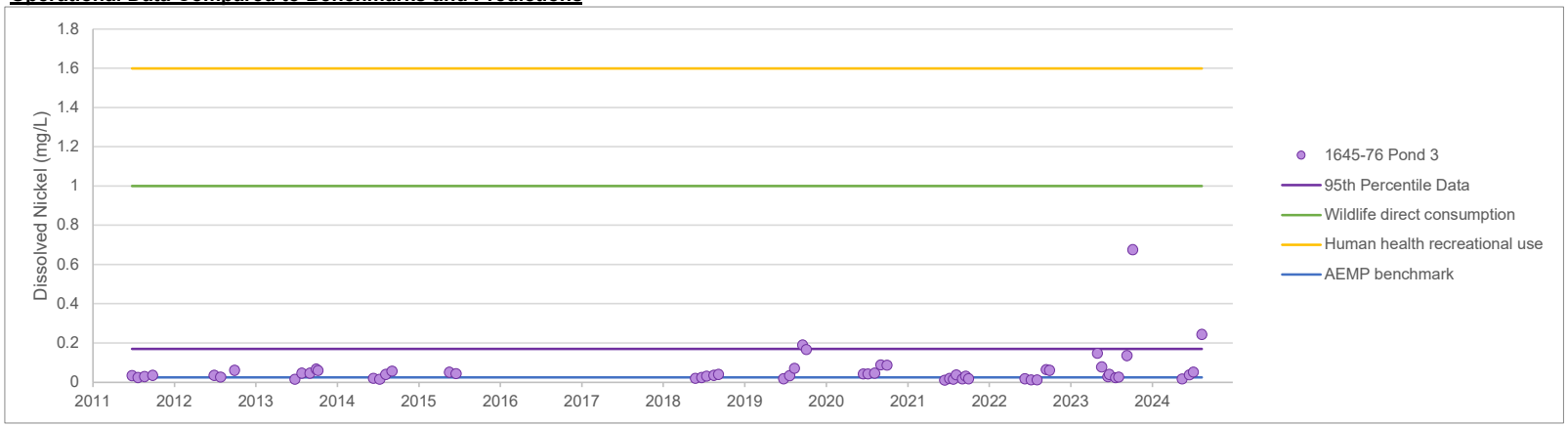


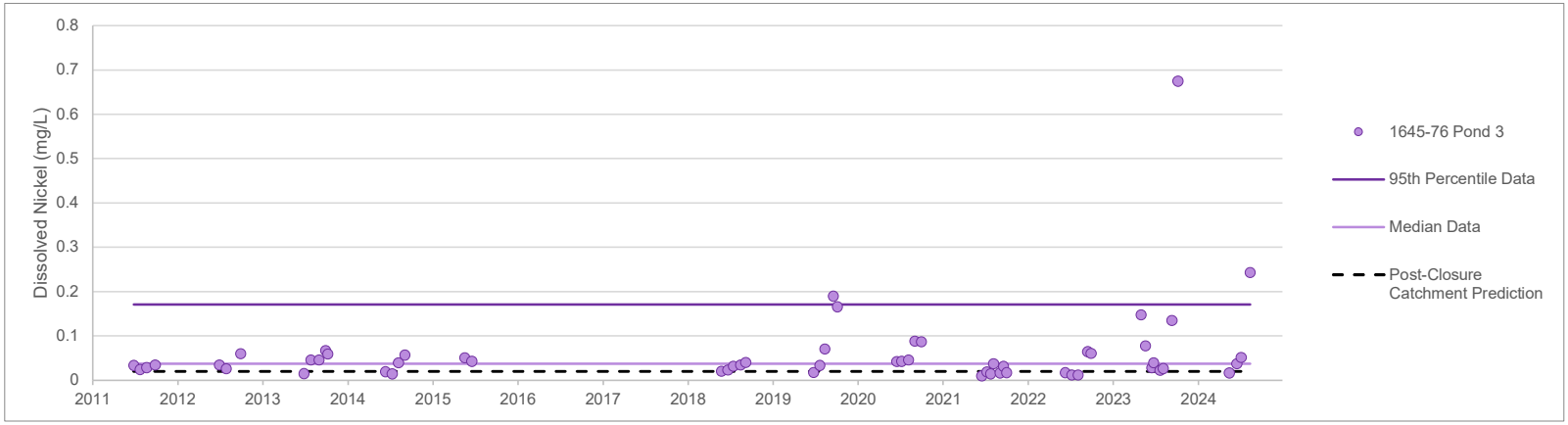
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.4324	Wildlife	0.5
Median	0.2170	Human recreational	0.4
Count	57	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



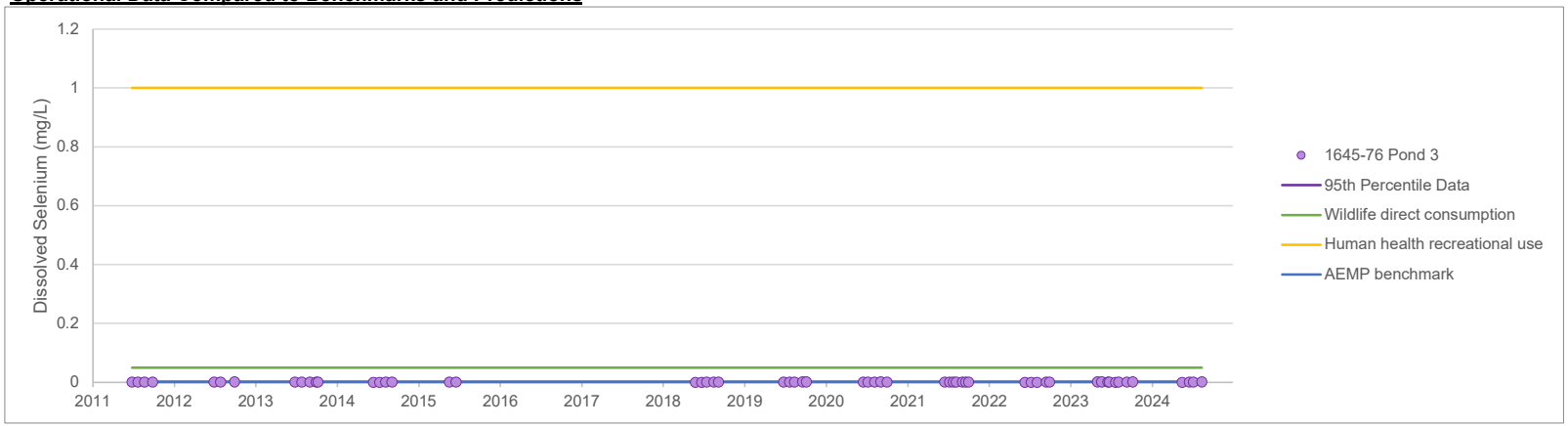


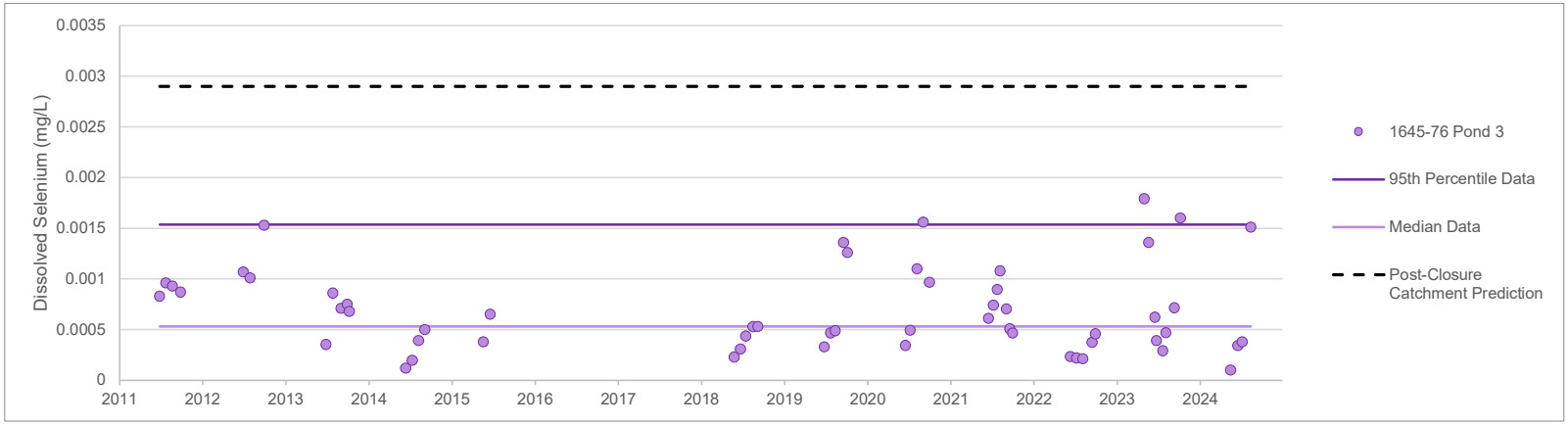
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.171	Wildlife	1.0
Median	0.037	Human recreational	1.6
Count	57	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



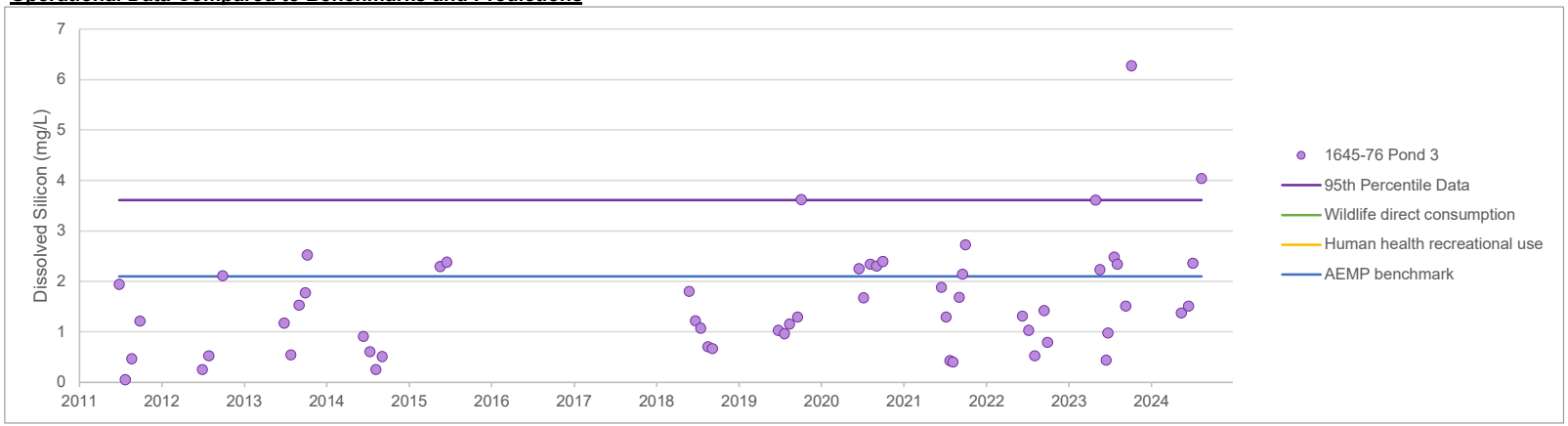


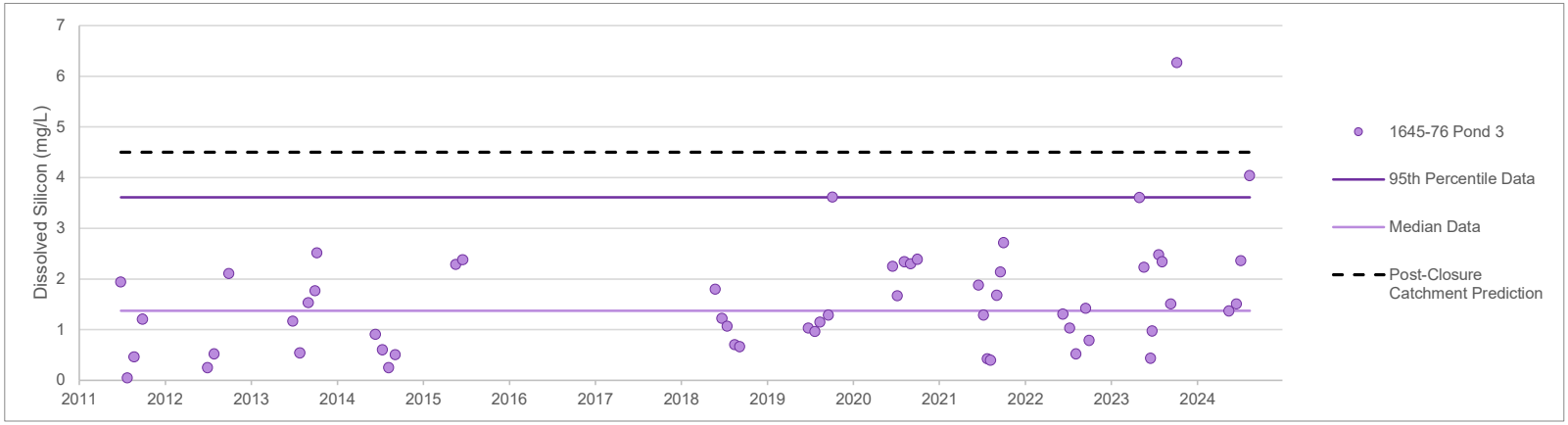
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00154	Wildlife	0.1
Median	0.00053	Human recreational	1.0
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



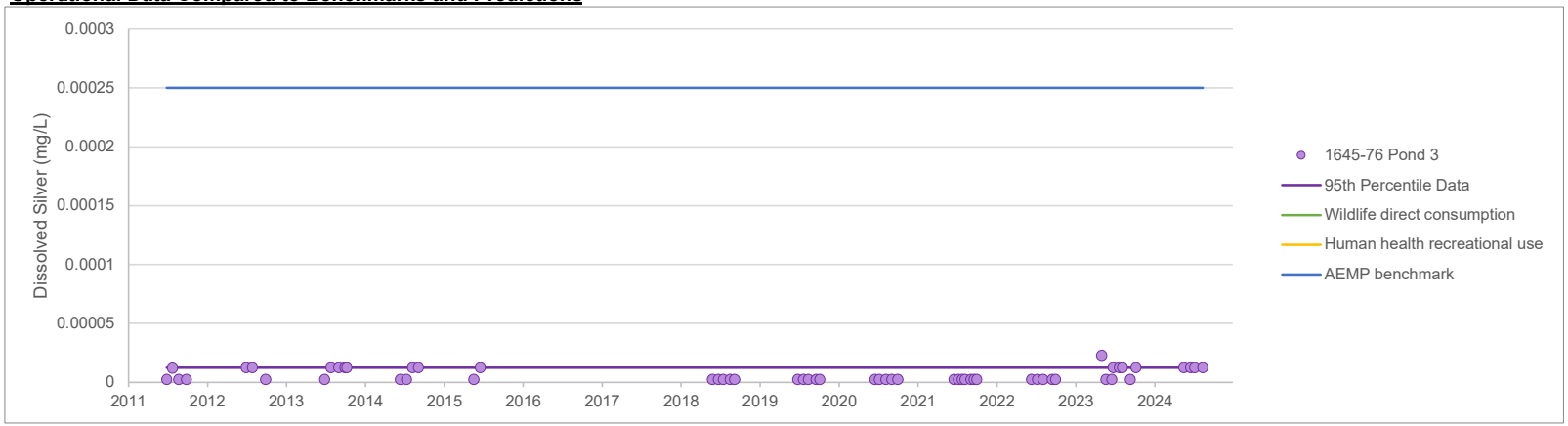


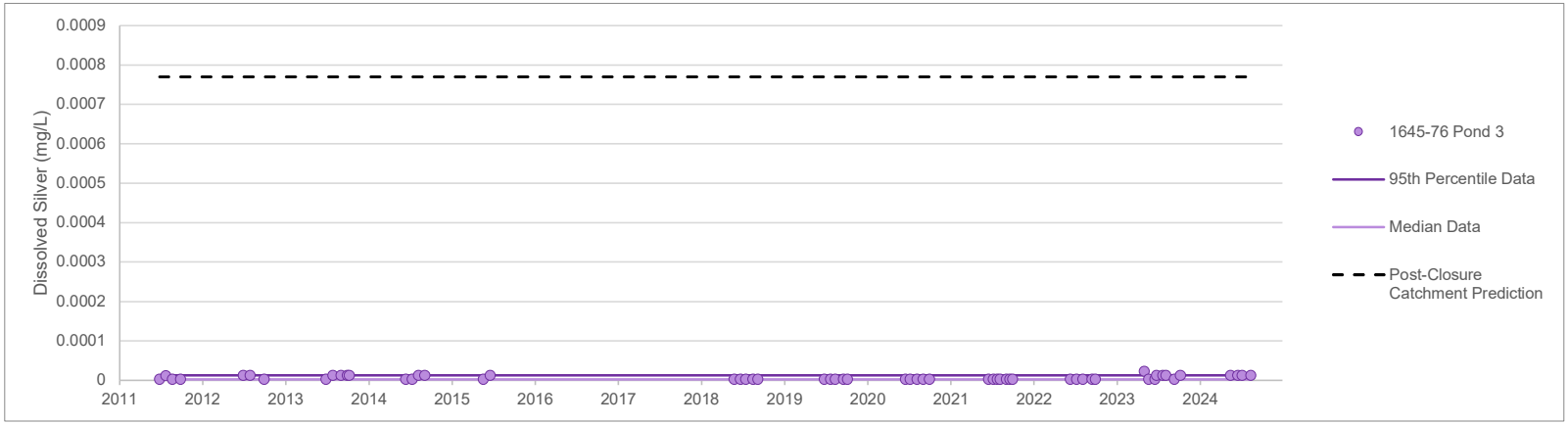
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.61	Wildlife	None
Median	1.37	Human recreational	None
Count	57	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



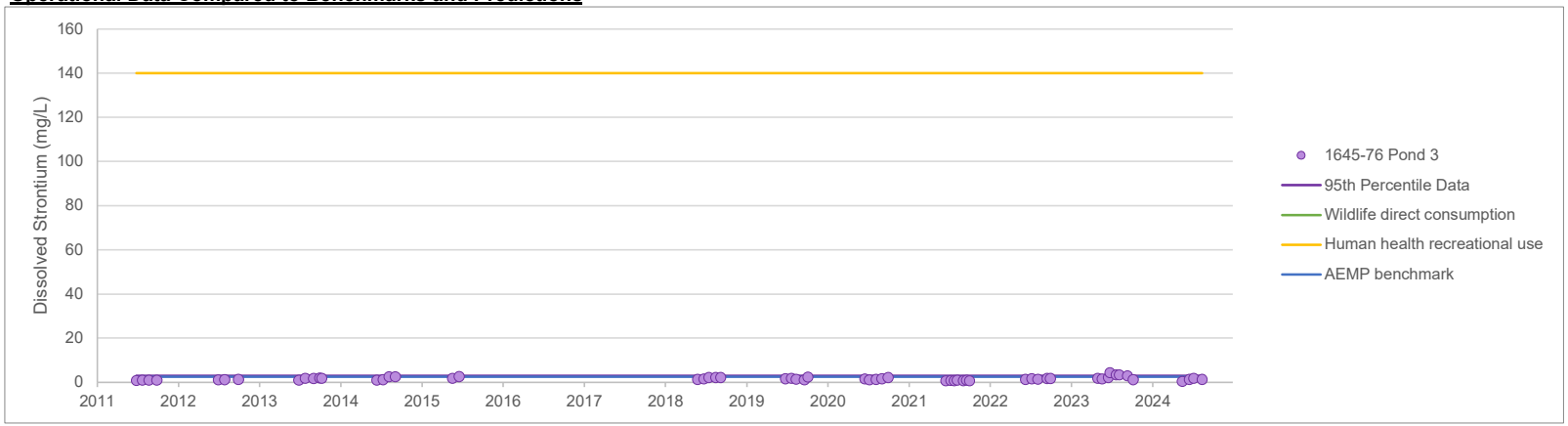


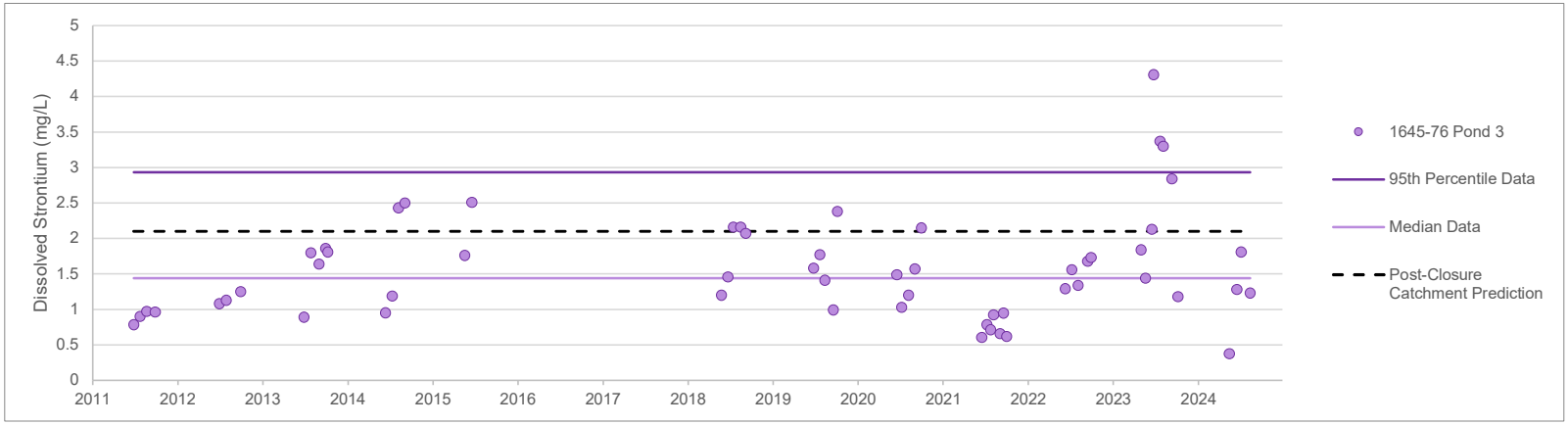
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000013	Wildlife	None
Median	0.000003	Human recreational	None
Count	57	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



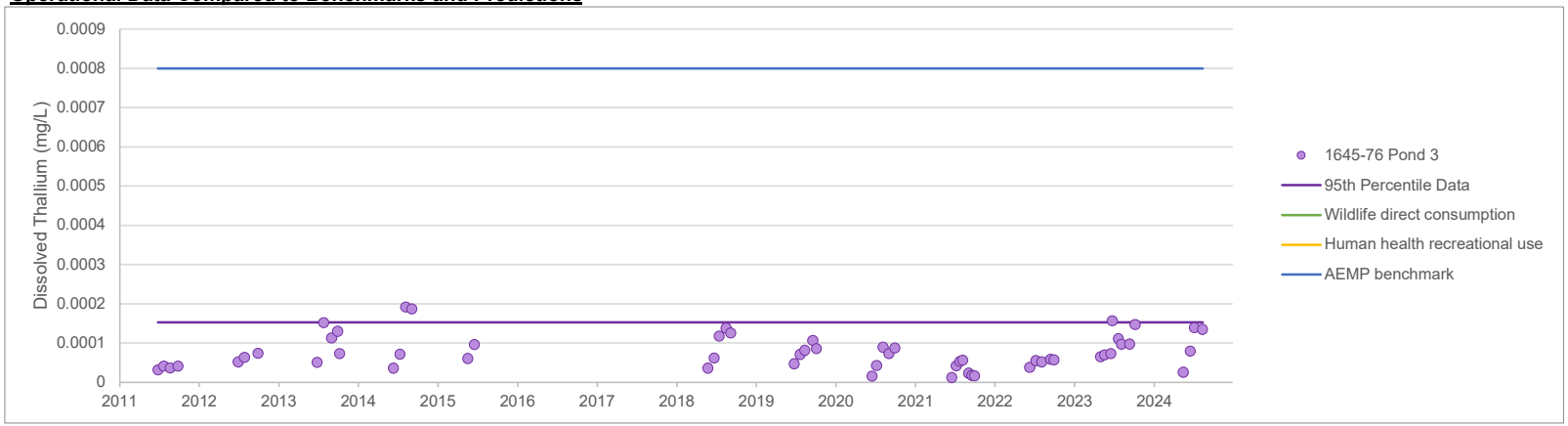


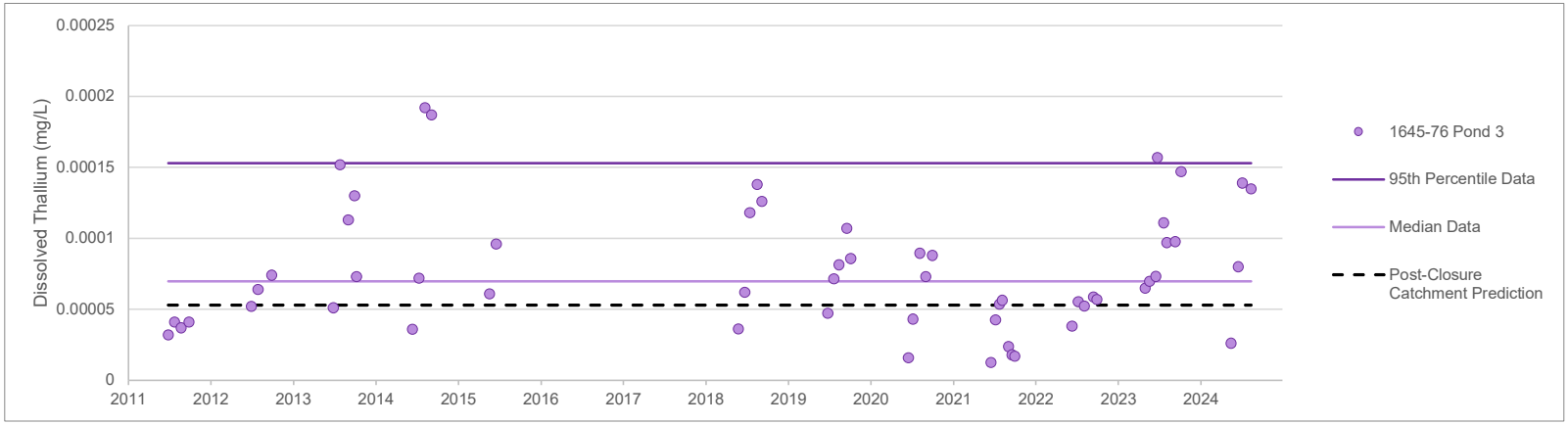
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	2.93	Wildlife	None
Median	1.44	Human recreational	140
Count	57	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



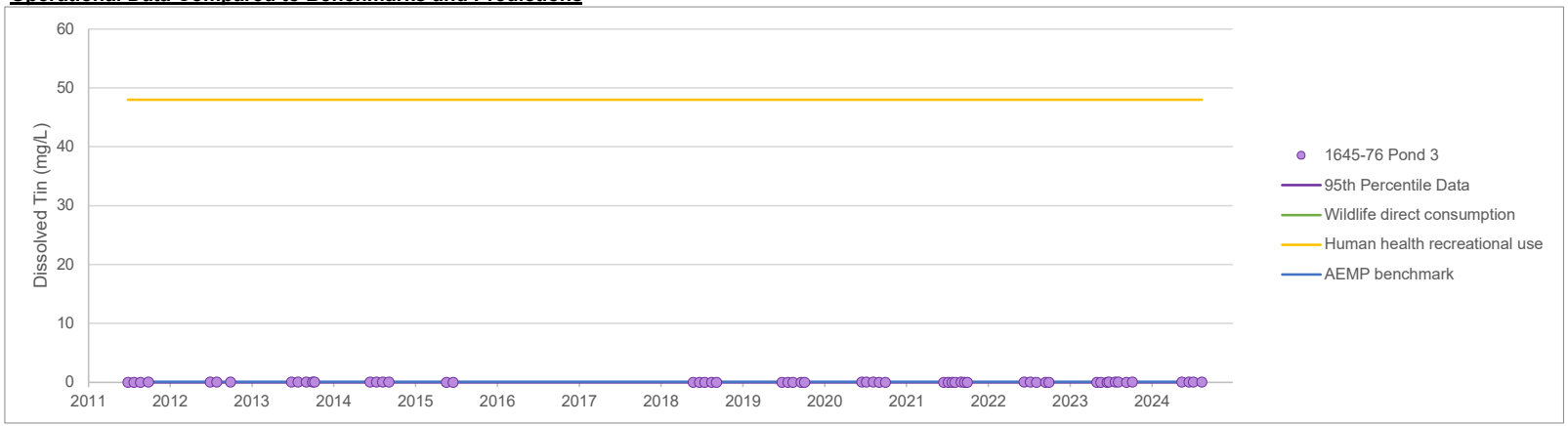


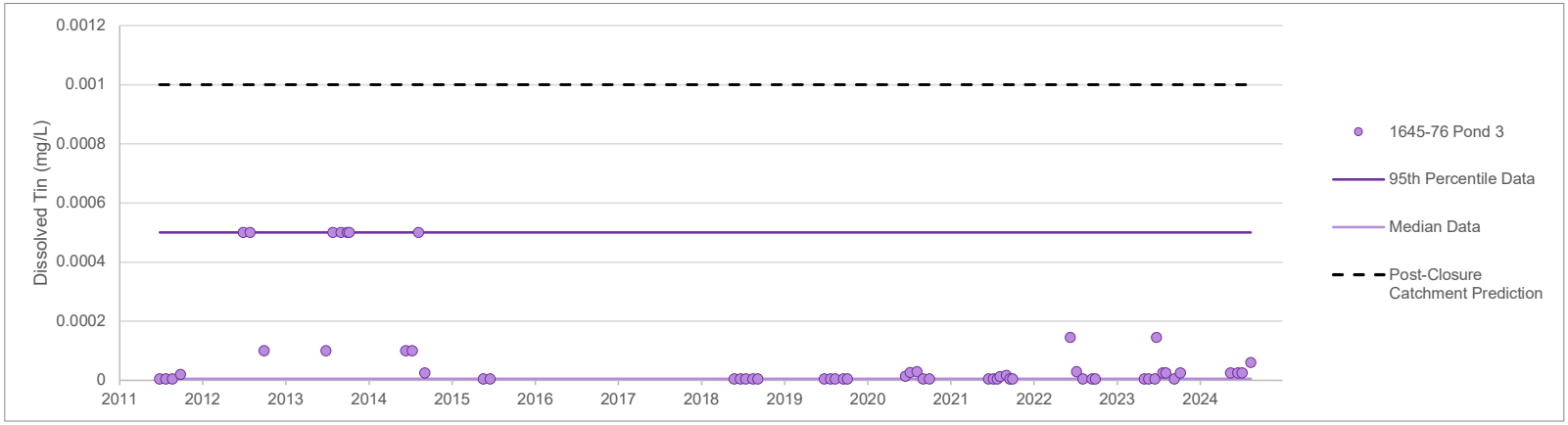
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00015	Wildlife	None
Median	0.00007	Human recreational	None
Count	57	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



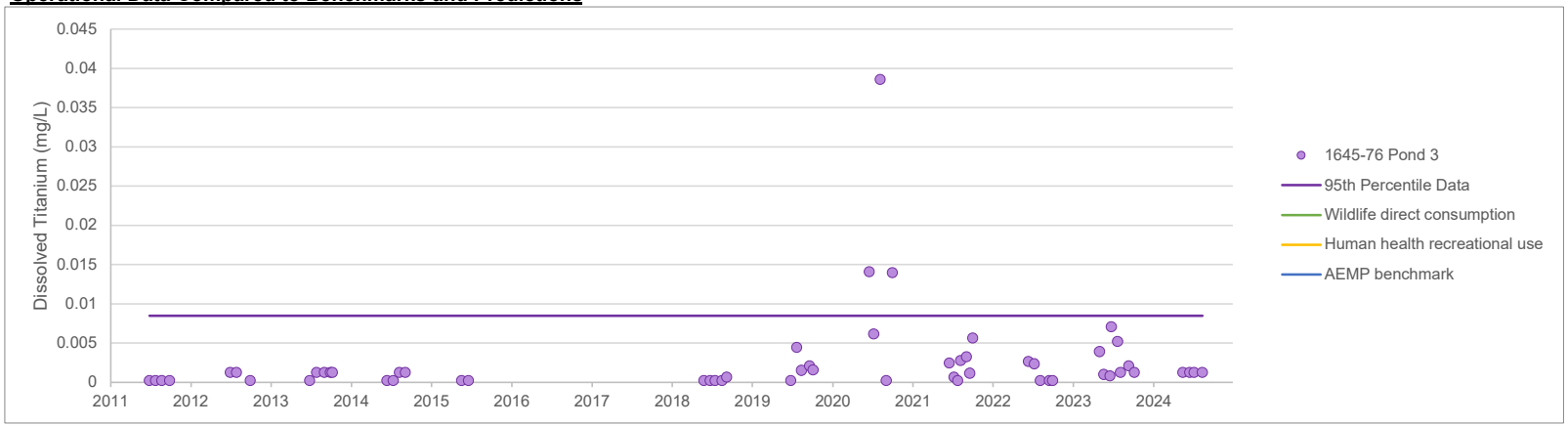


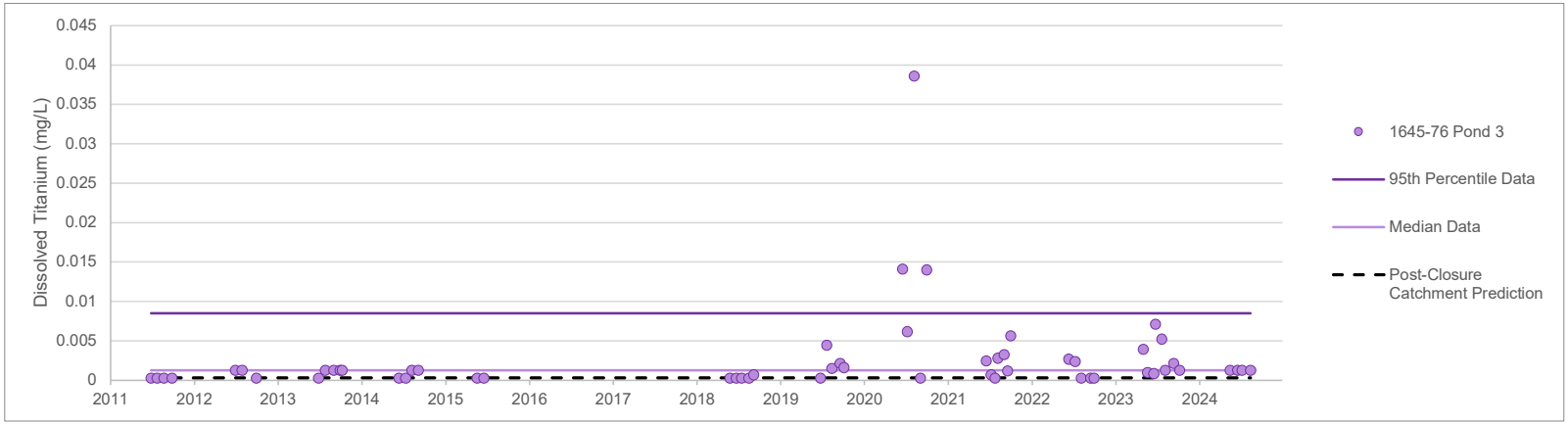
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00050	Wildlife	None
Median	0.00001	Human recreational	48
Count	57	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



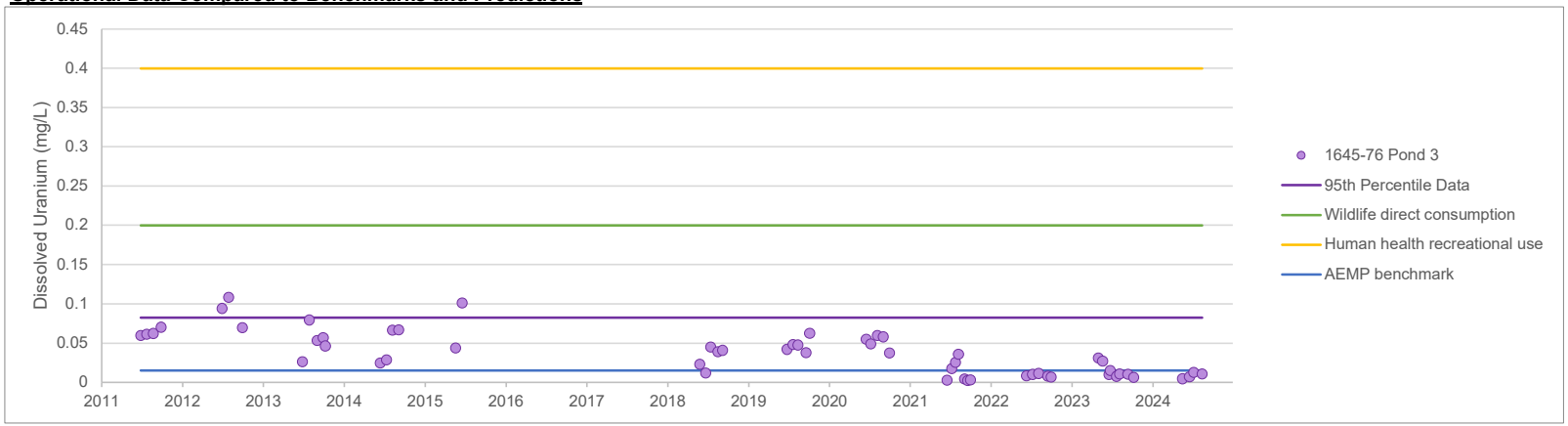


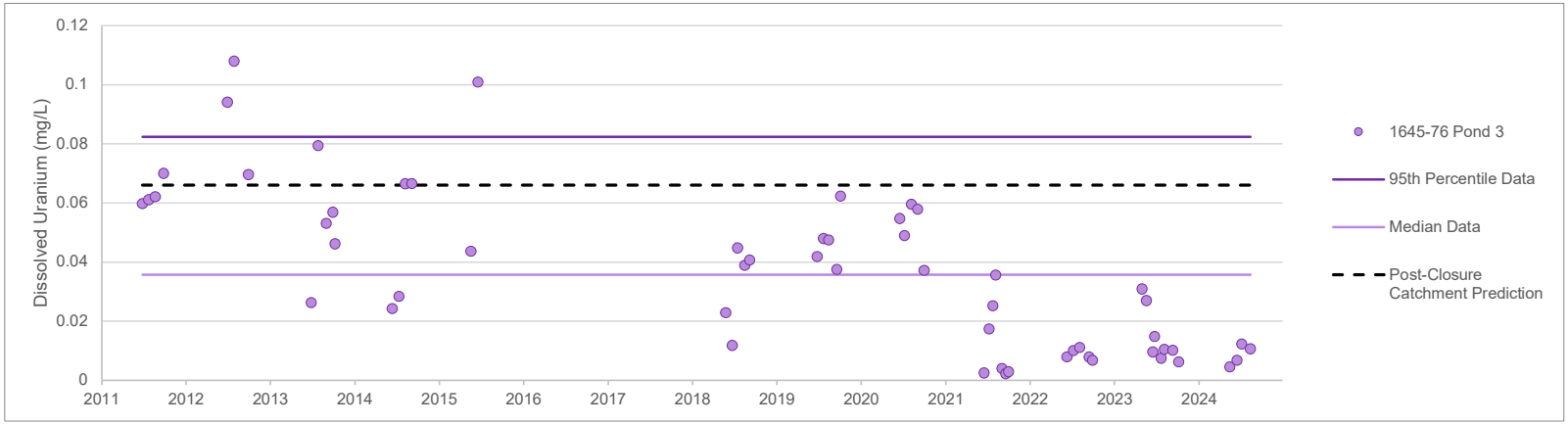
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0085	Wildlife	None
Median	0.0013	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



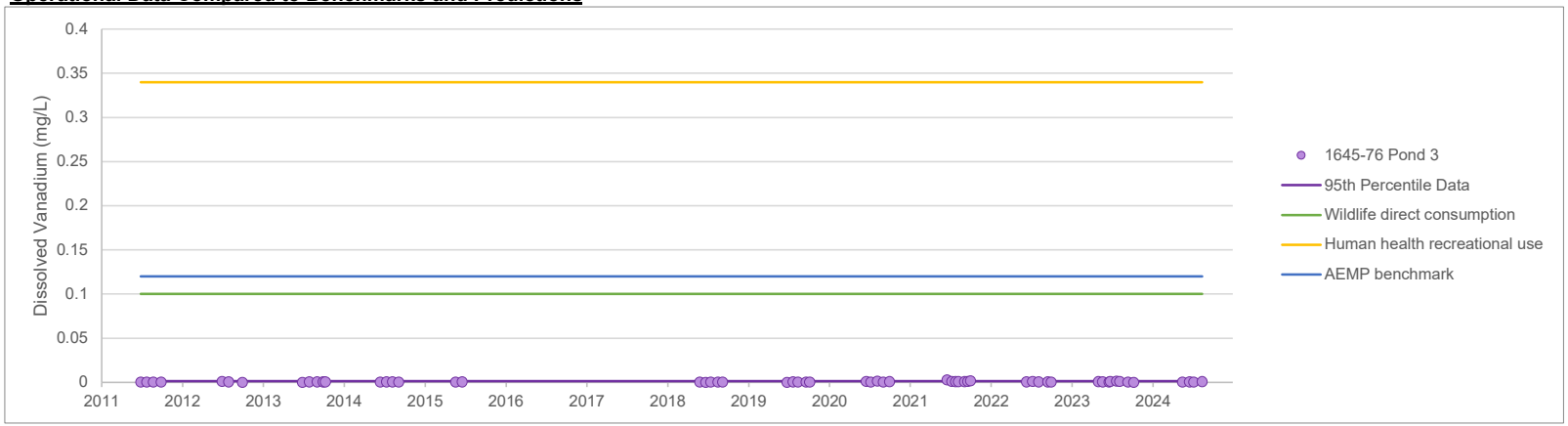


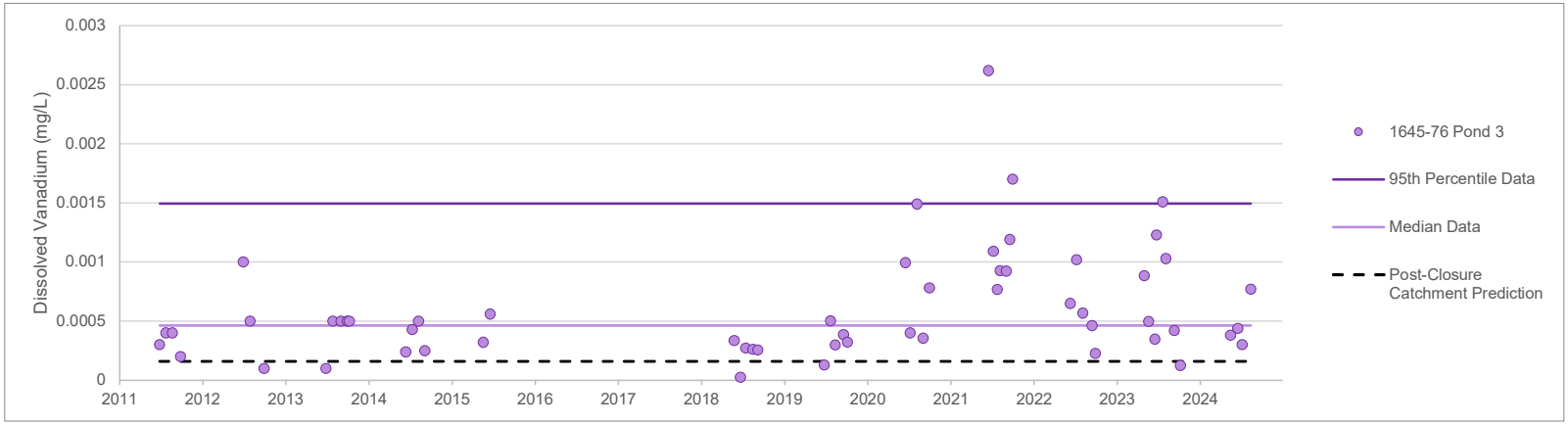
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0823	Wildlife	0.2
Median	0.0357	Human recreational	0.4
Count	57	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



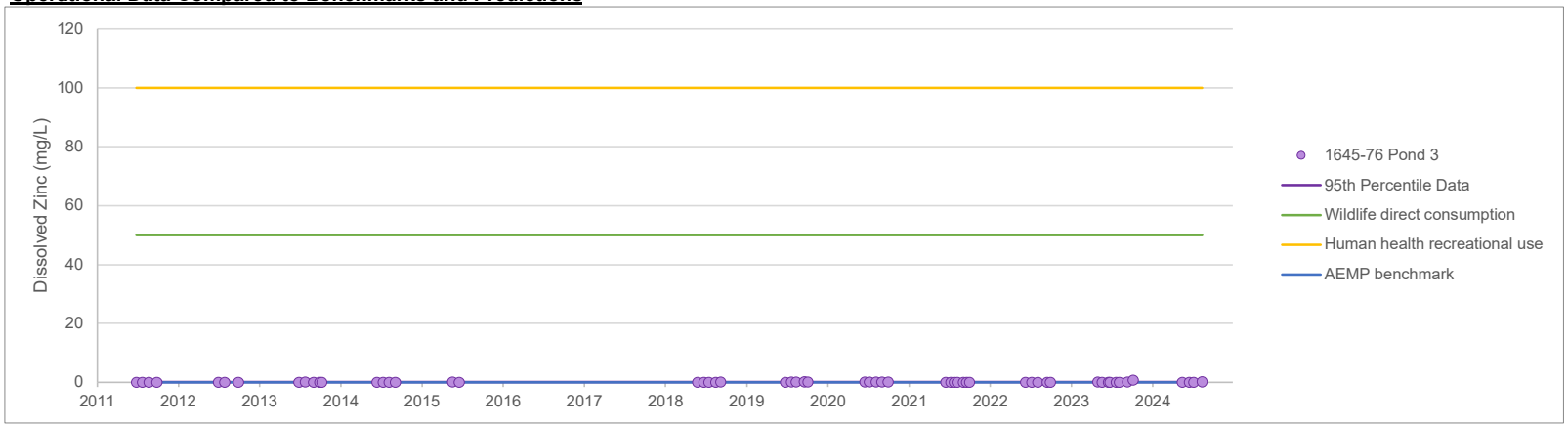


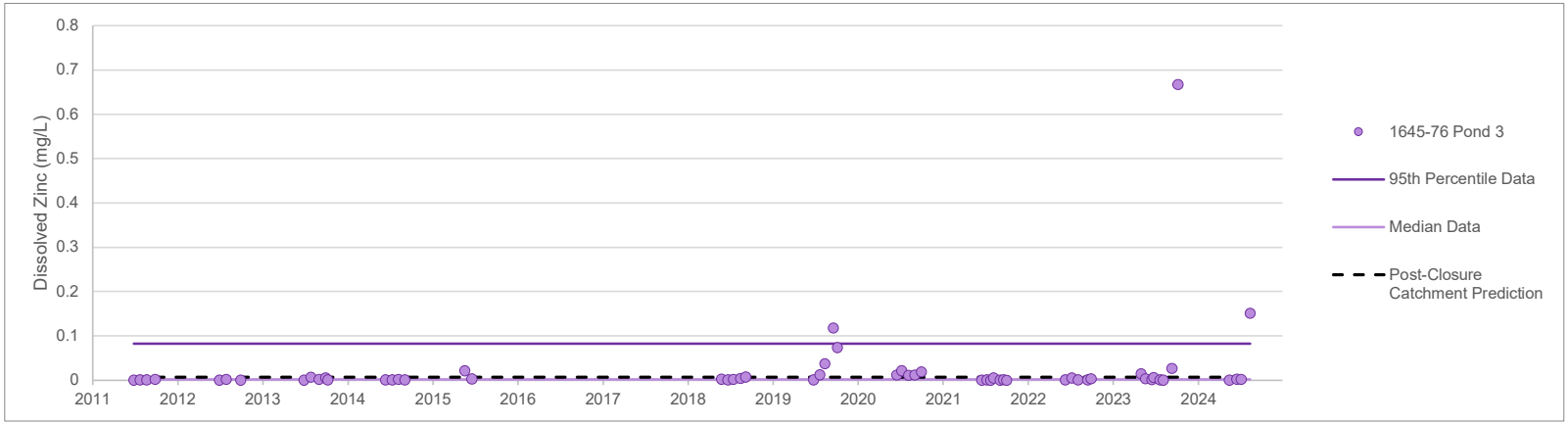
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0015	Wildlife	0.1
Median	0.0005	Human recreational	0.3
Count	57	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



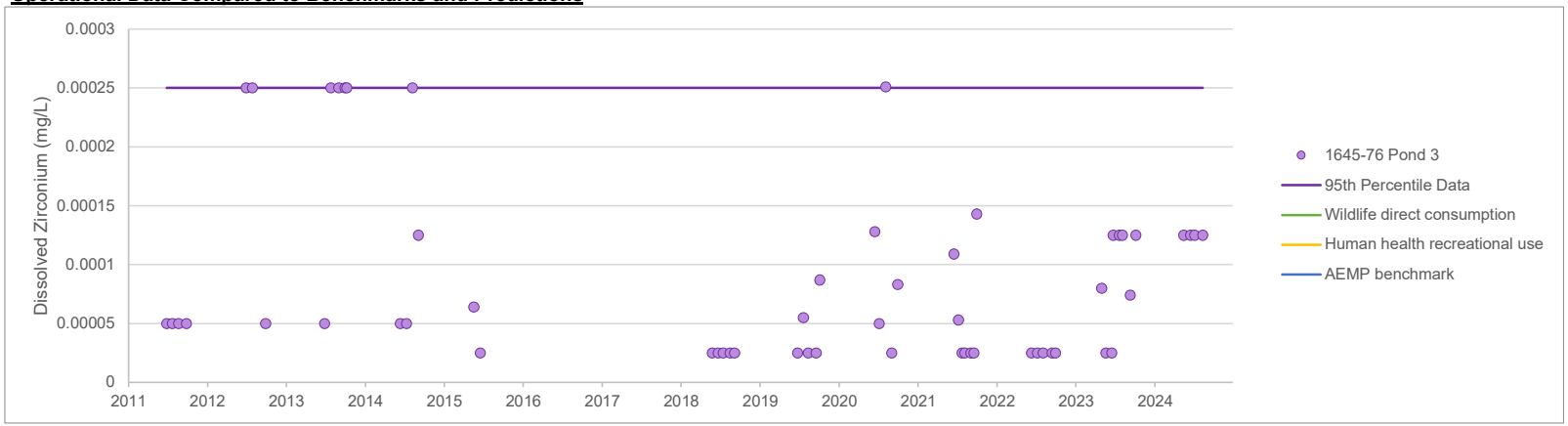


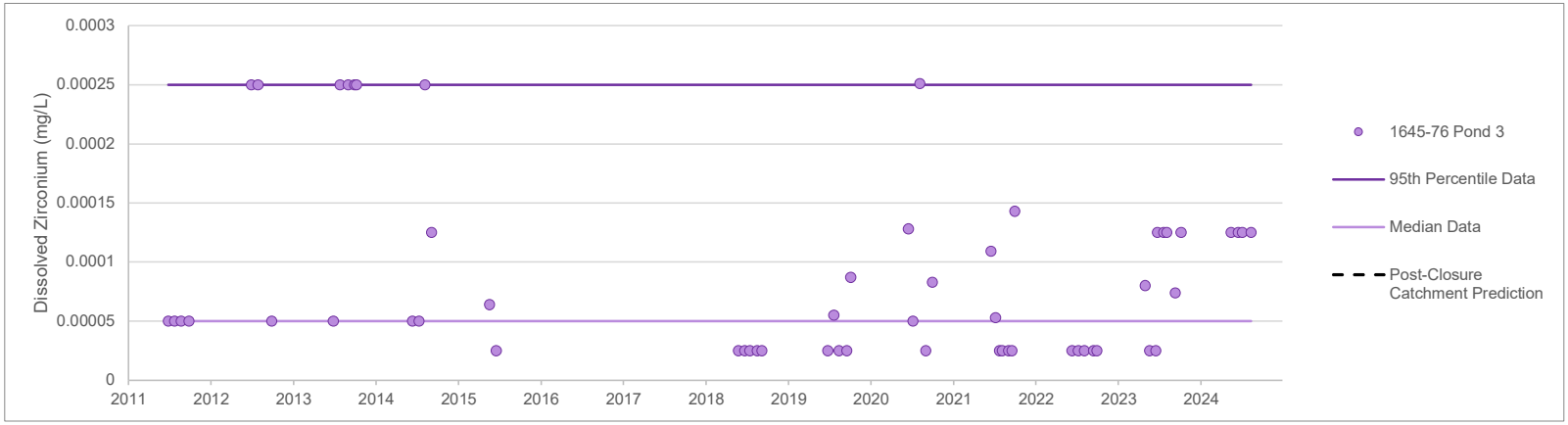
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.083	Wildlife	50
Median	0.002	Human recreational	100
Count	57	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0001	Human recreational	None
Count	57	AEMP	None

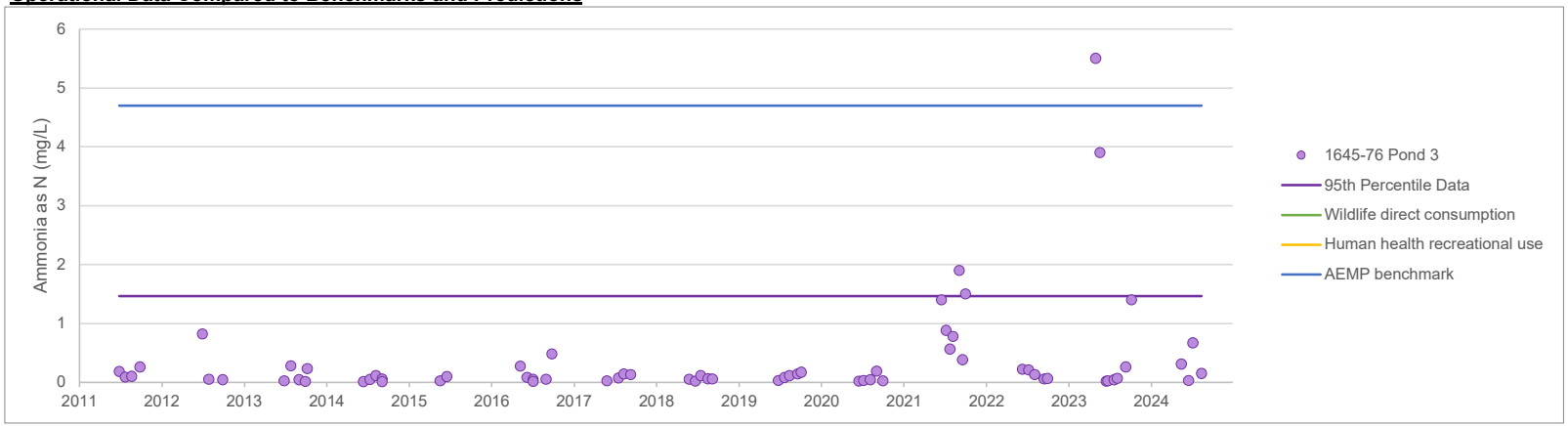
RioTinto | Diavik

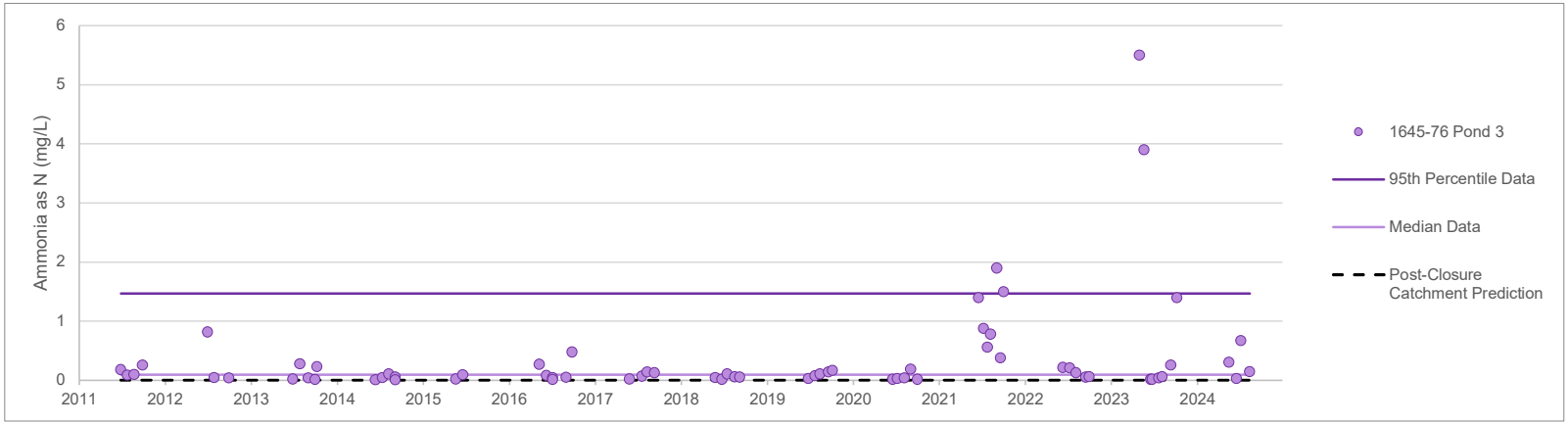
Pond 3

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



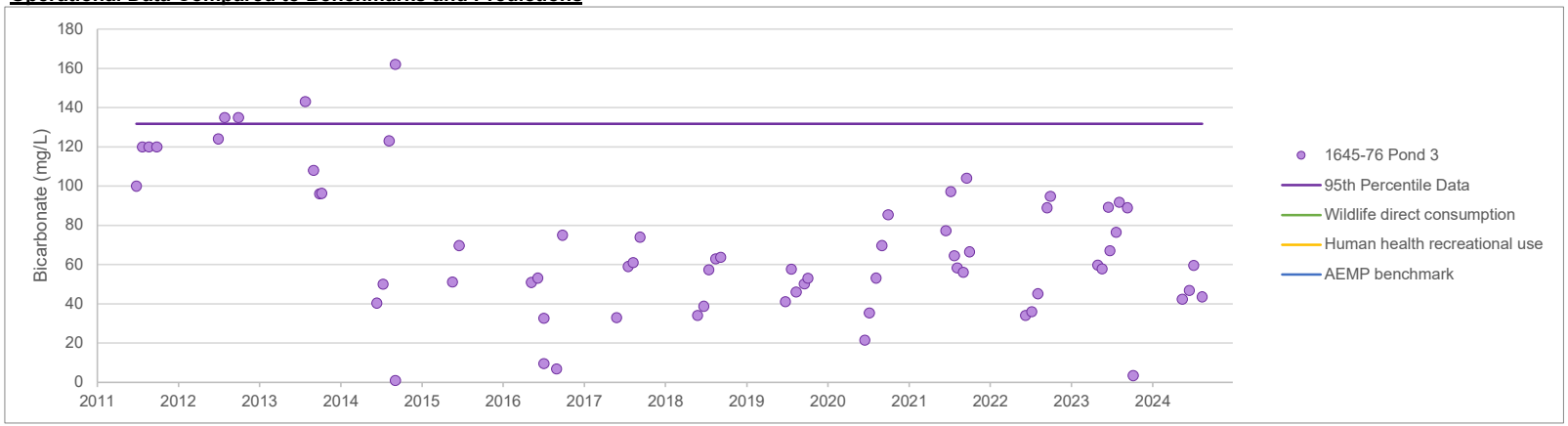


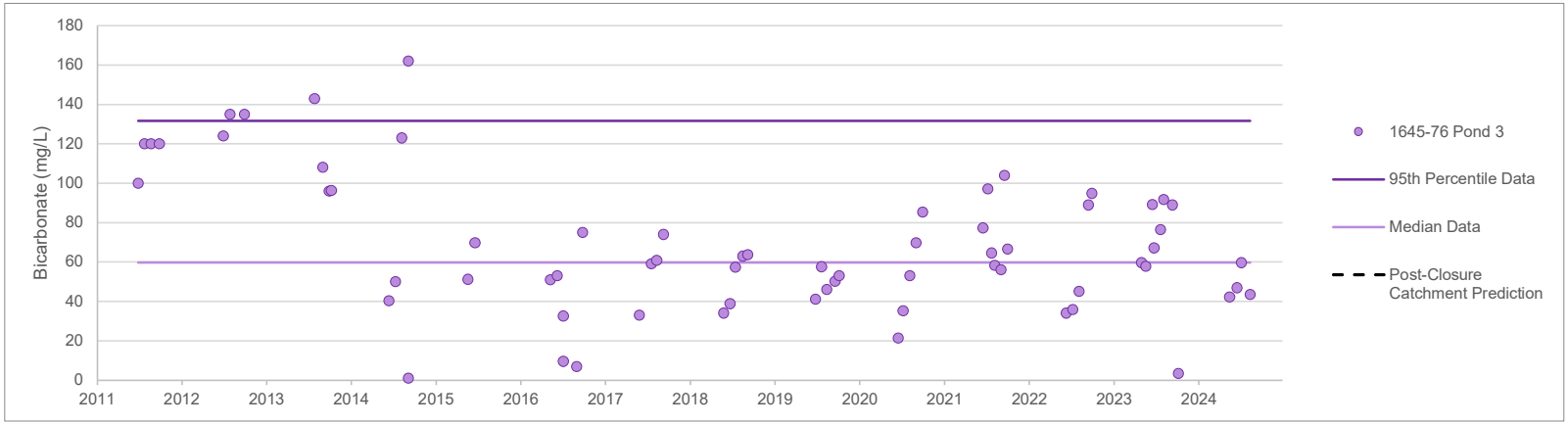
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	1.47	Wildlife	None
Median	0.09	Human recreational	None
Count	68	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



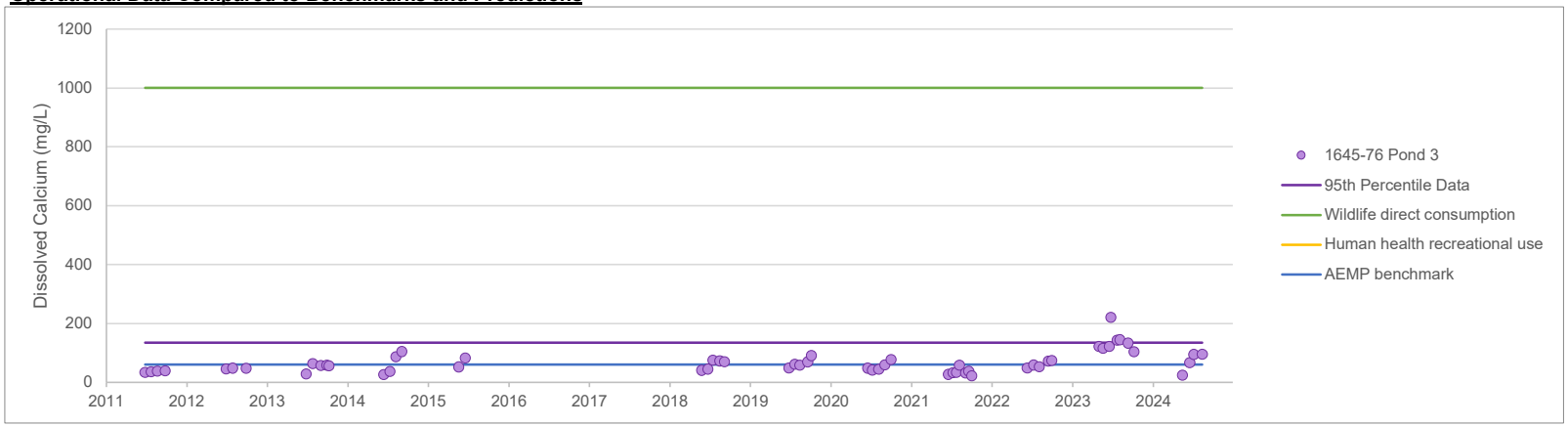


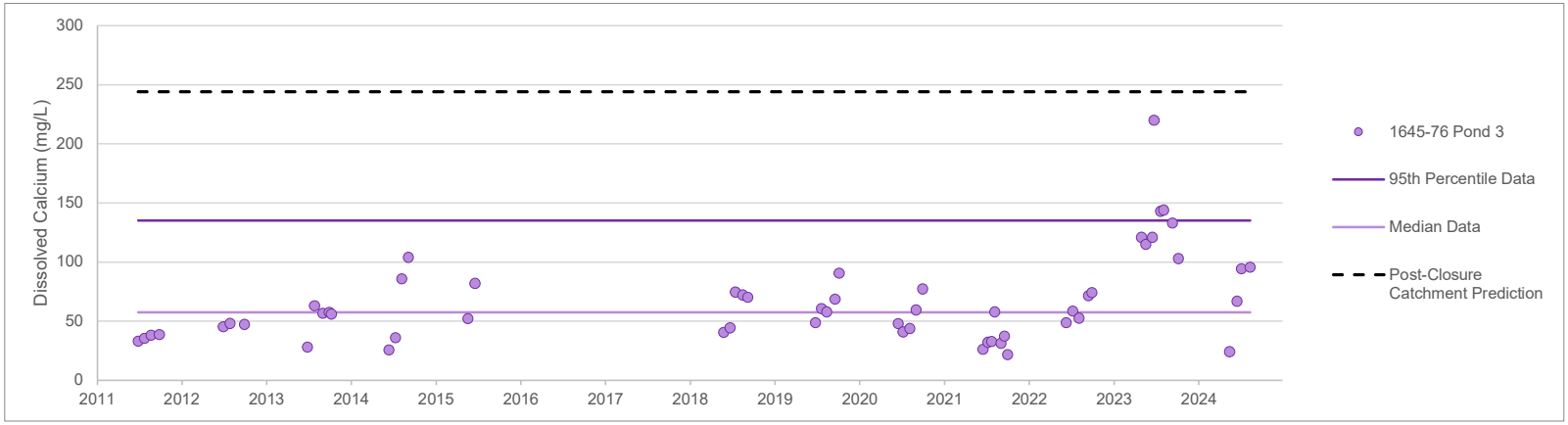
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	131.7	Wildlife	None
Median	59.7	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions



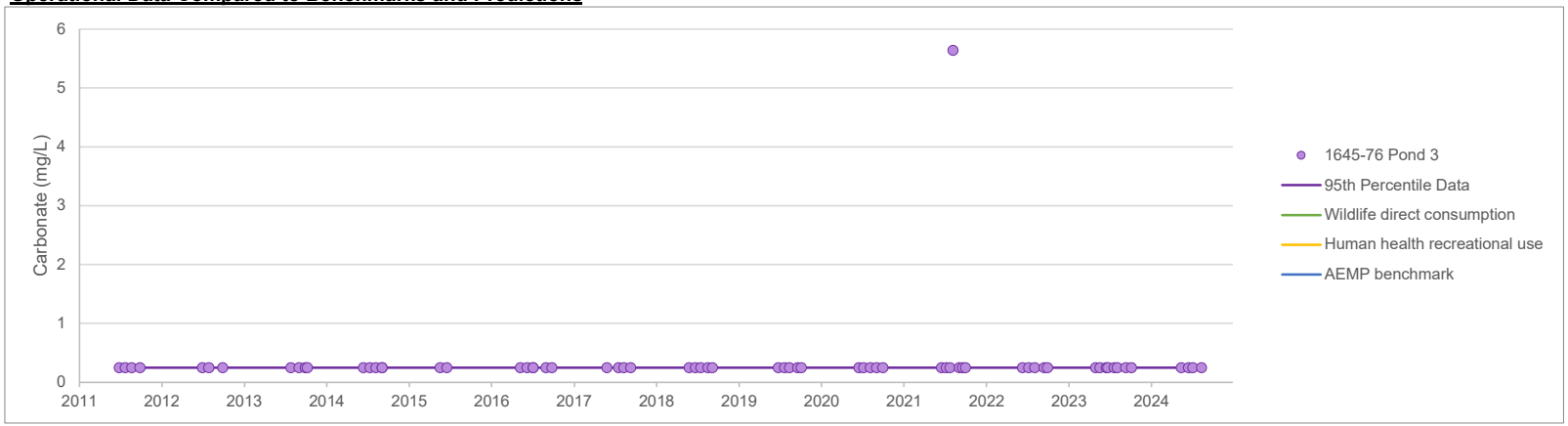


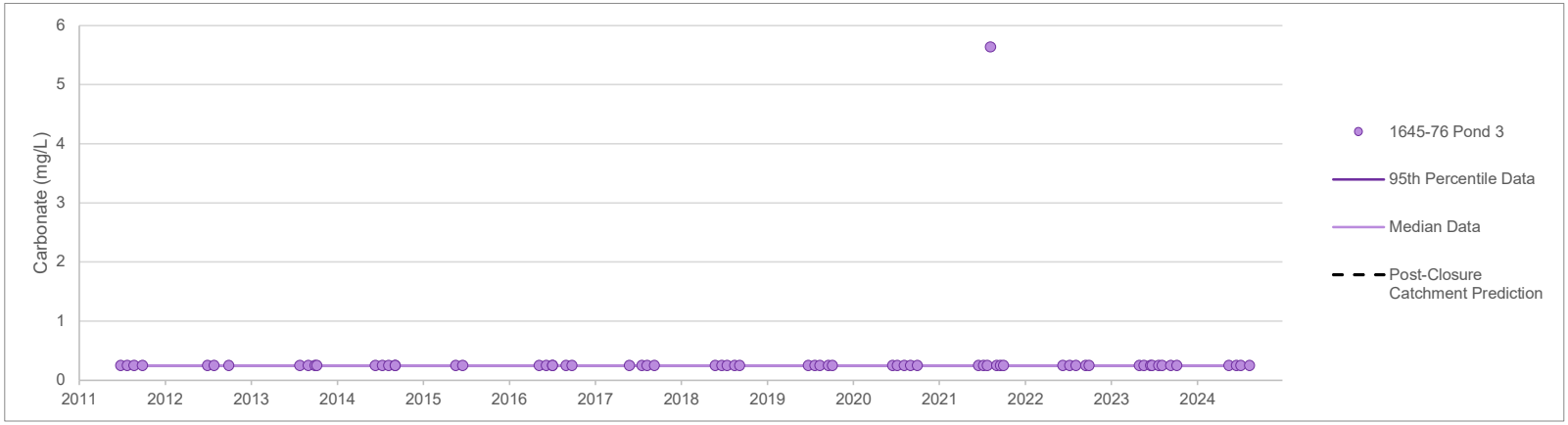
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	135.0	Wildlife	1000
Median	57.5	Human recreational	None
Count	57	AEMP	60

Operational Data Compared to Benchmarks and Predictions



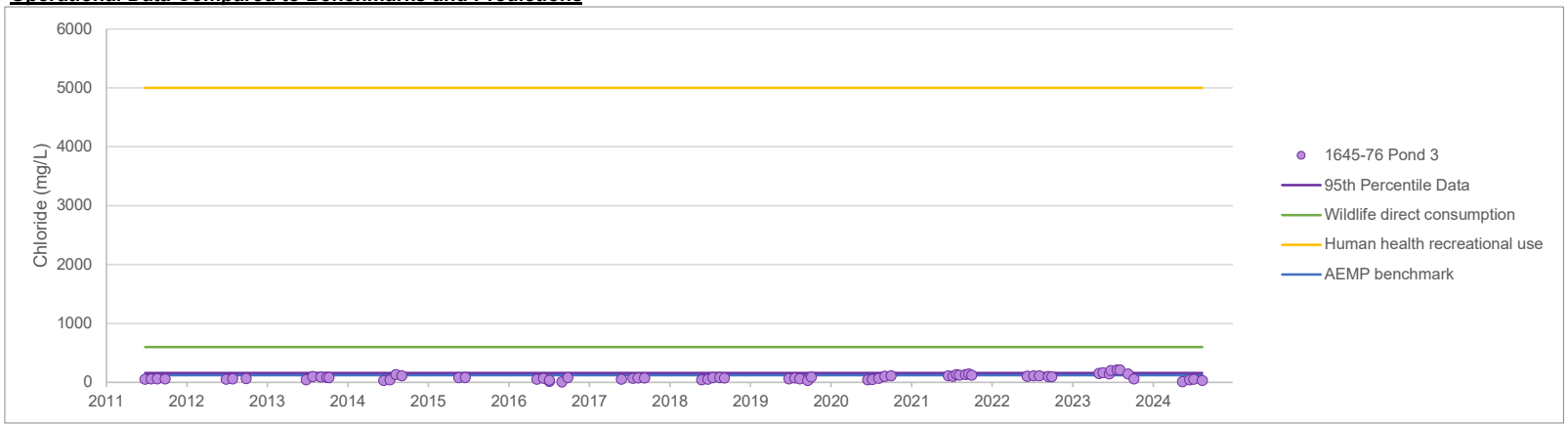


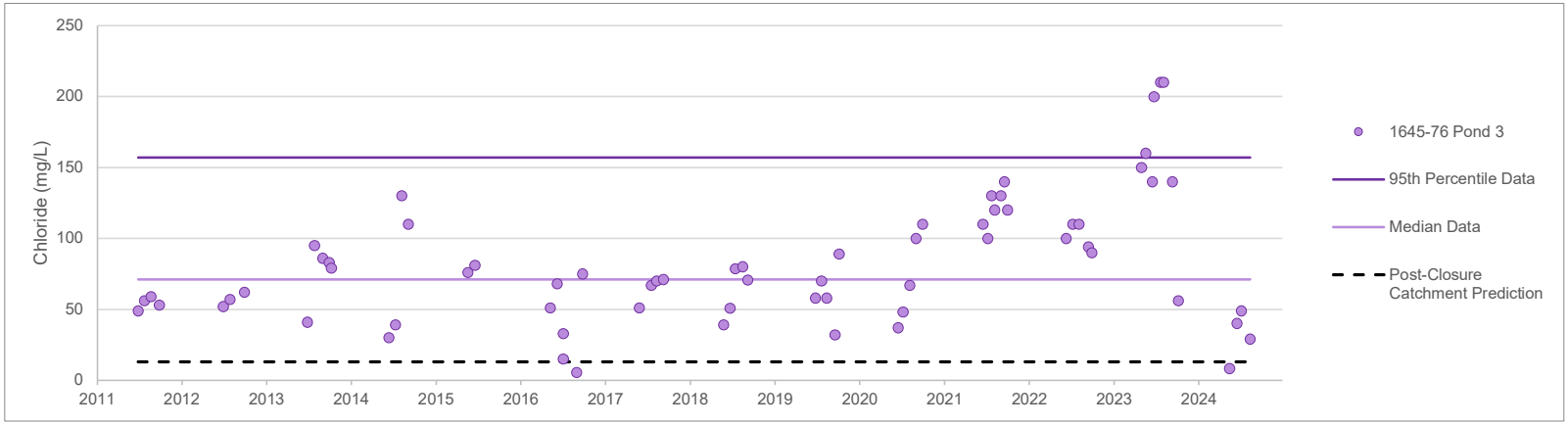
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions



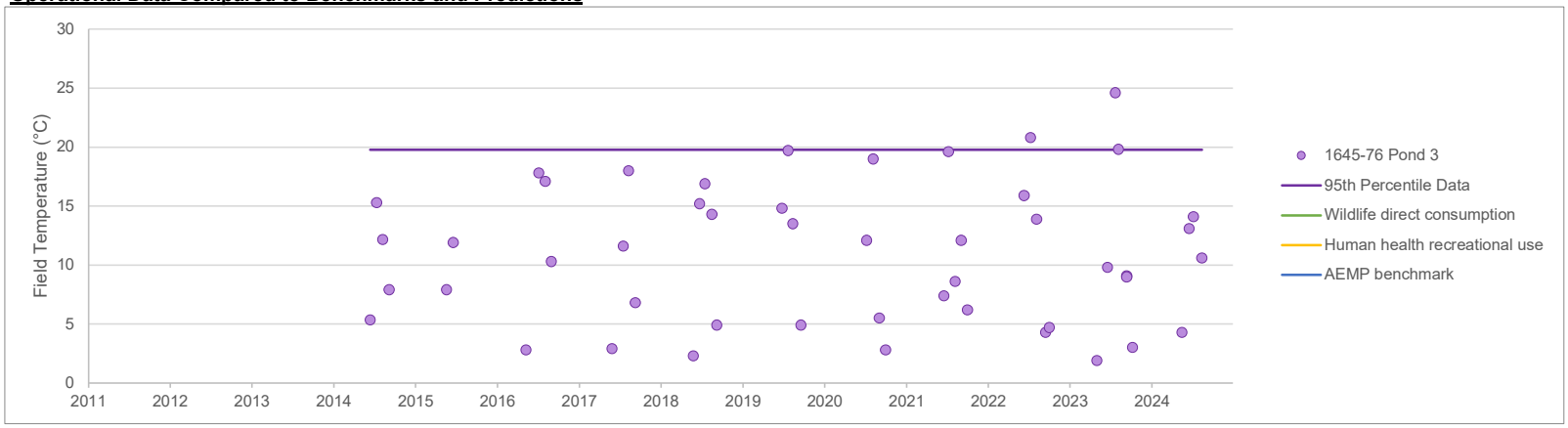


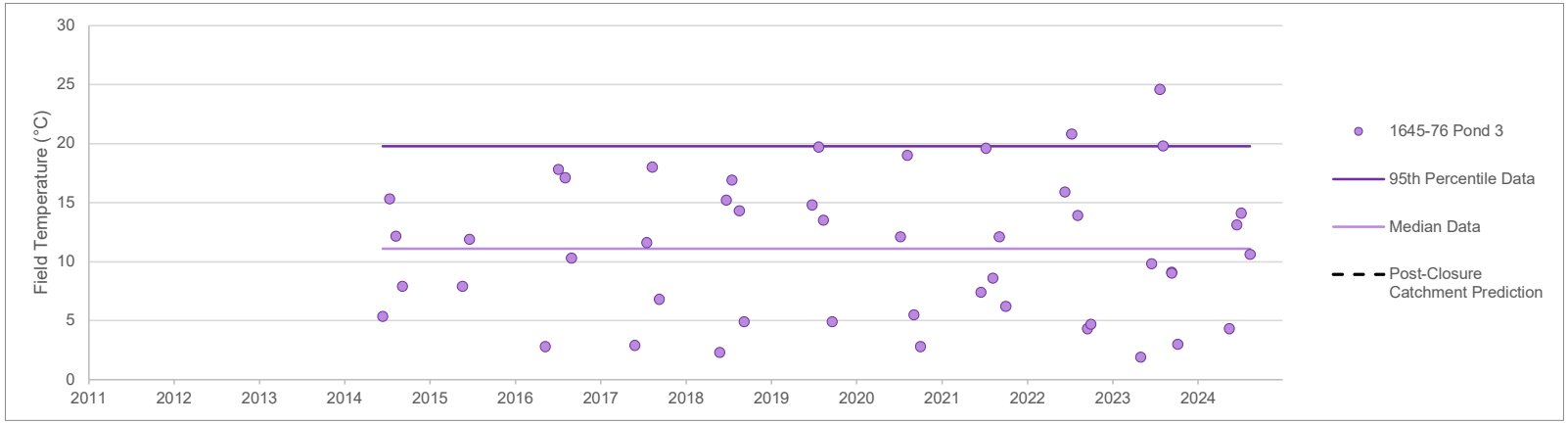
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	157.0	Wildlife	600
Median	71.0	Human recreational	5000
Count	67	AEMP	120

Operational Data Compared to Benchmarks and Predictions



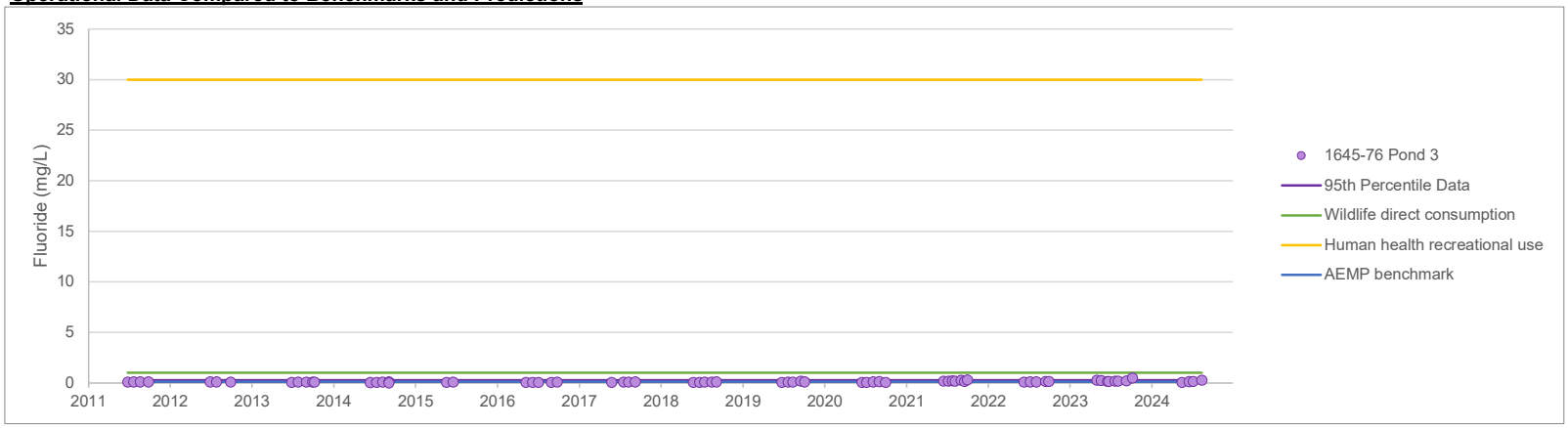


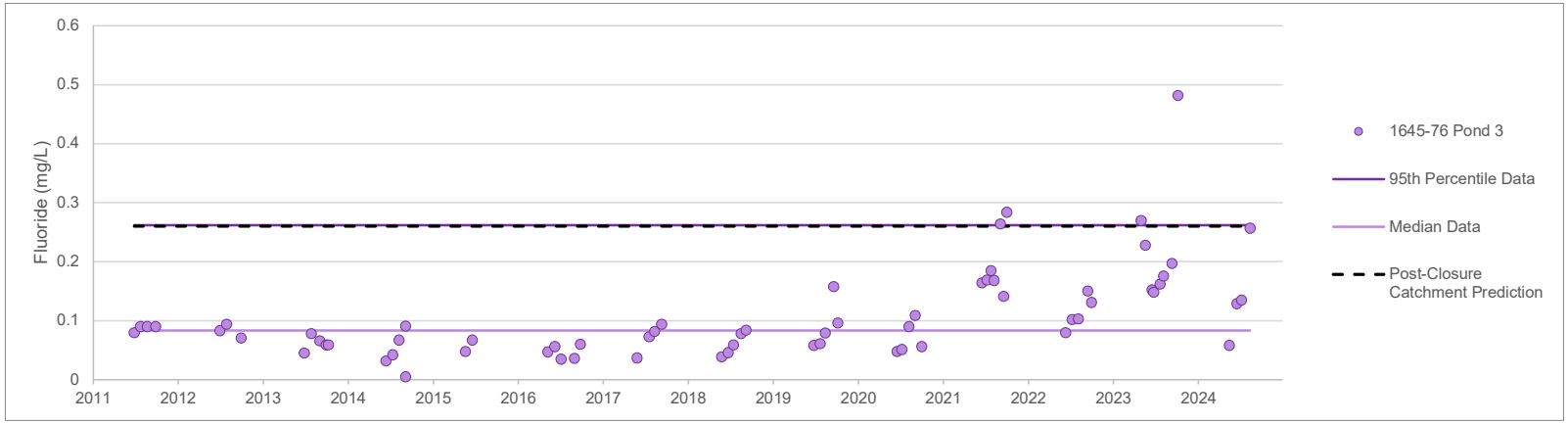
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	19.8	Wildlife	None
Median	11.1	Human recreational	None
Count	48	AEMP	None

Operational Data Compared to Benchmarks and Predictions



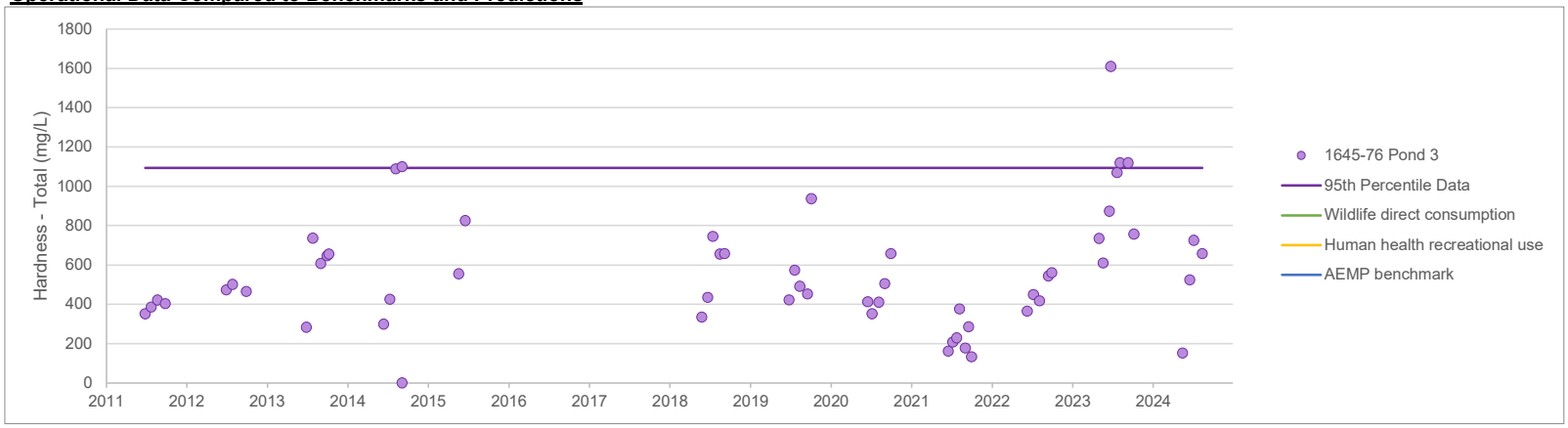


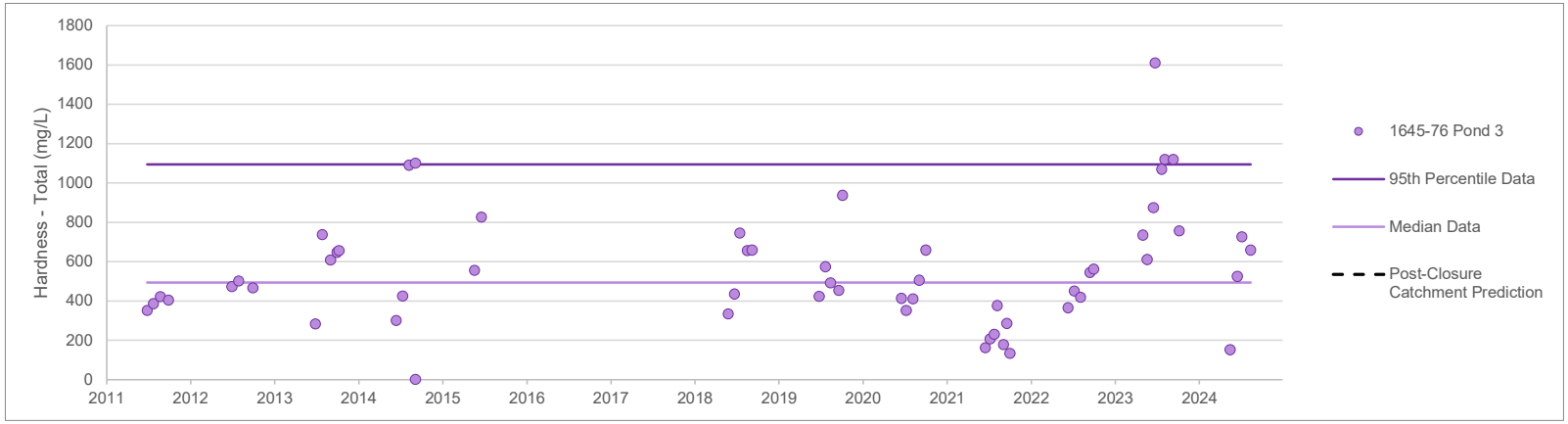
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.26	Wildlife	1
Median	0.08	Human recreational	30
Count	67	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



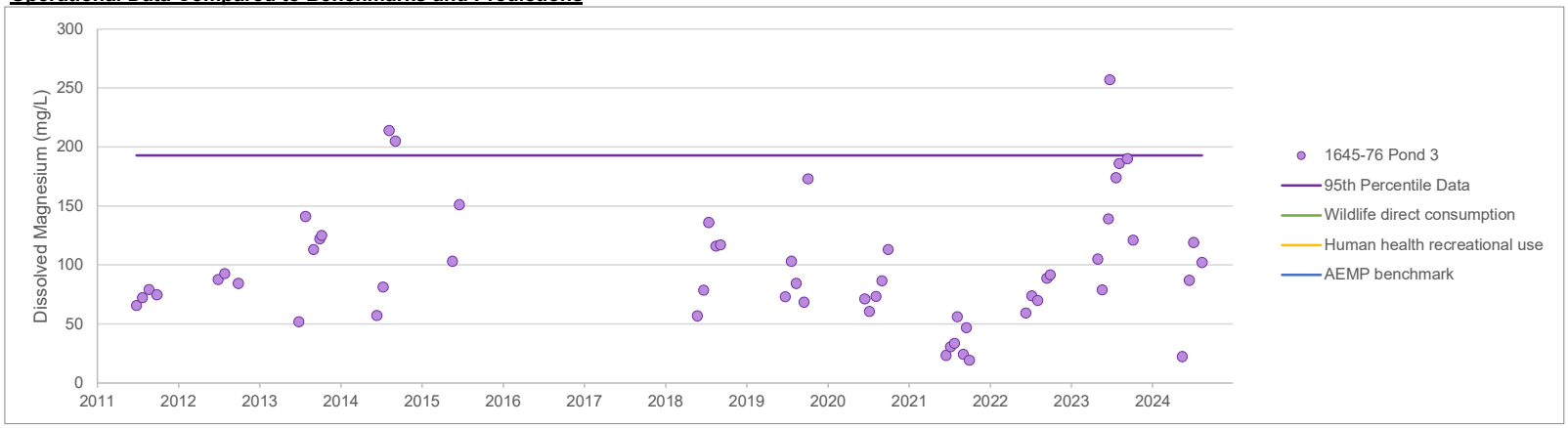


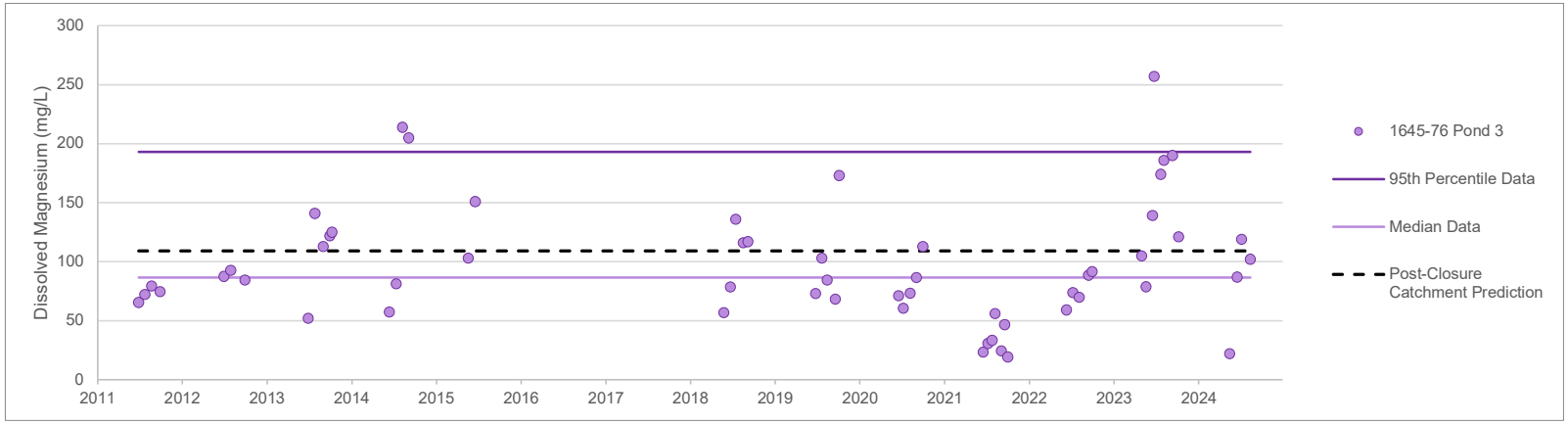
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	1094	Wildlife	None
Median	493	Human recreational	None
Count	69	AEMP	None

Operational Data Compared to Benchmarks and Predictions



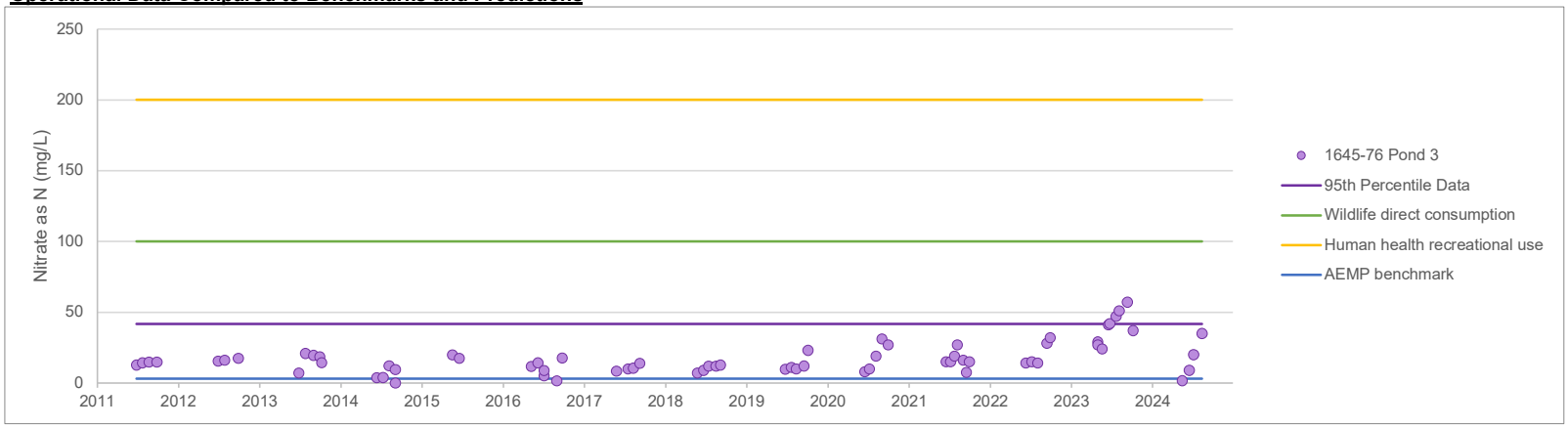


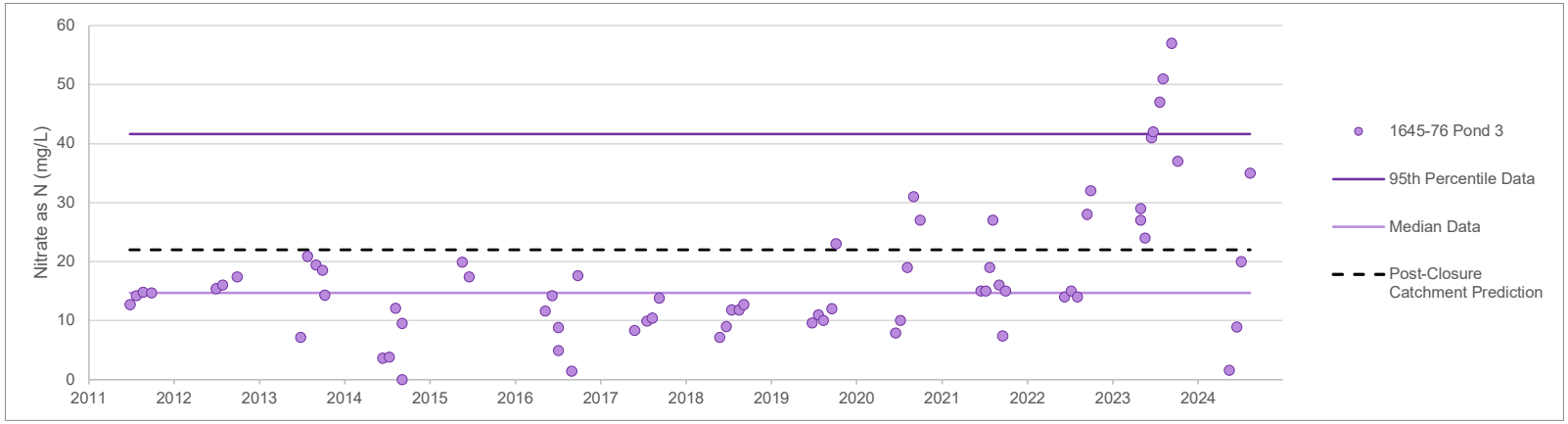
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	193.0	Wildlife	None
Median	86.6	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



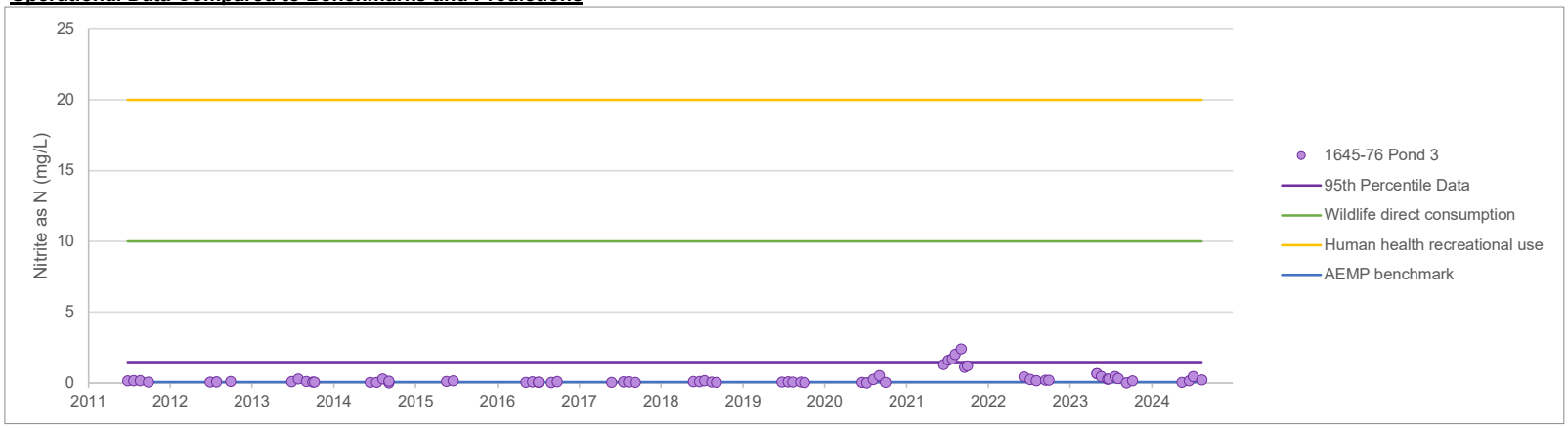


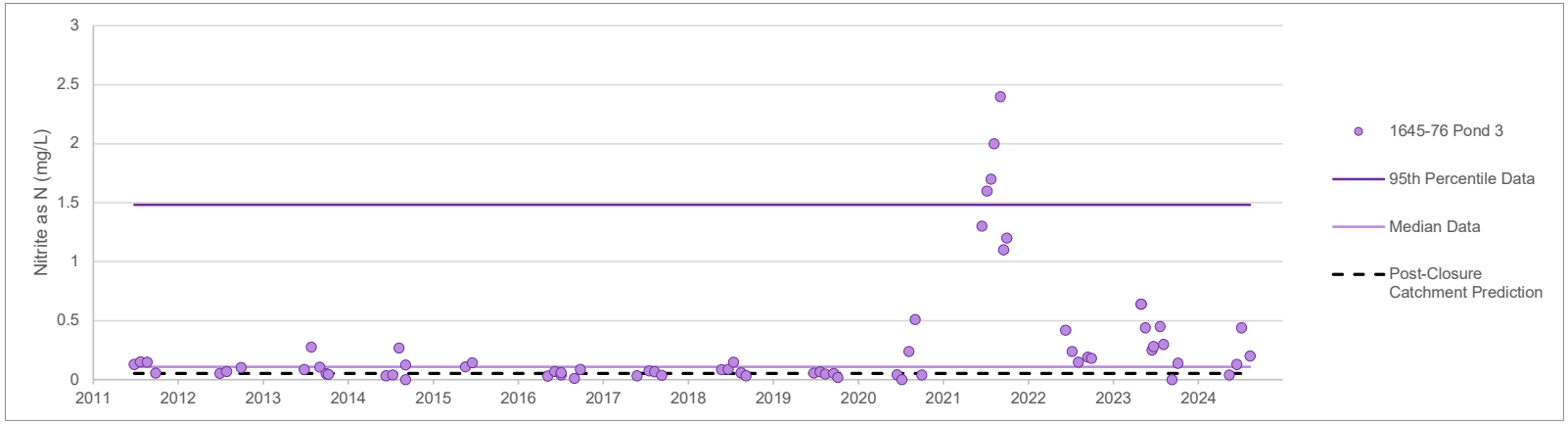
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	41.6	Wildlife	100
Median	14.7	Human recreational	200
Count	69	AEMP	3

Operational Data Compared to Benchmarks and Predictions



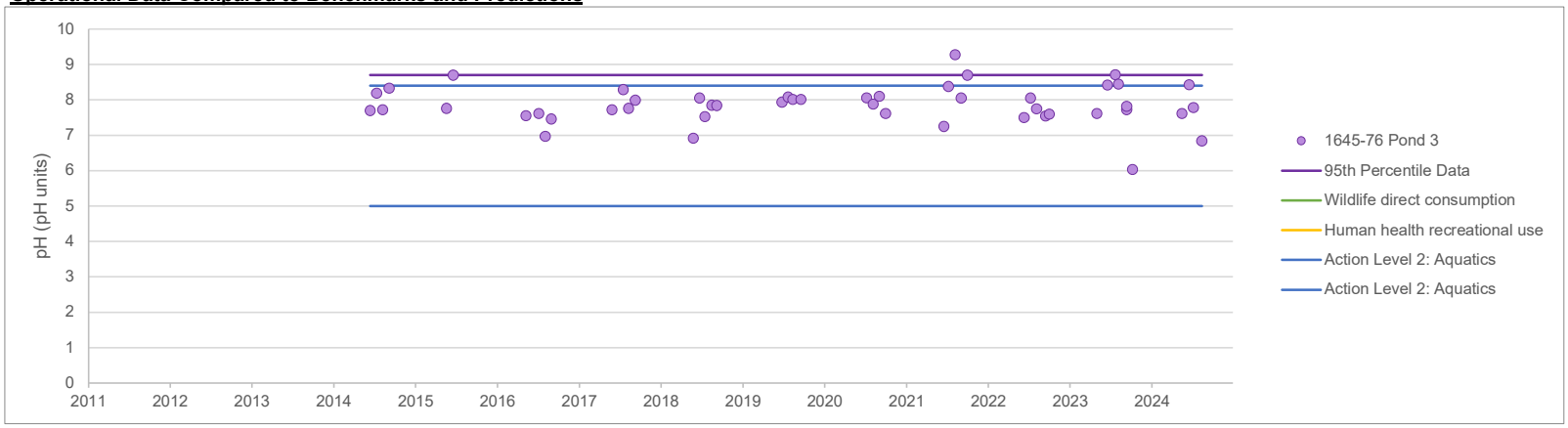


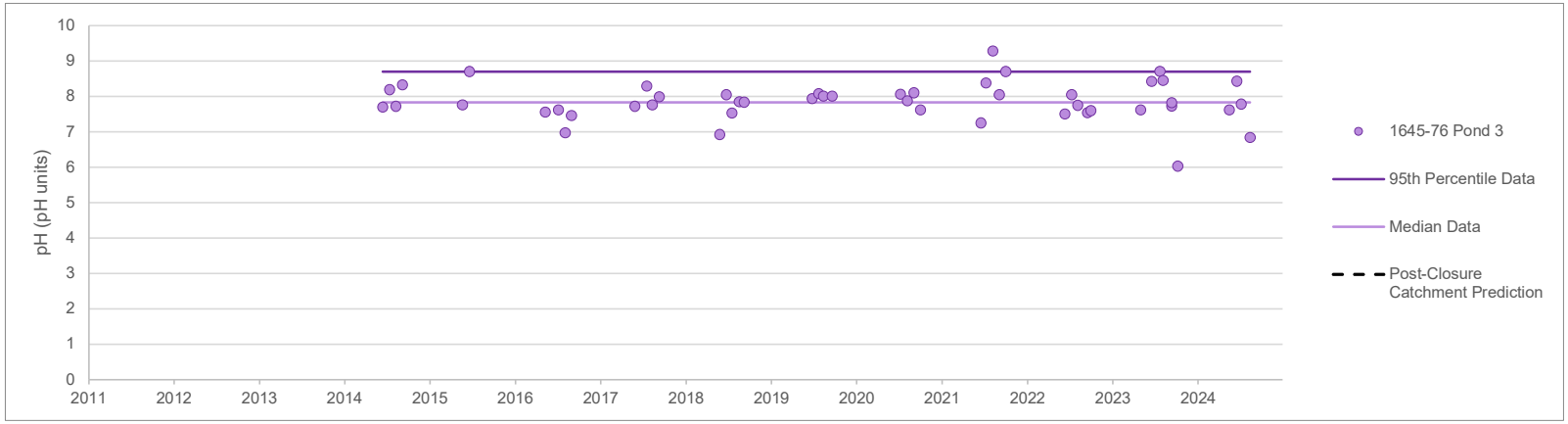
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	1.480	Wildlife	10.0
Median	0.107	Human recreational	20.0
Count	69	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



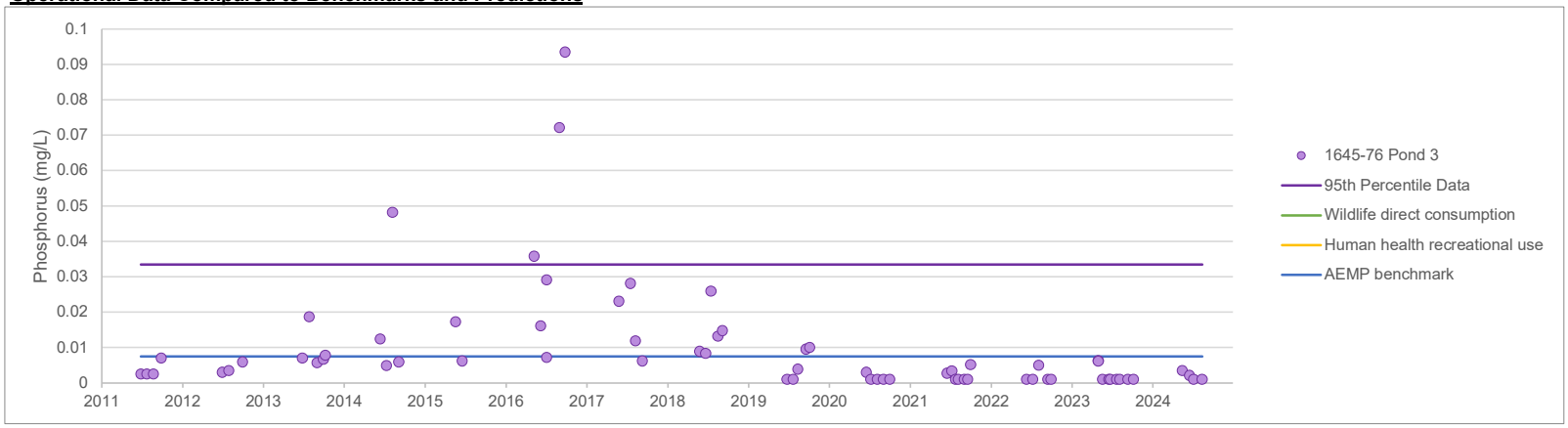


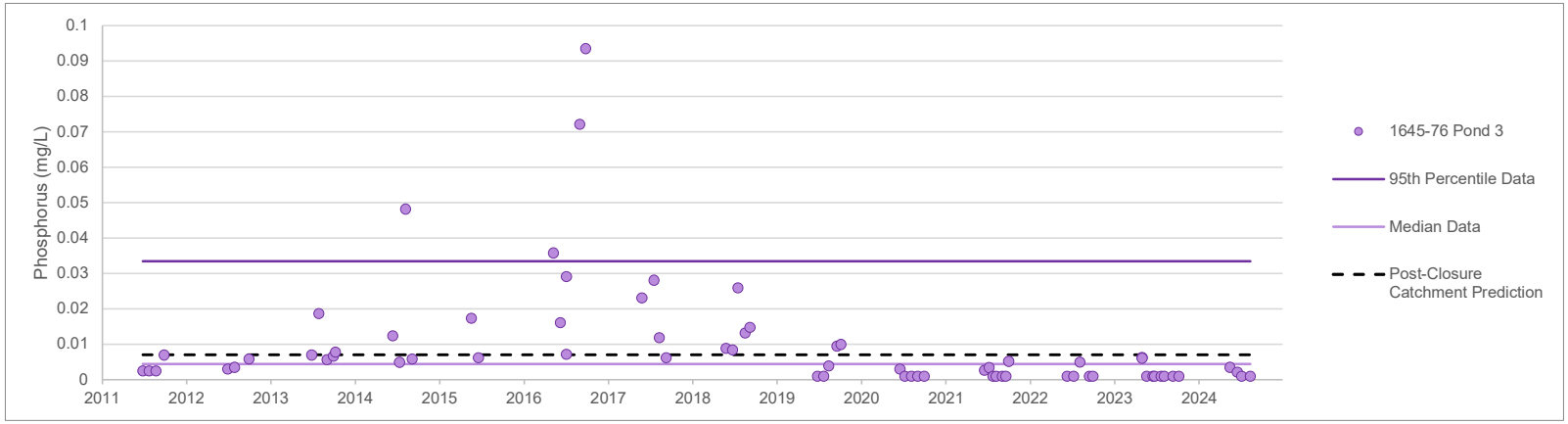
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.7	Wildlife	None
Median	7.8	Human recreational	None
Count	48	AEMP	None

Operational Data Compared to Benchmarks and Predictions



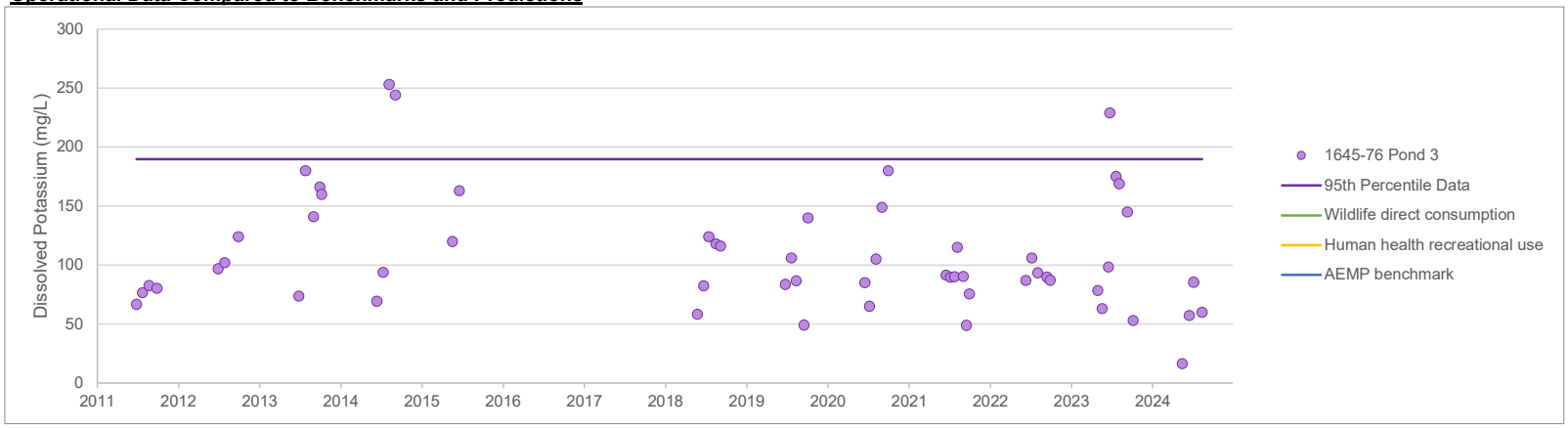


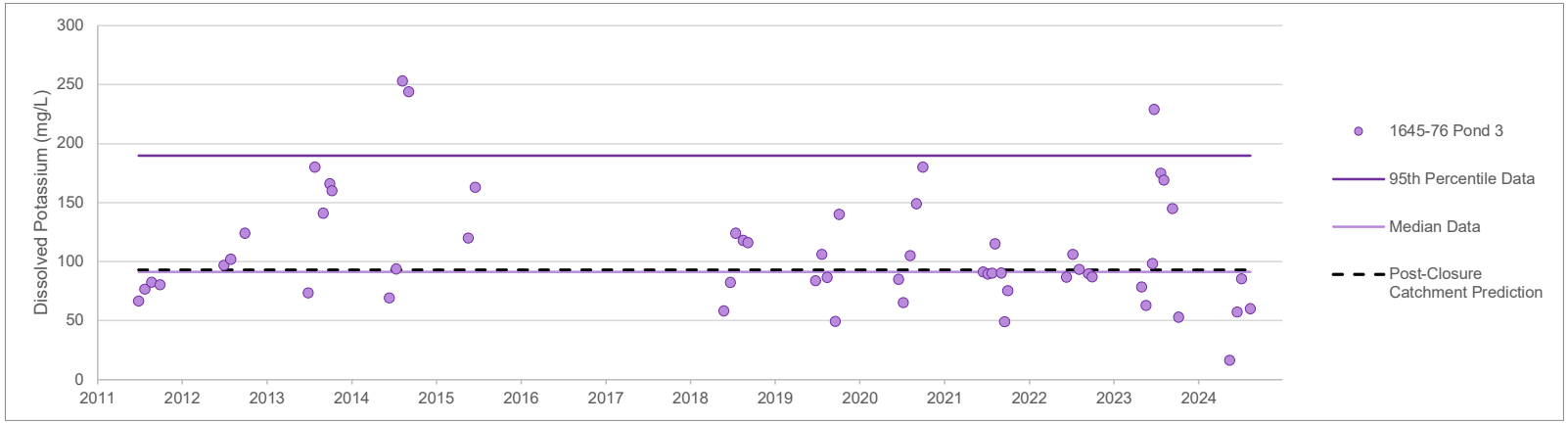
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.033	Wildlife	None
Median	0.004	Human recreational	None
Count	68	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



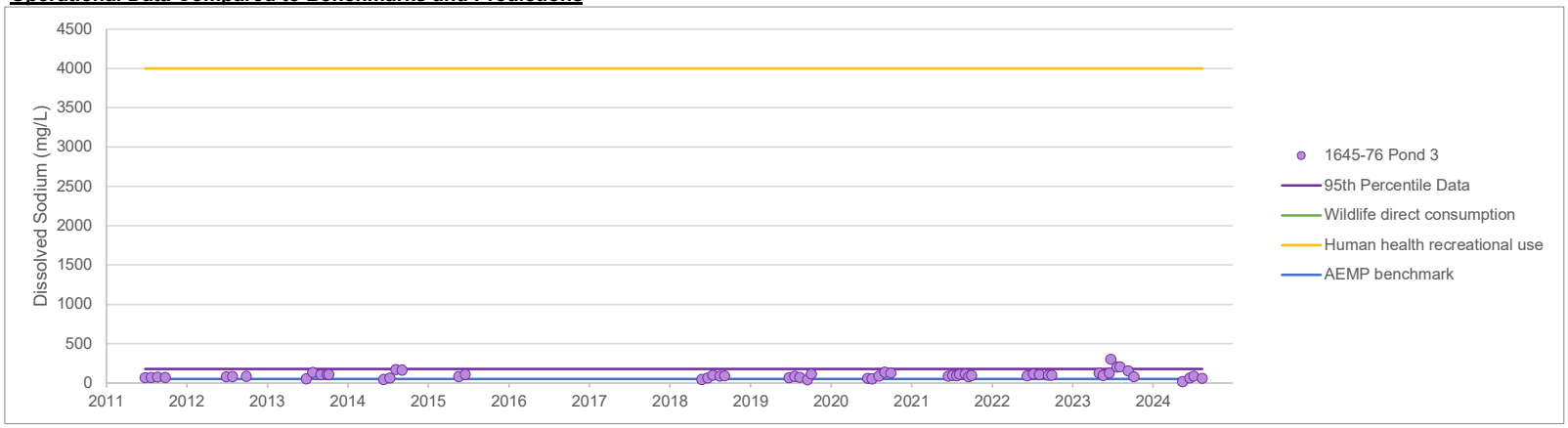


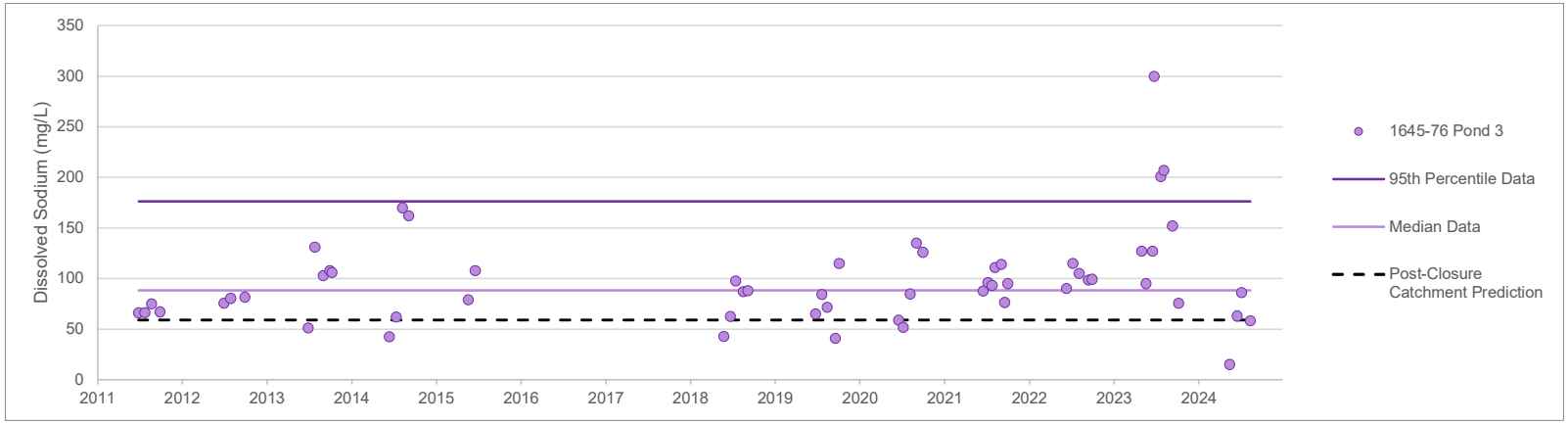
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	189.8	Wildlife	None
Median	91.3	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



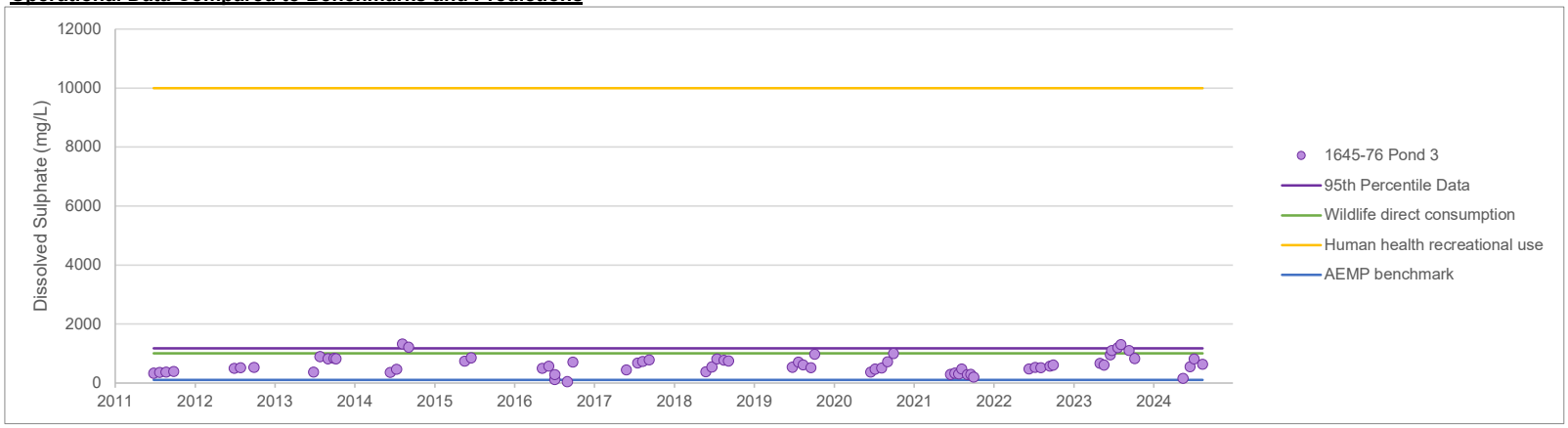


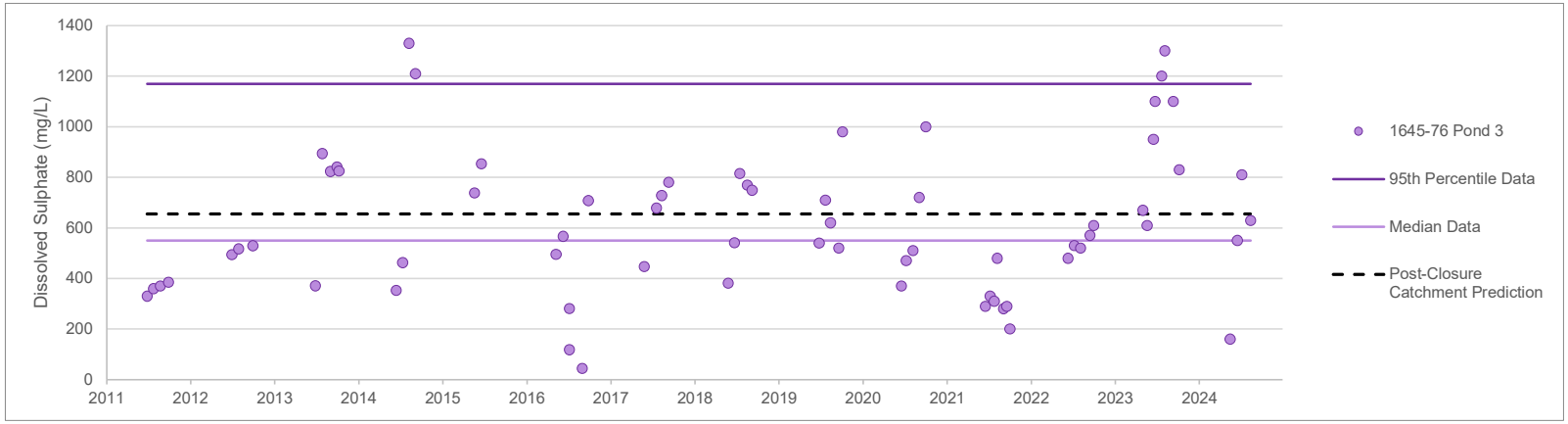
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	176.2	Wildlife	None
Median	88.1	Human recreational	4000
Count	57	AEMP	52

Operational Data Compared to Benchmarks and Predictions



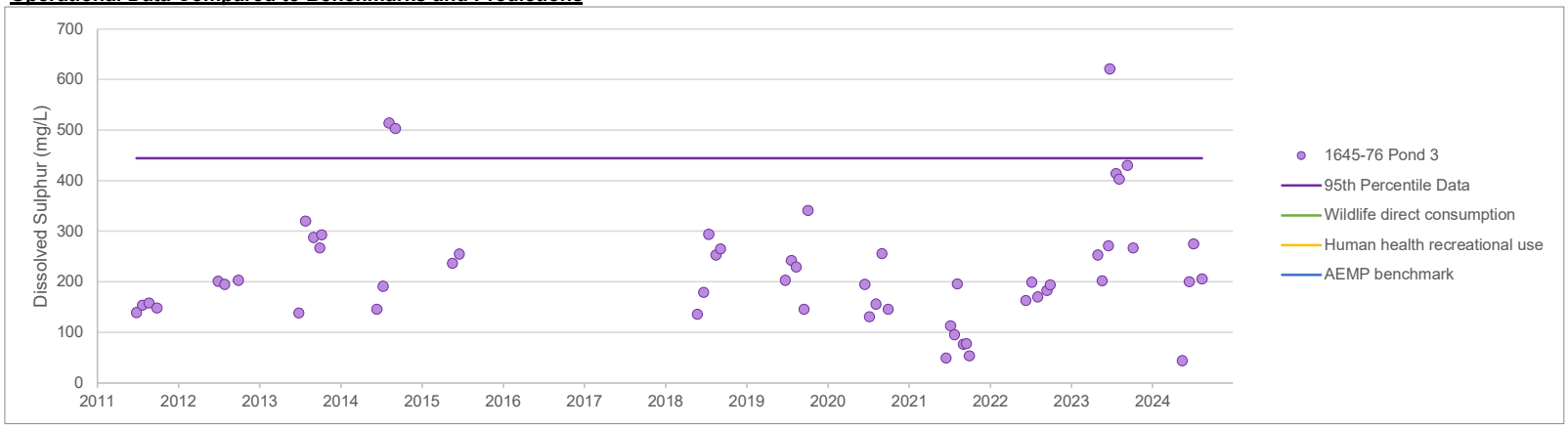


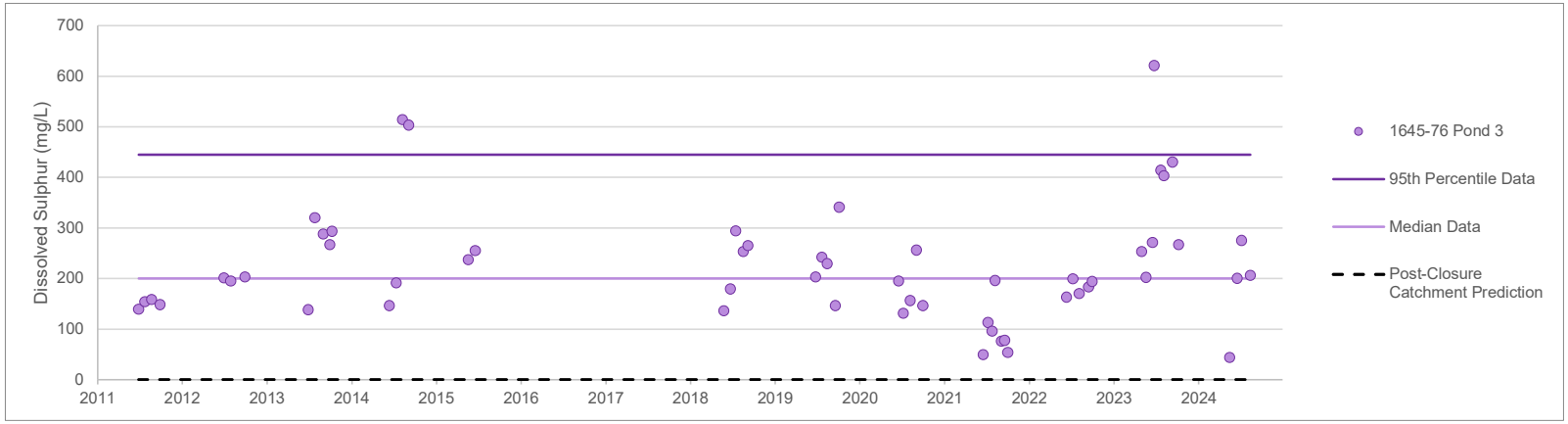
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	1170	Wildlife	1000
Median	550	Human recreational	10000
Count	67	AEMP	100

Operational Data Compared to Benchmarks and Predictions



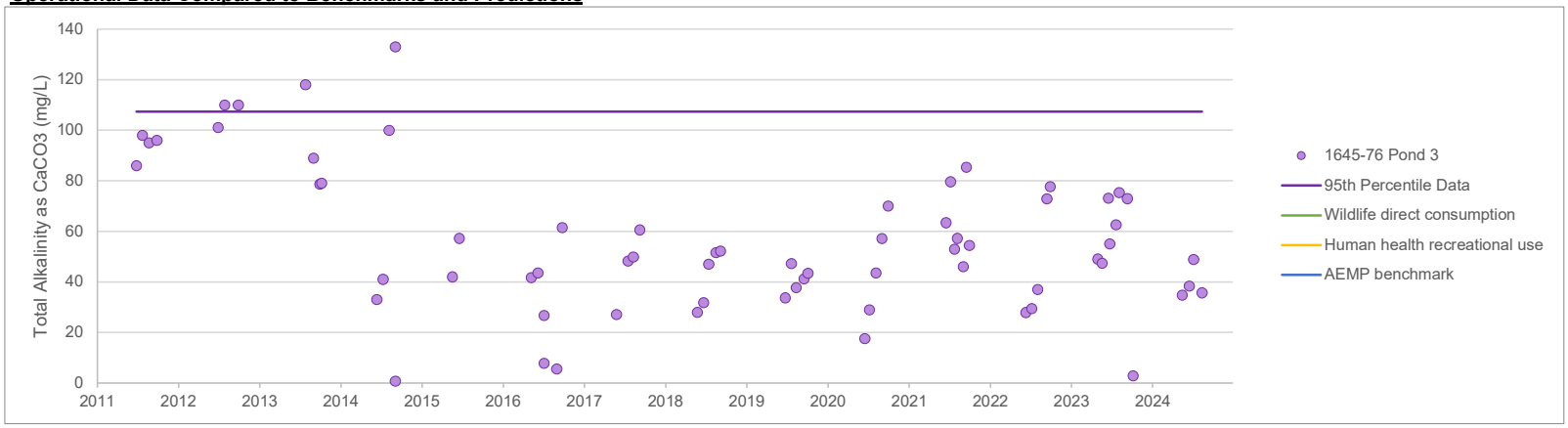


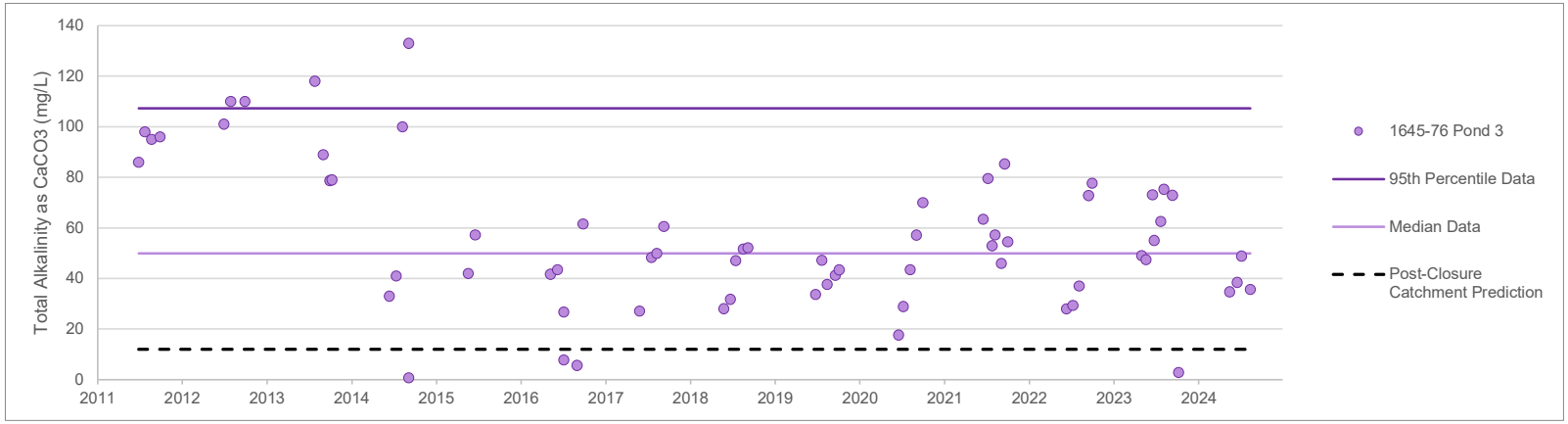
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	444.6	Wildlife	None
Median	200.0	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



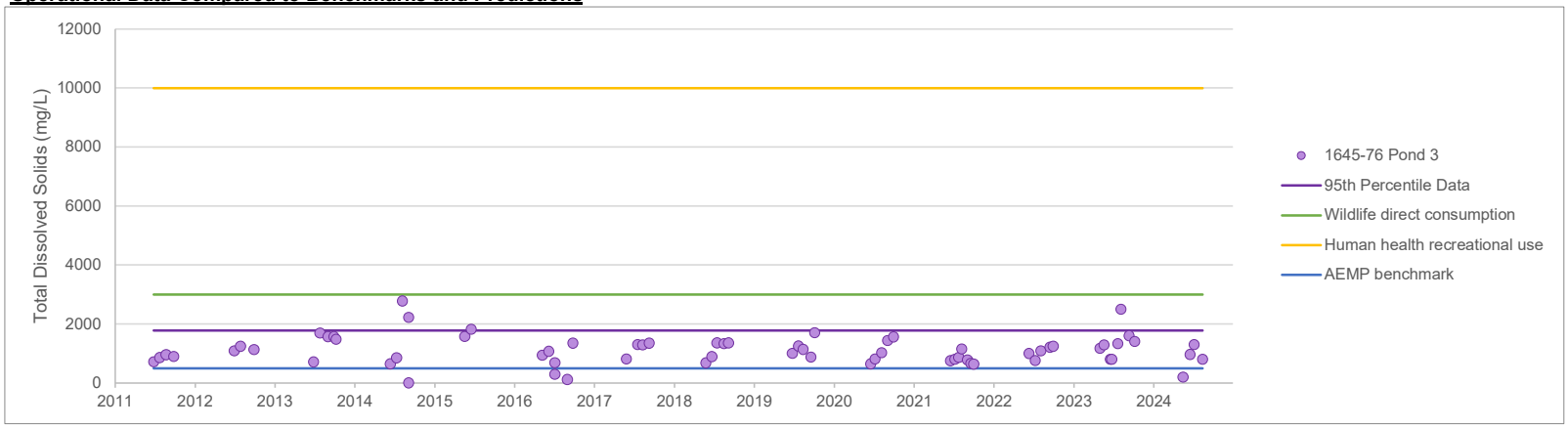


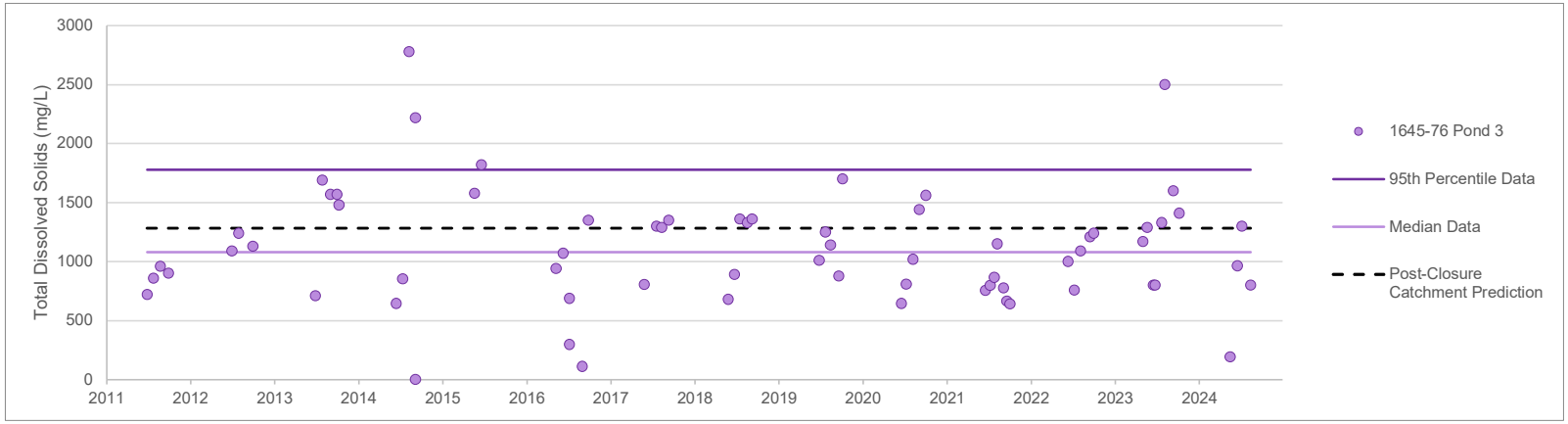
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	107.3	Wildlife	None
Median	49.9	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions



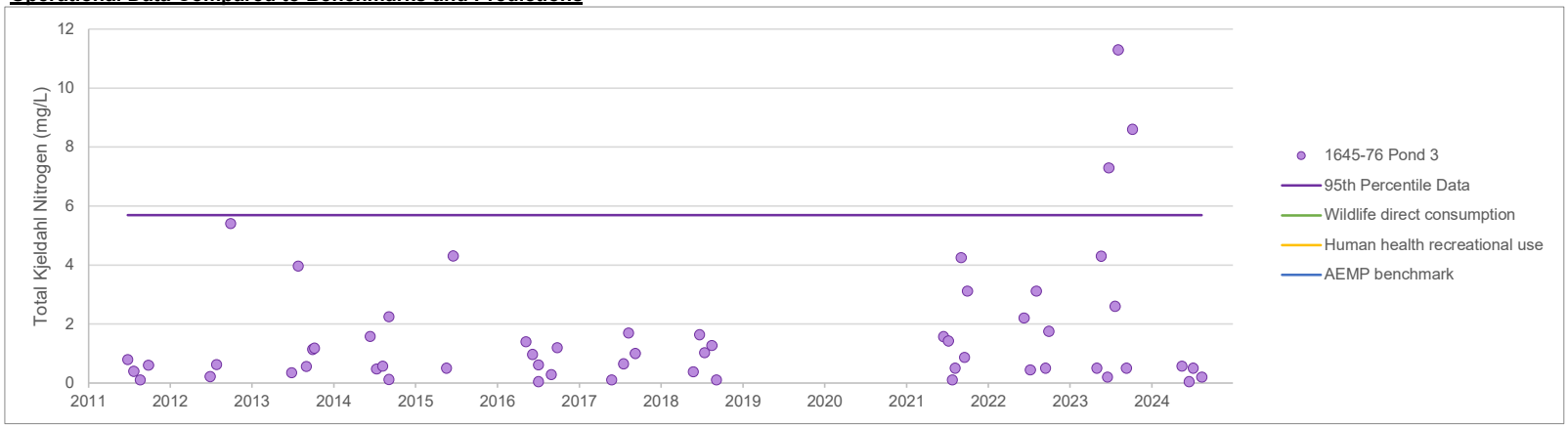


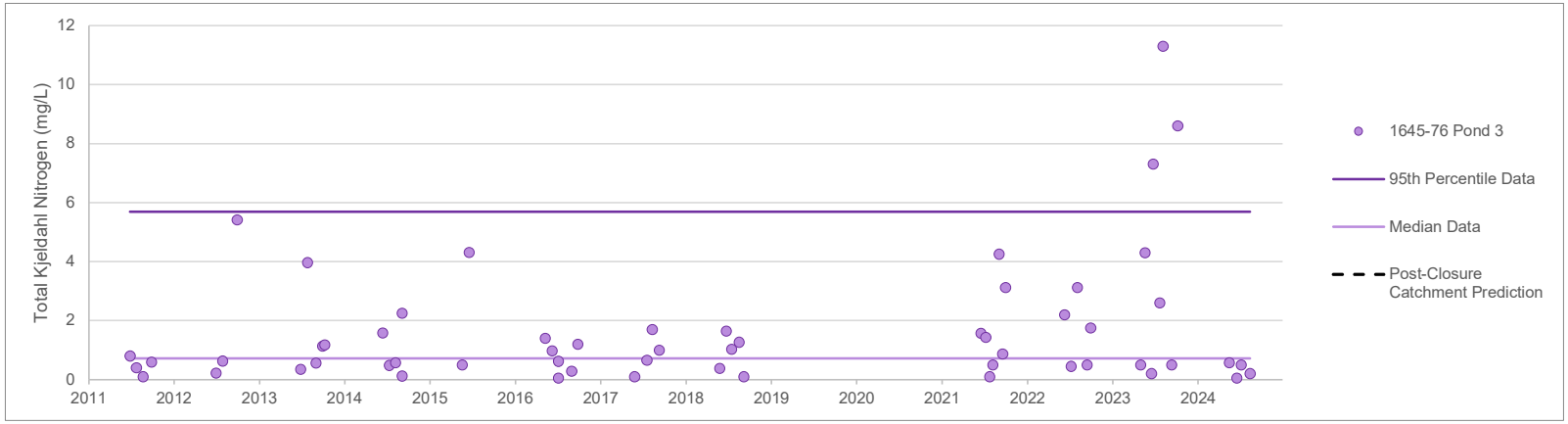
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	1778	Wildlife	3000
Median	1080	Human recreational	10000
Count	68	AEMP	500

Operational Data Compared to Benchmarks and Predictions



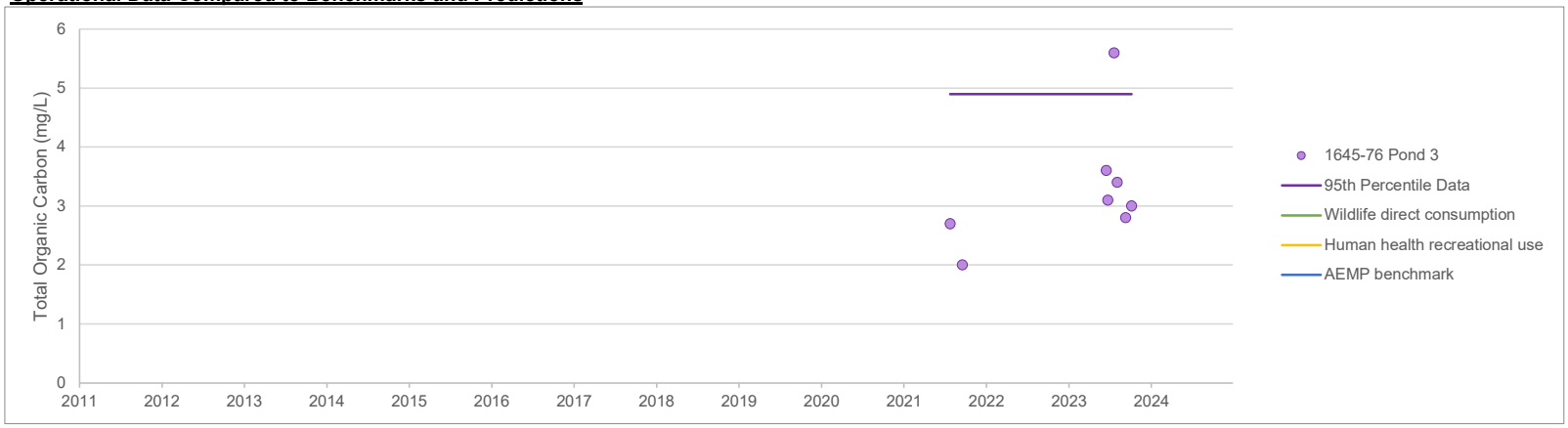


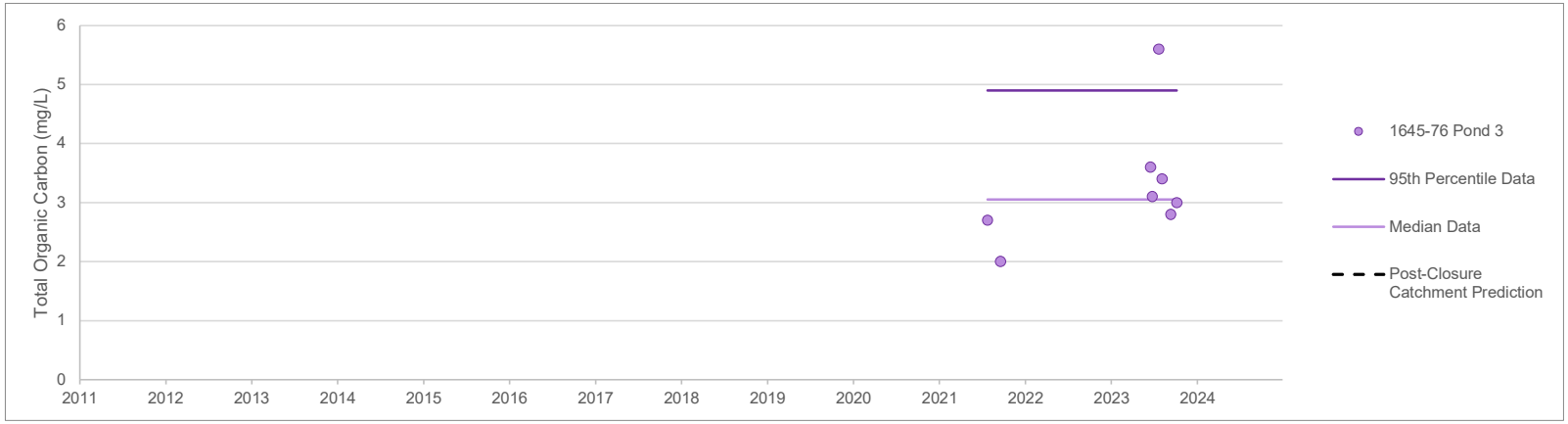
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	5.7	Wildlife	None
Median	0.7	Human recreational	None
Count	58	AEMP	None

Operational Data Compared to Benchmarks and Predictions



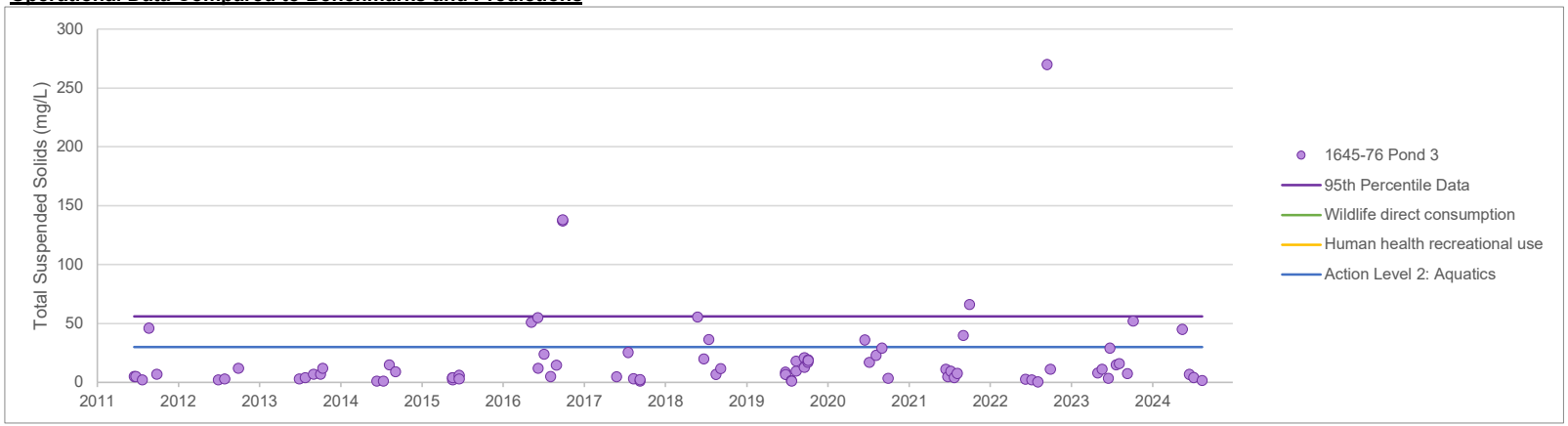


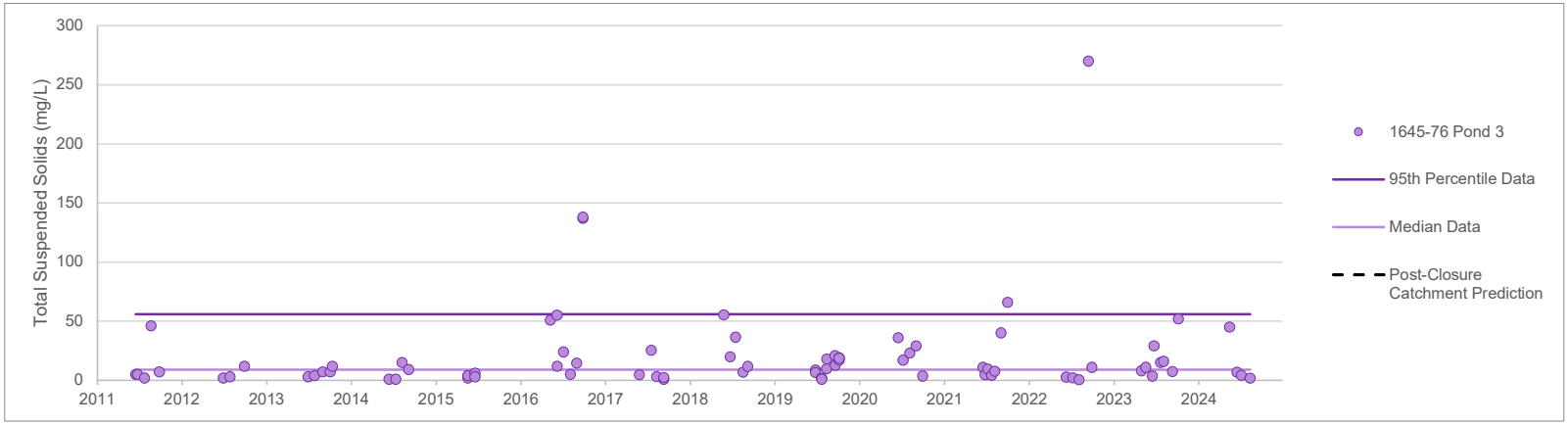
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	4.9	Wildlife	None
Median	3.1	Human recreational	None
Count	8	AEMP	None

Operational Data Compared to Benchmarks and Predictions



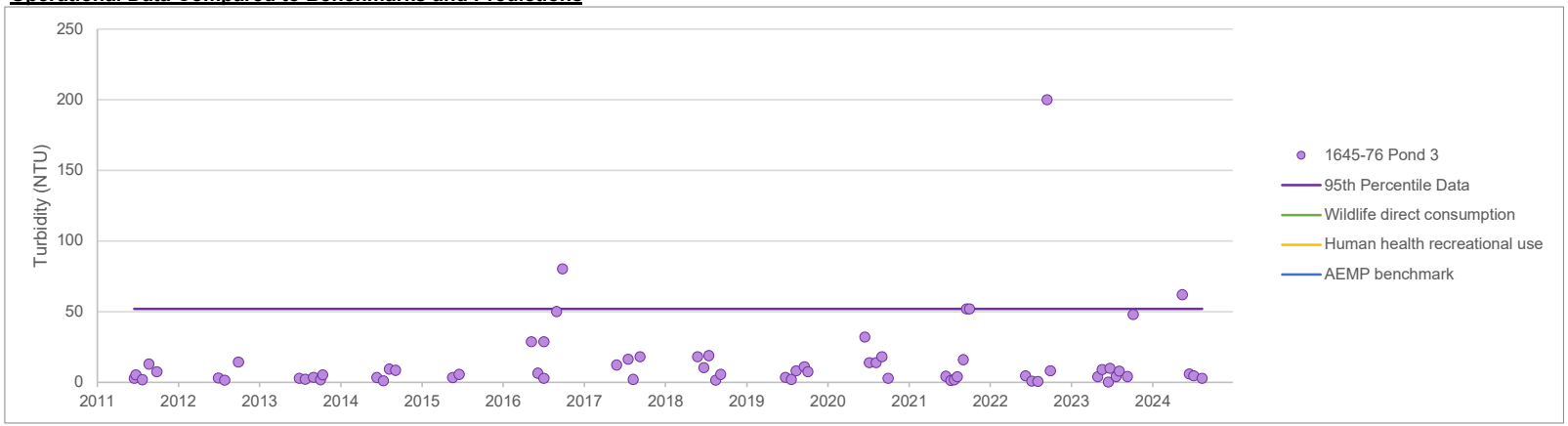


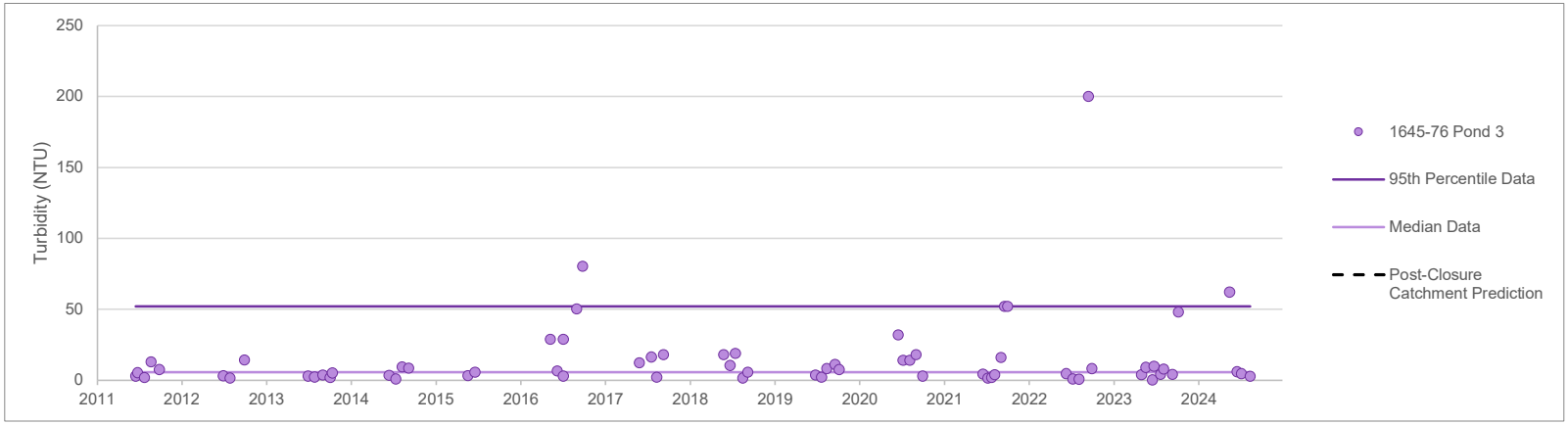
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	55.9	Wildlife	None
Median	8.9	Human recreational	None
Count	80	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



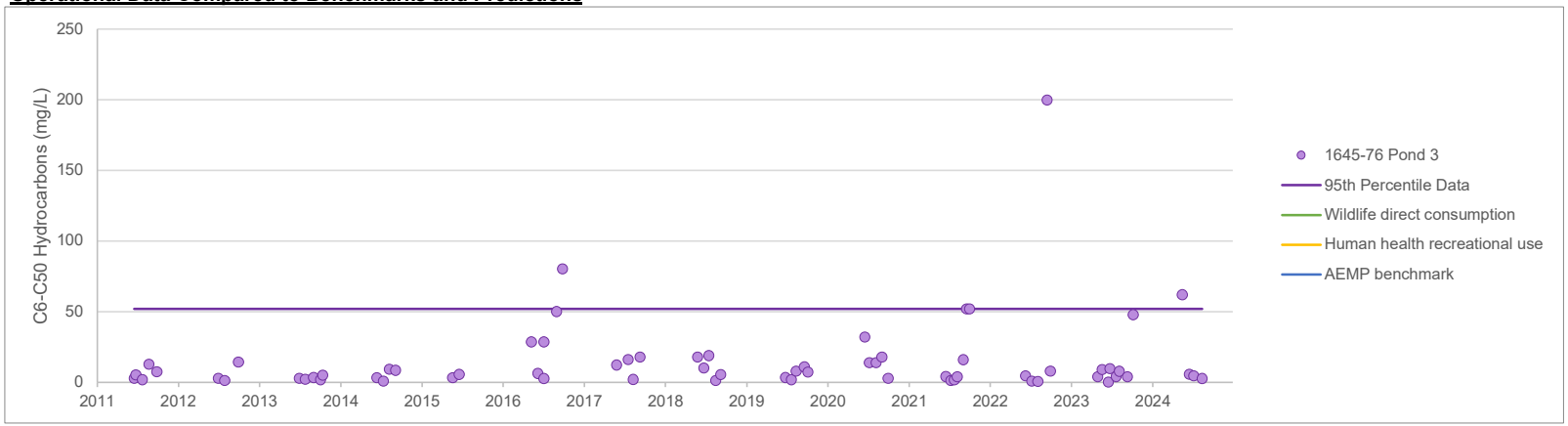


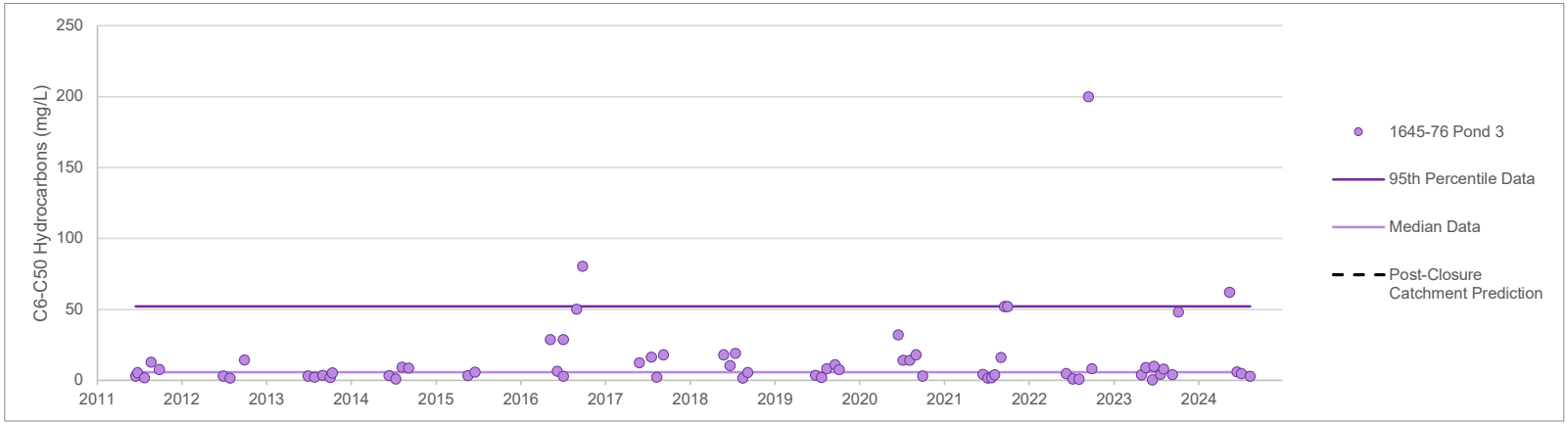
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	52.0	Wildlife	None
Median	5.8	Human recreational	None
Count	68	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	7	AEMP	None

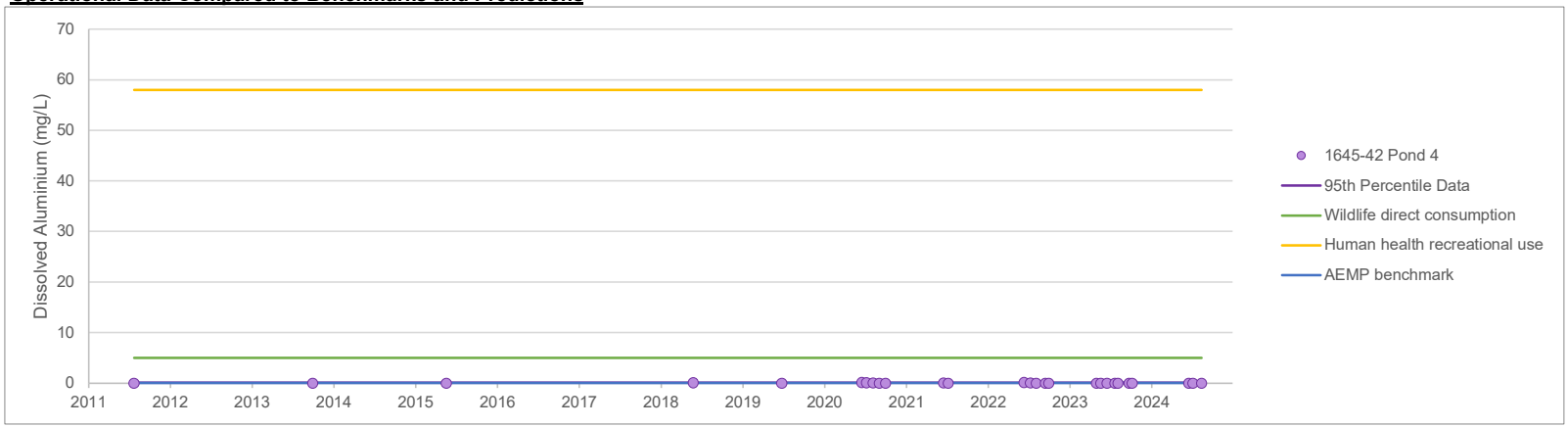
Pond 4

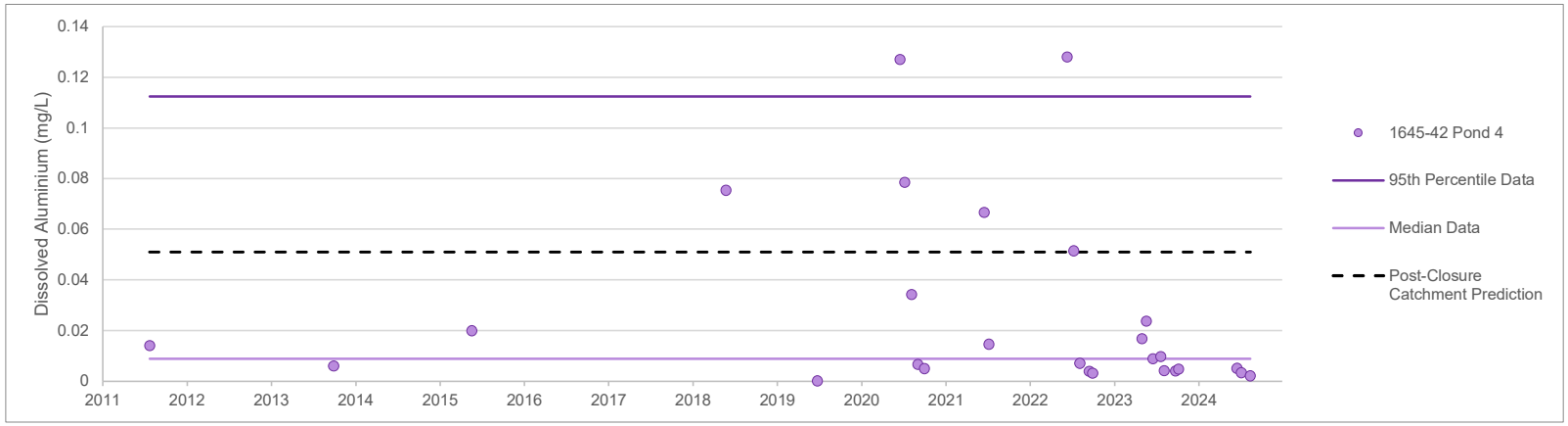
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



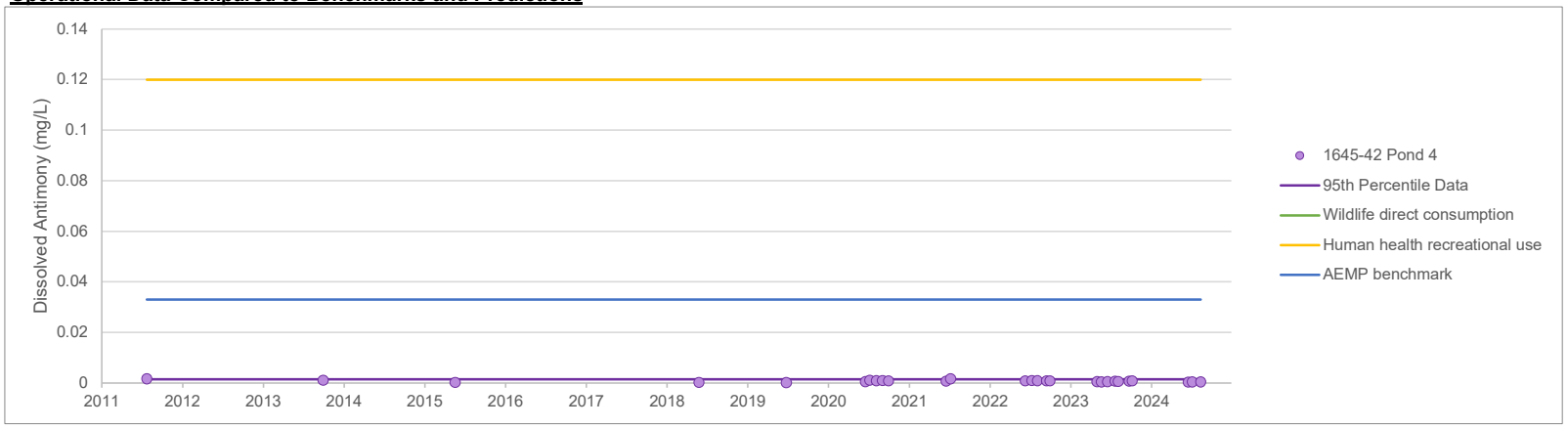


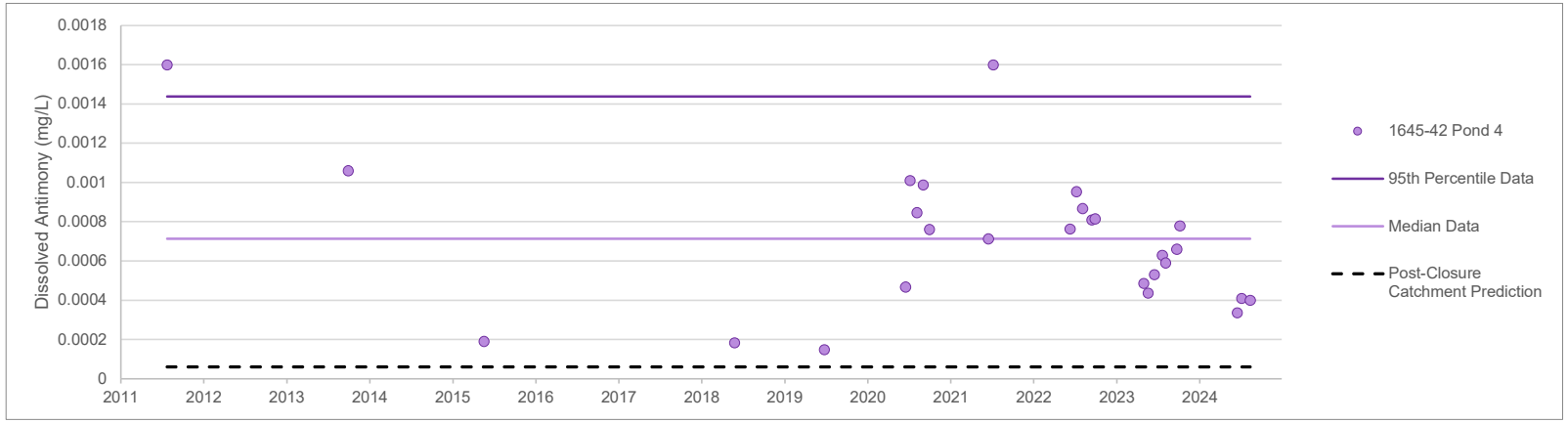
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.112	Wildlife	5.0
Median	0.009	Human recreational	58.0
Count	27	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



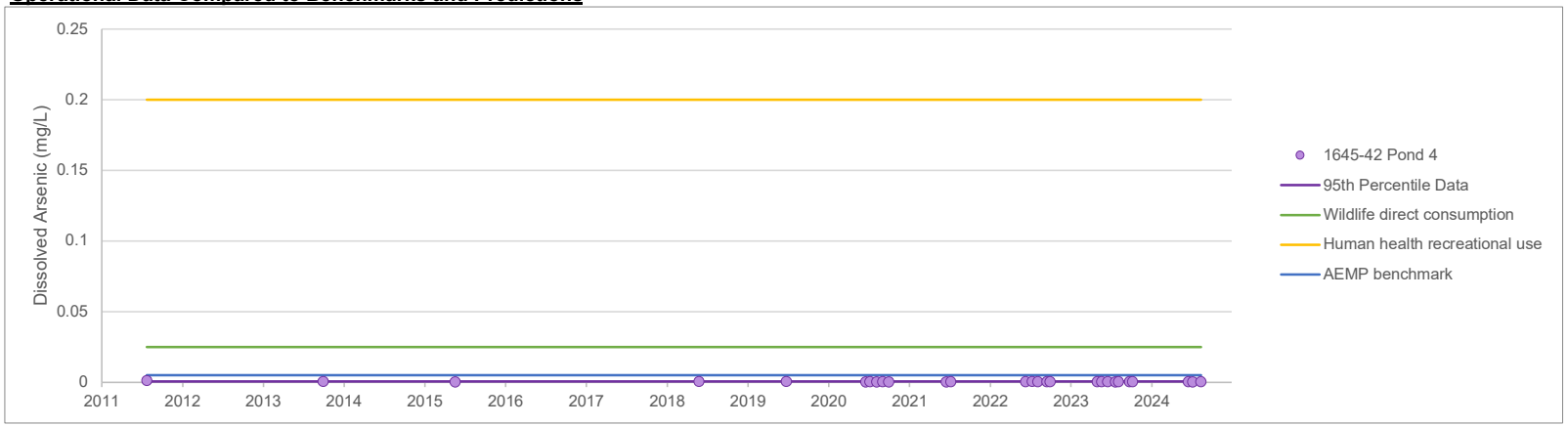


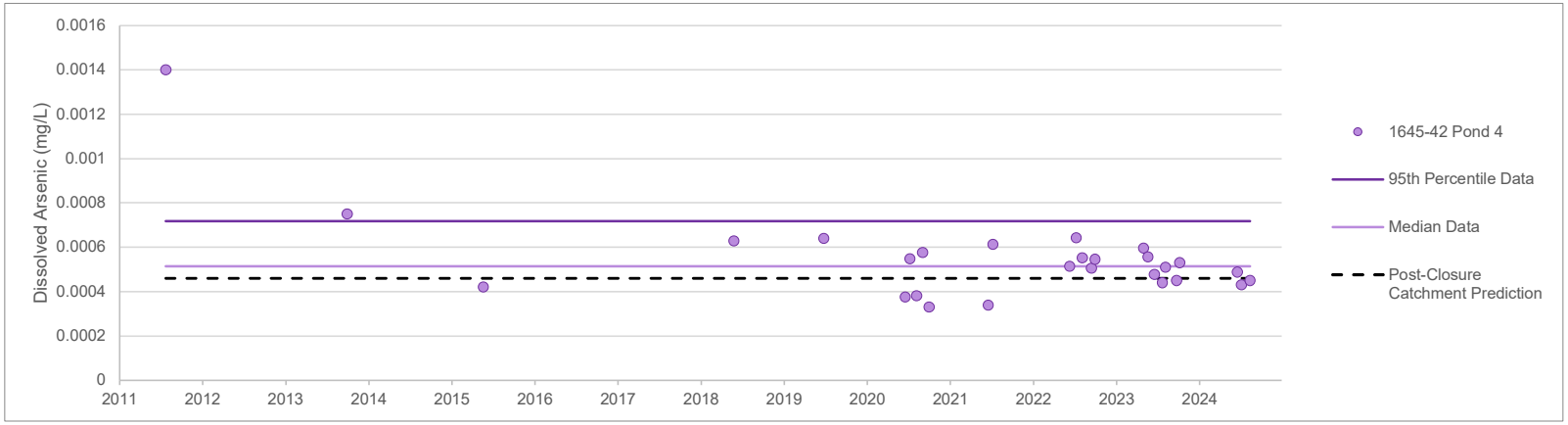
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00144	Wildlife	None
Median	0.00071	Human recreational	0.12
Count	27	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



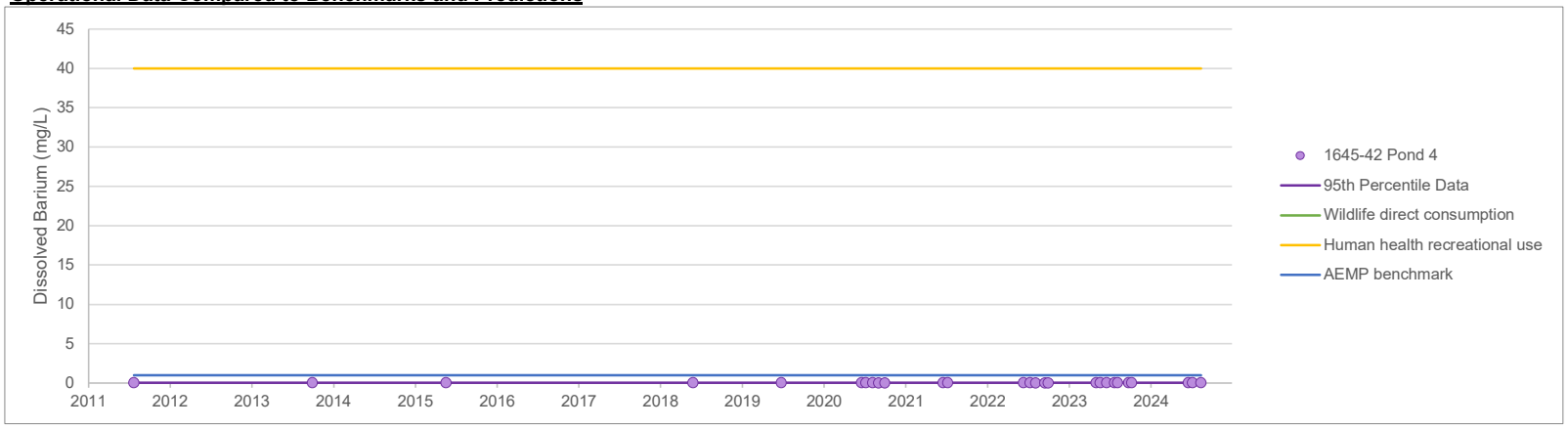


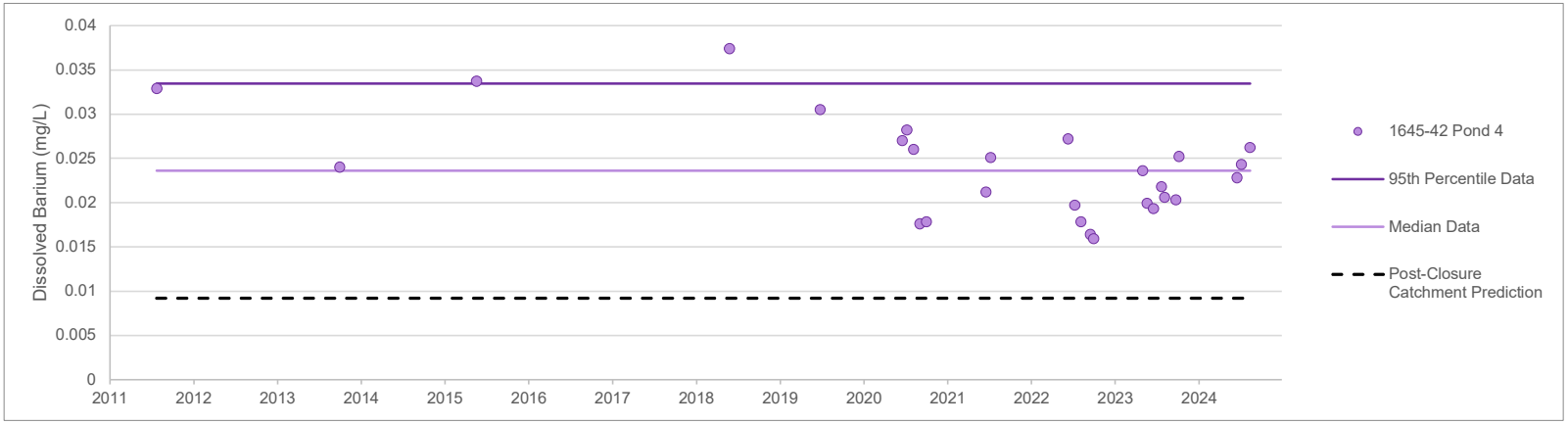
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0007	Wildlife	0.03
Median	0.0005	Human recreational	0.20
Count	27	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



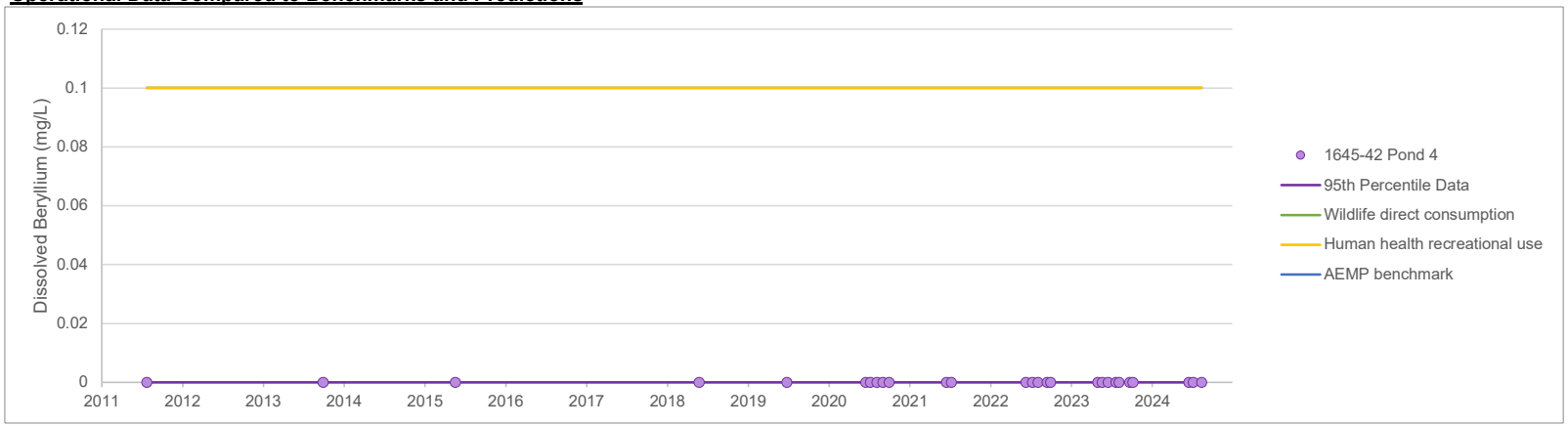


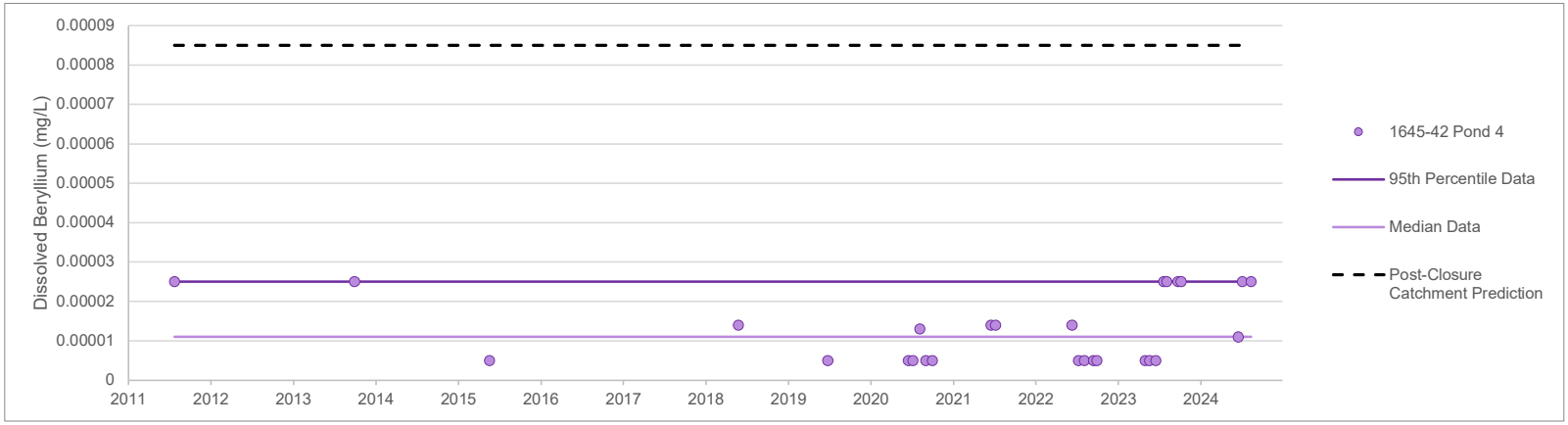
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.033	Wildlife	None
Median	0.024	Human recreational	40.0
Count	27	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



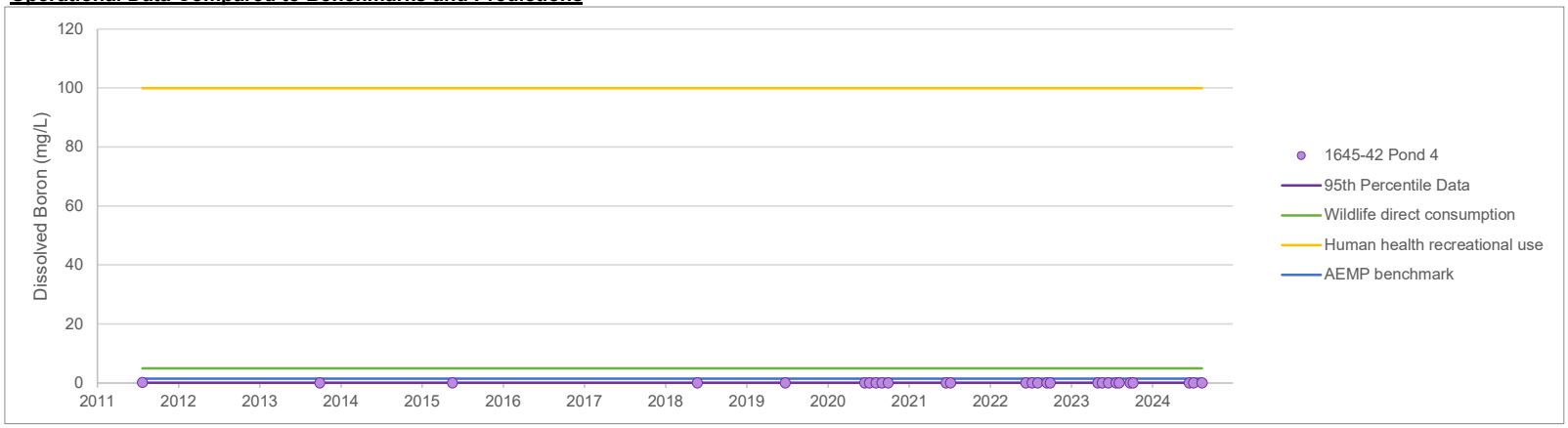


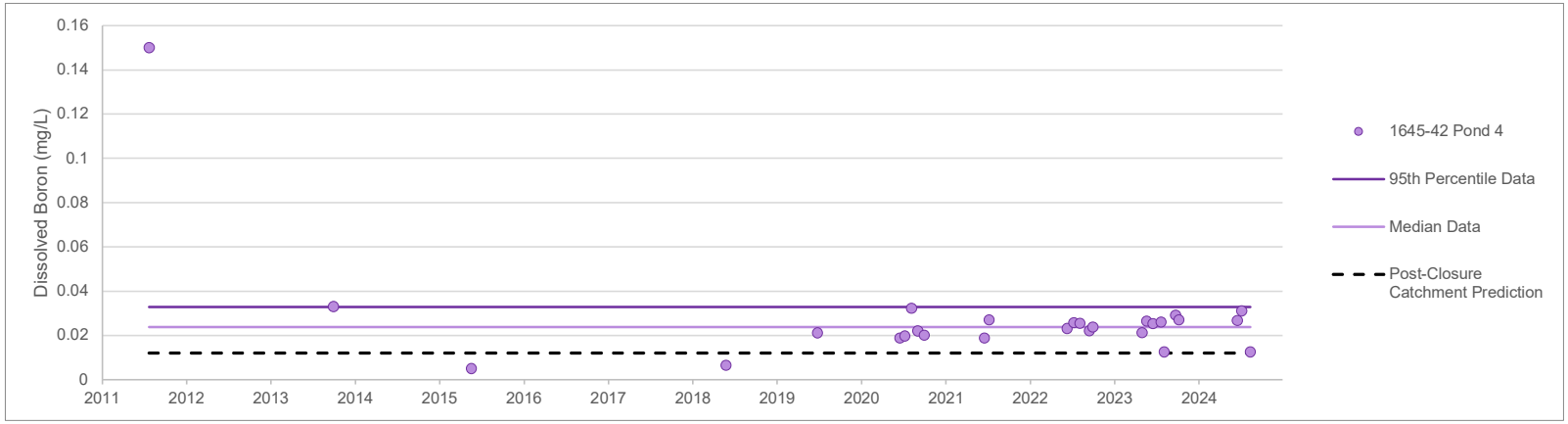
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000025	Wildlife	0.10
Median	0.000011	Human recreational	0.10
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



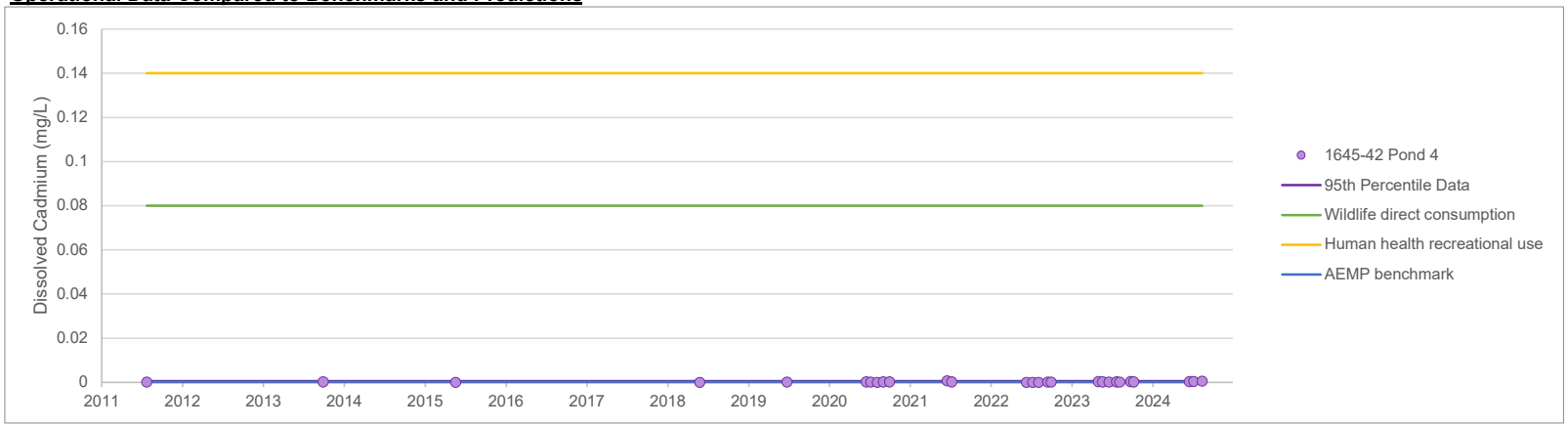


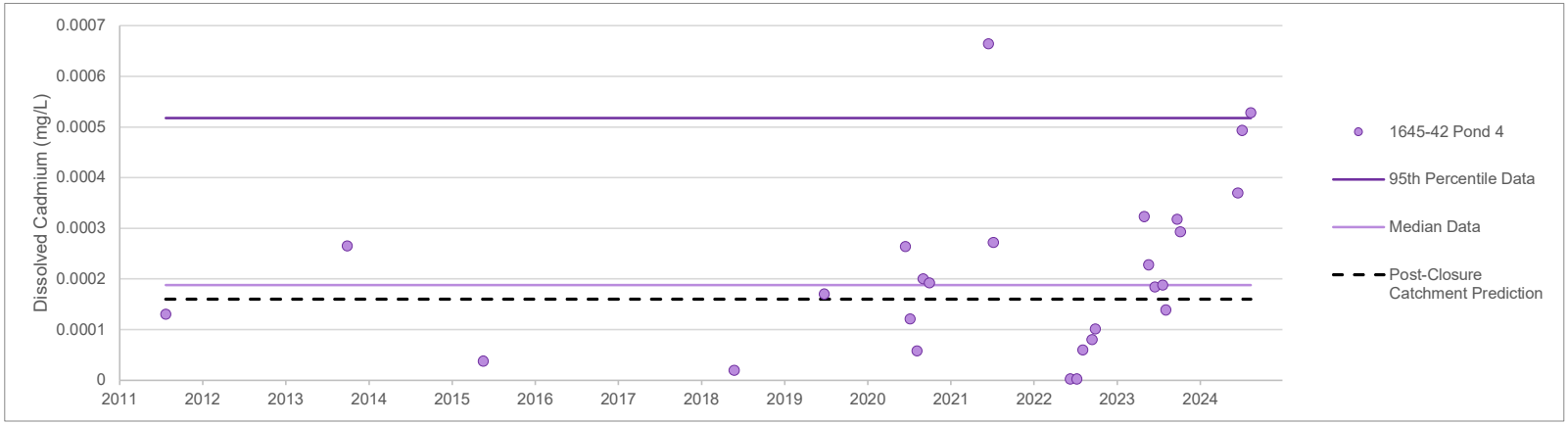
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.033	Wildlife	5.0
Median	0.024	Human recreational	100.0
Count	27	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



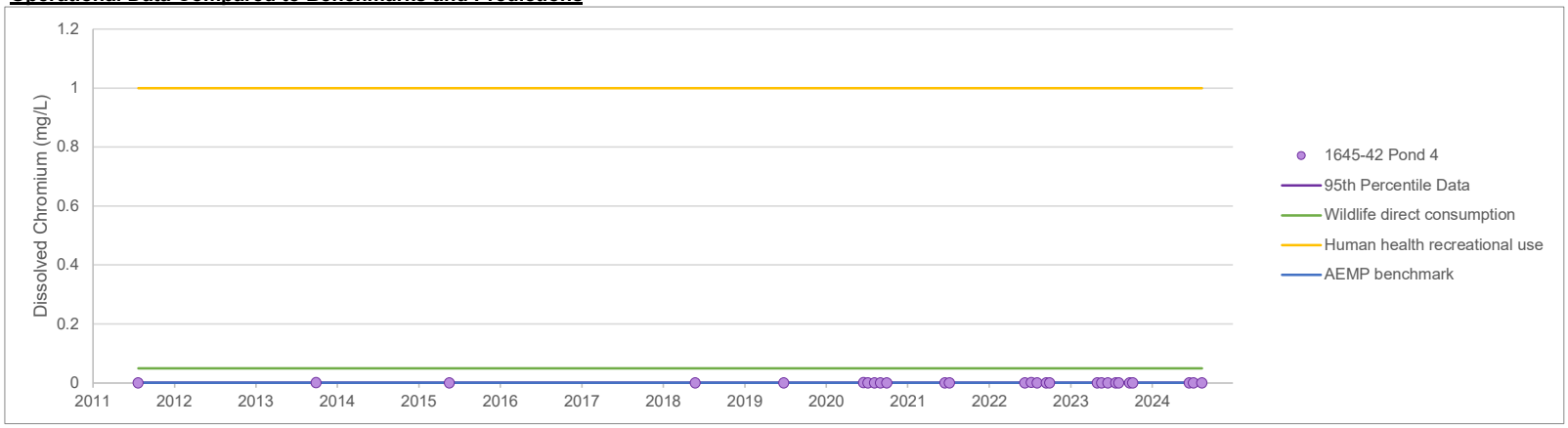


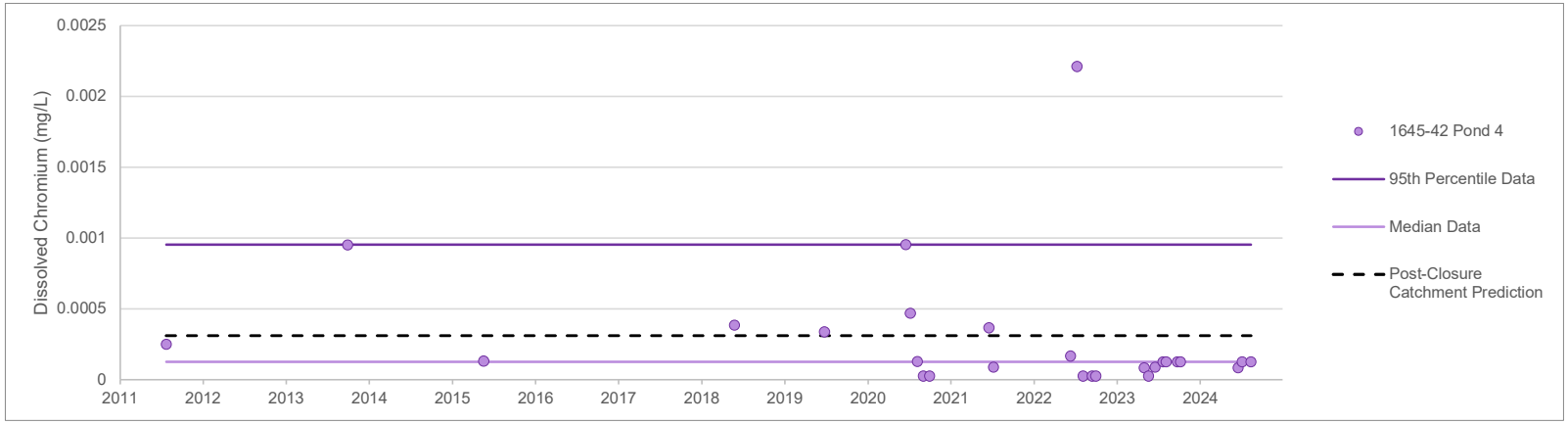
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00052	Wildlife	0.08
Median	0.00019	Human recreational	0.14
Count	27	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



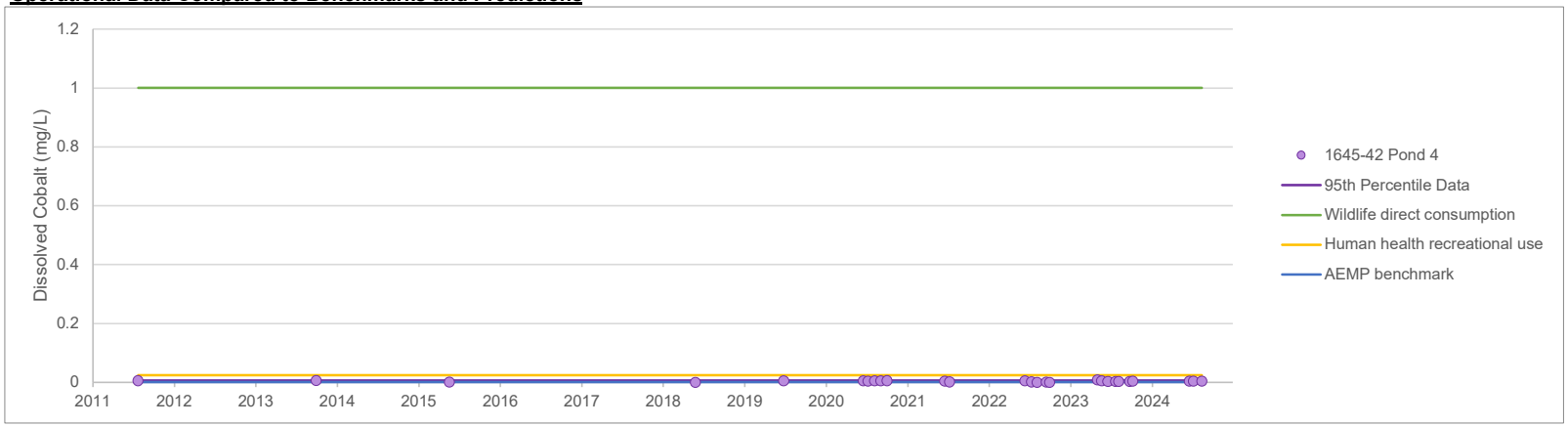


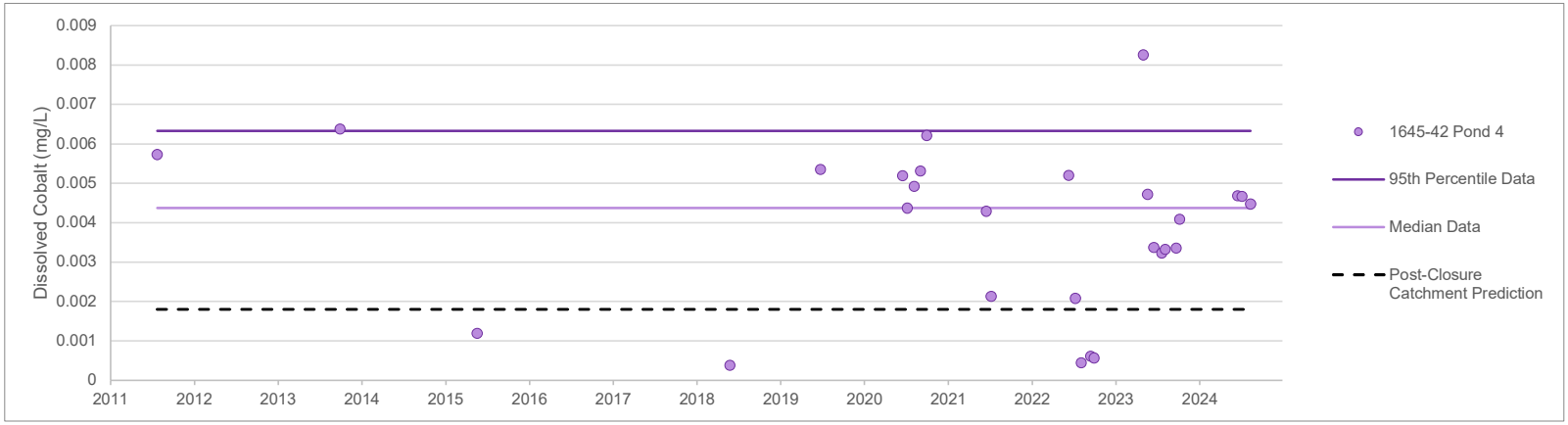
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00095	Wildlife	0.05
Median	0.00013	Human recreational	1.0
Count	27	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



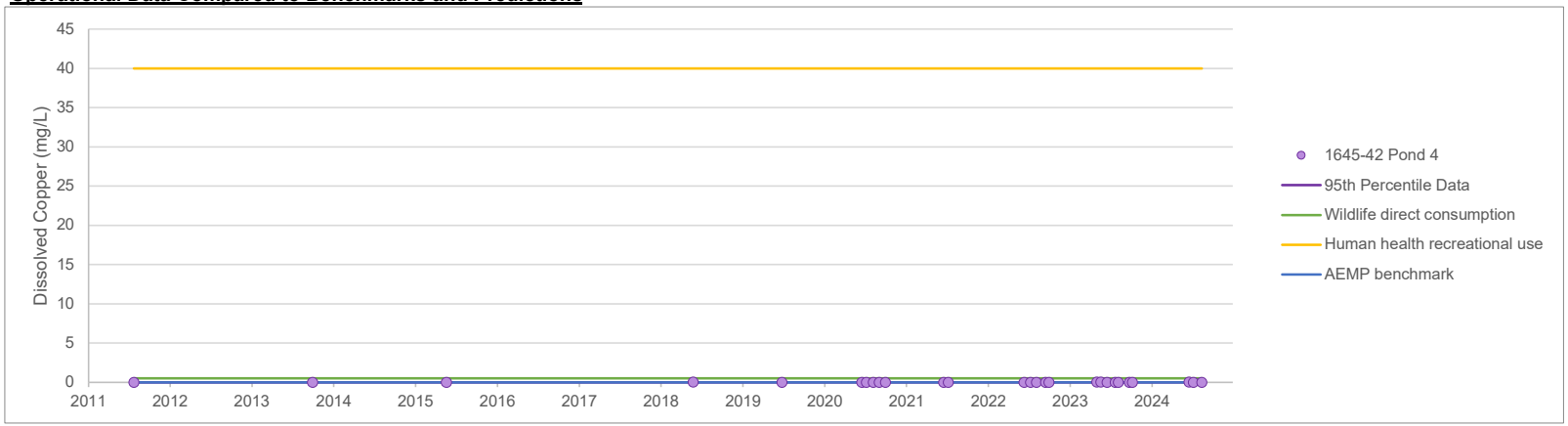


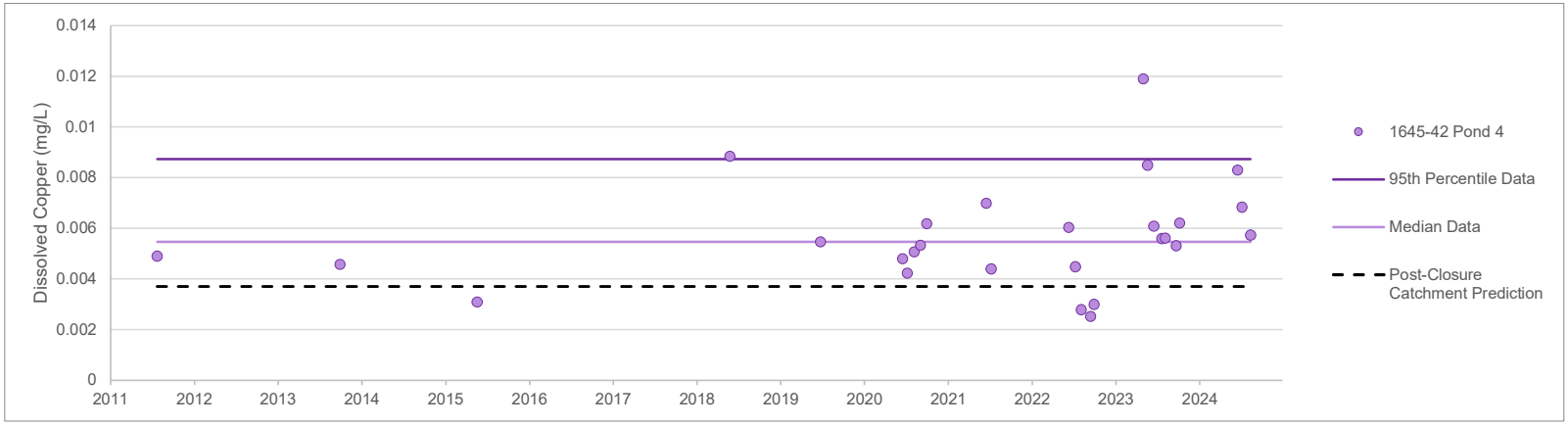
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0063	Wildlife	1.0
Median	0.0044	Human recreational	0.02
Count	27	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



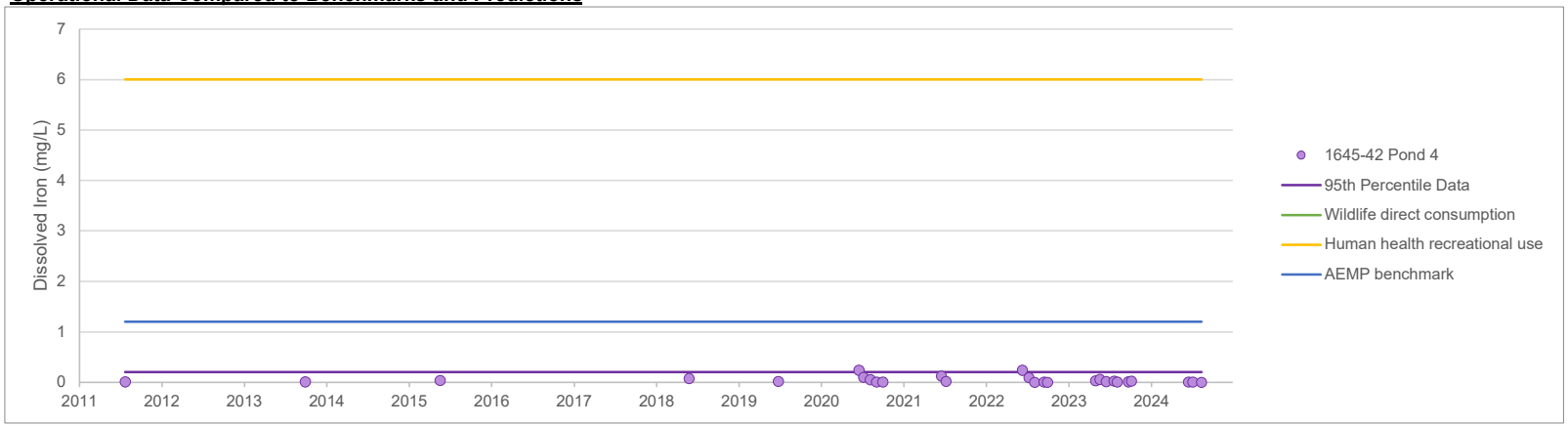


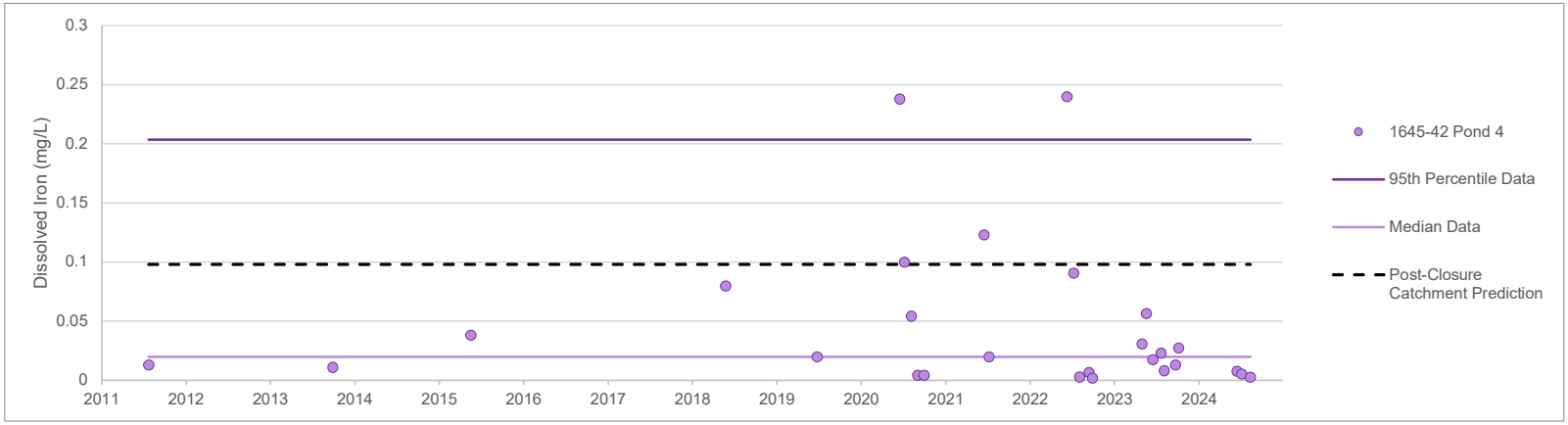
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0087	Wildlife	0.5
Median	0.0055	Human recreational	40.0
Count	27	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



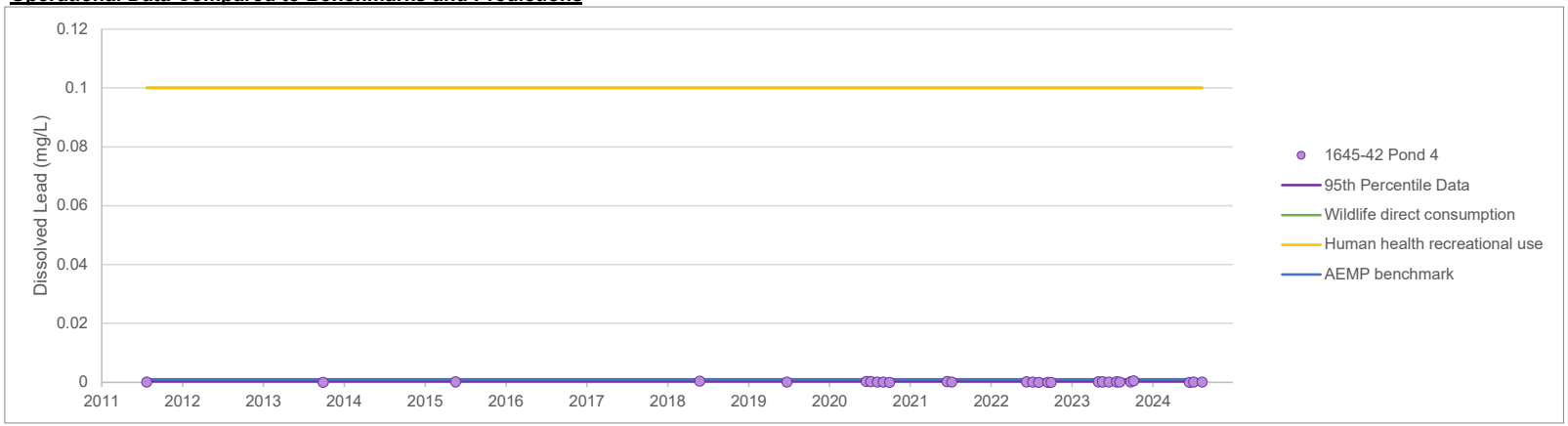


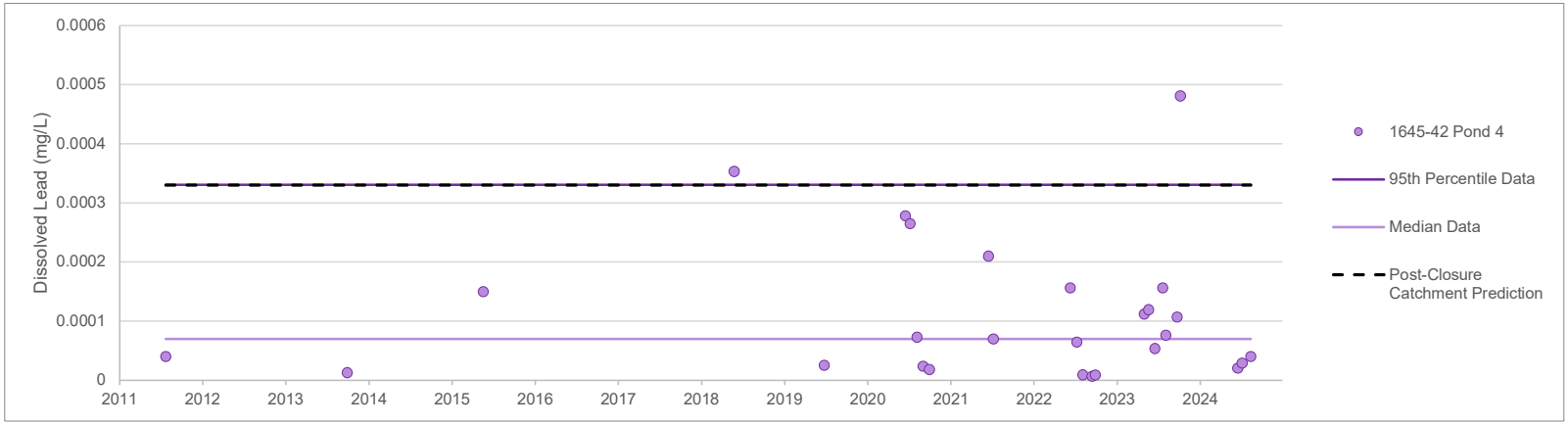
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.20	Wildlife	None
Median	0.02	Human recreational	6.0
Count	27	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



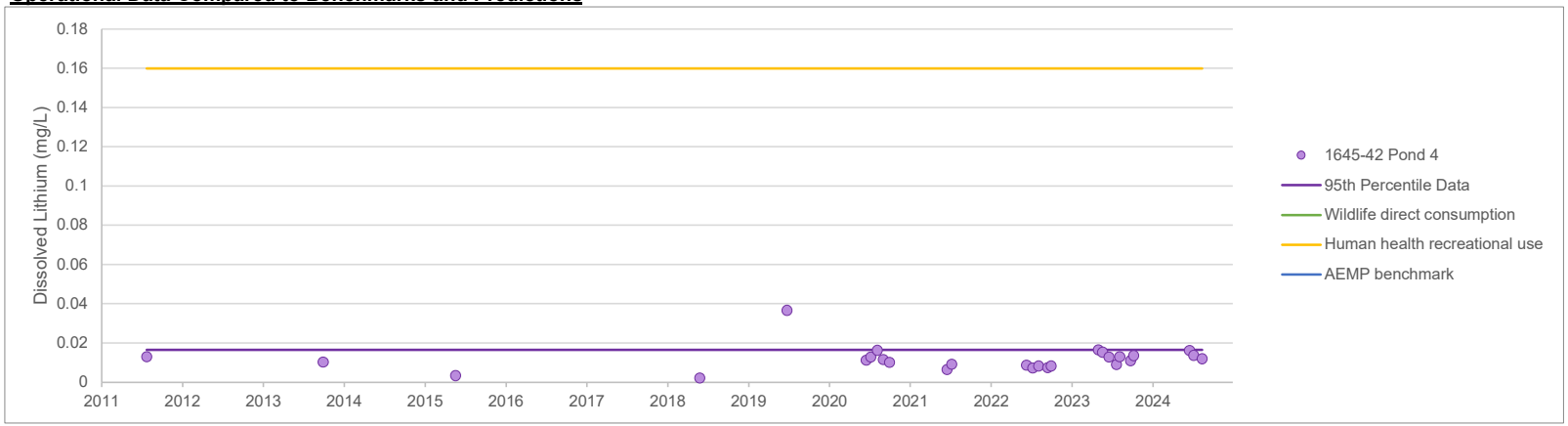


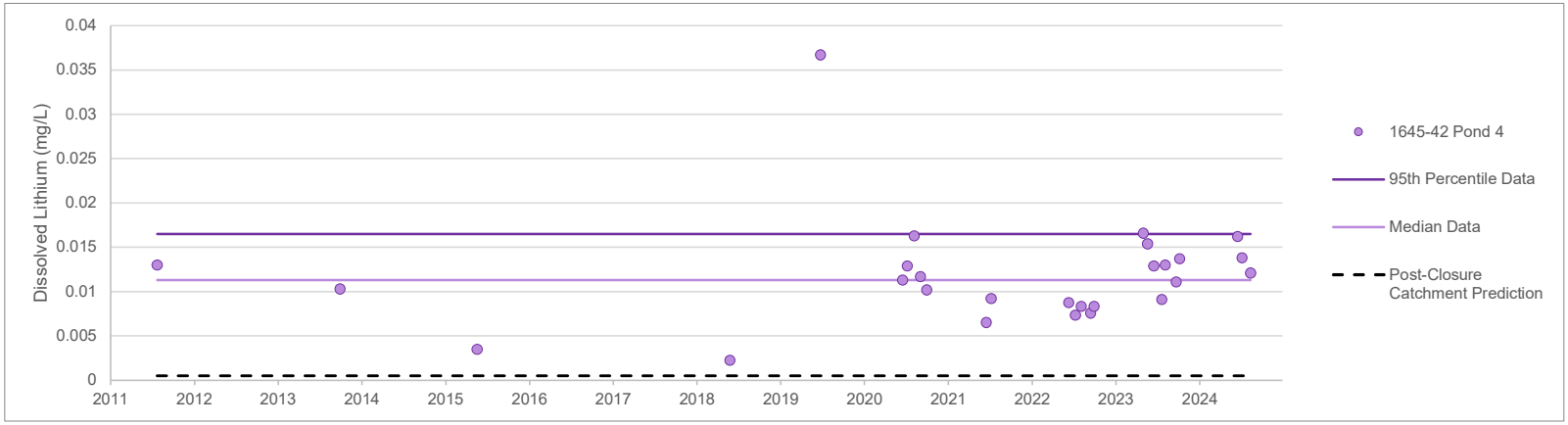
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00033	Wildlife	0.10
Median	0.00007	Human recreational	0.10
Count	27	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



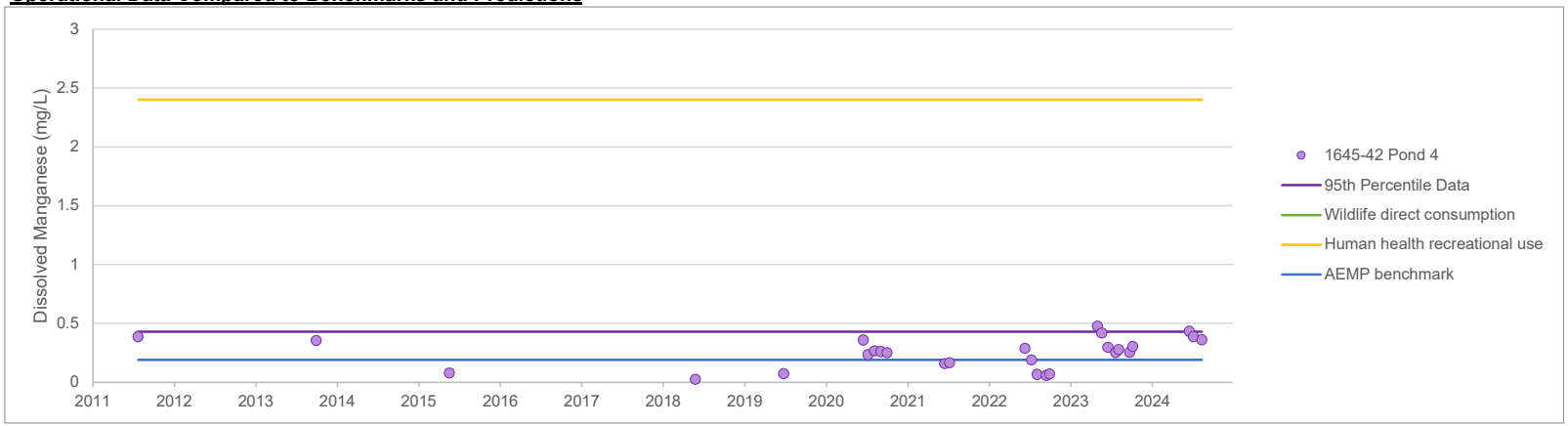


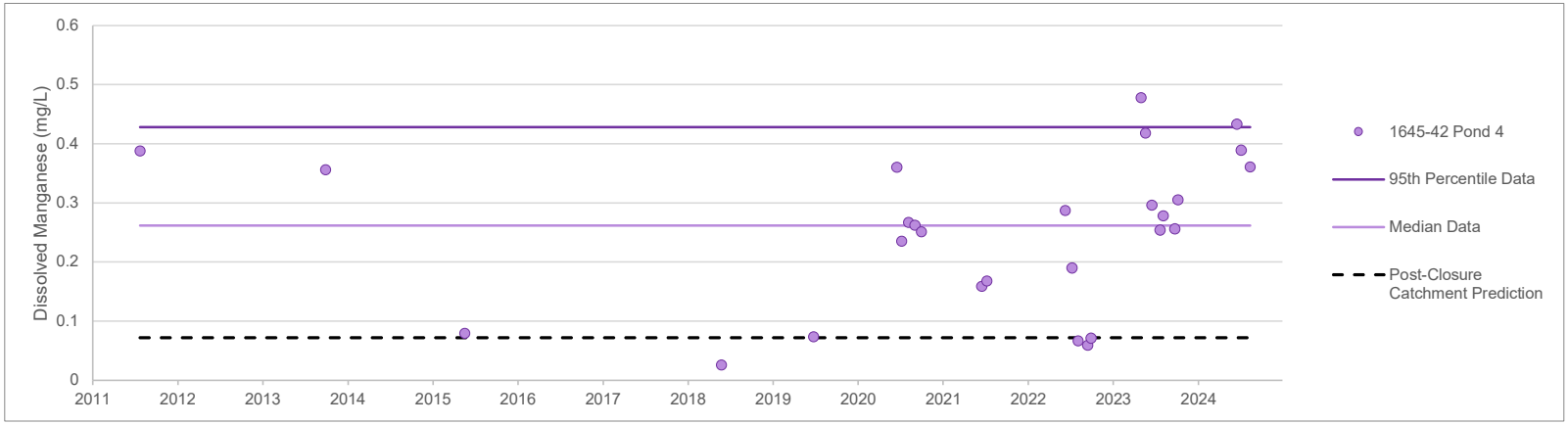
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.017	Wildlife	None
Median	0.011	Human recreational	0.16
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



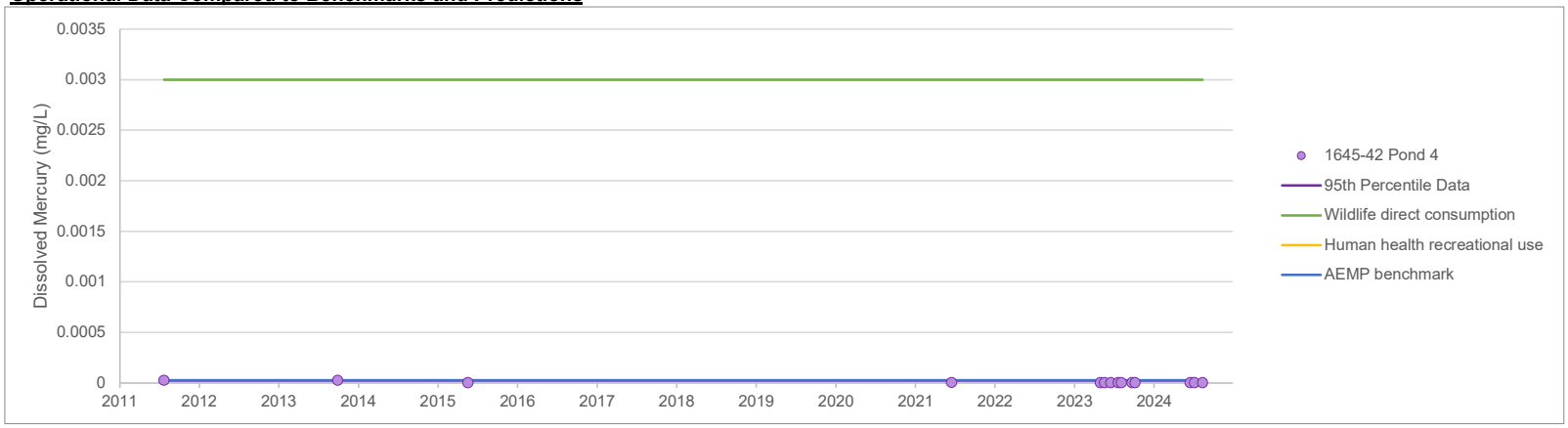


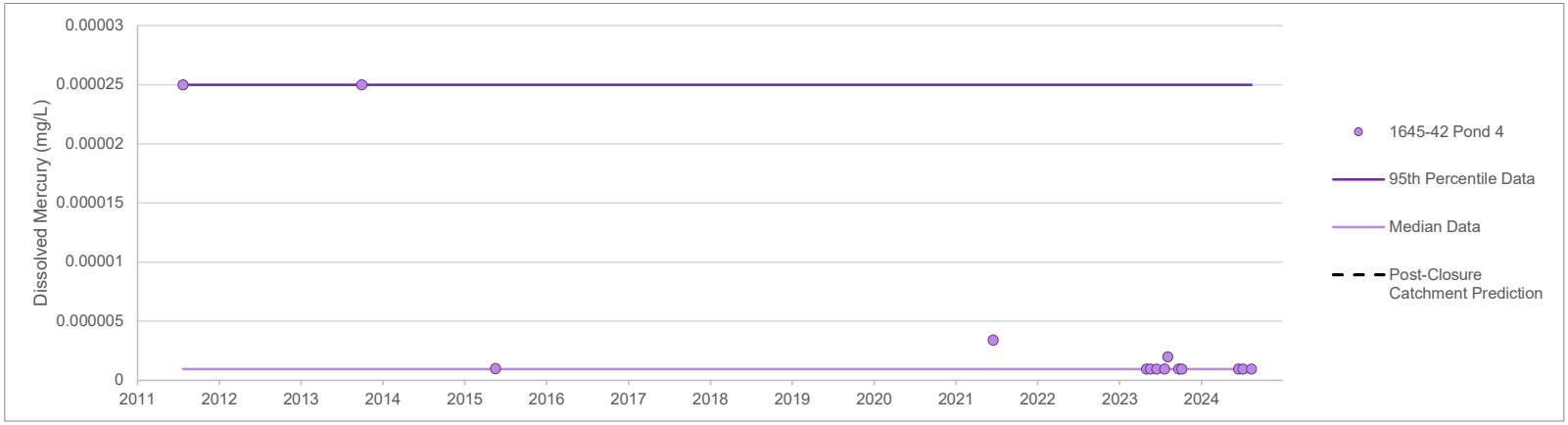
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.429	Wildlife	None
Median	0.262	Human recreational	2.4
Count	27	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



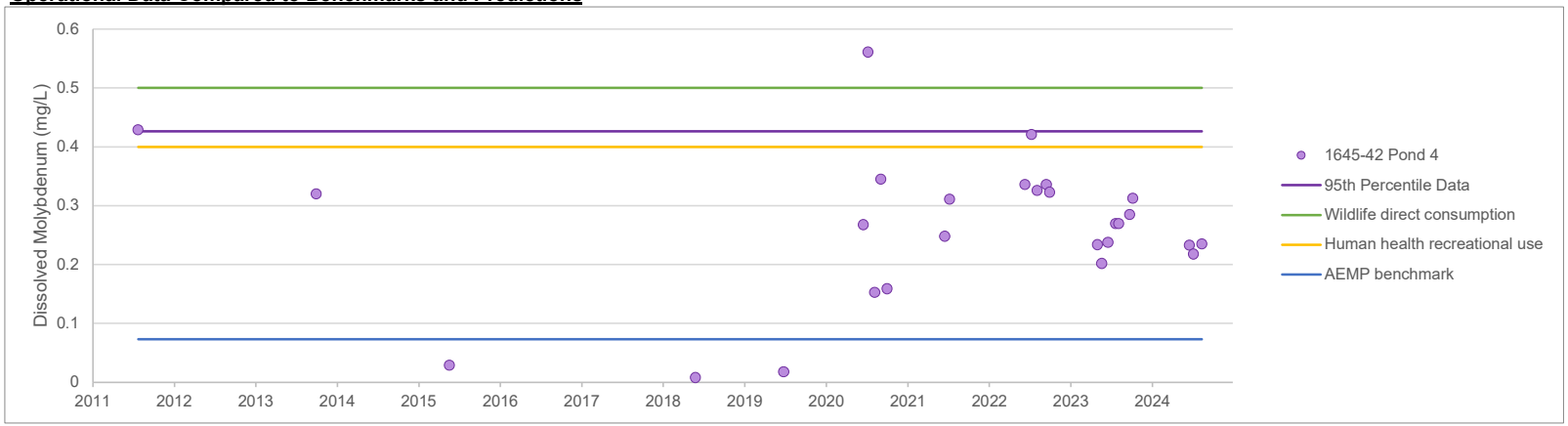


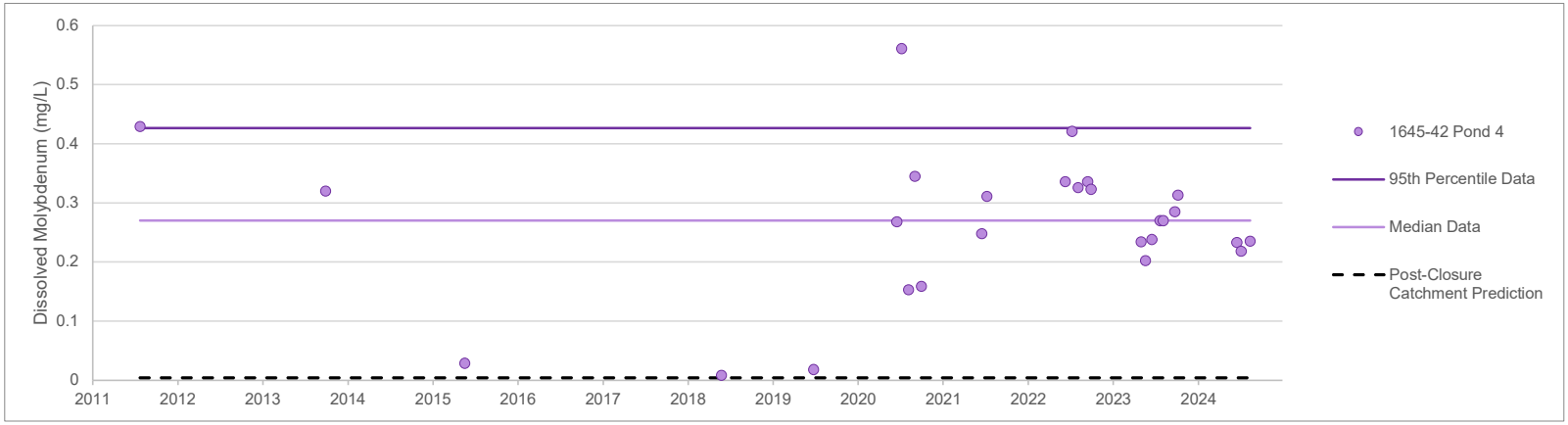
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000250	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	14	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



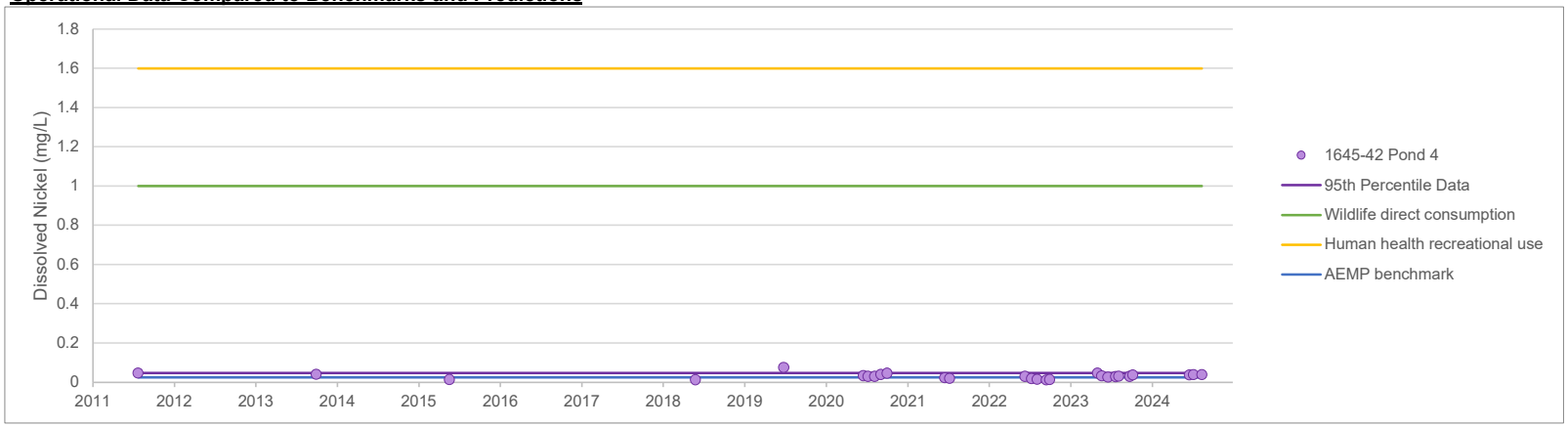


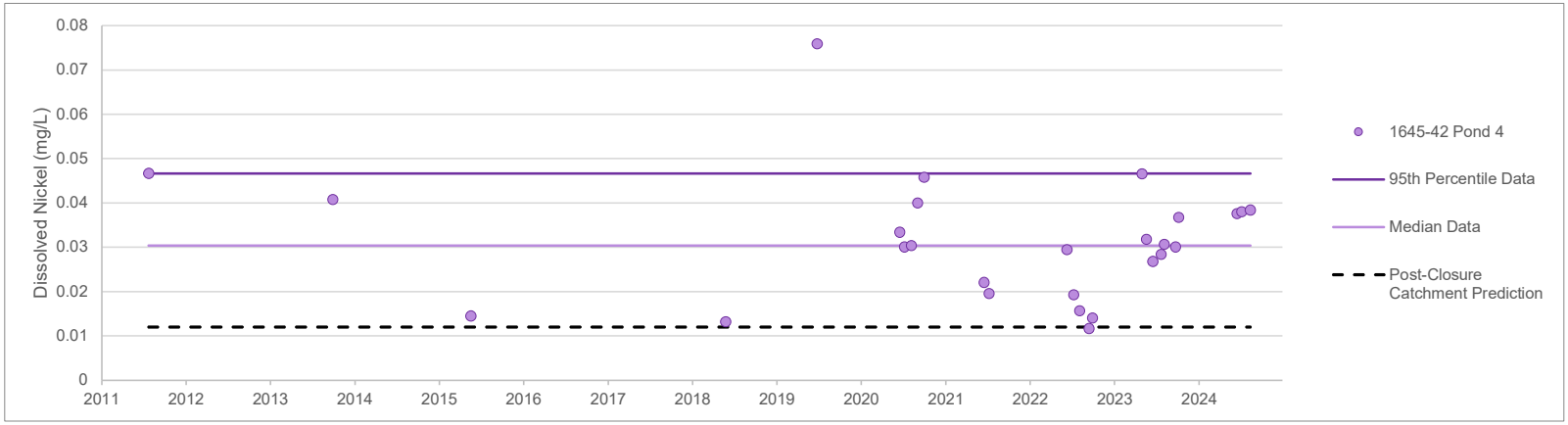
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.4266	Wildlife	0.5
Median	0.2700	Human recreational	0.4
Count	27	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



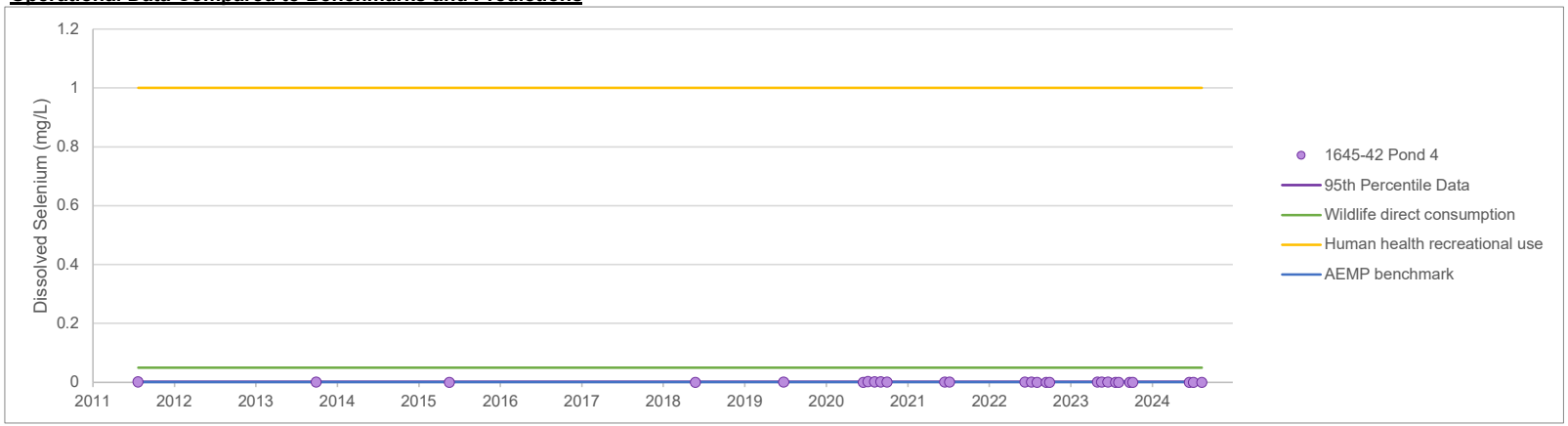


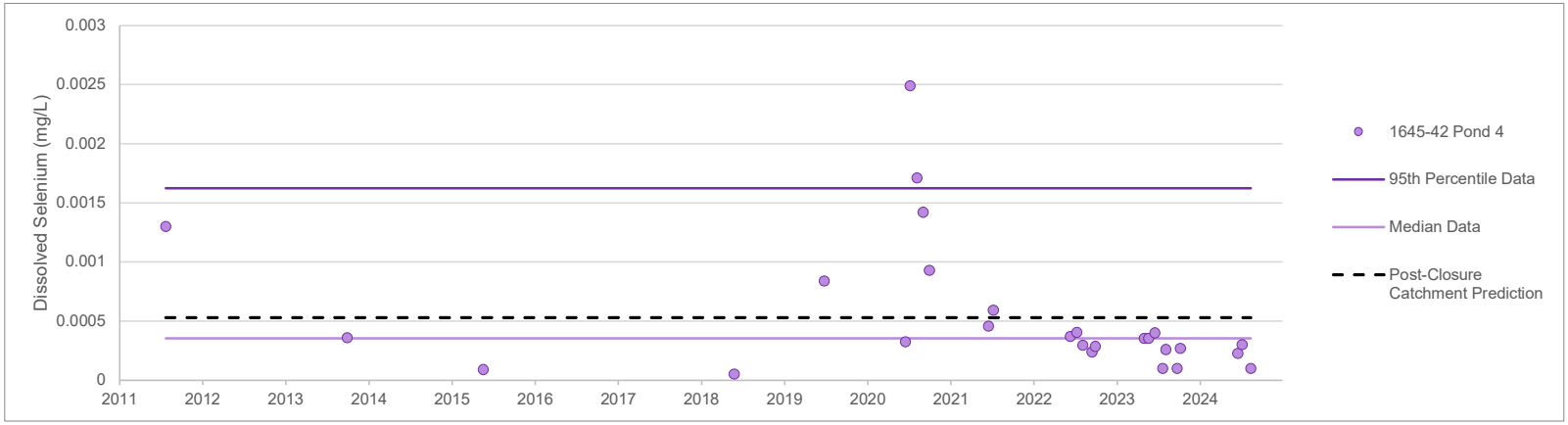
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.047	Wildlife	1.0
Median	0.030	Human recreational	1.6
Count	27	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



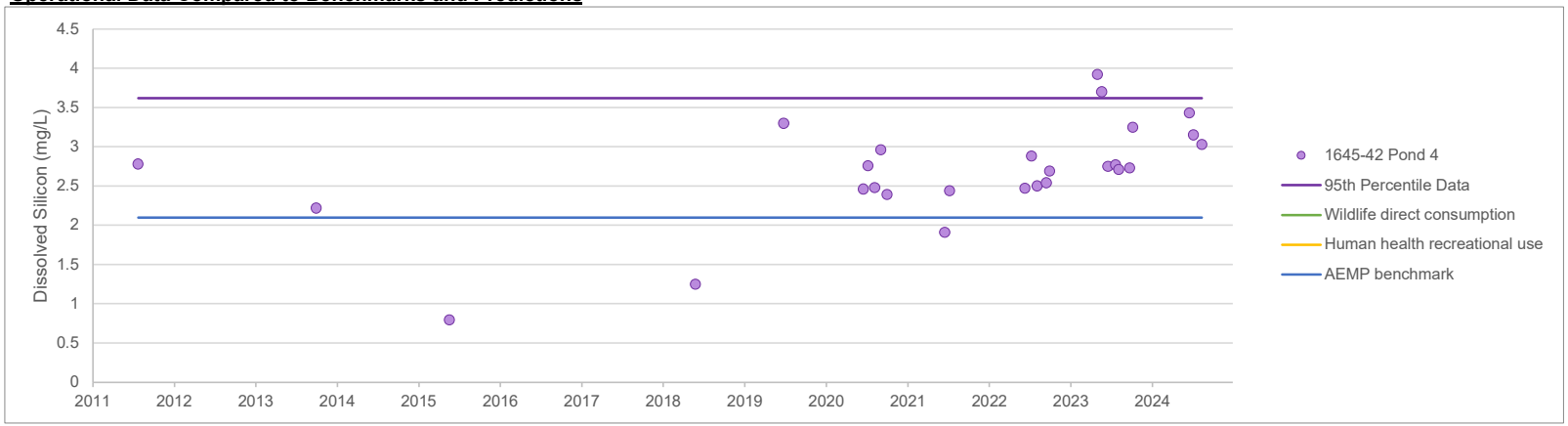


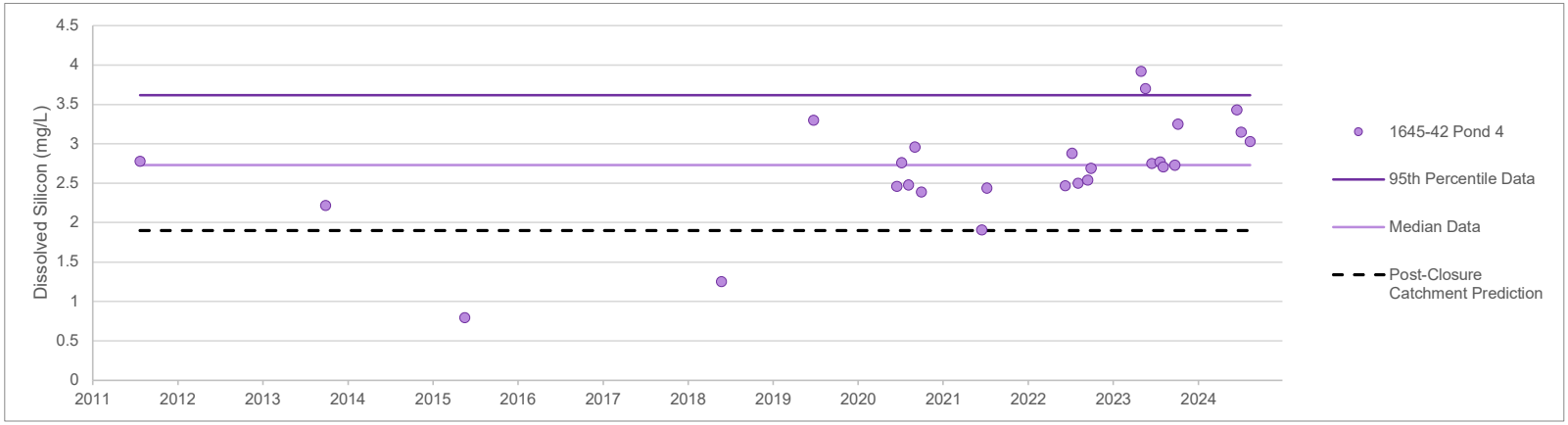
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00162	Wildlife	0.1
Median	0.00035	Human recreational	1.0
Count	27	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



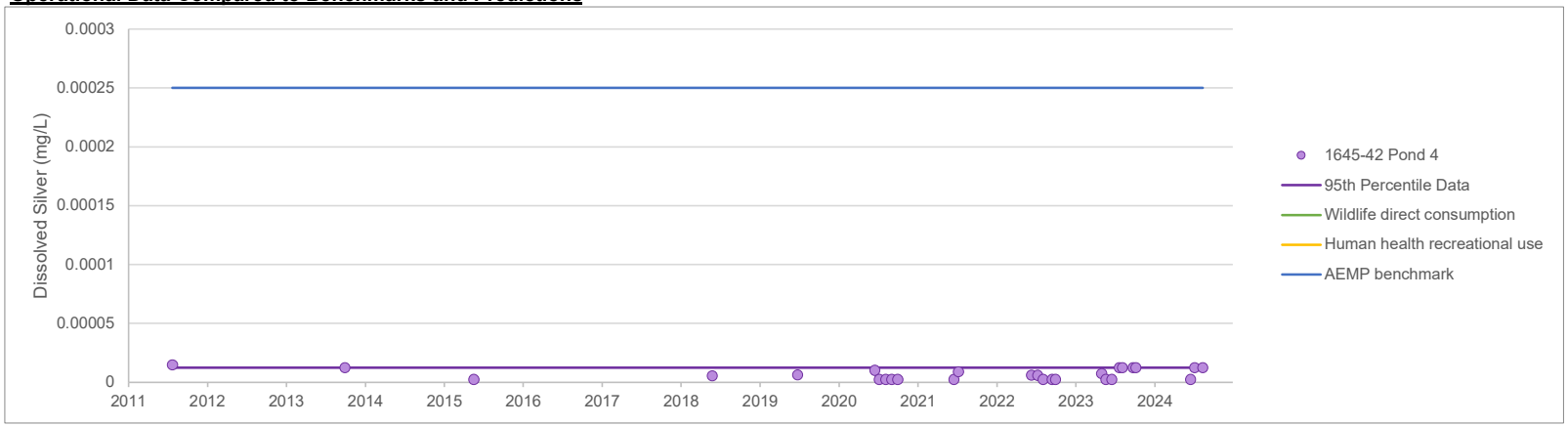


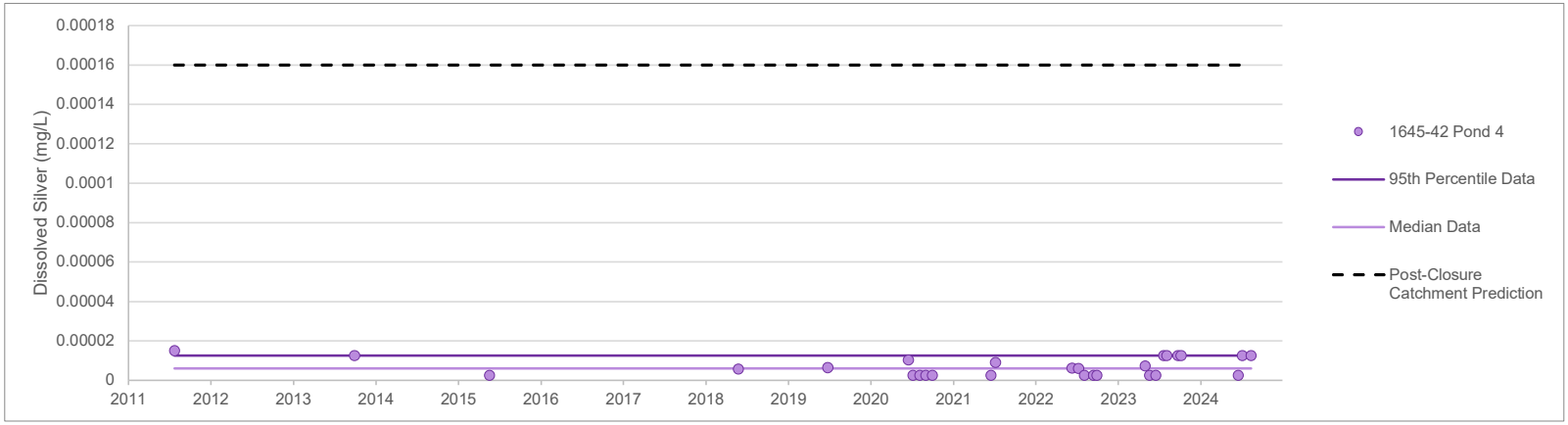
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.62	Wildlife	None
Median	2.73	Human recreational	None
Count	27	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



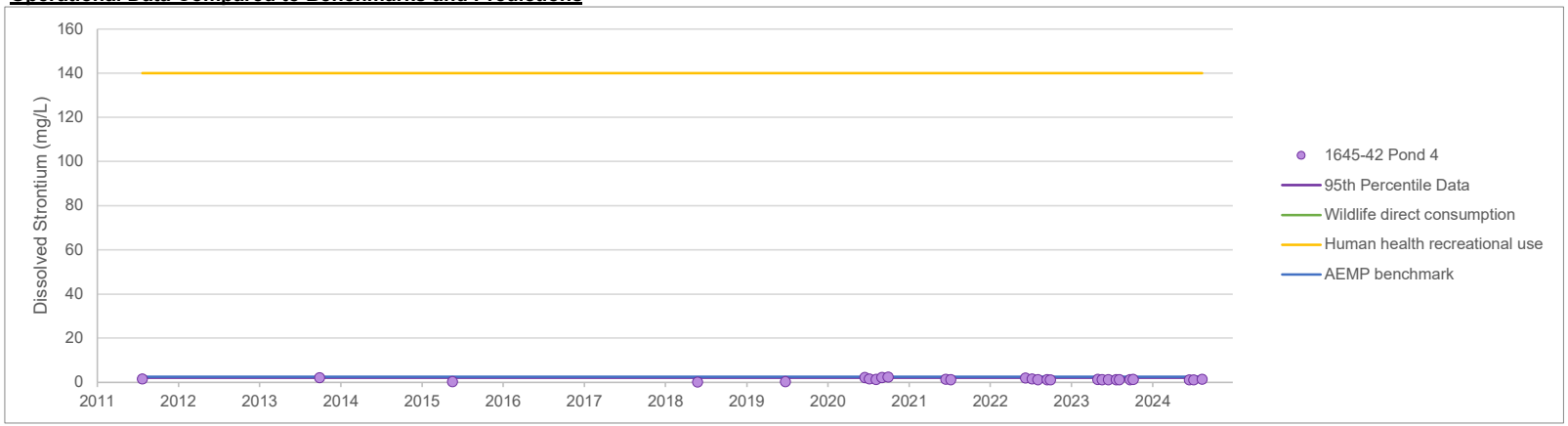


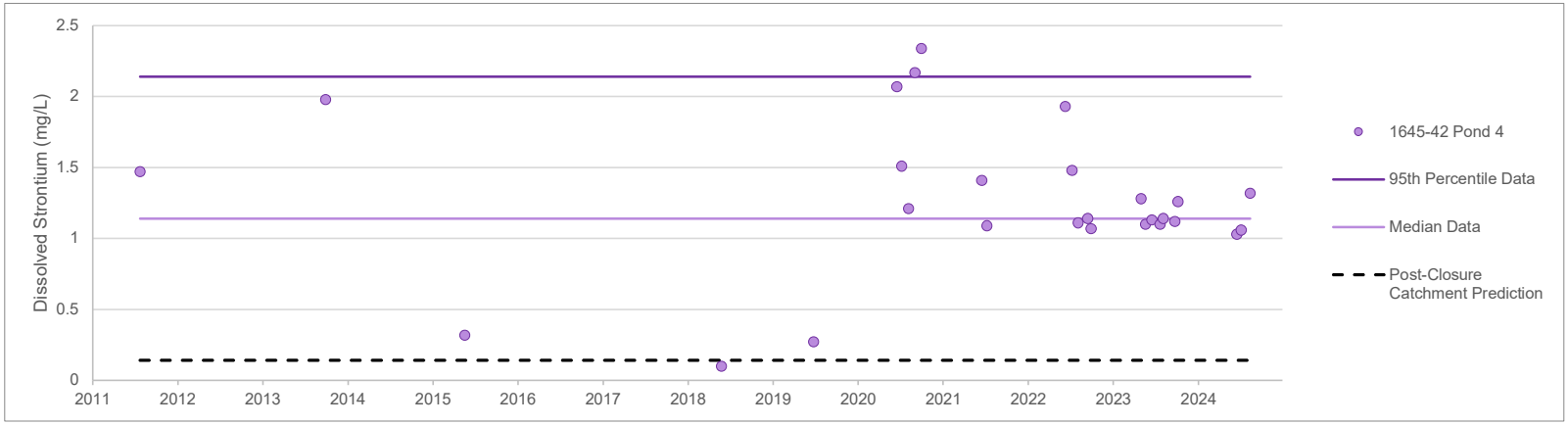
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000013	Wildlife	None
Median	0.000006	Human recreational	None
Count	27	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



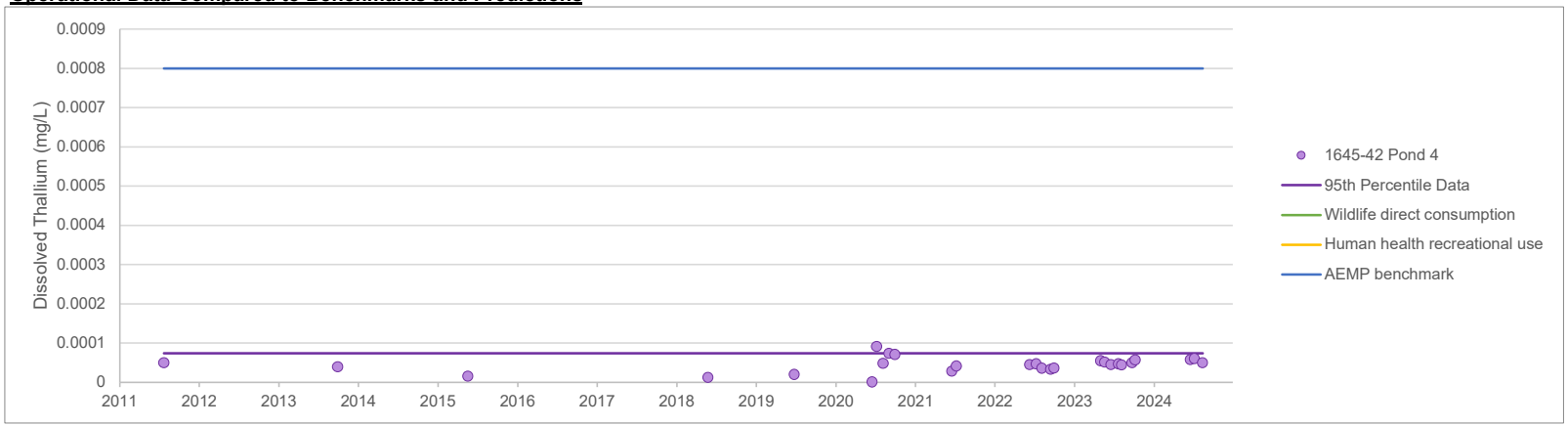


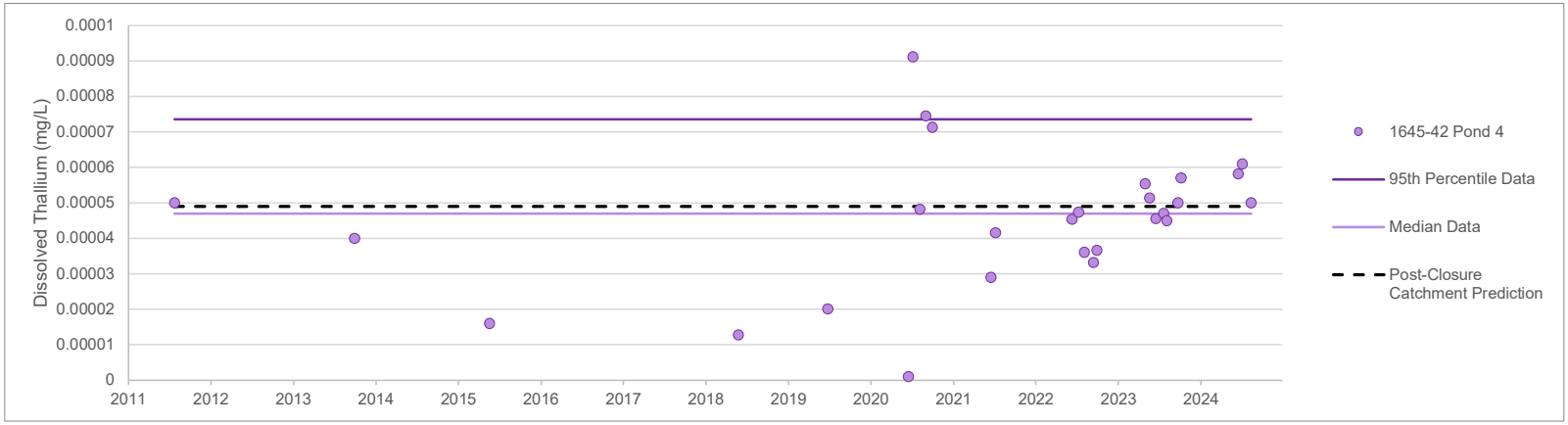
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	2.14	Wildlife	None
Median	1.14	Human recreational	140
Count	27	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



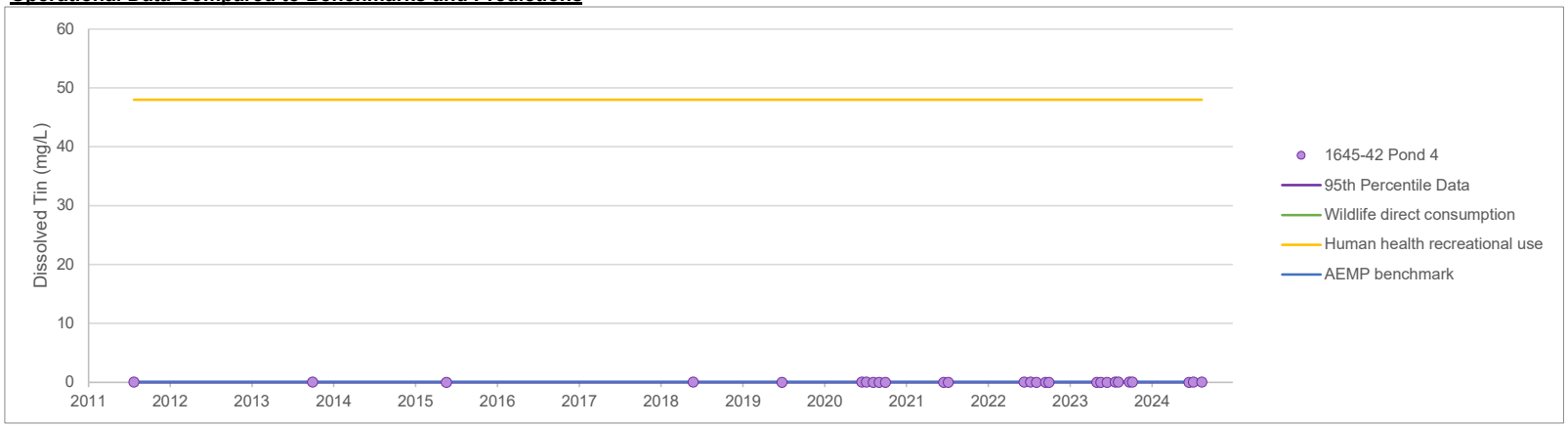


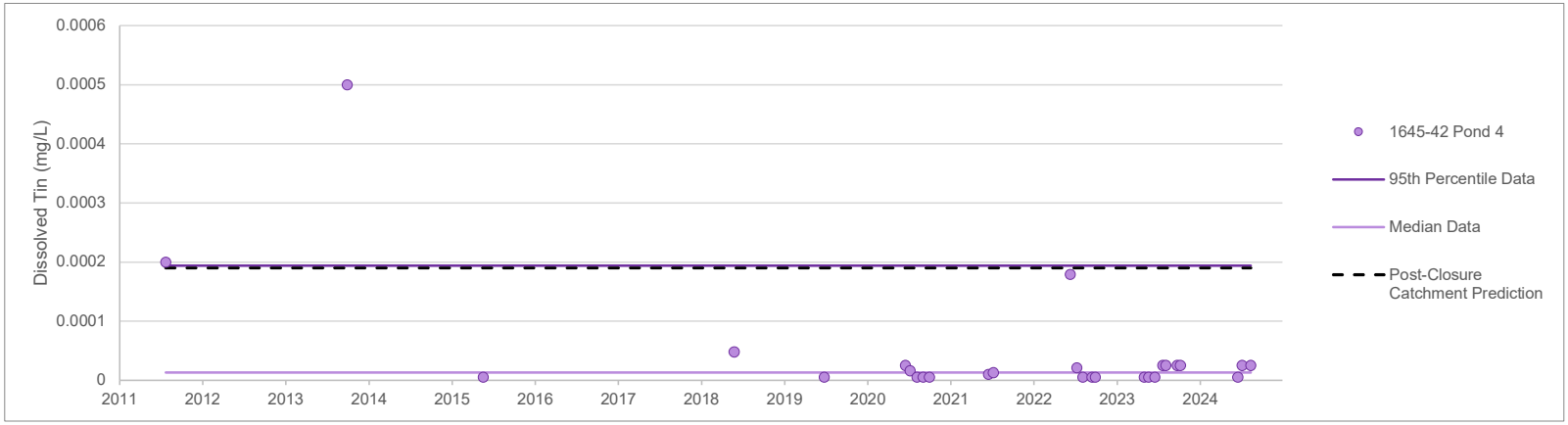
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00007	Wildlife	None
Median	0.00005	Human recreational	None
Count	27	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



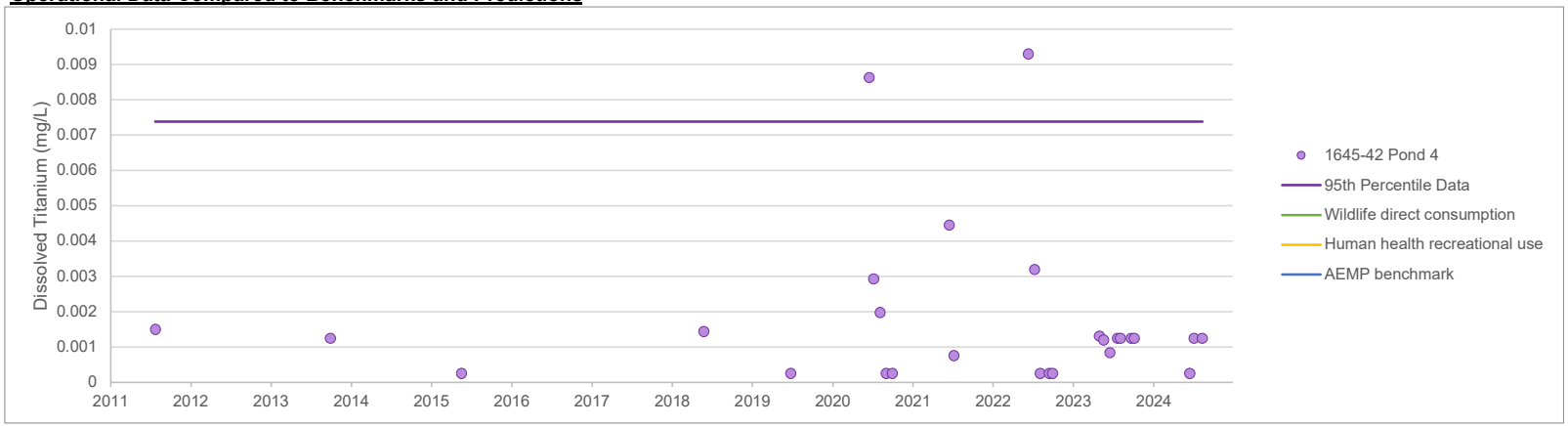


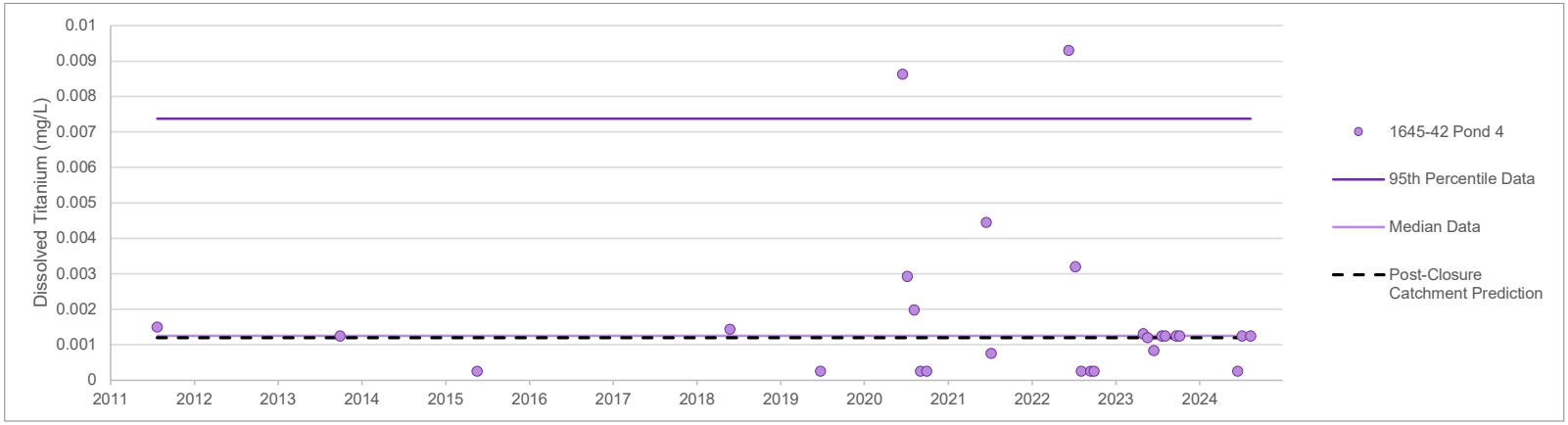
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00019	Wildlife	None
Median	0.00001	Human recreational	48
Count	27	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



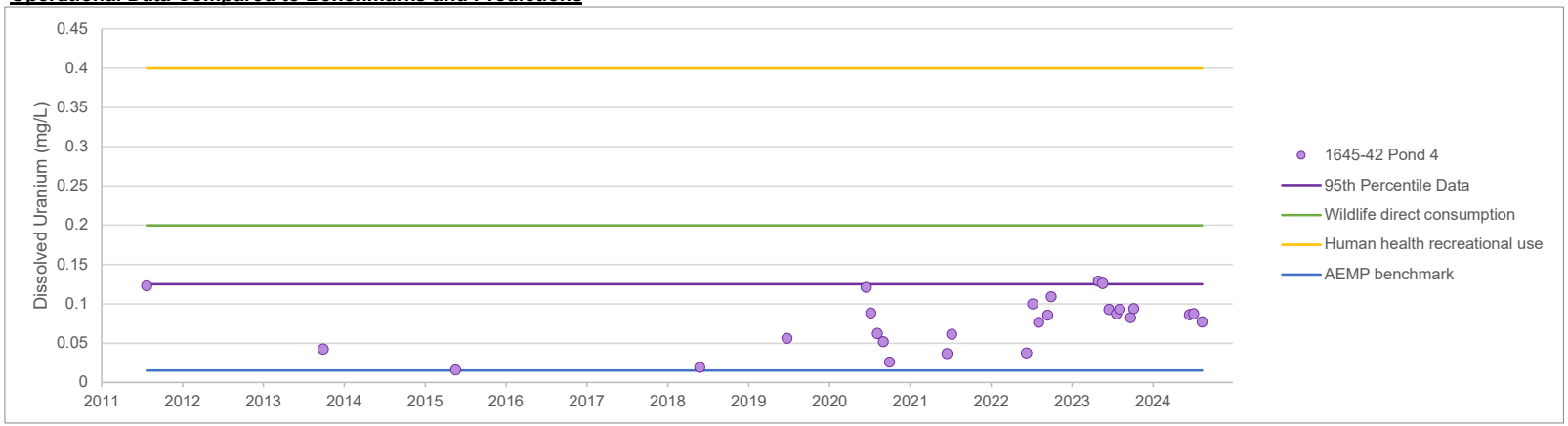


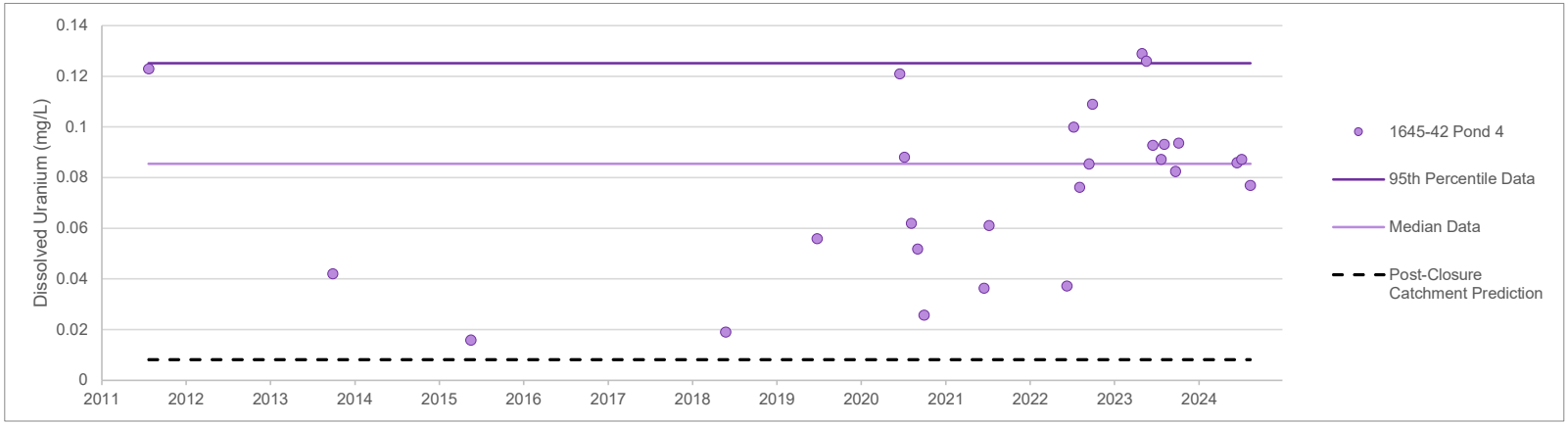
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0074	Wildlife	None
Median	0.0013	Human recreational	None
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



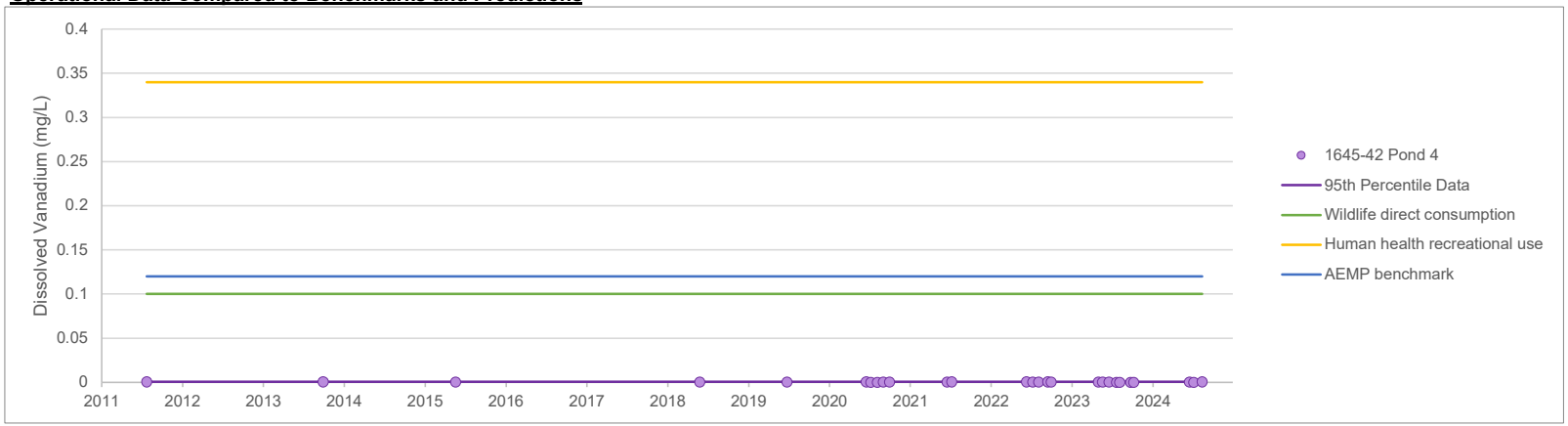


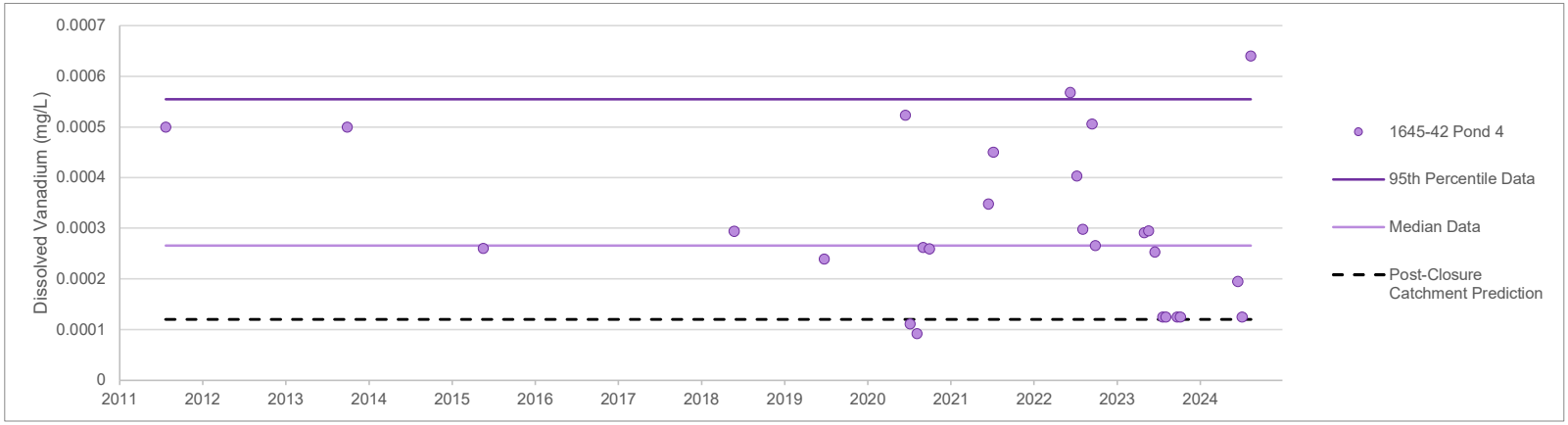
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.1251	Wildlife	0.2
Median	0.0854	Human recreational	0.4
Count	27	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



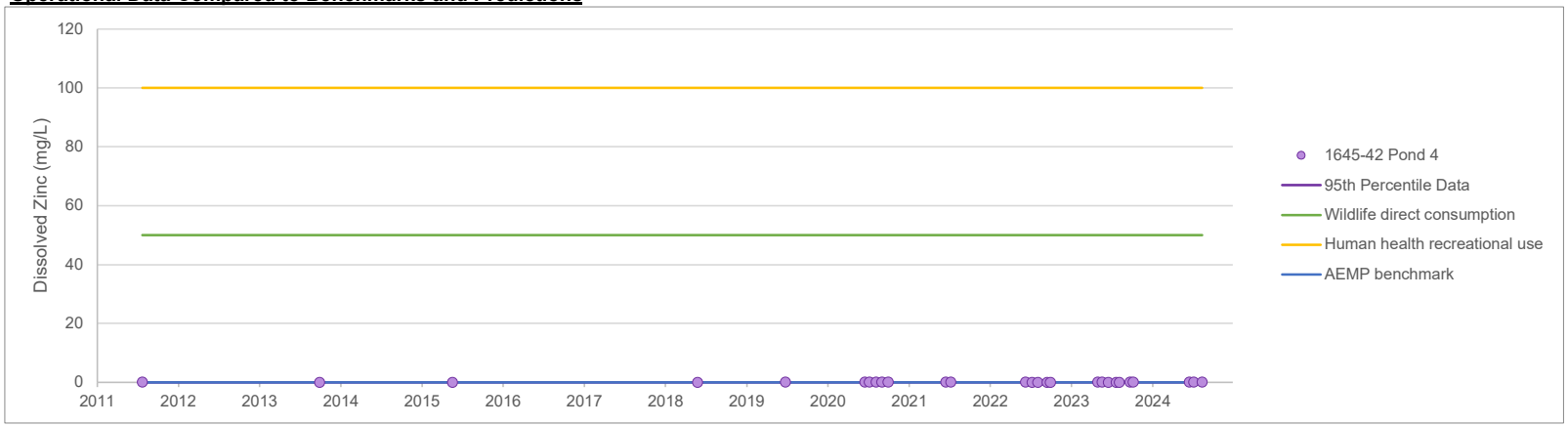


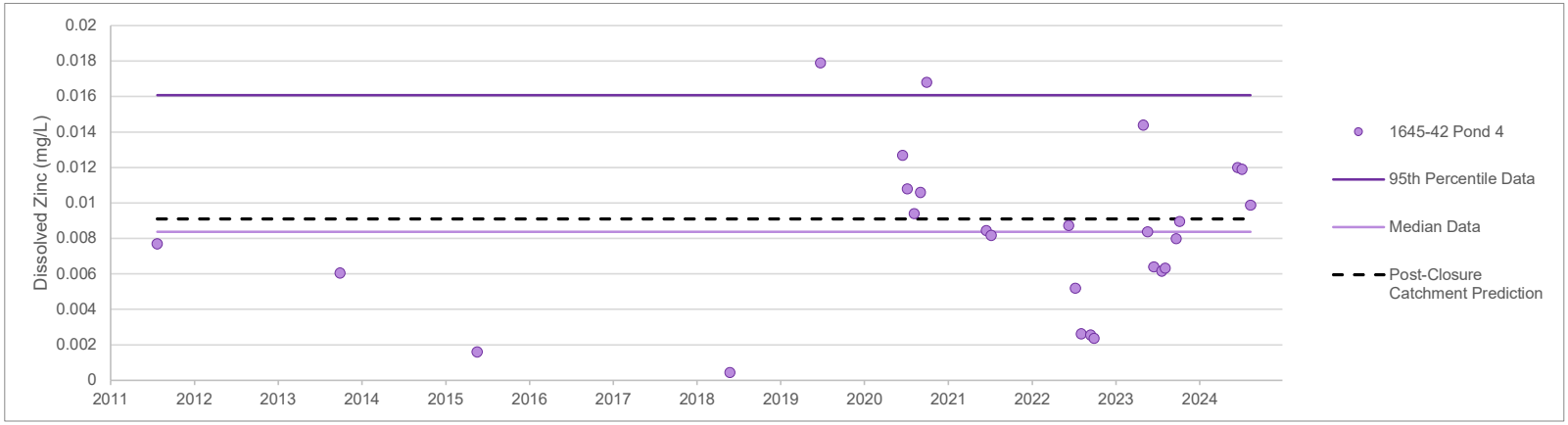
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0006	Wildlife	0.1
Median	0.0003	Human recreational	0.3
Count	27	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



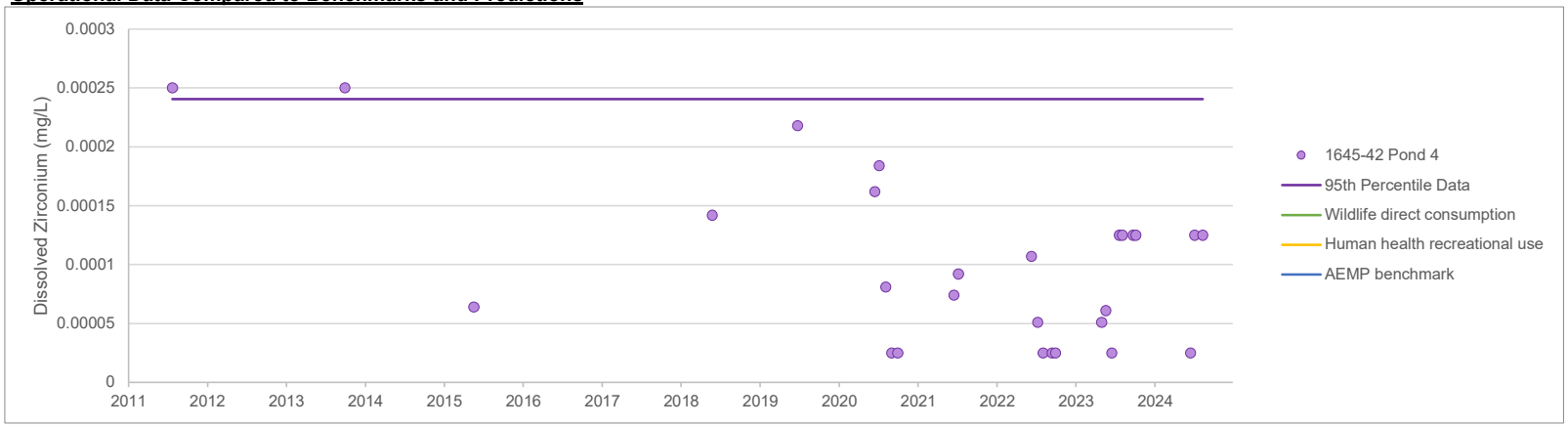


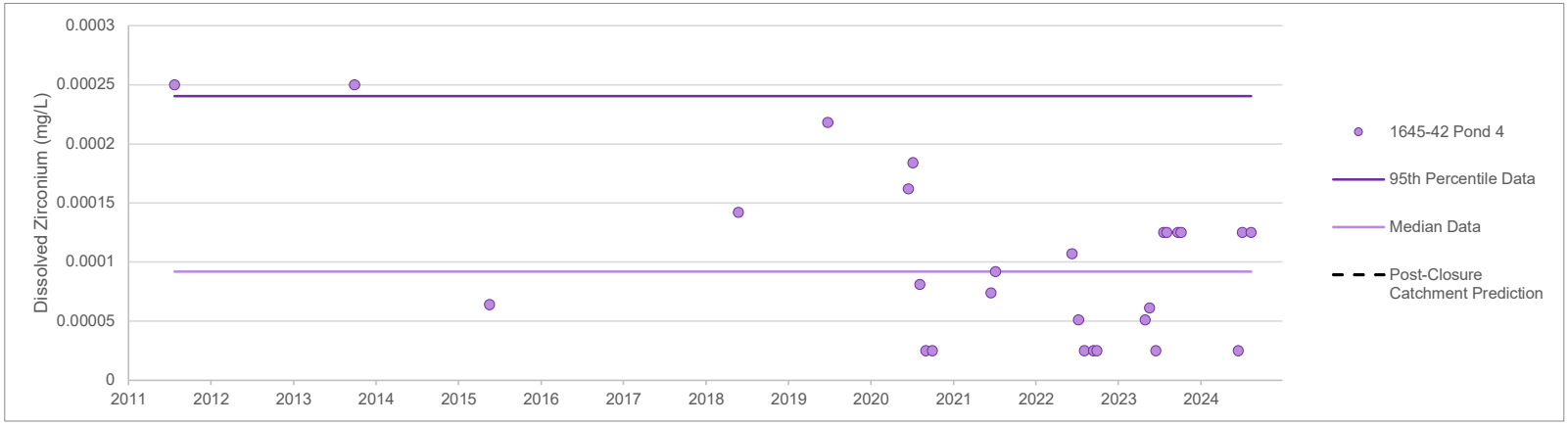
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.016	Wildlife	50
Median	0.008	Human recreational	100
Count	27	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0002	Wildlife	None
Median	0.0001	Human recreational	None
Count	27	AEMP	None

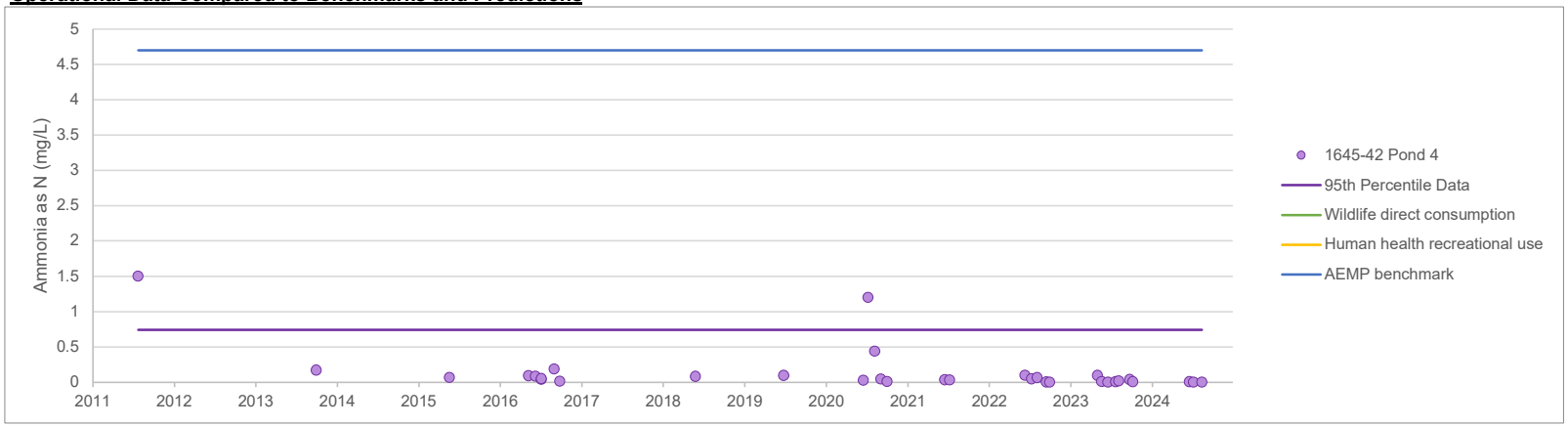
RioTinto | Diavik

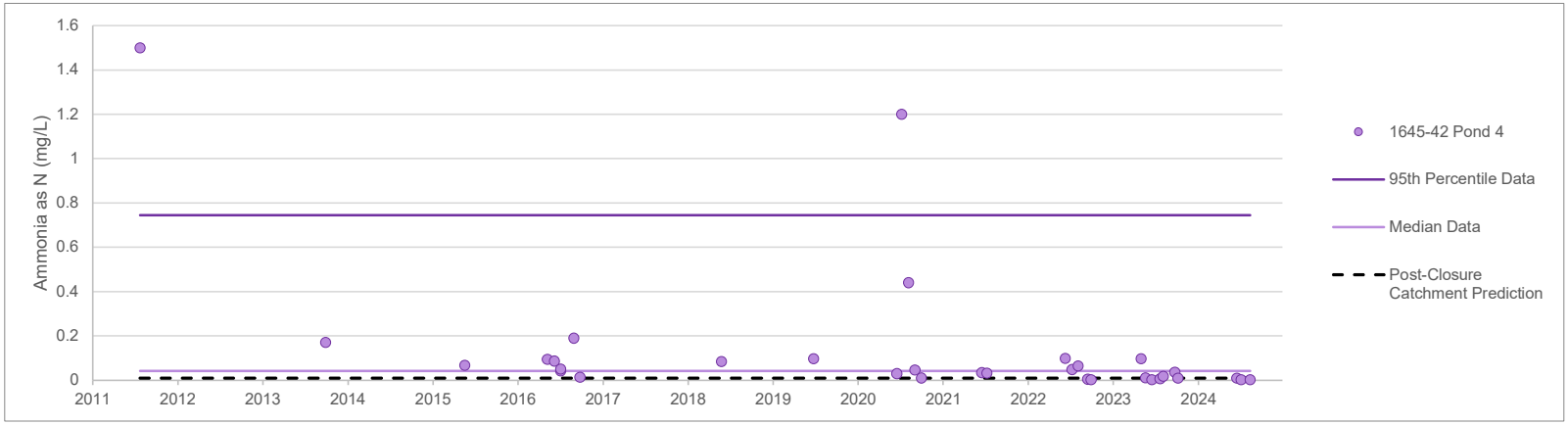
Pond 4

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



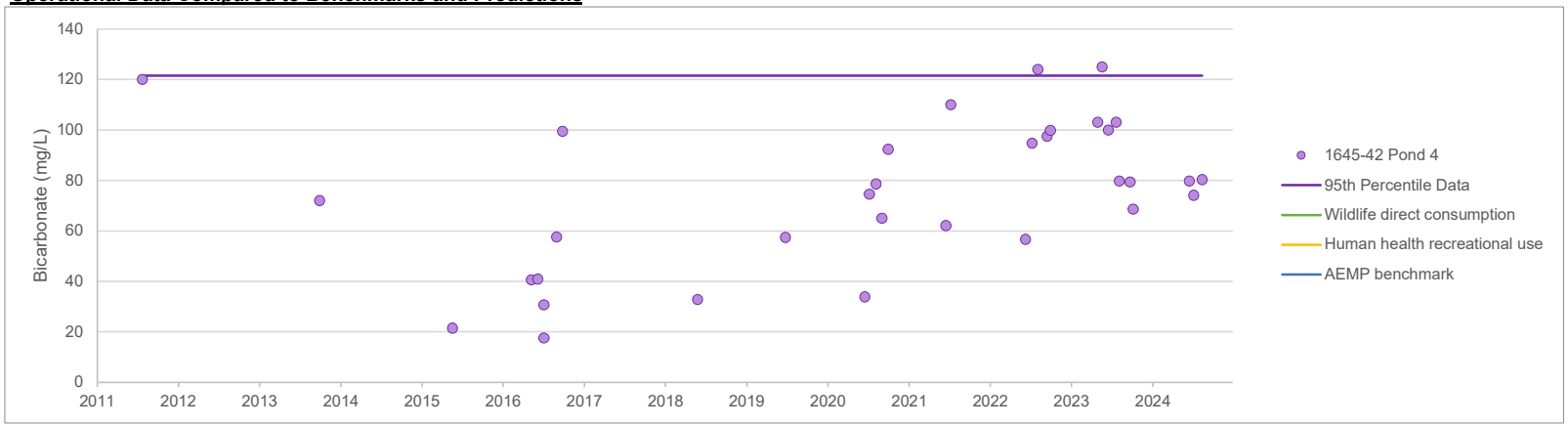


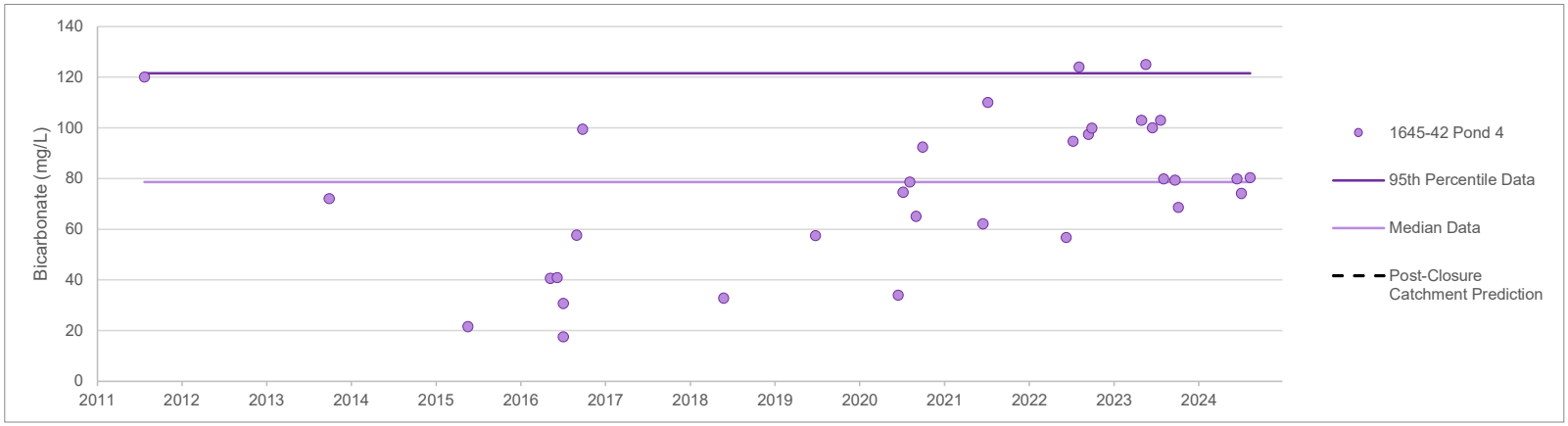
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.74	Wildlife	None
Median	0.04	Human recreational	None
Count	33	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



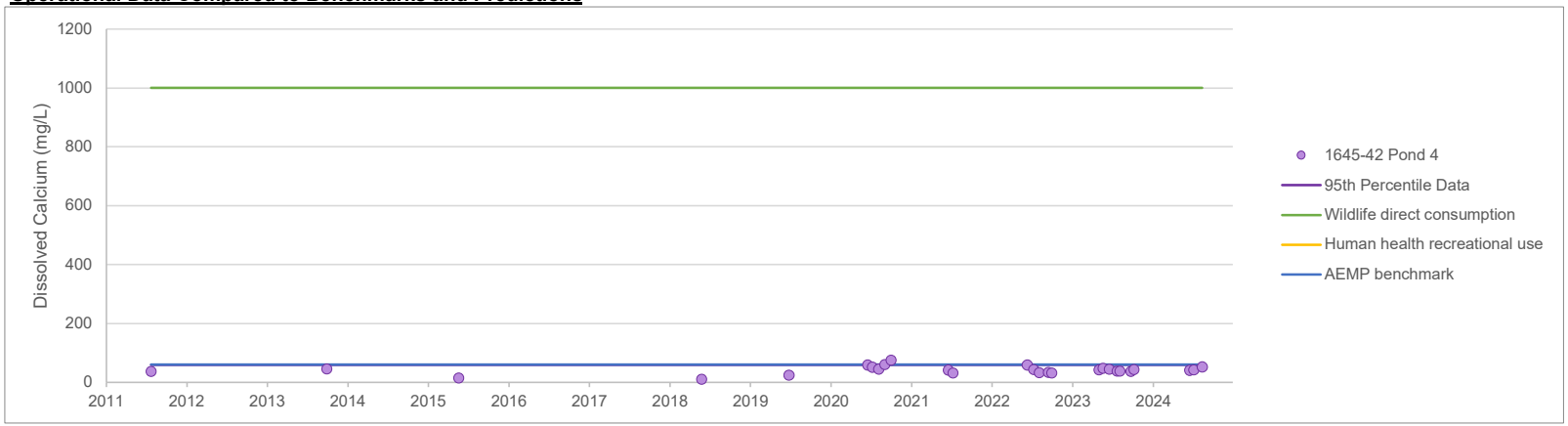


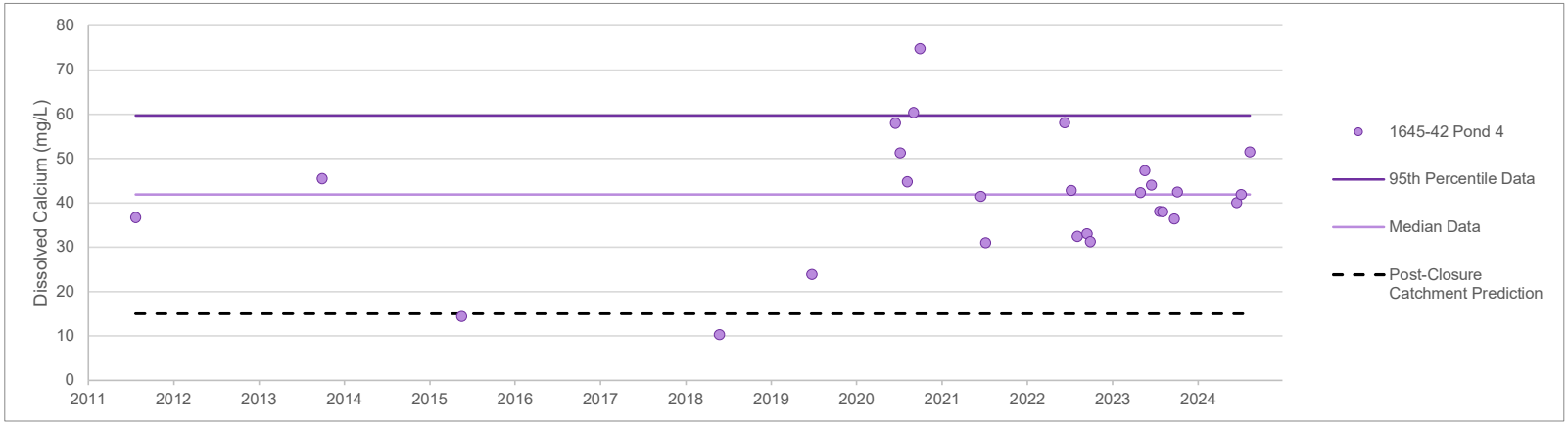
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	121.6	Wildlife	None
Median	78.6	Human recreational	None
Count	33	AEMP	None

Operational Data Compared to Benchmarks and Predictions



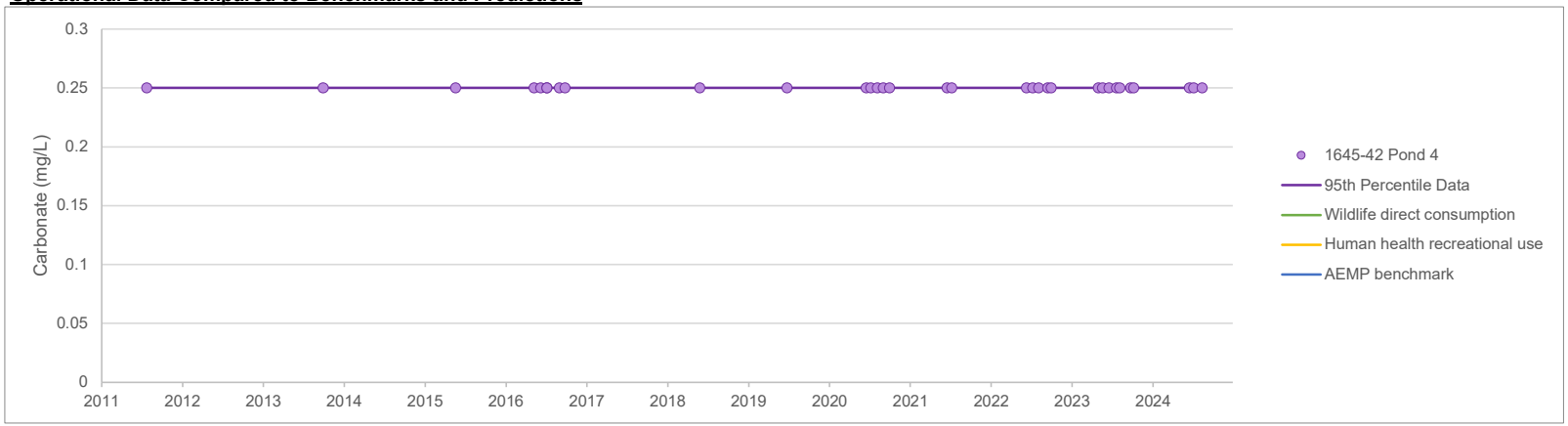


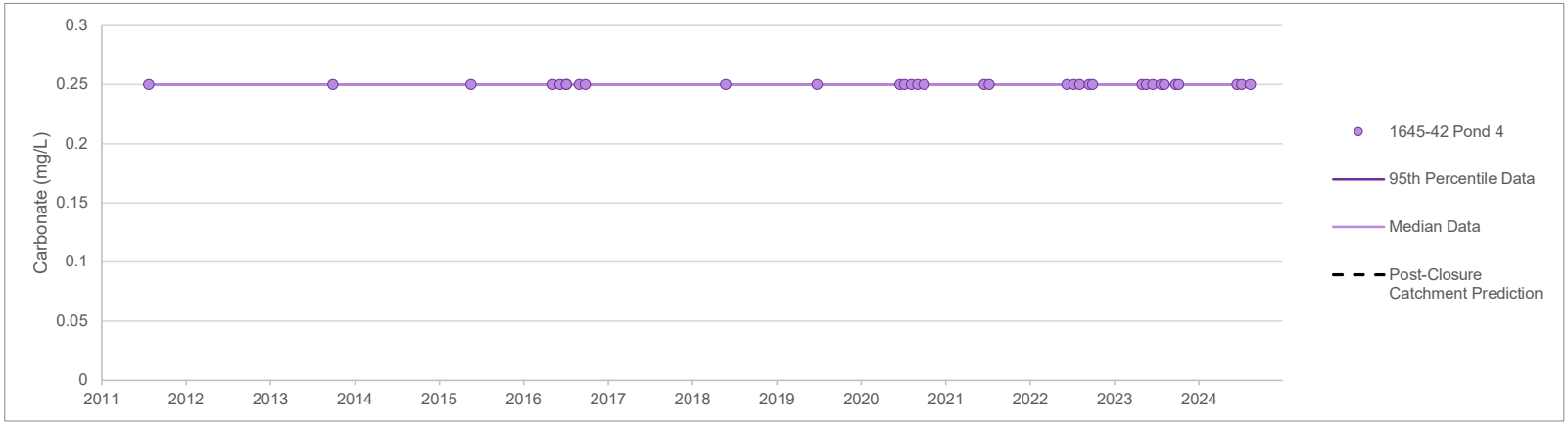
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	59.7	Wildlife	1000
Median	41.9	Human recreational	None
Count	27	AEMP	60

Operational Data Compared to Benchmarks and Predictions



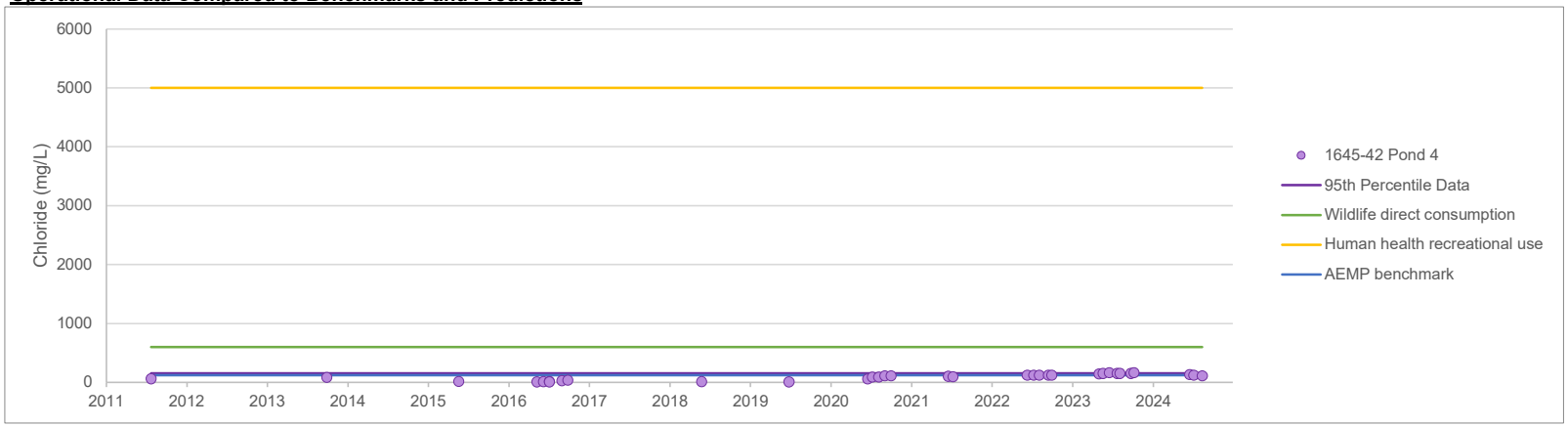


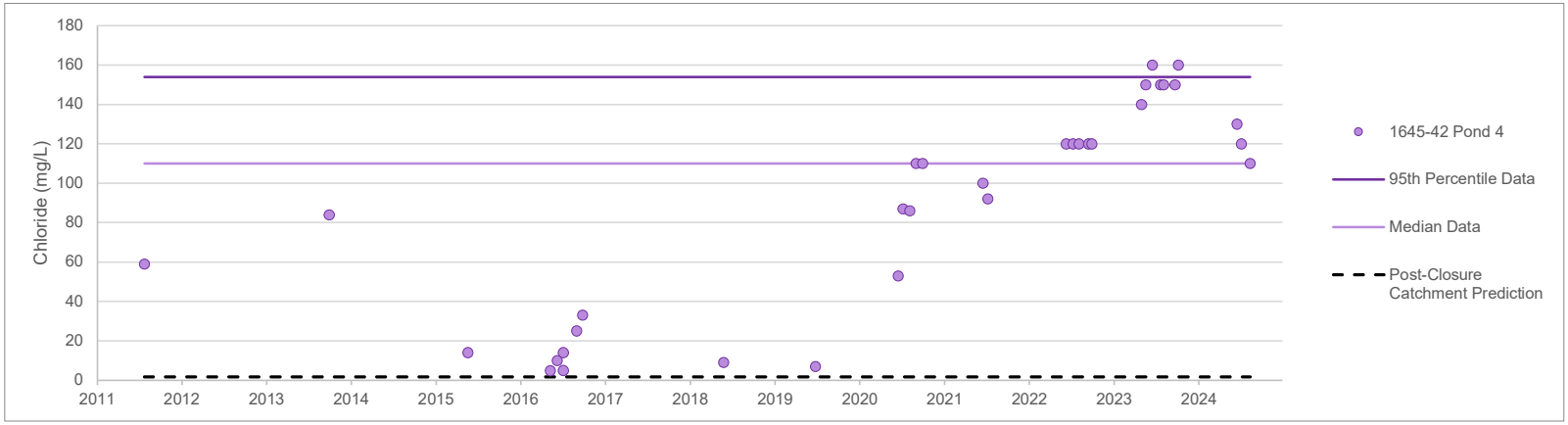
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	33	AEMP	None

Operational Data Compared to Benchmarks and Predictions



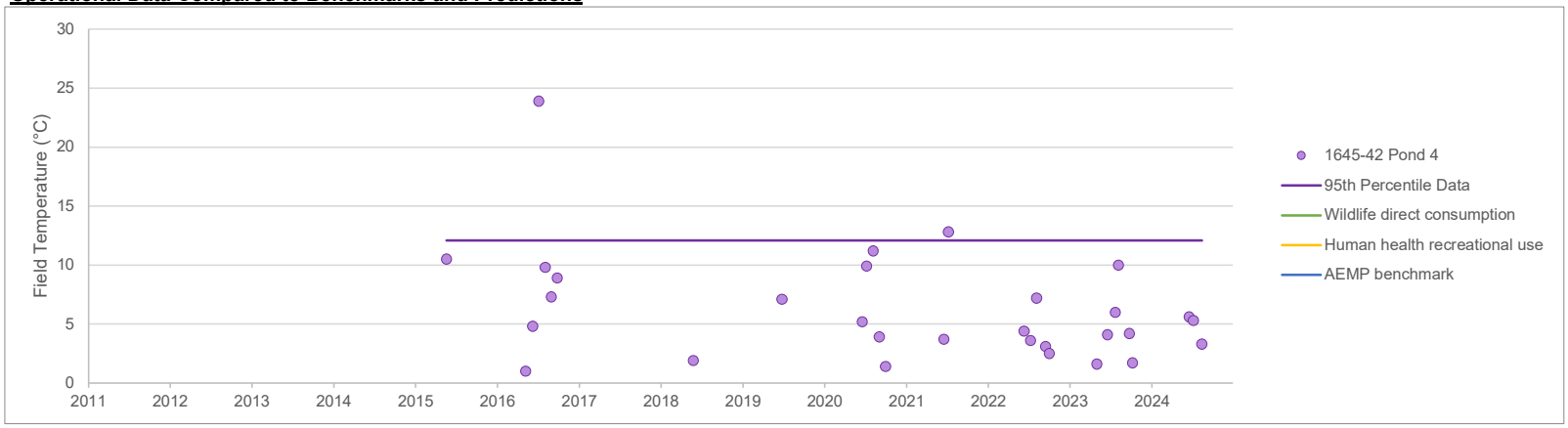


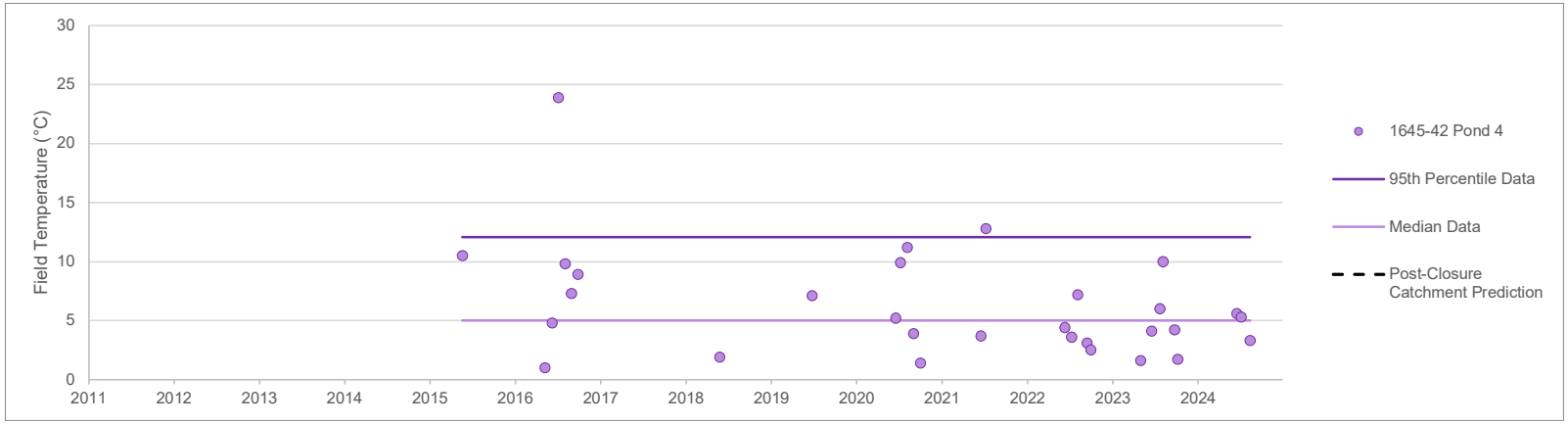
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	154.0	Wildlife	600
Median	110.0	Human recreational	5000
Count	33	AEMP	120

Operational Data Compared to Benchmarks and Predictions



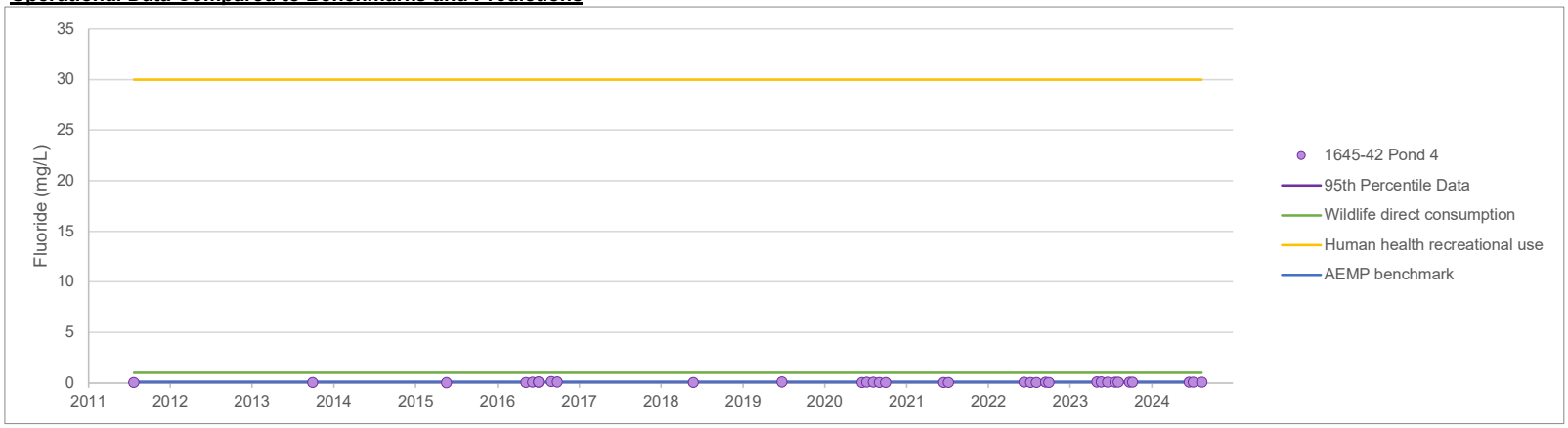


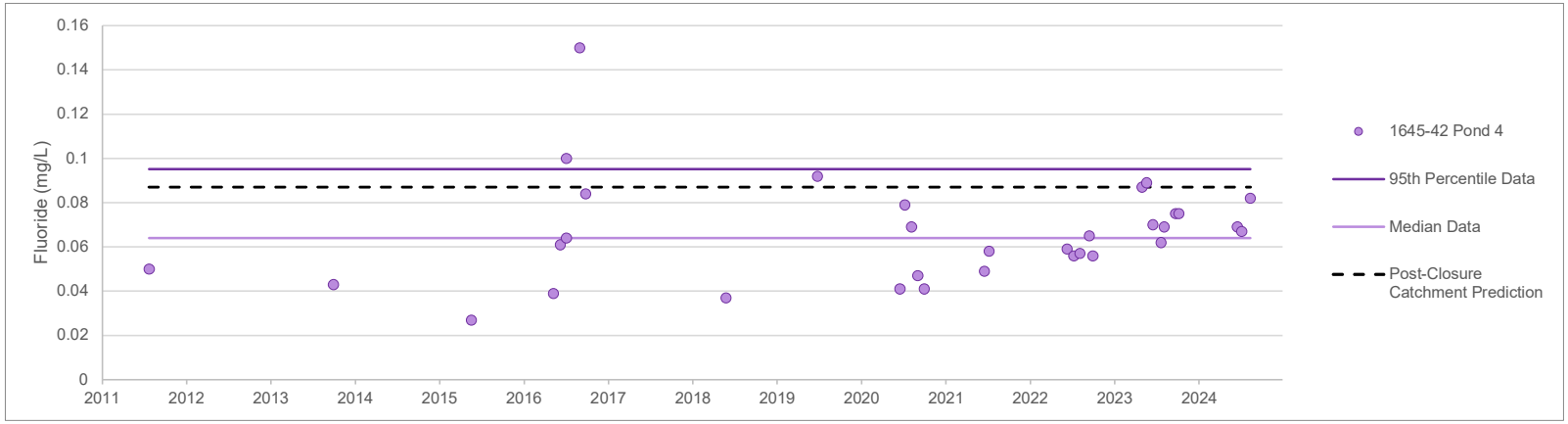
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	12.1	Wildlife	None
Median	5.0	Human recreational	None
Count	30	AEMP	None

Operational Data Compared to Benchmarks and Predictions



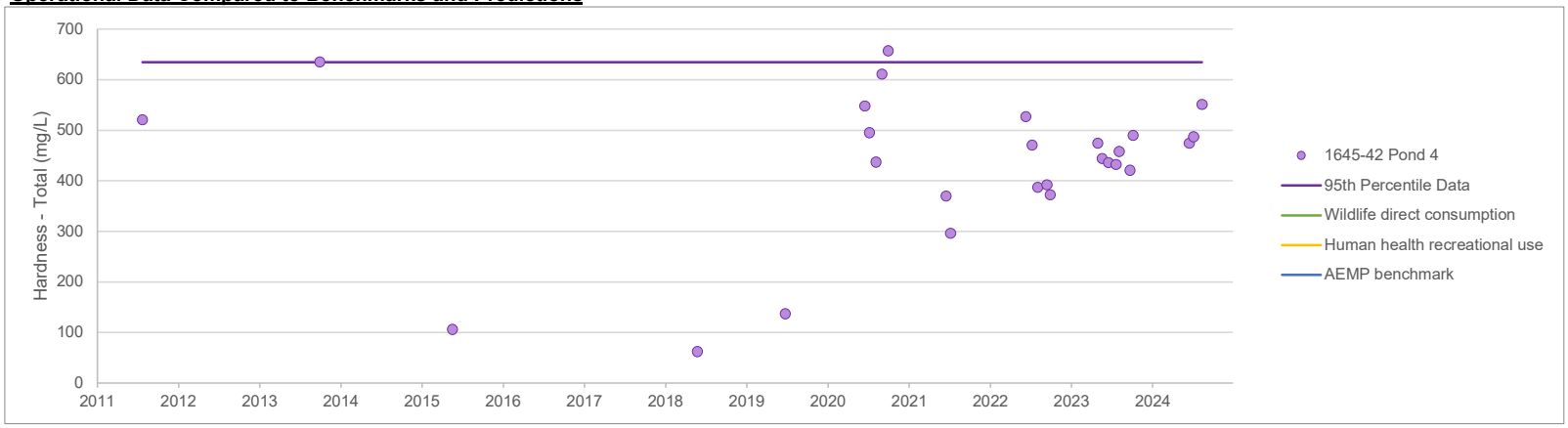


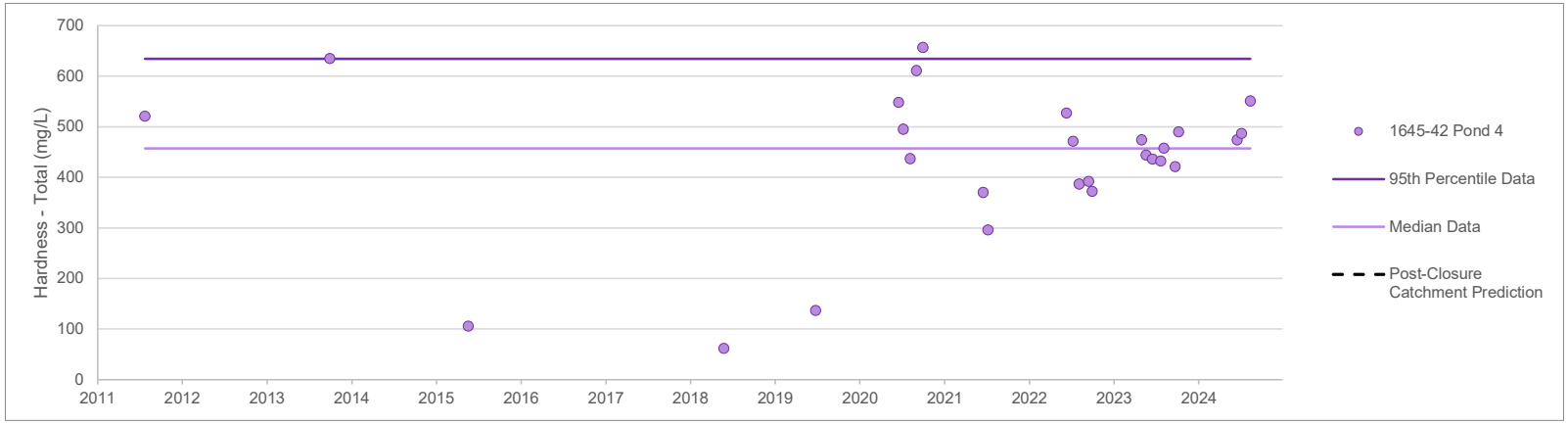
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.10	Wildlife	1
Median	0.06	Human recreational	30
Count	33	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



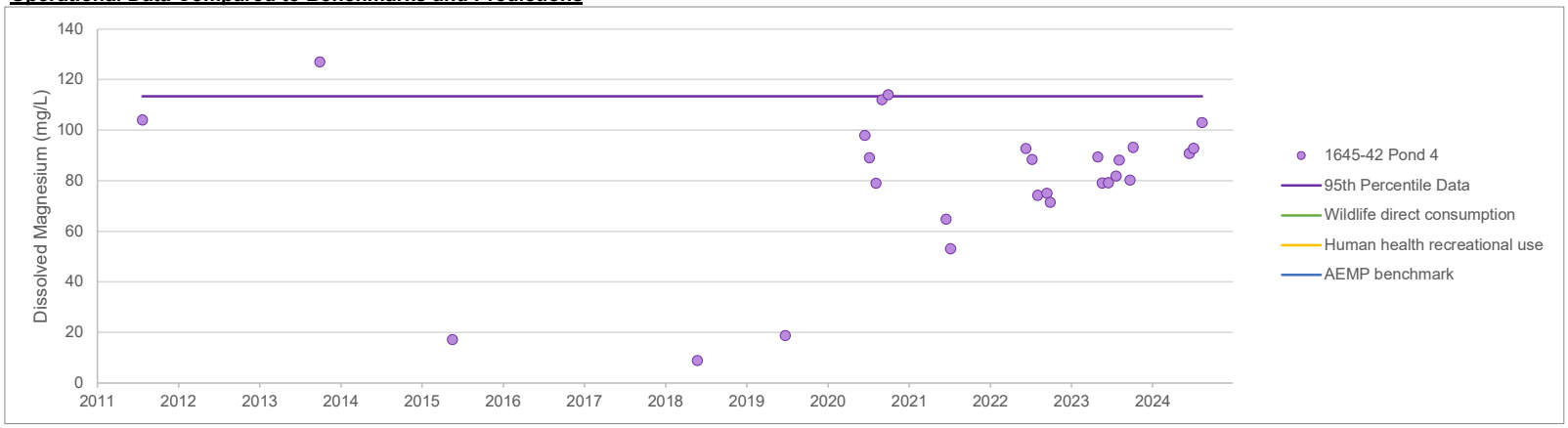


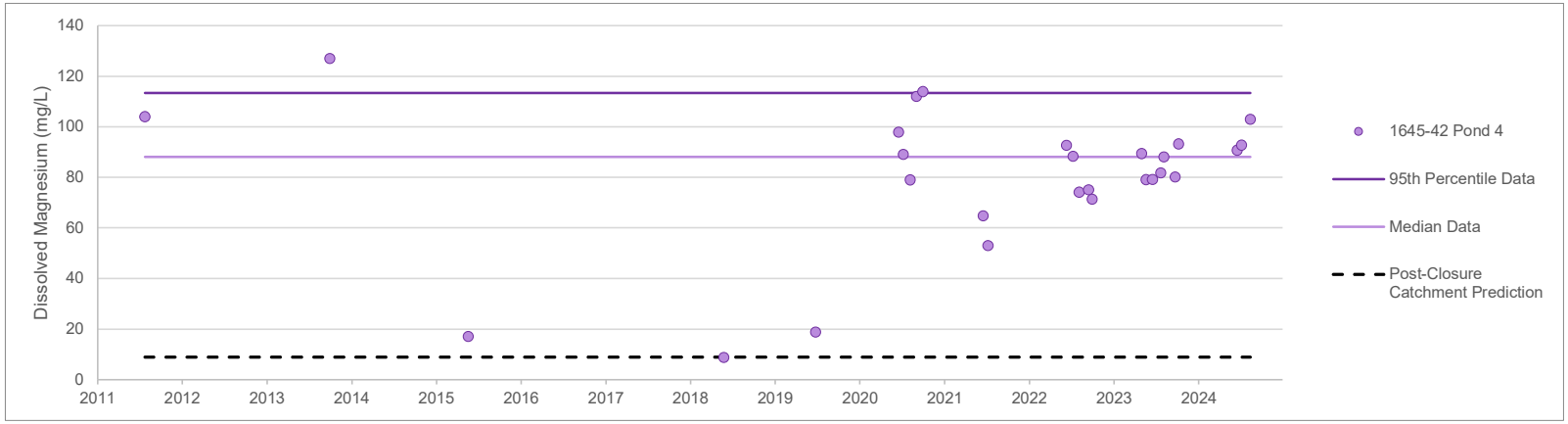
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	634	Wildlife	None
Median	457	Human recreational	None
Count	33	AEMP	None

Operational Data Compared to Benchmarks and Predictions



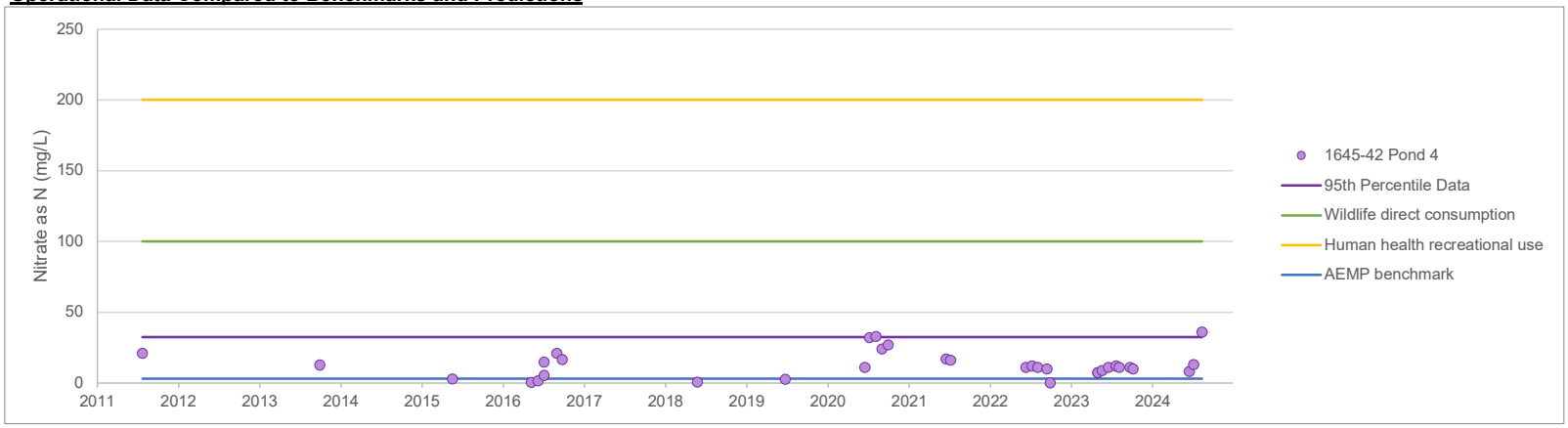


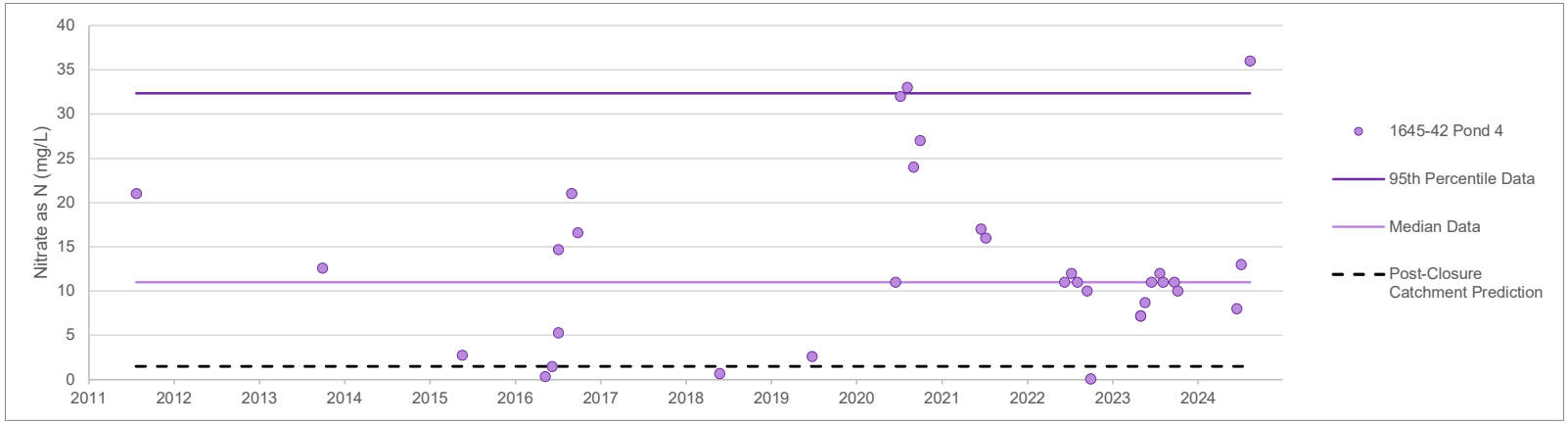
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	113.4	Wildlife	None
Median	88.1	Human recreational	None
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



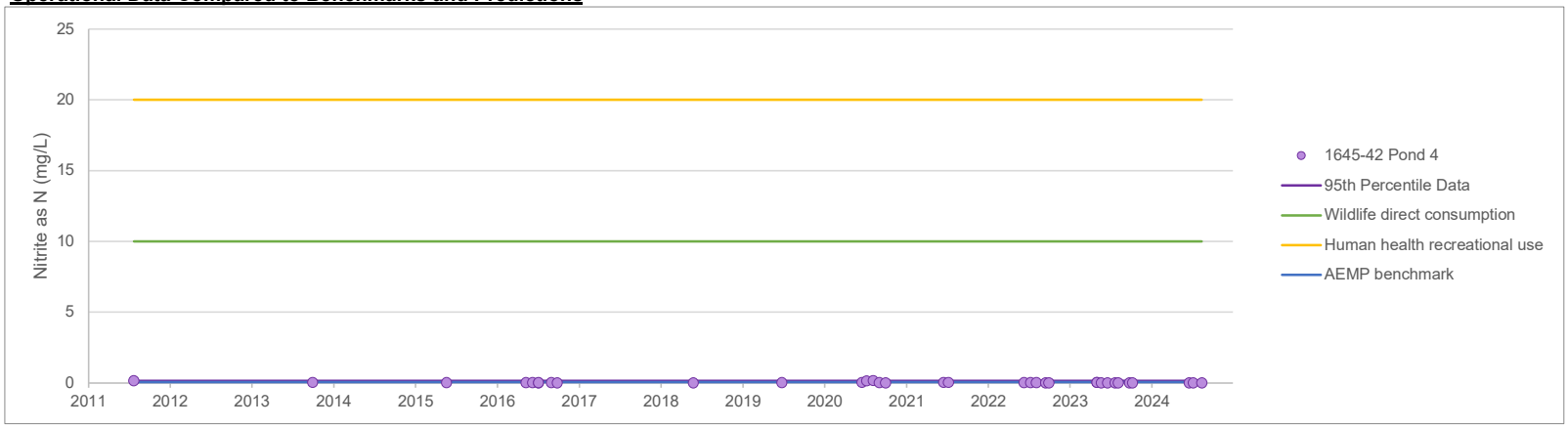


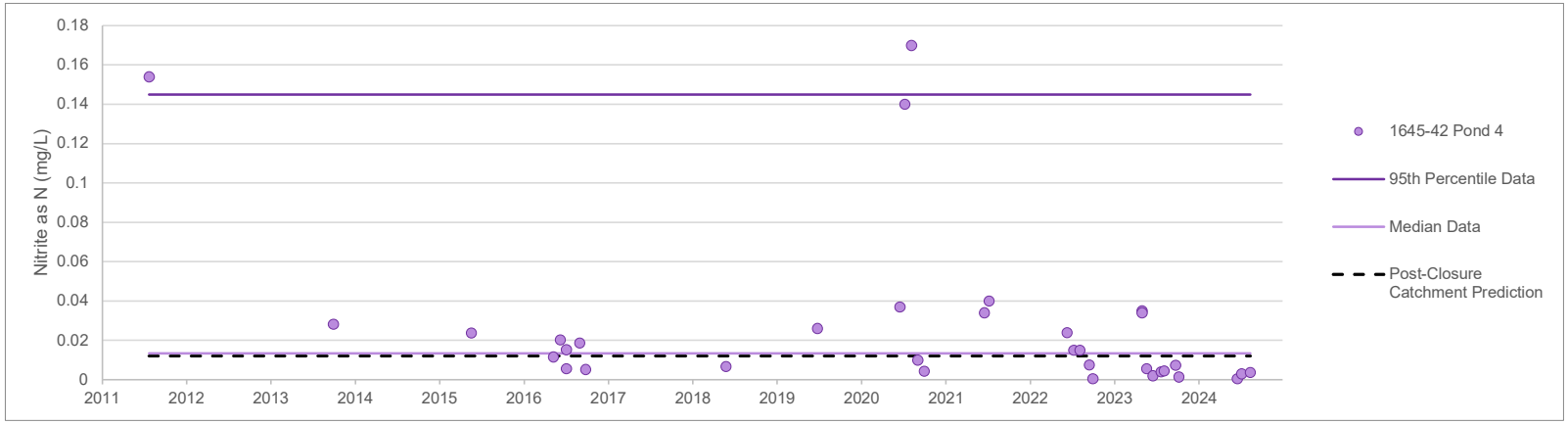
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	32.4	Wildlife	100
Median	11.0	Human recreational	200
Count	34	AEMP	3

Operational Data Compared to Benchmarks and Predictions



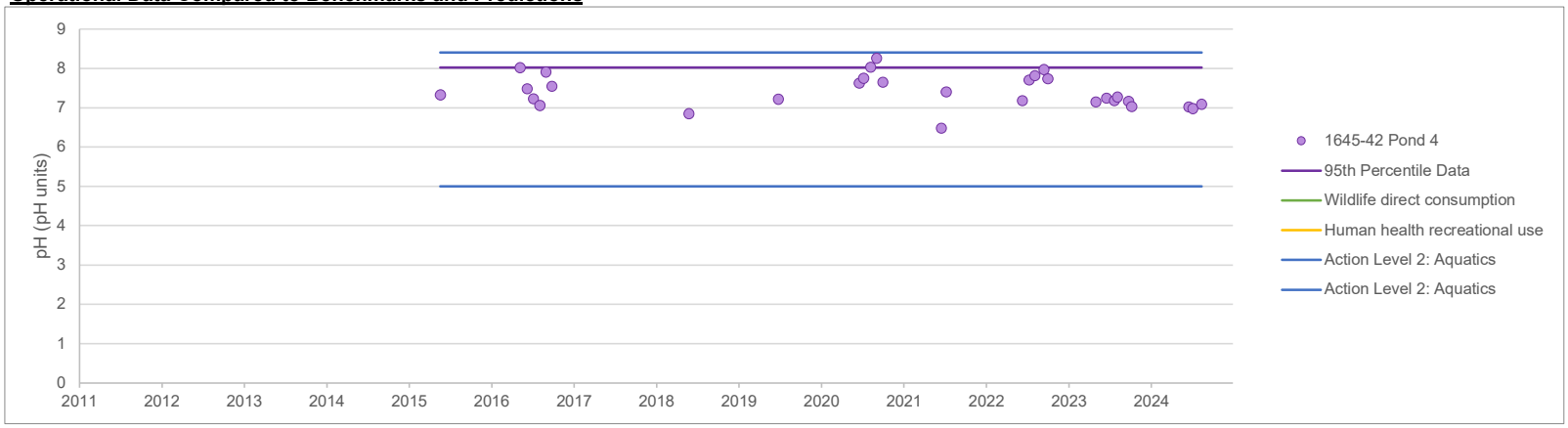


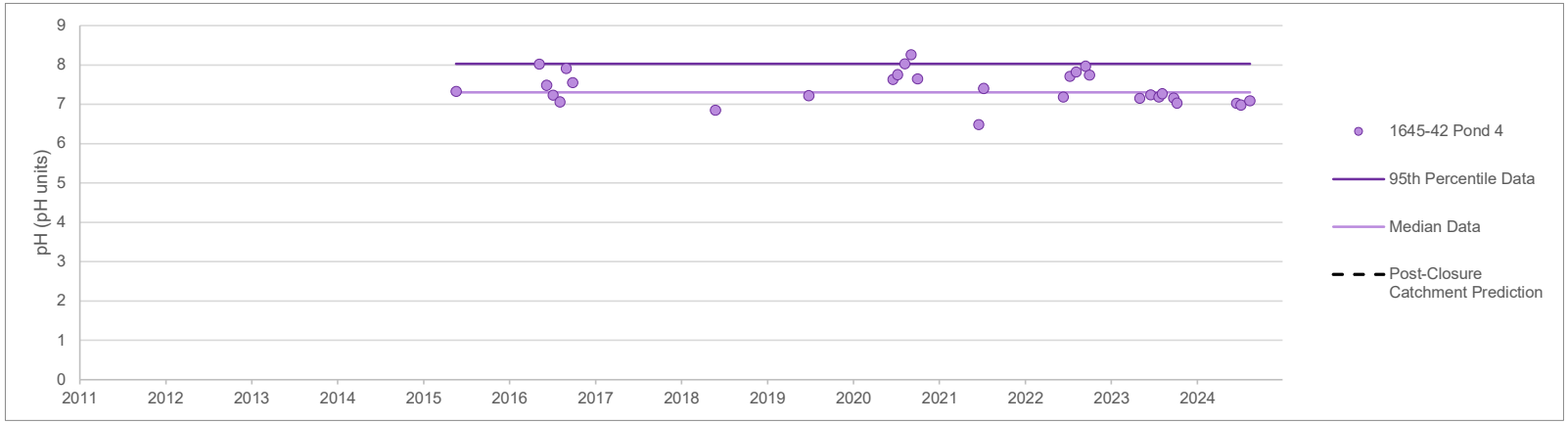
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.145	Wildlife	10.0
Median	0.013	Human recreational	20.0
Count	34	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



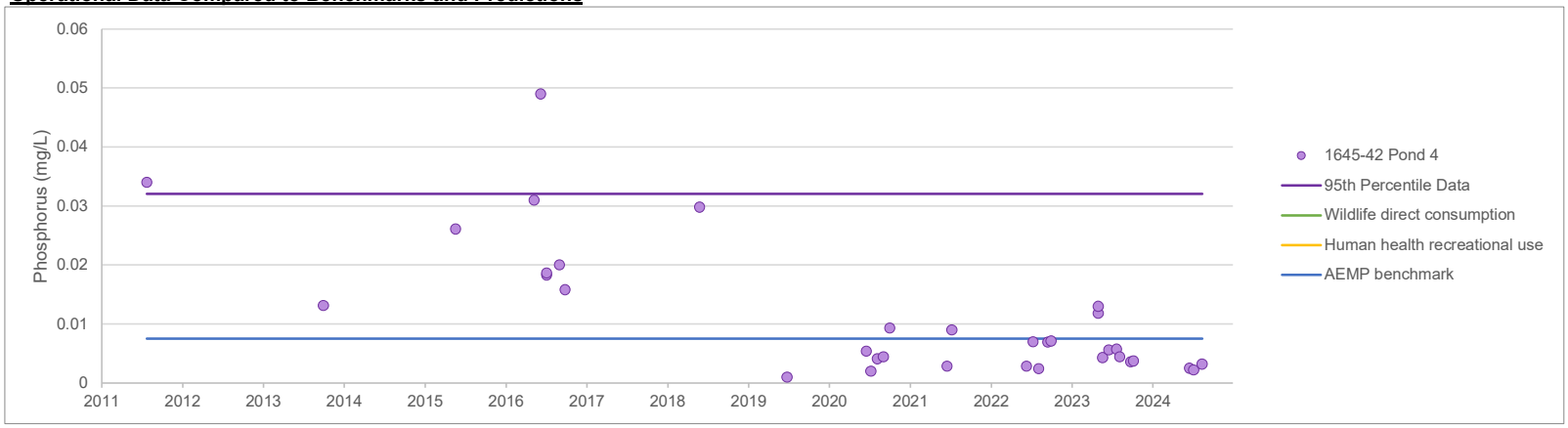


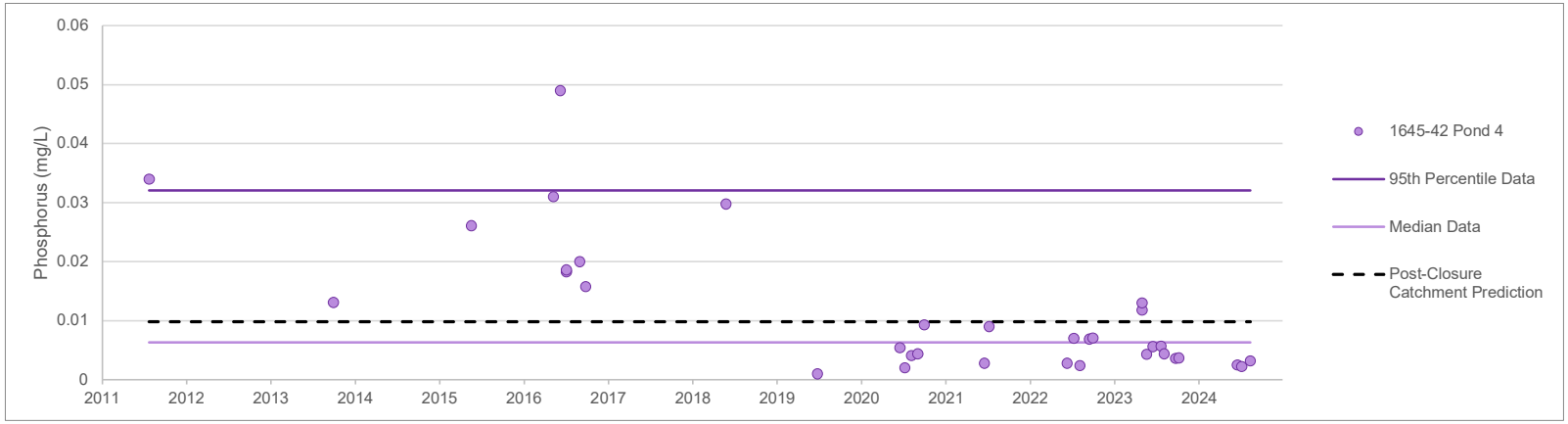
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.0	Wildlife	None
Median	7.3	Human recreational	None
Count	30	AEMP	None

Operational Data Compared to Benchmarks and Predictions



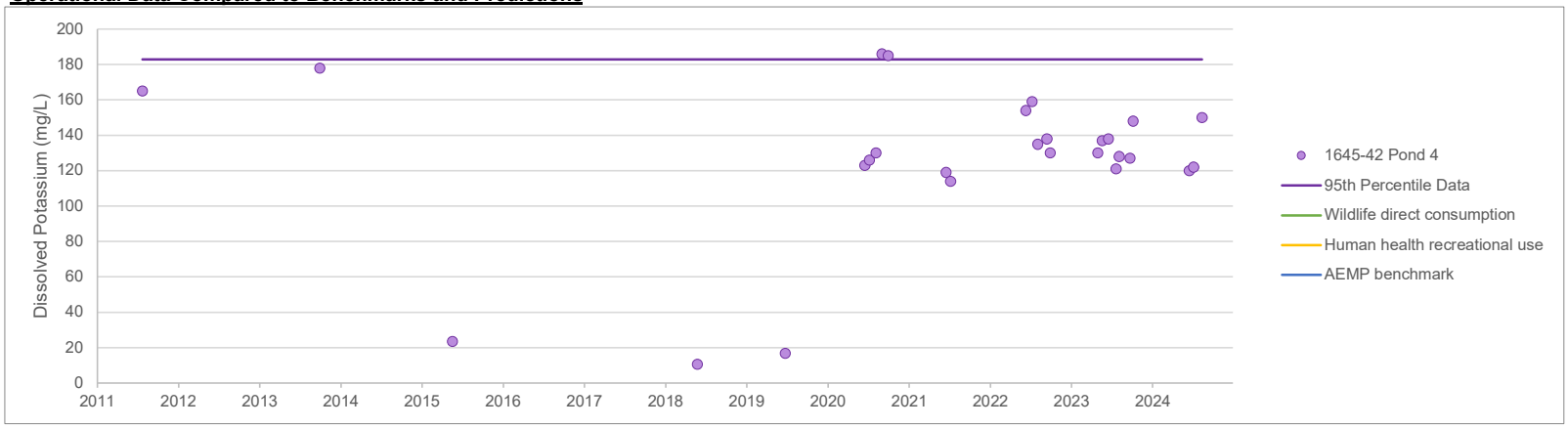


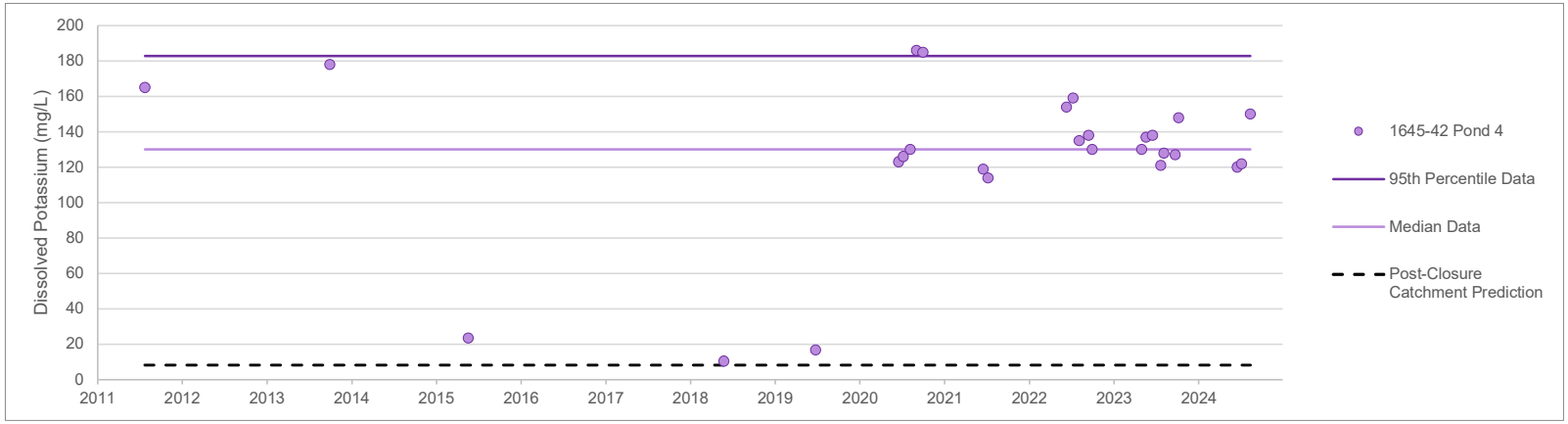
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.032	Wildlife	None
Median	0.006	Human recreational	None
Count	34	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



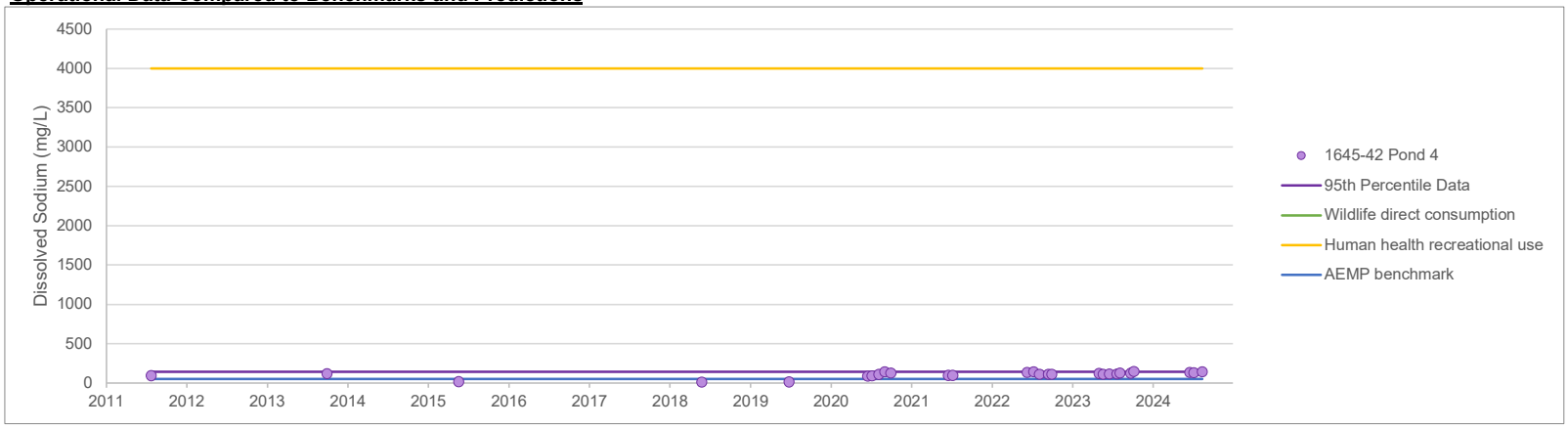


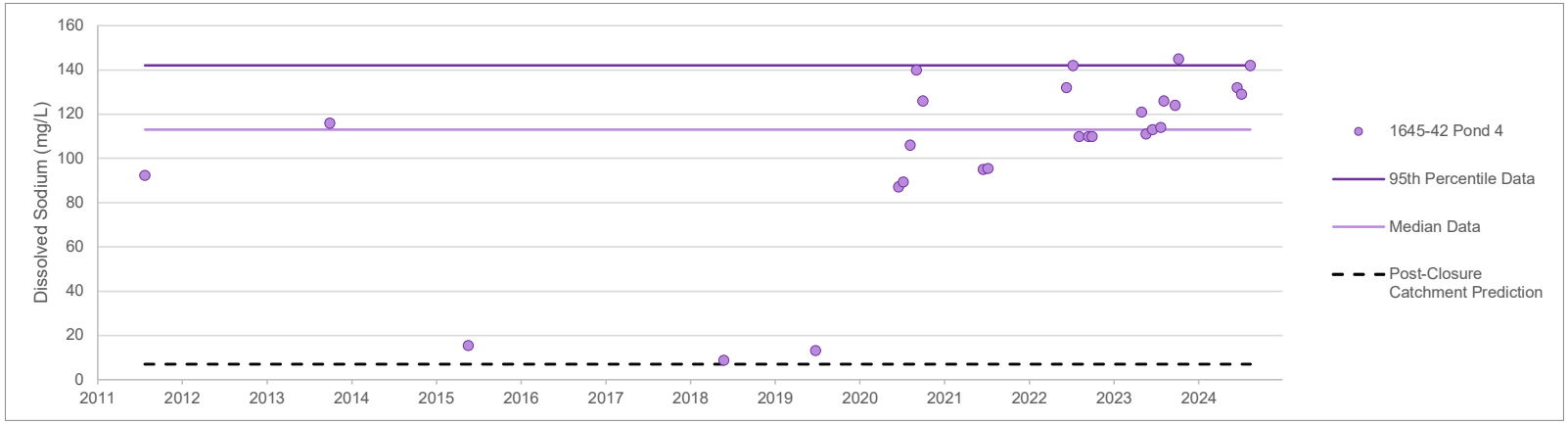
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	182.9	Wildlife	None
Median	130.0	Human recreational	None
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



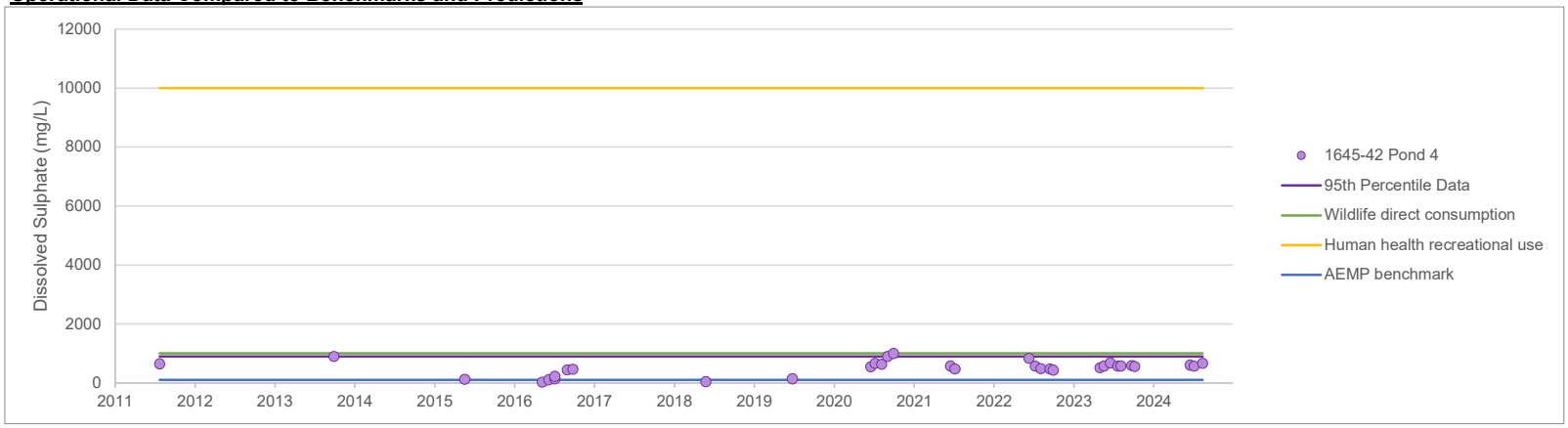


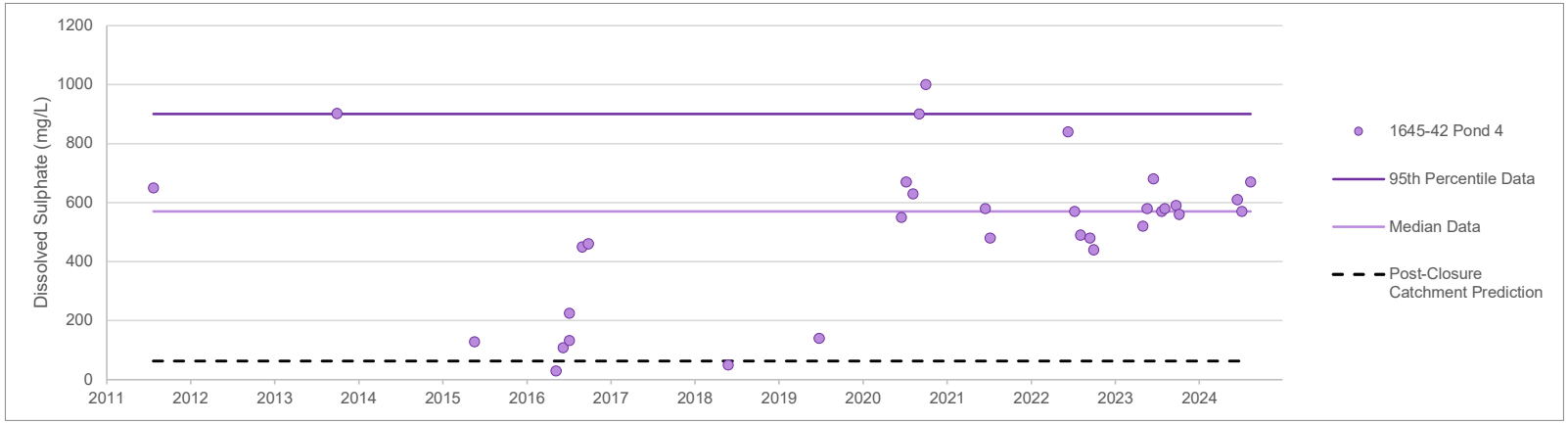
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	142.0	Wildlife	None
Median	113.0	Human recreational	4000
Count	27	AEMP	52

Operational Data Compared to Benchmarks and Predictions



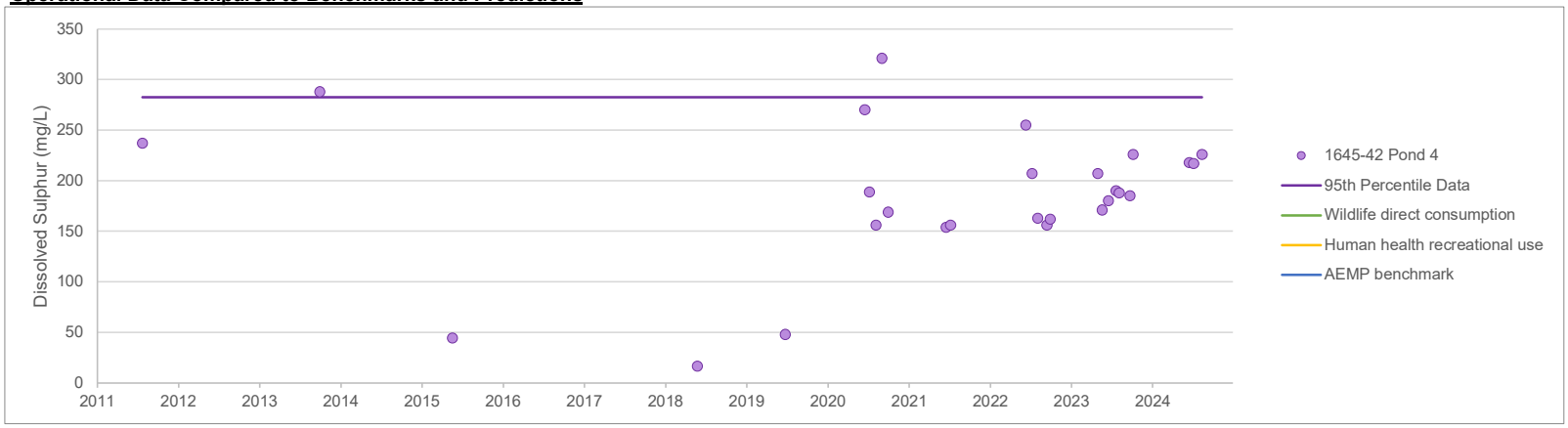


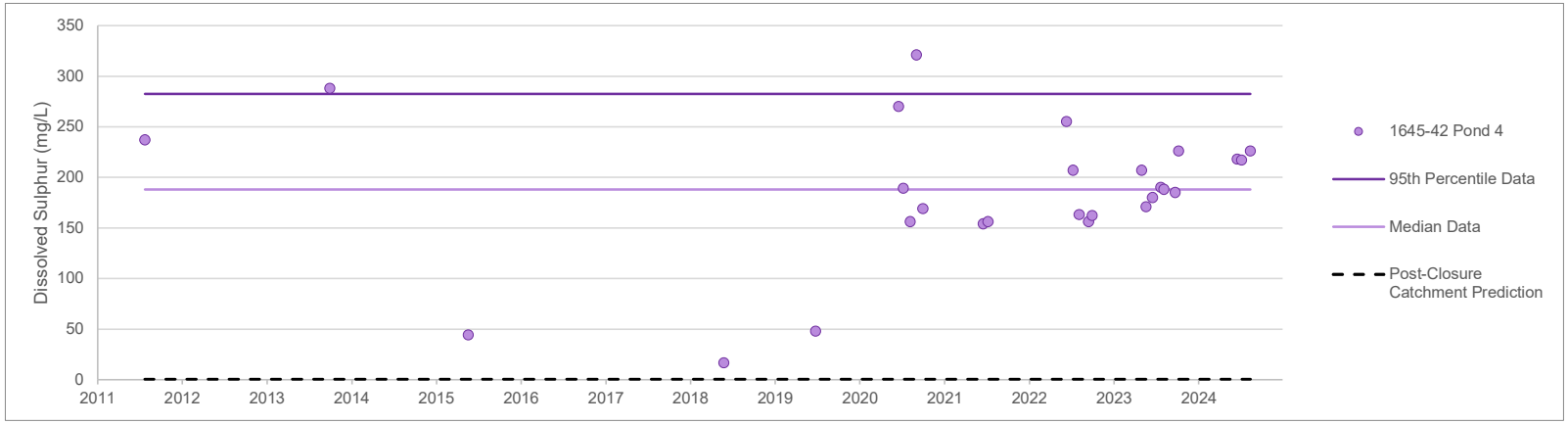
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	901	Wildlife	1000
Median	570	Human recreational	10000
Count	33	AEMP	100

Operational Data Compared to Benchmarks and Predictions



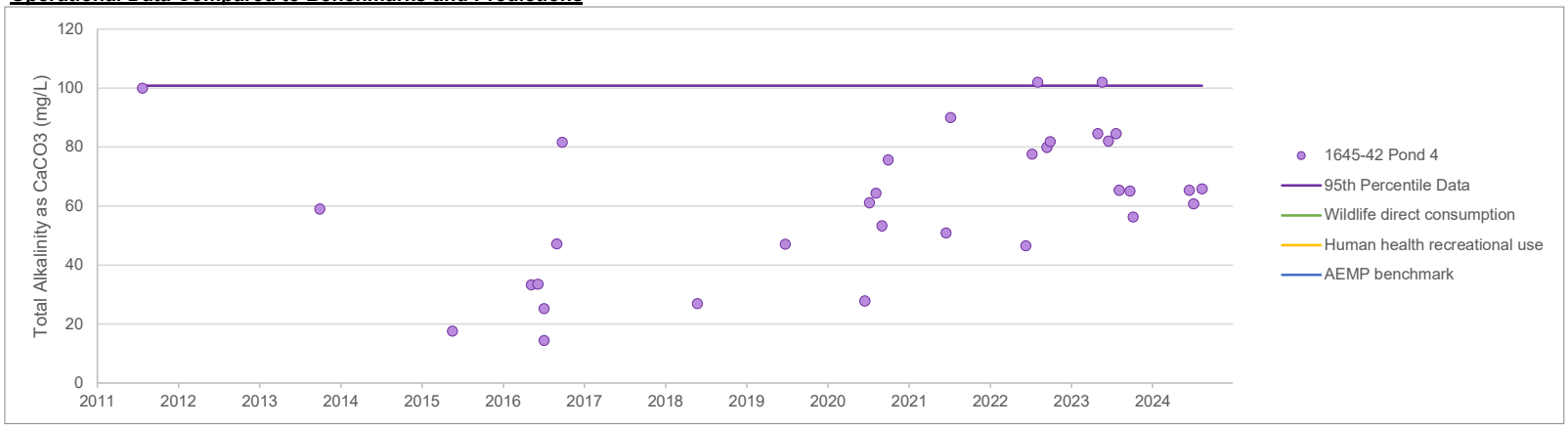


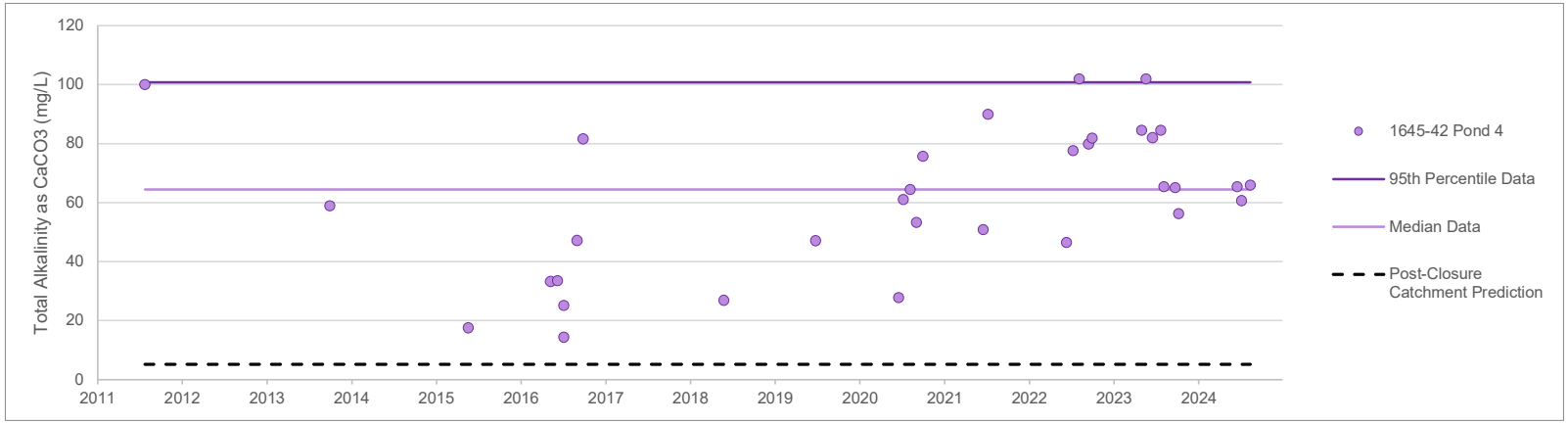
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	282.6	Wildlife	None
Median	188.0	Human recreational	None
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



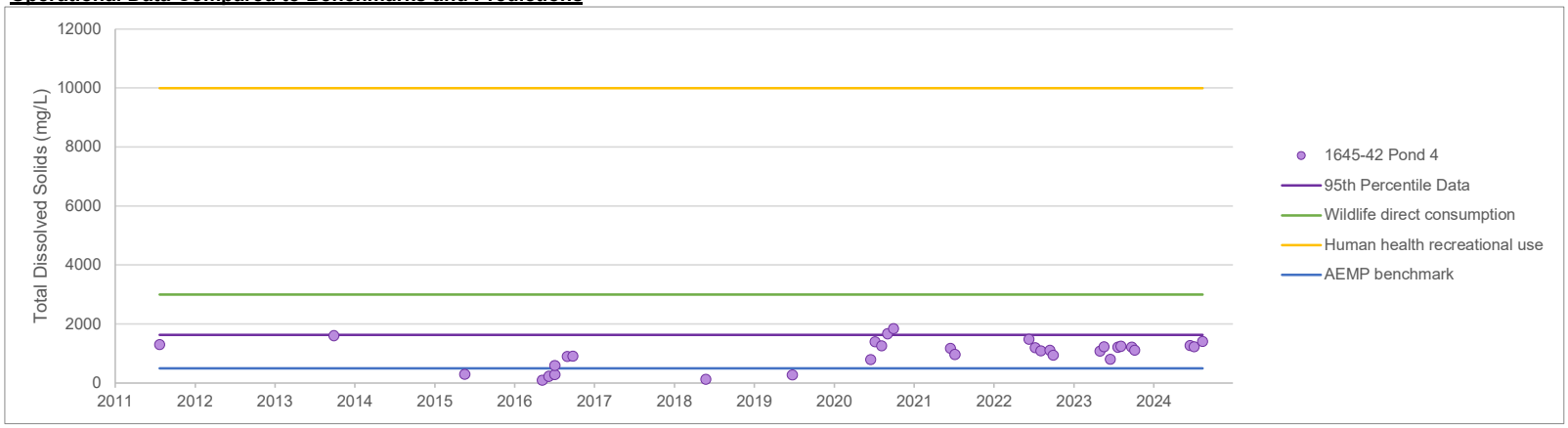


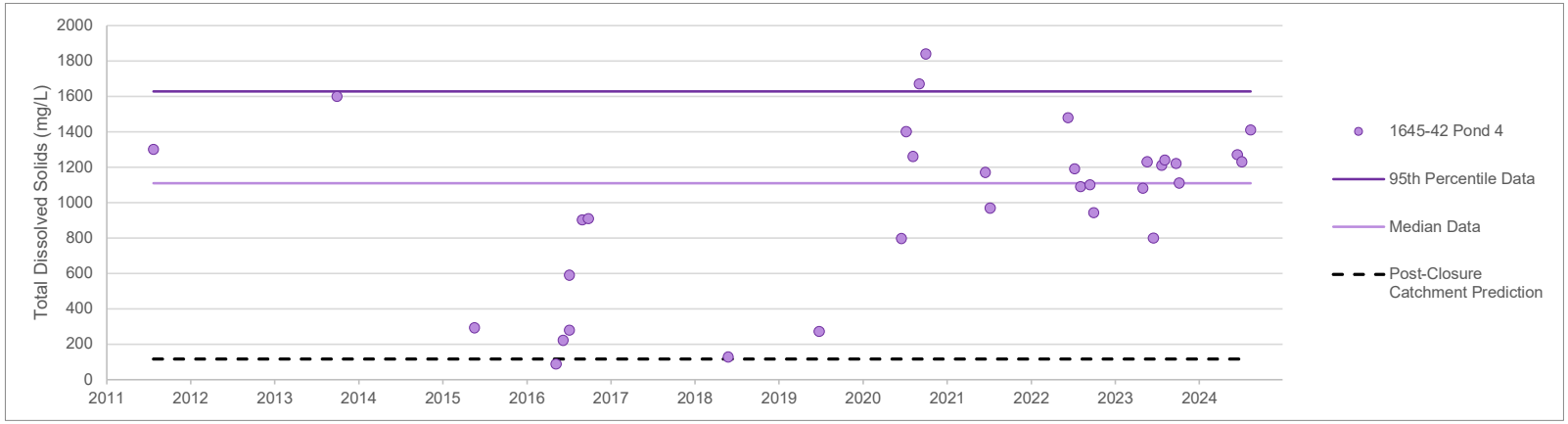
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	100.8	Wildlife	None
Median	64.4	Human recreational	None
Count	33	AEMP	None

Operational Data Compared to Benchmarks and Predictions



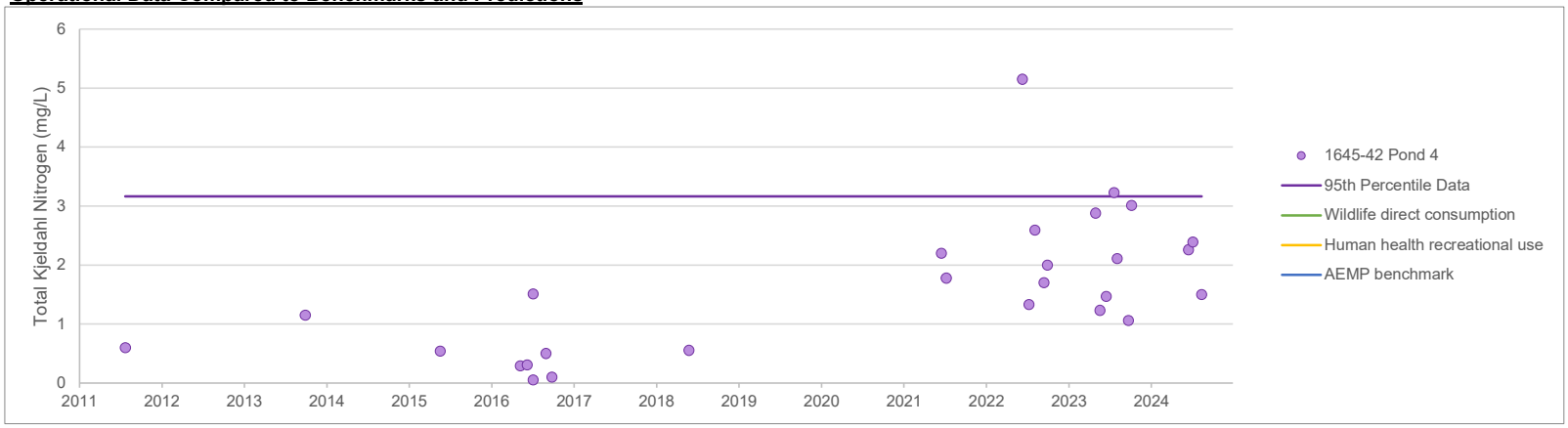


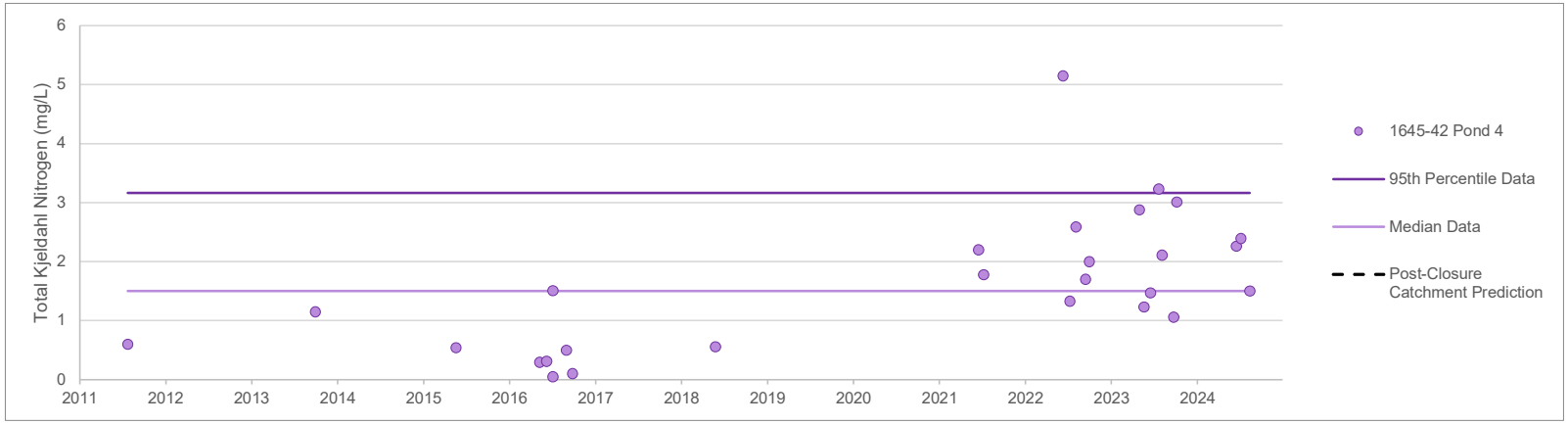
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	1628	Wildlife	3000
Median	1110	Human recreational	10000
Count	33	AEMP	500

Operational Data Compared to Benchmarks and Predictions



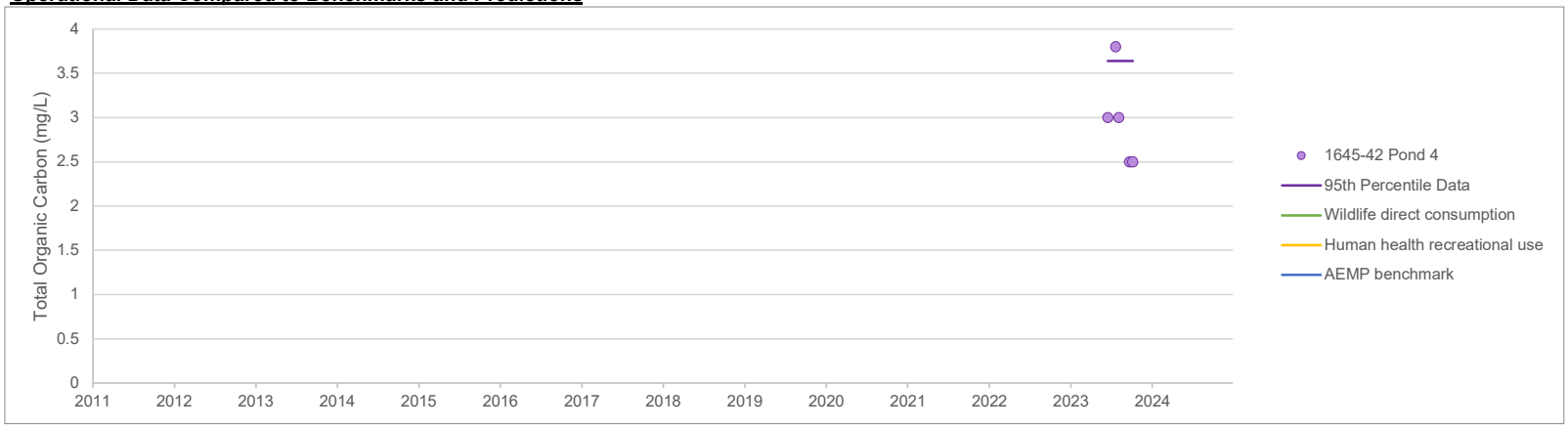


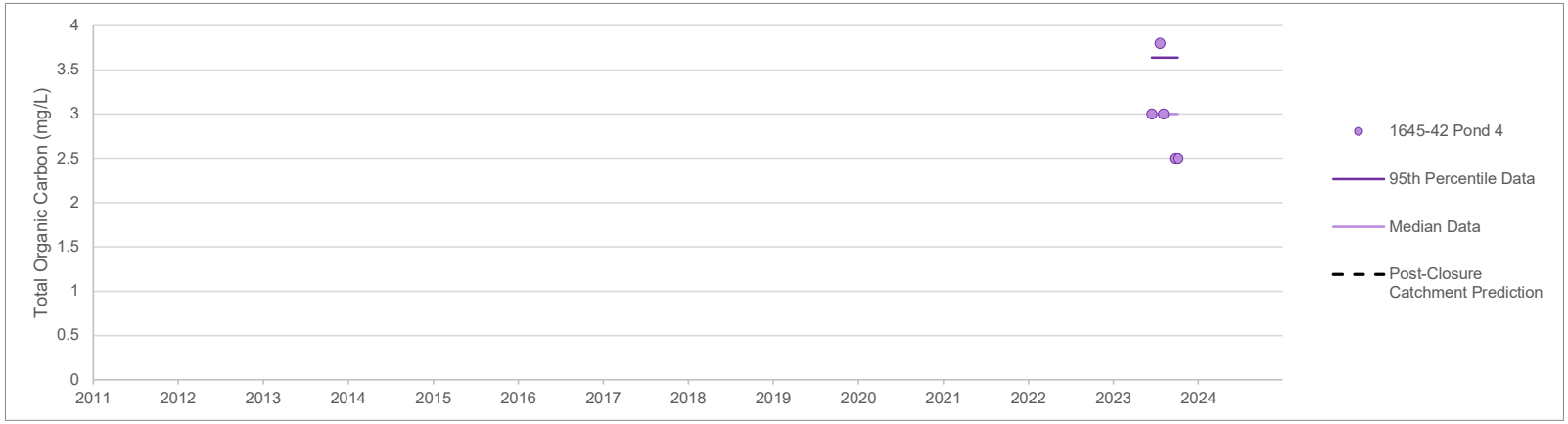
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	3.2	Wildlife	None
Median	1.5	Human recreational	None
Count	27	AEMP	None

Operational Data Compared to Benchmarks and Predictions



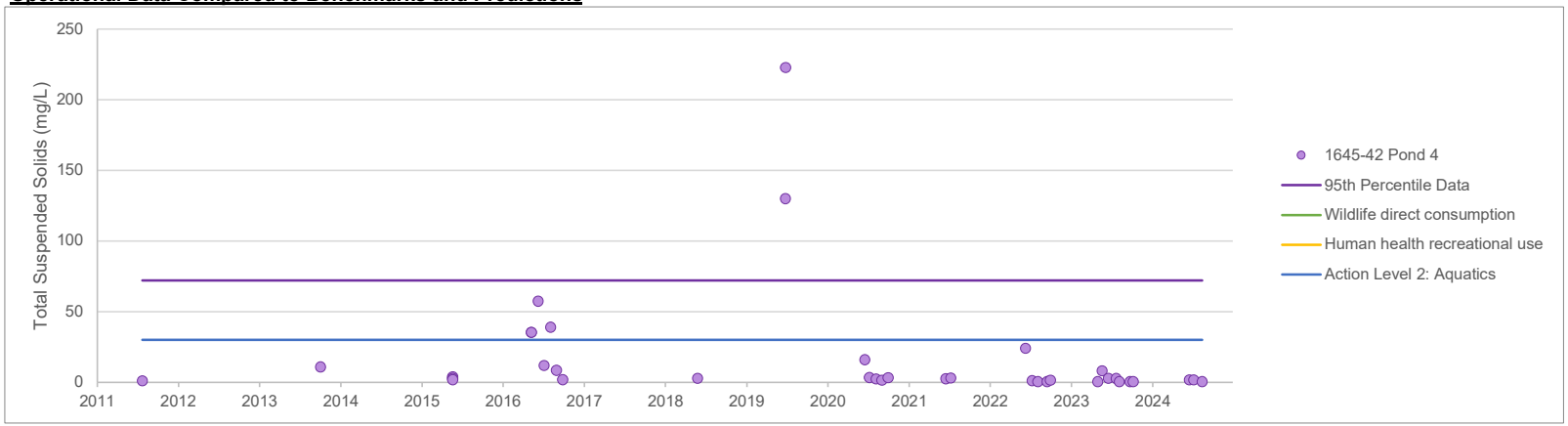


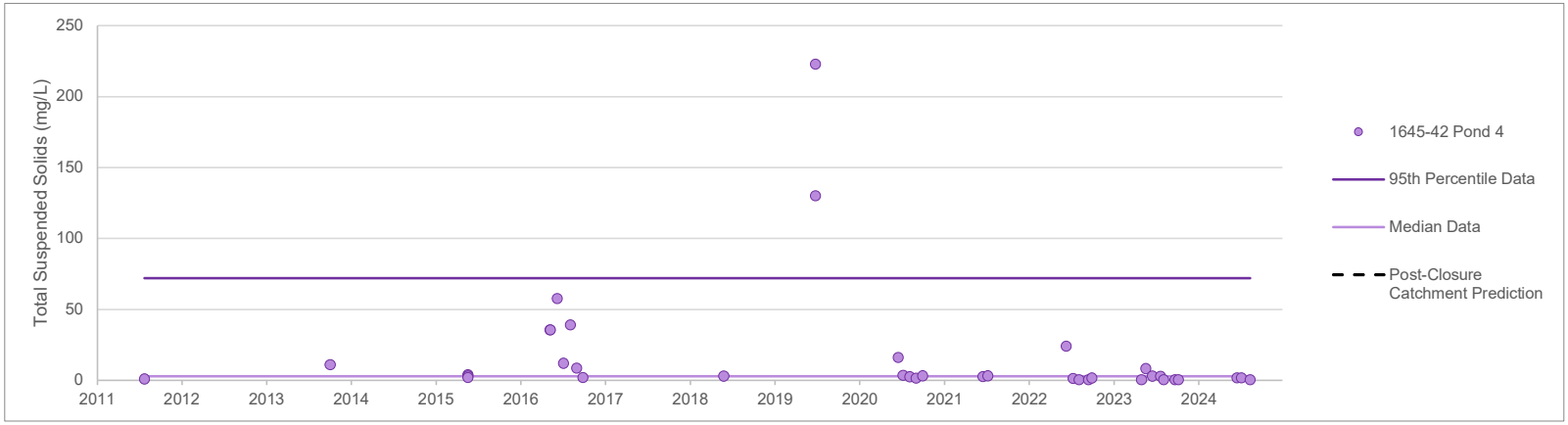
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	3.6	Wildlife	None
Median	3.0	Human recreational	None
Count	5	AEMP	None

Operational Data Compared to Benchmarks and Predictions



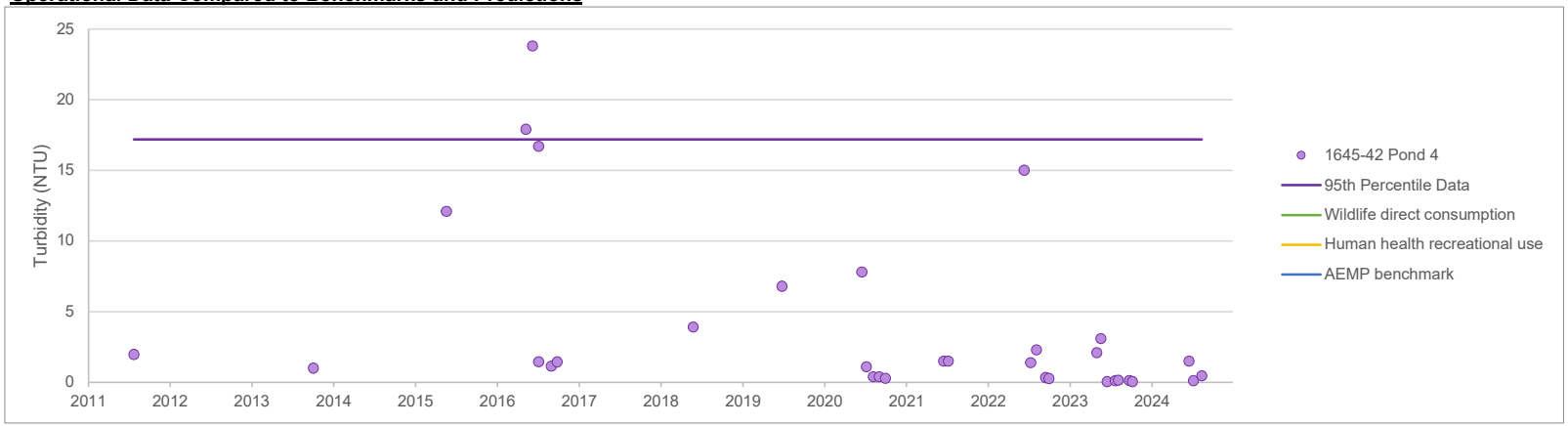


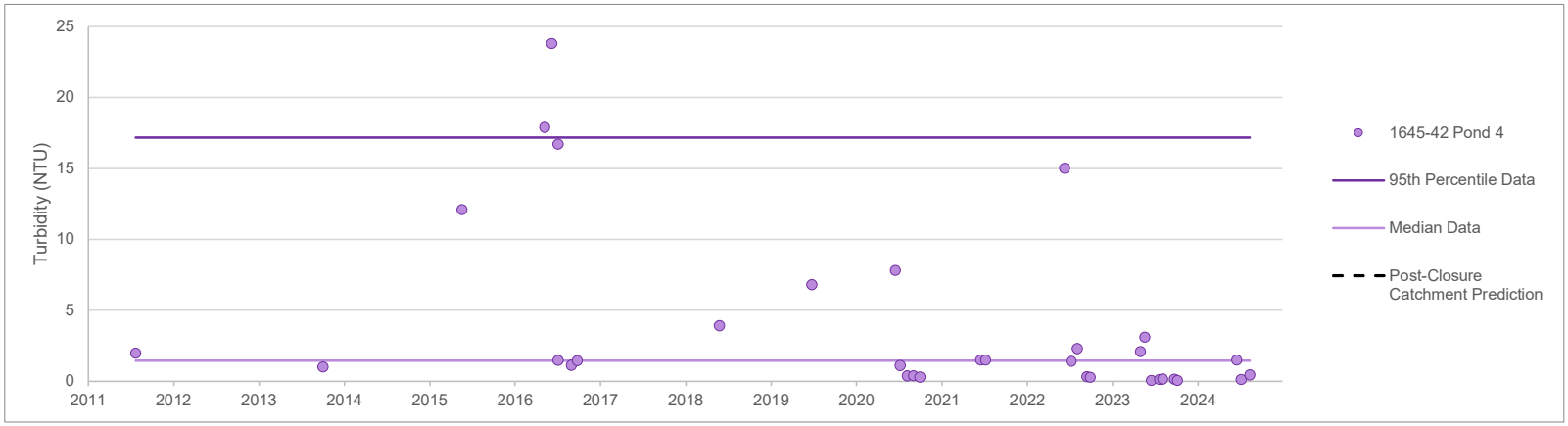
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	72.0	Wildlife	None
Median	2.9	Human recreational	None
Count	37	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



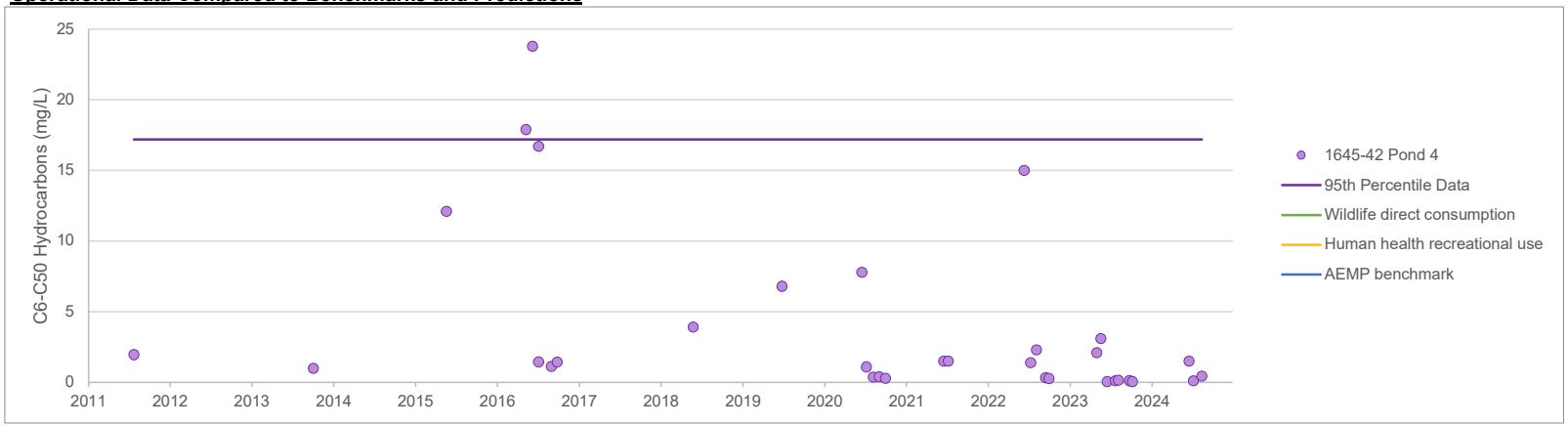


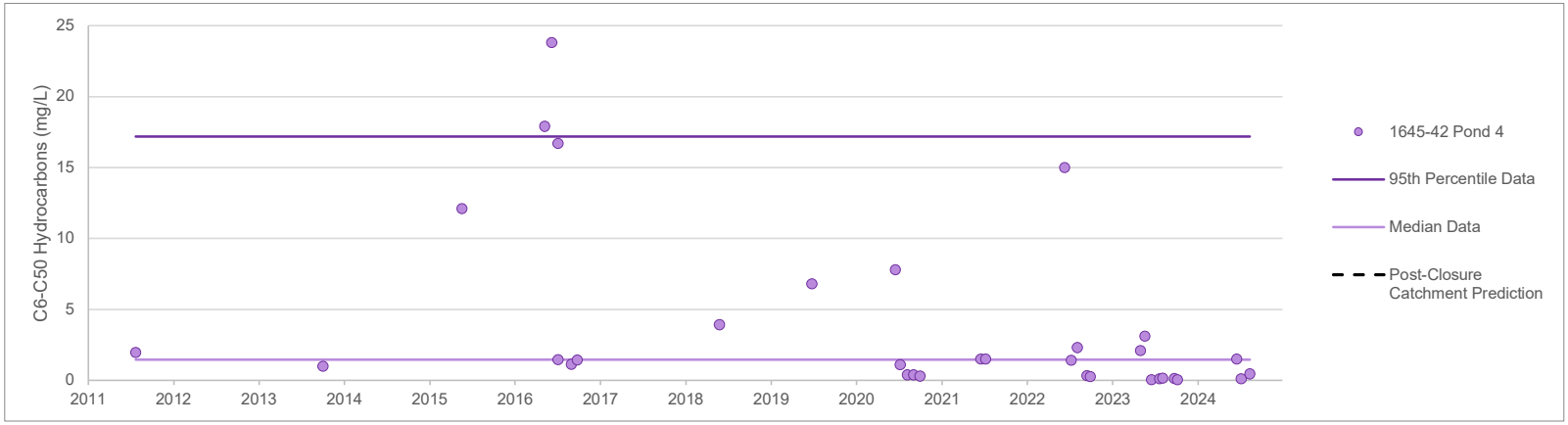
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	17.2	Wildlife	None
Median	1.4	Human recreational	None
Count	33	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	6	AEMP	None

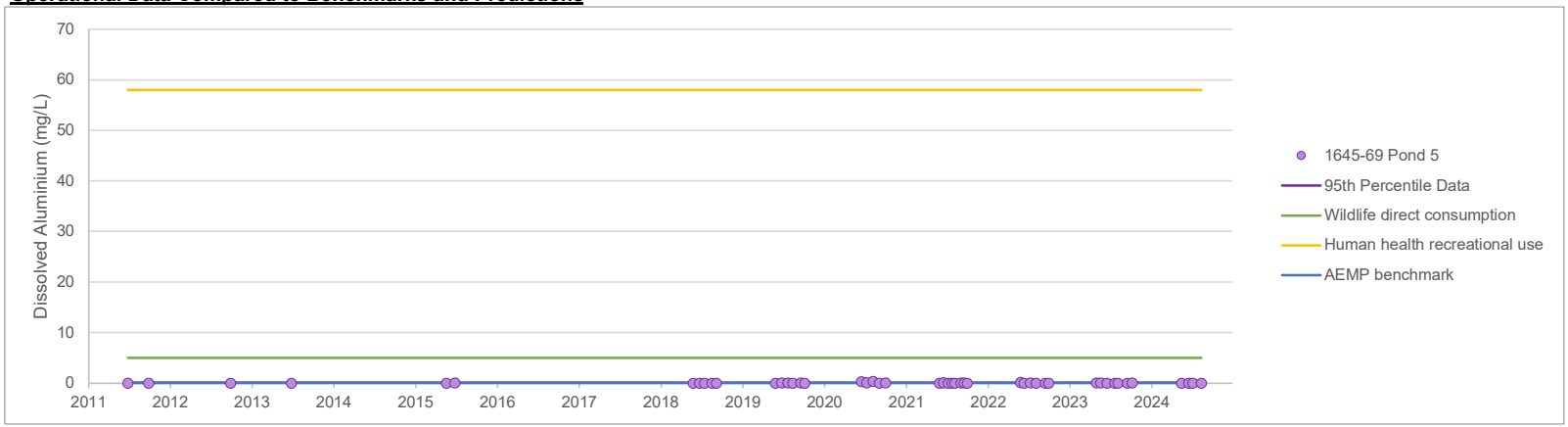
Pond 5

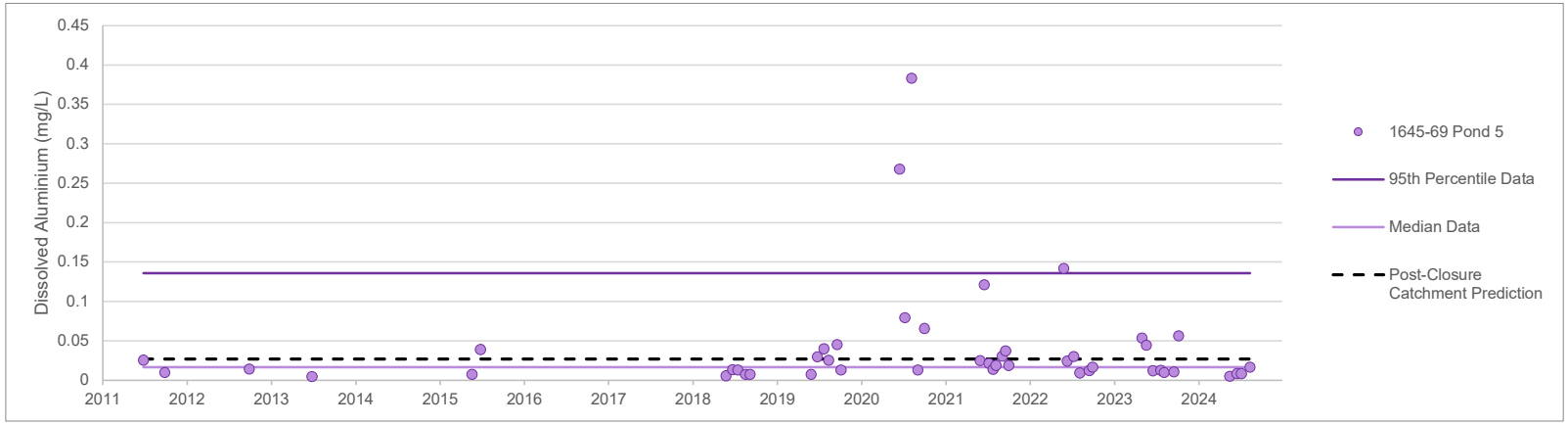
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



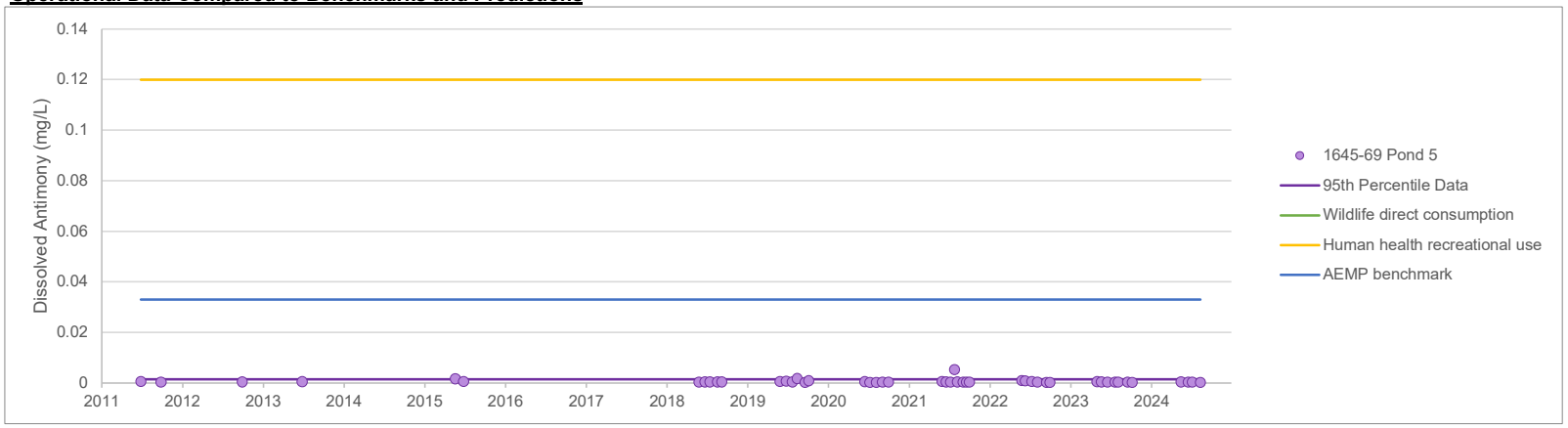


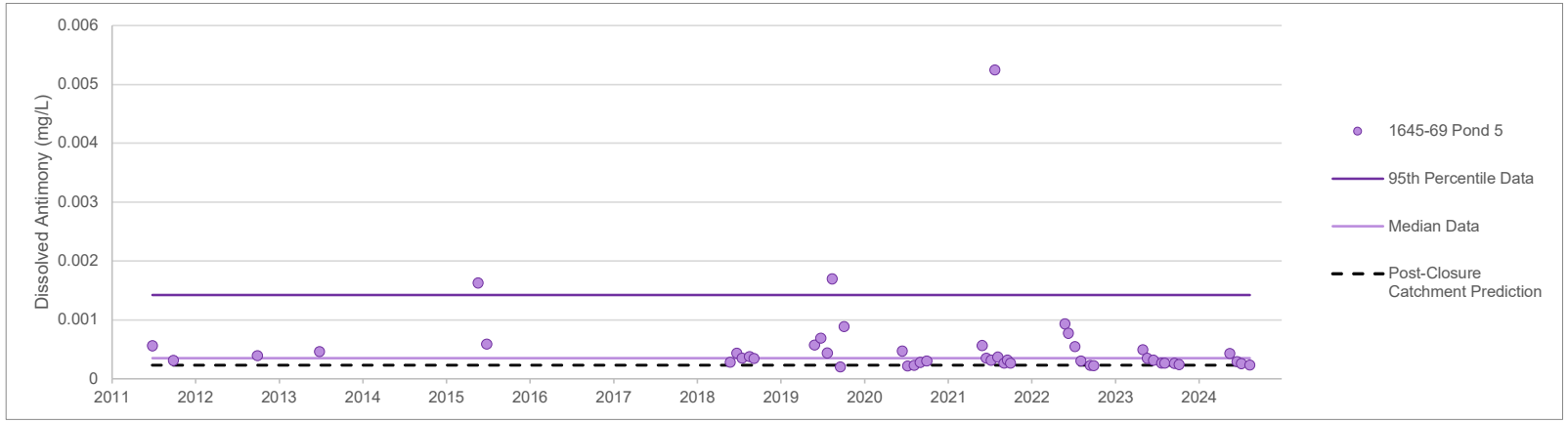
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.136	Wildlife	5.0
Median	0.017	Human recreational	58.0
Count	47	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



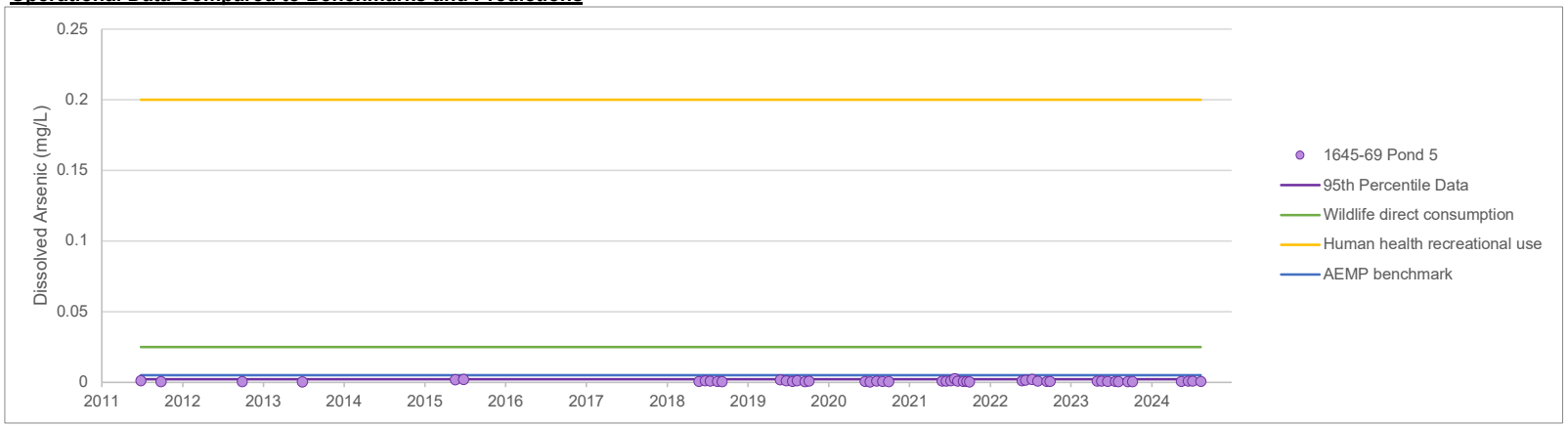


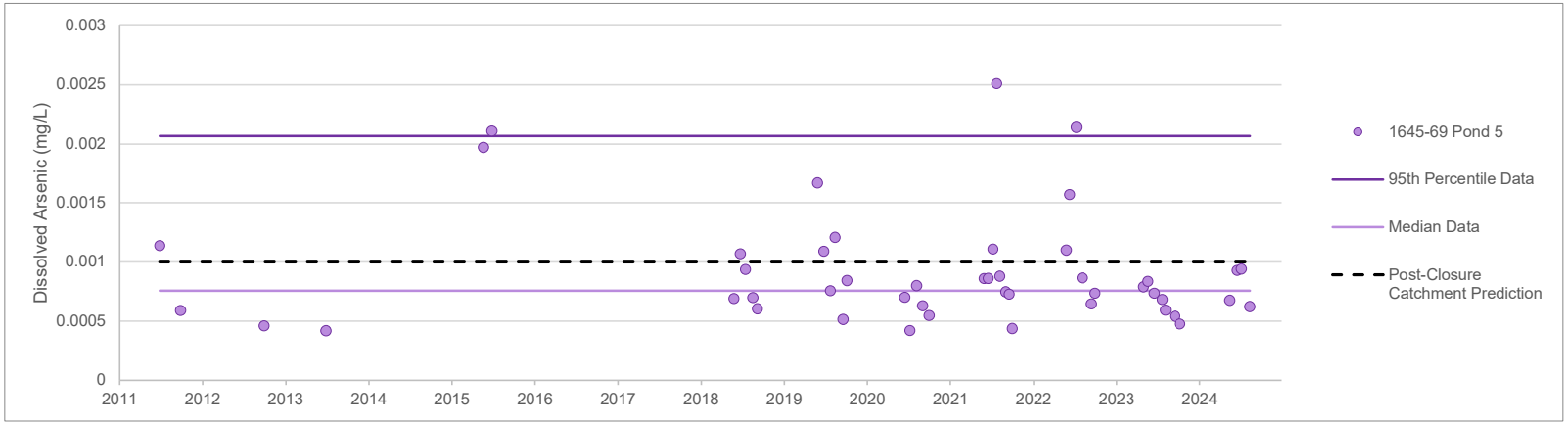
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00142	Wildlife	None
Median	0.00035	Human recreational	0.12
Count	47	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



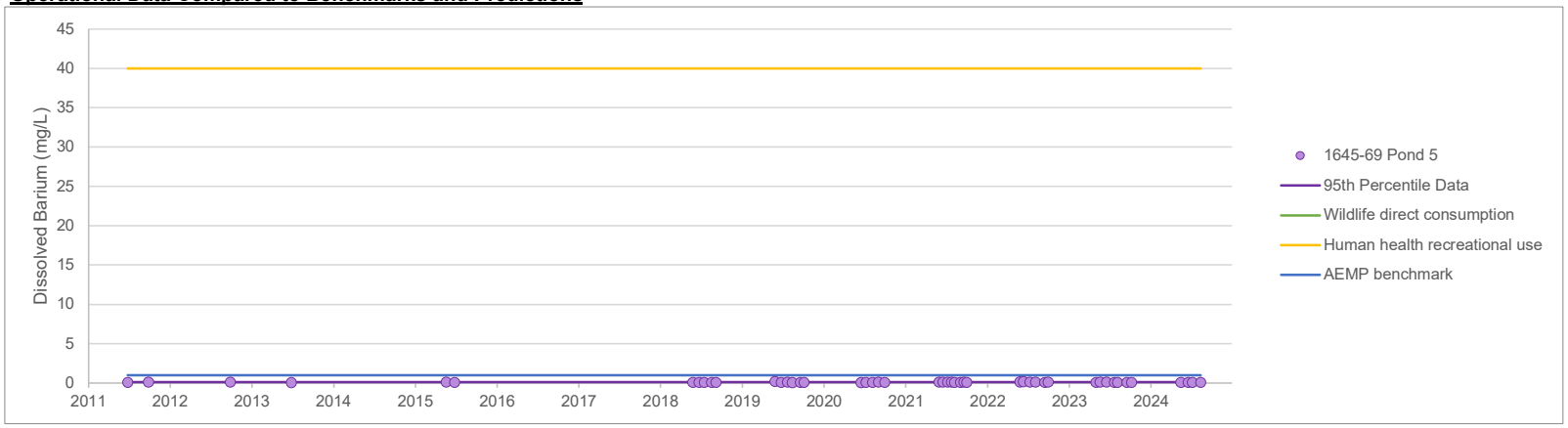


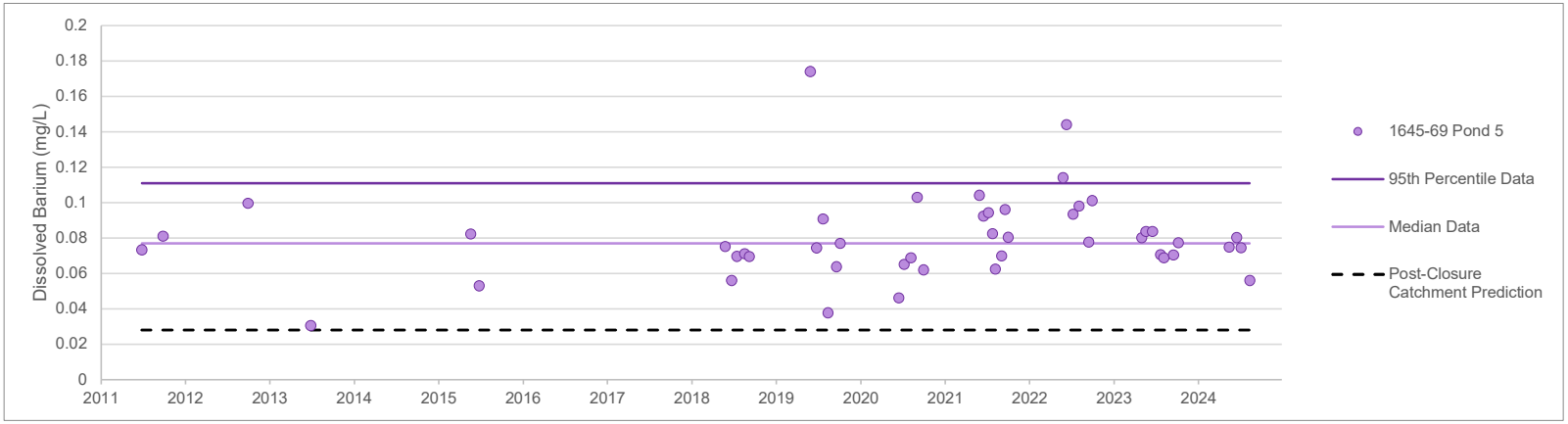
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0021	Wildlife	0.03
Median	0.0008	Human recreational	0.20
Count	47	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



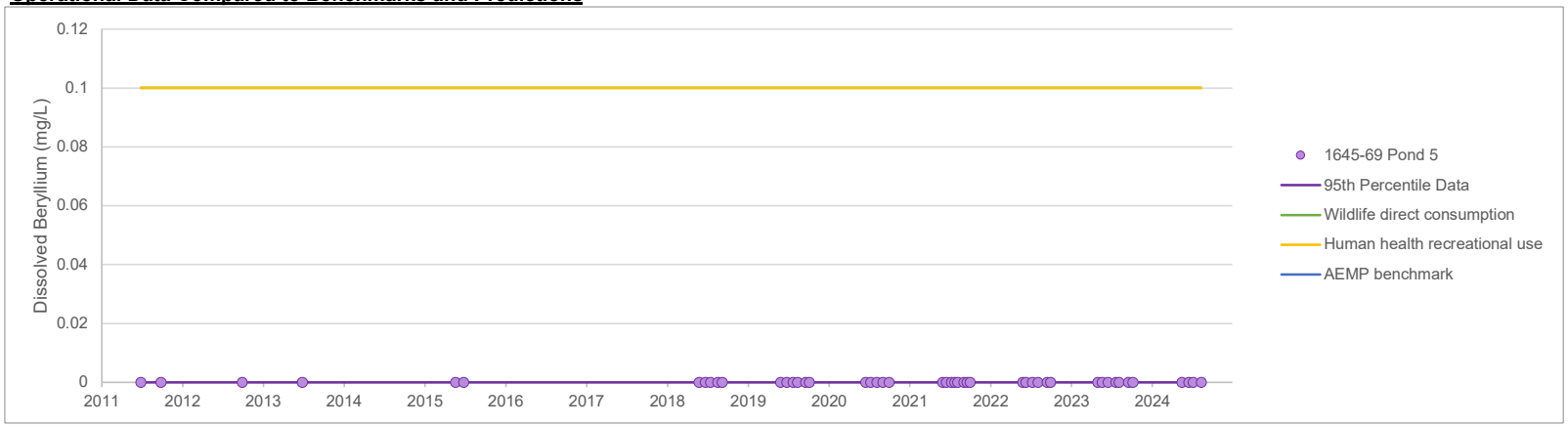


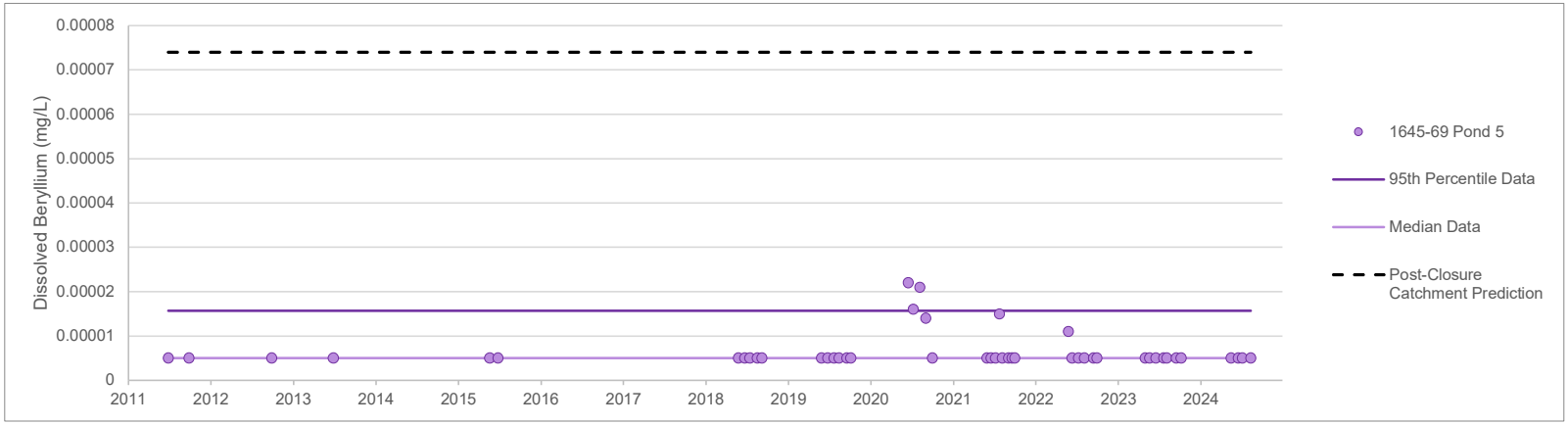
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.111	Wildlife	None
Median	0.077	Human recreational	40.0
Count	47	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



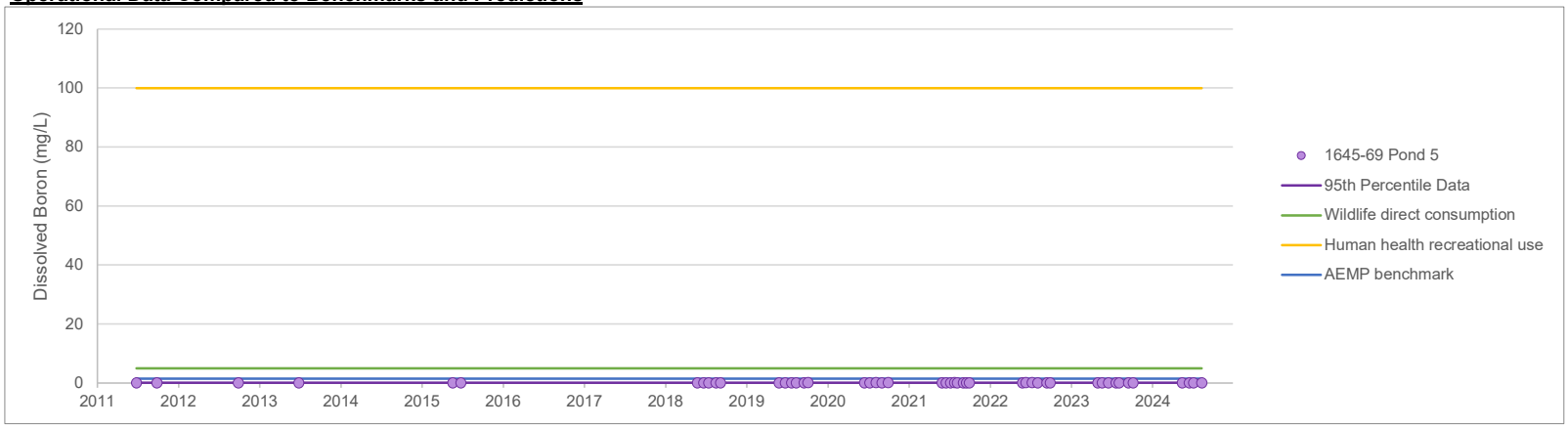


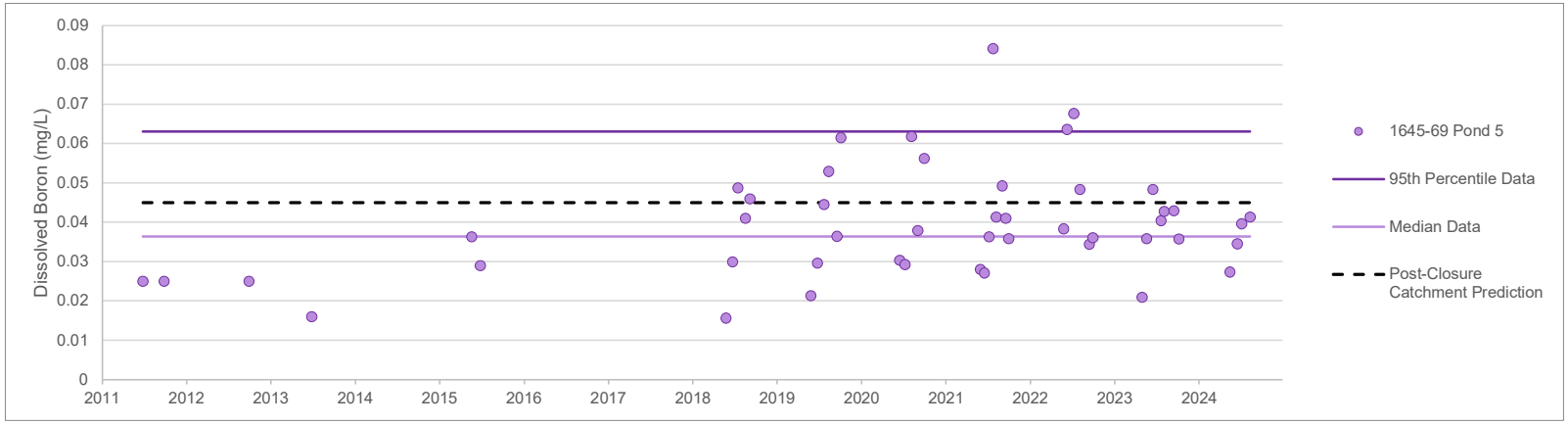
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000016	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



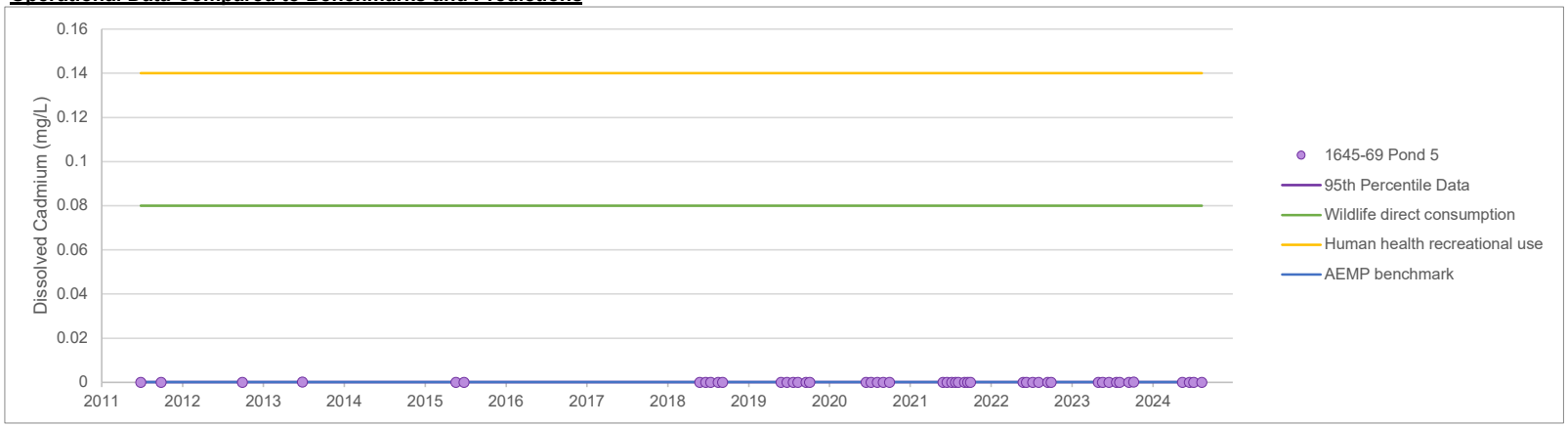


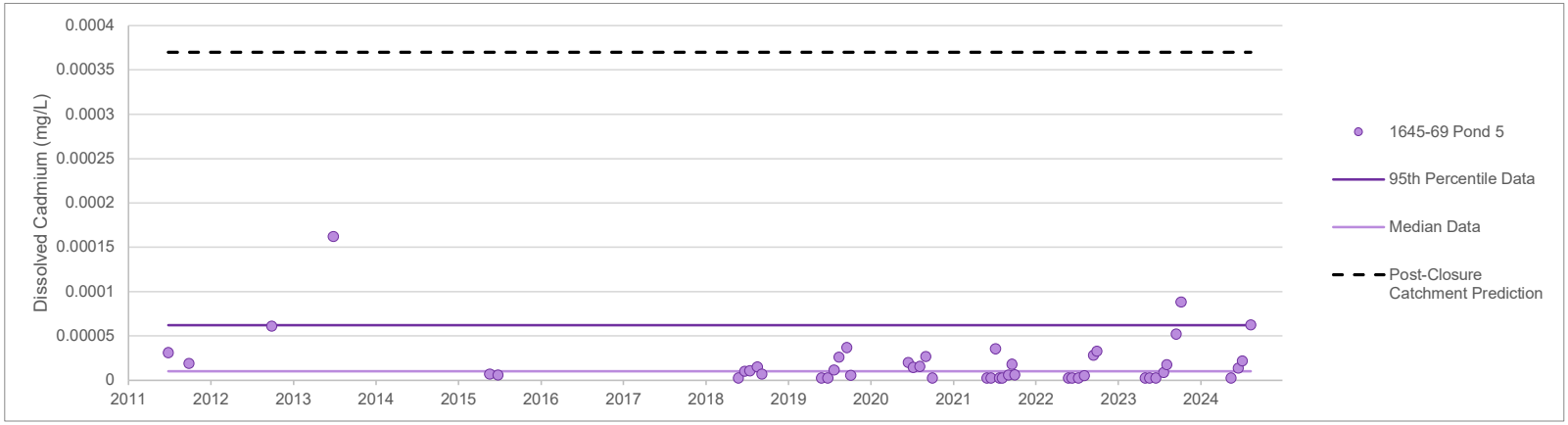
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.063	Wildlife	5.0
Median	0.036	Human recreational	100.0
Count	47	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



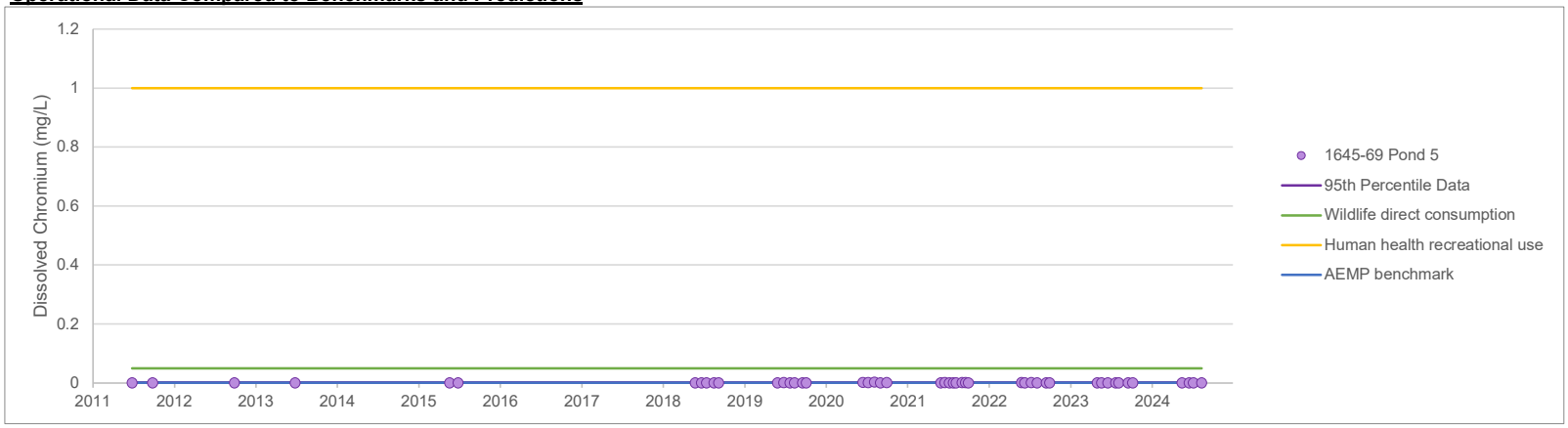


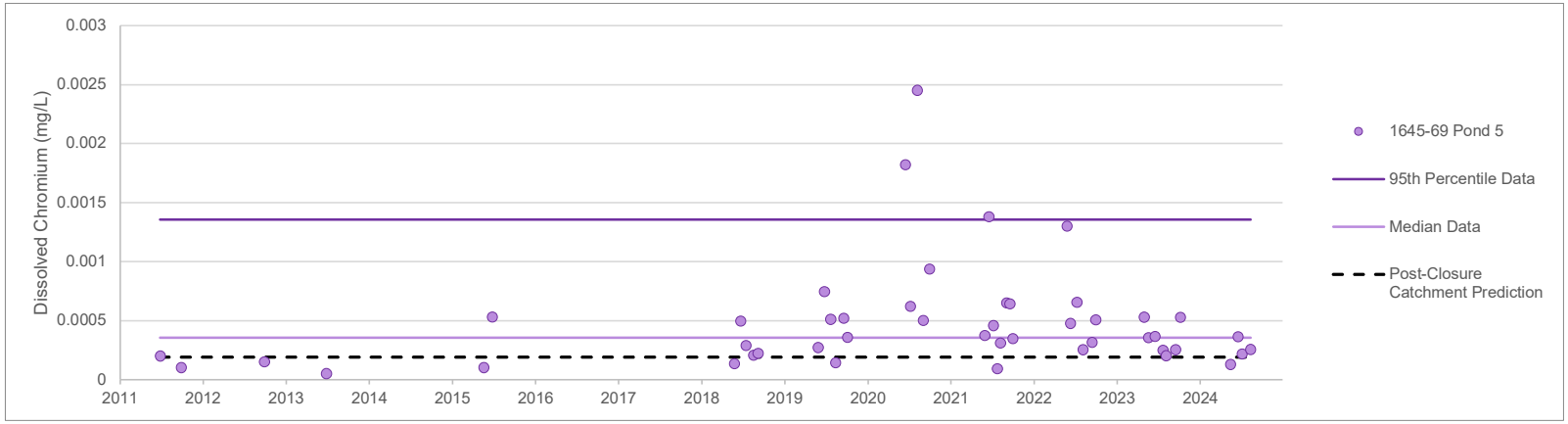
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00006	Wildlife	0.08
Median	0.00001	Human recreational	0.14
Count	47	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



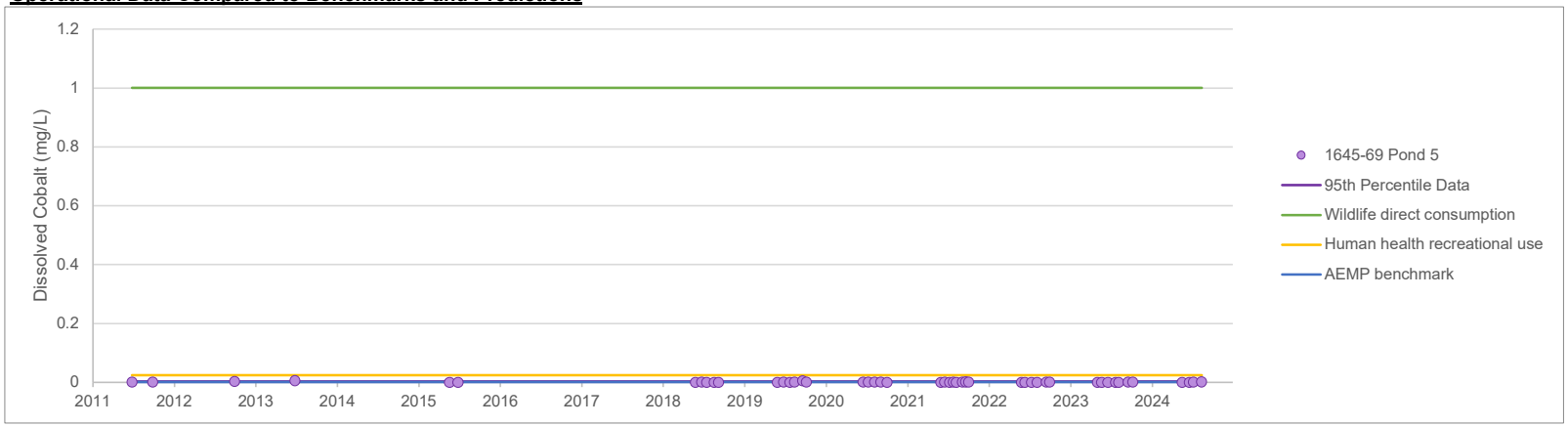


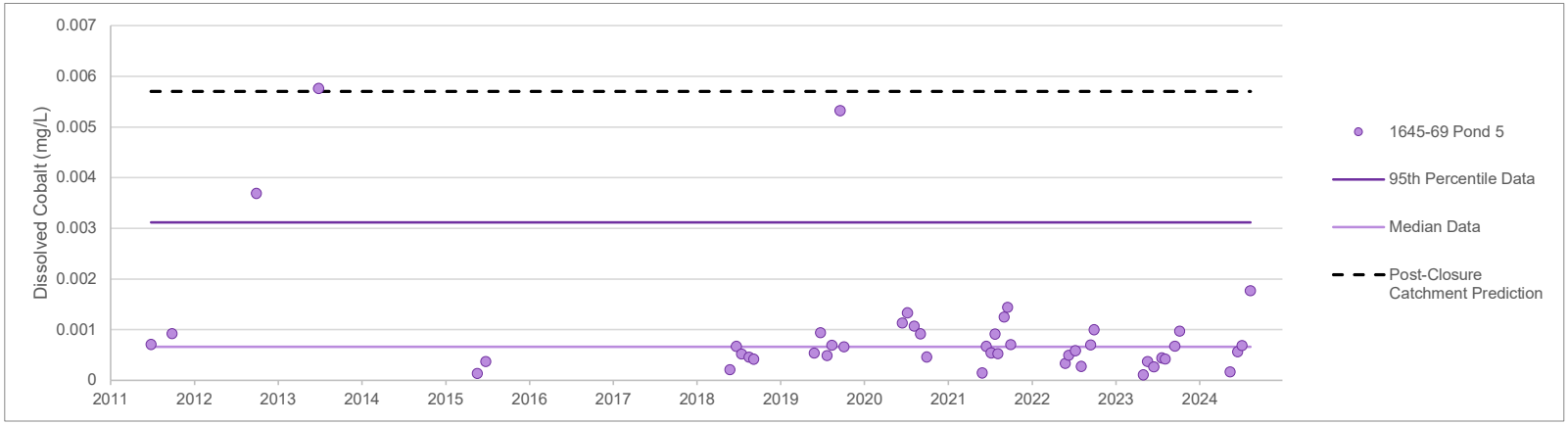
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00136	Wildlife	0.05
Median	0.00036	Human recreational	1.0
Count	47	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



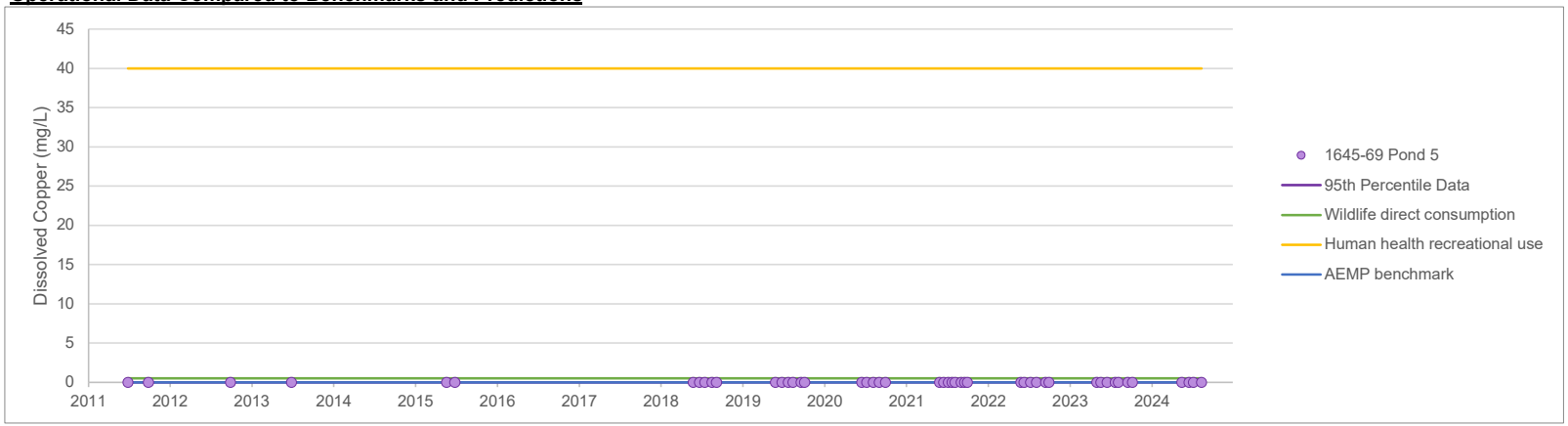


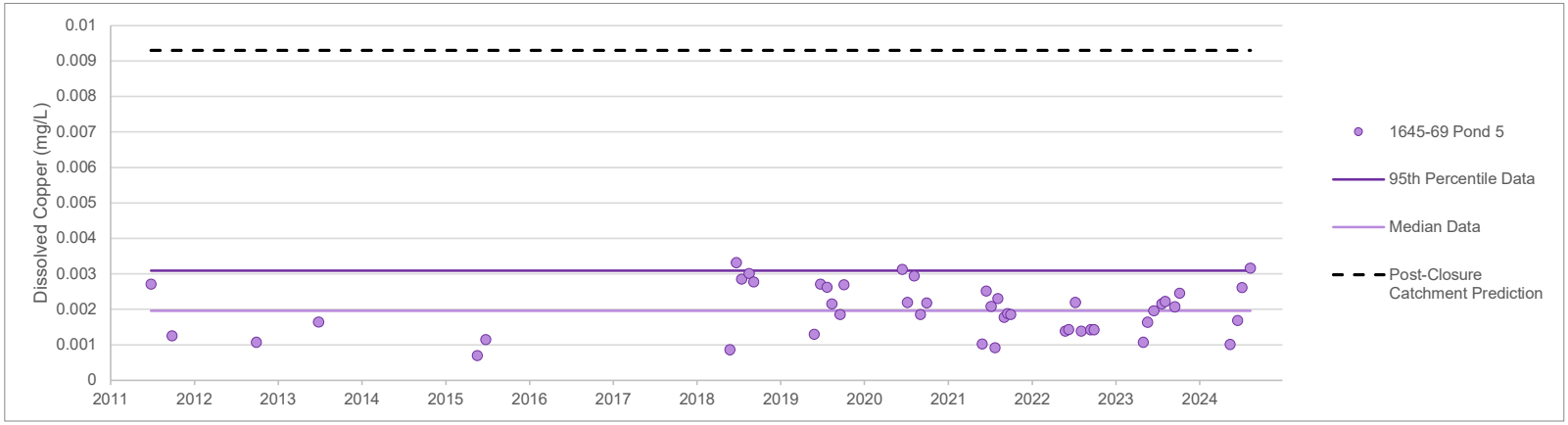
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0031	Wildlife	1.0
Median	0.0007	Human recreational	0.02
Count	47	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



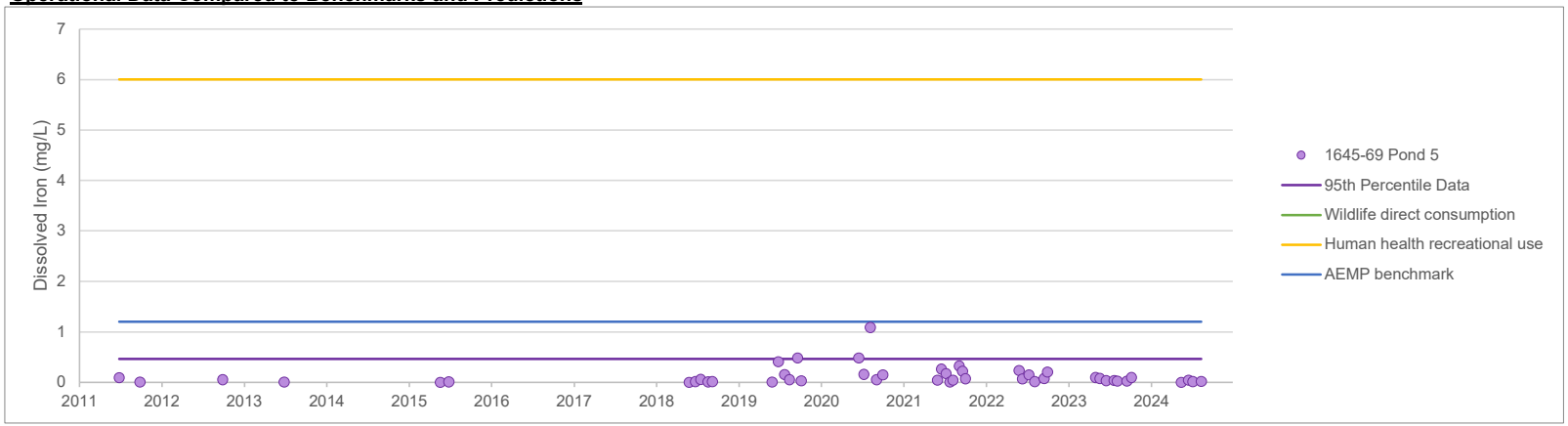


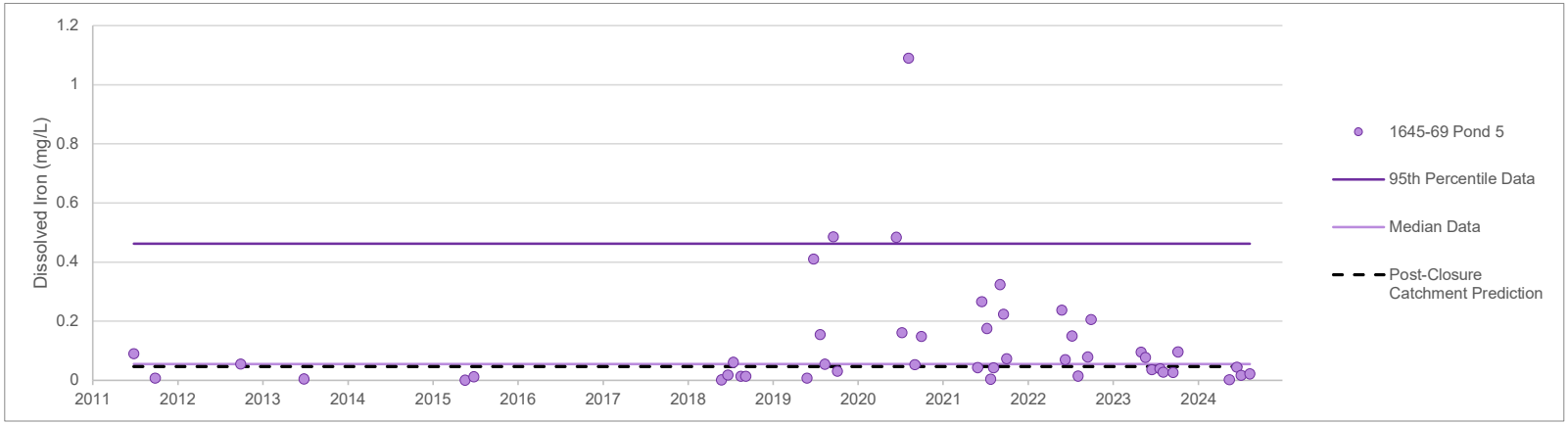
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0031	Wildlife	0.5
Median	0.0020	Human recreational	40.0
Count	47	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



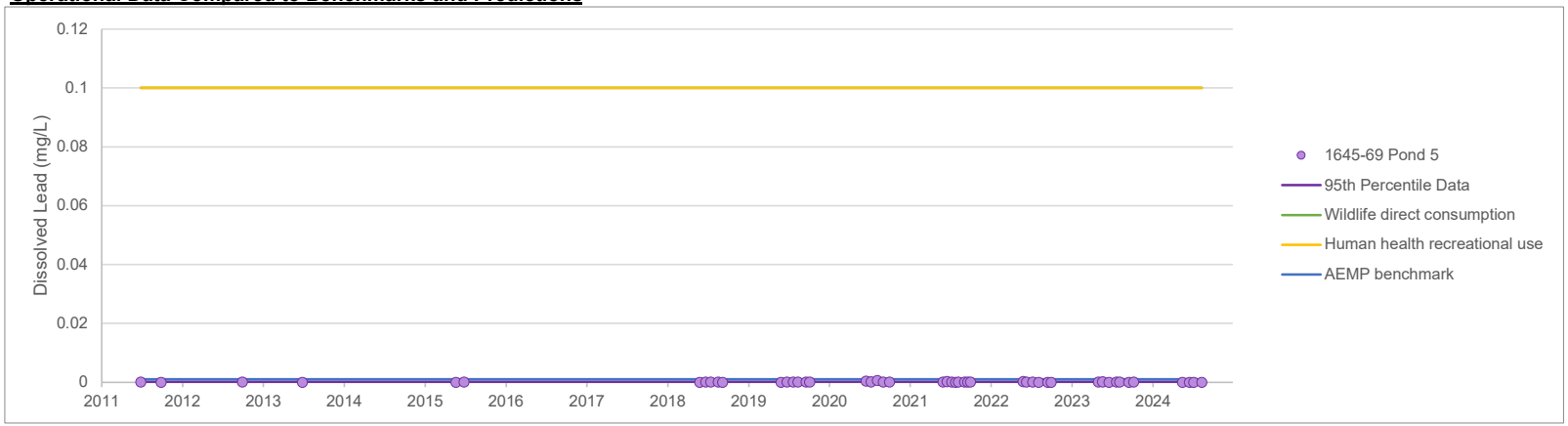


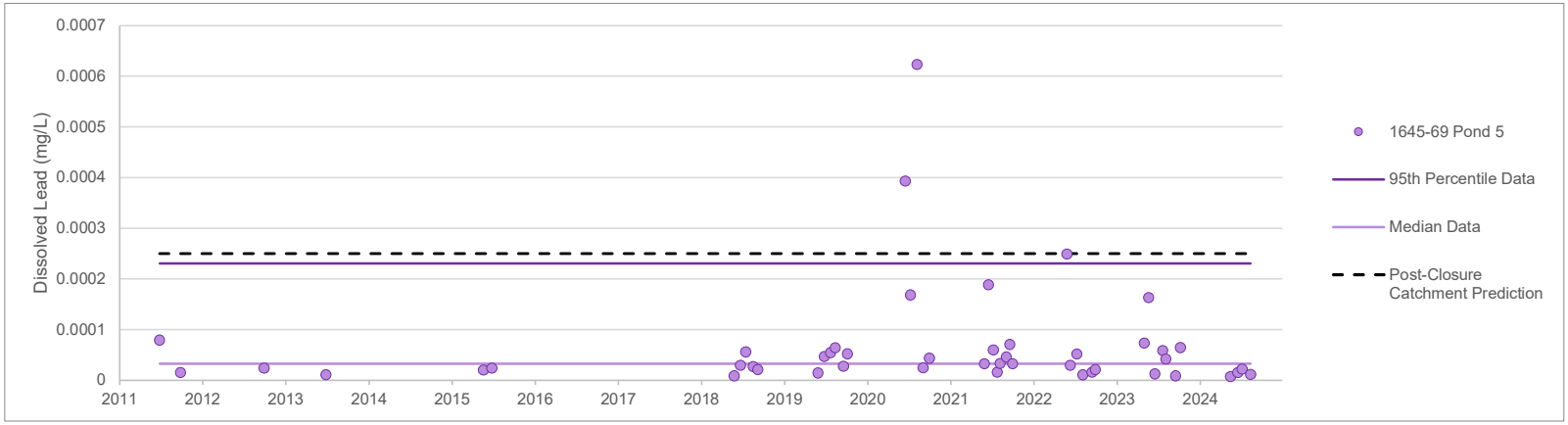
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.46	Wildlife	None
Median	0.05	Human recreational	6.0
Count	47	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



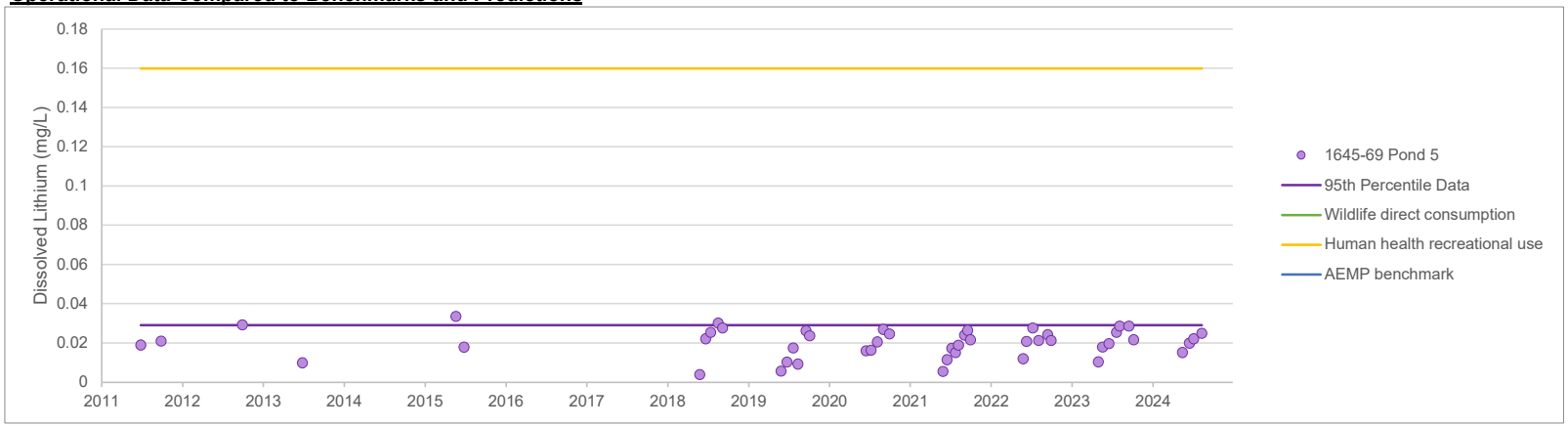


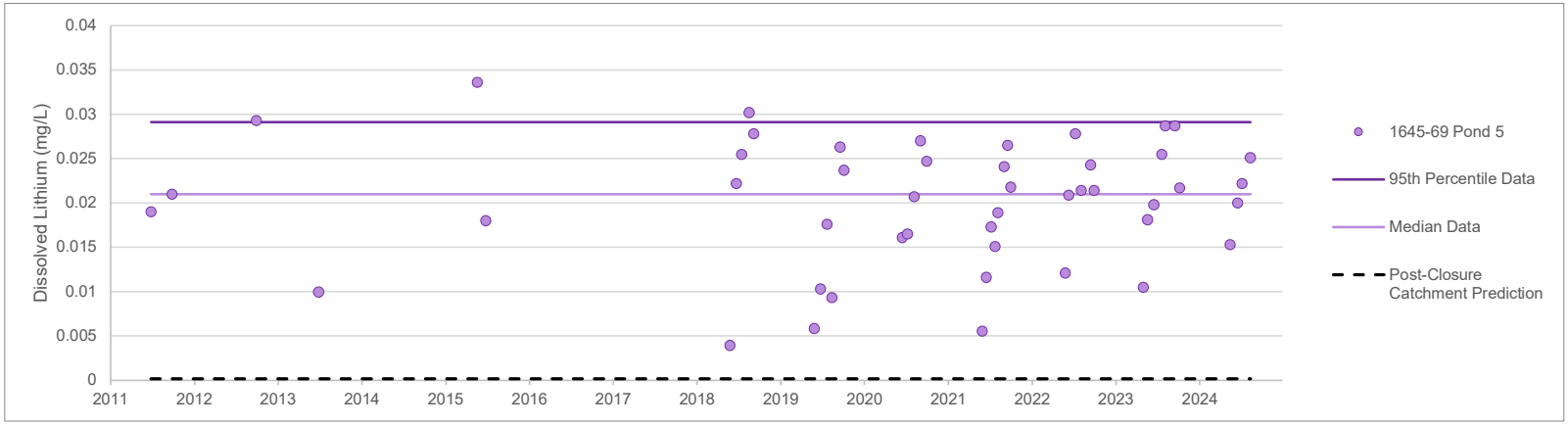
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00023	Wildlife	0.10
Median	0.00003	Human recreational	0.10
Count	47	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



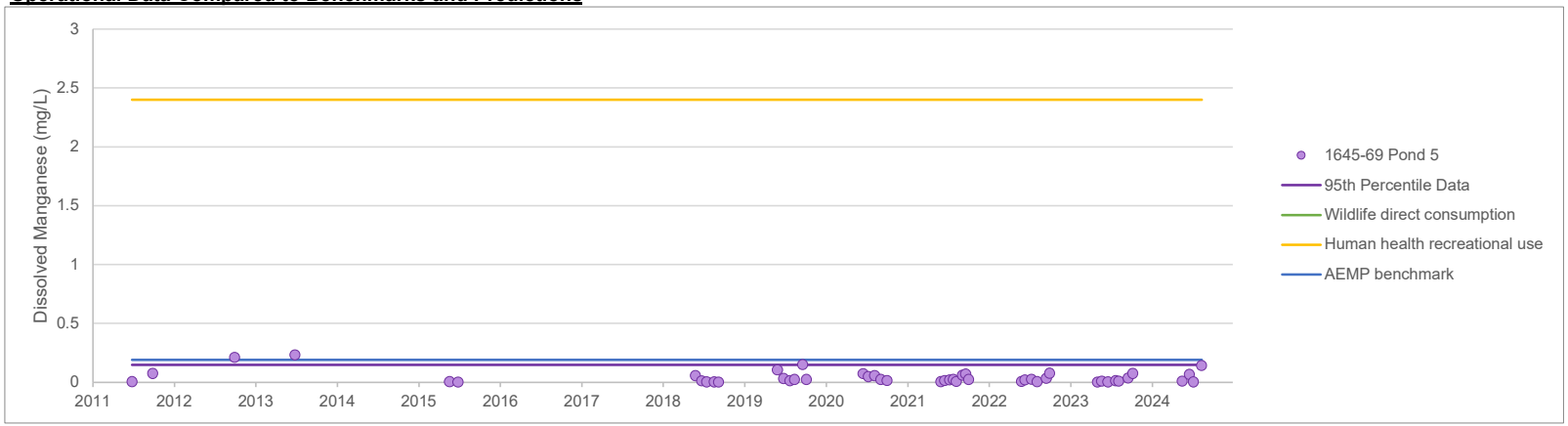


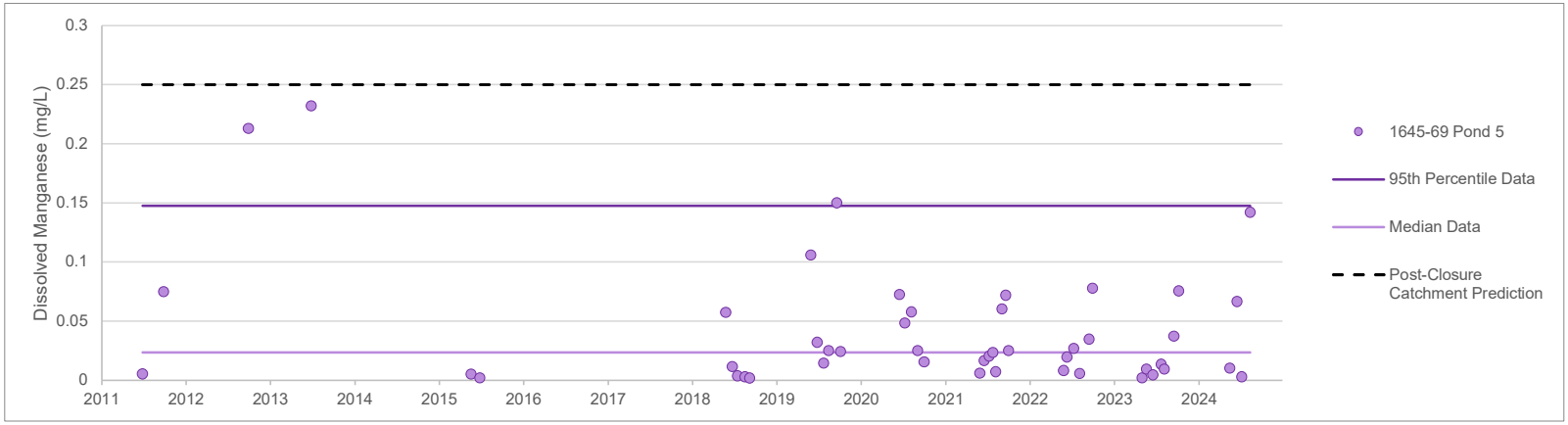
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.029	Wildlife	None
Median	0.021	Human recreational	0.16
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



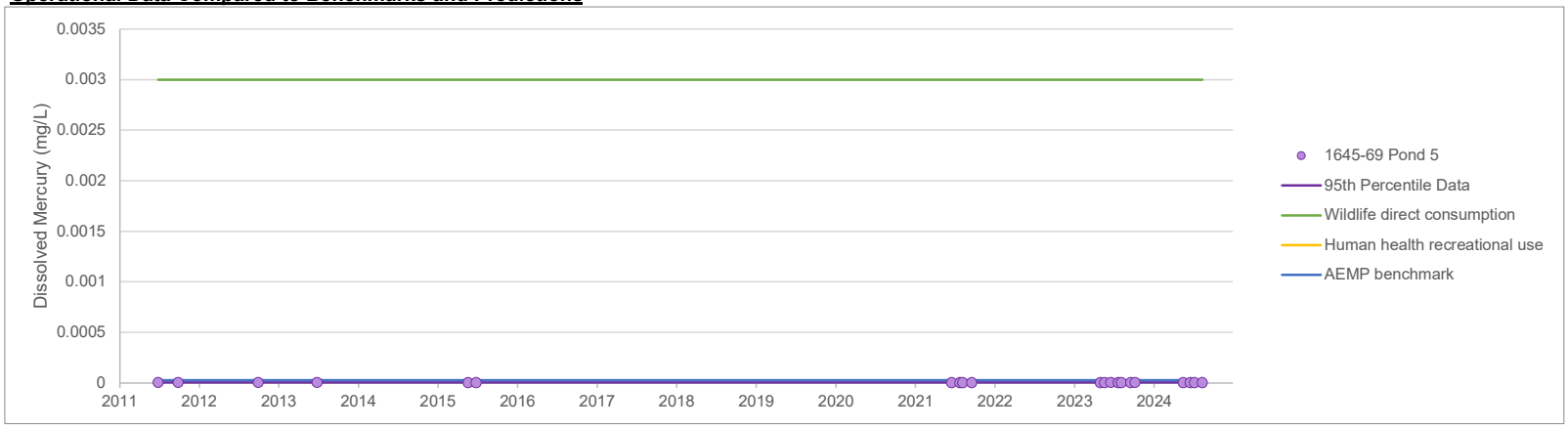


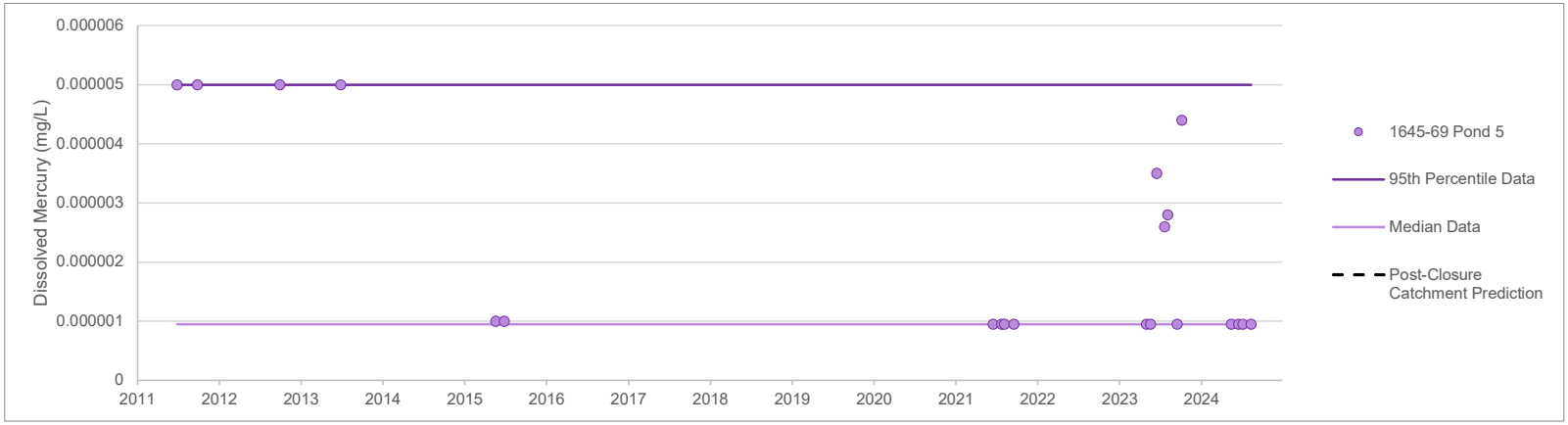
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.148	Wildlife	None
Median	0.023	Human recreational	2.4
Count	47	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



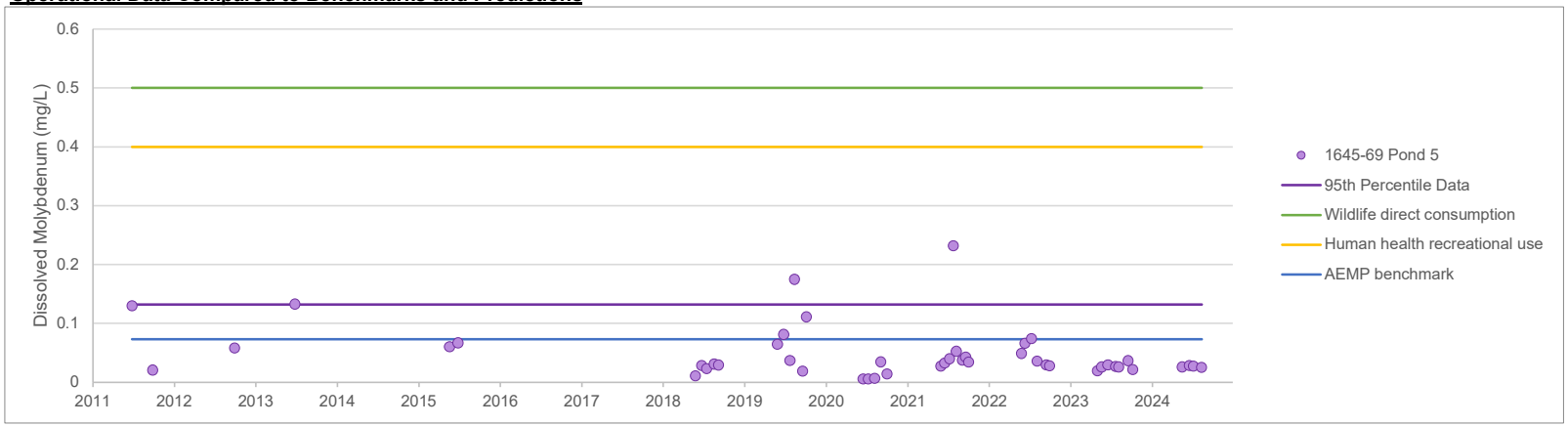


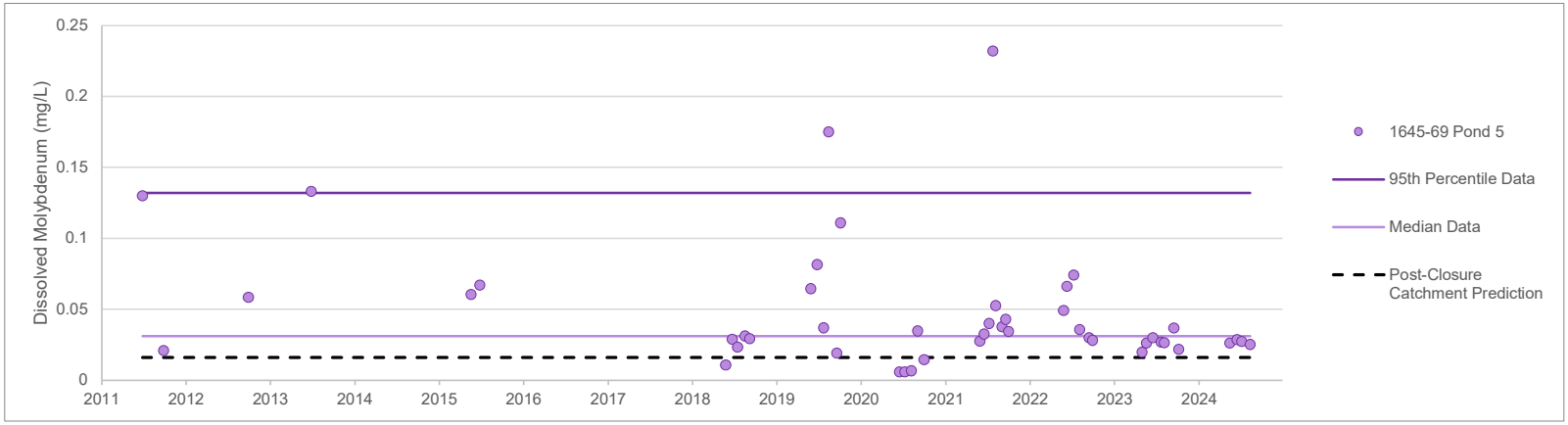
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	21	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



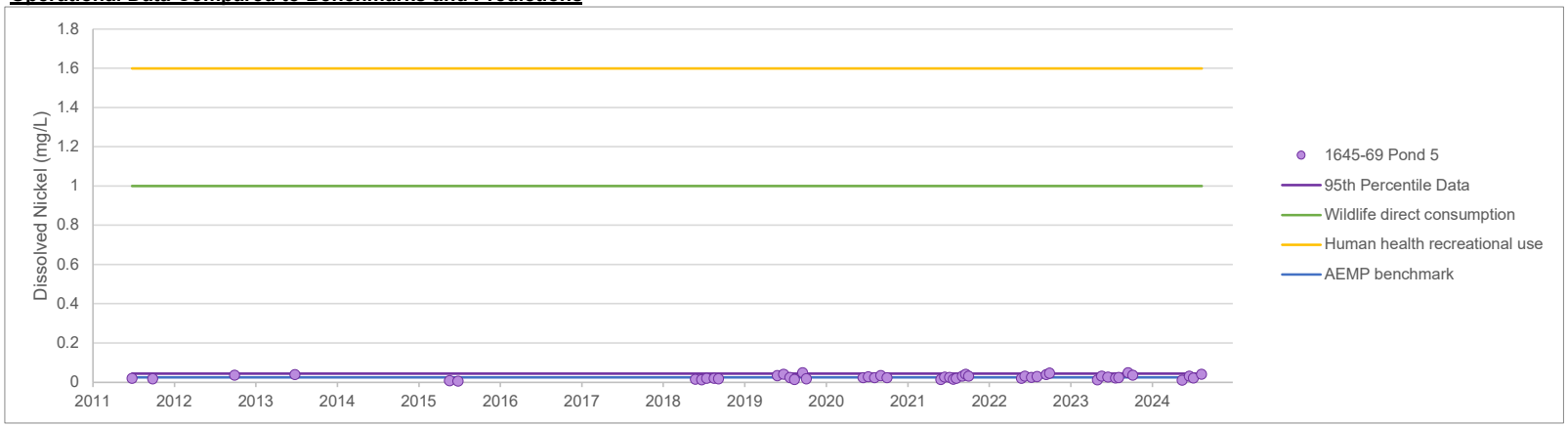


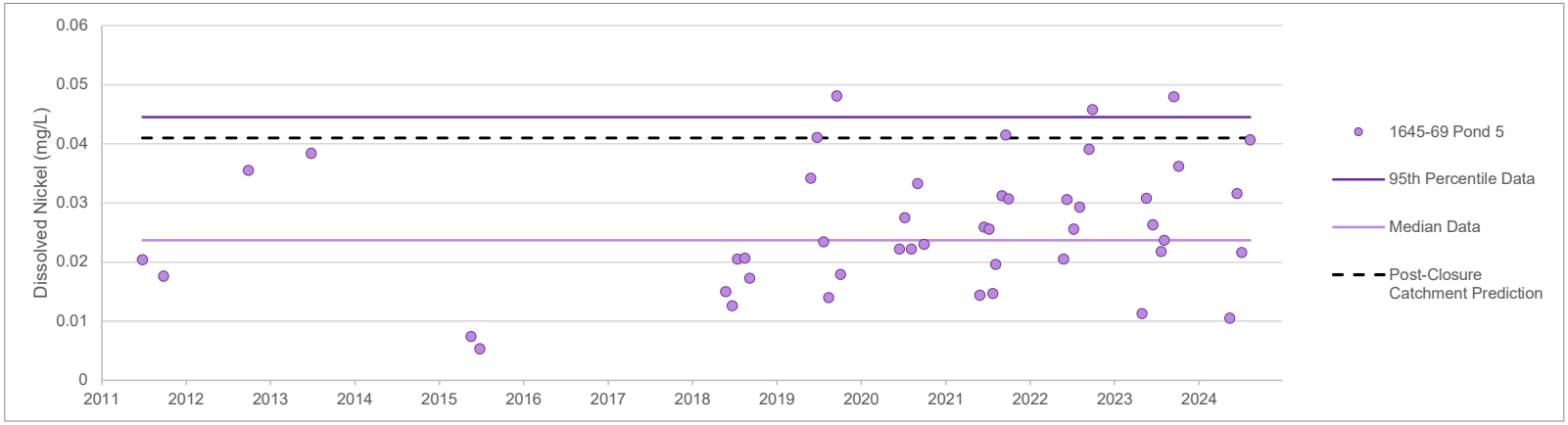
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.1321	Wildlife	0.5
Median	0.0311	Human recreational	0.4
Count	47	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



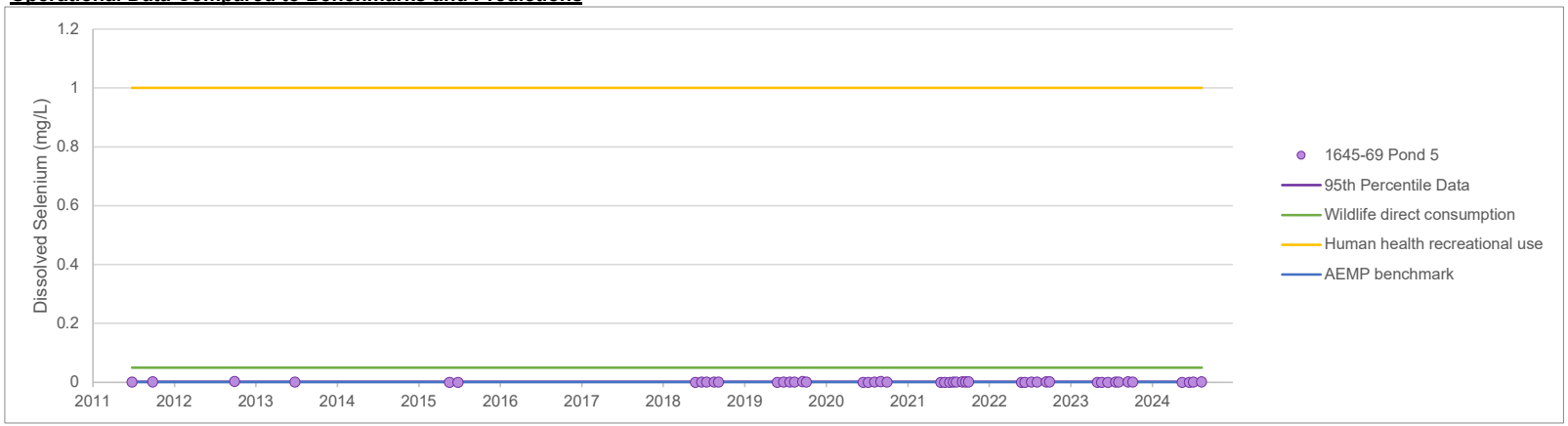


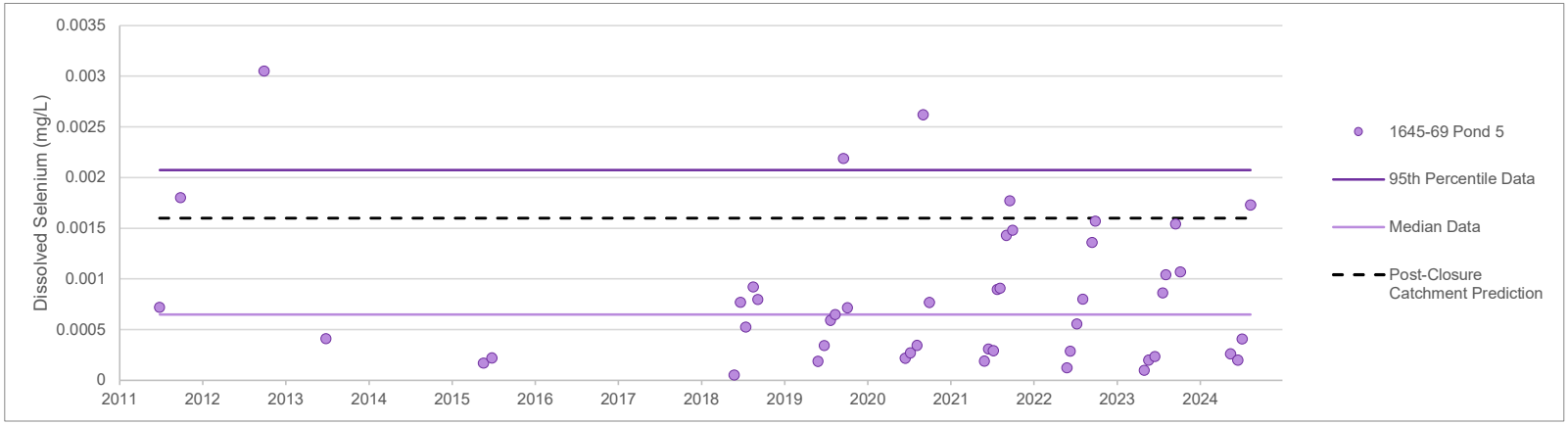
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.045	Wildlife	1.0
Median	0.024	Human recreational	1.6
Count	47	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



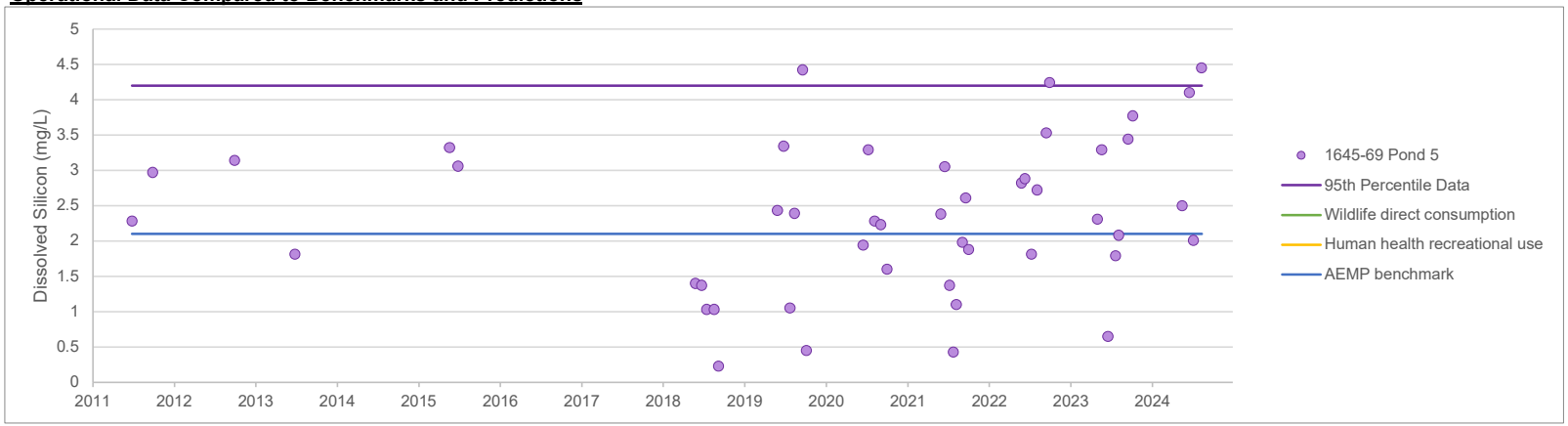


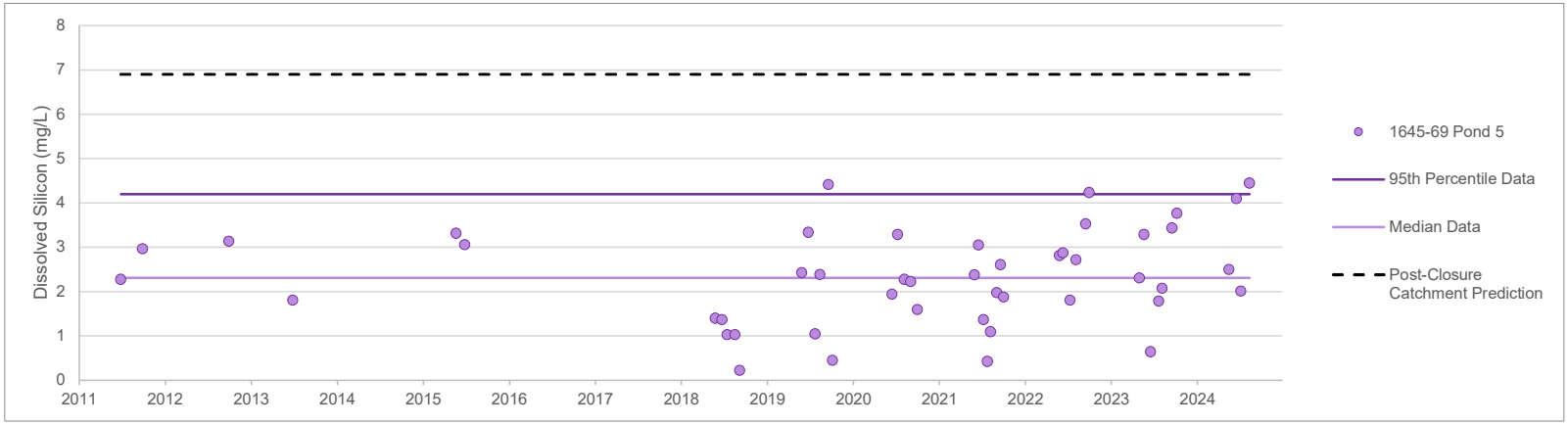
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00207	Wildlife	0.1
Median	0.00065	Human recreational	1.0
Count	47	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



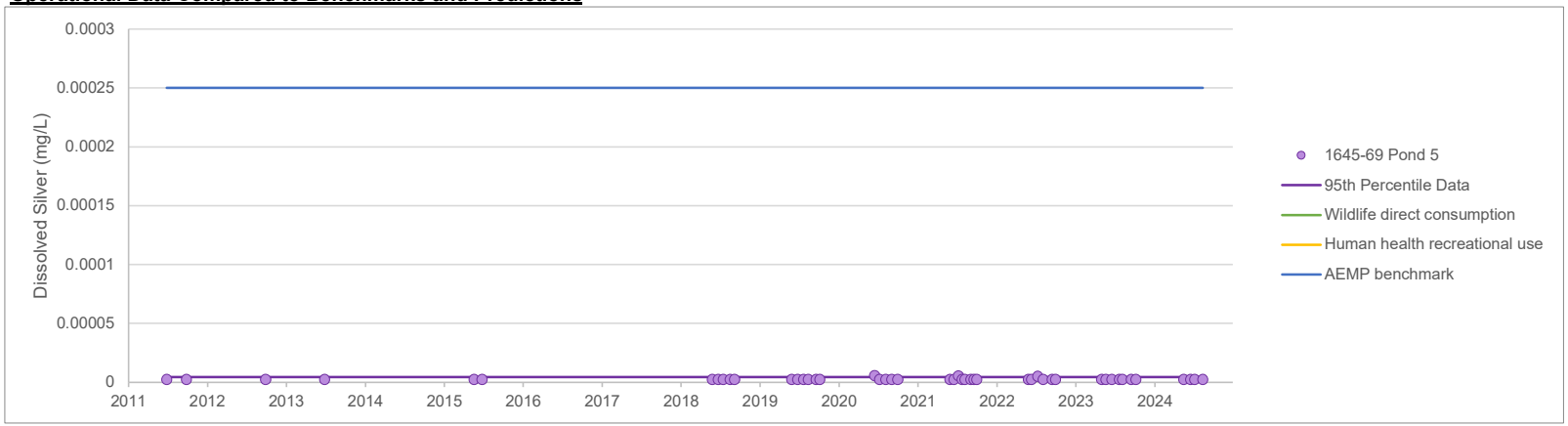


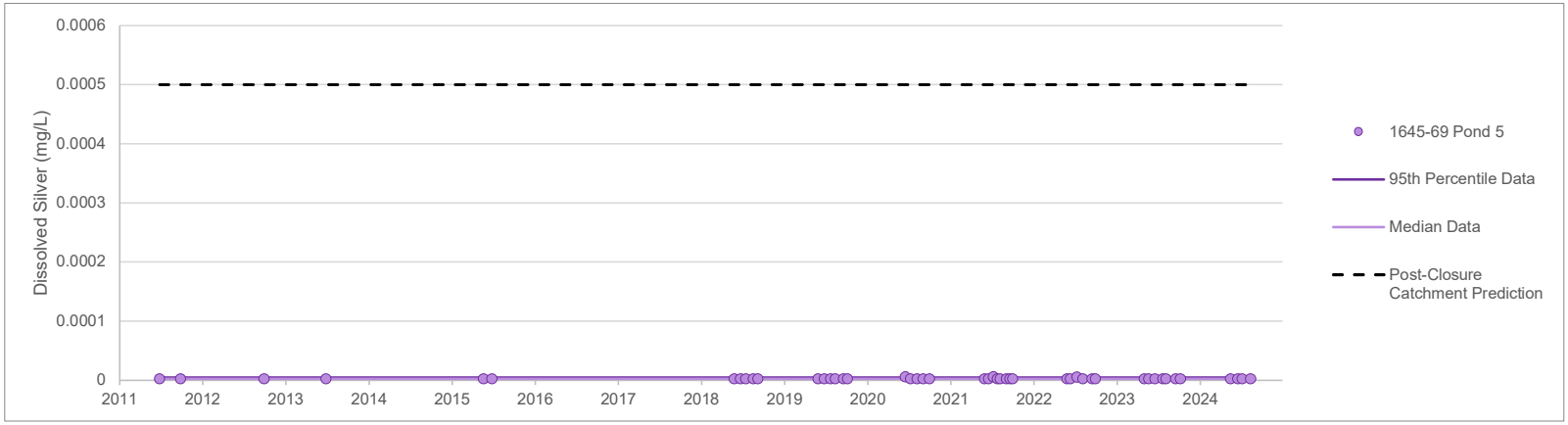
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	4.20	Wildlife	None
Median	2.31	Human recreational	None
Count	47	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



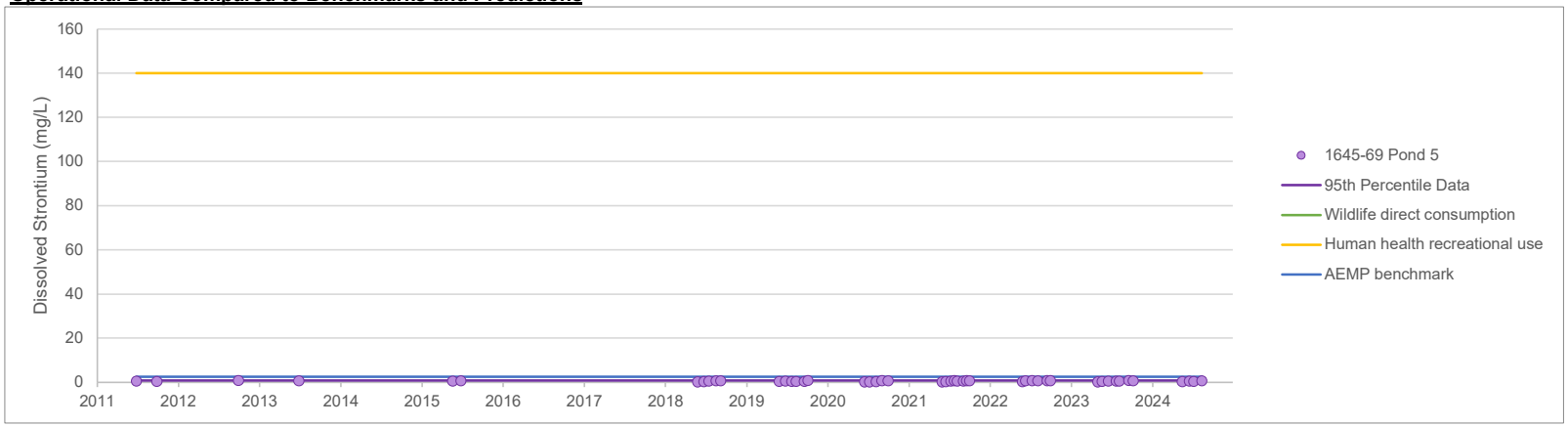


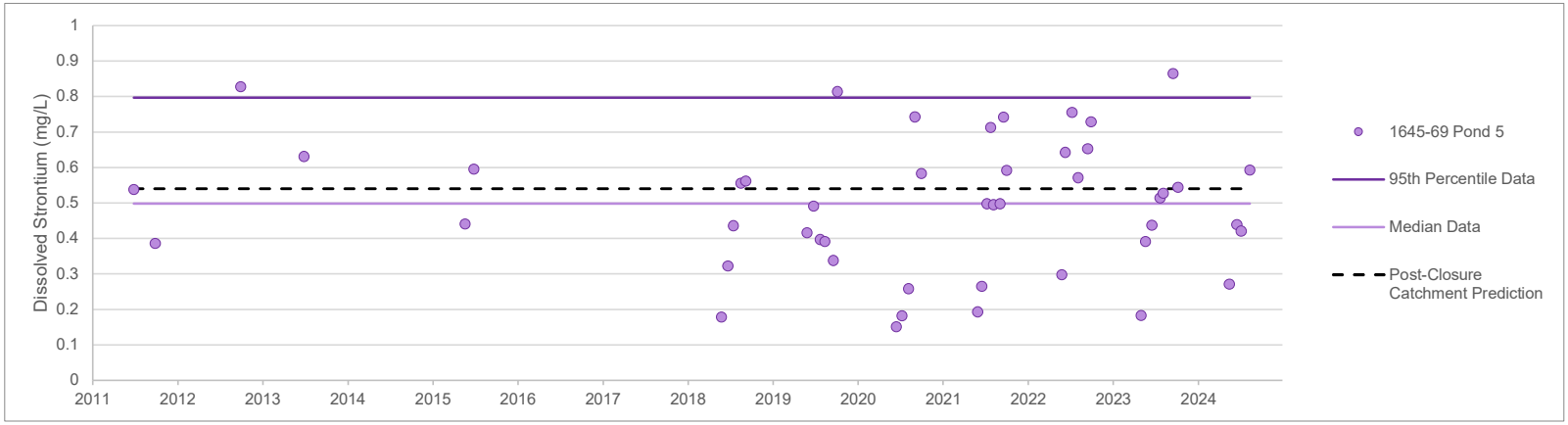
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000004	Wildlife	None
Median	0.000003	Human recreational	None
Count	47	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



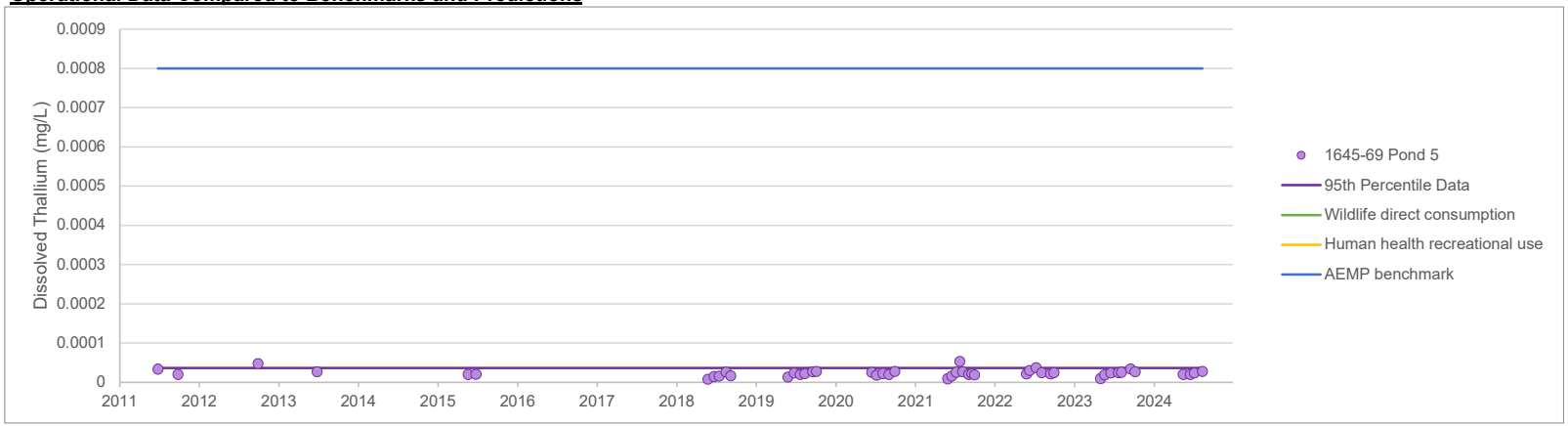


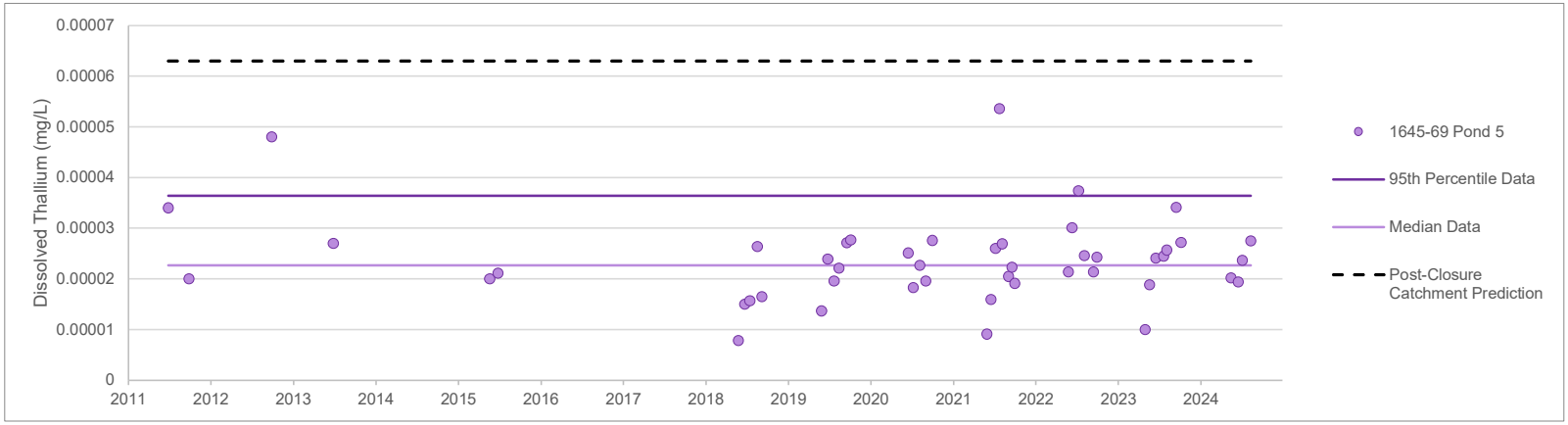
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.80	Wildlife	None
Median	0.50	Human recreational	140
Count	47	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



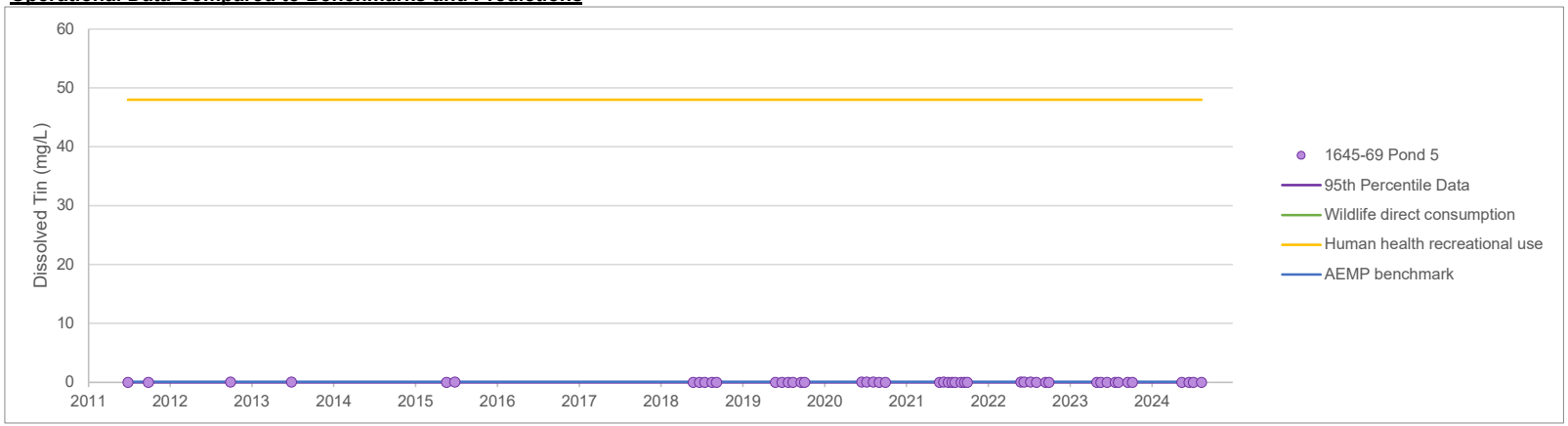


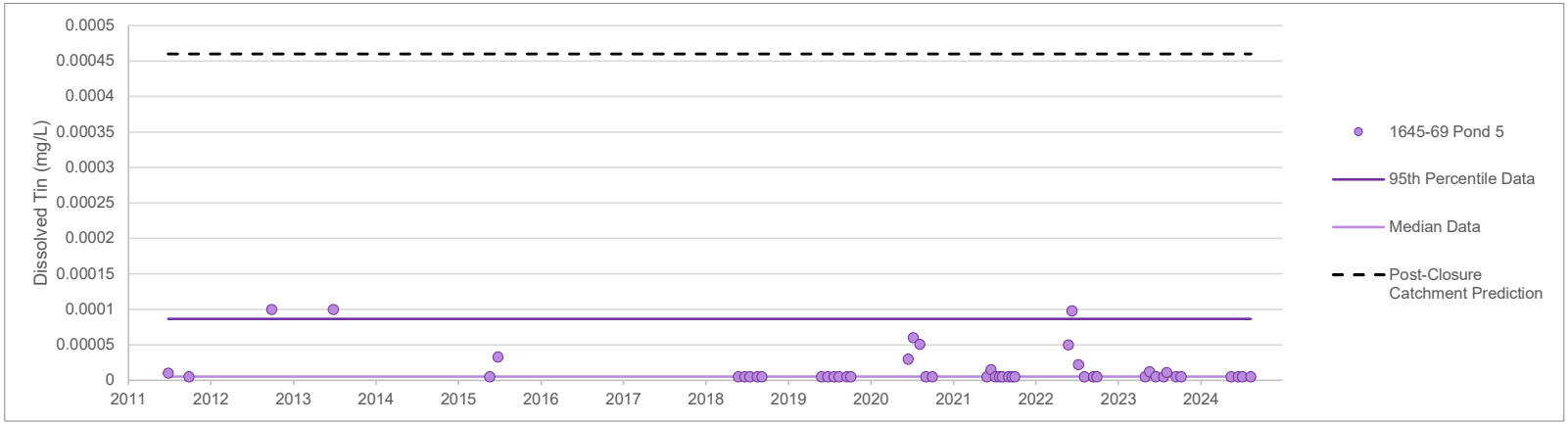
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00004	Wildlife	None
Median	0.00002	Human recreational	None
Count	47	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



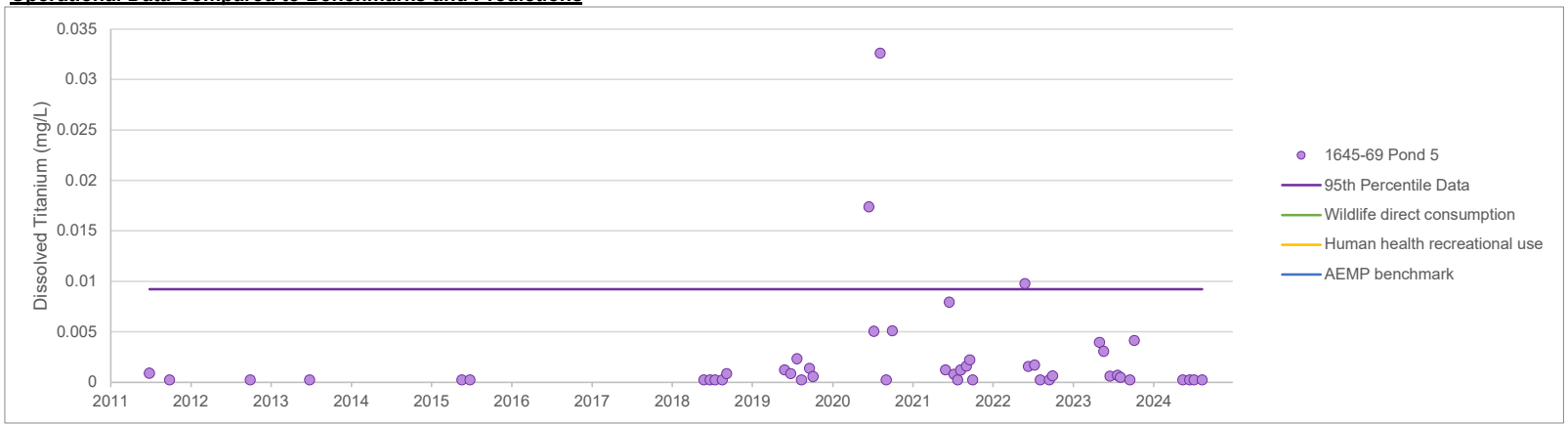


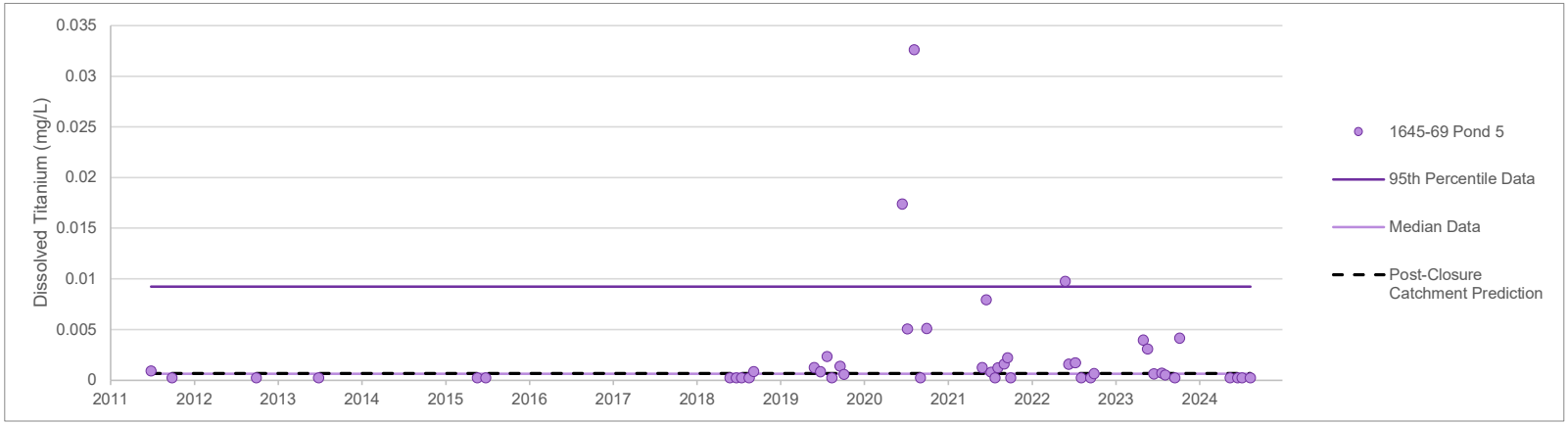
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00009	Wildlife	None
Median	0.00001	Human recreational	48
Count	47	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



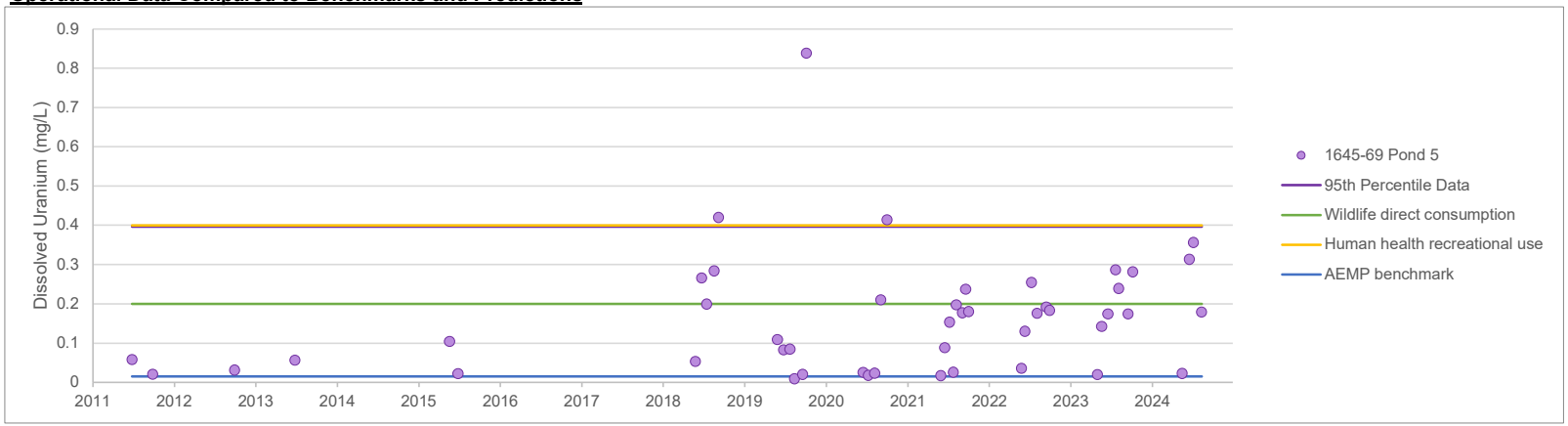


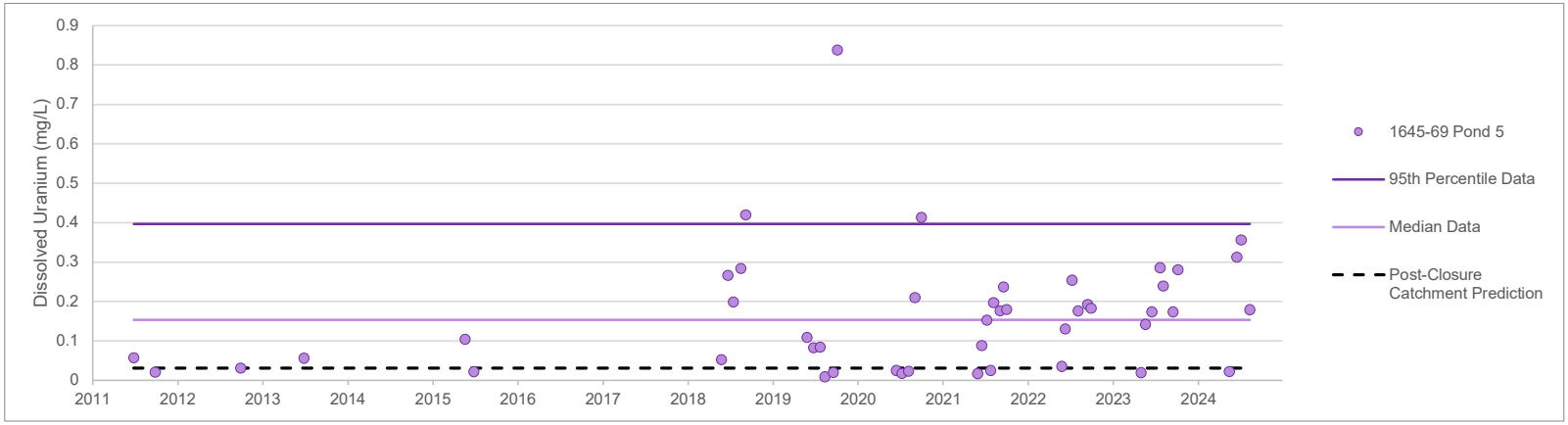
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0092	Wildlife	None
Median	0.0007	Human recreational	None
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



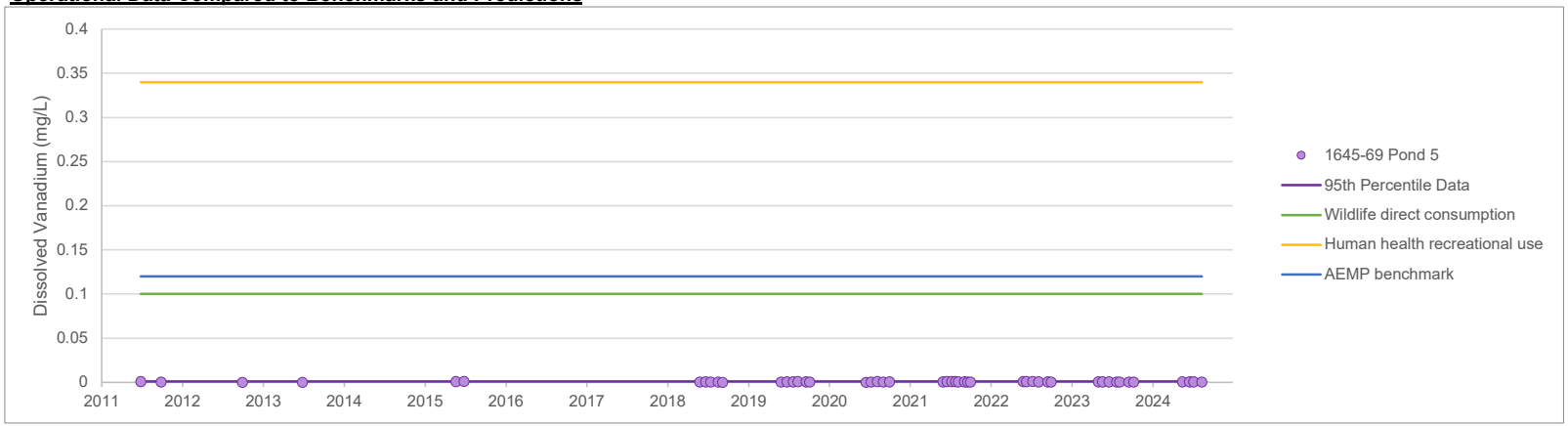


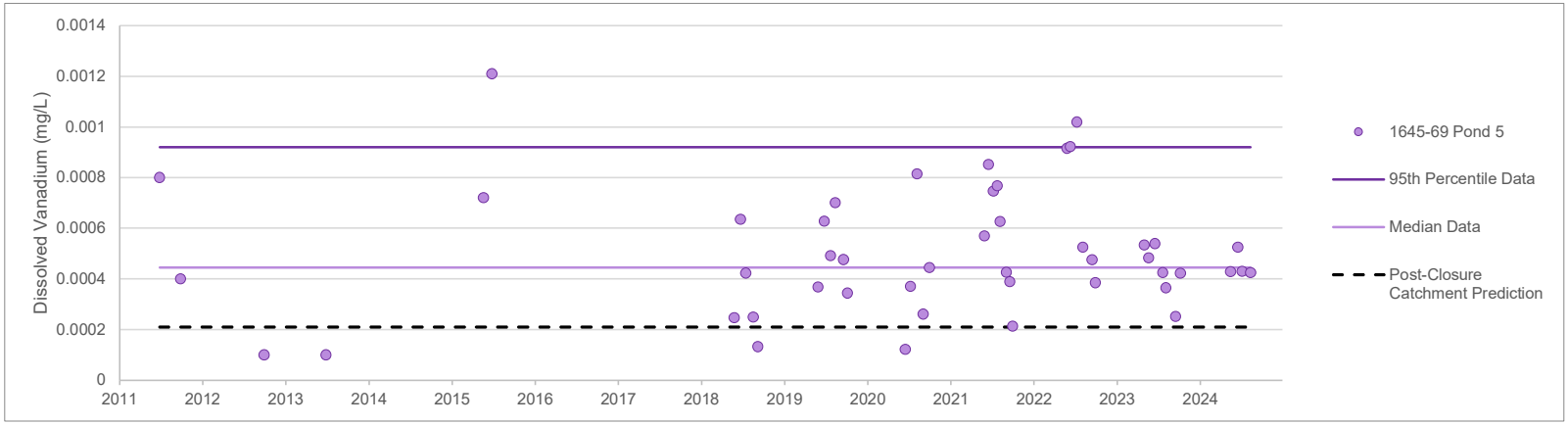
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.3966	Wildlife	0.2
Median	0.1530	Human recreational	0.4
Count	47	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



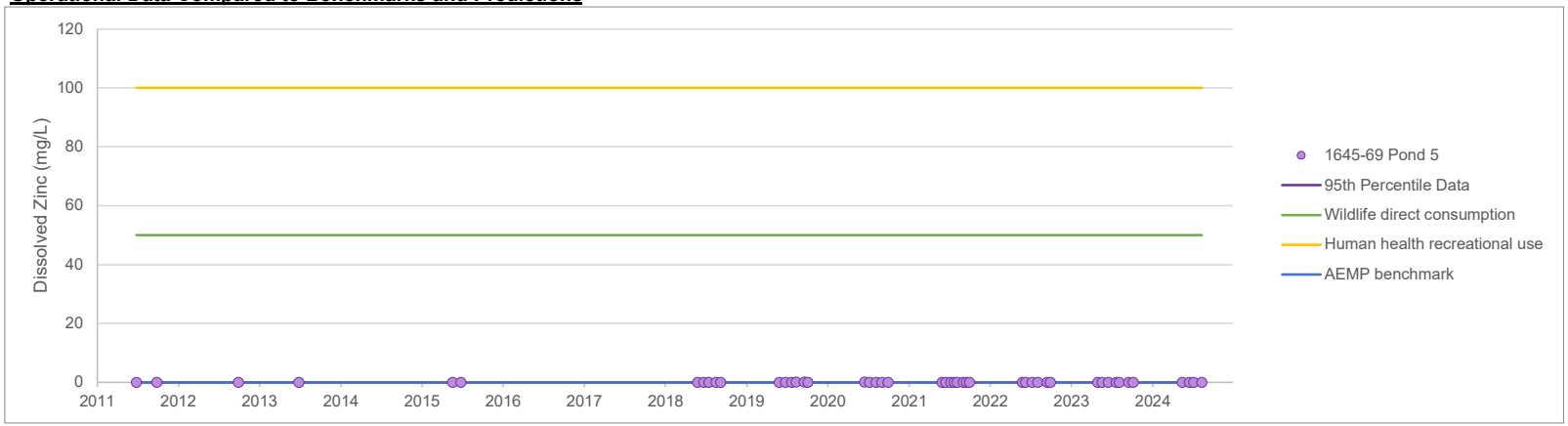


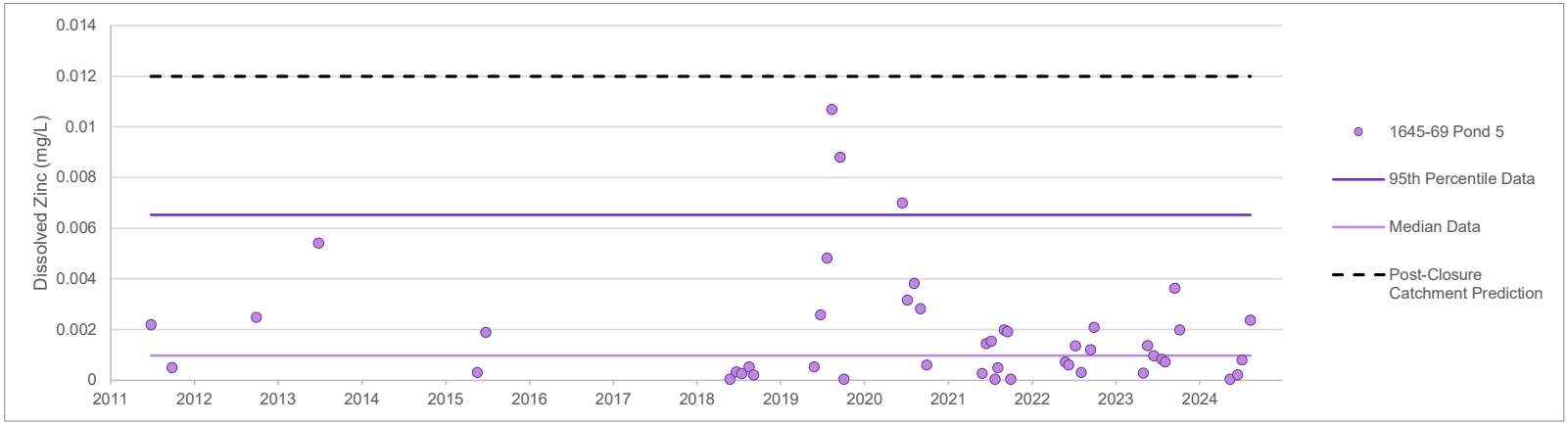
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0009	Wildlife	0.1
Median	0.0004	Human recreational	0.3
Count	47	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



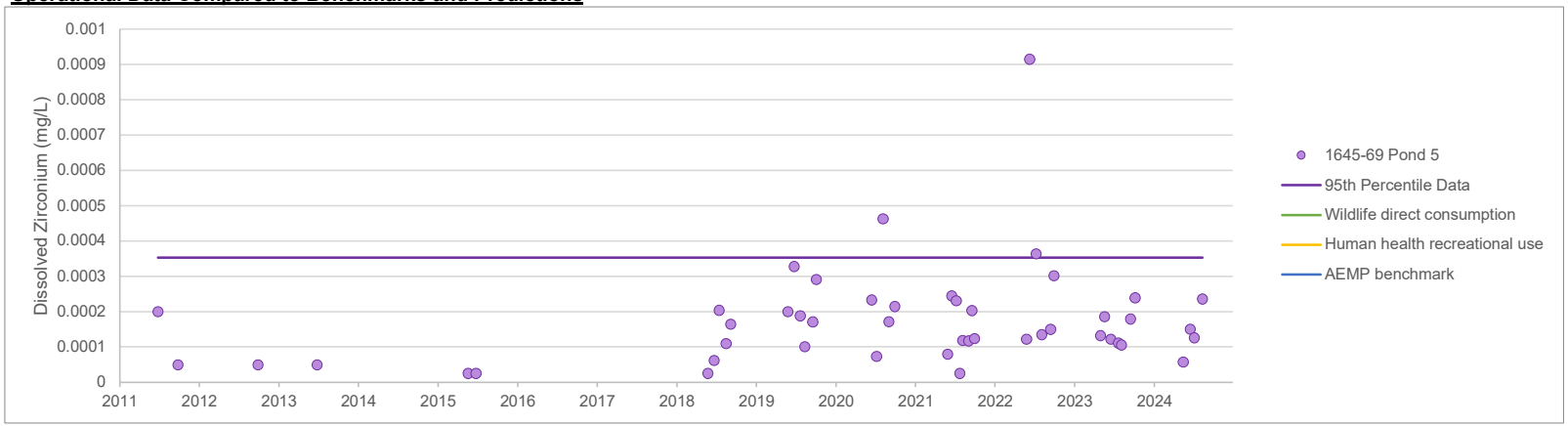


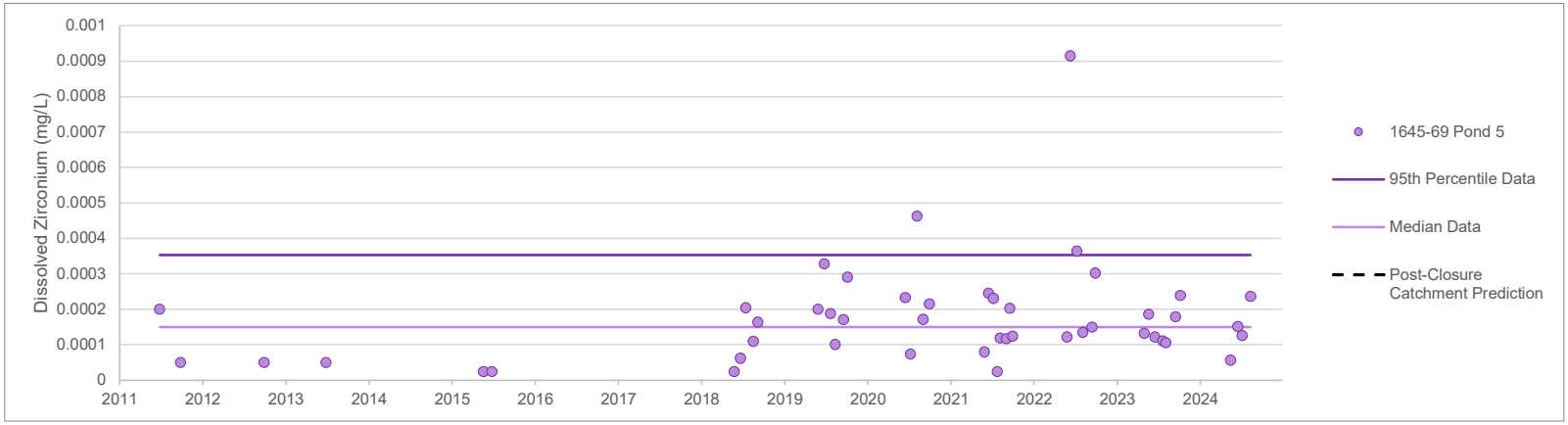
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.007	Wildlife	50
Median	0.001	Human recreational	100
Count	47	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0004	Wildlife	None
Median	0.0002	Human recreational	None
Count	47	AEMP	None

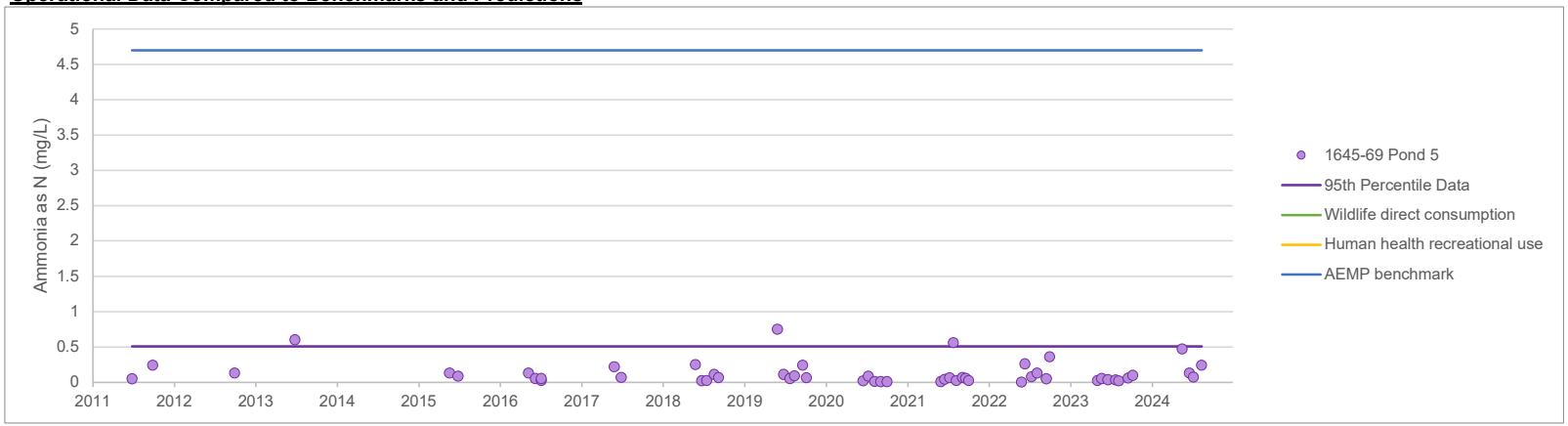
RioTinto | Diavik

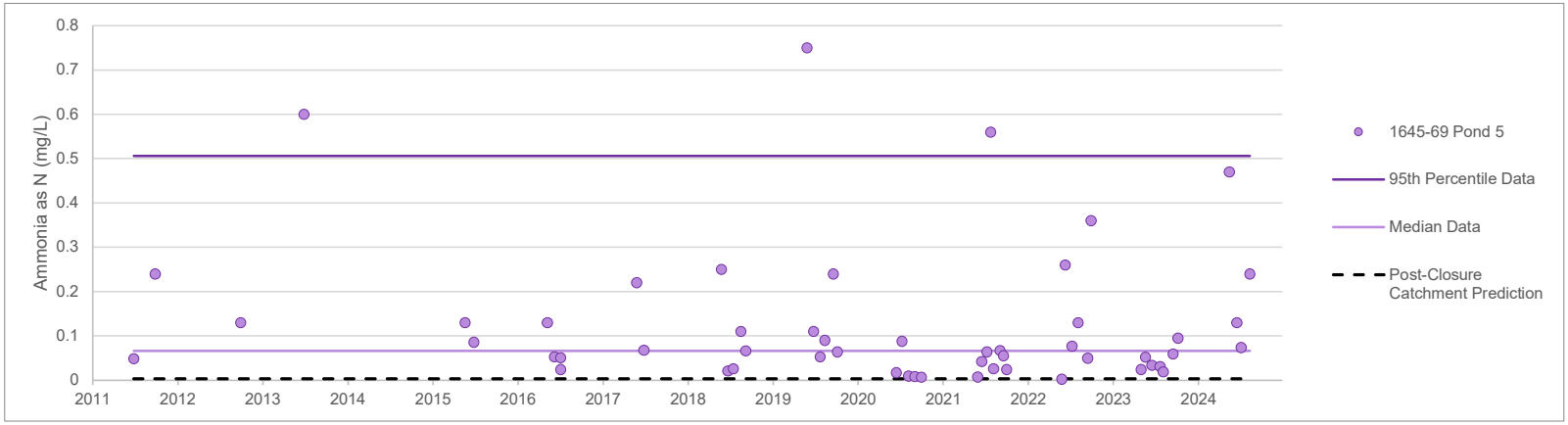
Pond 5

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



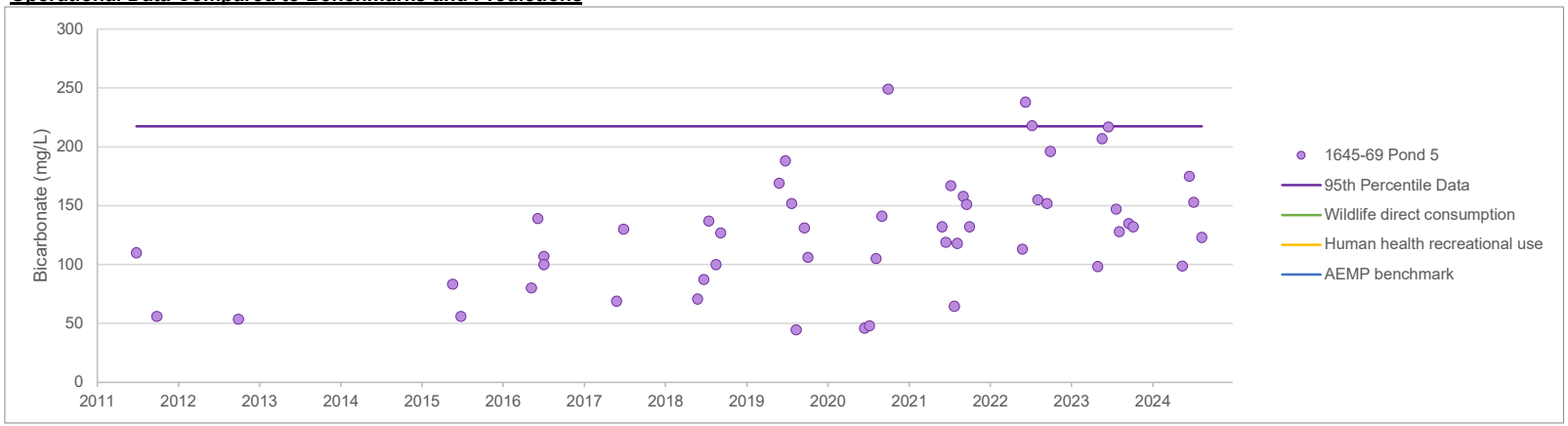


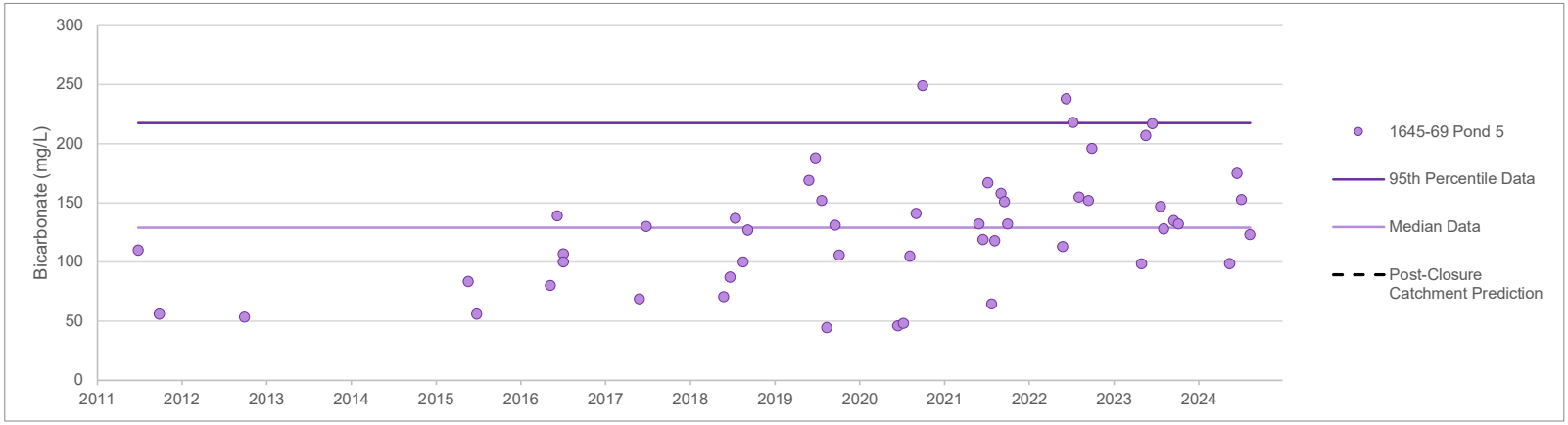
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.51	Wildlife	None
Median	0.07	Human recreational	None
Count	53	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



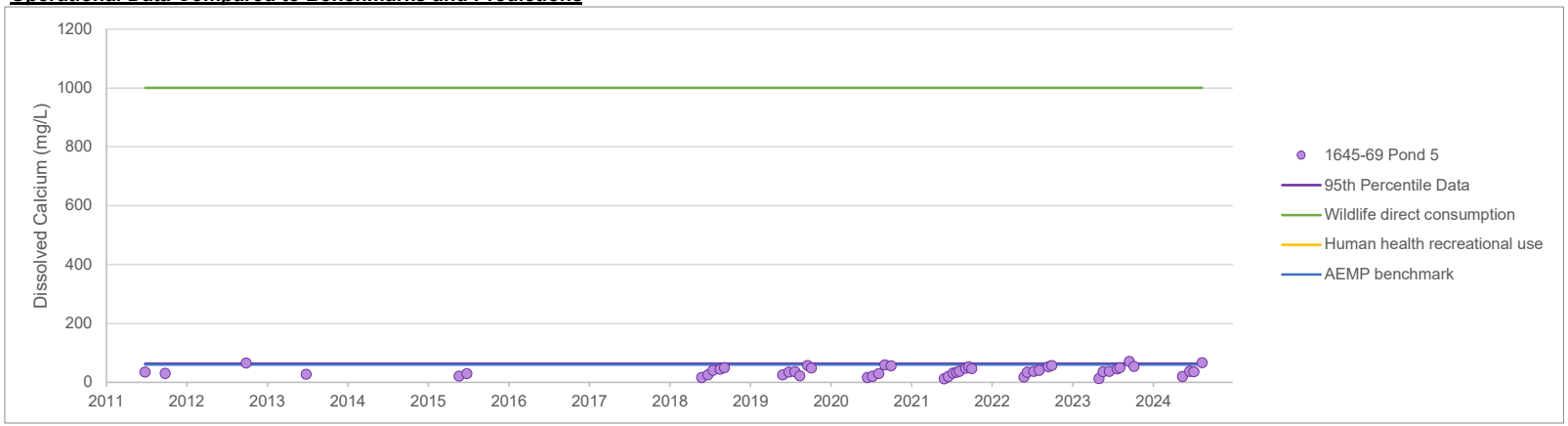


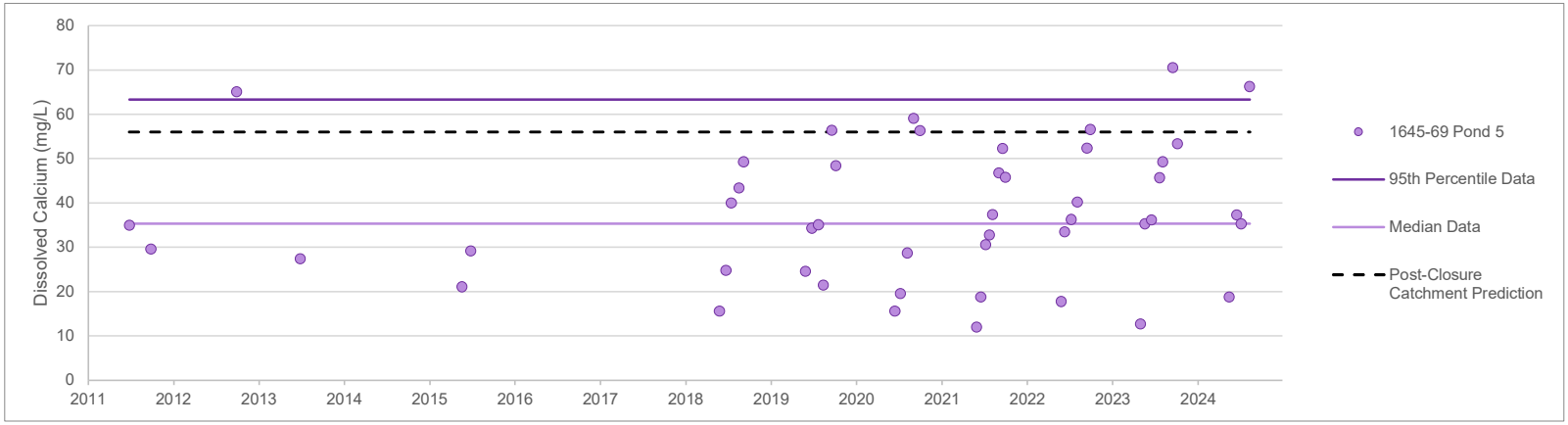
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	217.5	Wildlife	None
Median	129.0	Human recreational	None
Count	52	AEMP	None

Operational Data Compared to Benchmarks and Predictions



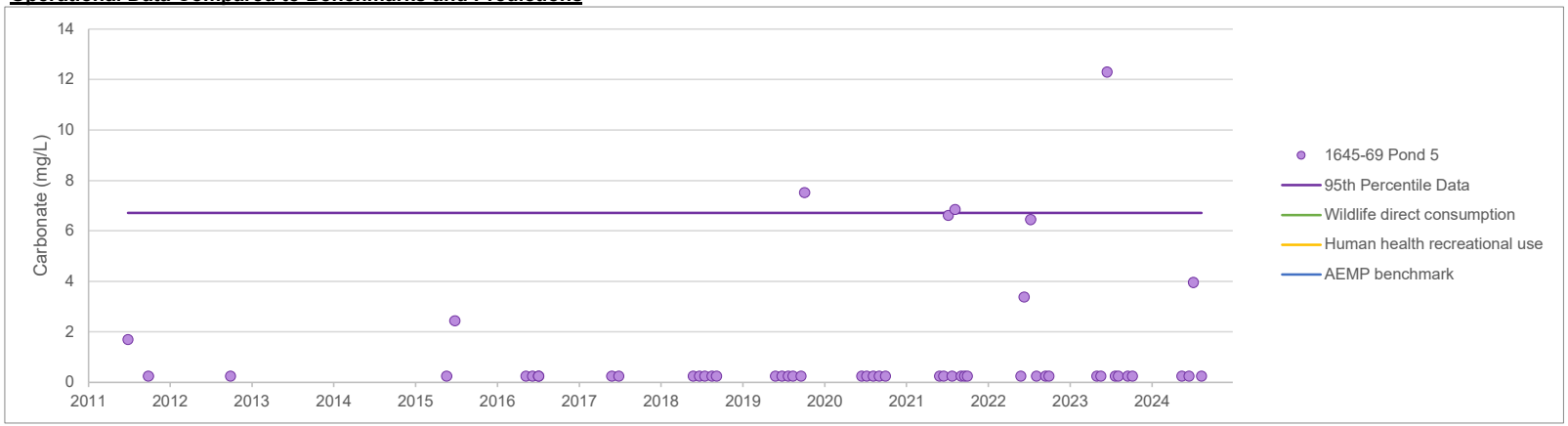


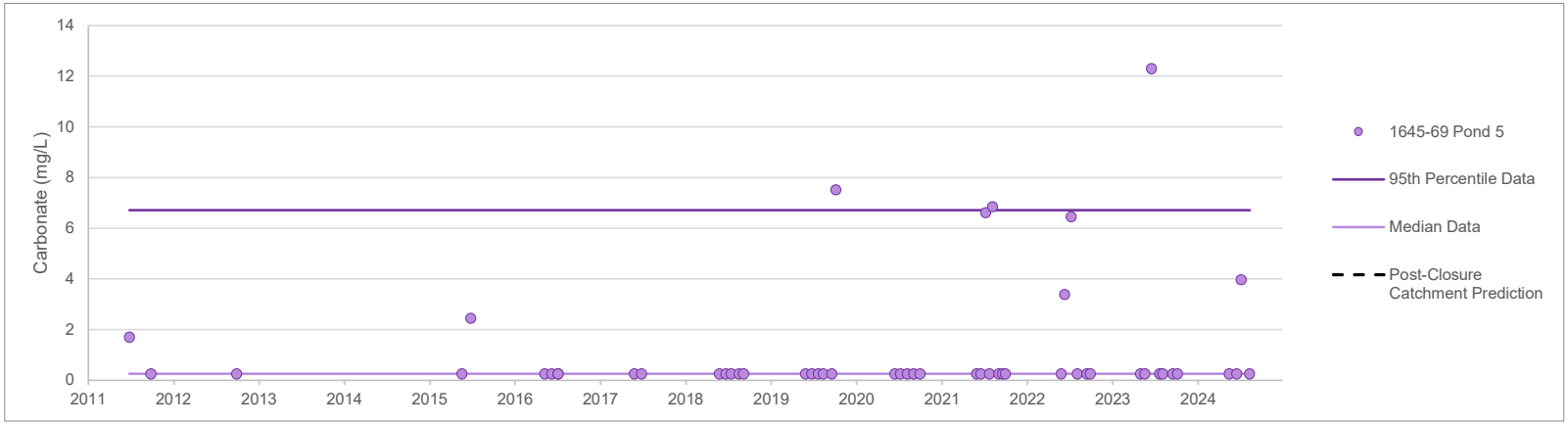
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	63.3	Wildlife	1000
Median	35.3	Human recreational	None
Count	47	AEMP	60

Operational Data Compared to Benchmarks and Predictions



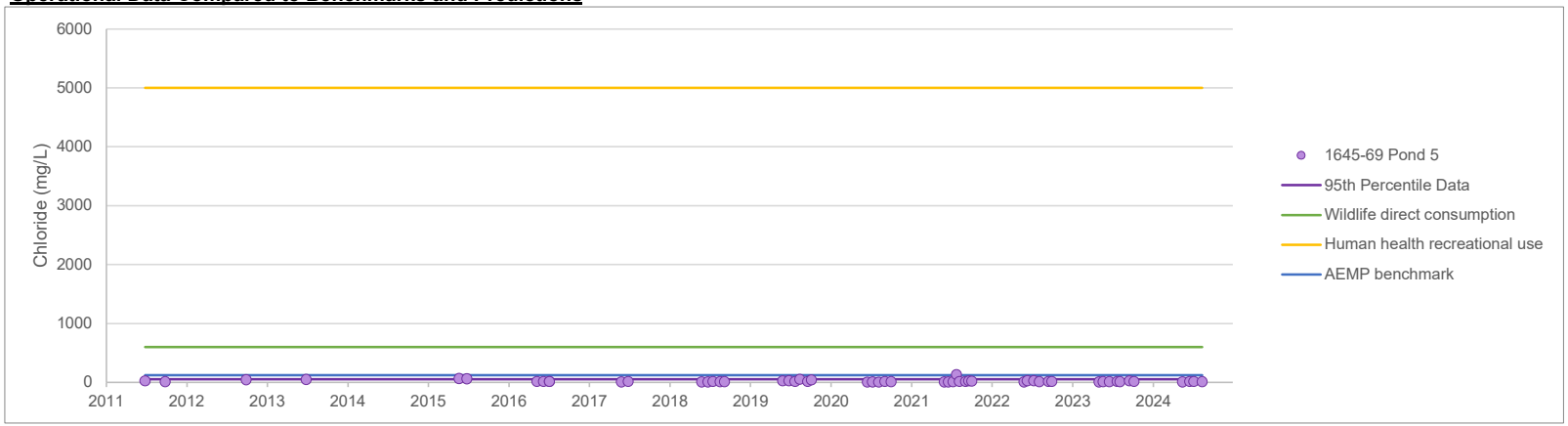


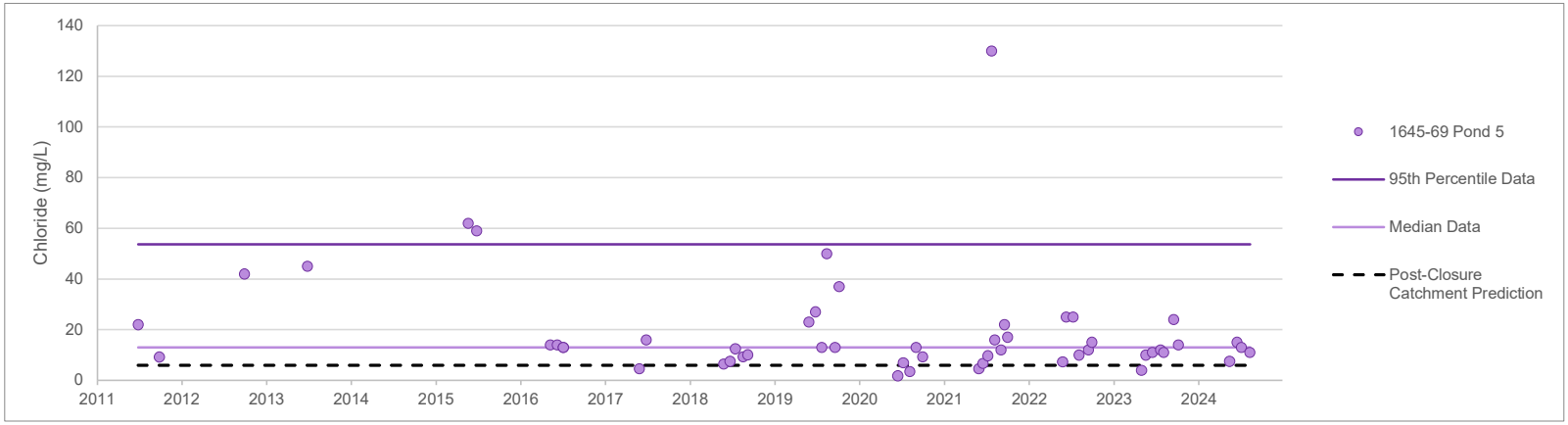
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	6.72	Wildlife	None
Median	0.25	Human recreational	None
Count	52	AEMP	None

Operational Data Compared to Benchmarks and Predictions



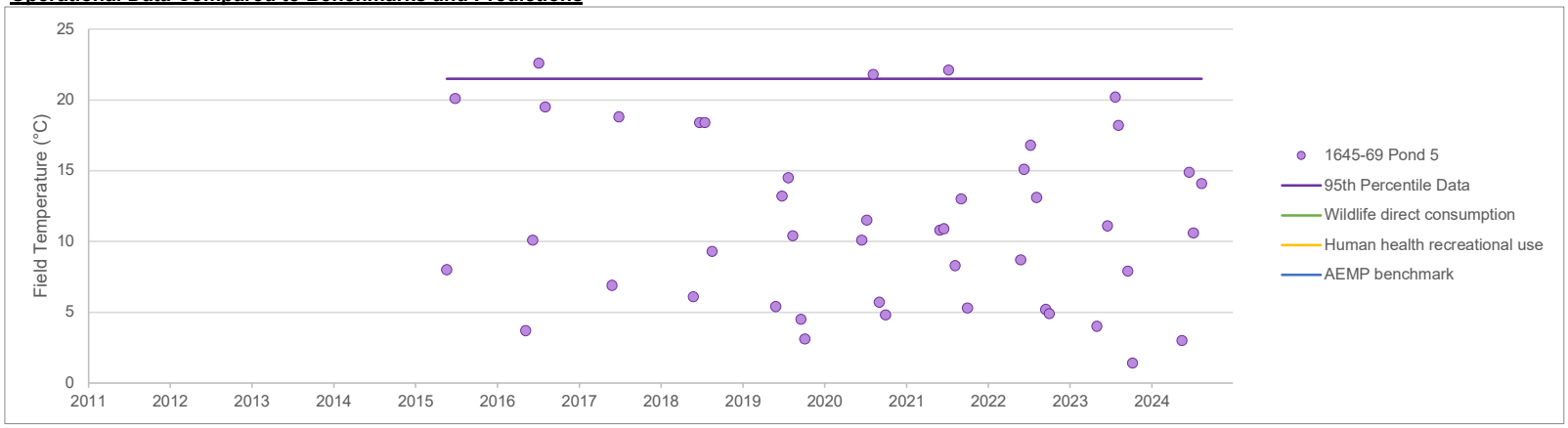


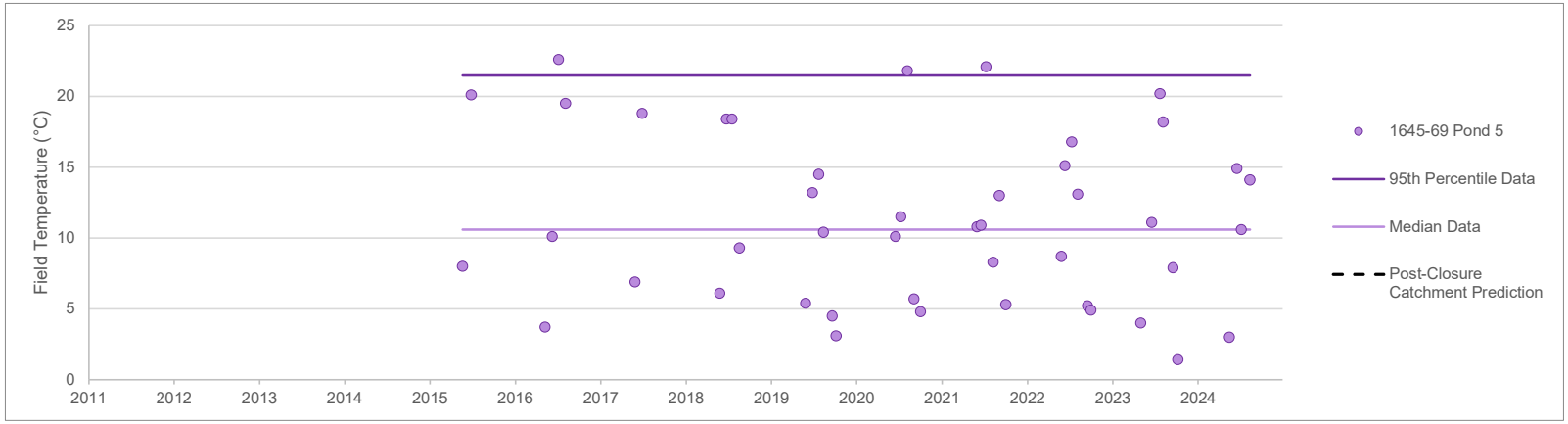
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	53.6	Wildlife	600
Median	13.0	Human recreational	5000
Count	53	AEMP	120

Operational Data Compared to Benchmarks and Predictions



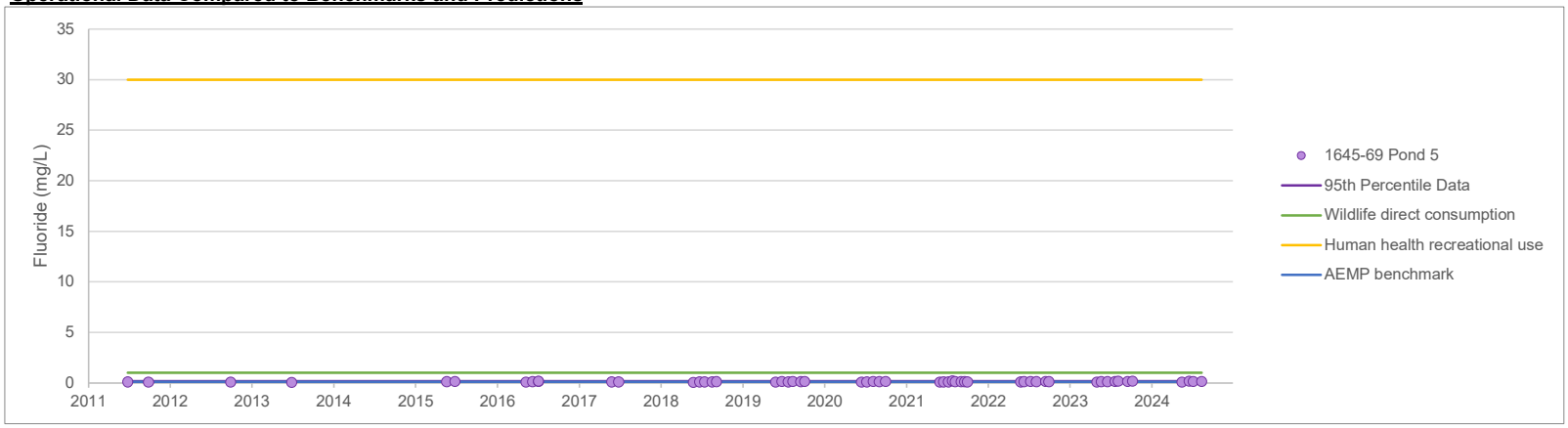


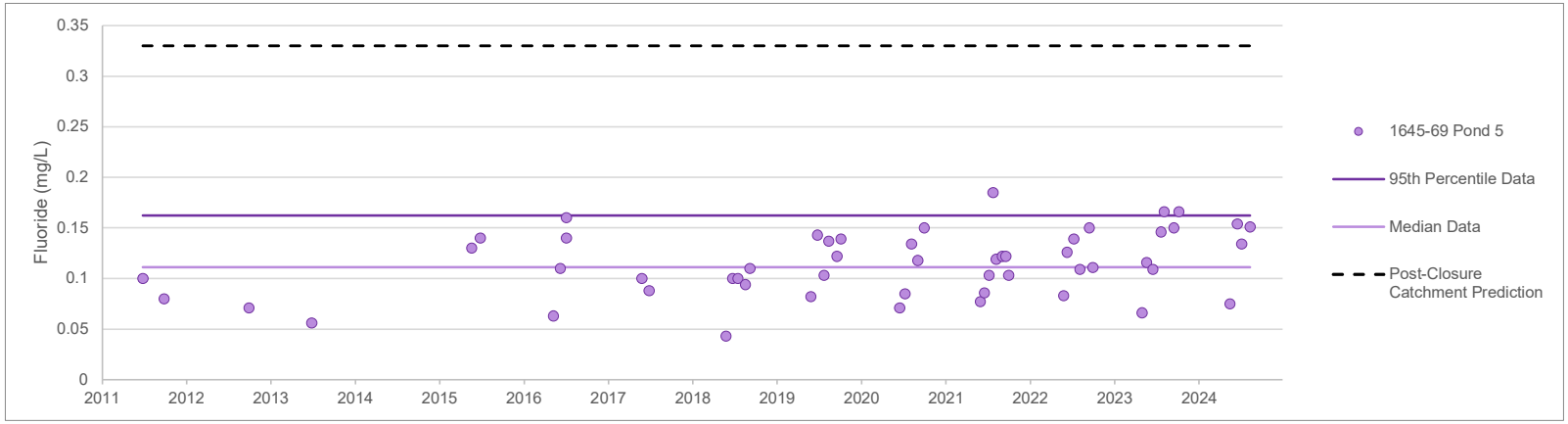
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	21.5	Wildlife	None
Median	10.6	Human recreational	None
Count	45	AEMP	None

Operational Data Compared to Benchmarks and Predictions



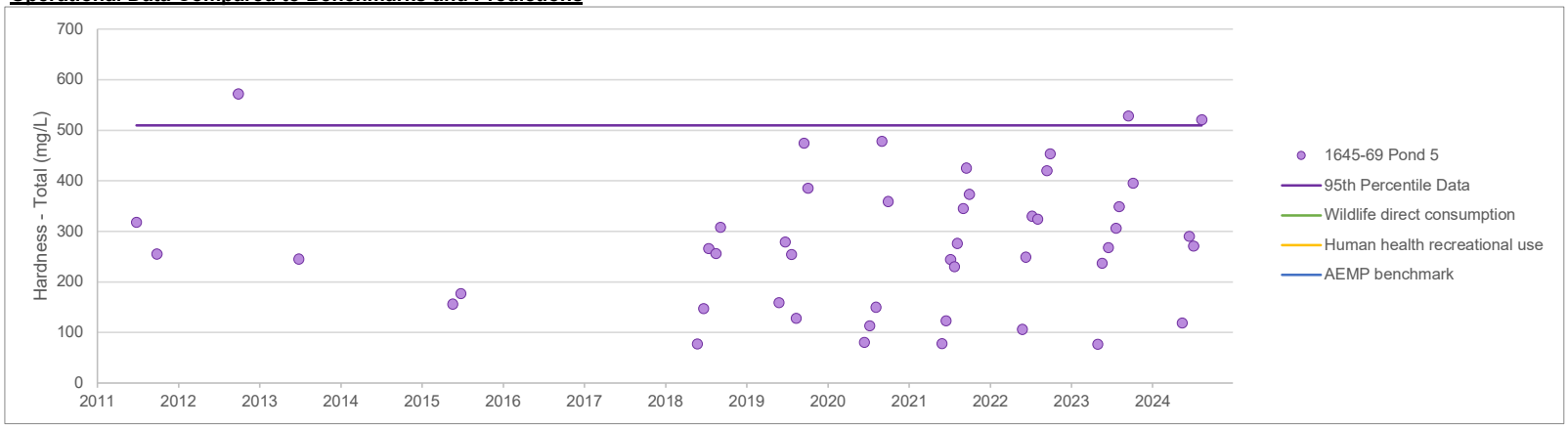


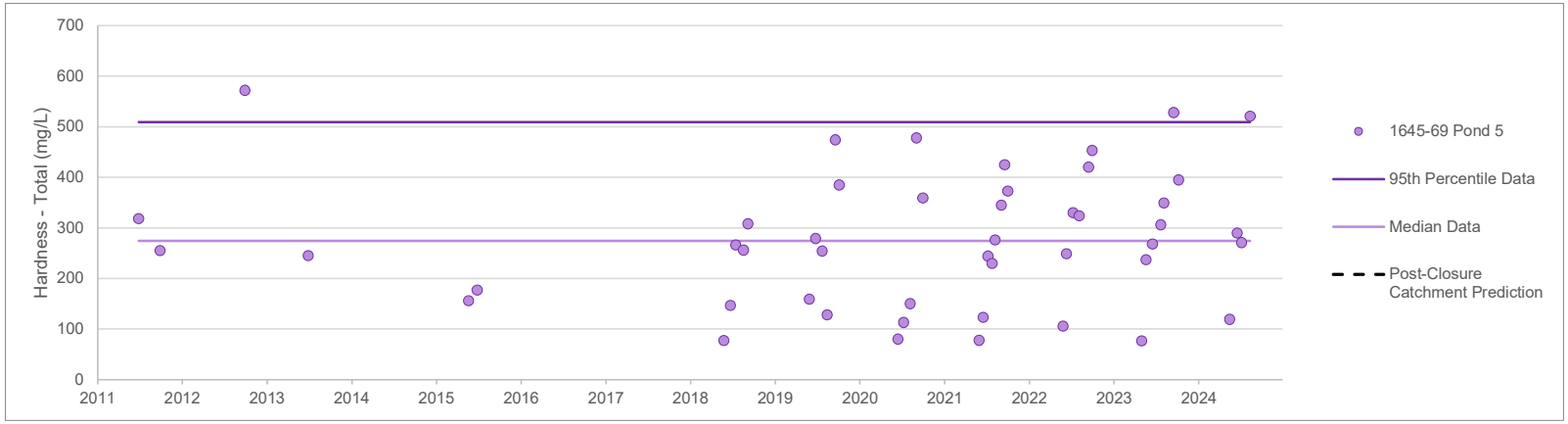
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.16	Wildlife	1
Median	0.11	Human recreational	30
Count	53	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



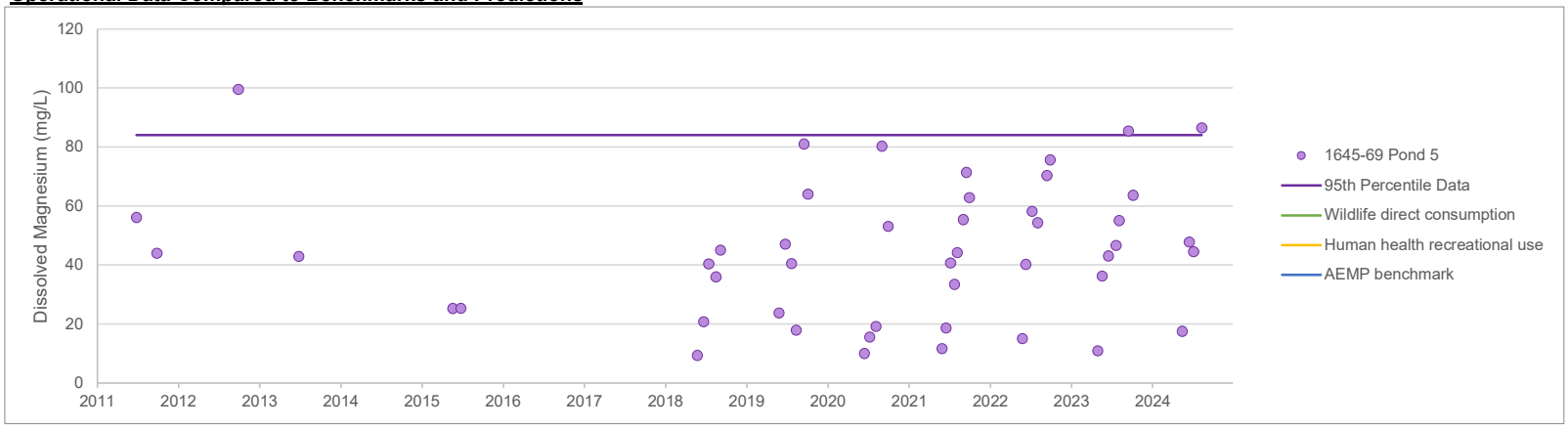


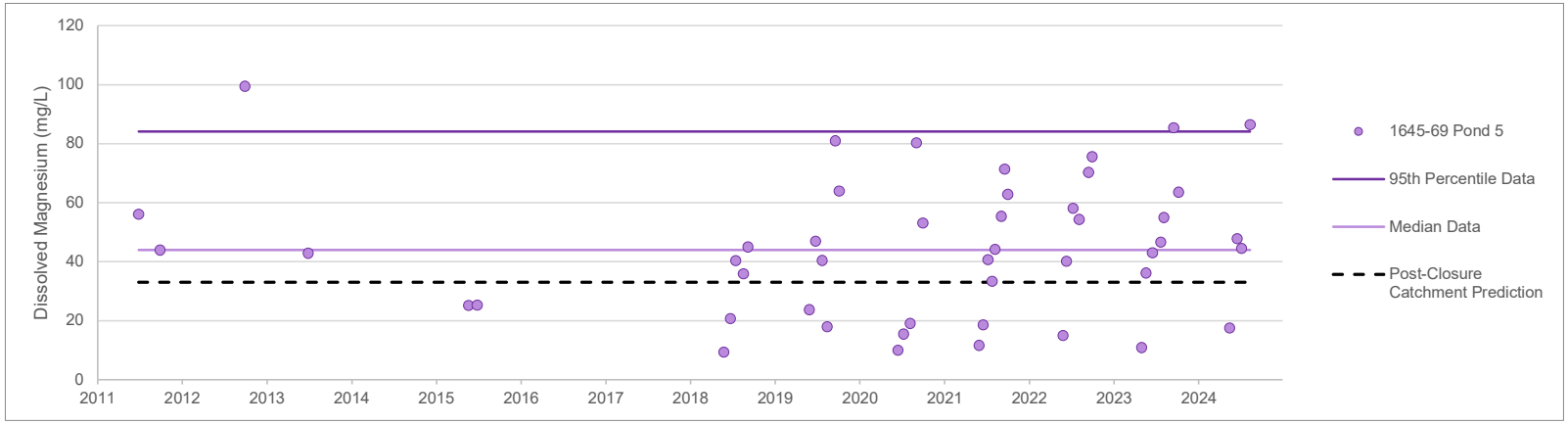
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	509	Wildlife	None
Median	275	Human recreational	None
Count	54	AEMP	None

Operational Data Compared to Benchmarks and Predictions



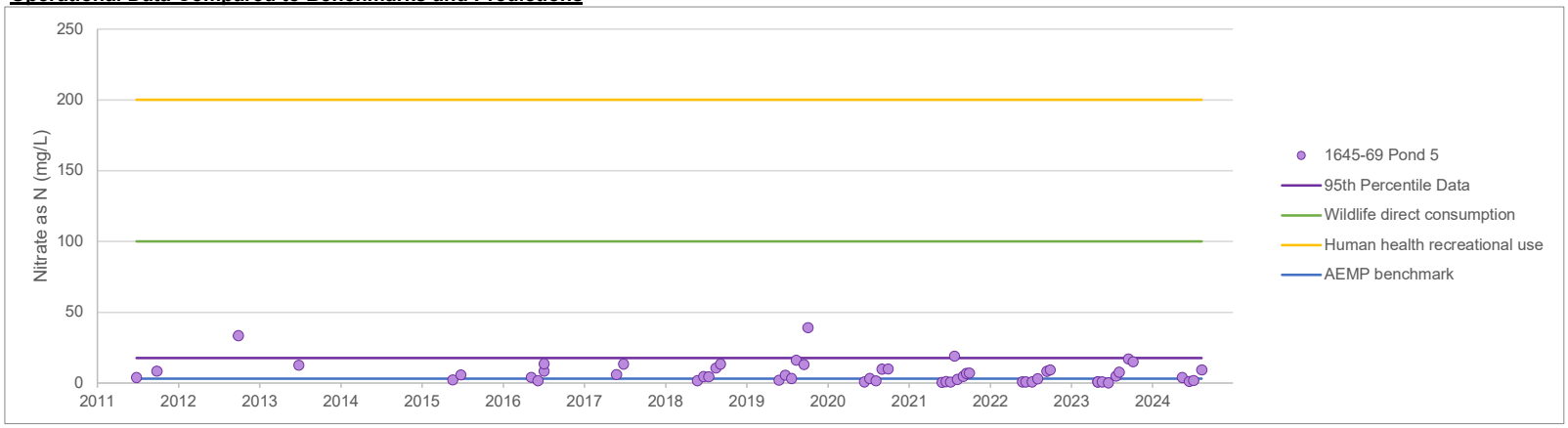


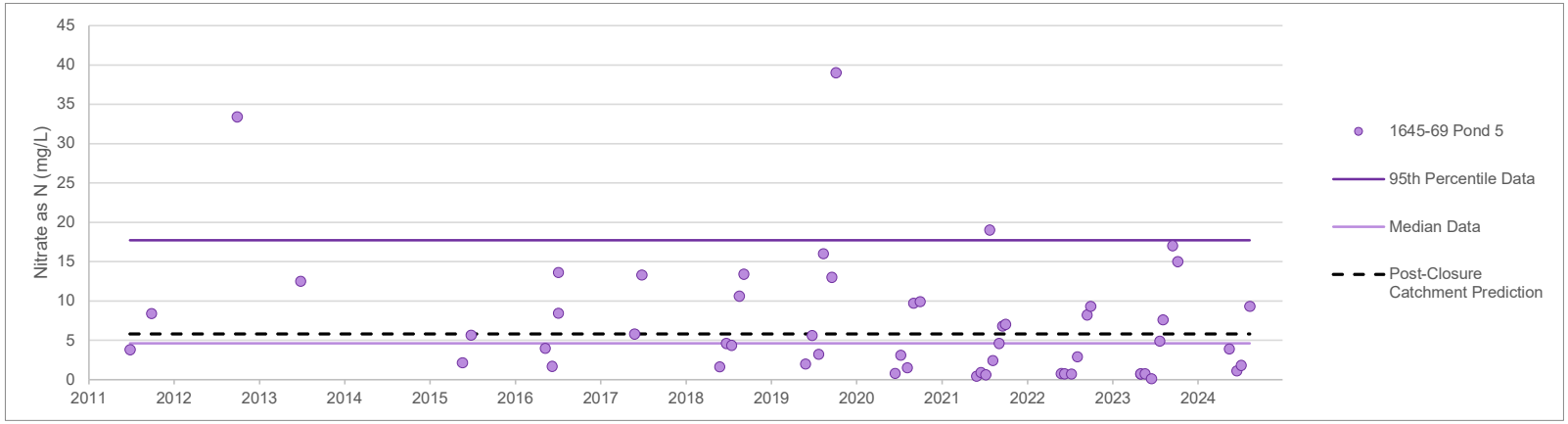
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	84.1	Wildlife	None
Median	43.9	Human recreational	None
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



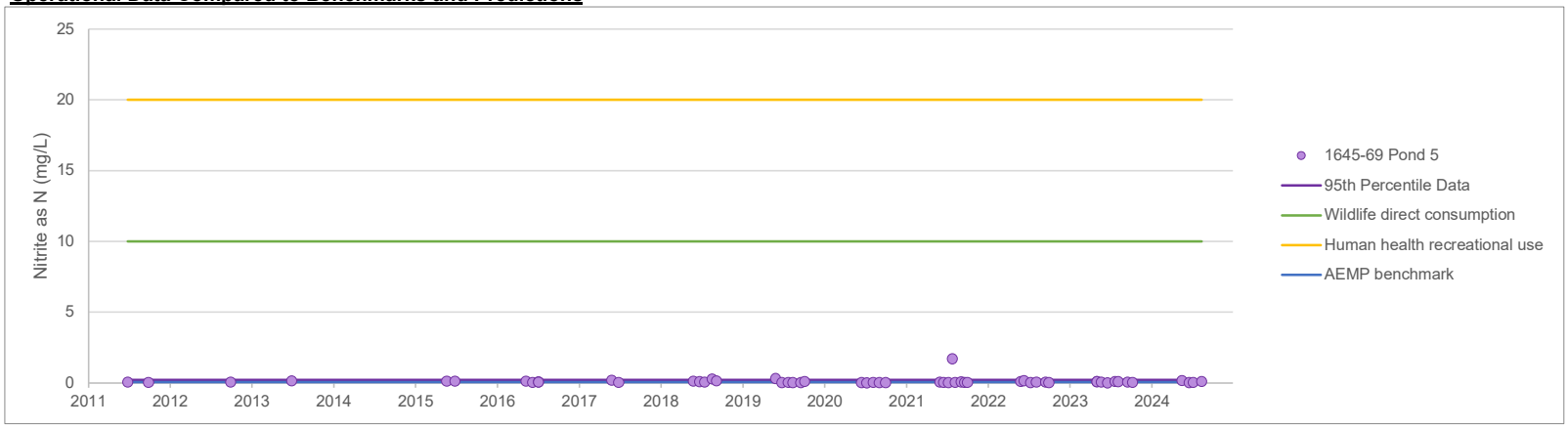


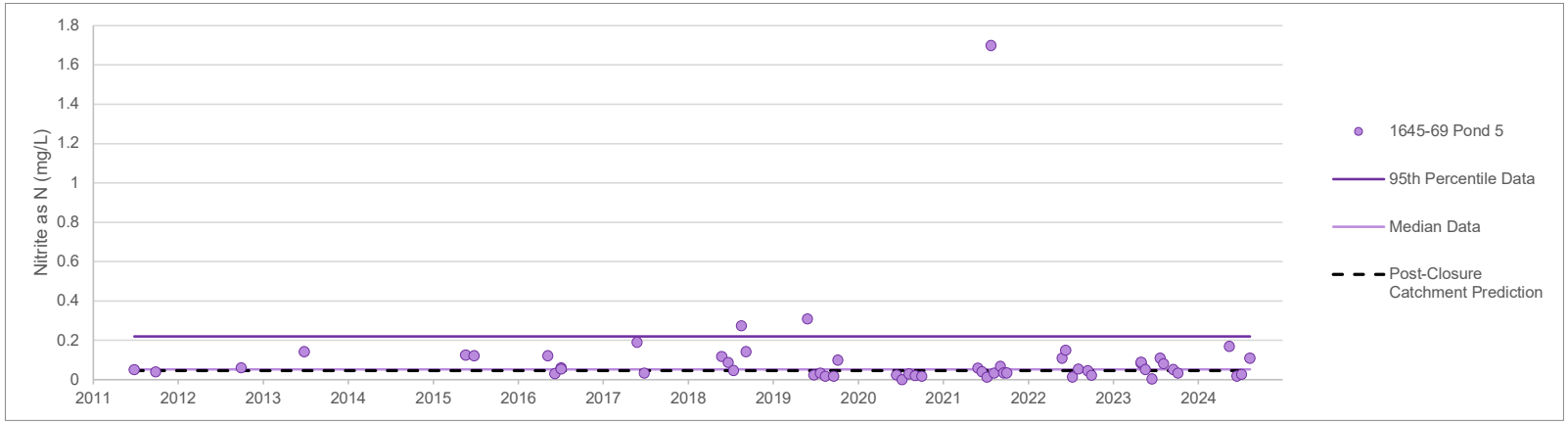
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	17.7	Wildlife	100
Median	4.6	Human recreational	200
Count	54	AEMP	3

Operational Data Compared to Benchmarks and Predictions



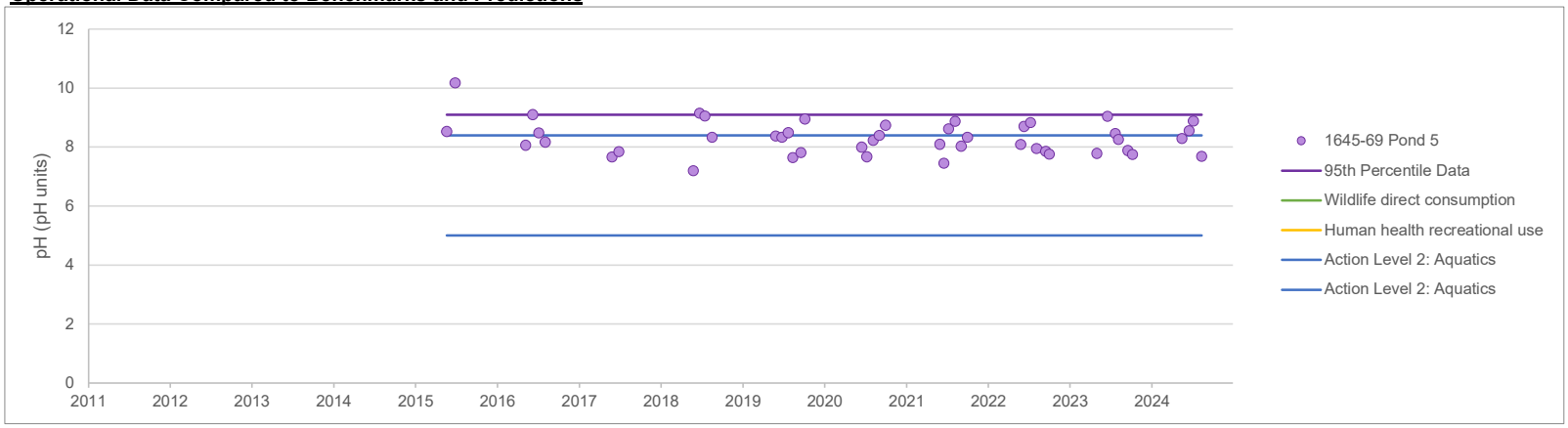


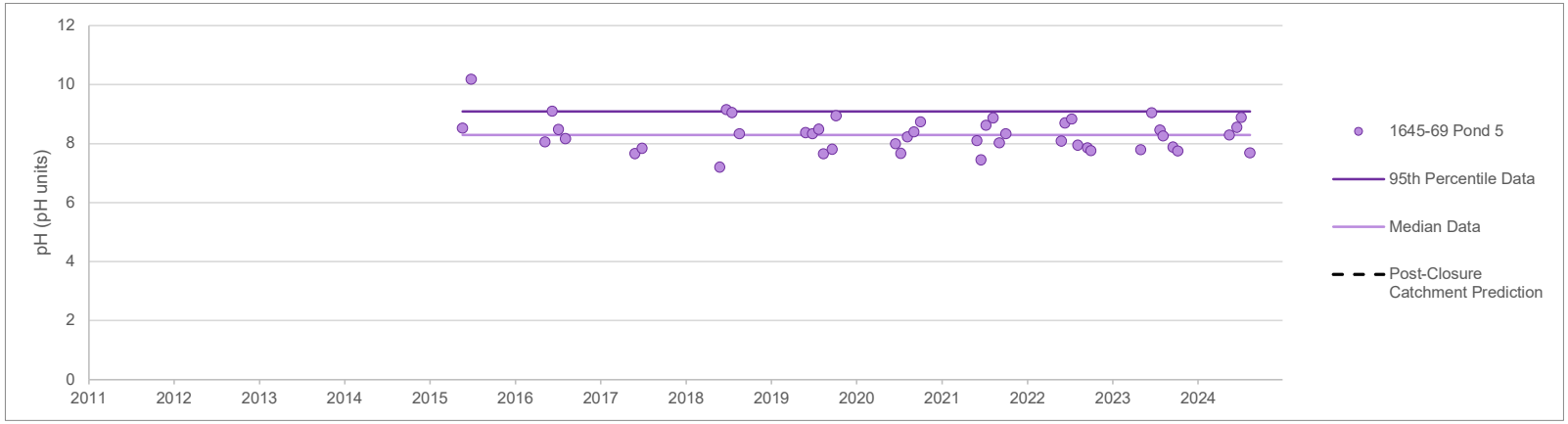
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.219	Wildlife	10.0
Median	0.052	Human recreational	20.0
Count	54	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



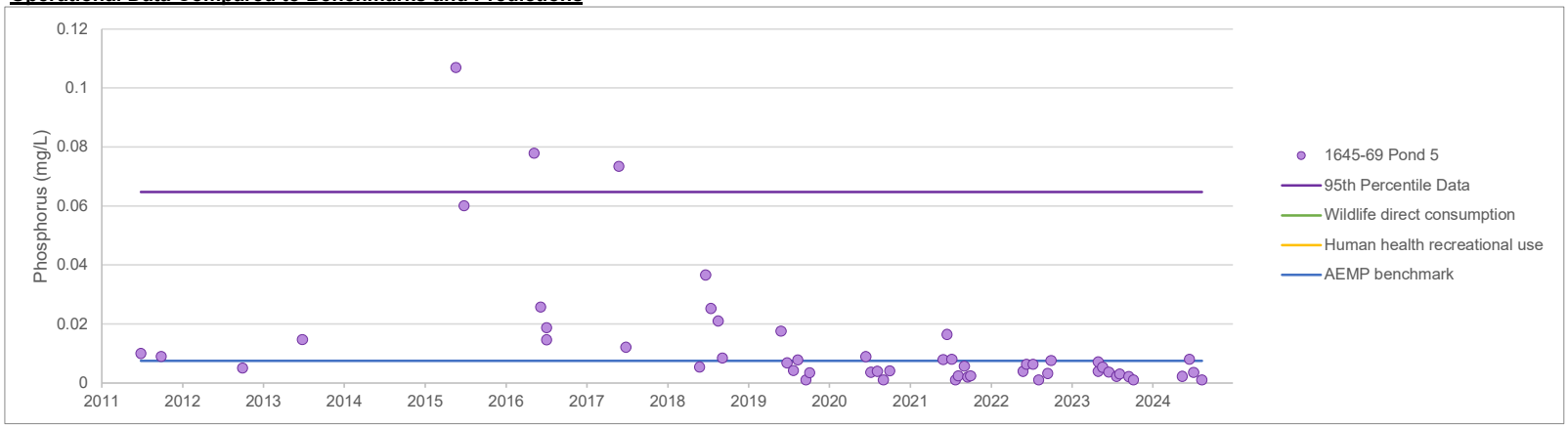


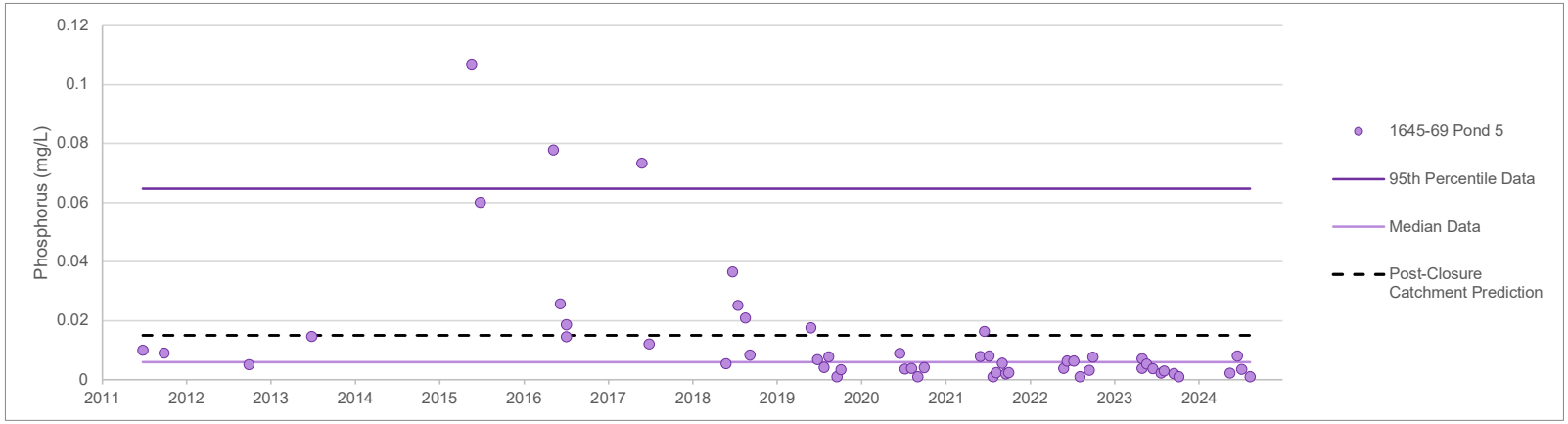
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	9.1	Wildlife	None
Median	8.3	Human recreational	None
Count	45	AEMP	None

Operational Data Compared to Benchmarks and Predictions



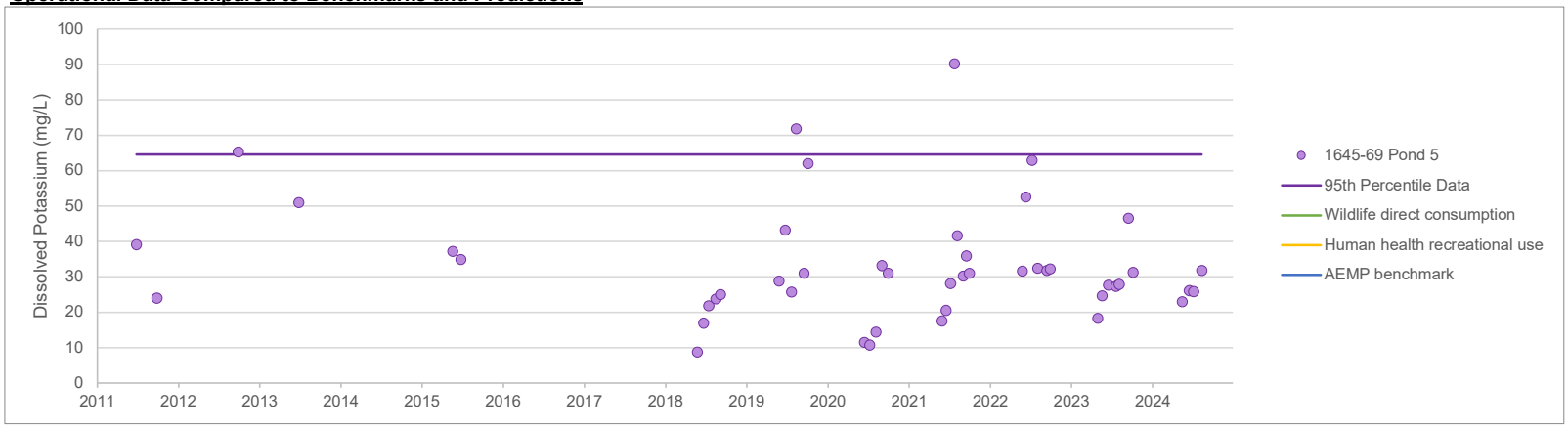


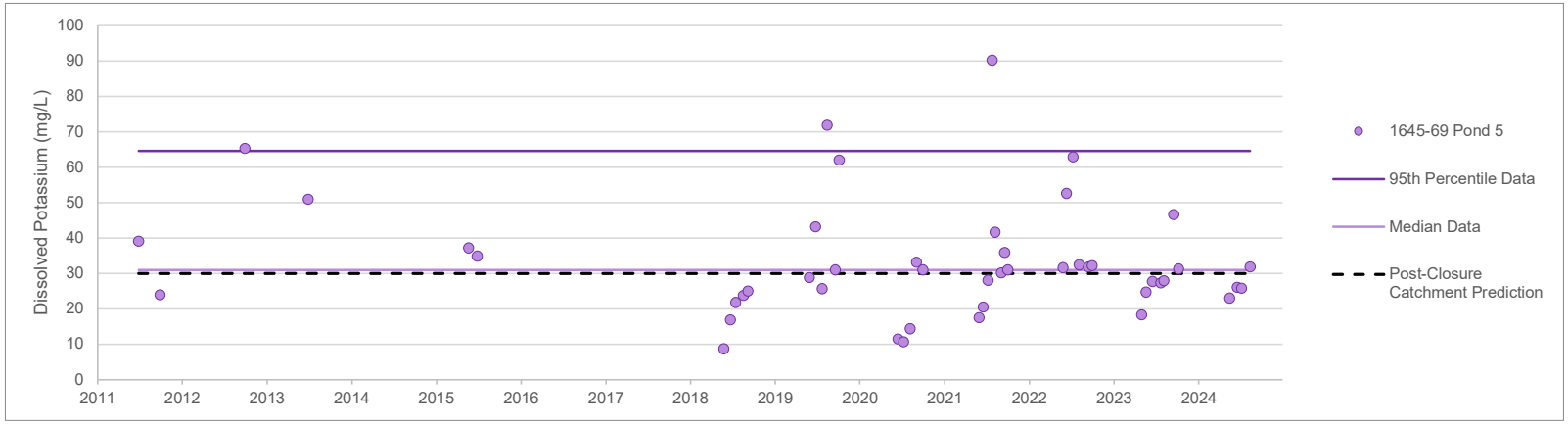
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.065	Wildlife	None
Median	0.006	Human recreational	None
Count	54	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



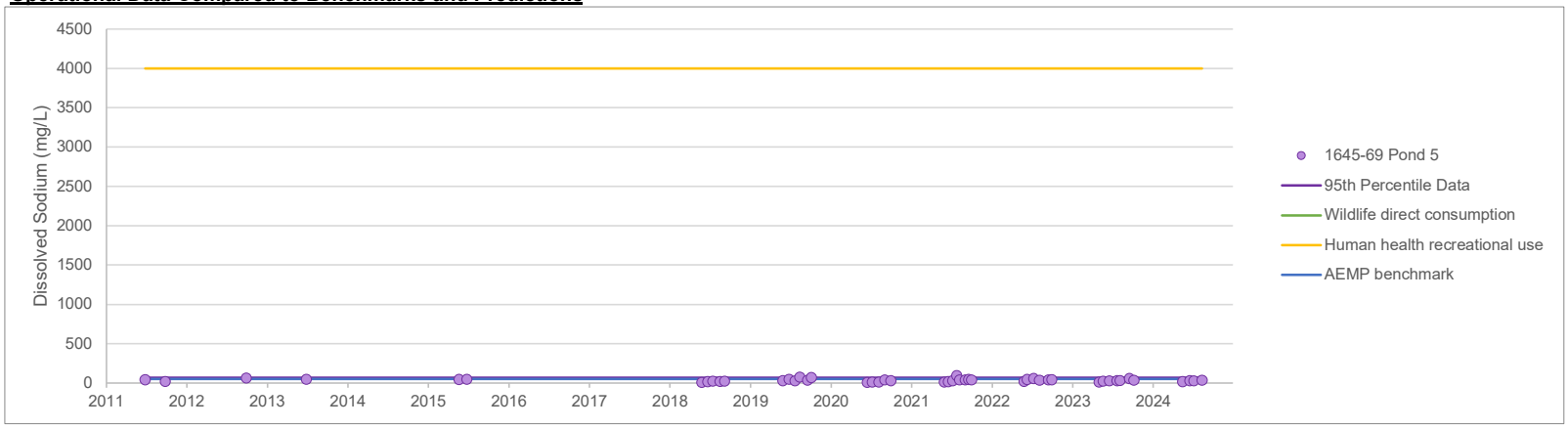


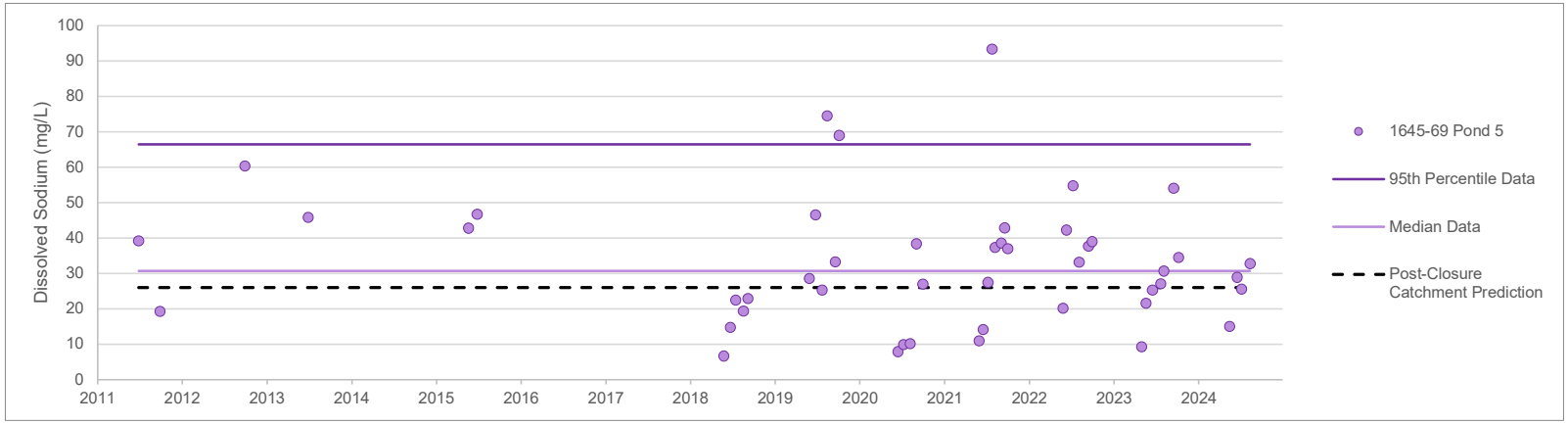
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	64.6	Wildlife	None
Median	31.0	Human recreational	None
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



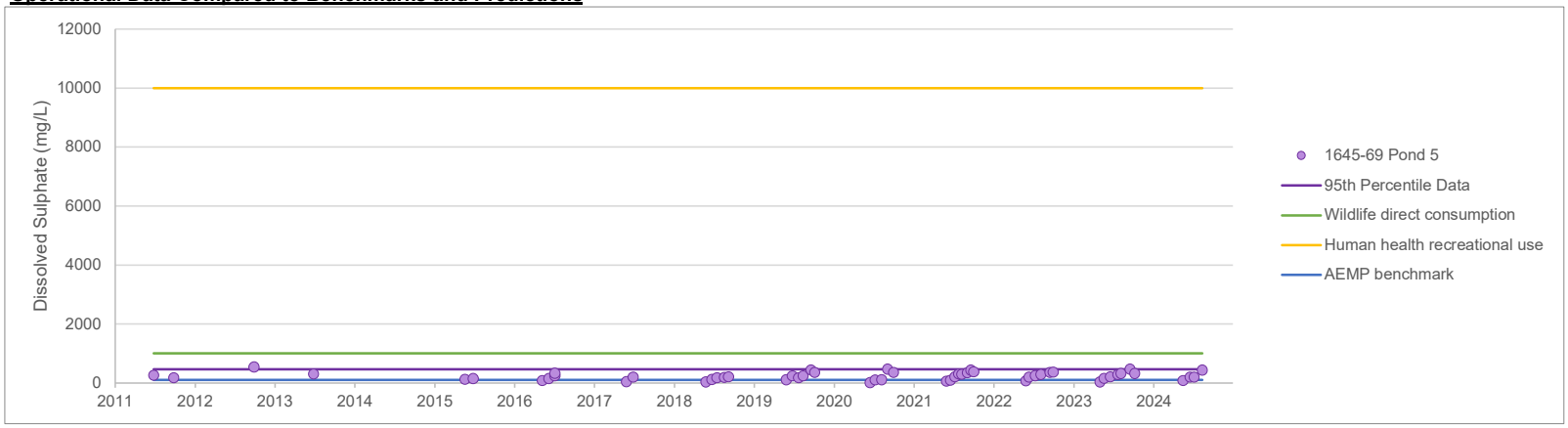


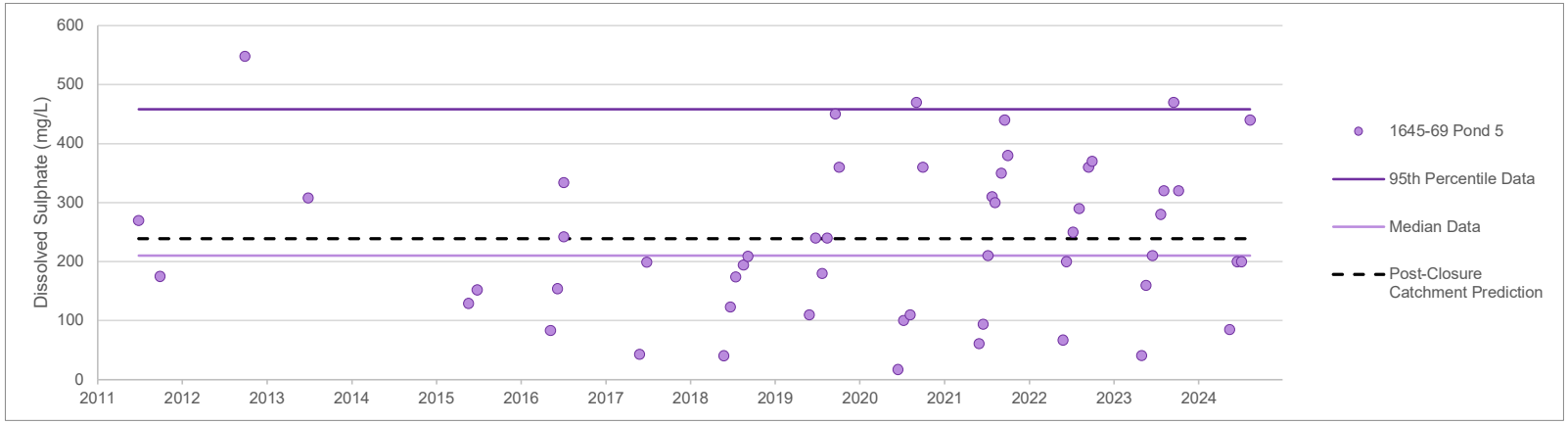
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	66.4	Wildlife	None
Median	30.7	Human recreational	4000
Count	47	AEMP	52

Operational Data Compared to Benchmarks and Predictions



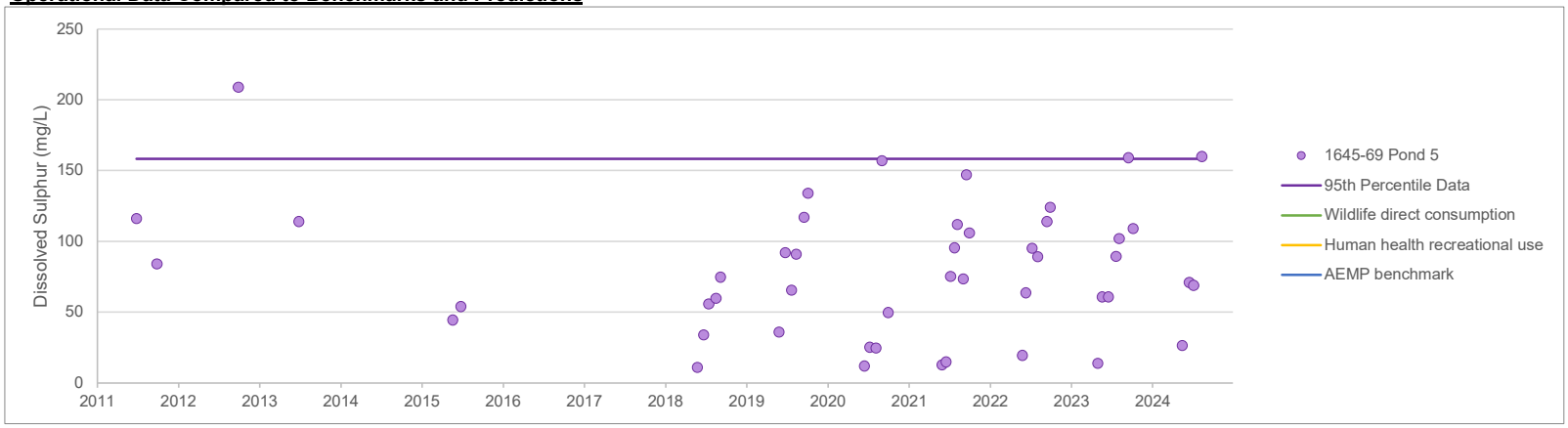


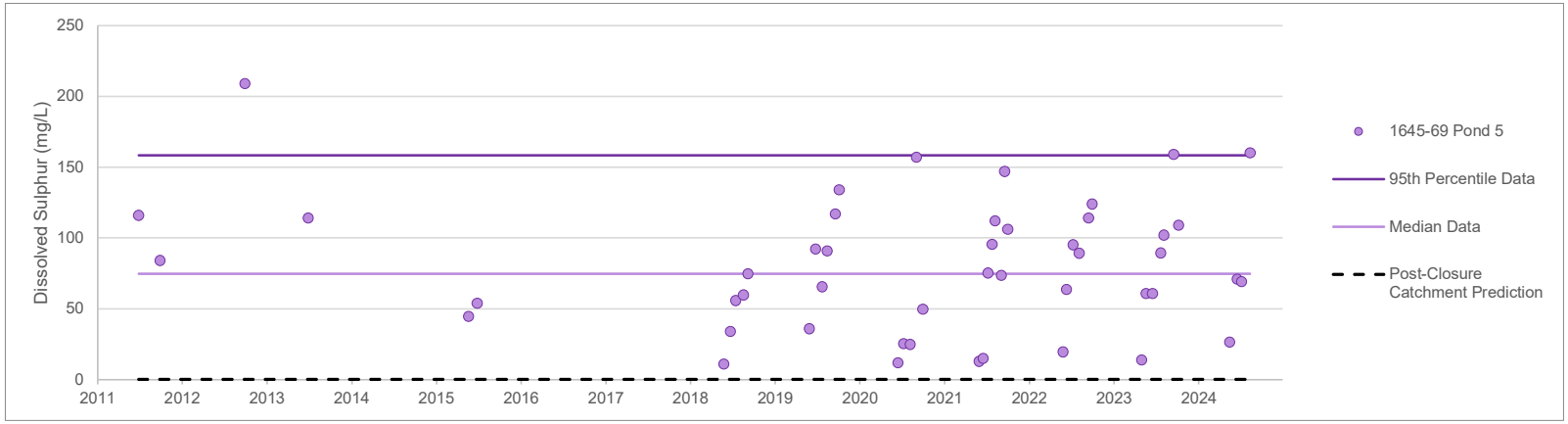
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	458	Wildlife	1000
Median	210	Human recreational	10000
Count	53	AEMP	100

Operational Data Compared to Benchmarks and Predictions



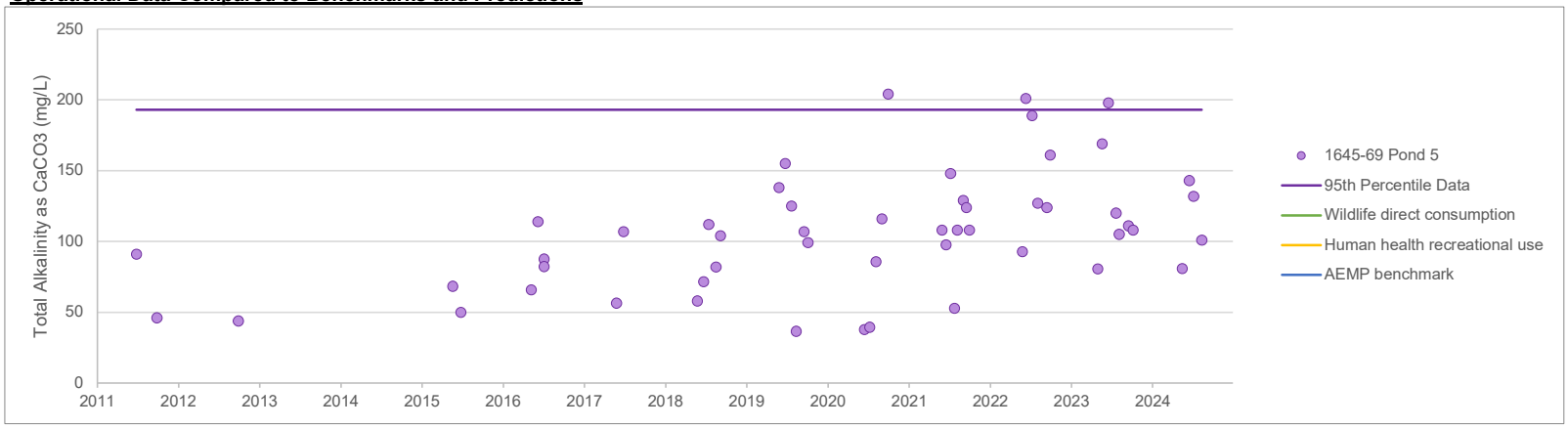


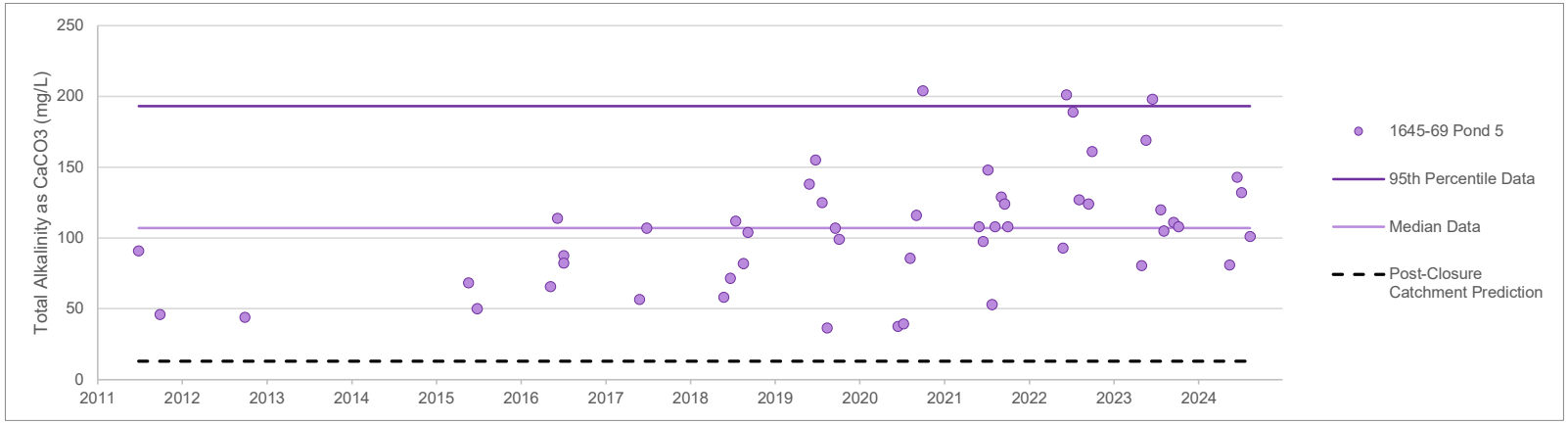
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	158.4	Wildlife	None
Median	74.7	Human recreational	None
Count	47	AEMP	None

Operational Data Compared to Benchmarks and Predictions



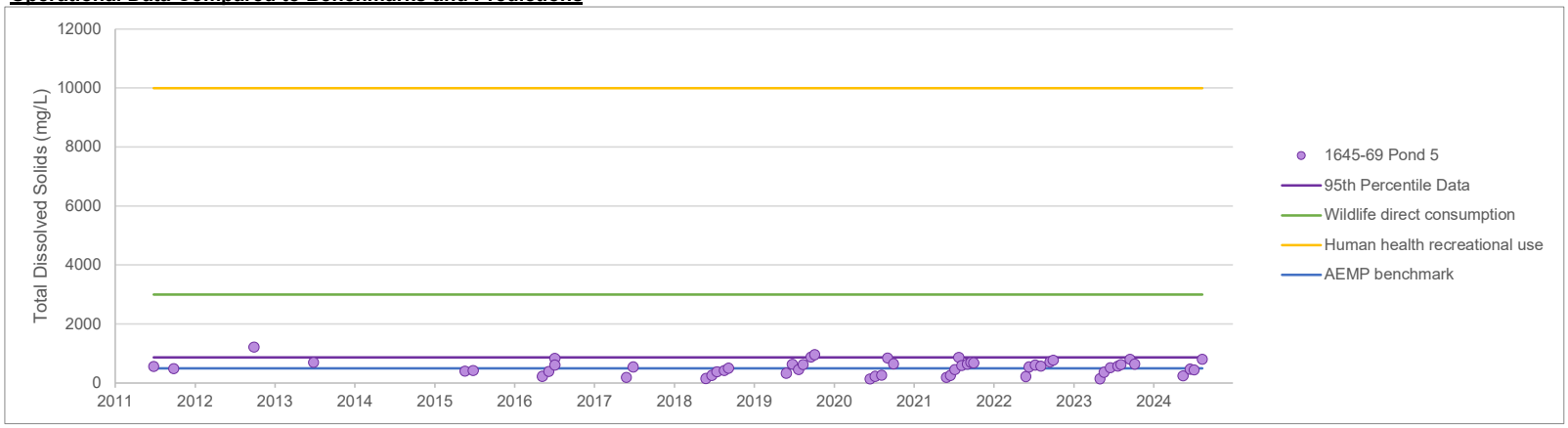


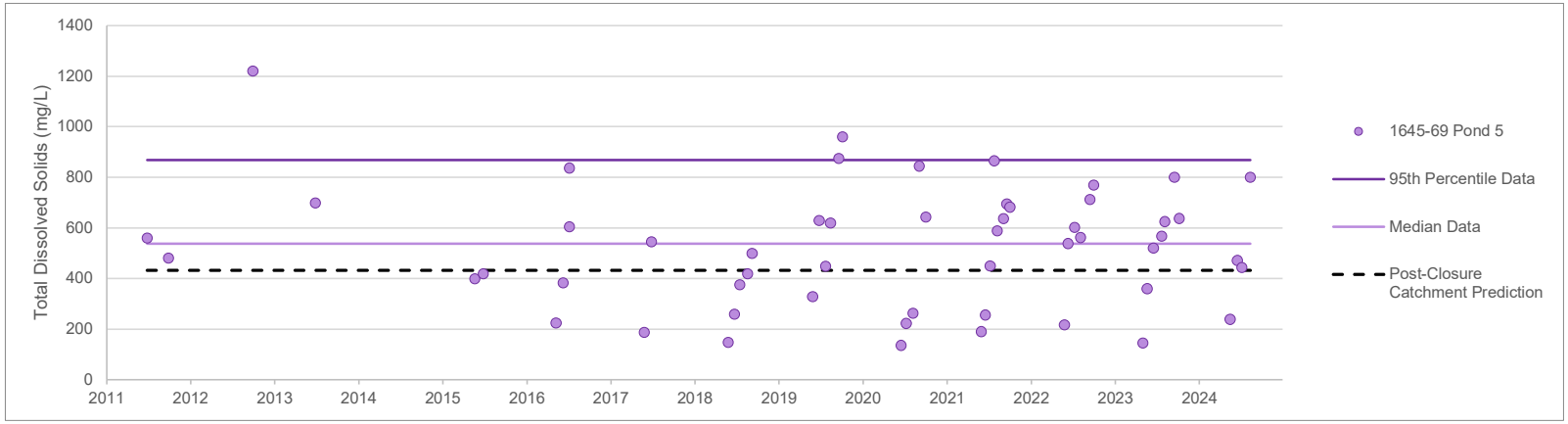
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	193.1	Wildlife	None
Median	107.0	Human recreational	None
Count	52	AEMP	None

Operational Data Compared to Benchmarks and Predictions



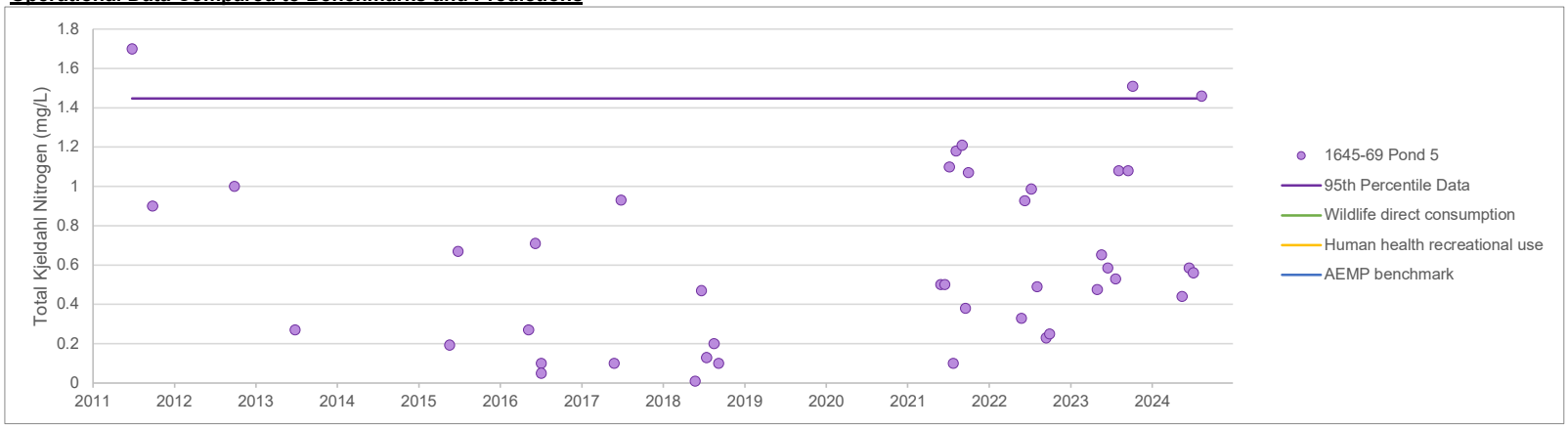


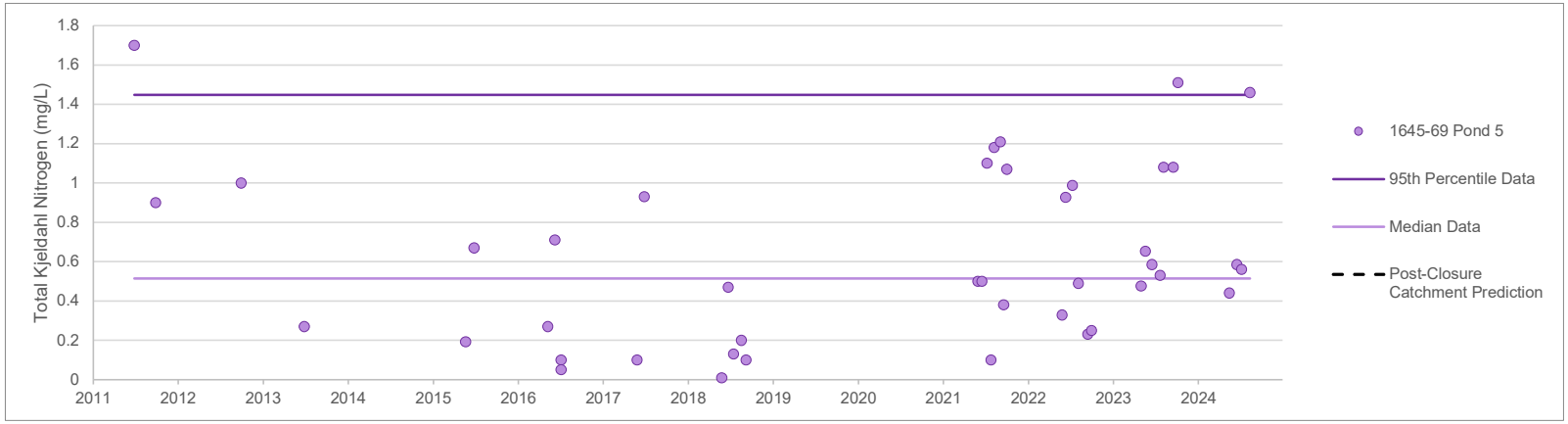
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	869	Wildlife	3000
Median	538	Human recreational	10000
Count	53	AEMP	500

Operational Data Compared to Benchmarks and Predictions



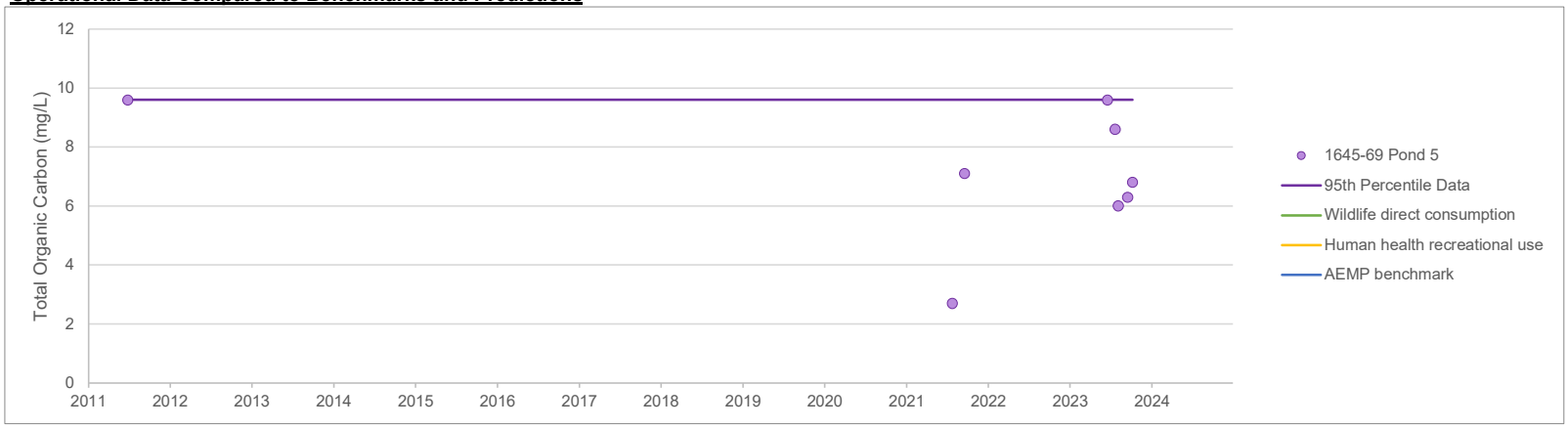


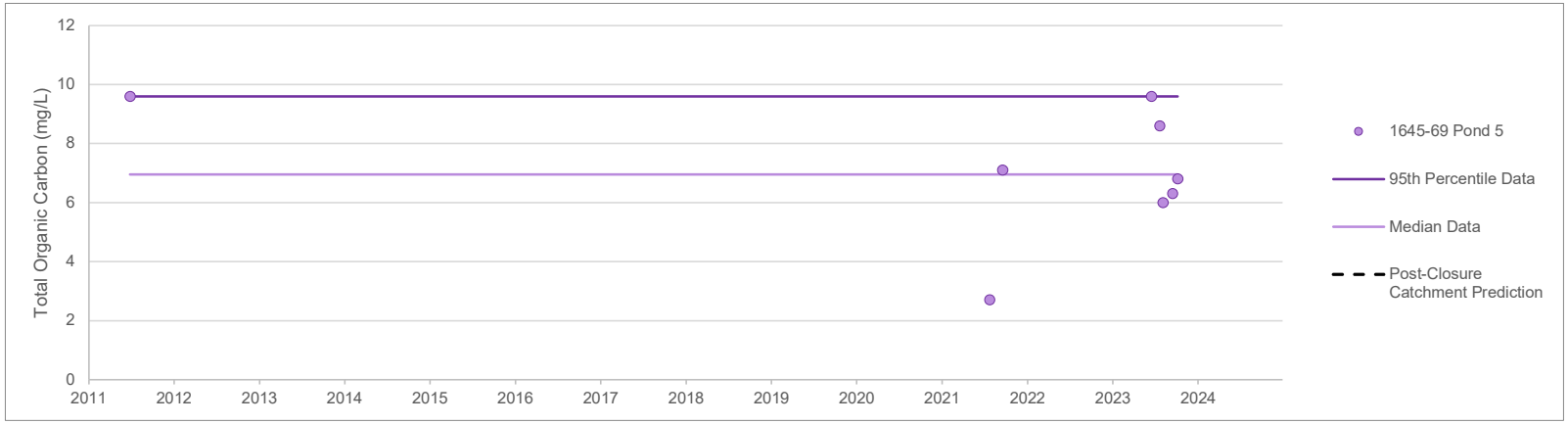
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.4	Wildlife	None
Median	0.5	Human recreational	None
Count	42	AEMP	None

Operational Data Compared to Benchmarks and Predictions



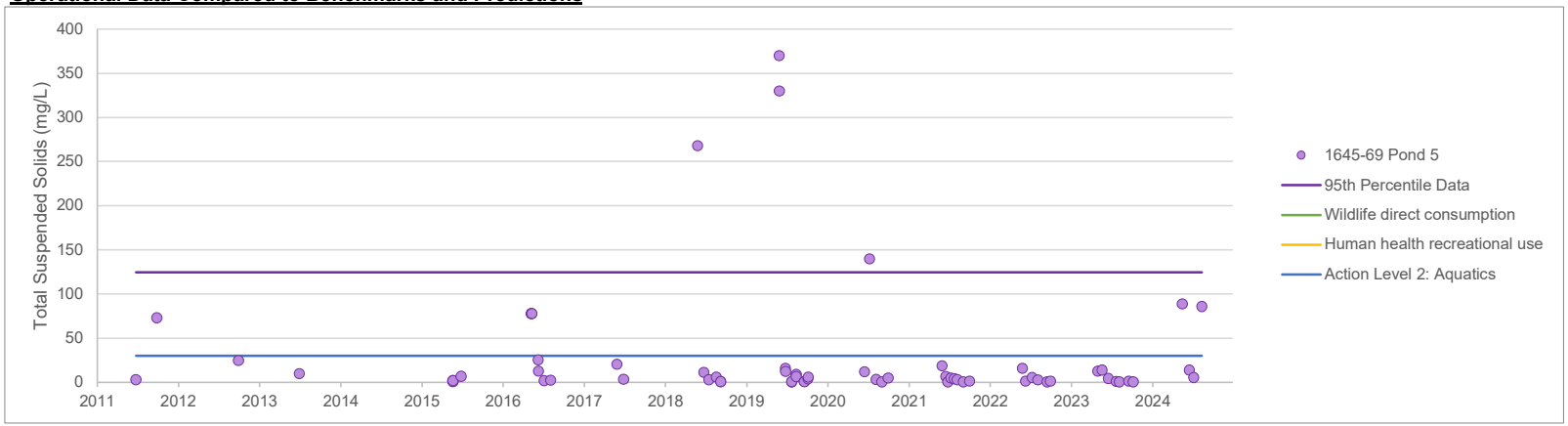


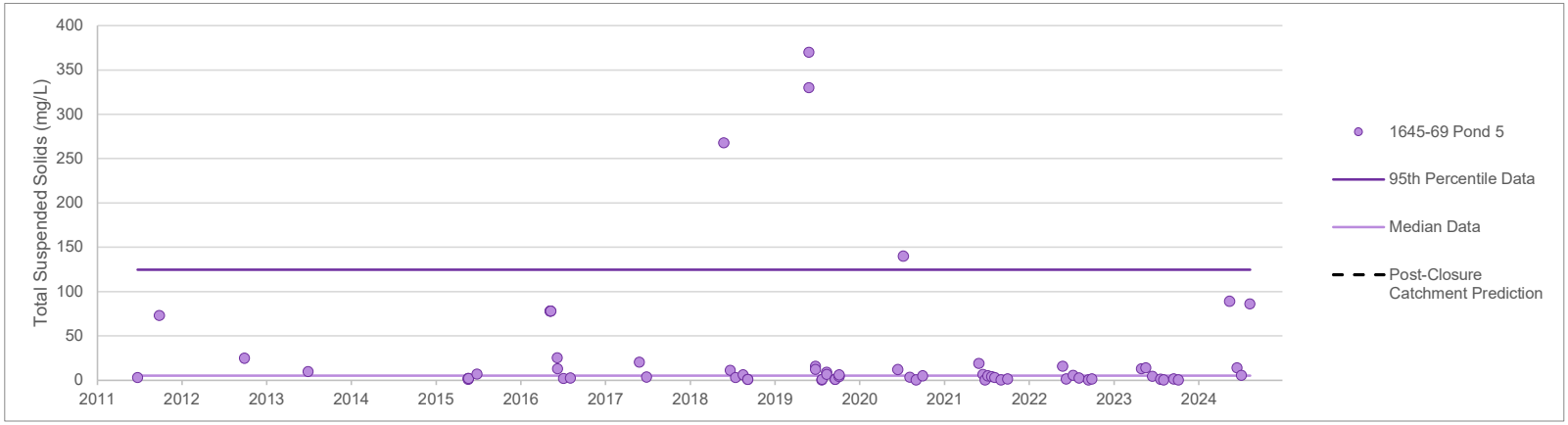
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	9.6	Wildlife	None
Median	7.0	Human recreational	None
Count	8	AEMP	None

Operational Data Compared to Benchmarks and Predictions



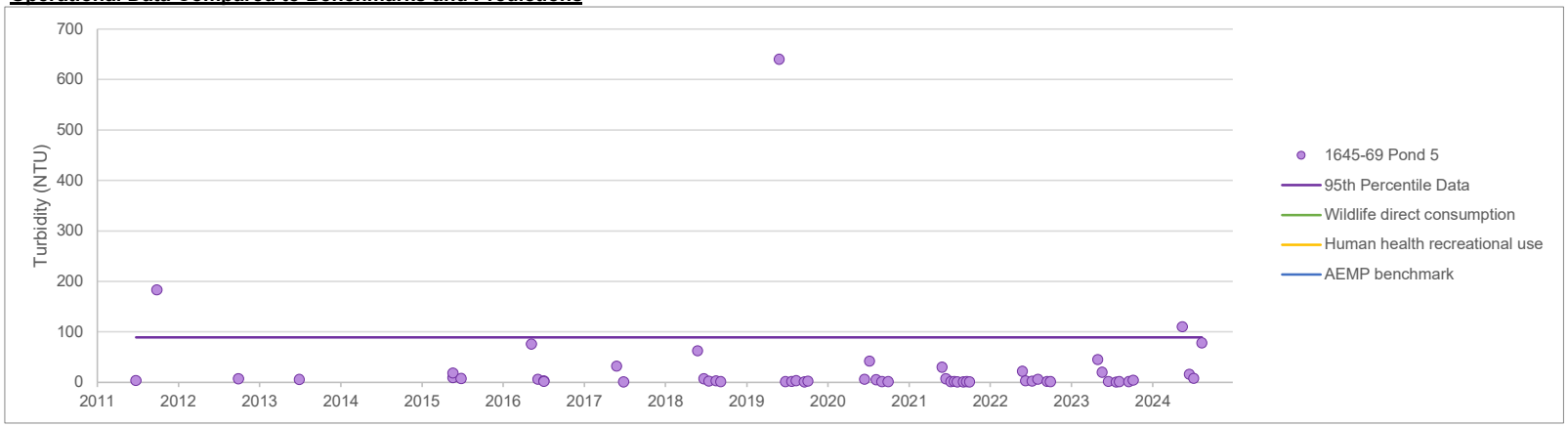


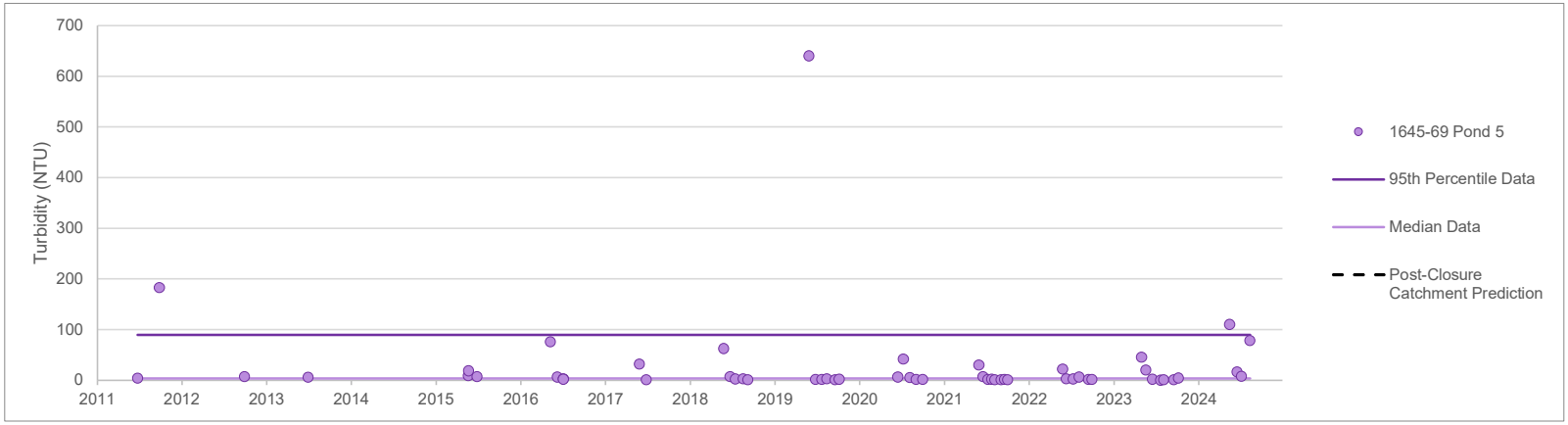
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	124.7	Wildlife	None
Median	5.1	Human recreational	None
Count	67	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



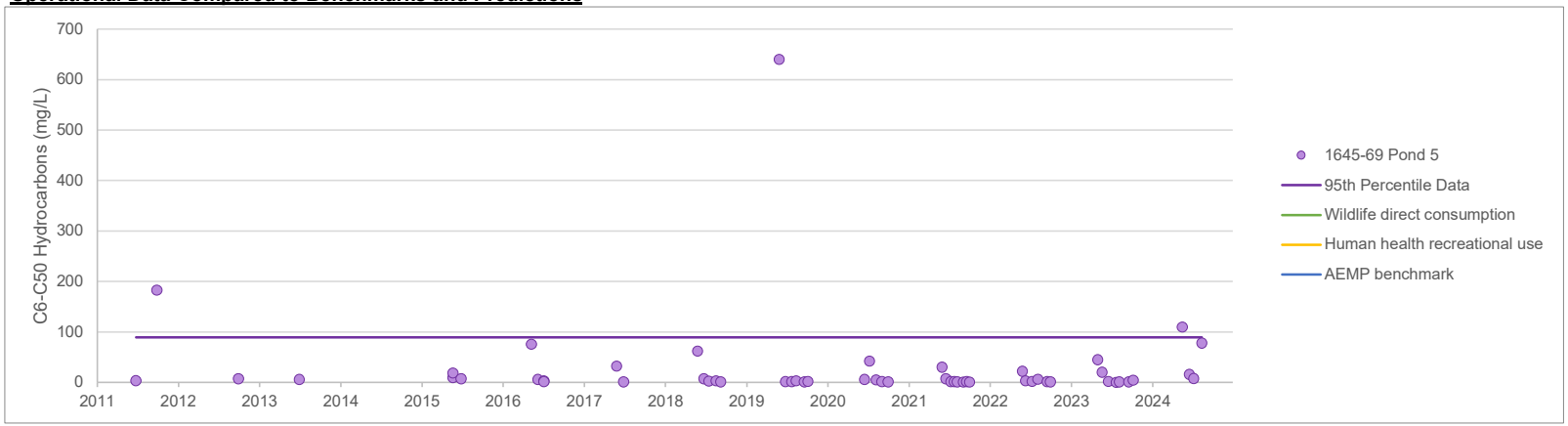


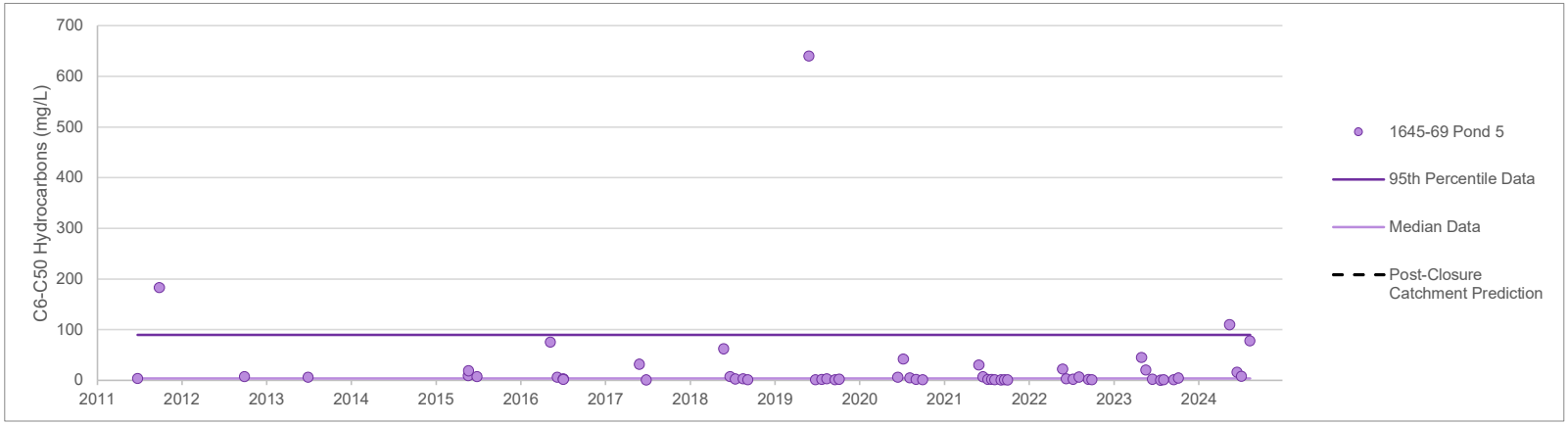
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	89.2	Wildlife	None
Median	3.3	Human recreational	None
Count	54	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	7	AEMP	None

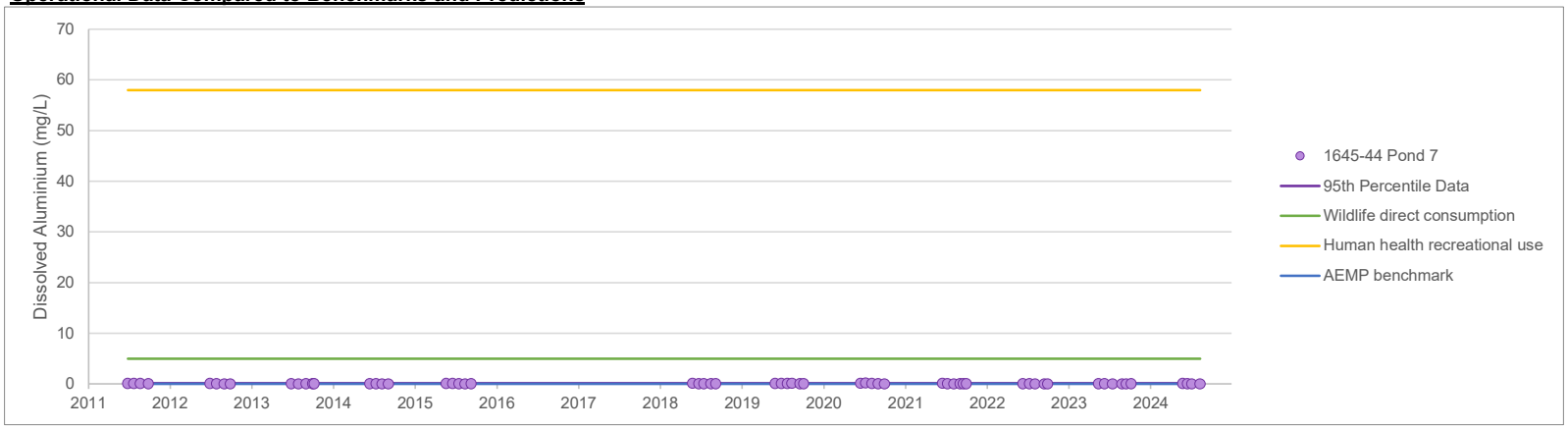
Pond 7

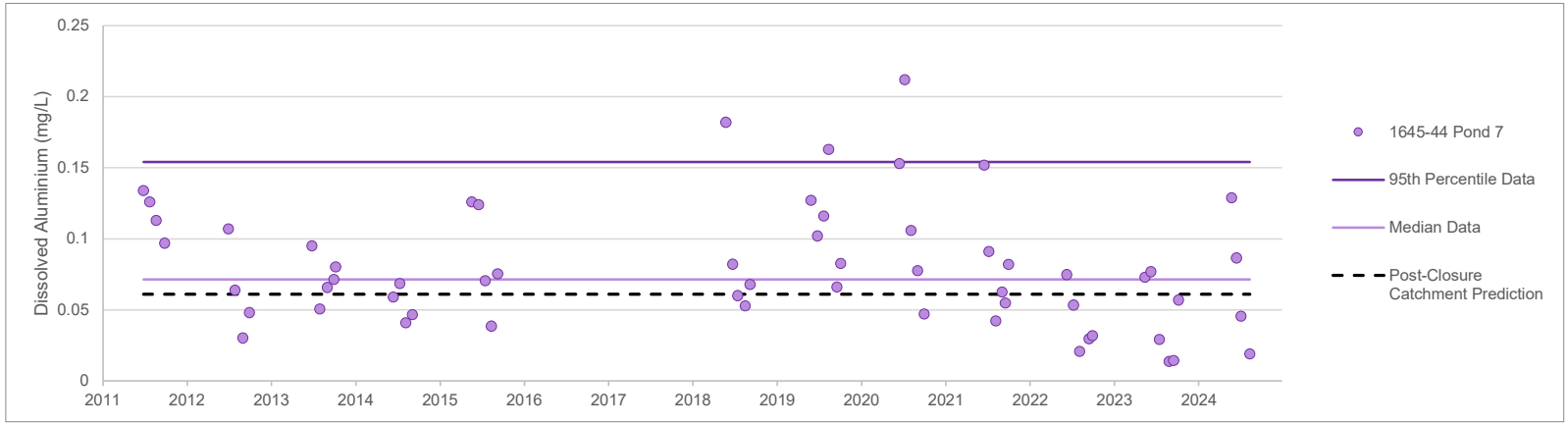
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



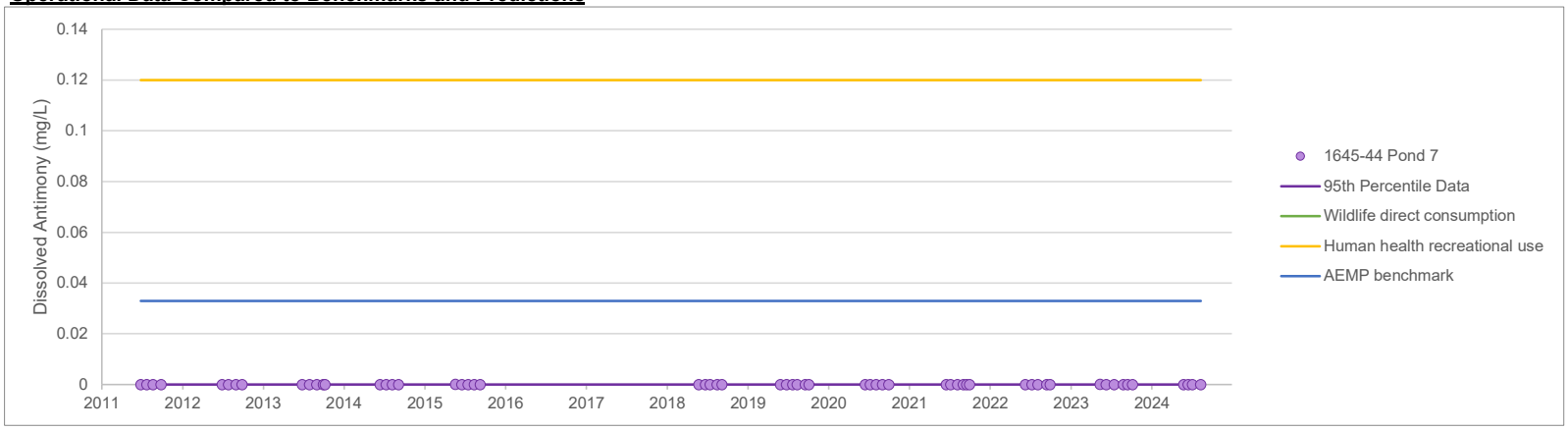


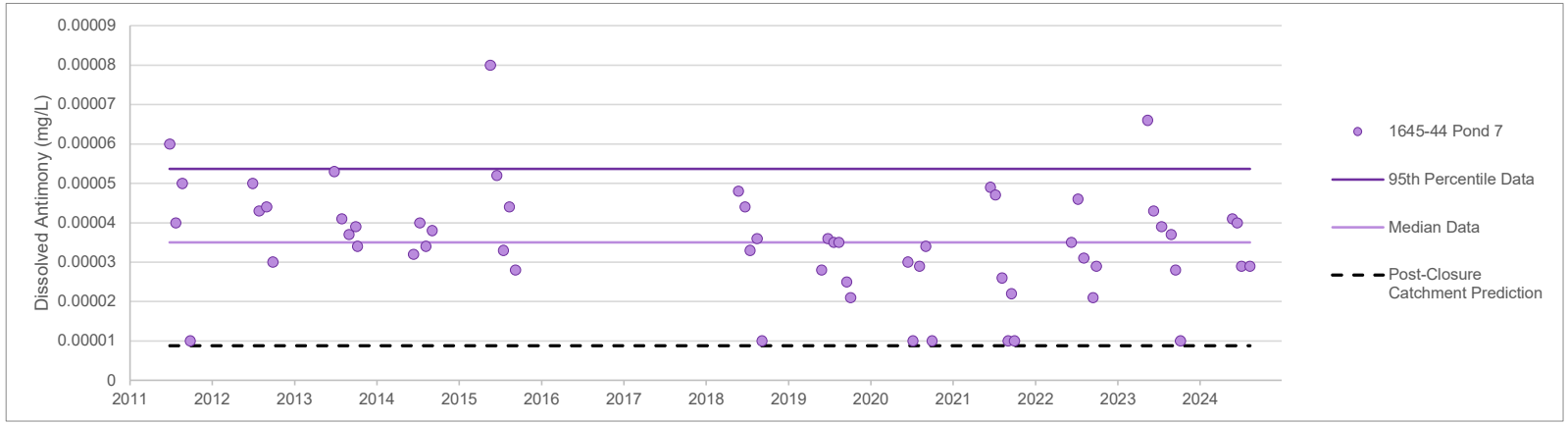
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.154	Wildlife	5.0
Median	0.071	Human recreational	58.0
Count	59	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions

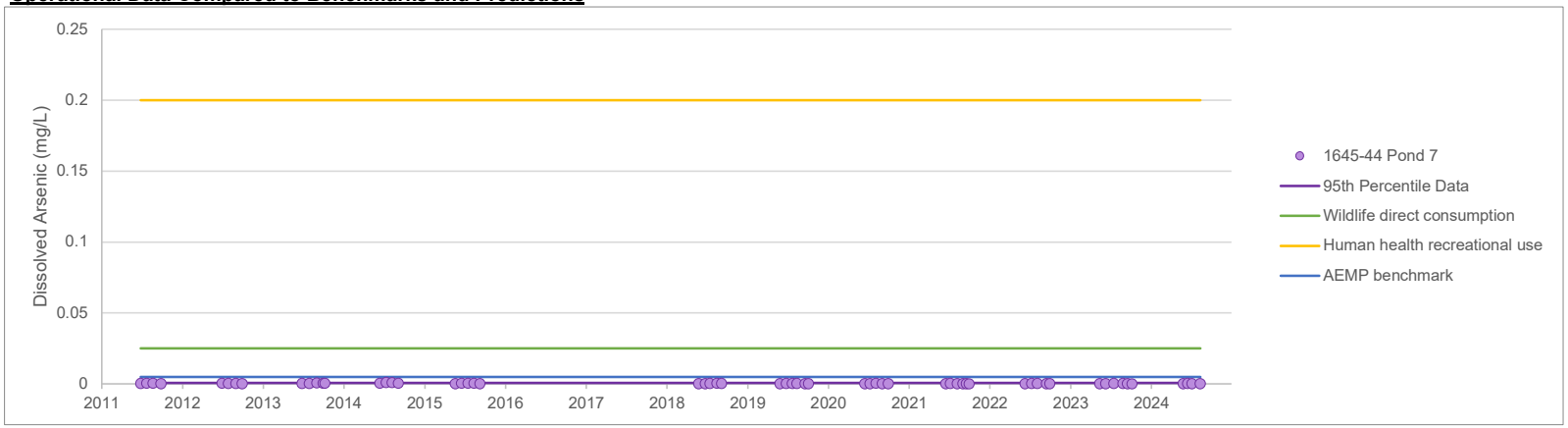


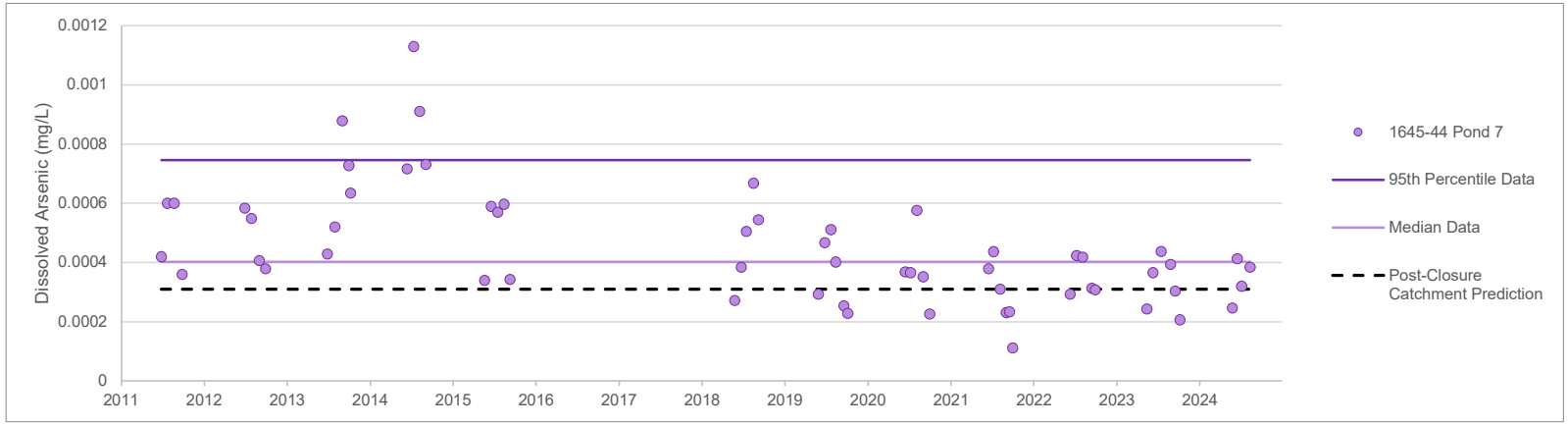


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00005	Wildlife	None
Median	0.00004	Human recreational	0.12
Count	59	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions

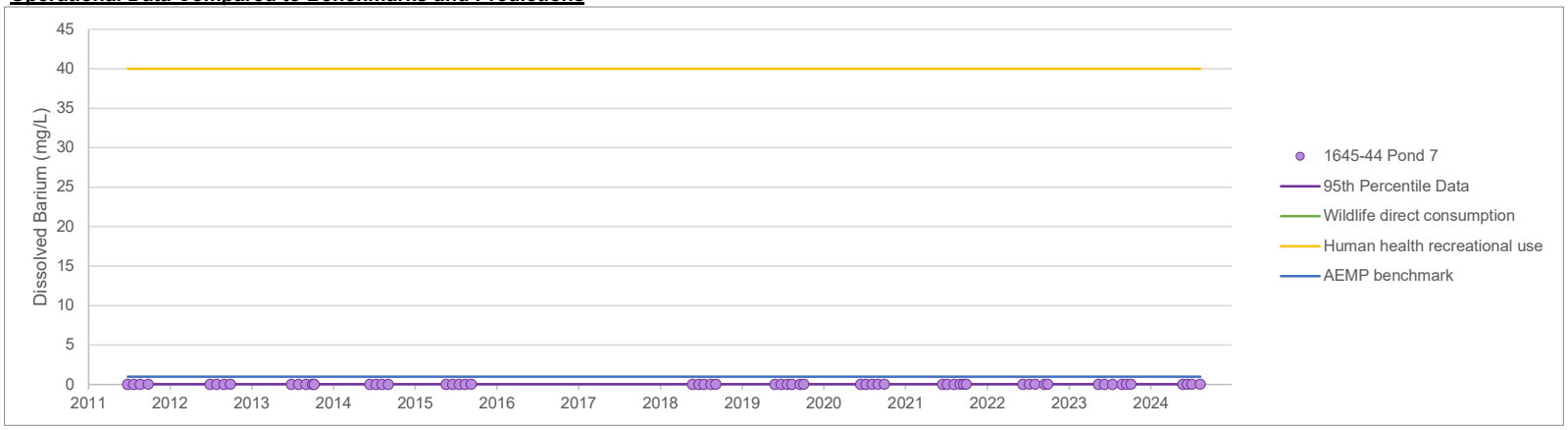


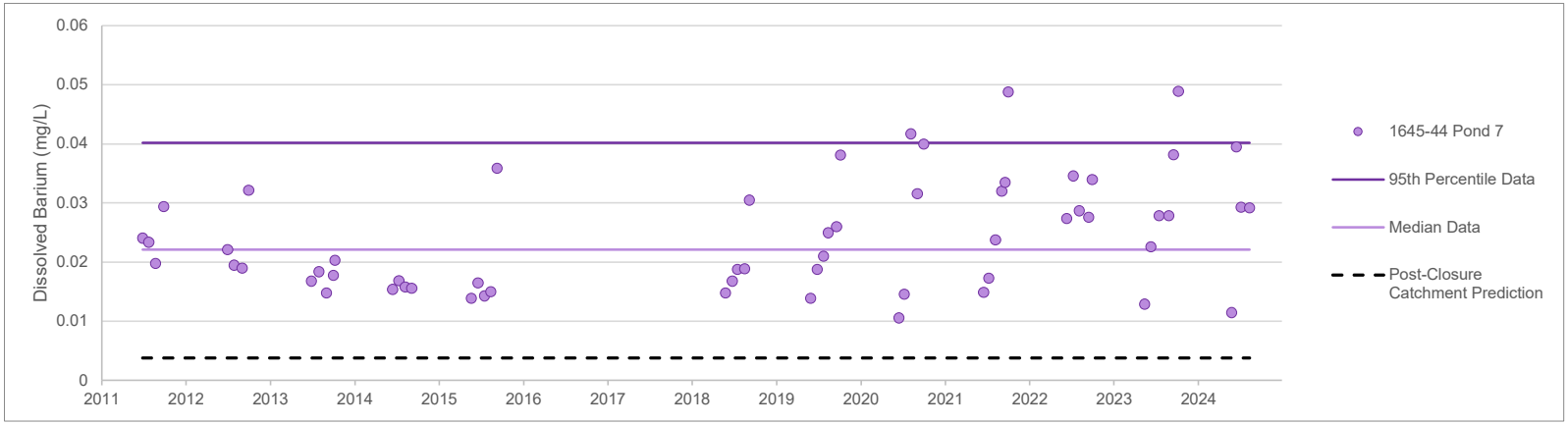


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0007	Wildlife	0.03
Median	0.0004	Human recreational	0.20
Count	59	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

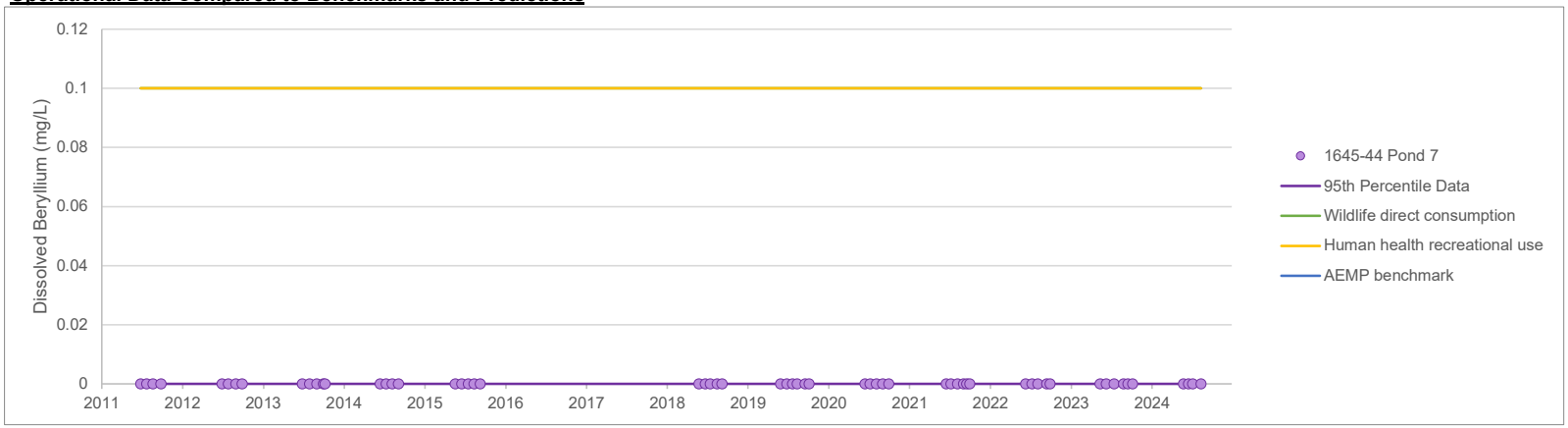


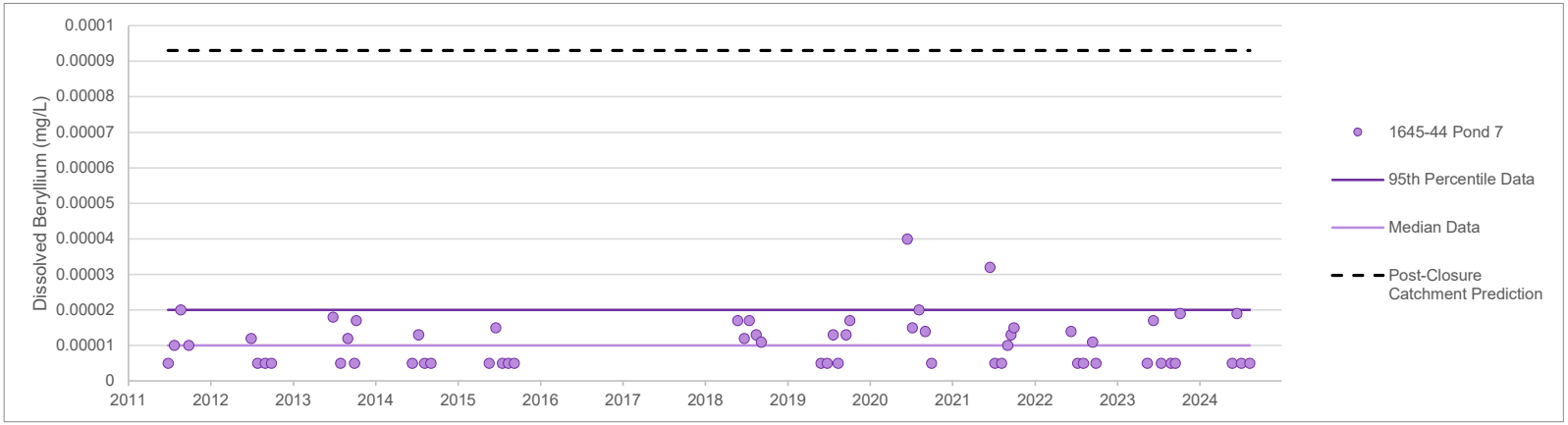


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.040	Wildlife	None
Median	0.022	Human recreational	40.0
Count	59	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



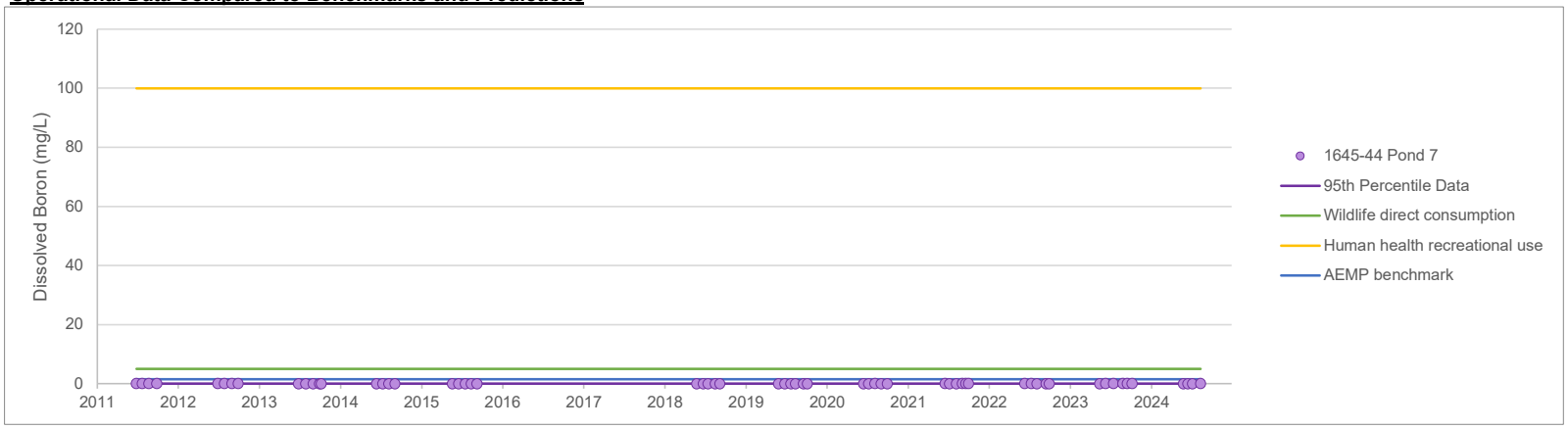


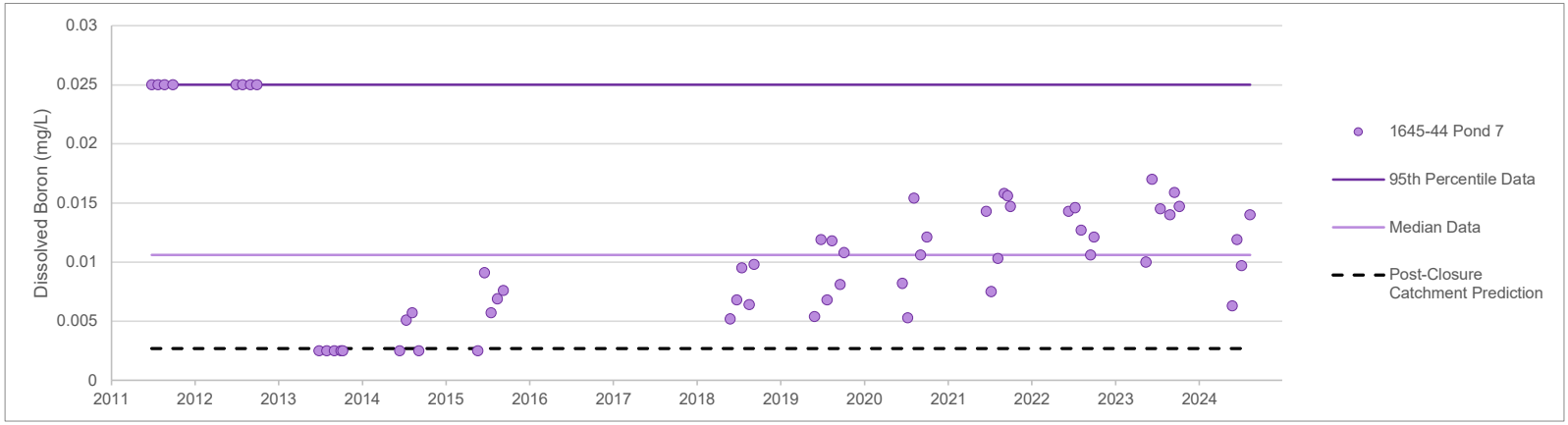
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000020	Wildlife	0.10
Median	0.000010	Human recreational	0.10
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



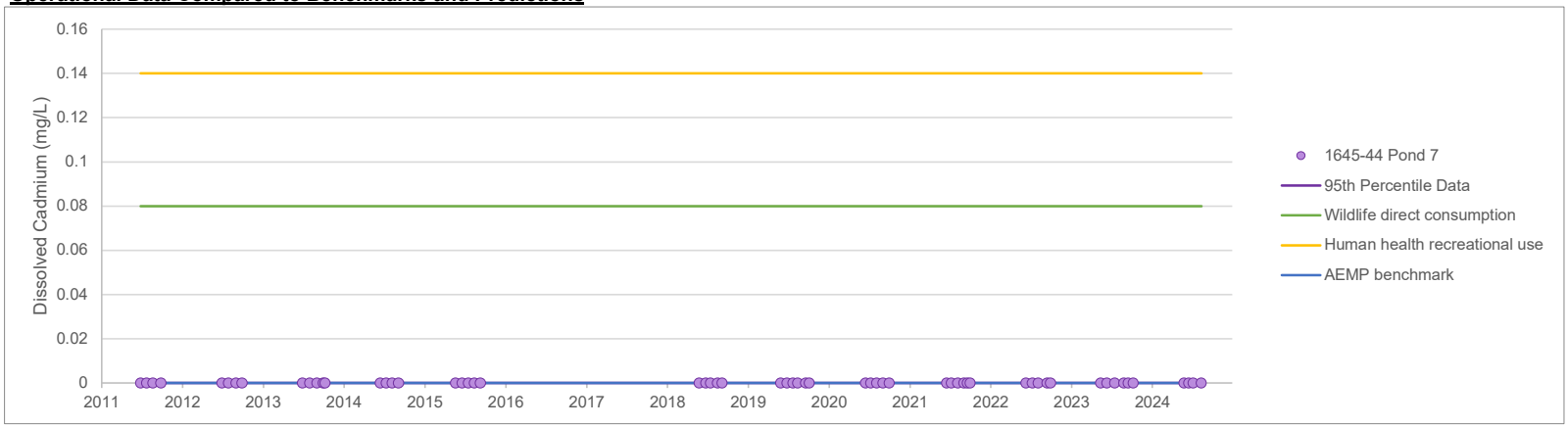


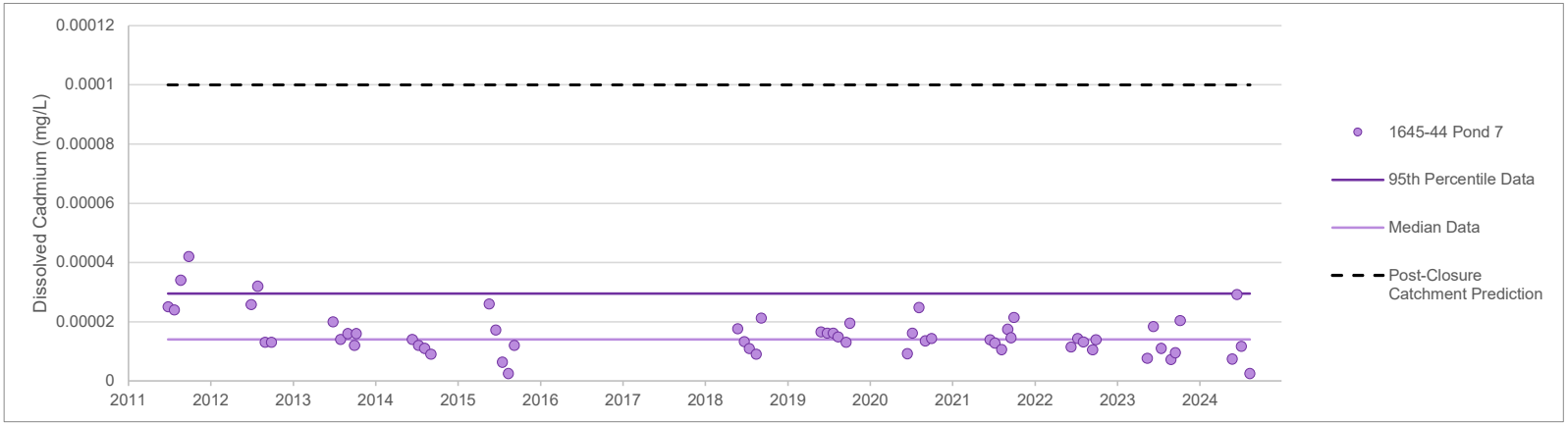
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.025	Wildlife	5.0
Median	0.011	Human recreational	100.0
Count	59	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

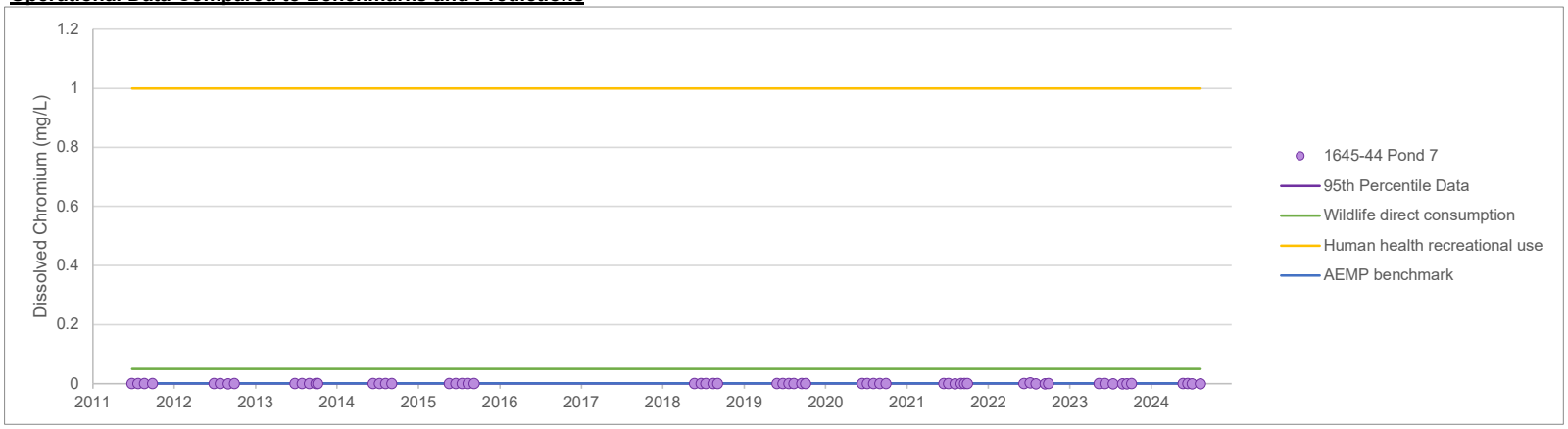


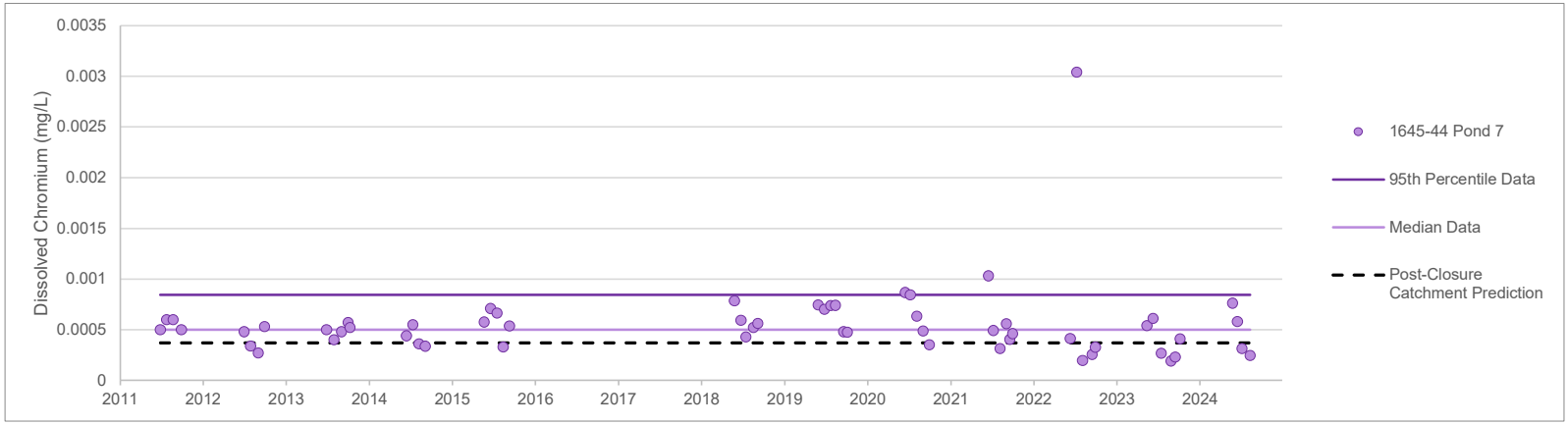


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00003	Wildlife	0.08
Median	0.00001	Human recreational	0.14
Count	59	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions

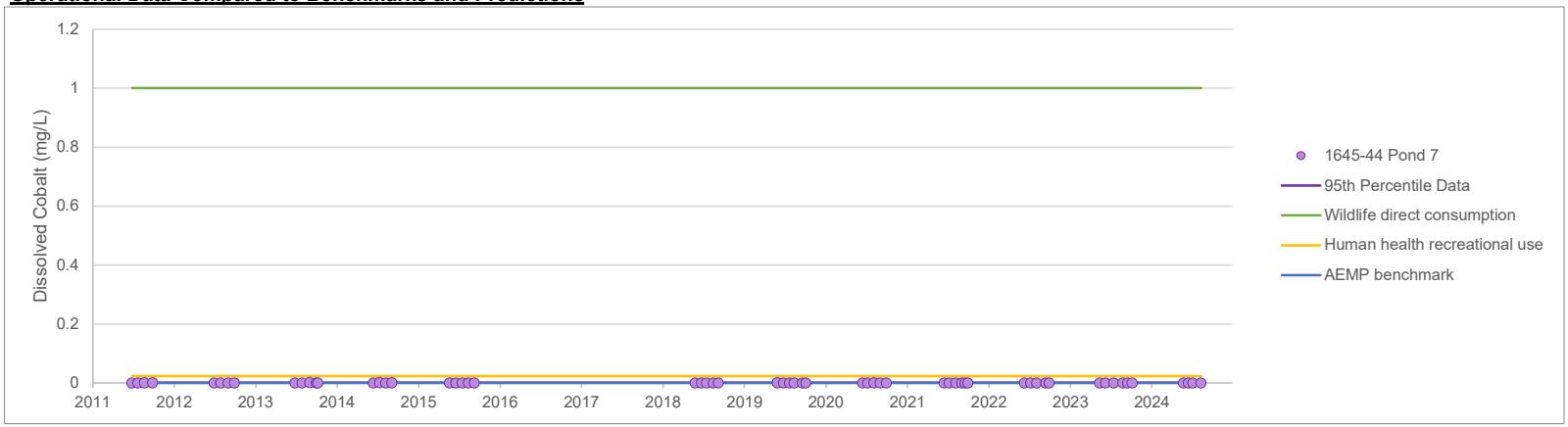


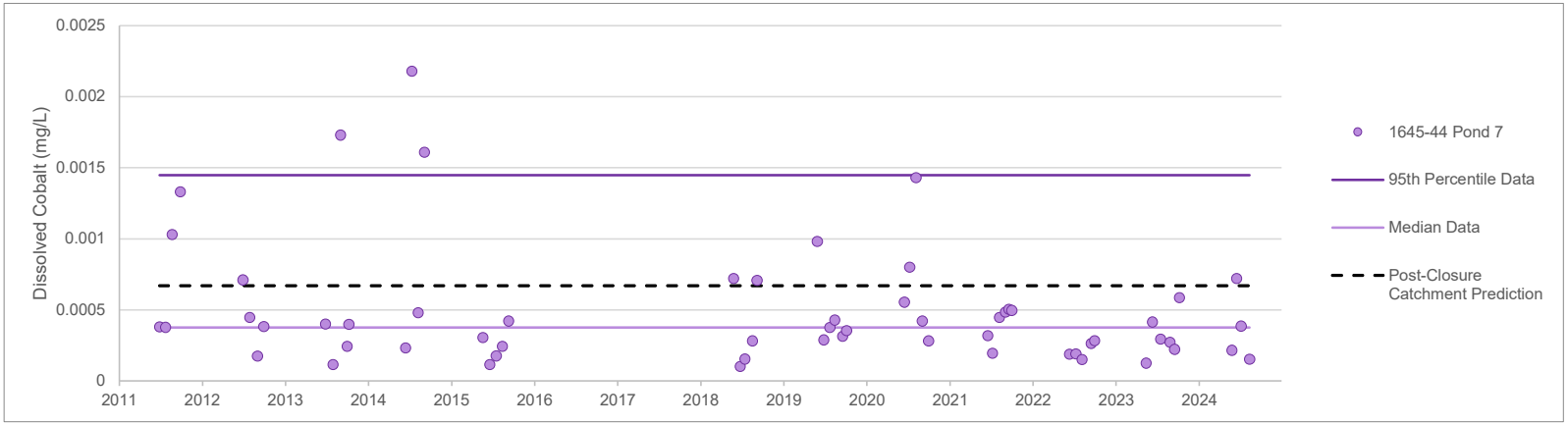


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00084	Wildlife	0.05
Median	0.00050	Human recreational	1.0
Count	59	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



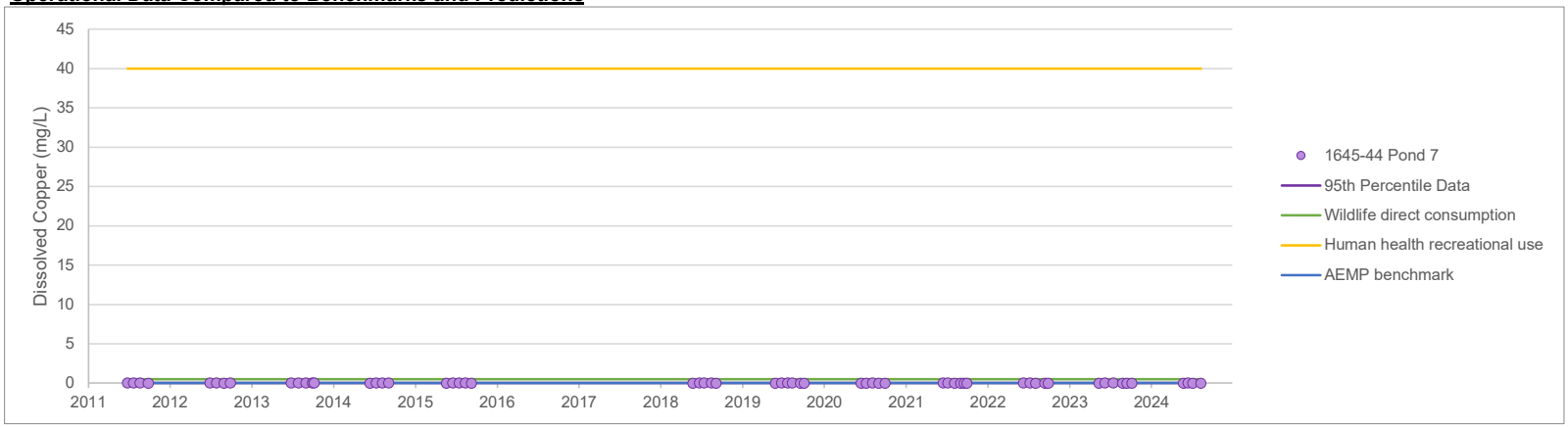


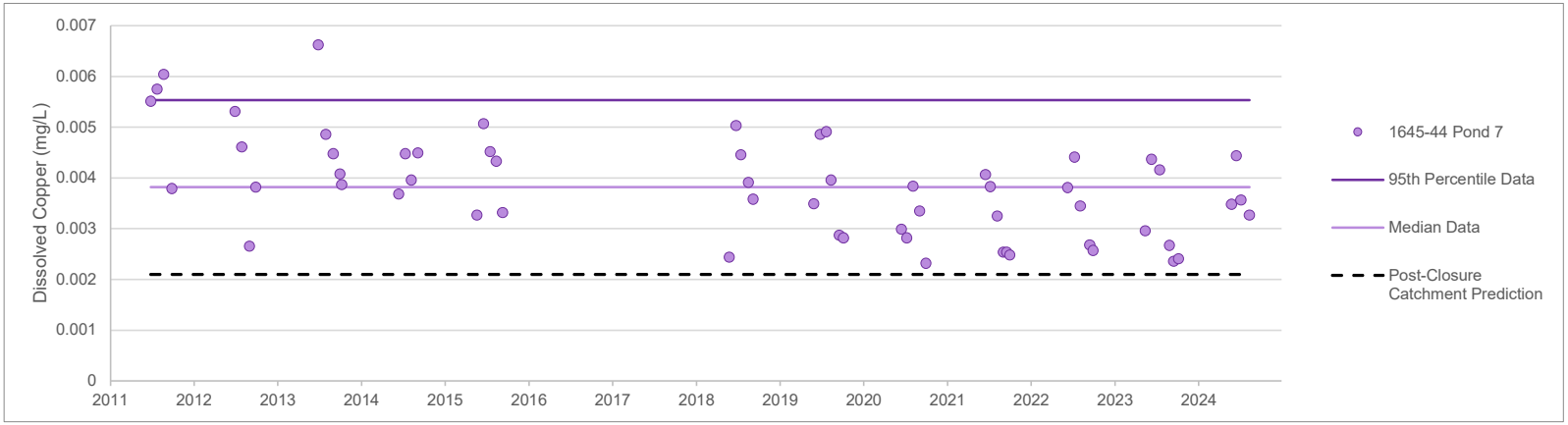
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0014	Wildlife	1.0
Median	0.0004	Human recreational	0.02
Count	59	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

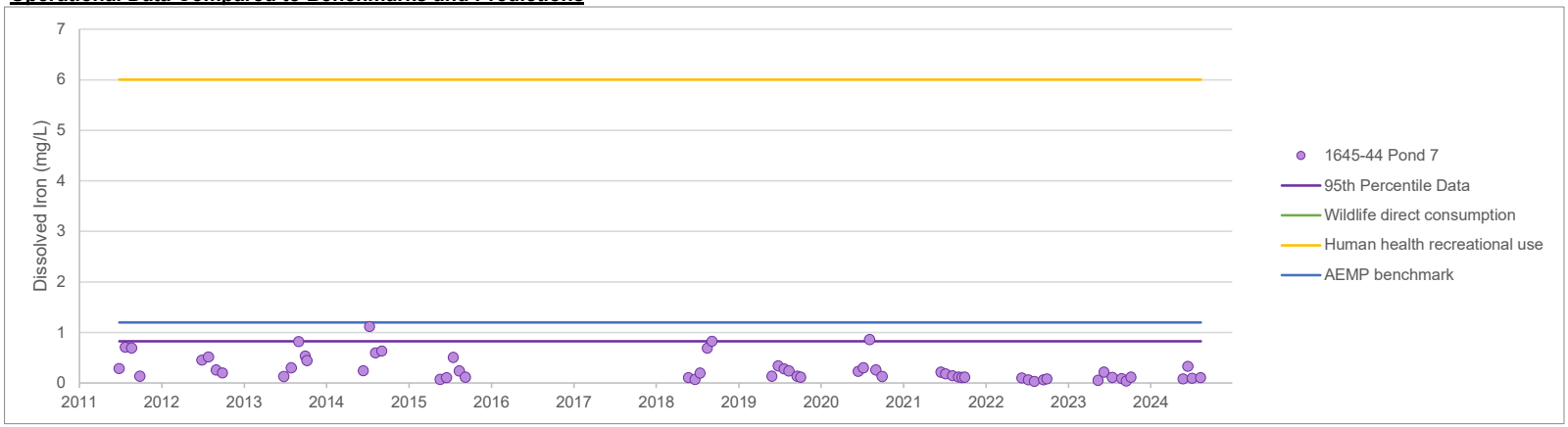


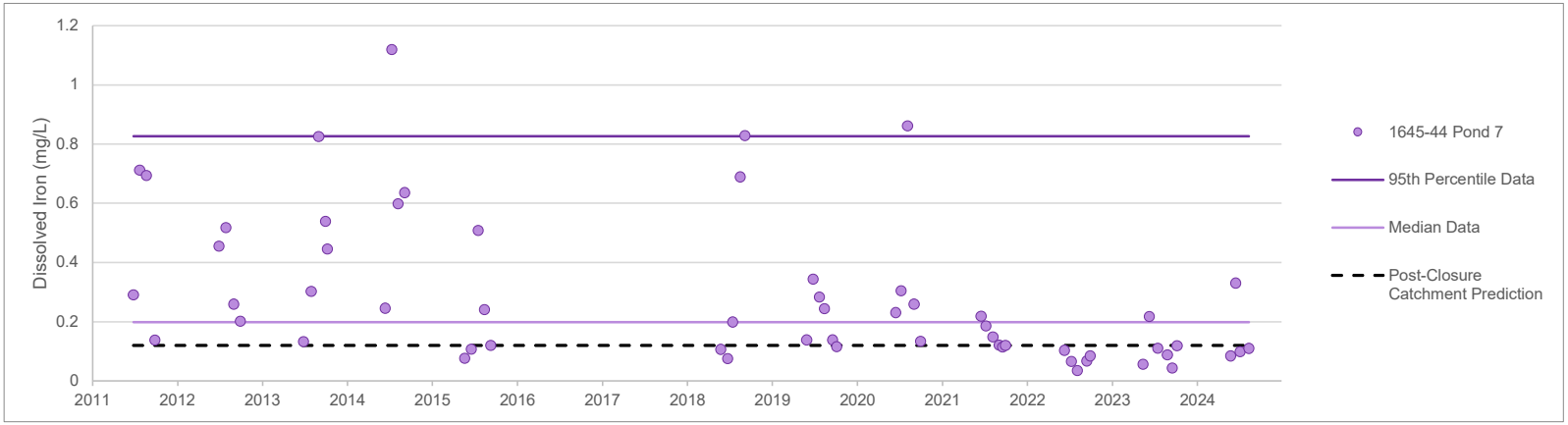


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0055	Wildlife	0.5
Median	0.0038	Human recreational	40.0
Count	59	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions

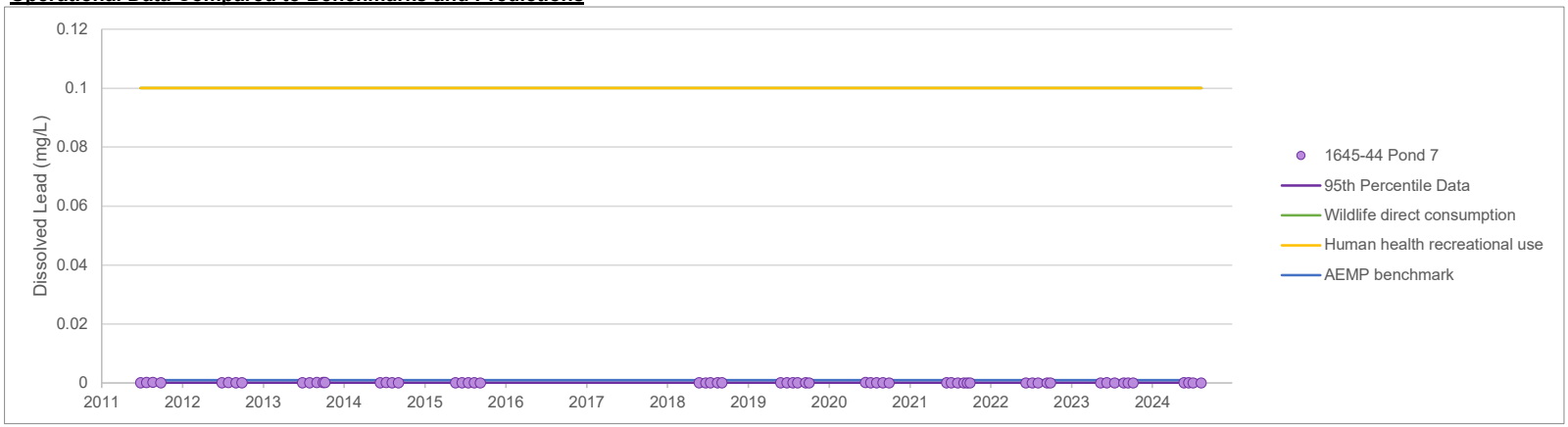


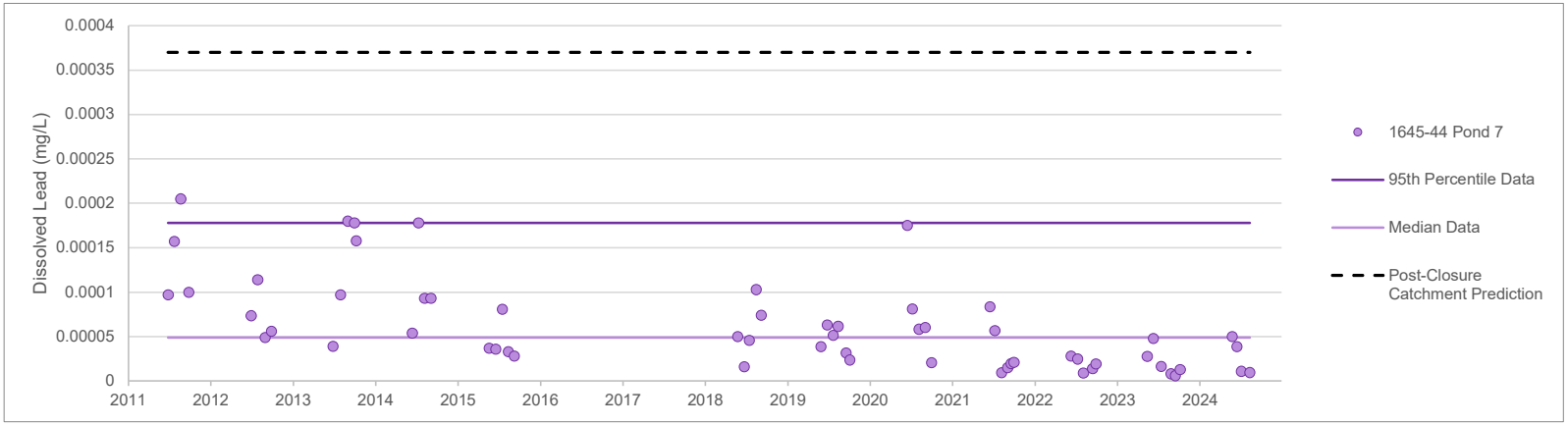


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.83	Wildlife	None
Median	0.20	Human recreational	6.0
Count	59	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

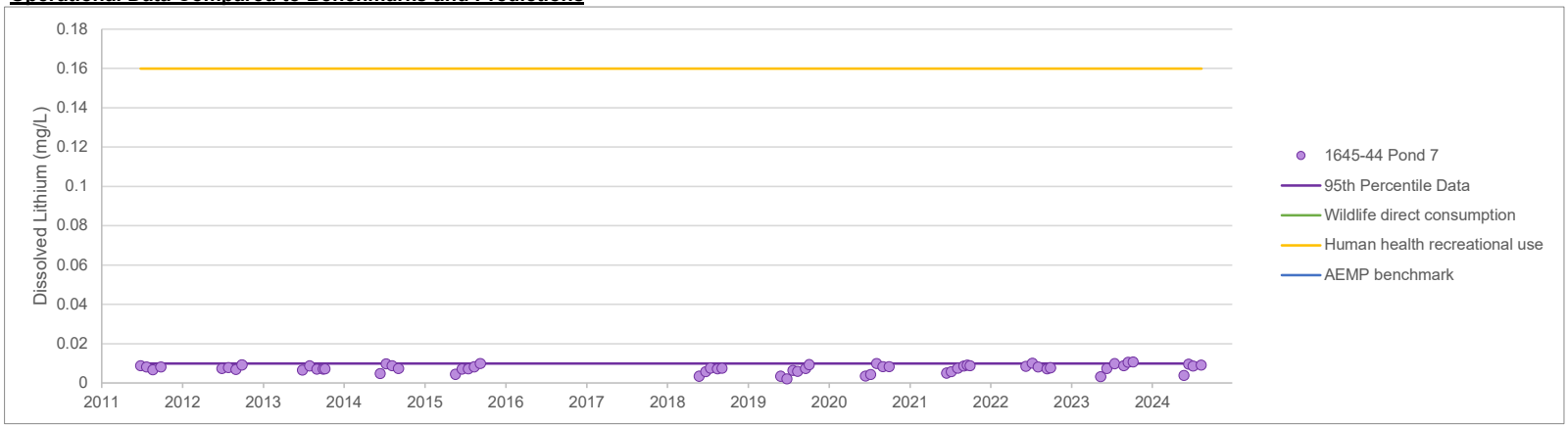


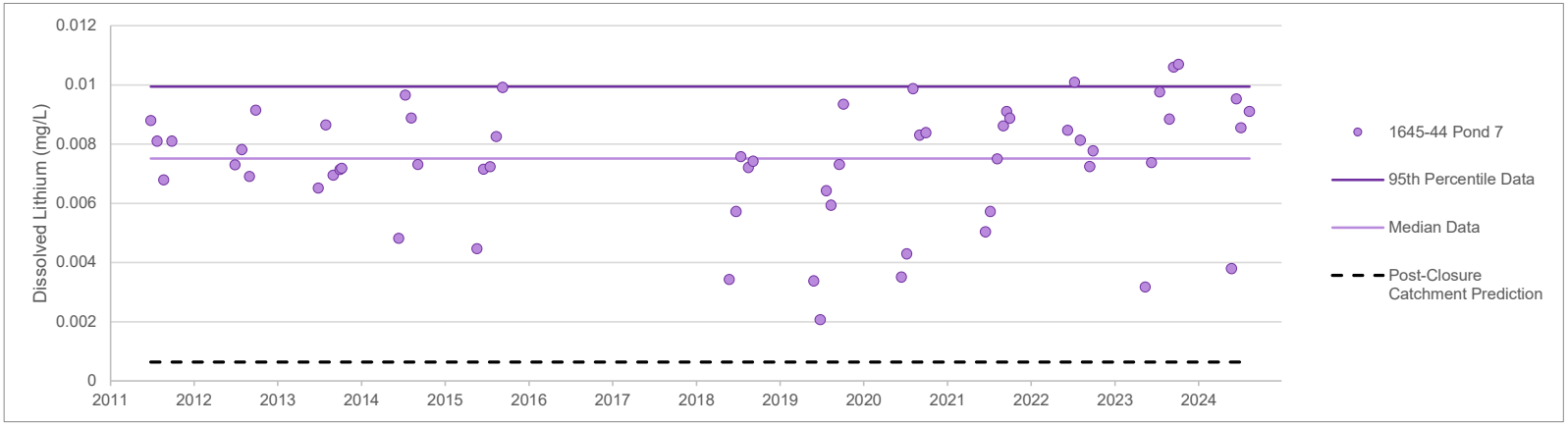


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00018	Wildlife	0.10
Median	0.00005	Human recreational	0.10
Count	59	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

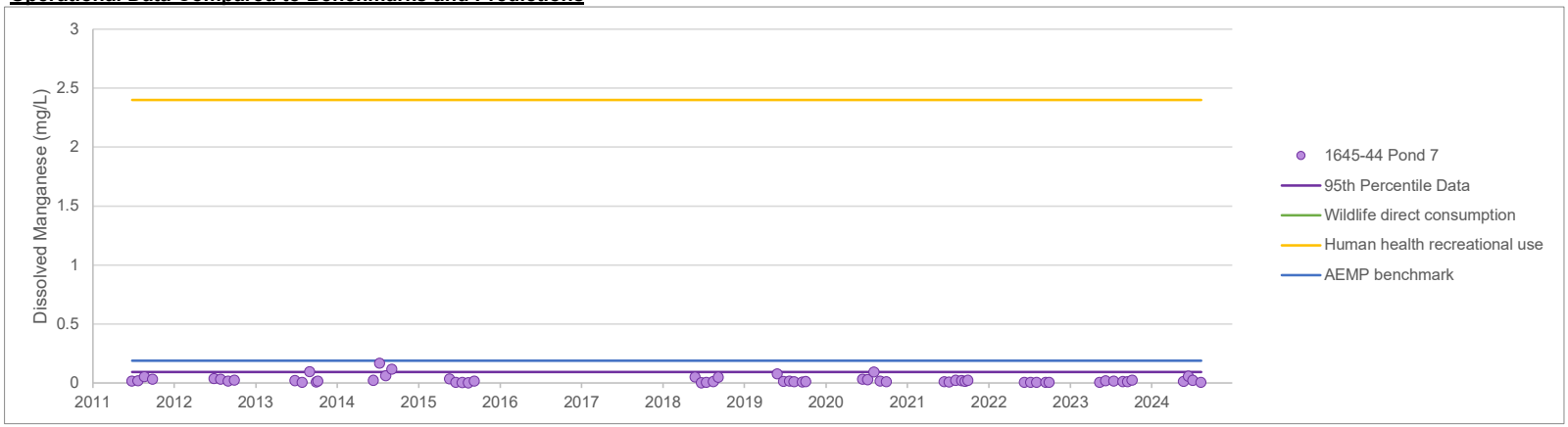


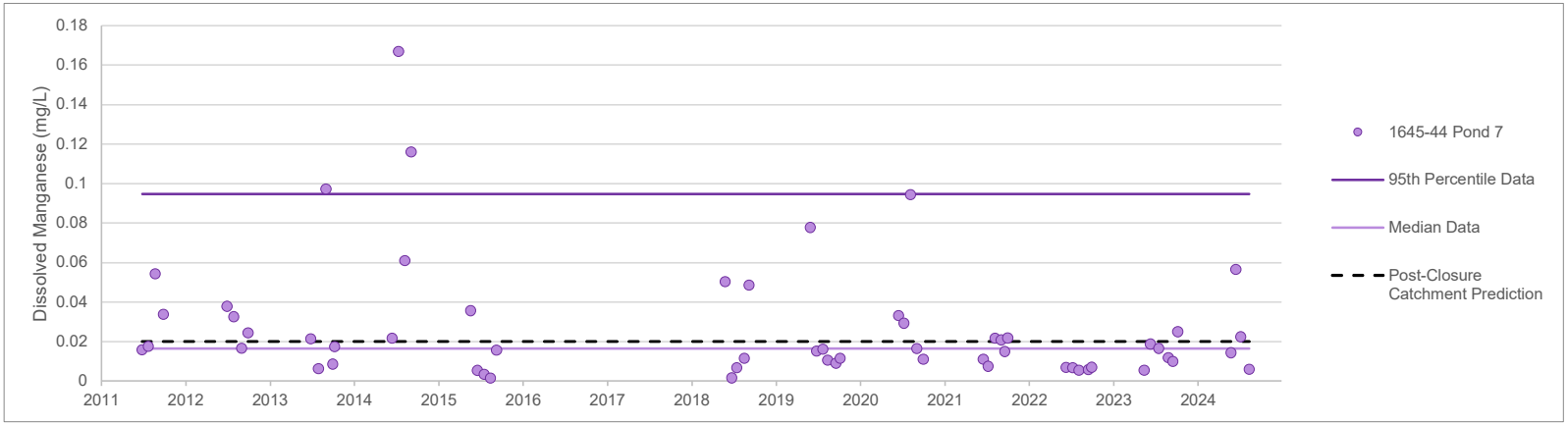


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.010	Wildlife	None
Median	0.008	Human recreational	0.16
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions

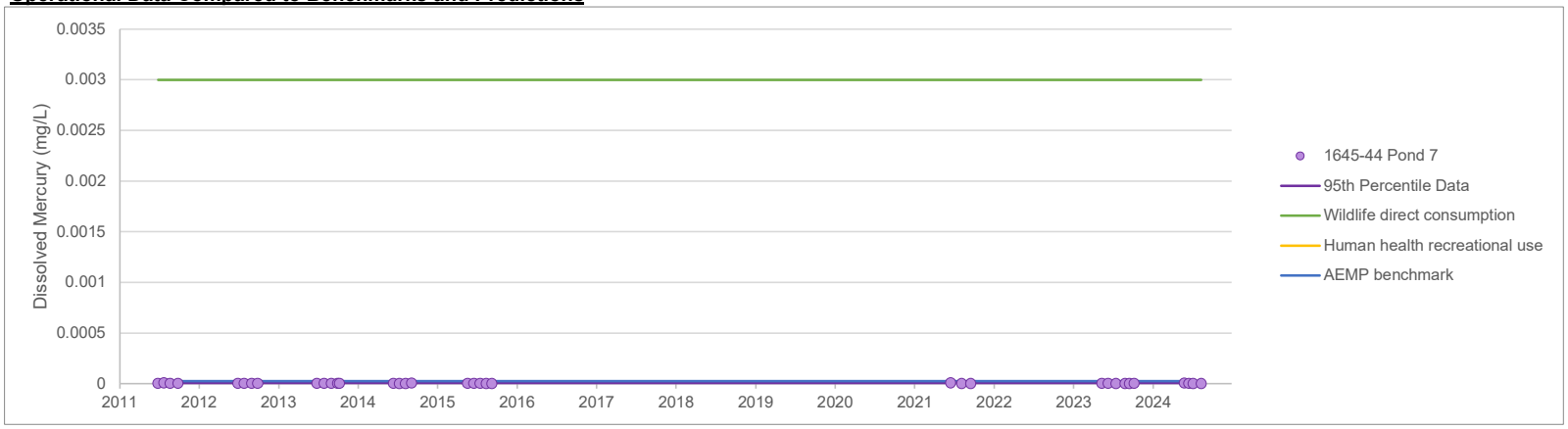


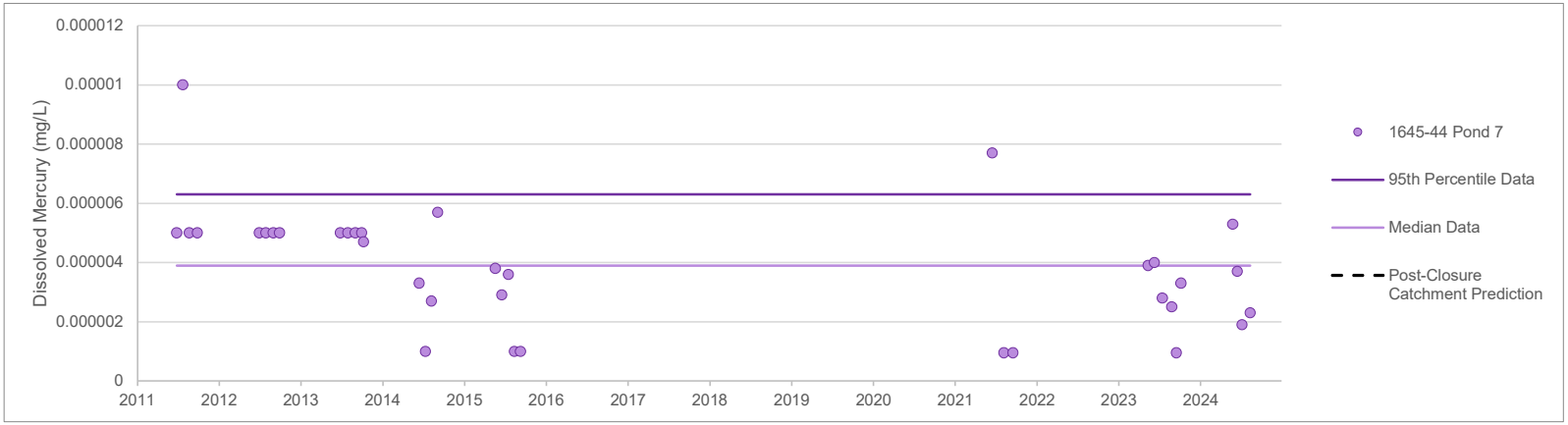


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.095	Wildlife	None
Median	0.016	Human recreational	2.4
Count	59	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

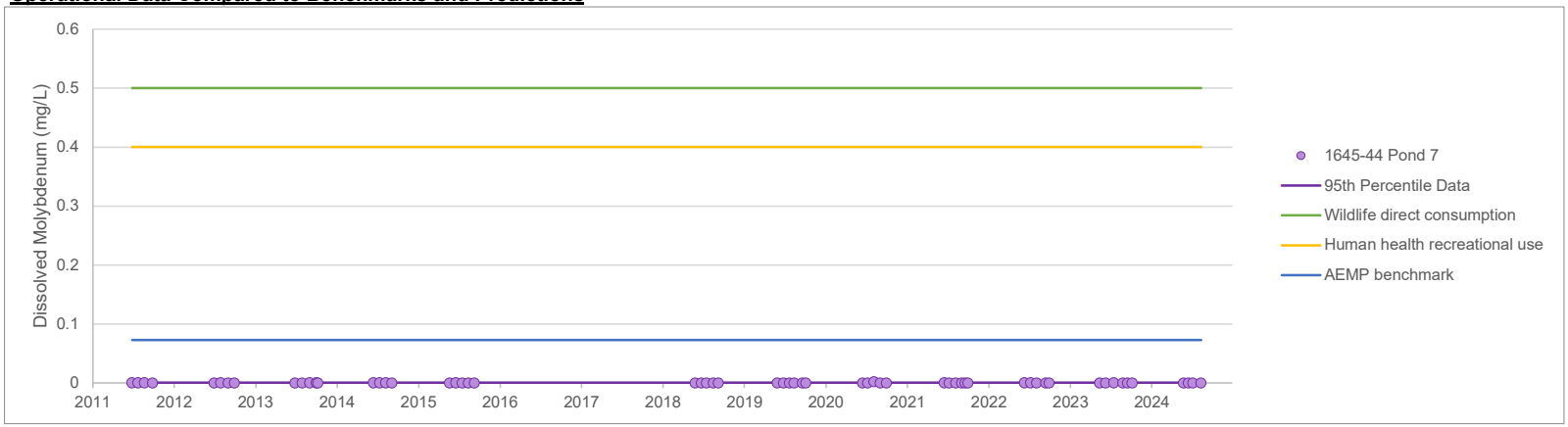


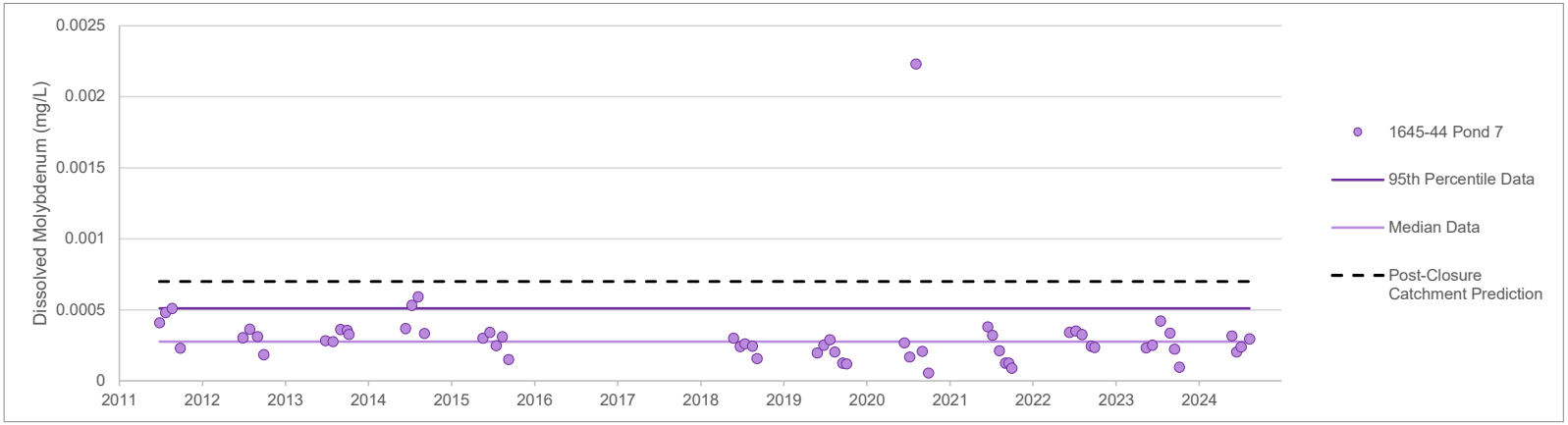


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000063	Wildlife	0.003
Median	0.0000039	Human recreational	None
Count	35	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



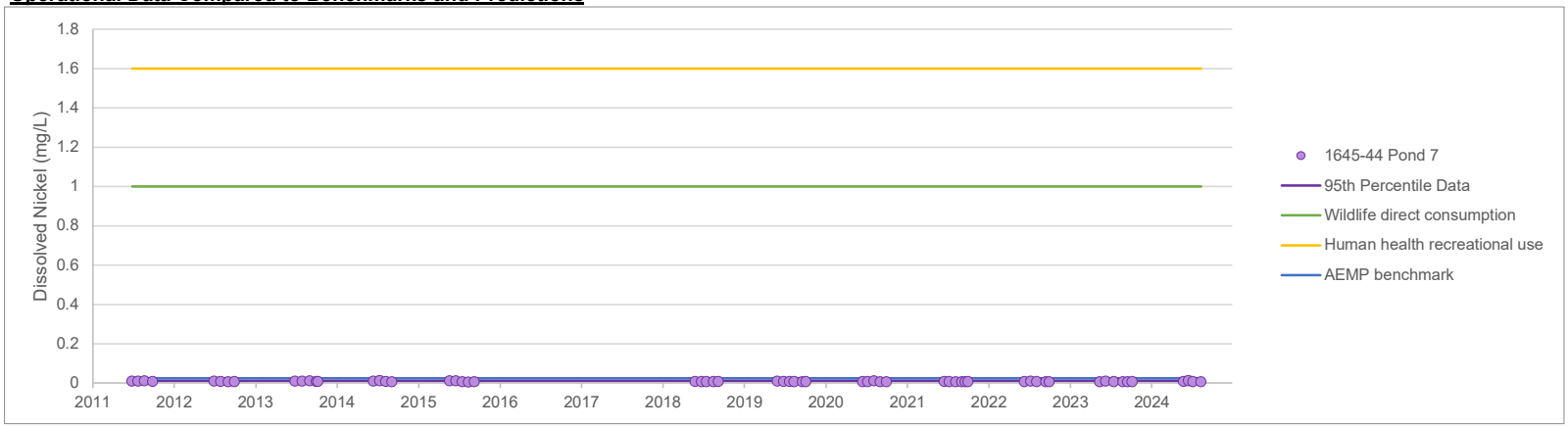


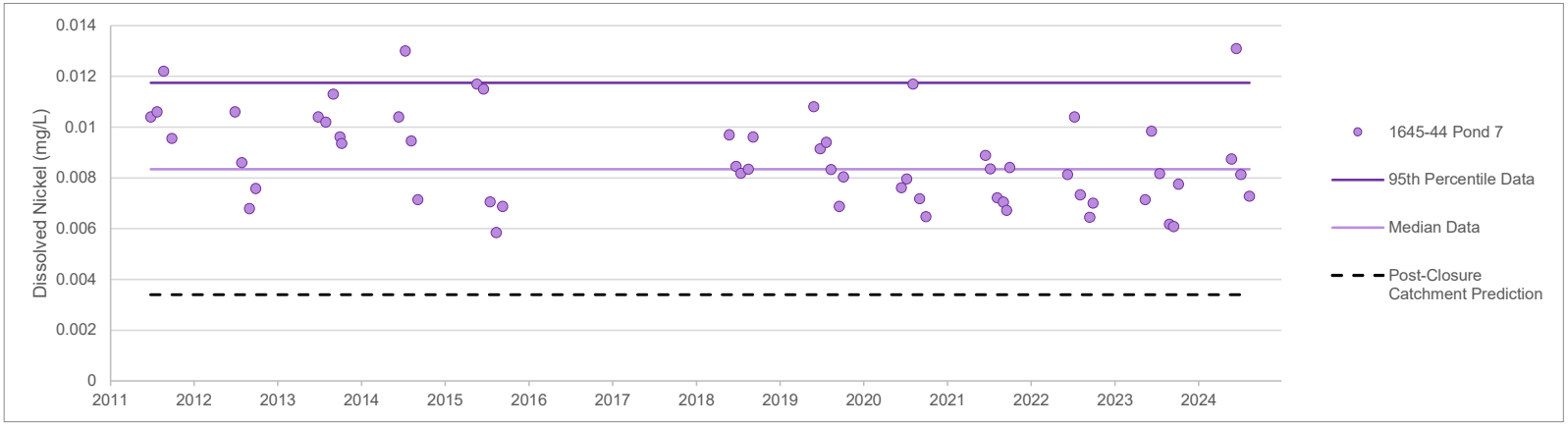
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0005	Wildlife	0.5
Median	0.0003	Human recreational	0.4
Count	59	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

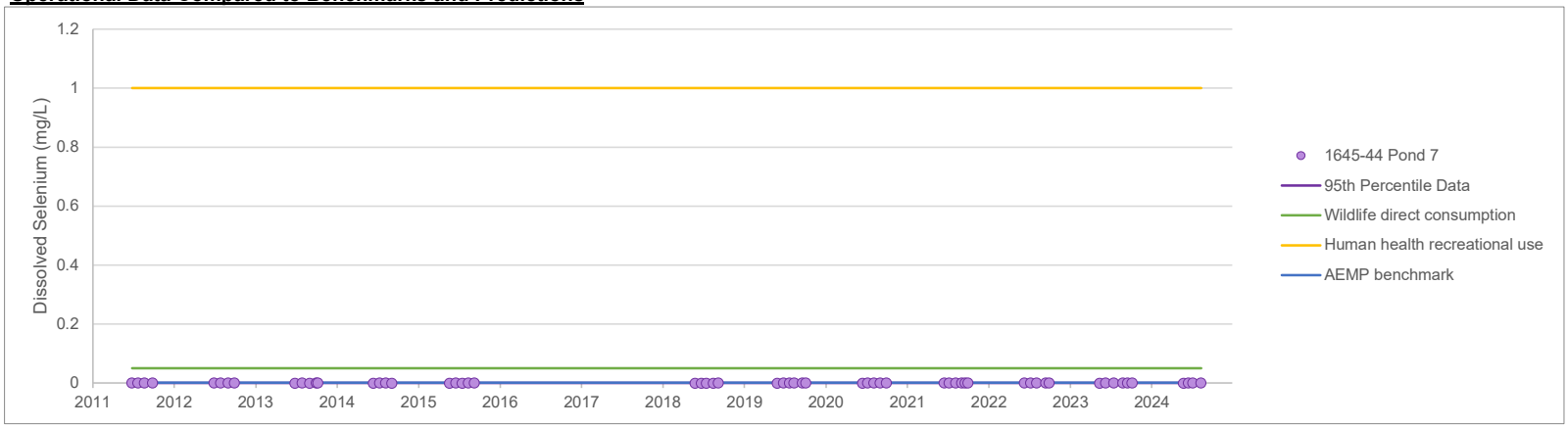


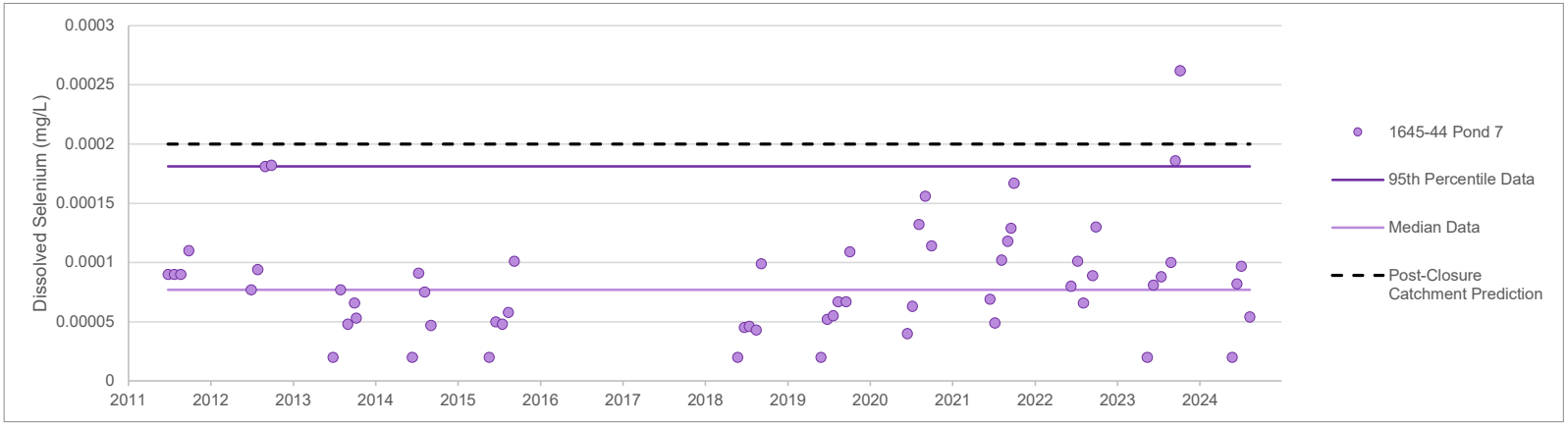


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.012	Wildlife	1.0
Median	0.008	Human recreational	1.6
Count	59	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



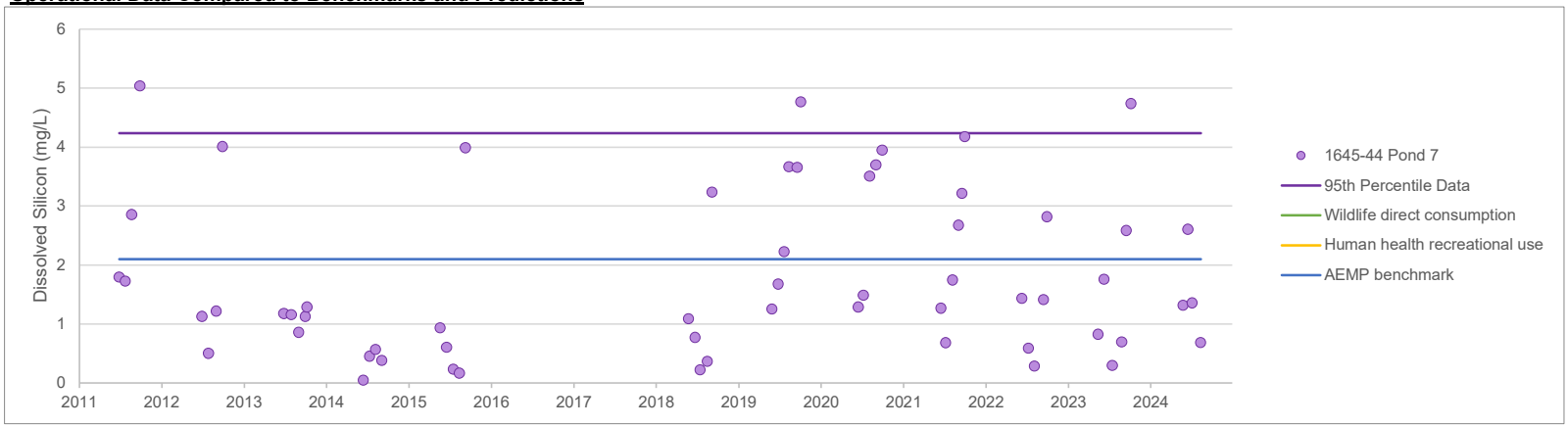


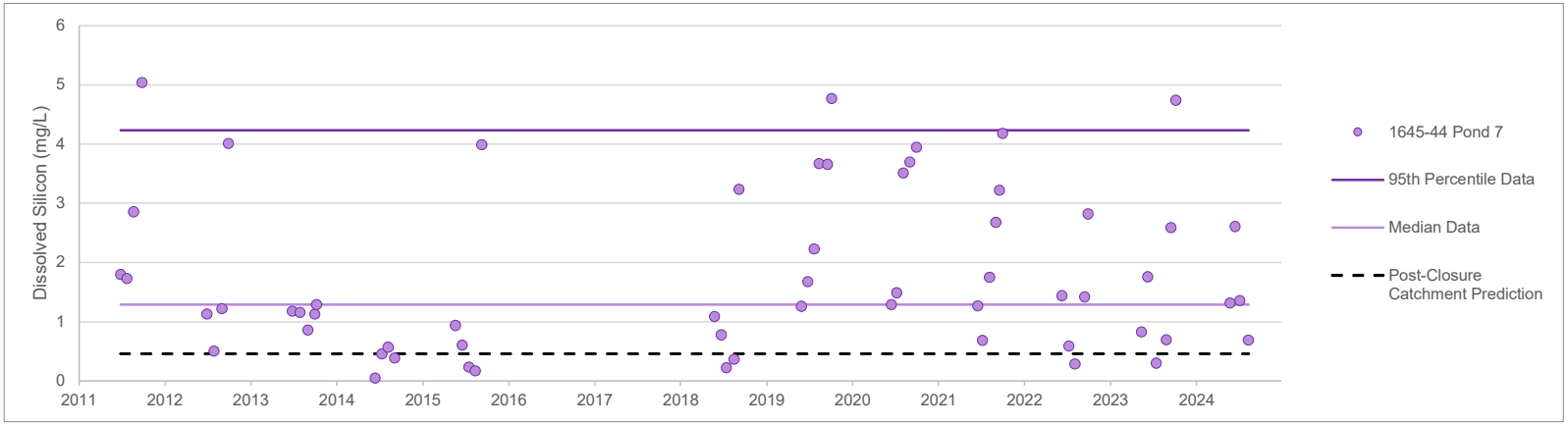
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00018	Wildlife	0.1
Median	0.00008	Human recreational	1.0
Count	59	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



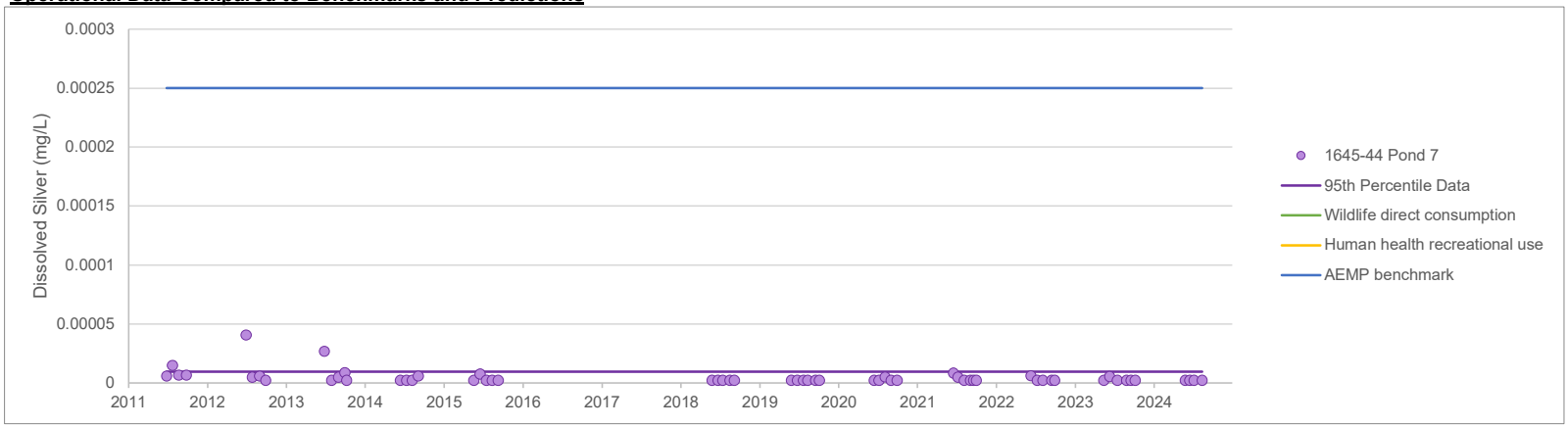


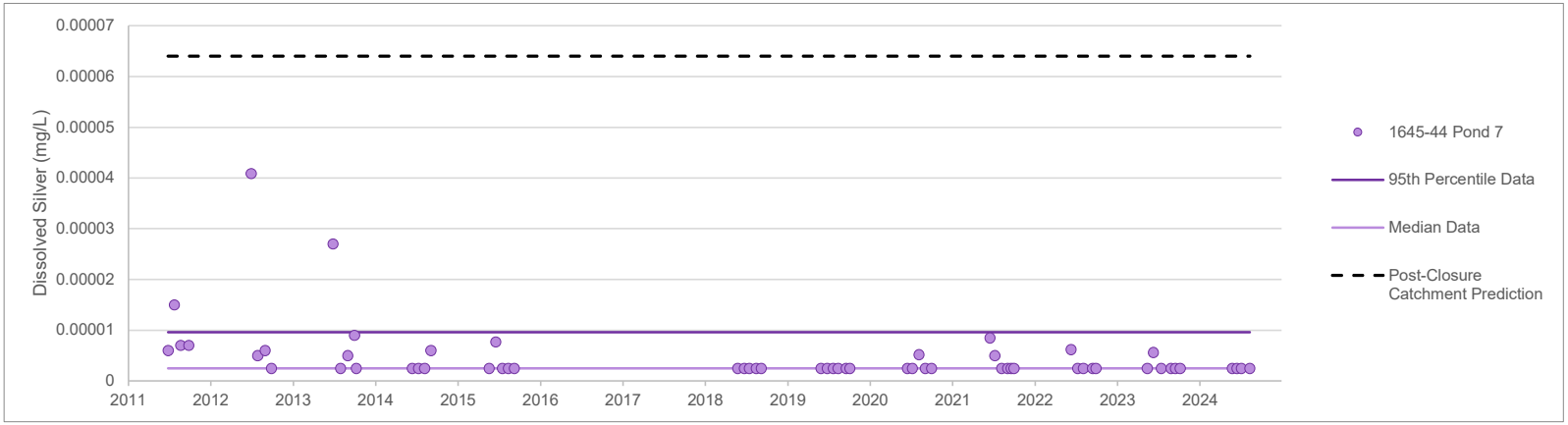
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	4.24	Wildlife	None
Median	1.29	Human recreational	None
Count	59	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions

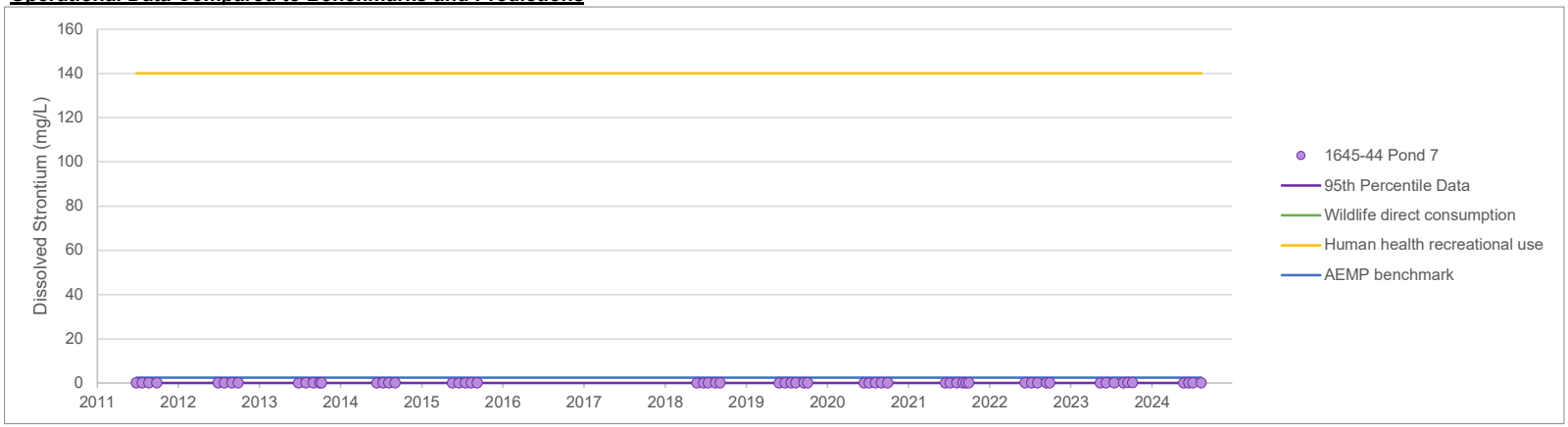


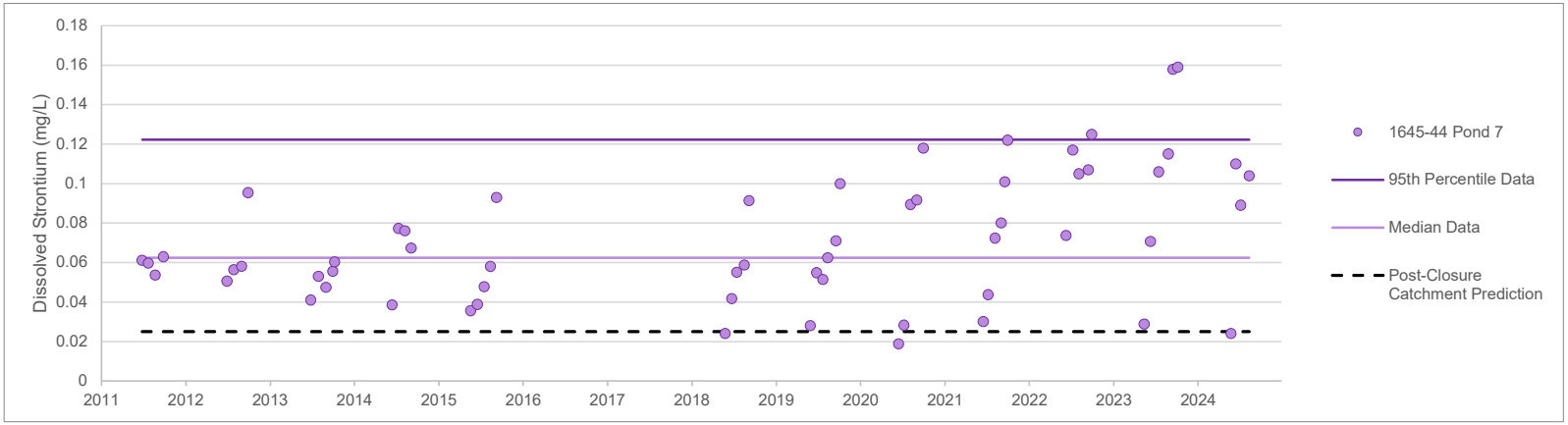


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000010	Wildlife	None
Median	0.000003	Human recreational	None
Count	59	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



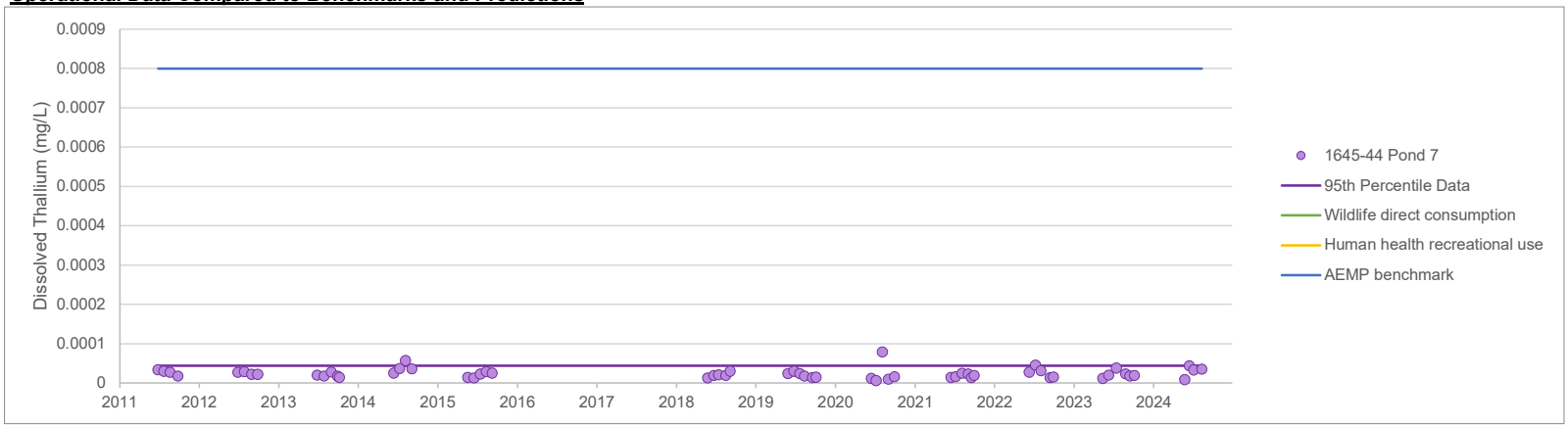


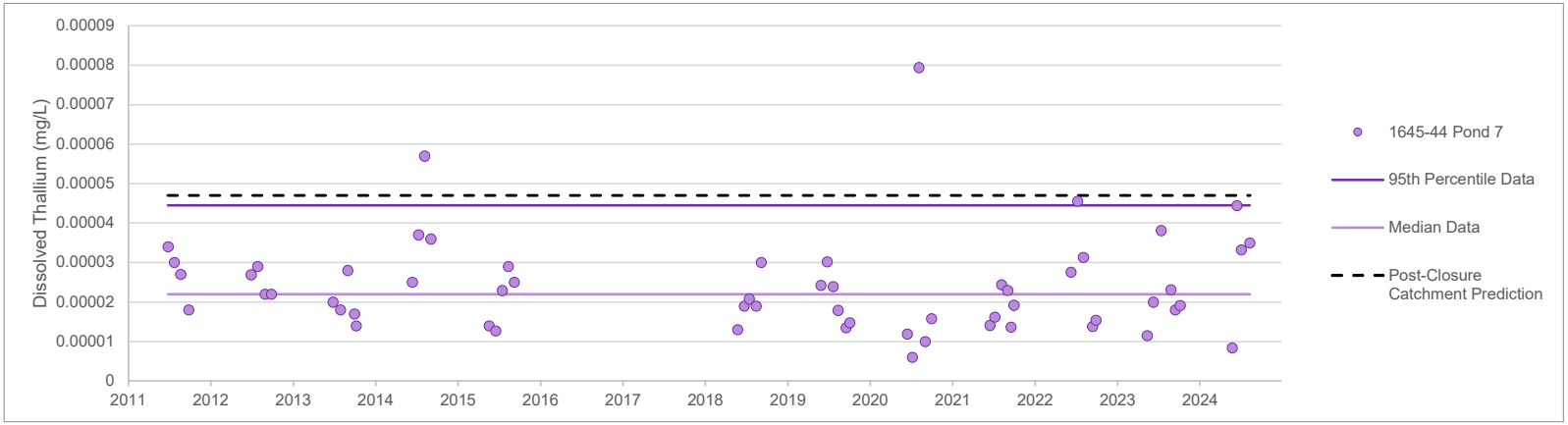
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.12	Wildlife	None
Median	0.06	Human recreational	140
Count	59	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions

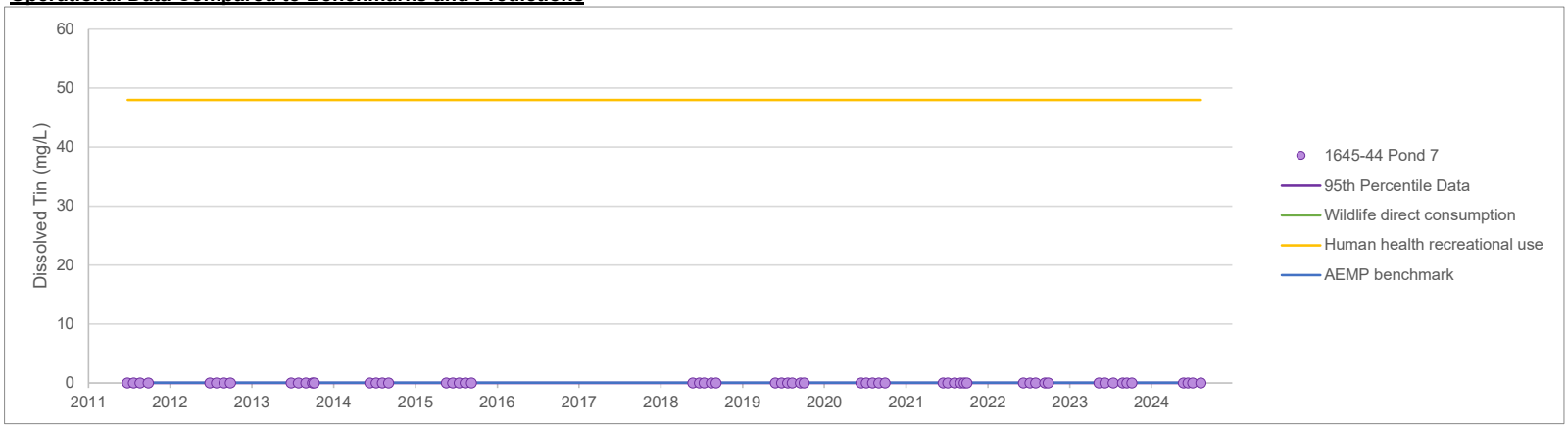


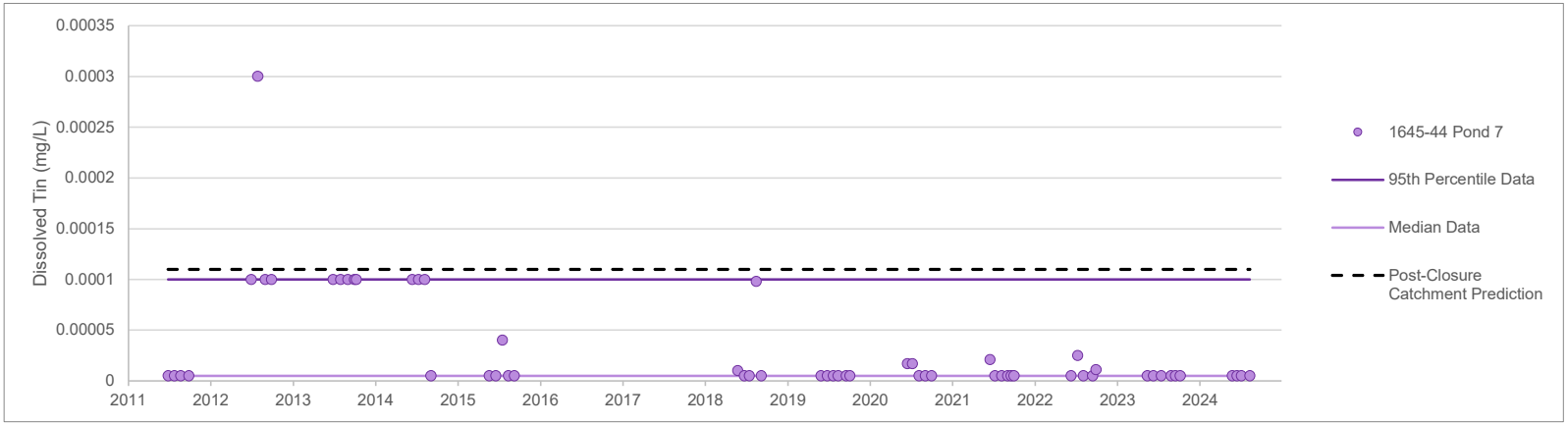


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00004	Wildlife	None
Median	0.00002	Human recreational	None
Count	59	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

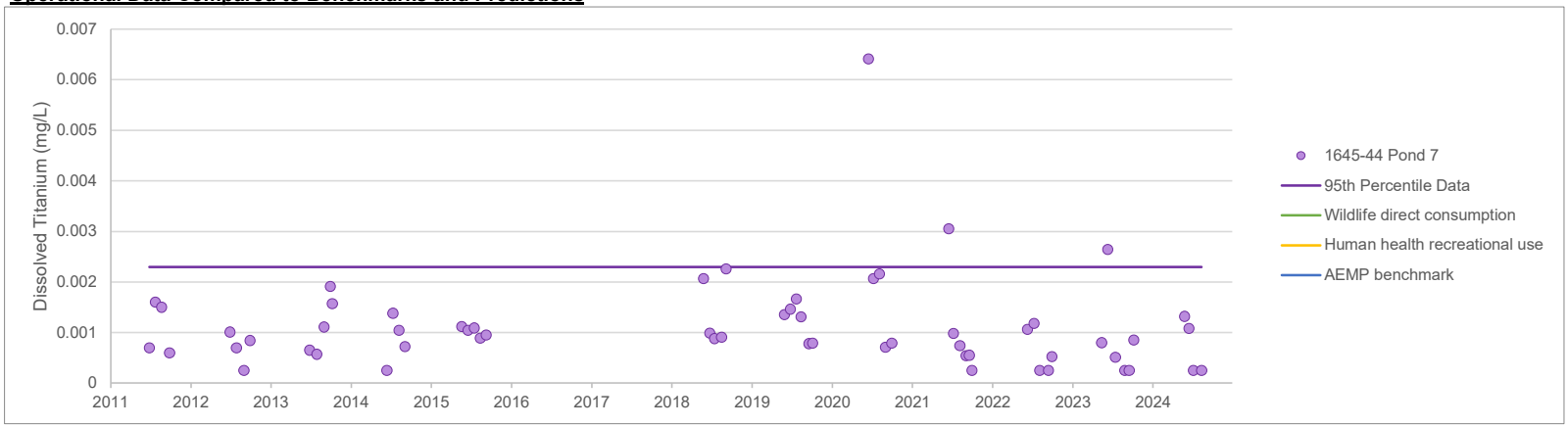


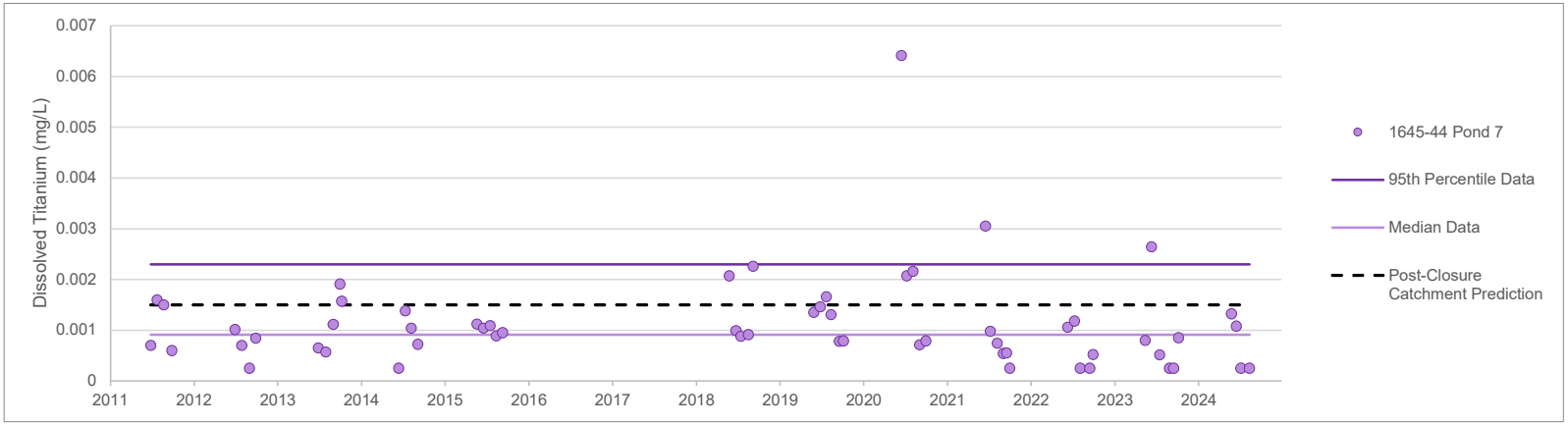


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	59	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

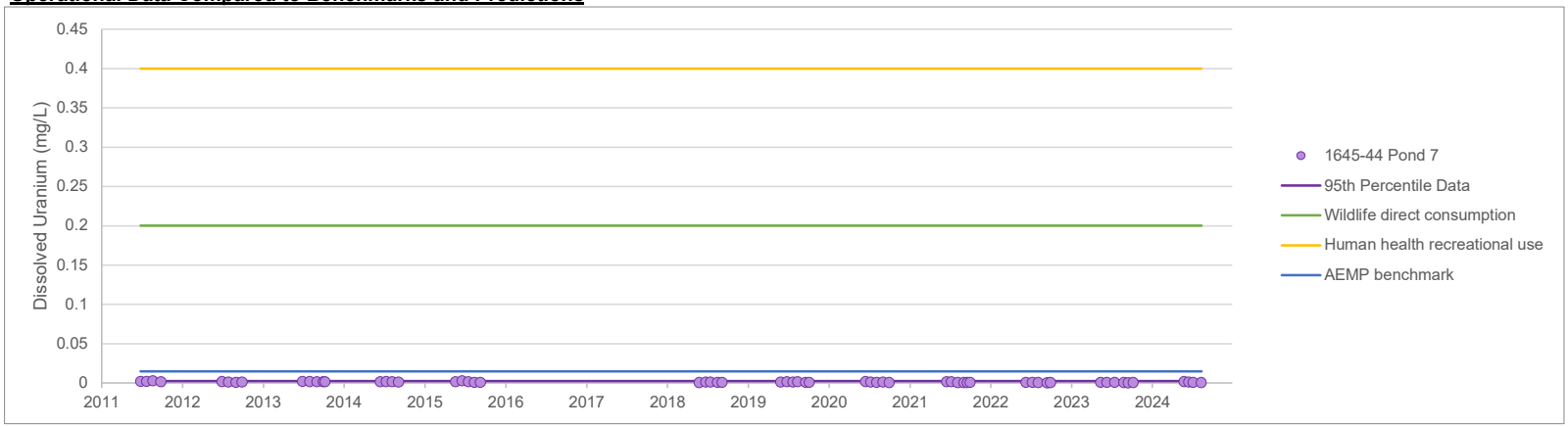


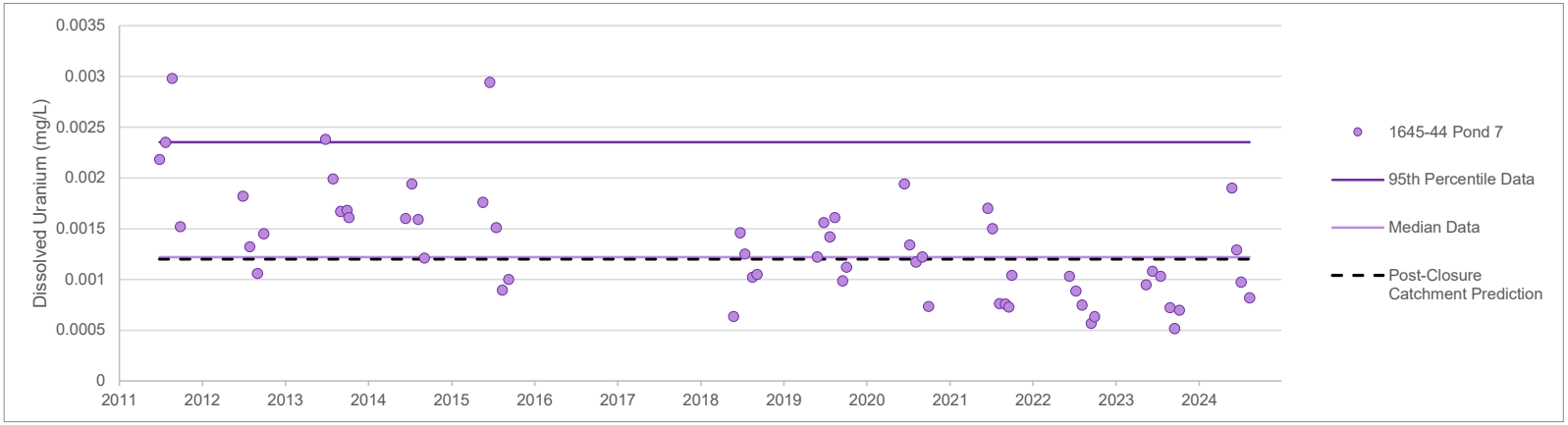


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0023	Wildlife	None
Median	0.0009	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions

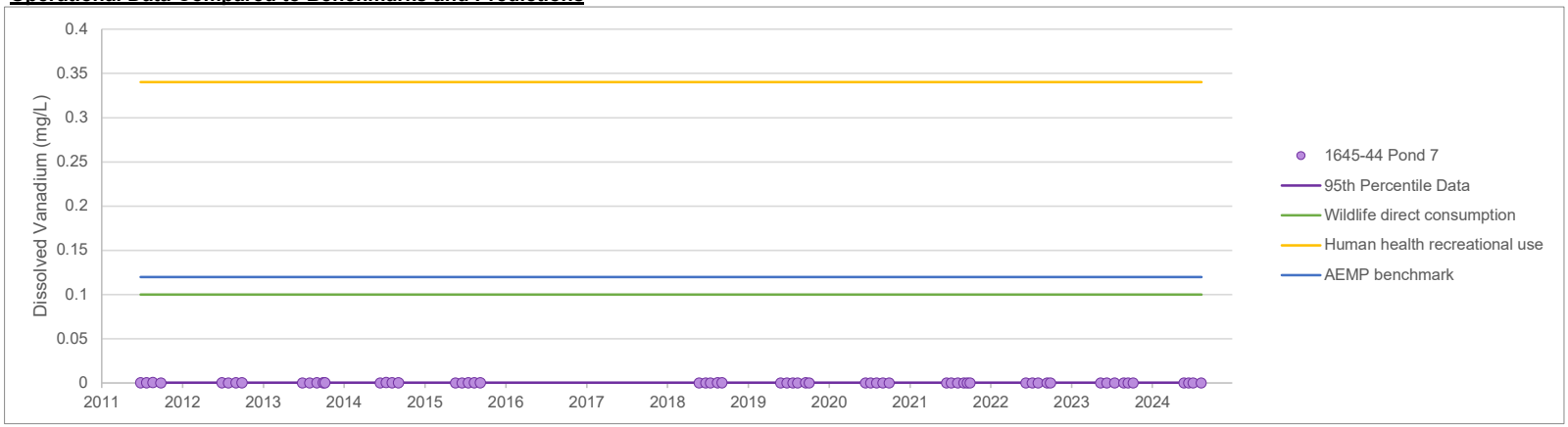


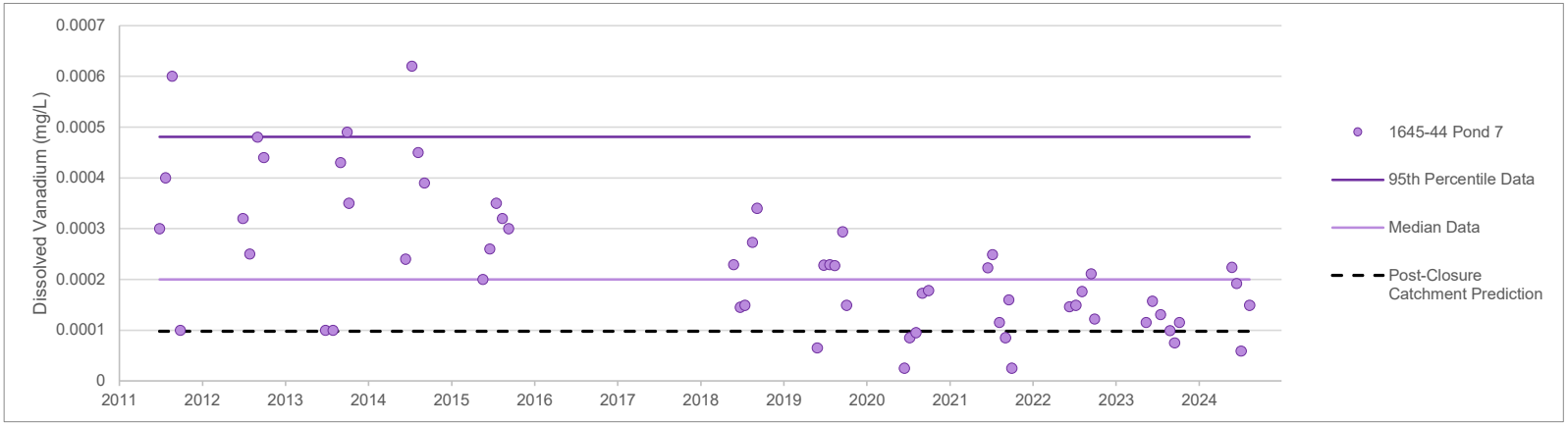


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0024	Wildlife	0.2
Median	0.0012	Human recreational	0.4
Count	59	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions

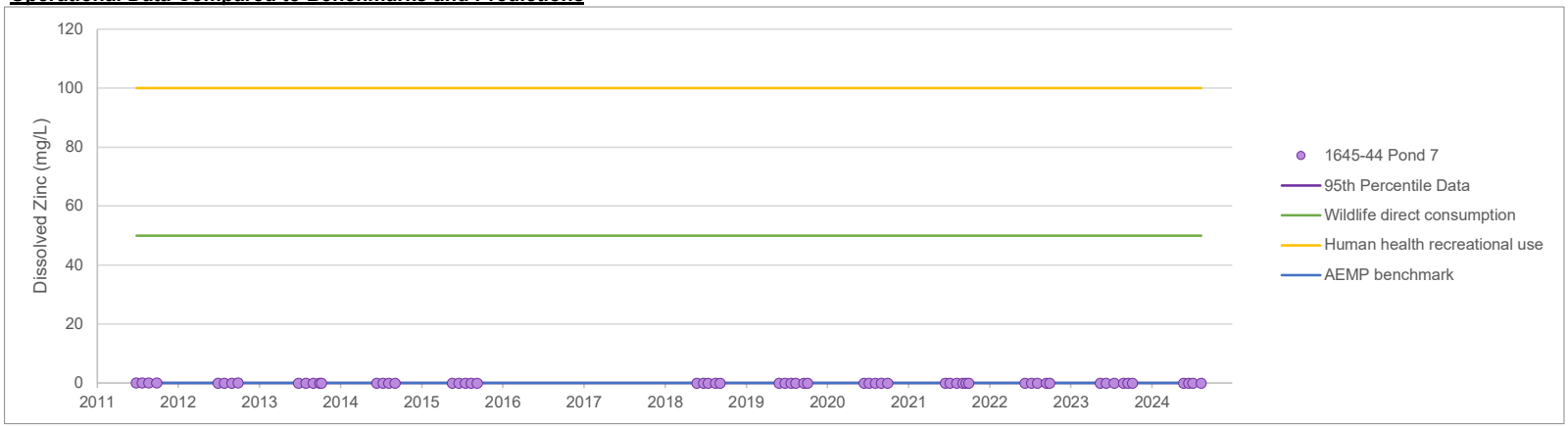


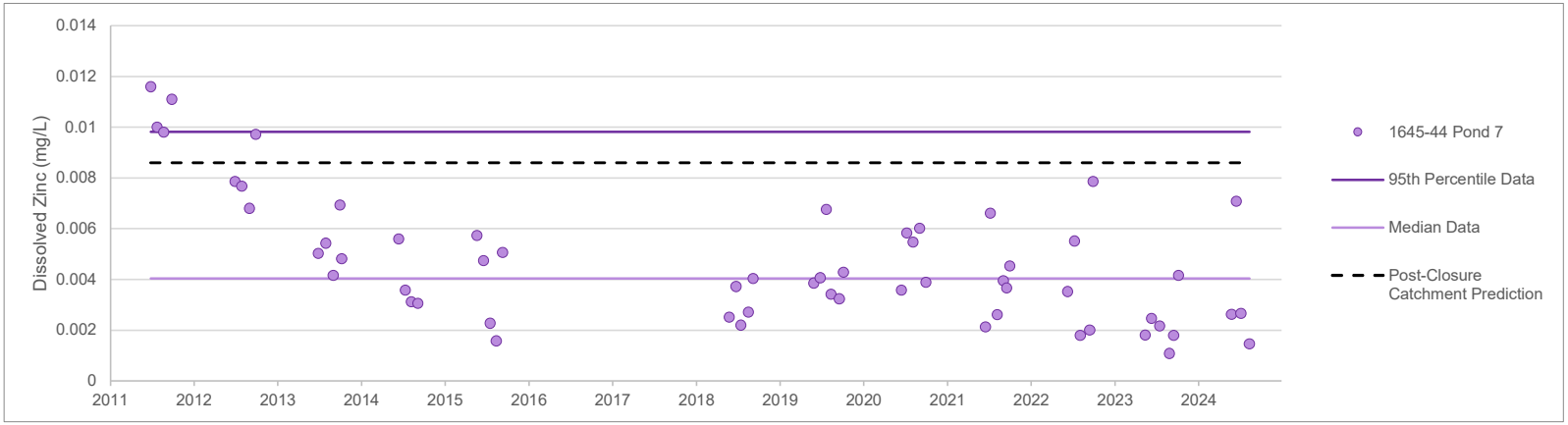


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0005	Wildlife	0.1
Median	0.0002	Human recreational	0.3
Count	59	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

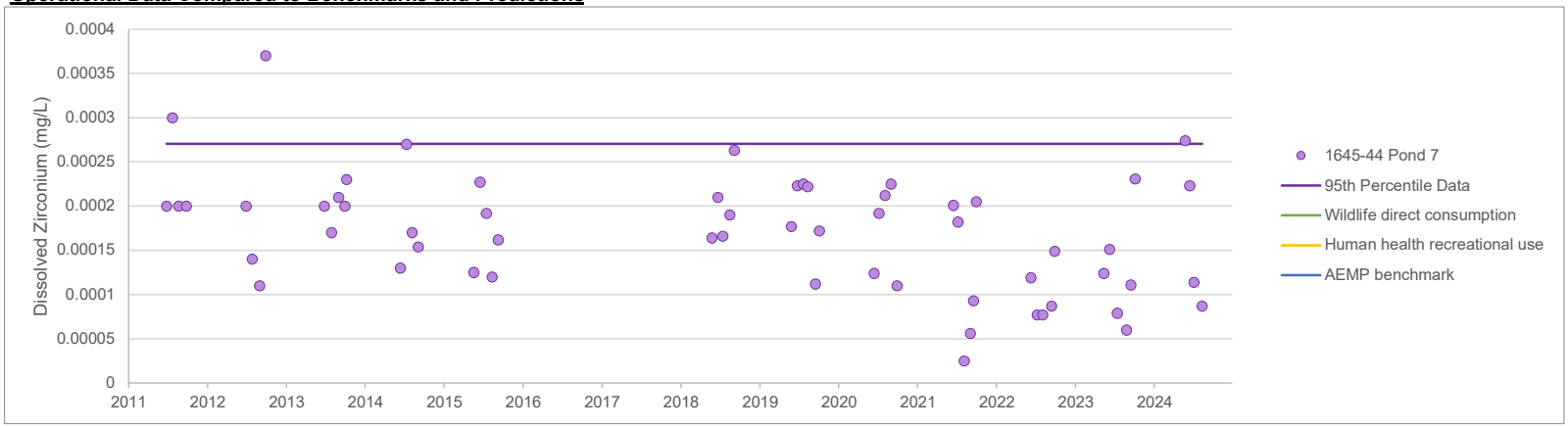


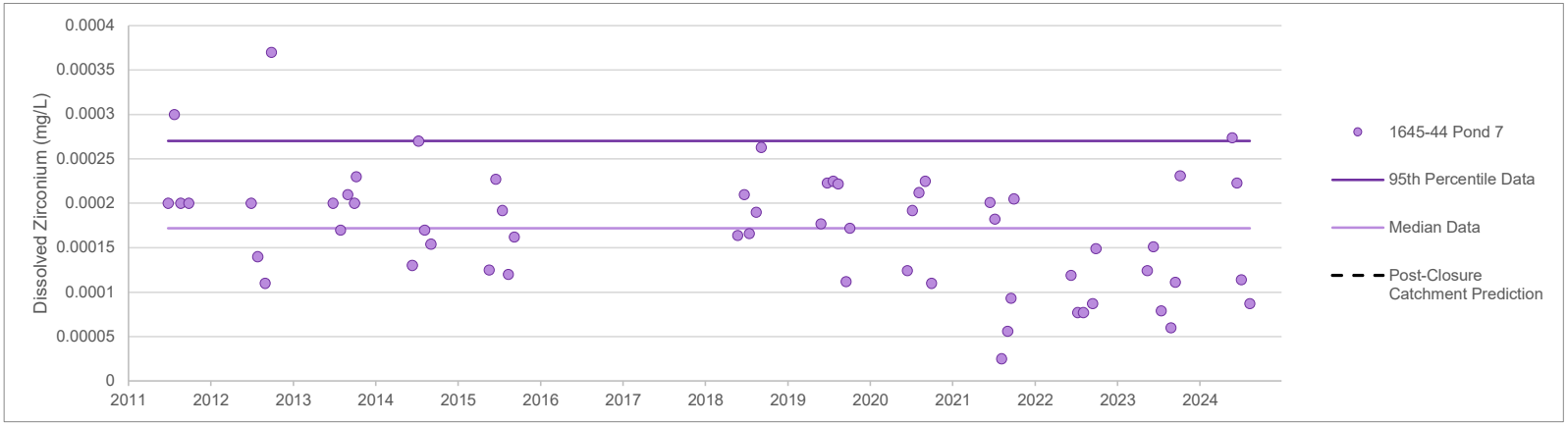


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.010	Wildlife	50
Median	0.004	Human recreational	100
Count	59	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0002	Human recreational	None
Count	59	AEMP	None

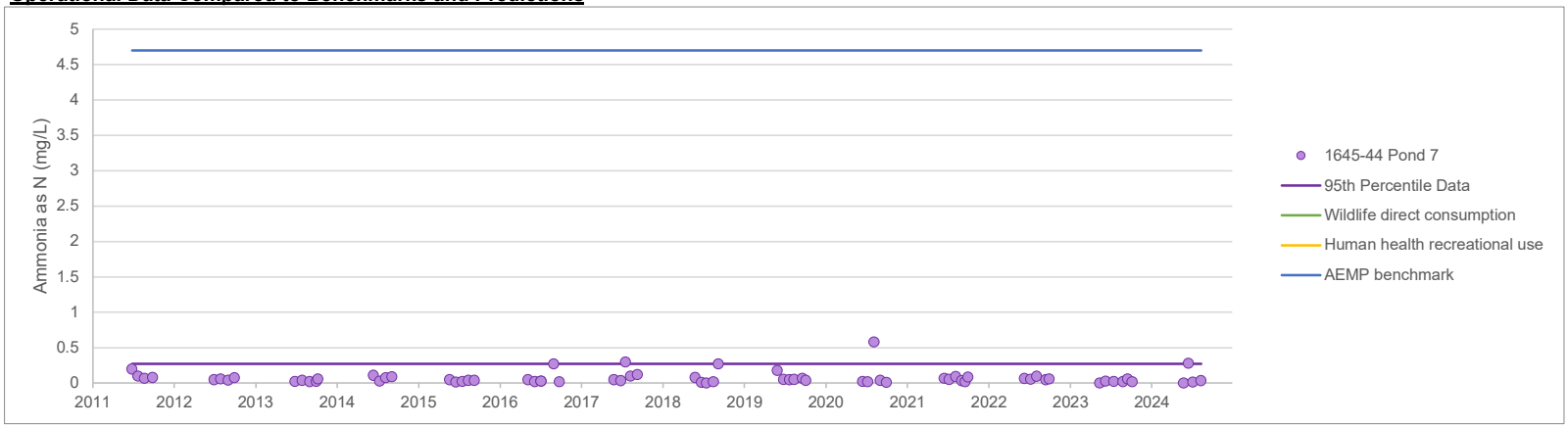
RioTinto | Diavik

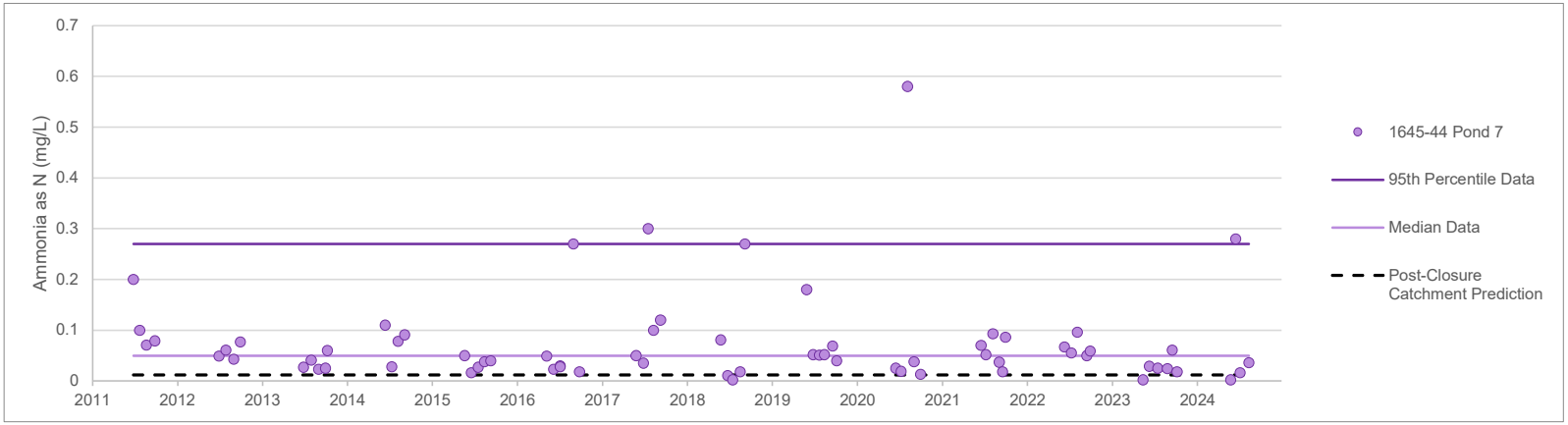
Pond 7

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



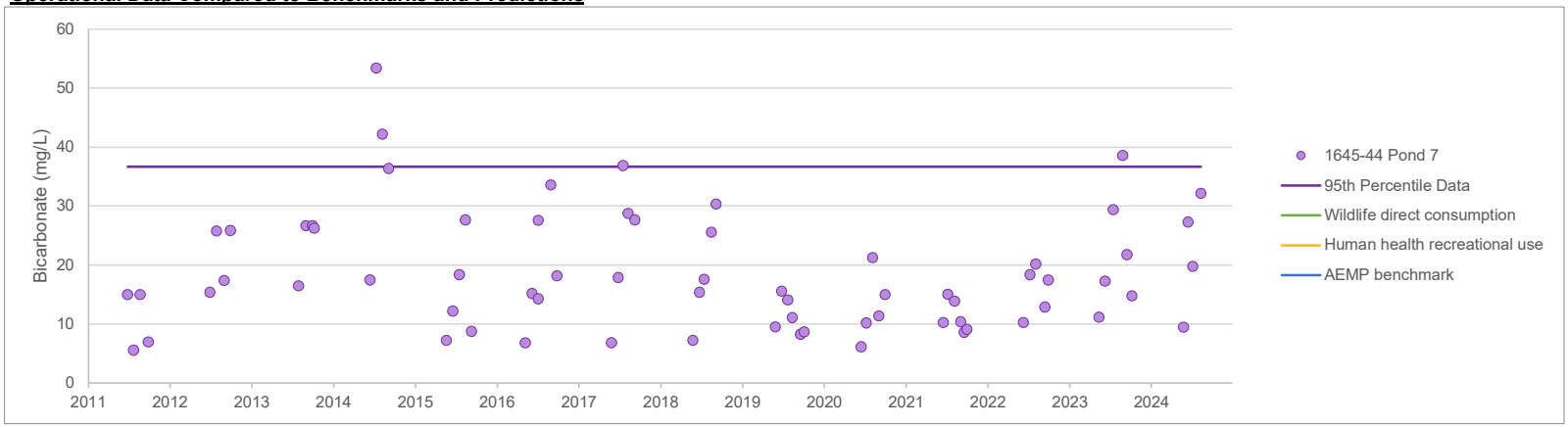


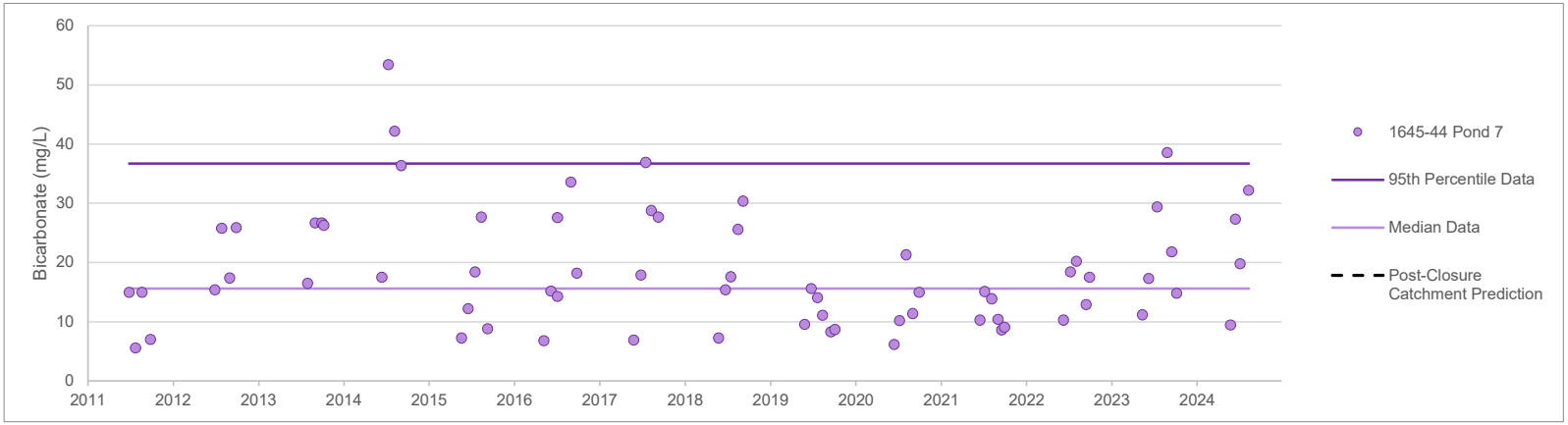
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.27	Wildlife	None
Median	0.05	Human recreational	None
Count	70	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions

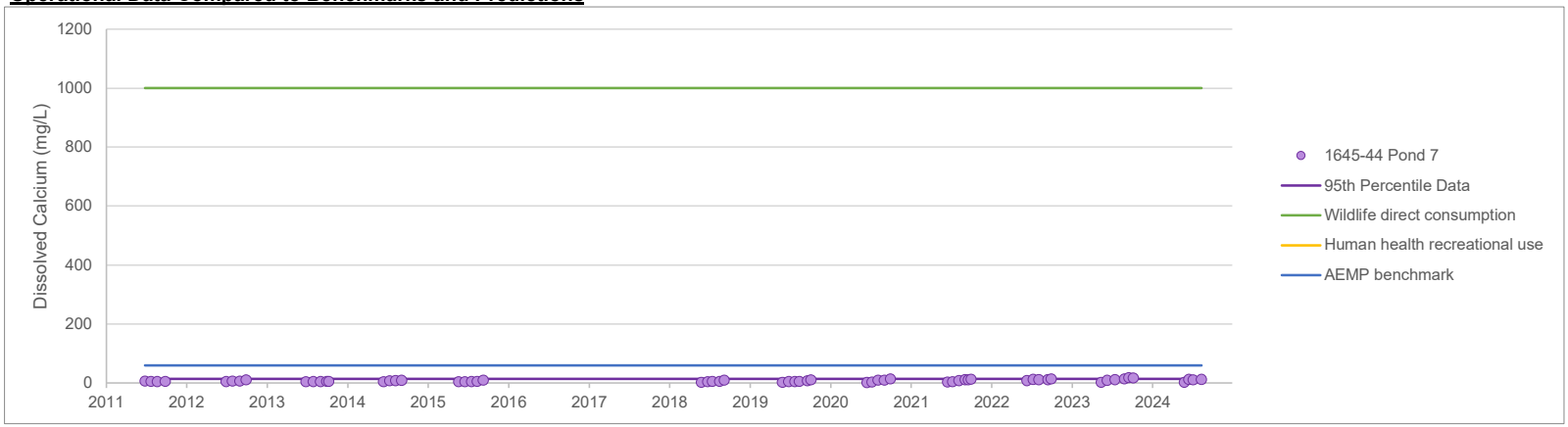


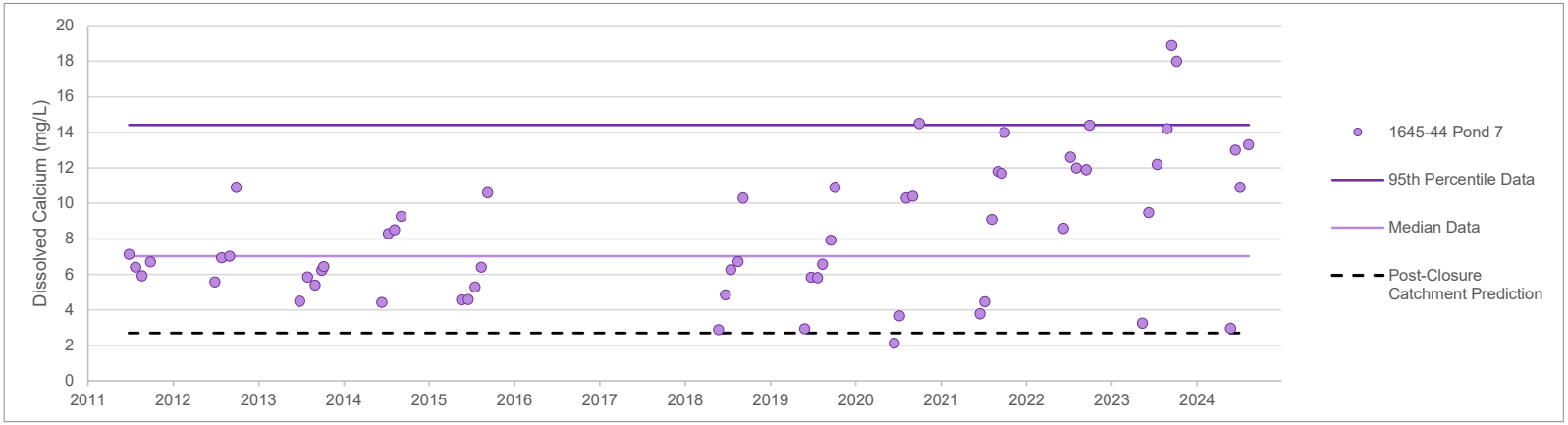


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	36.7	Wildlife	None
Median	15.6	Human recreational	None
Count	69	AEMP	None

Operational Data Compared to Benchmarks and Predictions

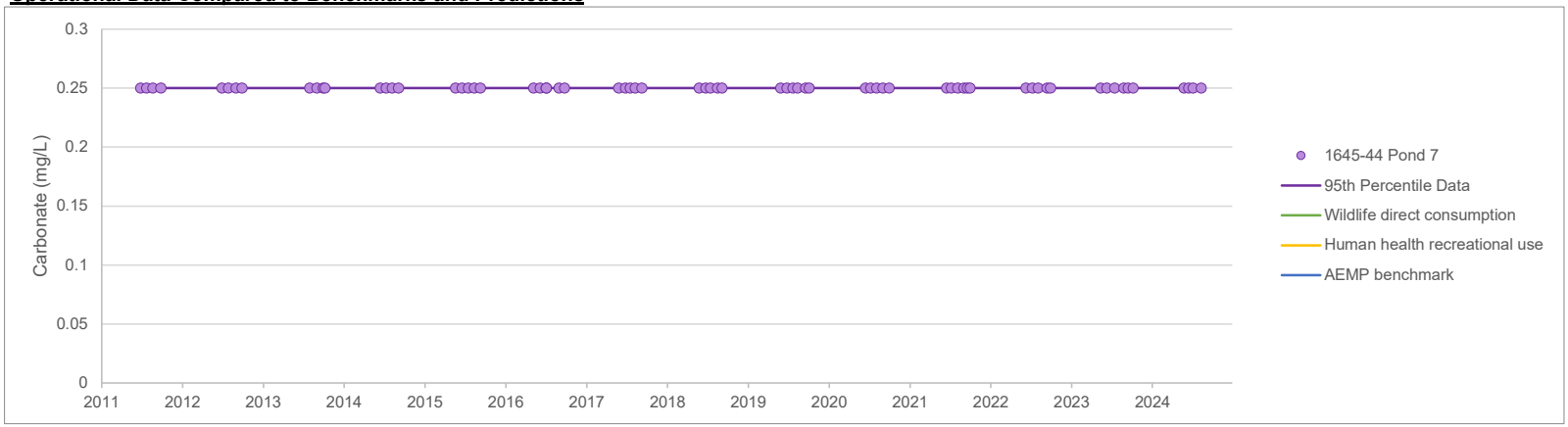


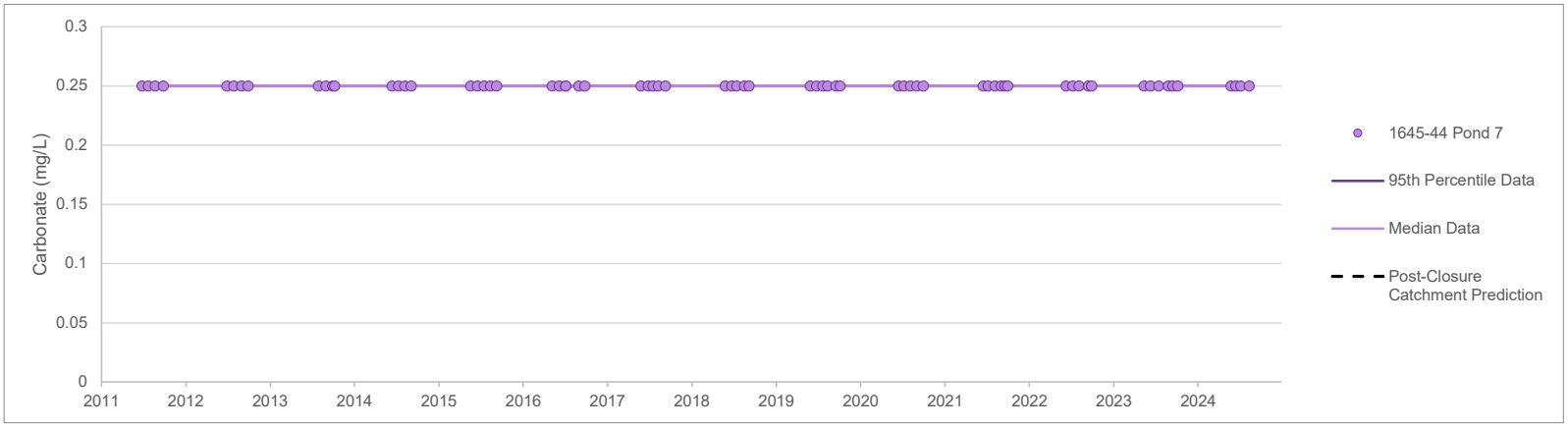


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	14.4	Wildlife	1000
Median	7.0	Human recreational	None
Count	59	AEMP	60

Operational Data Compared to Benchmarks and Predictions

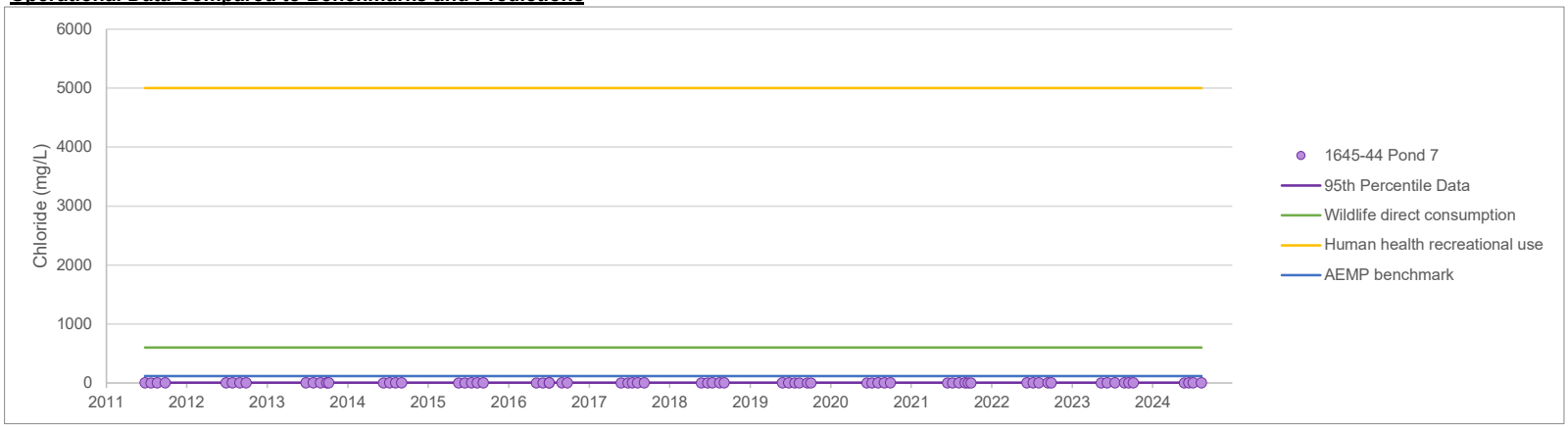


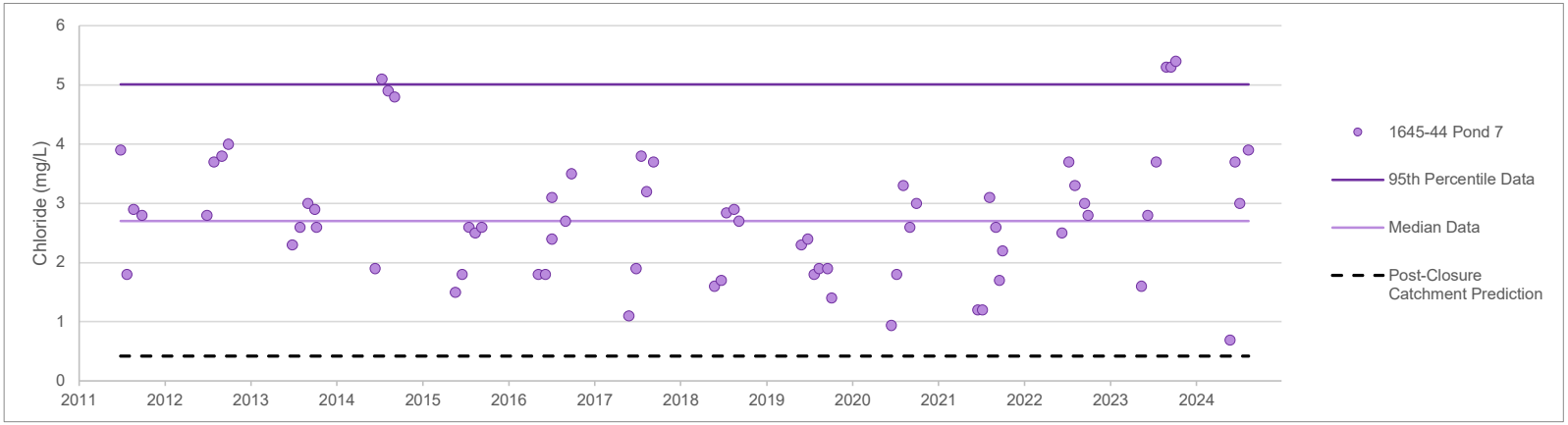


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	69	AEMP	None

Operational Data Compared to Benchmarks and Predictions



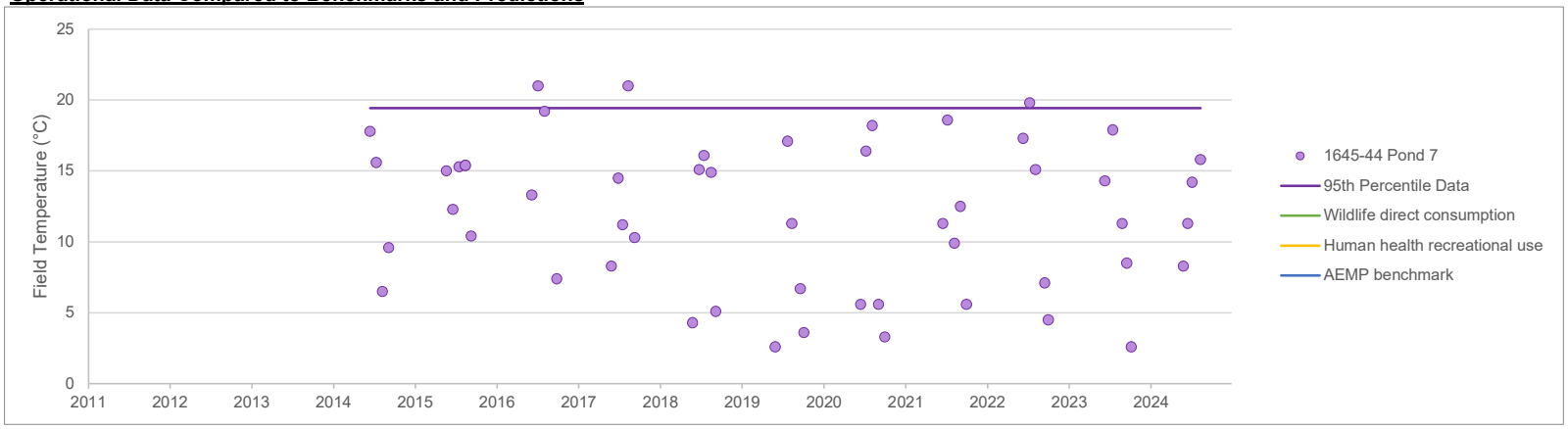


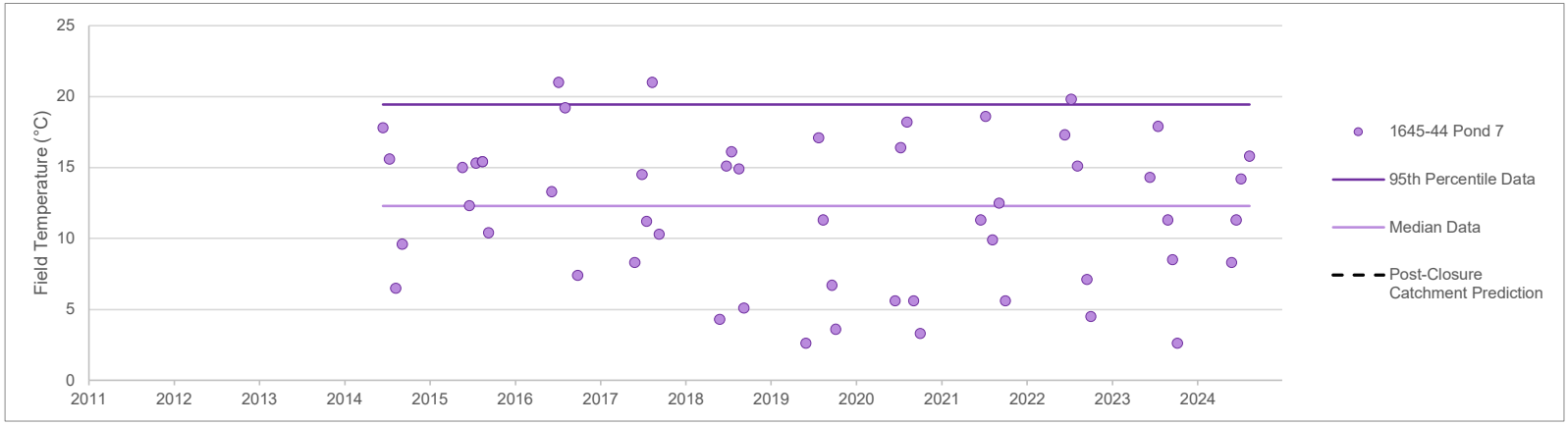
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	5.0	Wildlife	600
Median	2.7	Human recreational	5000
Count	70	AEMP	120

Operational Data Compared to Benchmarks and Predictions

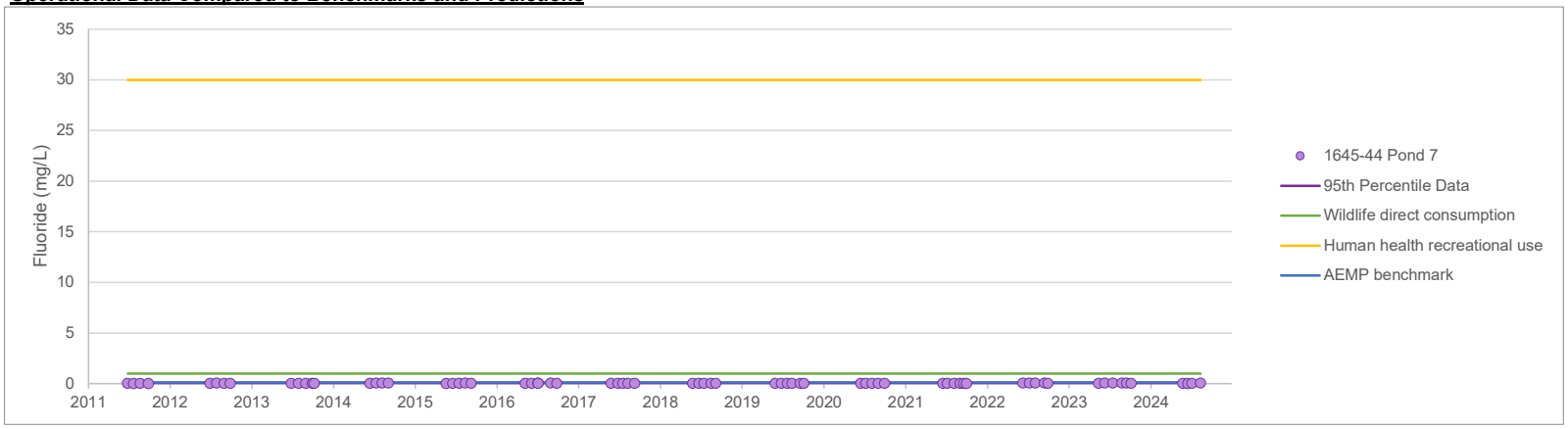


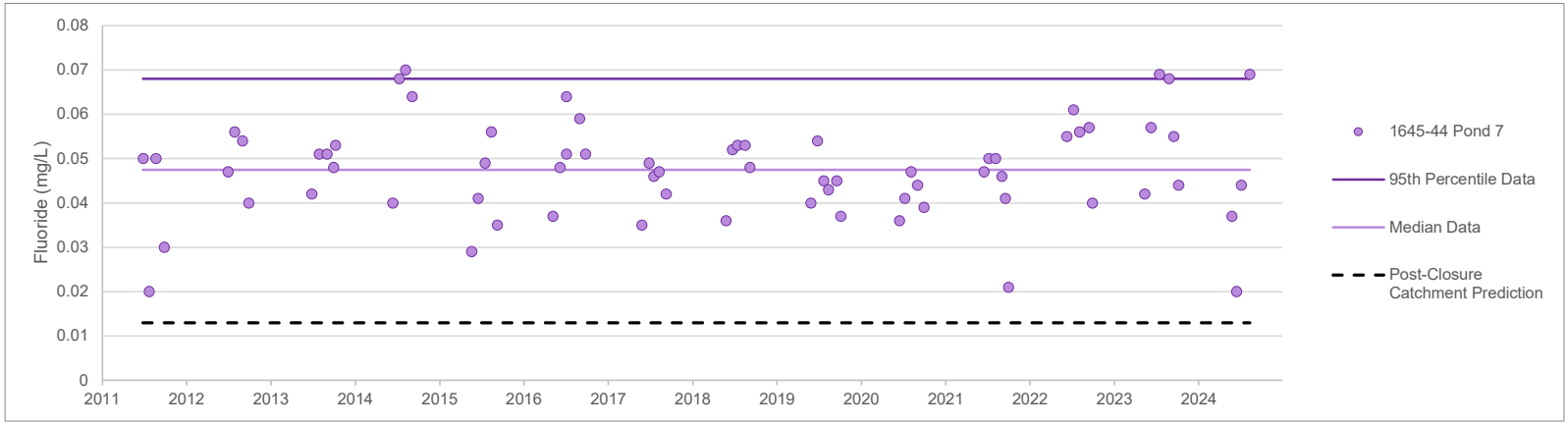


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	19.4	Wildlife	None
Median	12.3	Human recreational	None
Count	53	AEMP	None

Operational Data Compared to Benchmarks and Predictions

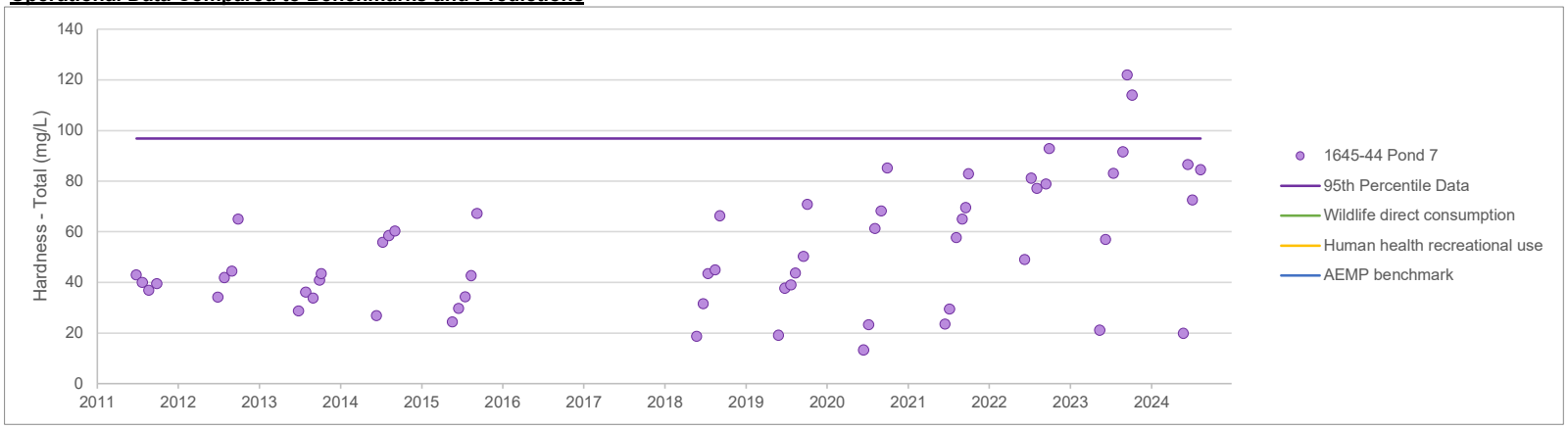


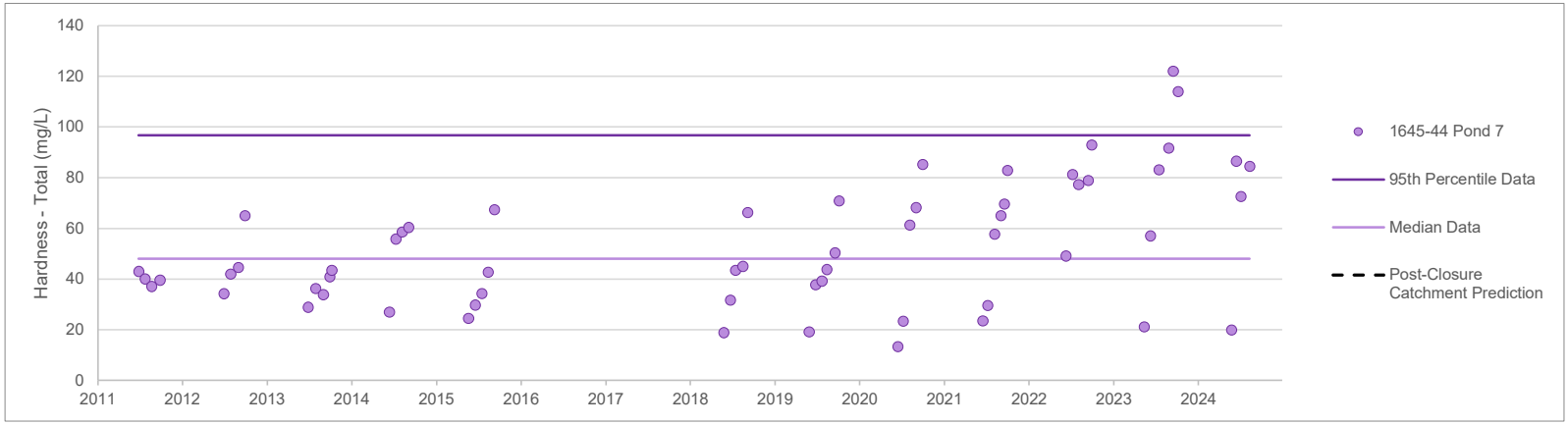


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.07	Wildlife	1
Median	0.05	Human recreational	30
Count	70	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

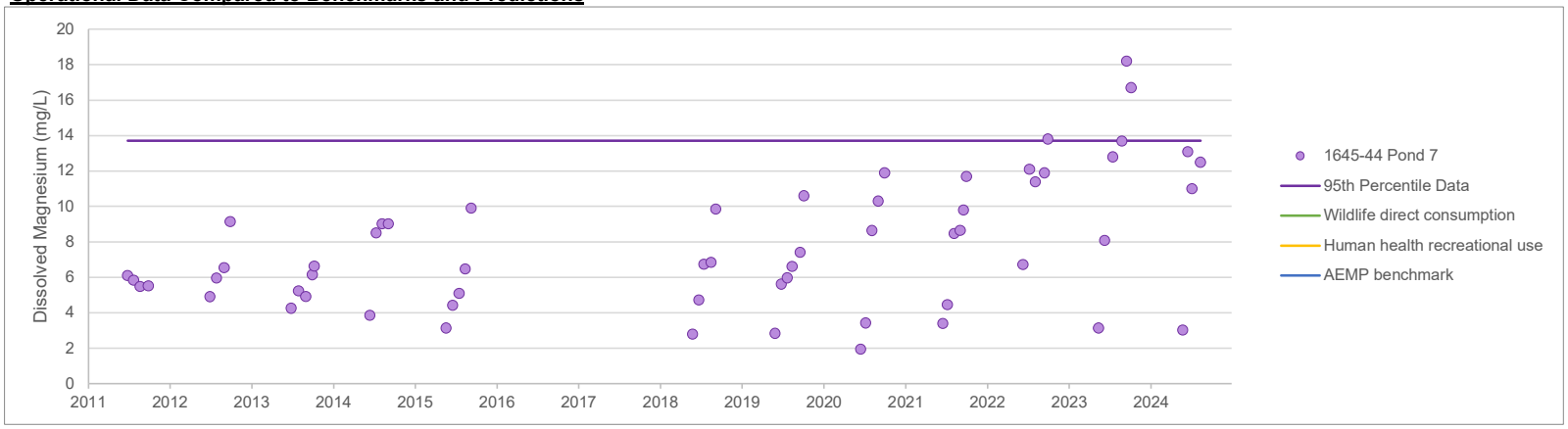


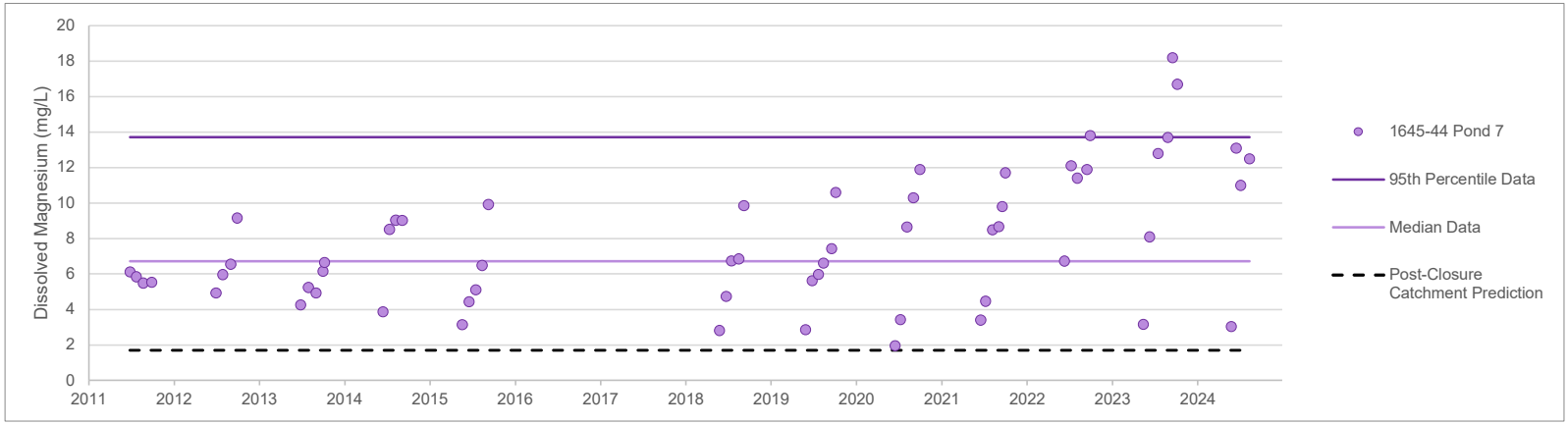


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	97	Wildlife	None
Median	48	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions

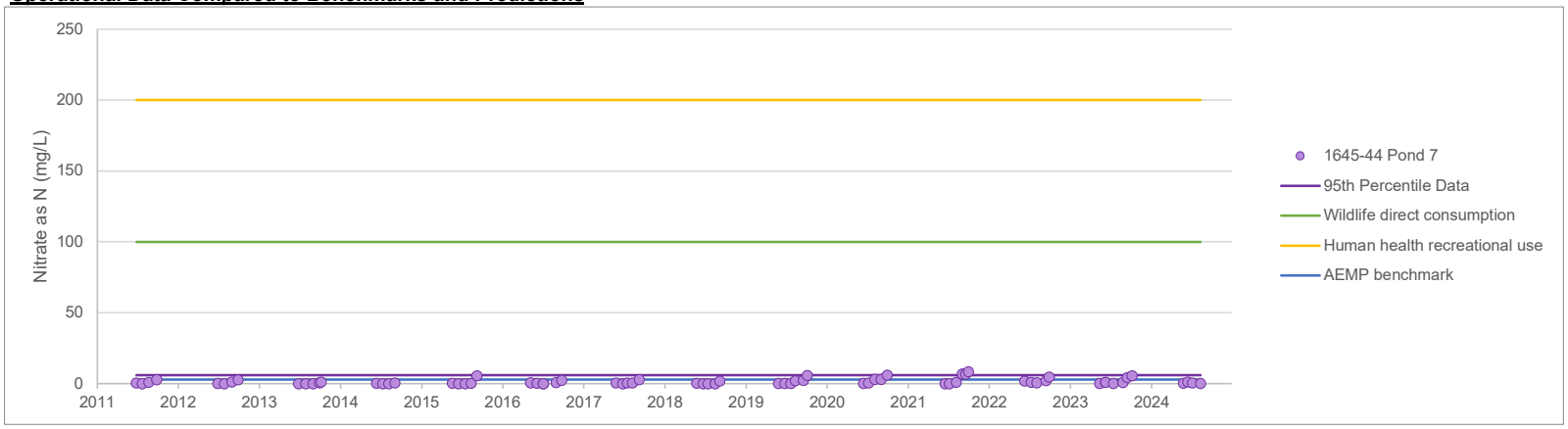


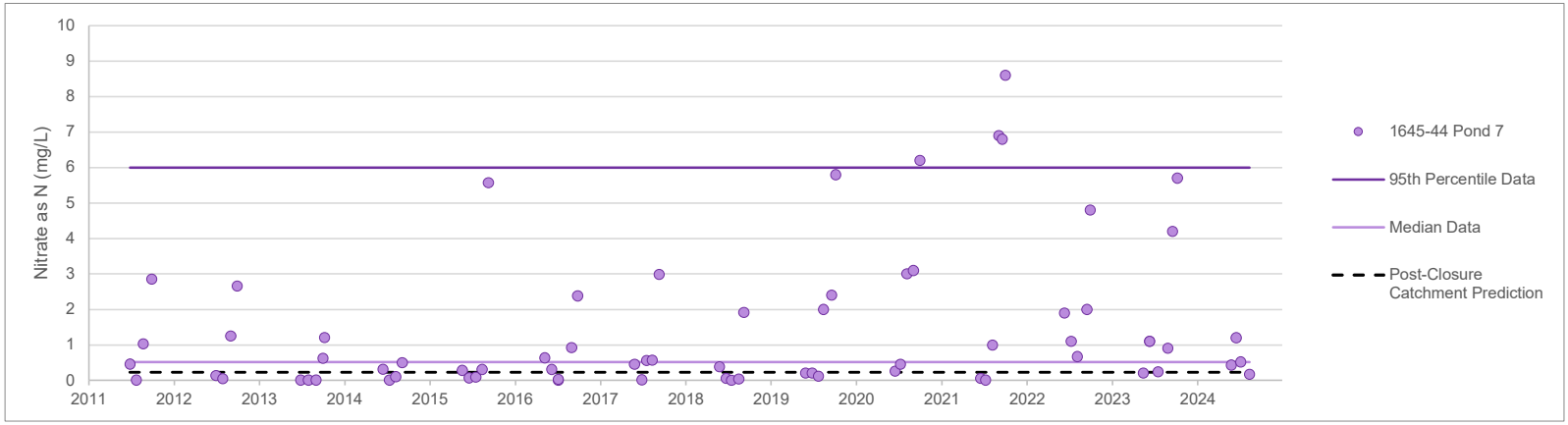


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	13.7	Wildlife	None
Median	6.7	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions

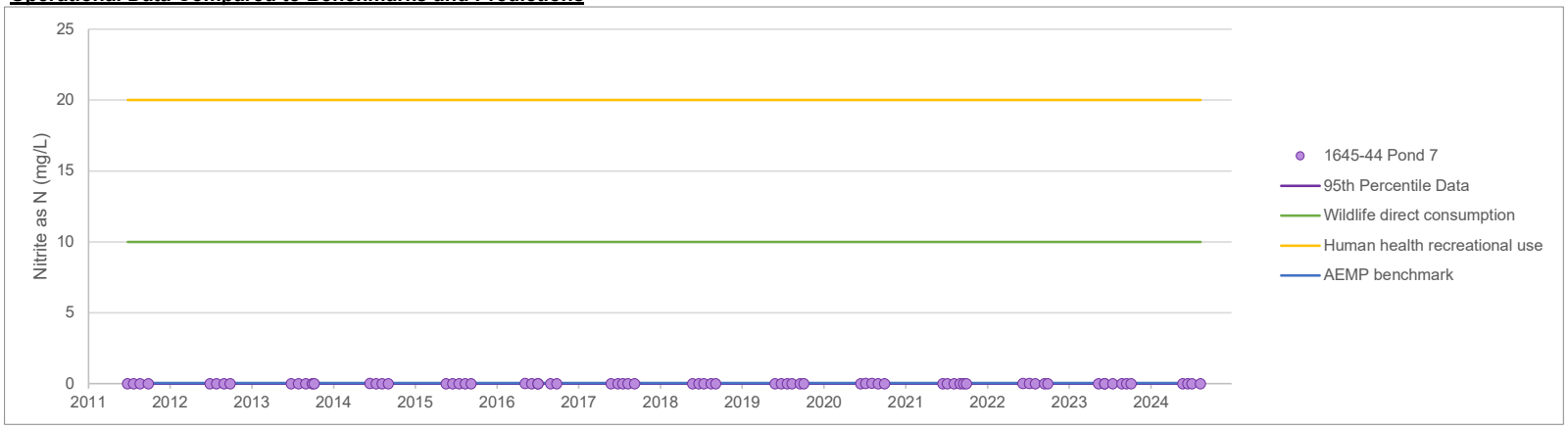


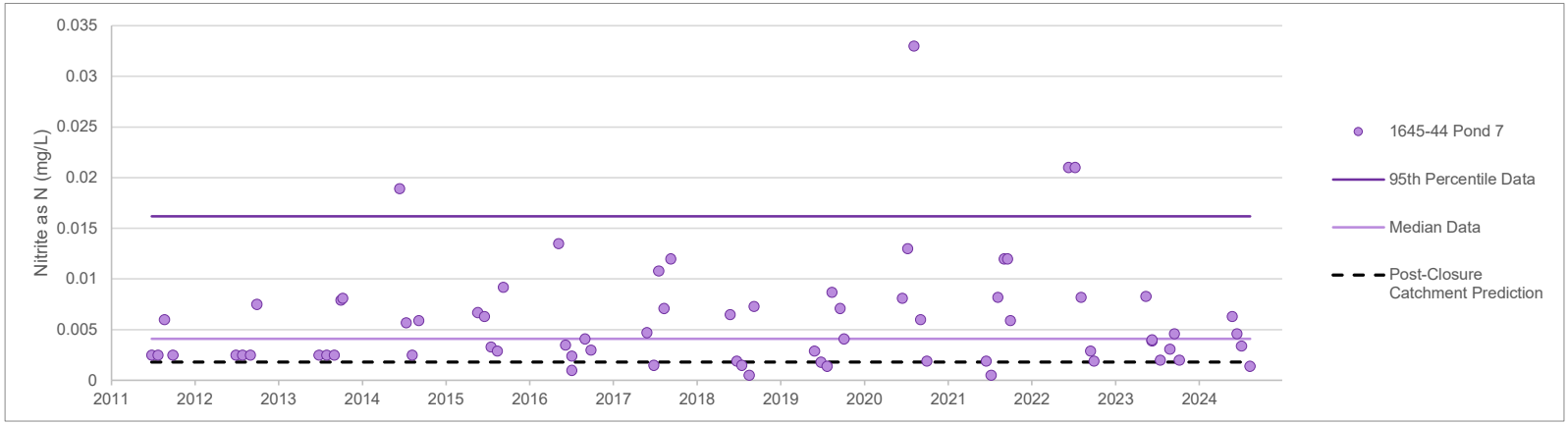


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	6.0	Wildlife	100
Median	0.5	Human recreational	200
Count	71	AEMP	3

Operational Data Compared to Benchmarks and Predictions

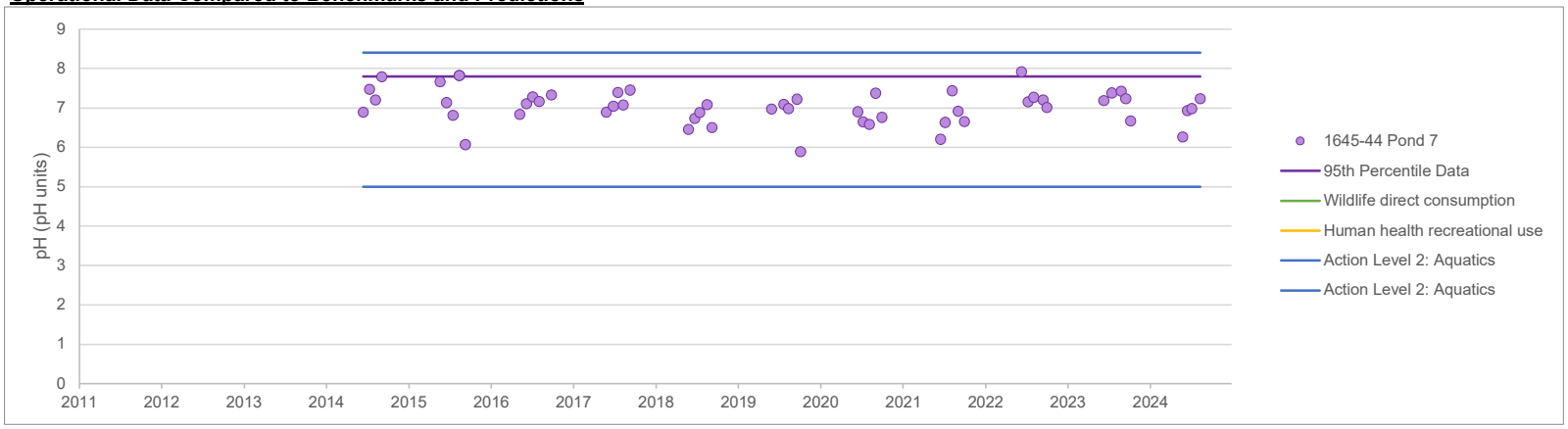


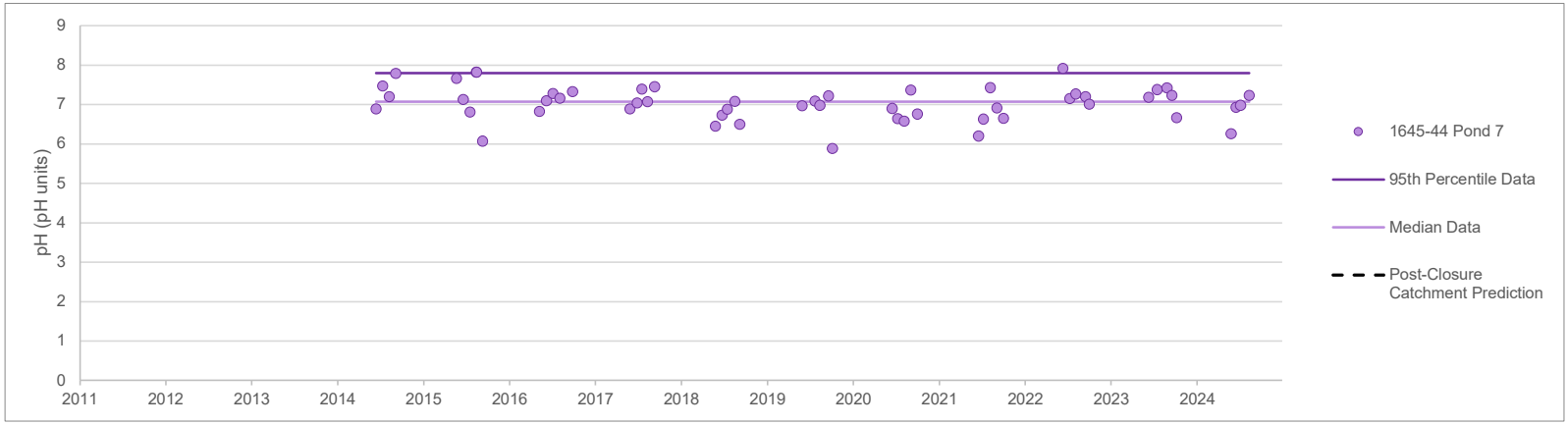


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.016	Wildlife	10.0
Median	0.004	Human recreational	20.0
Count	71	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



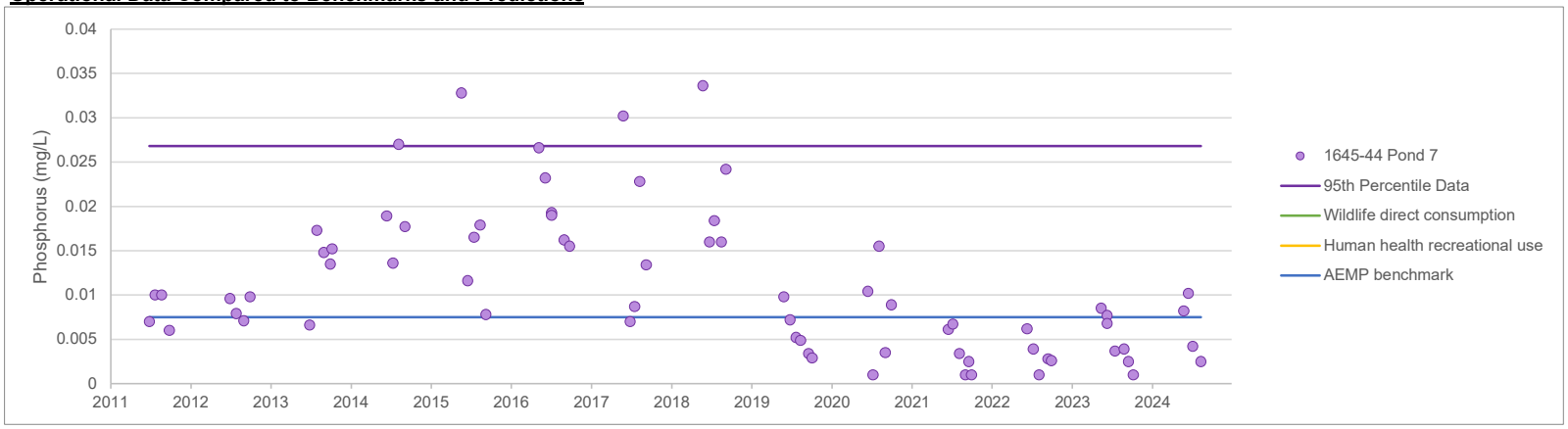


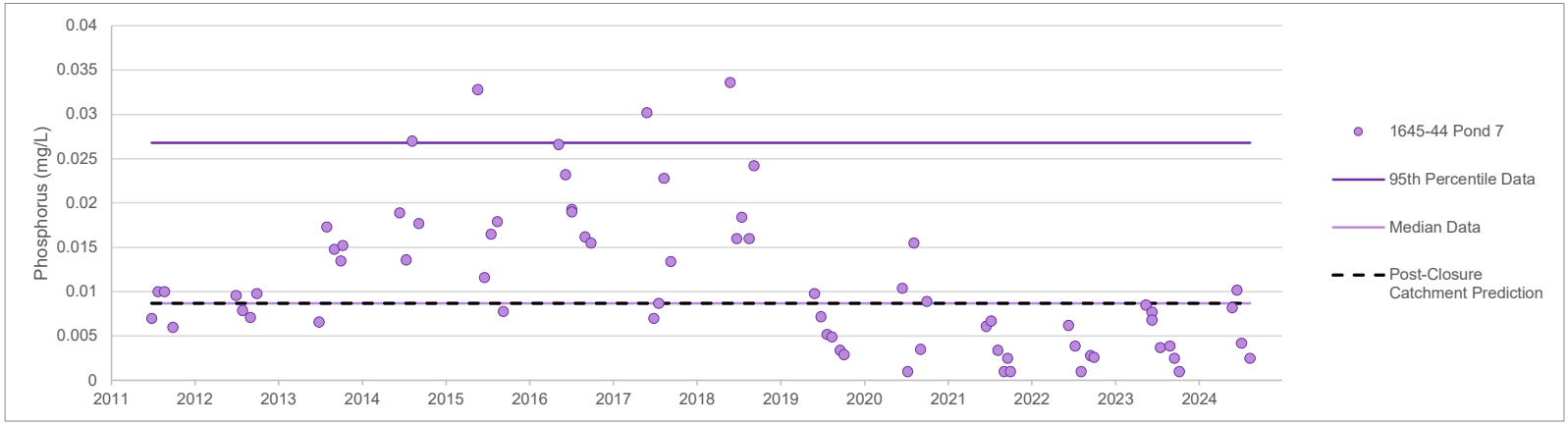
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	7.8	Wildlife	None
Median	7.1	Human recreational	None
Count	54	AEMP	None

Operational Data Compared to Benchmarks and Predictions

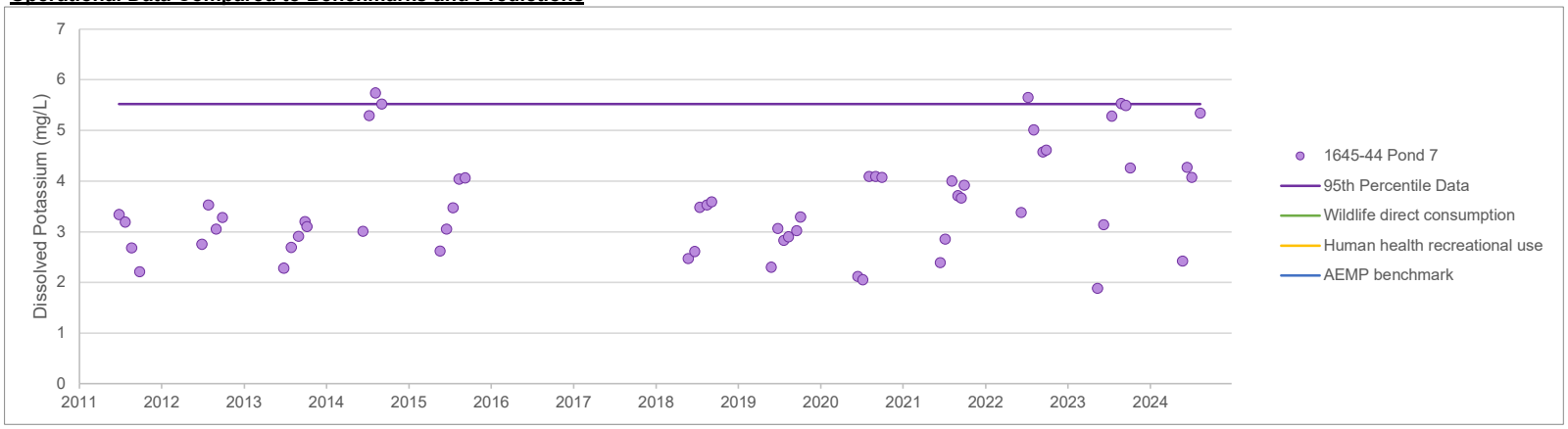


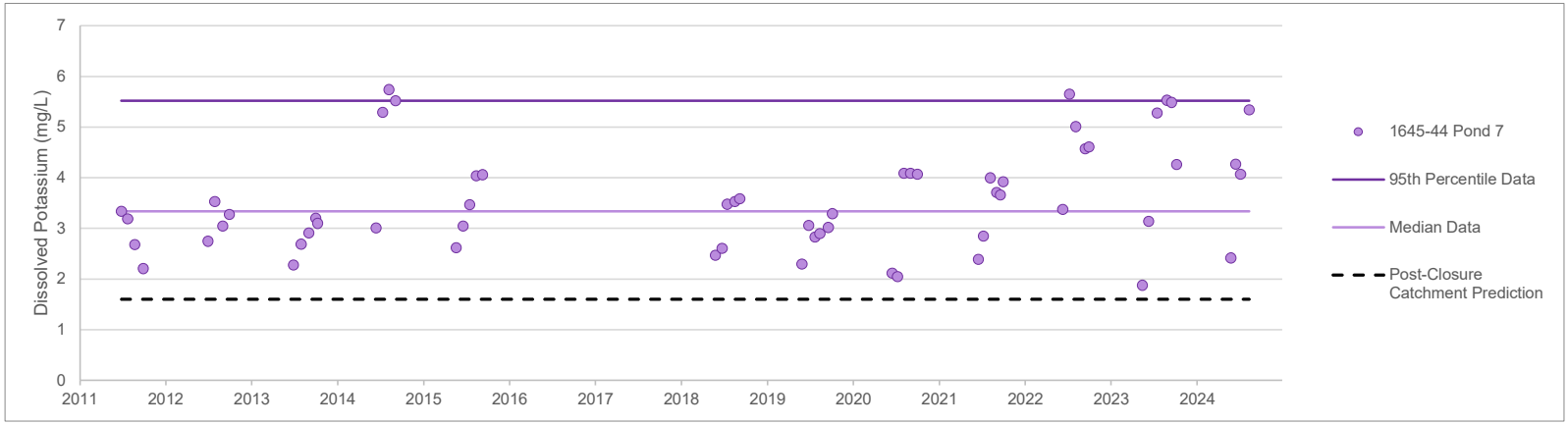


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.027	Wildlife	None
Median	0.009	Human recreational	None
Count	71	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions

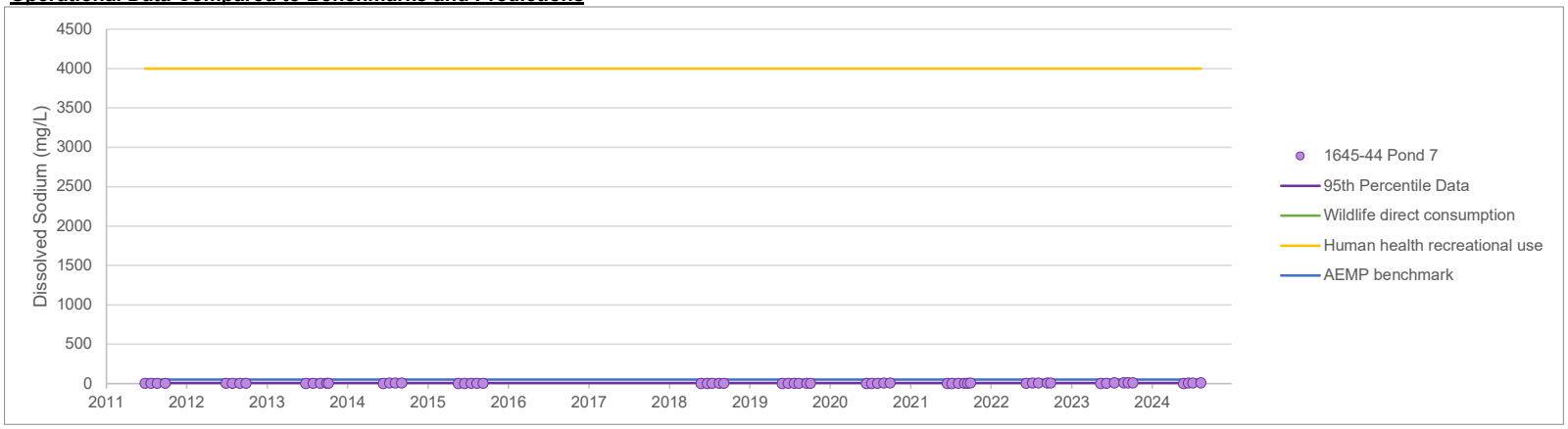


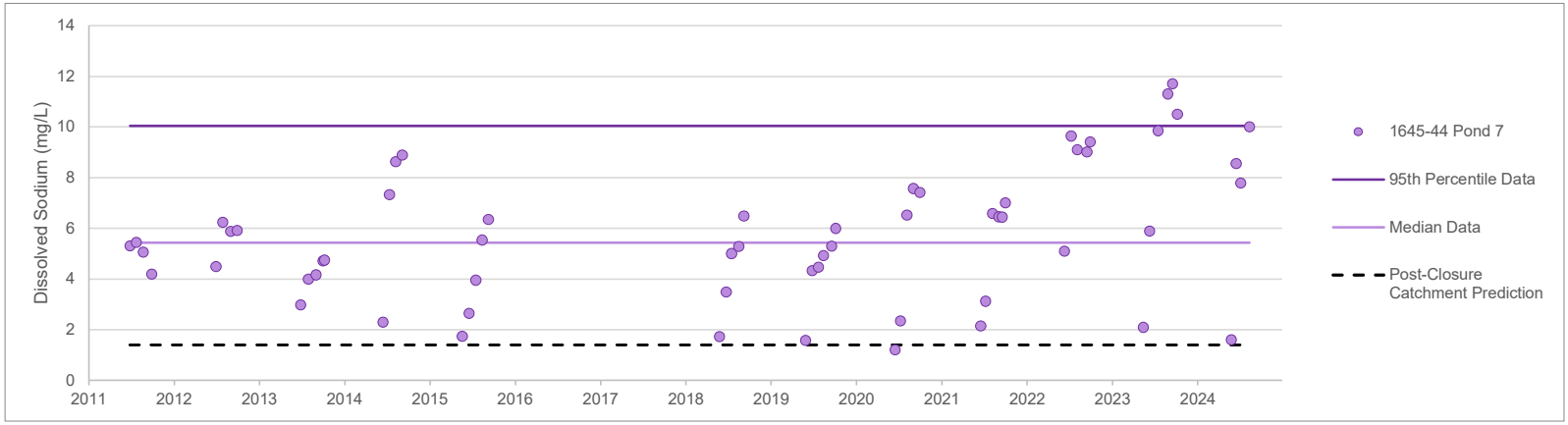


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	5.5	Wildlife	None
Median	3.3	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions

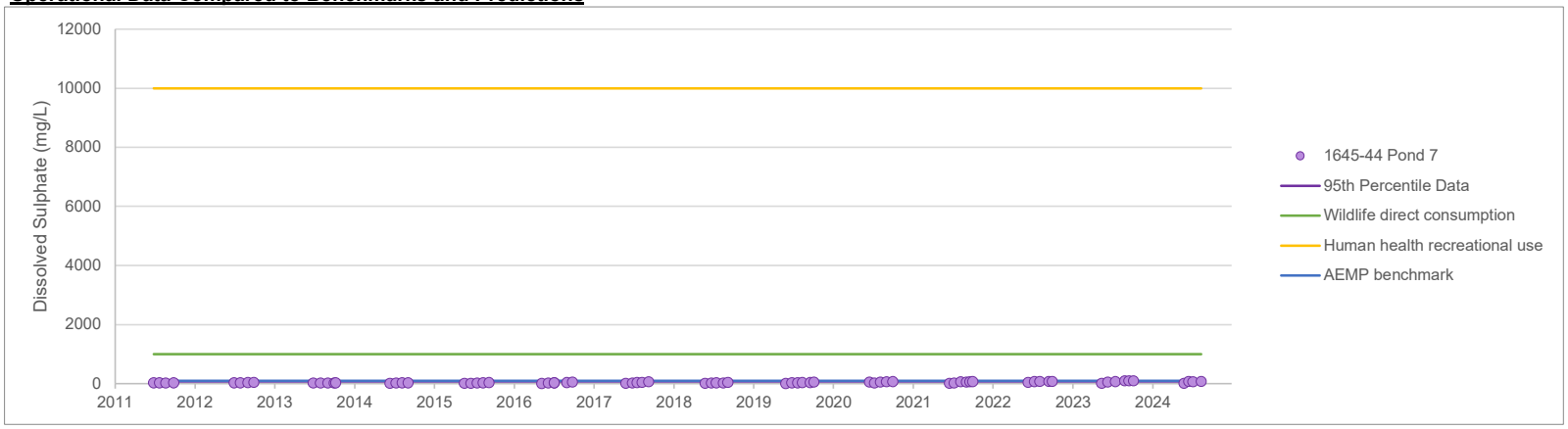


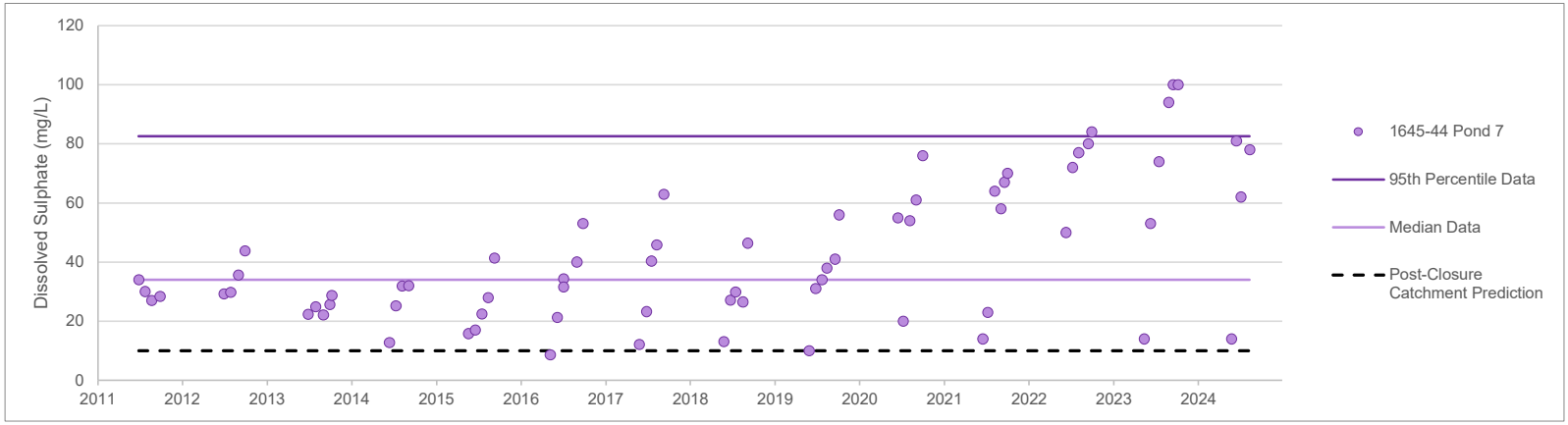


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	10.1	Wildlife	None
Median	5.4	Human recreational	4000
Count	59	AEMP	52

Operational Data Compared to Benchmarks and Predictions



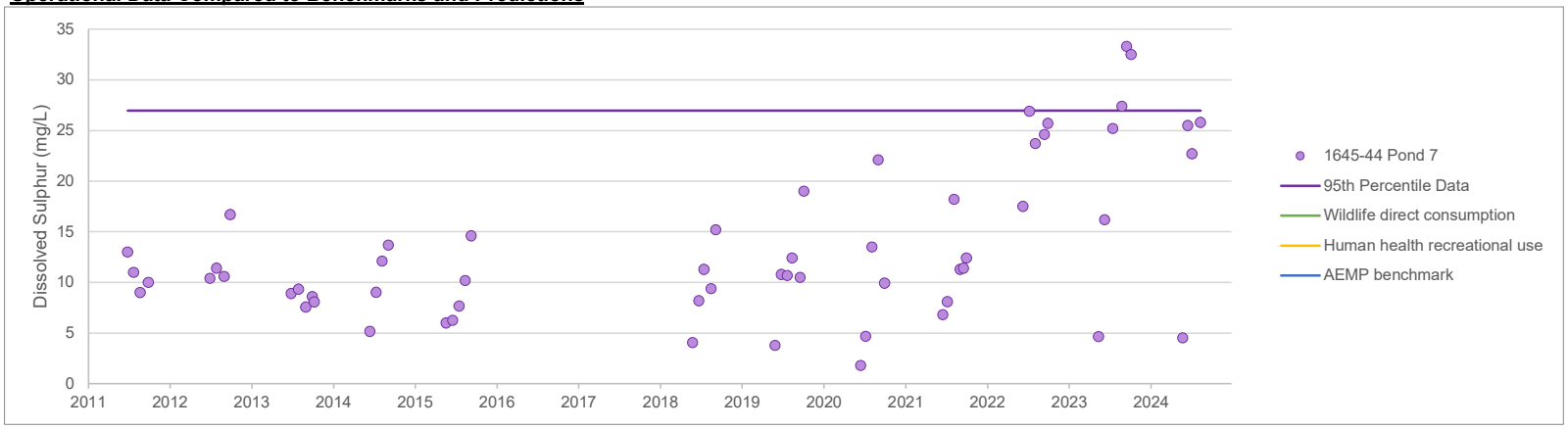


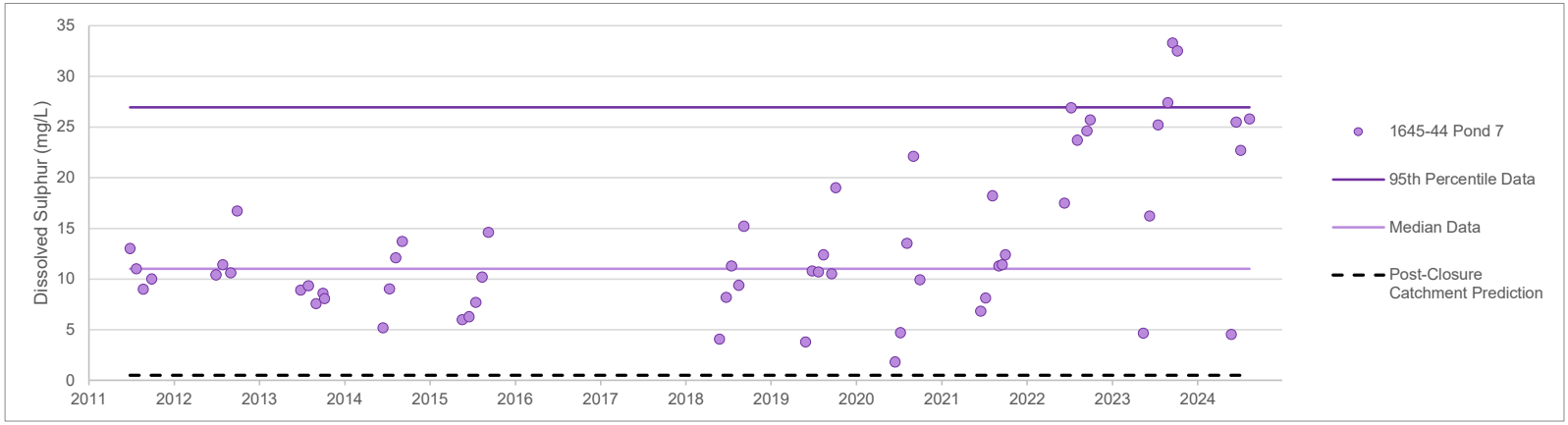
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	83	Wildlife	1000
Median	34	Human recreational	10000
Count	70	AEMP	100

Operational Data Compared to Benchmarks and Predictions

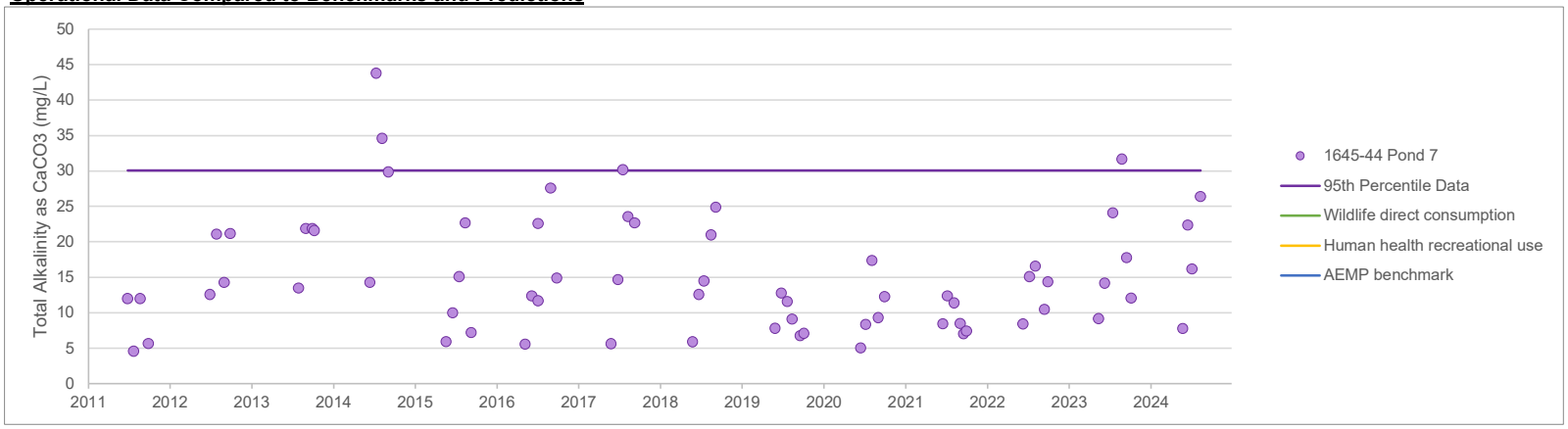


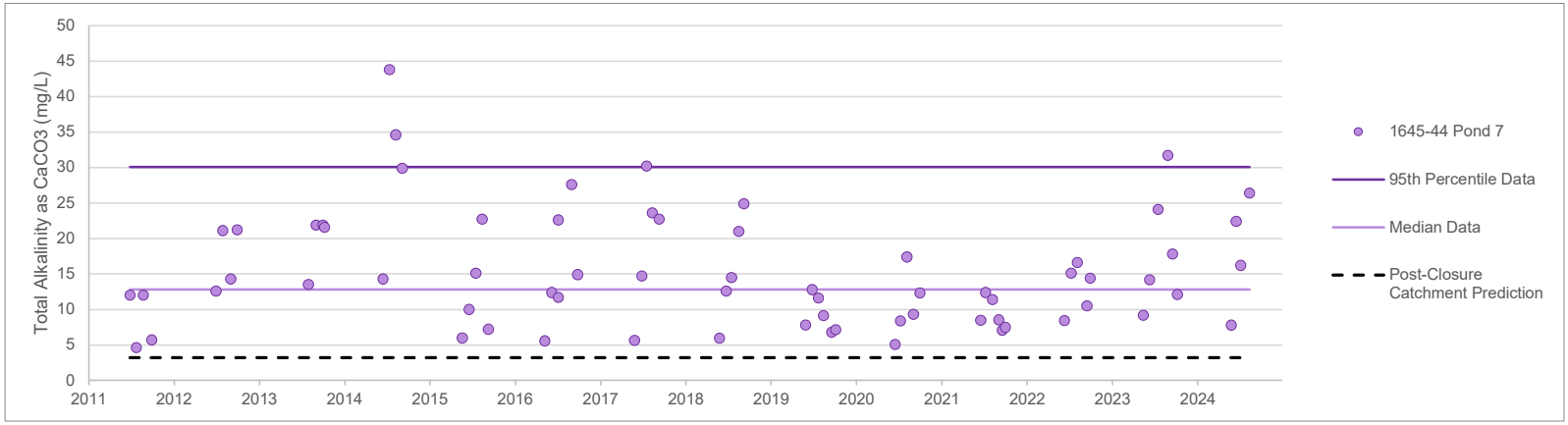


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	27.0	Wildlife	None
Median	11.0	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions

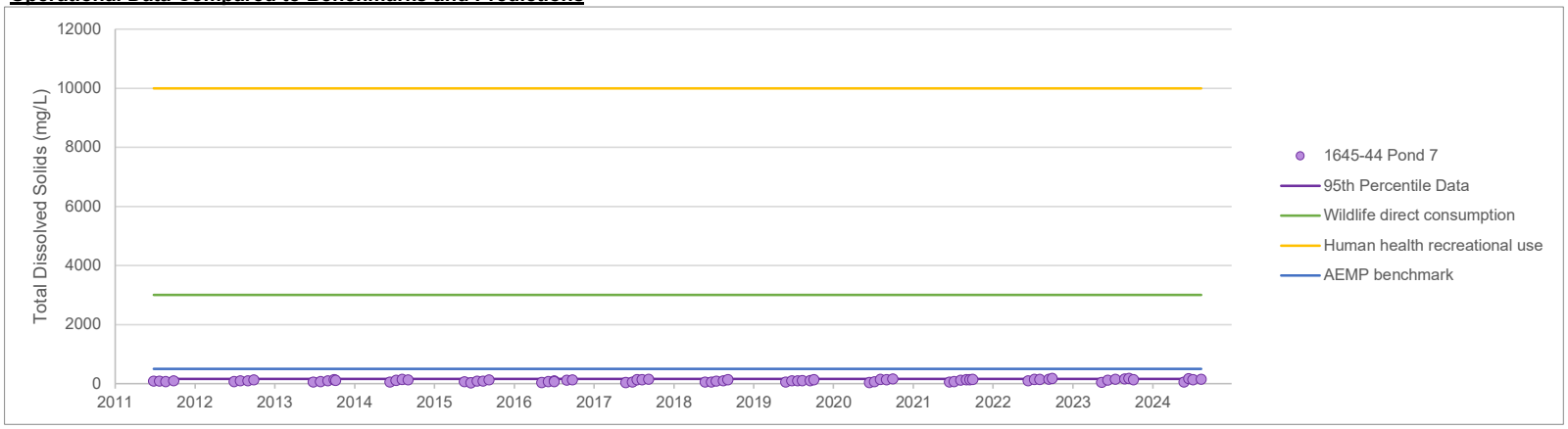


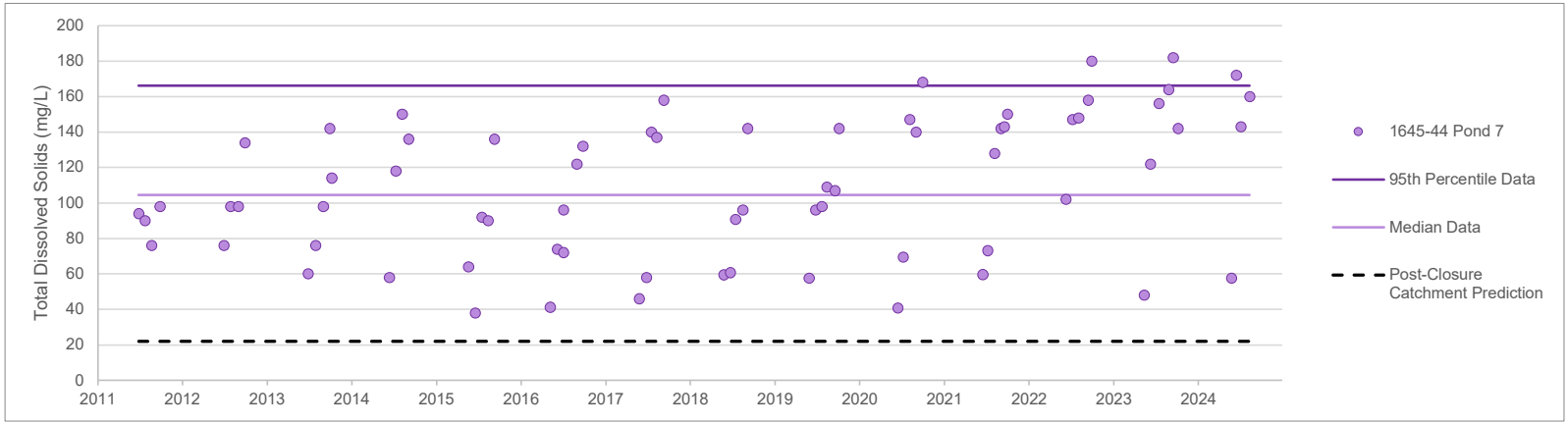


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	30.1	Wildlife	None
Median	12.8	Human recreational	None
Count	69	AEMP	None

Operational Data Compared to Benchmarks and Predictions



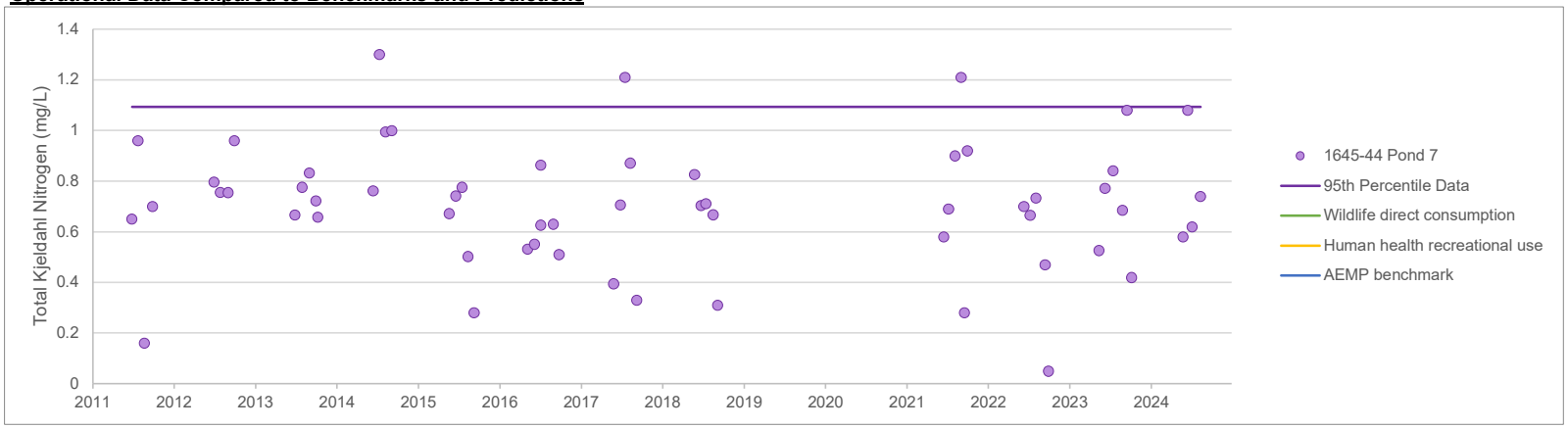


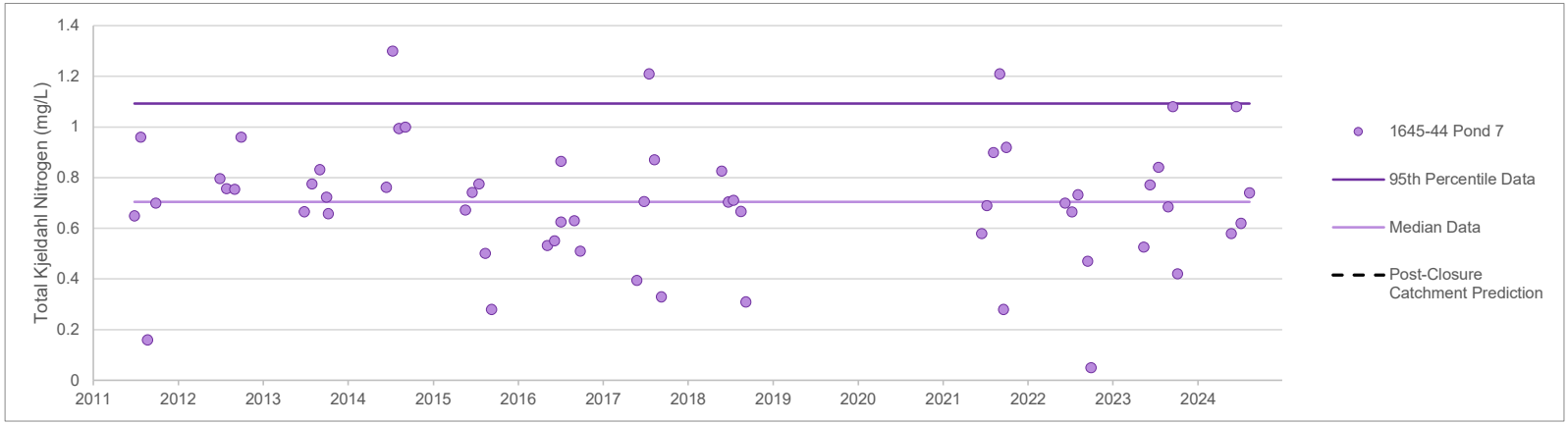
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	166	Wildlife	3000
Median	105	Human recreational	10000
Count	70	AEMP	500

Operational Data Compared to Benchmarks and Predictions

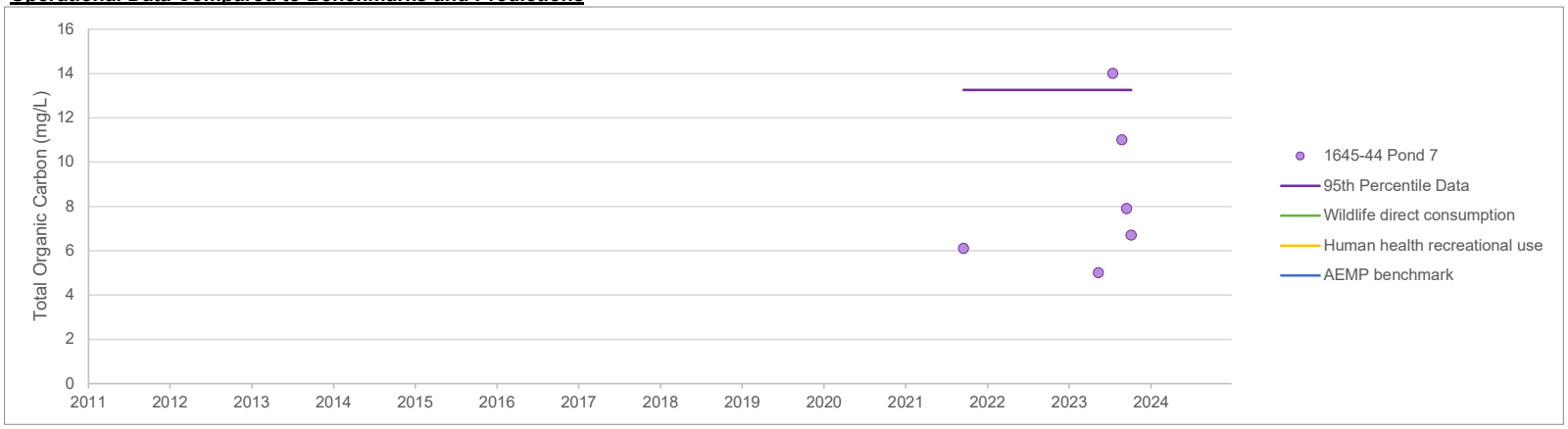


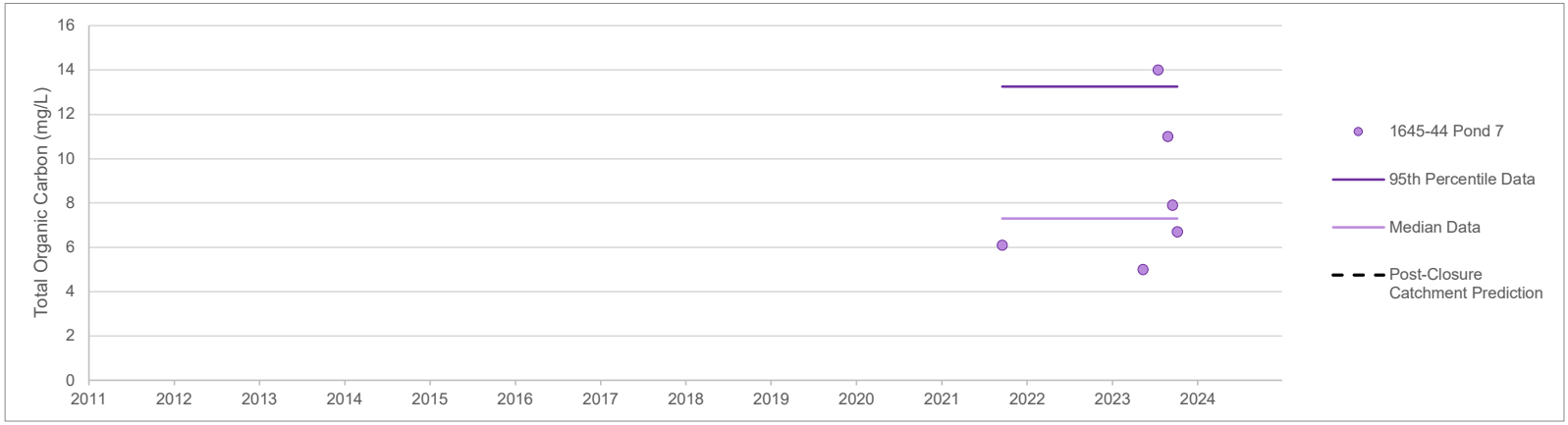


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.1	Wildlife	None
Median	0.7	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



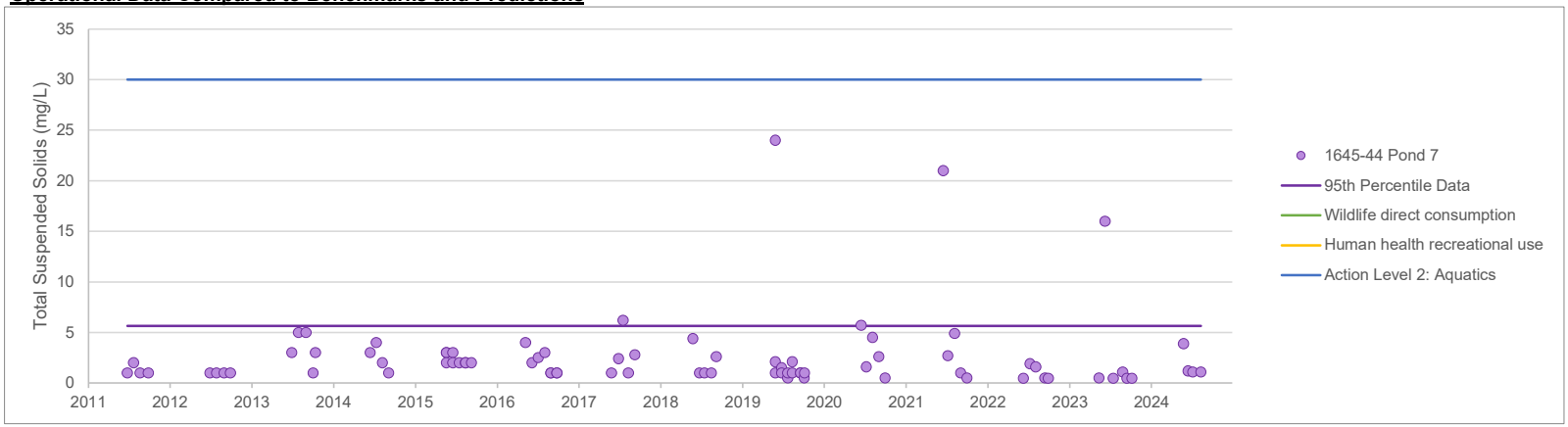


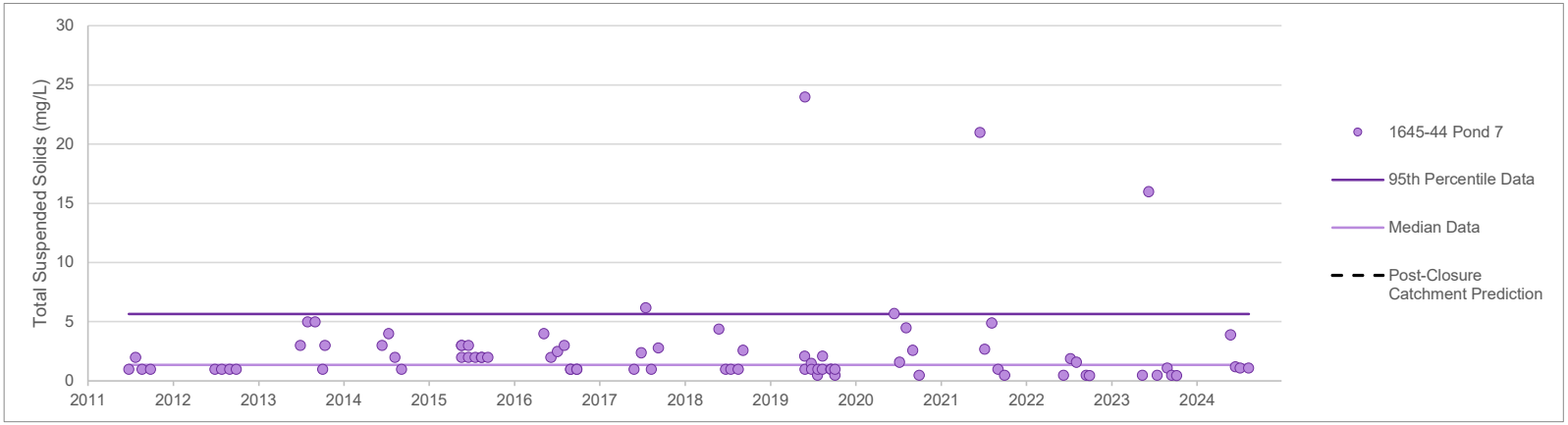
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	13.3	Wildlife	None
Median	7.3	Human recreational	None
Count	6	AEMP	None

Operational Data Compared to Benchmarks and Predictions

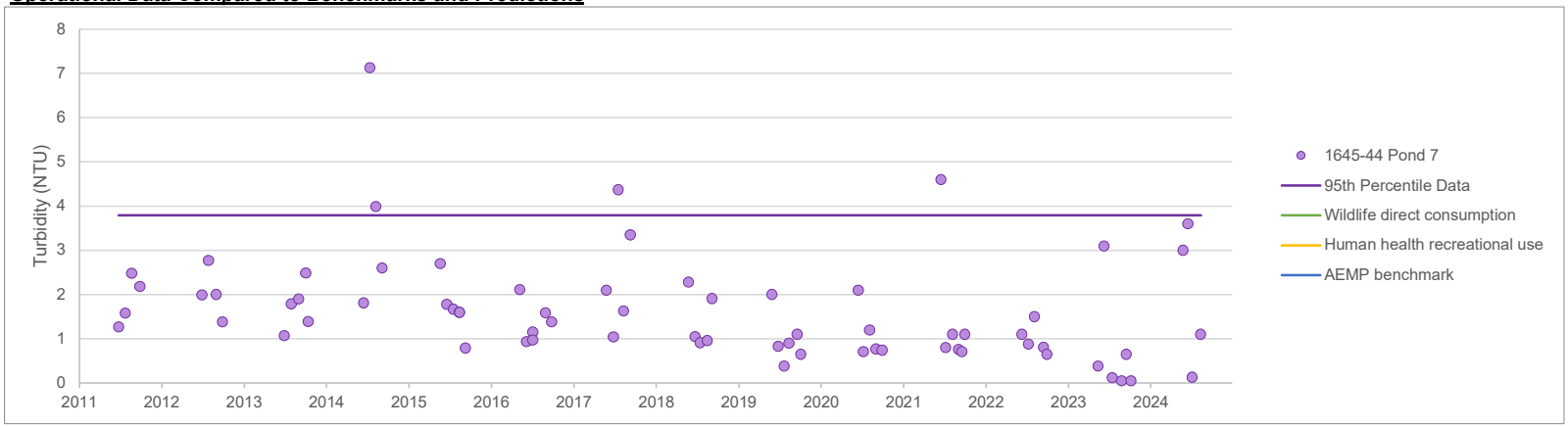


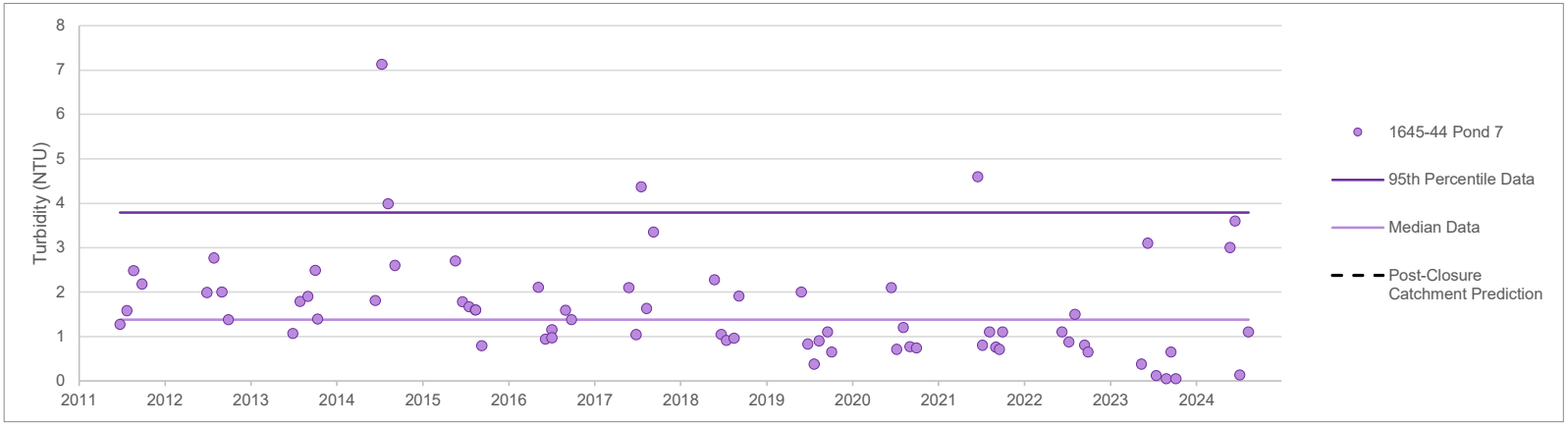


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	5.7	Wildlife	None
Median	1.4	Human recreational	None
Count	82	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



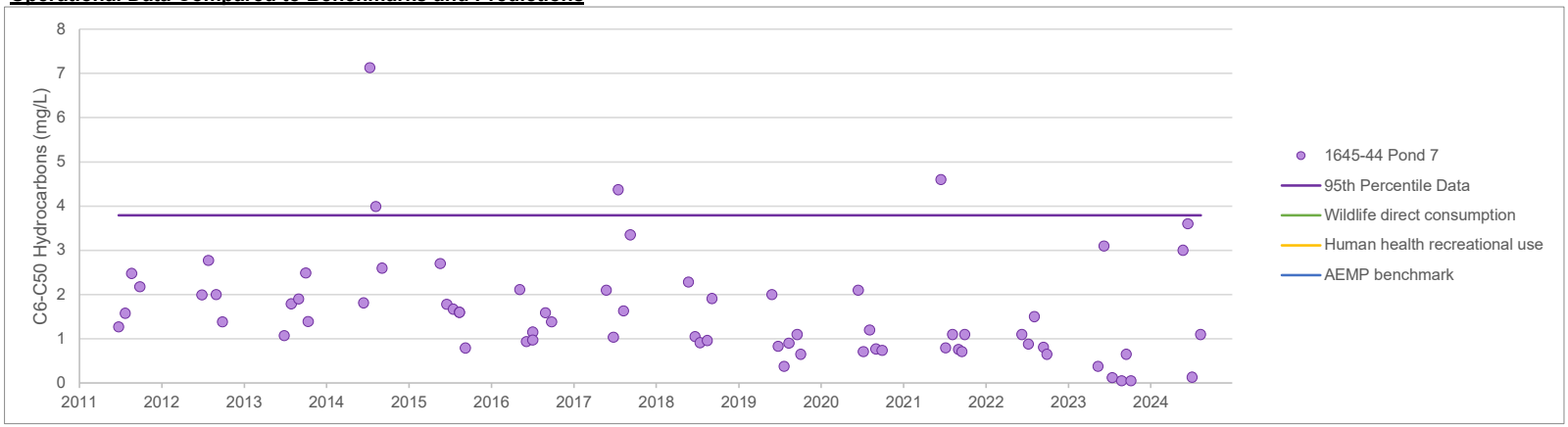


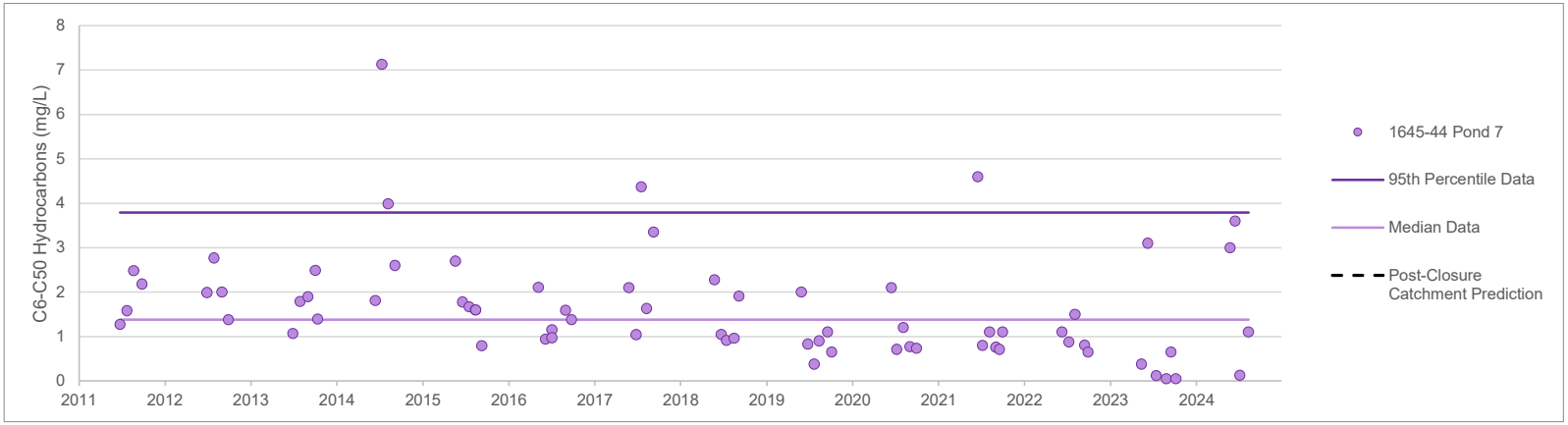
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	3.8	Wildlife	None
Median	1.4	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	7	AEMP	None

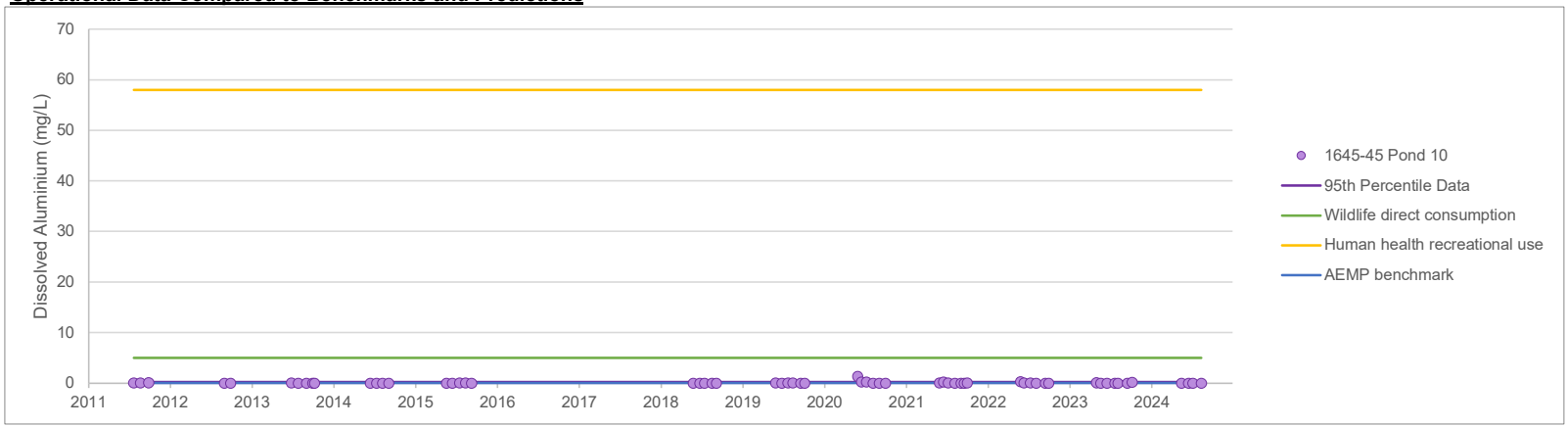
Pond 10

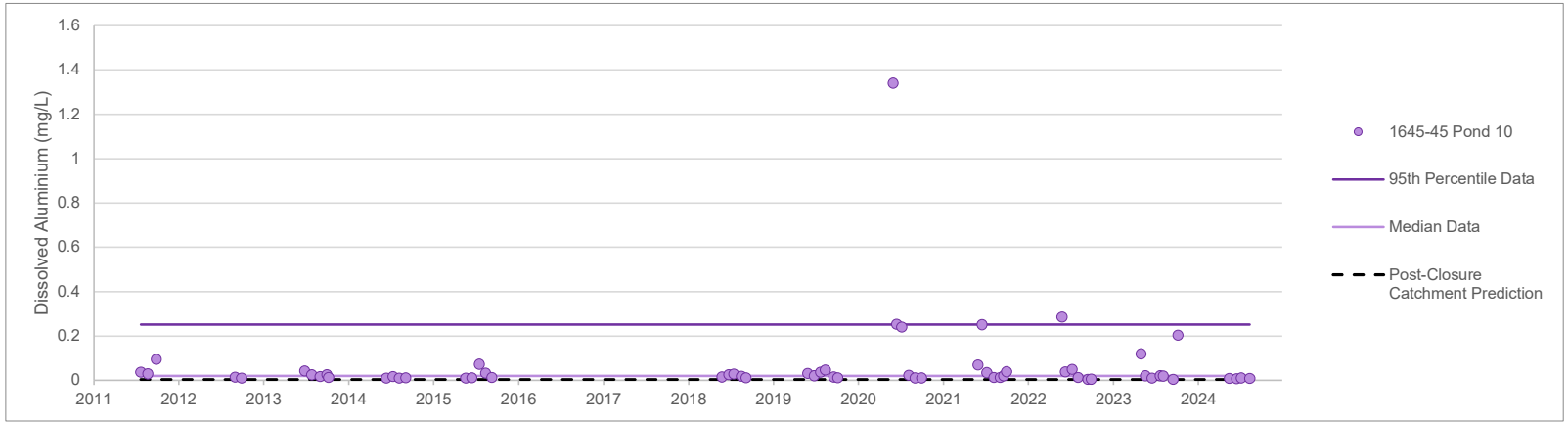
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



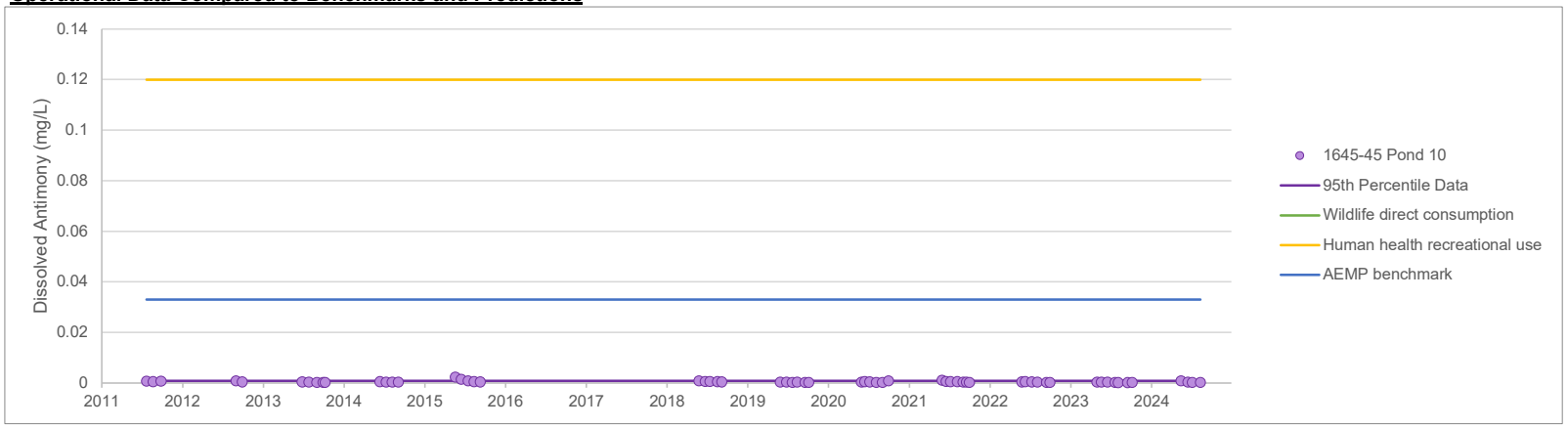


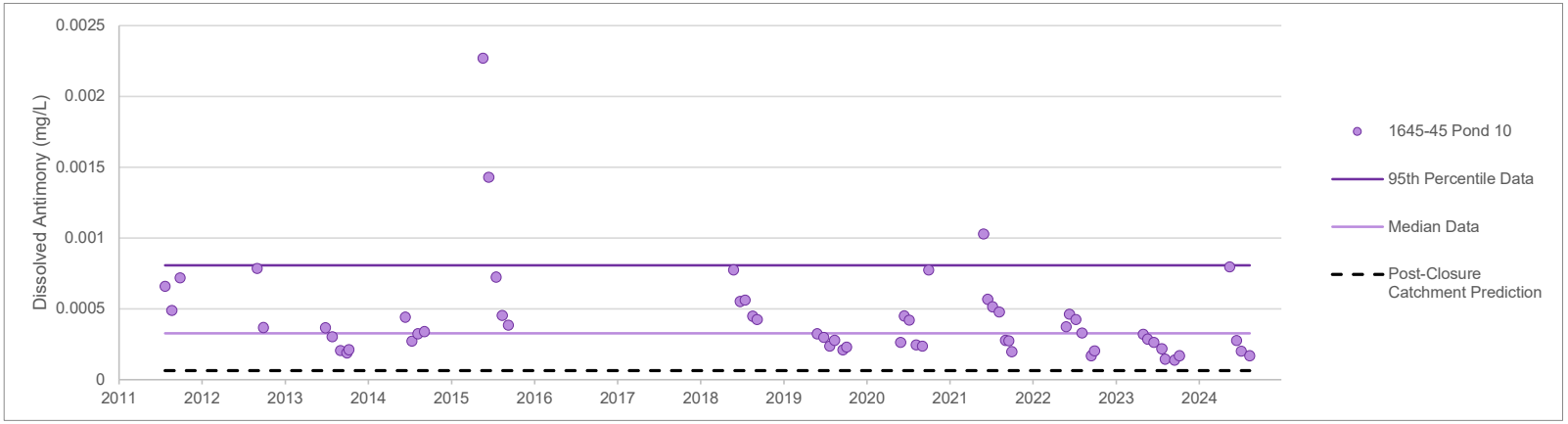
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.251	Wildlife	5.0
Median	0.019	Human recreational	58.0
Count	60	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



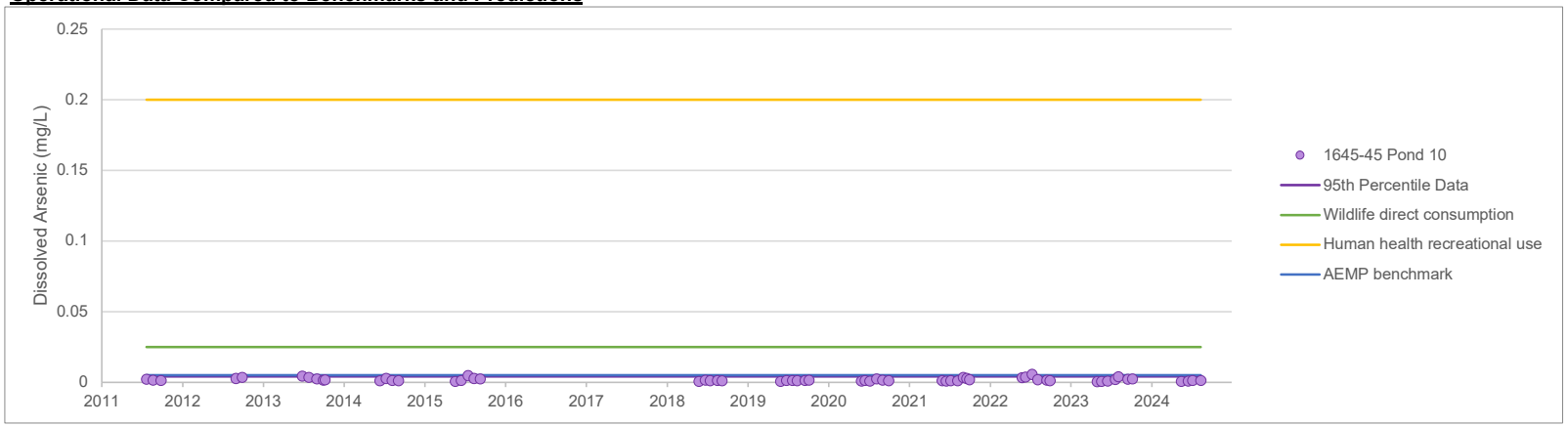


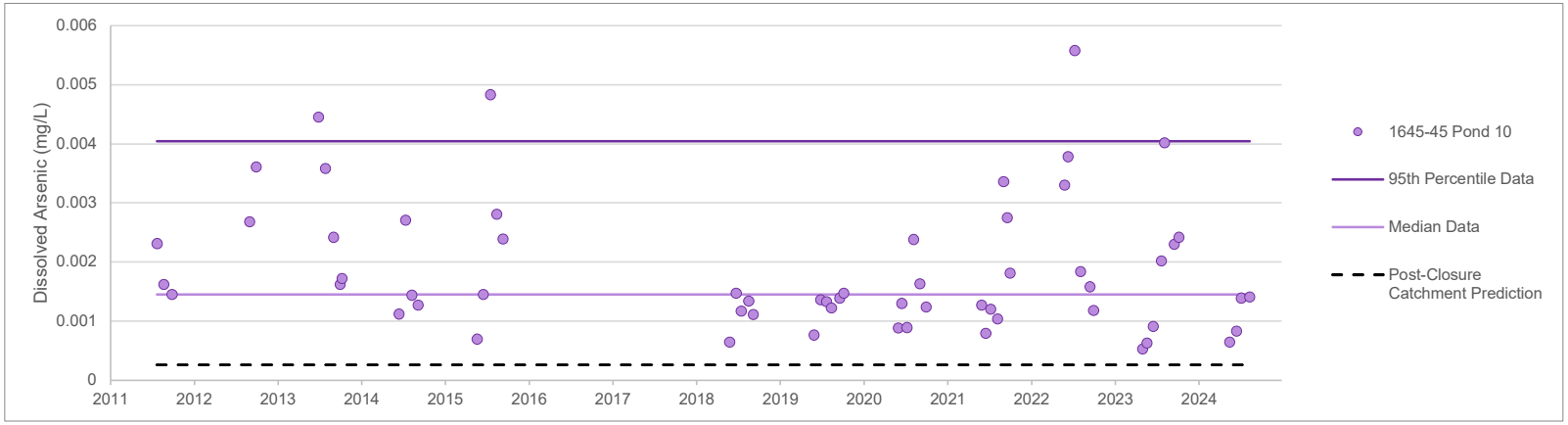
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00081	Wildlife	None
Median	0.00033	Human recreational	0.12
Count	60	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



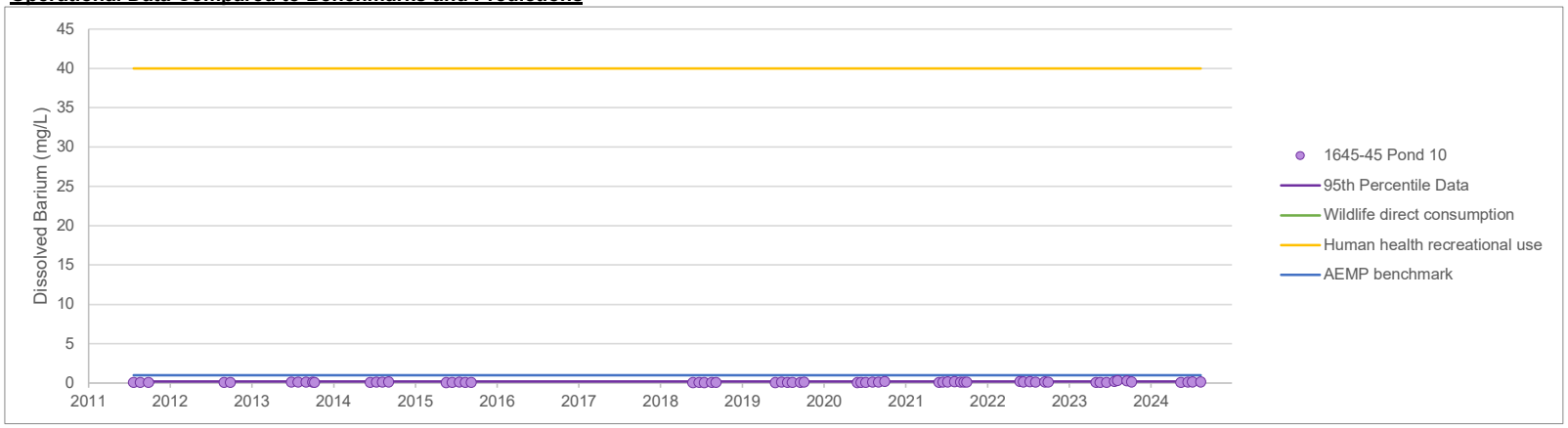


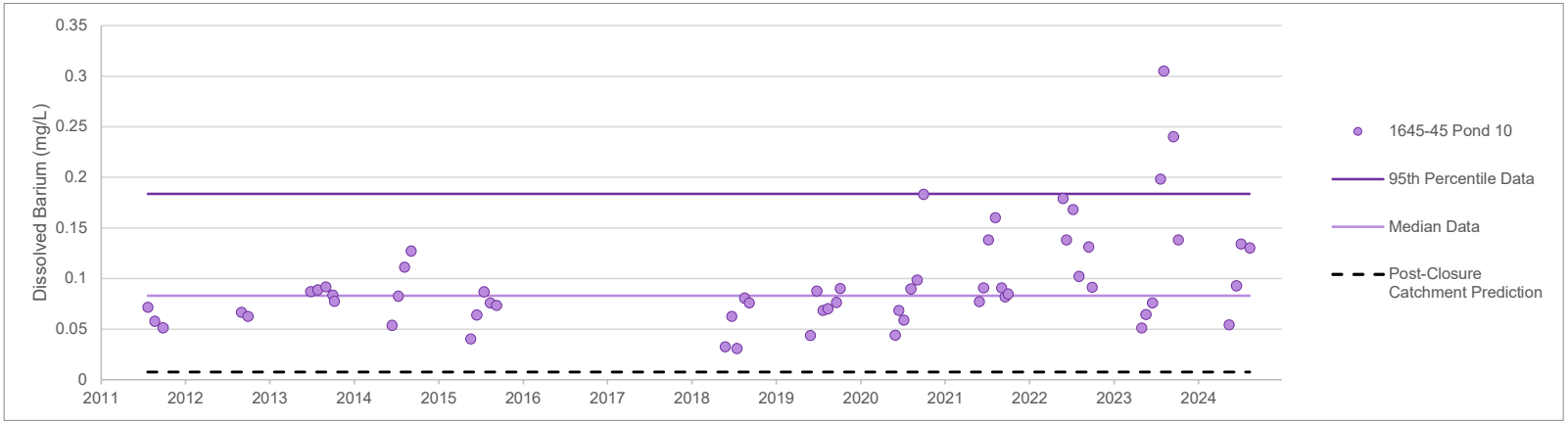
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0040	Wildlife	0.03
Median	0.0015	Human recreational	0.20
Count	60	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



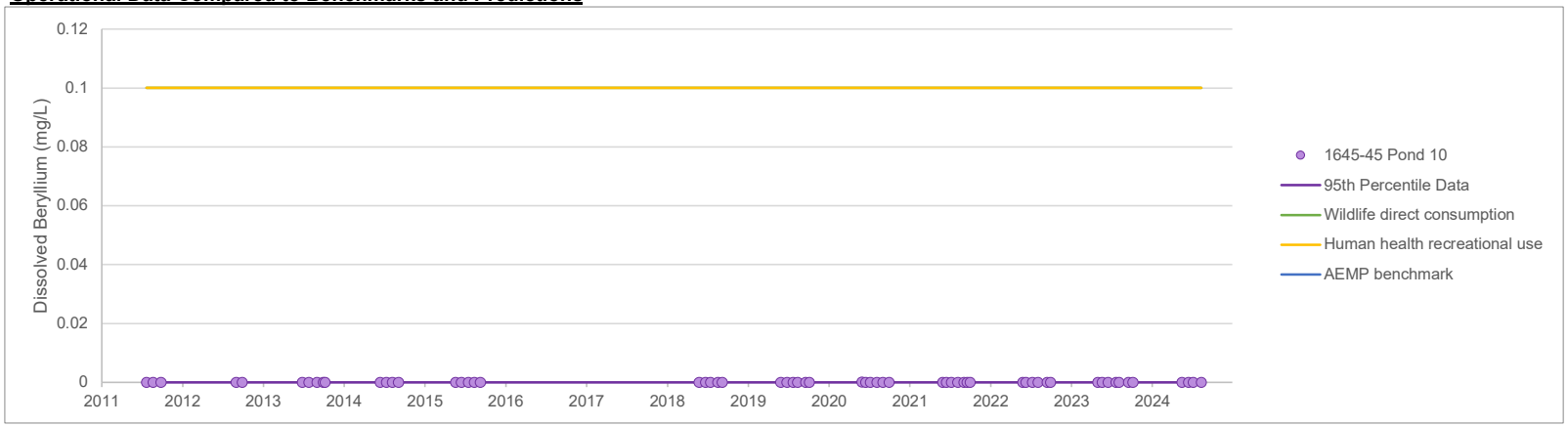


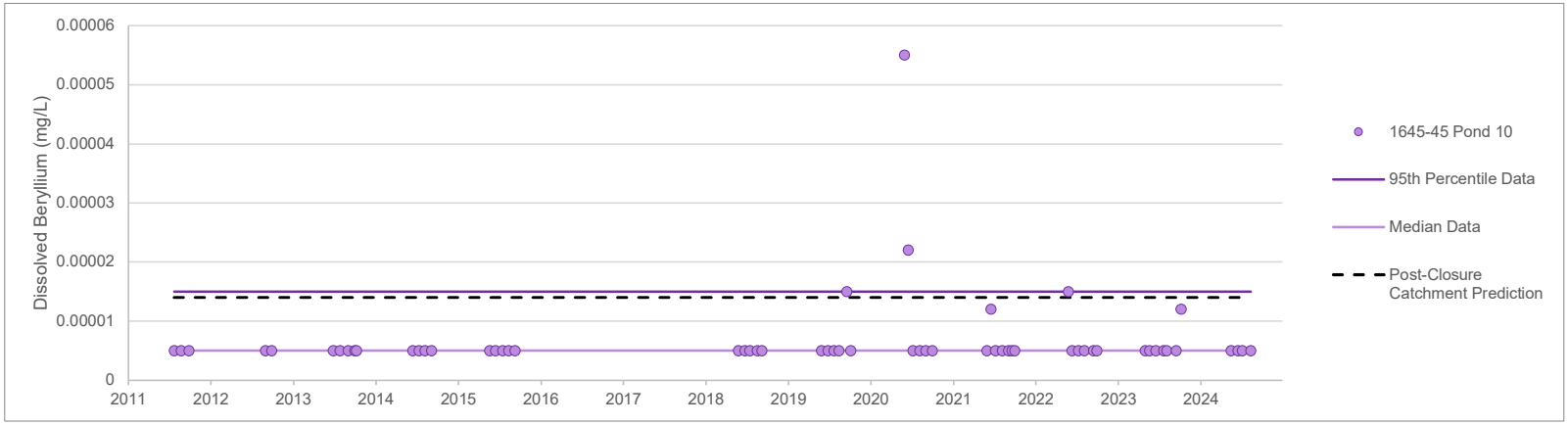
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.184	Wildlife	None
Median	0.083	Human recreational	40.0
Count	60	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



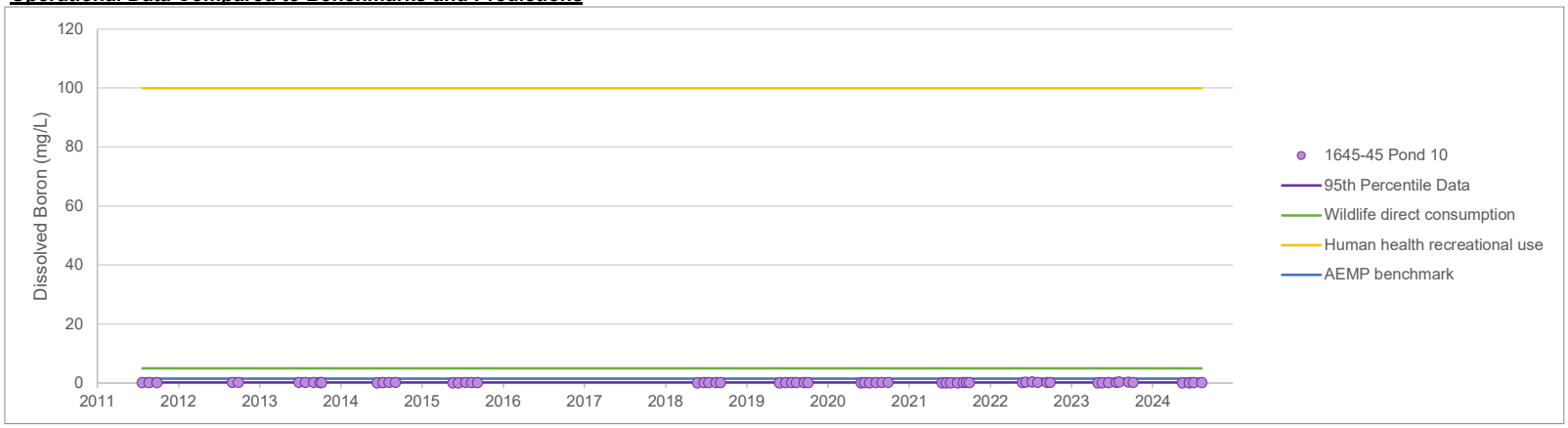


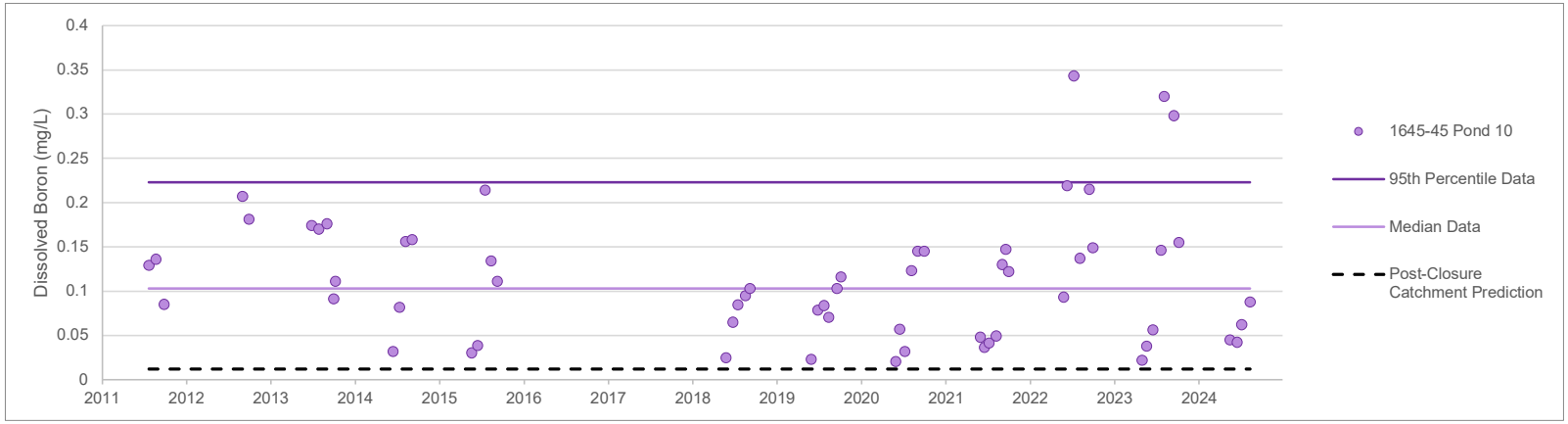
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000015	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



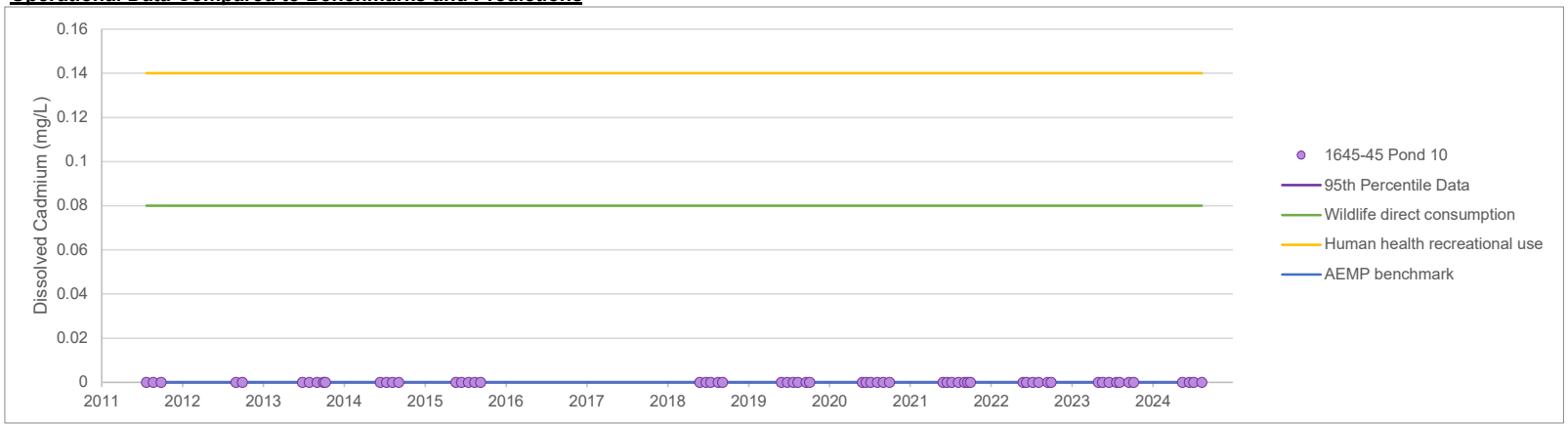


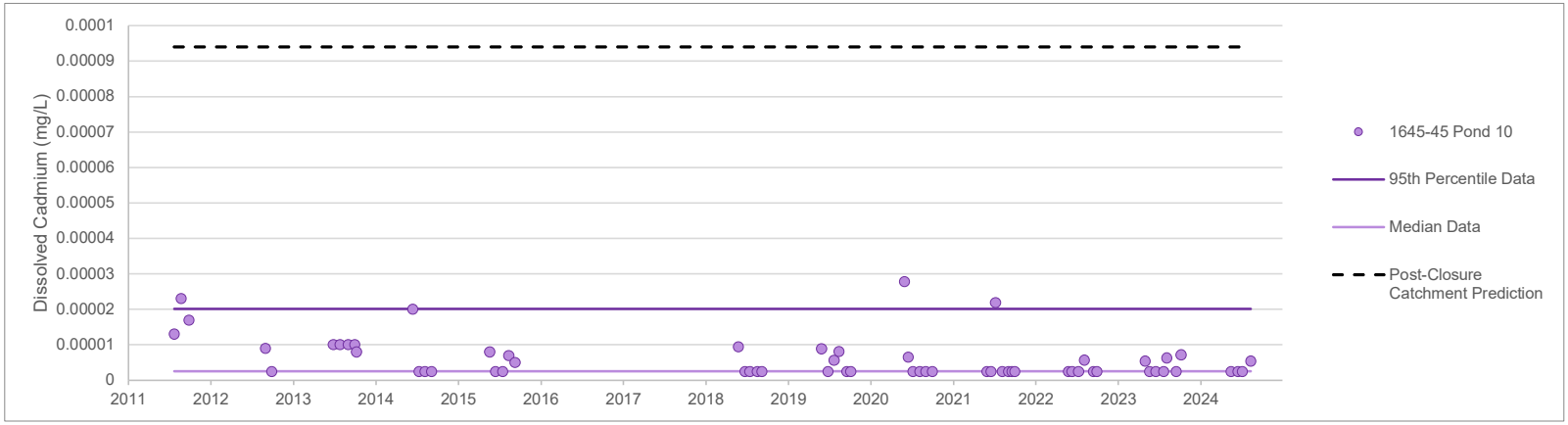
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.223	Wildlife	5.0
Median	0.103	Human recreational	100.0
Count	60	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



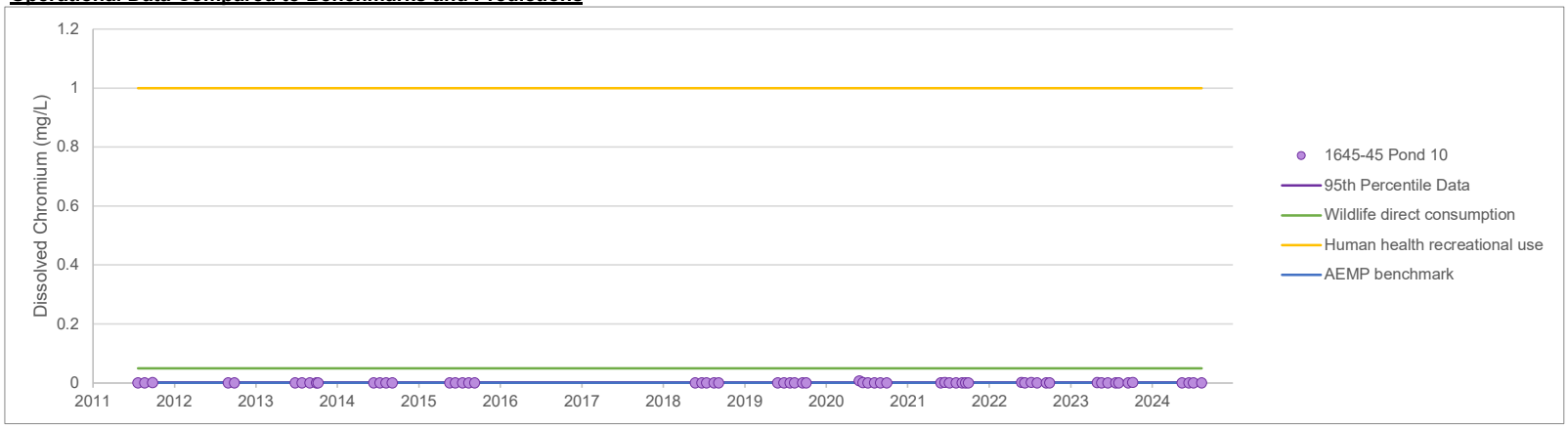


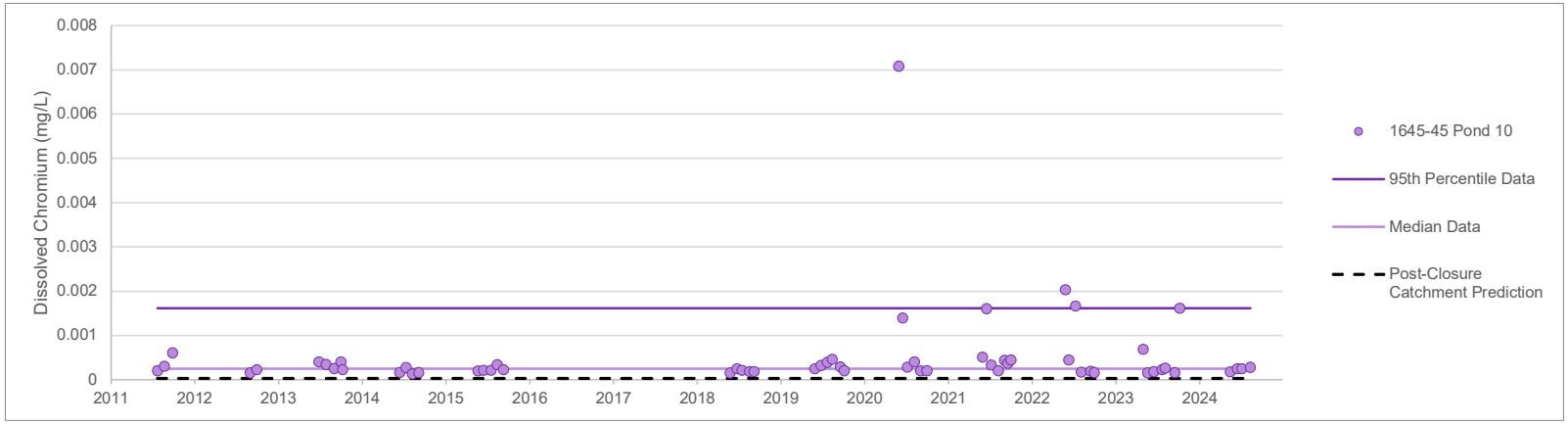
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00002	Wildlife	0.08
Median	0.00000	Human recreational	0.14
Count	60	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



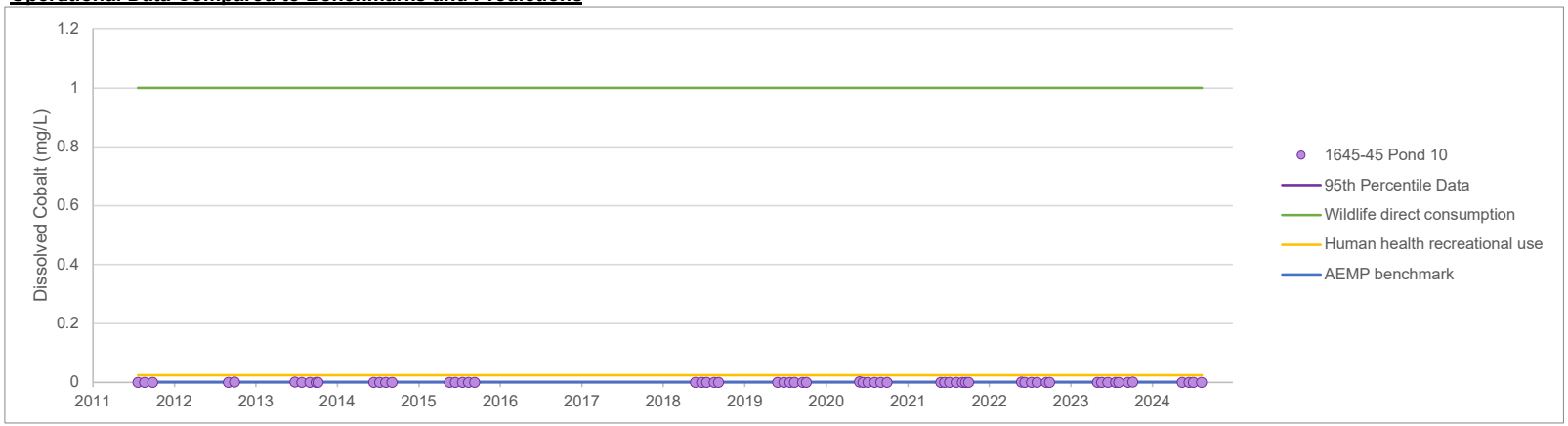


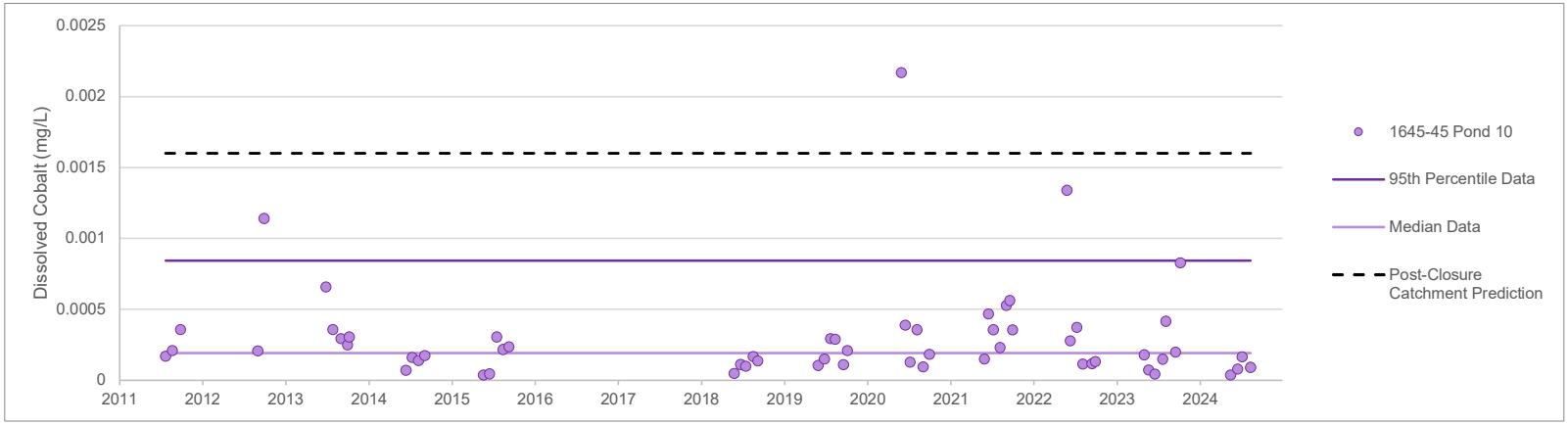
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00161	Wildlife	0.05
Median	0.00024	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



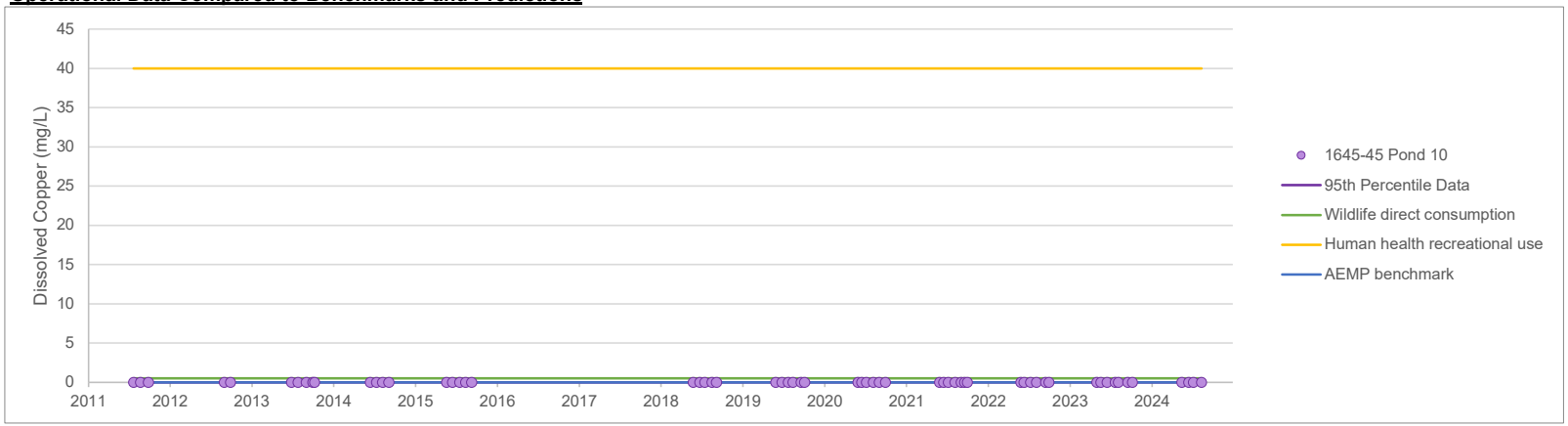


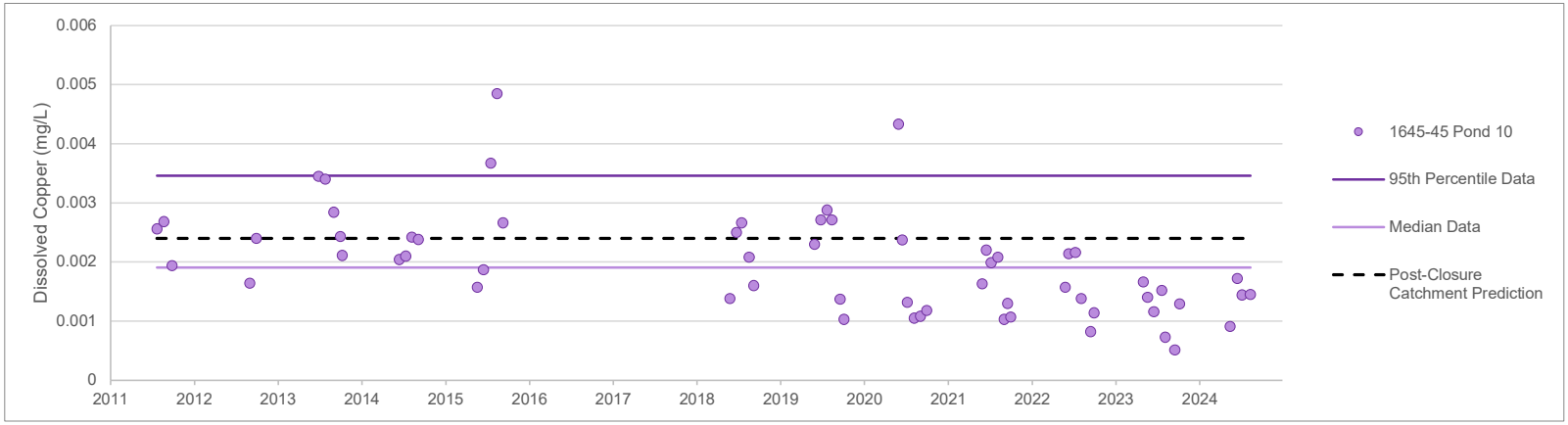
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0008	Wildlife	1.0
Median	0.0002	Human recreational	0.02
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



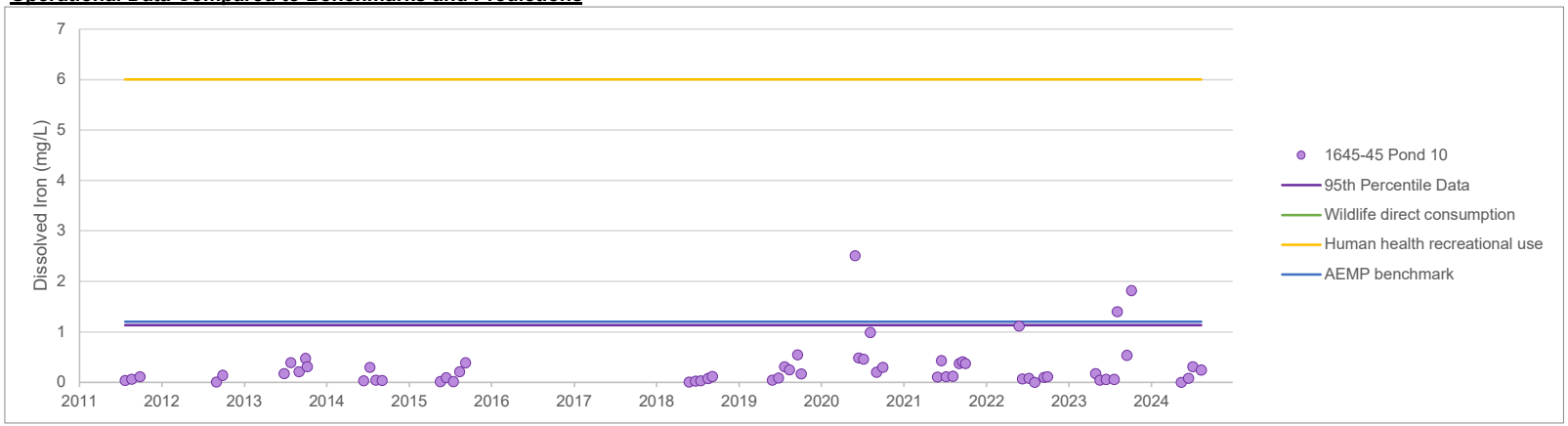


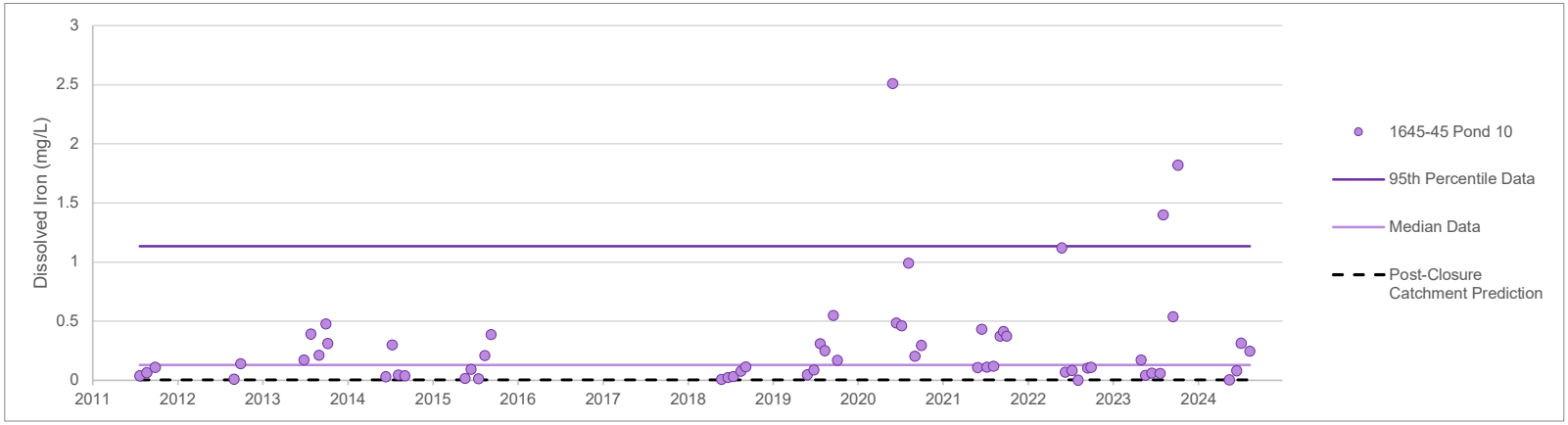
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0035	Wildlife	0.5
Median	0.0019	Human recreational	40.0
Count	60	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



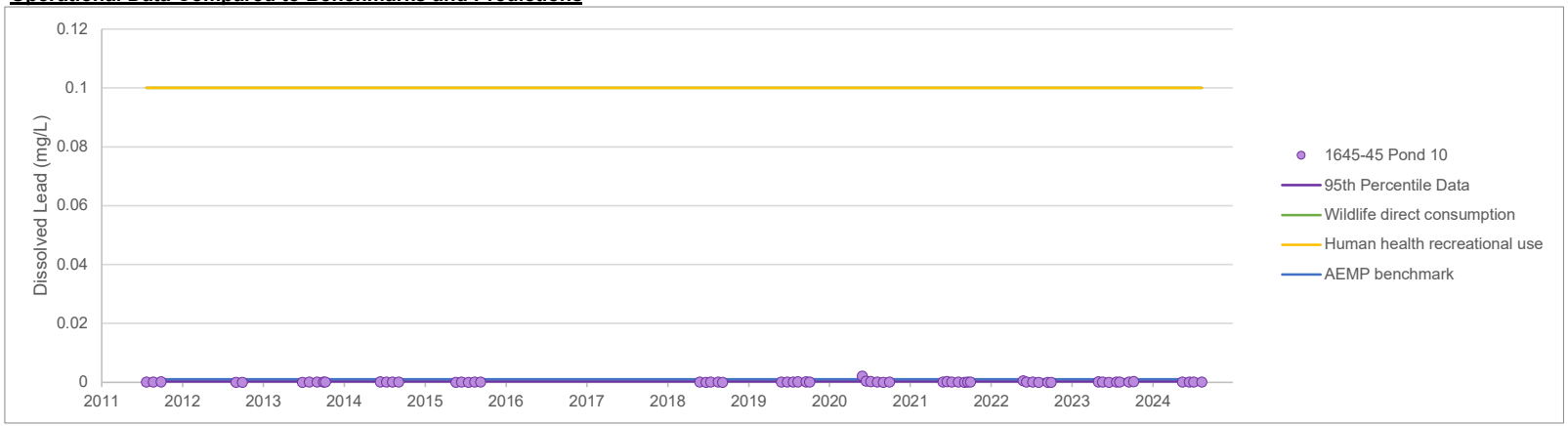


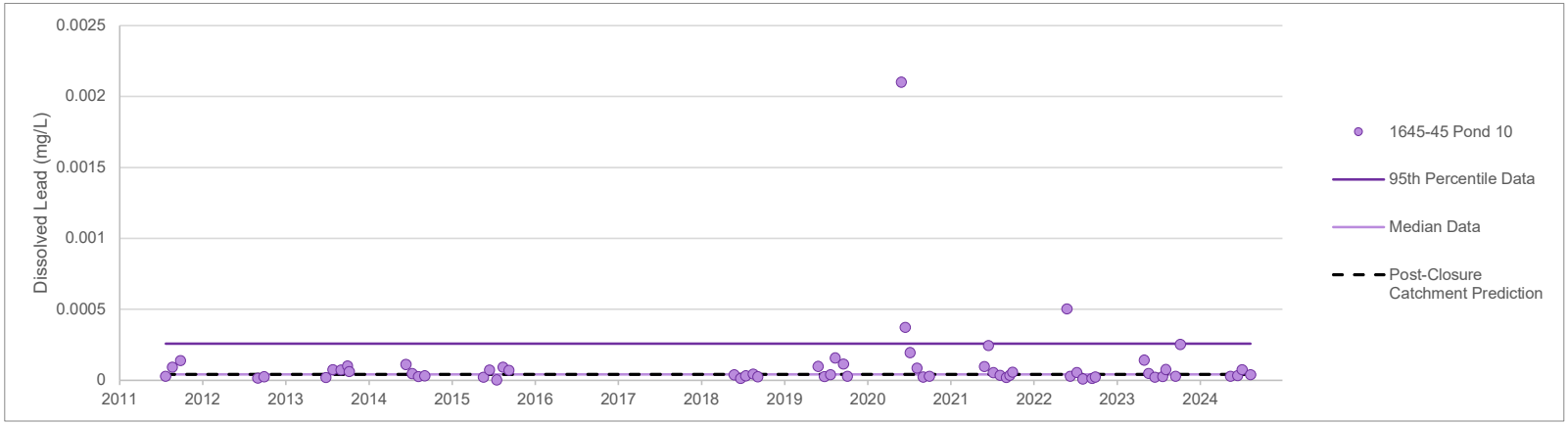
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	1.13	Wildlife	None
Median	0.13	Human recreational	6.0
Count	60	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



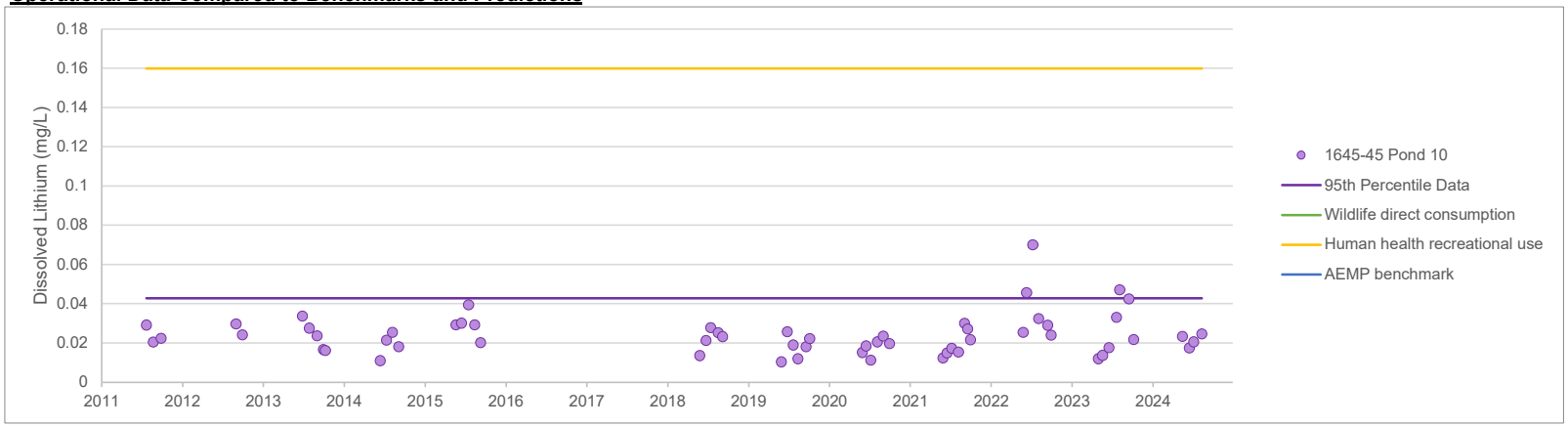


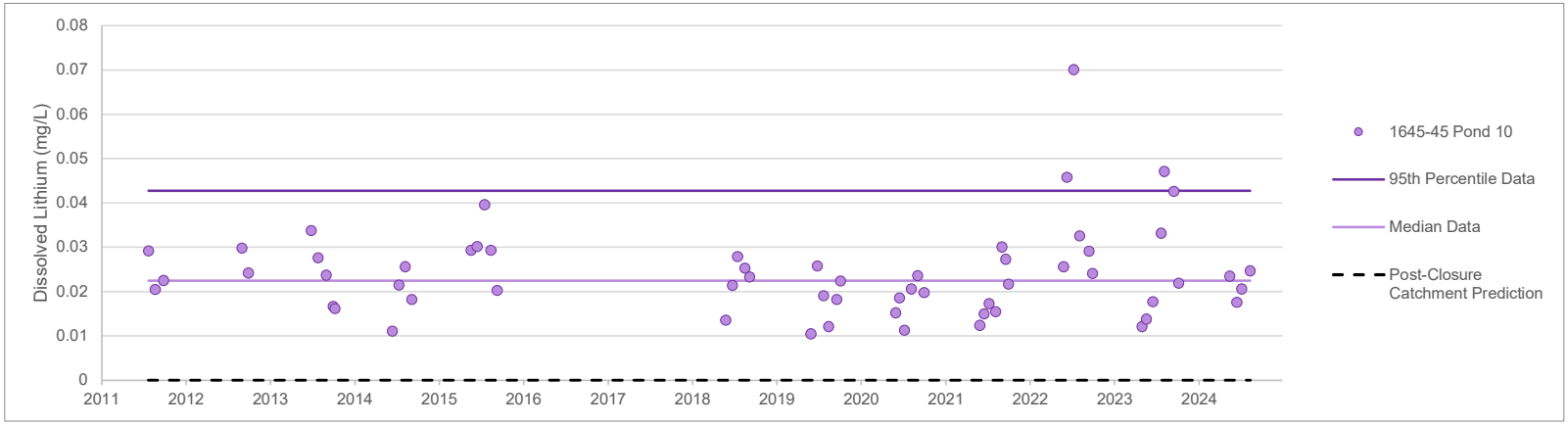
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00026	Wildlife	0.10
Median	0.00004	Human recreational	0.10
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



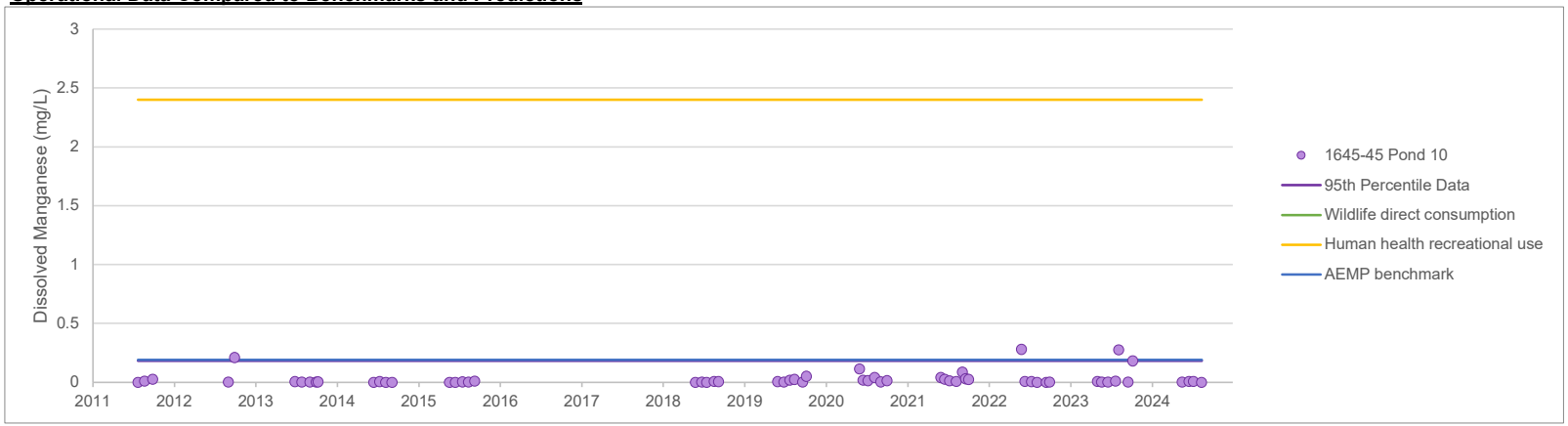


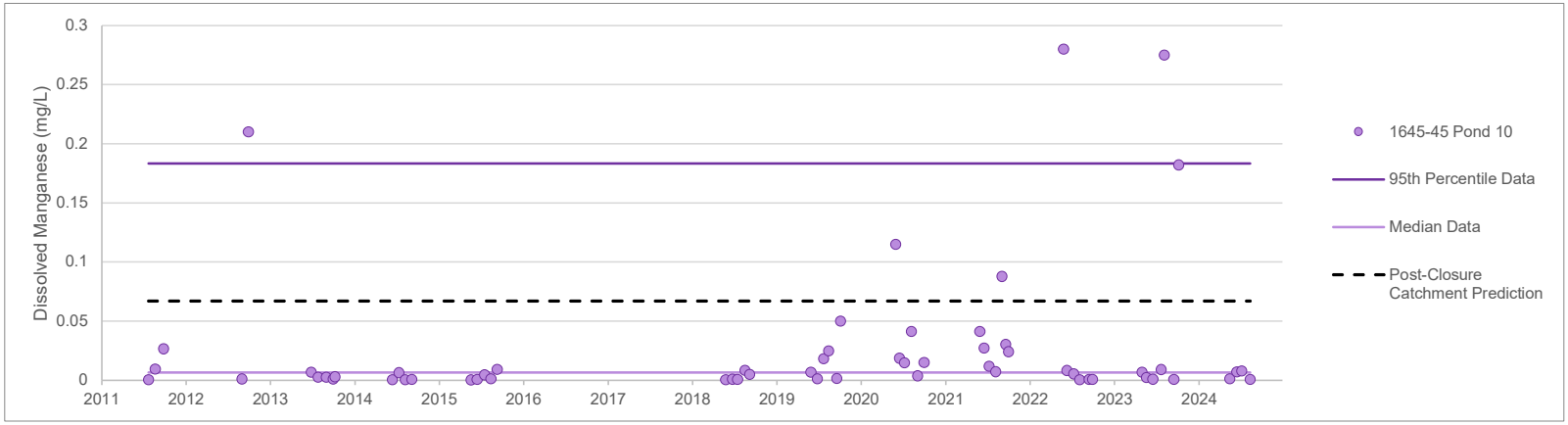
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.043	Wildlife	None
Median	0.022	Human recreational	0.16
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



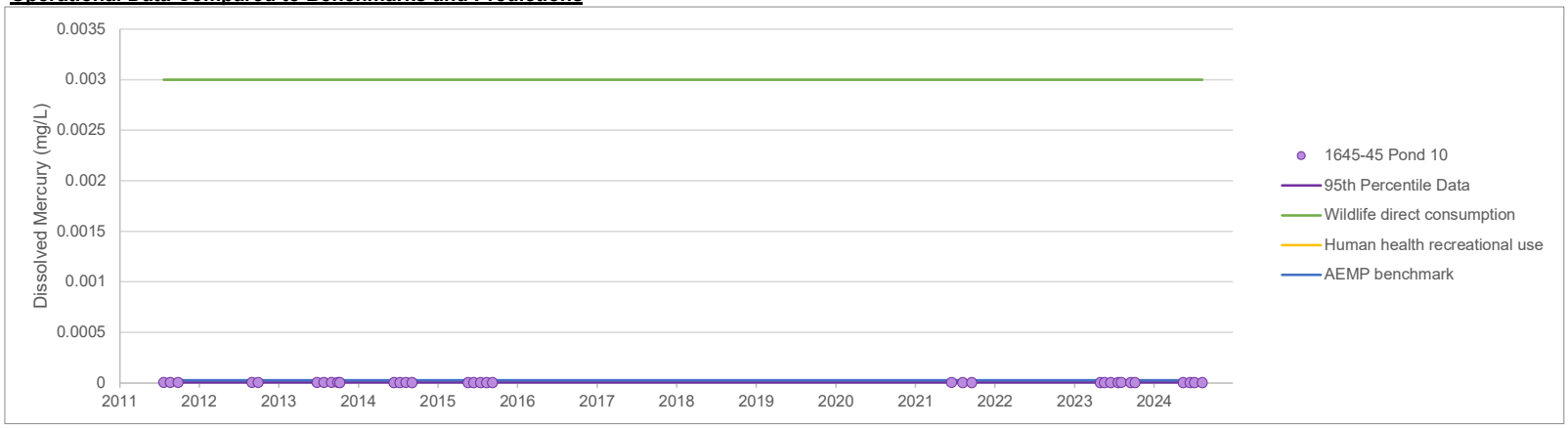


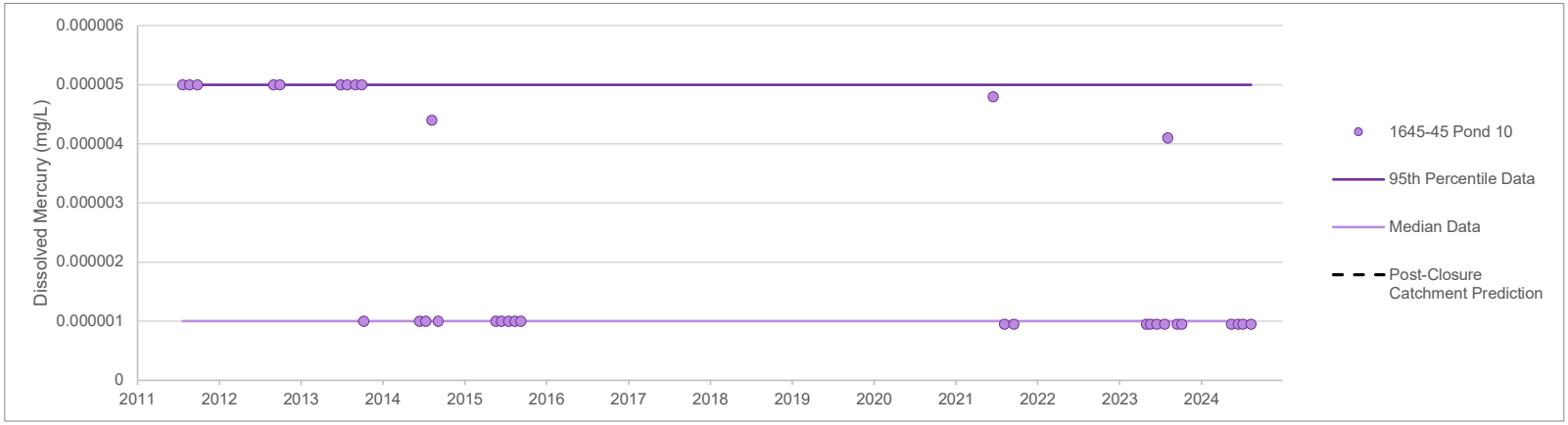
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.183	Wildlife	None
Median	0.007	Human recreational	2.4
Count	60	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



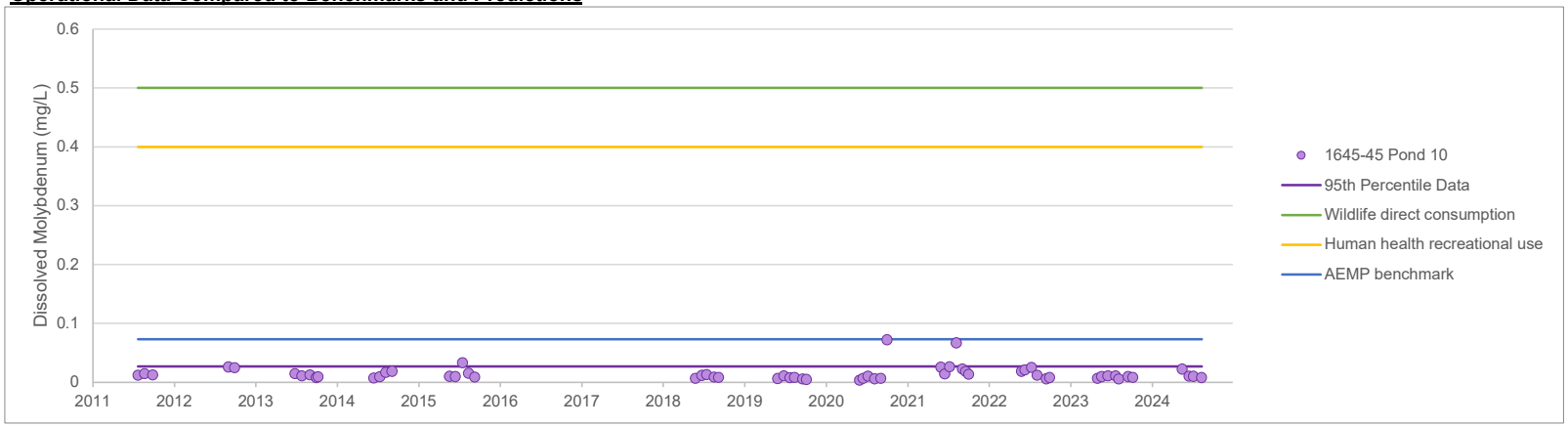


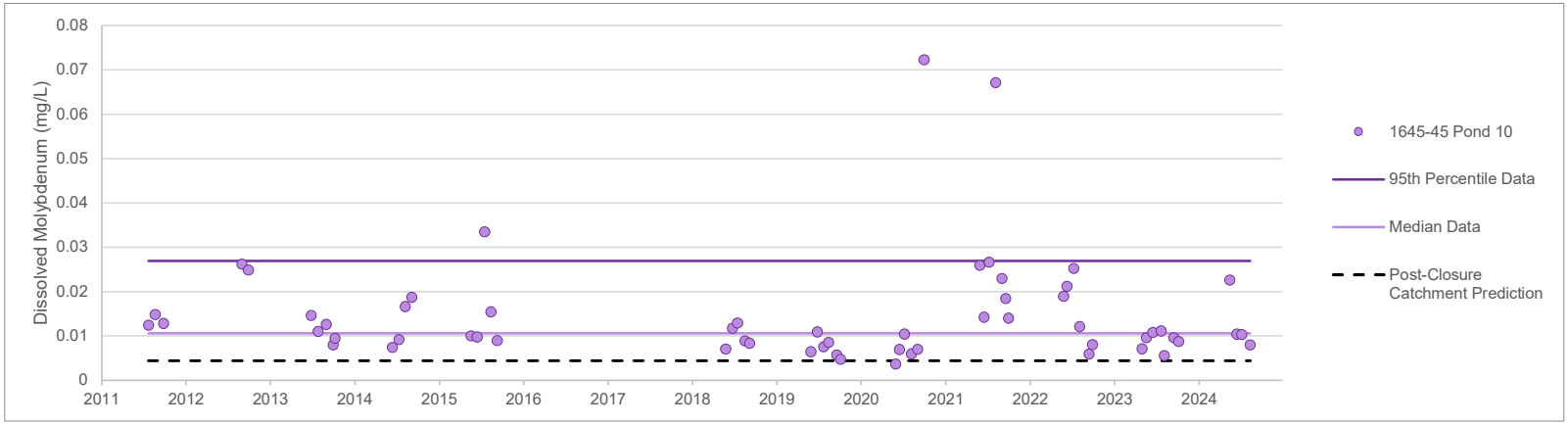
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	33	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



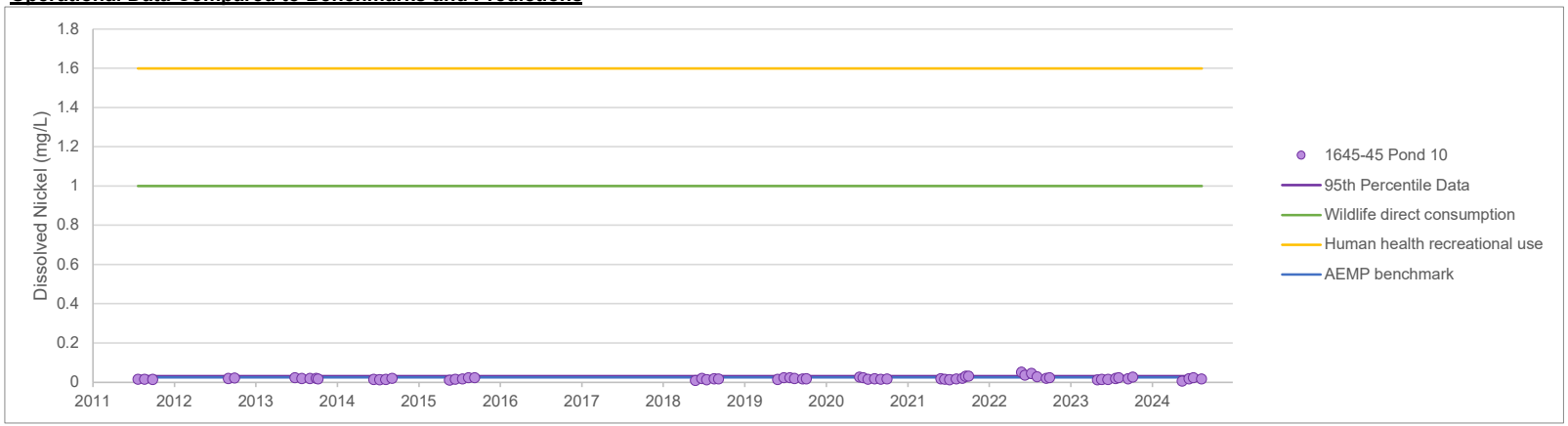


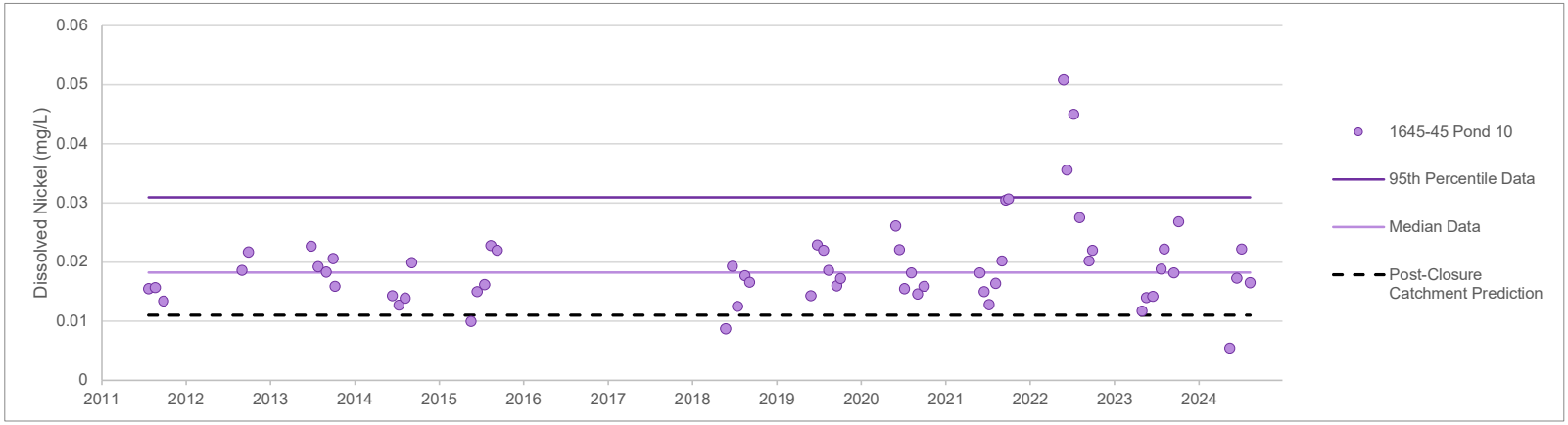
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0269	Wildlife	0.5
Median	0.0106	Human recreational	0.4
Count	60	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



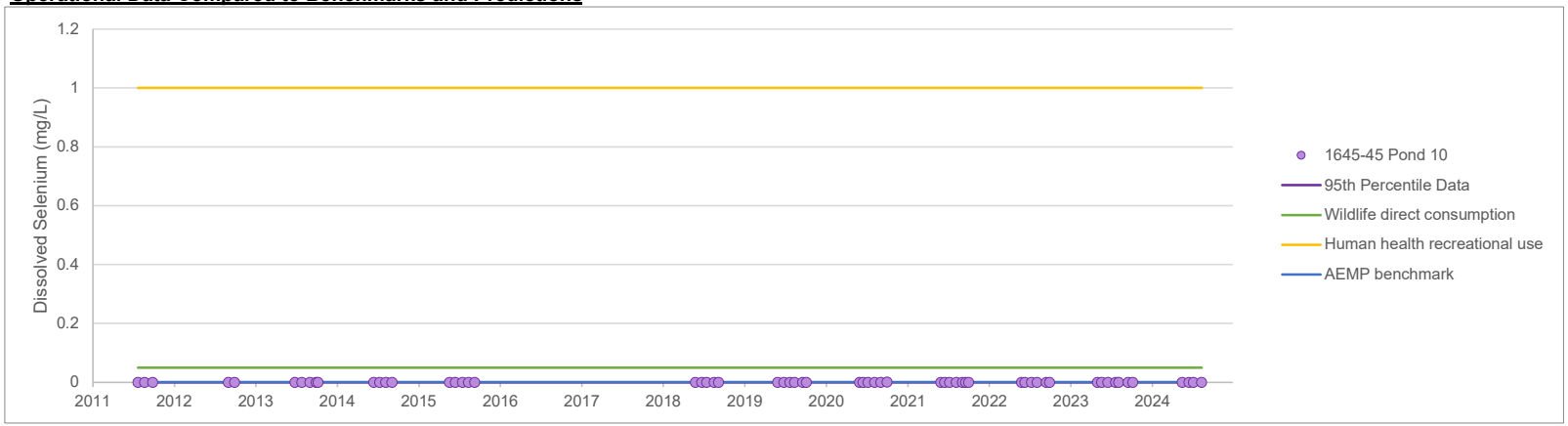


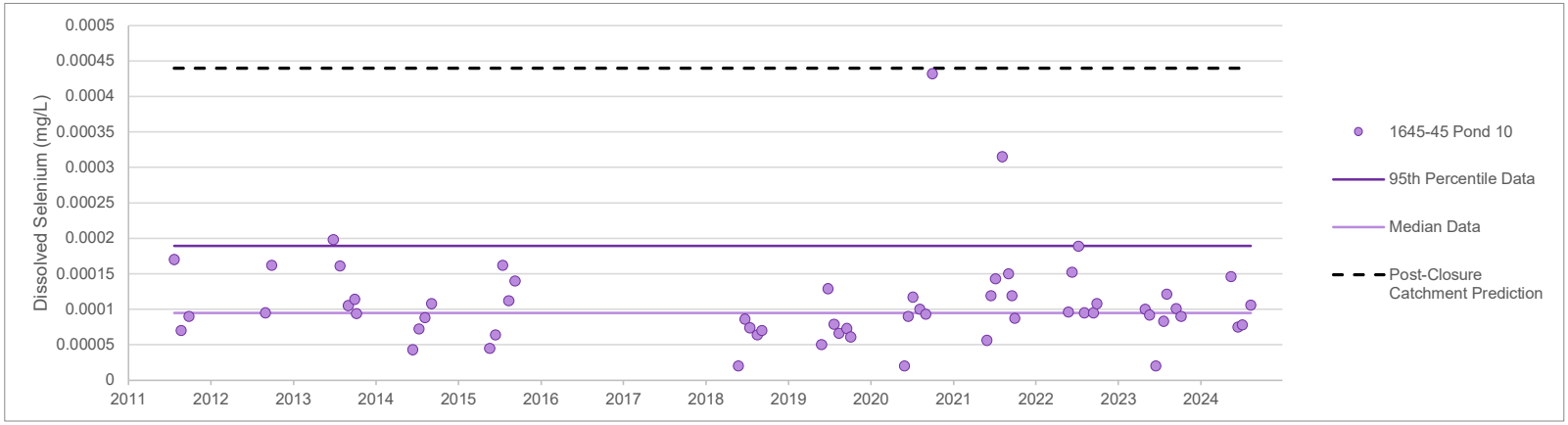
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.031	Wildlife	1.0
Median	0.018	Human recreational	1.6
Count	60	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



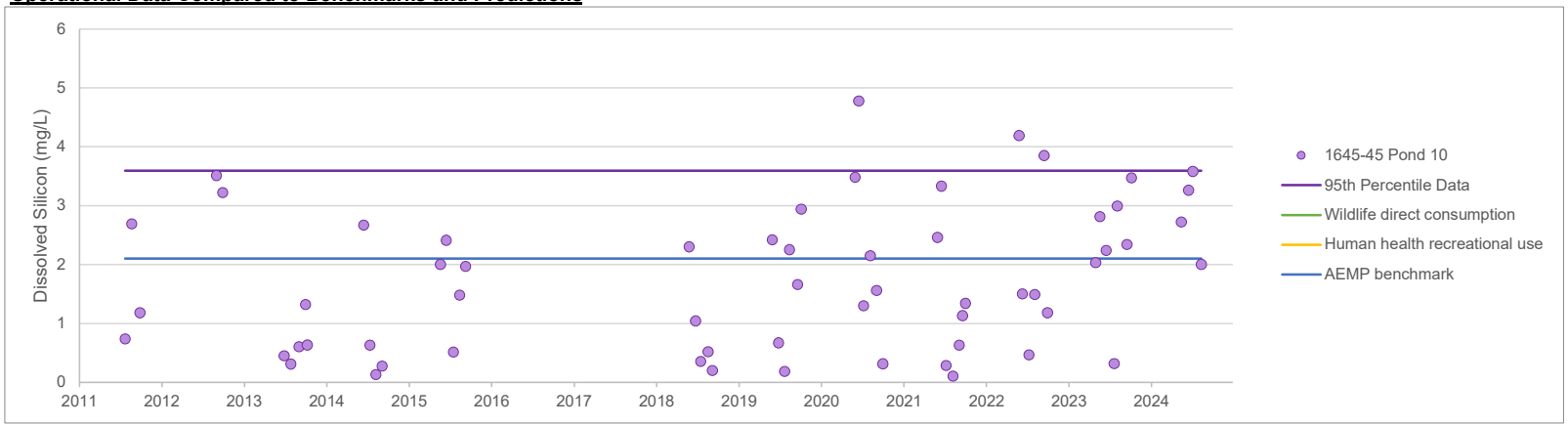


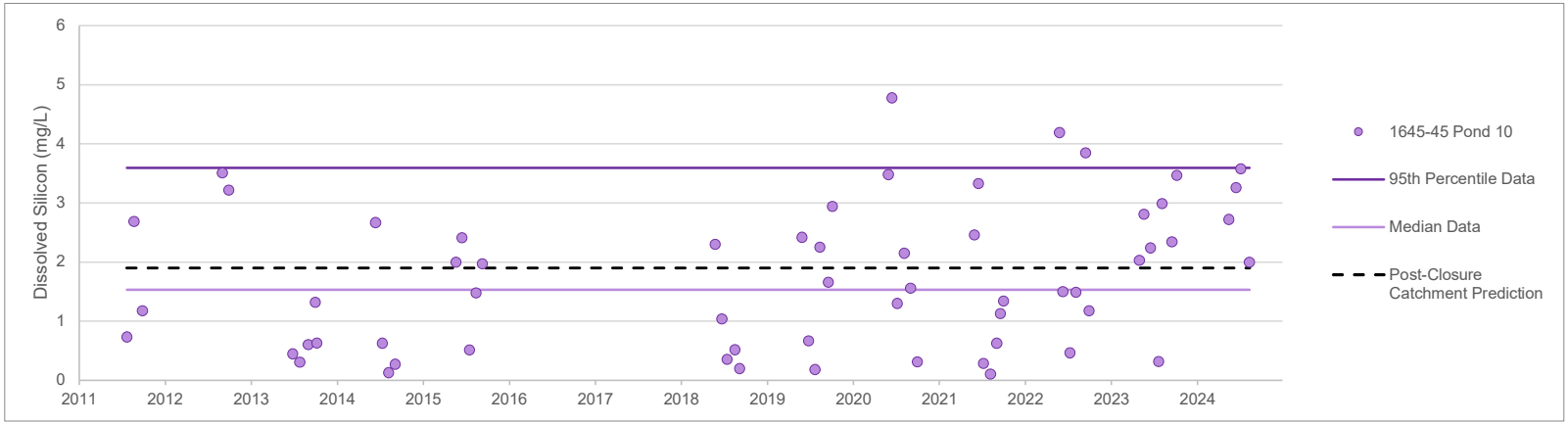
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00019	Wildlife	0.1
Median	0.00010	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



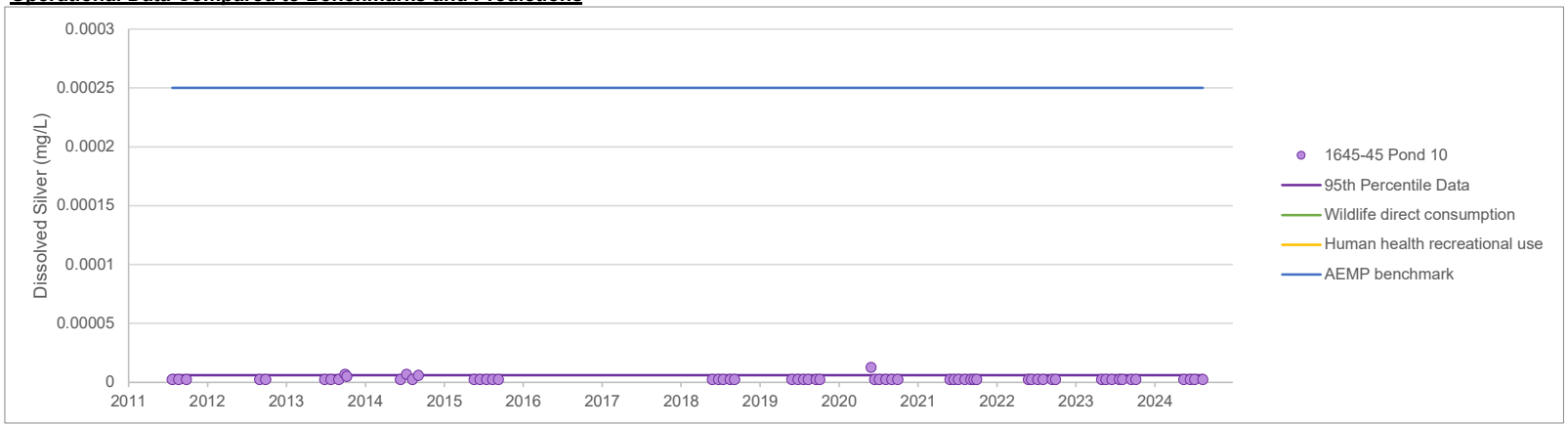


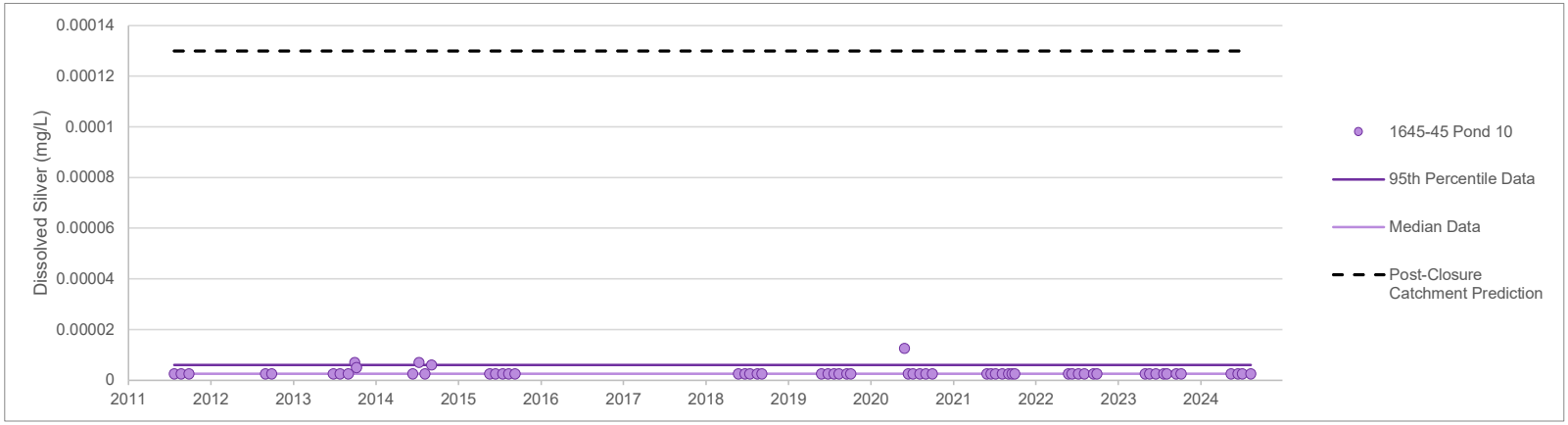
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.59	Wildlife	None
Median	1.53	Human recreational	None
Count	60	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



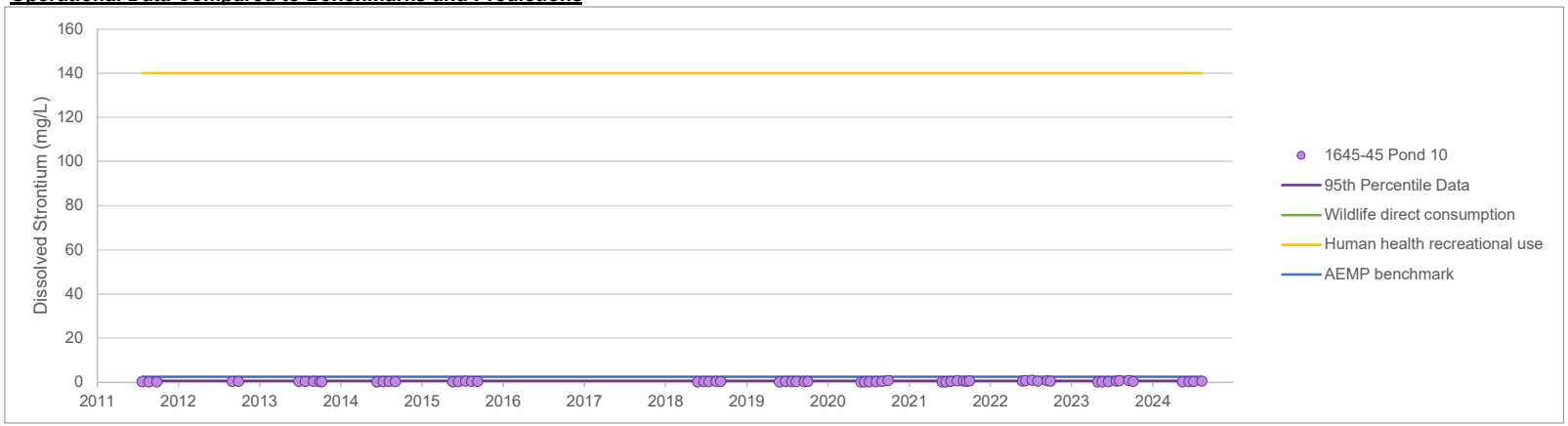


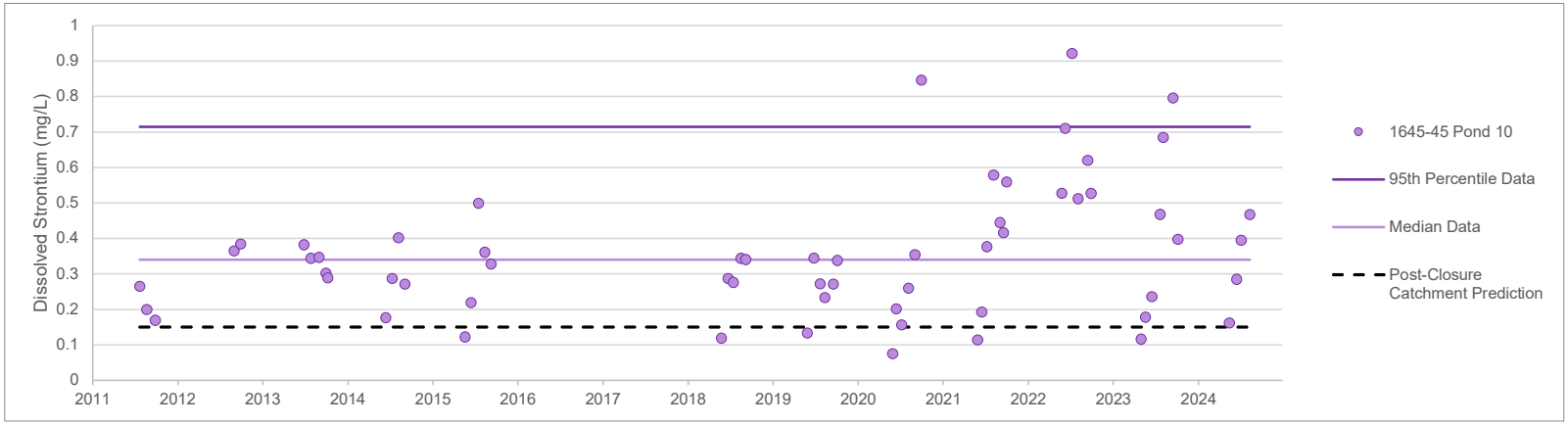
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000006	Wildlife	None
Median	0.000003	Human recreational	None
Count	60	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



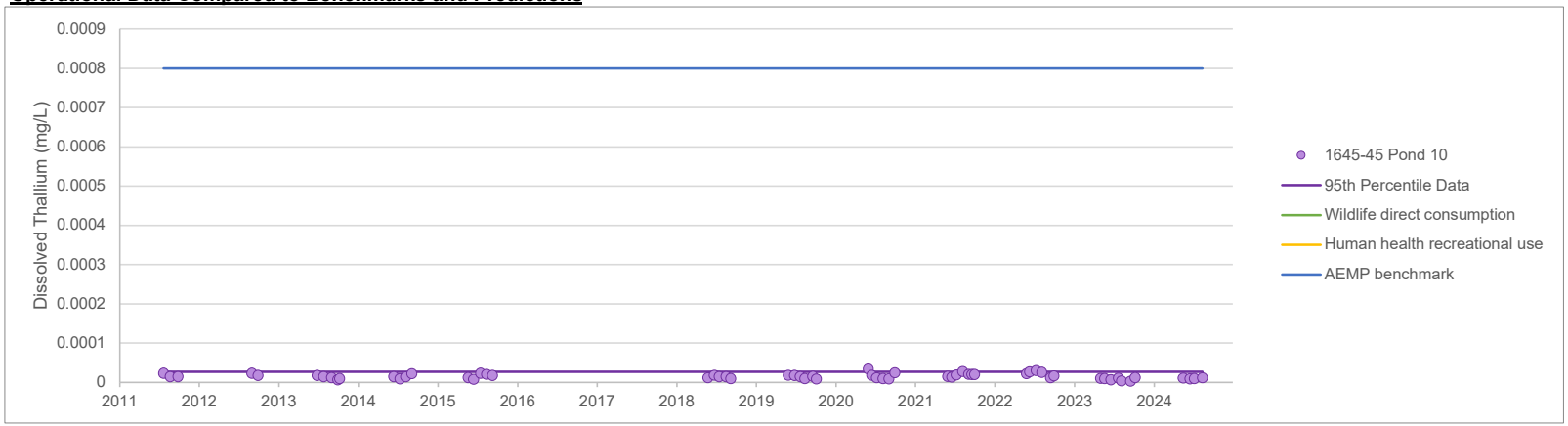


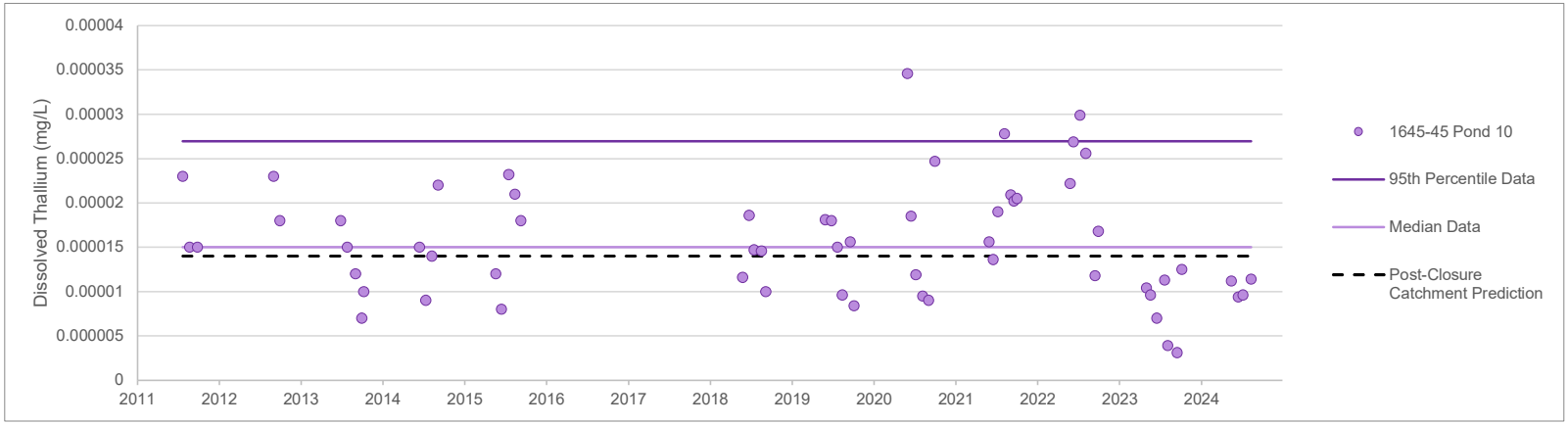
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.71	Wildlife	None
Median	0.34	Human recreational	140
Count	60	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



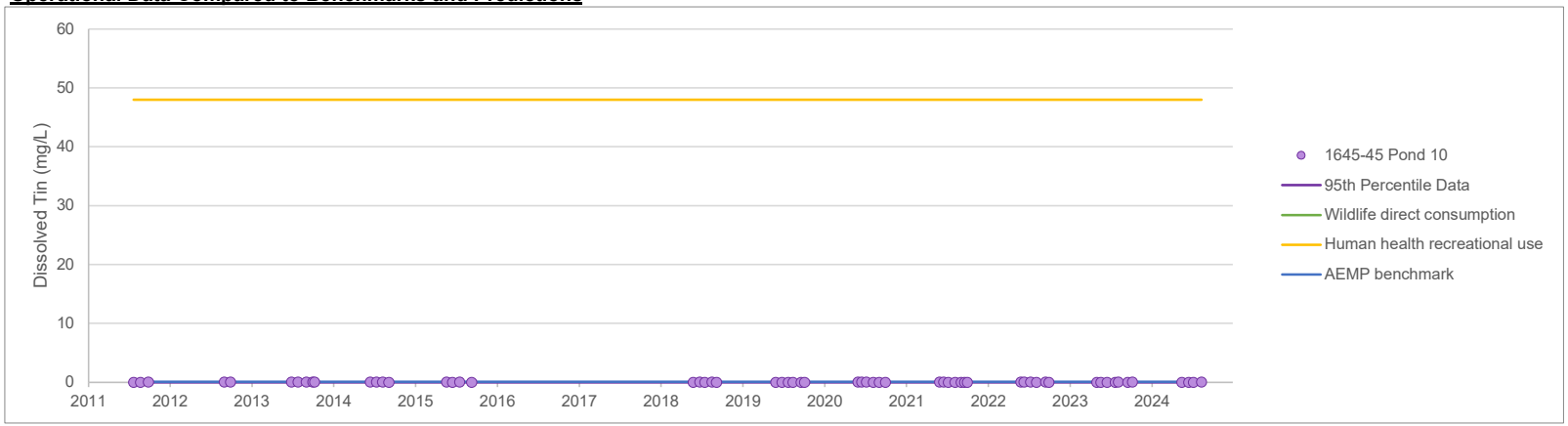


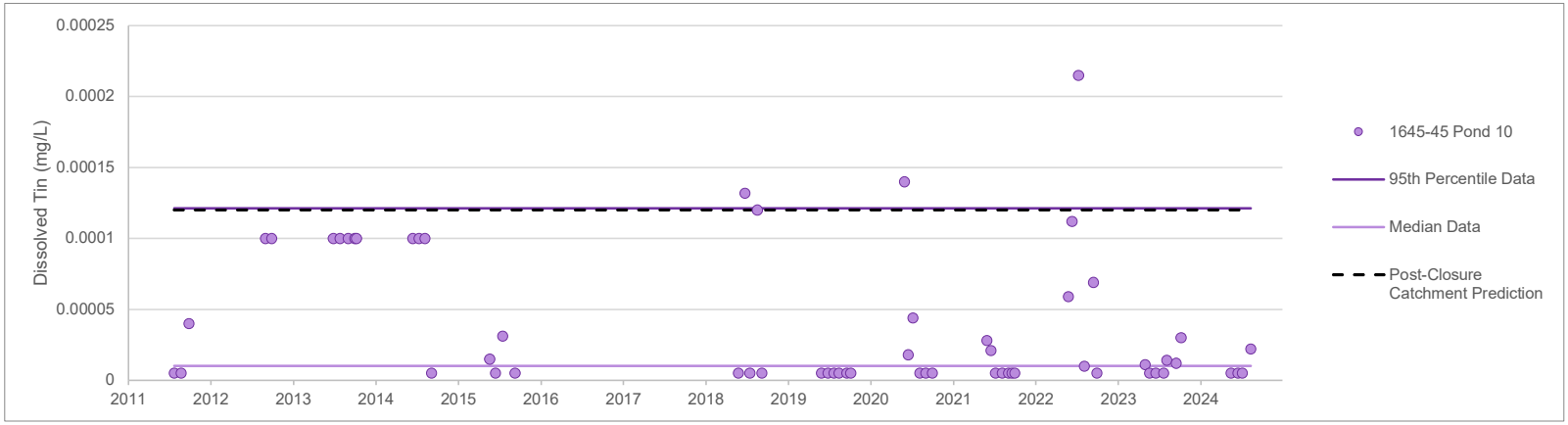
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00003	Wildlife	None
Median	0.00001	Human recreational	None
Count	60	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



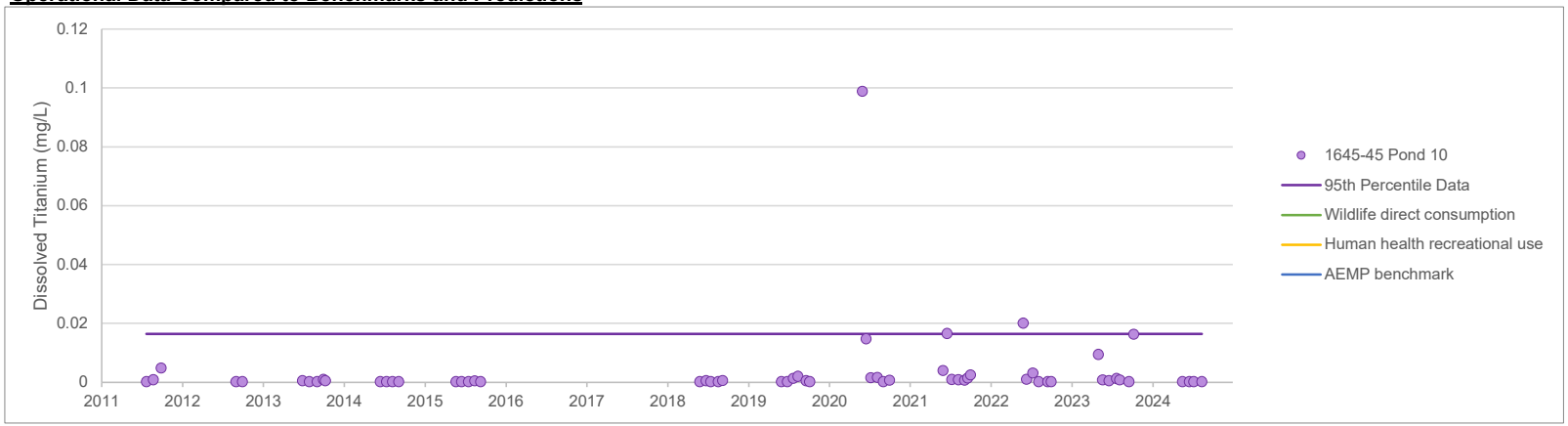


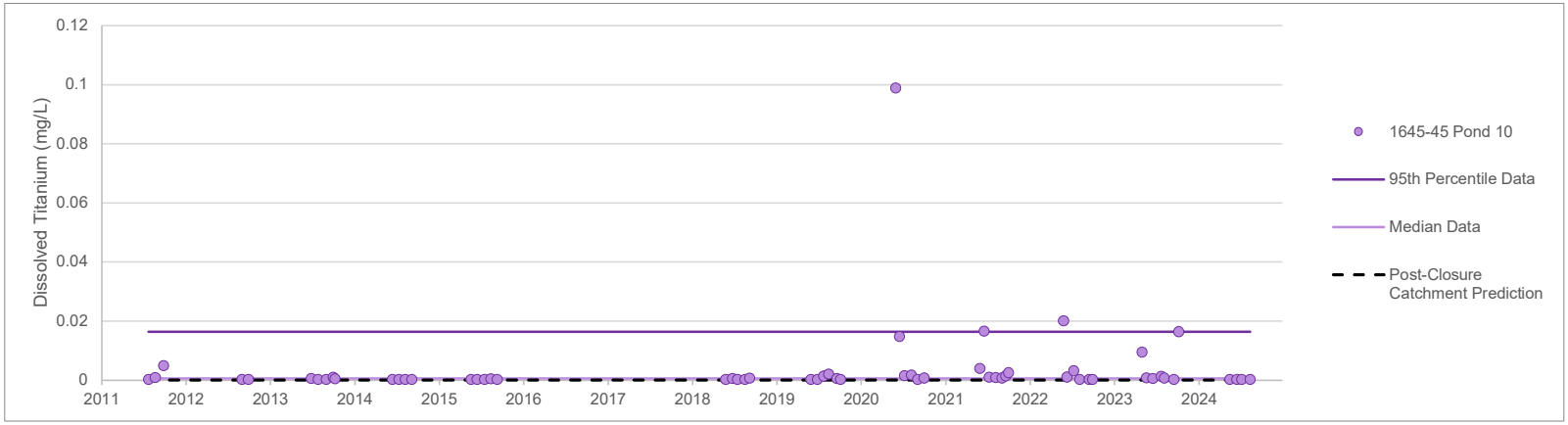
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00012	Wildlife	None
Median	0.00001	Human recreational	48
Count	59	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



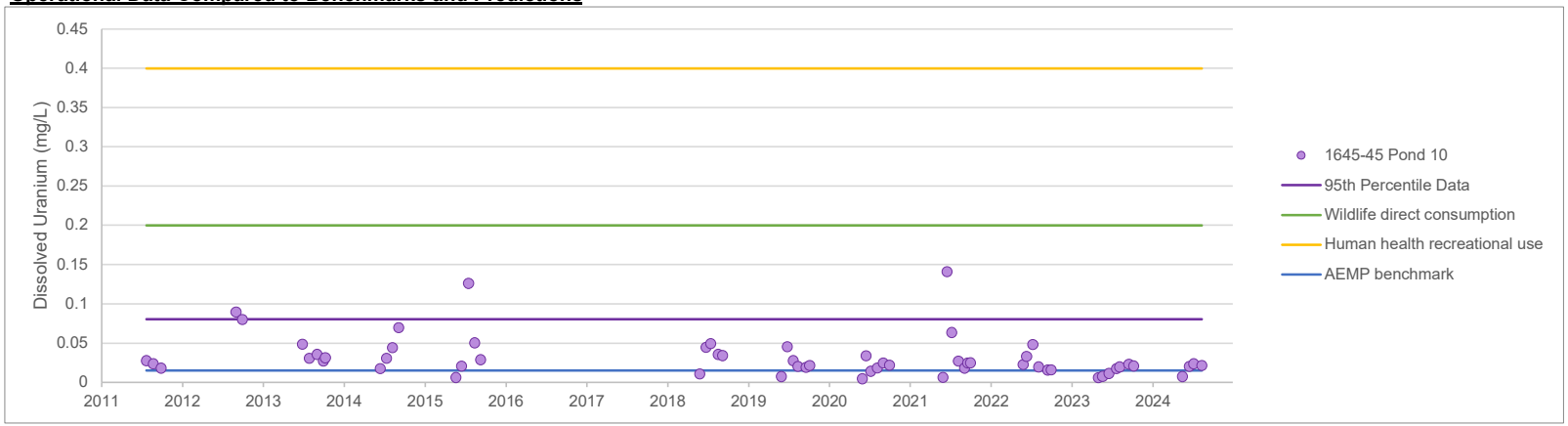


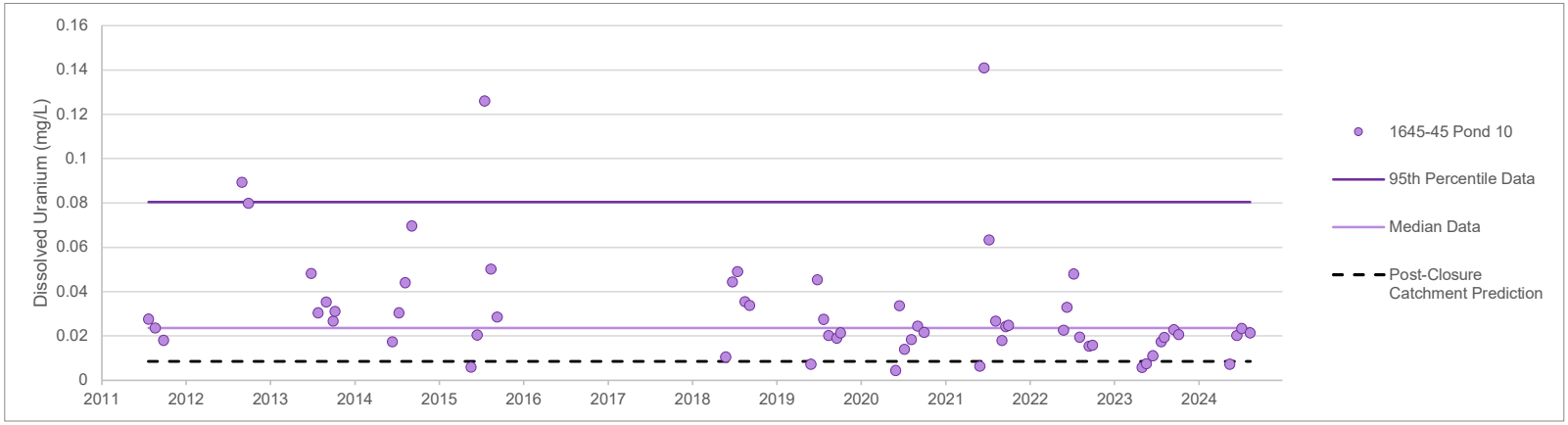
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0164	Wildlife	None
Median	0.0006	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



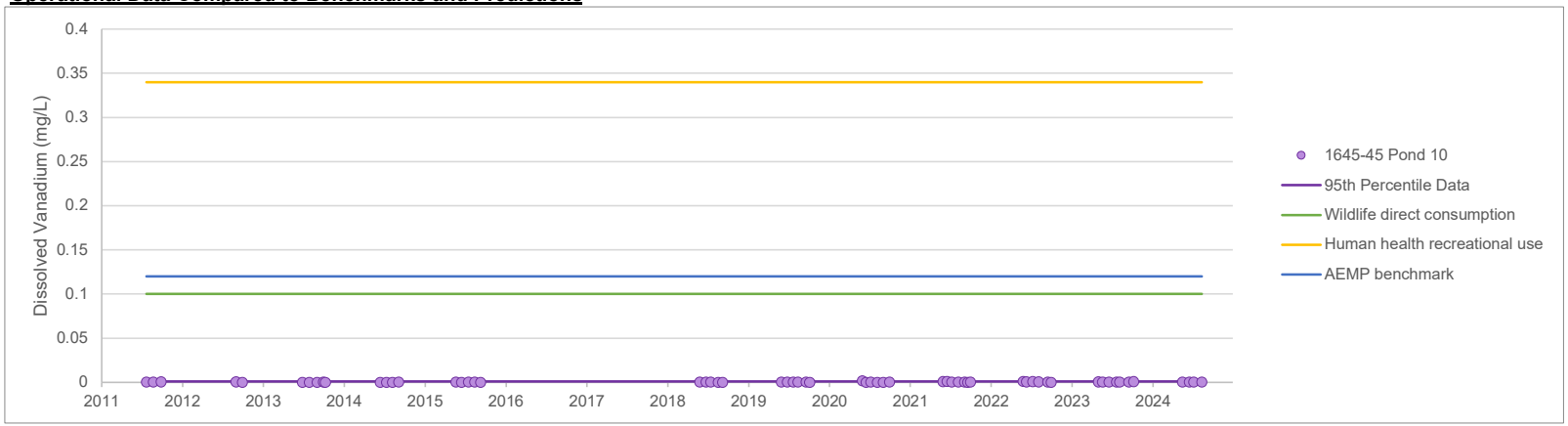


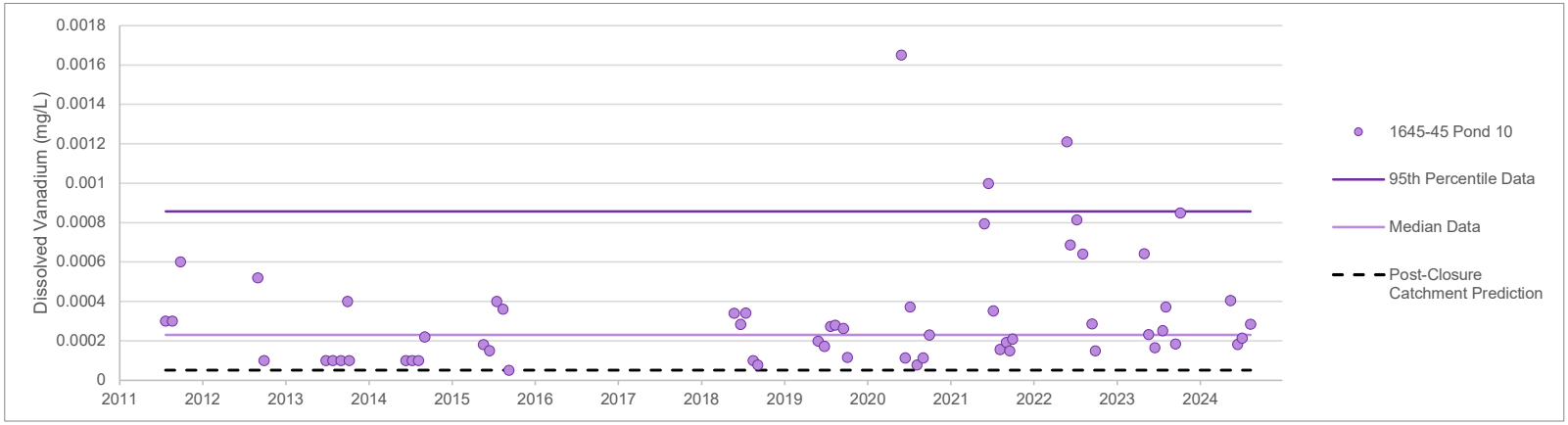
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0804	Wildlife	0.2
Median	0.0235	Human recreational	0.4
Count	60	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



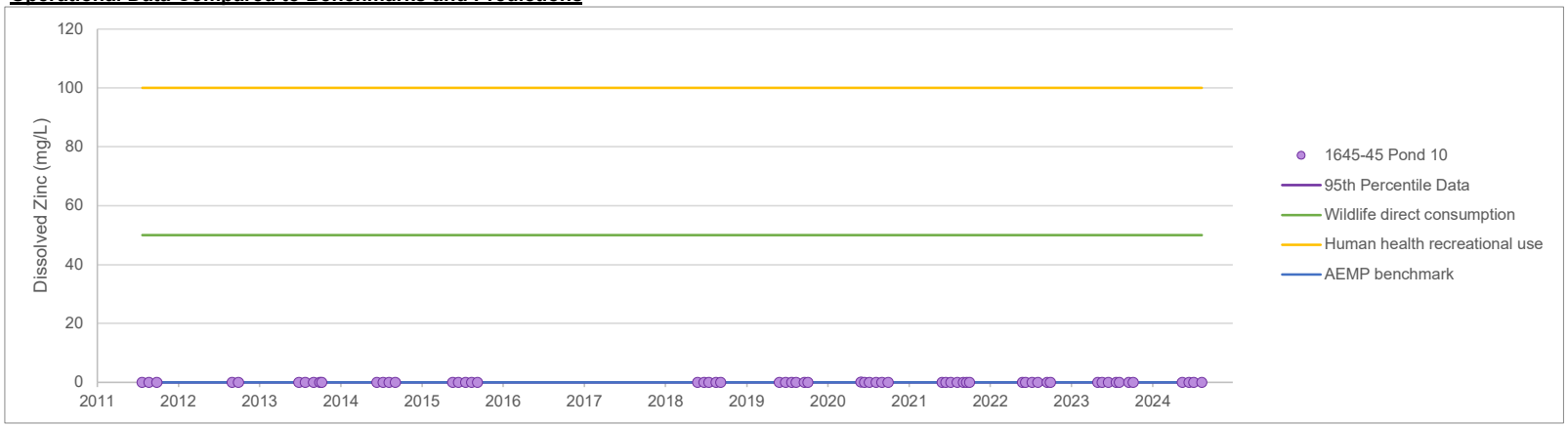


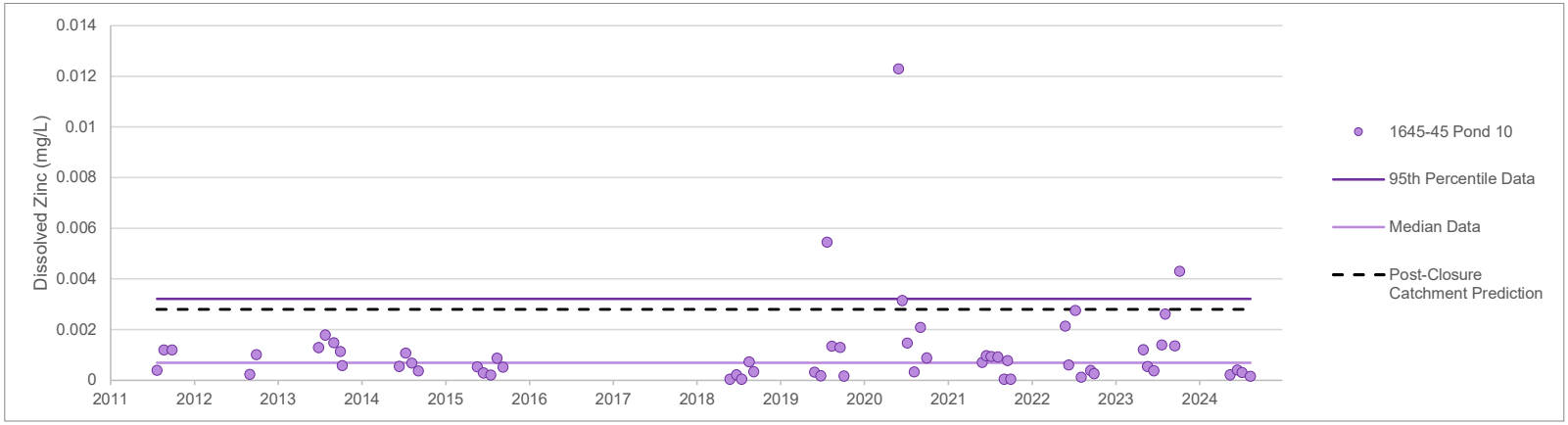
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0009	Wildlife	0.1
Median	0.0002	Human recreational	0.3
Count	60	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



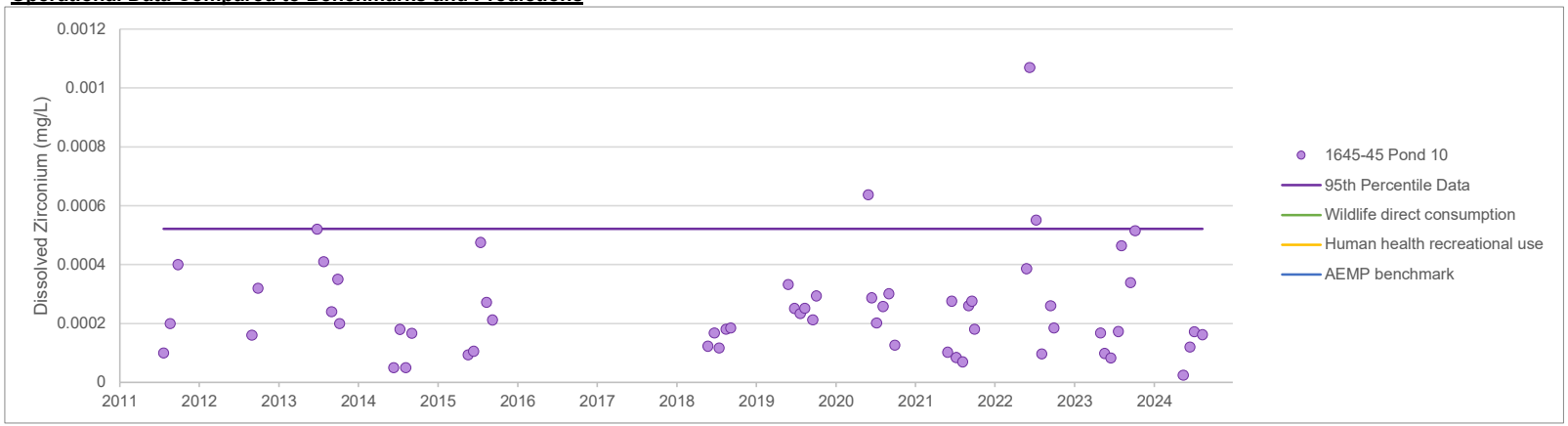


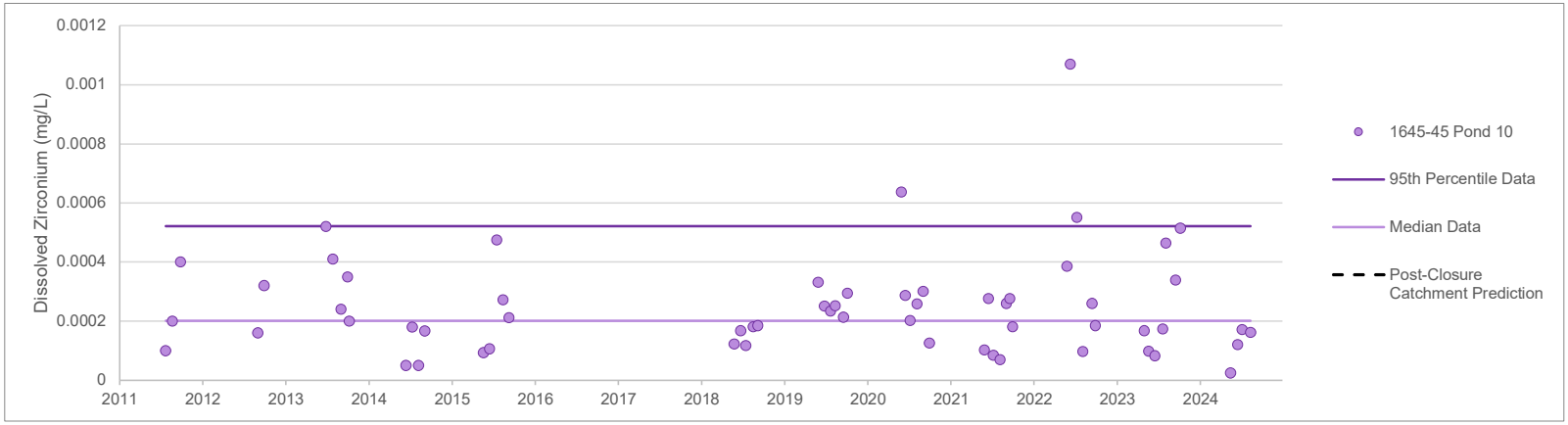
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.003	Wildlife	50
Median	0.001	Human recreational	100
Count	60	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0005	Wildlife	None
Median	0.0002	Human recreational	None
Count	60	AEMP	None

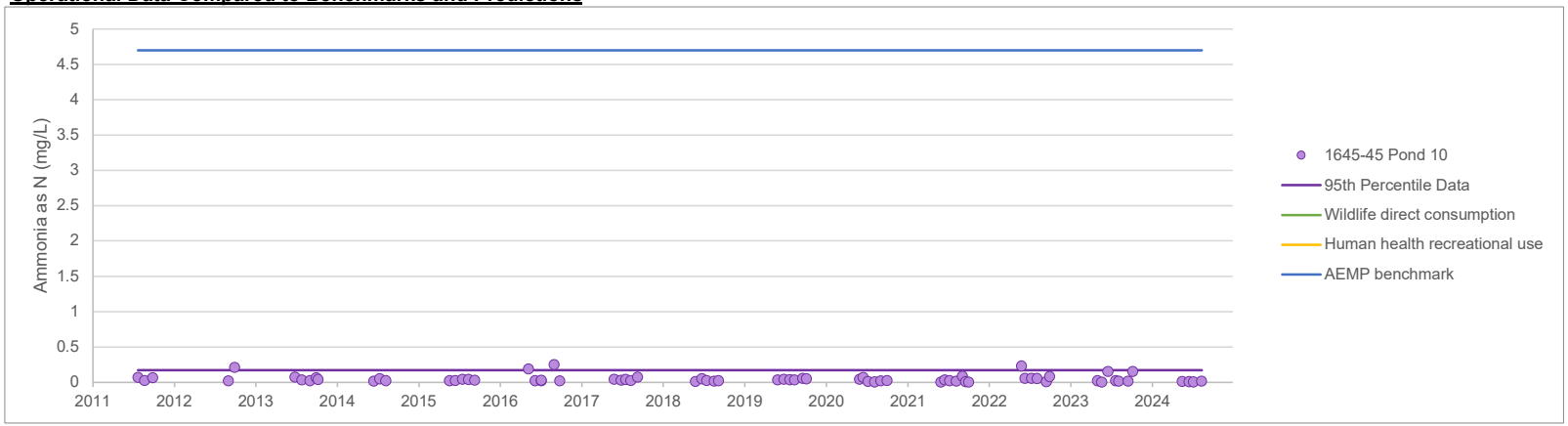
RioTinto | Diavik

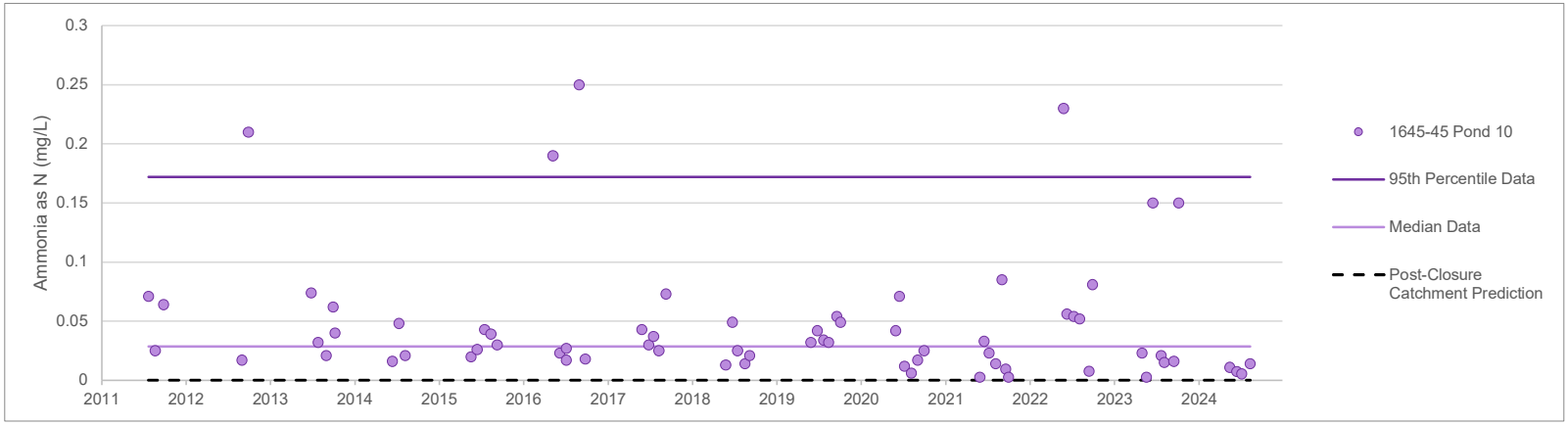
Pond 10

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



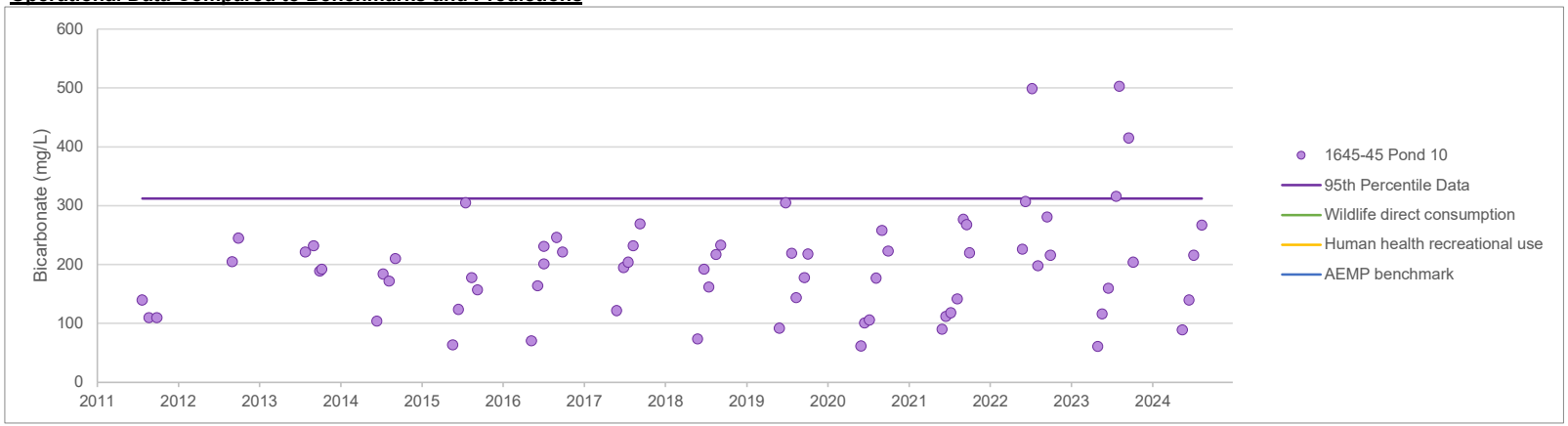


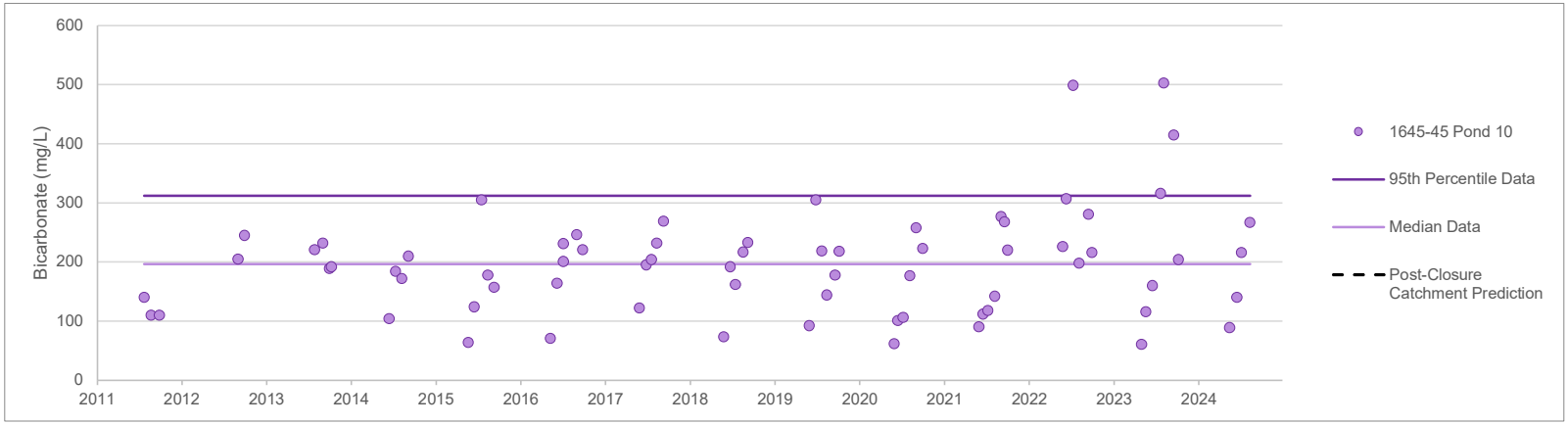
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.17	Wildlife	None
Median	0.03	Human recreational	None
Count	70	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



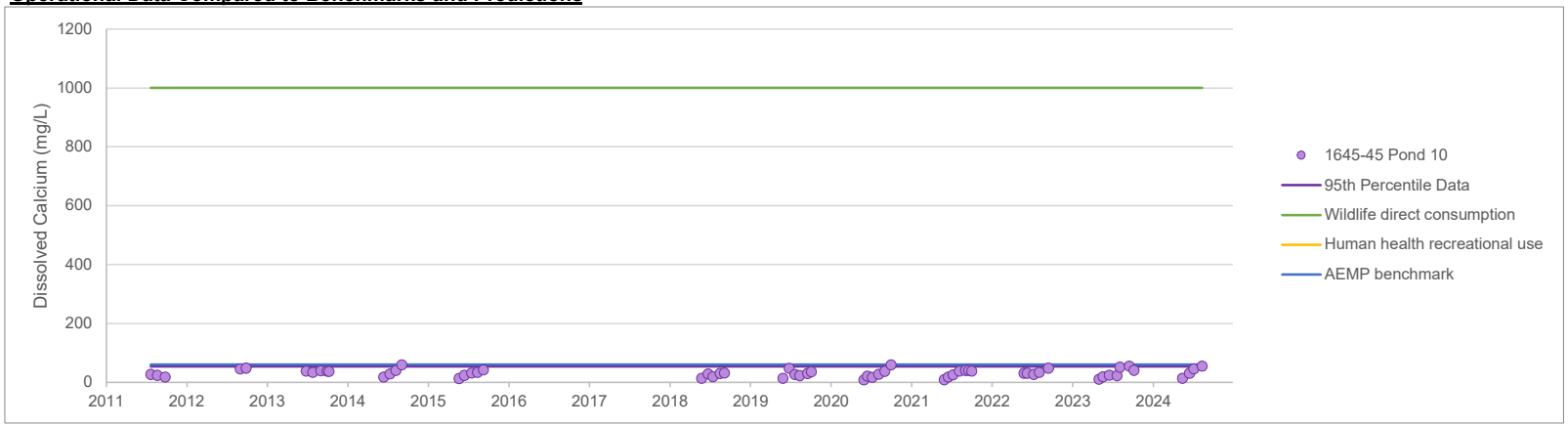


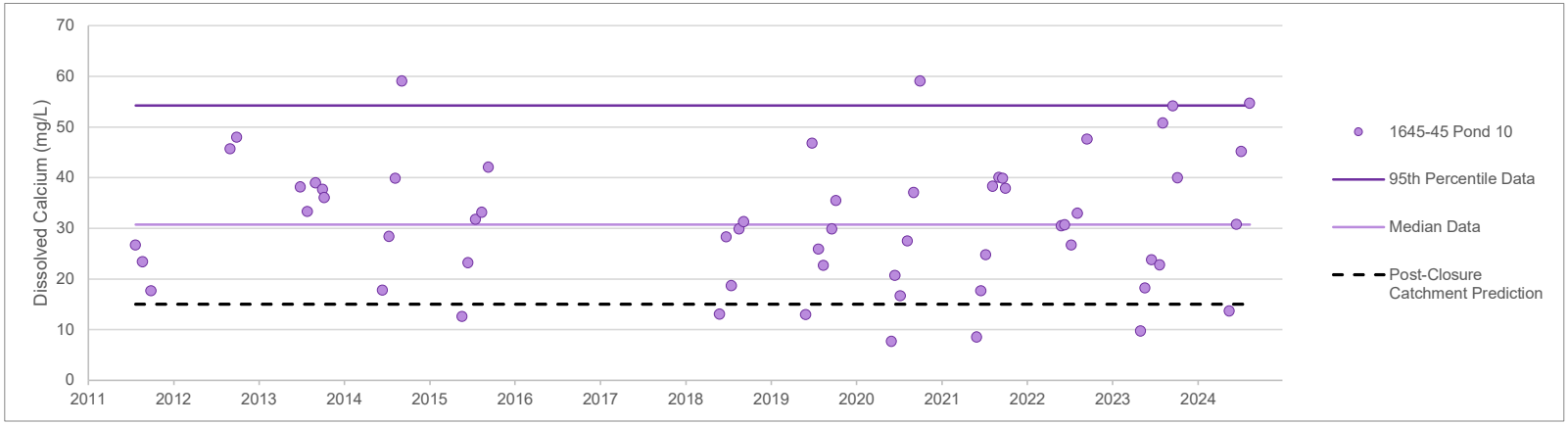
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	312.0	Wildlife	None
Median	196.5	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



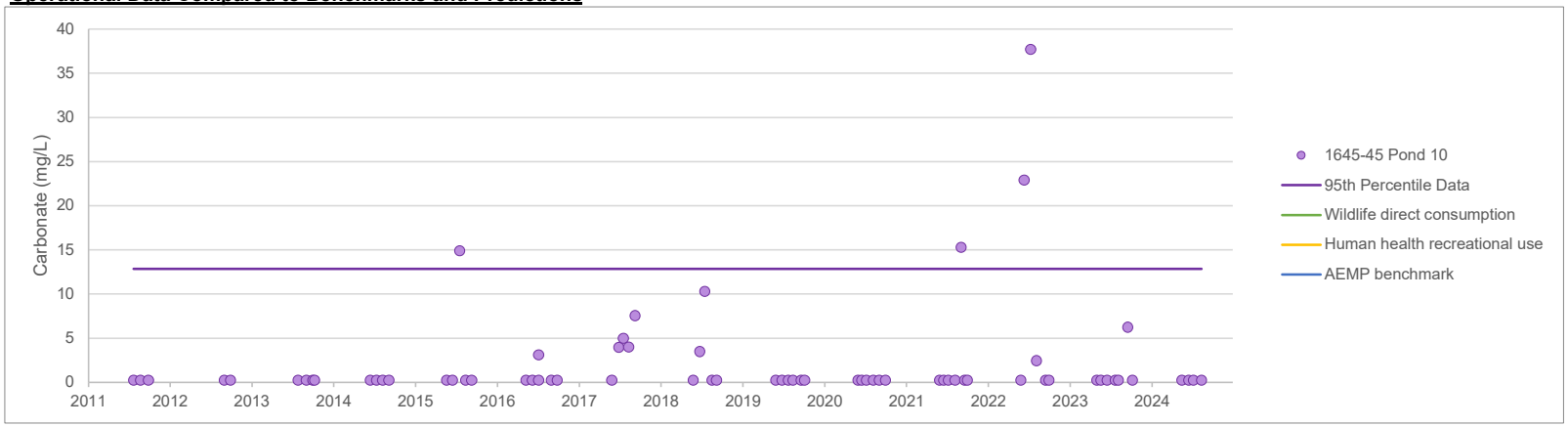


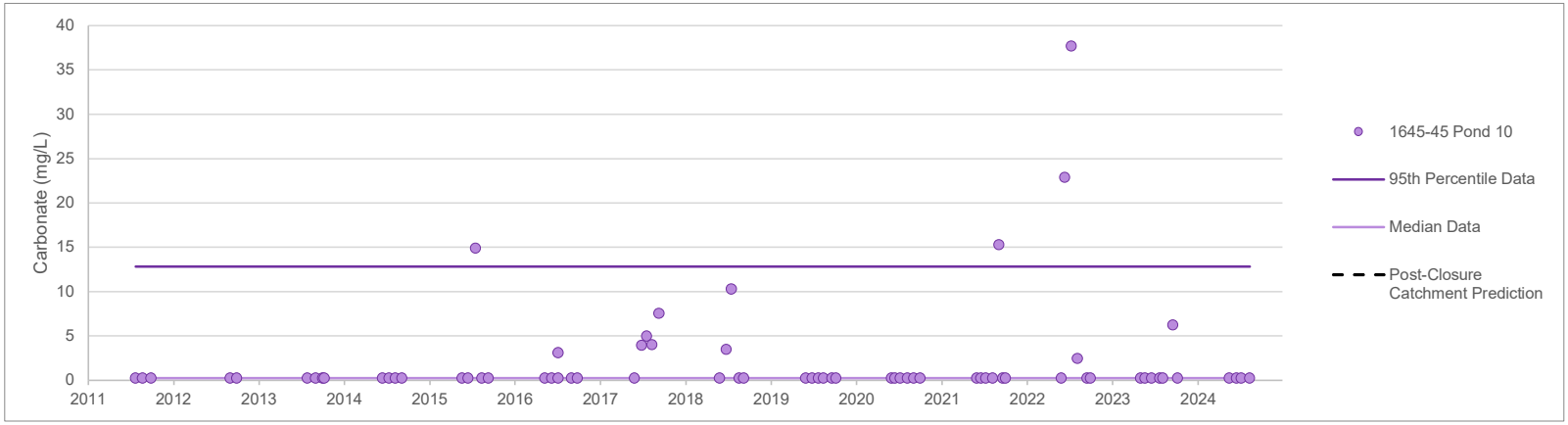
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	54.3	Wildlife	1000
Median	30.7	Human recreational	None
Count	59	AEMP	60

Operational Data Compared to Benchmarks and Predictions



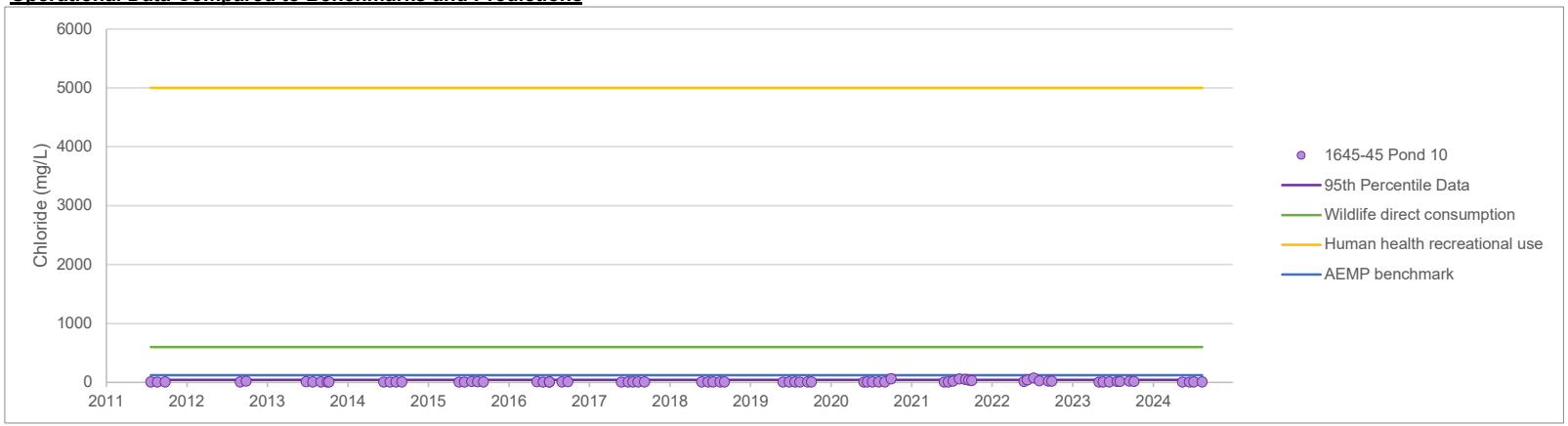


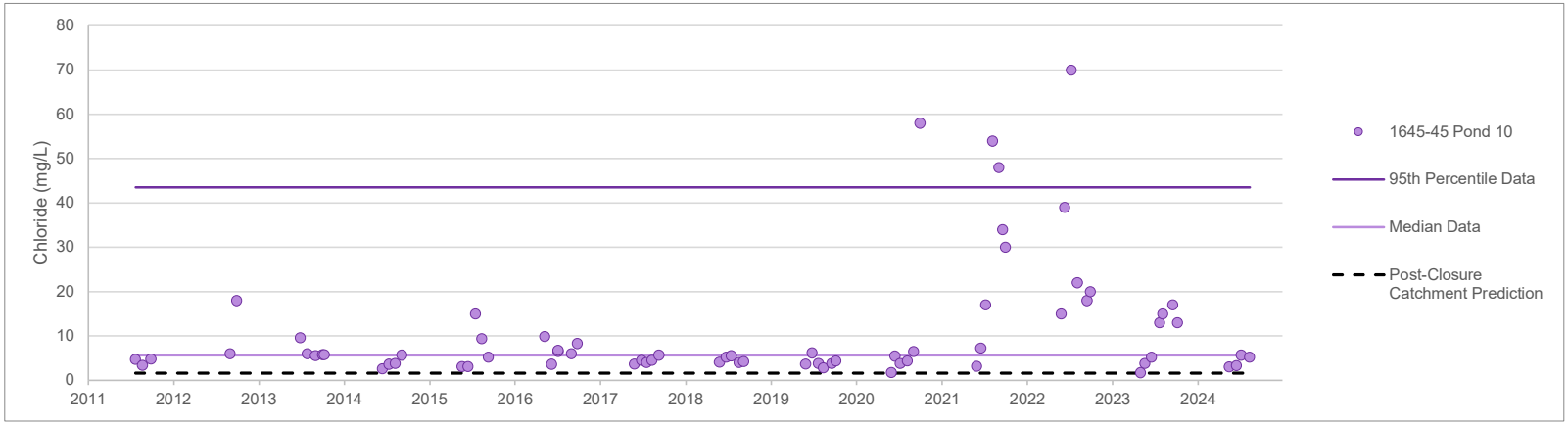
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	12.83	Wildlife	None
Median	0.25	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



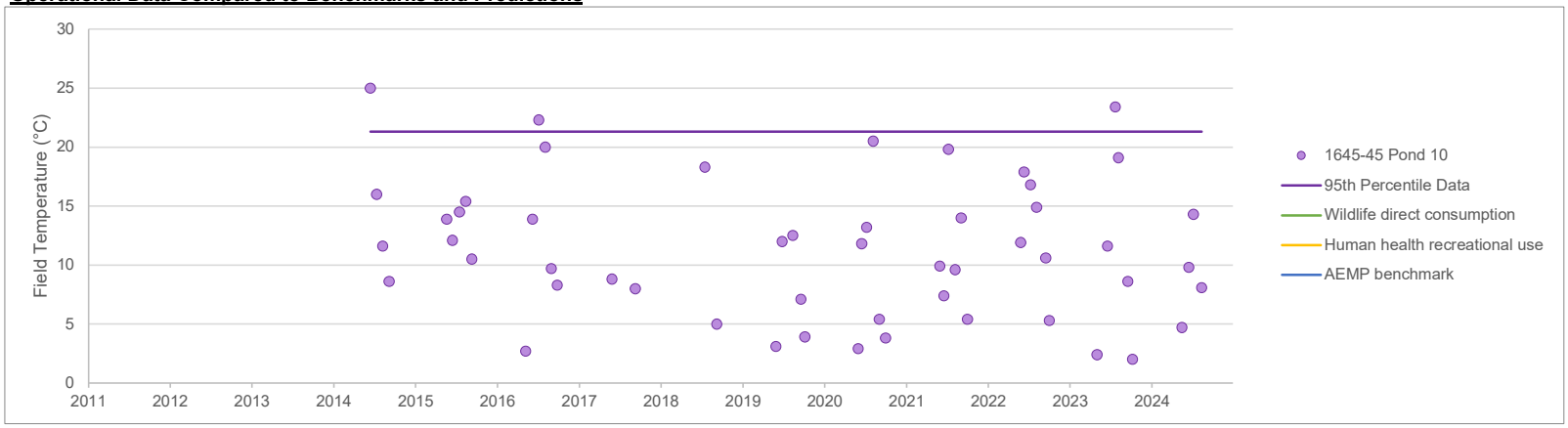


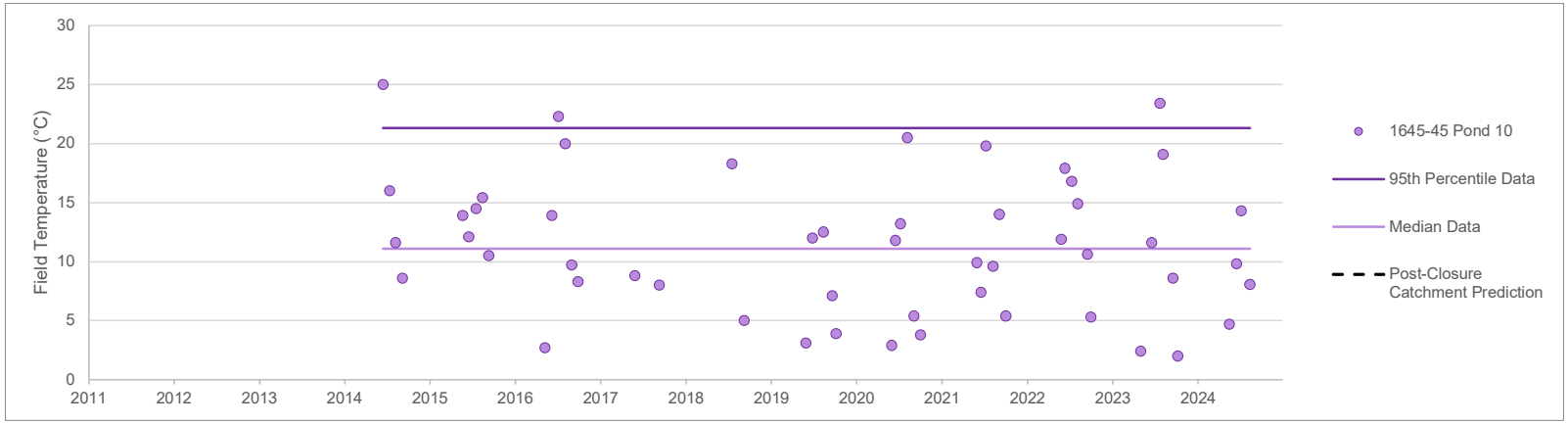
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	43.5	Wildlife	600
Median	5.6	Human recreational	5000
Count	71	AEMP	120

Operational Data Compared to Benchmarks and Predictions



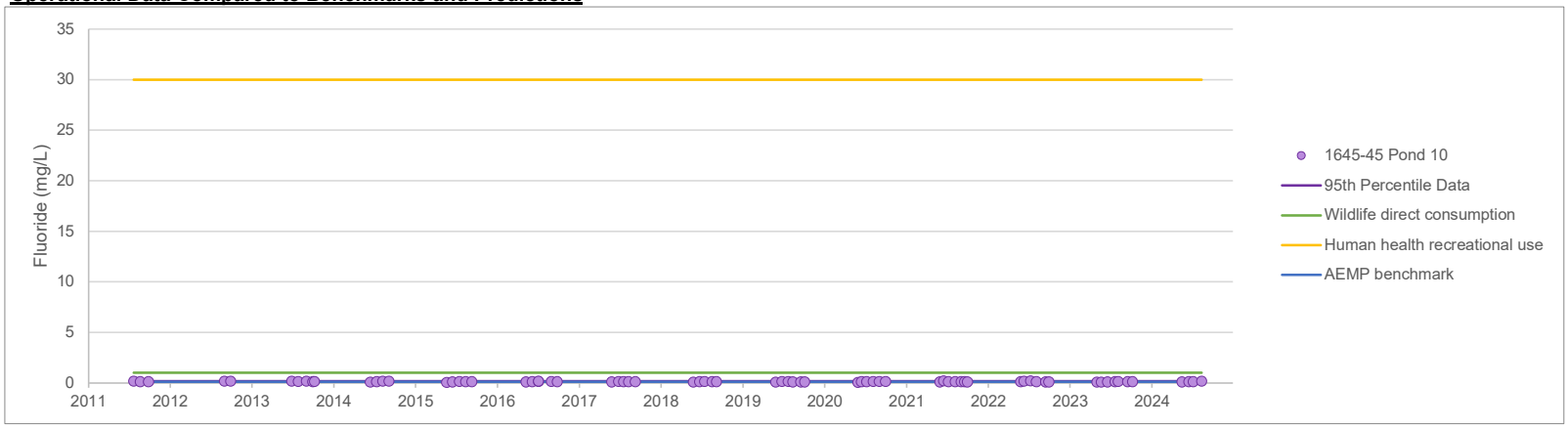


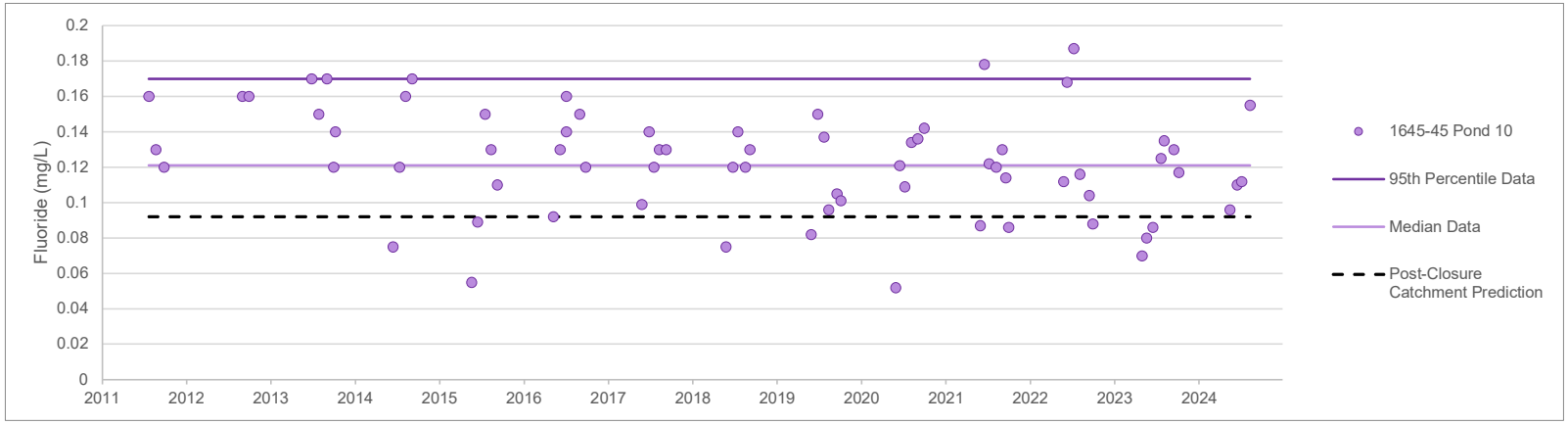
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	21.3	Wildlife	None
Median	11.1	Human recreational	None
Count	52	AEMP	None

Operational Data Compared to Benchmarks and Predictions



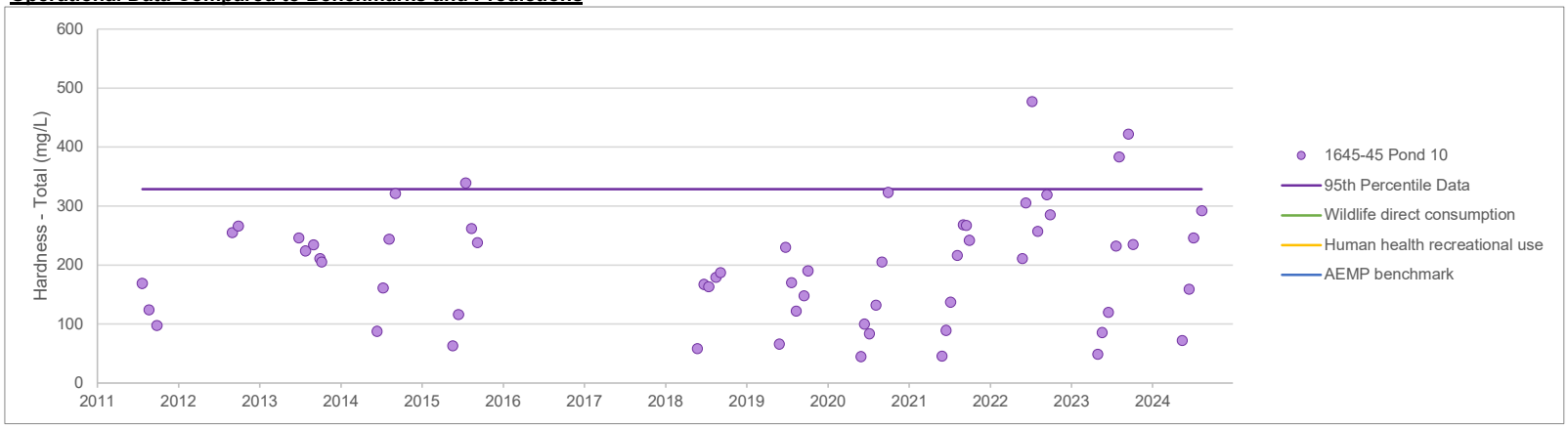


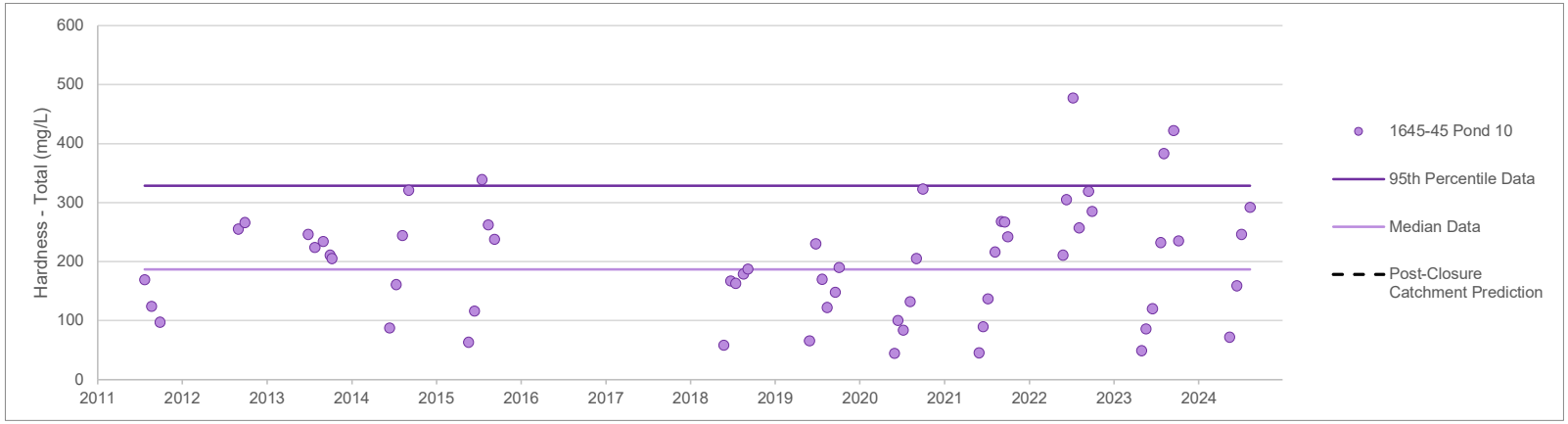
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.17	Wildlife	1
Median	0.12	Human recreational	30
Count	71	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



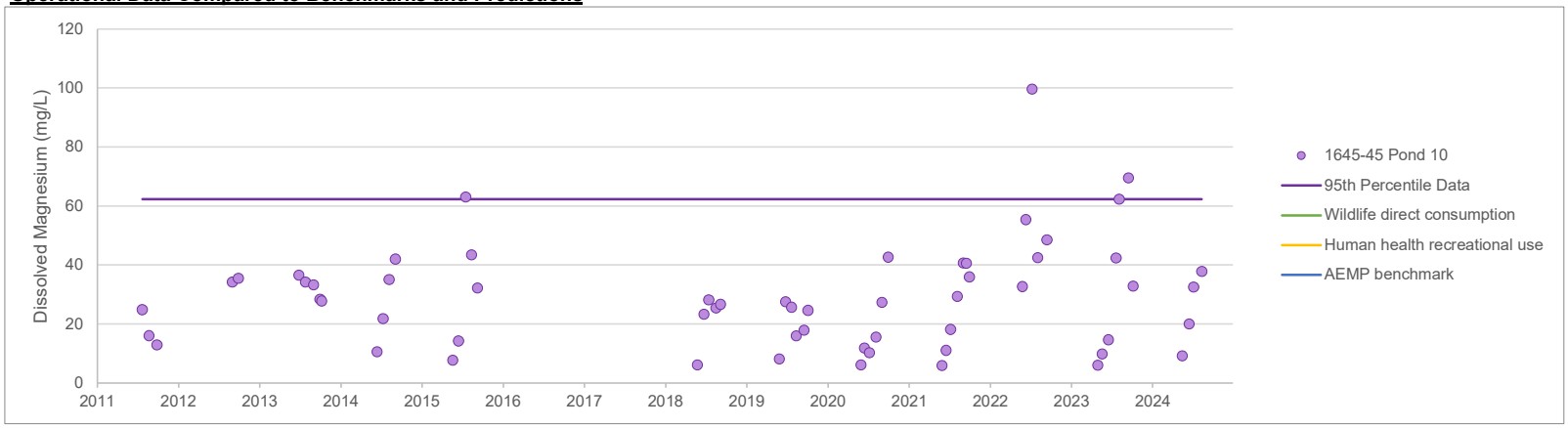


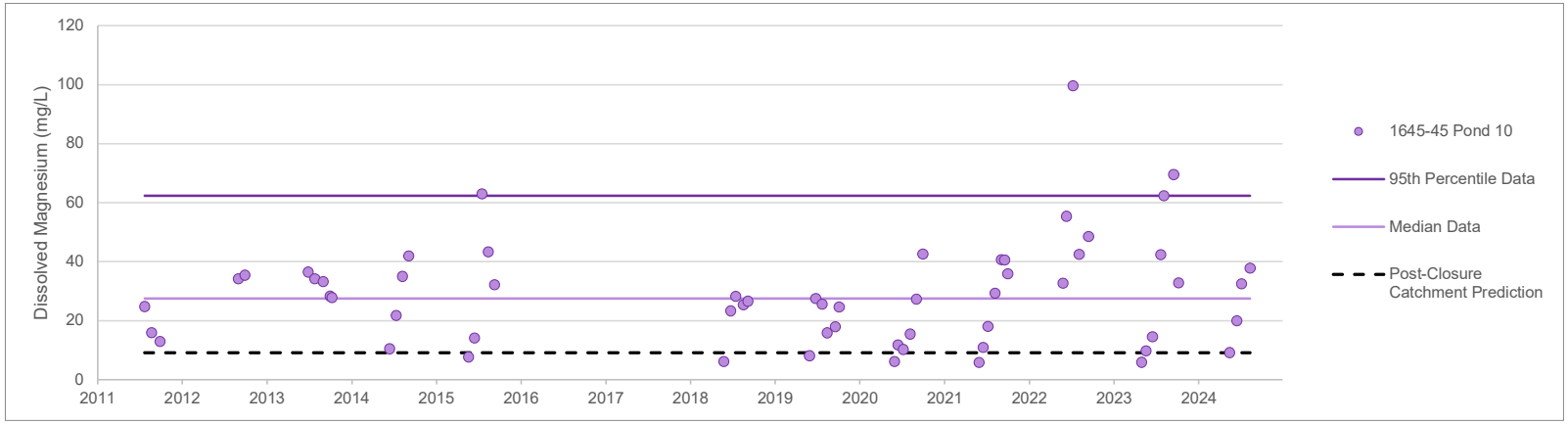
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	329	Wildlife	None
Median	187	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions



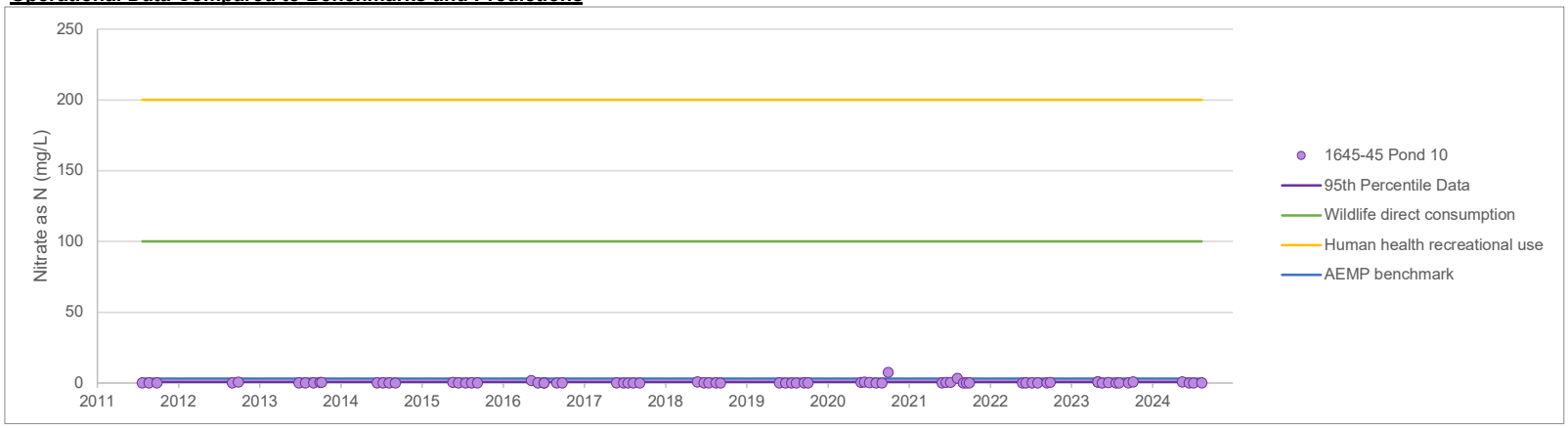


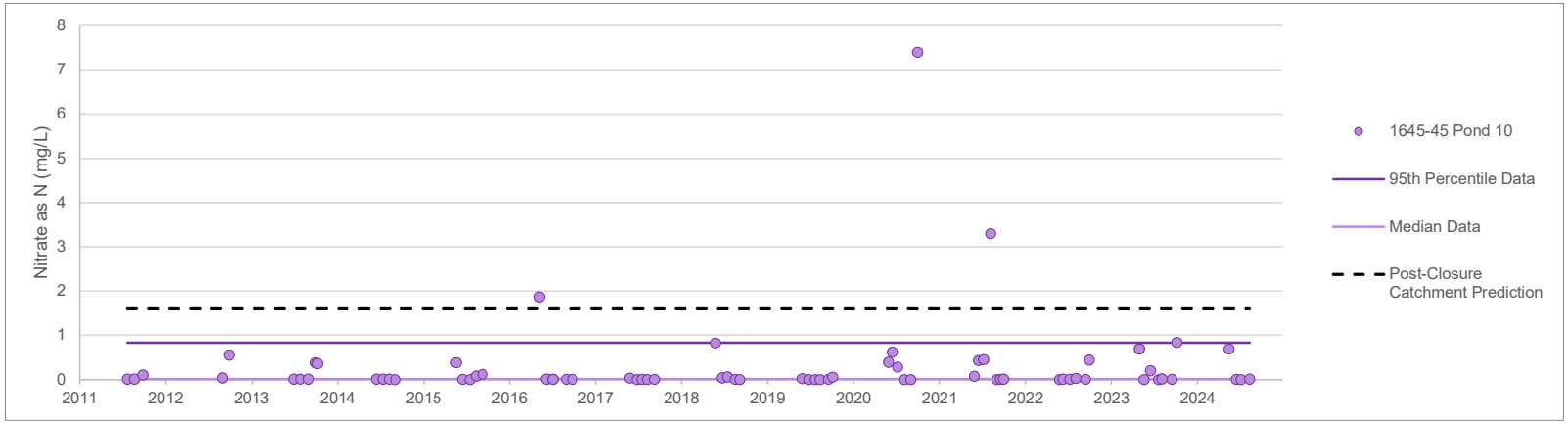
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	62.4	Wildlife	None
Median	27.5	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



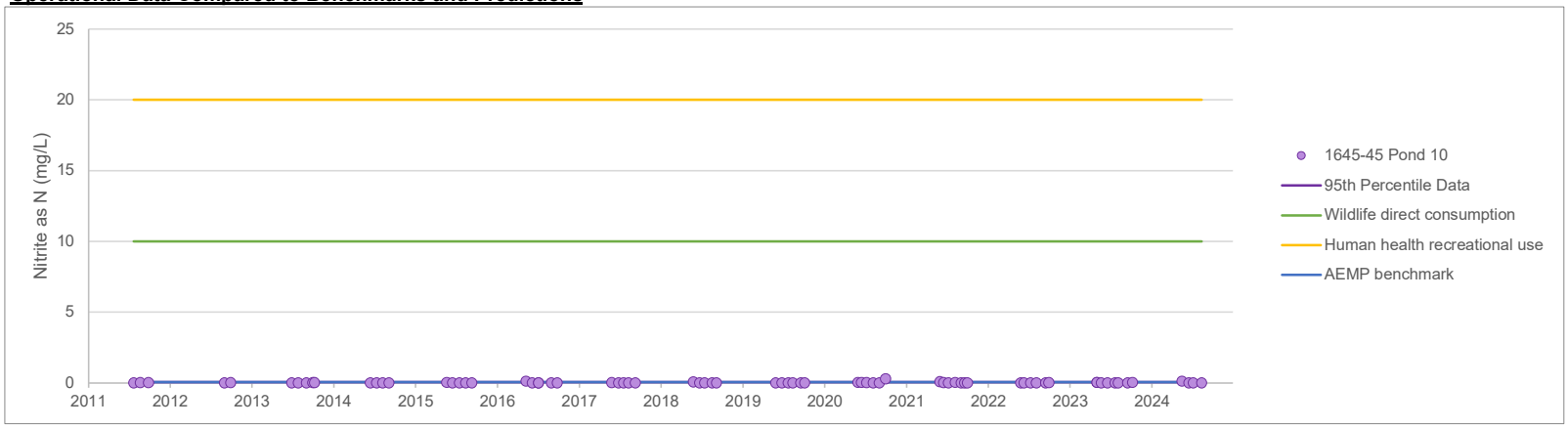


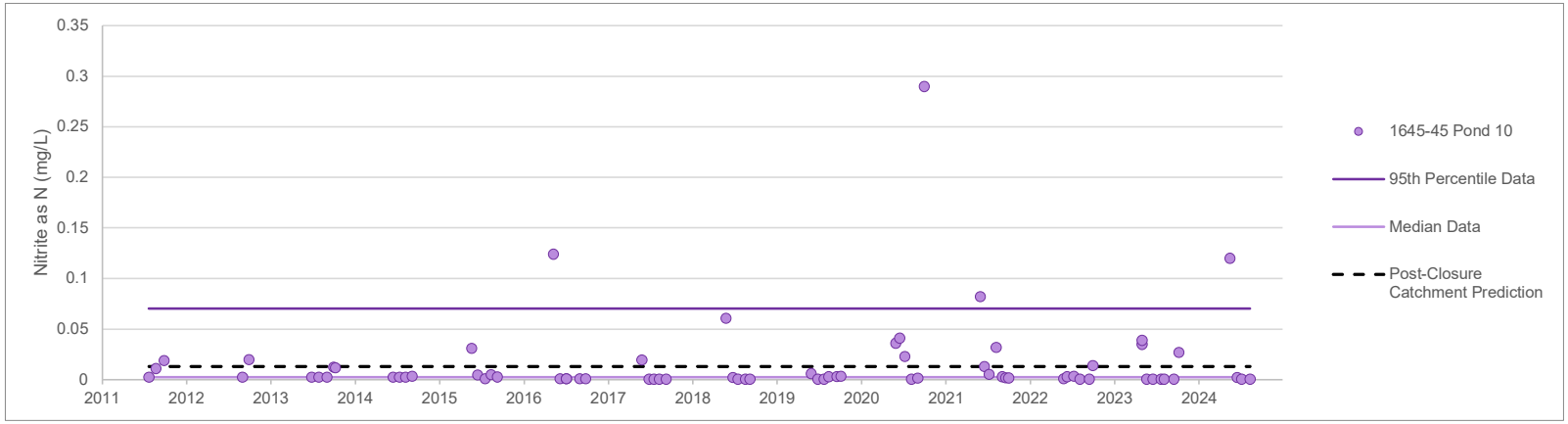
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	0.8	Wildlife	100
Median	0.0	Human recreational	200
Count	72	AEMP	3

Operational Data Compared to Benchmarks and Predictions



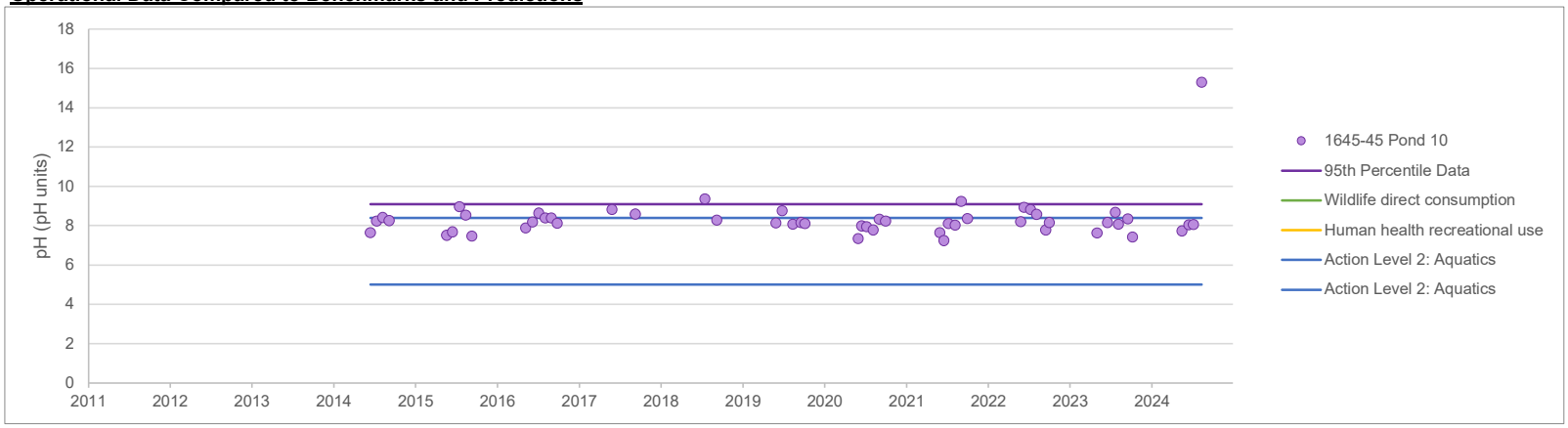


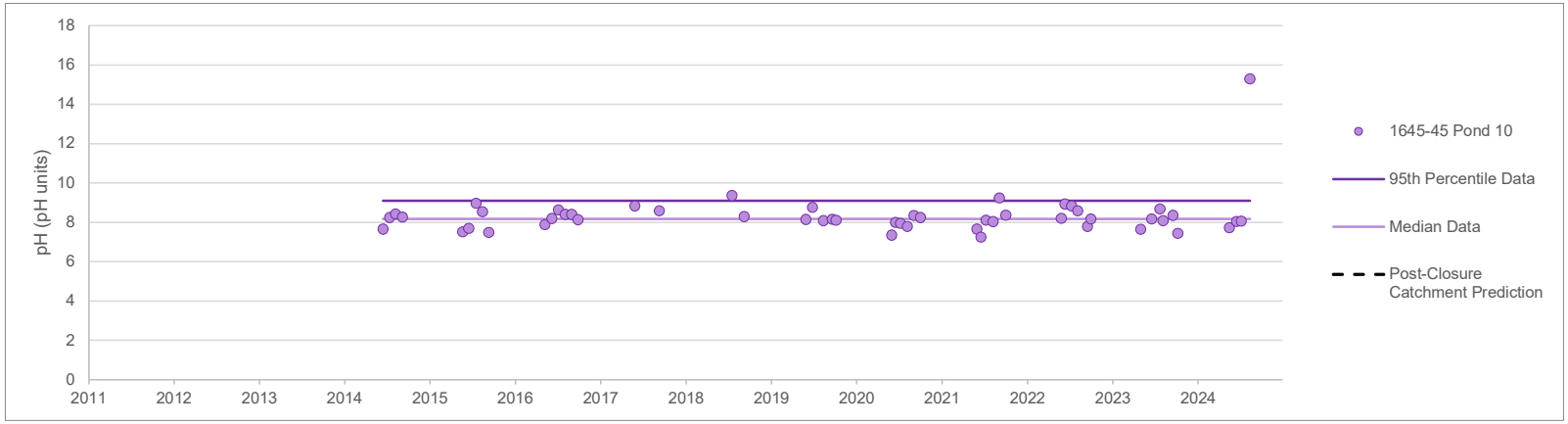
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.070	Wildlife	10.0
Median	0.003	Human recreational	20.0
Count	72	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



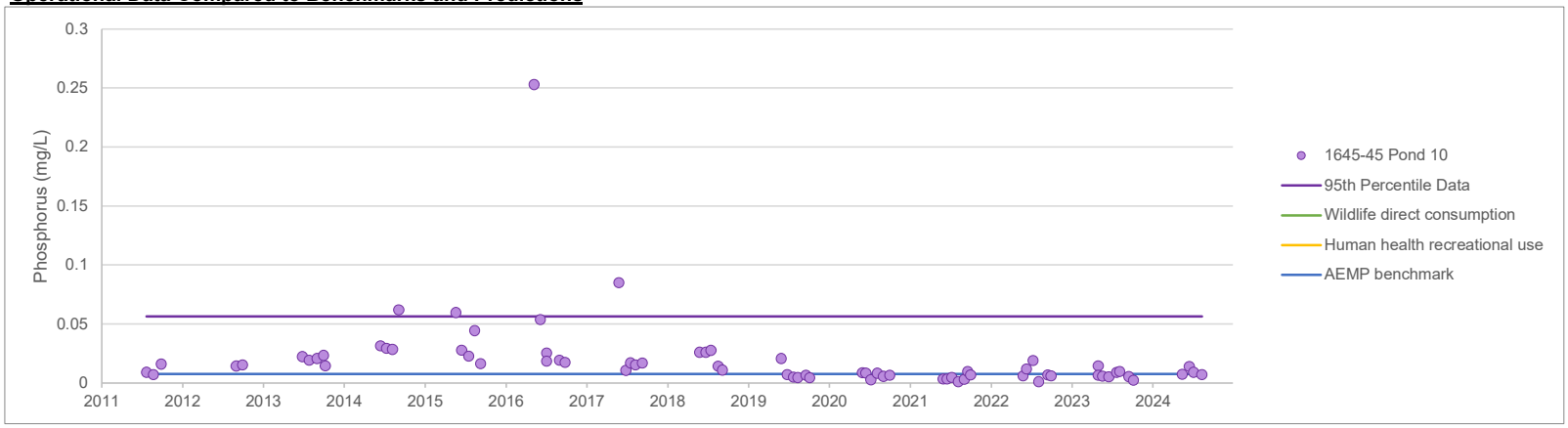


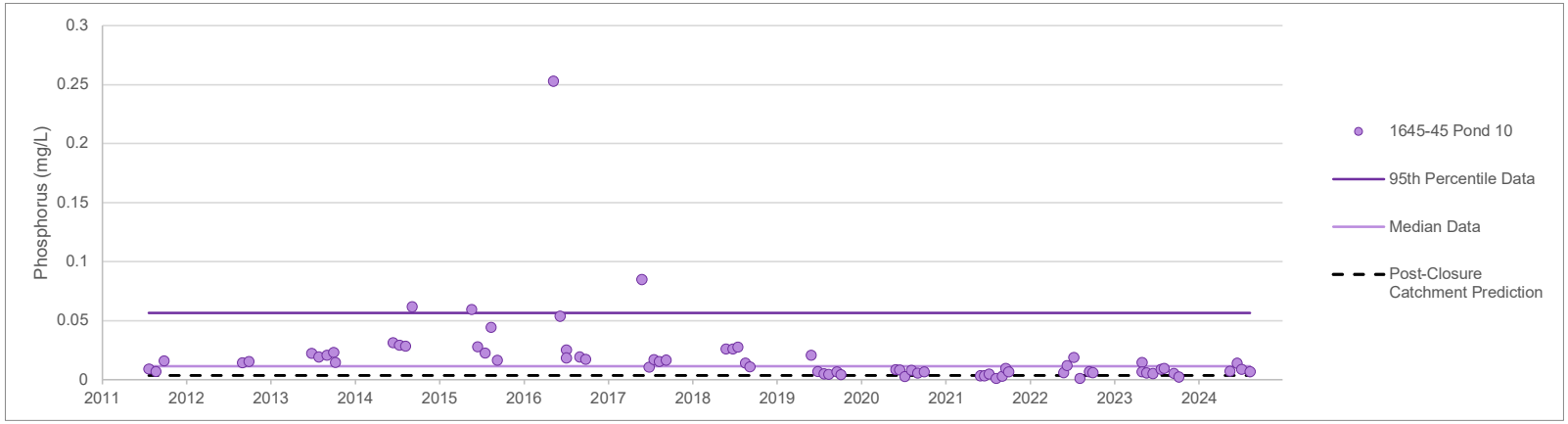
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	9.1	Wildlife	None
Median	8.2	Human recreational	None
Count	52	AEMP	None

Operational Data Compared to Benchmarks and Predictions



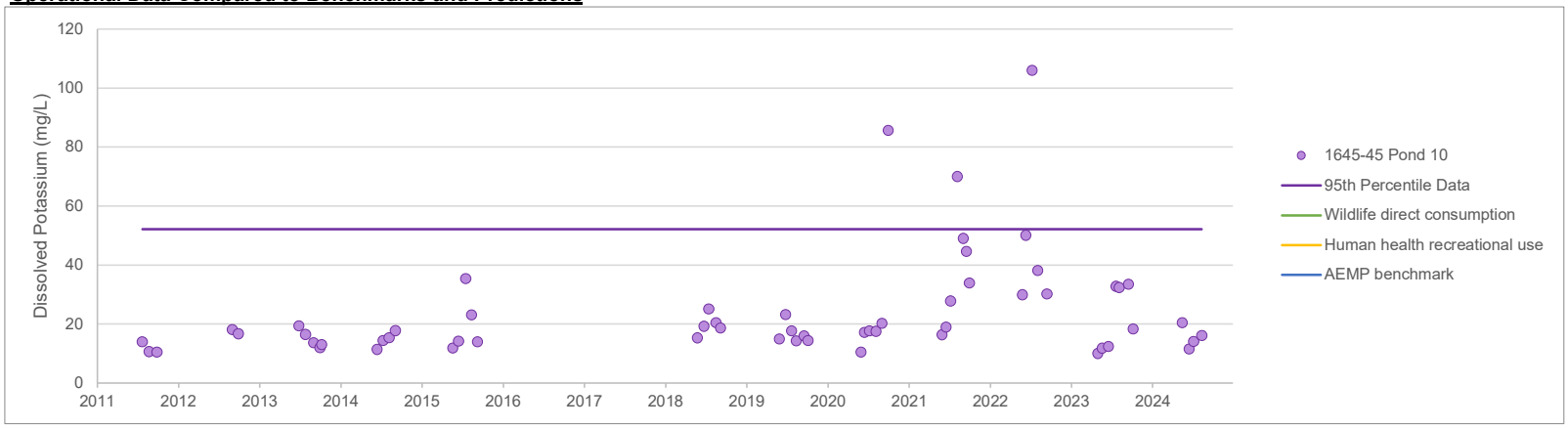


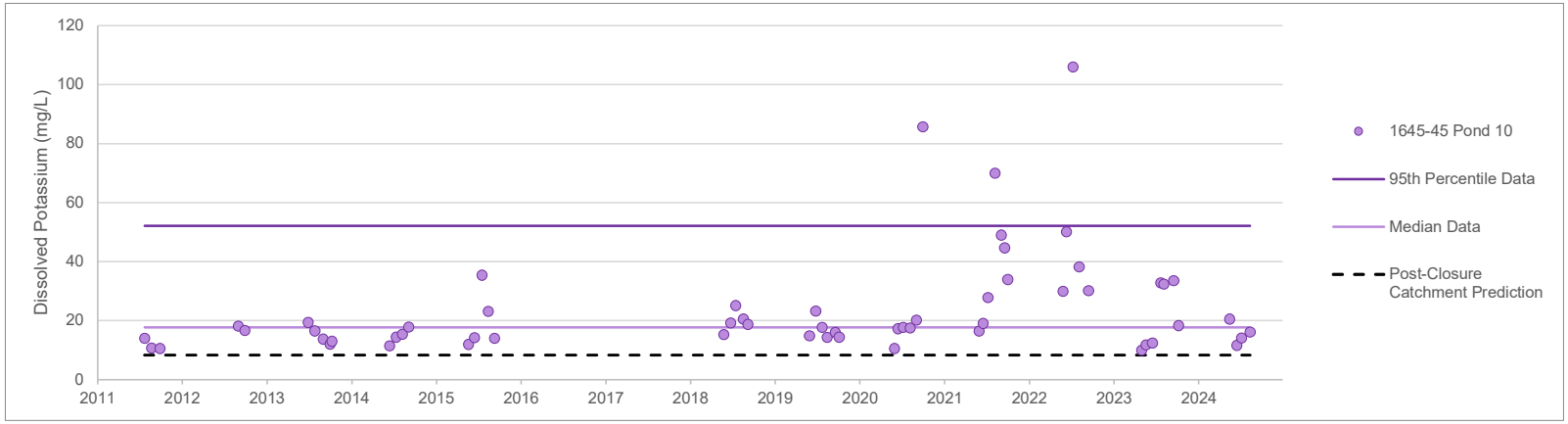
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.056	Wildlife	None
Median	0.011	Human recreational	None
Count	72	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



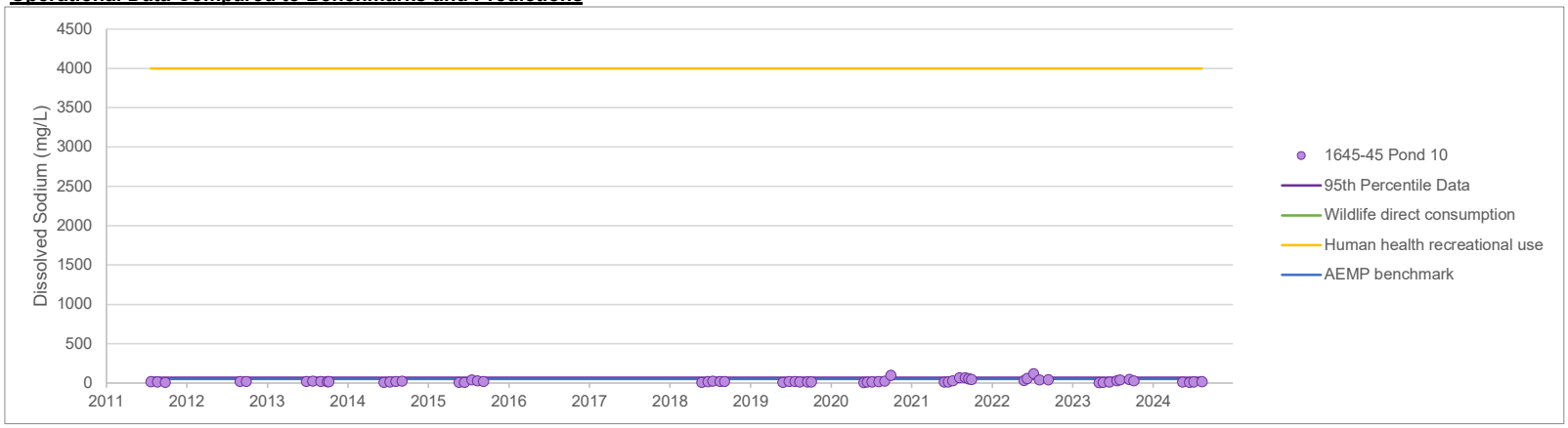


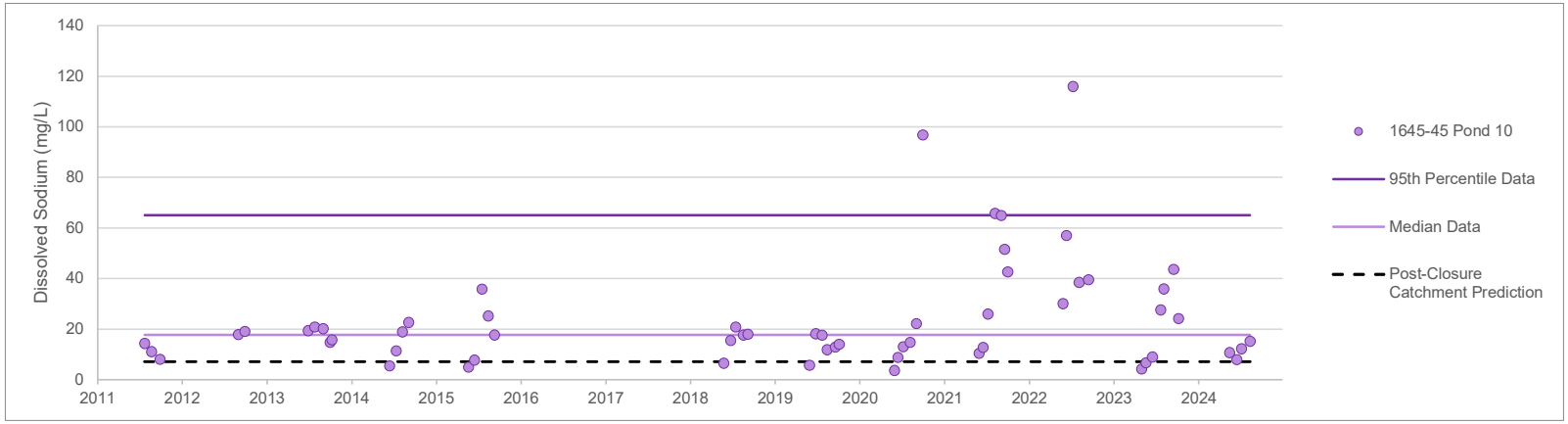
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	52.1	Wildlife	None
Median	17.7	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



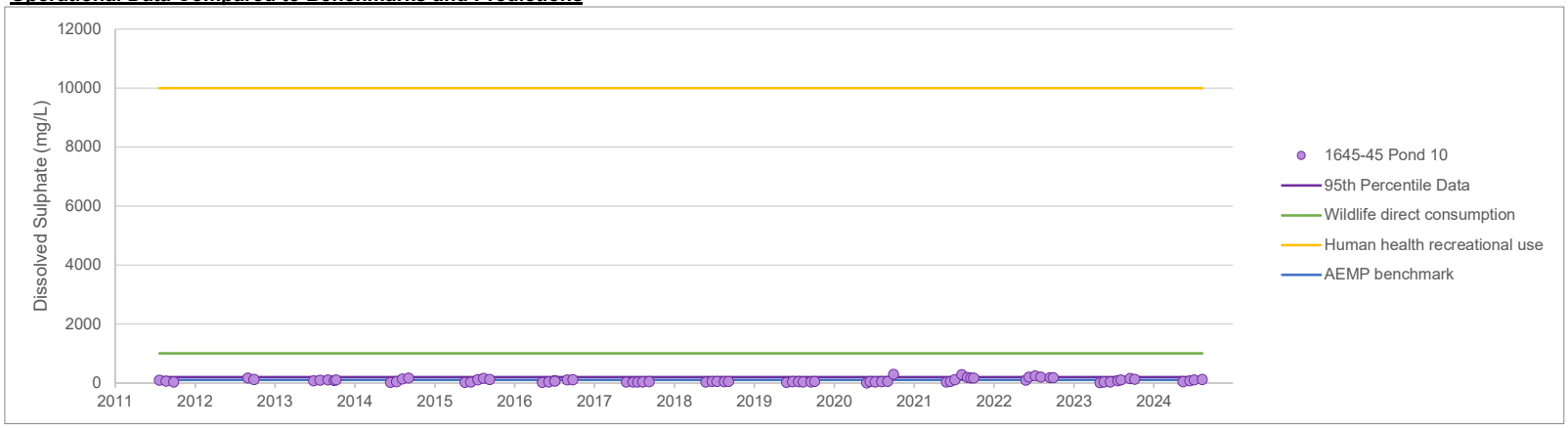


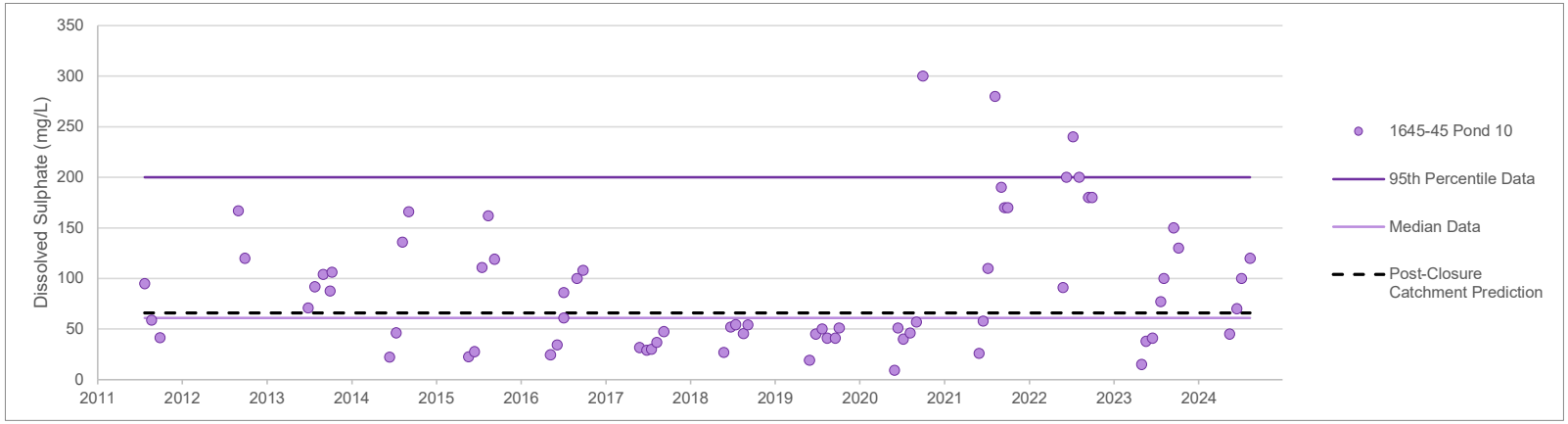
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	65.0	Wildlife	None
Median	17.7	Human recreational	4000
Count	59	AEMP	52

Operational Data Compared to Benchmarks and Predictions



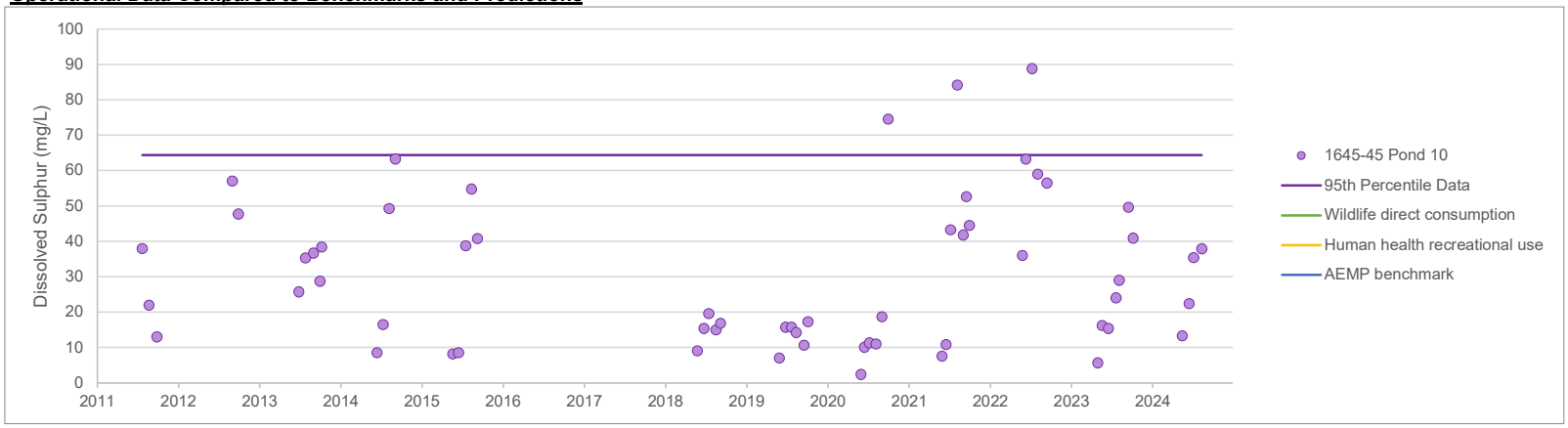


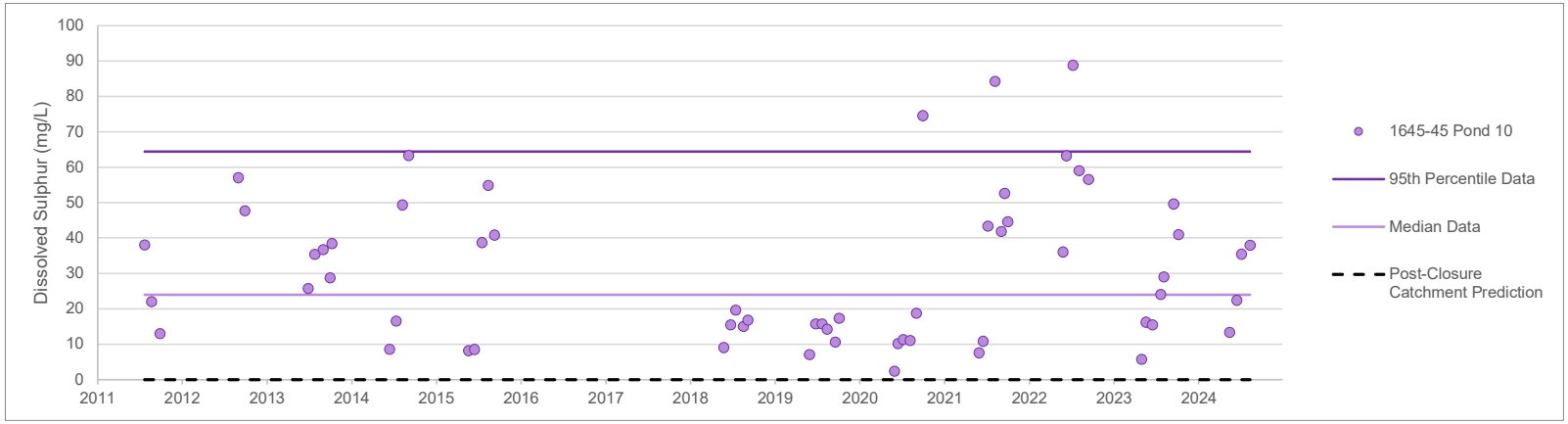
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	200	Wildlife	1000
Median	61	Human recreational	10000
Count	71	AEMP	100

Operational Data Compared to Benchmarks and Predictions



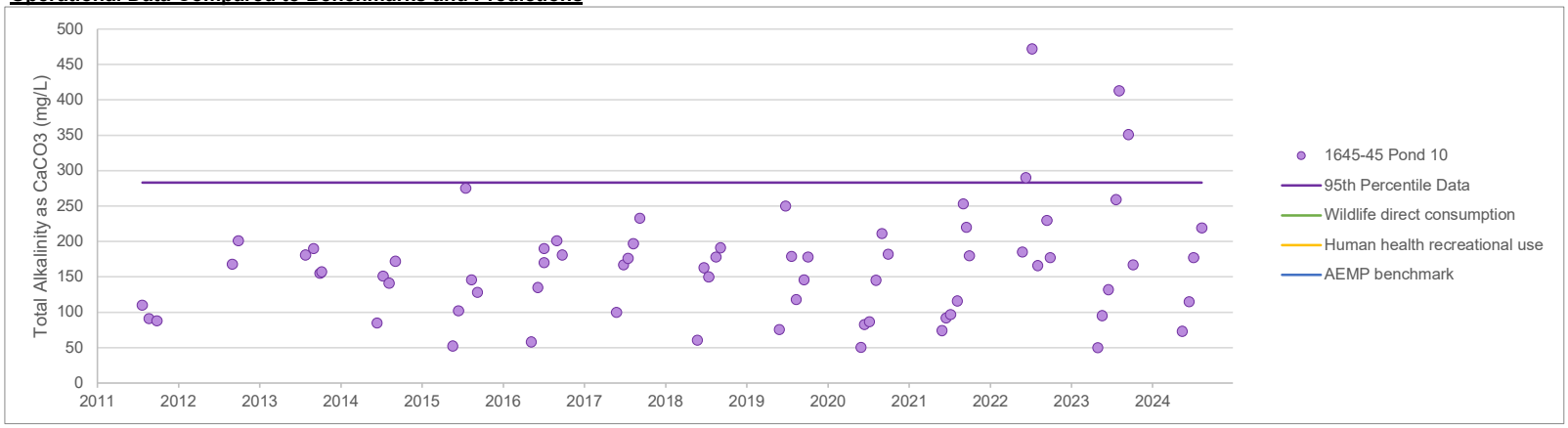


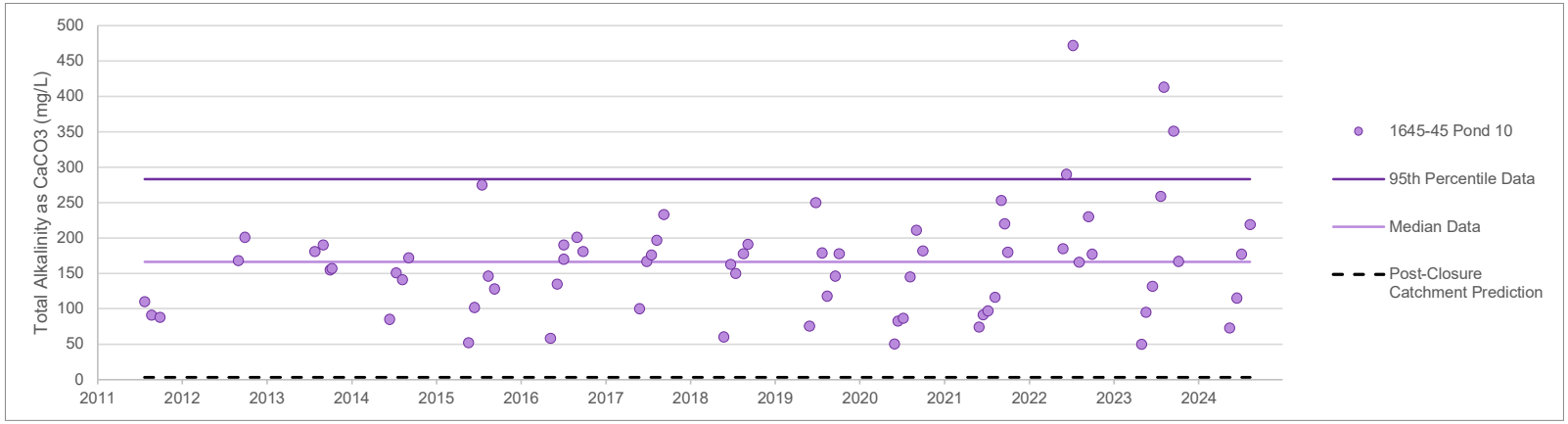
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	64.4	Wildlife	None
Median	24.0	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



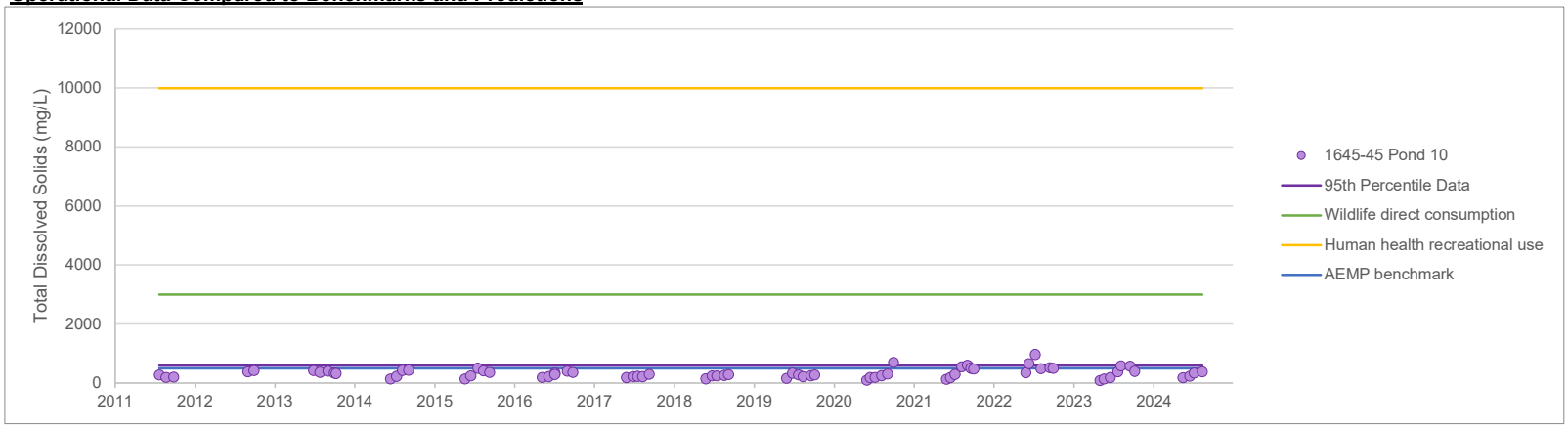


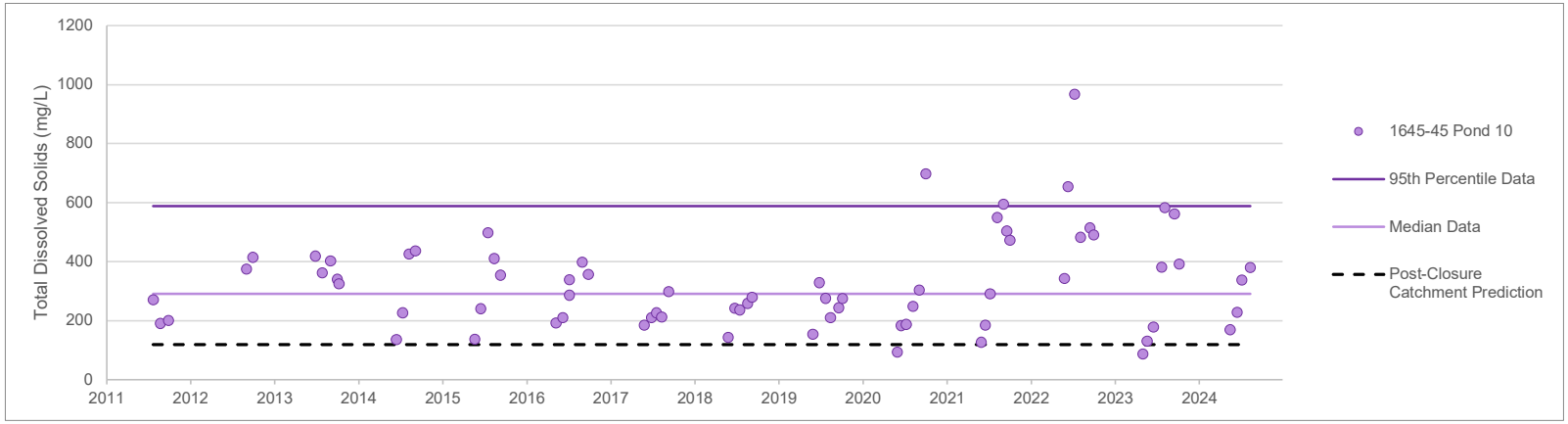
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	283.3	Wildlife	None
Median	166.5	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



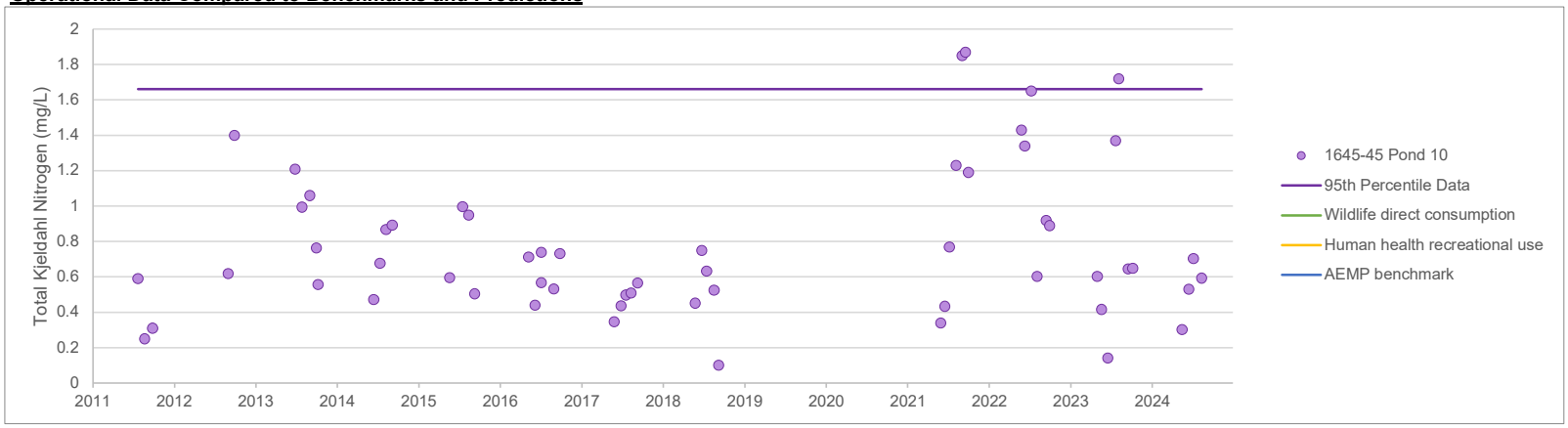


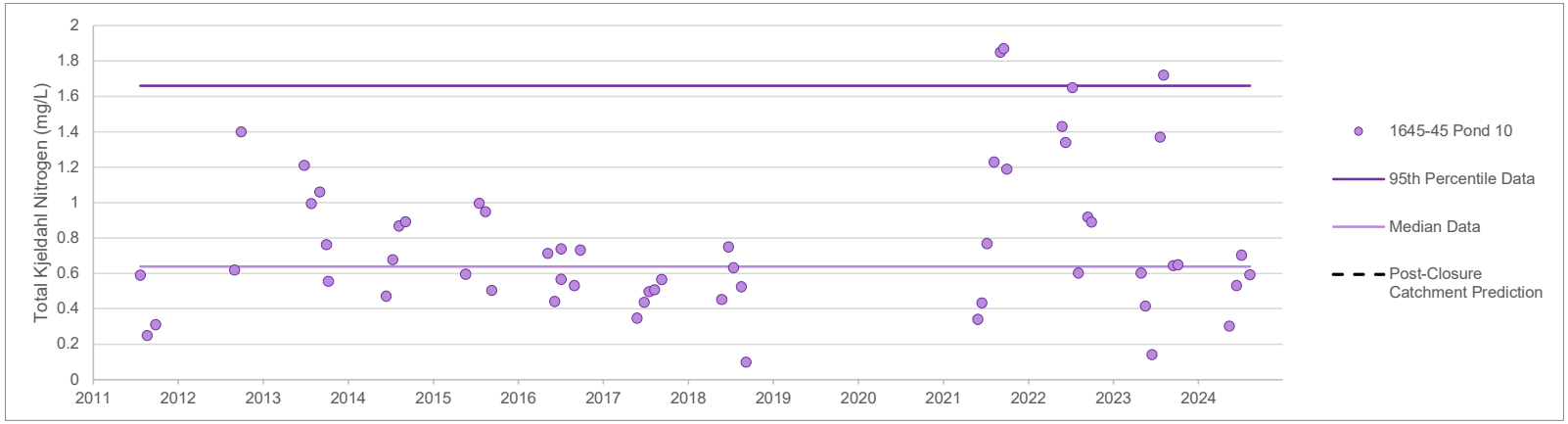
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	589	Wildlife	3000
Median	291	Human recreational	10000
Count	71	AEMP	500

Operational Data Compared to Benchmarks and Predictions



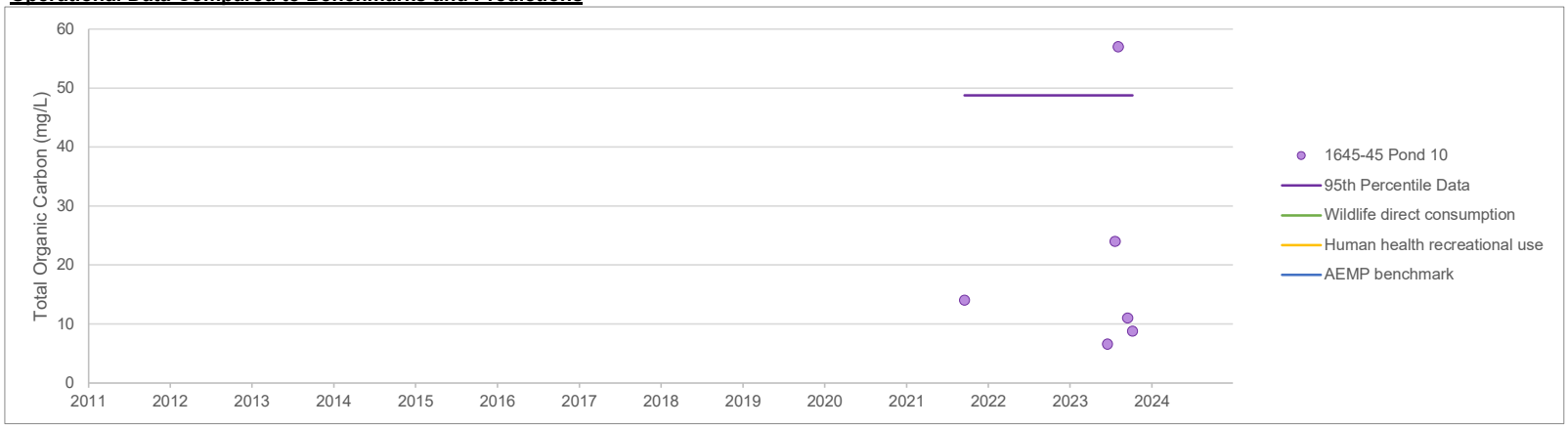


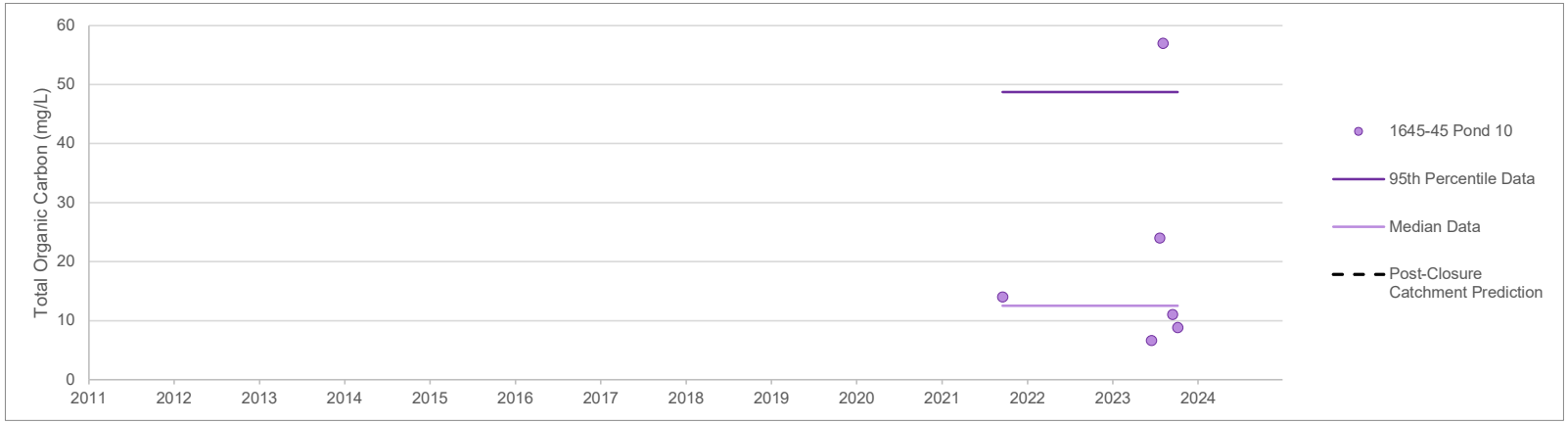
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.7	Wildlife	None
Median	0.6	Human recreational	None
Count	58	AEMP	None

Operational Data Compared to Benchmarks and Predictions



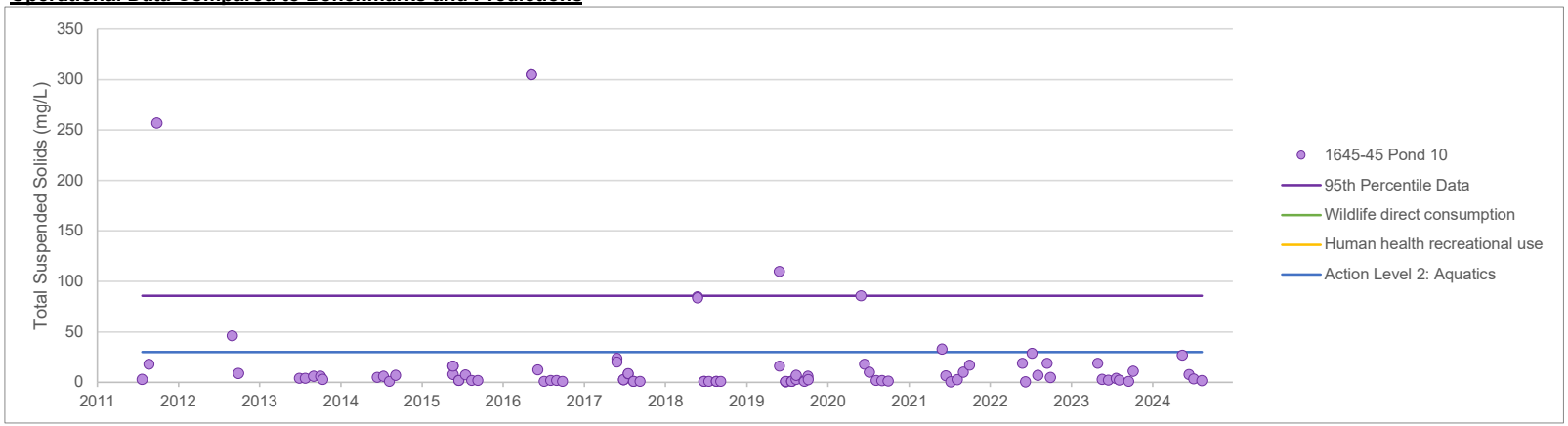


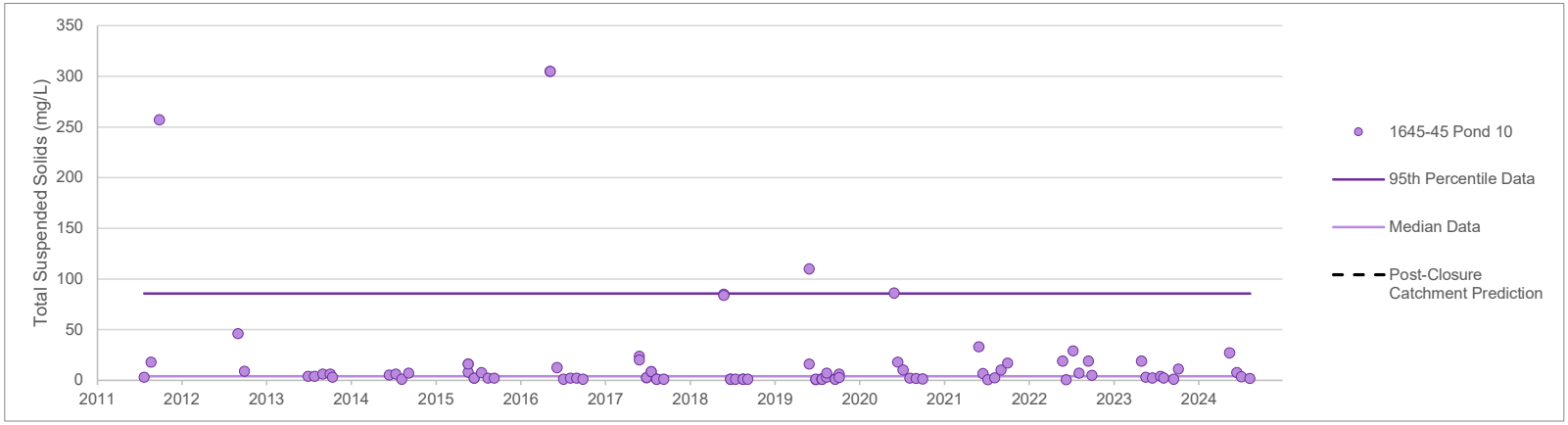
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	48.8	Wildlife	None
Median	12.5	Human recreational	None
Count	6	AEMP	None

Operational Data Compared to Benchmarks and Predictions



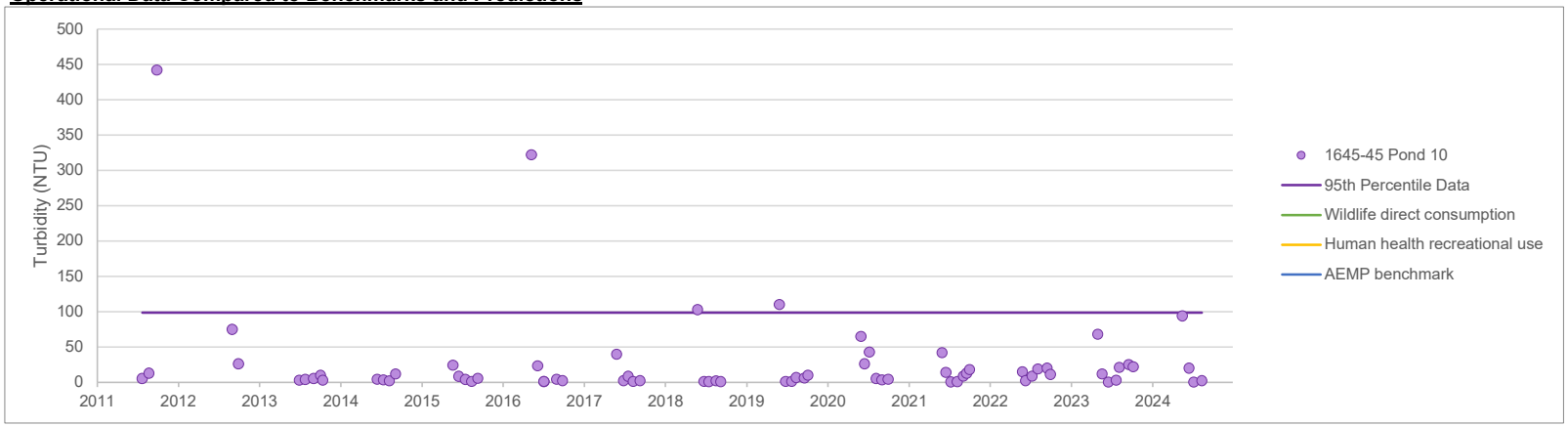


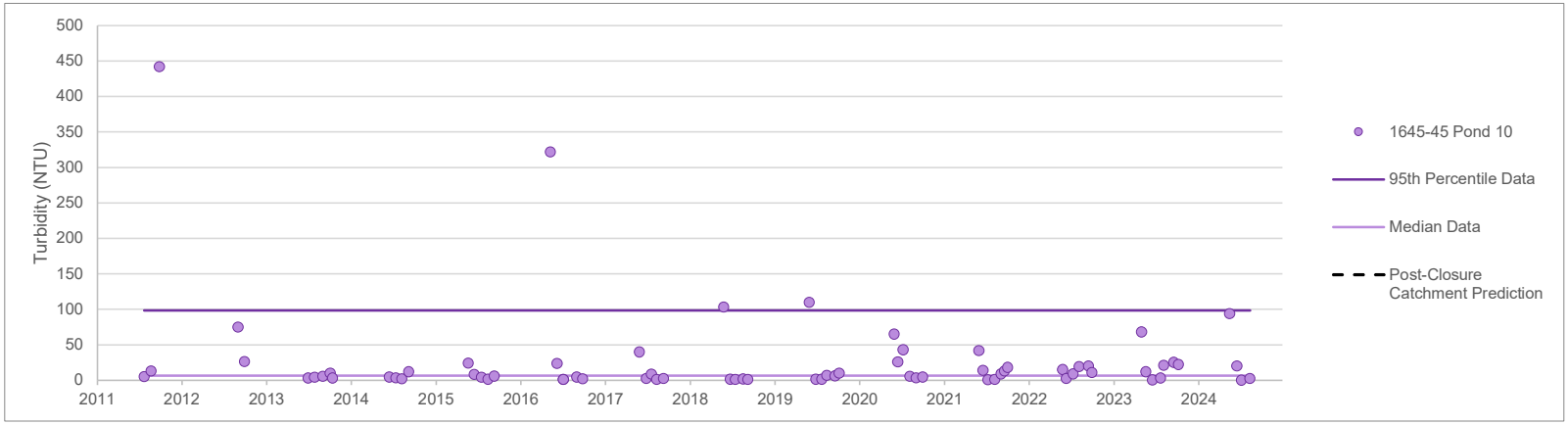
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	85.7	Wildlife	None
Median	3.9	Human recreational	None
Count	88	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



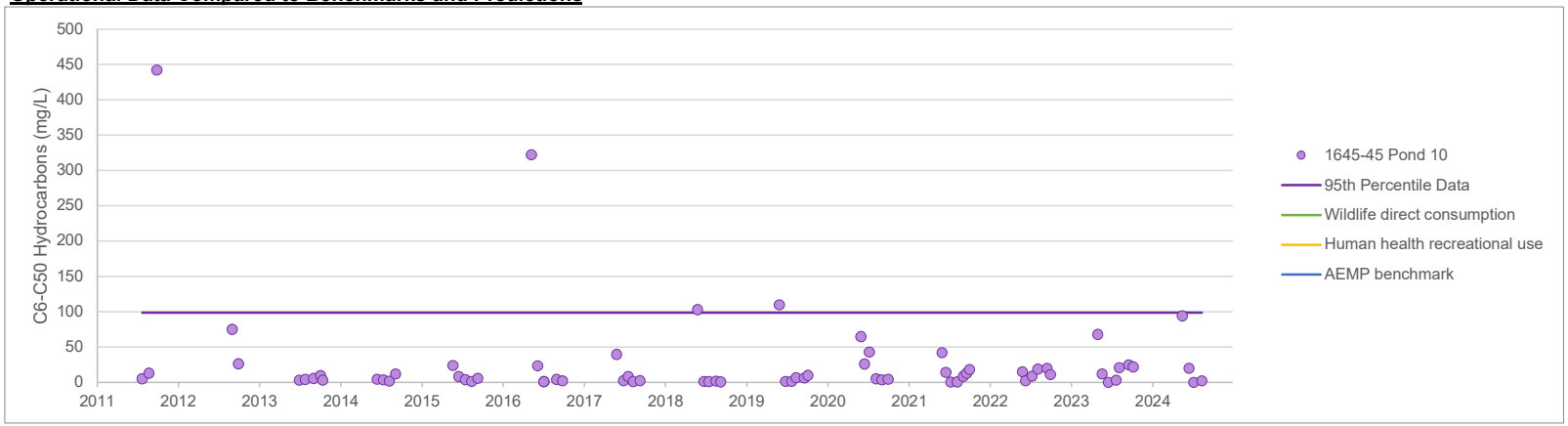


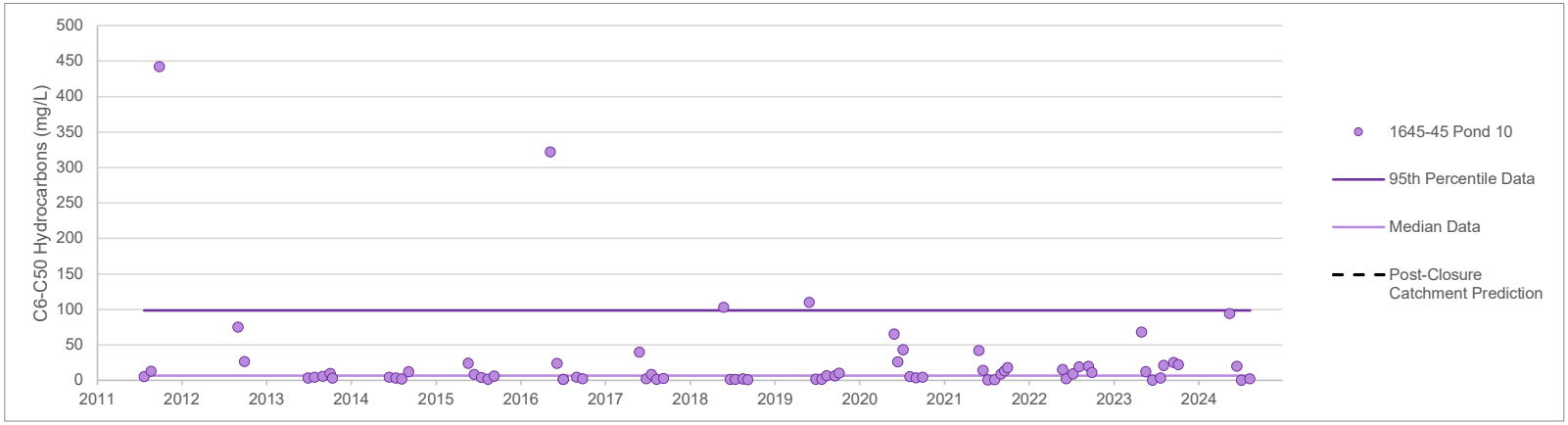
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	98.5	Wildlife	None
Median	6.7	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.30	Wildlife	None
Median	0.13	Human recreational	None
Count	6	AEMP	None

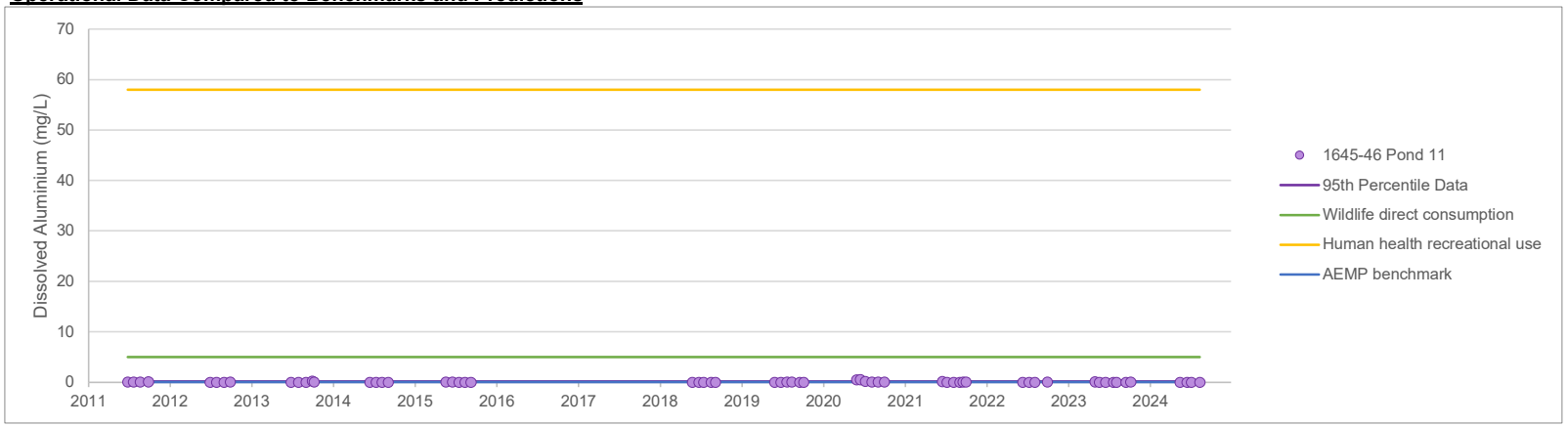
Pond 11

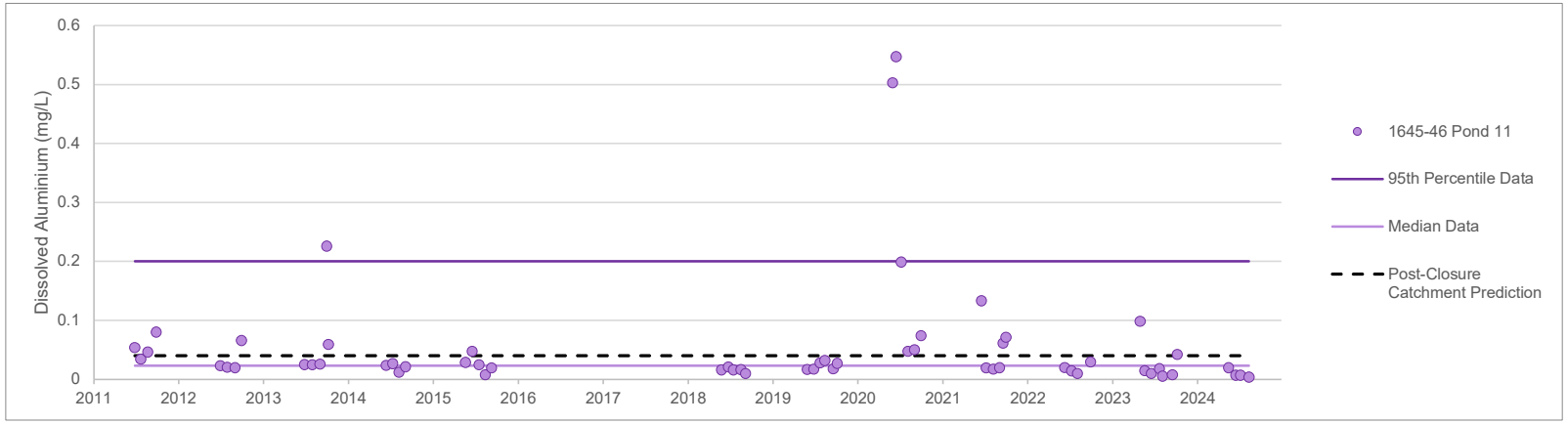
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



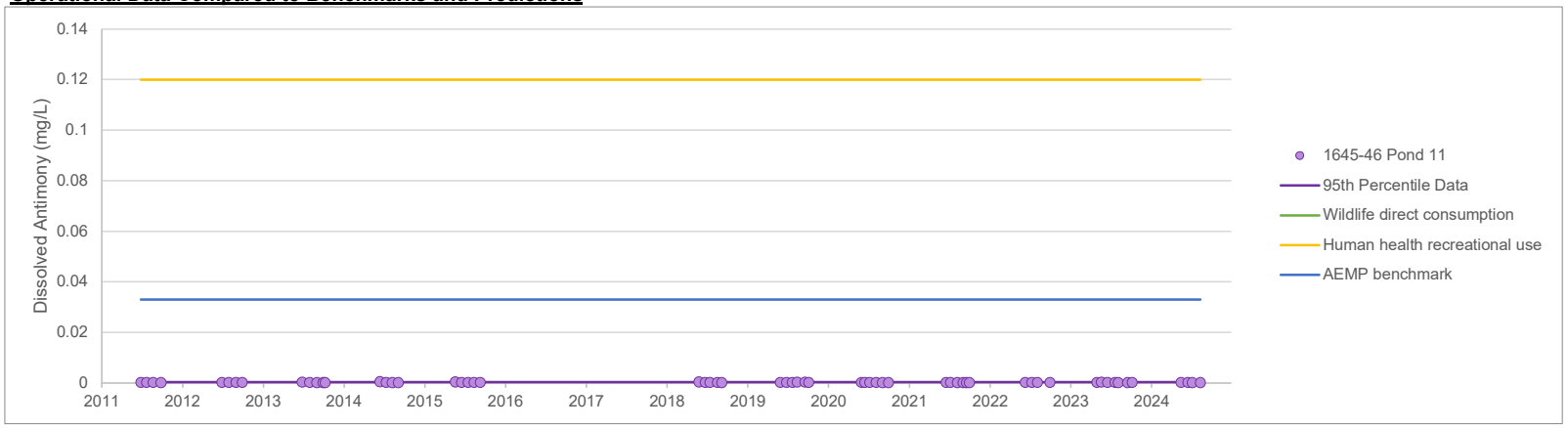


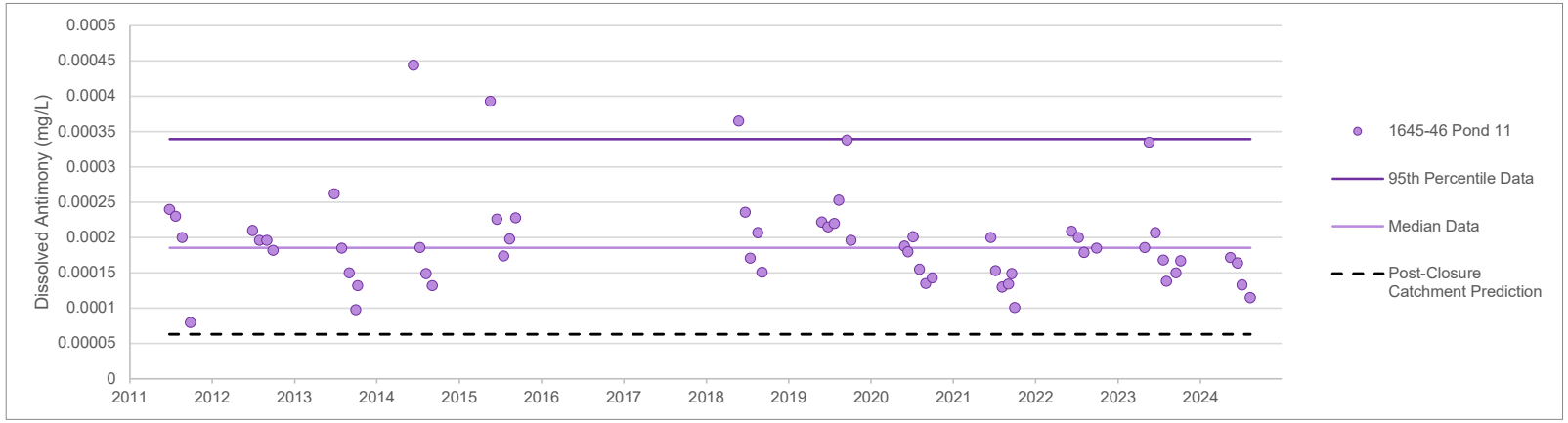
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.200	Wildlife	5.0
Median	0.023	Human recreational	58.0
Count	60	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



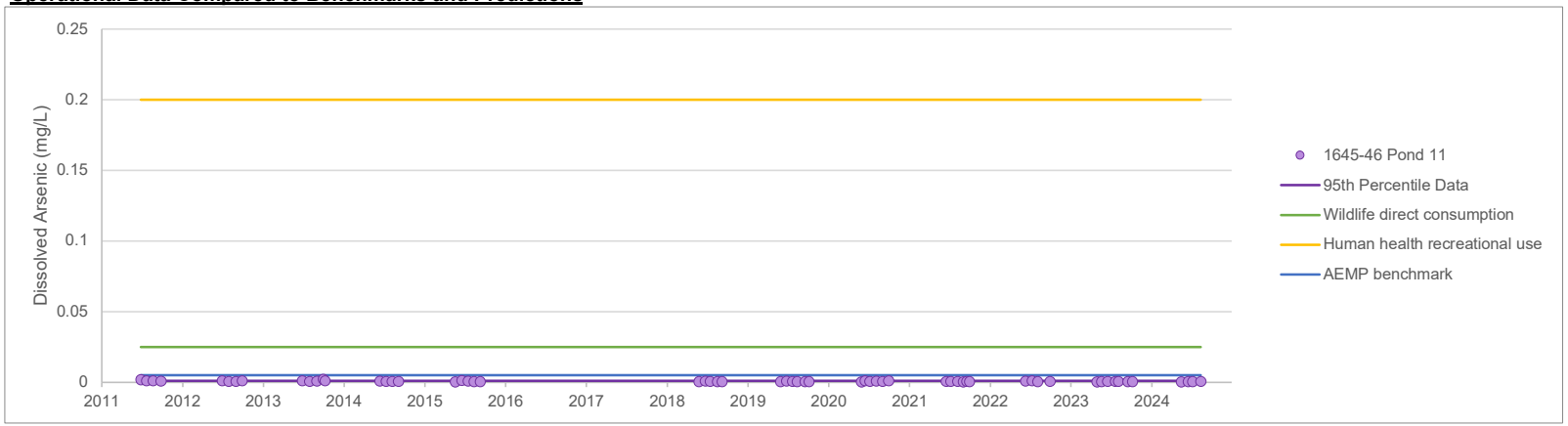


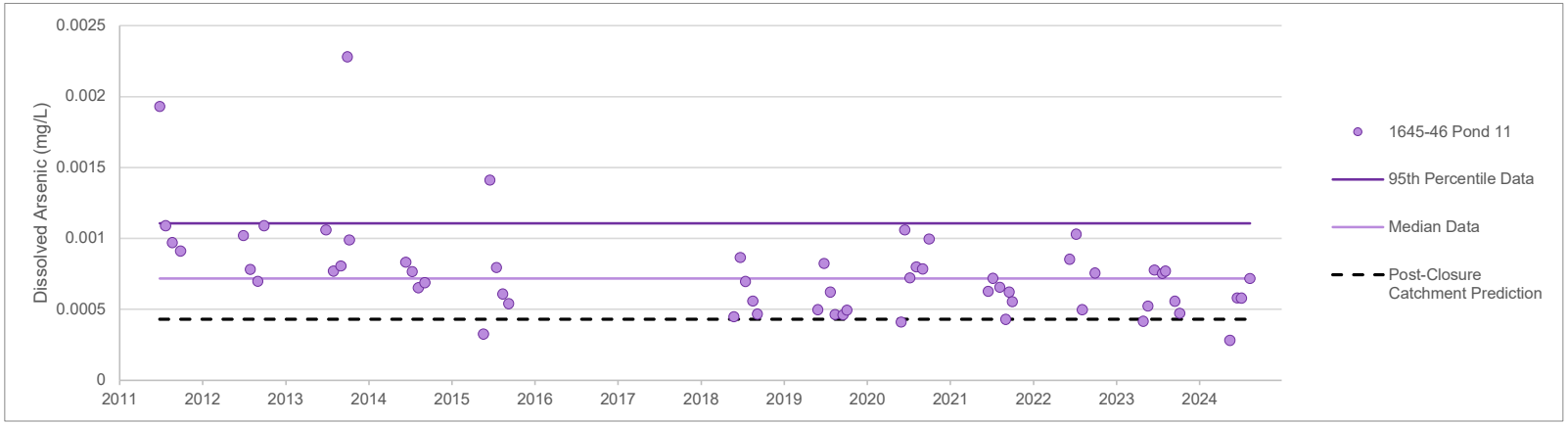
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00034	Wildlife	None
Median	0.00019	Human recreational	0.12
Count	60	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



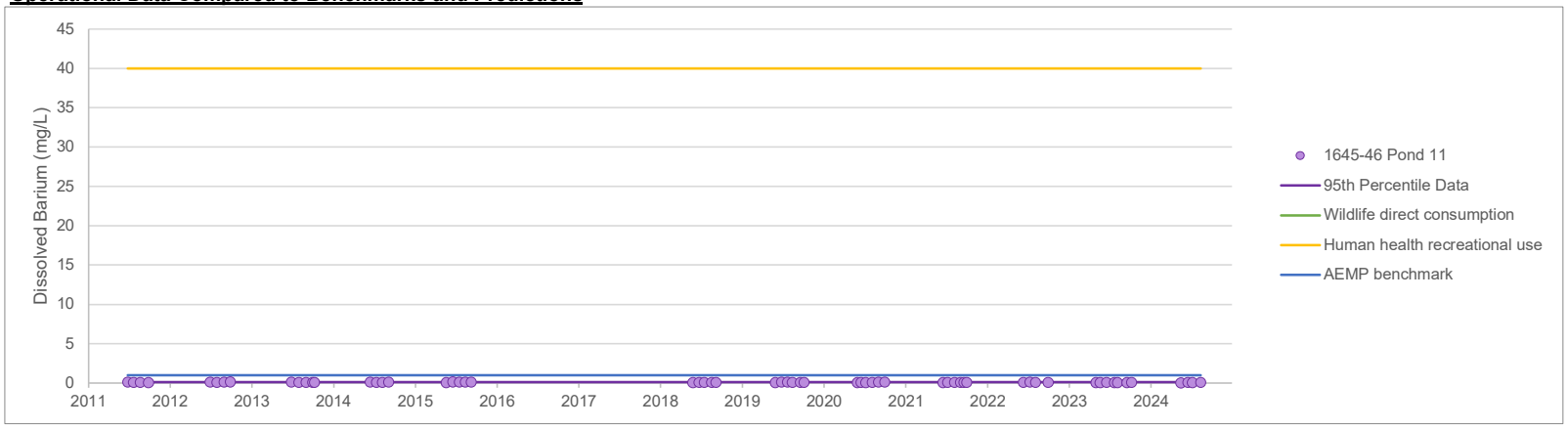


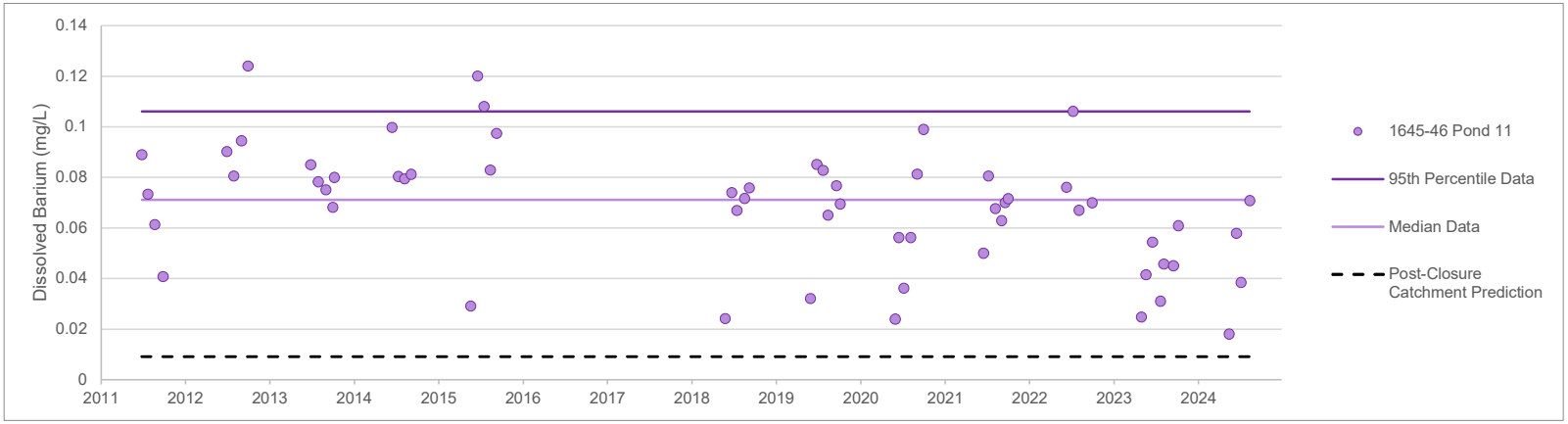
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0011	Wildlife	0.03
Median	0.0007	Human recreational	0.20
Count	60	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



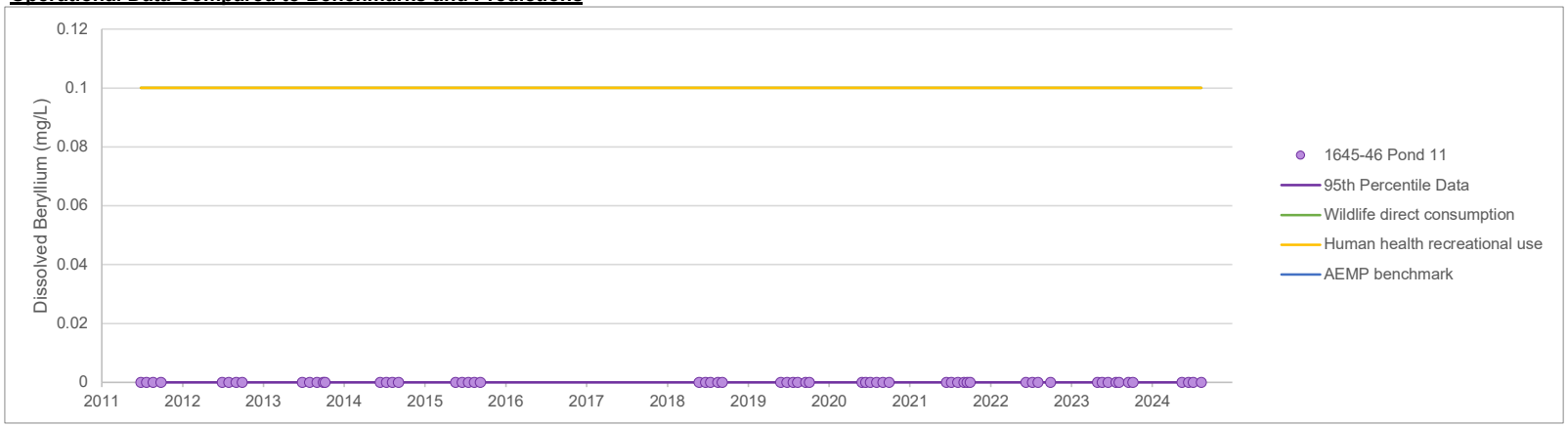


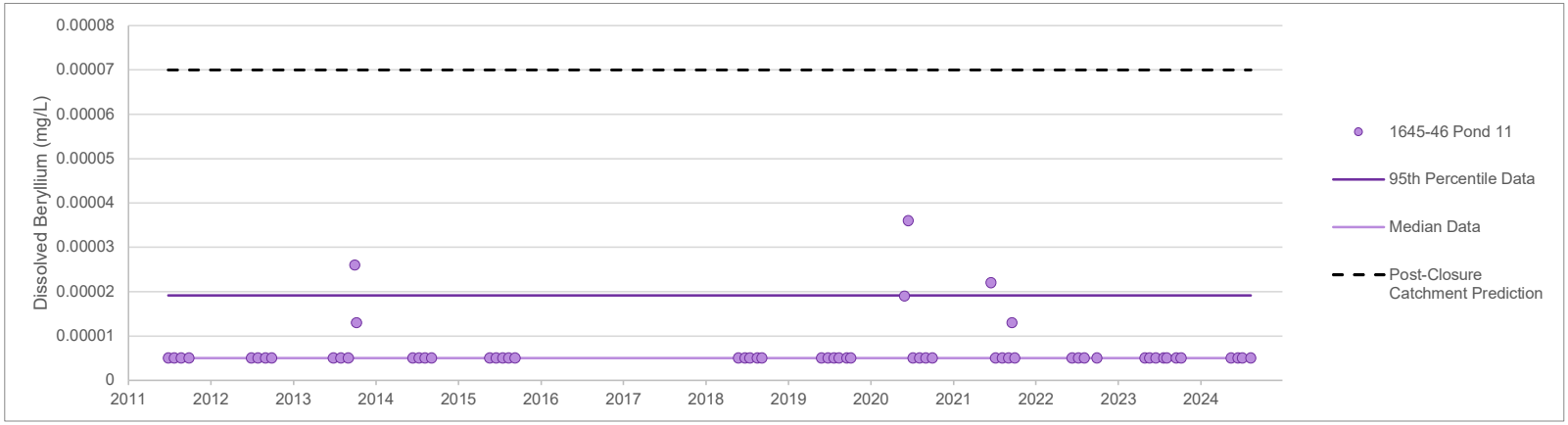
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.106	Wildlife	None
Median	0.071	Human recreational	40.0
Count	60	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



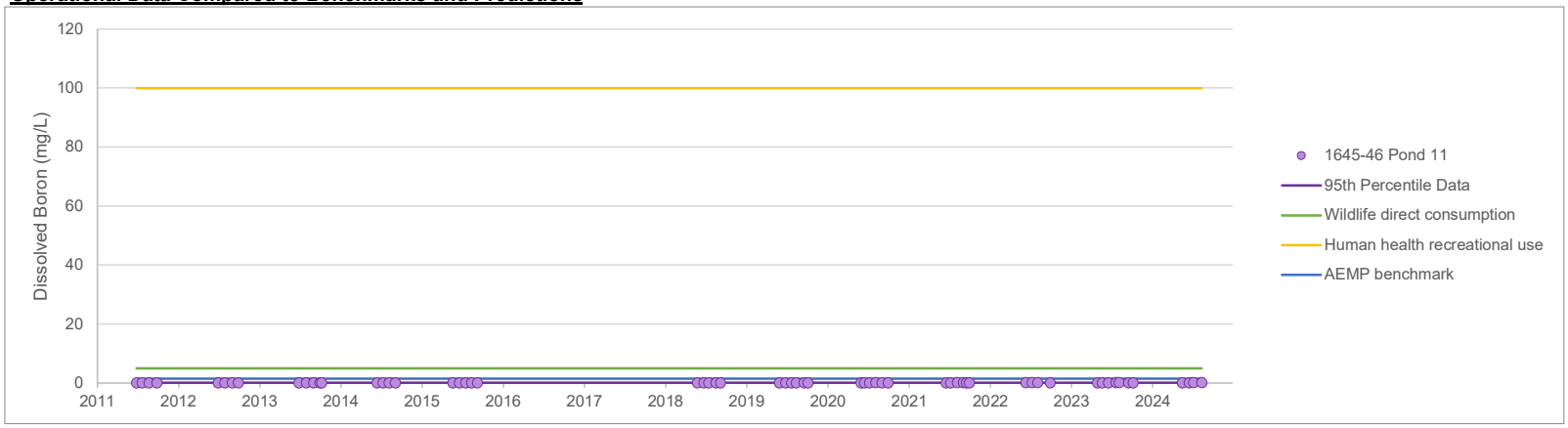


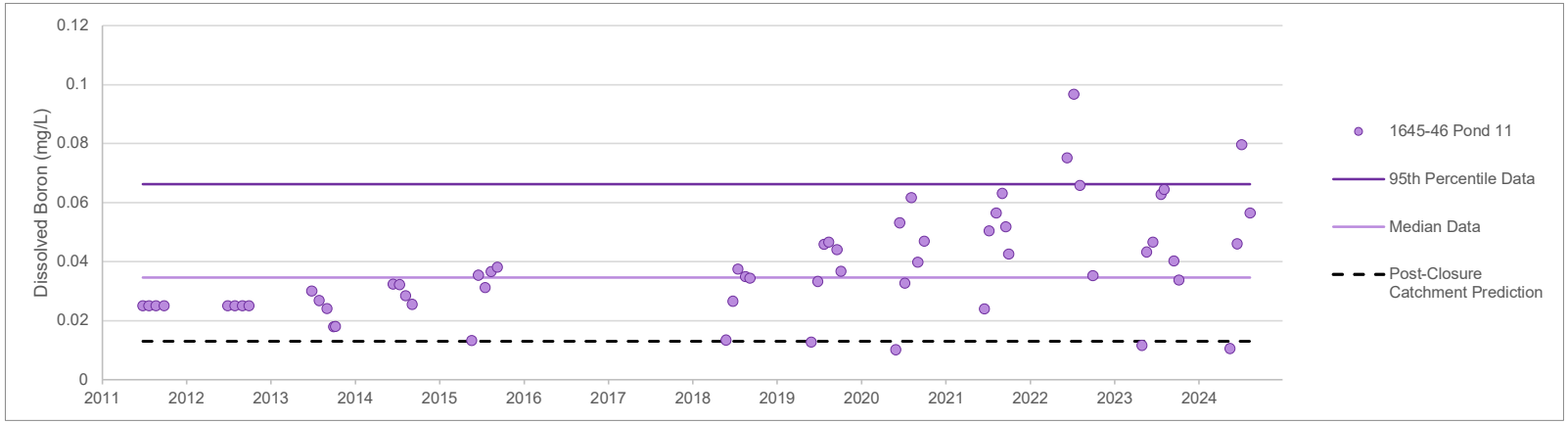
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000019	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



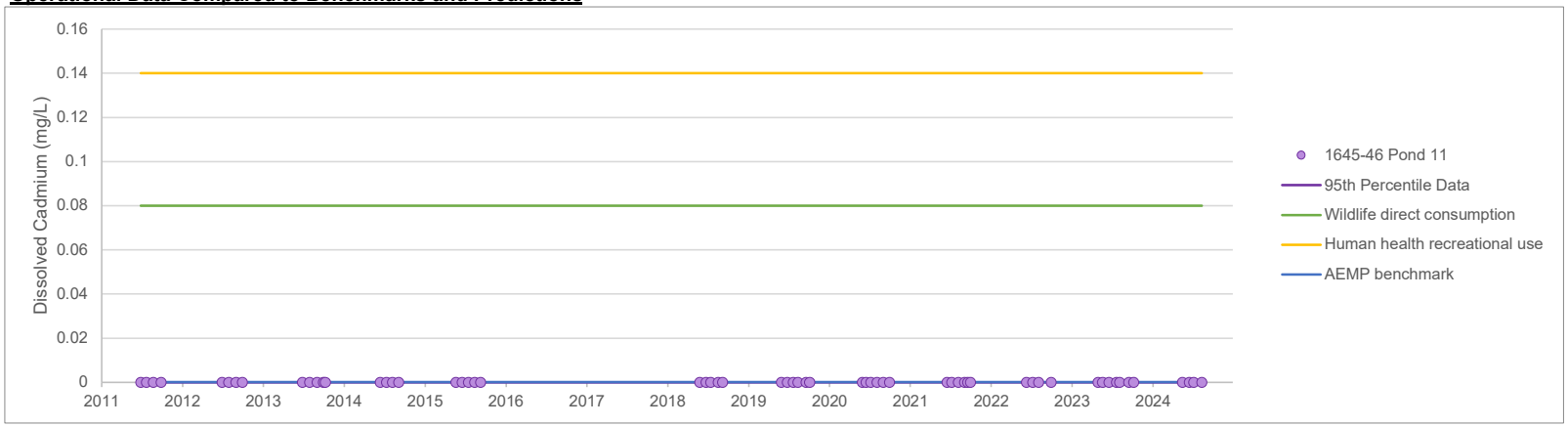


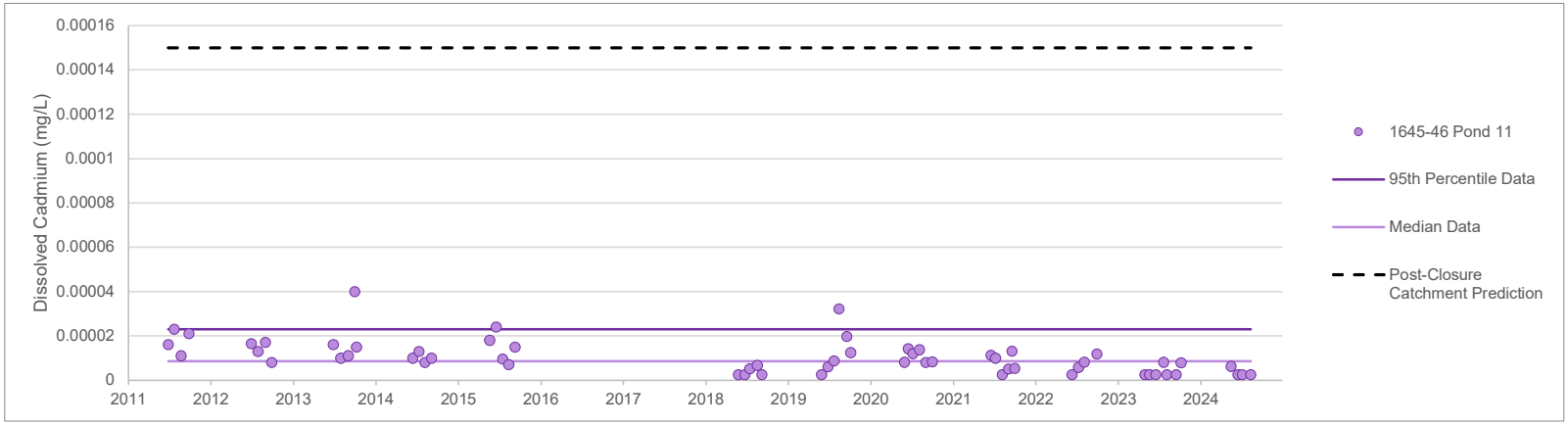
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.066	Wildlife	5.0
Median	0.035	Human recreational	100.0
Count	60	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



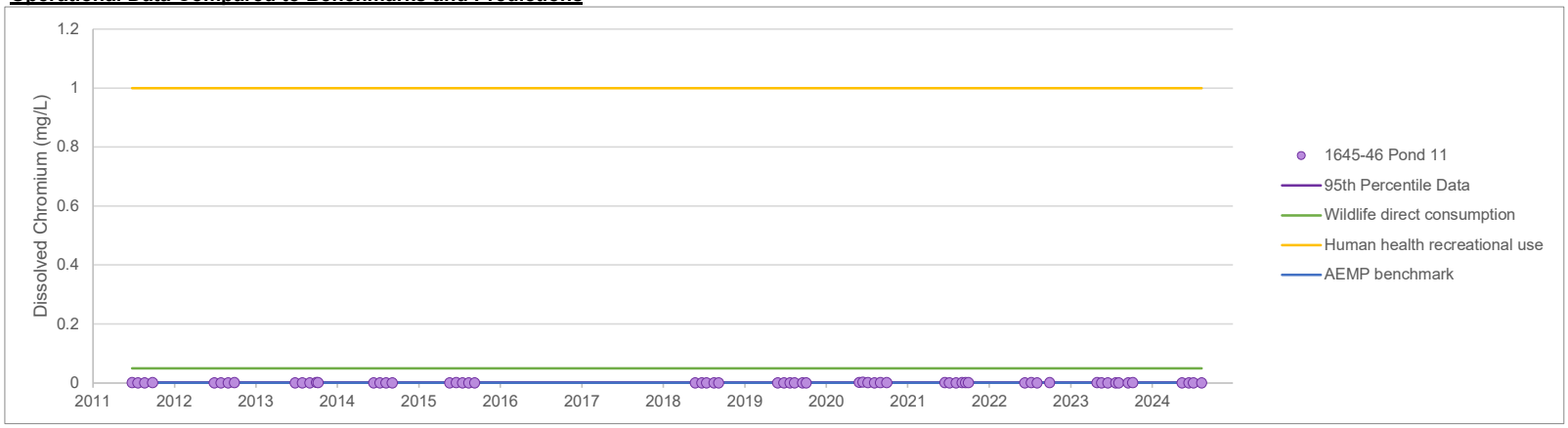


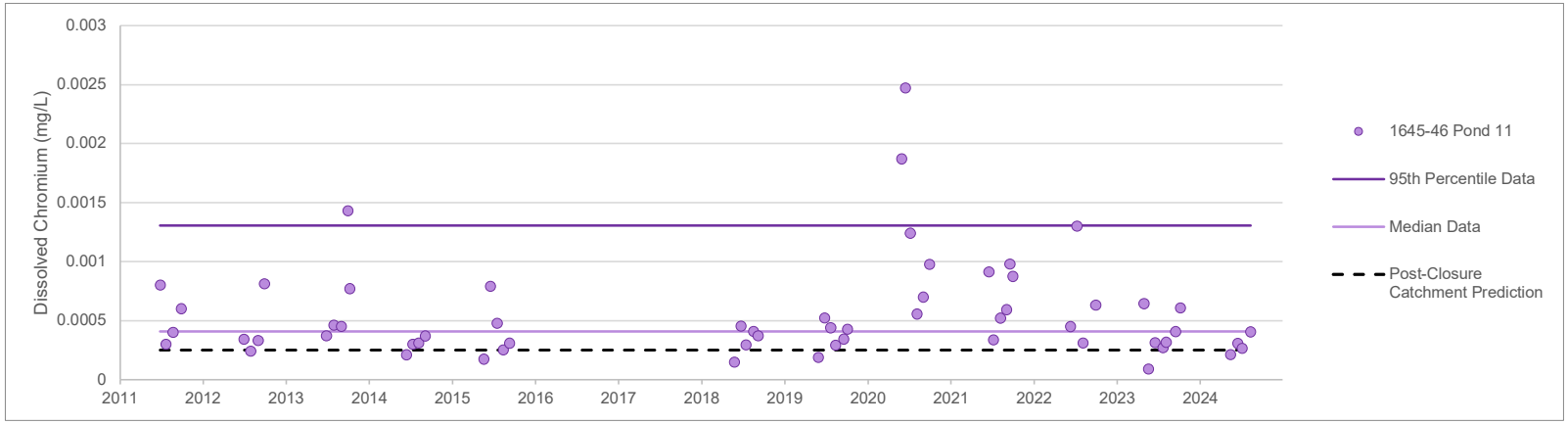
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00002	Wildlife	0.08
Median	0.00001	Human recreational	0.14
Count	60	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



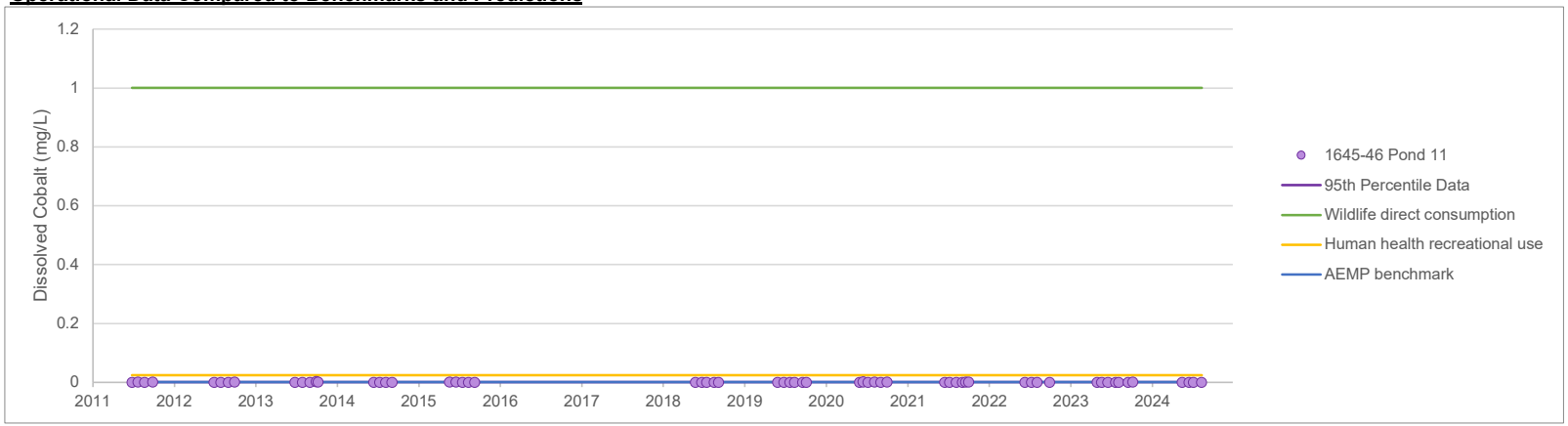


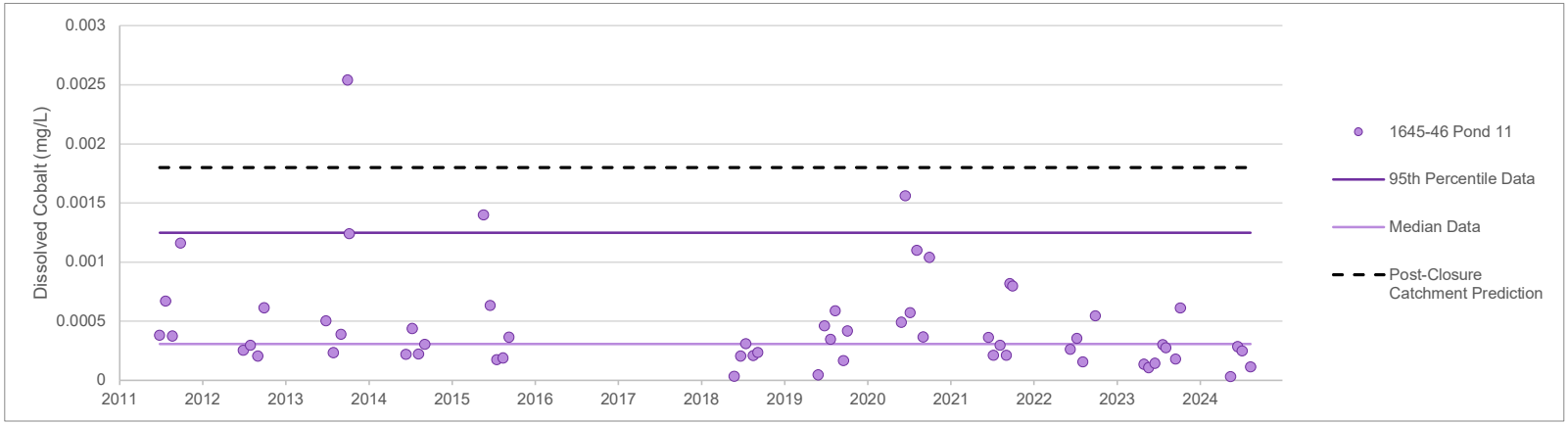
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00131	Wildlife	0.05
Median	0.00041	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



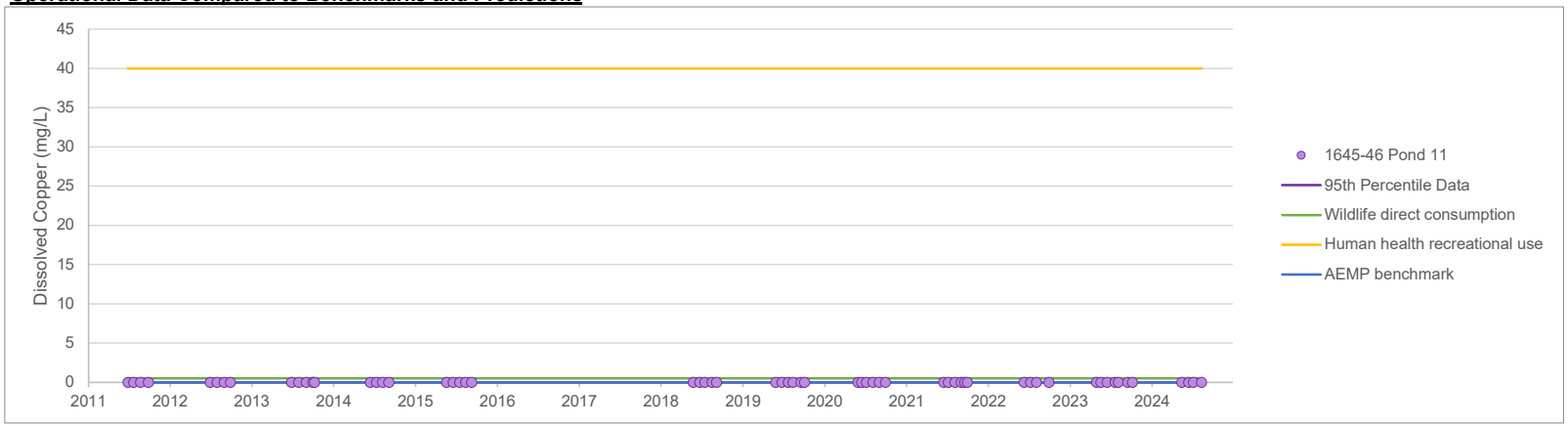


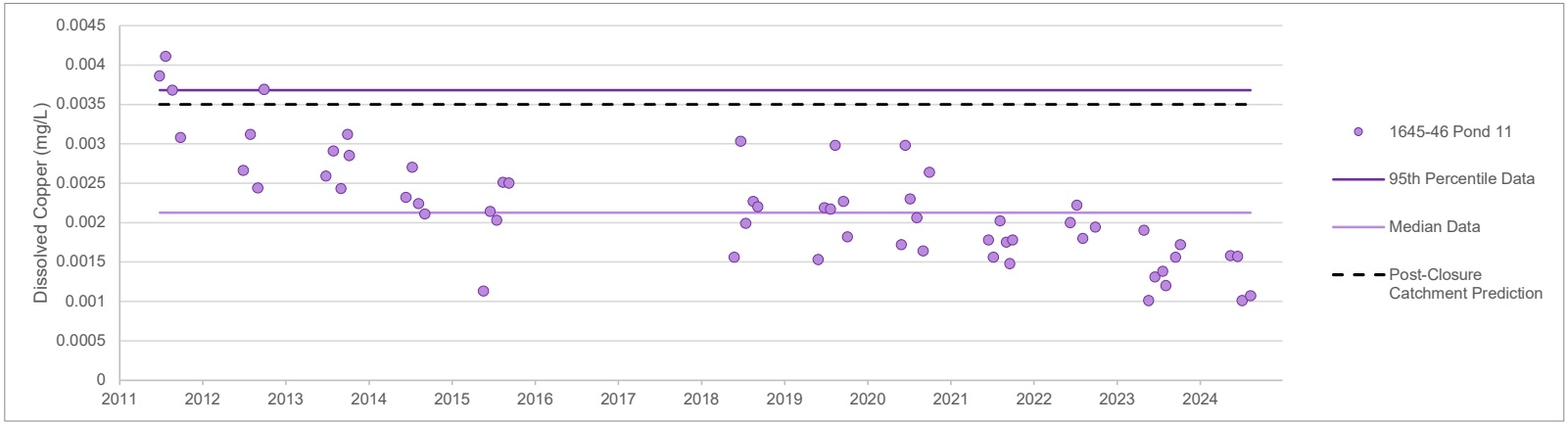
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0012	Wildlife	1.0
Median	0.0003	Human recreational	0.02
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



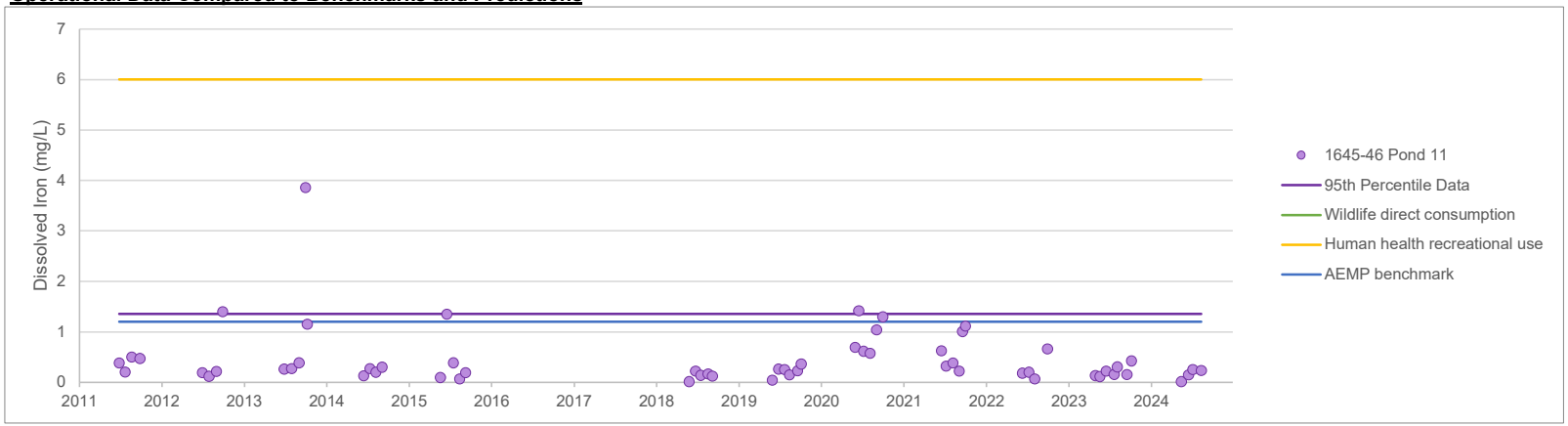


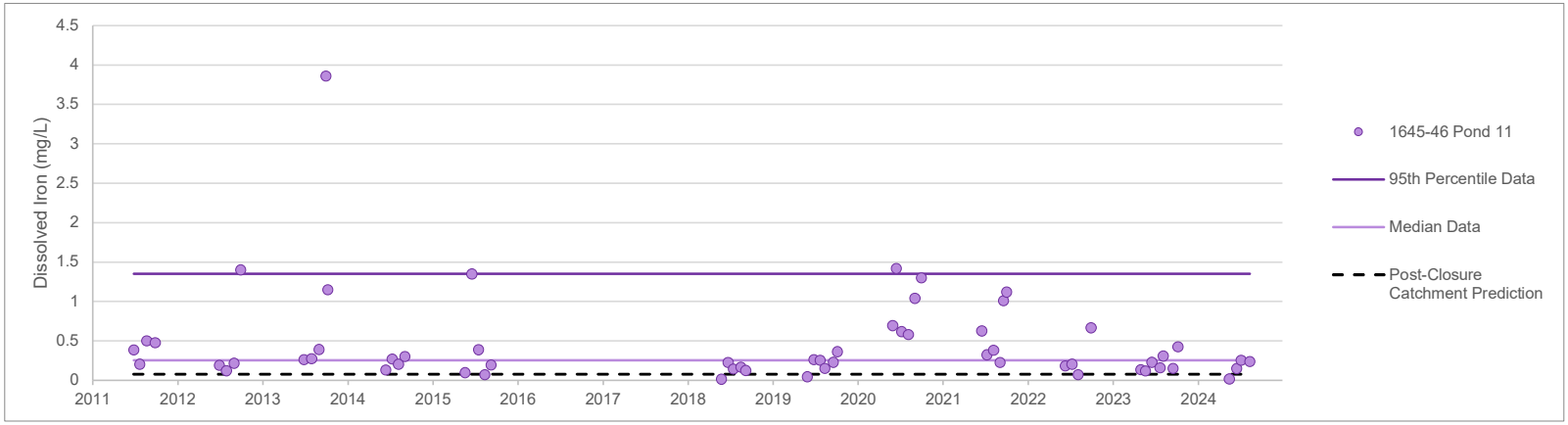
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0037	Wildlife	0.5
Median	0.0021	Human recreational	40.0
Count	60	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



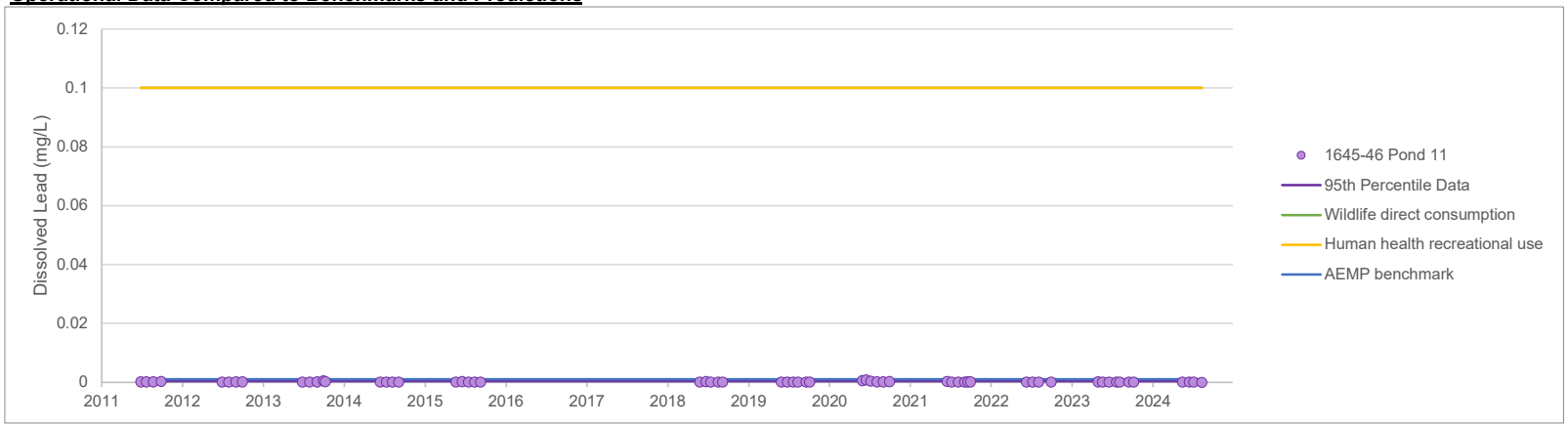


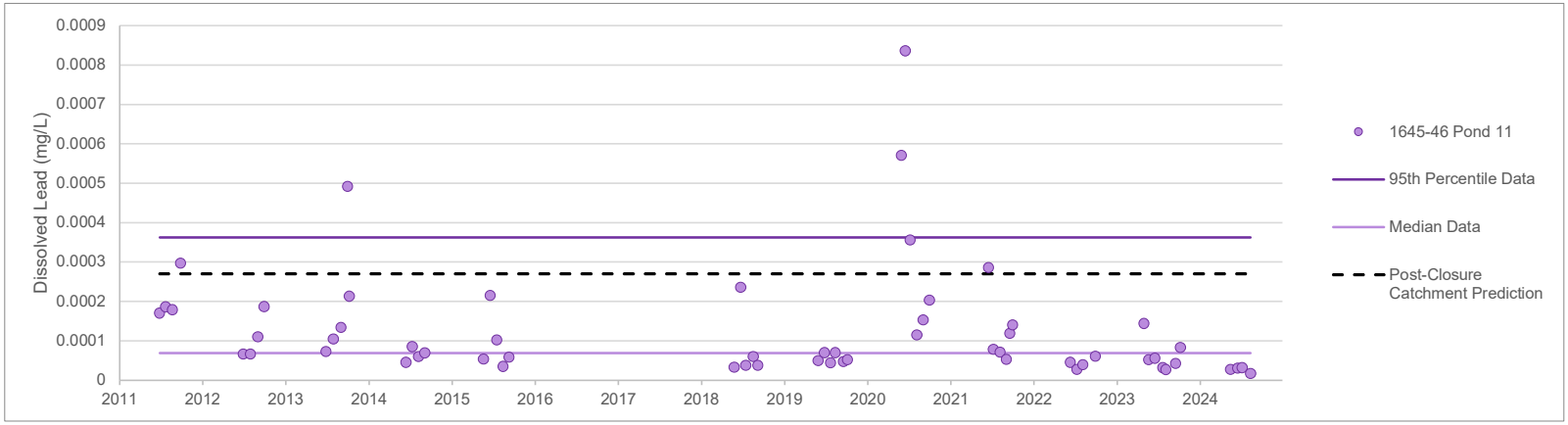
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	1.35	Wildlife	None
Median	0.25	Human recreational	6.0
Count	60	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



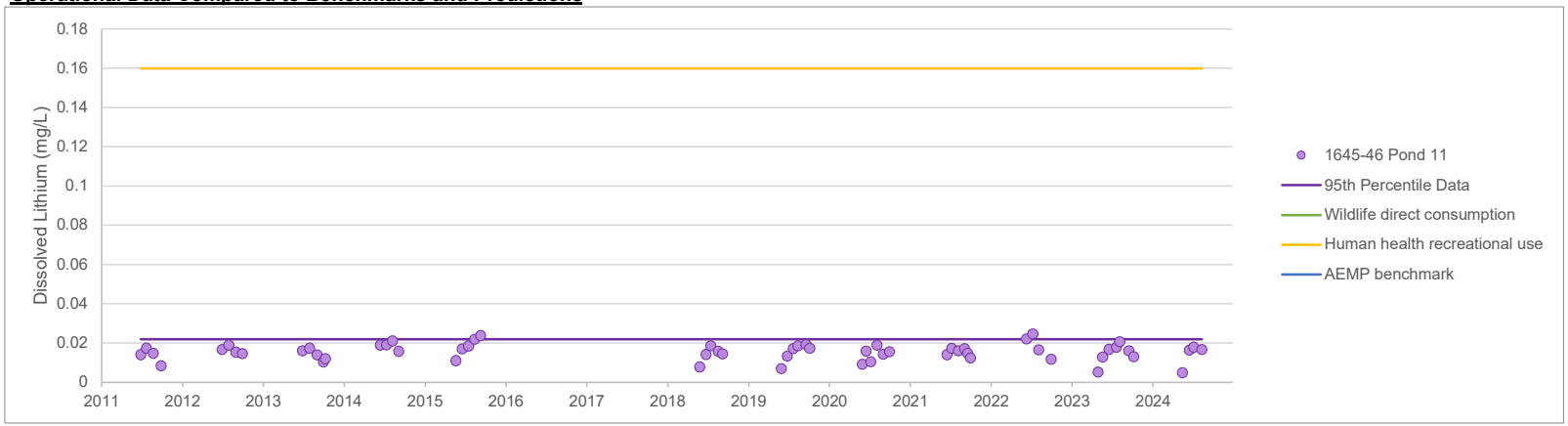


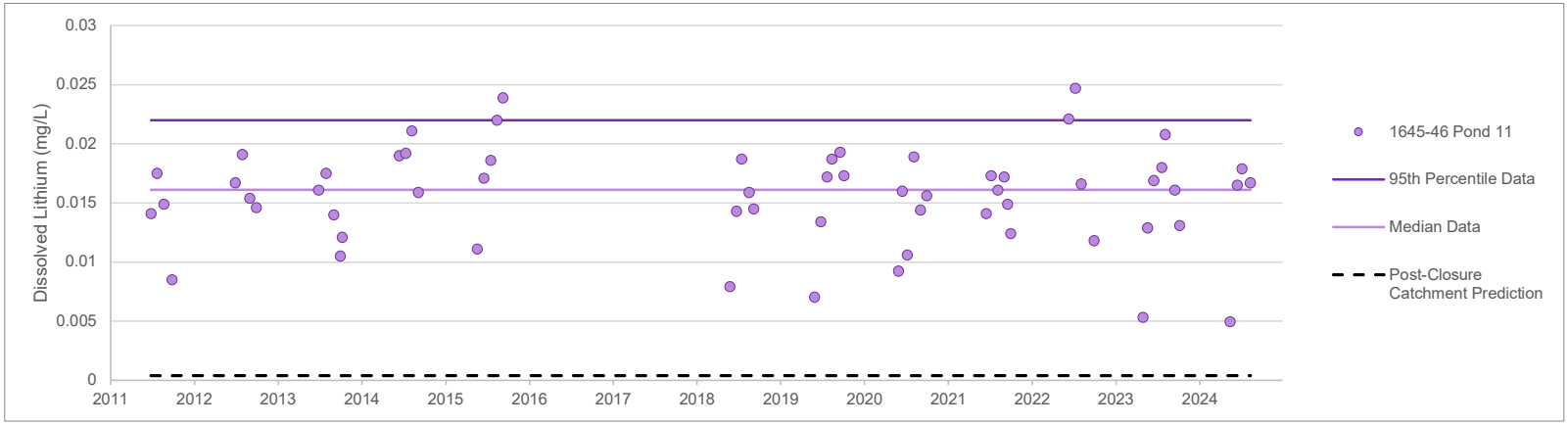
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00036	Wildlife	0.10
Median	0.00007	Human recreational	0.10
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



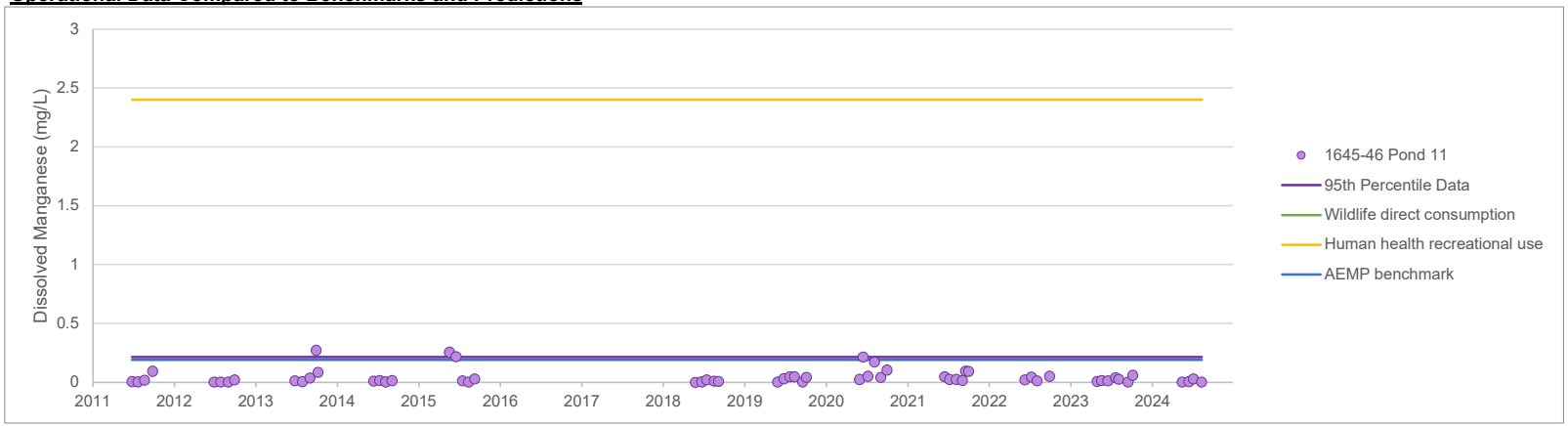


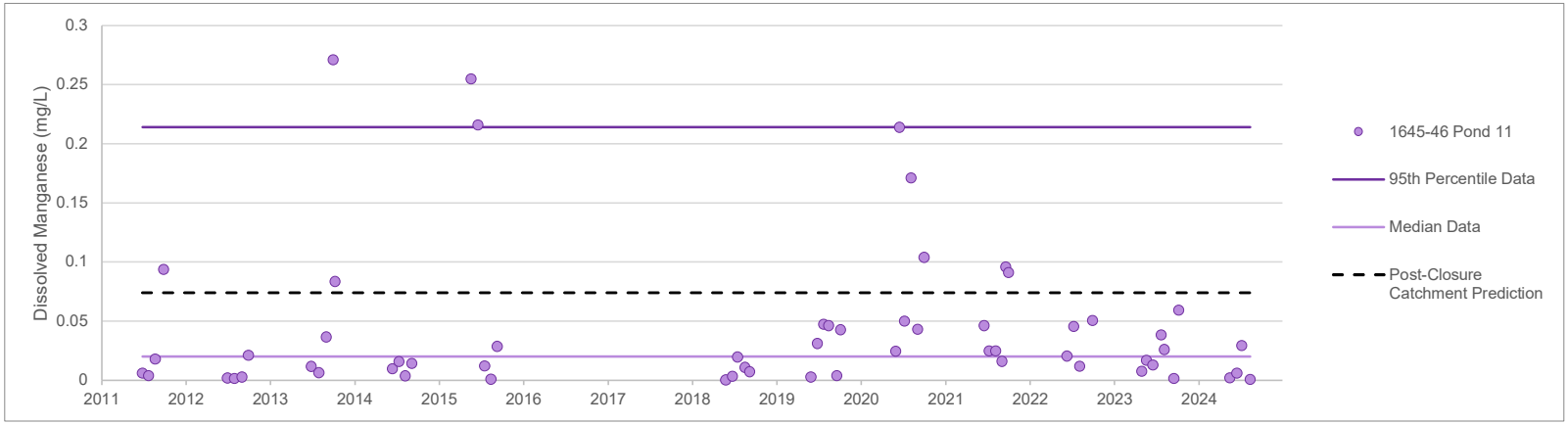
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.022	Wildlife	None
Median	0.016	Human recreational	0.16
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



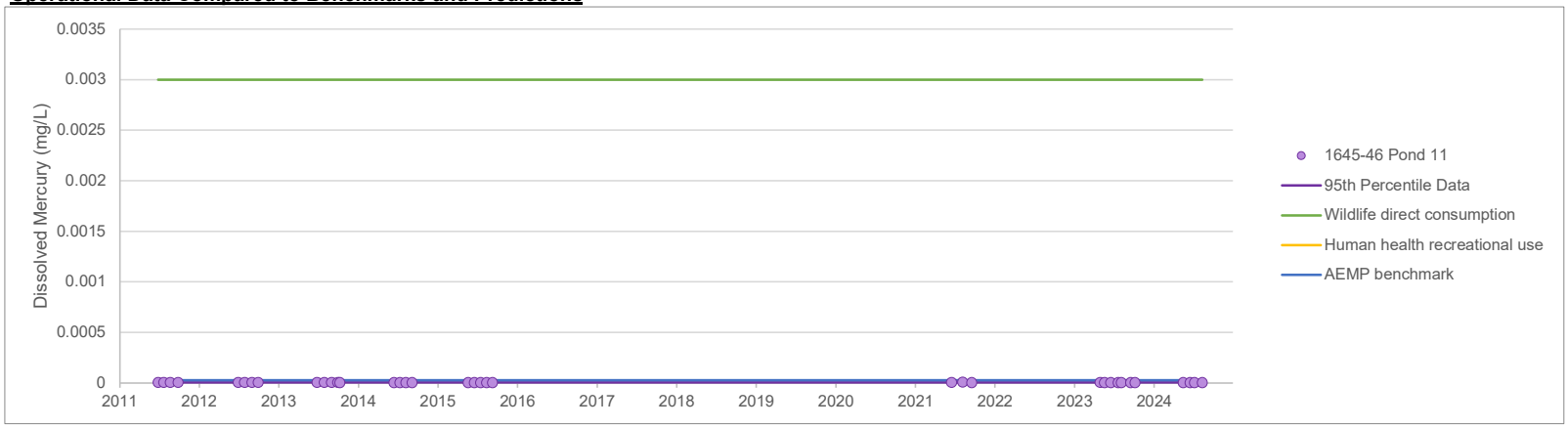


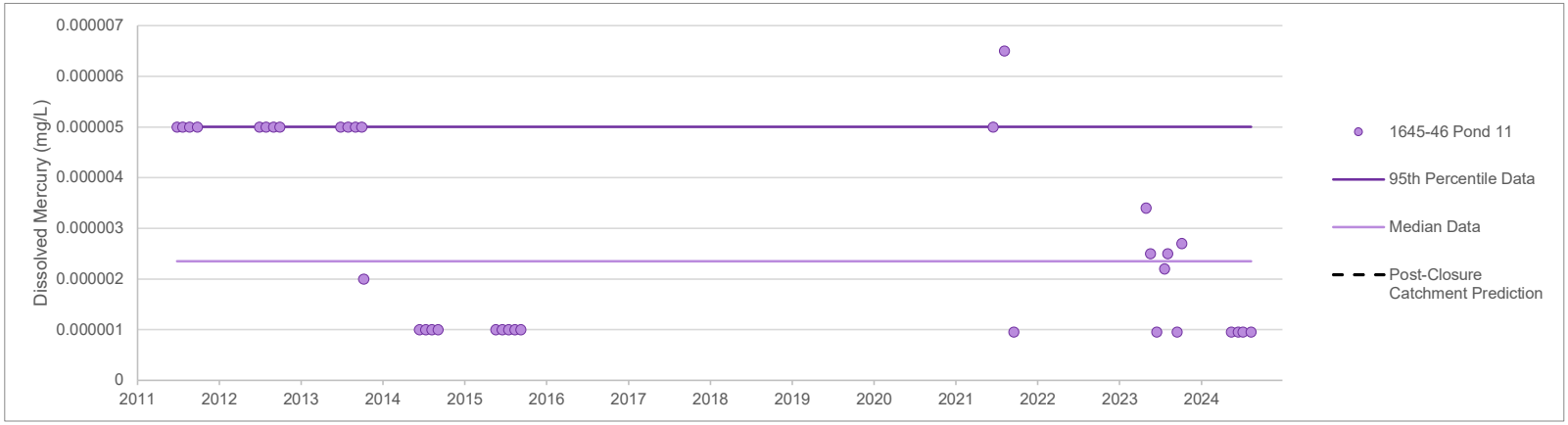
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.214	Wildlife	None
Median	0.020	Human recreational	2.4
Count	60	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



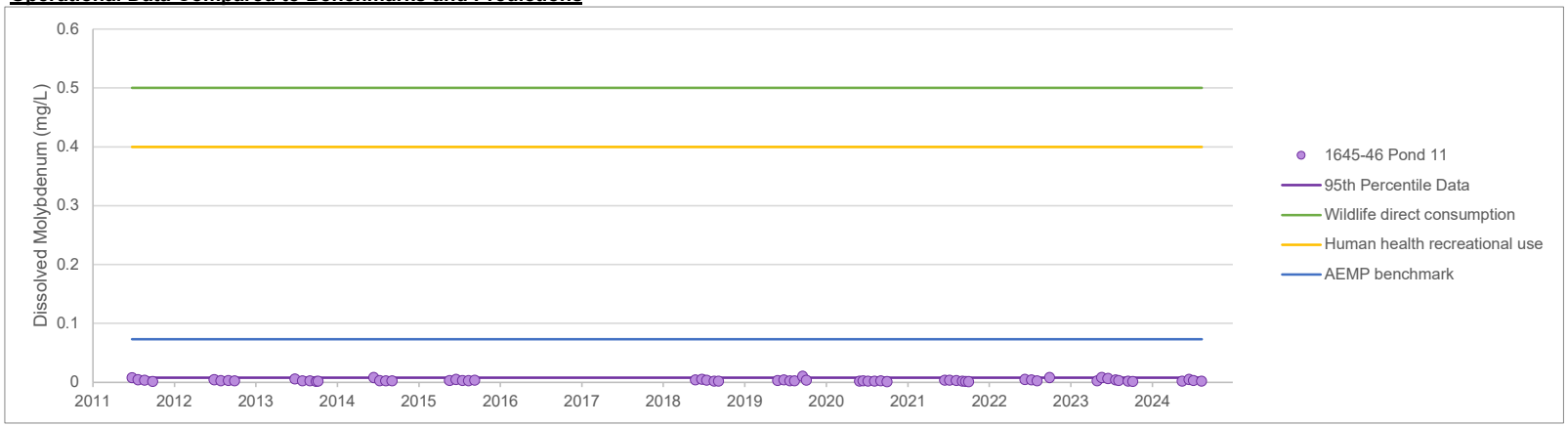


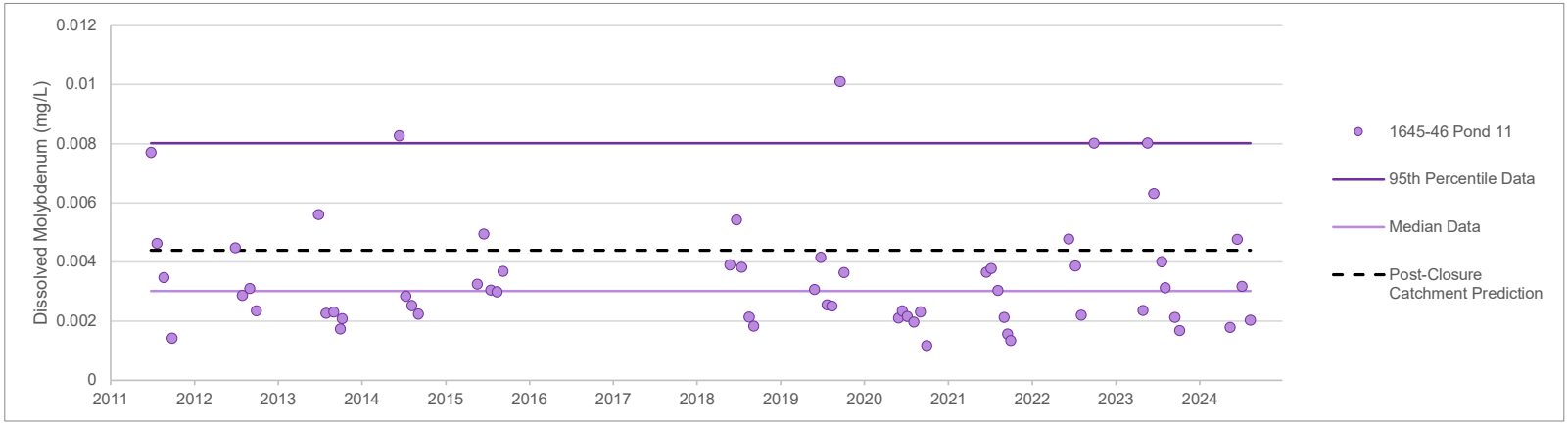
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000024	Human recreational	None
Count	36	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



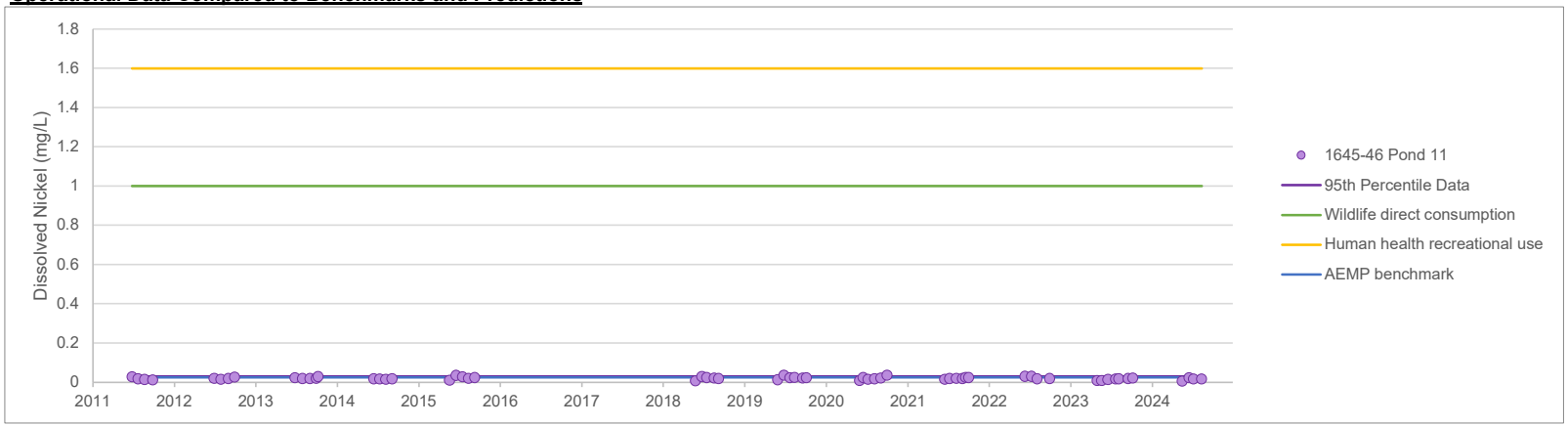


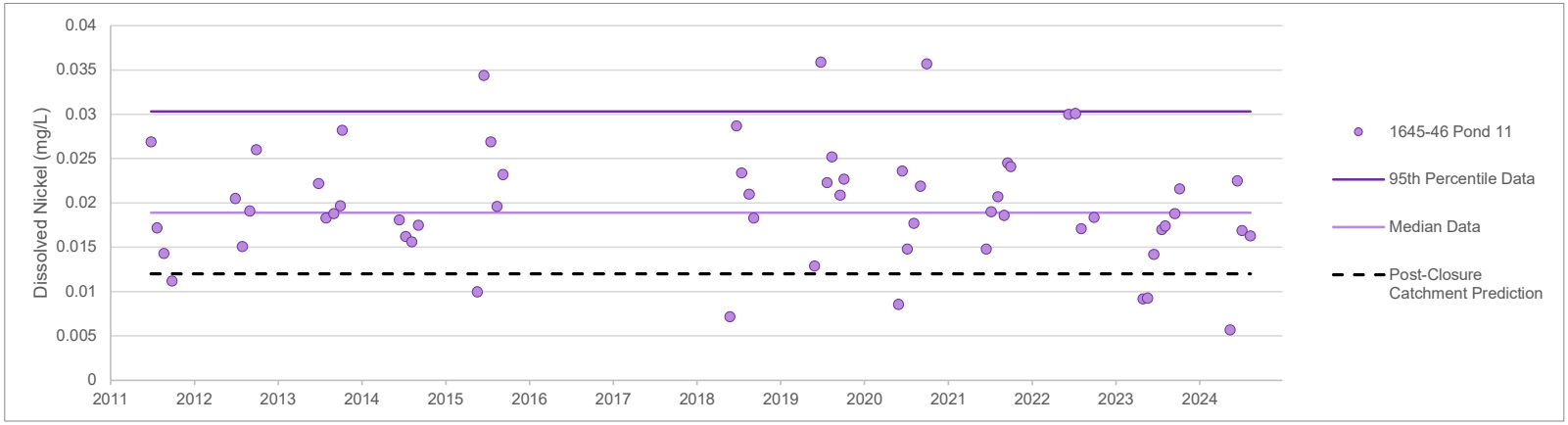
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0080	Wildlife	0.5
Median	0.0030	Human recreational	0.4
Count	60	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



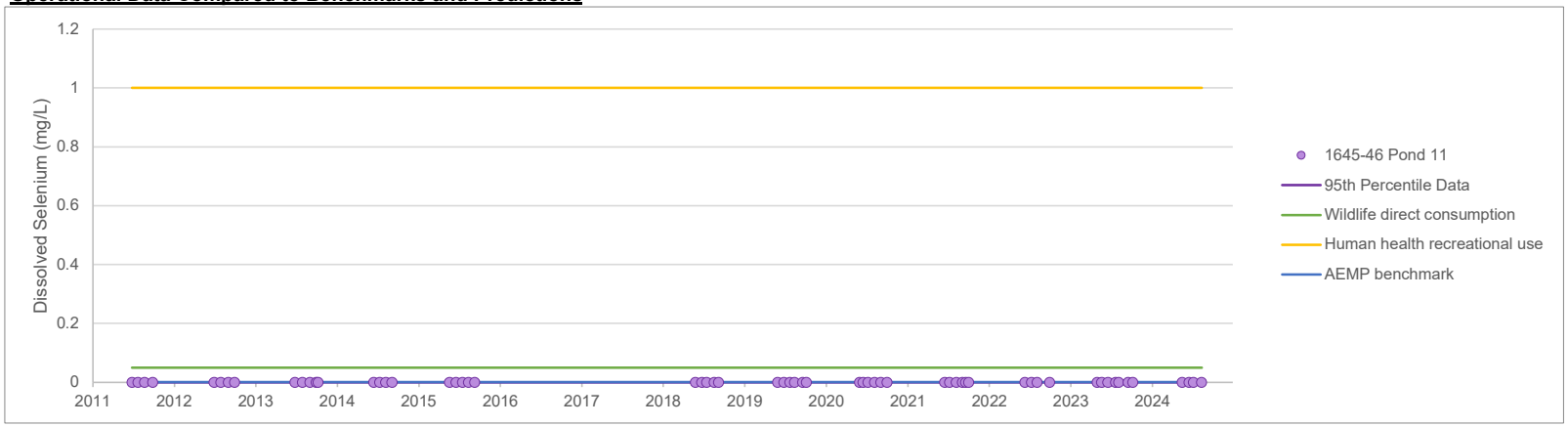


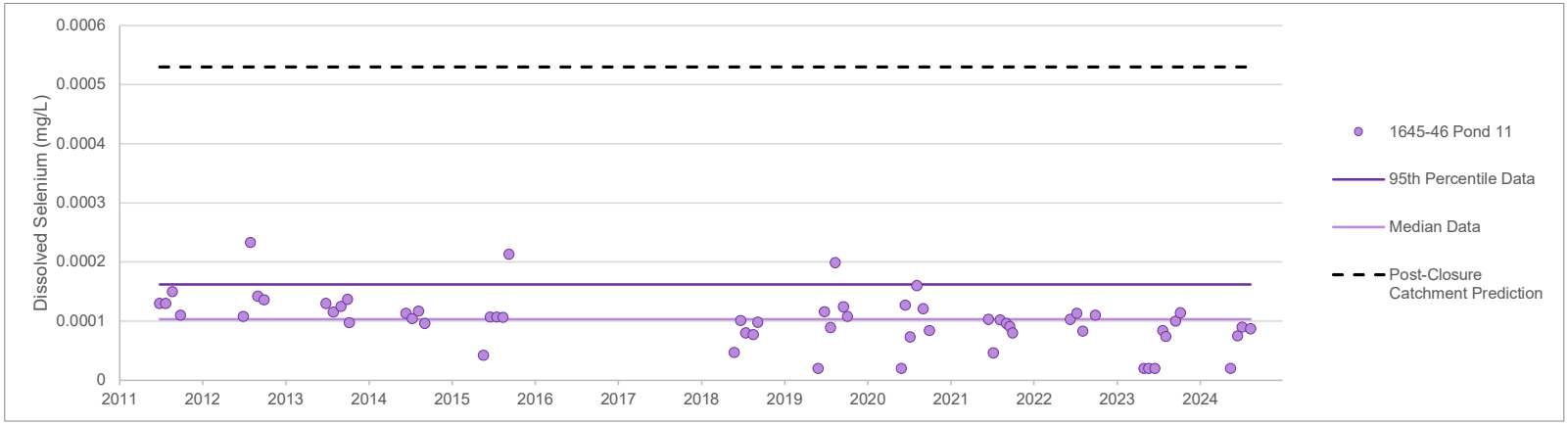
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.030	Wildlife	1.0
Median	0.019	Human recreational	1.6
Count	60	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



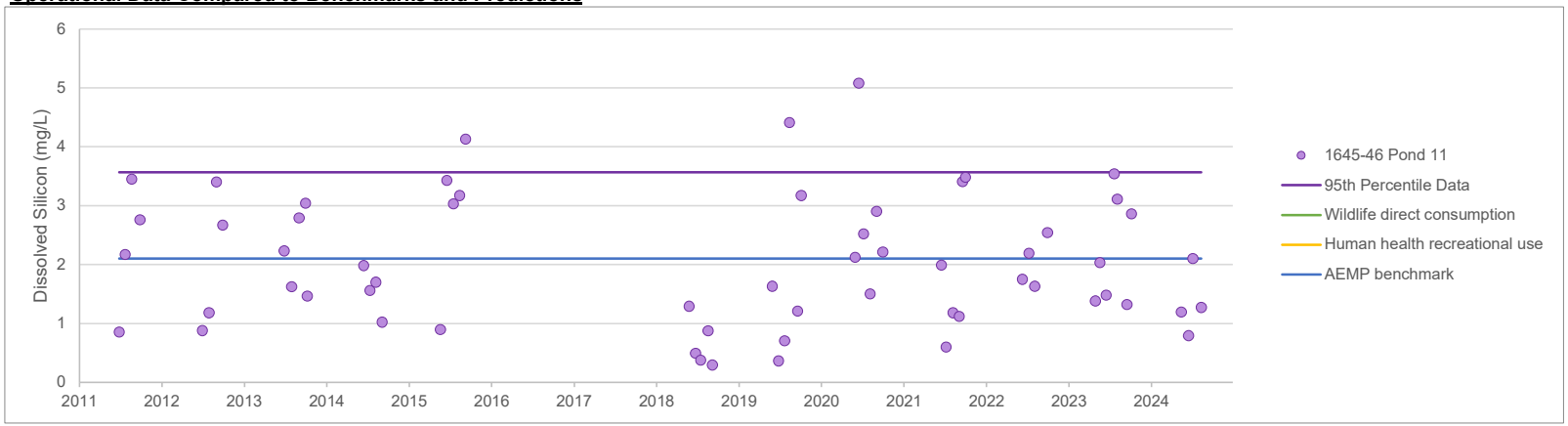


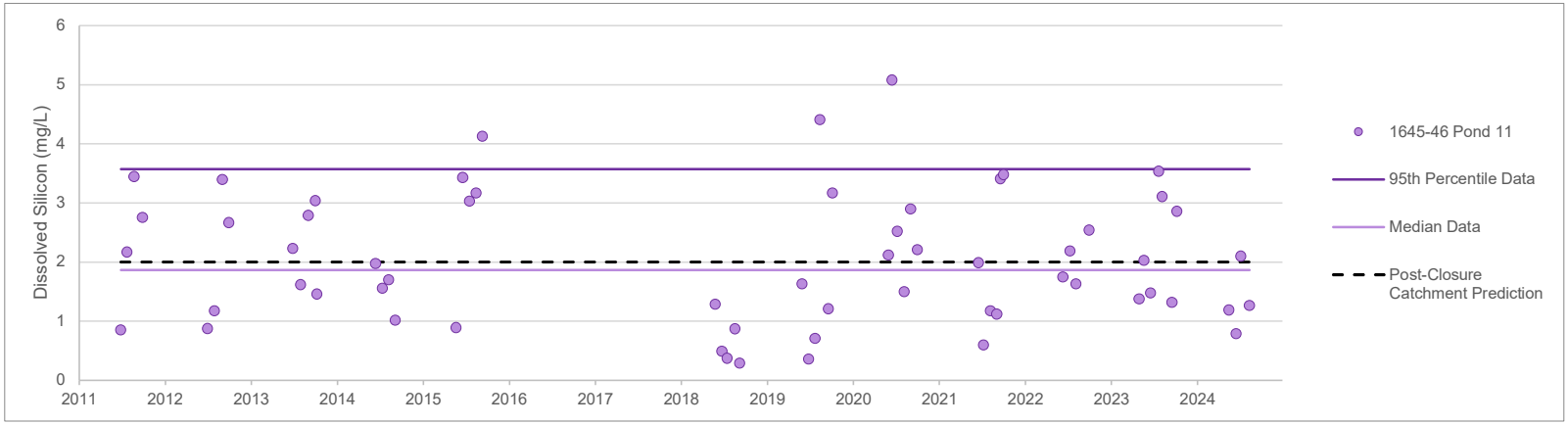
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00016	Wildlife	0.1
Median	0.00010	Human recreational	1.0
Count	60	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



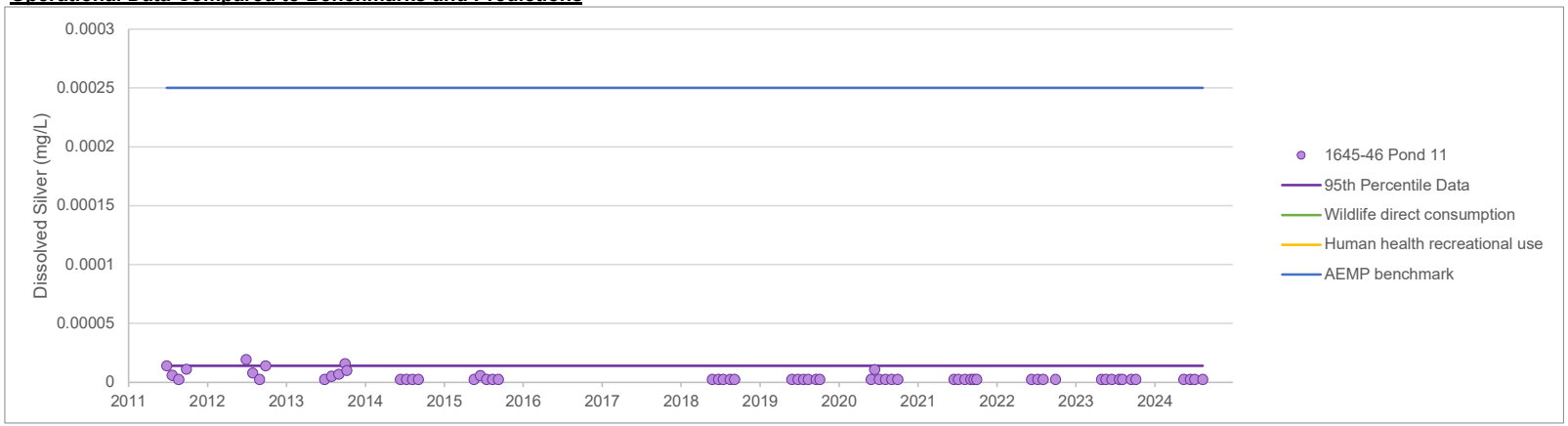


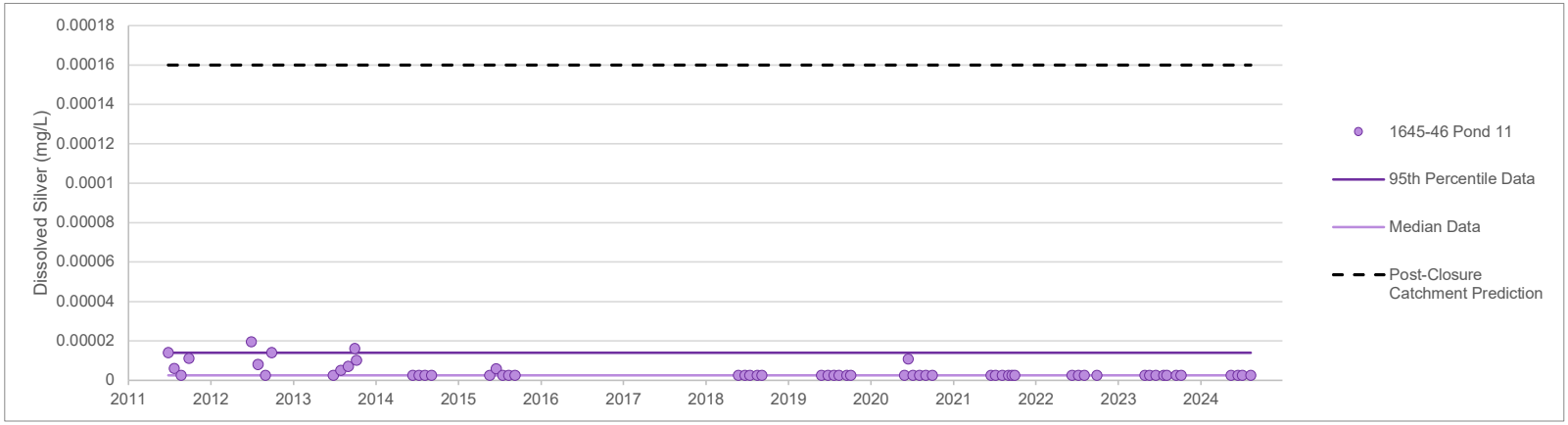
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.57	Wildlife	None
Median	1.87	Human recreational	None
Count	60	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



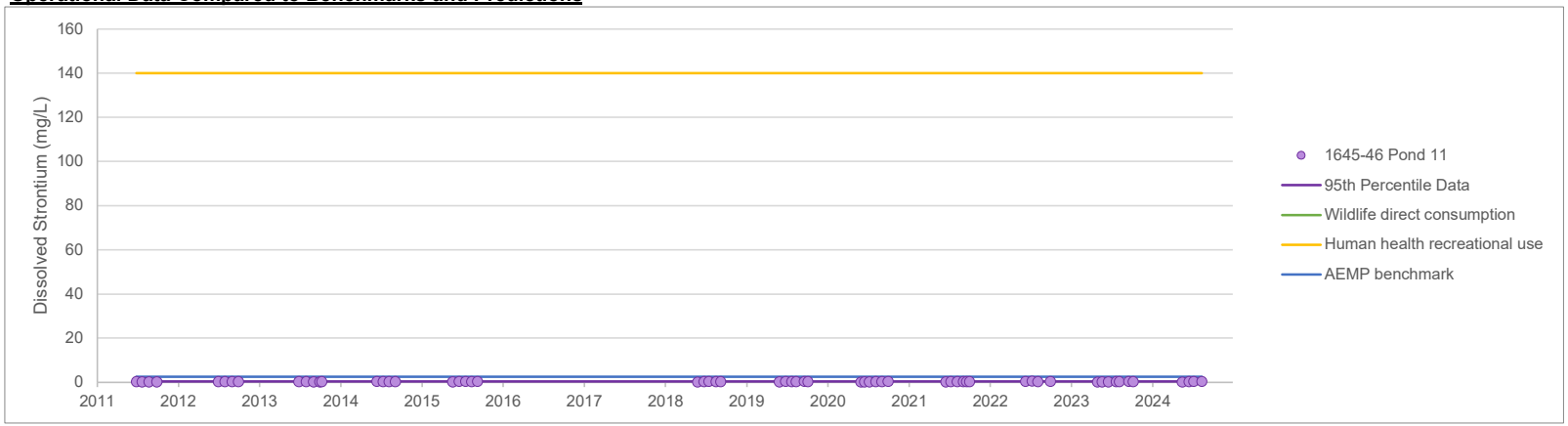


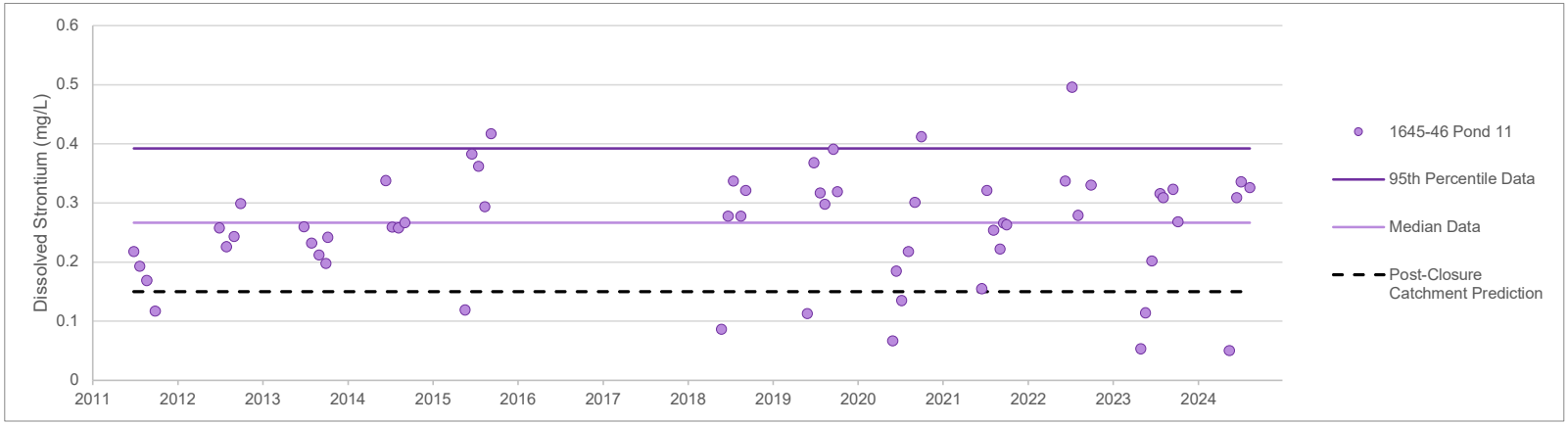
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000014	Wildlife	None
Median	0.000003	Human recreational	None
Count	60	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



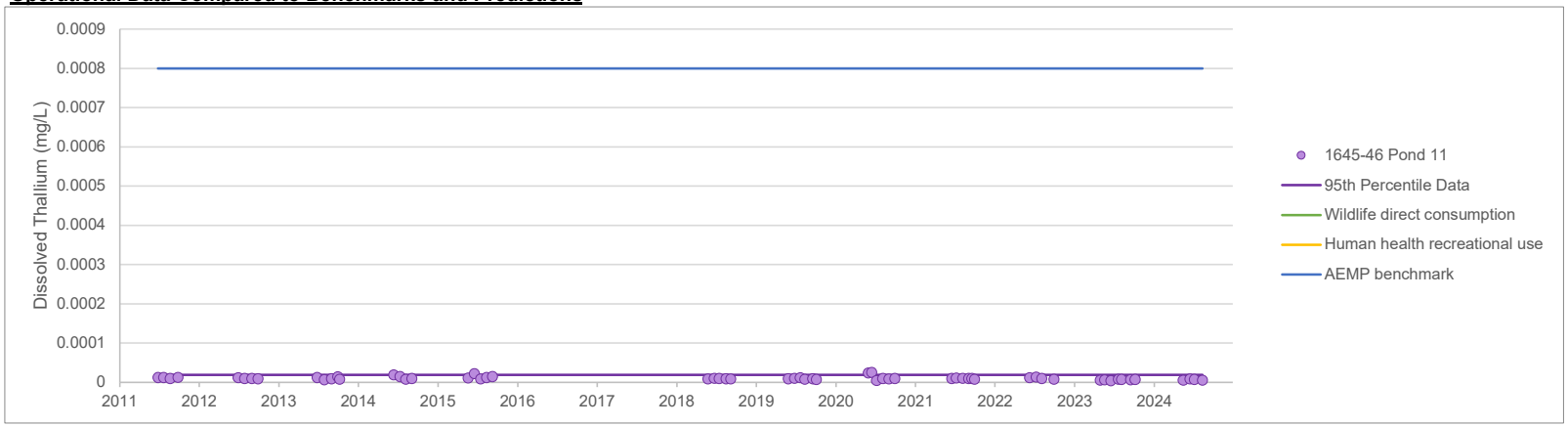


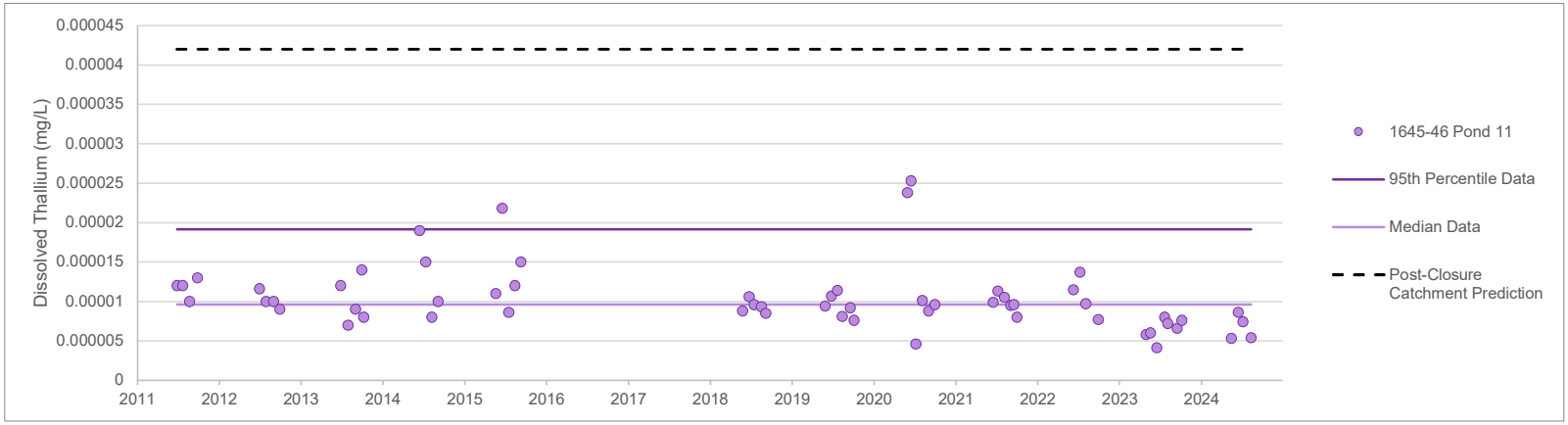
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.39	Wildlife	None
Median	0.27	Human recreational	140
Count	60	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



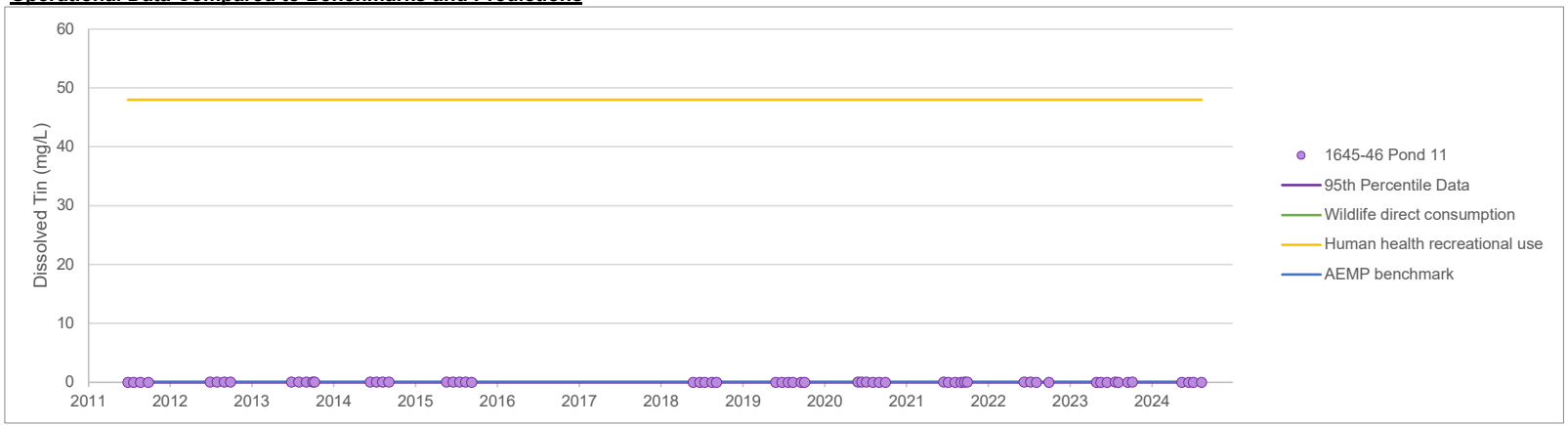


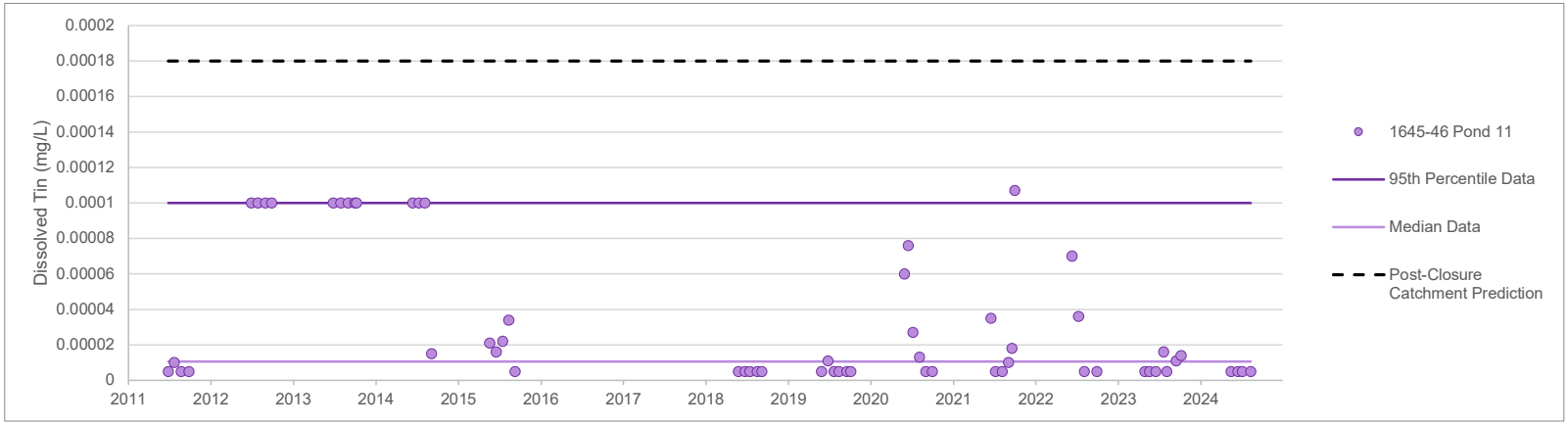
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00002	Wildlife	None
Median	0.00001	Human recreational	None
Count	60	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



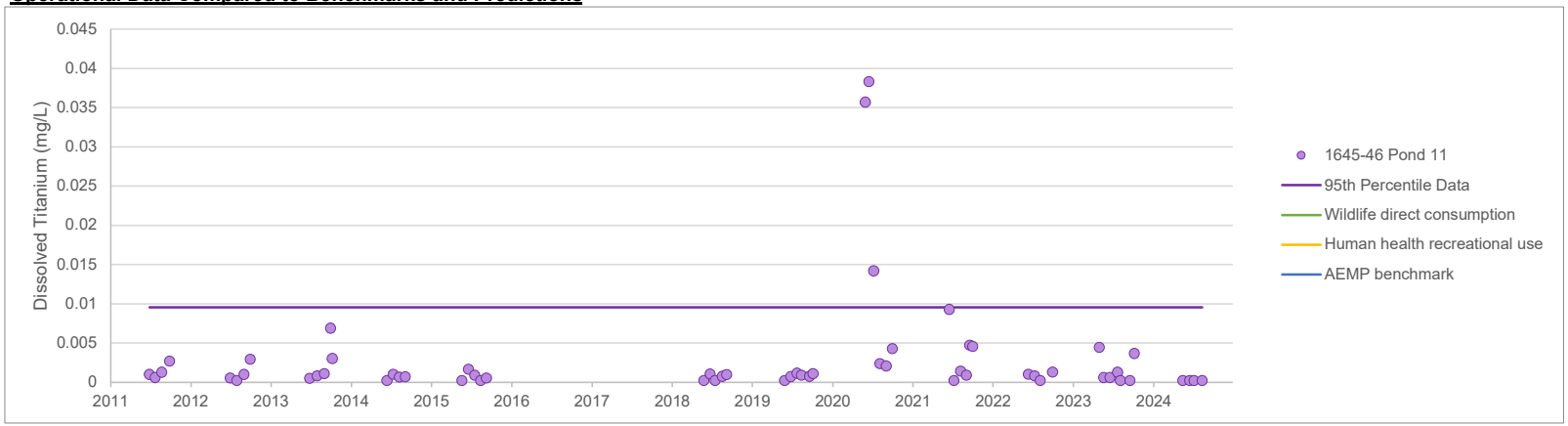


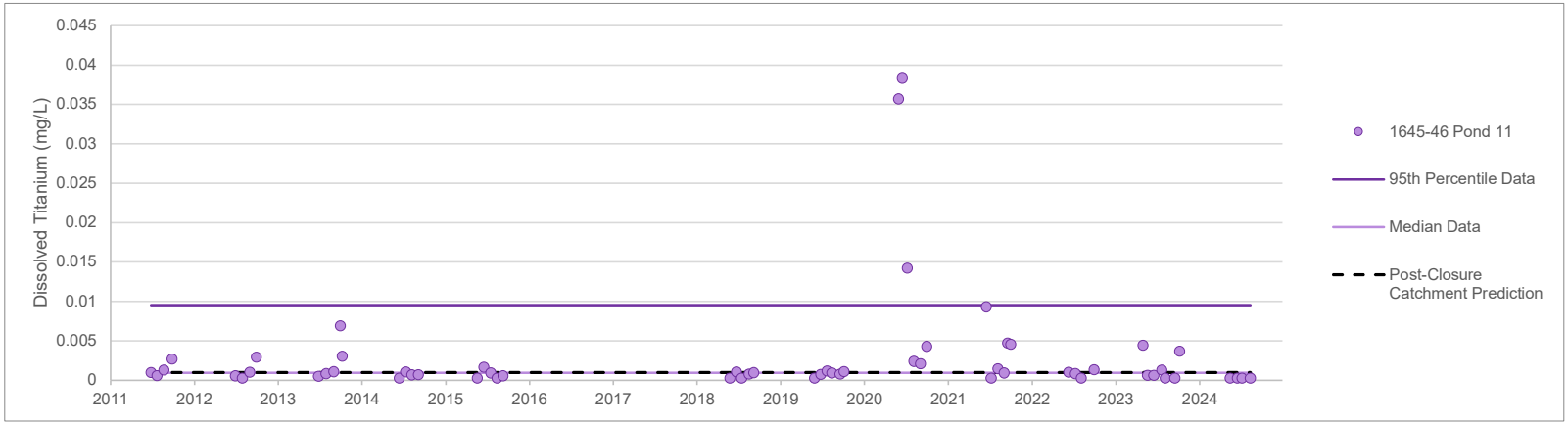
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	60	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



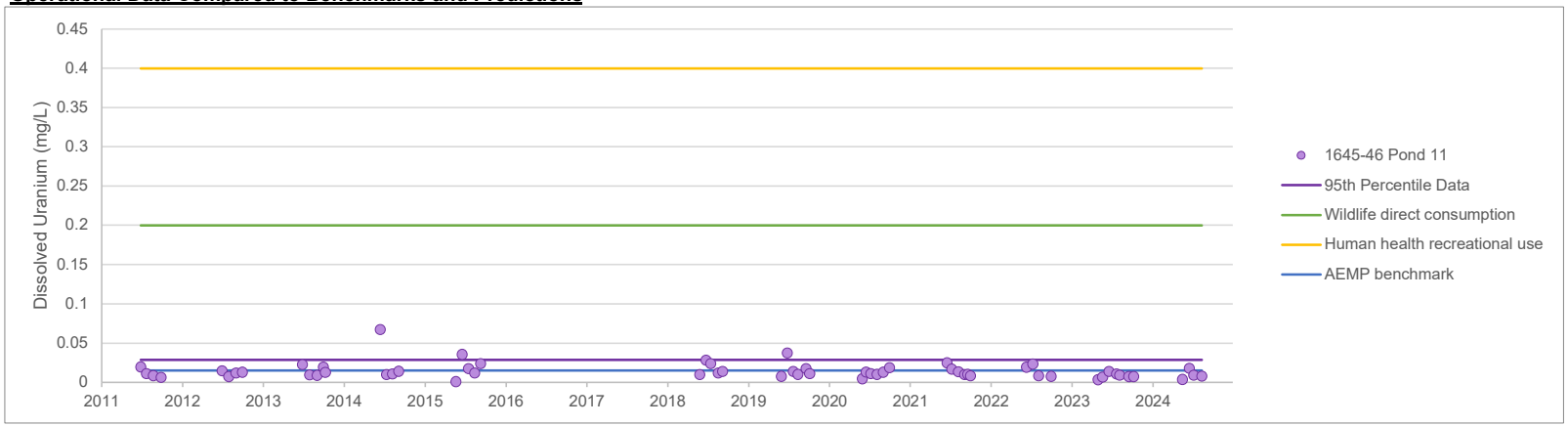


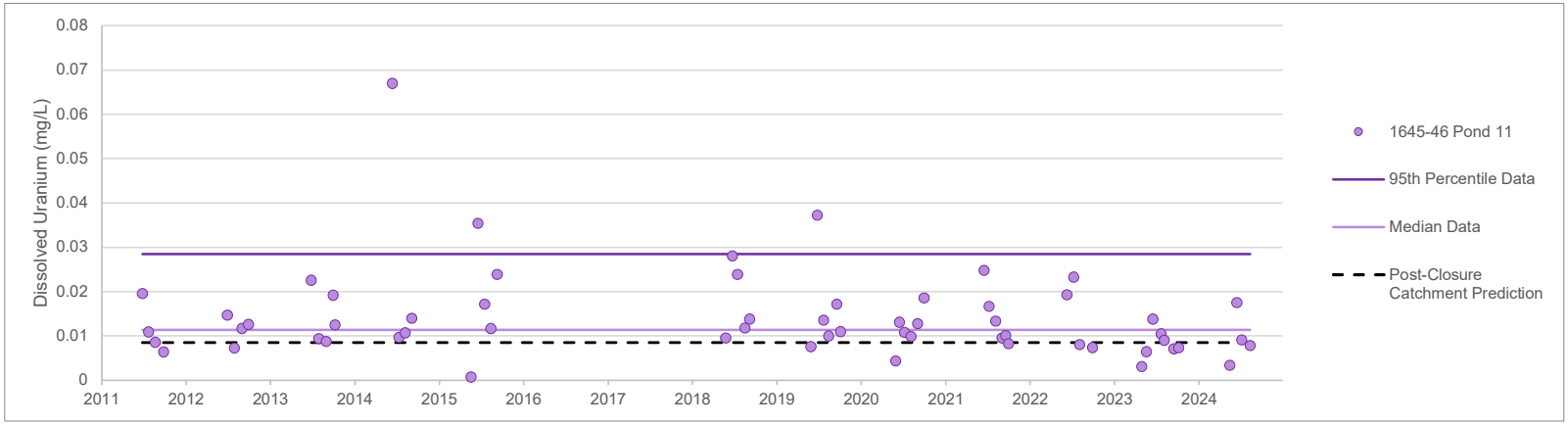
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0095	Wildlife	None
Median	0.0009	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



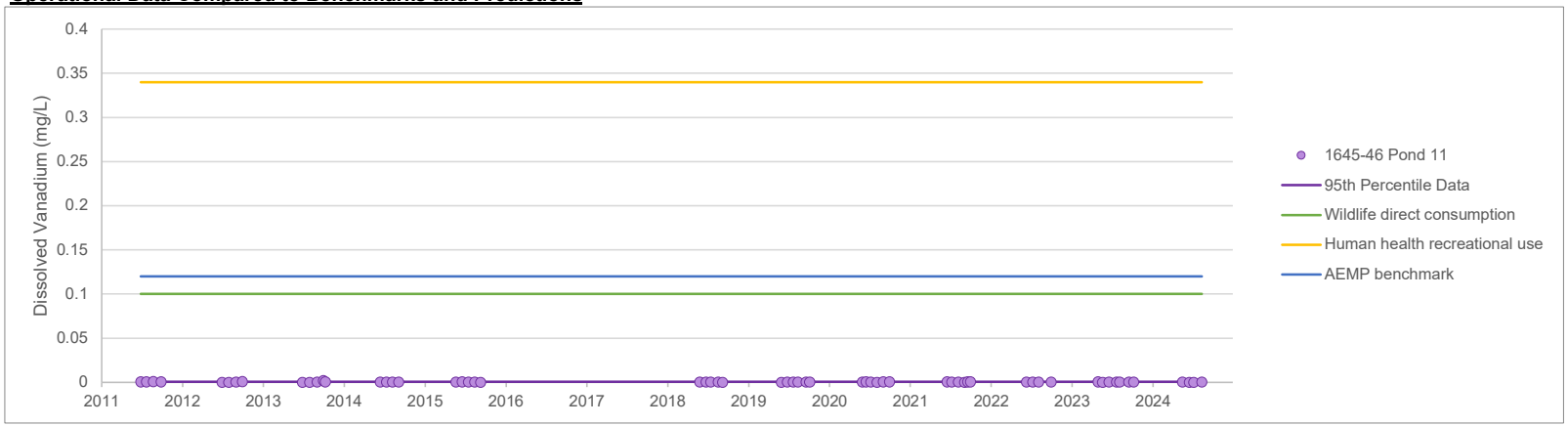


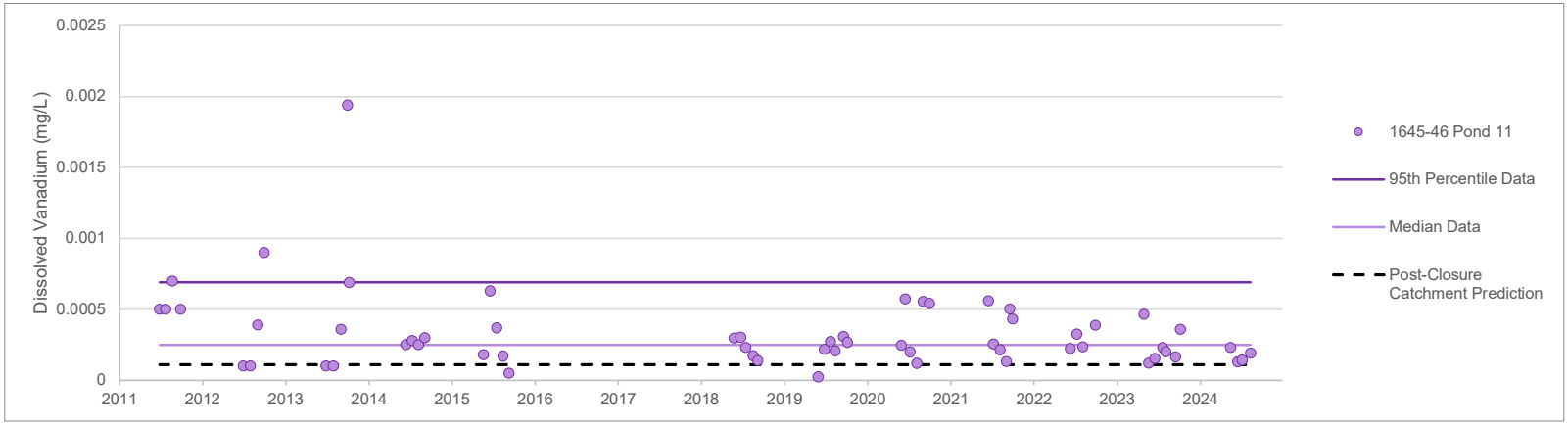
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0285	Wildlife	0.2
Median	0.0114	Human recreational	0.4
Count	60	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



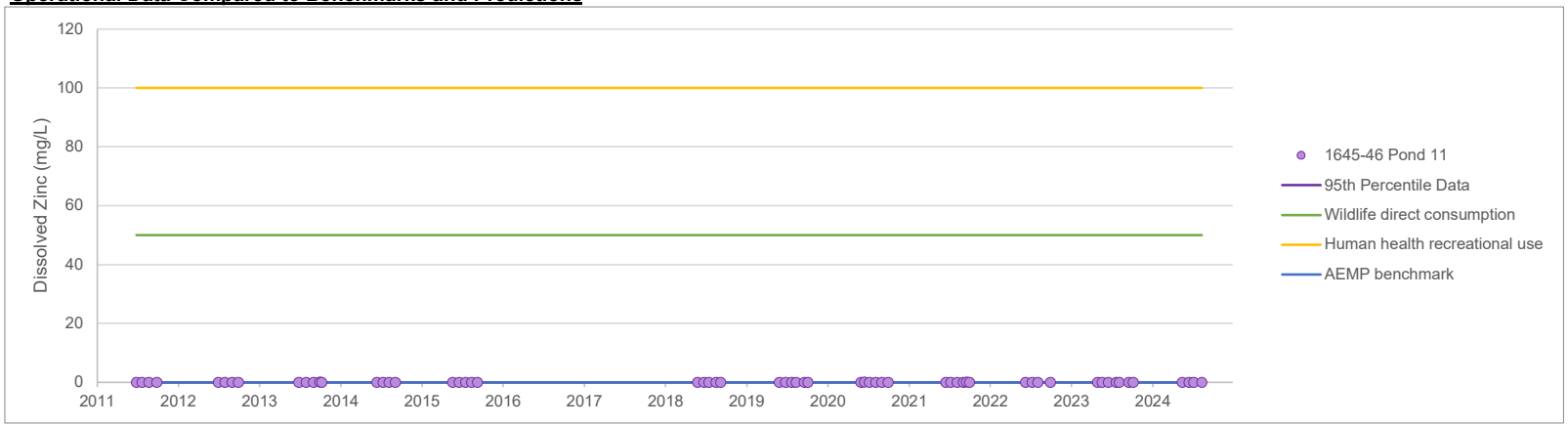


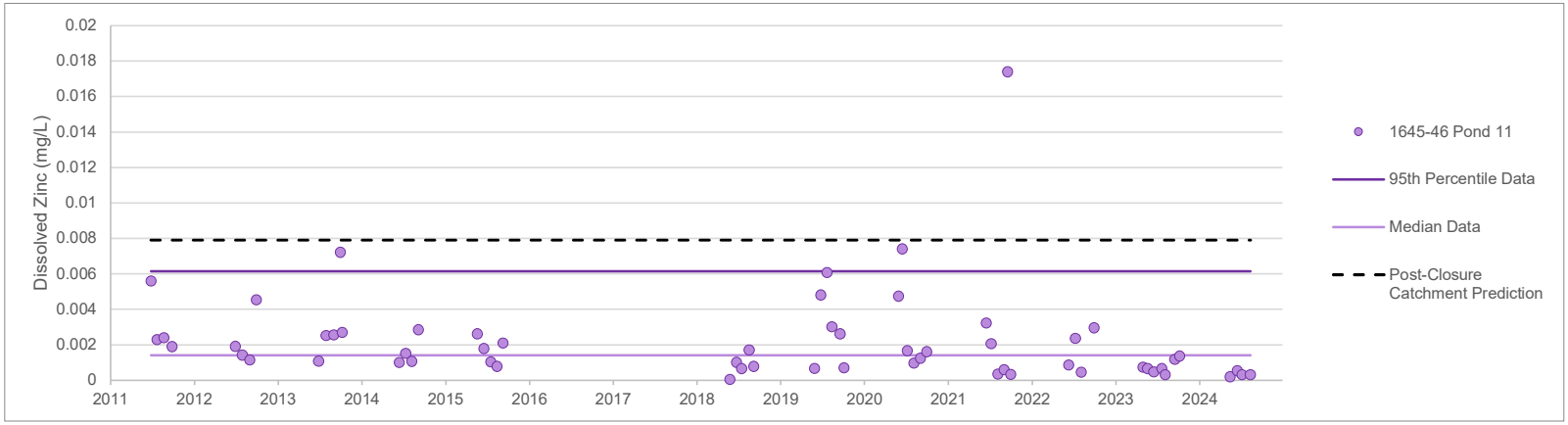
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0007	Wildlife	0.1
Median	0.0003	Human recreational	0.3
Count	60	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



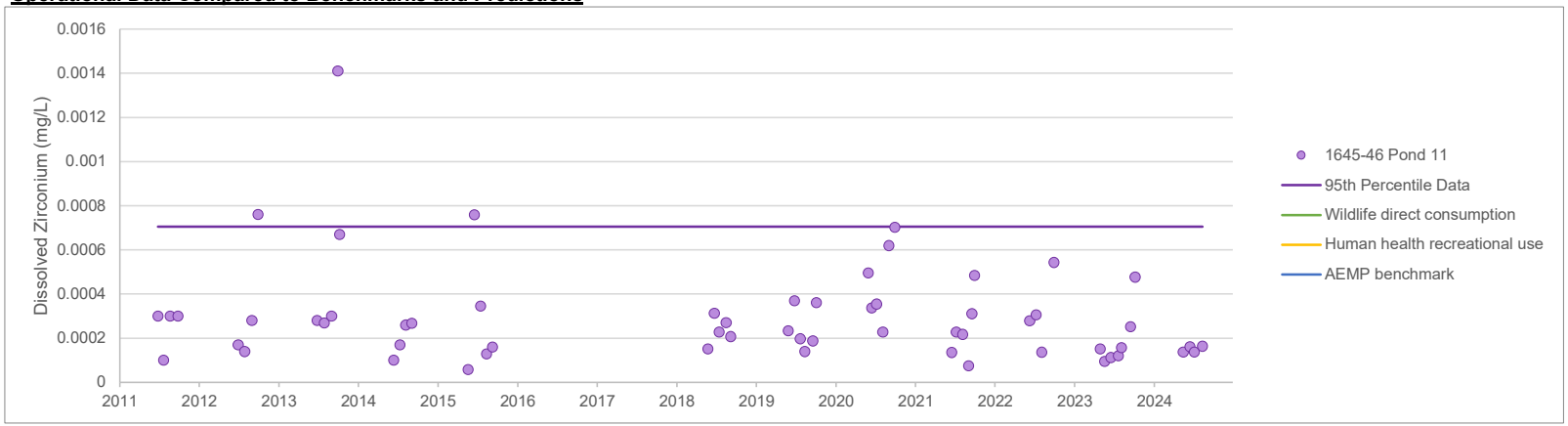


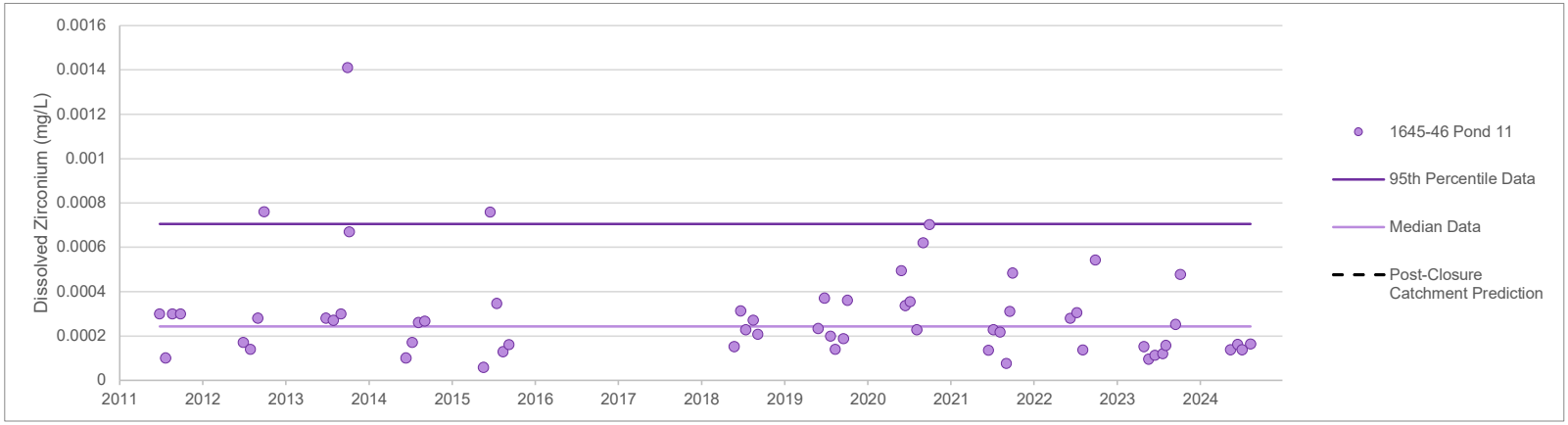
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.006	Wildlife	50
Median	0.001	Human recreational	100
Count	60	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0007	Wildlife	None
Median	0.0002	Human recreational	None
Count	60	AEMP	None

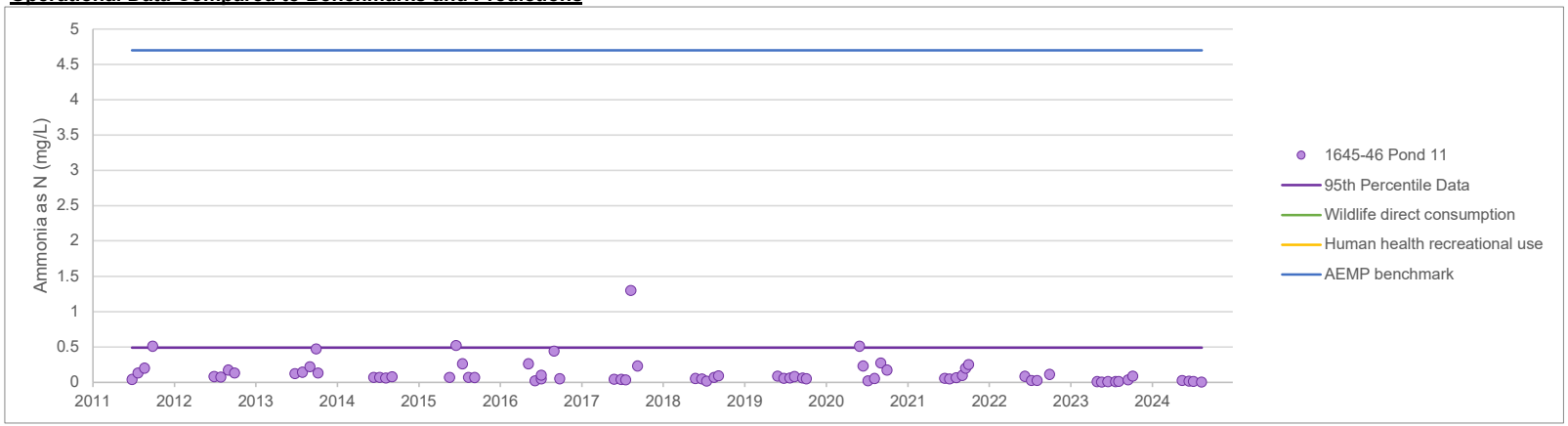
RioTinto | Diavik

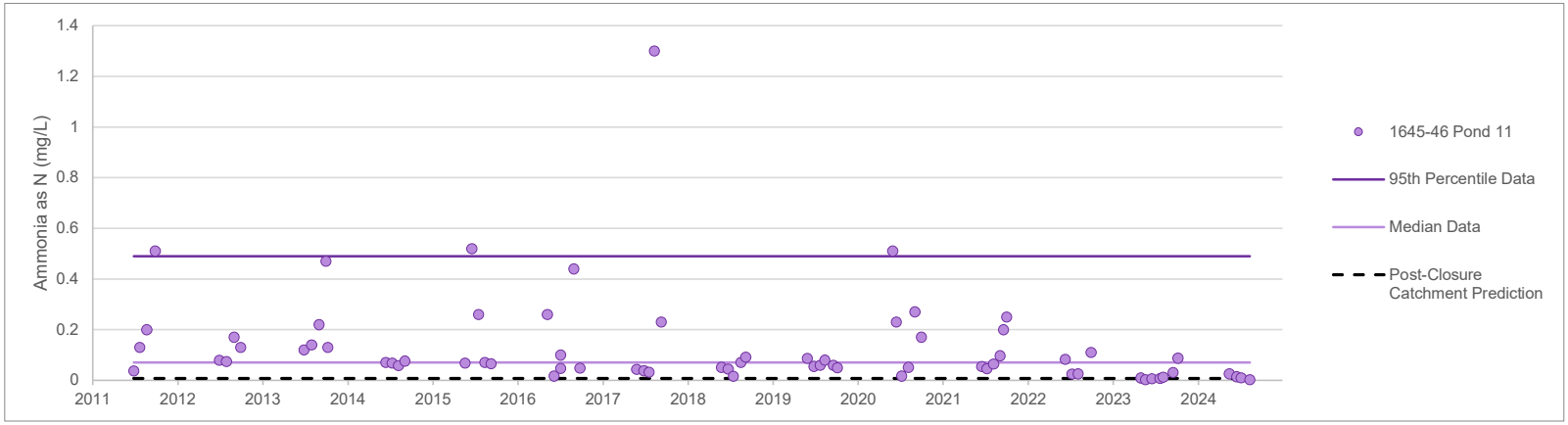
Pond 11

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



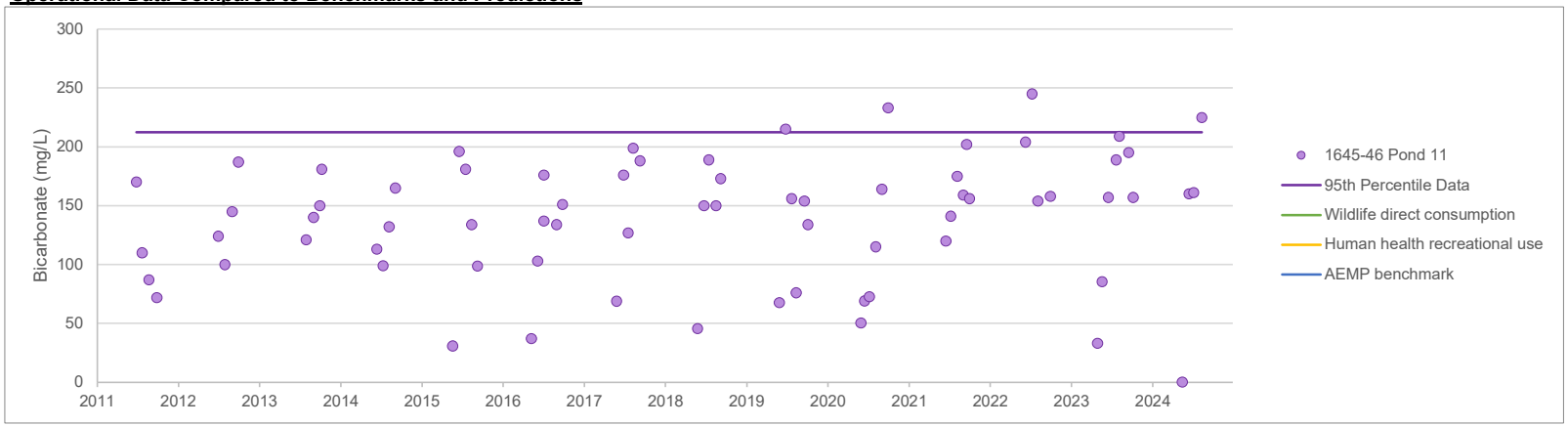


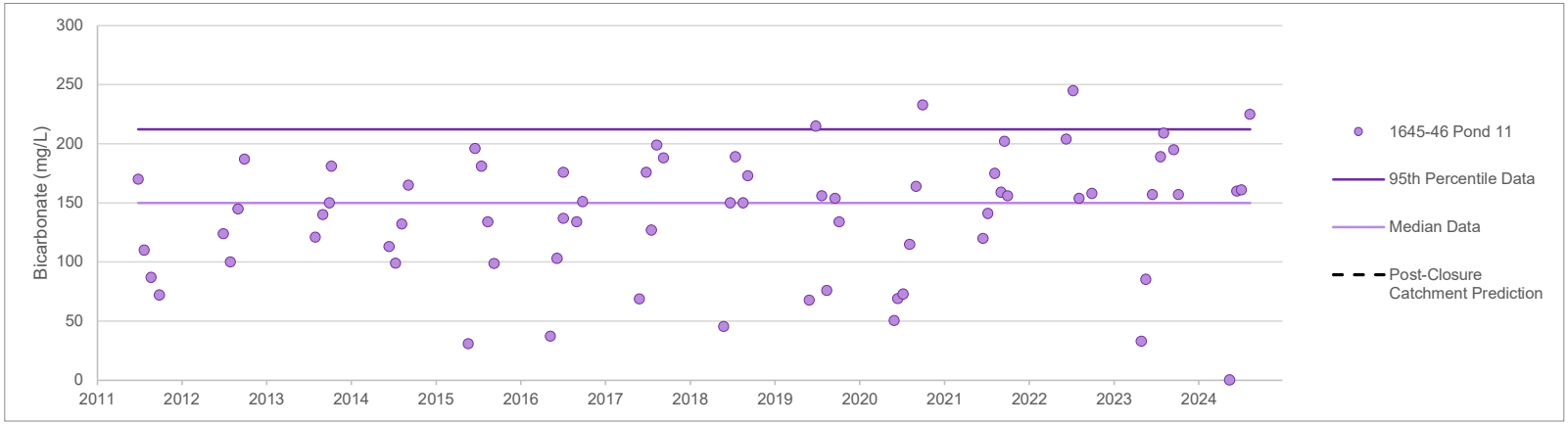
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.49	Wildlife	None
Median	0.07	Human recreational	None
Count	71	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



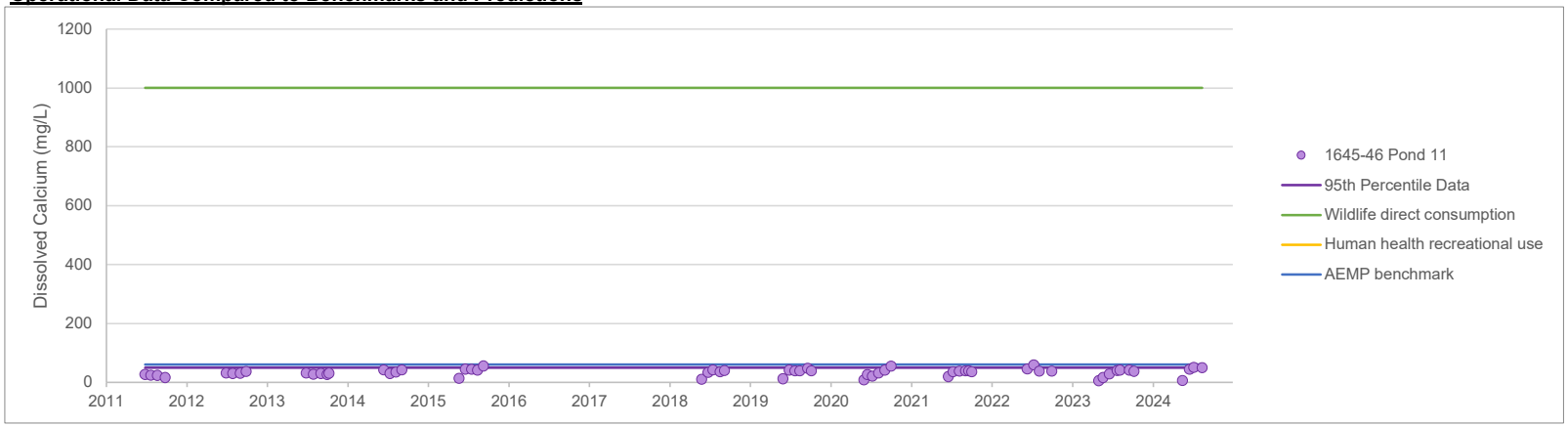


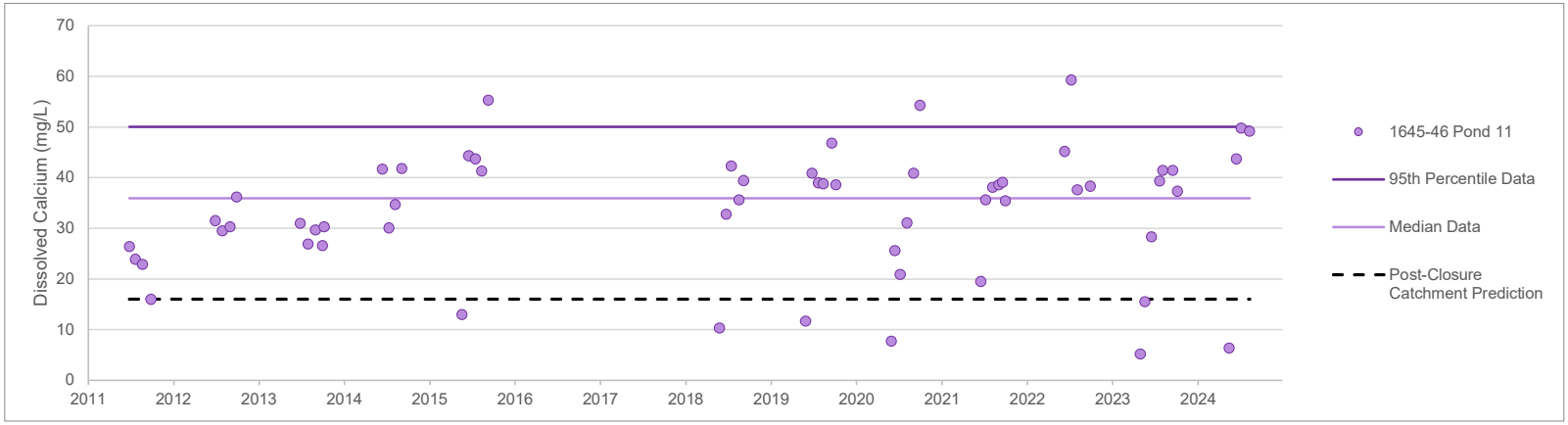
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	212.3	Wildlife	None
Median	150.0	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



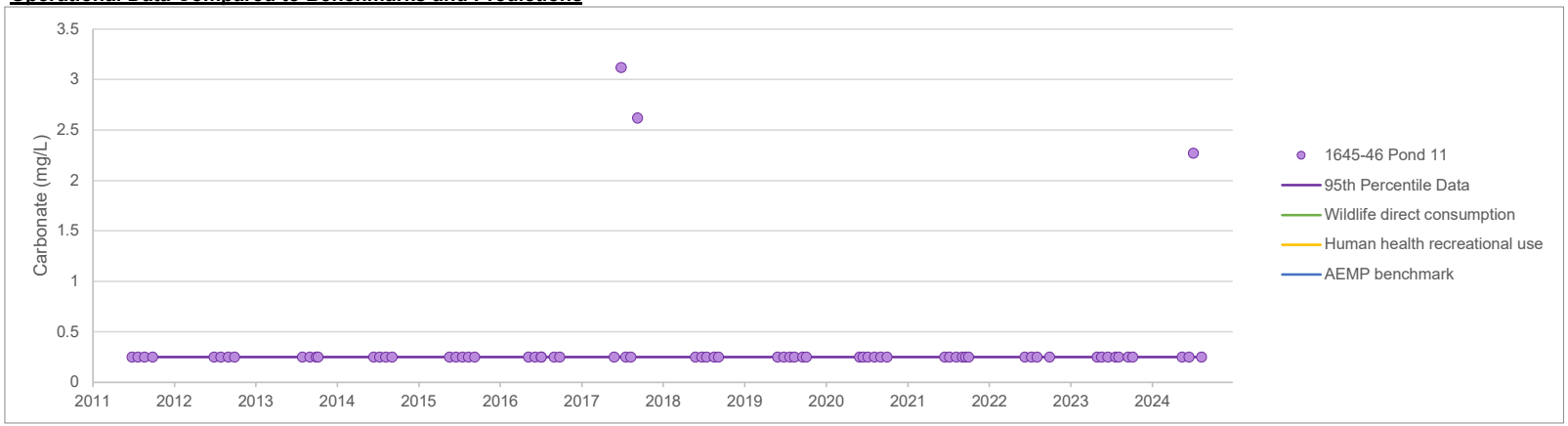


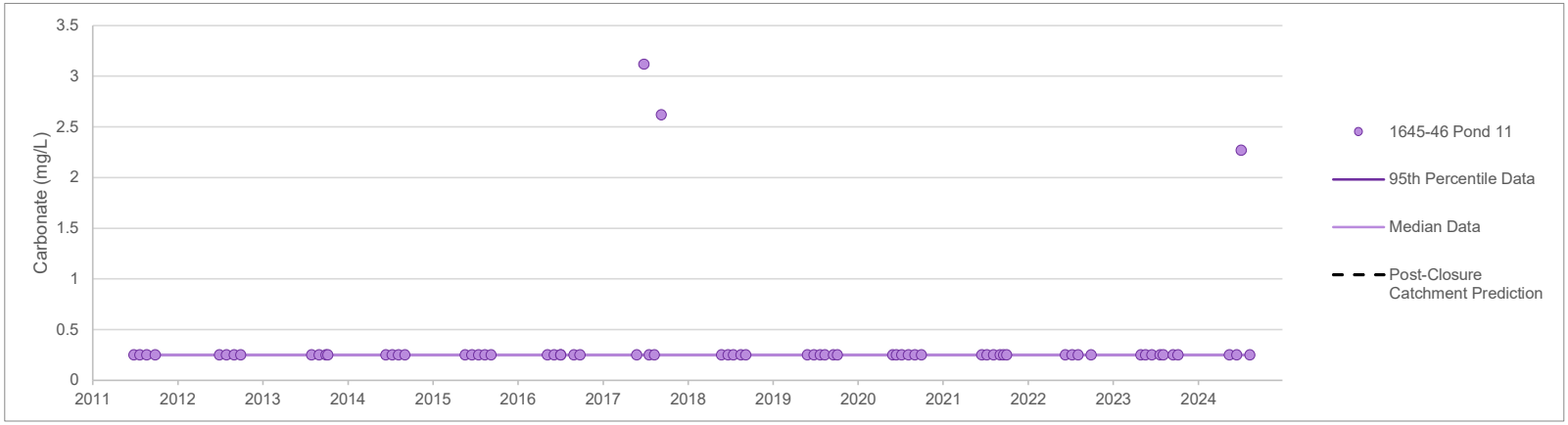
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	50.0	Wildlife	1000
Median	35.9	Human recreational	None
Count	60	AEMP	60

Operational Data Compared to Benchmarks and Predictions



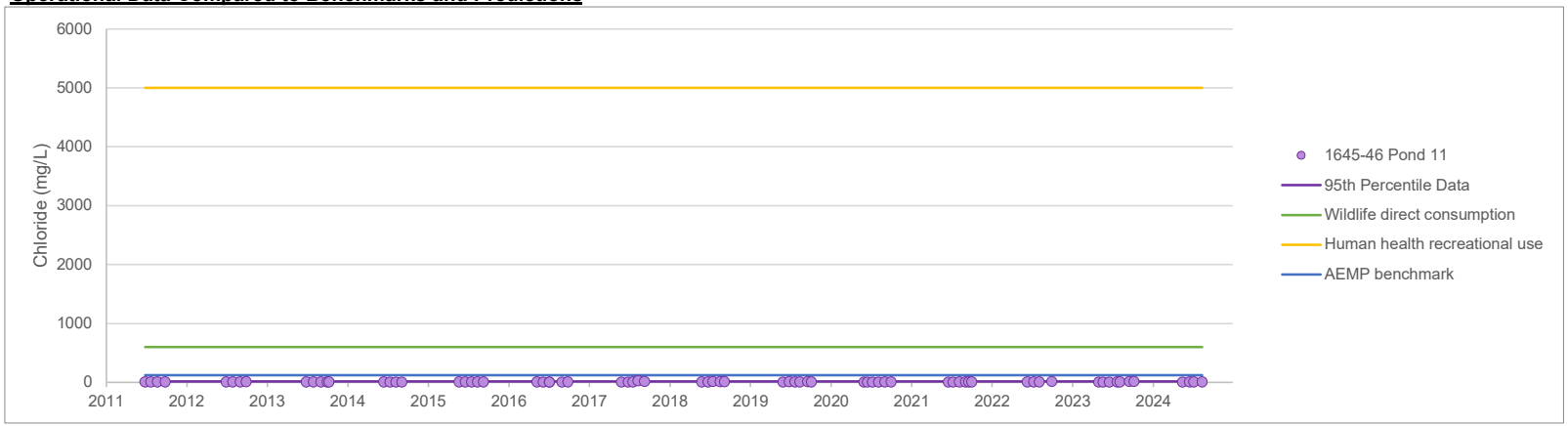


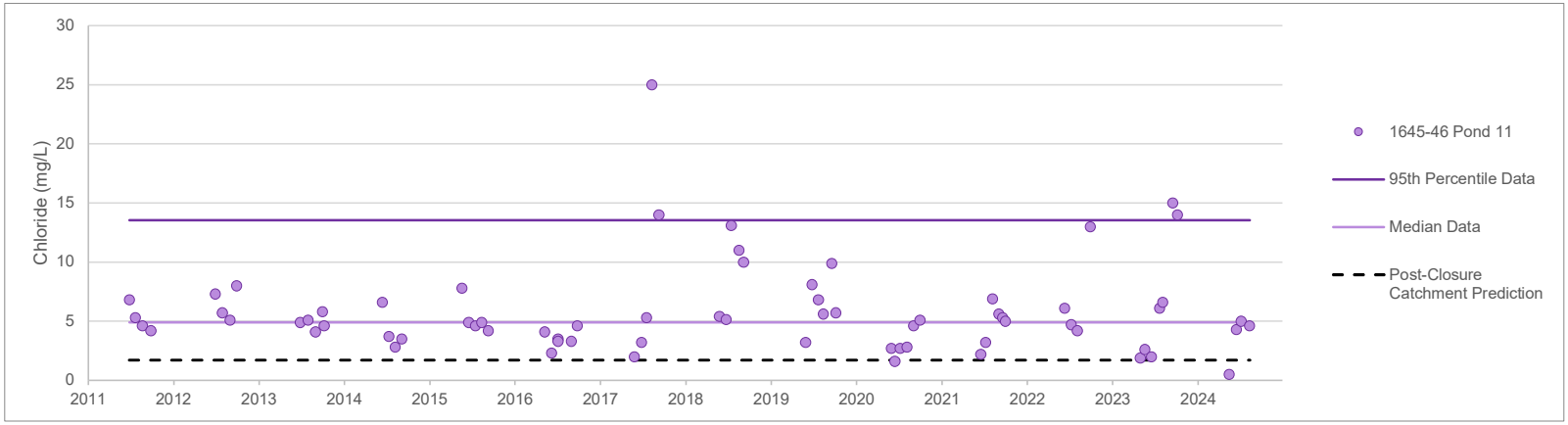
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



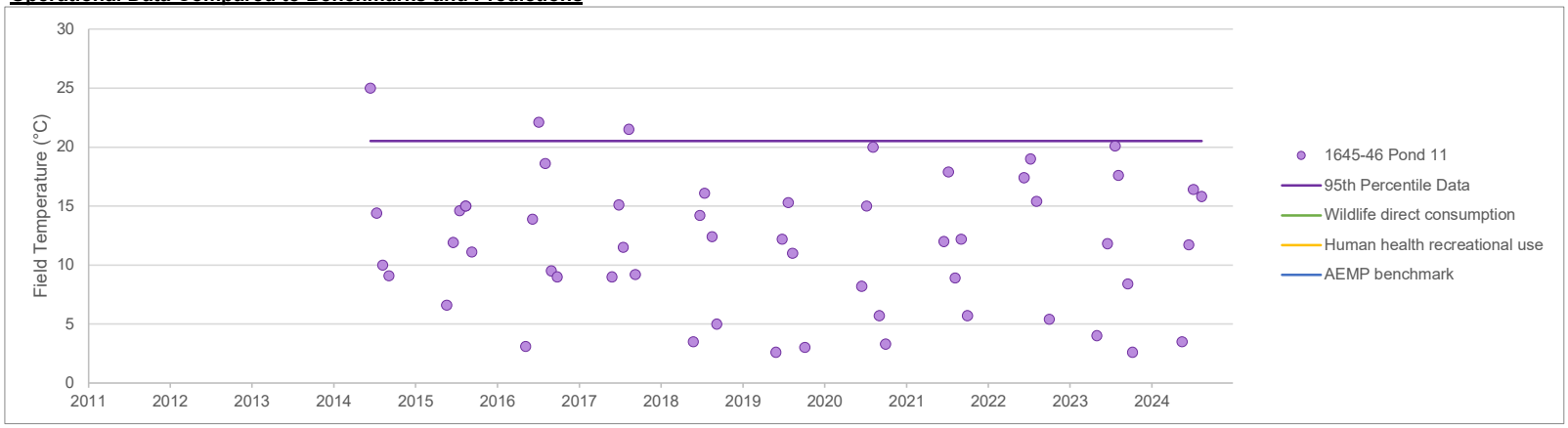


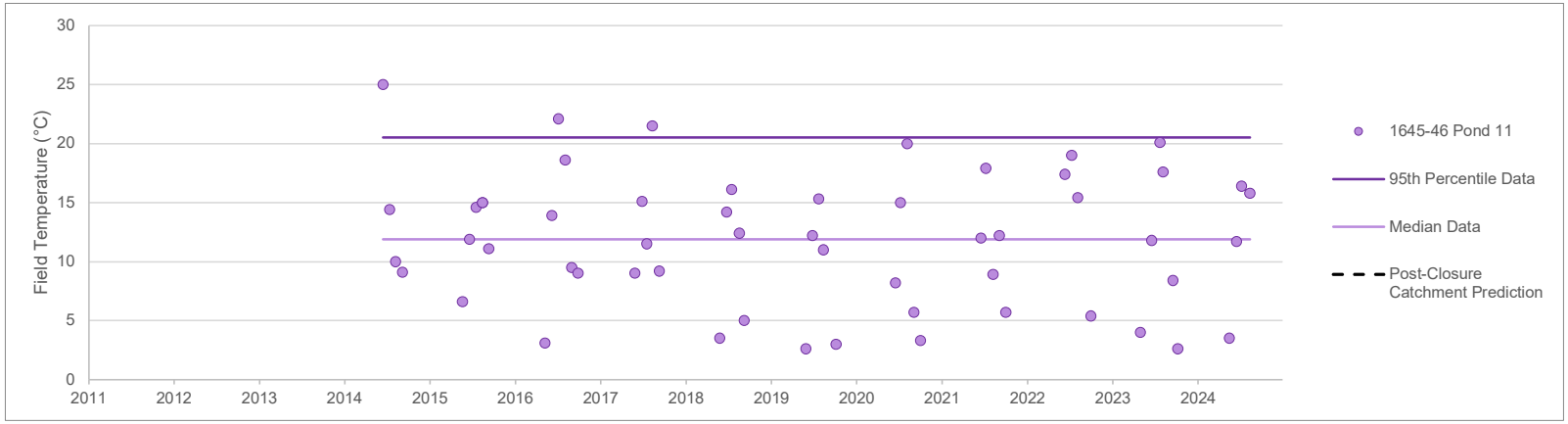
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	13.6	Wildlife	600
Median	4.9	Human recreational	5000
Count	71	AEMP	120

Operational Data Compared to Benchmarks and Predictions



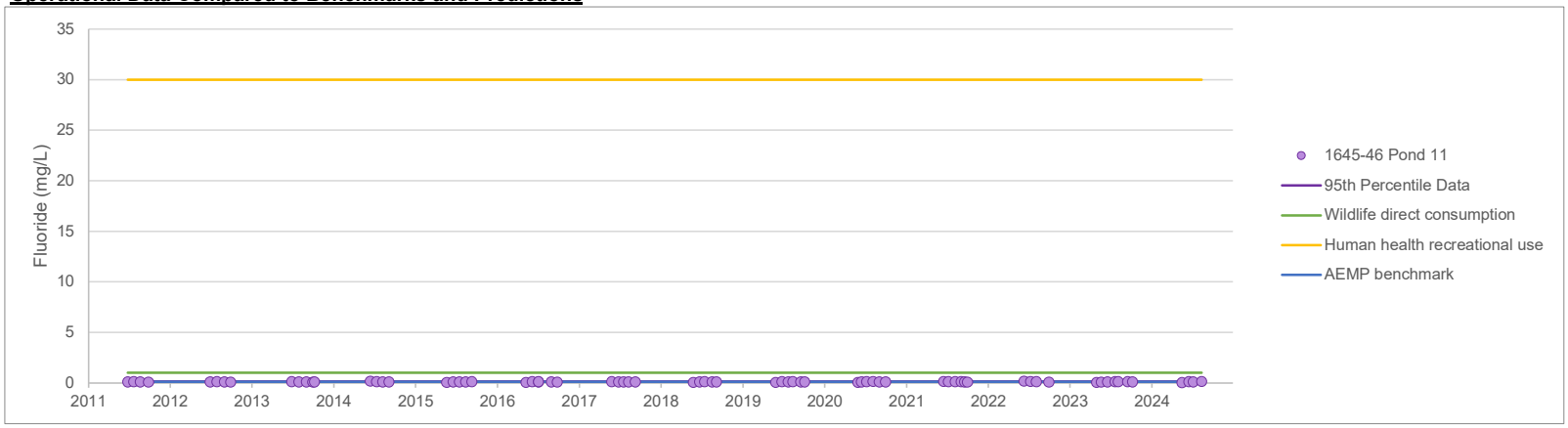


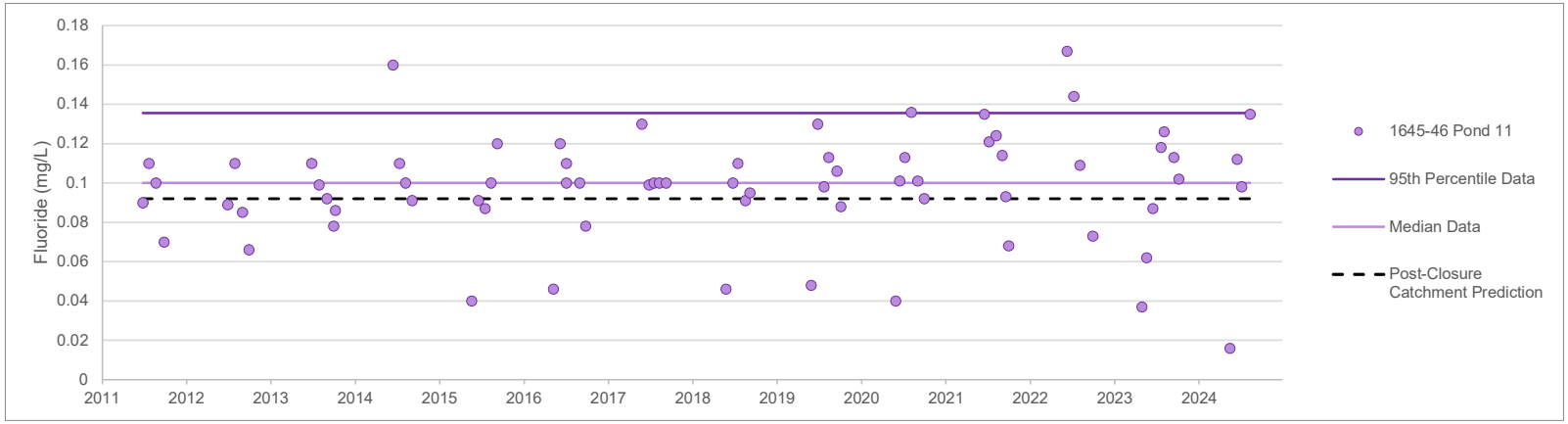
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	20.5	Wildlife	None
Median	11.9	Human recreational	None
Count	55	AEMP	None

Operational Data Compared to Benchmarks and Predictions



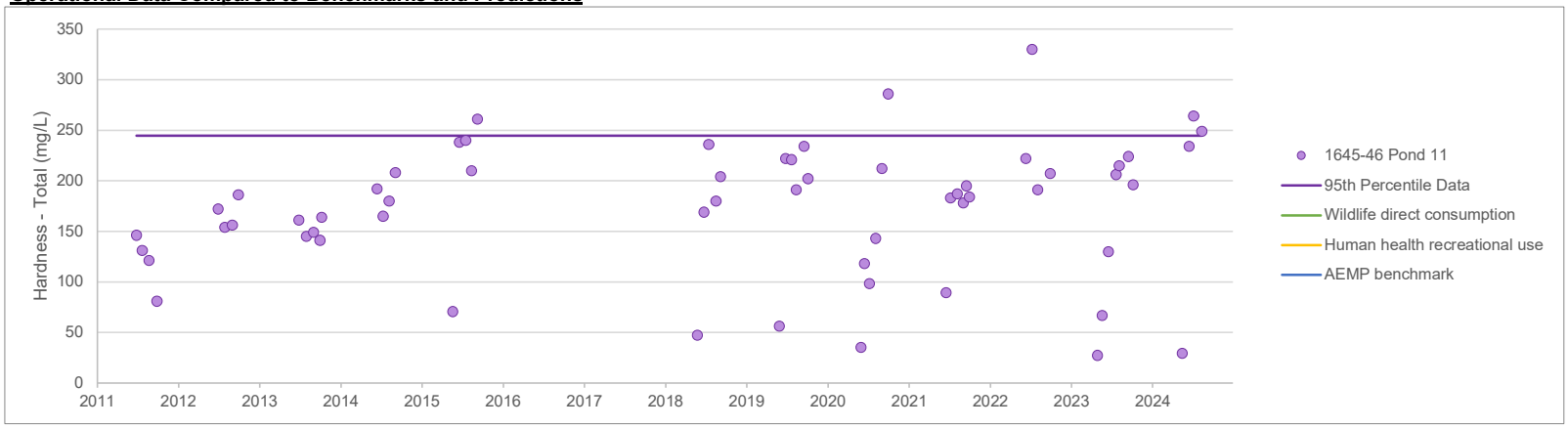


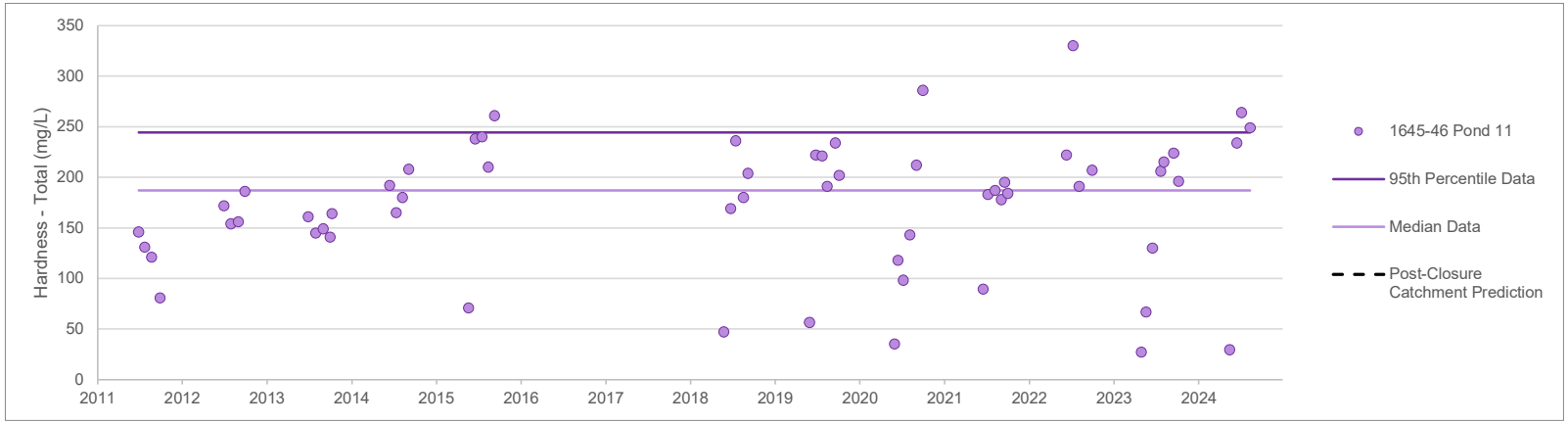
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.14	Wildlife	1
Median	0.10	Human recreational	30
Count	71	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



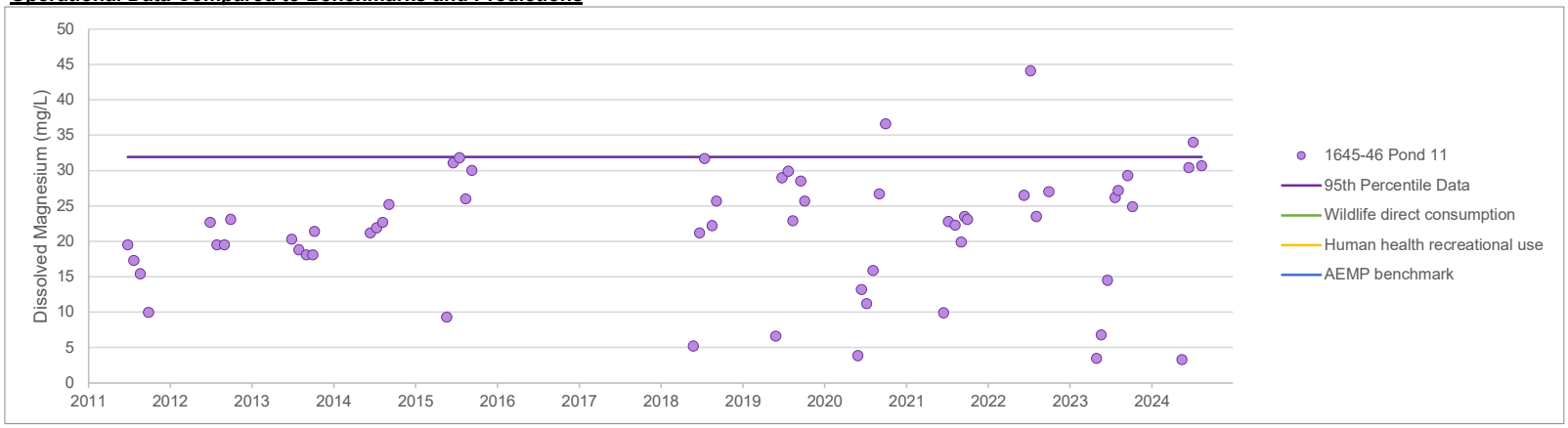


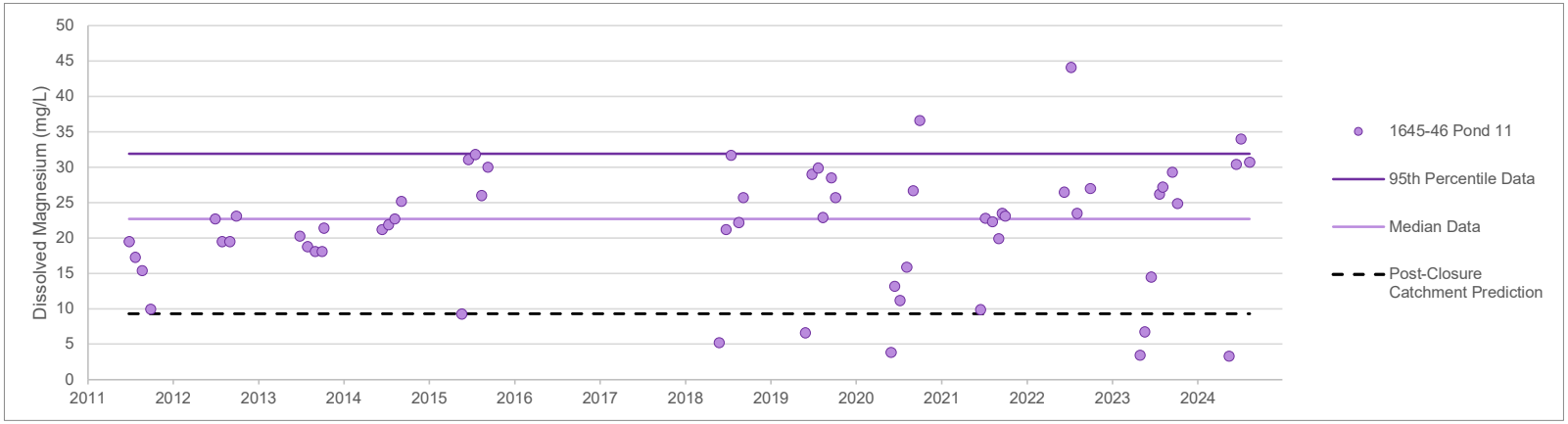
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	245	Wildlife	None
Median	187	Human recreational	None
Count	71	AEMP	None

Operational Data Compared to Benchmarks and Predictions



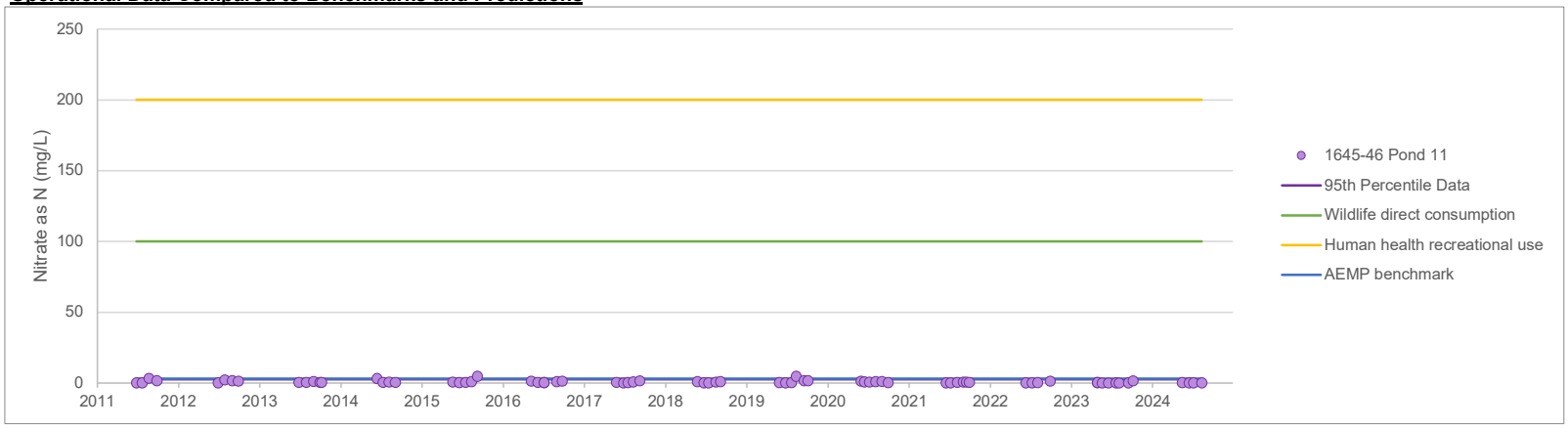


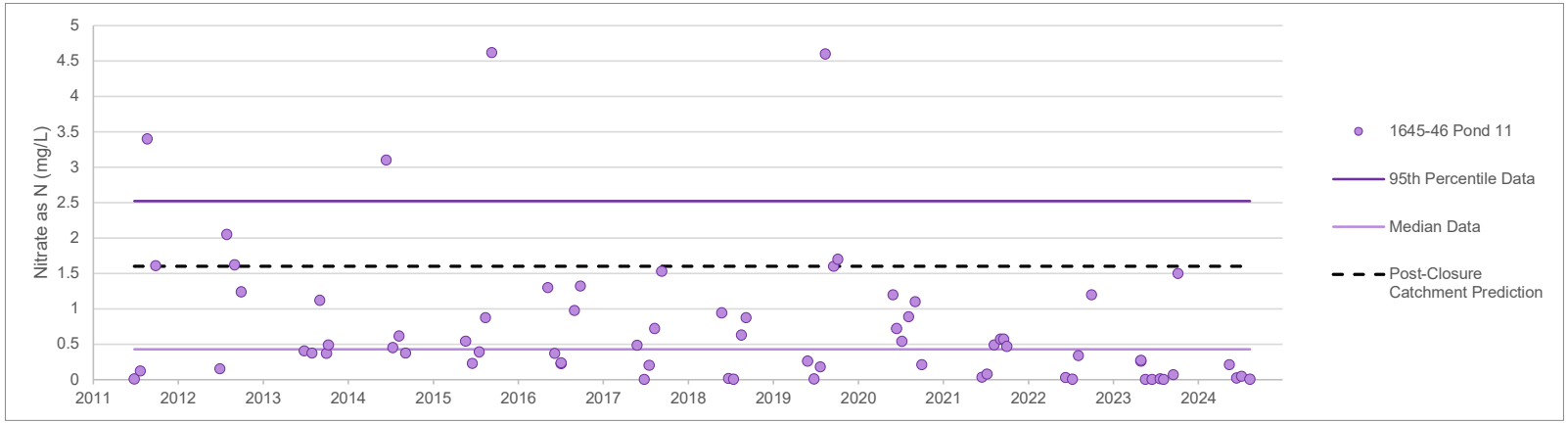
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	31.9	Wildlife	None
Median	22.7	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



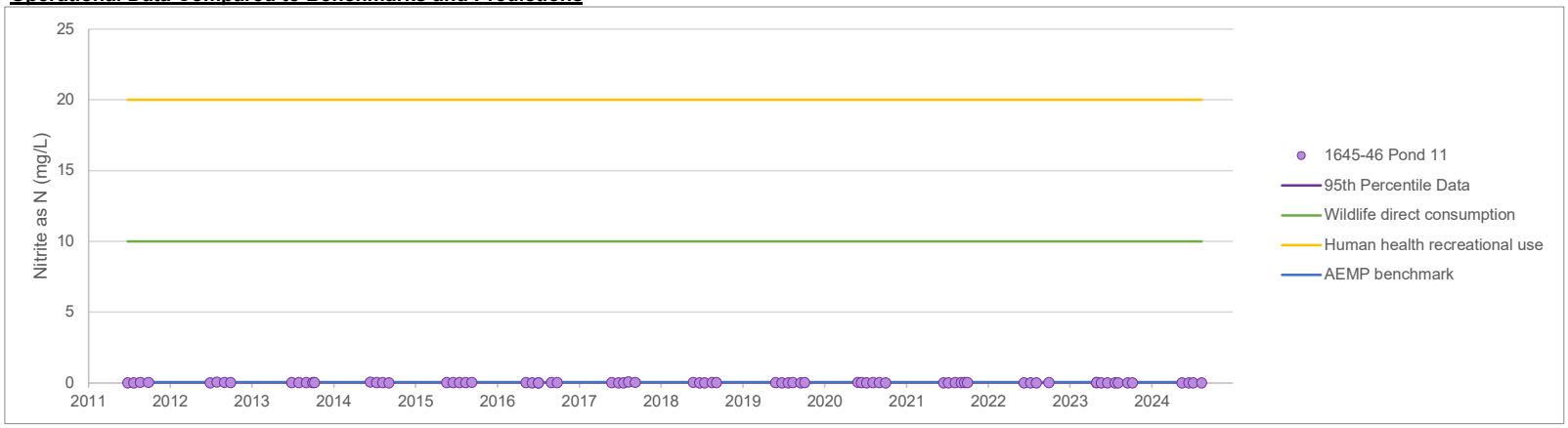


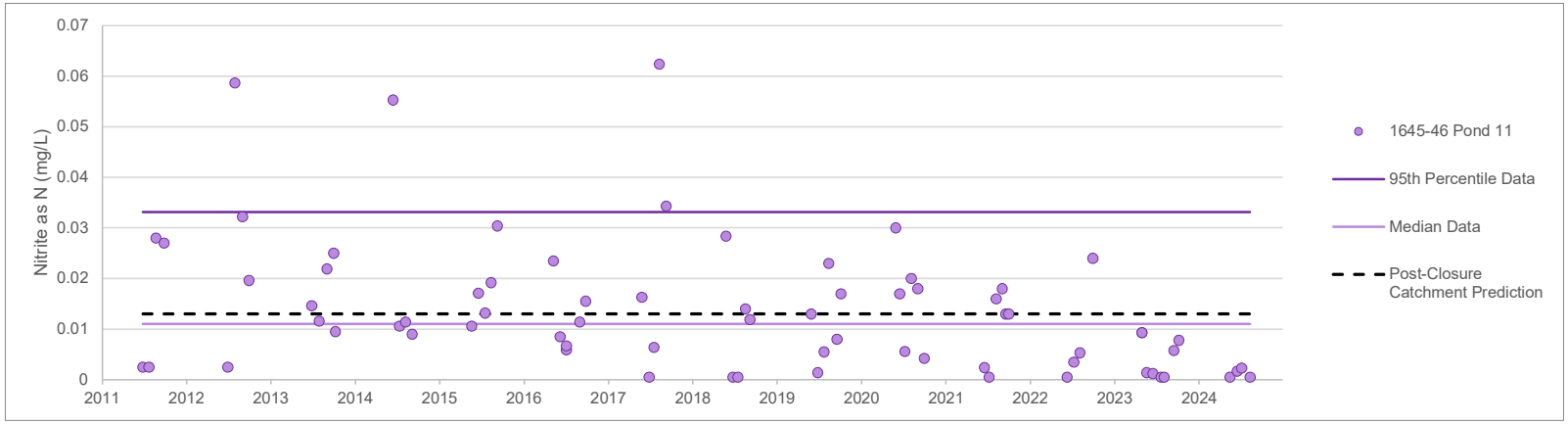
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	2.5	Wildlife	100
Median	0.4	Human recreational	200
Count	72	AEMP	3

Operational Data Compared to Benchmarks and Predictions



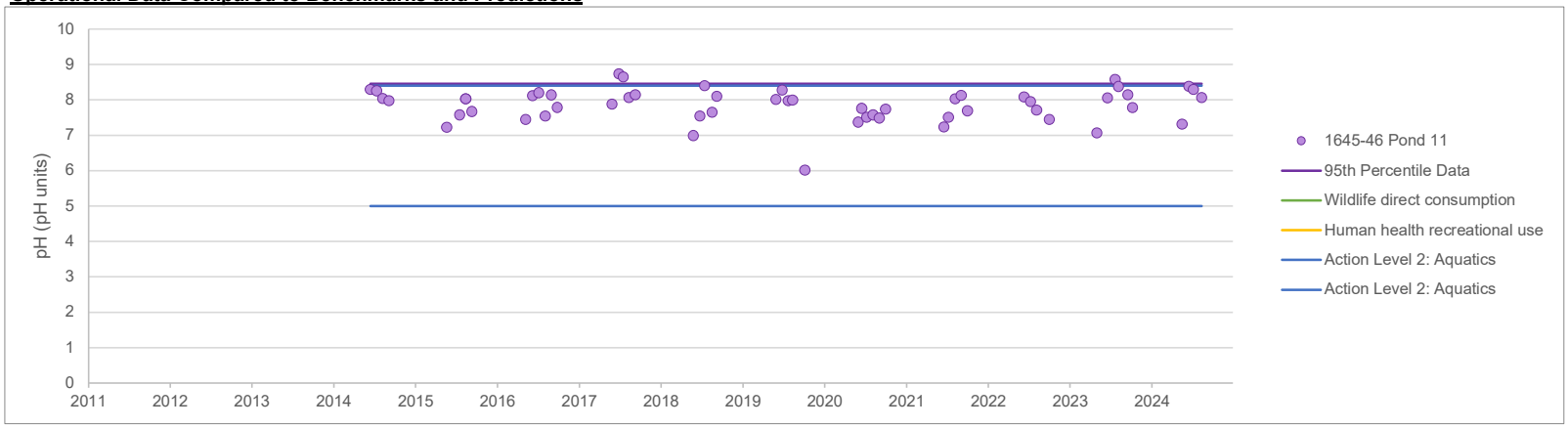


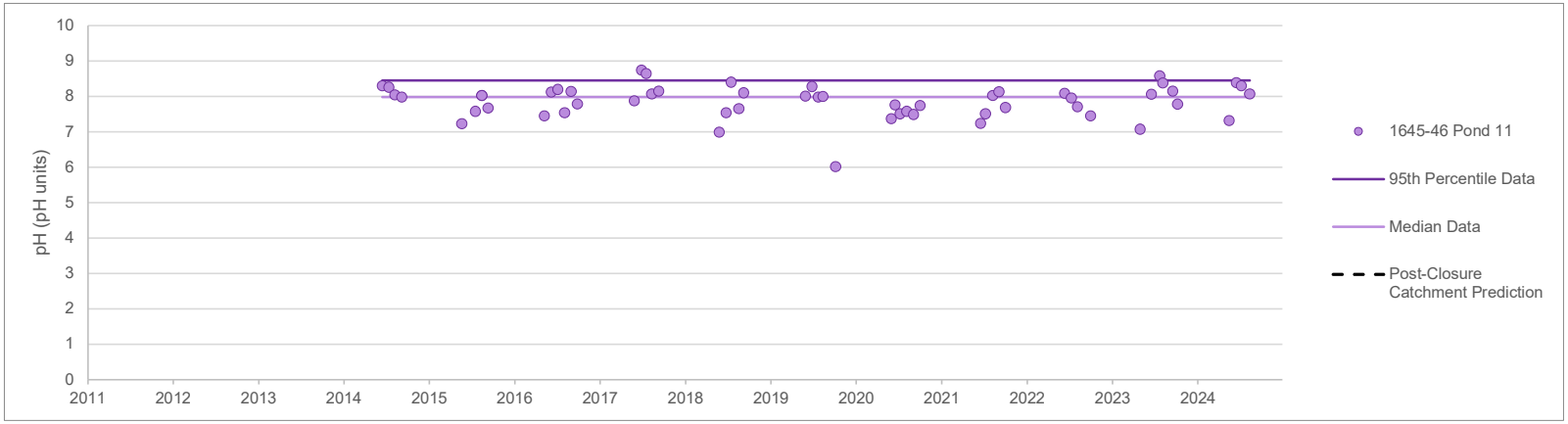
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.033	Wildlife	10.0
Median	0.011	Human recreational	20.0
Count	72	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



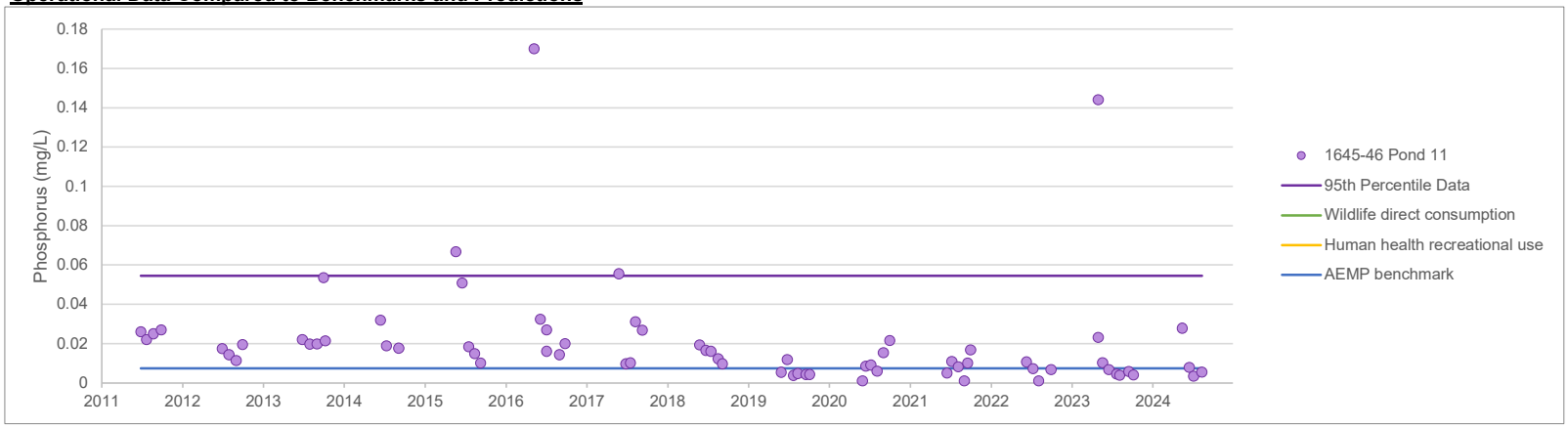


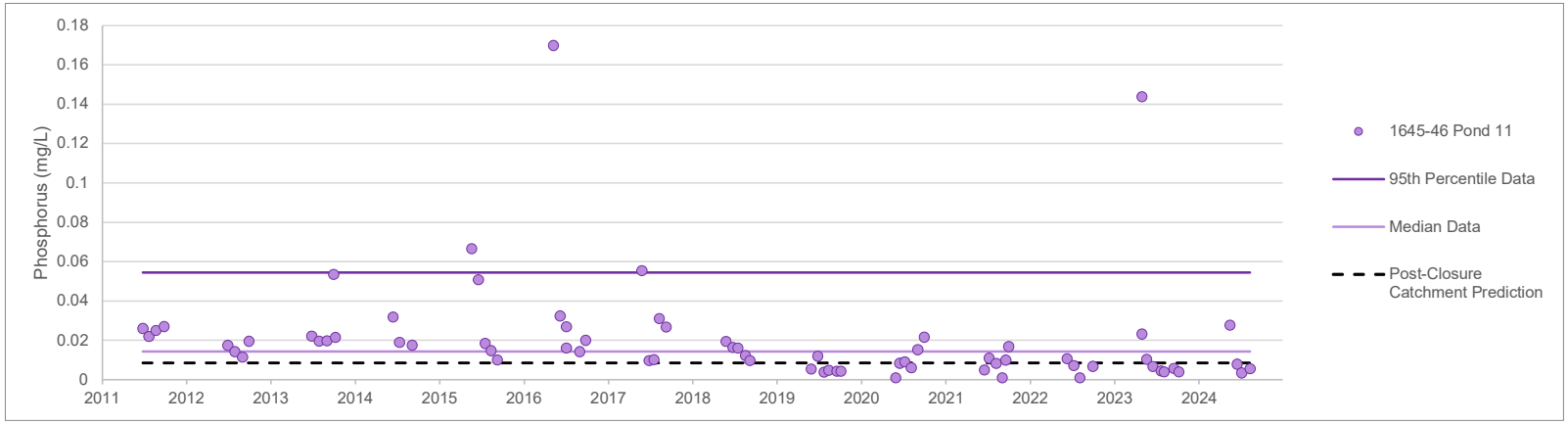
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.5	Wildlife	None
Median	8.0	Human recreational	None
Count	55	AEMP	None

Operational Data Compared to Benchmarks and Predictions



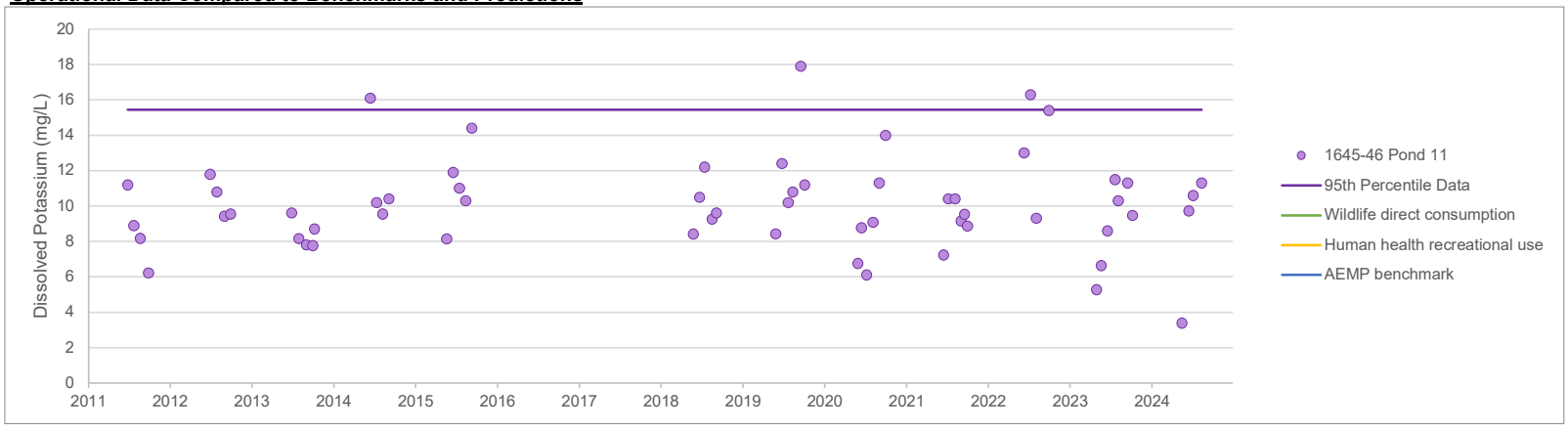


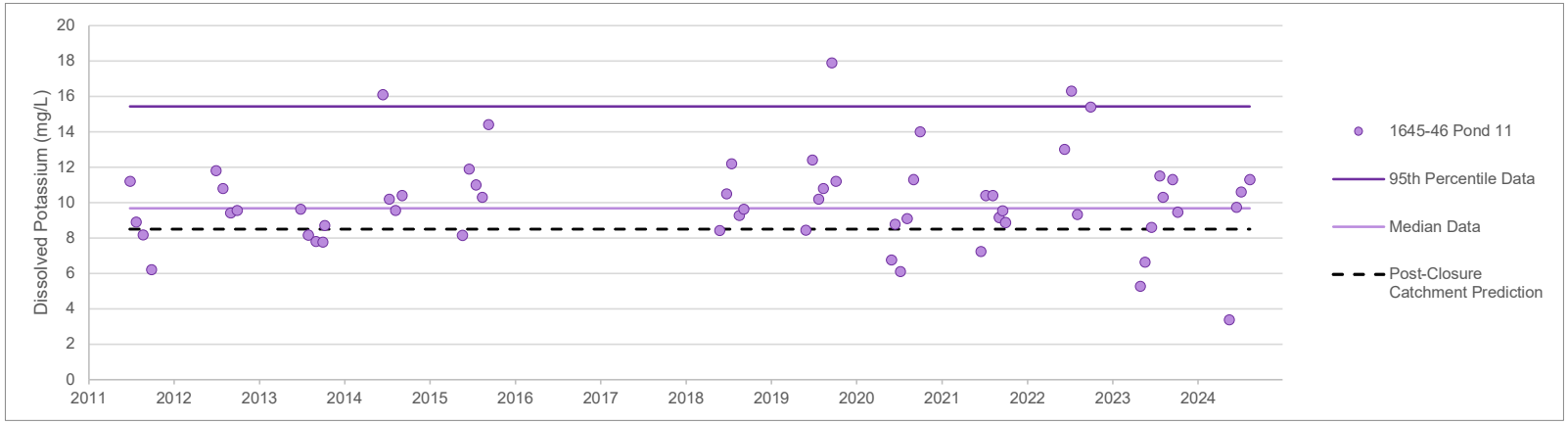
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.055	Wildlife	None
Median	0.014	Human recreational	None
Count	71	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



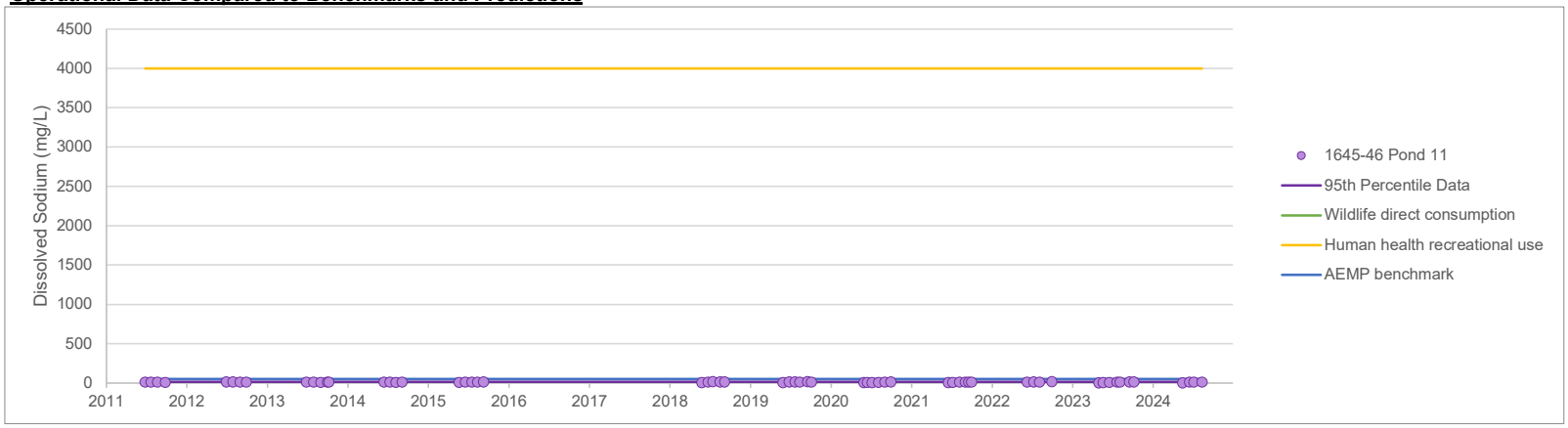


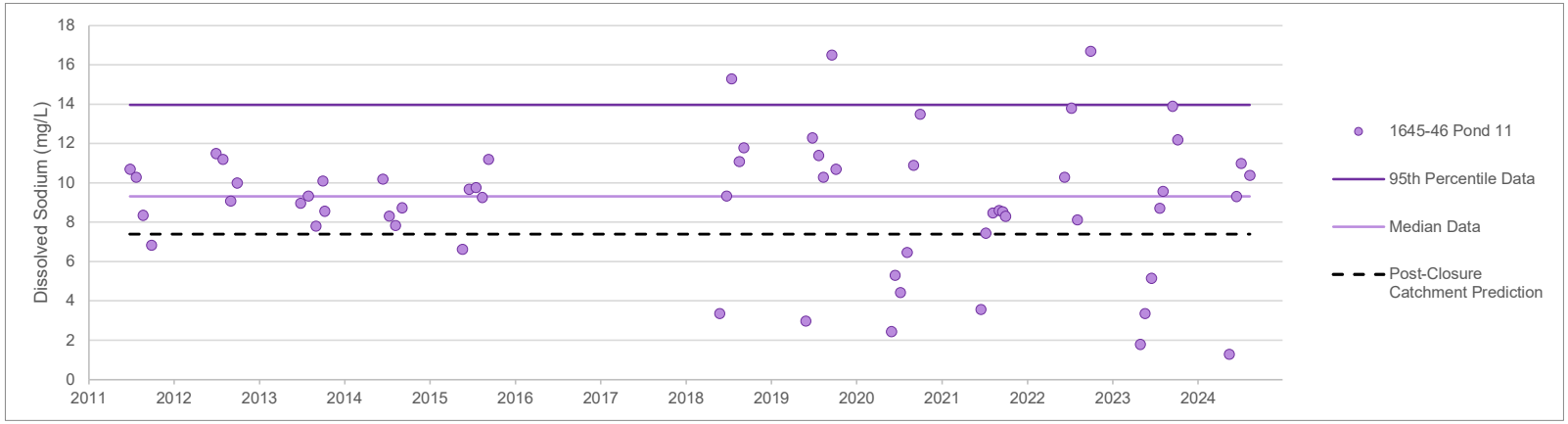
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	15.4	Wildlife	None
Median	9.7	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



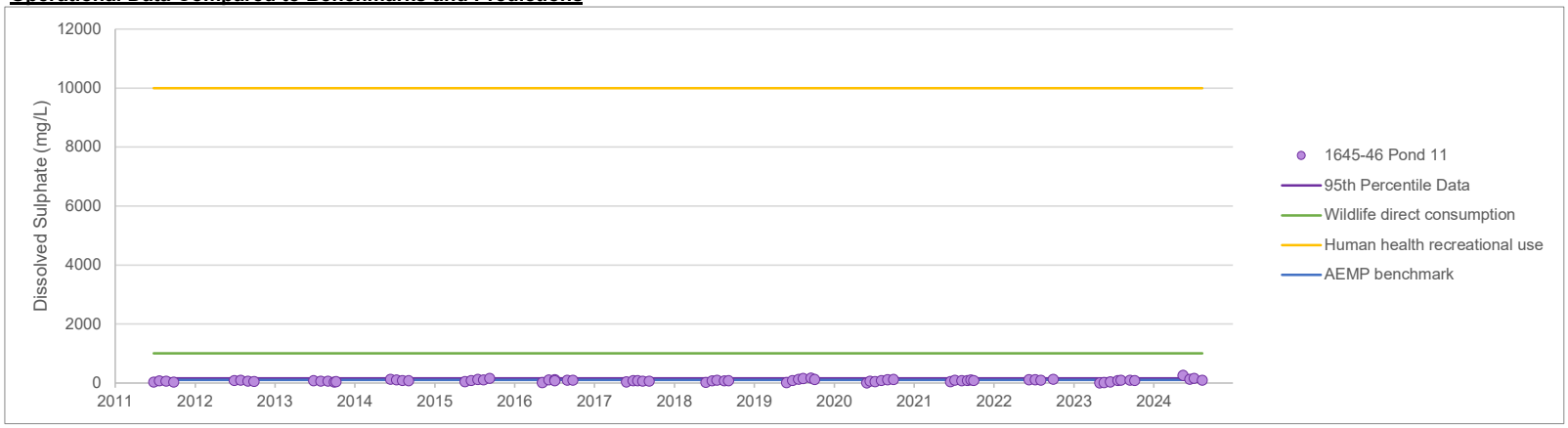


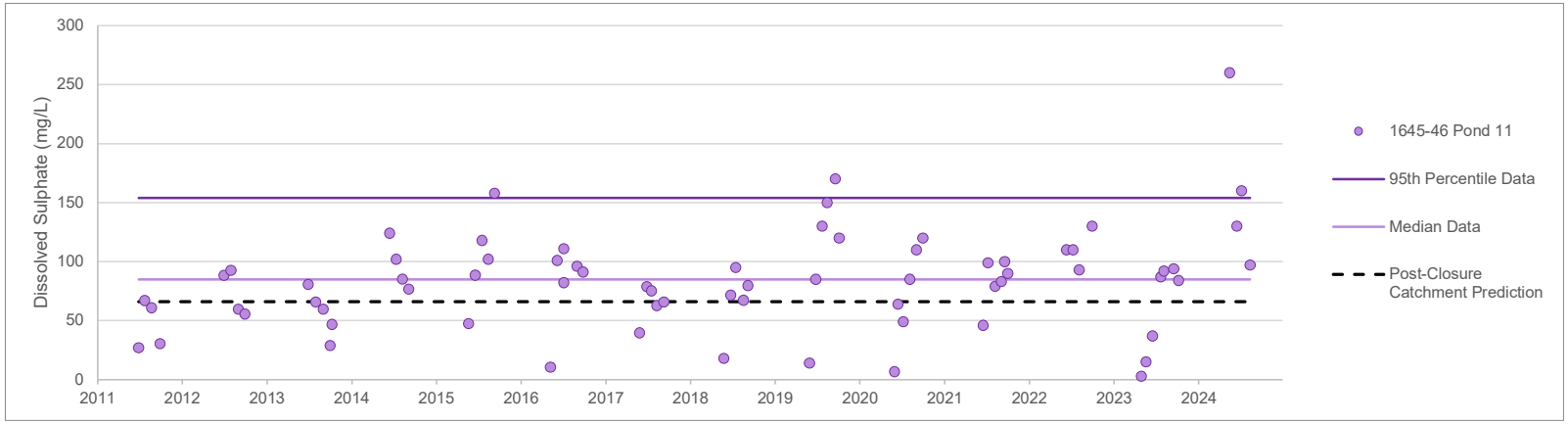
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	14.0	Wildlife	None
Median	9.3	Human recreational	4000
Count	60	AEMP	52

Operational Data Compared to Benchmarks and Predictions



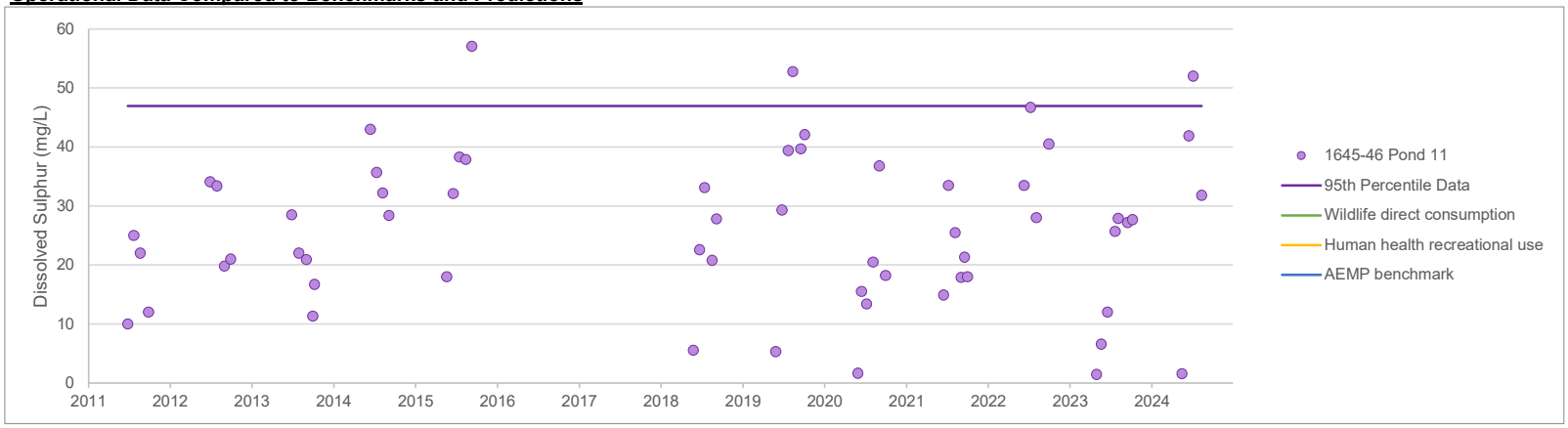


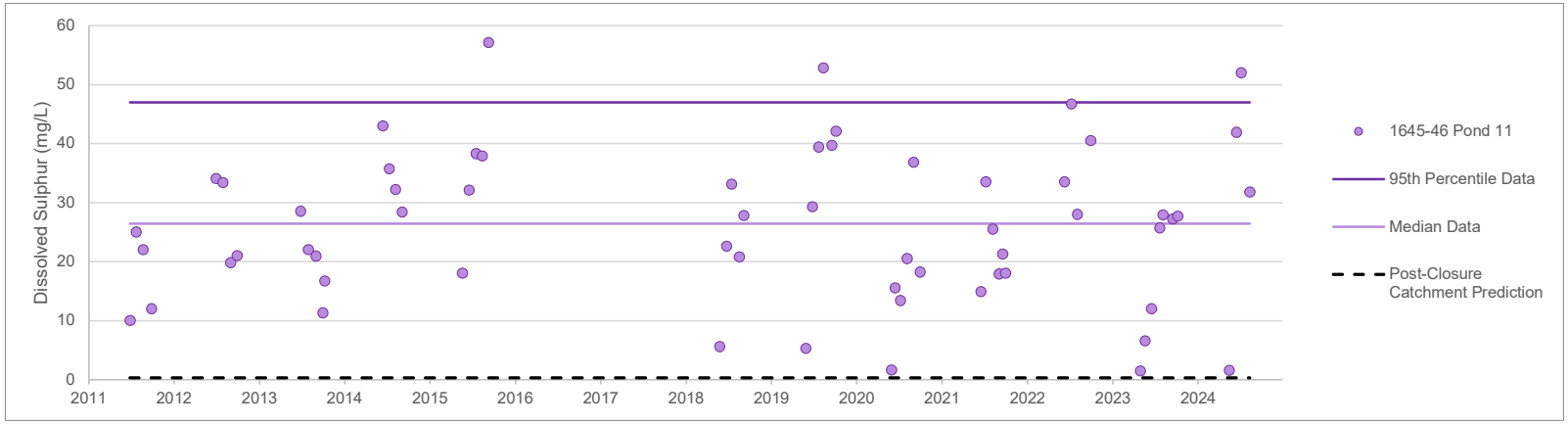
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	154	Wildlife	1000
Median	85	Human recreational	10000
Count	71	AEMP	100

Operational Data Compared to Benchmarks and Predictions



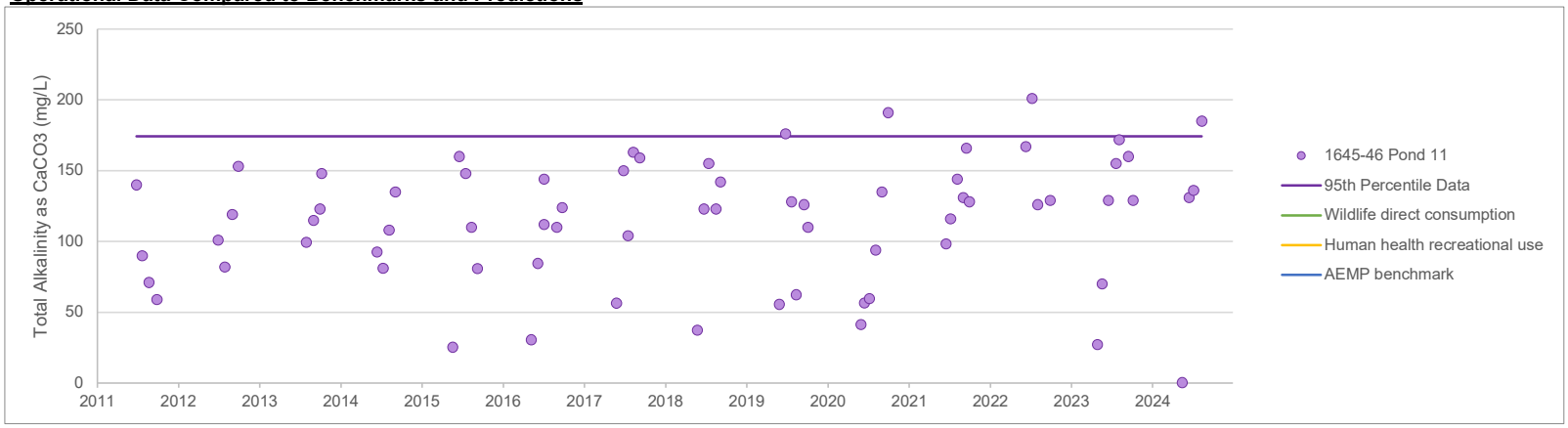


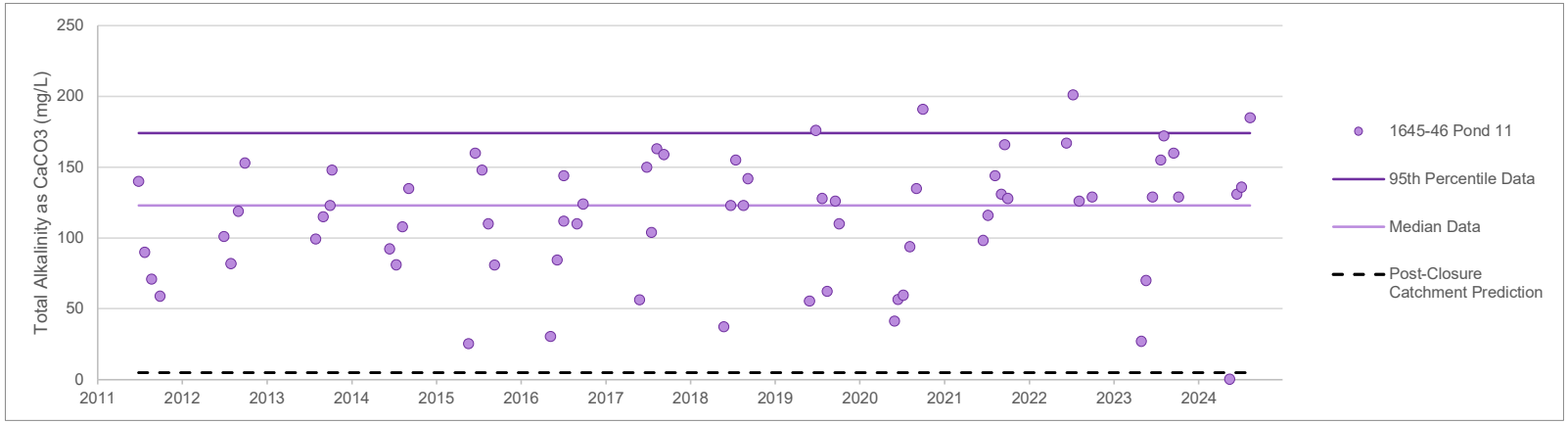
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	47.0	Wildlife	None
Median	26.5	Human recreational	None
Count	60	AEMP	None

Operational Data Compared to Benchmarks and Predictions



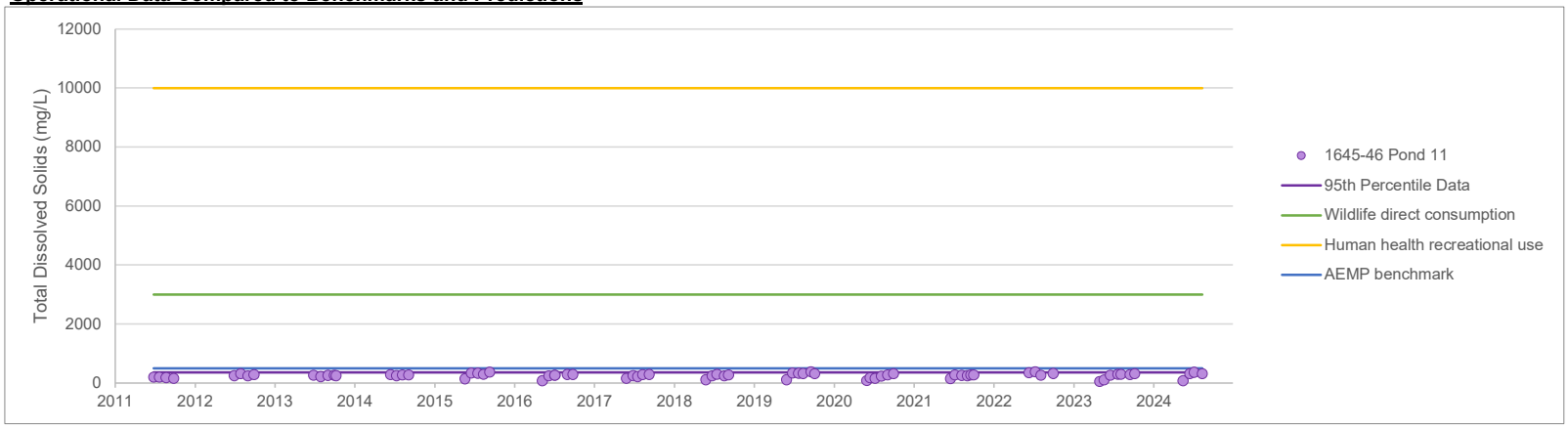


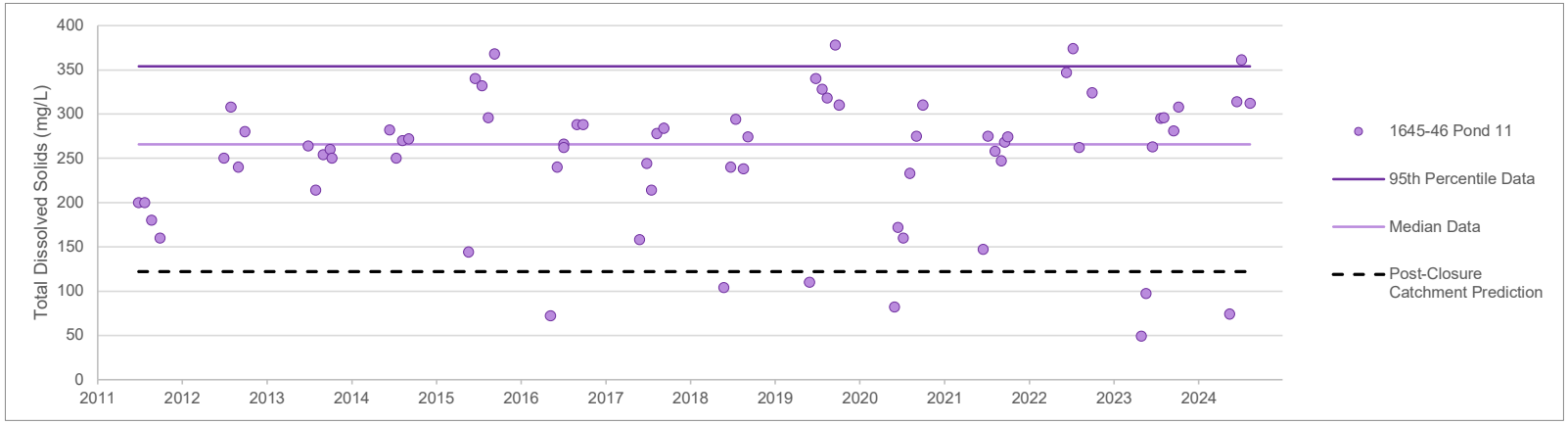
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	174.2	Wildlife	None
Median	123.0	Human recreational	None
Count	70	AEMP	None

Operational Data Compared to Benchmarks and Predictions



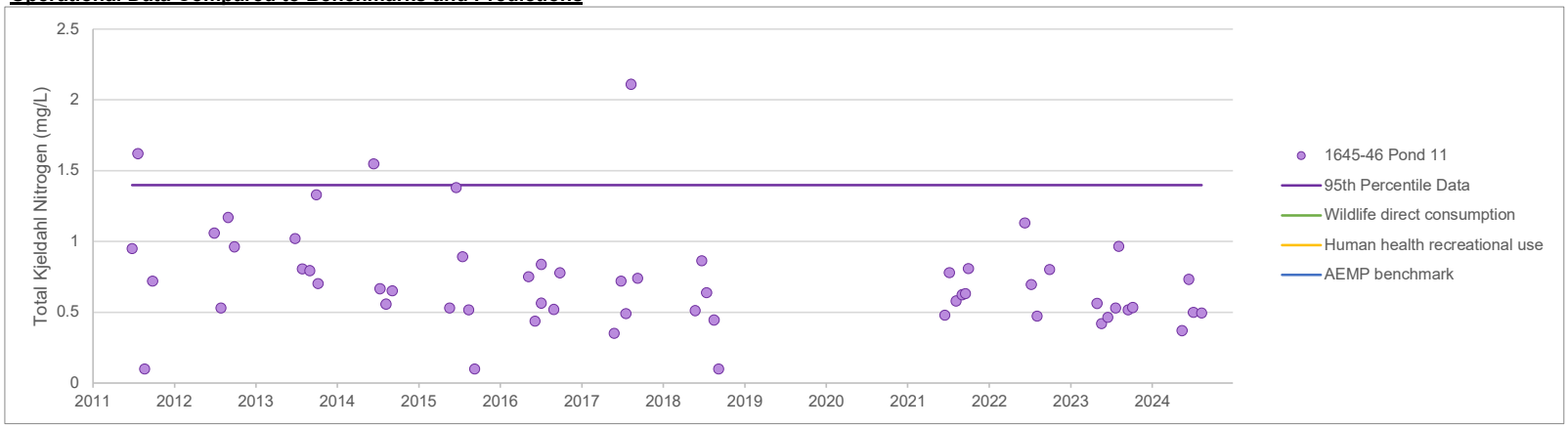


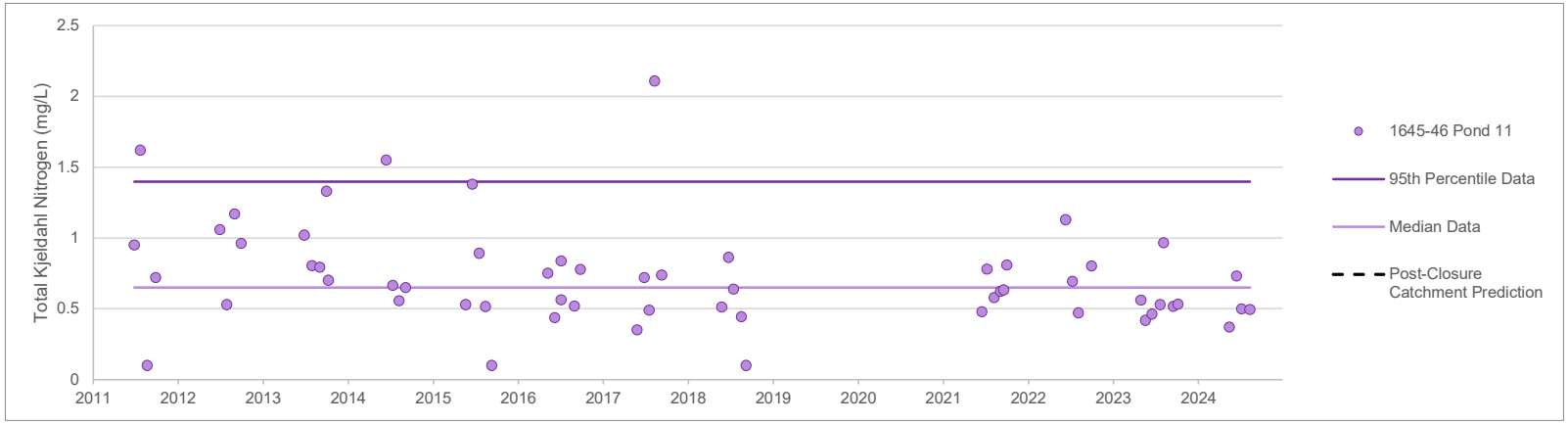
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	354	Wildlife	3000
Median	266	Human recreational	10000
Count	71	AEMP	500

Operational Data Compared to Benchmarks and Predictions



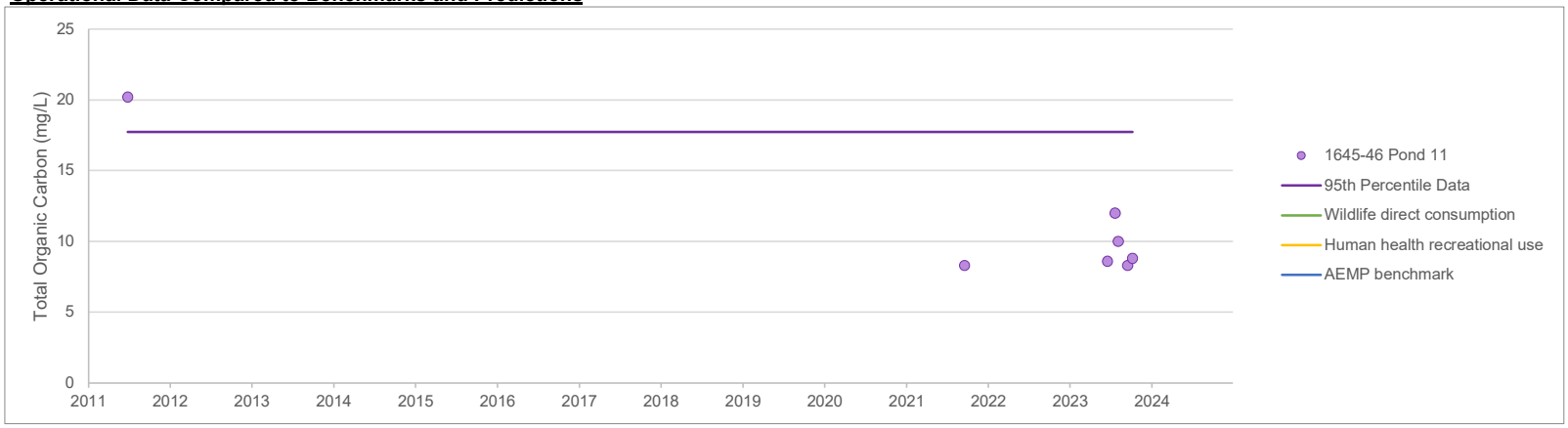


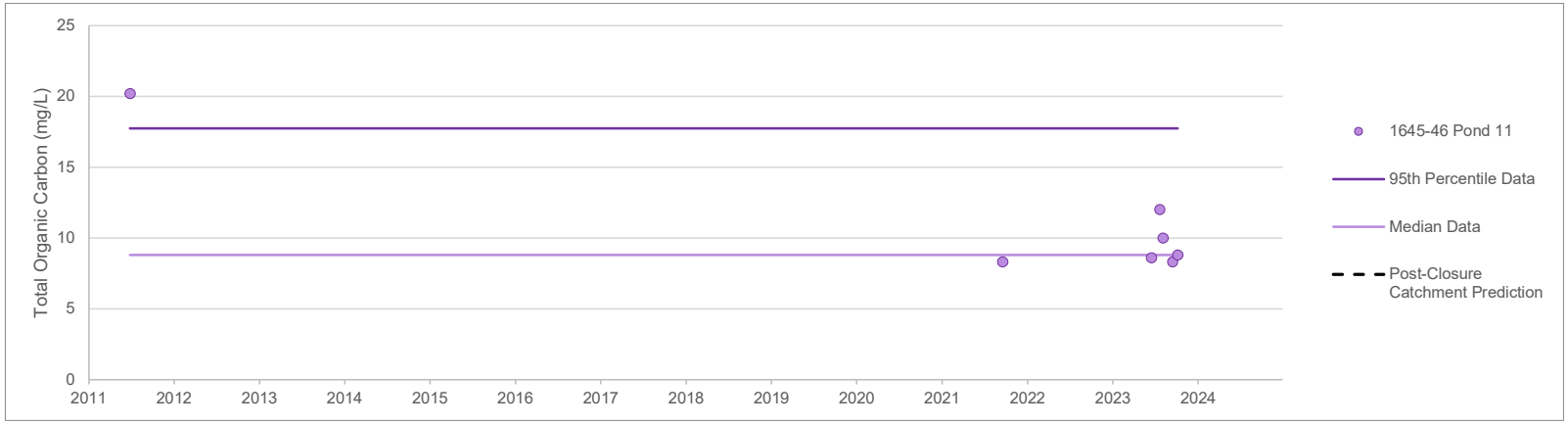
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.4	Wildlife	None
Median	0.7	Human recreational	None
Count	59	AEMP	None

Operational Data Compared to Benchmarks and Predictions



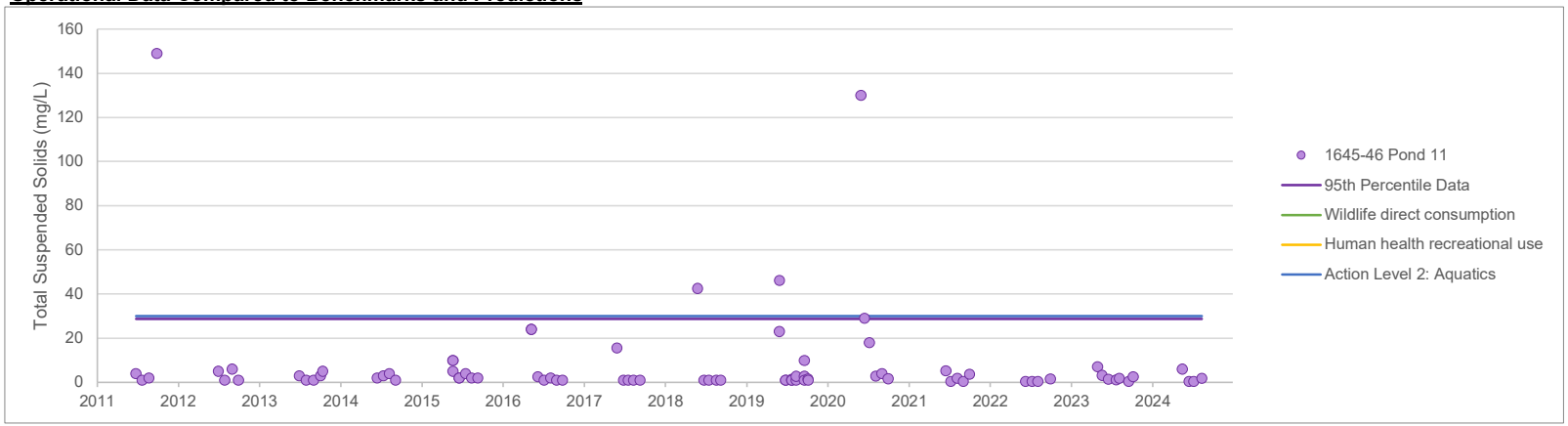


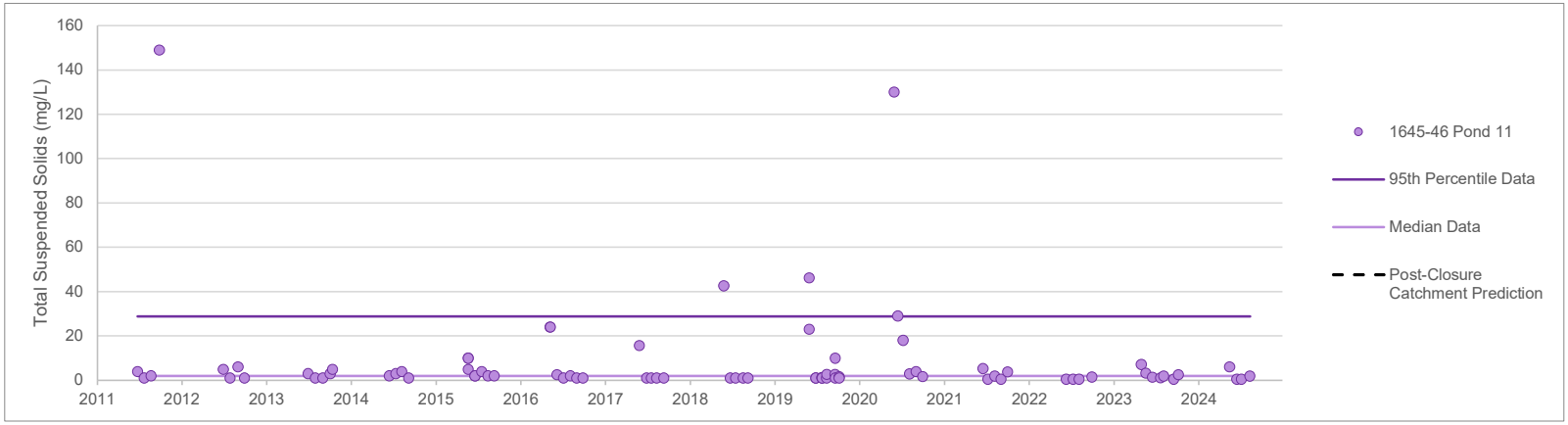
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	17.7	Wildlife	None
Median	8.8	Human recreational	None
Count	7	AEMP	None

Operational Data Compared to Benchmarks and Predictions



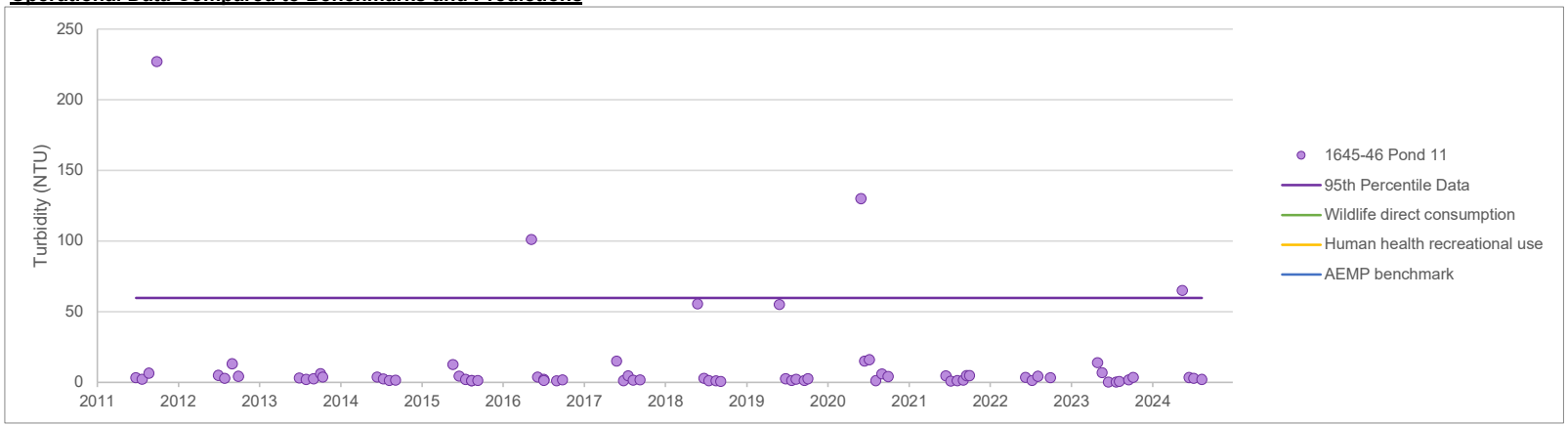


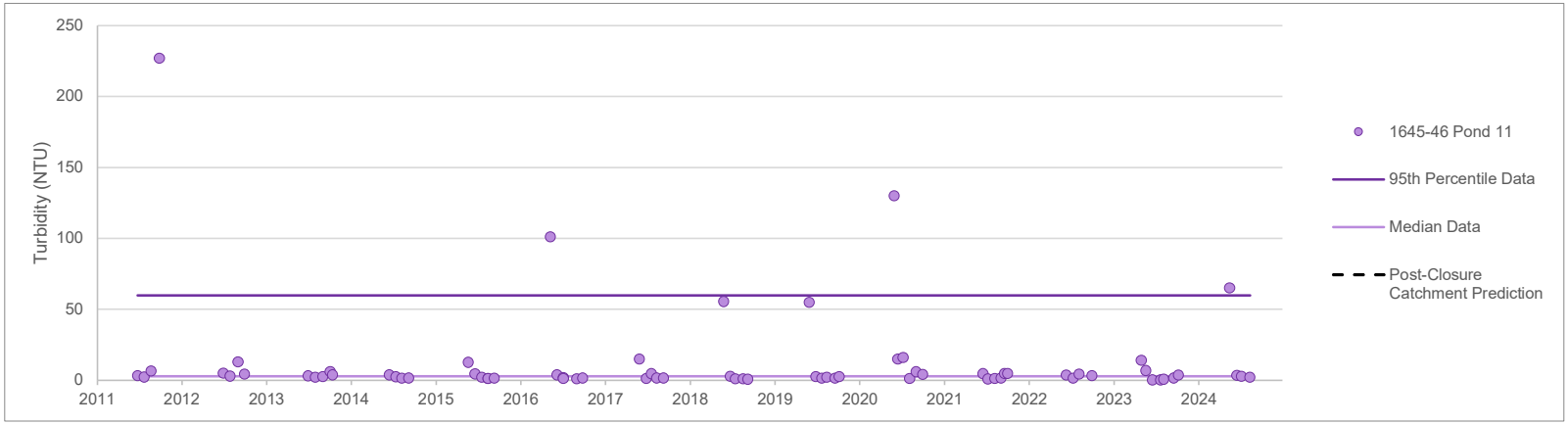
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	28.8	Wildlife	None
Median	2.0	Human recreational	None
Count	82	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



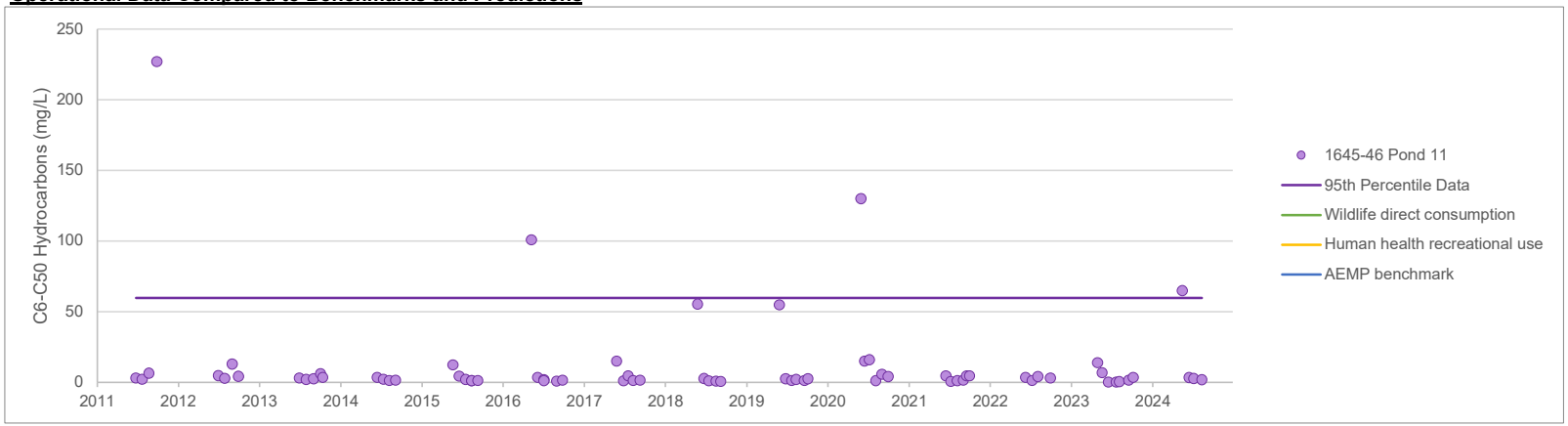


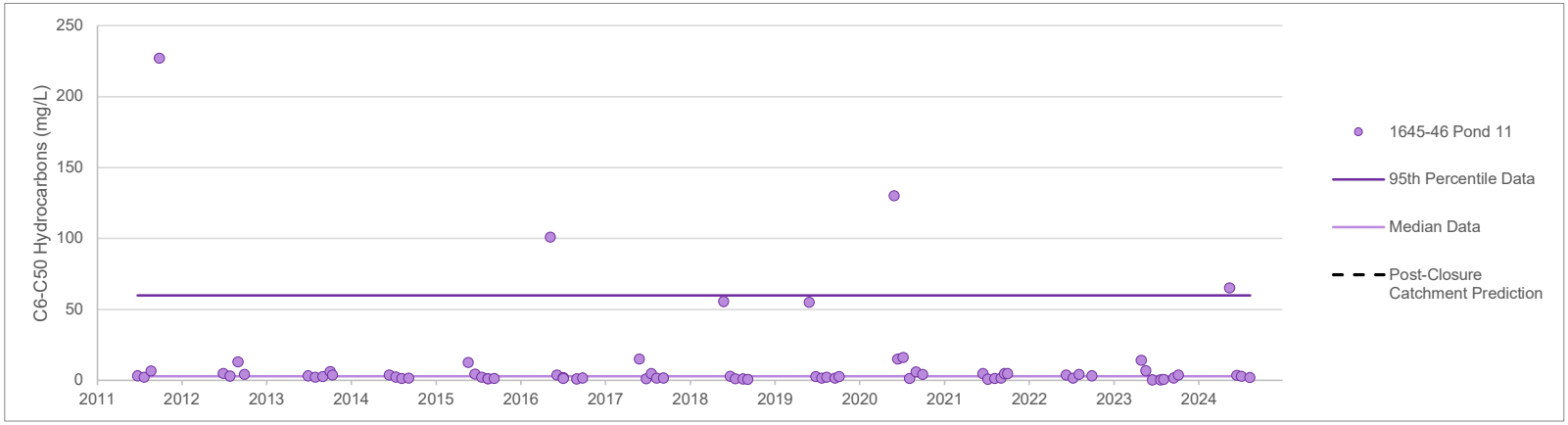
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	59.8	Wildlife	None
Median	2.8	Human recreational	None
Count	72	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	6	AEMP	None

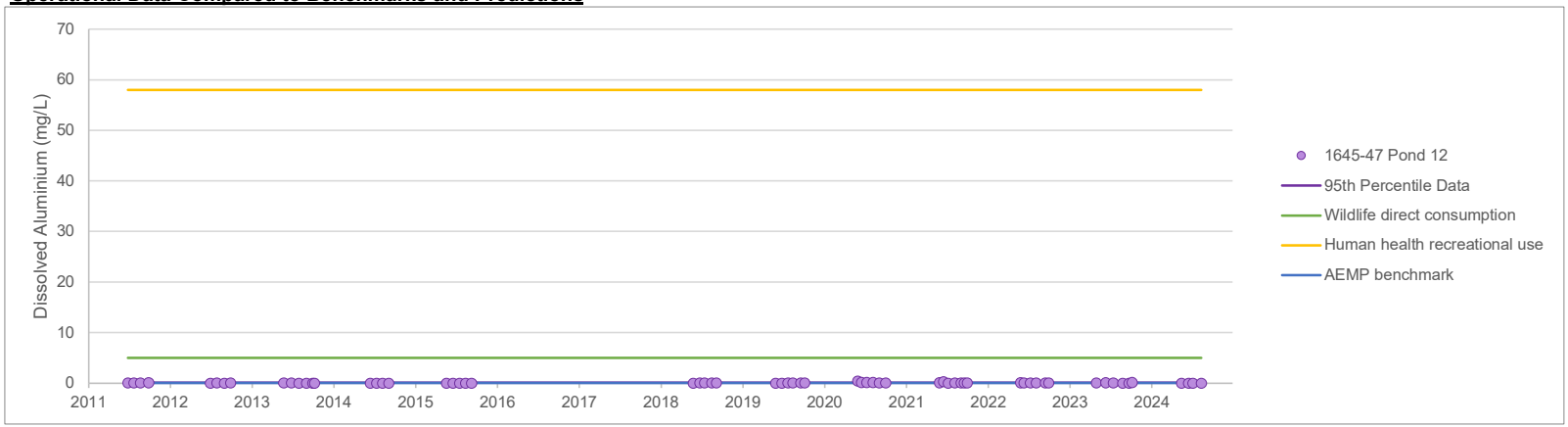
Pond 12

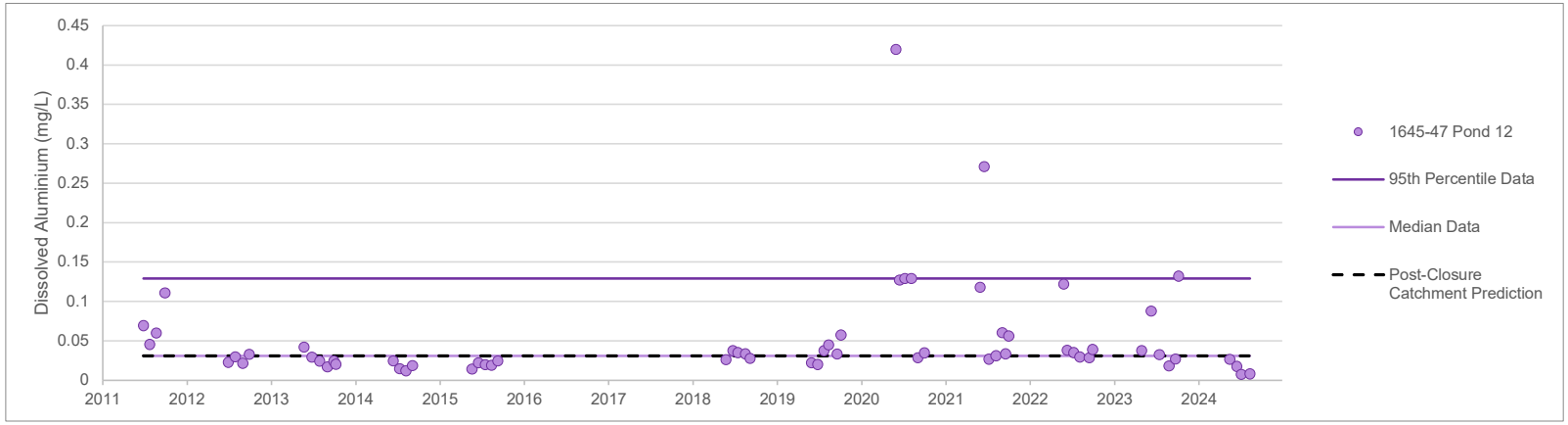
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



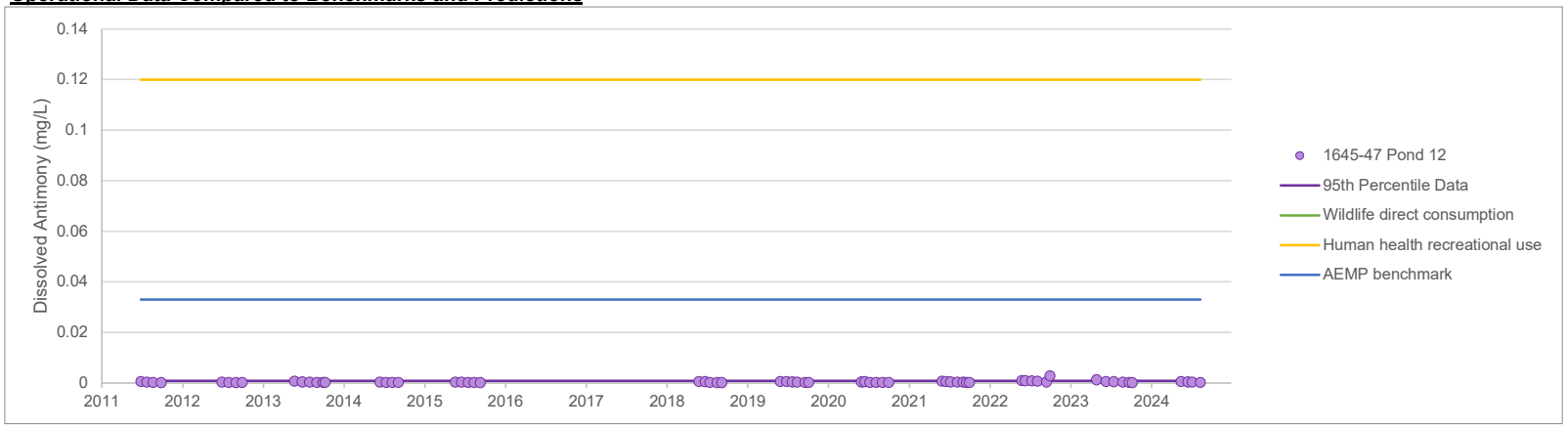


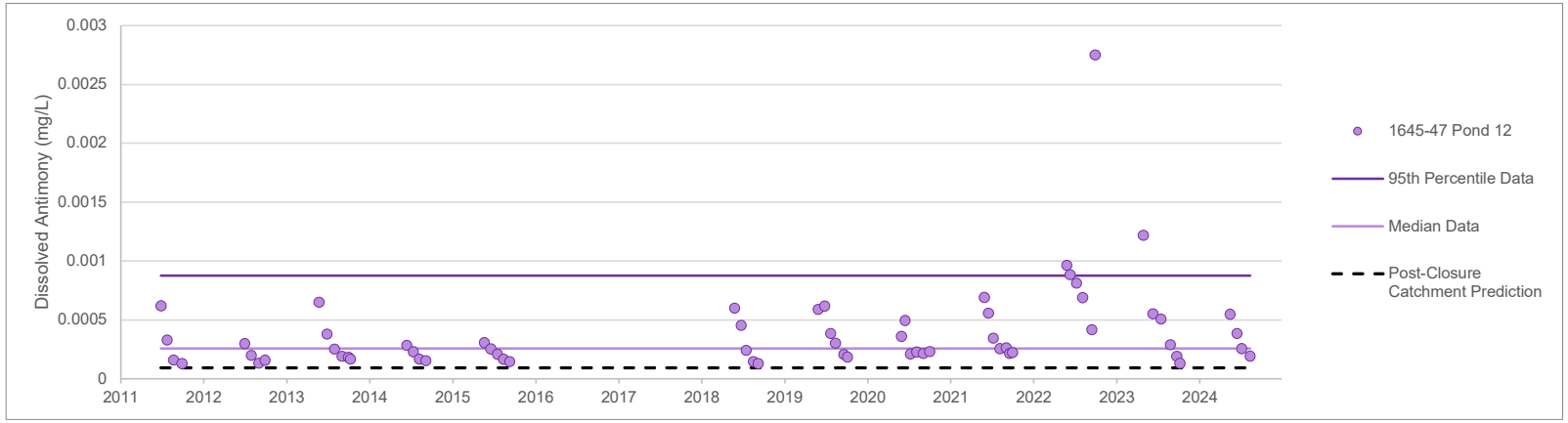
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.129	Wildlife	5.0
Median	0.031	Human recreational	58.0
Count	63	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



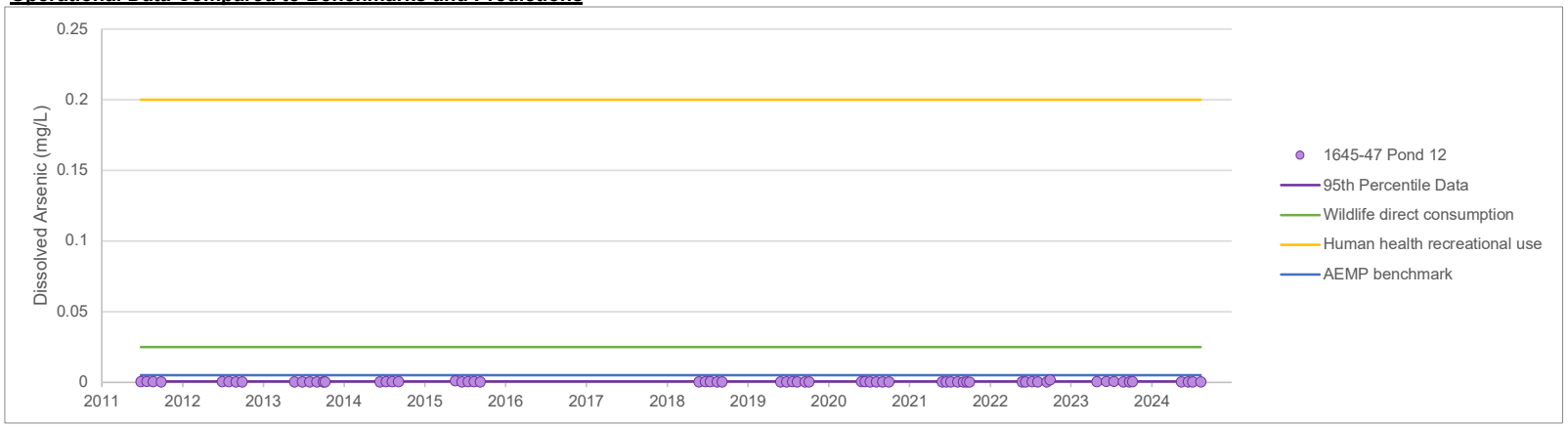


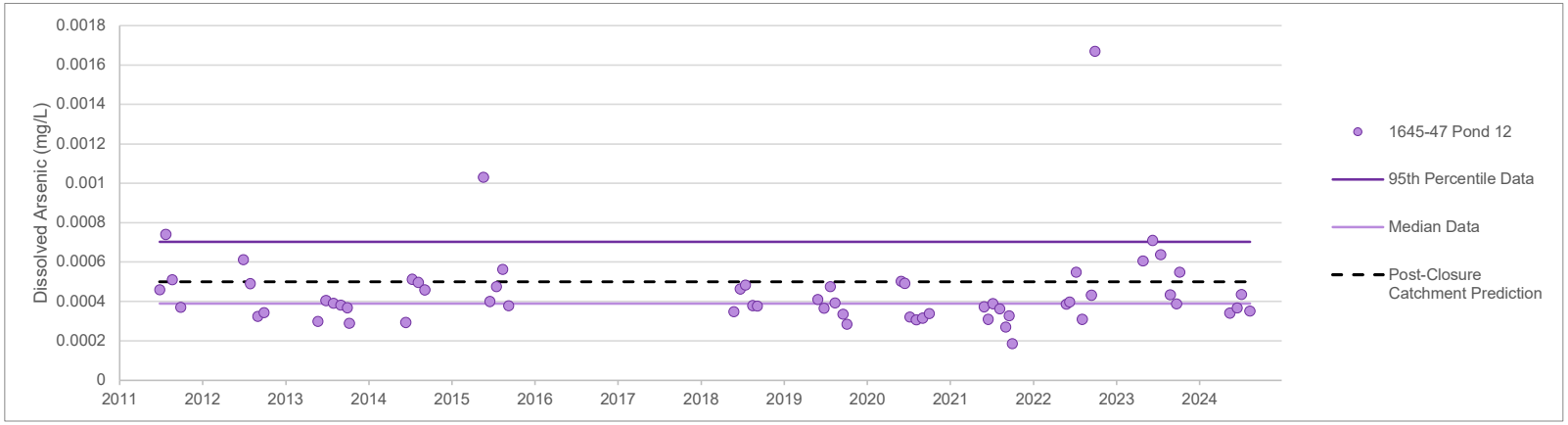
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00088	Wildlife	None
Median	0.00026	Human recreational	0.12
Count	63	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



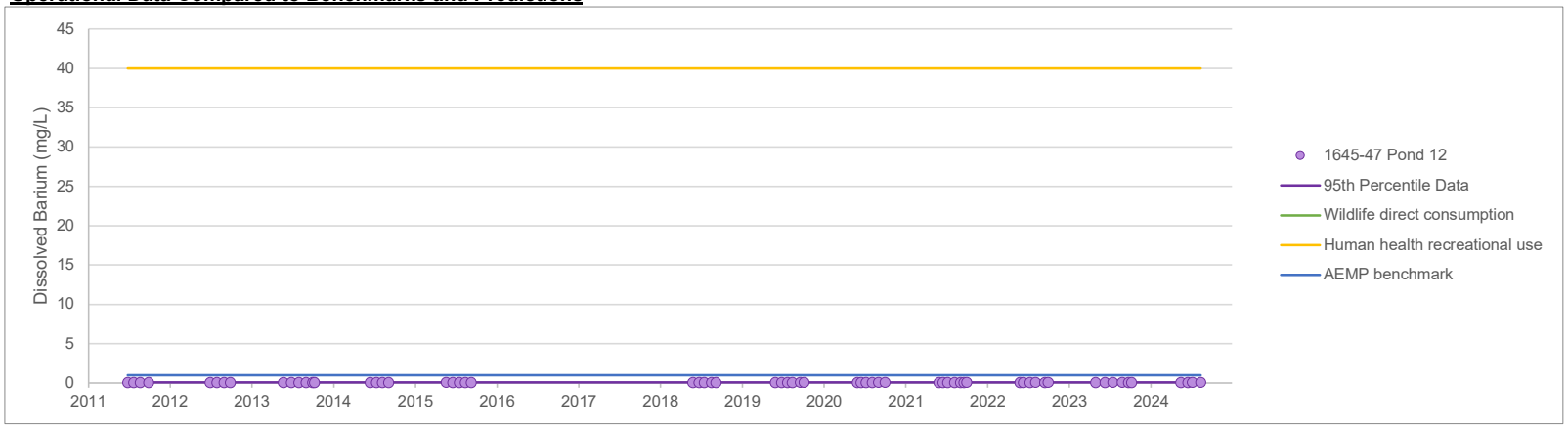


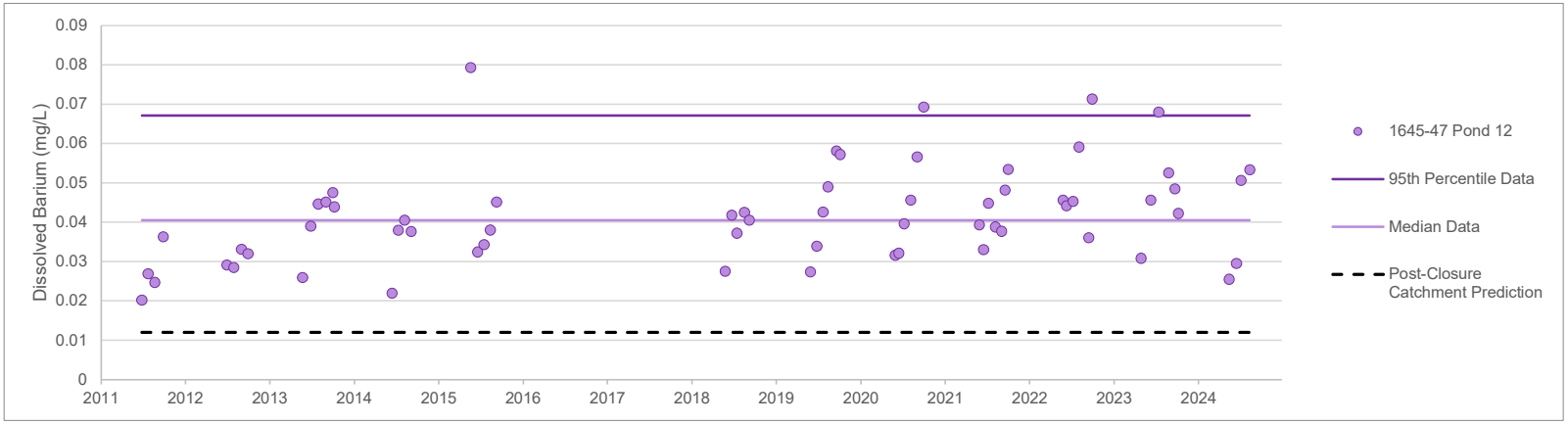
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0007	Wildlife	0.03
Median	0.0004	Human recreational	0.20
Count	63	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions



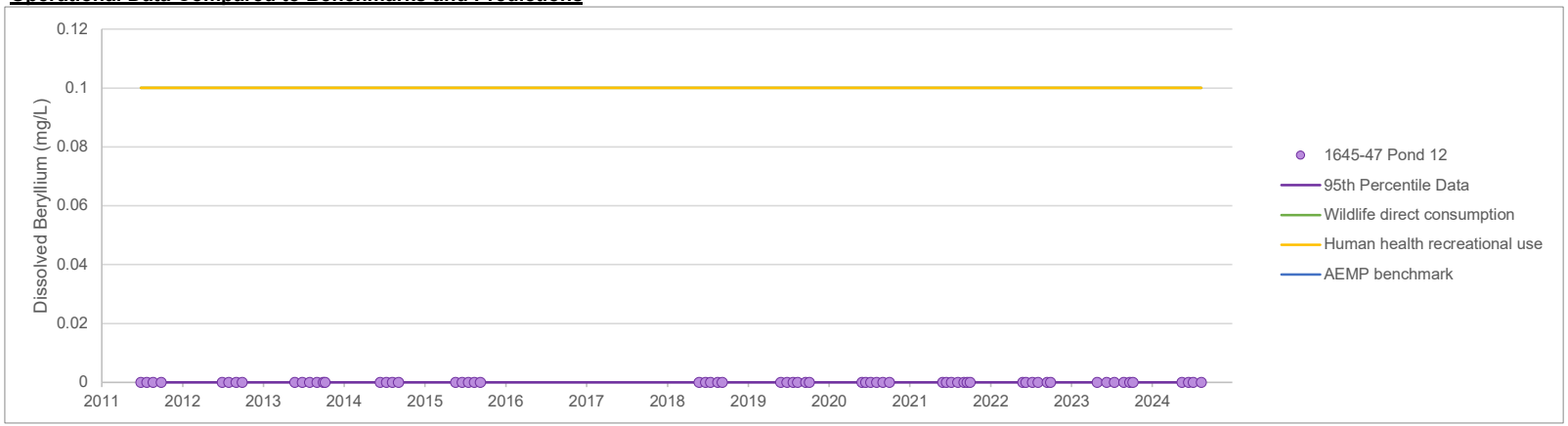


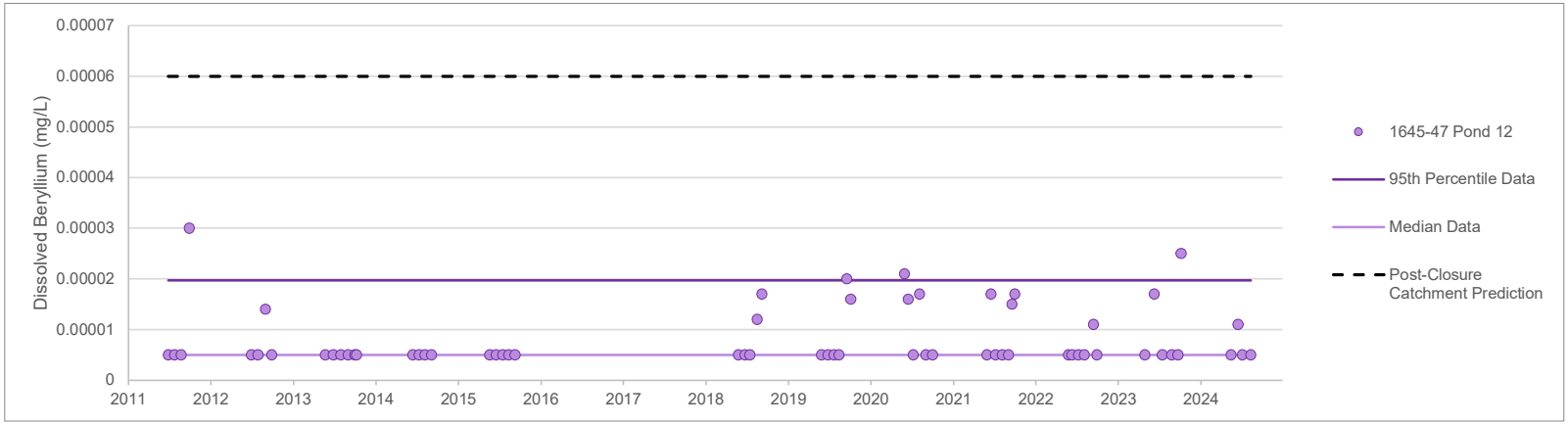
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.067	Wildlife	None
Median	0.041	Human recreational	40.0
Count	63	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



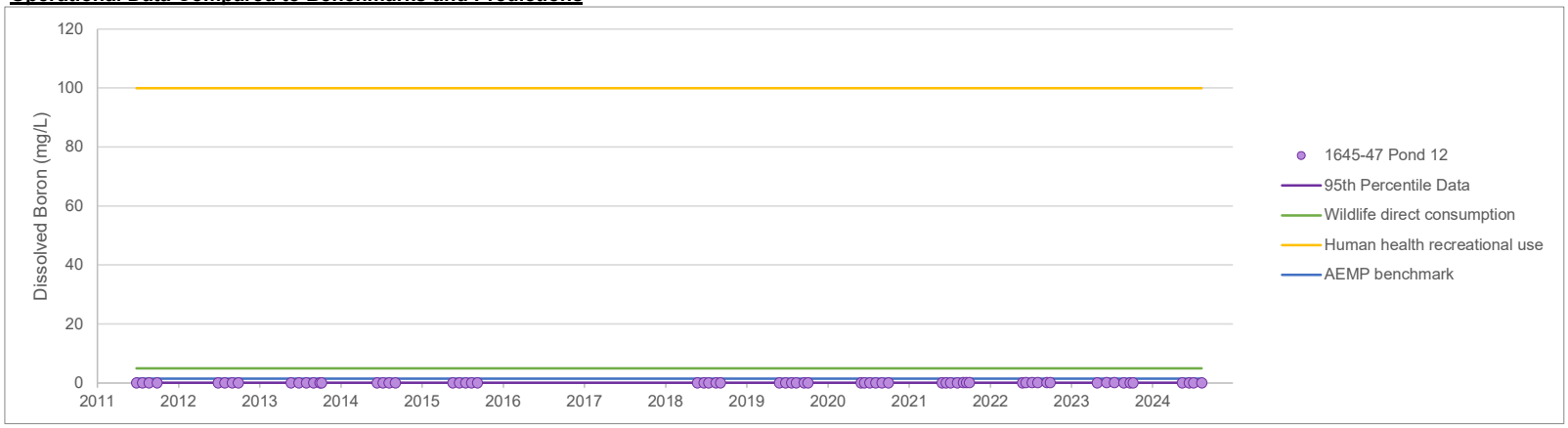


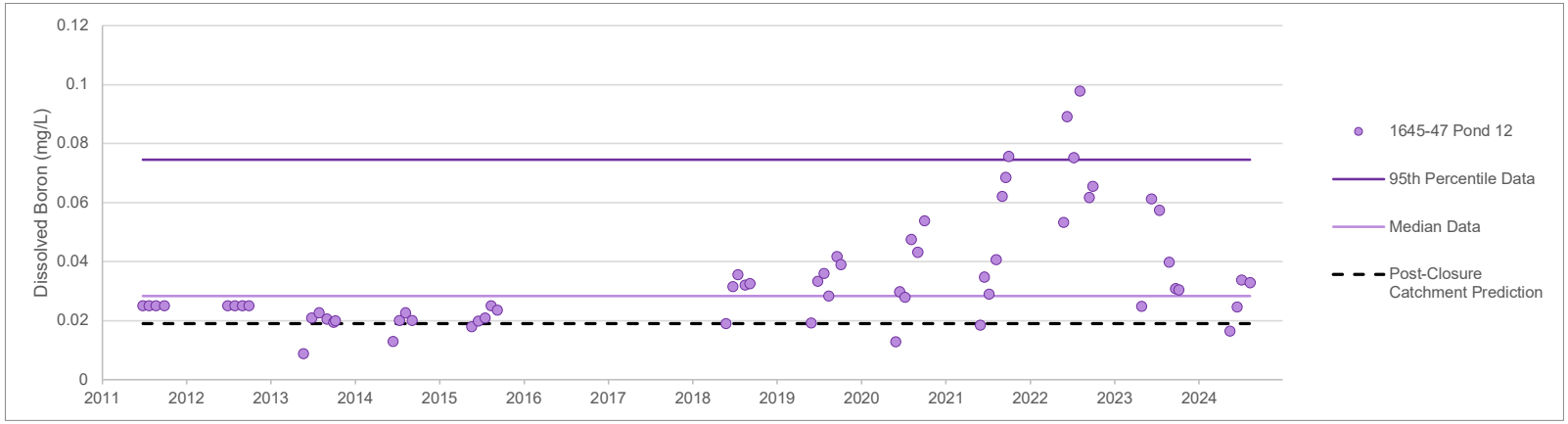
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000020	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



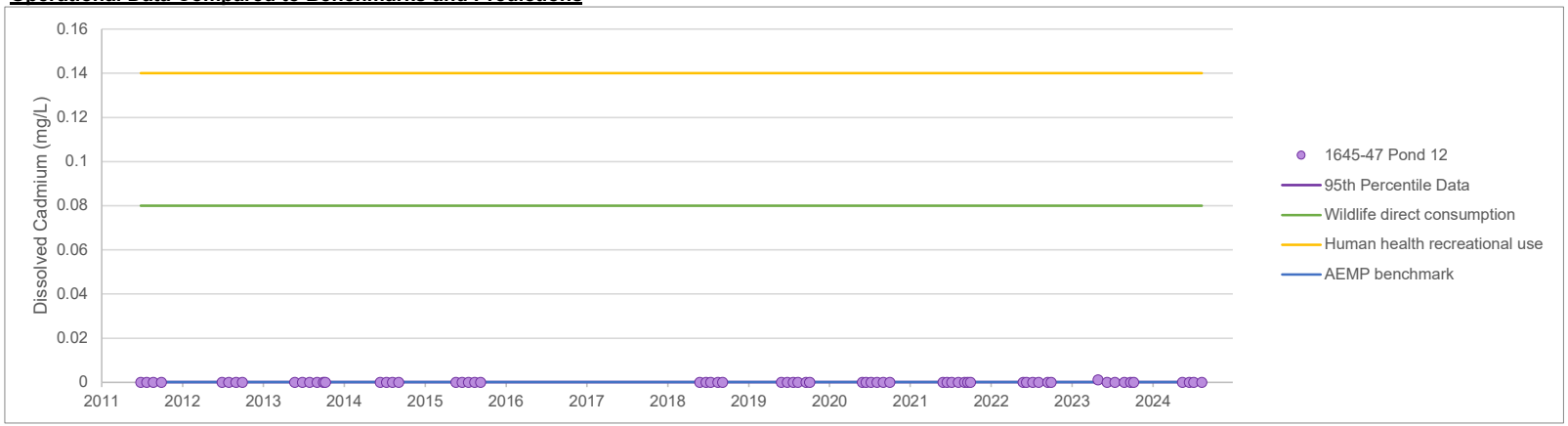


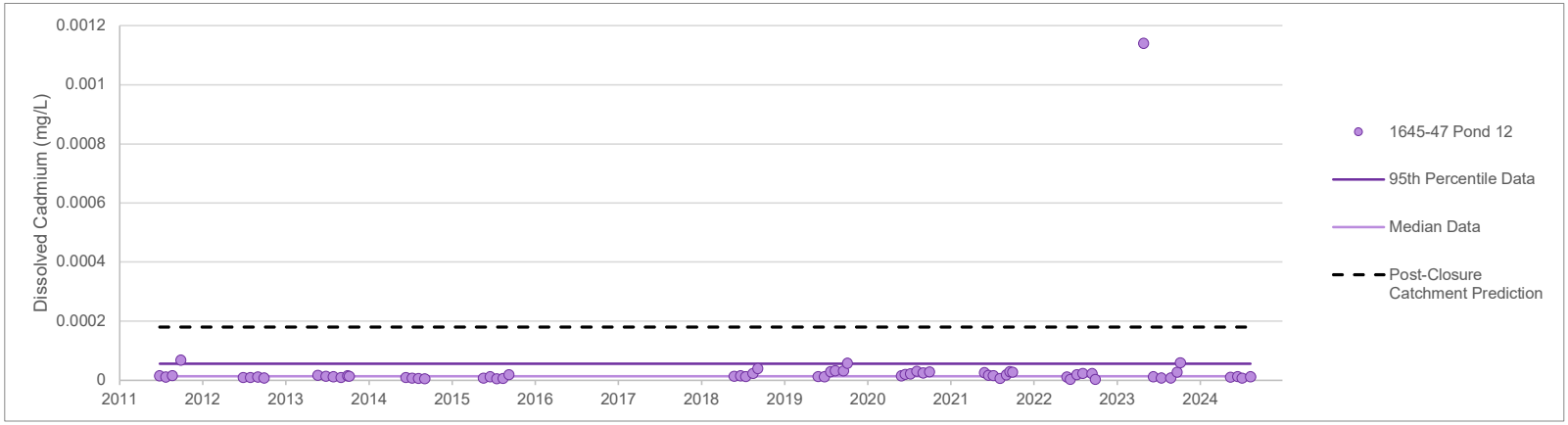
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.075	Wildlife	5.0
Median	0.028	Human recreational	100.0
Count	63	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions



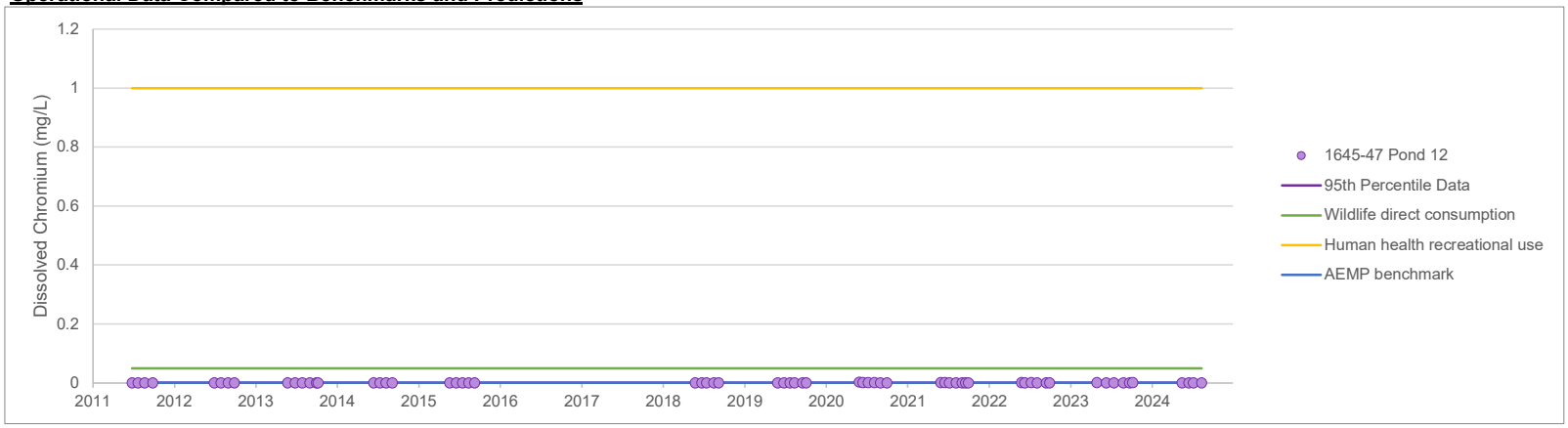


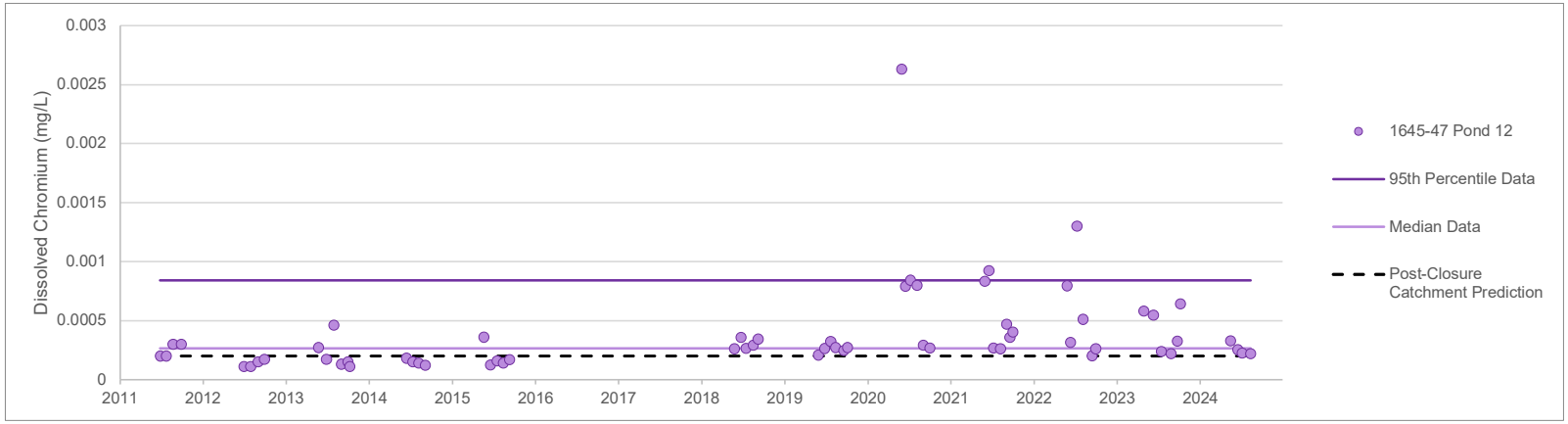
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00006	Wildlife	0.08
Median	0.00001	Human recreational	0.14
Count	63	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



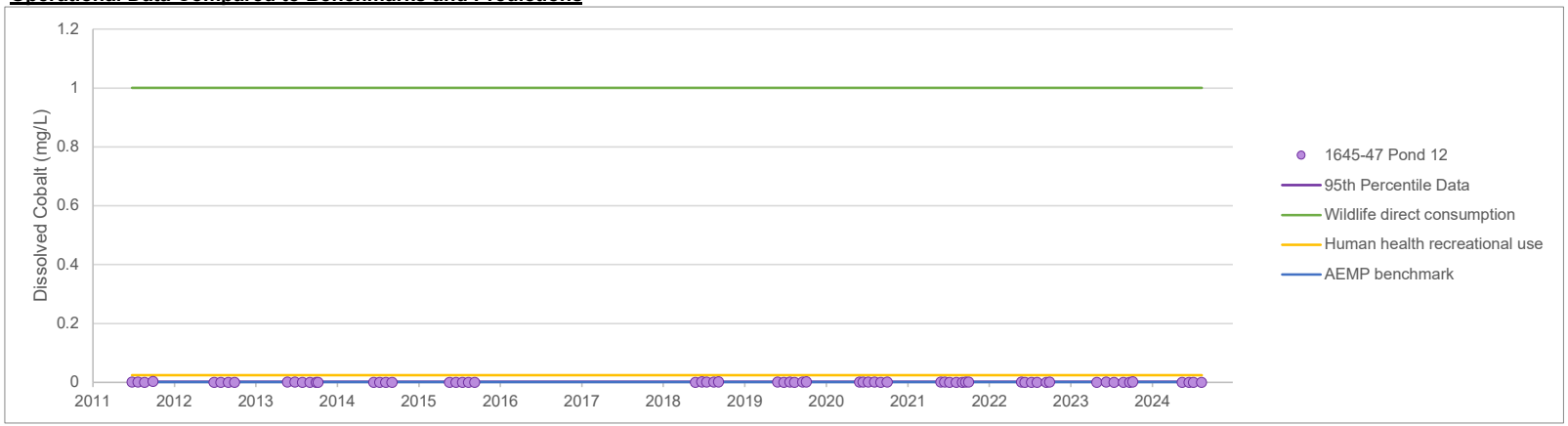


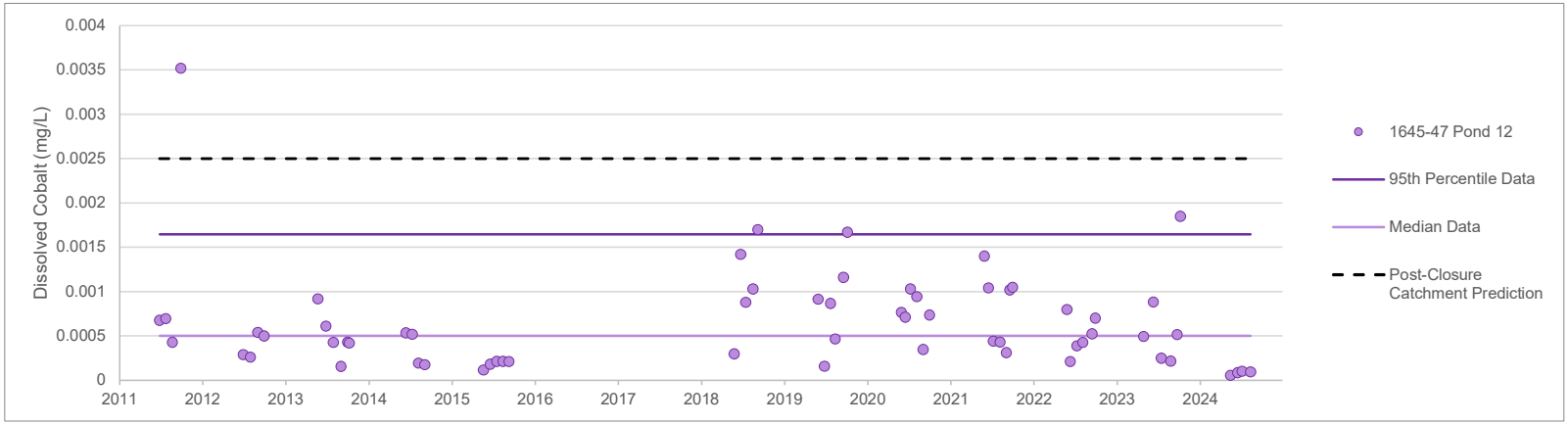
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00084	Wildlife	0.05
Median	0.00027	Human recreational	1.0
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



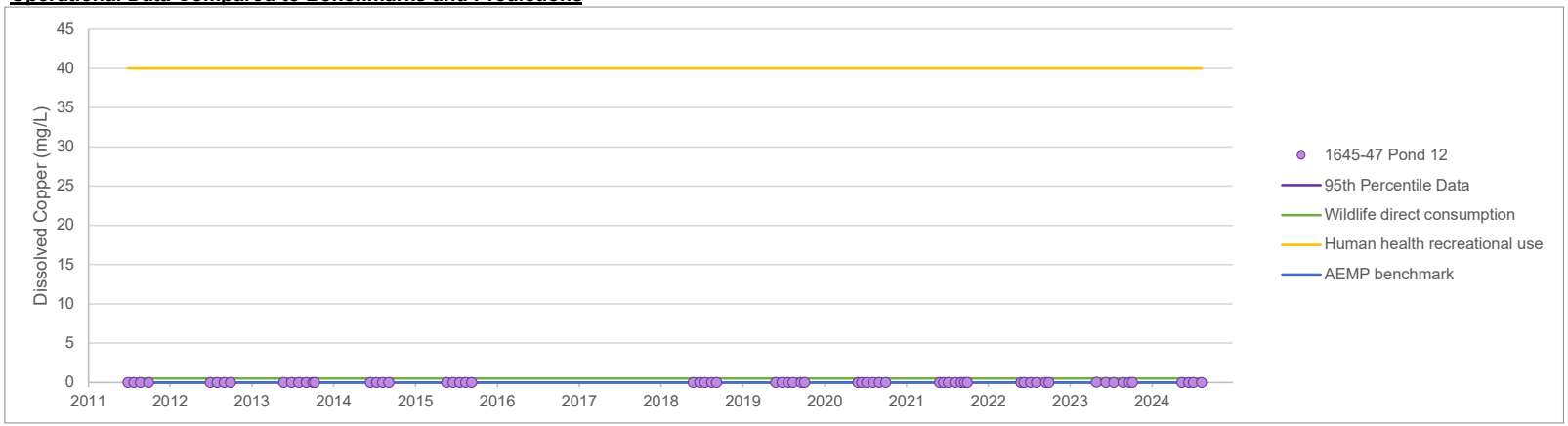


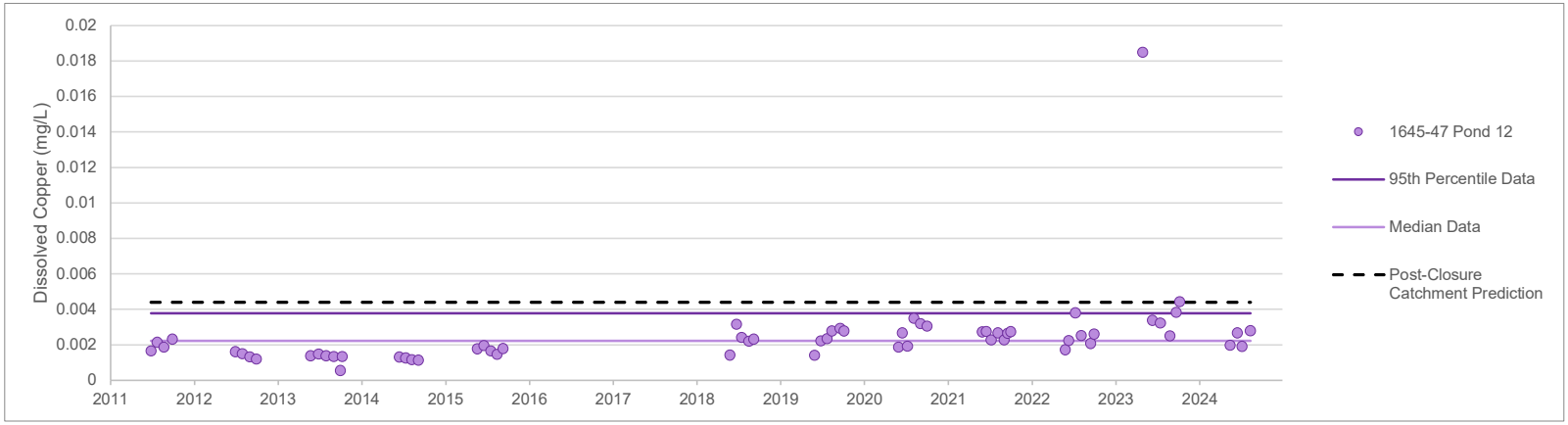
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0016	Wildlife	1.0
Median	0.0005	Human recreational	0.02
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



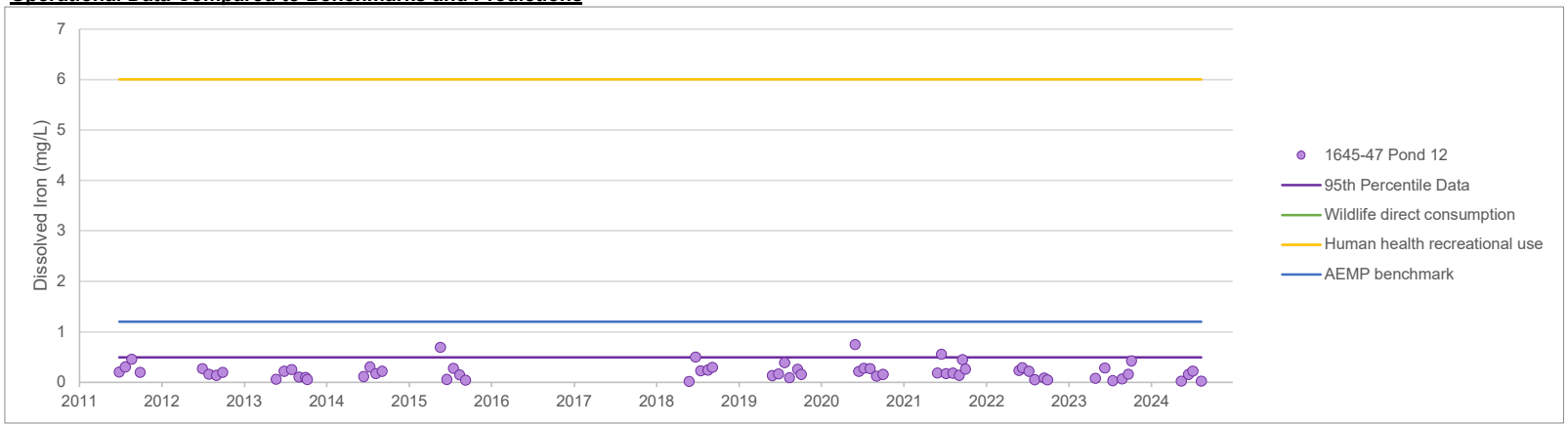


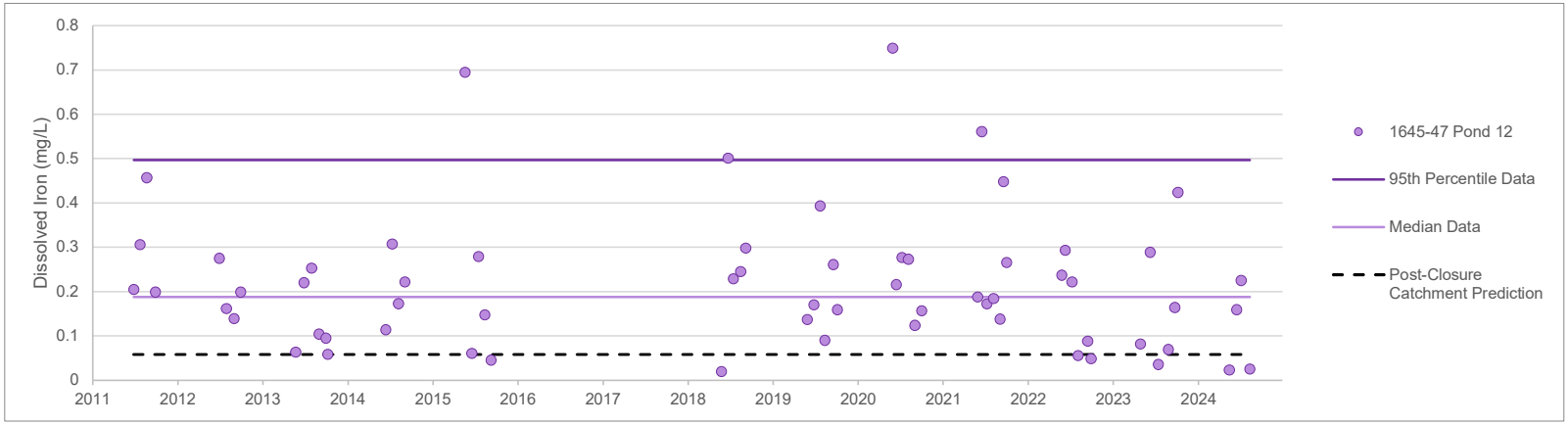
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0038	Wildlife	0.5
Median	0.0022	Human recreational	40.0
Count	63	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



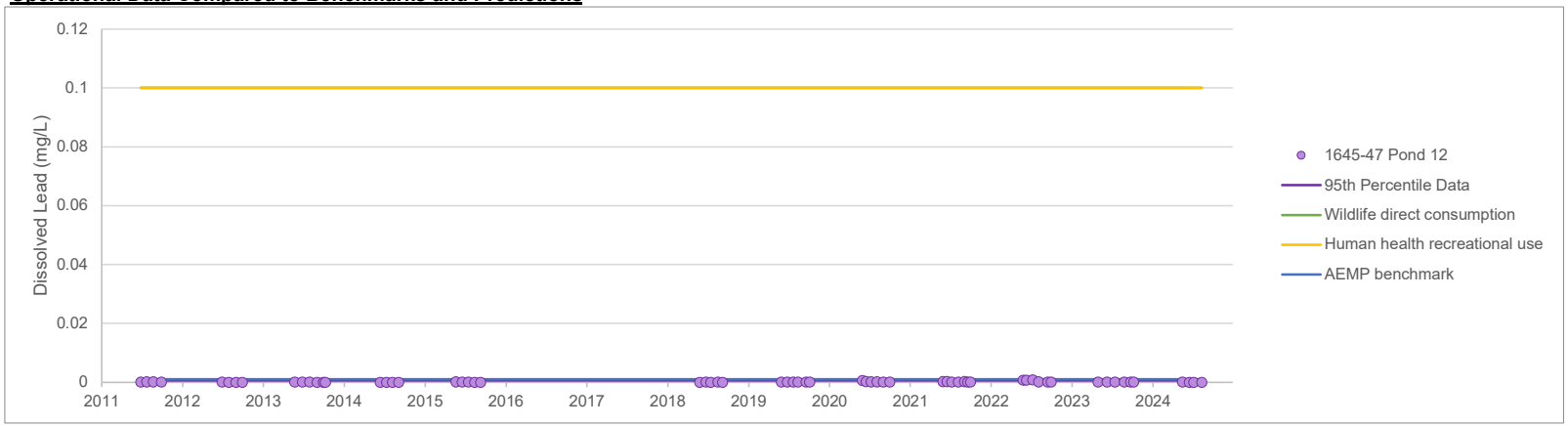


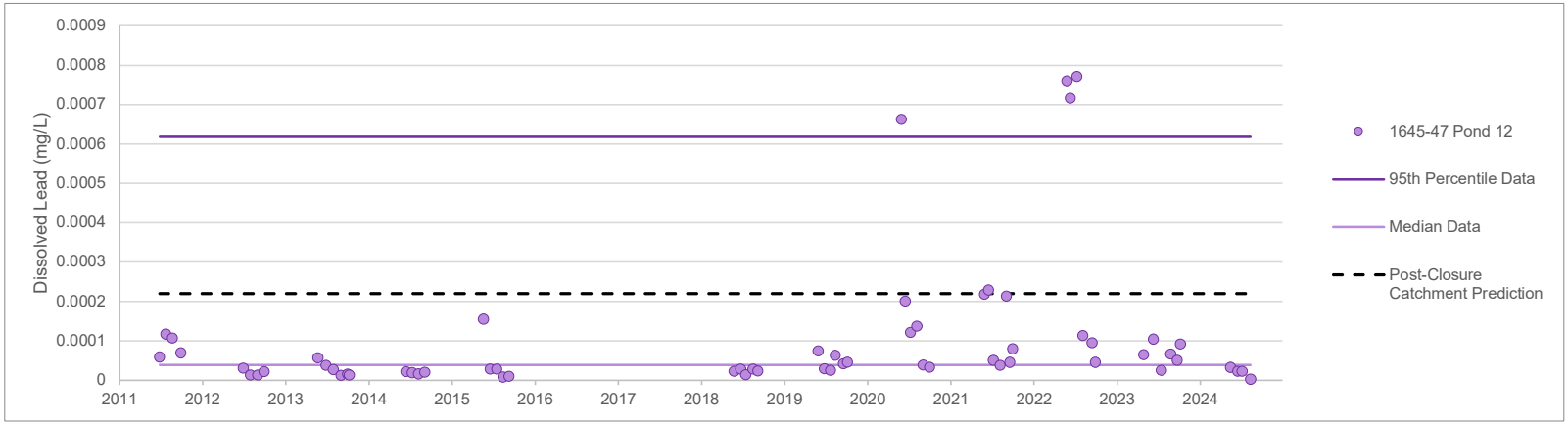
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.50	Wildlife	None
Median	0.19	Human recreational	6.0
Count	63	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions



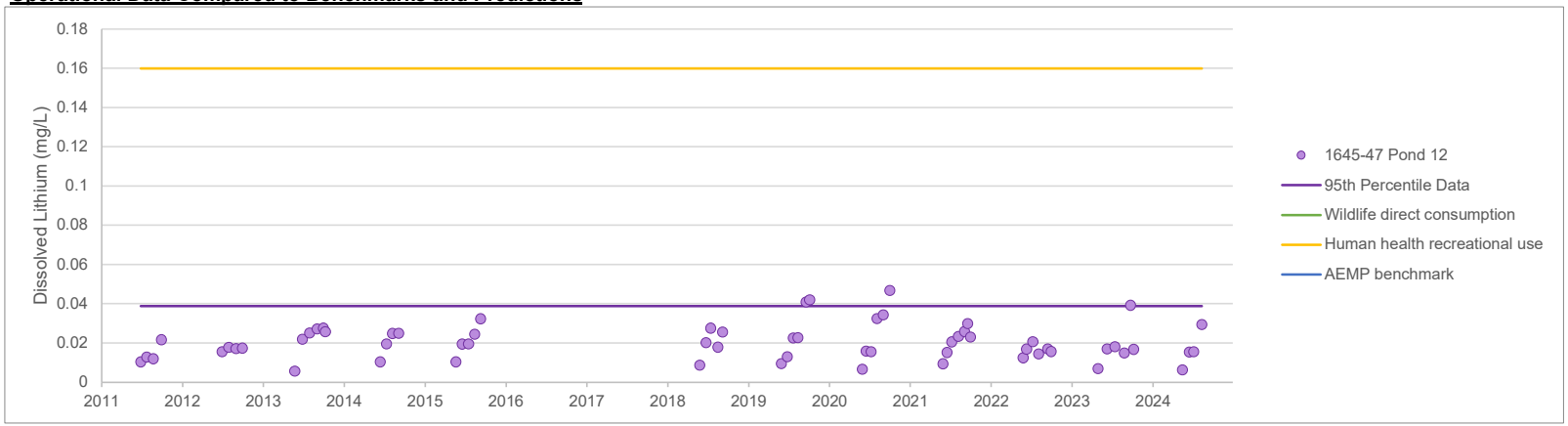


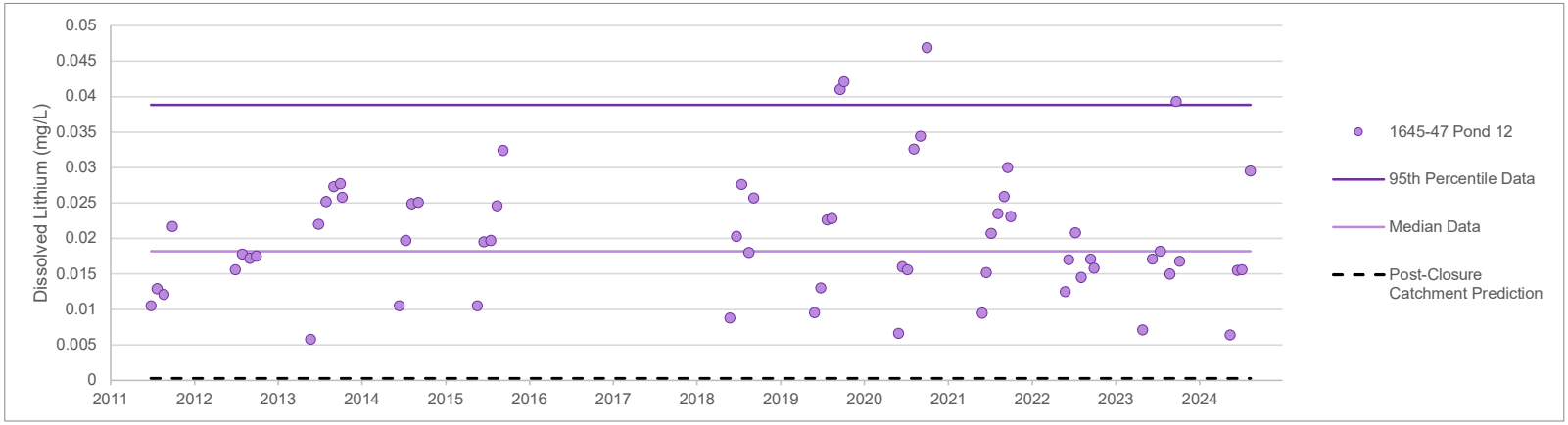
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00062	Wildlife	0.10
Median	0.00004	Human recreational	0.10
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



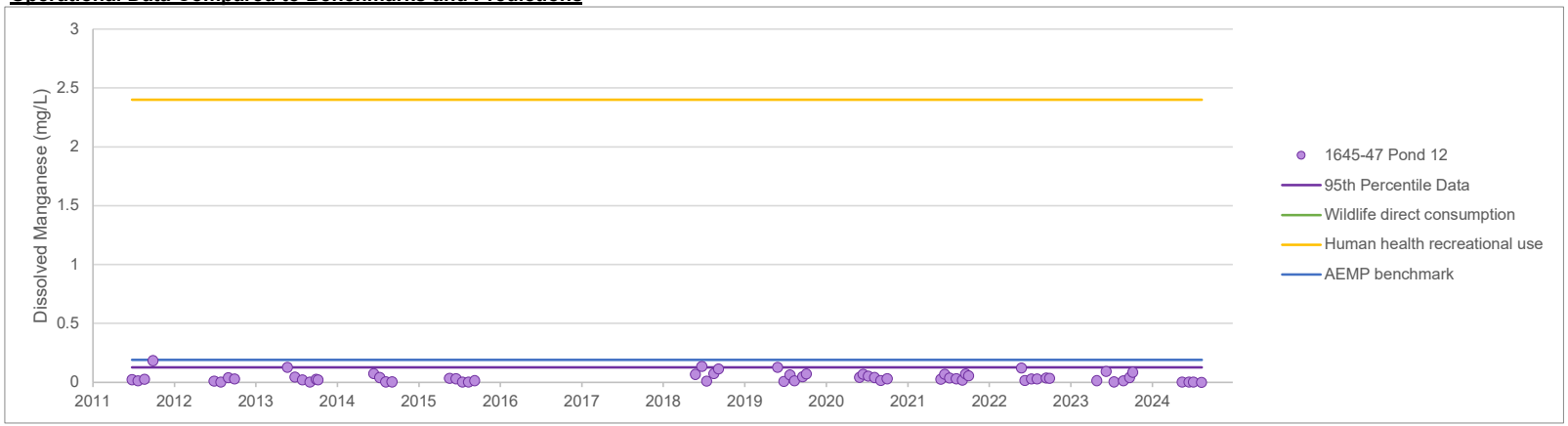


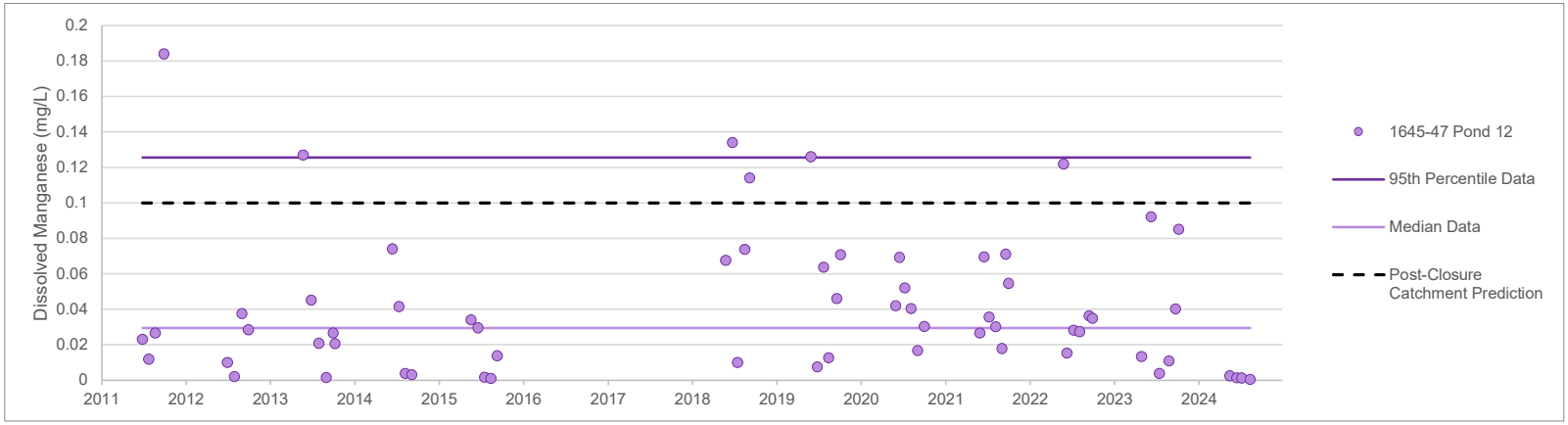
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.039	Wildlife	None
Median	0.018	Human recreational	0.16
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



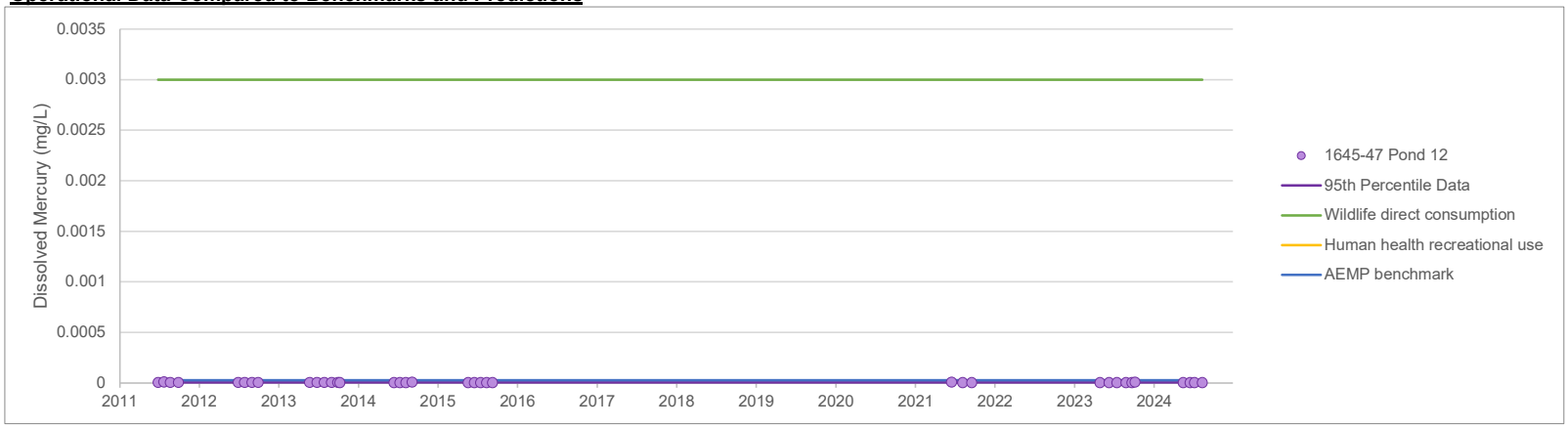


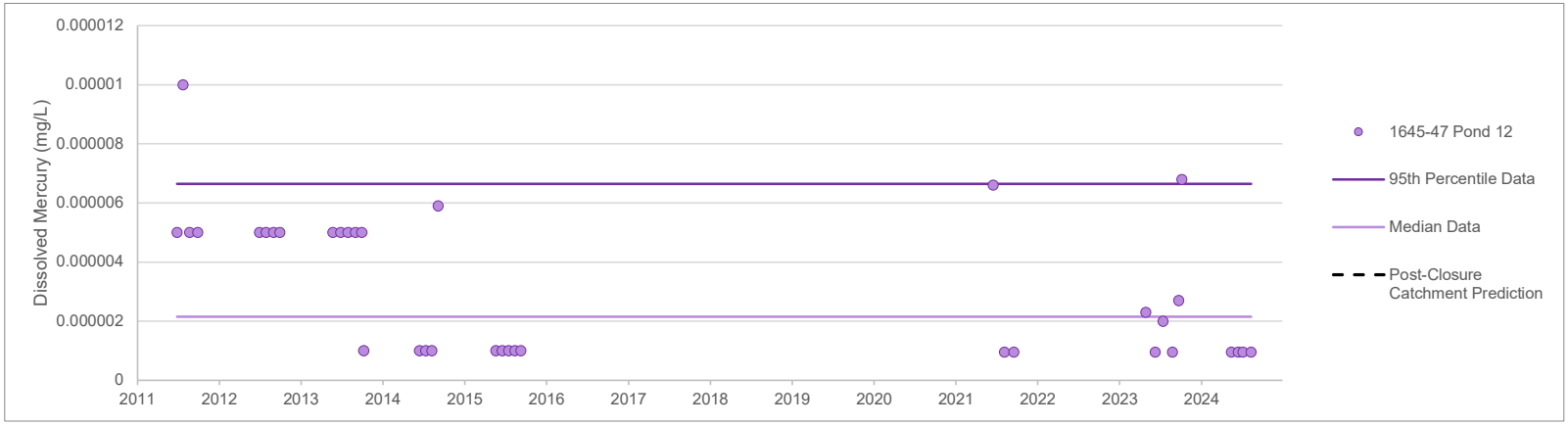
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.126	Wildlife	None
Median	0.030	Human recreational	2.4
Count	63	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions



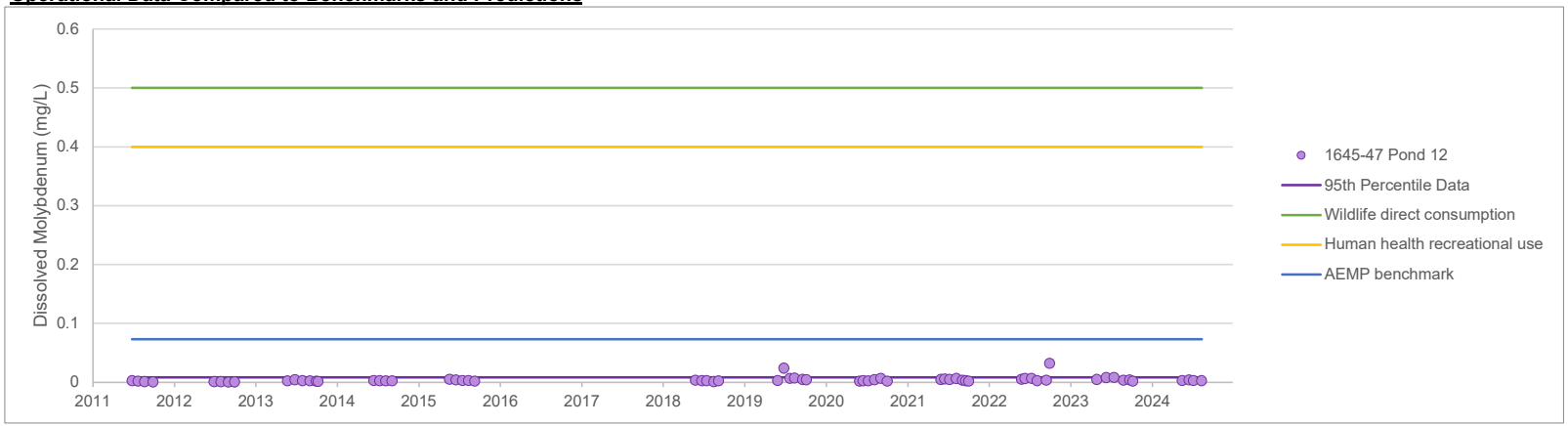


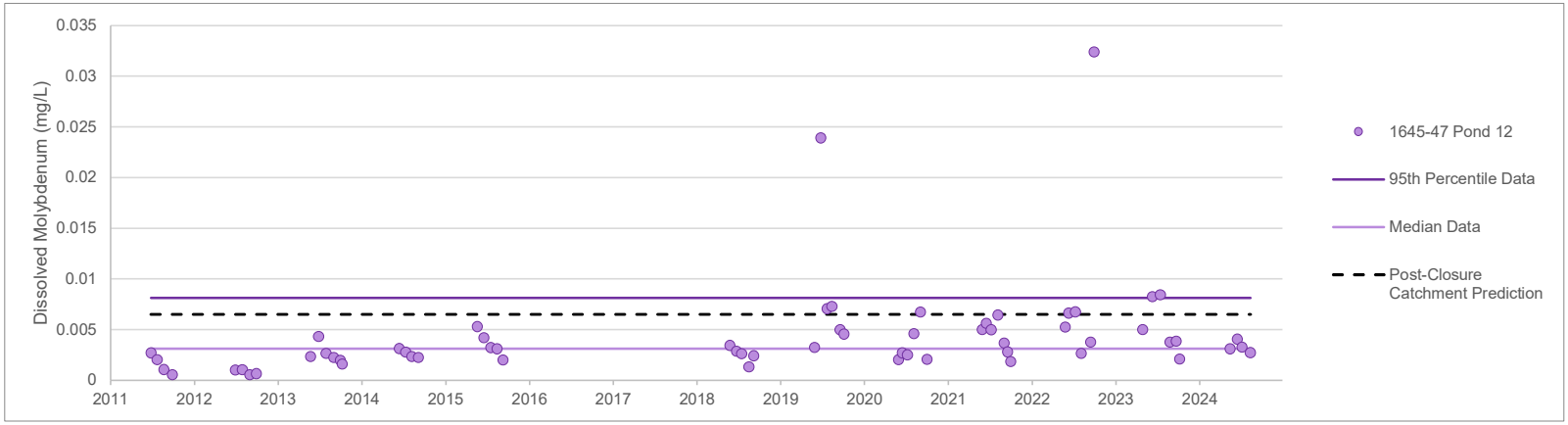
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000067	Wildlife	0.003
Median	0.0000022	Human recreational	None
Count	36	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



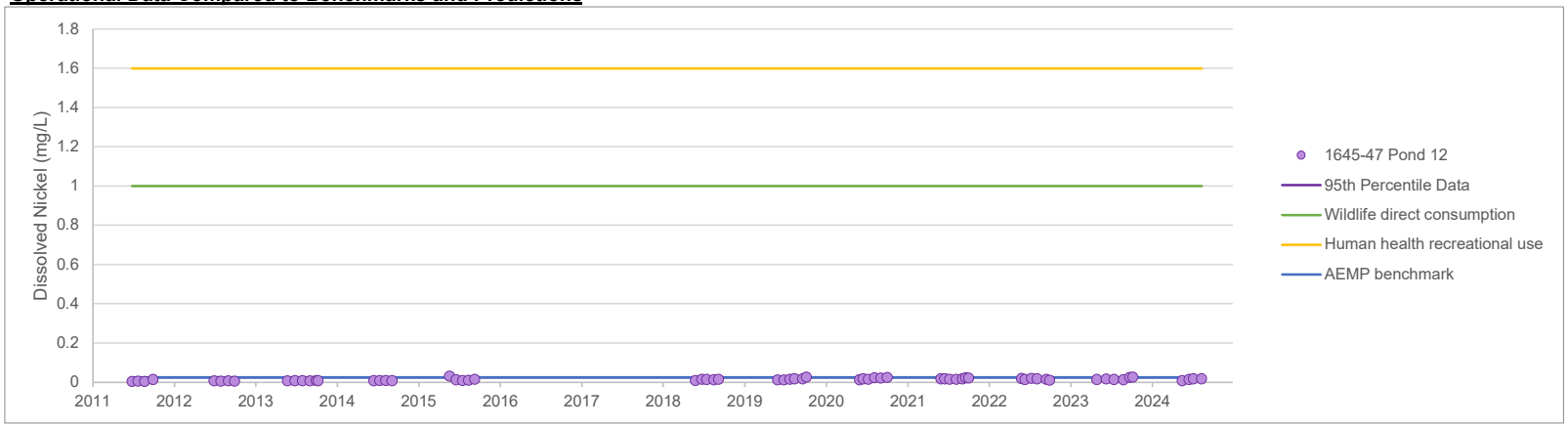


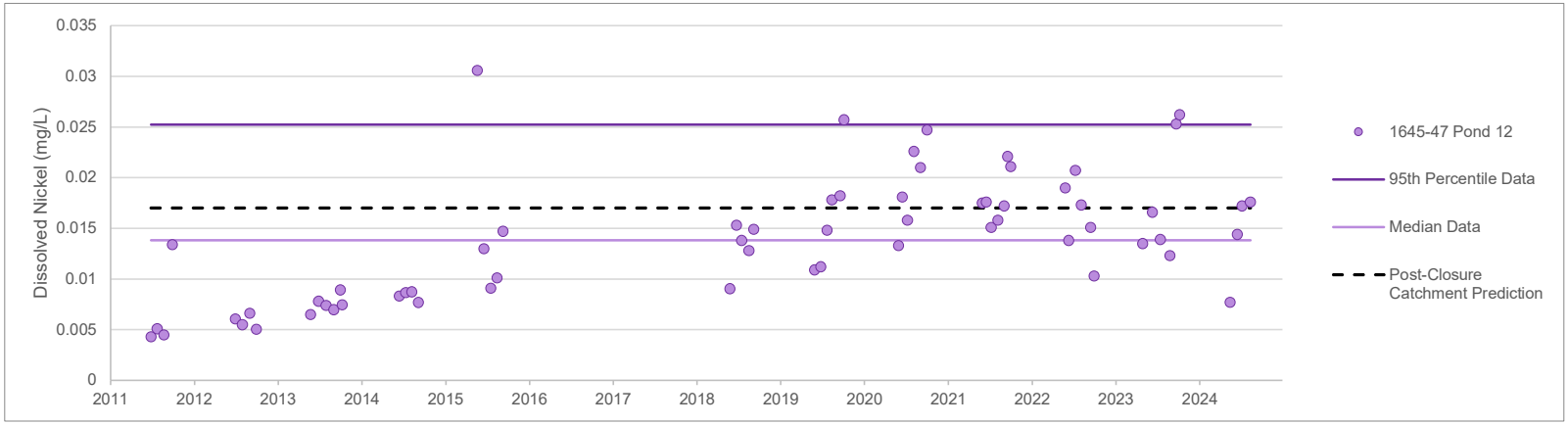
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0081	Wildlife	0.5
Median	0.0031	Human recreational	0.4
Count	63	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



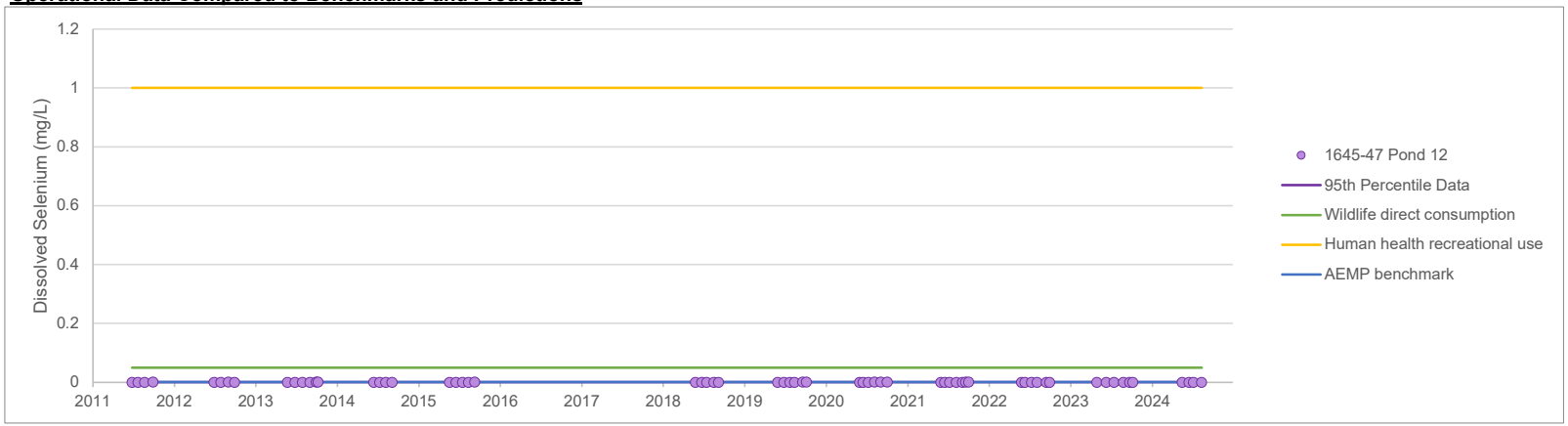


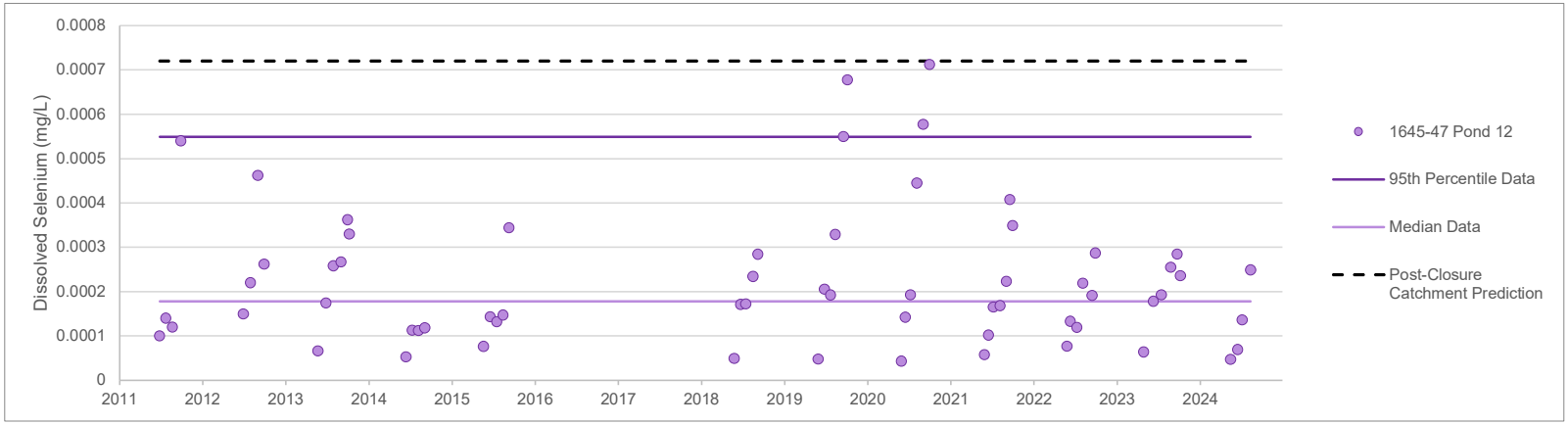
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.025	Wildlife	1.0
Median	0.014	Human recreational	1.6
Count	63	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



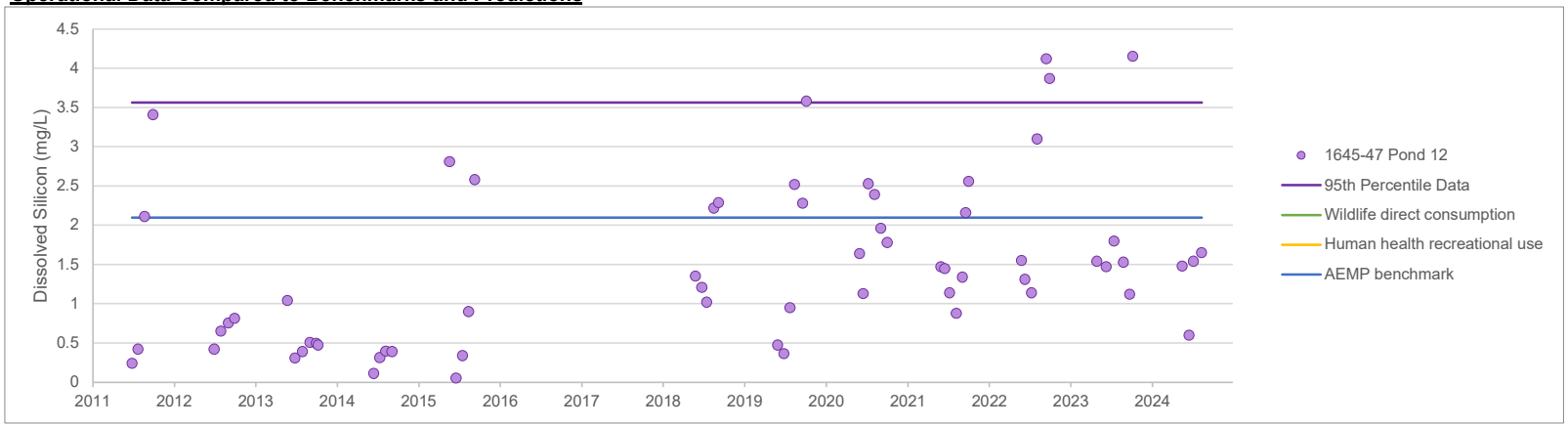


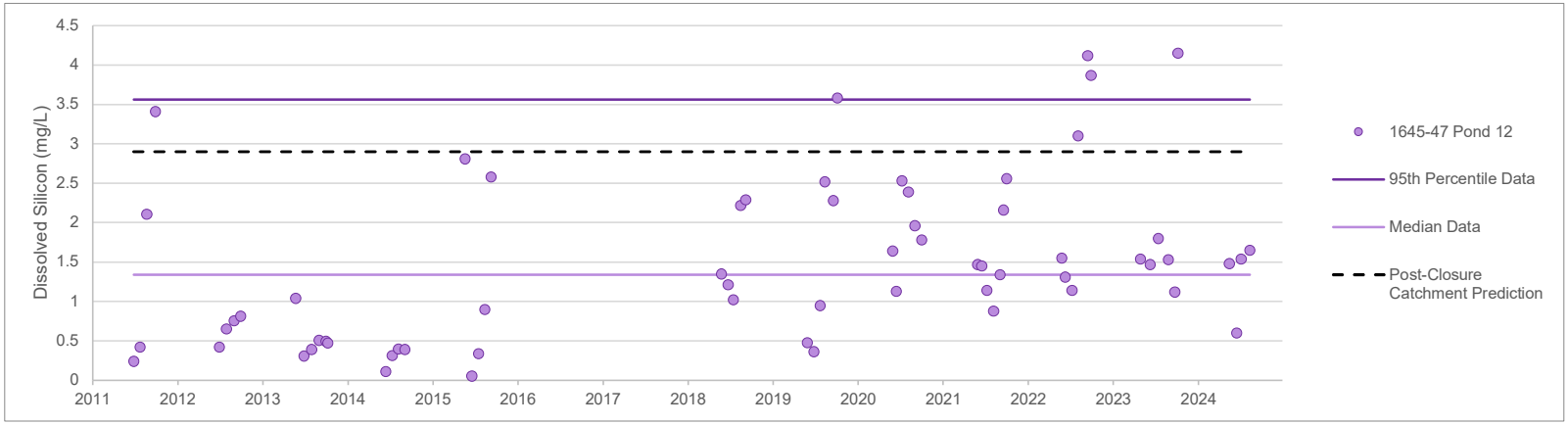
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00055	Wildlife	0.1
Median	0.00018	Human recreational	1.0
Count	63	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



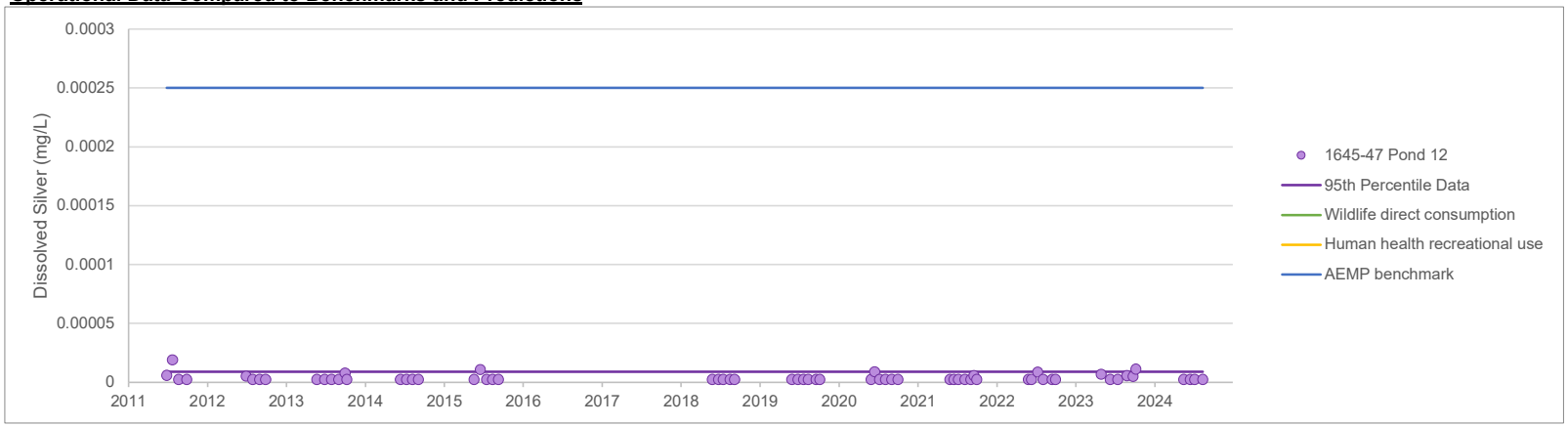


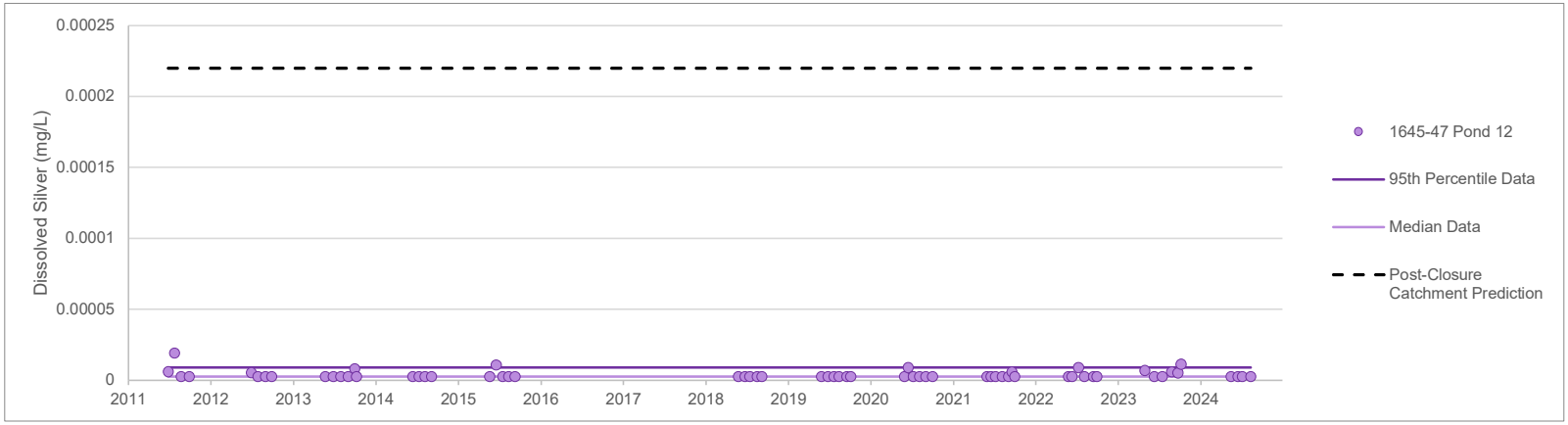
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.56	Wildlife	None
Median	1.34	Human recreational	None
Count	63	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



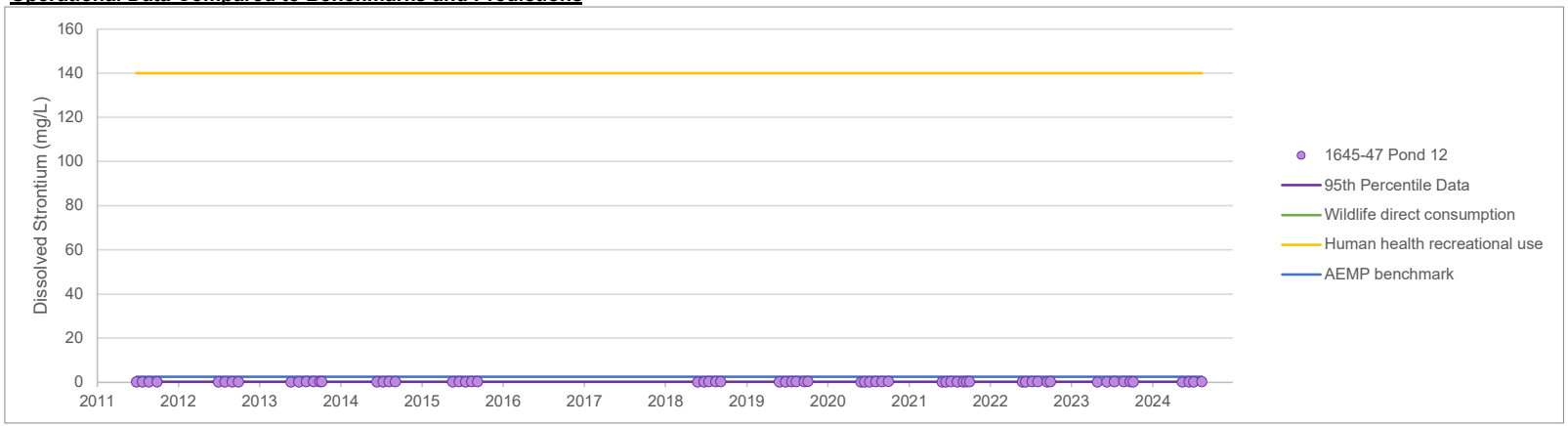


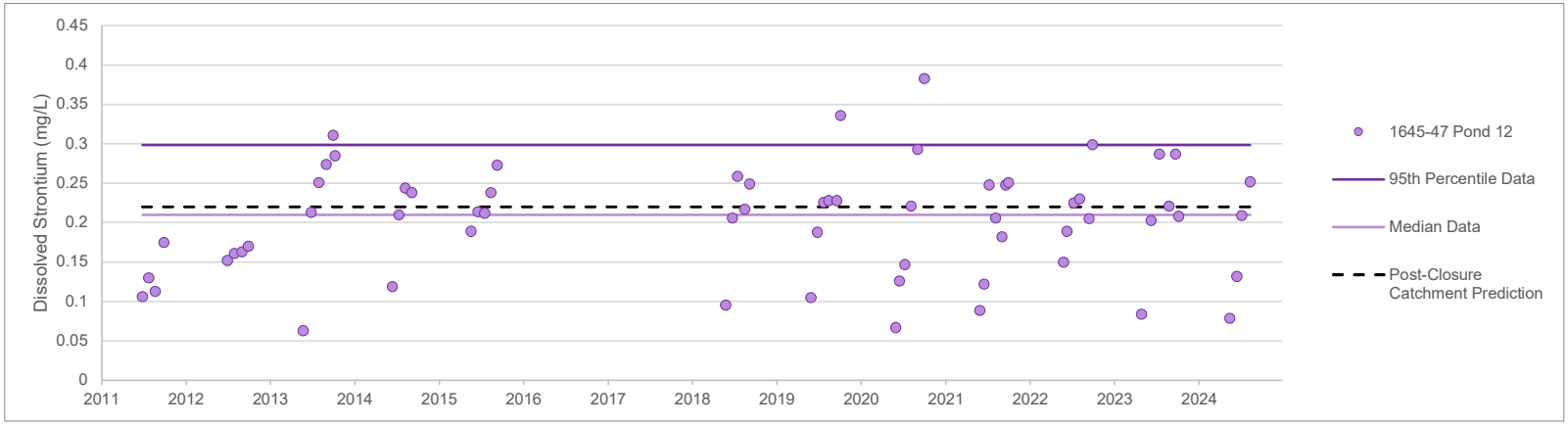
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000009	Wildlife	None
Median	0.000003	Human recreational	None
Count	63	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions



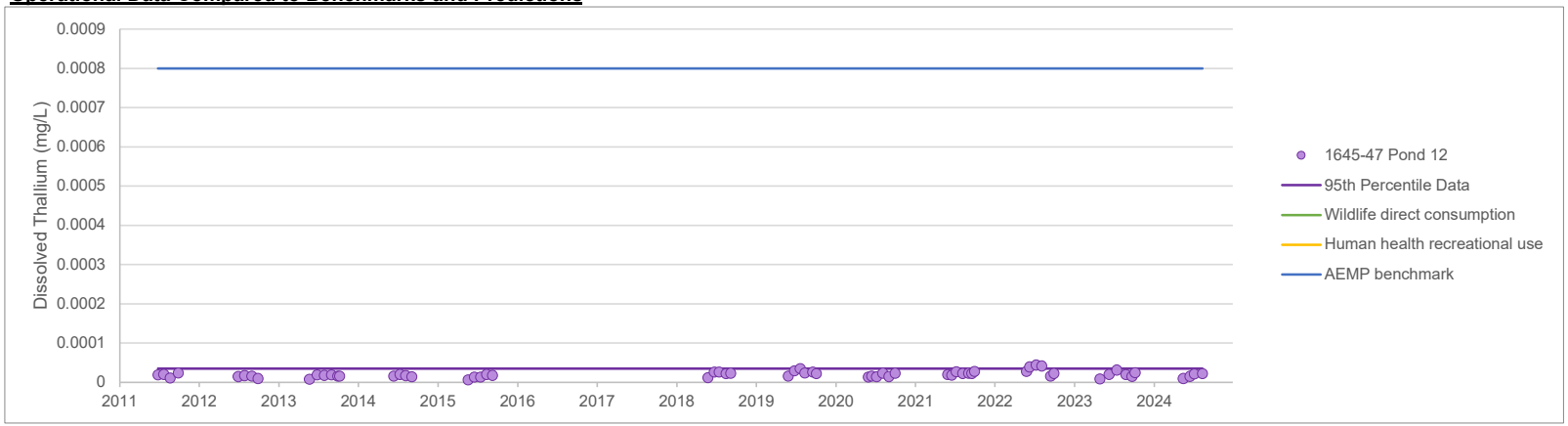


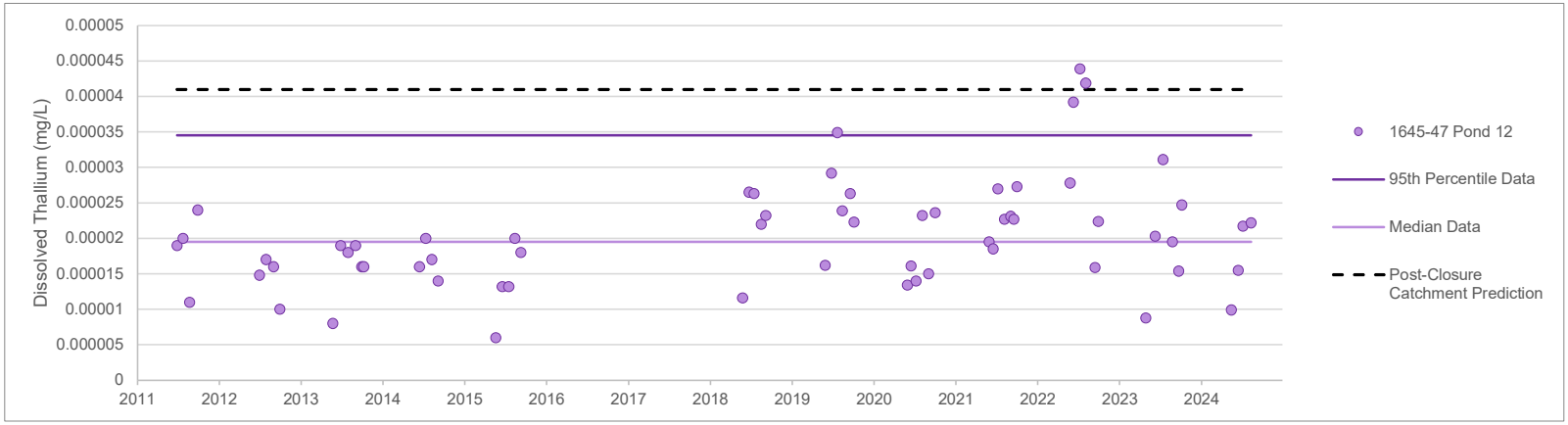
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.30	Wildlife	None
Median	0.21	Human recreational	140
Count	63	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



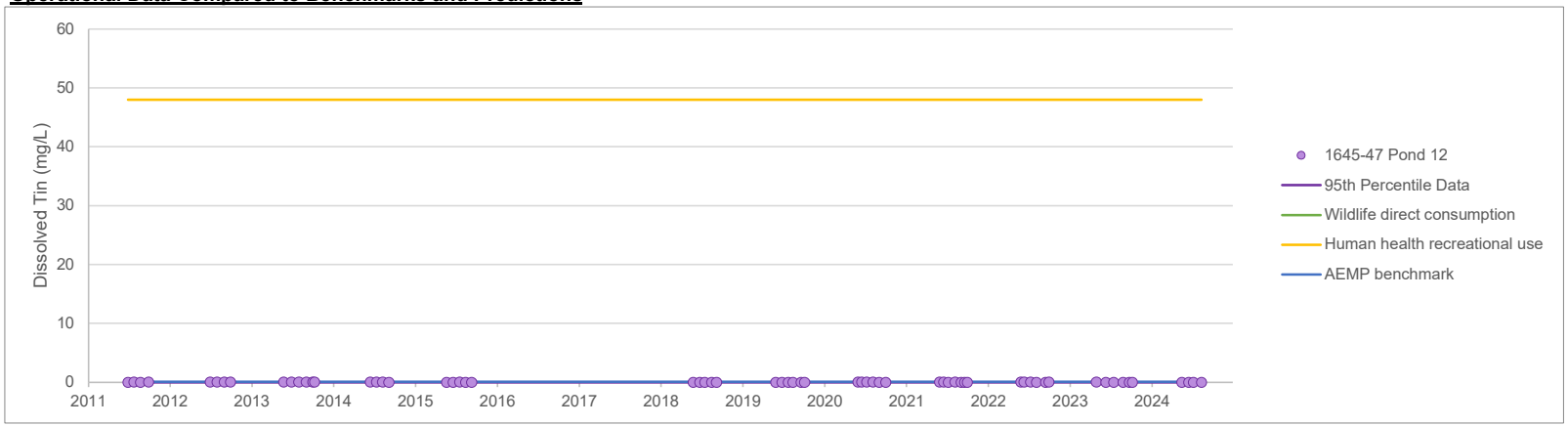


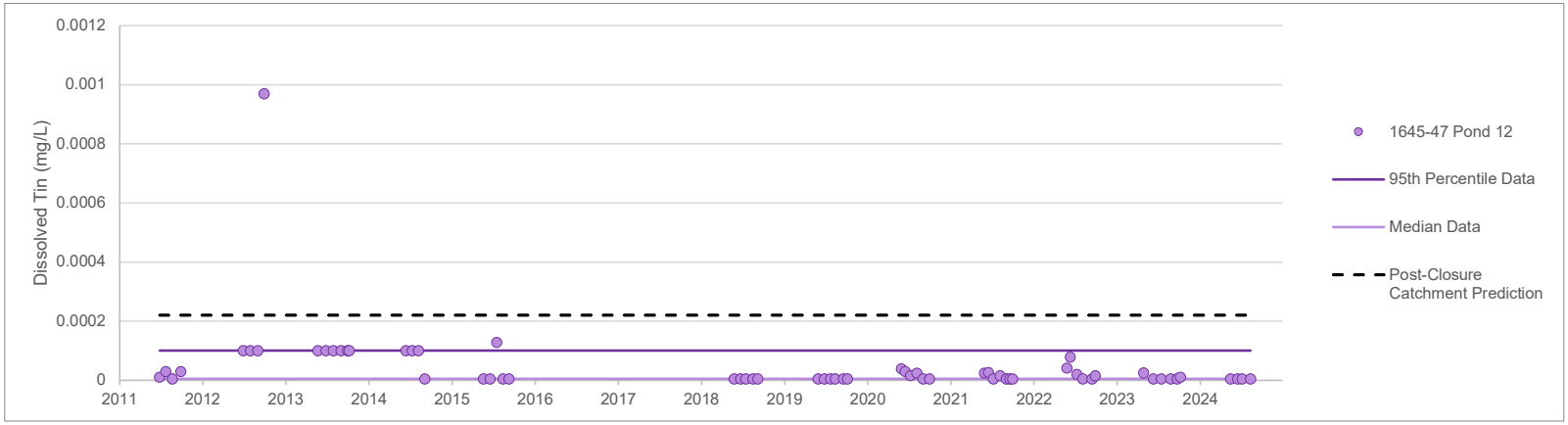
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00003	Wildlife	None
Median	0.00002	Human recreational	None
Count	63	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions



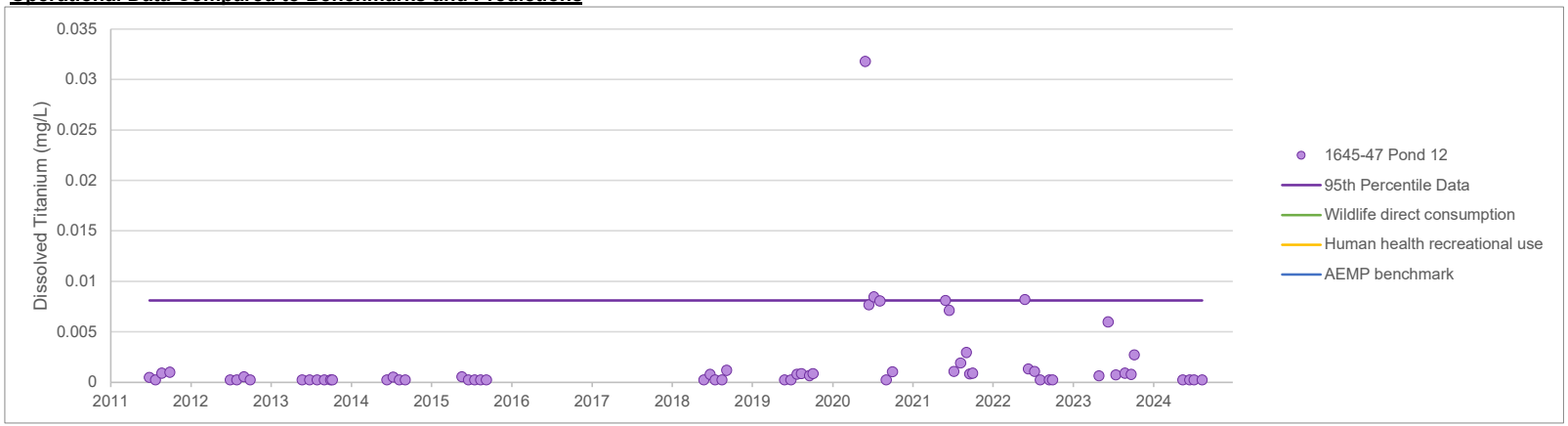


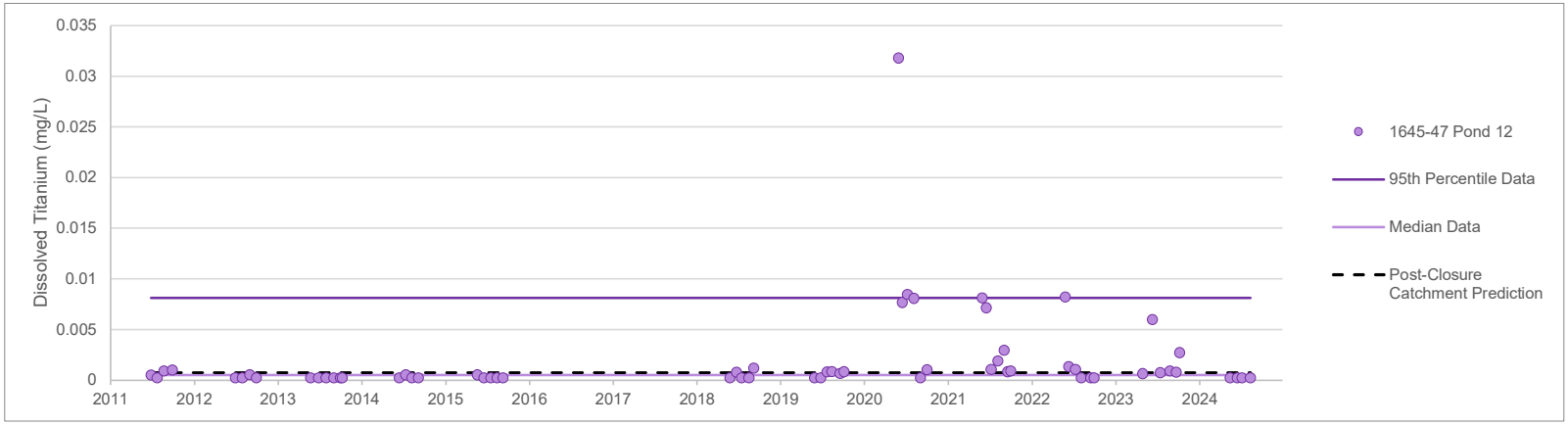
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	63	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



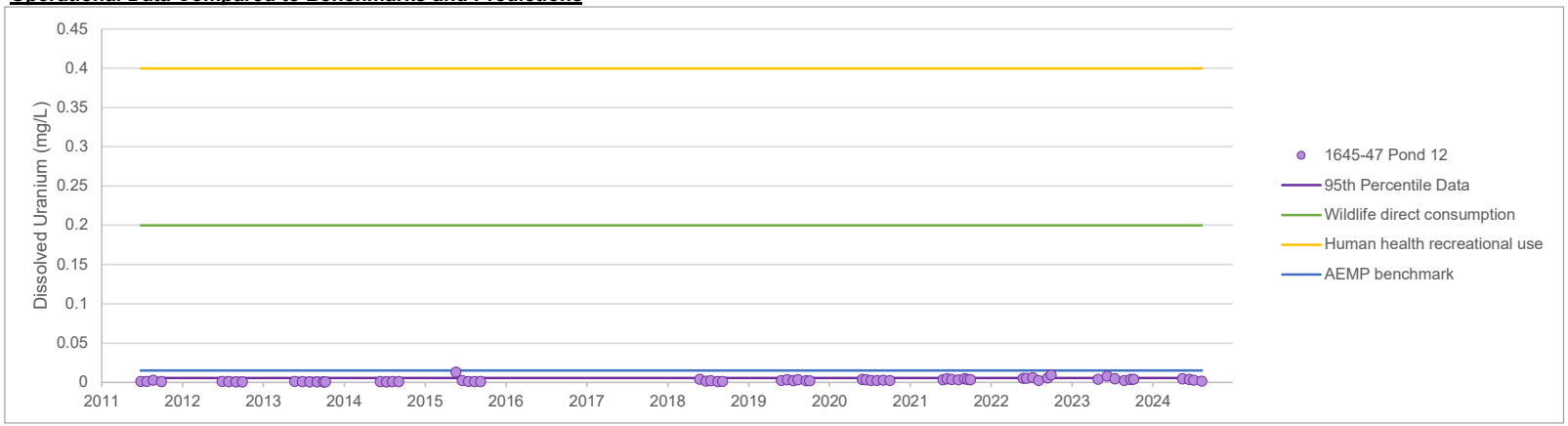


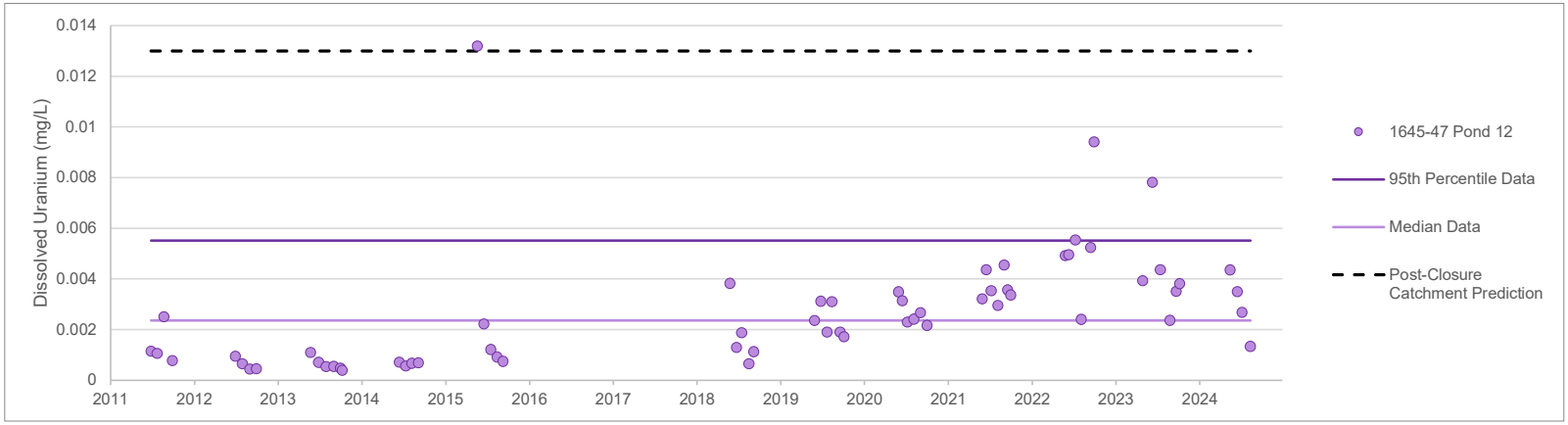
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0081	Wildlife	None
Median	0.0005	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



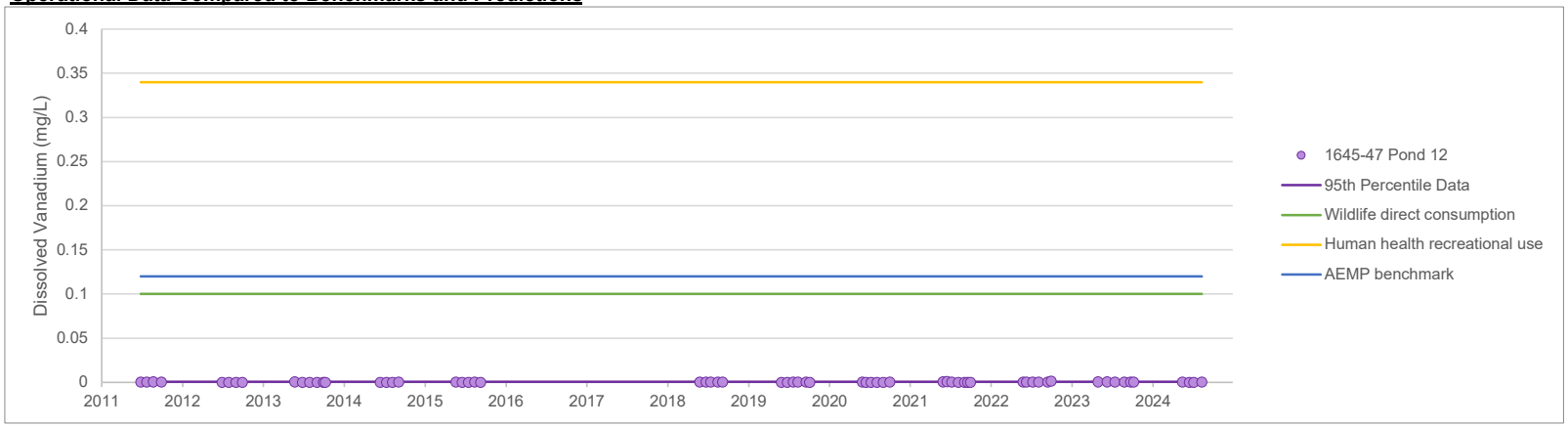


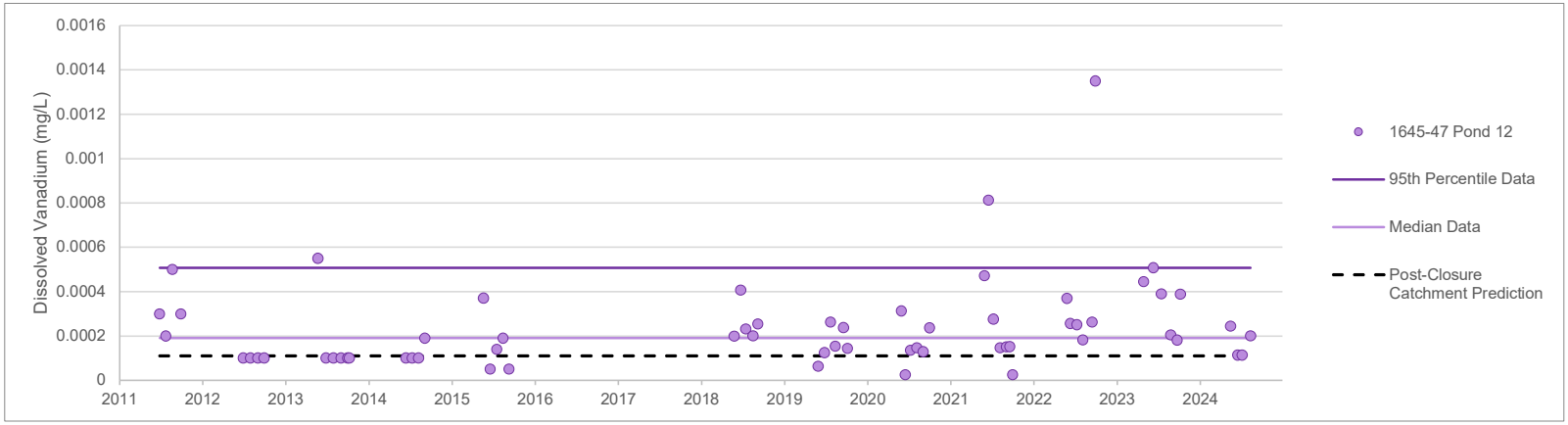
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0055	Wildlife	0.2
Median	0.0024	Human recreational	0.4
Count	63	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



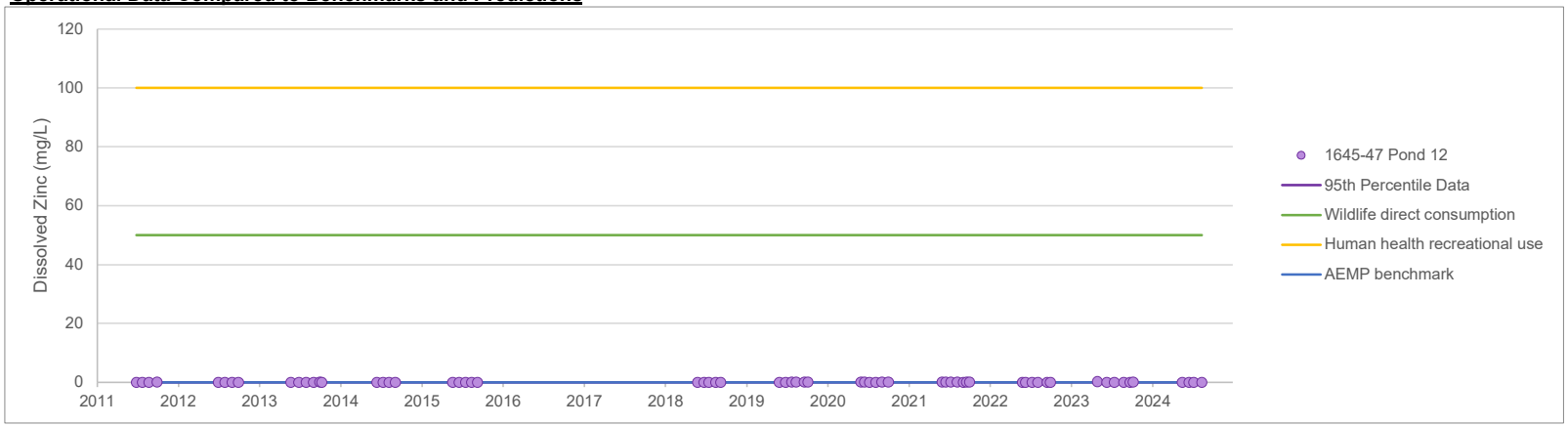


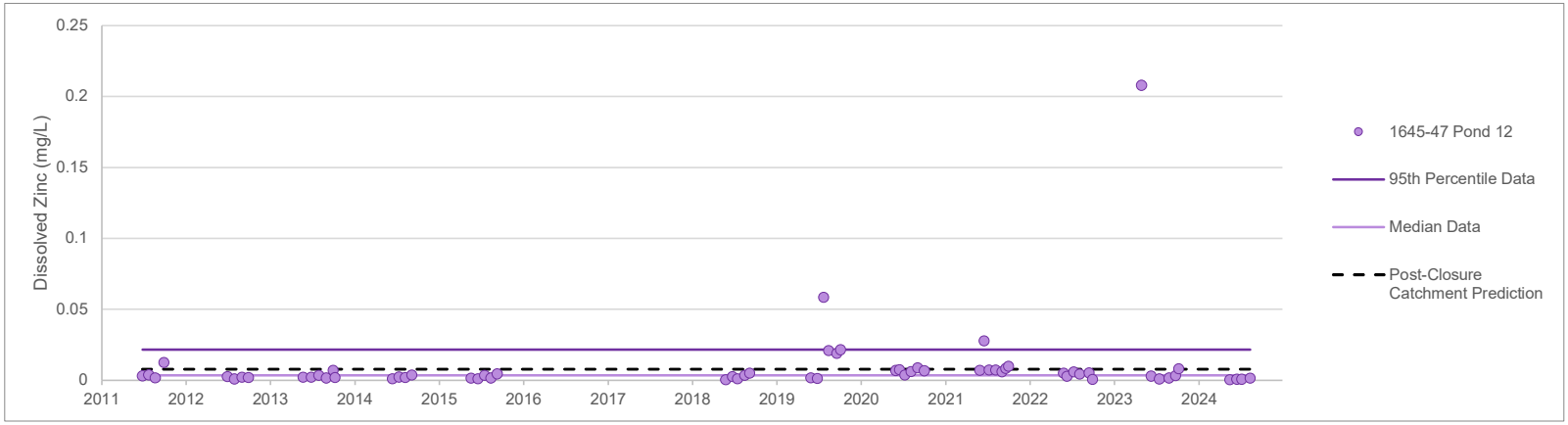
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0005	Wildlife	0.1
Median	0.0002	Human recreational	0.3
Count	63	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



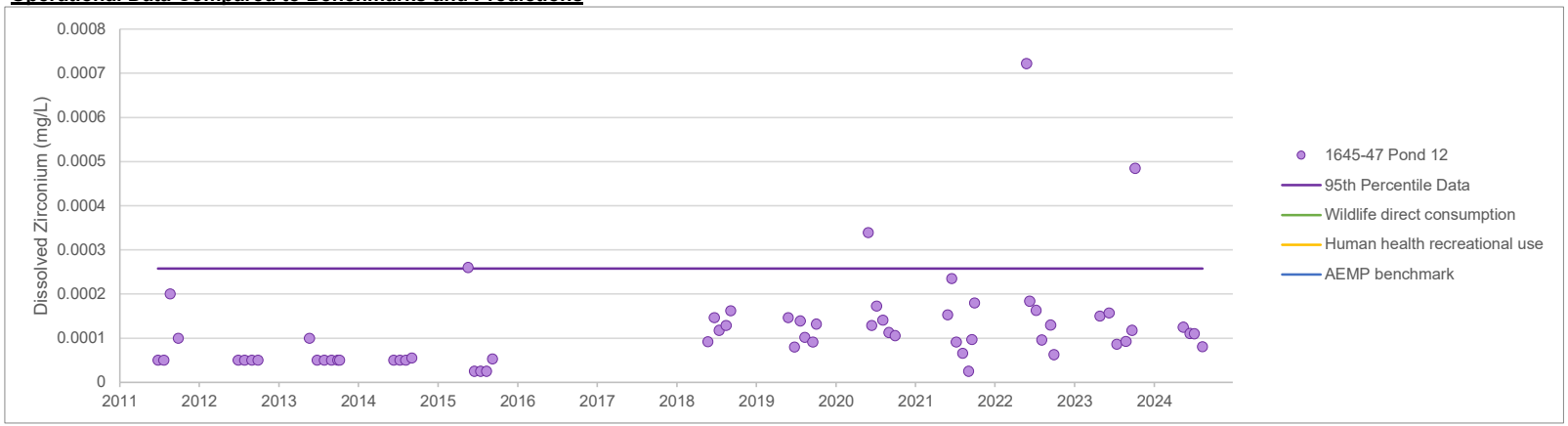


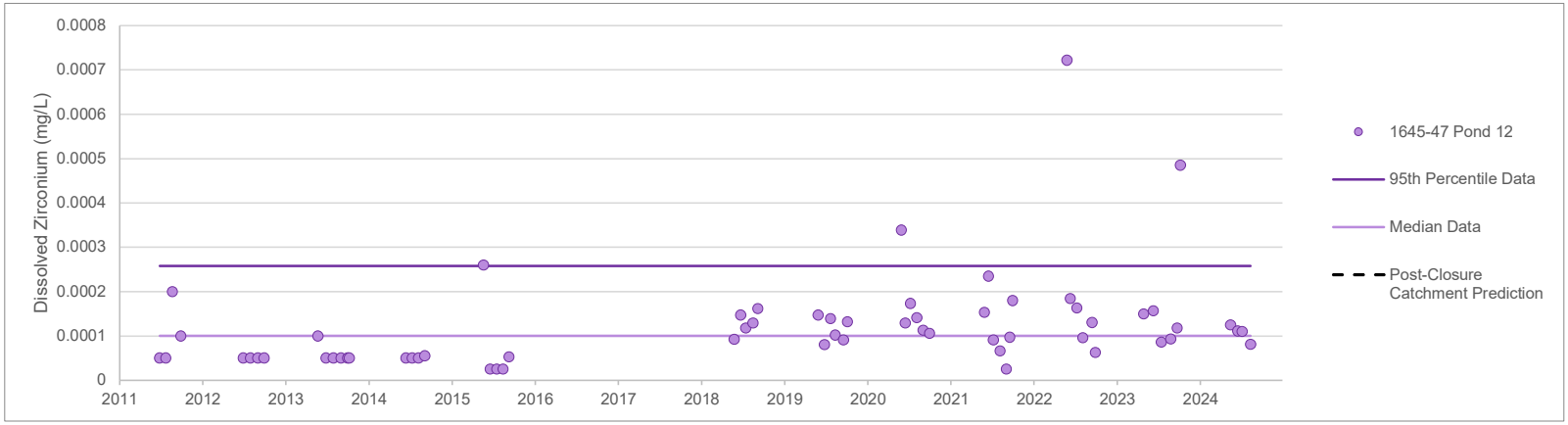
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.022	Wildlife	50
Median	0.003	Human recreational	100
Count	63	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0001	Human recreational	None
Count	63	AEMP	None

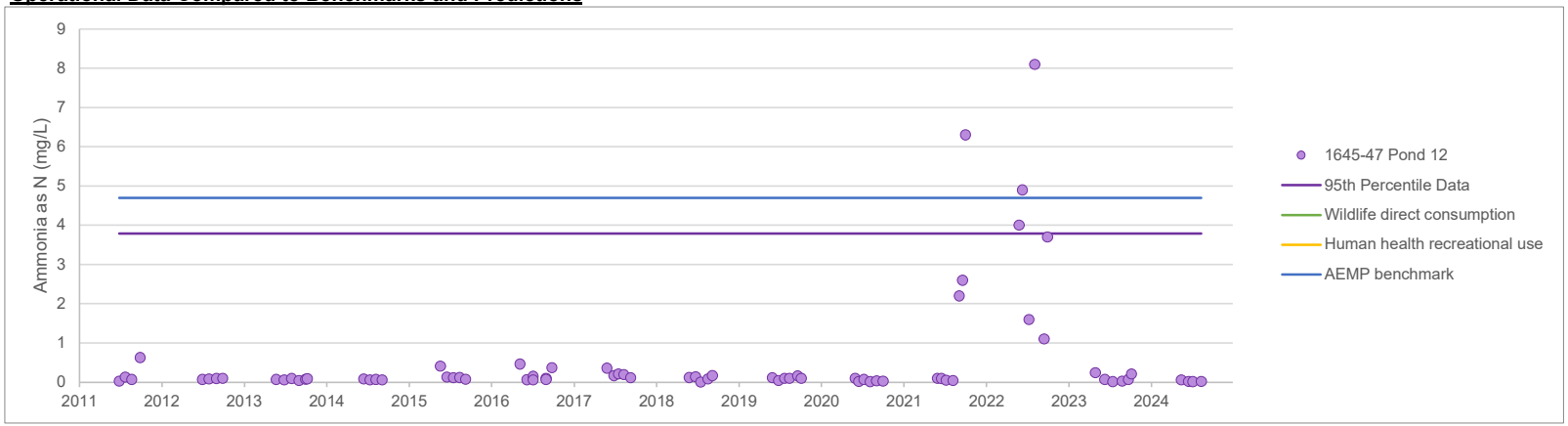
RioTinto | Diavik

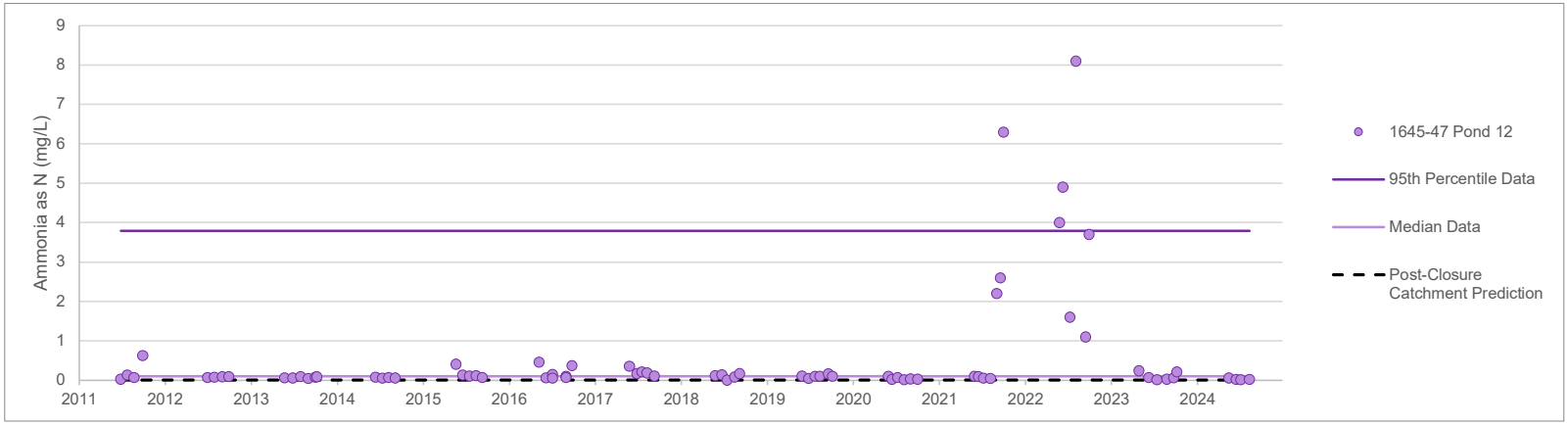
Pond 12

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions



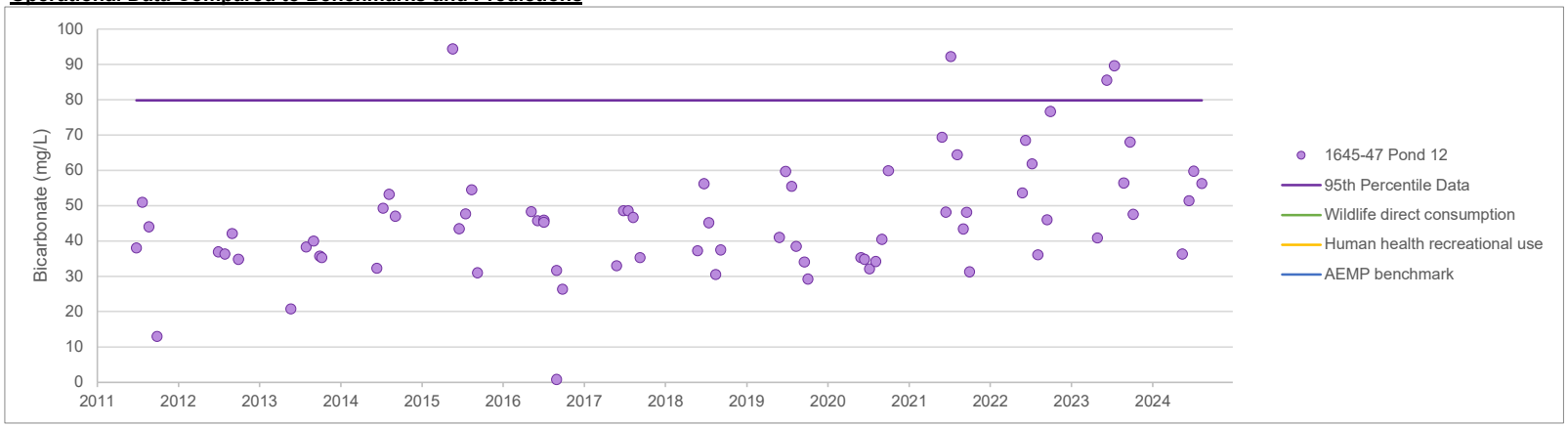


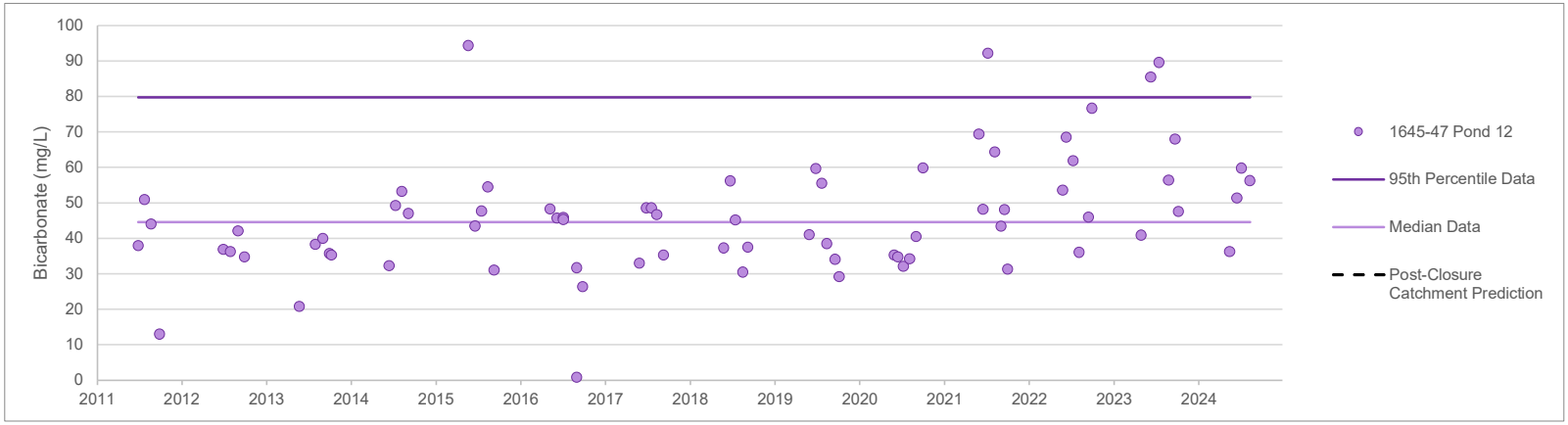
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	3.79	Wildlife	None
Median	0.10	Human recreational	None
Count	75	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



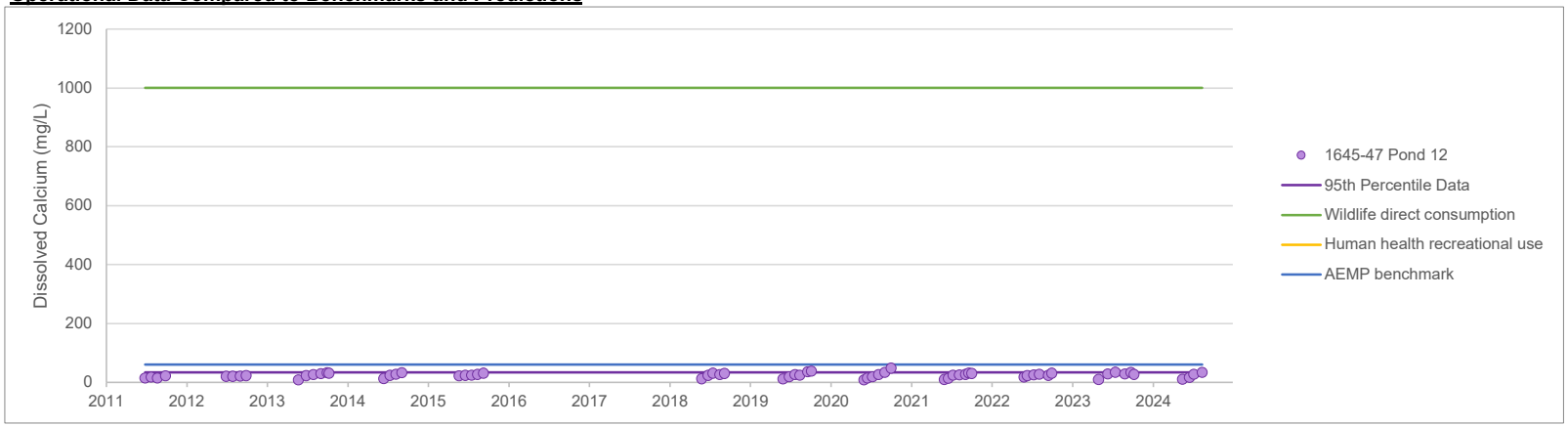


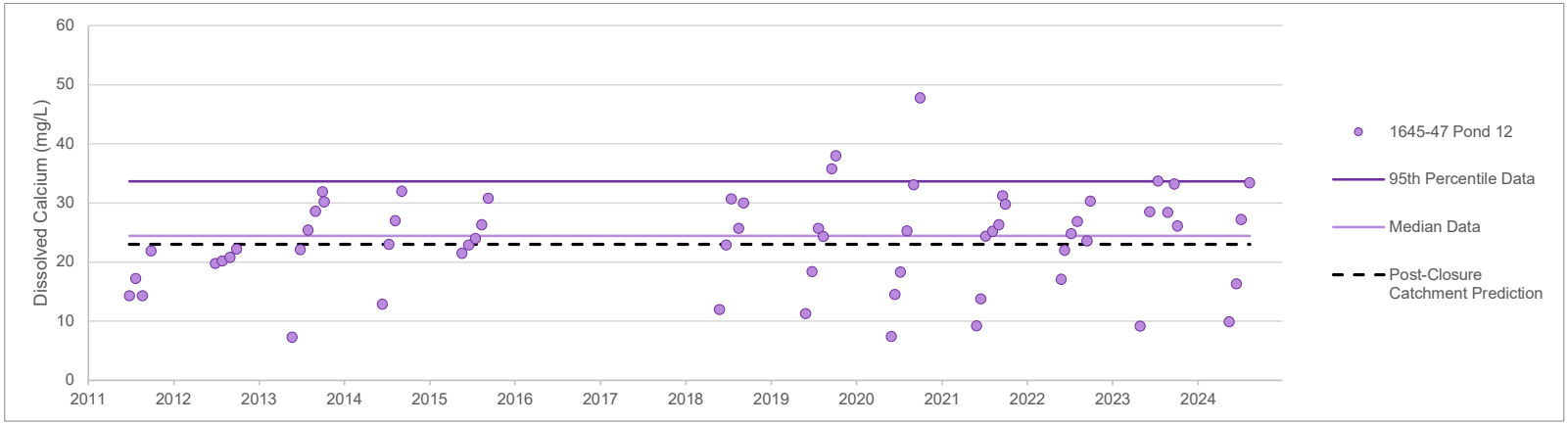
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	79.8	Wildlife	None
Median	44.6	Human recreational	None
Count	74	AEMP	None

Operational Data Compared to Benchmarks and Predictions



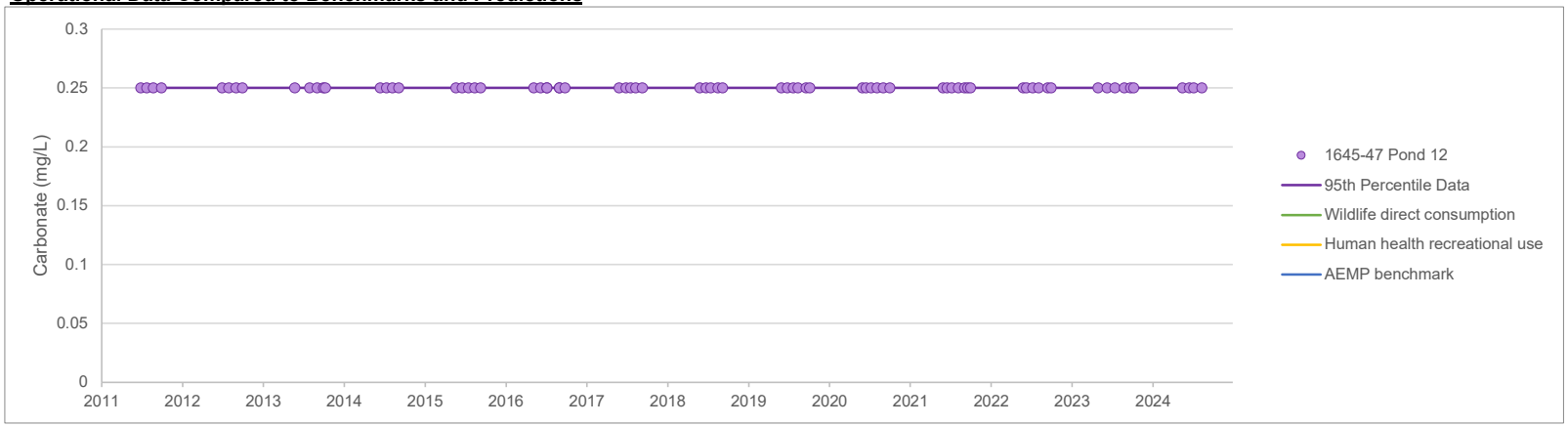


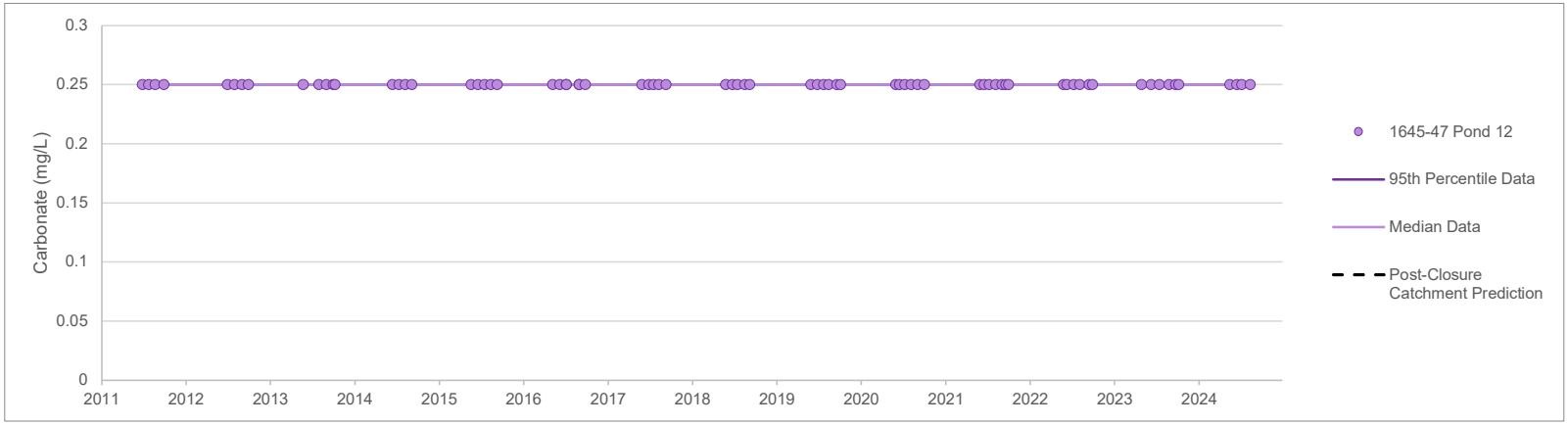
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	33.7	Wildlife	1000
Median	24.4	Human recreational	None
Count	63	AEMP	60

Operational Data Compared to Benchmarks and Predictions



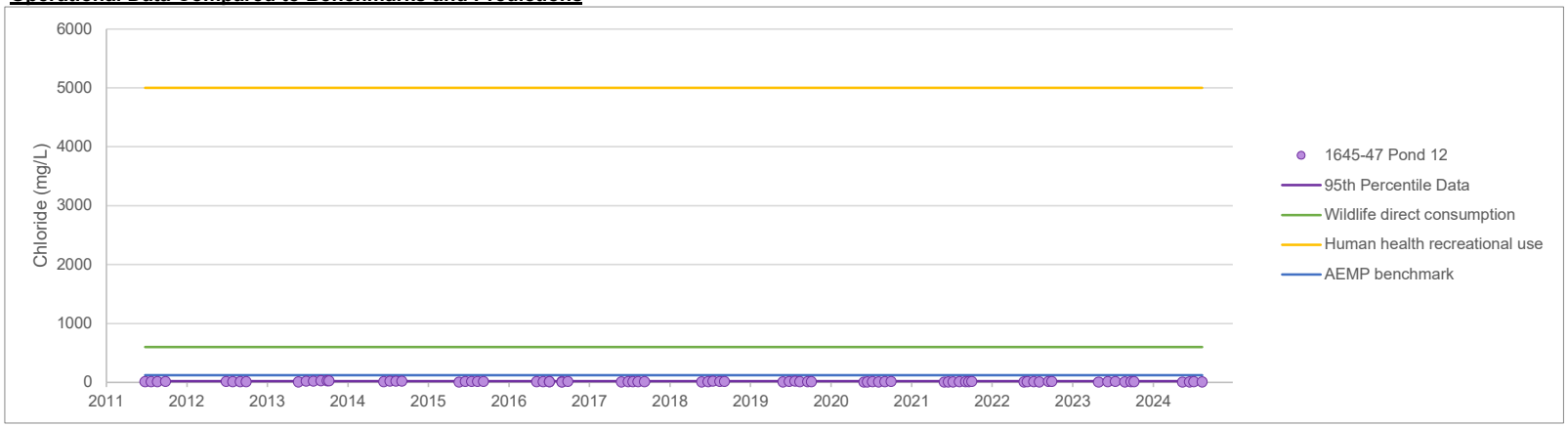


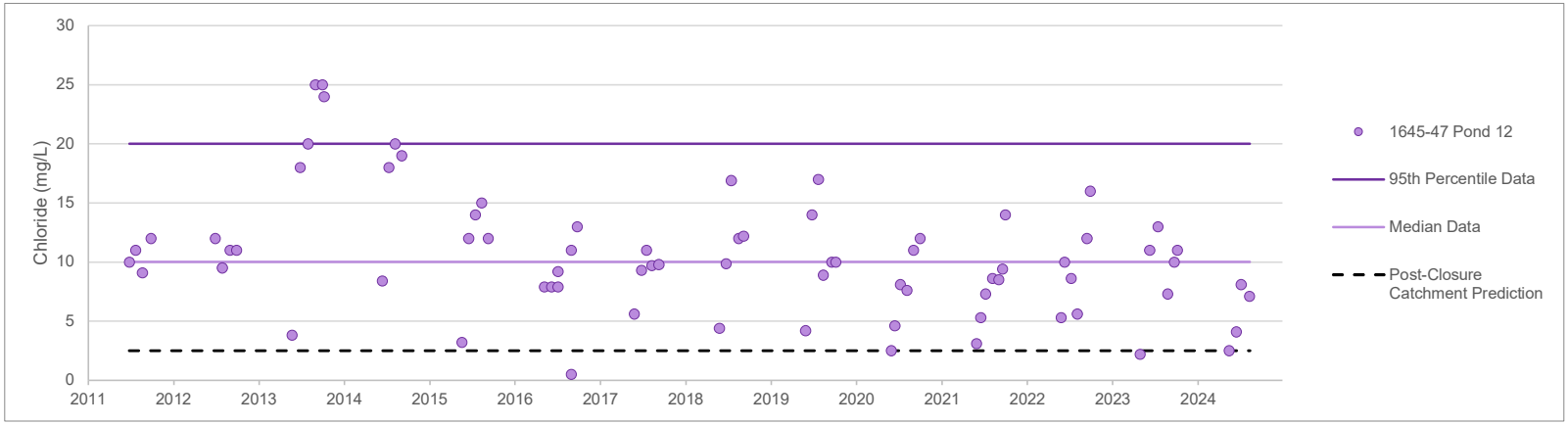
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	74	AEMP	None

Operational Data Compared to Benchmarks and Predictions



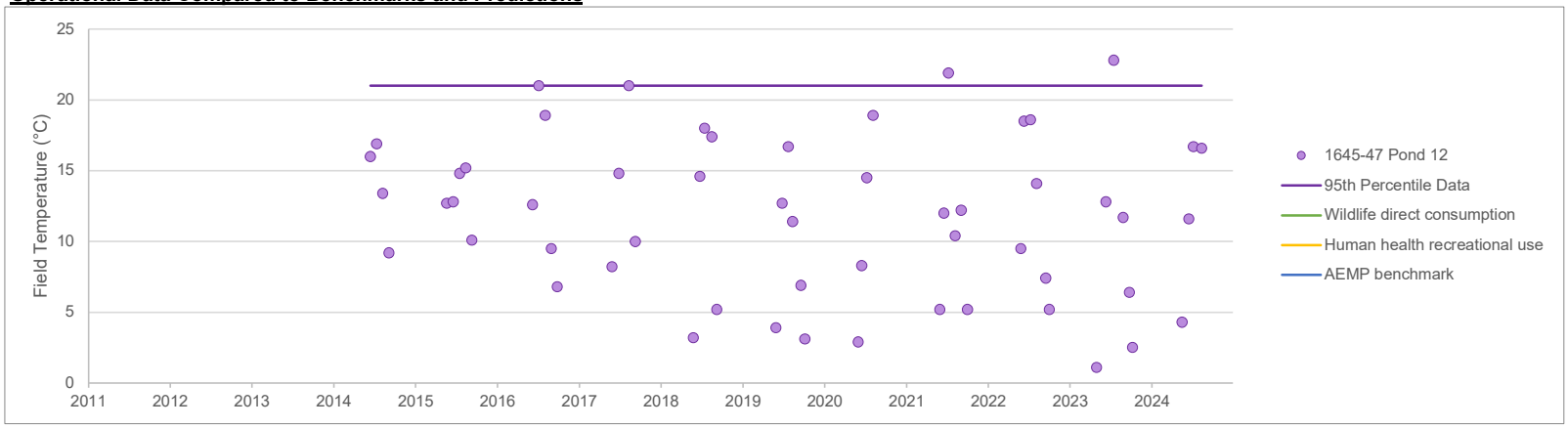


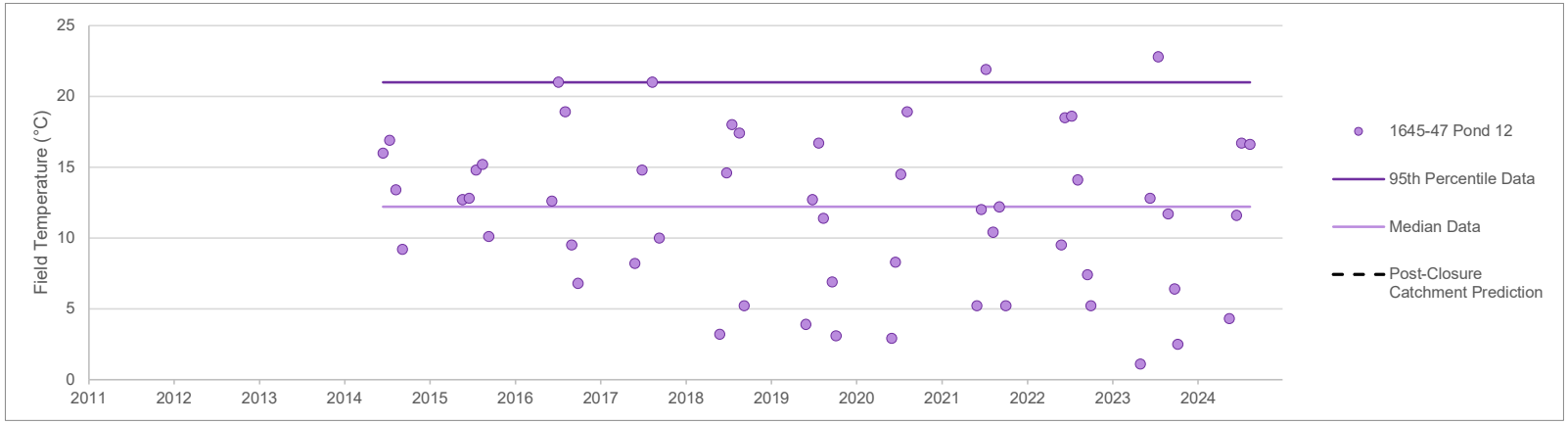
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	20.0	Wildlife	600
Median	10.0	Human recreational	5000
Count	75	AEMP	120

Operational Data Compared to Benchmarks and Predictions



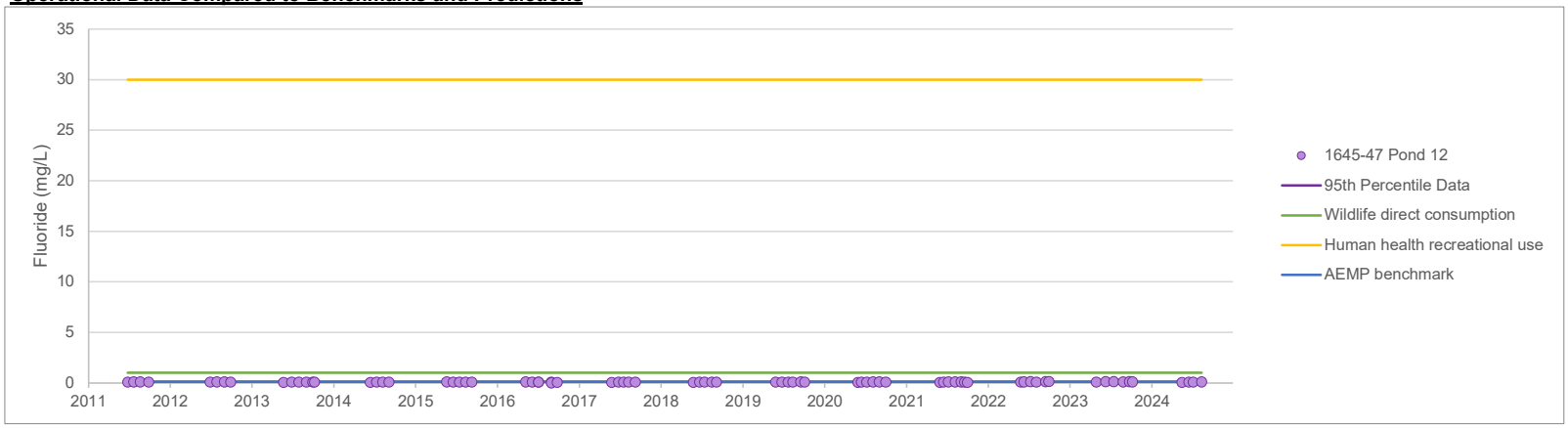


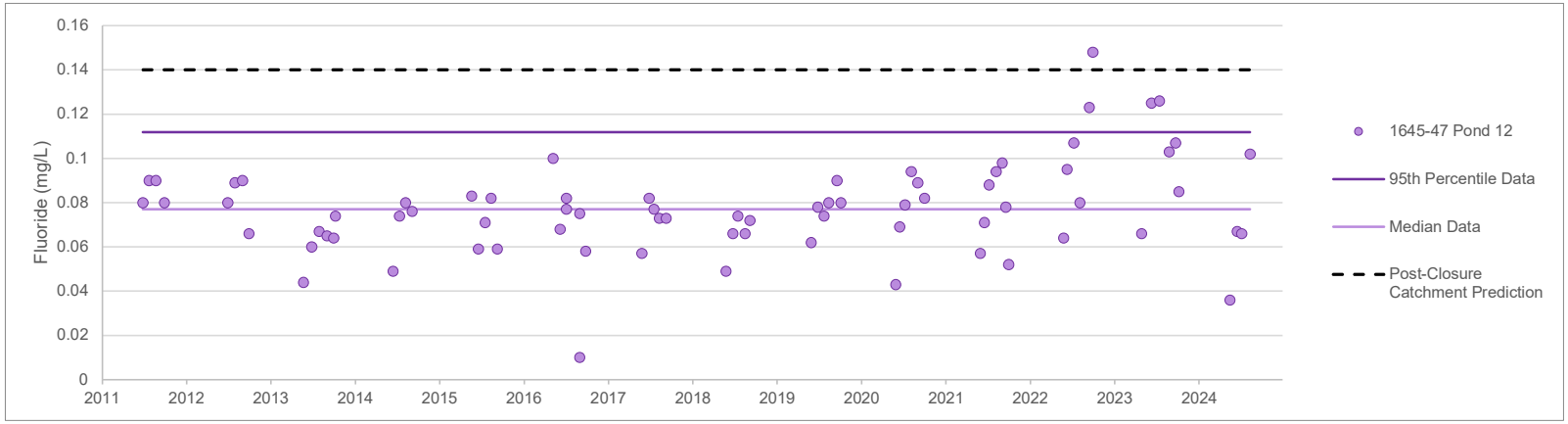
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	21.0	Wildlife	None
Median	12.2	Human recreational	None
Count	55	AEMP	None

Operational Data Compared to Benchmarks and Predictions



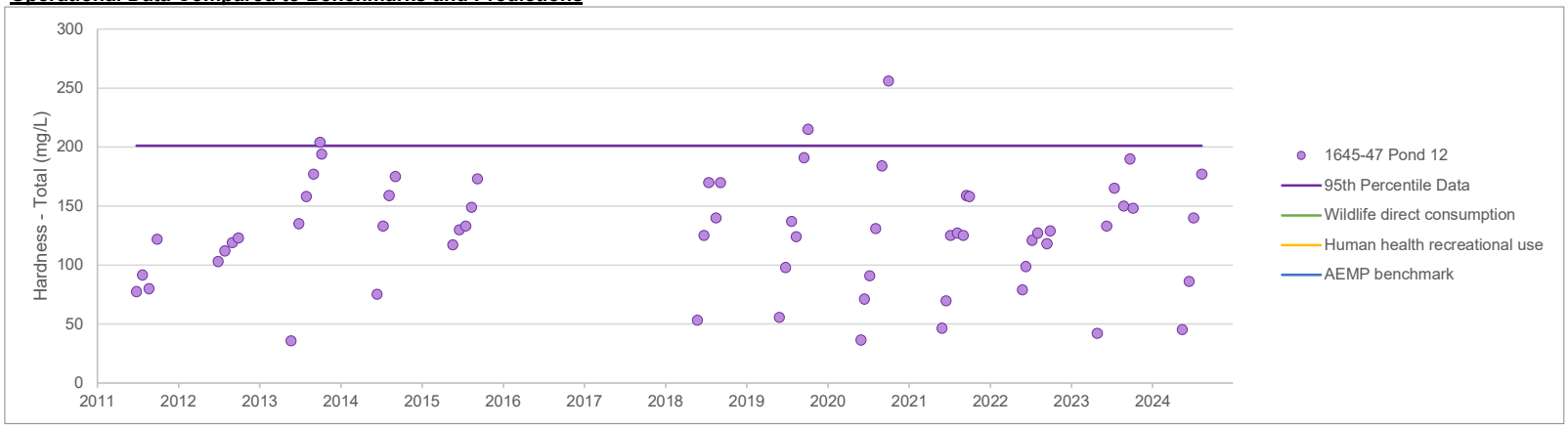


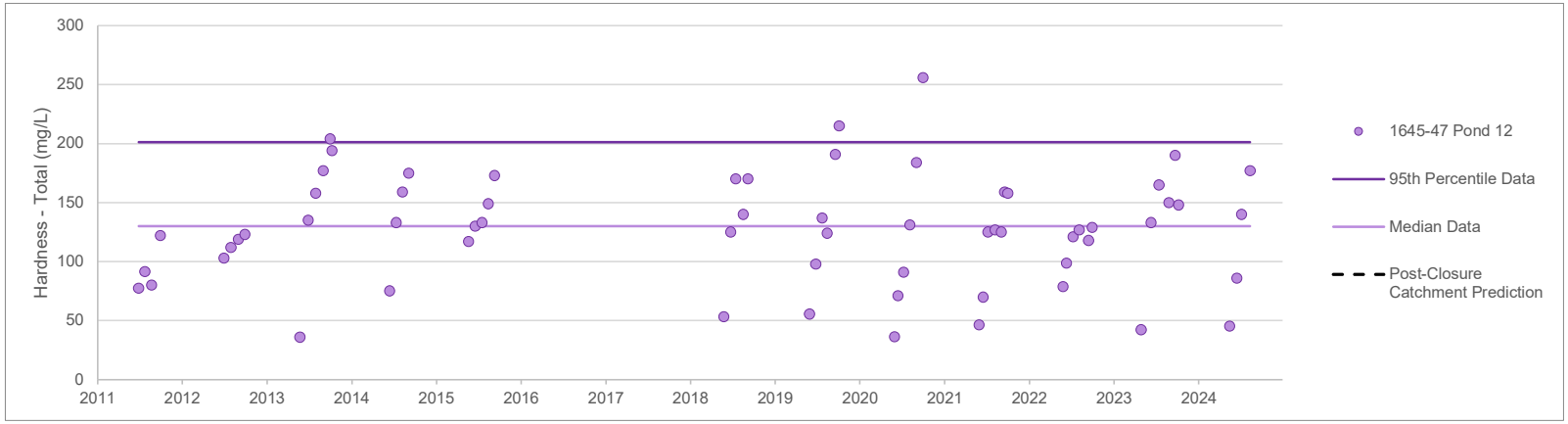
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.11	Wildlife	1
Median	0.08	Human recreational	30
Count	75	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



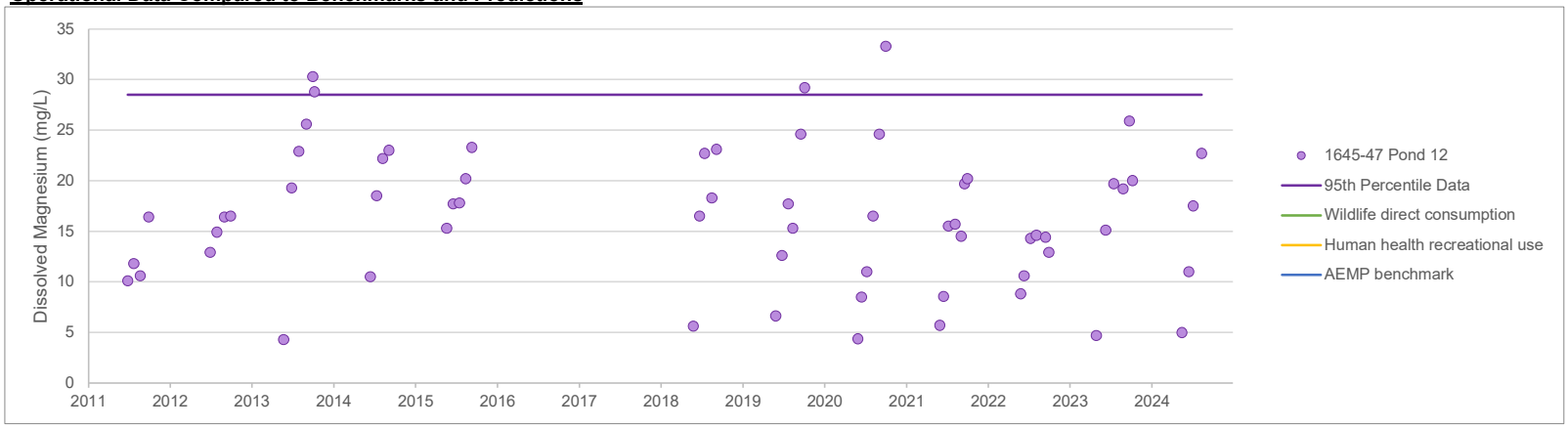


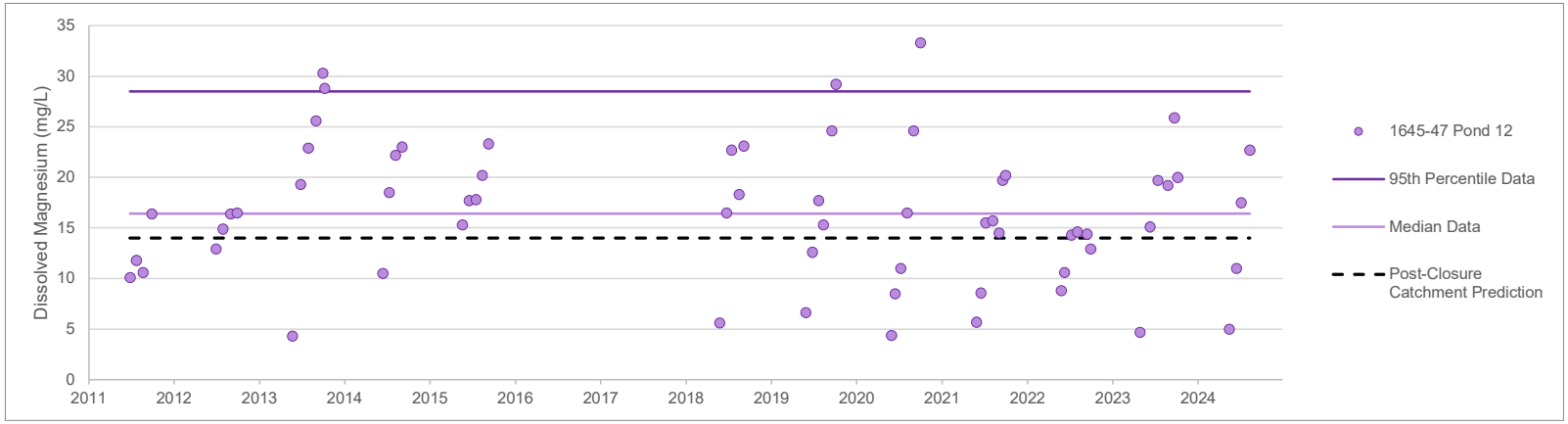
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	201	Wildlife	None
Median	130	Human recreational	None
Count	75	AEMP	None

Operational Data Compared to Benchmarks and Predictions



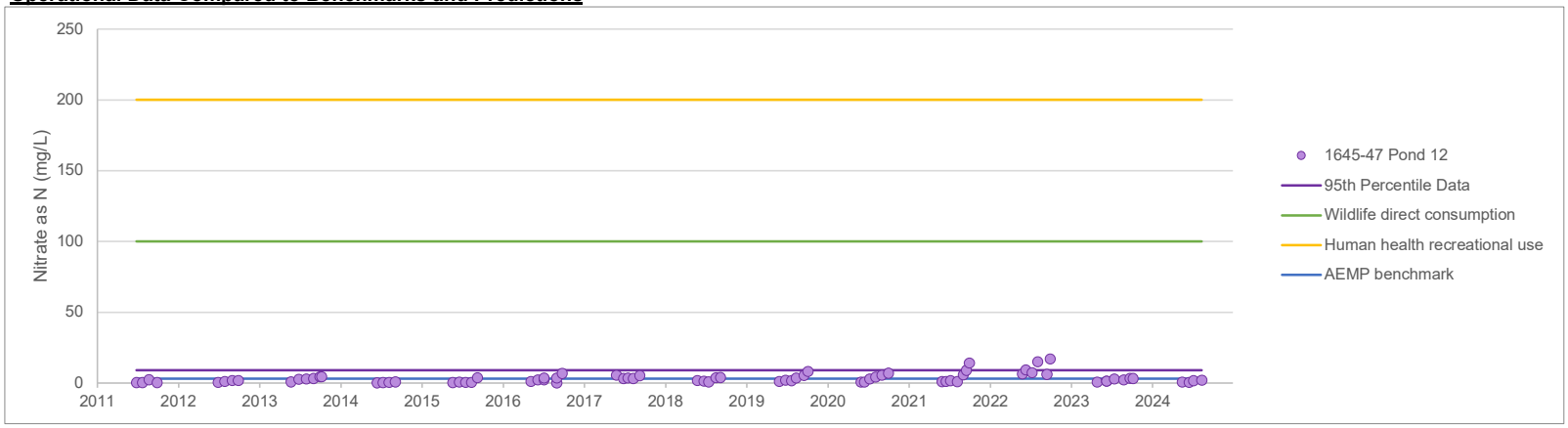


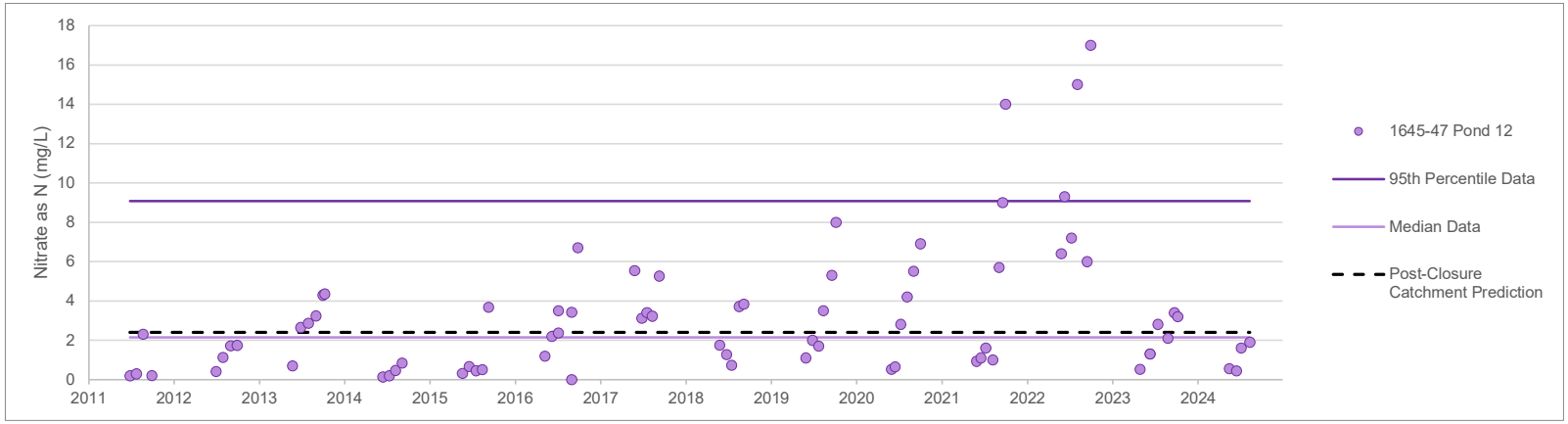
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	28.5	Wildlife	None
Median	16.4	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



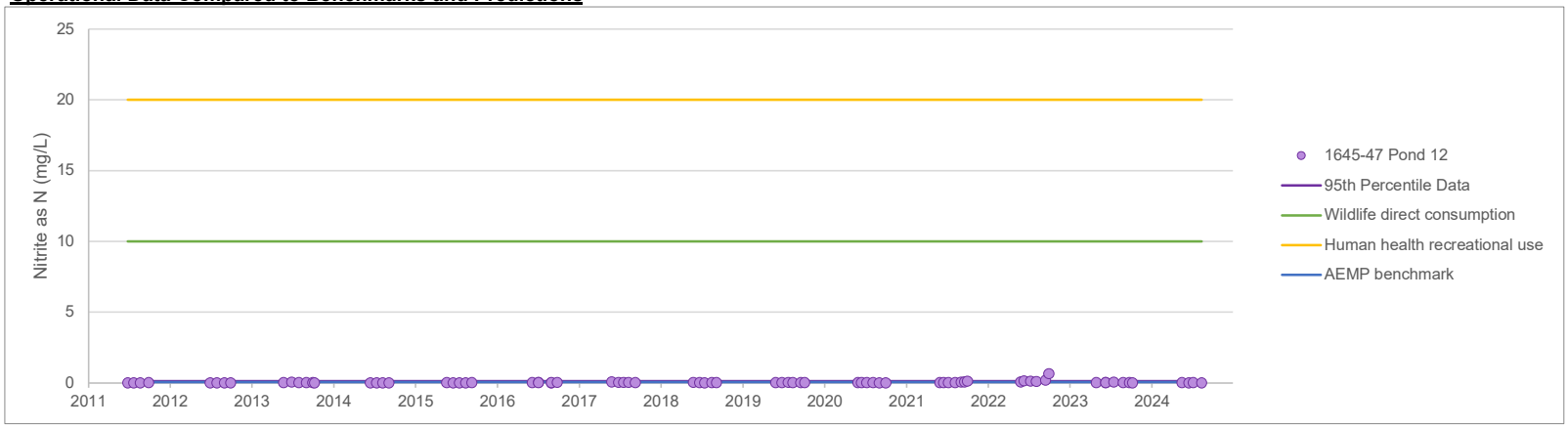


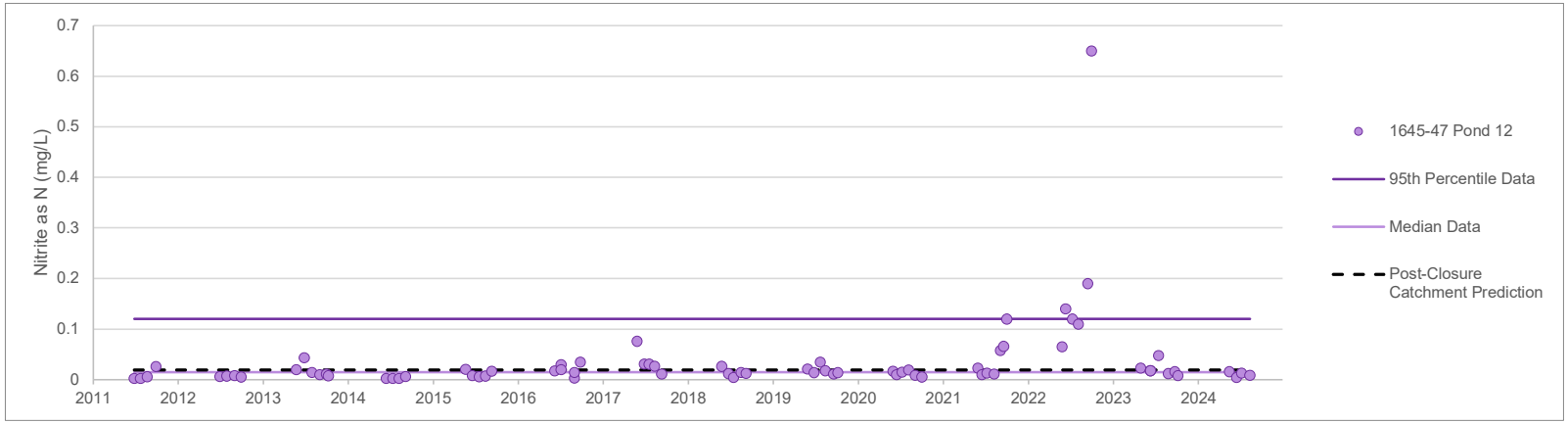
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	9.1	Wildlife	100
Median	2.1	Human recreational	200
Count	76	AEMP	3

Operational Data Compared to Benchmarks and Predictions



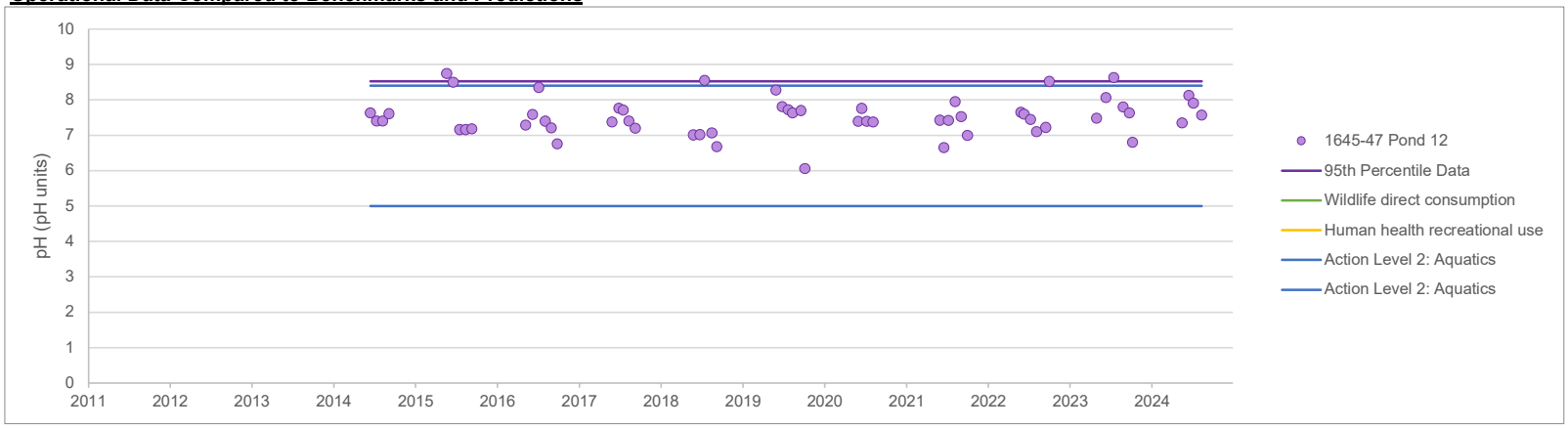


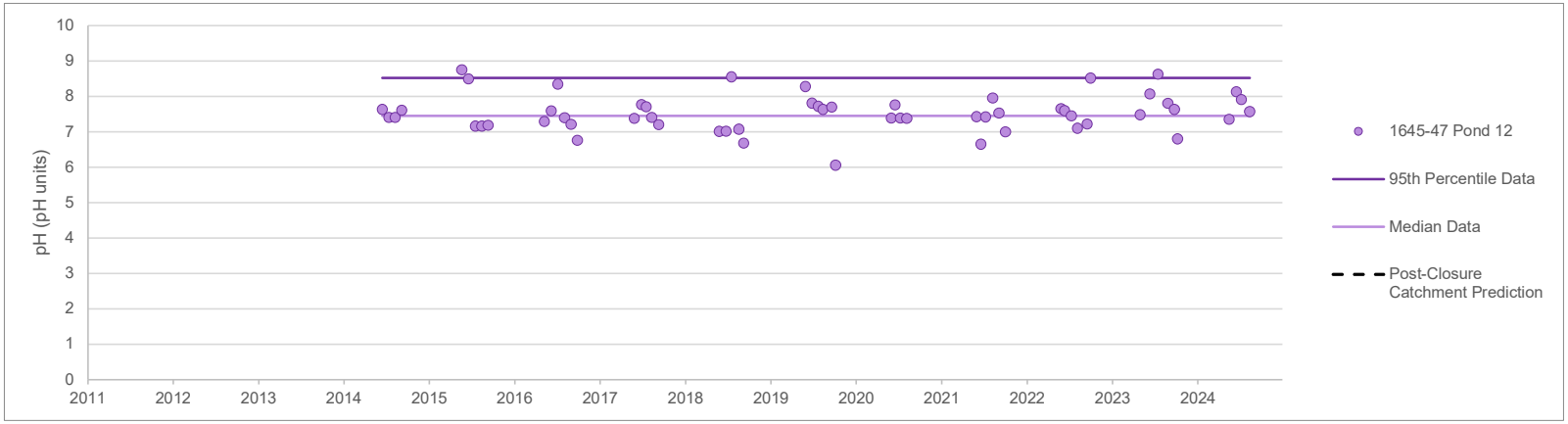
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.120	Wildlife	10.0
Median	0.015	Human recreational	20.0
Count	75	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



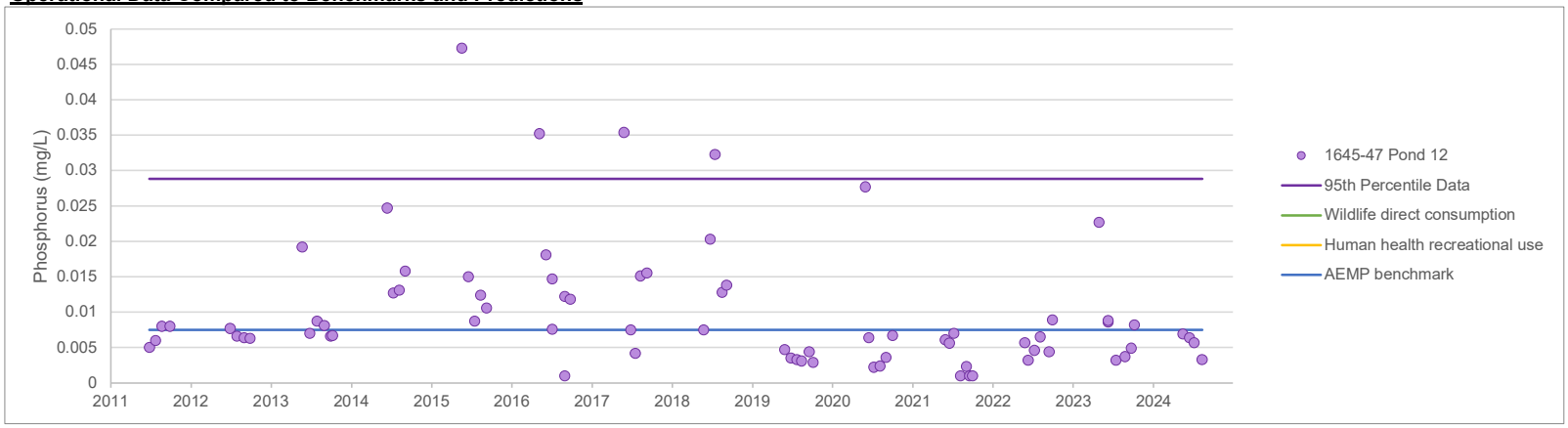


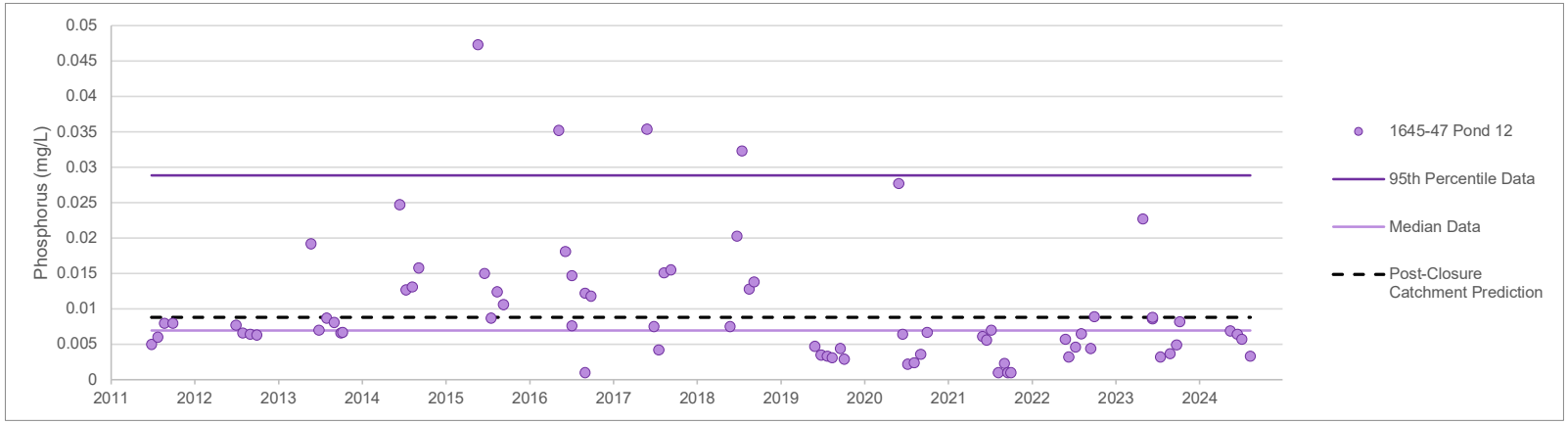
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.5	Wildlife	None
Median	7.5	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



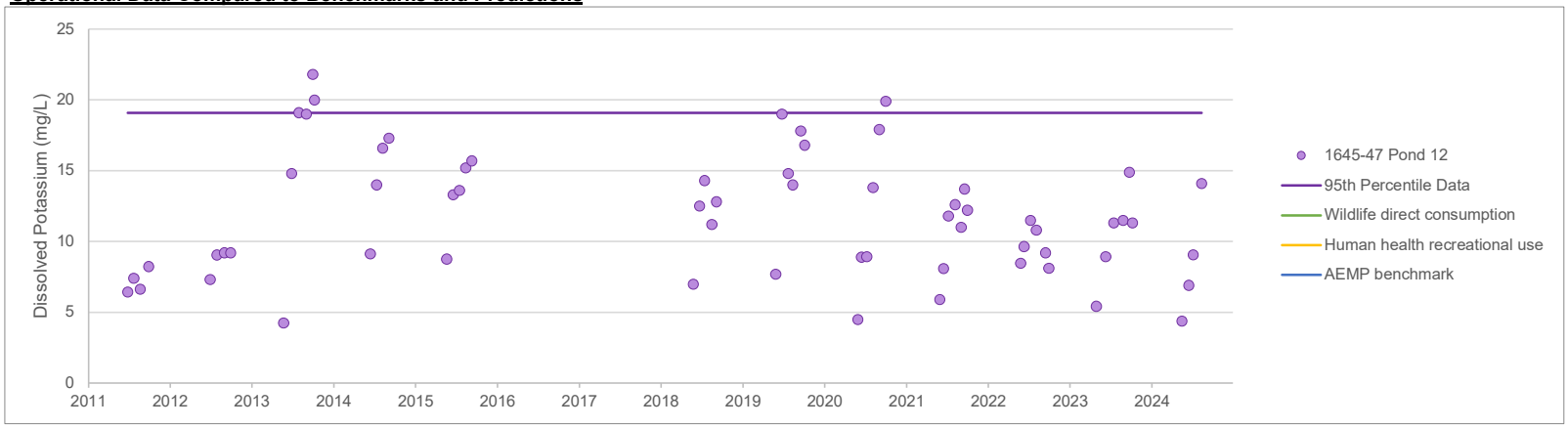


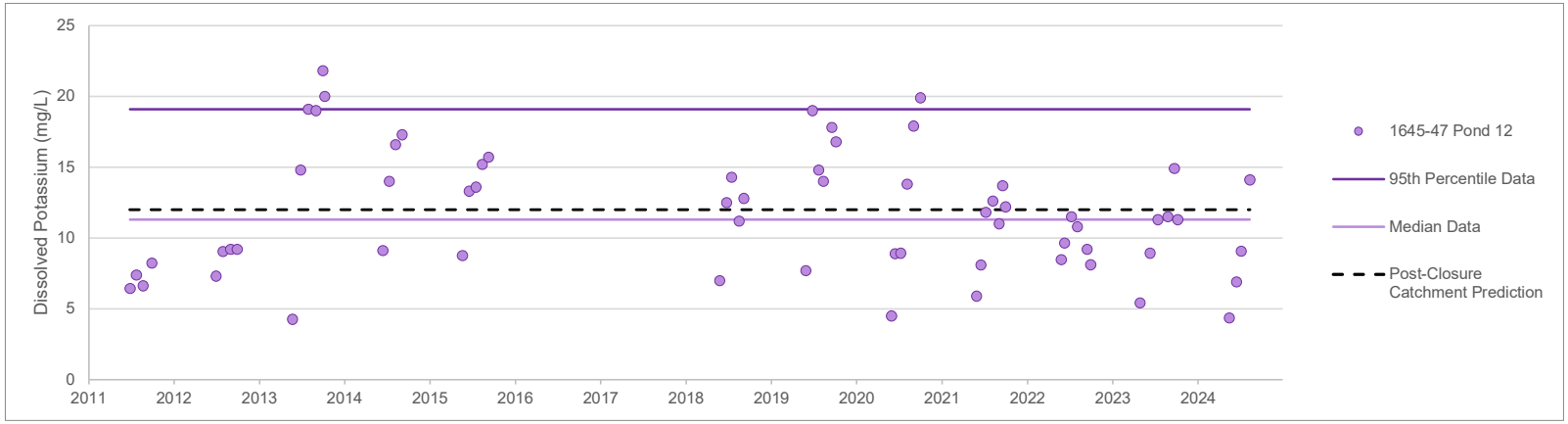
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.029	Wildlife	None
Median	0.007	Human recreational	None
Count	76	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



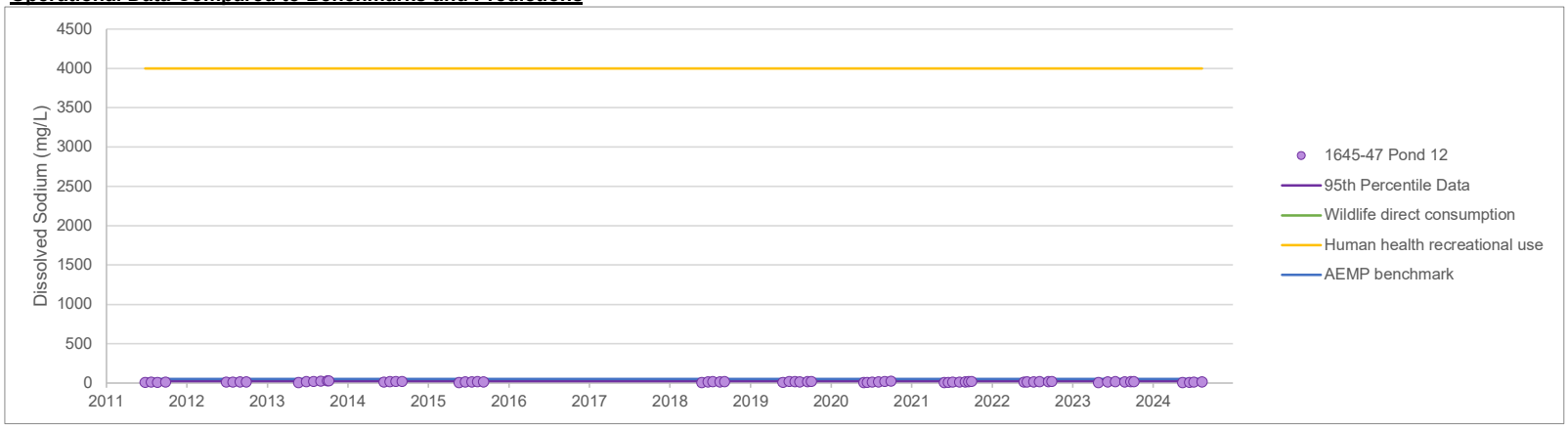


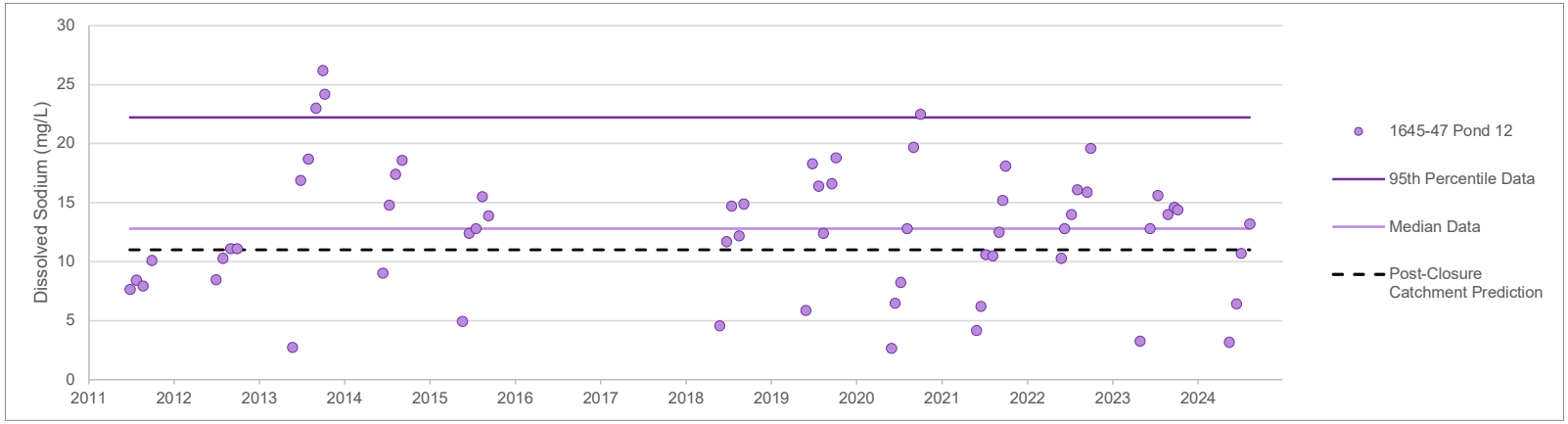
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	19.1	Wildlife	None
Median	11.3	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



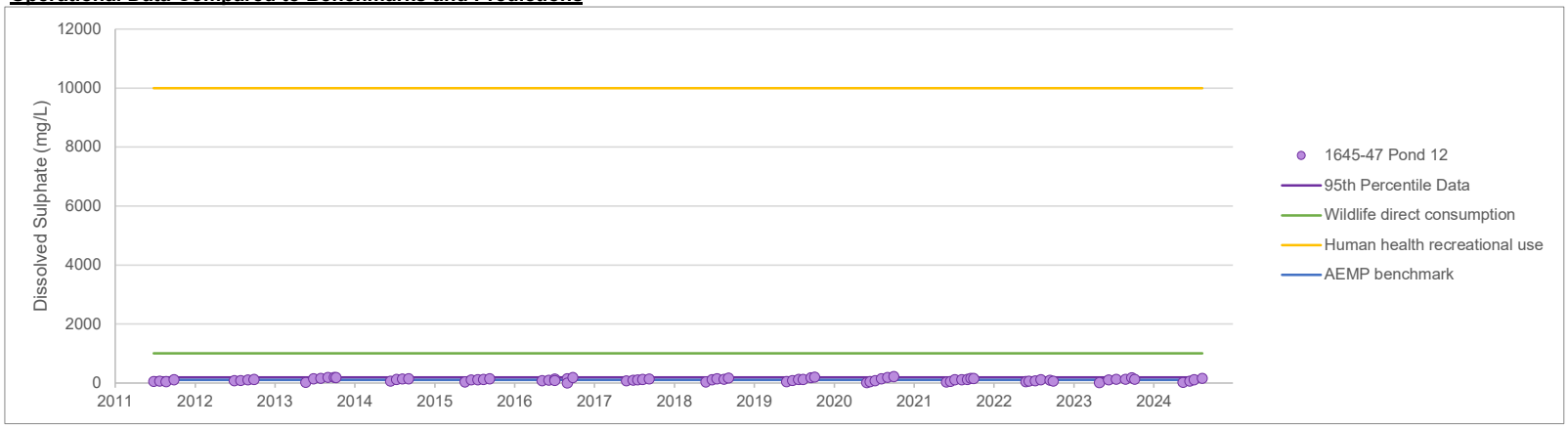


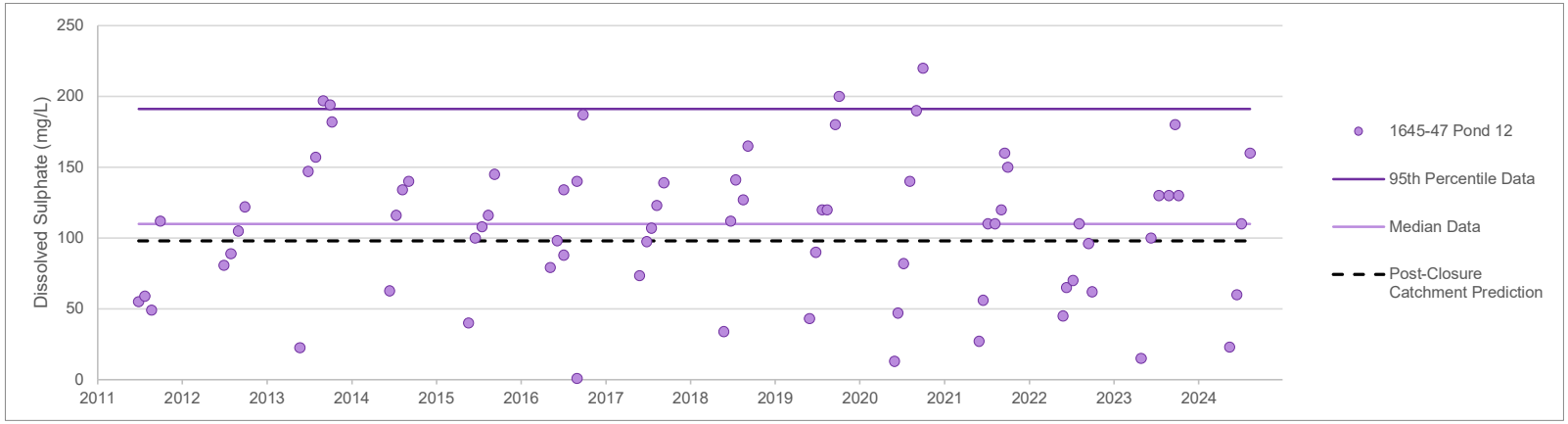
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	22.2	Wildlife	None
Median	12.8	Human recreational	4000
Count	63	AEMP	52

Operational Data Compared to Benchmarks and Predictions



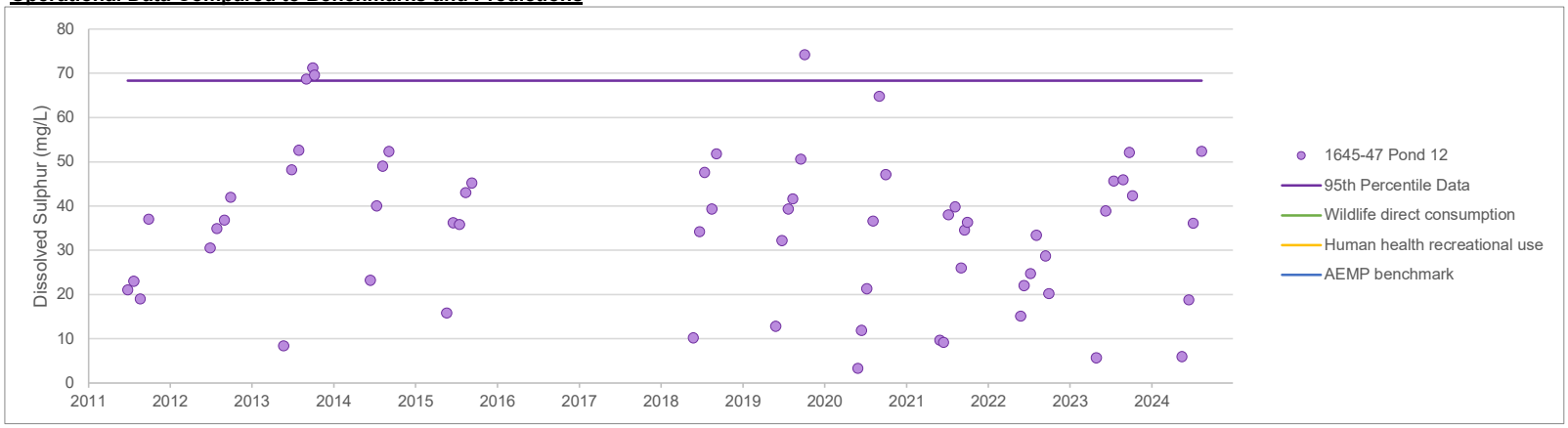


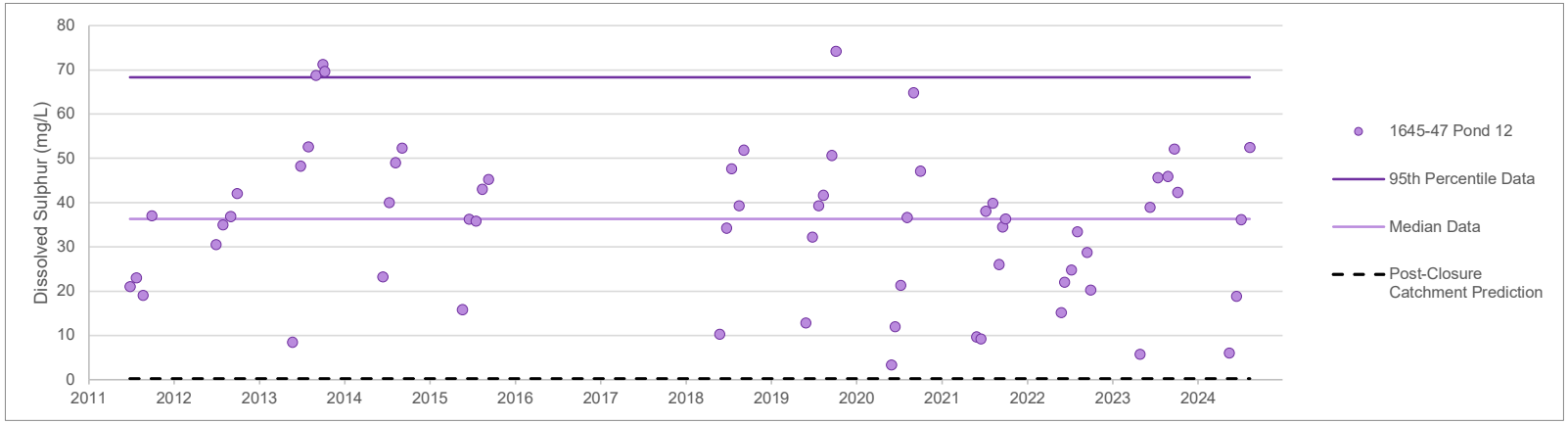
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	191	Wildlife	1000
Median	110	Human recreational	10000
Count	75	AEMP	100

Operational Data Compared to Benchmarks and Predictions



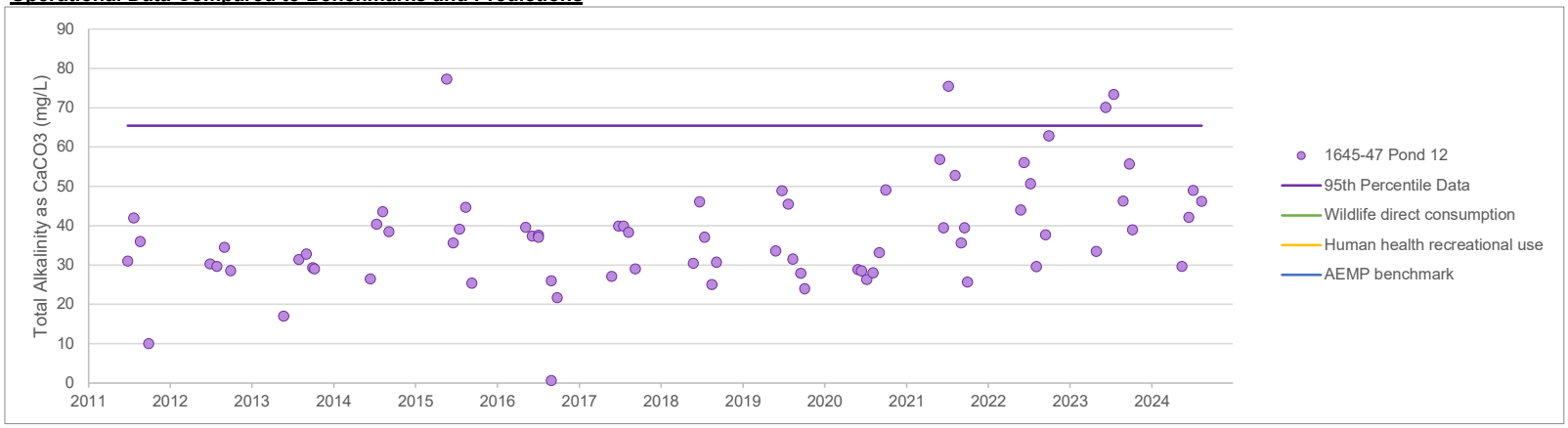


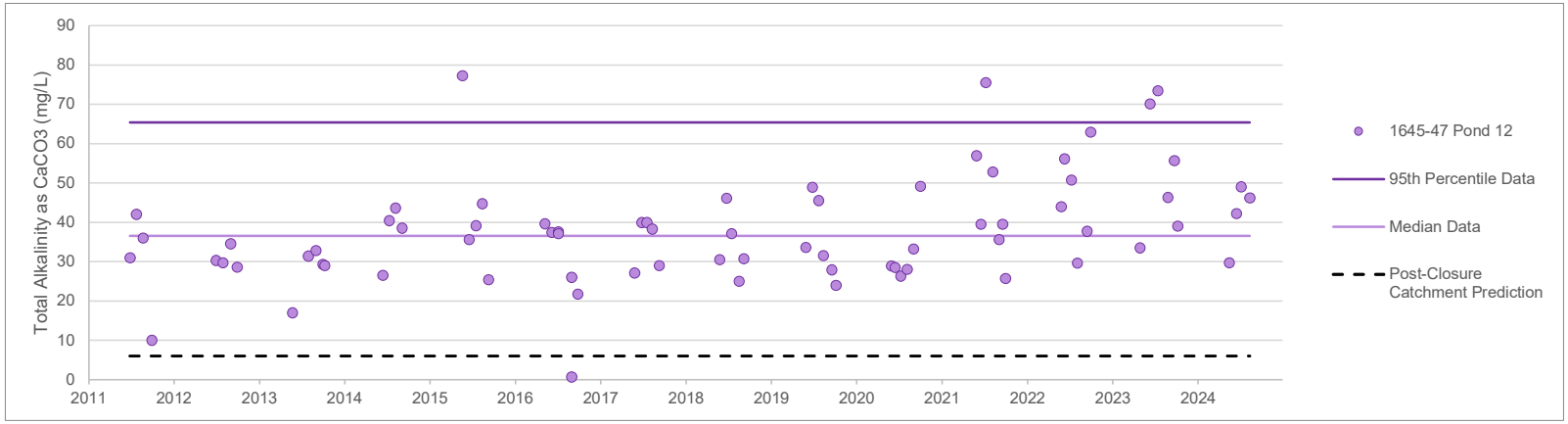
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	68.3	Wildlife	None
Median	36.3	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



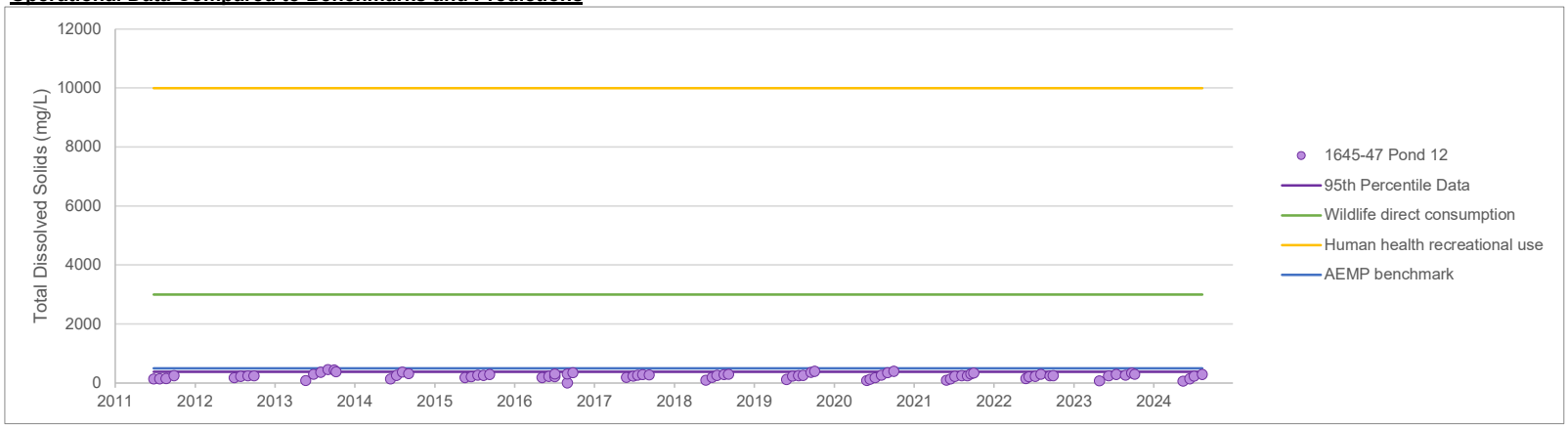


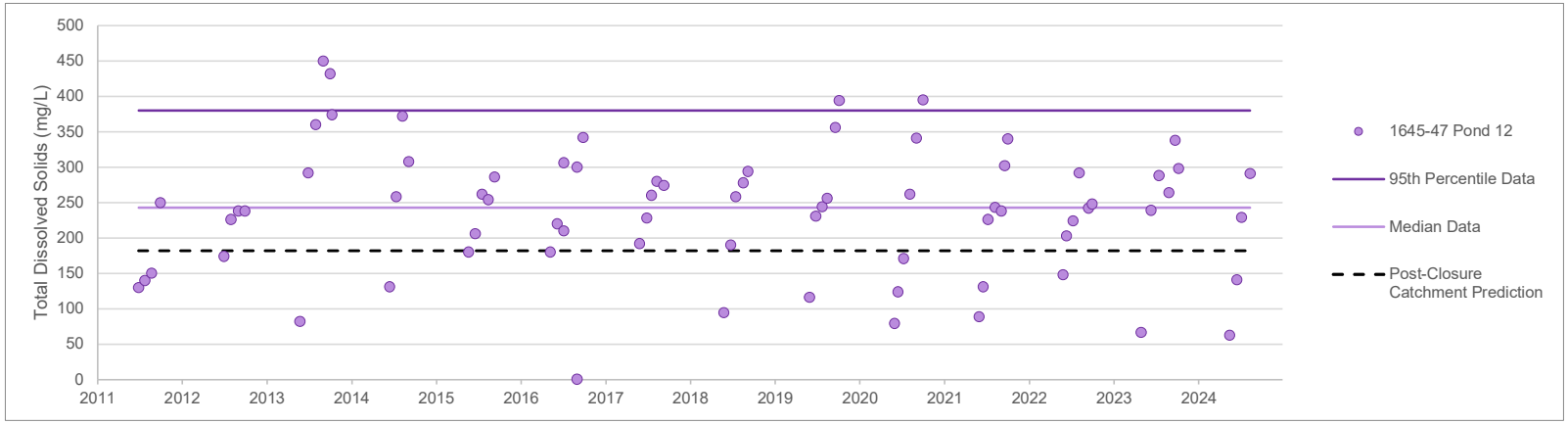
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	65.4	Wildlife	None
Median	36.6	Human recreational	None
Count	74	AEMP	None

Operational Data Compared to Benchmarks and Predictions



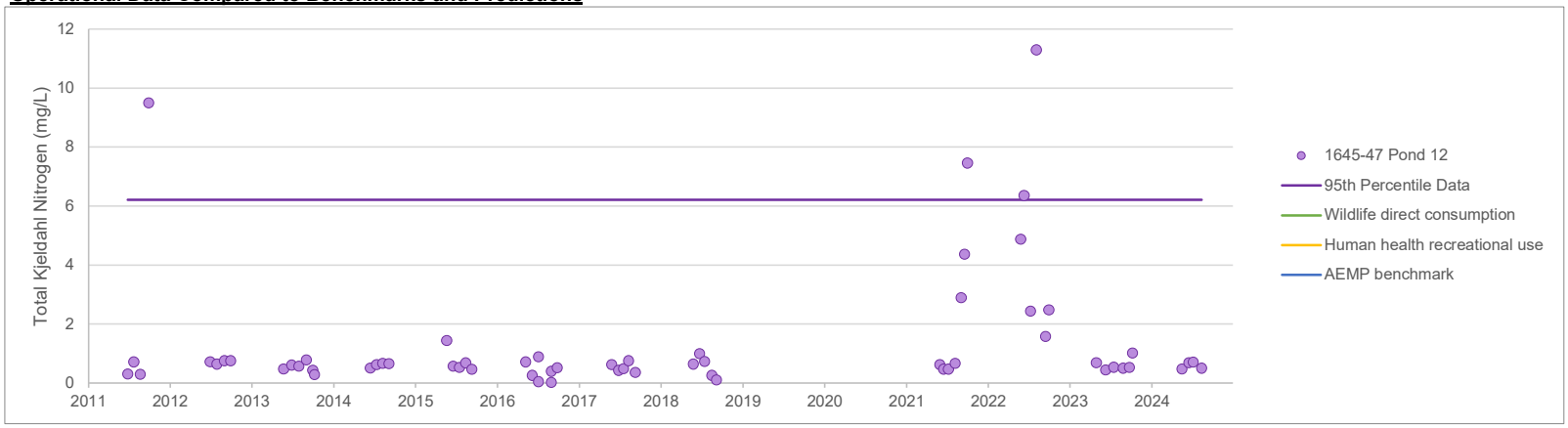


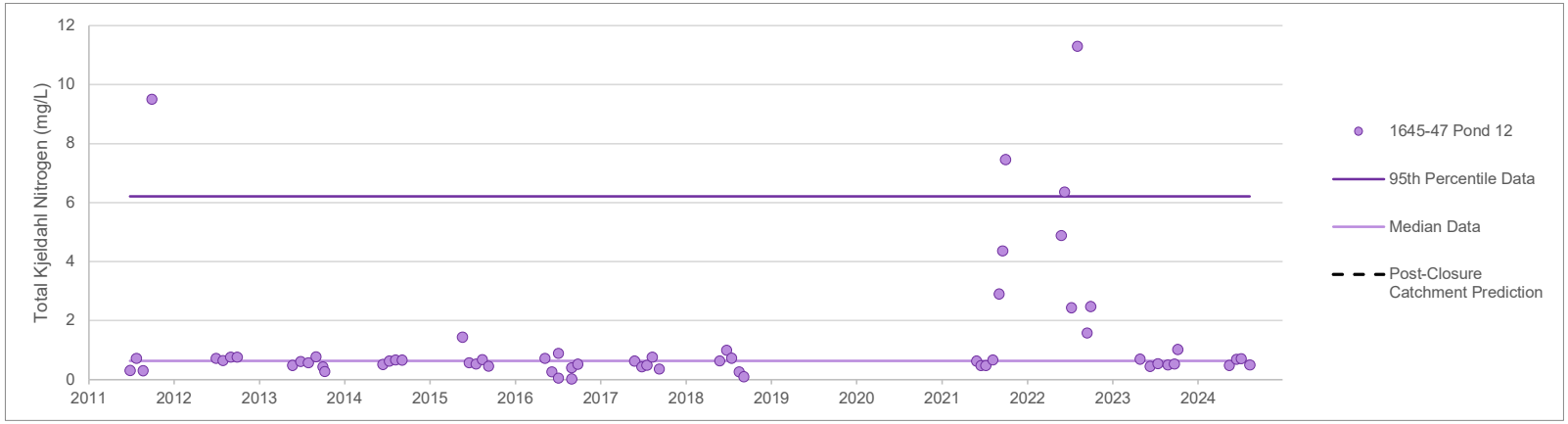
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	380	Wildlife	3000
Median	243	Human recreational	10000
Count	75	AEMP	500

Operational Data Compared to Benchmarks and Predictions



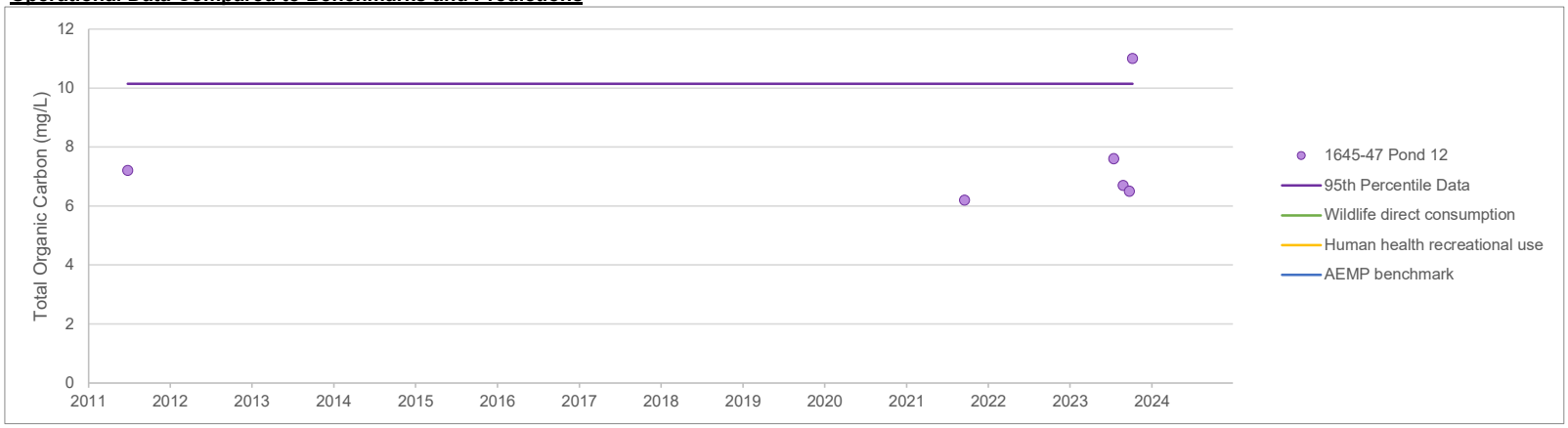


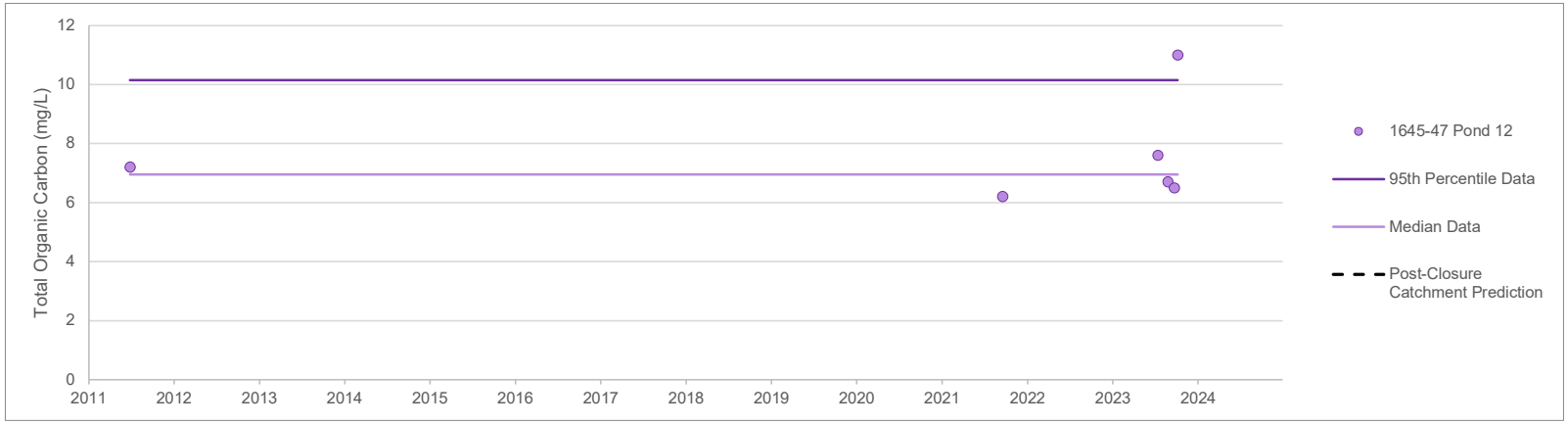
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	6.2	Wildlife	None
Median	0.6	Human recreational	None
Count	63	AEMP	None

Operational Data Compared to Benchmarks and Predictions



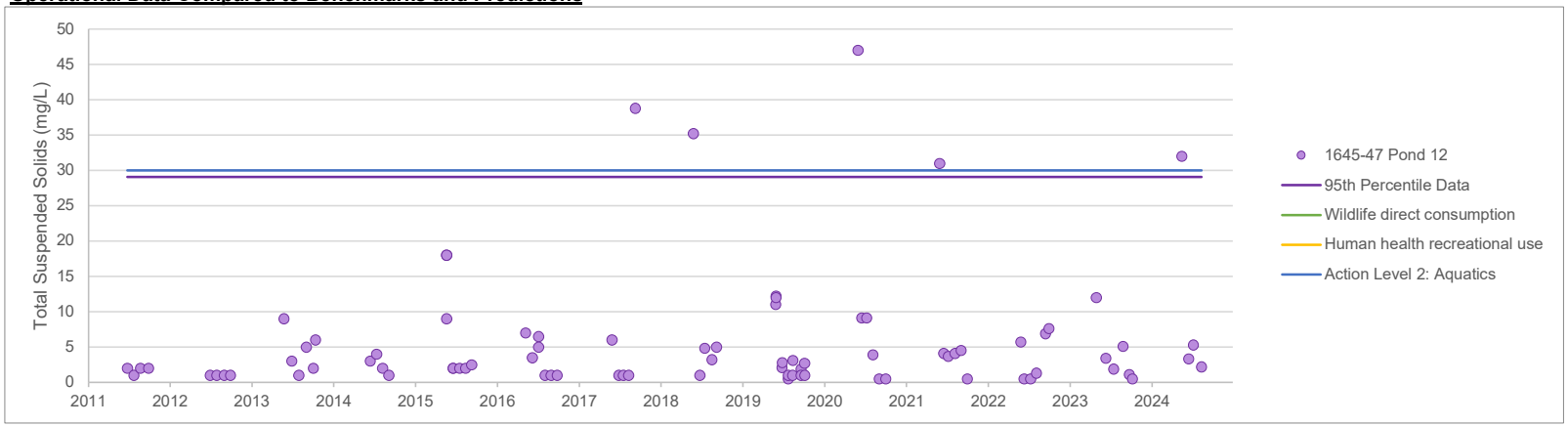


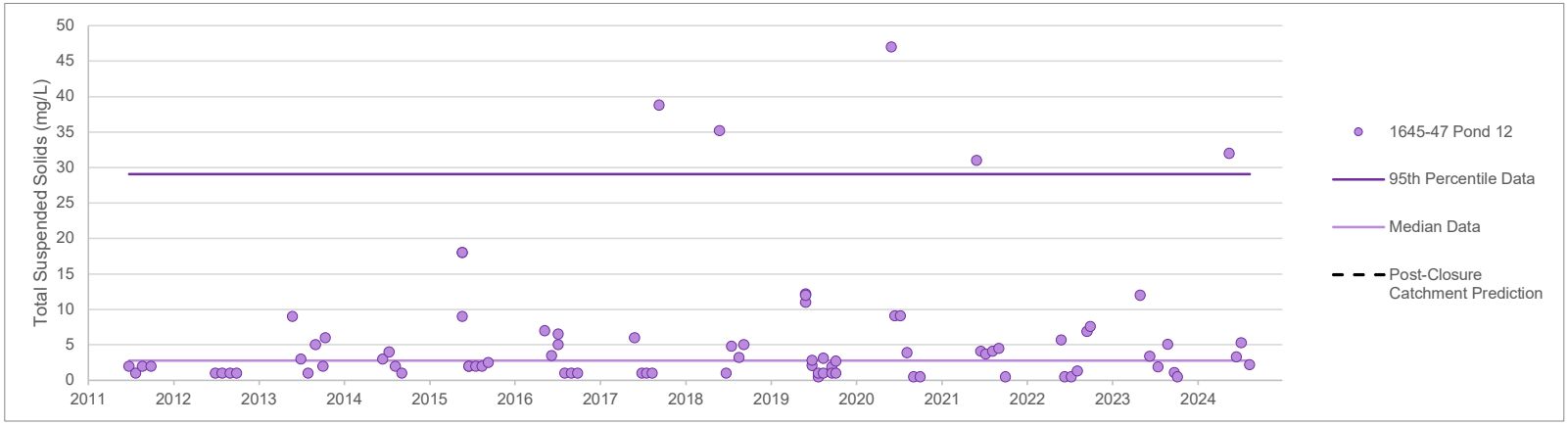
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	10.2	Wildlife	None
Median	6.9	Human recreational	None
Count	6	AEMP	None

Operational Data Compared to Benchmarks and Predictions



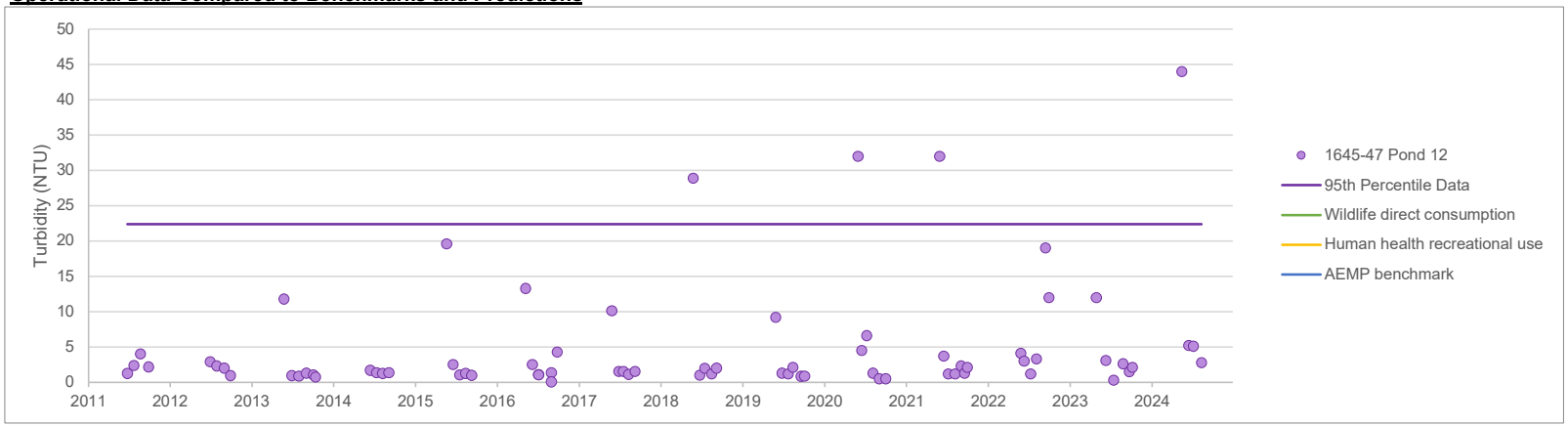


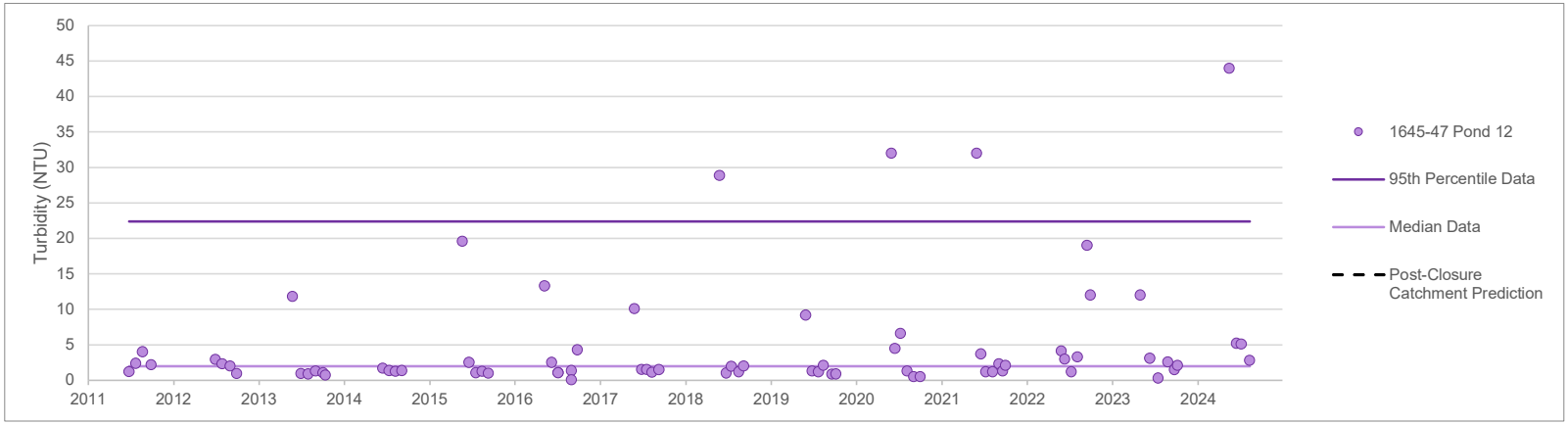
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	29.0	Wildlife	None
Median	2.8	Human recreational	None
Count	84	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



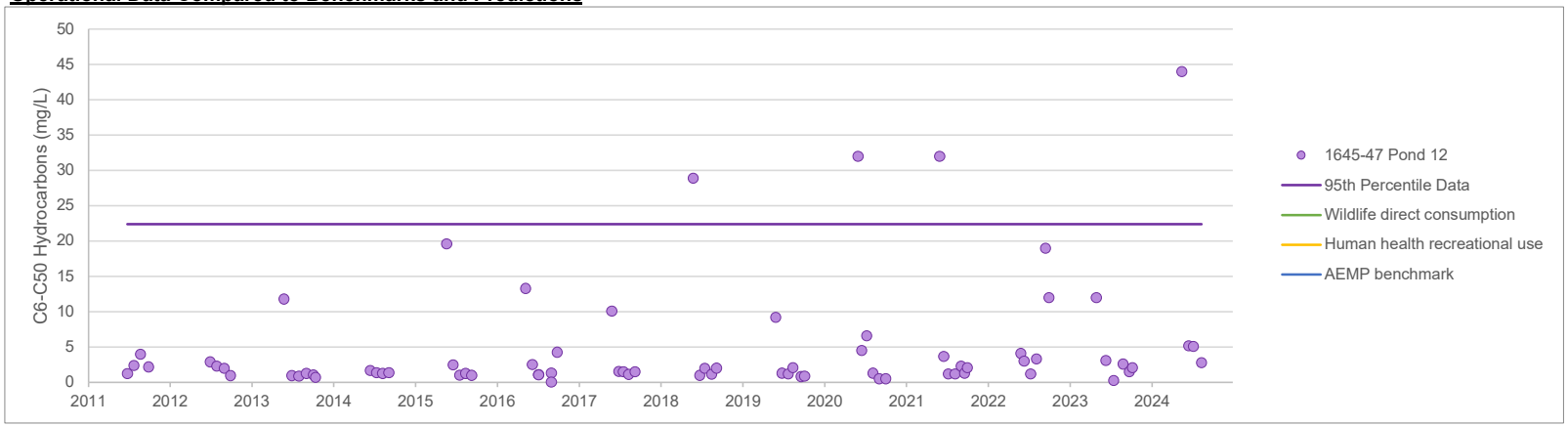


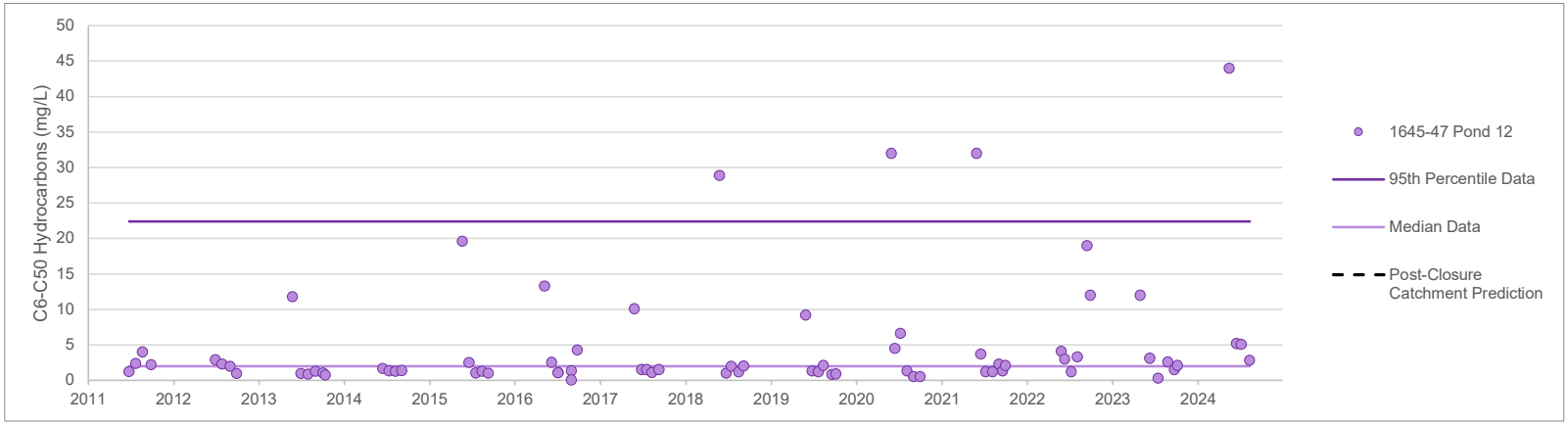
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	22.4	Wildlife	None
Median	2.0	Human recreational	None
Count	75	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.22	Wildlife	None
Median	0.13	Human recreational	None
Count	40	AEMP	None

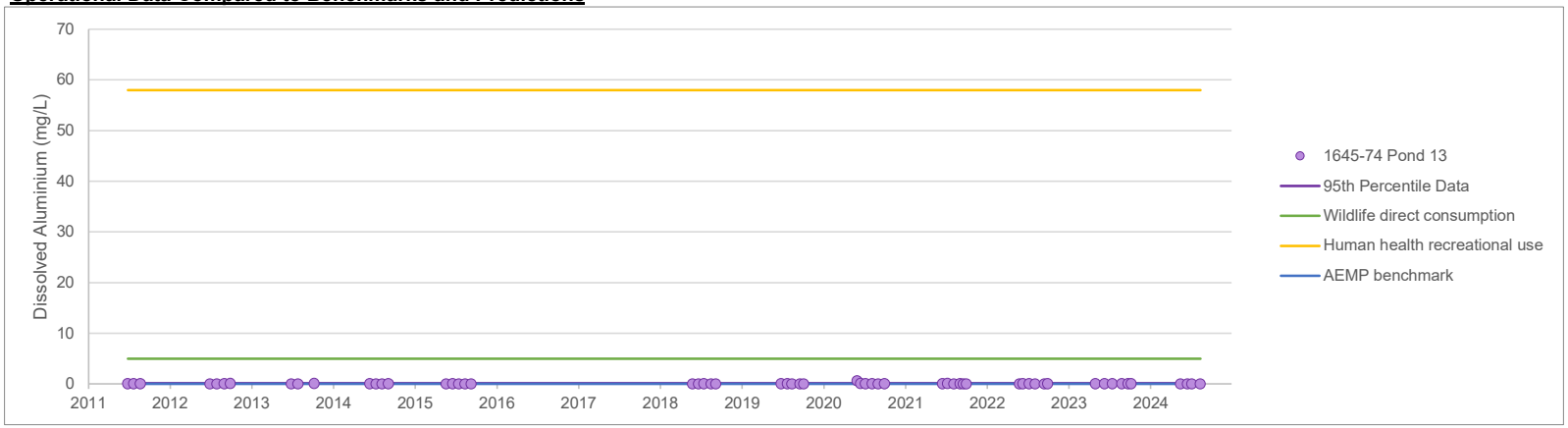
Pond 13

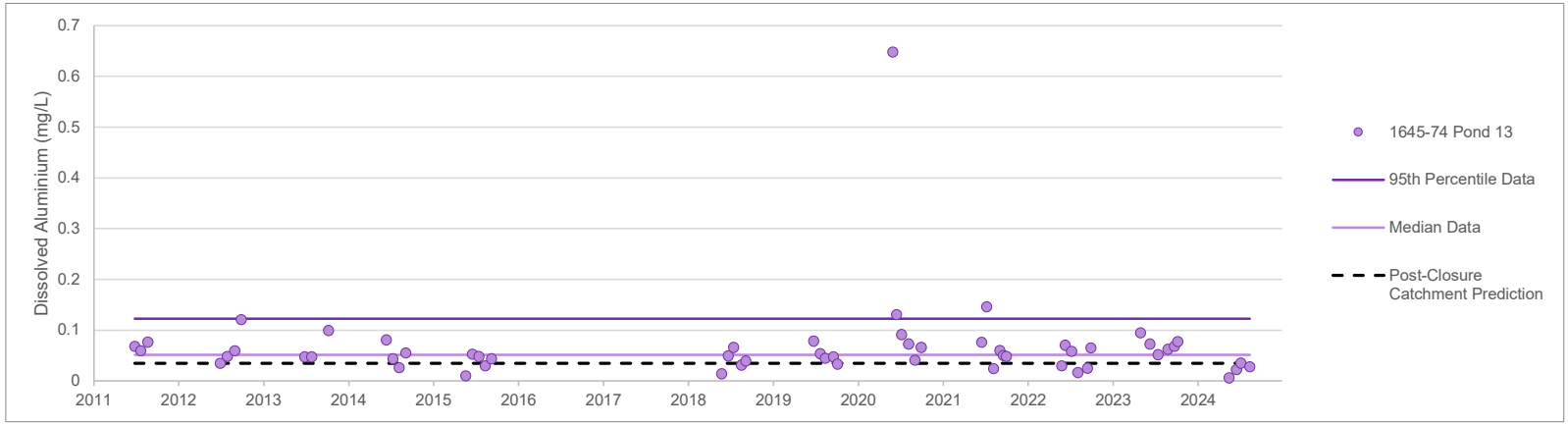
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



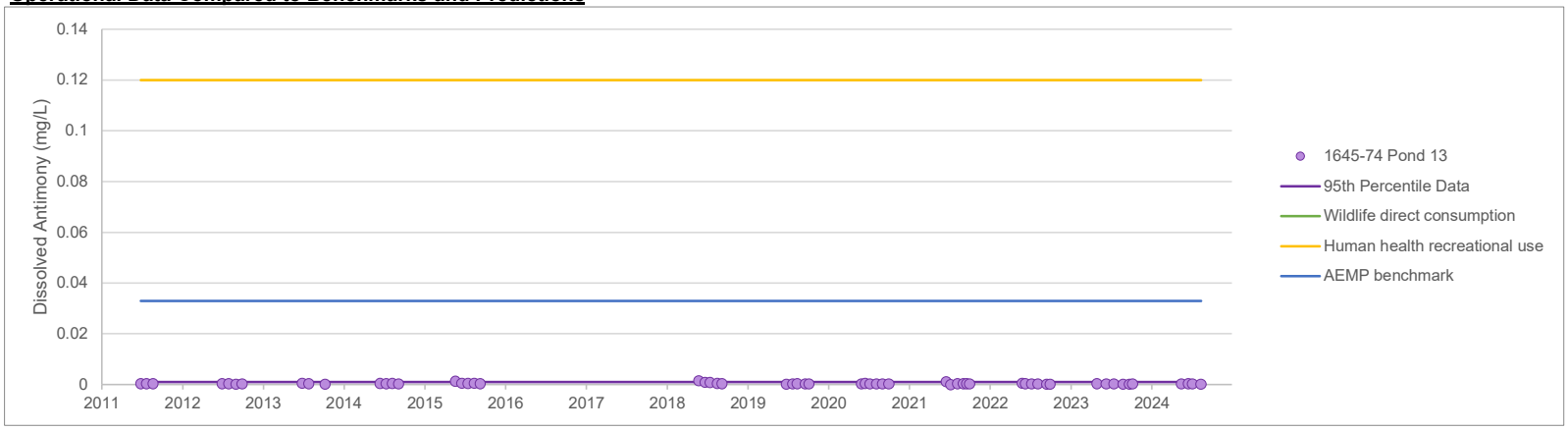


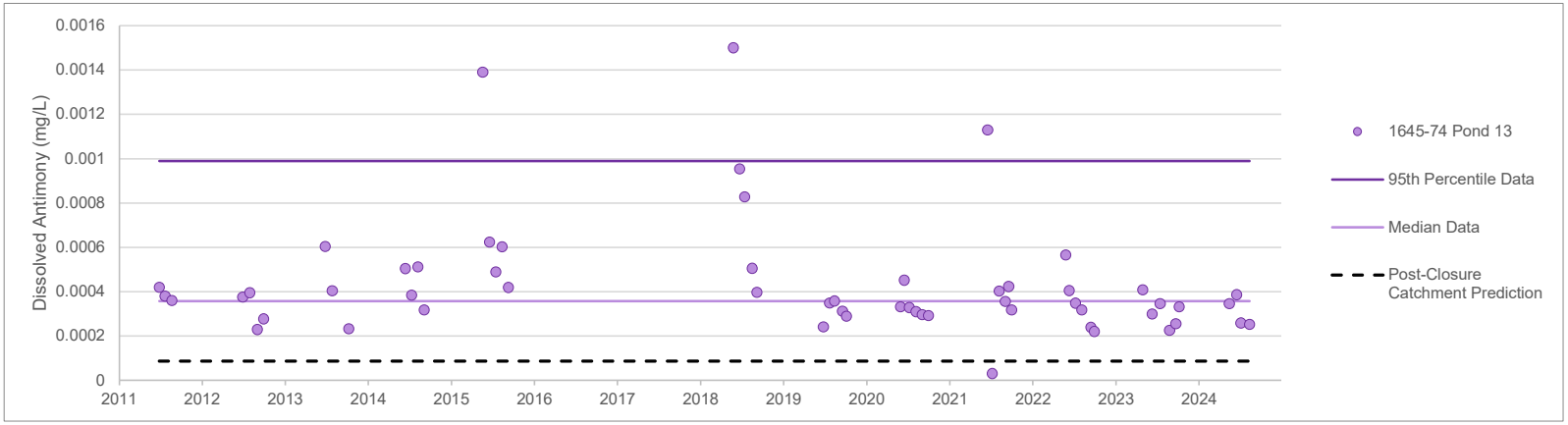
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.123	Wildlife	5.0
Median	0.052	Human recreational	58.0
Count	57	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions

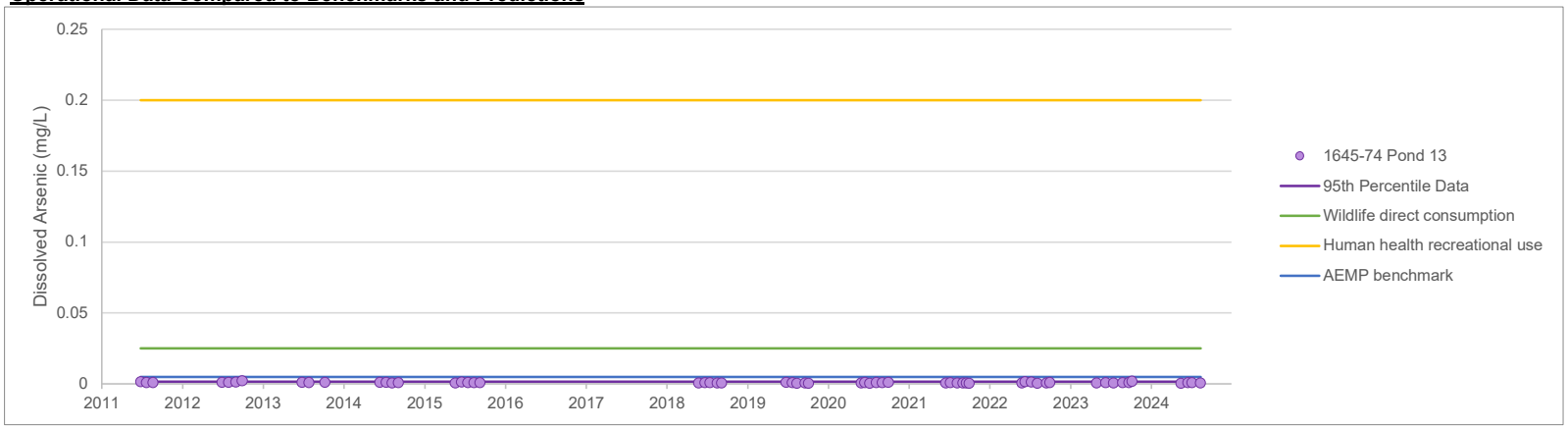


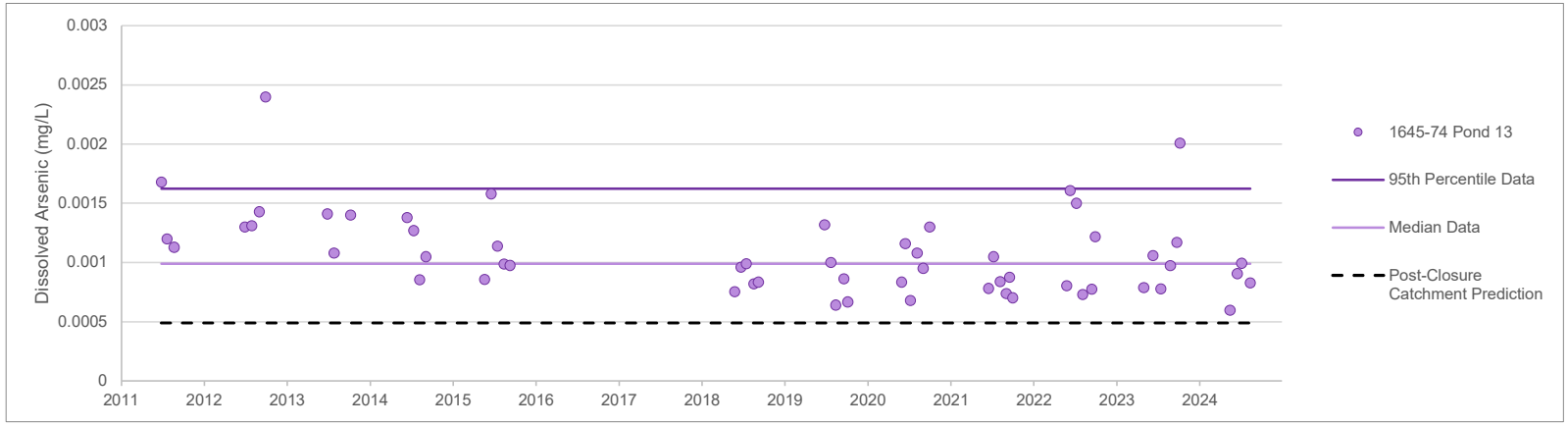


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00099	Wildlife	None
Median	0.00036	Human recreational	0.12
Count	57	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions

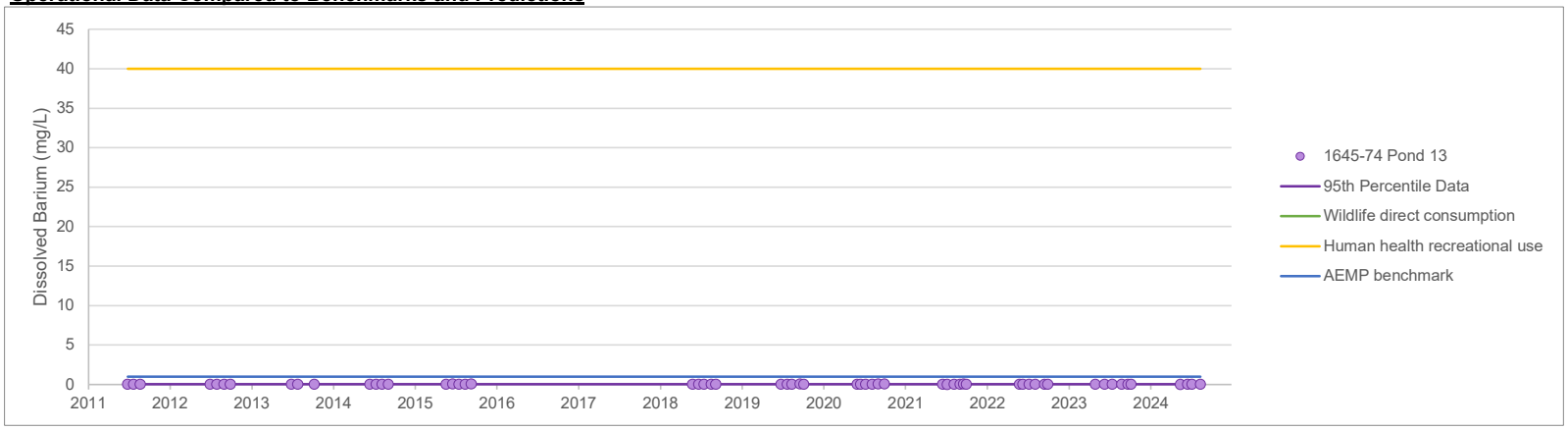


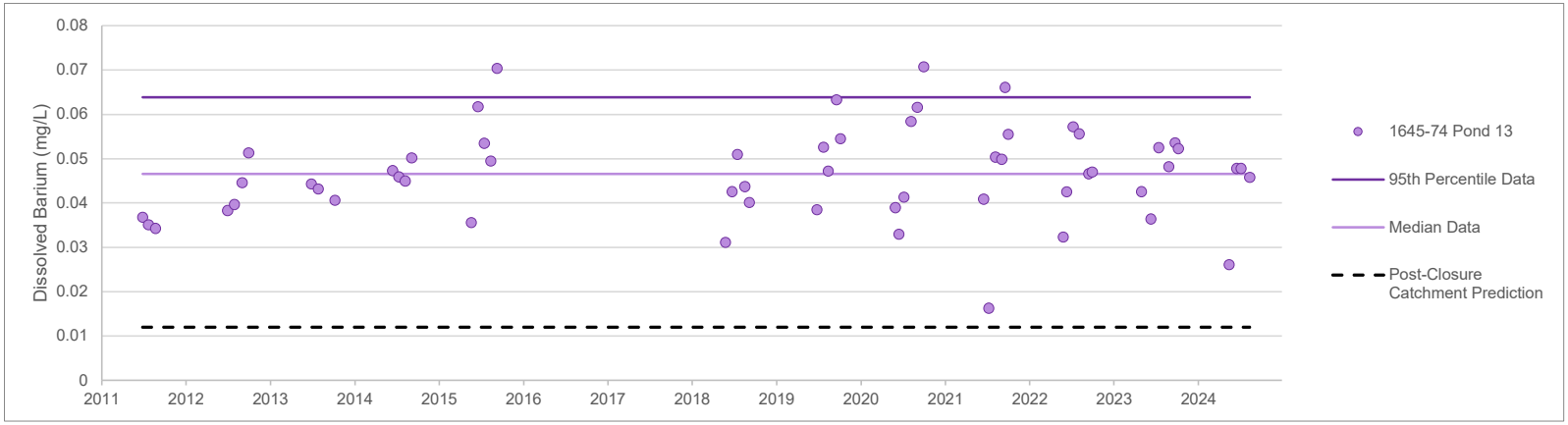


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0016	Wildlife	0.03
Median	0.0010	Human recreational	0.20
Count	57	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

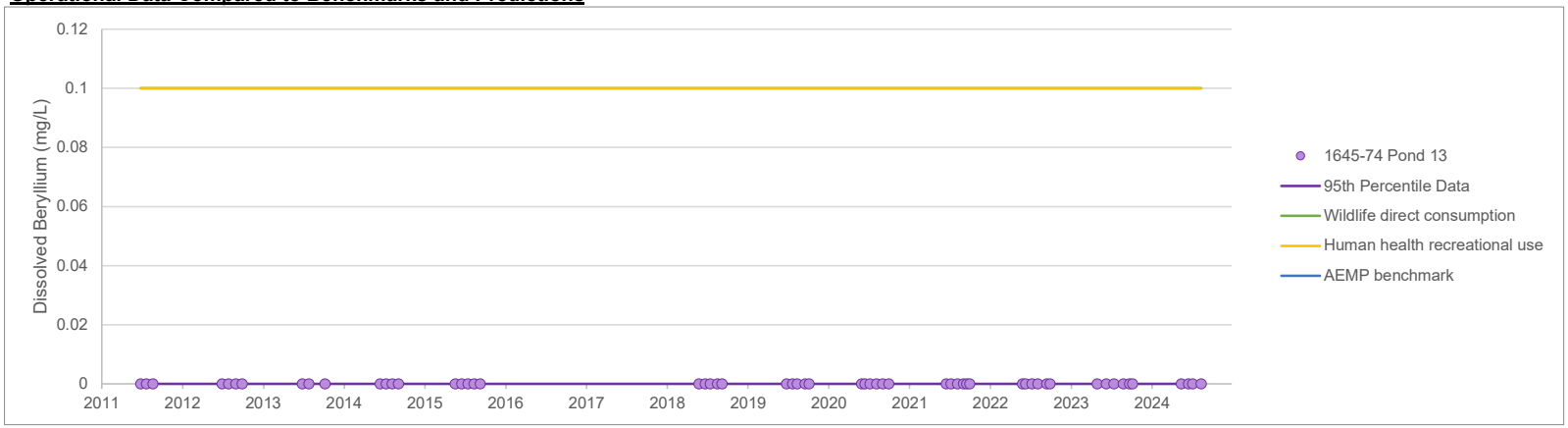


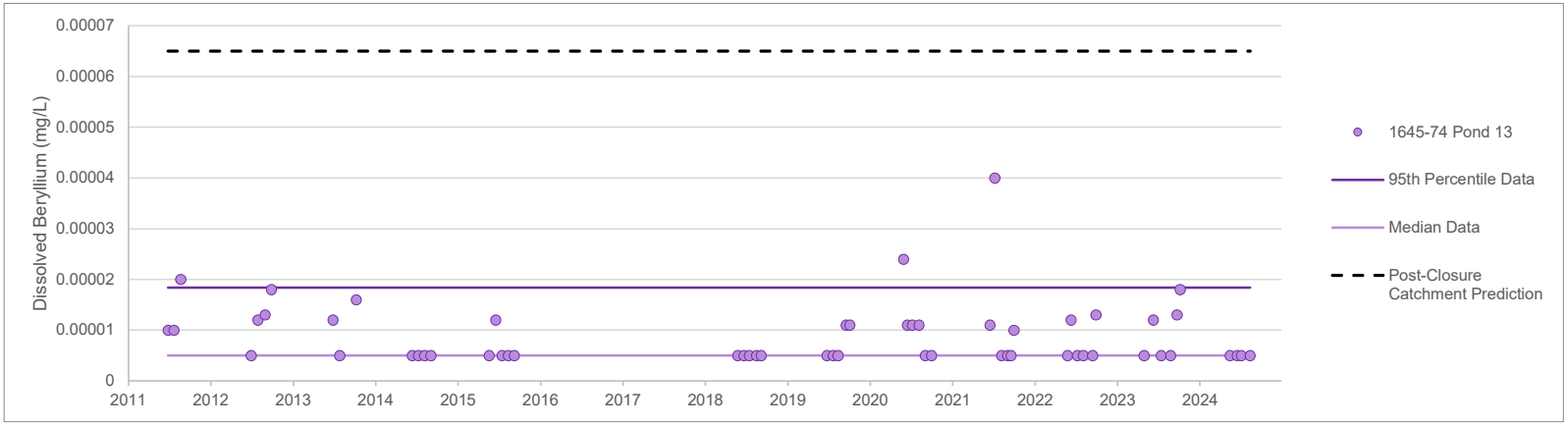


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.064	Wildlife	None
Median	0.047	Human recreational	40.0
Count	57	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



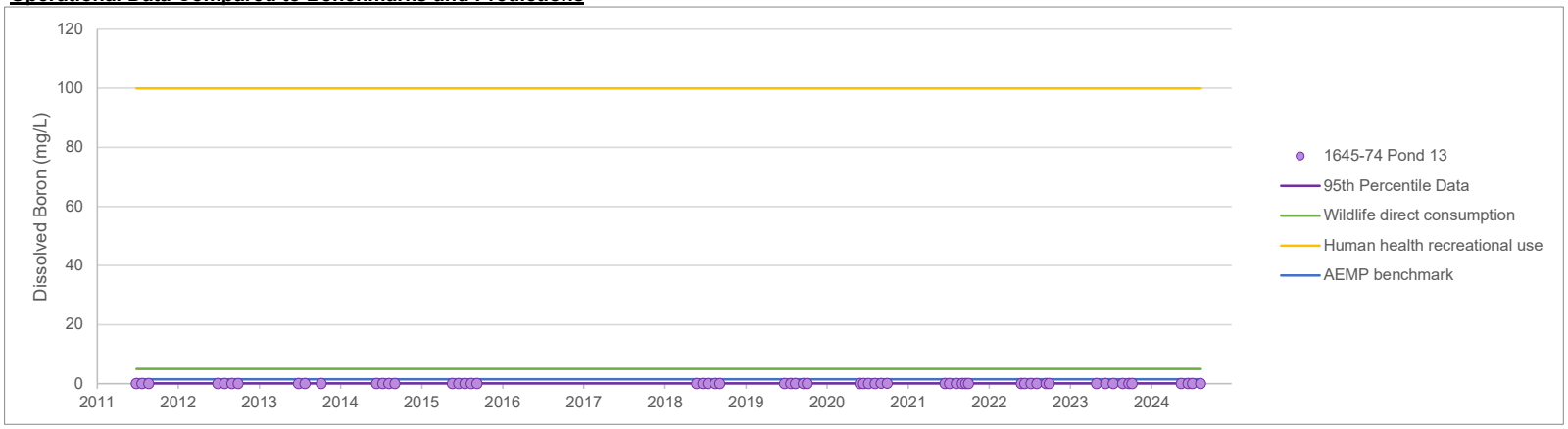


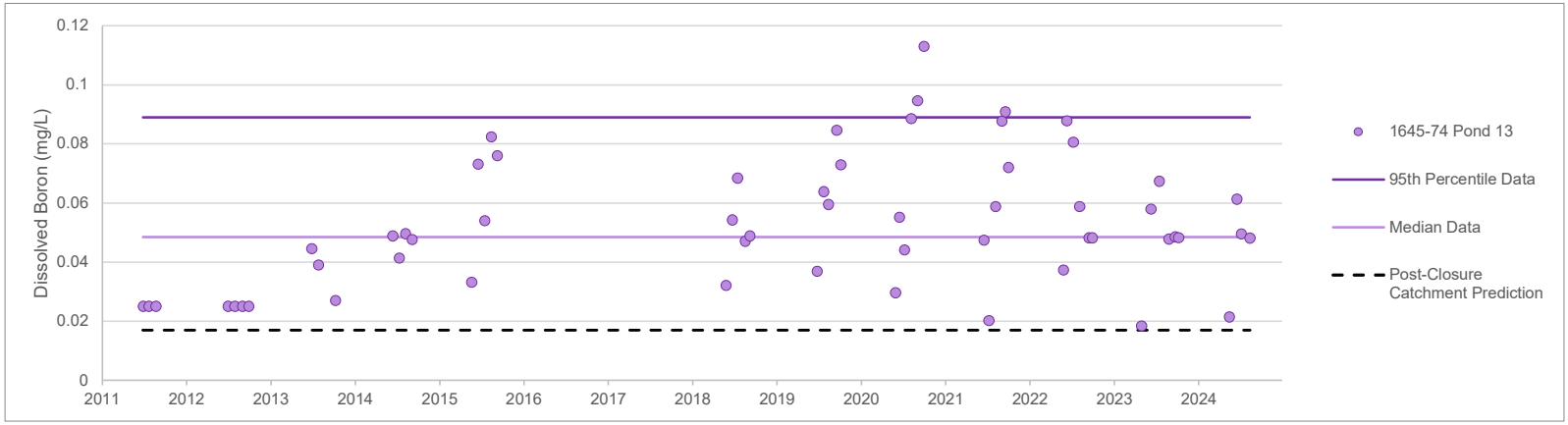
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000018	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



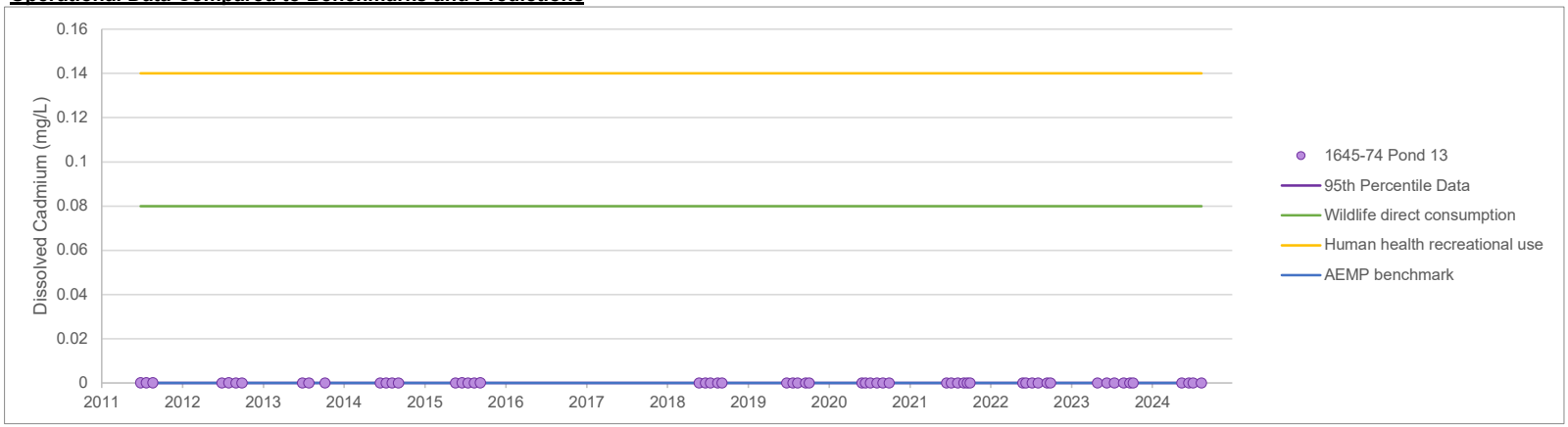


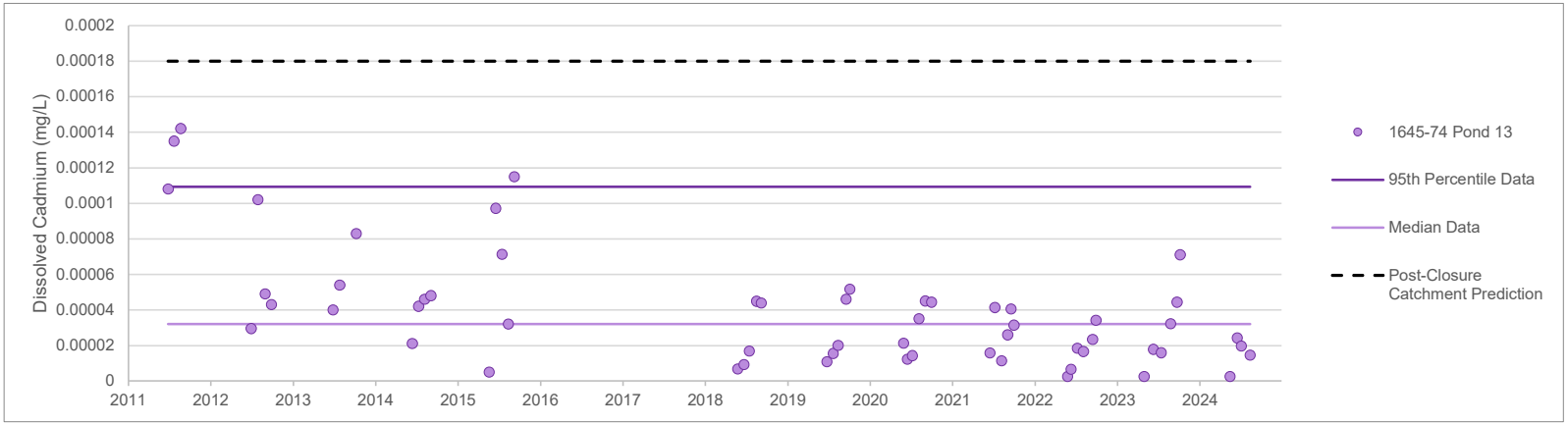
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.089	Wildlife	5.0
Median	0.049	Human recreational	100.0
Count	57	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

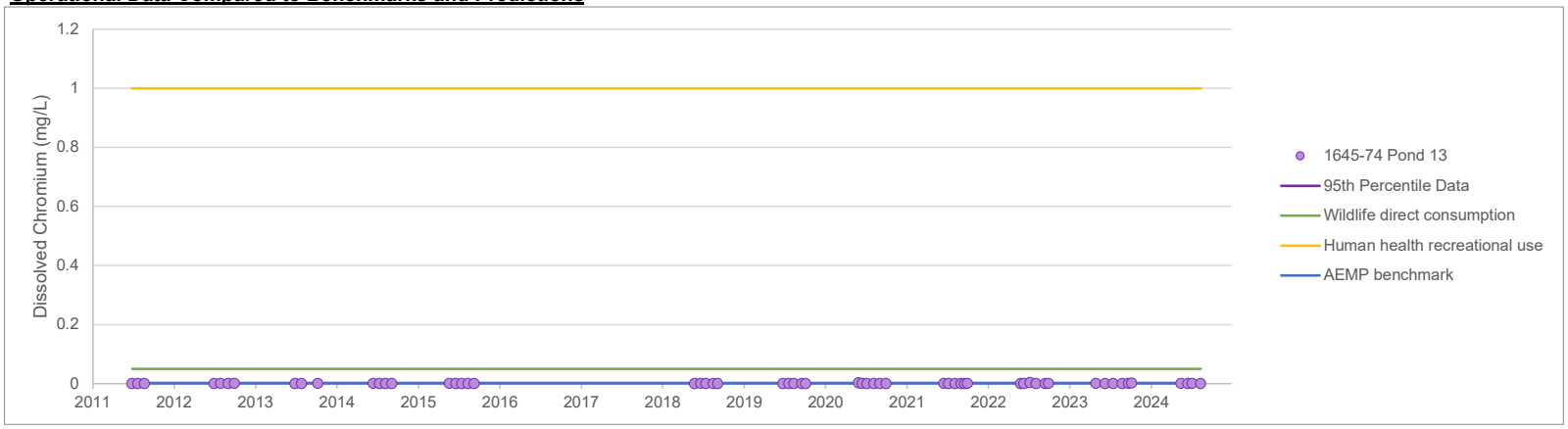


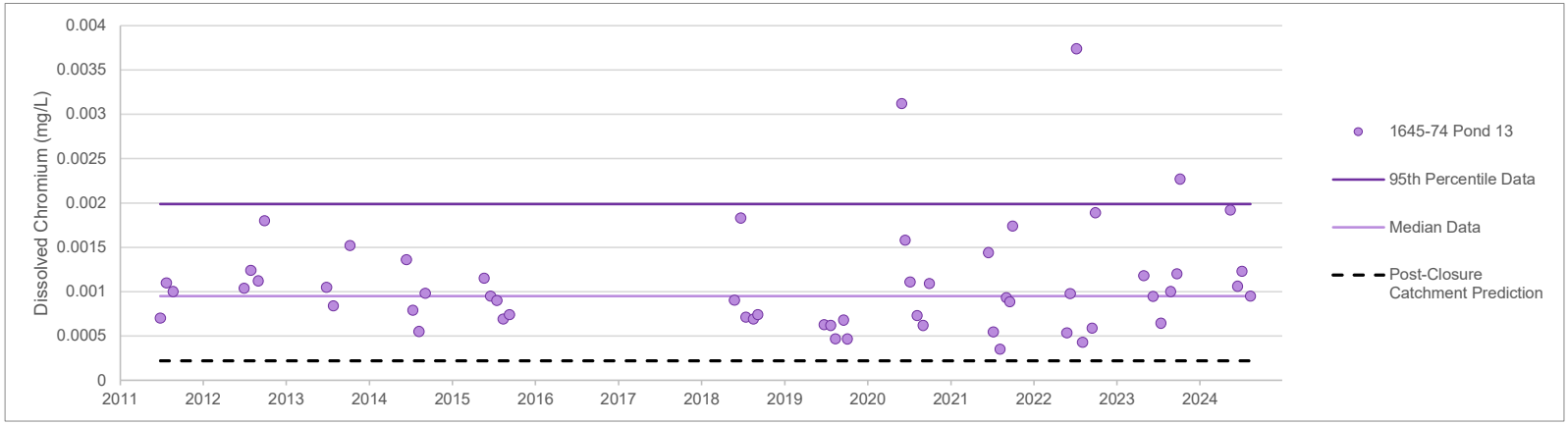


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00011	Wildlife	0.08
Median	0.00003	Human recreational	0.14
Count	57	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



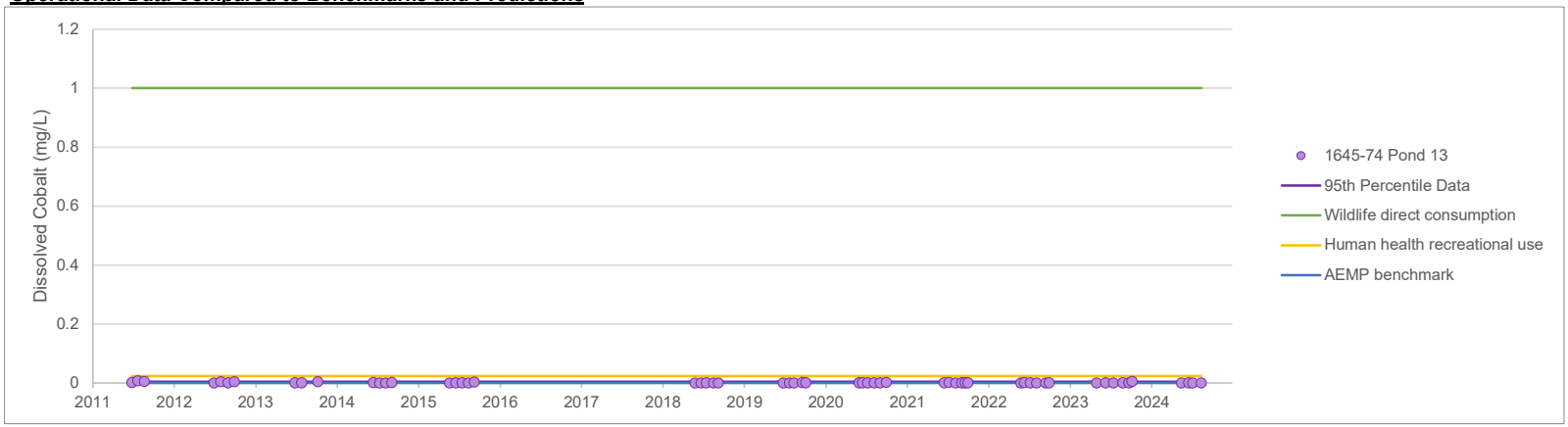


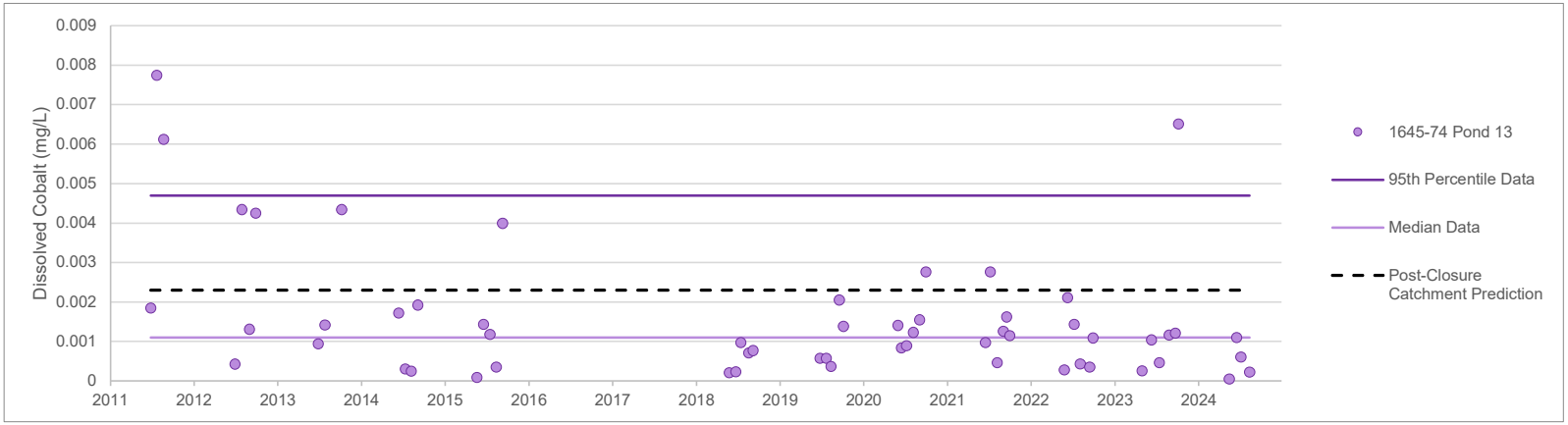
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00199	Wildlife	0.05
Median	0.00095	Human recreational	1.0
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



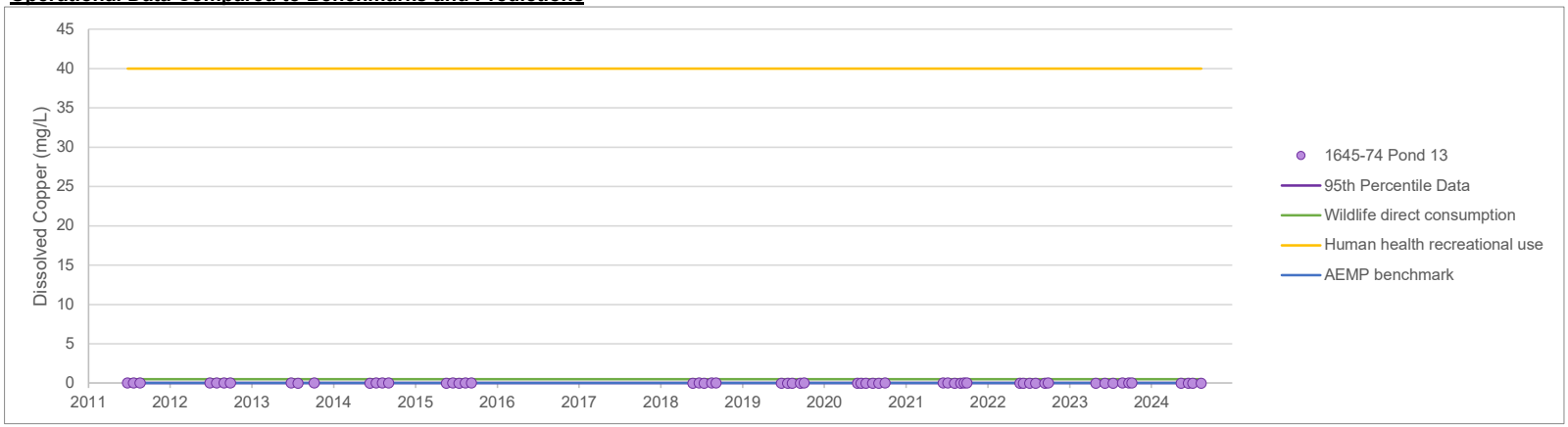


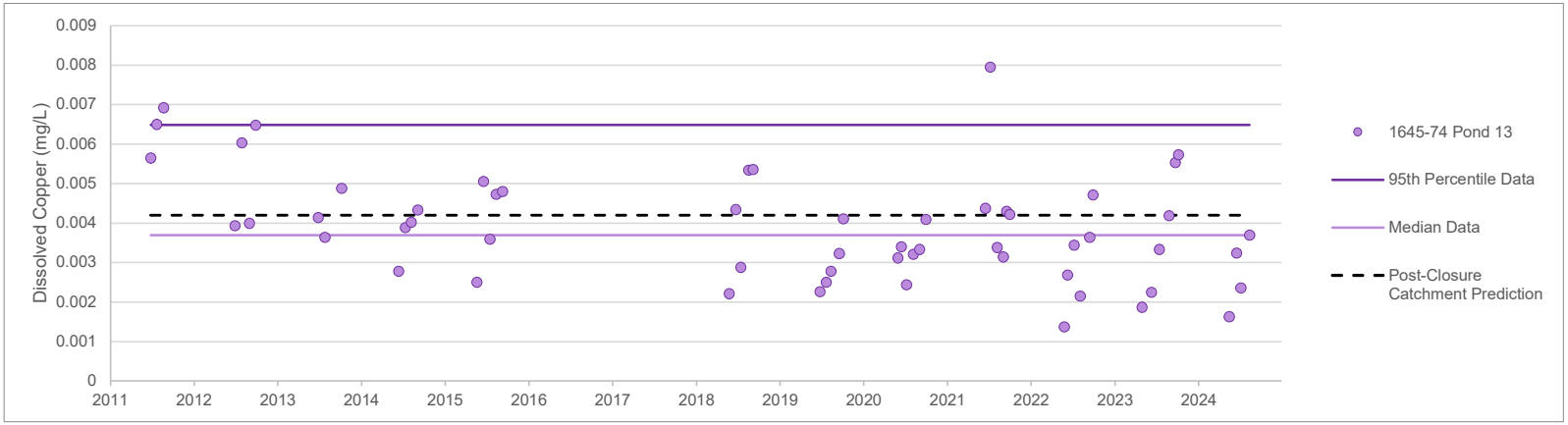
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0047	Wildlife	1.0
Median	0.0011	Human recreational	0.02
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



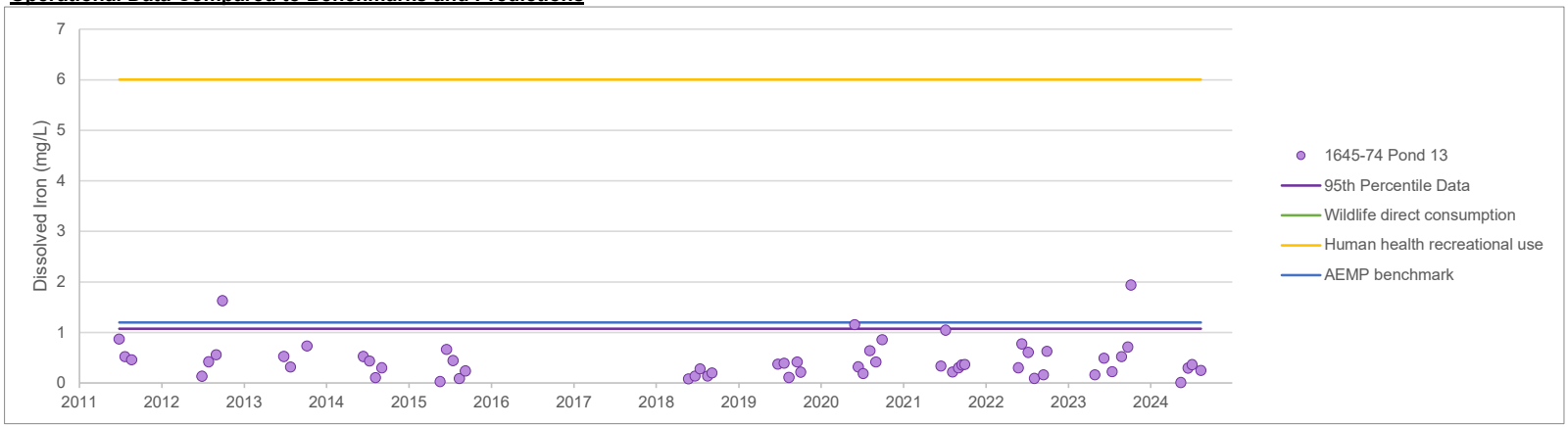


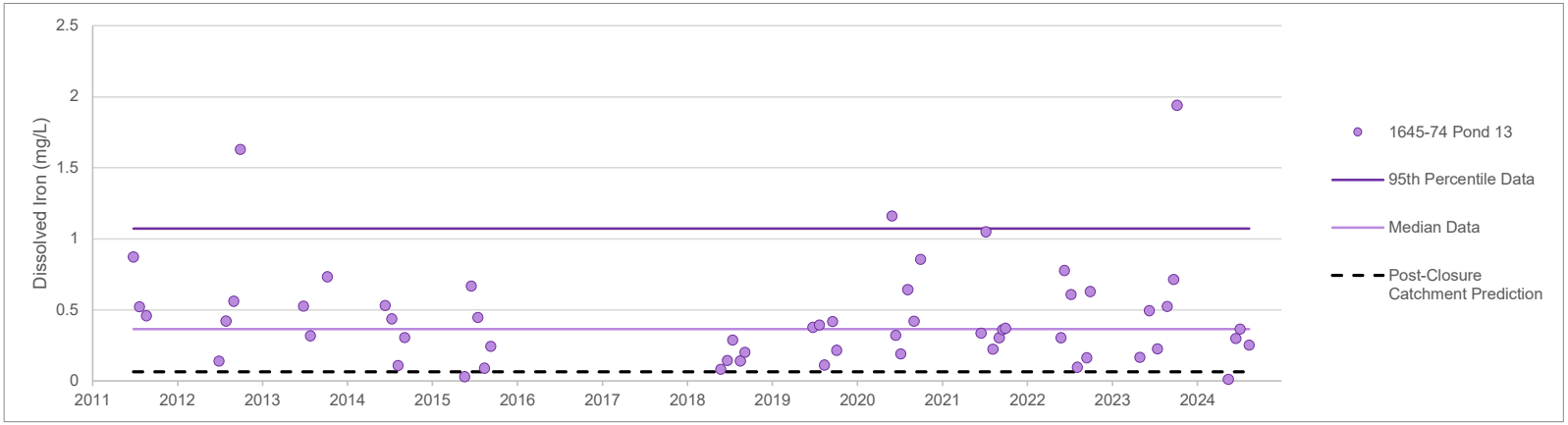
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0065	Wildlife	0.5
Median	0.0037	Human recreational	40.0
Count	57	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions

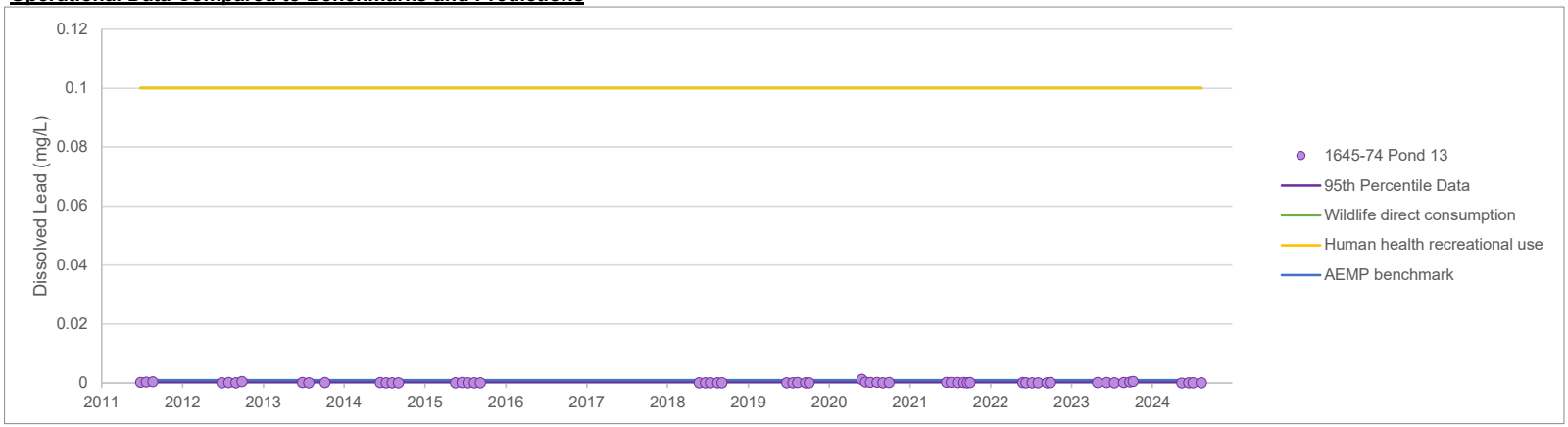


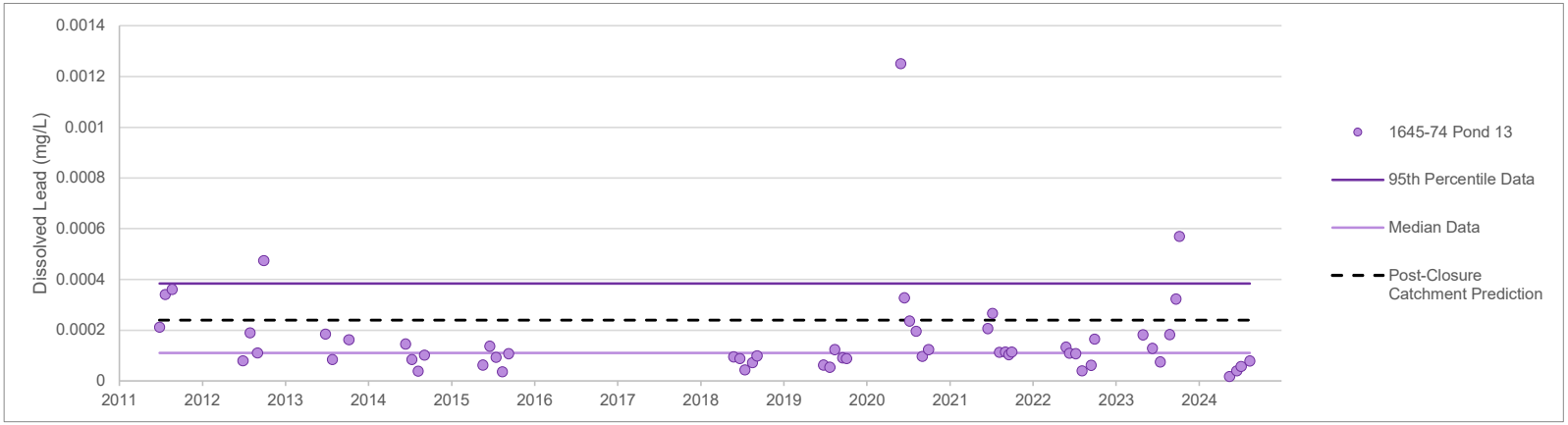


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	1.07	Wildlife	None
Median	0.37	Human recreational	6.0
Count	57	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

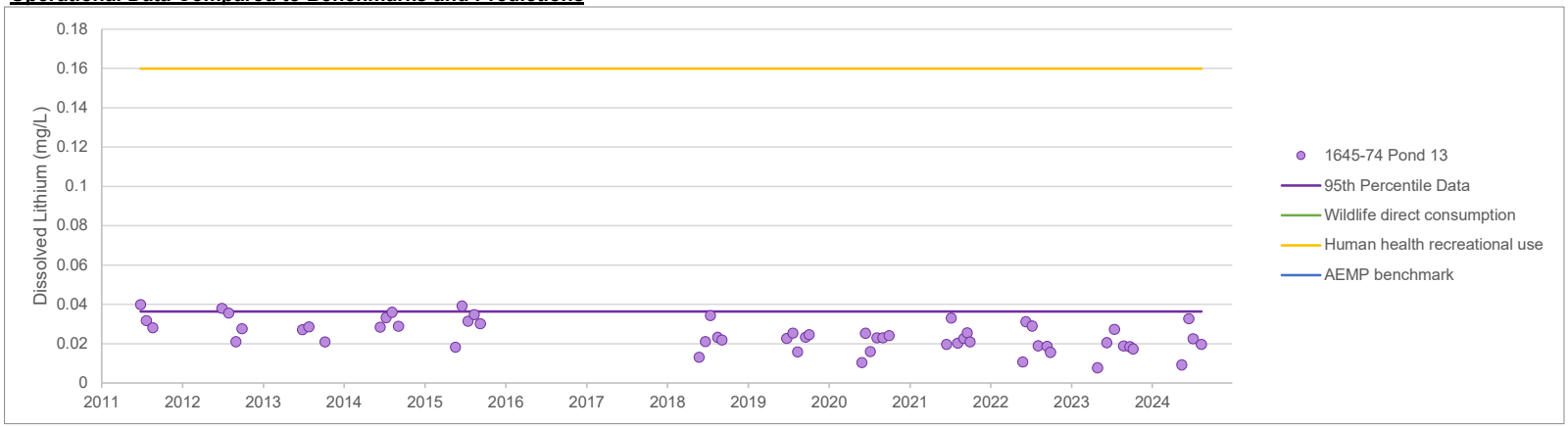


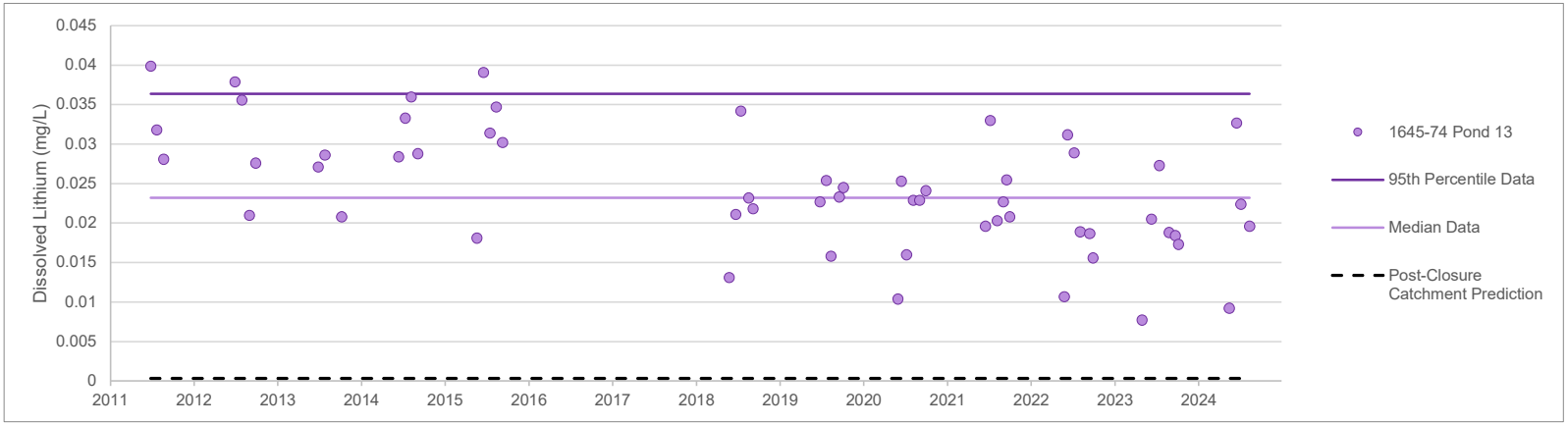


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00038	Wildlife	0.10
Median	0.00011	Human recreational	0.10
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

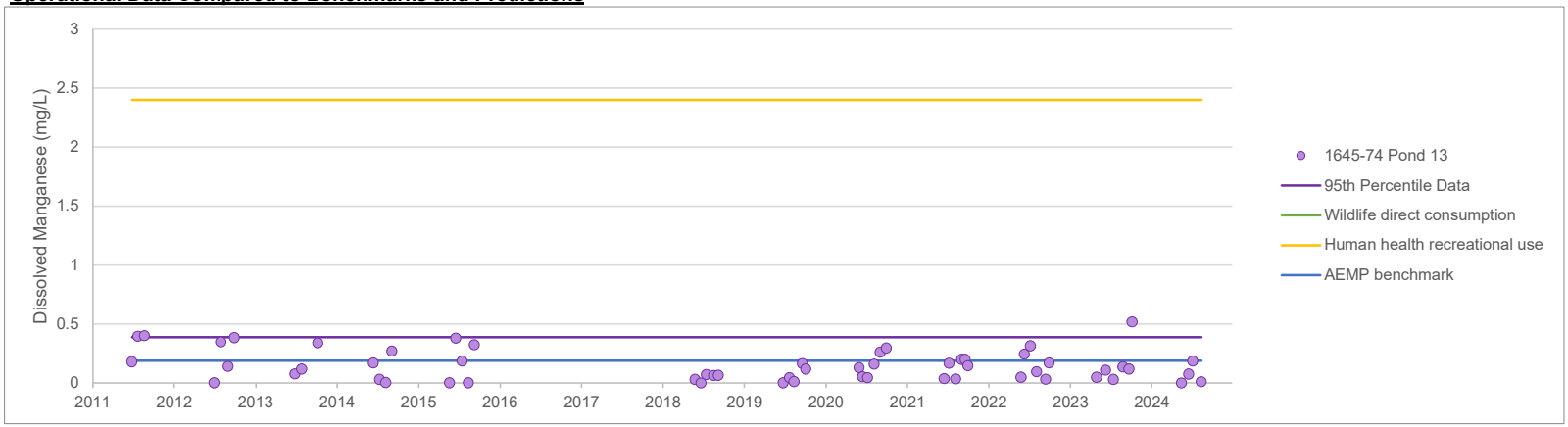


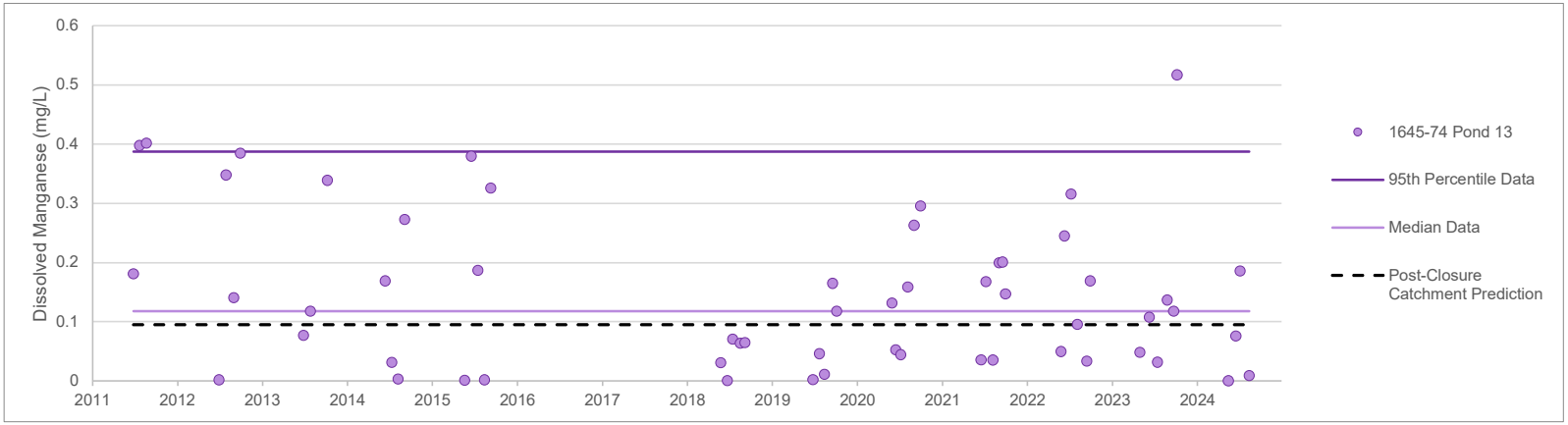


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.036	Wildlife	None
Median	0.023	Human recreational	0.16
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

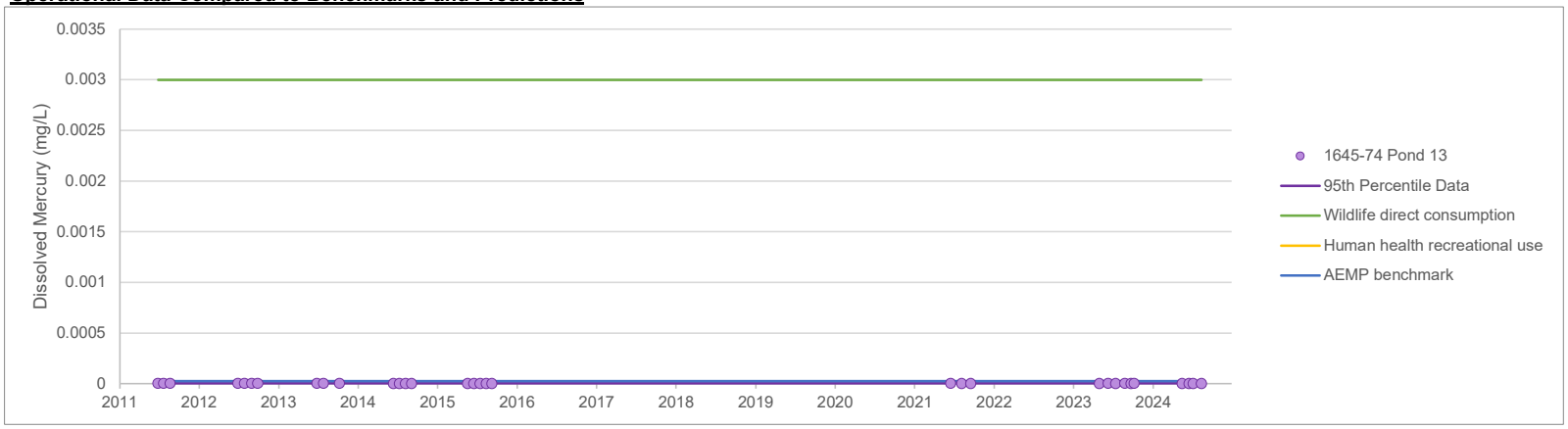


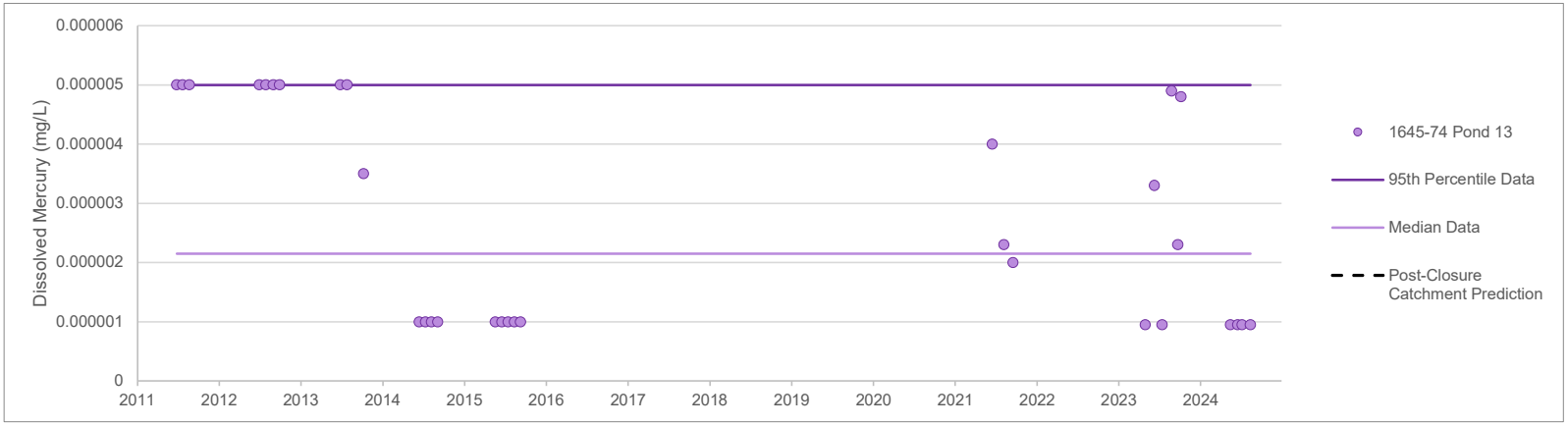


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.388	Wildlife	None
Median	0.118	Human recreational	2.4
Count	57	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

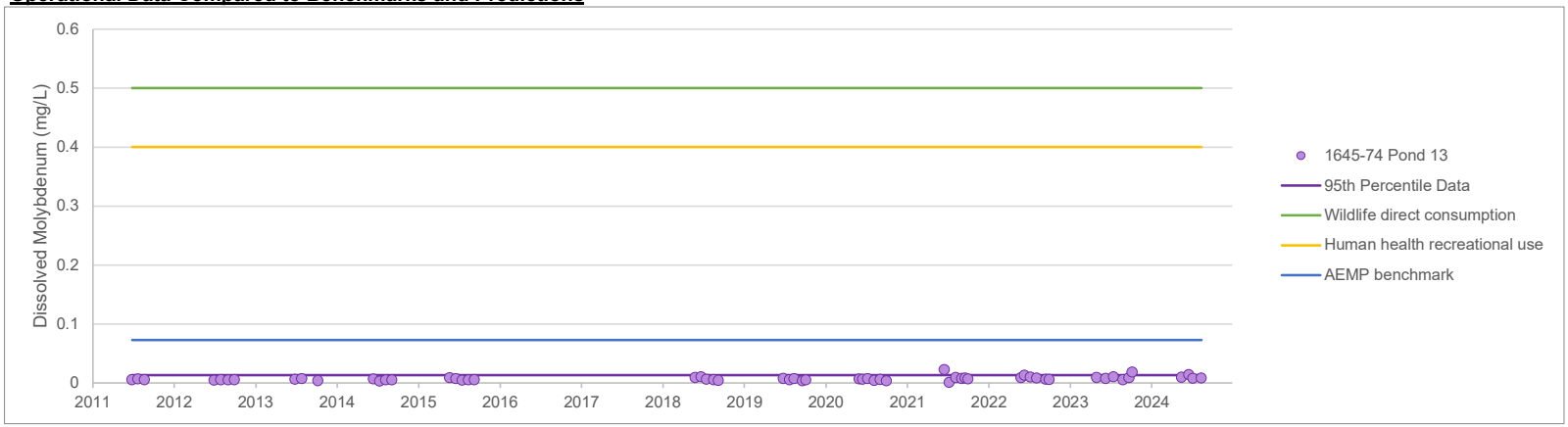


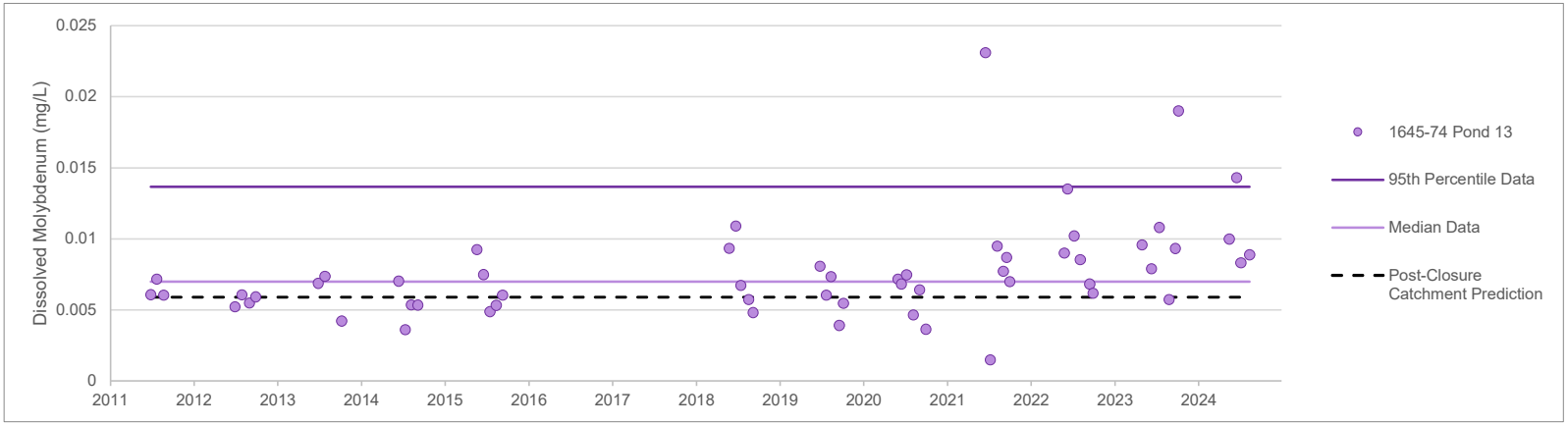


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000022	Human recreational	None
Count	32	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



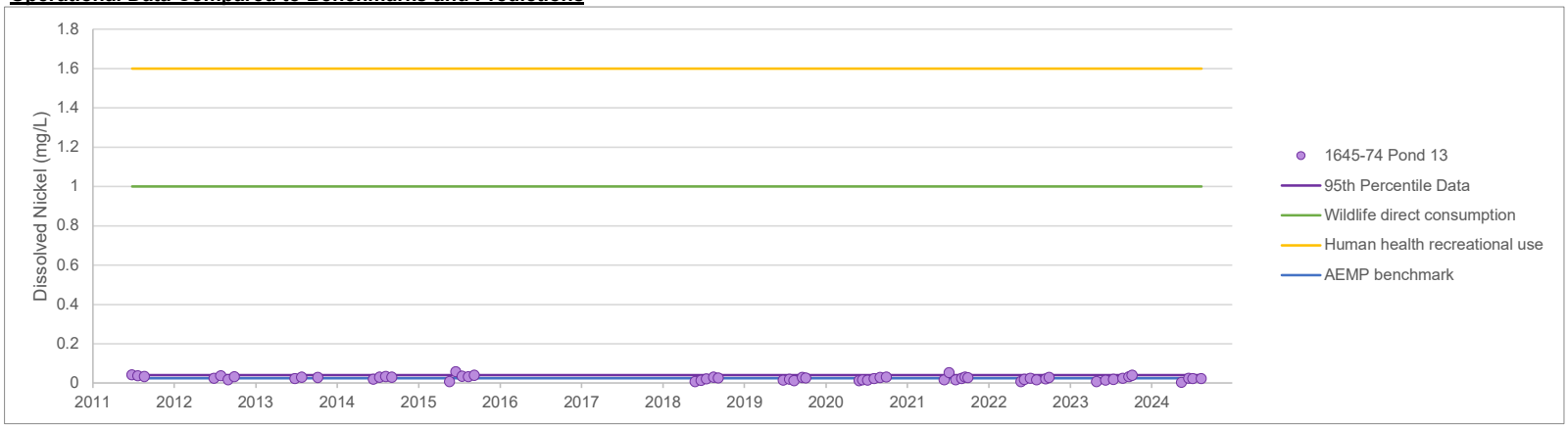


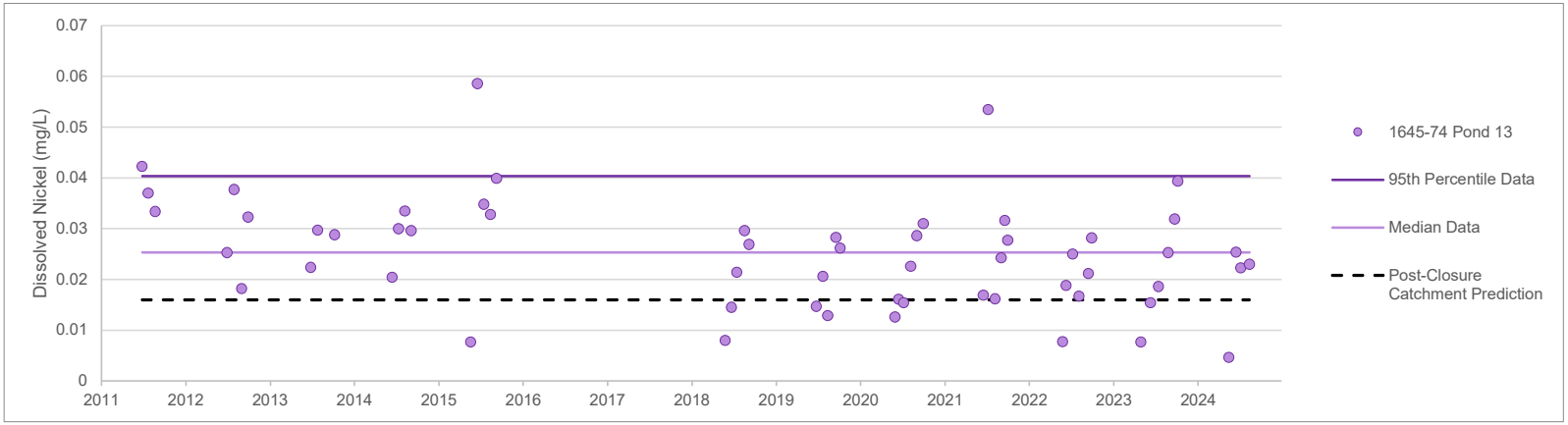
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0137	Wildlife	0.5
Median	0.0070	Human recreational	0.4
Count	57	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

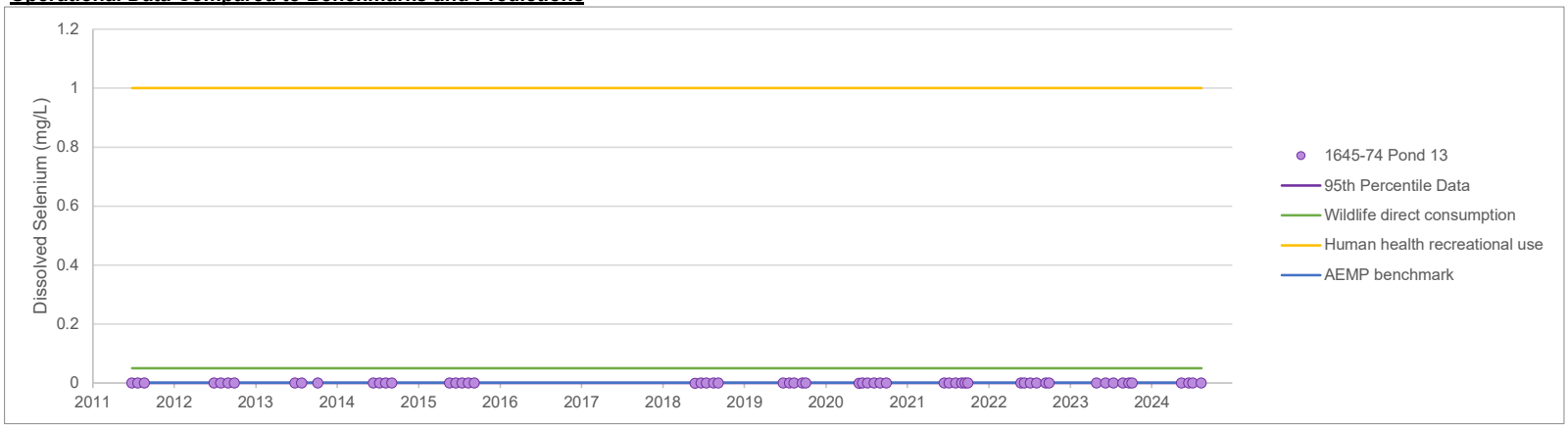


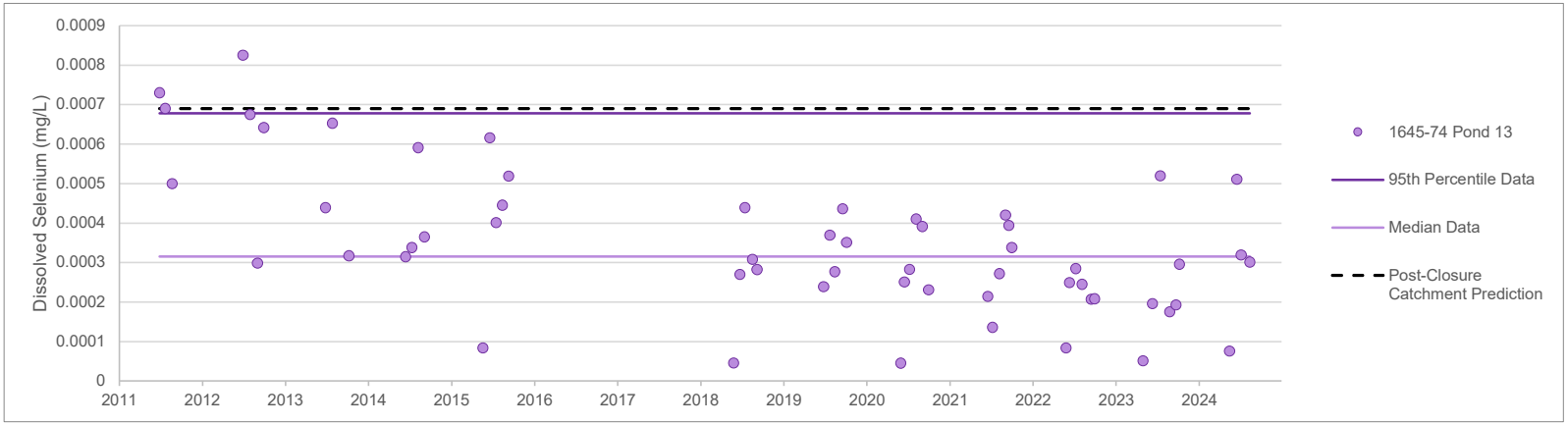


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.040	Wildlife	1.0
Median	0.025	Human recreational	1.6
Count	57	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions

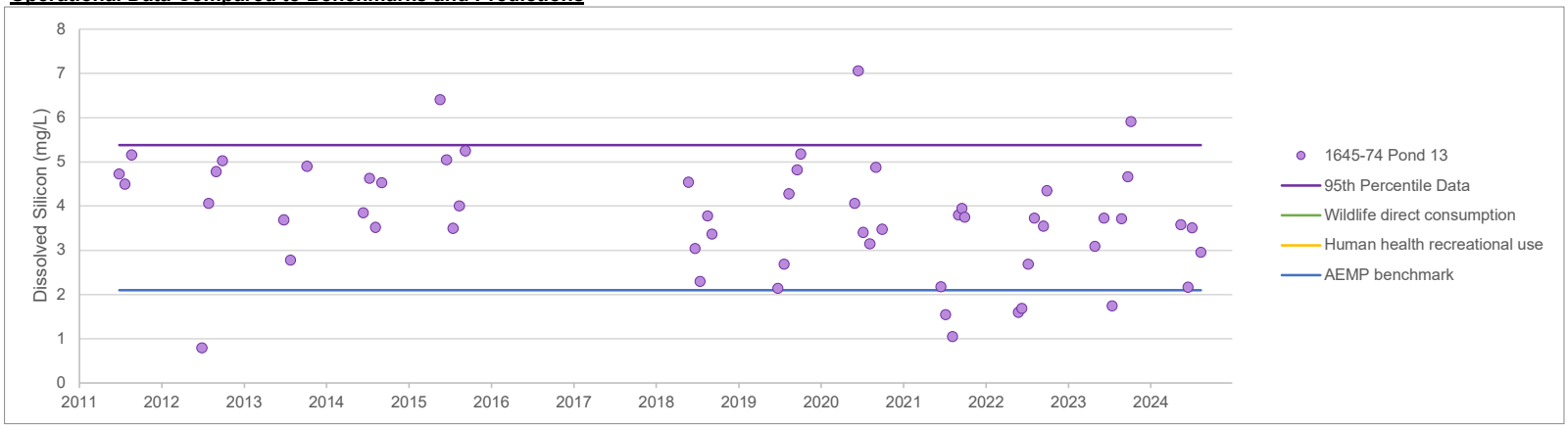


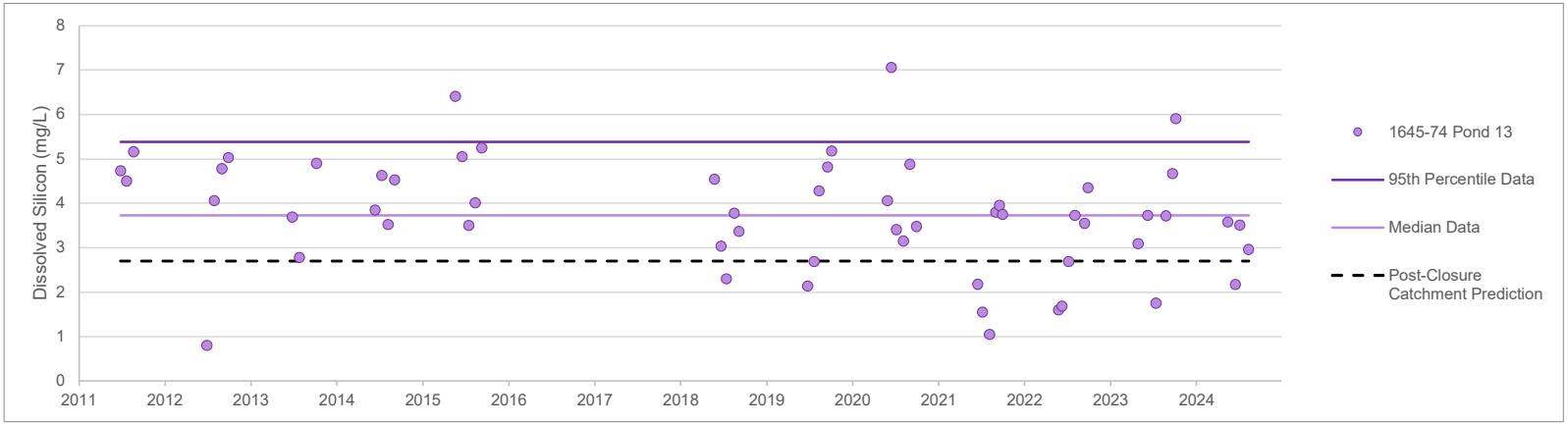


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00068	Wildlife	0.1
Median	0.00032	Human recreational	1.0
Count	57	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



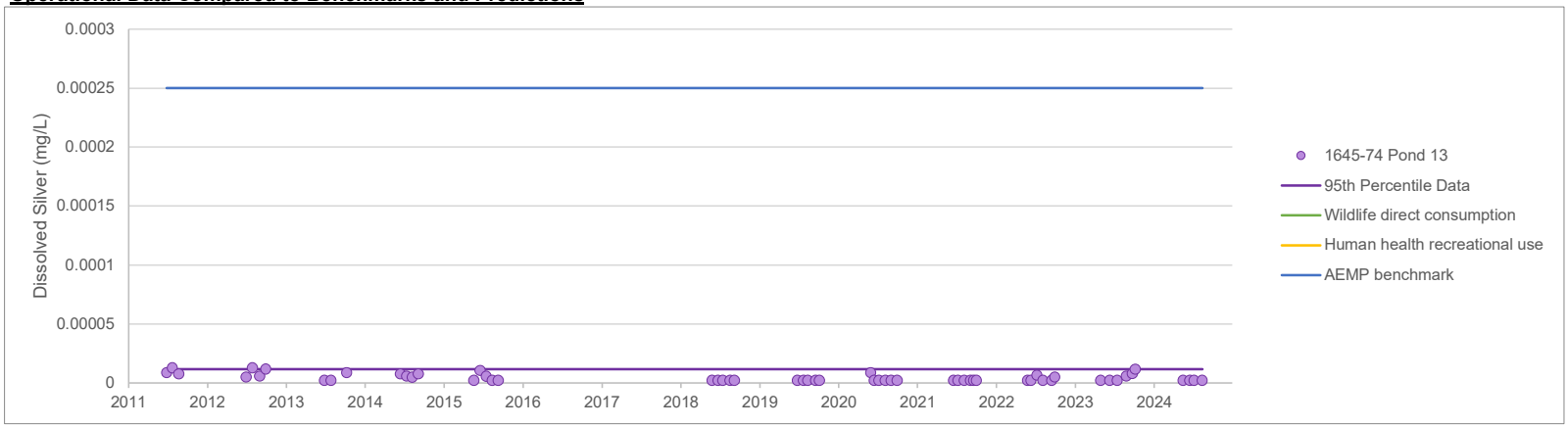


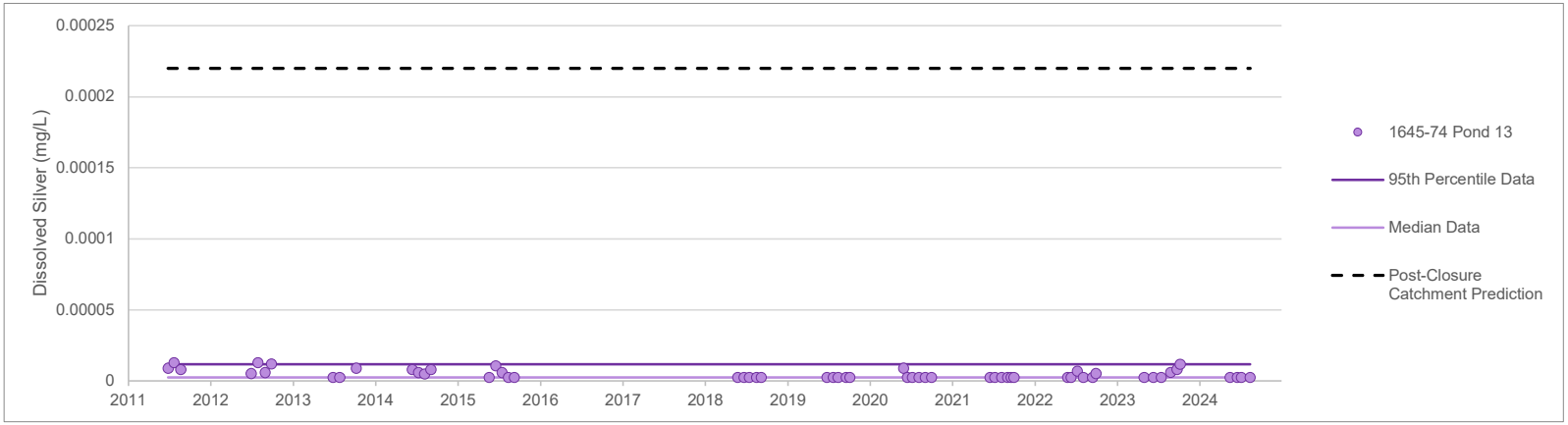
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	5.38	Wildlife	None
Median	3.73	Human recreational	None
Count	57	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions

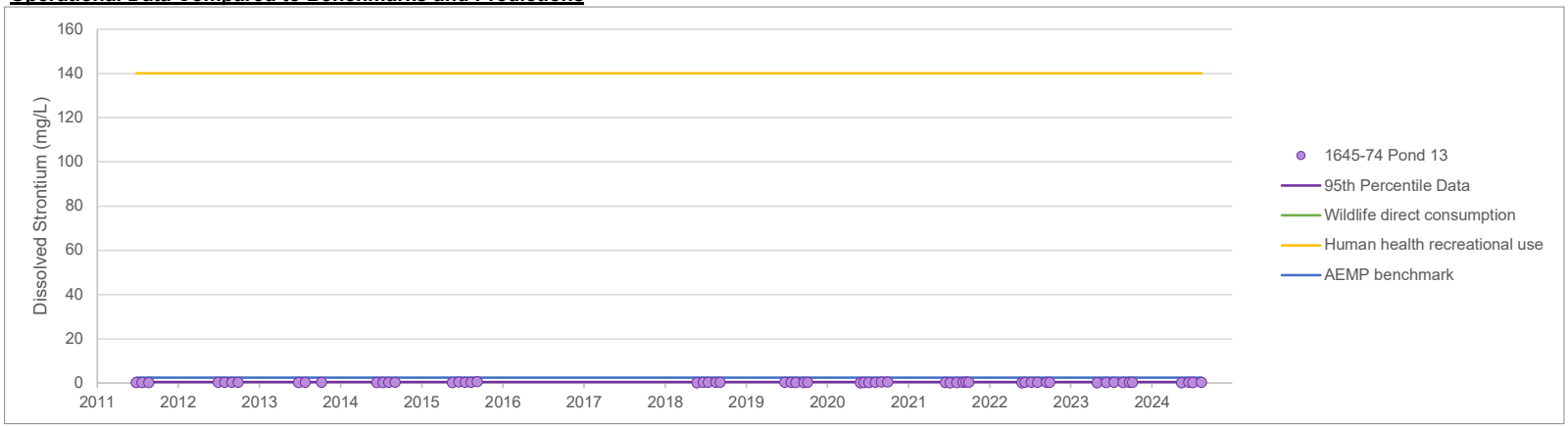


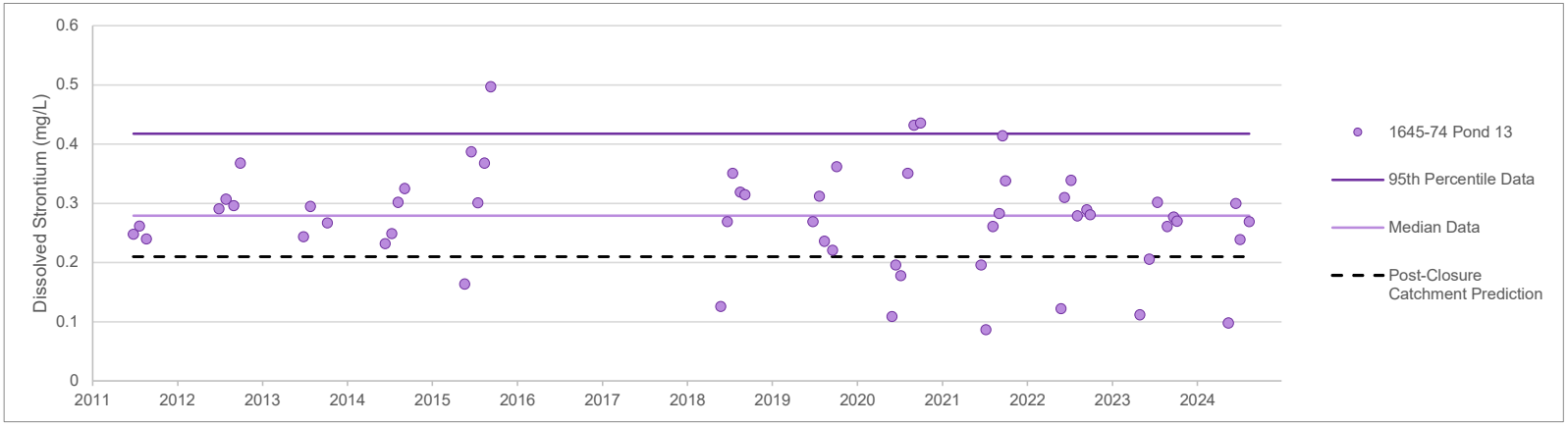


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000012	Wildlife	None
Median	0.000003	Human recreational	None
Count	57	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions

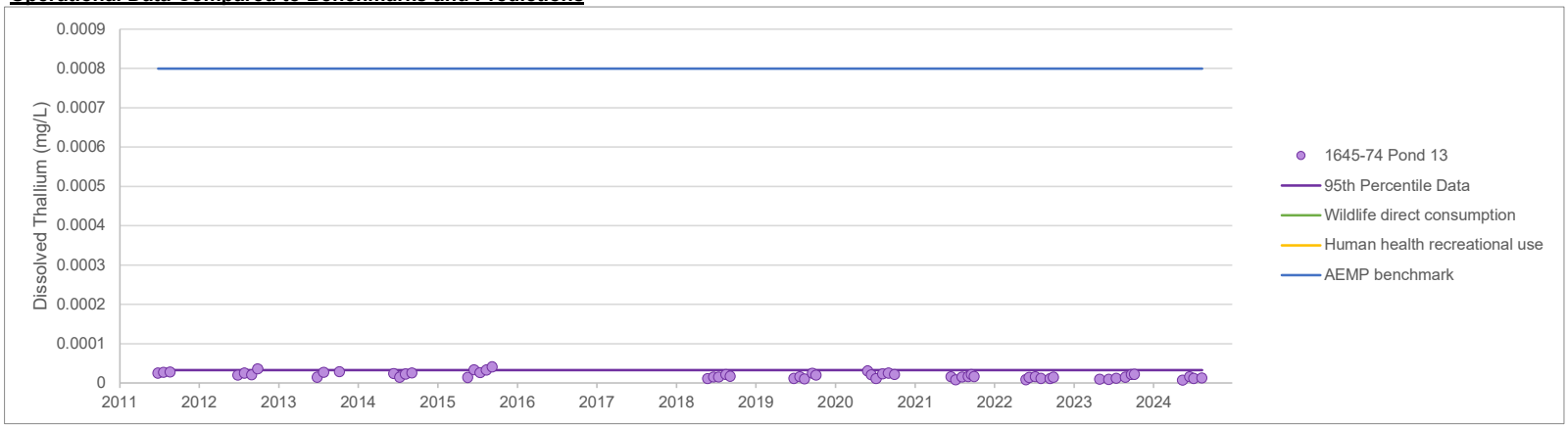


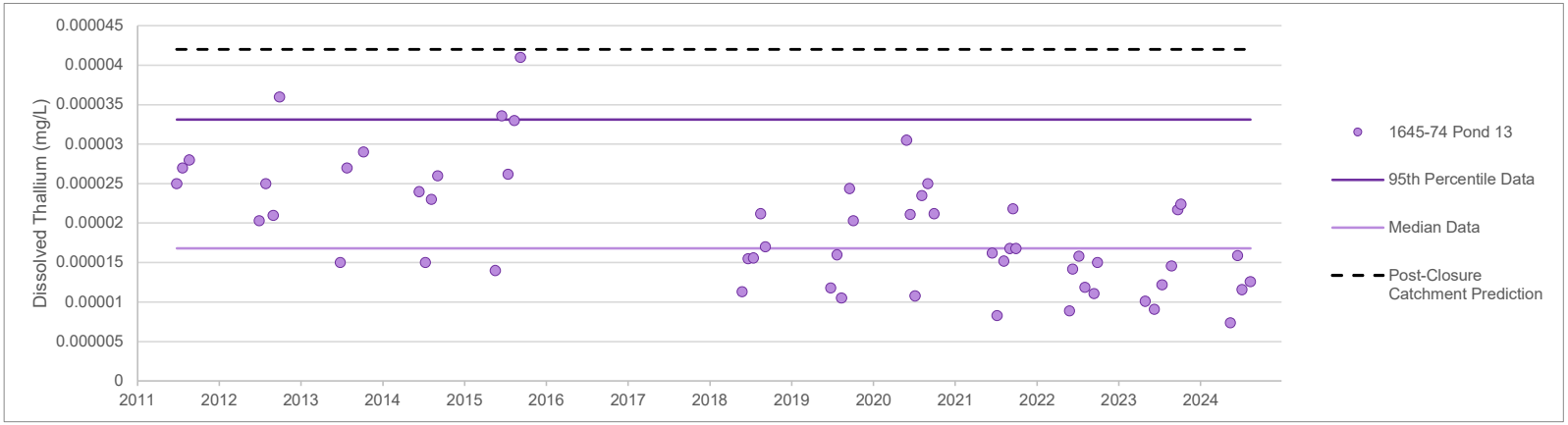


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.42	Wildlife	None
Median	0.28	Human recreational	140
Count	57	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions

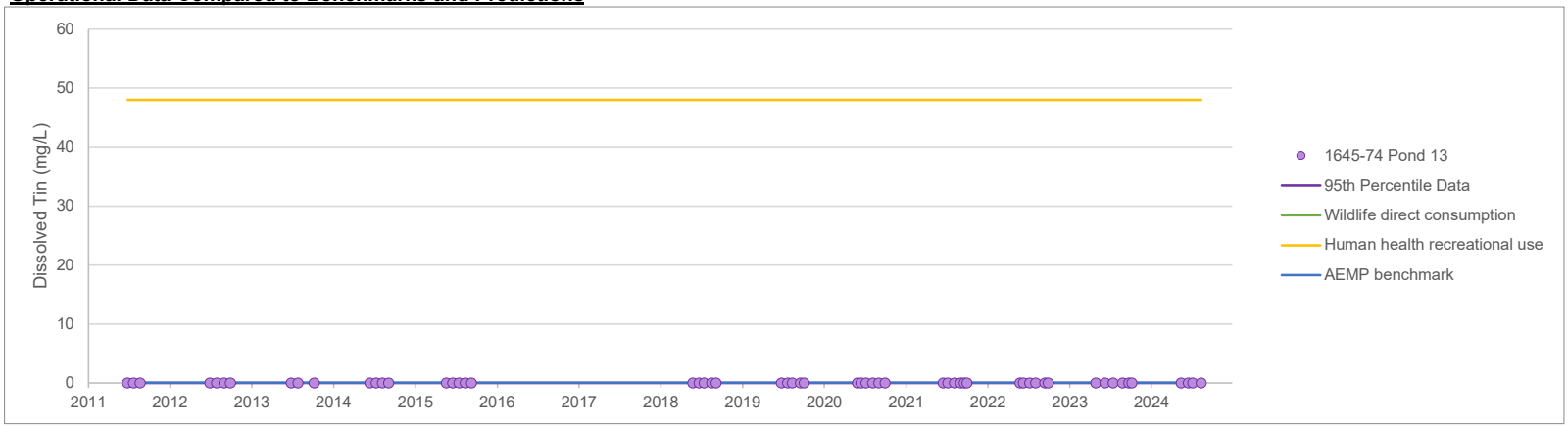


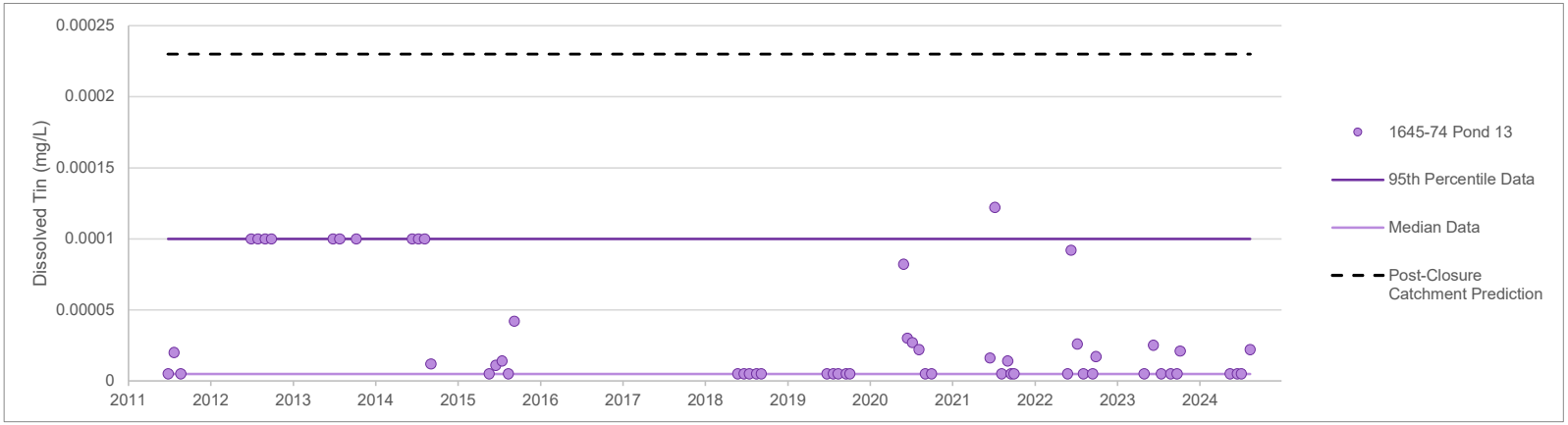


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00003	Wildlife	None
Median	0.00002	Human recreational	None
Count	57	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

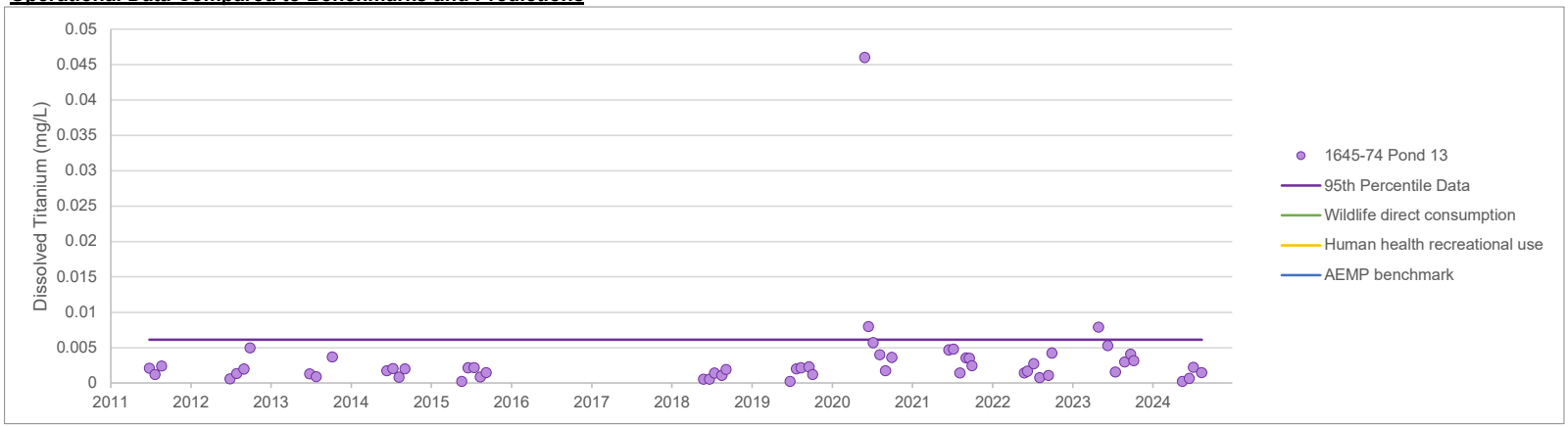


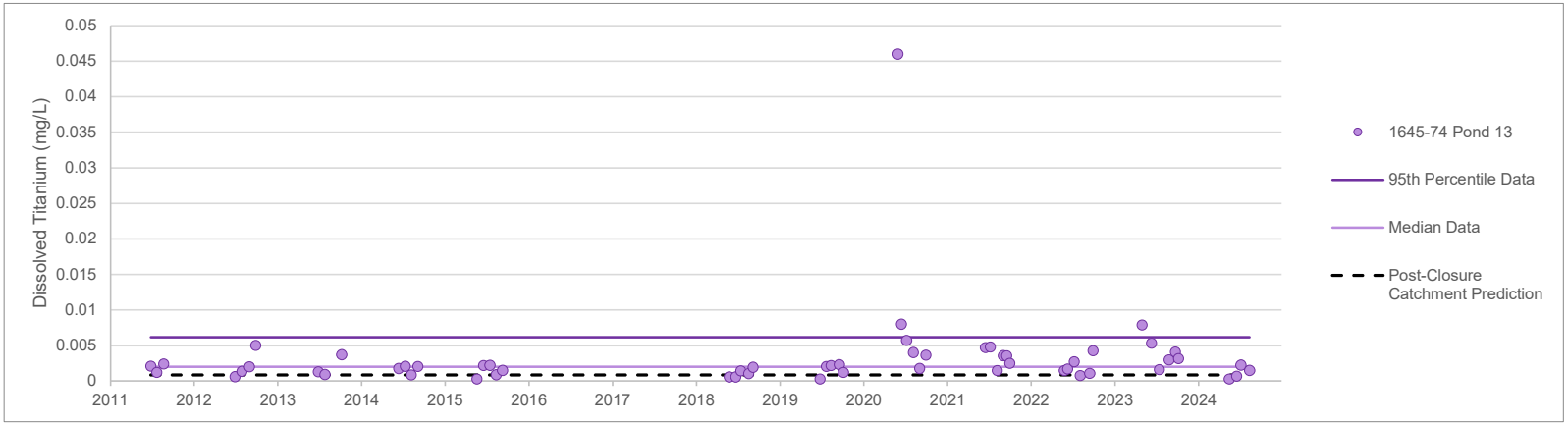


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	57	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



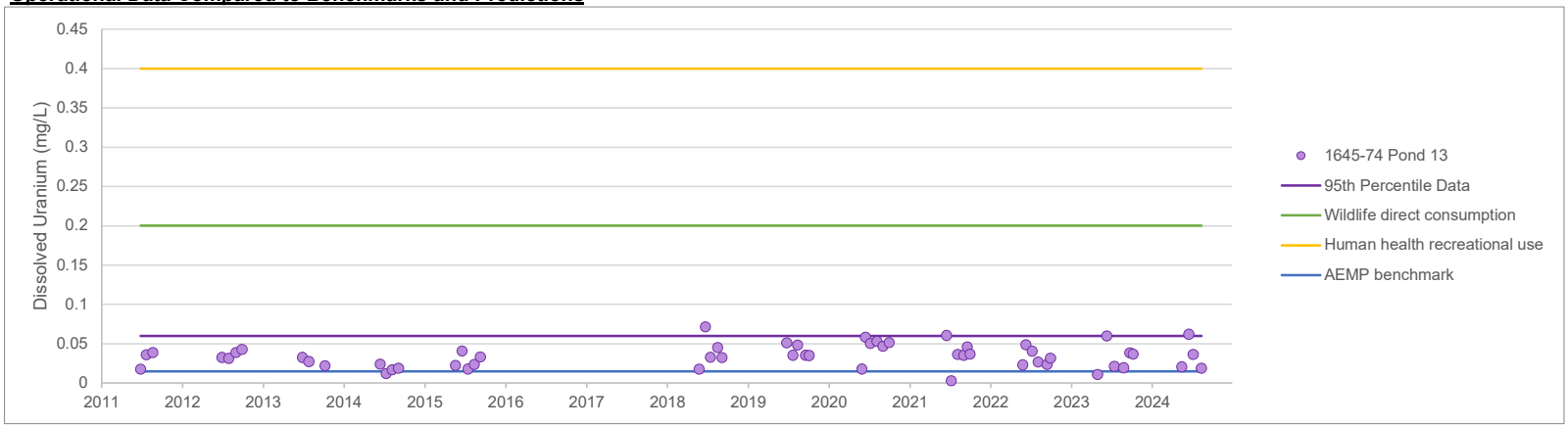


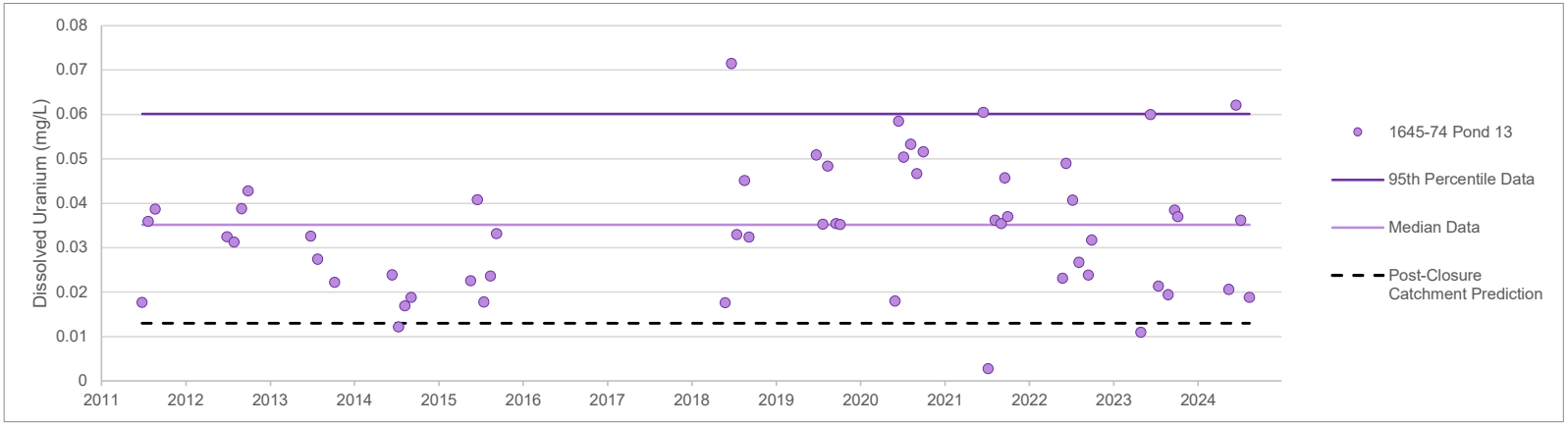
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0061	Wildlife	None
Median	0.0020	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

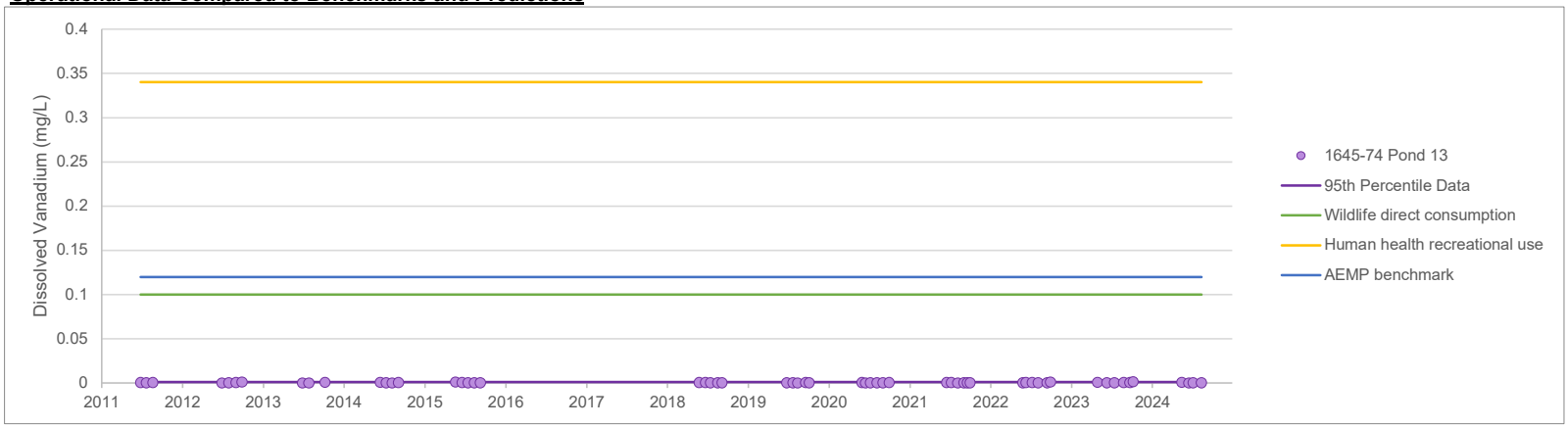


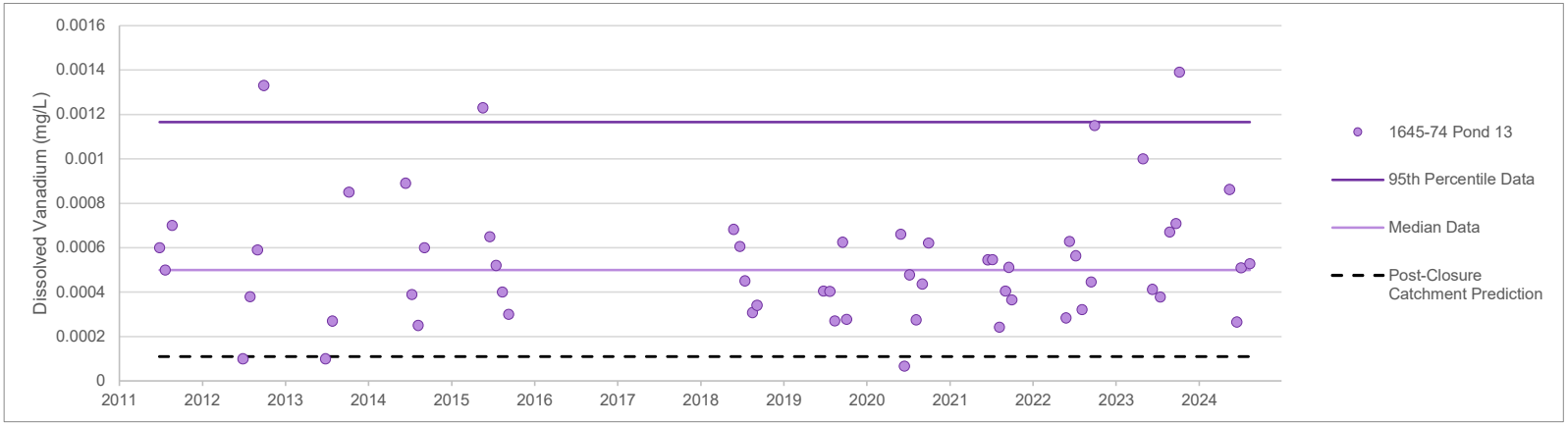


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0601	Wildlife	0.2
Median	0.0352	Human recreational	0.4
Count	57	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions

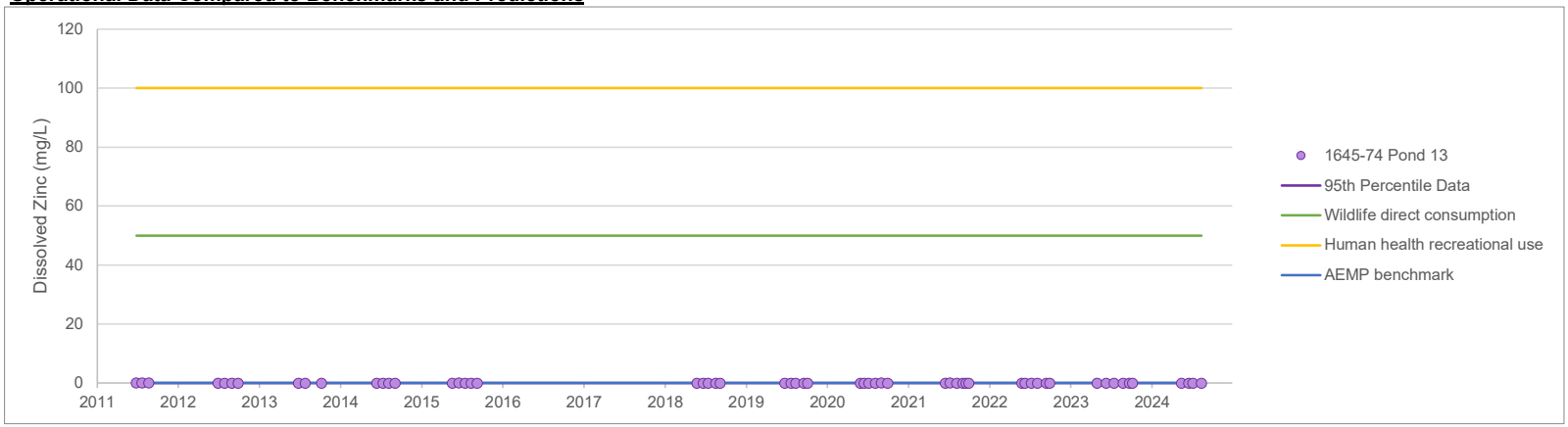


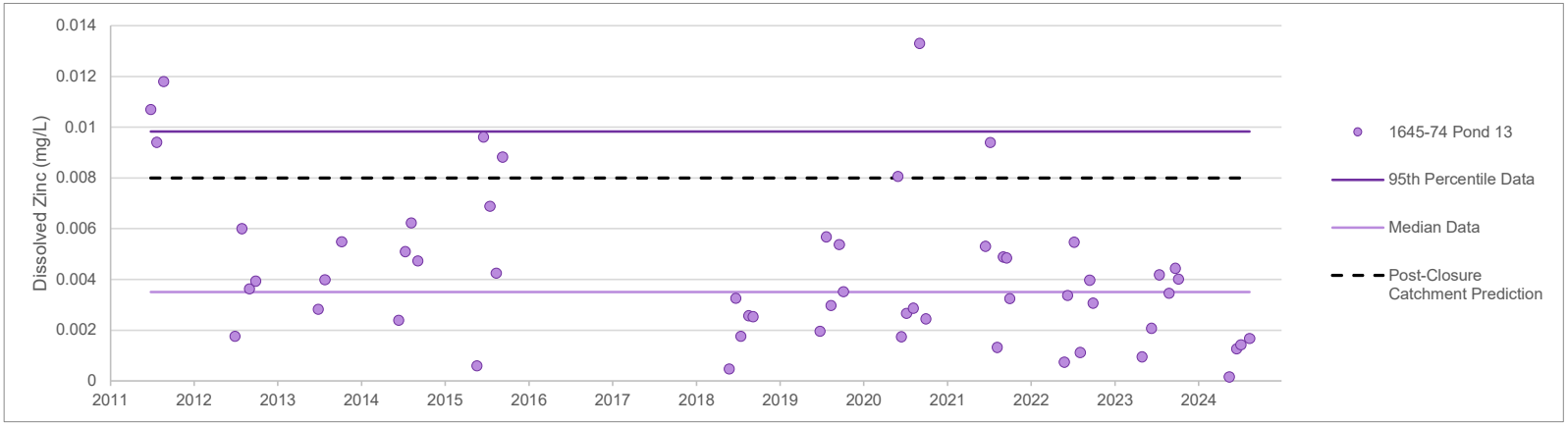


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0012	Wildlife	0.1
Median	0.0005	Human recreational	0.3
Count	57	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

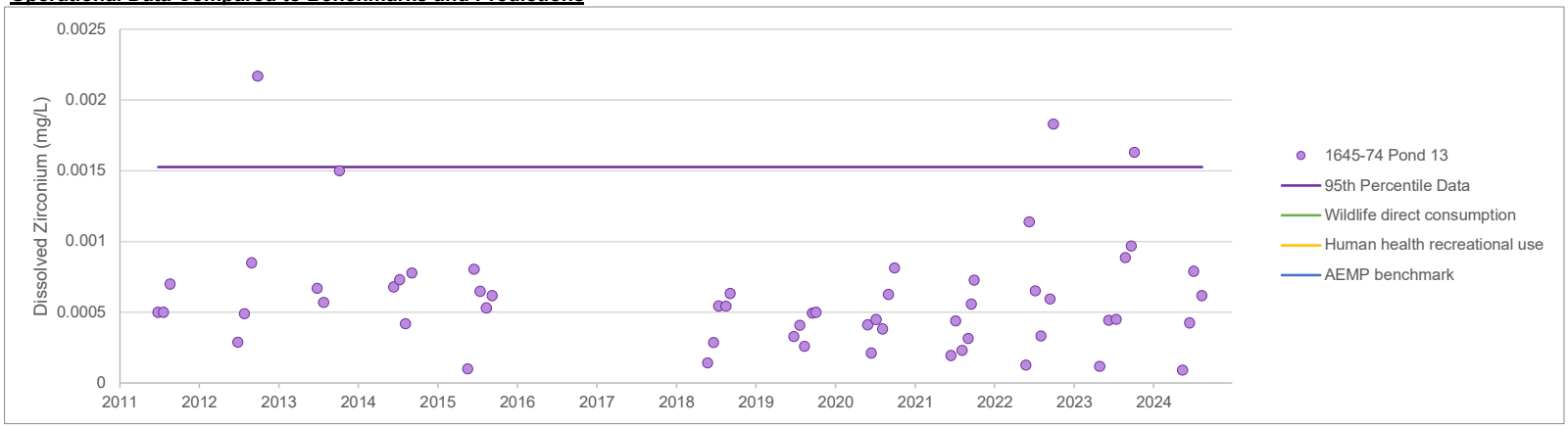


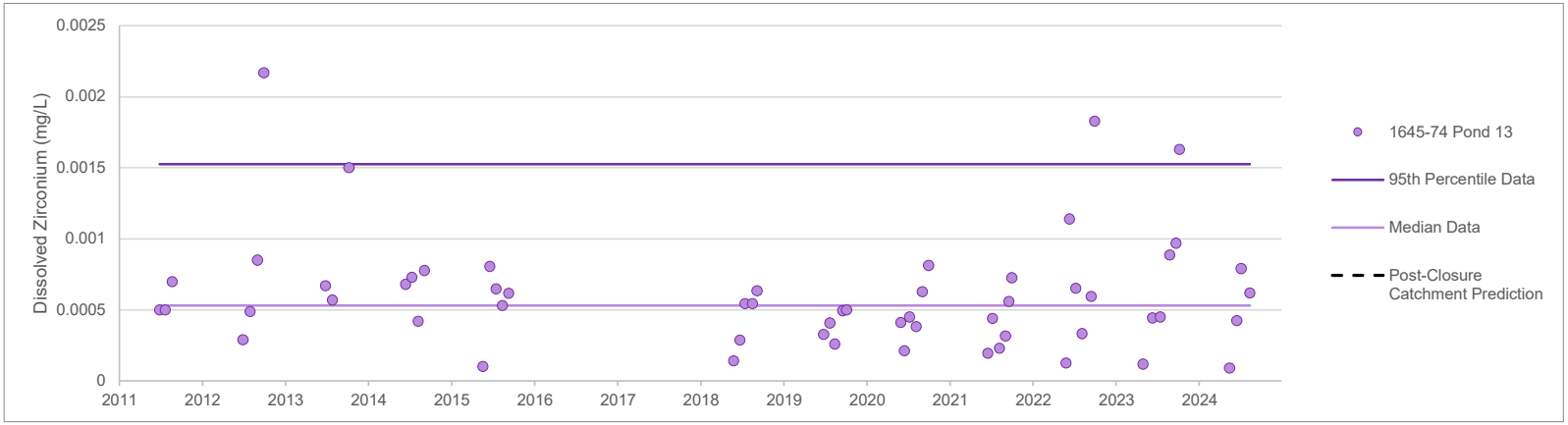


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.010	Wildlife	50
Median	0.004	Human recreational	100
Count	57	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0015	Wildlife	None
Median	0.0005	Human recreational	None
Count	57	AEMP	None

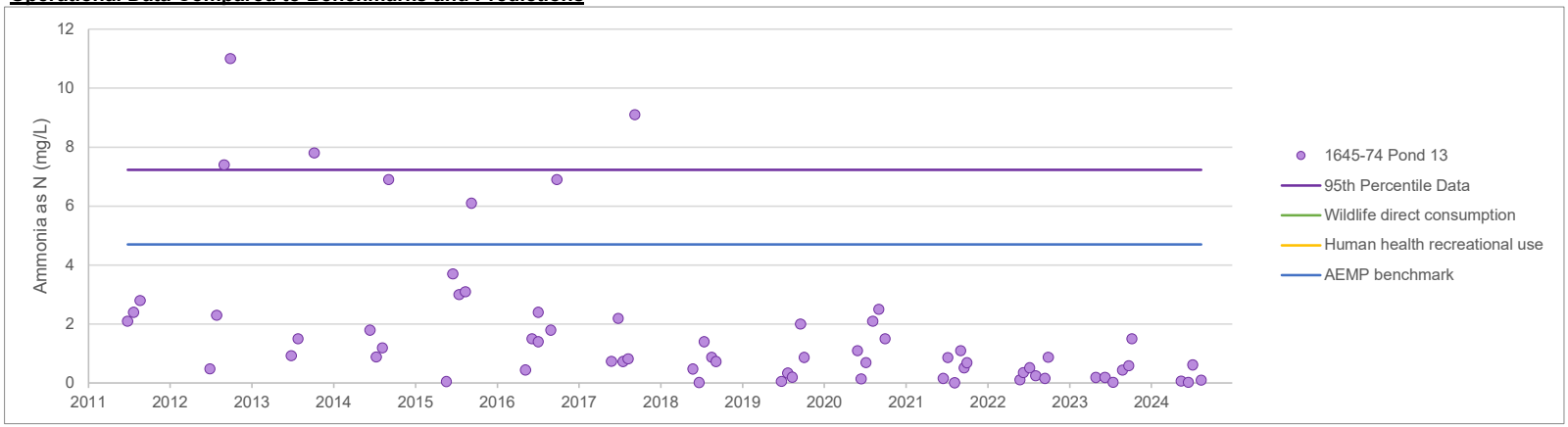
RioTinto | Diavik

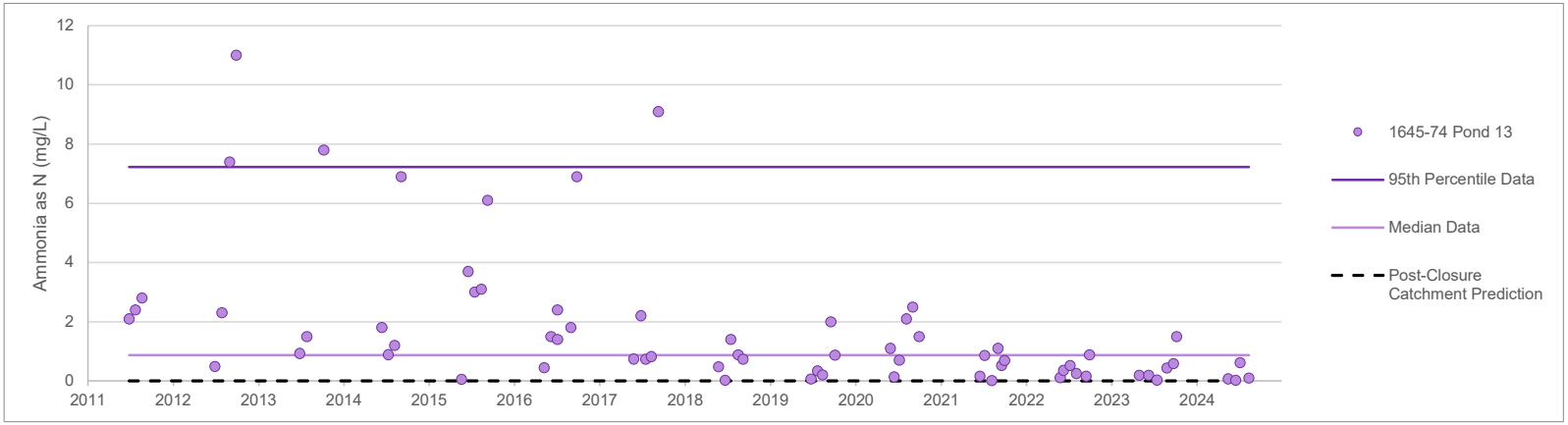
Pond 13

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions

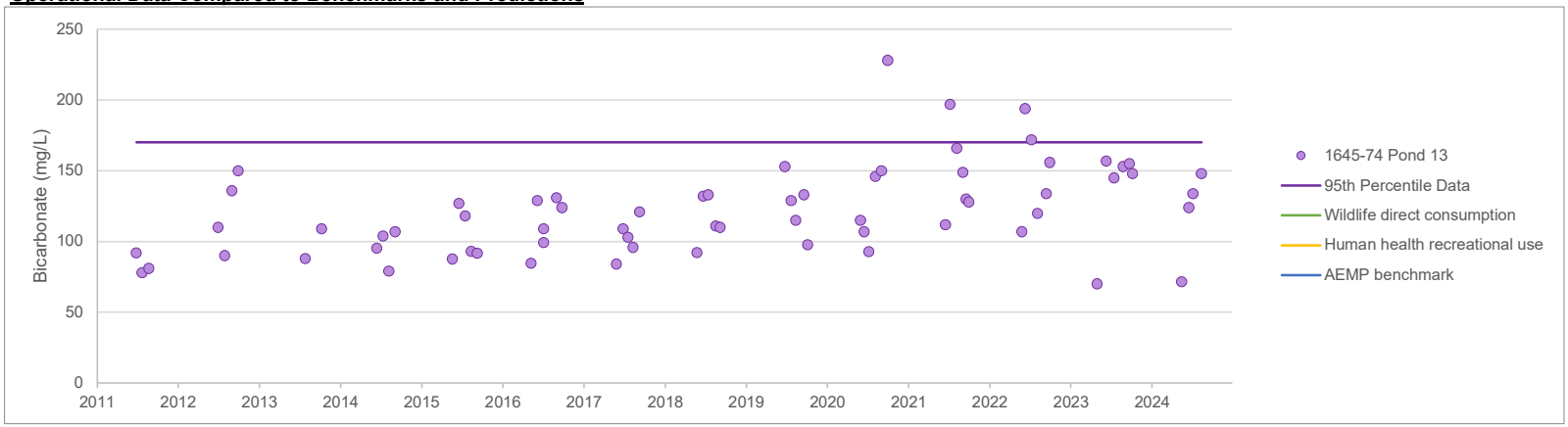


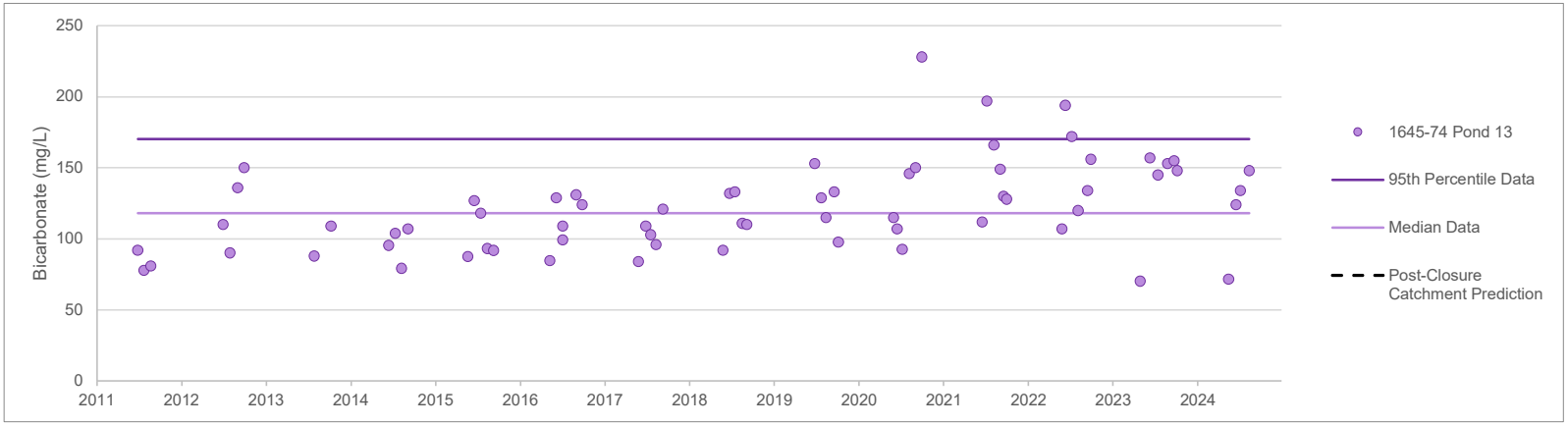


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	7.23	Wildlife	None
Median	0.88	Human recreational	None
Count	68	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions

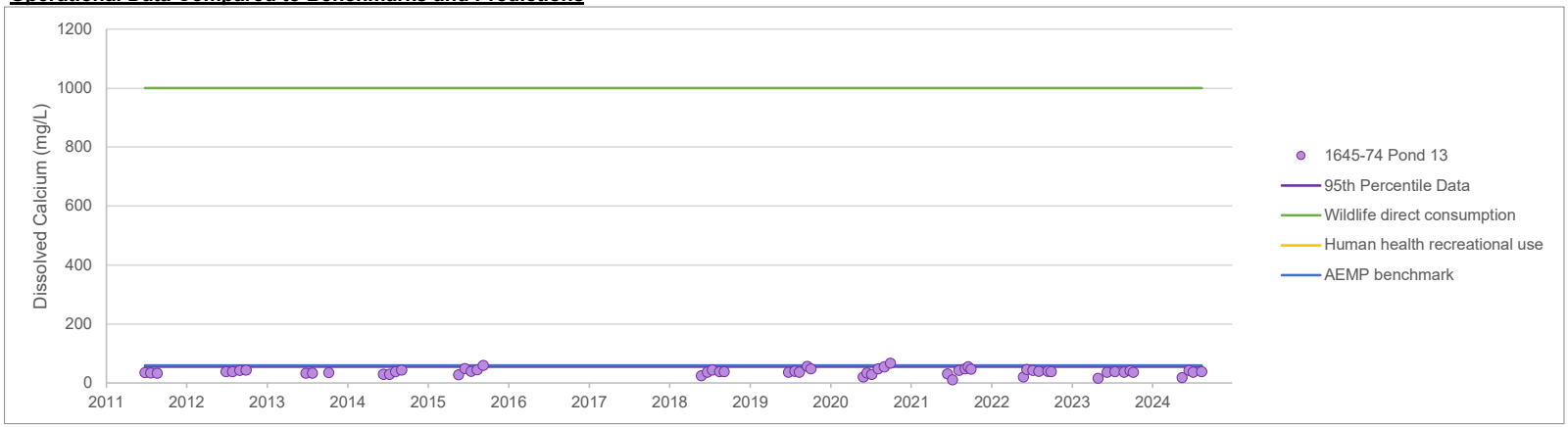


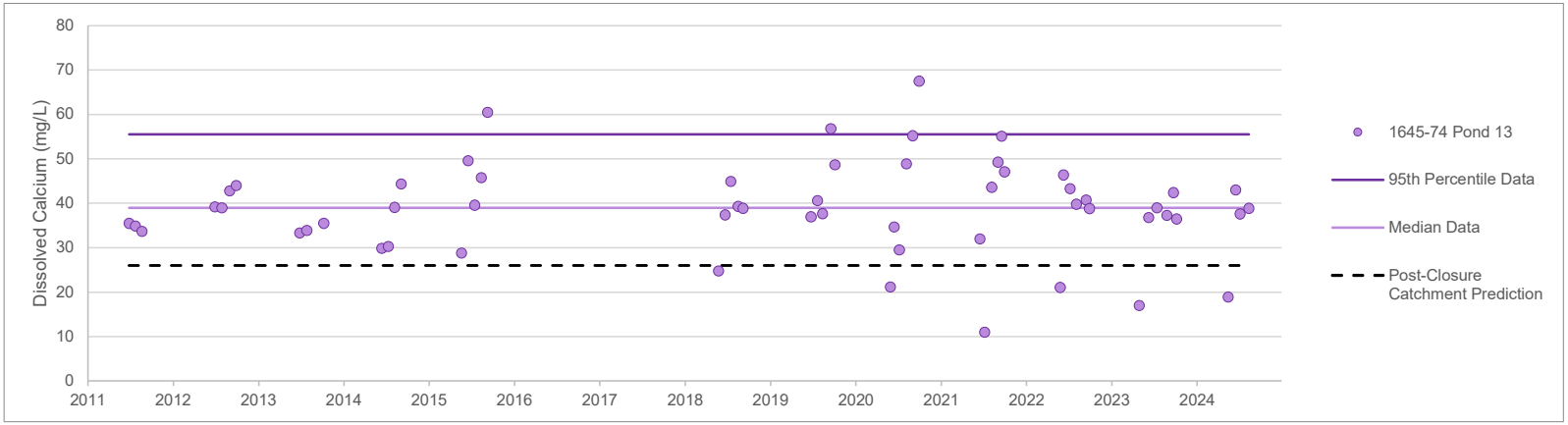


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	170.2	Wildlife	None
Median	118.0	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions

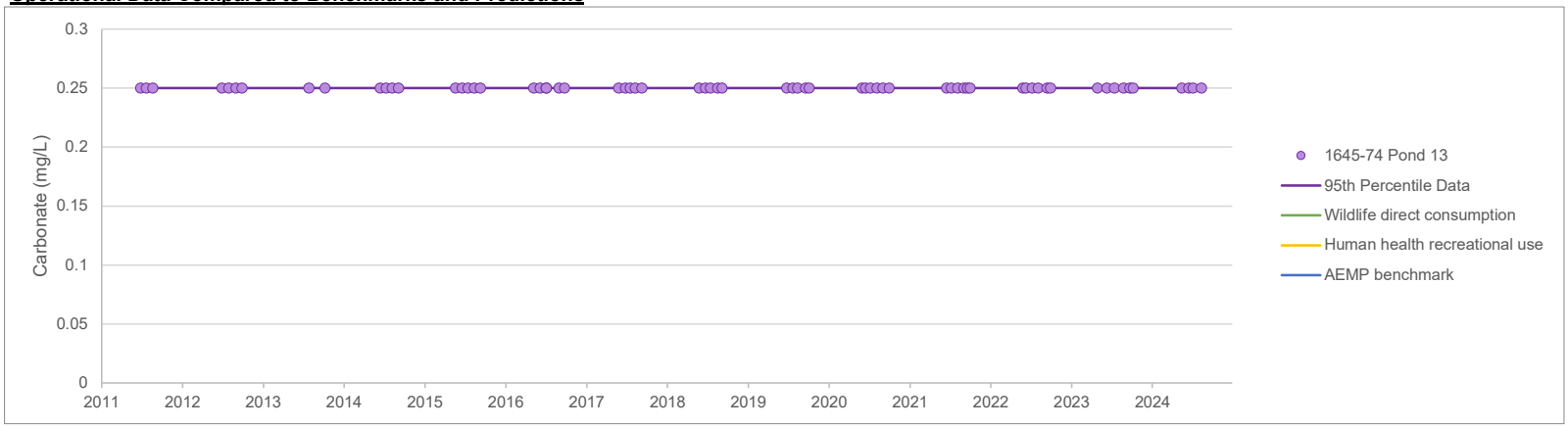


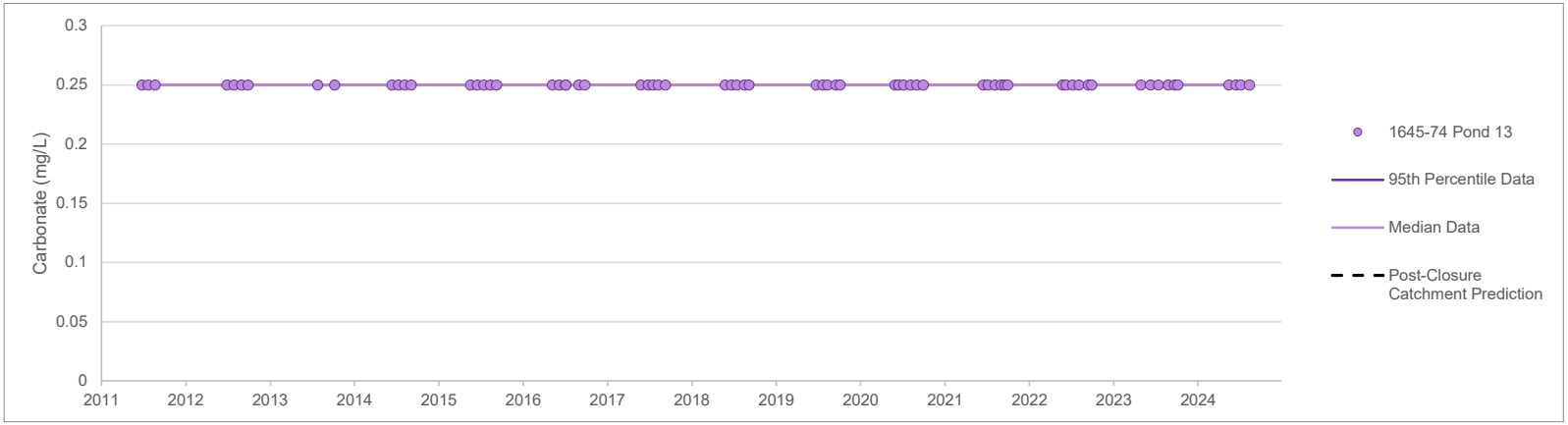


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	55.5	Wildlife	1000
Median	39.0	Human recreational	None
Count	57	AEMP	60

Operational Data Compared to Benchmarks and Predictions

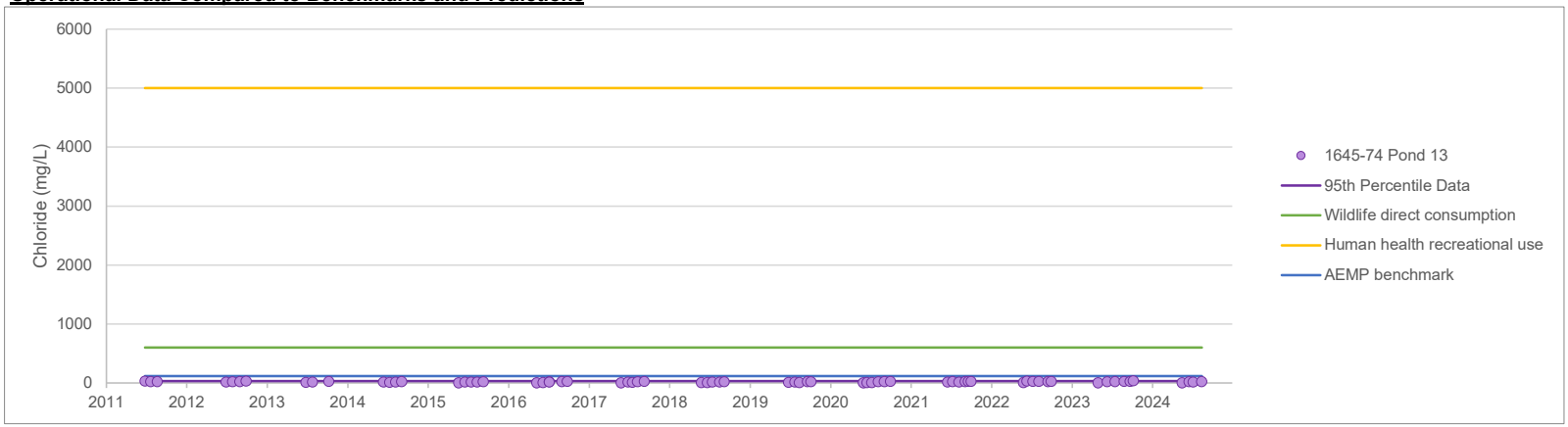


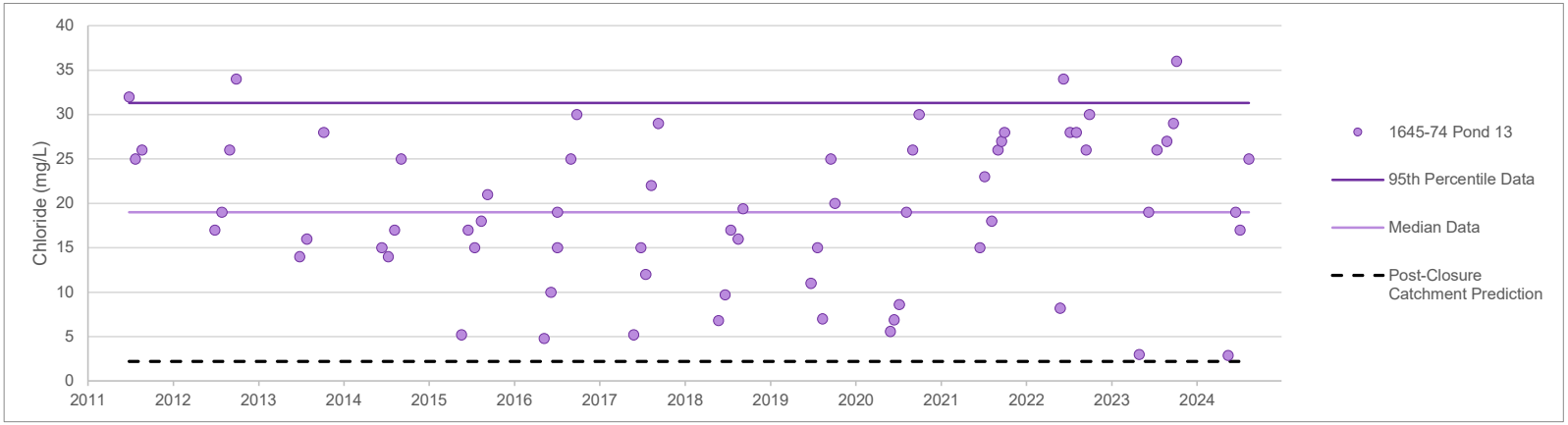


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions



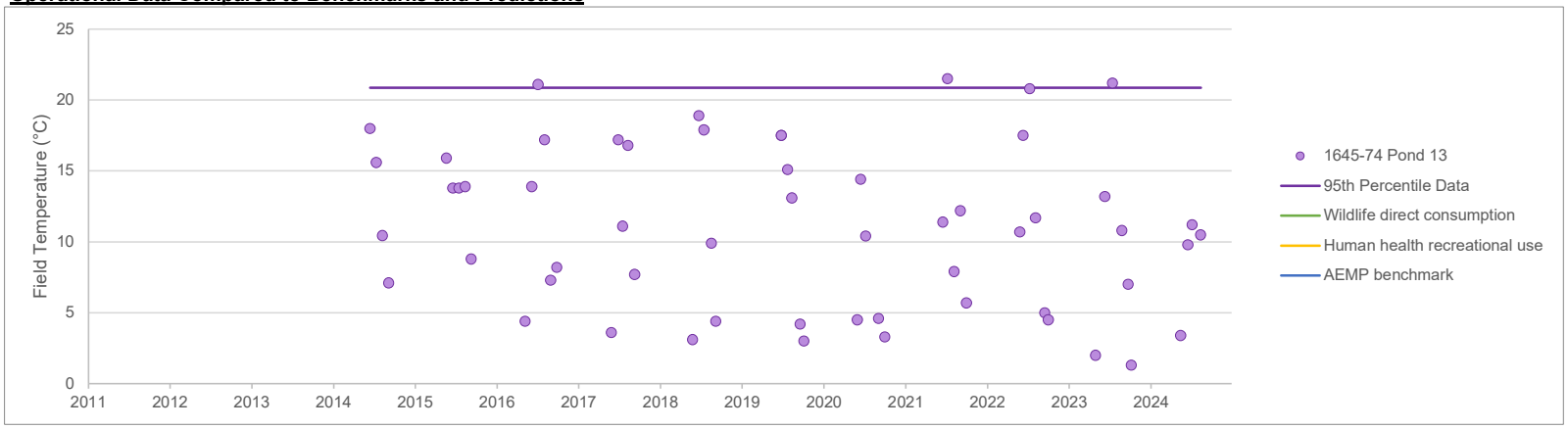


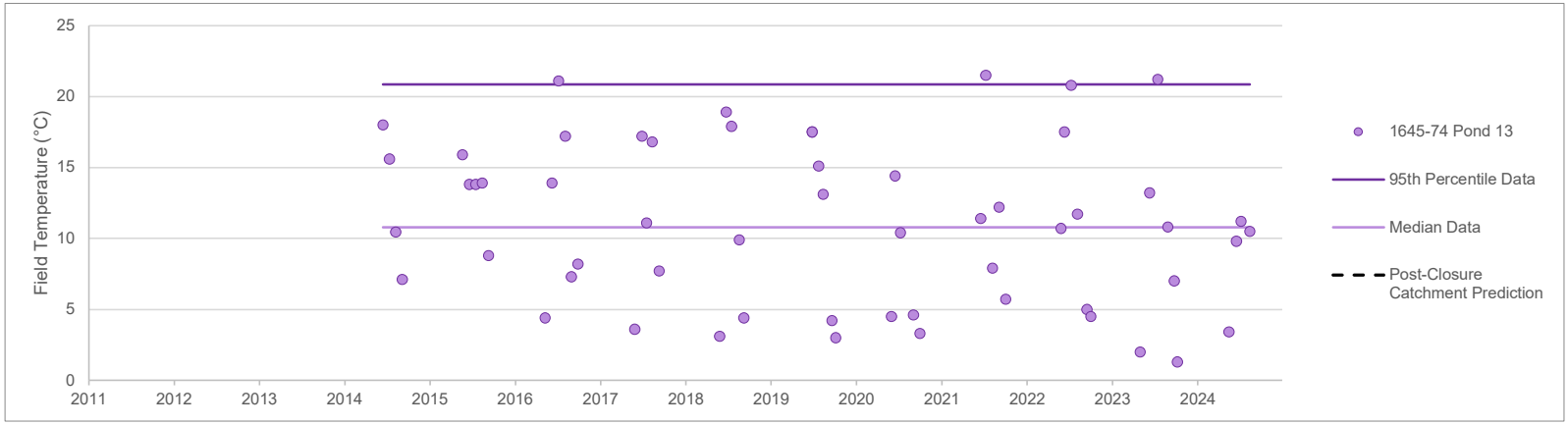
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	31.3	Wildlife	600
Median	19.0	Human recreational	5000
Count	68	AEMP	120

Operational Data Compared to Benchmarks and Predictions



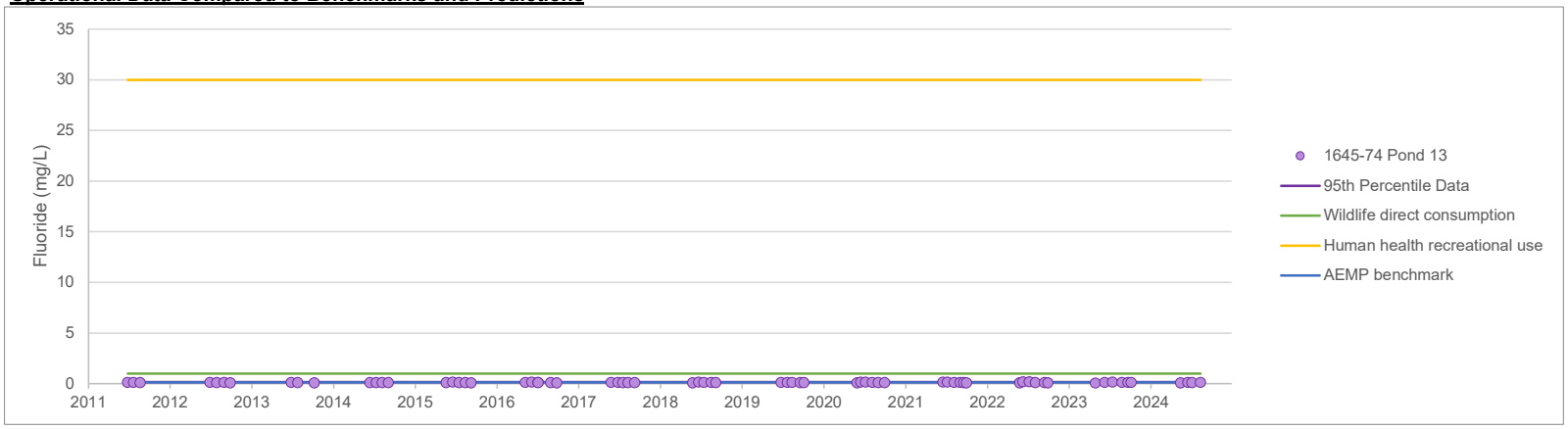


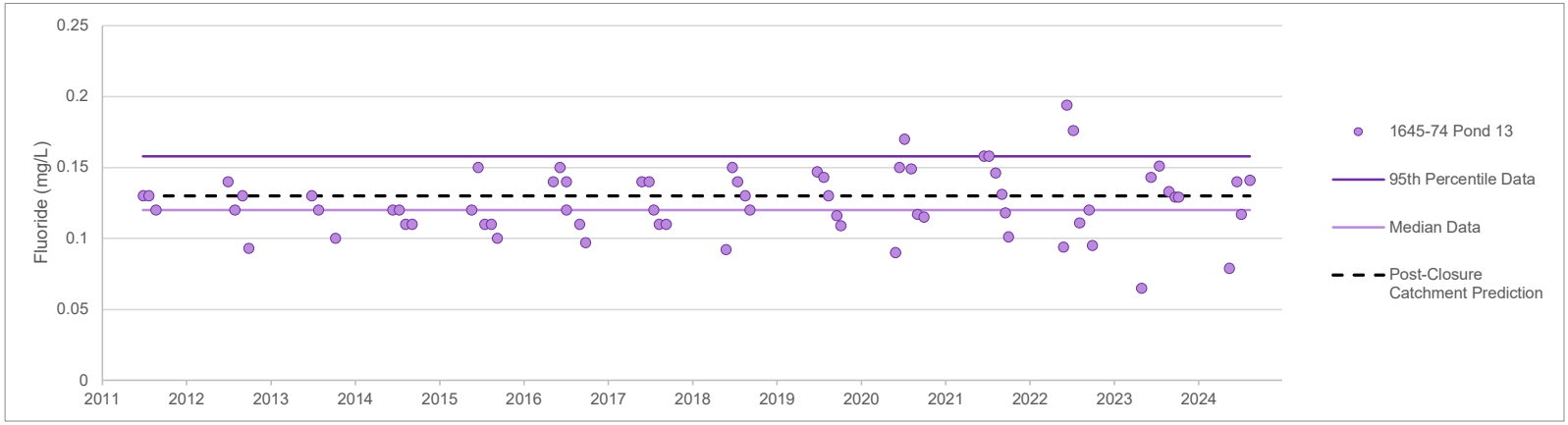
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	20.9	Wildlife	None
Median	10.8	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

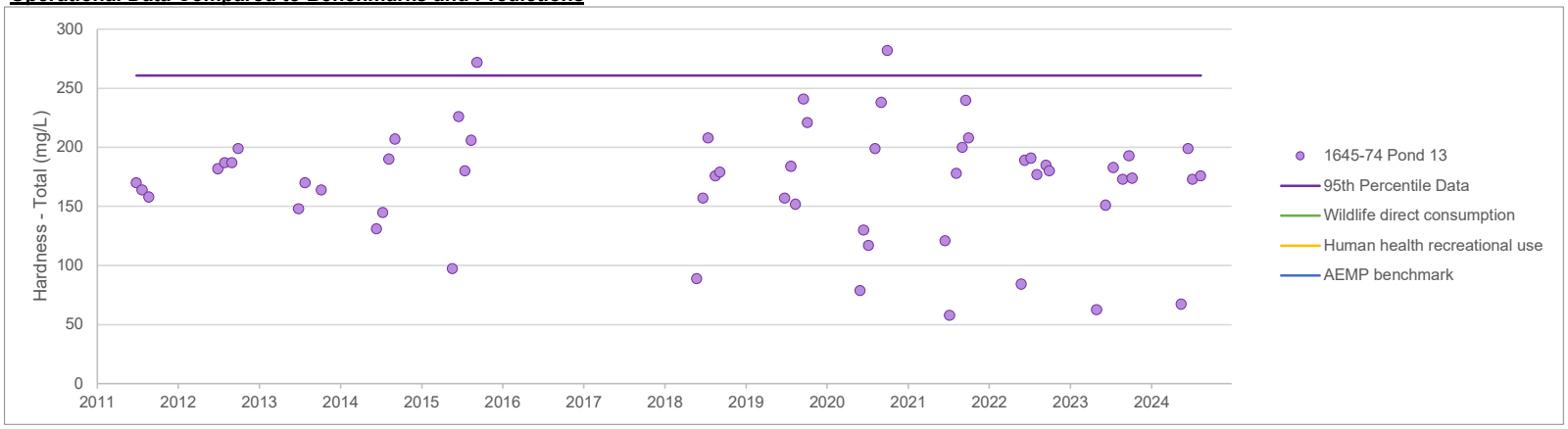


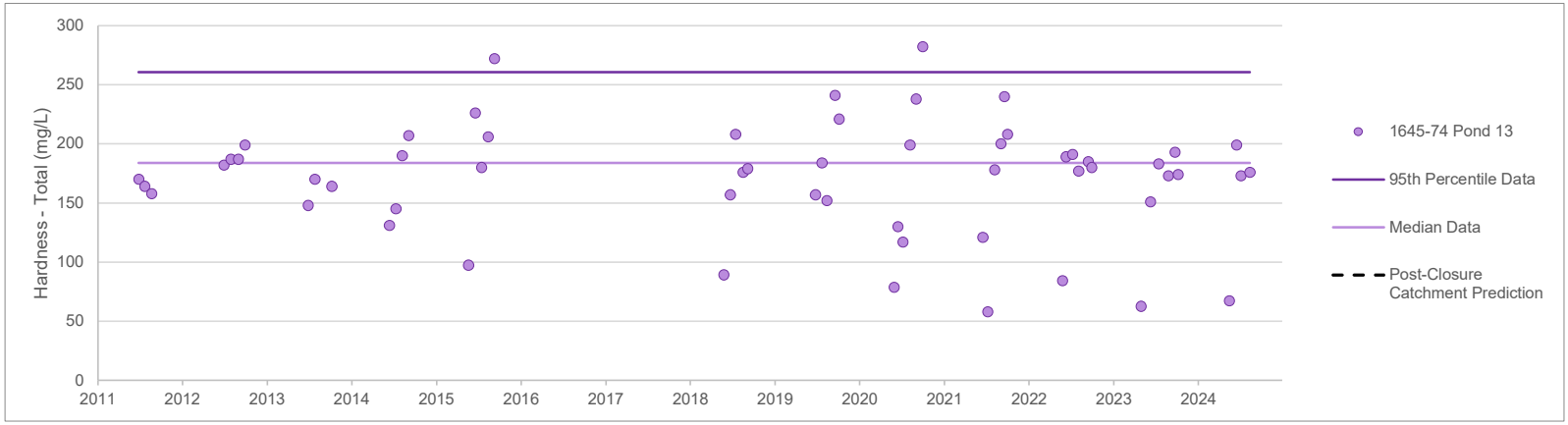


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.16	Wildlife	1
Median	0.12	Human recreational	30
Count	68	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

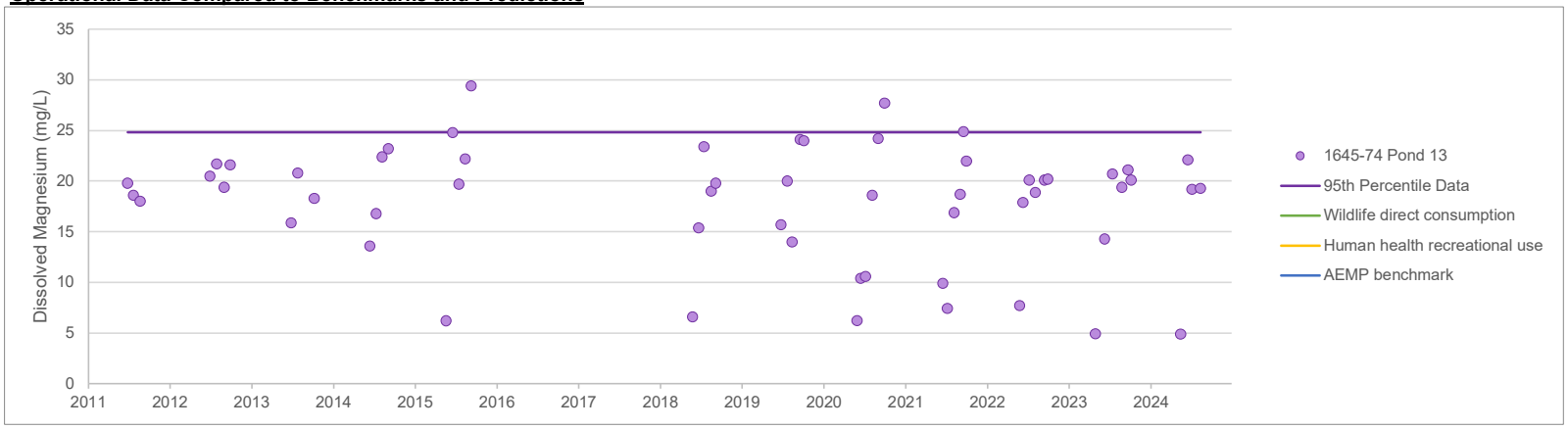


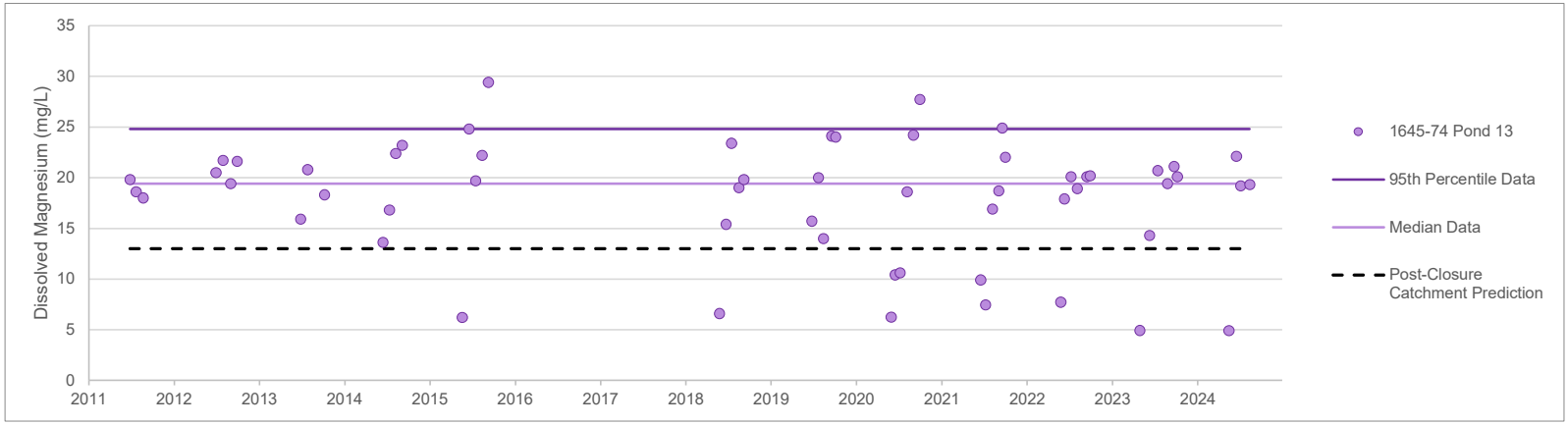


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	261	Wildlife	None
Median	184	Human recreational	None
Count	68	AEMP	None

Operational Data Compared to Benchmarks and Predictions

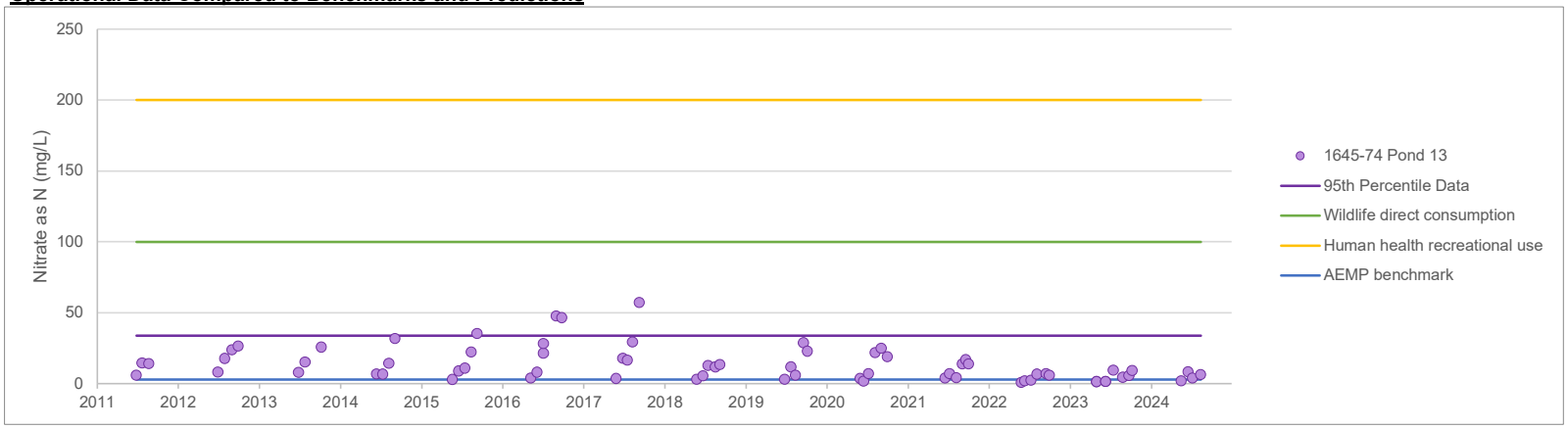


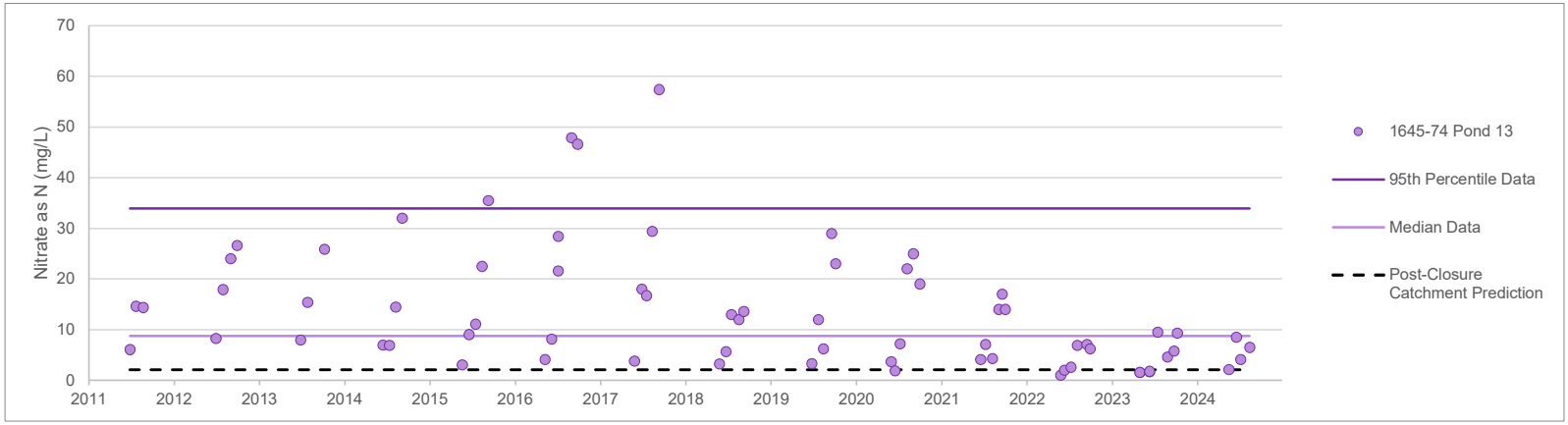


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	24.8	Wildlife	None
Median	19.4	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

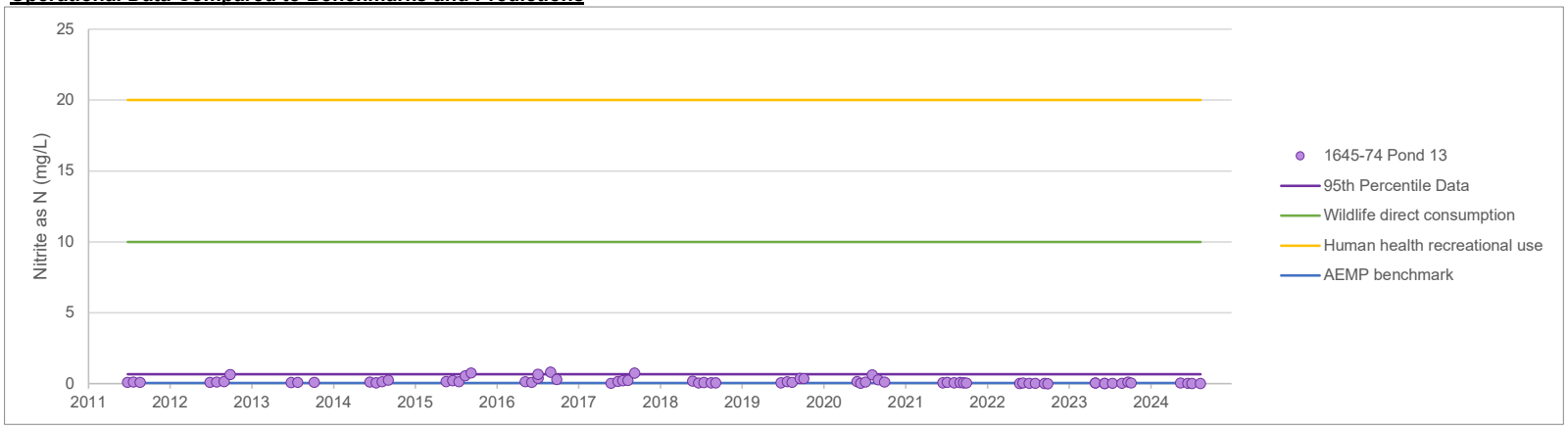


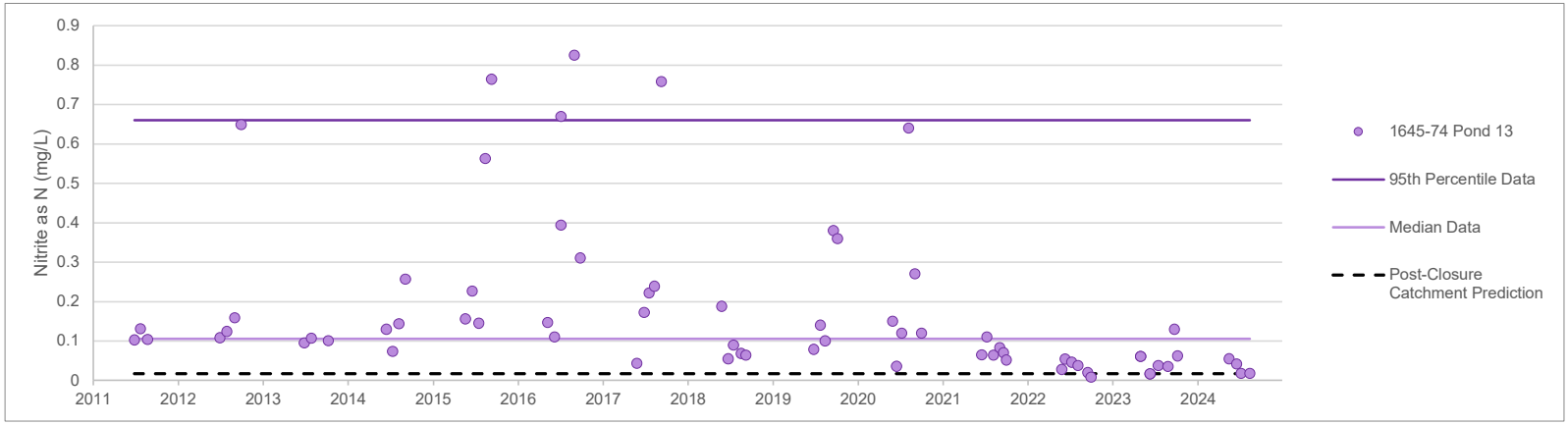


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	33.9	Wildlife	100
Median	8.8	Human recreational	200
Count	70	AEMP	3

Operational Data Compared to Benchmarks and Predictions

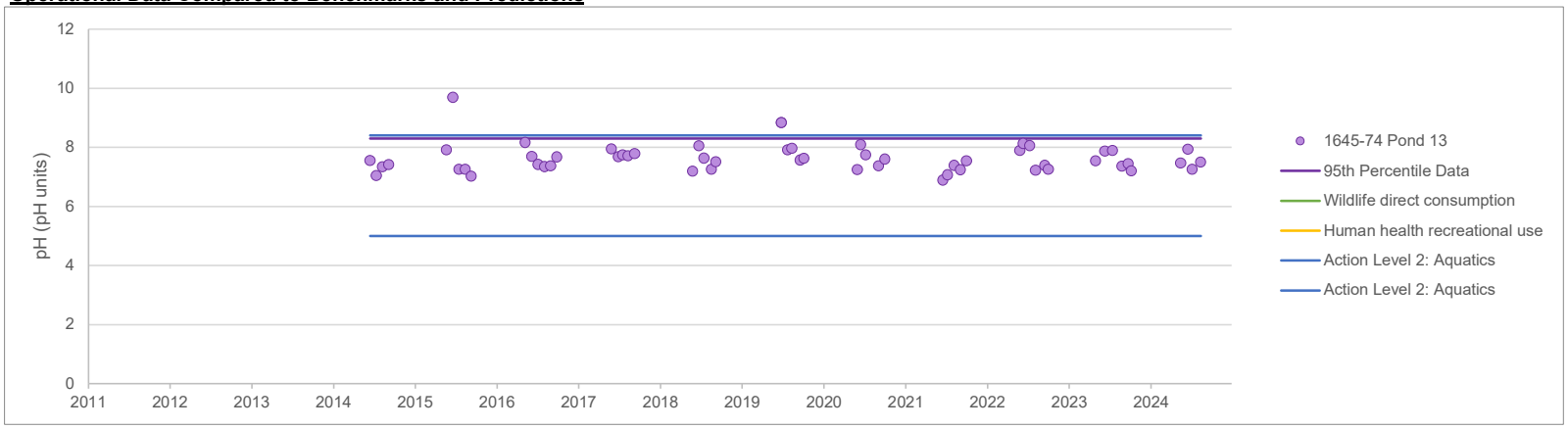


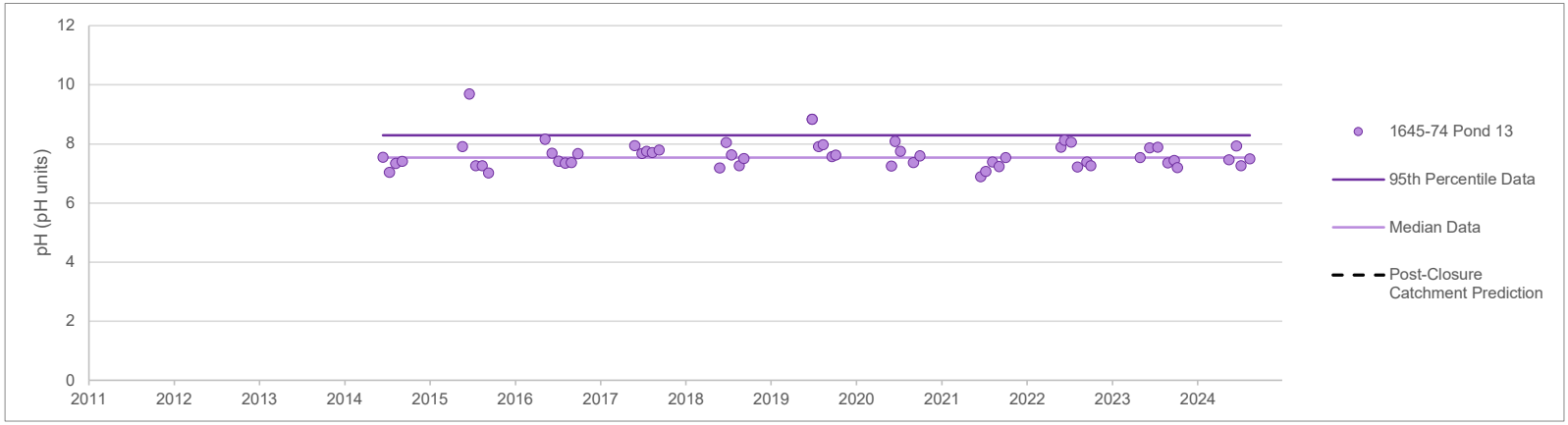


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.661	Wildlife	10.0
Median	0.106	Human recreational	20.0
Count	70	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



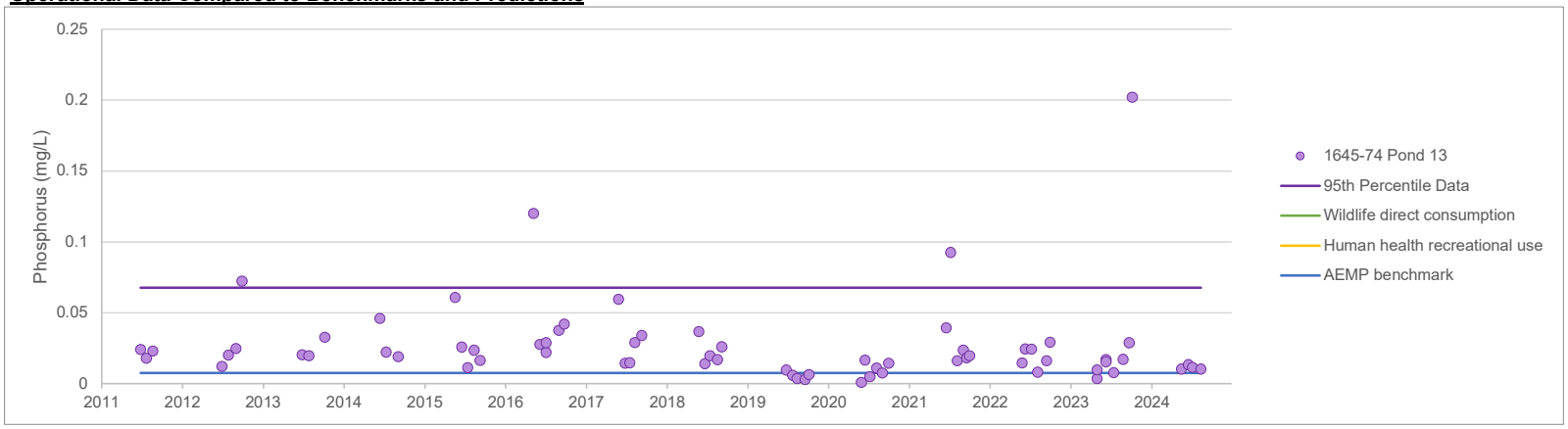


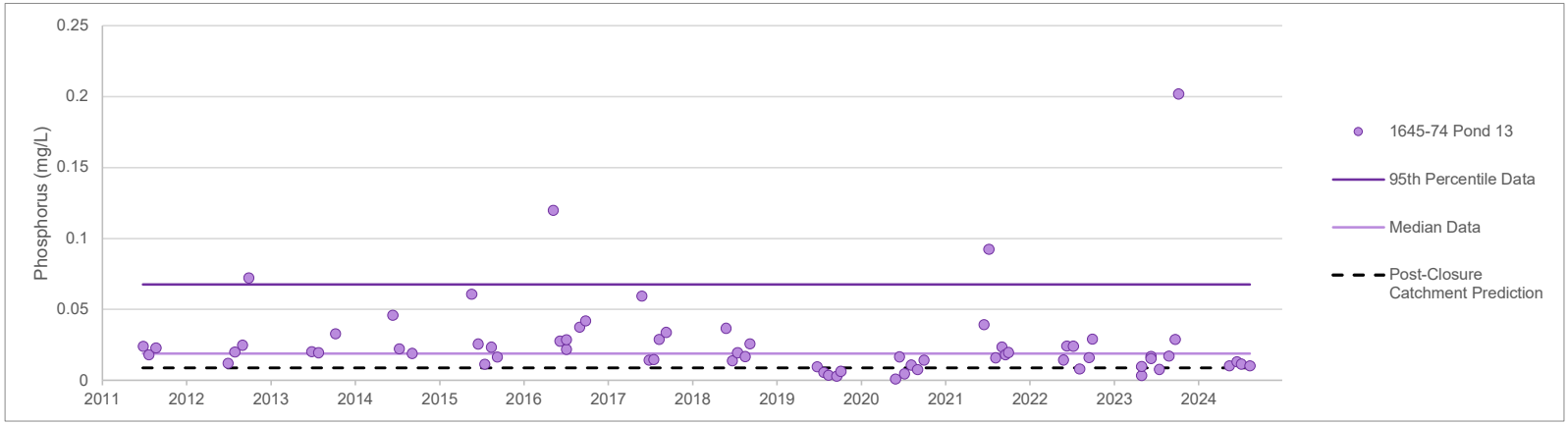
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.3	Wildlife	None
Median	7.5	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

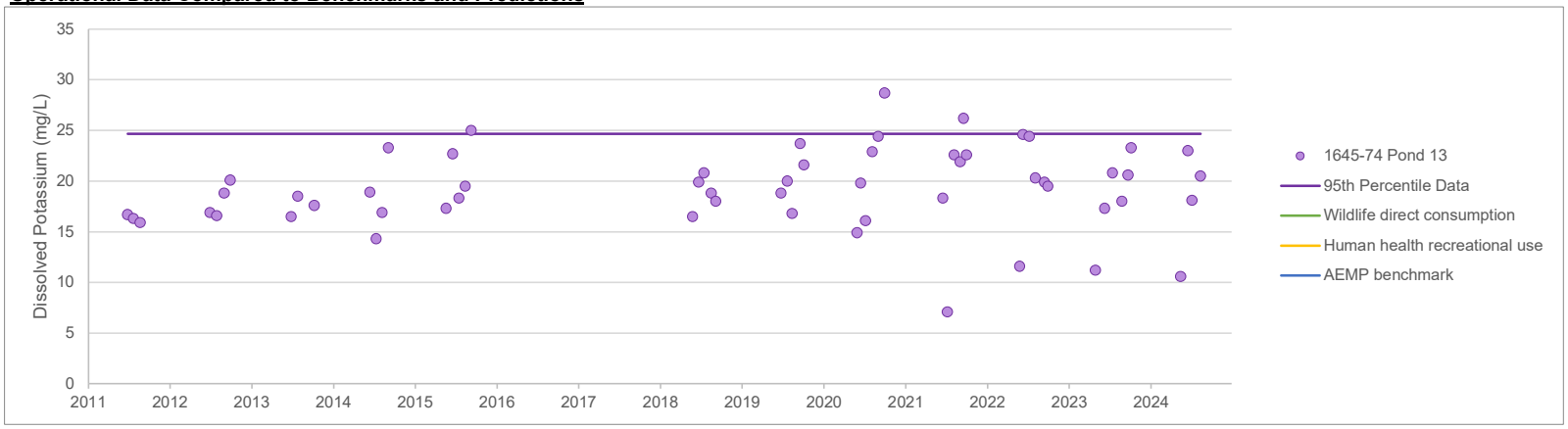


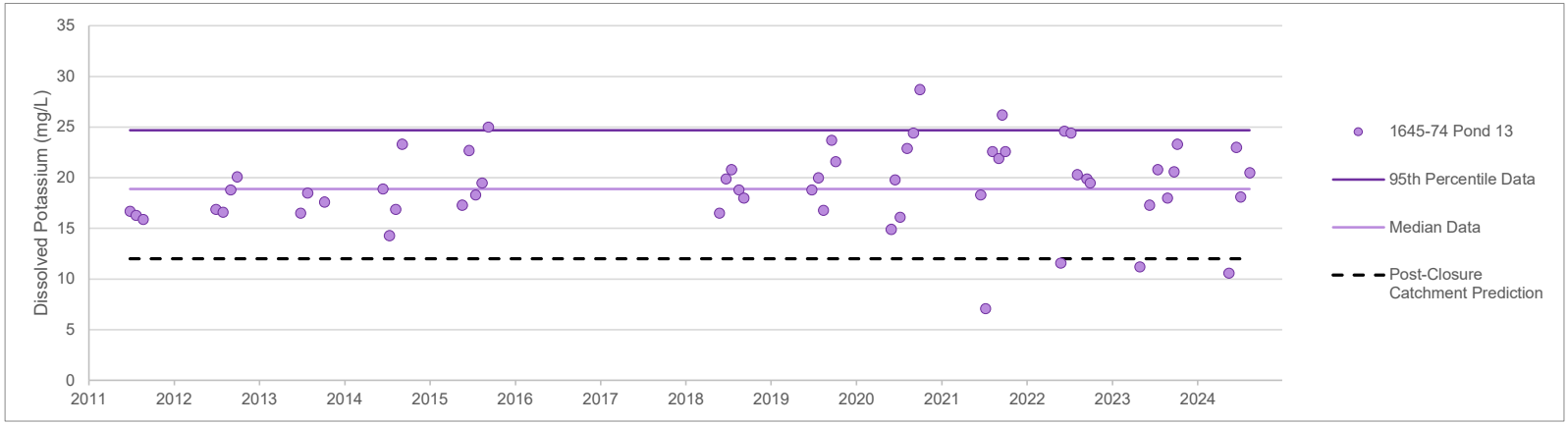


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.068	Wildlife	None
Median	0.019	Human recreational	None
Count	69	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions

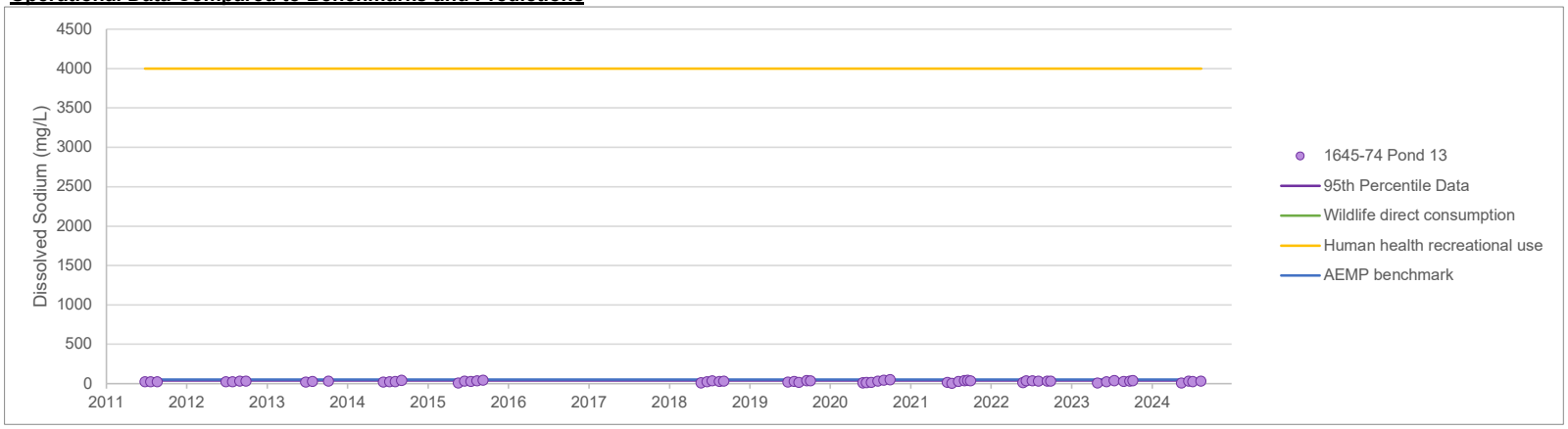


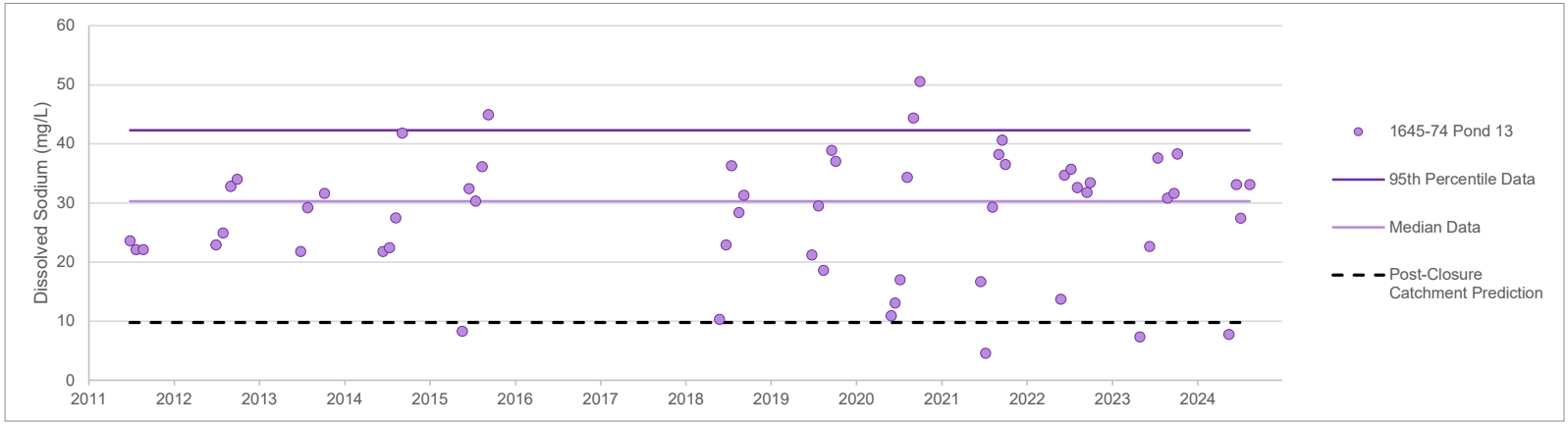


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	24.7	Wildlife	None
Median	18.9	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

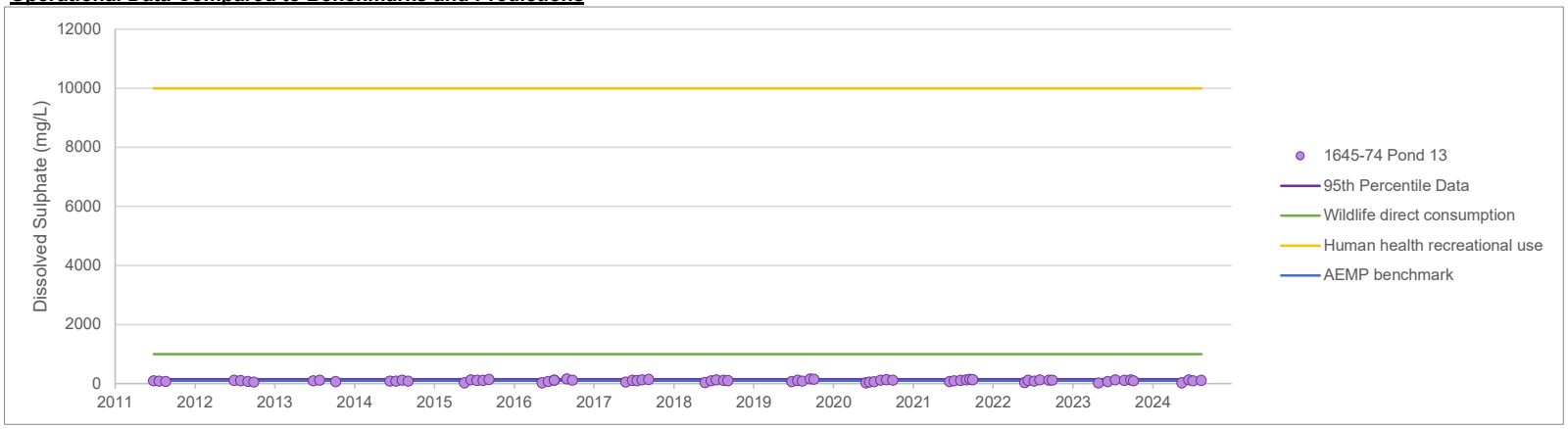


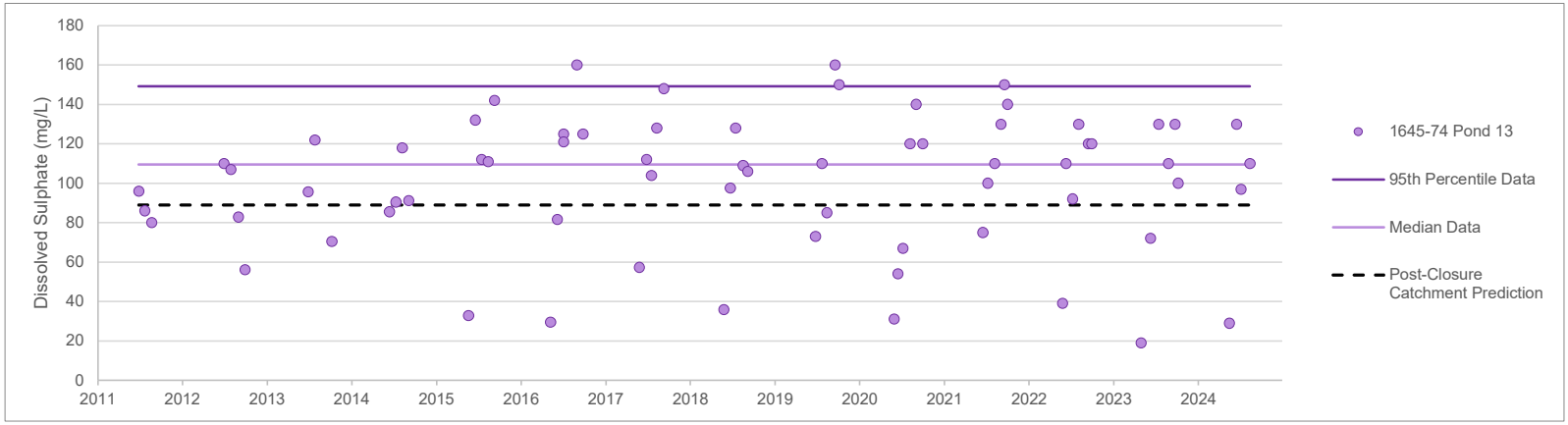


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	42.3	Wildlife	None
Median	30.3	Human recreational	4000
Count	57	AEMP	52

Operational Data Compared to Benchmarks and Predictions

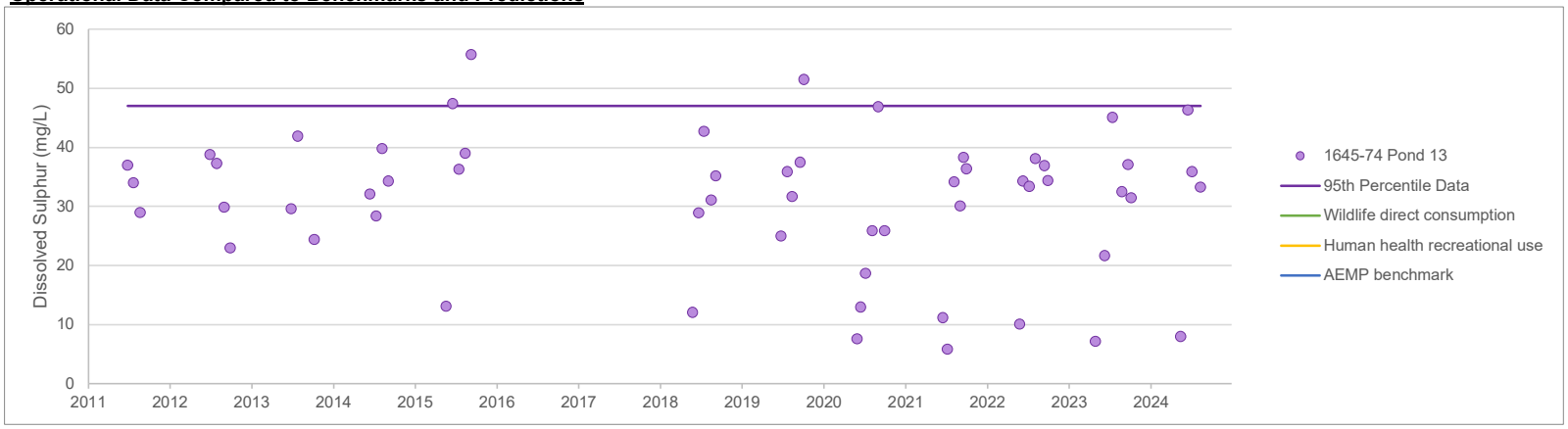


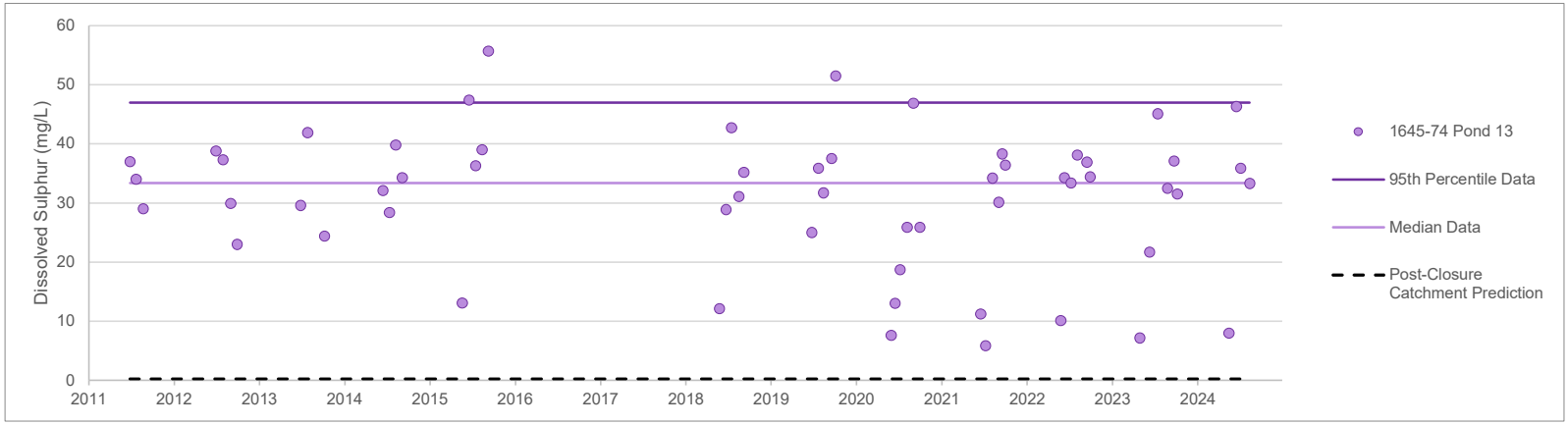


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	149	Wildlife	1000
Median	110	Human recreational	10000
Count	68	AEMP	100

Operational Data Compared to Benchmarks and Predictions

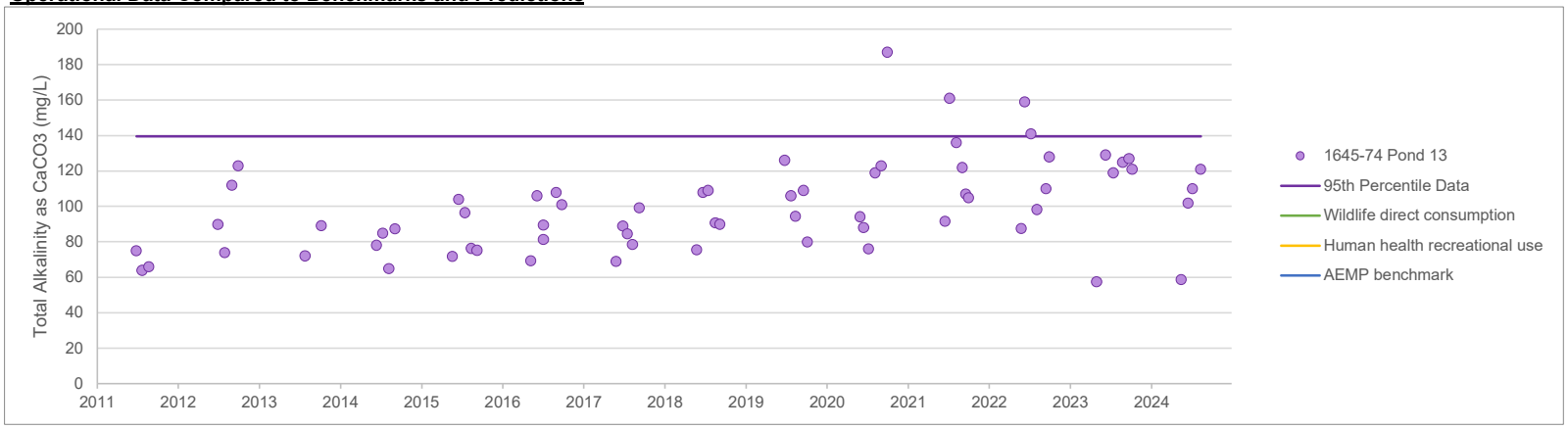


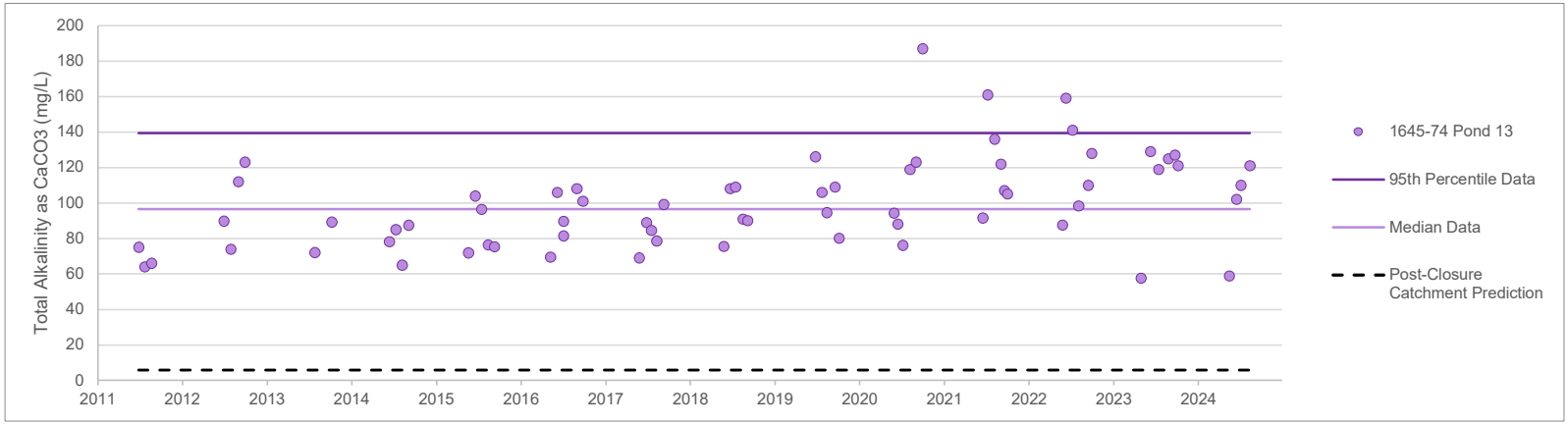


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	47.0	Wildlife	None
Median	33.4	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions



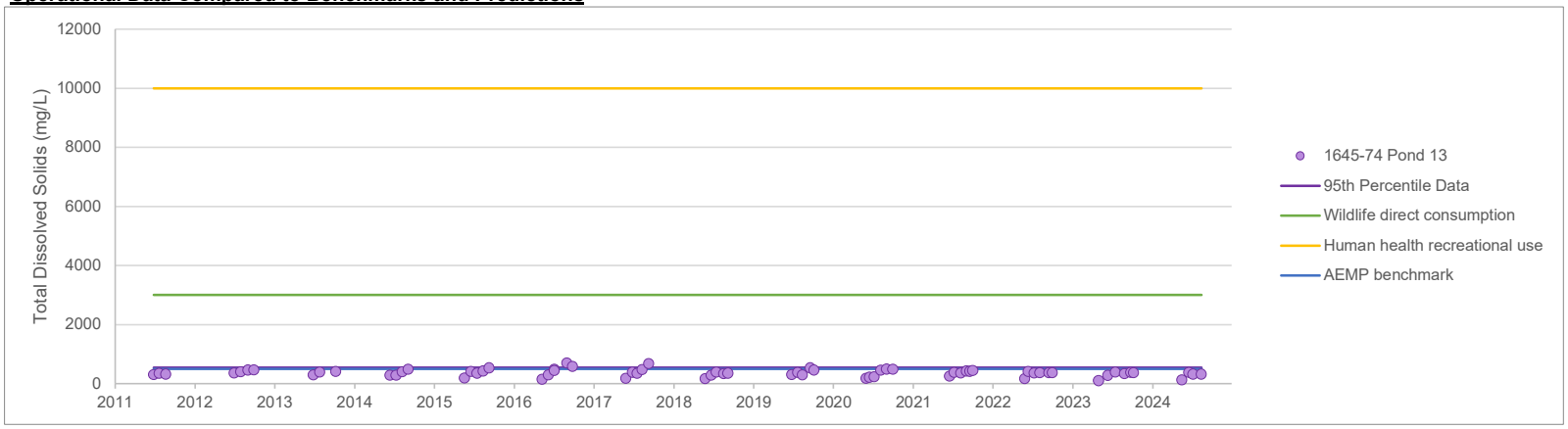


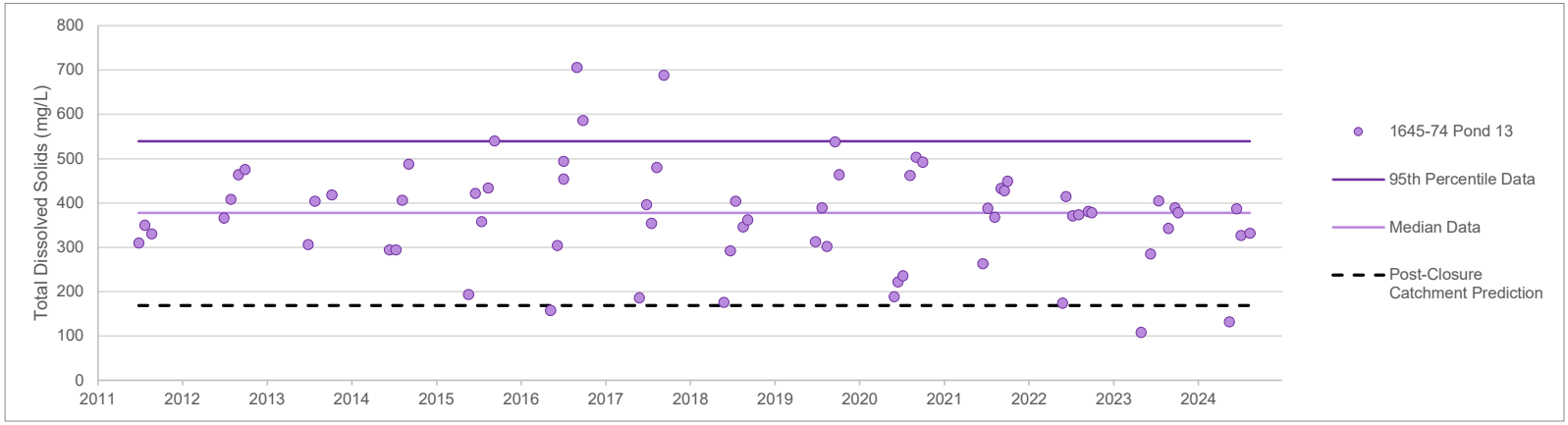
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	139.5	Wildlife	None
Median	96.5	Human recreational	None
Count	67	AEMP	None

Operational Data Compared to Benchmarks and Predictions



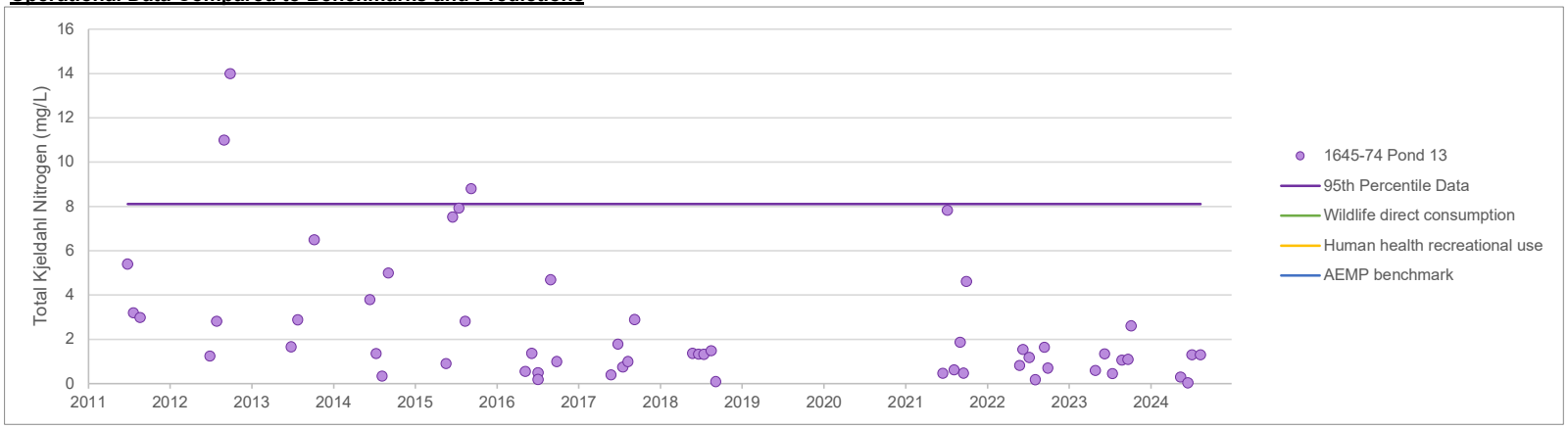


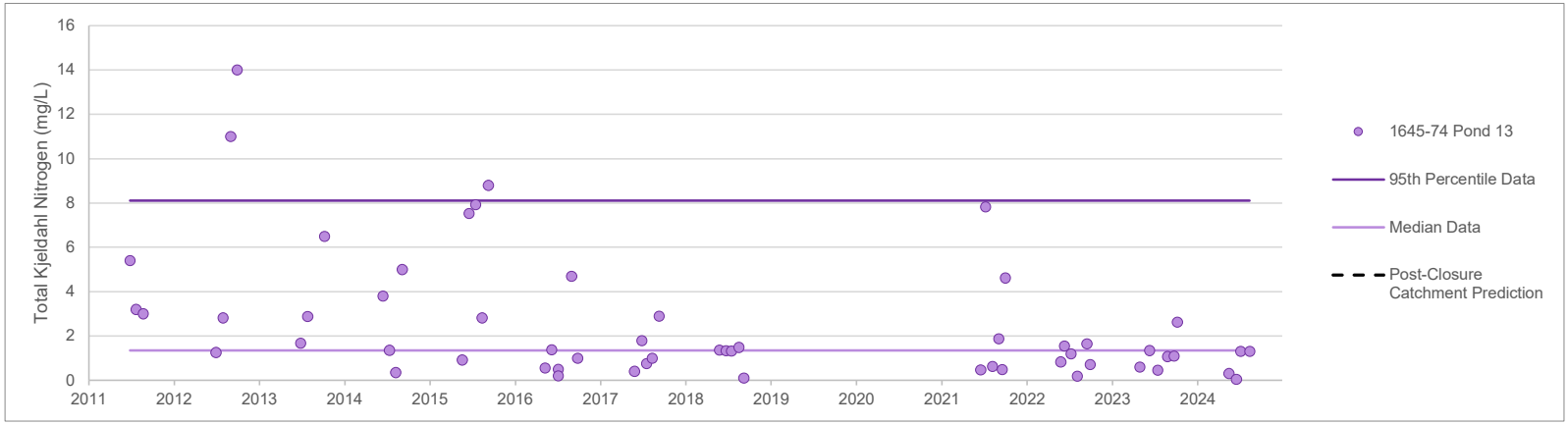
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	539	Wildlife	3000
Median	378	Human recreational	10000
Count	68	AEMP	500

Operational Data Compared to Benchmarks and Predictions

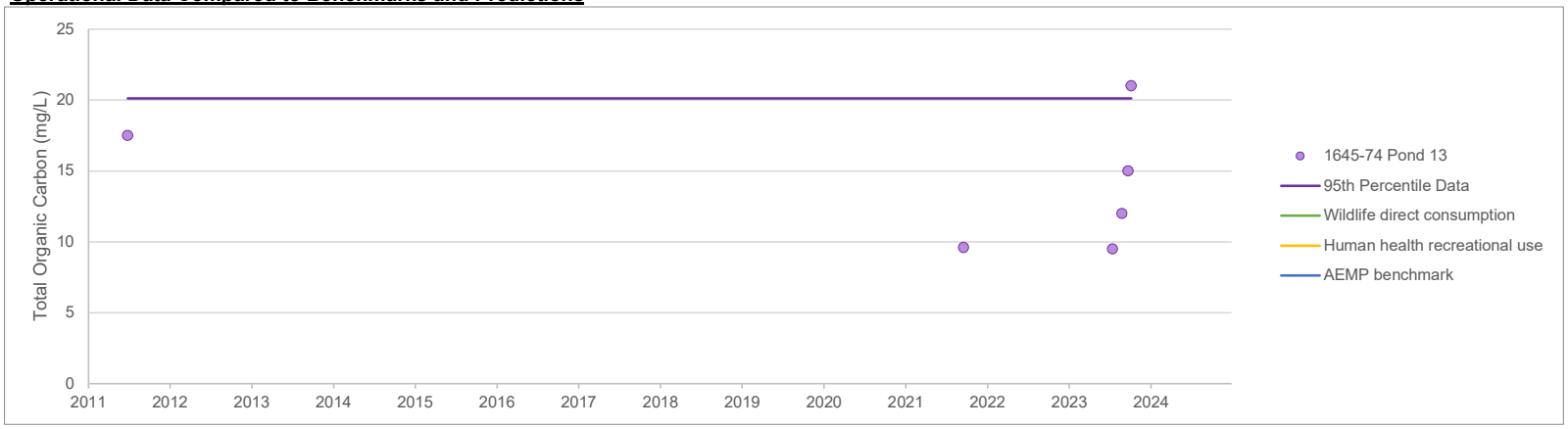


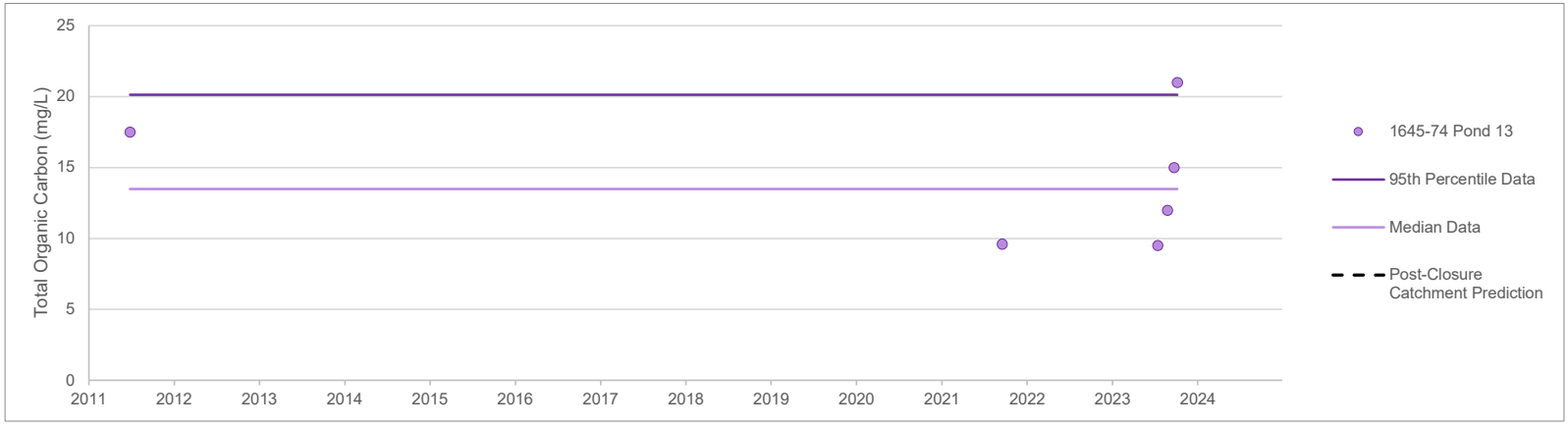


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	8.1	Wildlife	None
Median	1.4	Human recreational	None
Count	57	AEMP	None

Operational Data Compared to Benchmarks and Predictions

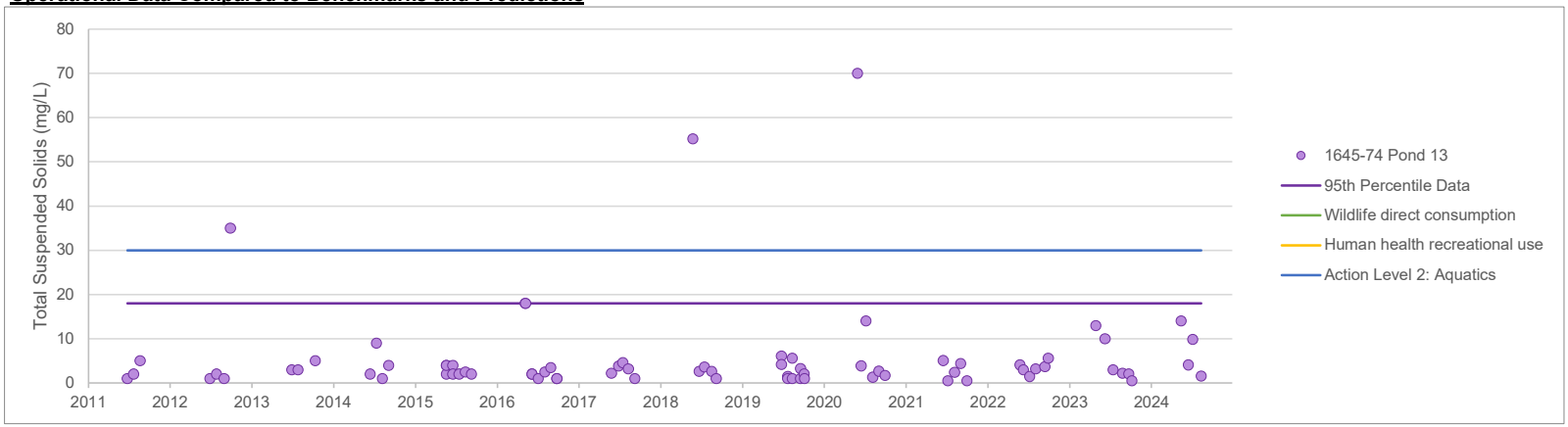


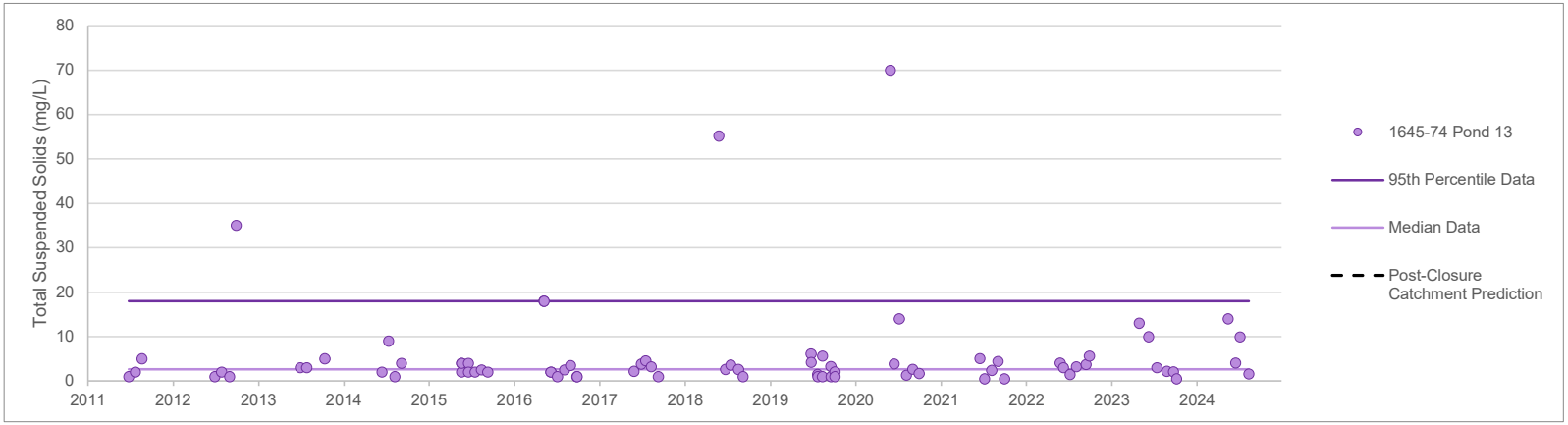


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	20.1	Wildlife	None
Median	13.5	Human recreational	None
Count	6	AEMP	None

Operational Data Compared to Benchmarks and Predictions



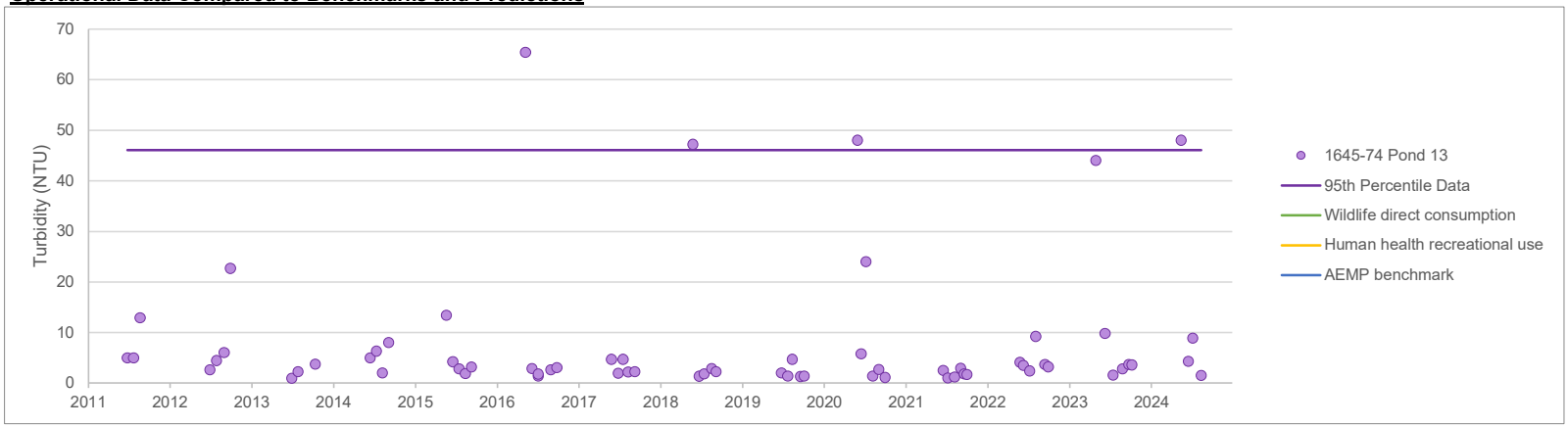


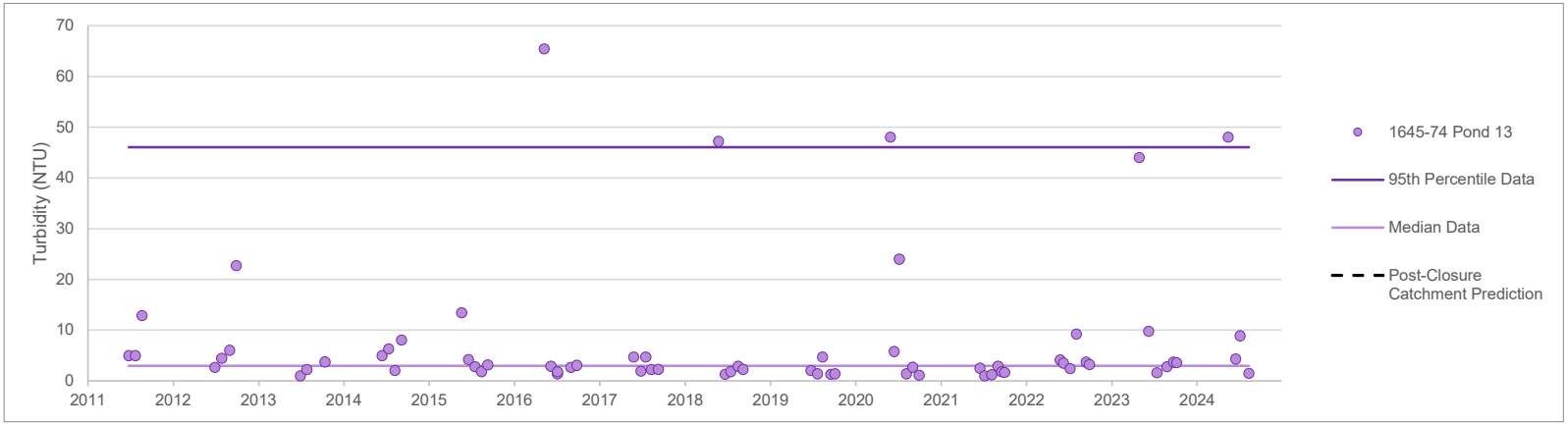
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	18.0	Wildlife	None
Median	2.7	Human recreational	None
Count	78	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions

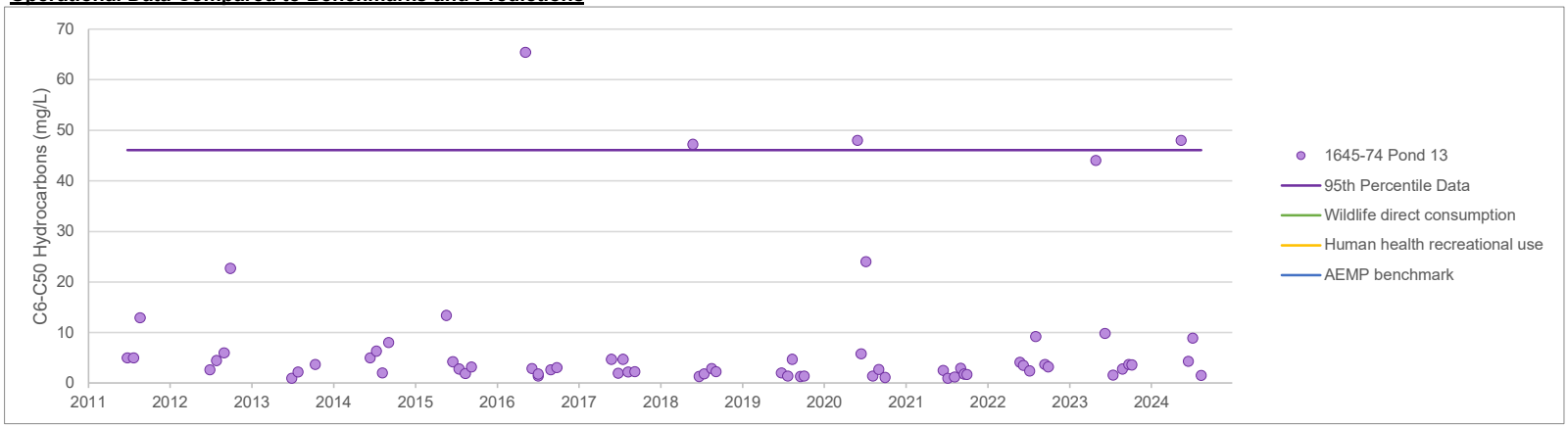


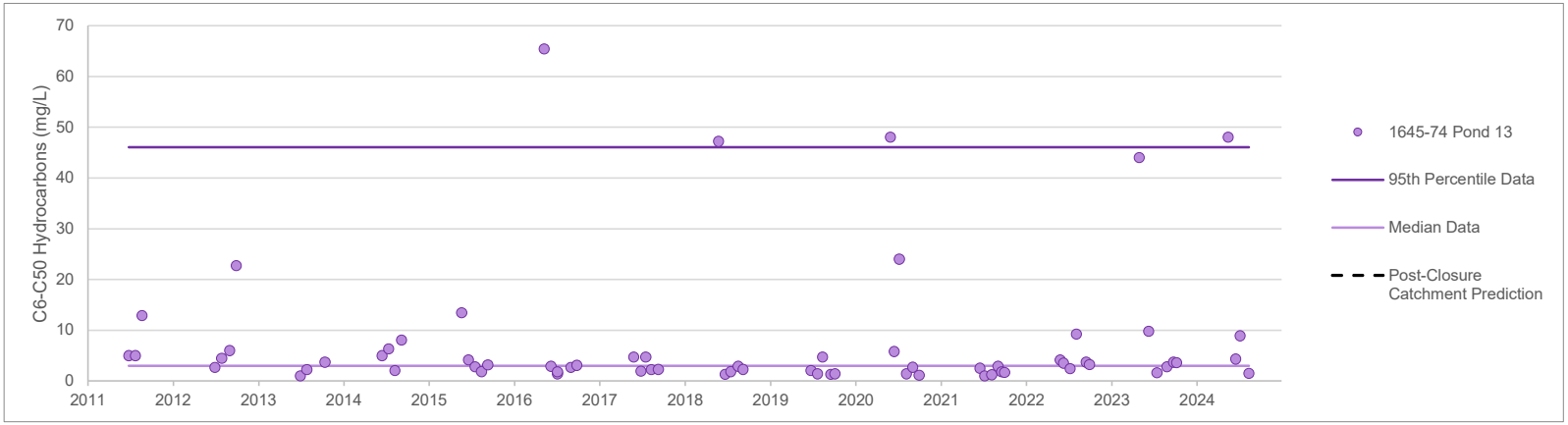


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	46.1	Wildlife	None
Median	3.0	Human recreational	None
Count	68	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	4	AEMP	None

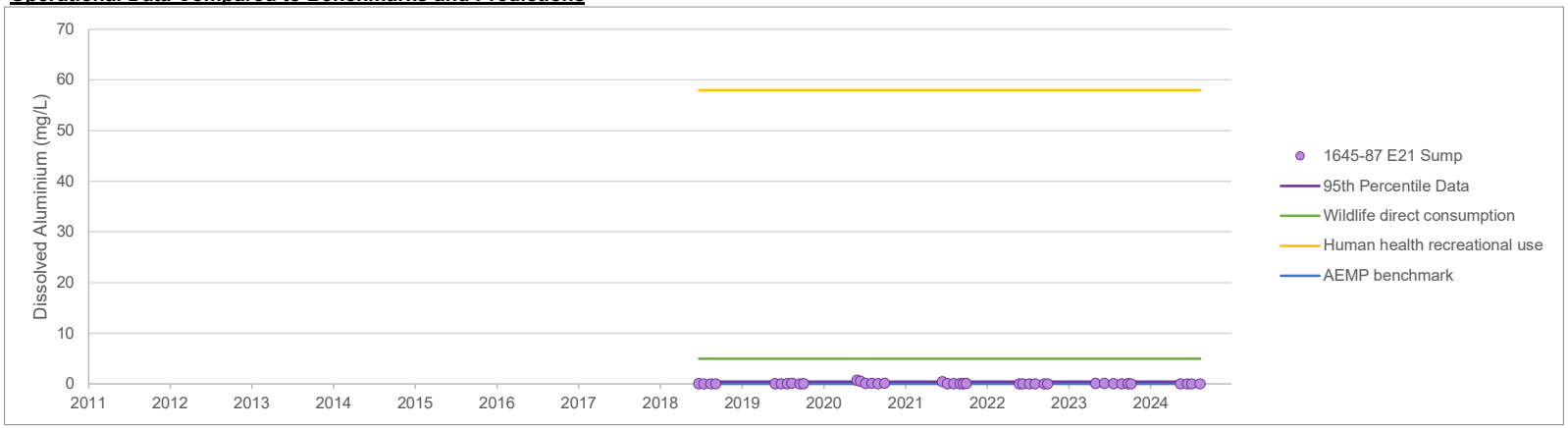
Sump E21

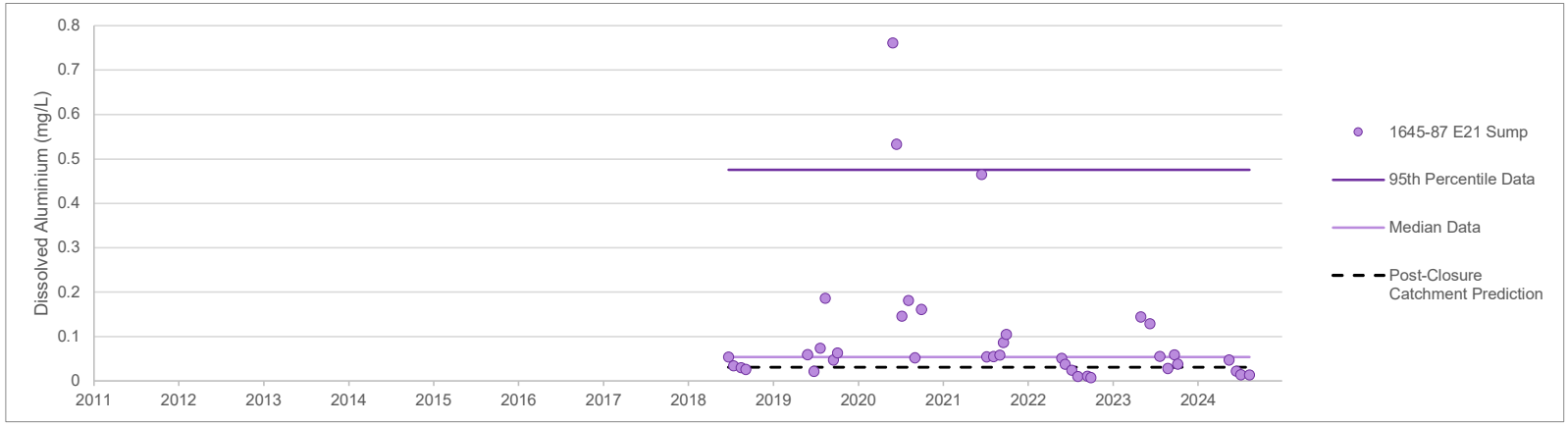
RioTinto | Diavik

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



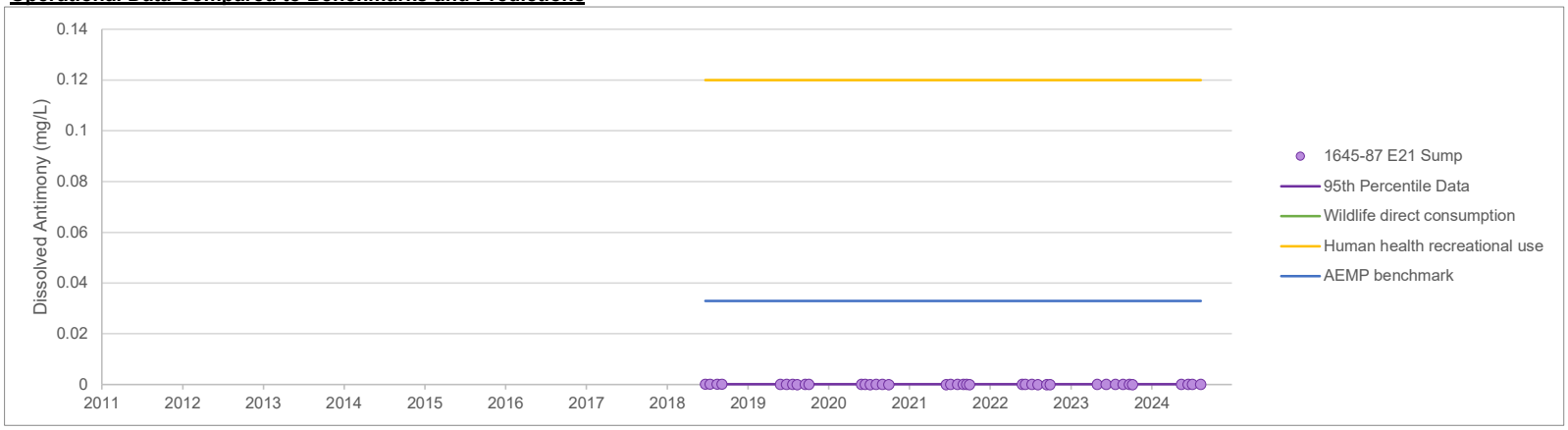


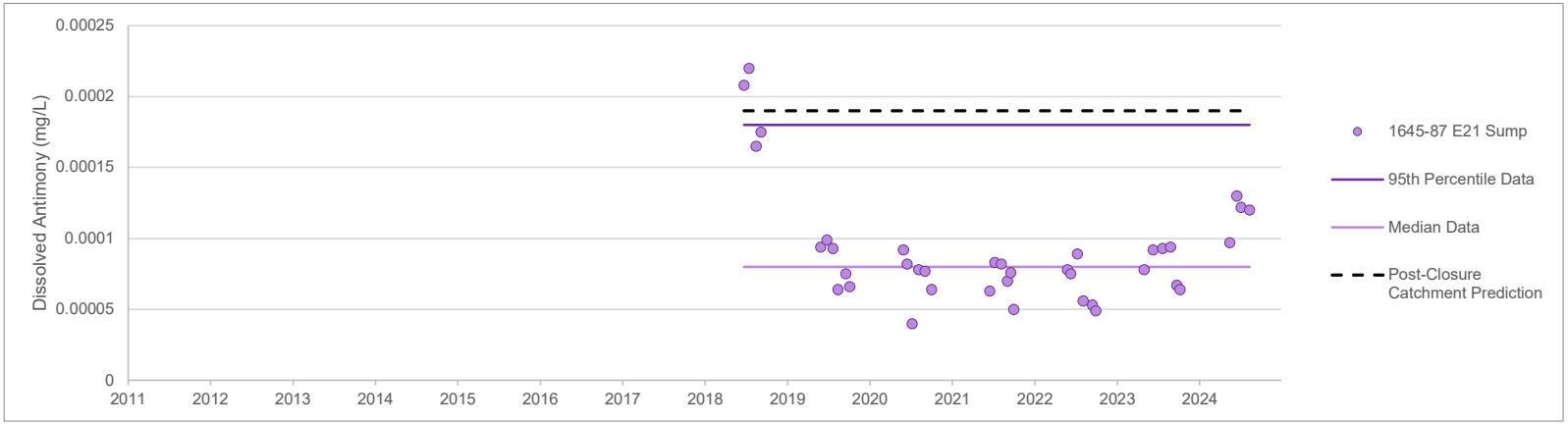
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.475	Wildlife	5.0
Median	0.054	Human recreational	58.0
Count	38	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions

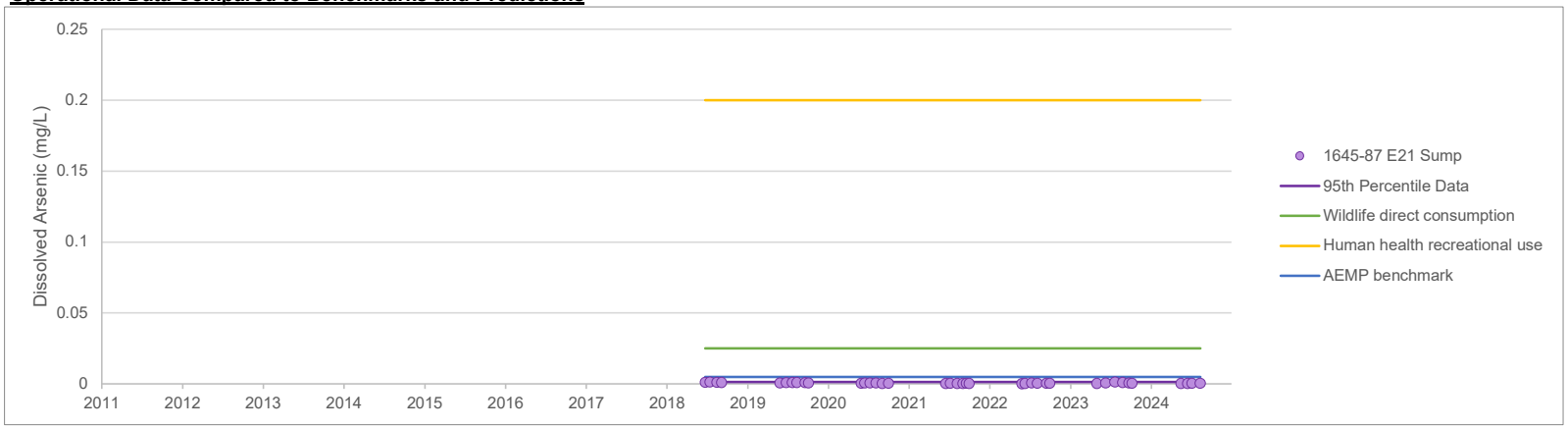


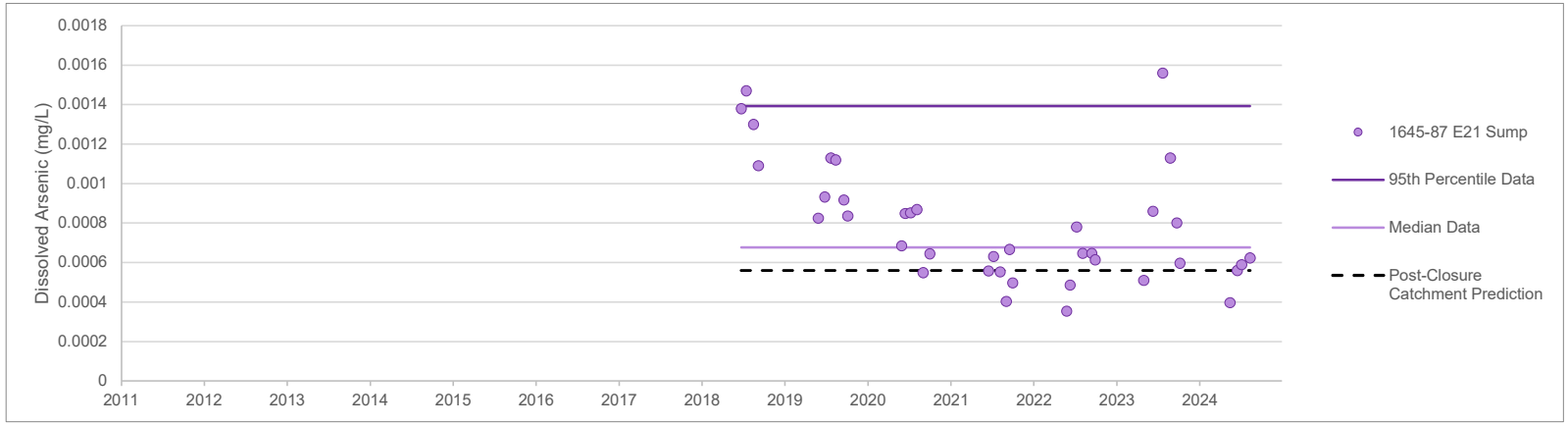


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00018	Wildlife	None
Median	0.00008	Human recreational	0.12
Count	38	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



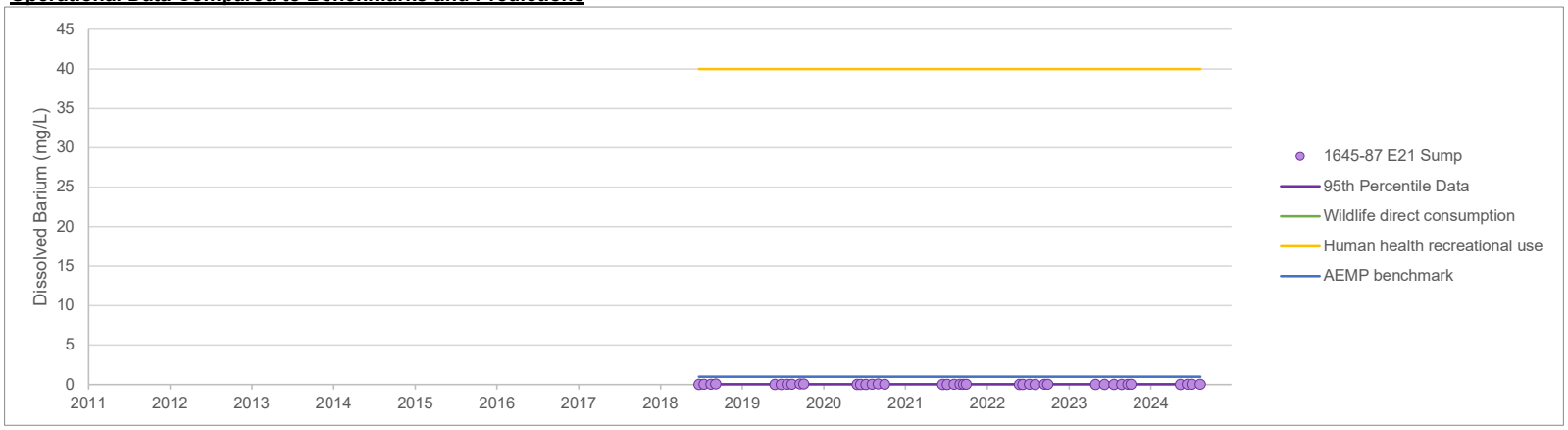


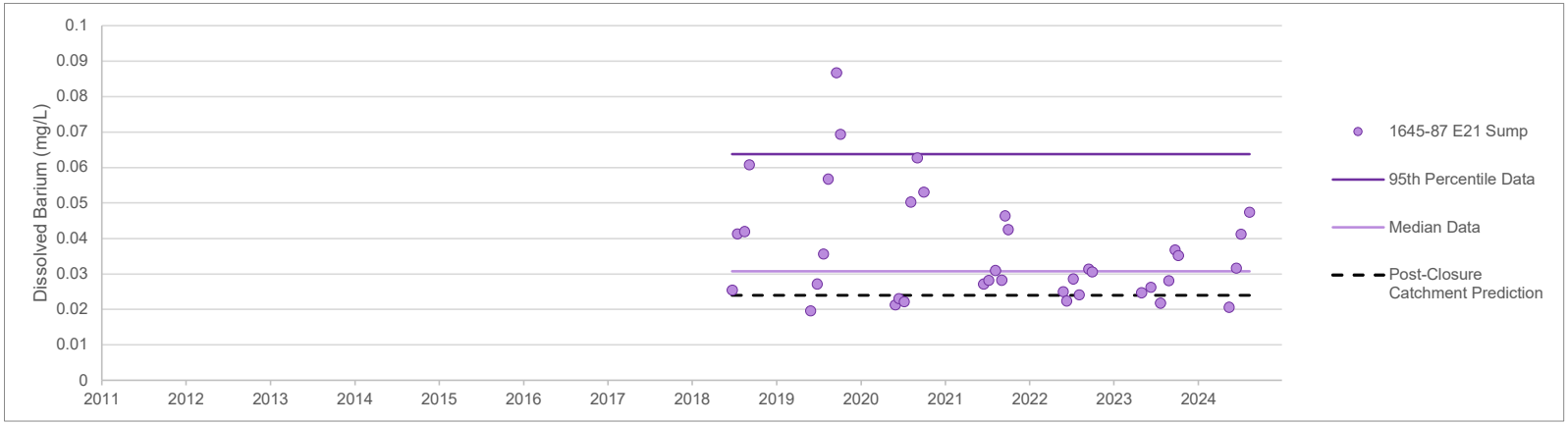
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0014	Wildlife	0.03
Median	0.0007	Human recreational	0.20
Count	38	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

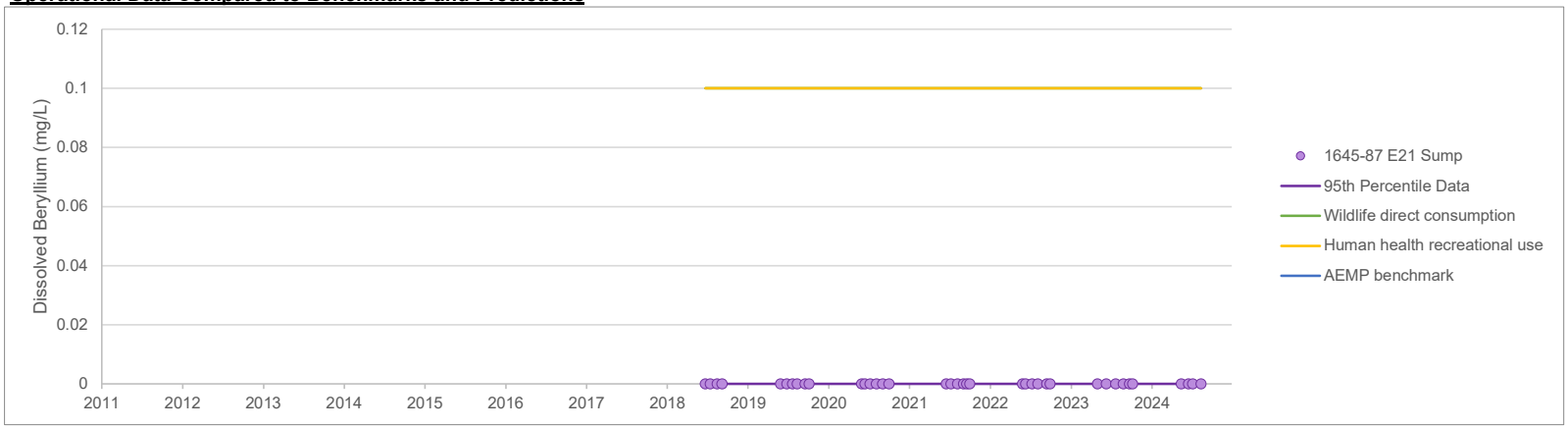


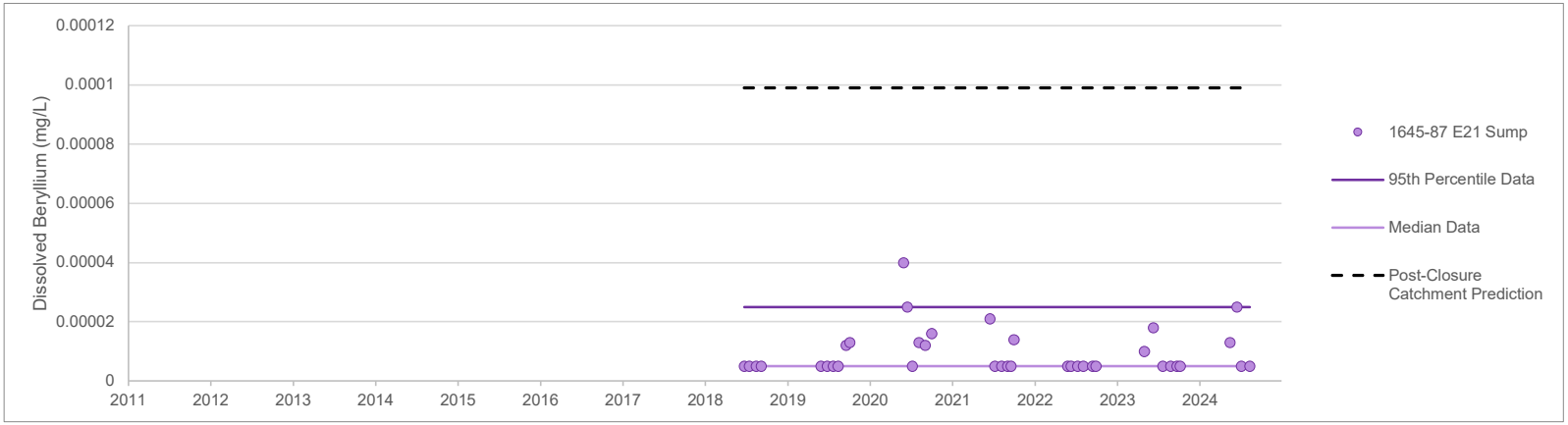


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.064	Wildlife	None
Median	0.031	Human recreational	40.0
Count	38	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions

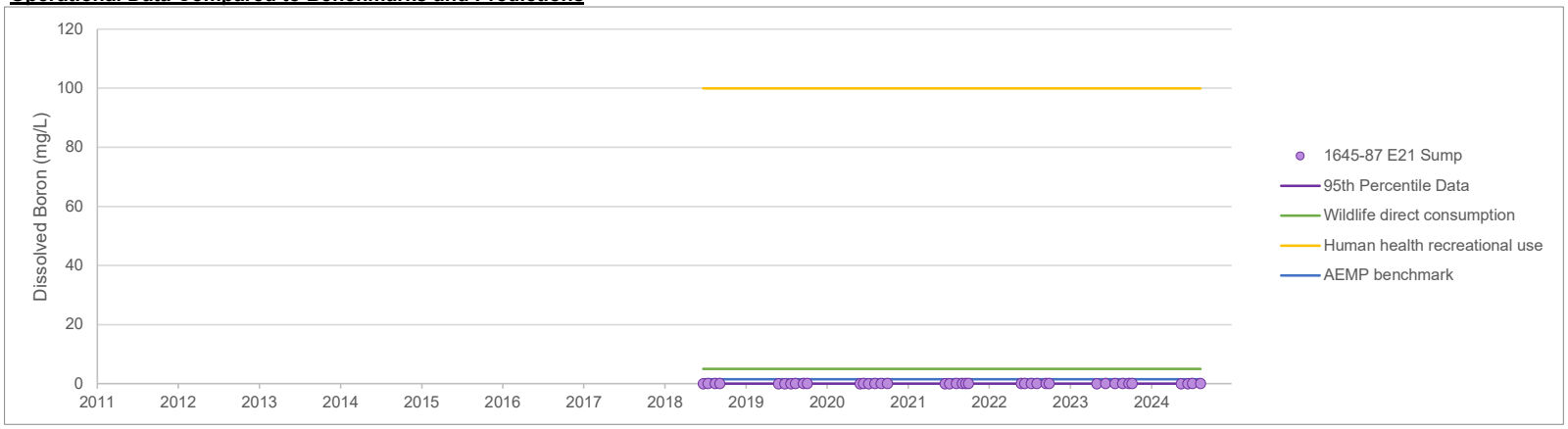


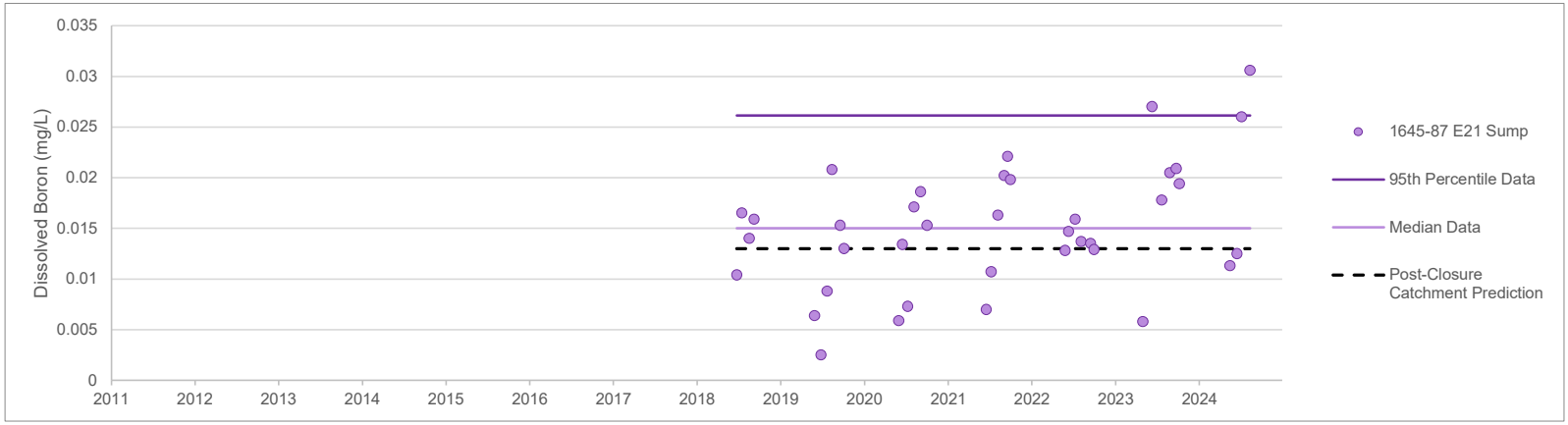


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000025	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



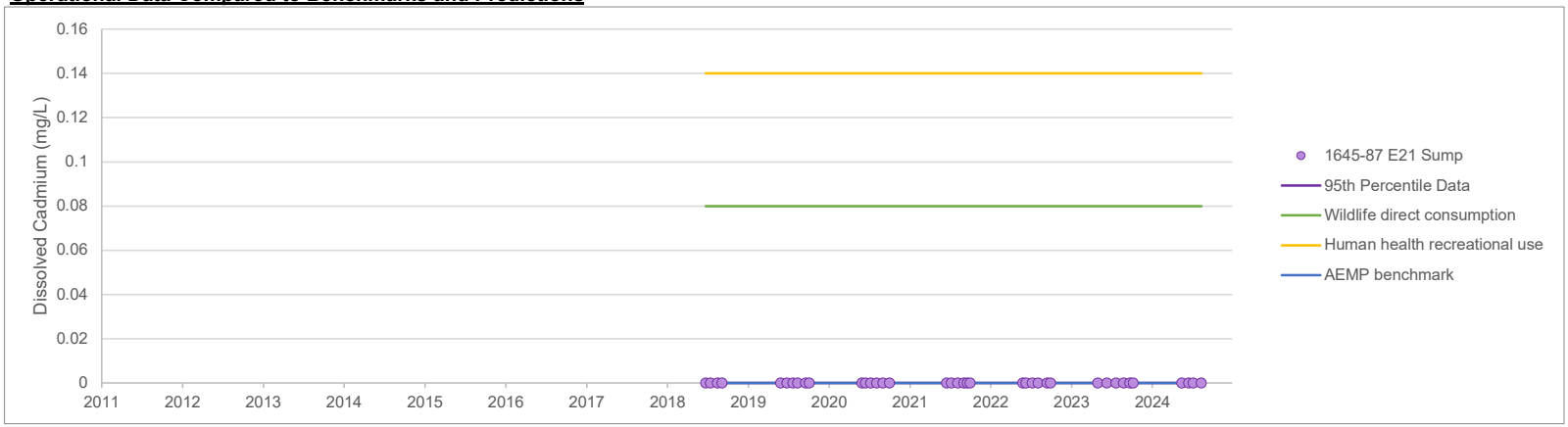


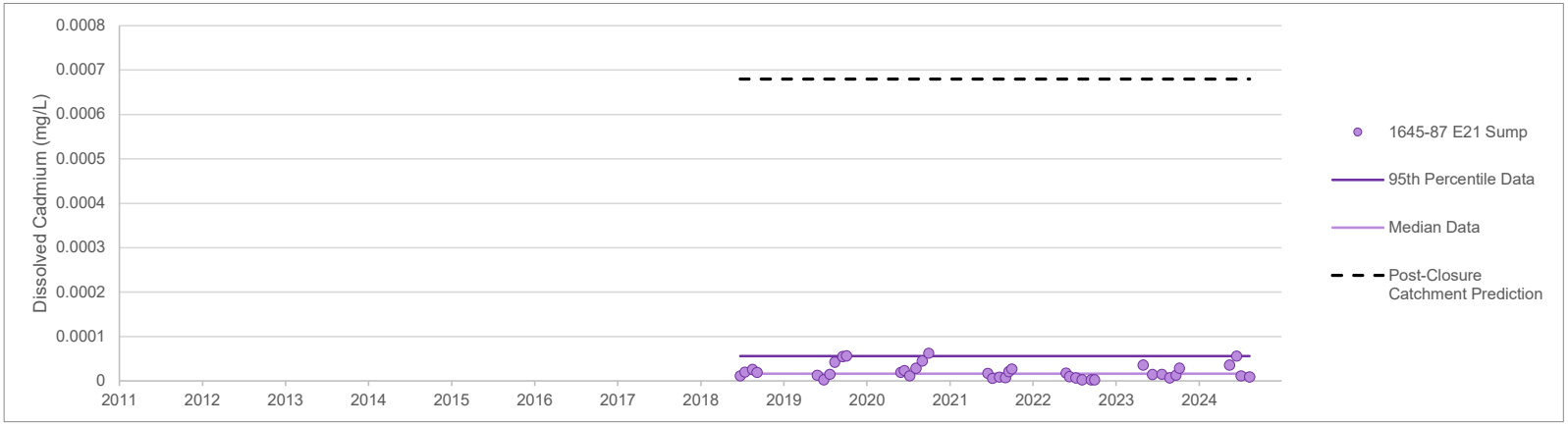
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.026	Wildlife	5.0
Median	0.015	Human recreational	100.0
Count	38	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

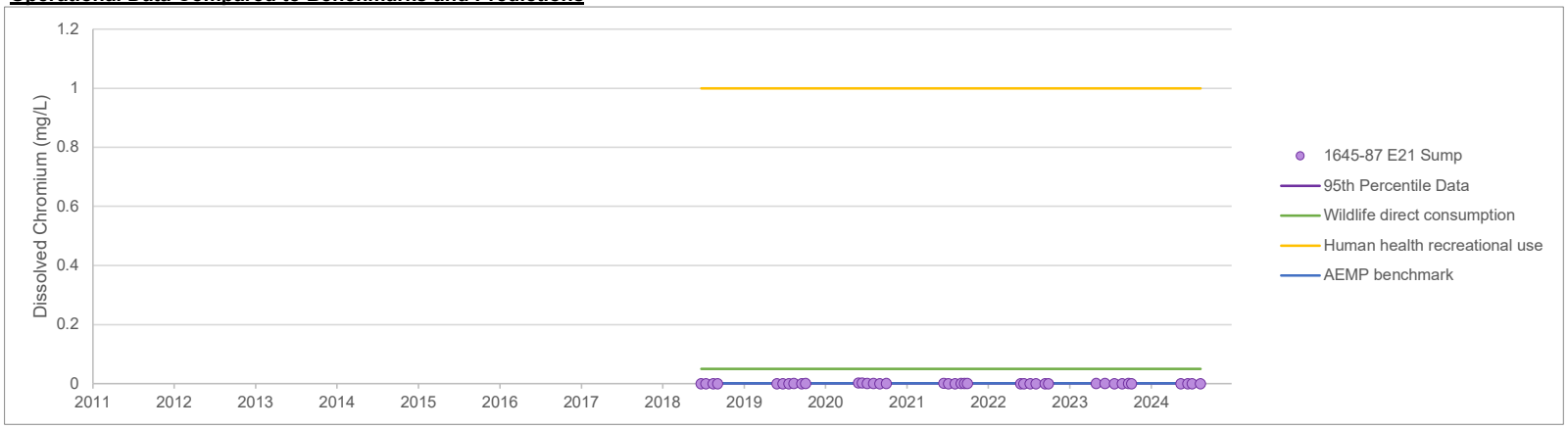


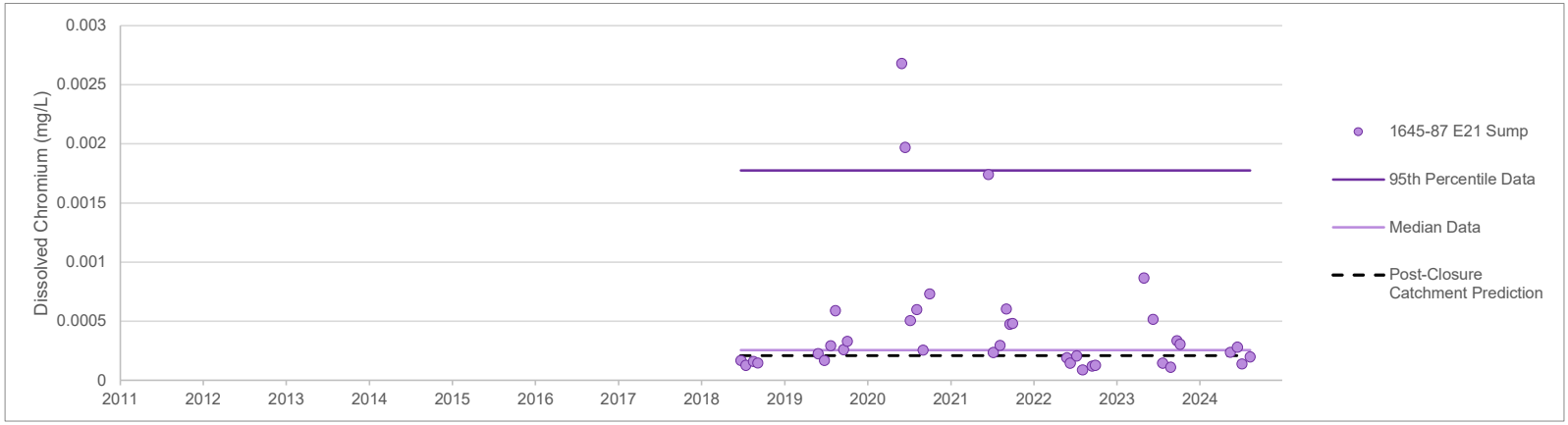


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00006	Wildlife	0.08
Median	0.00002	Human recreational	0.14
Count	38	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions

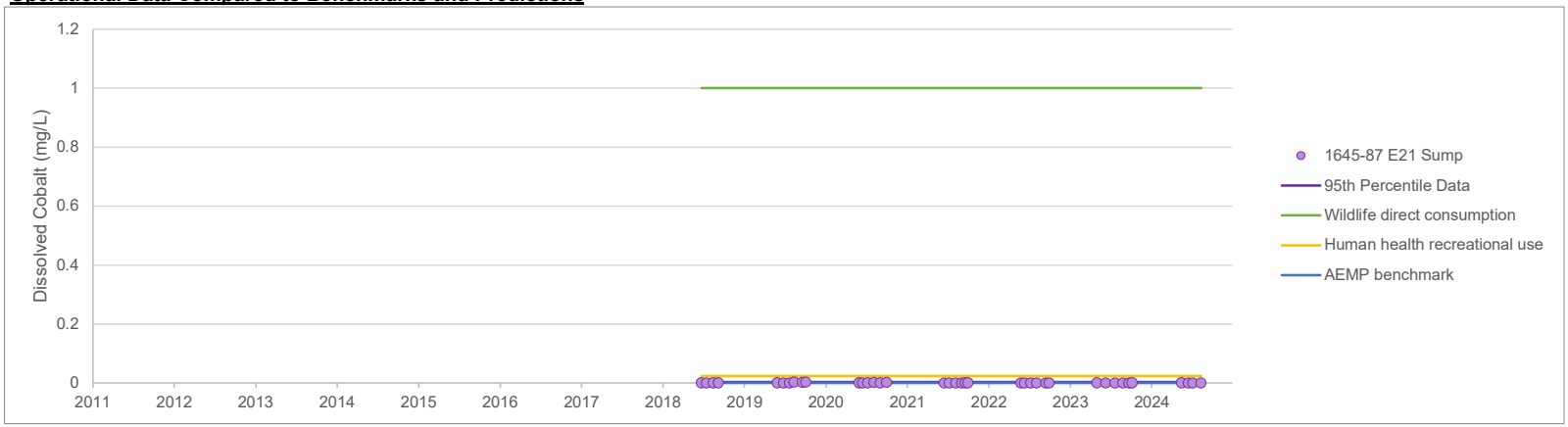


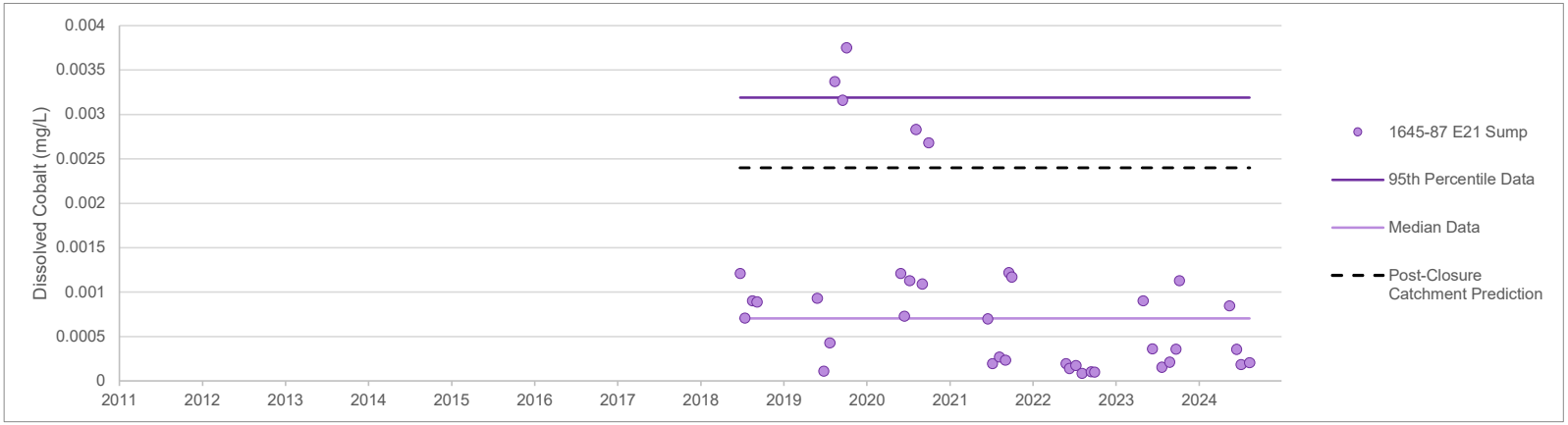


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00177	Wildlife	0.05
Median	0.00026	Human recreational	1.0
Count	38	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



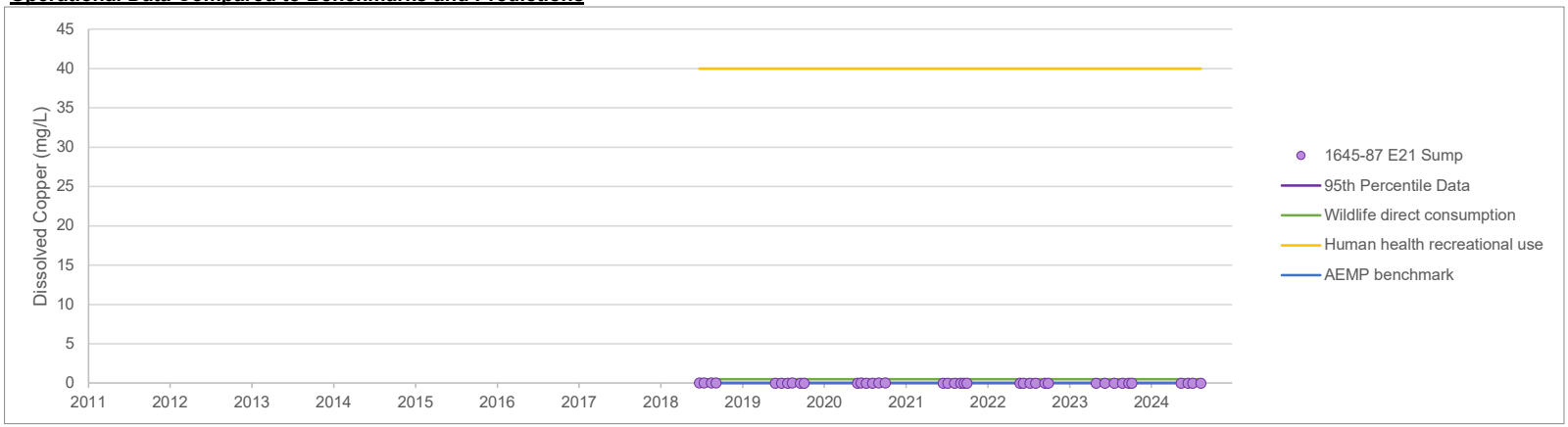


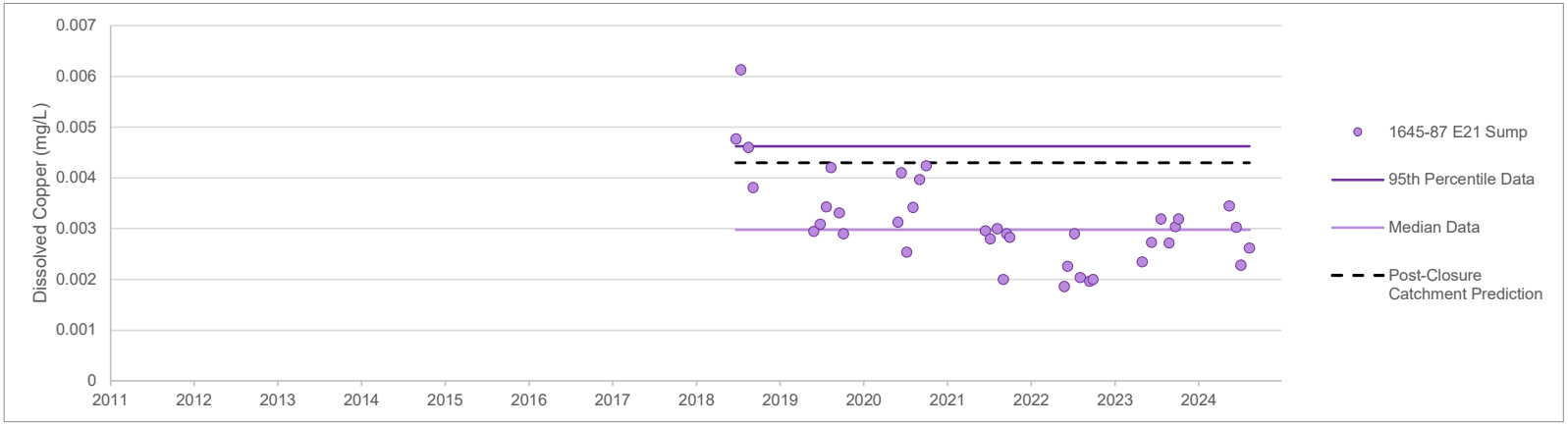
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0032	Wildlife	1.0
Median	0.0007	Human recreational	0.02
Count	38	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

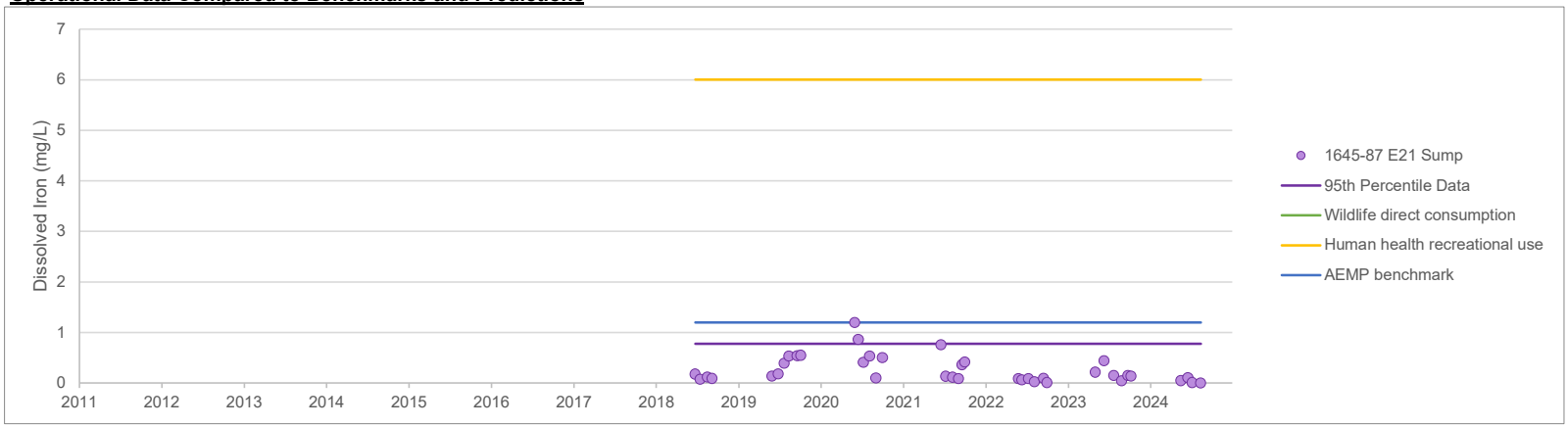


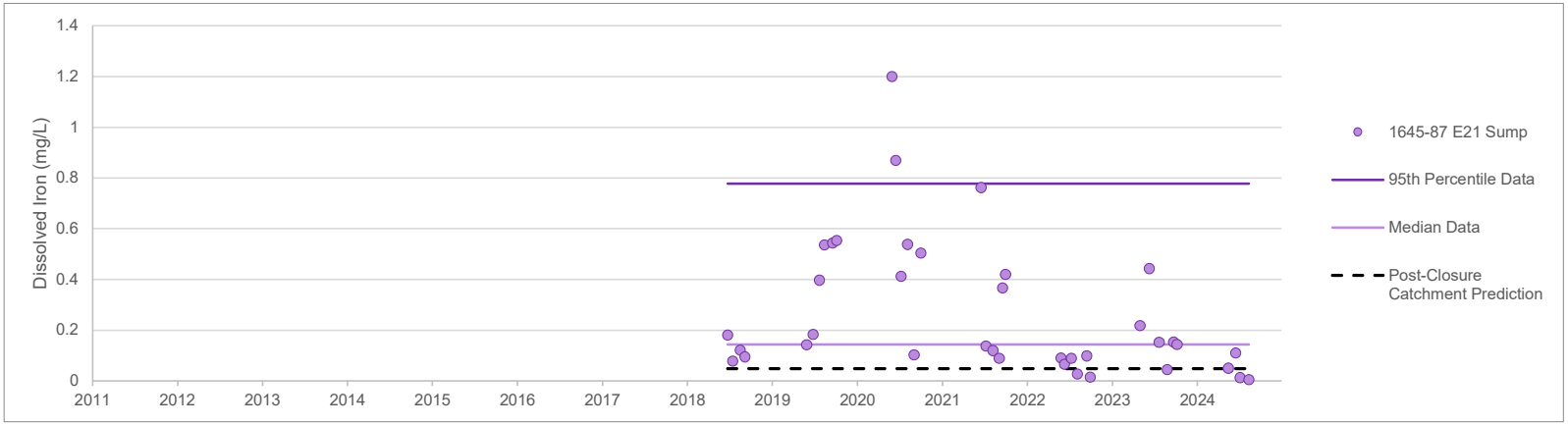


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0046	Wildlife	0.5
Median	0.0030	Human recreational	40.0
Count	38	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



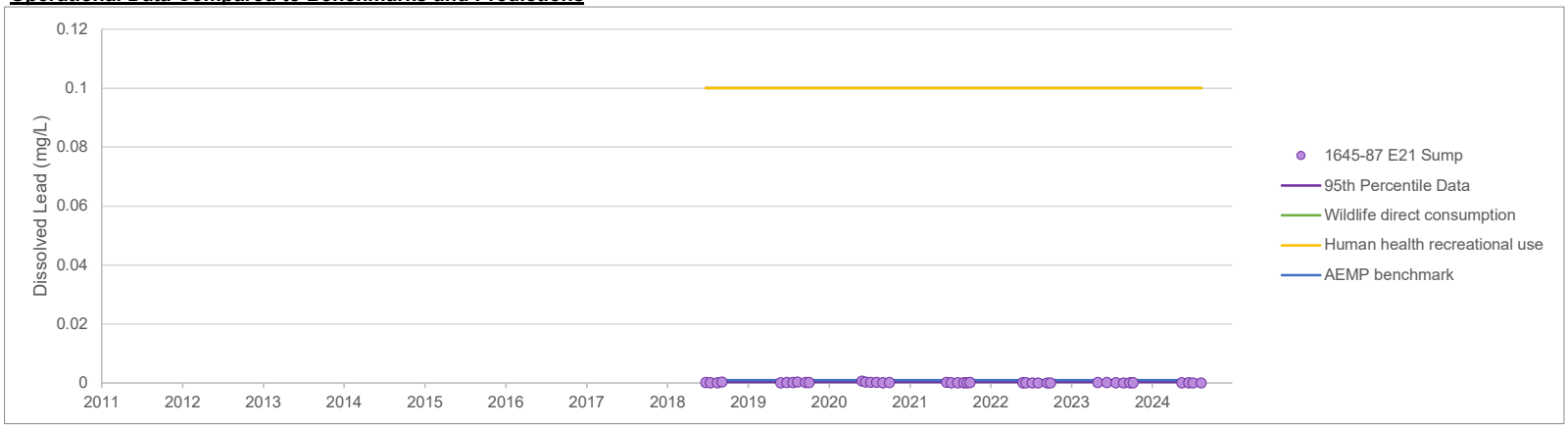


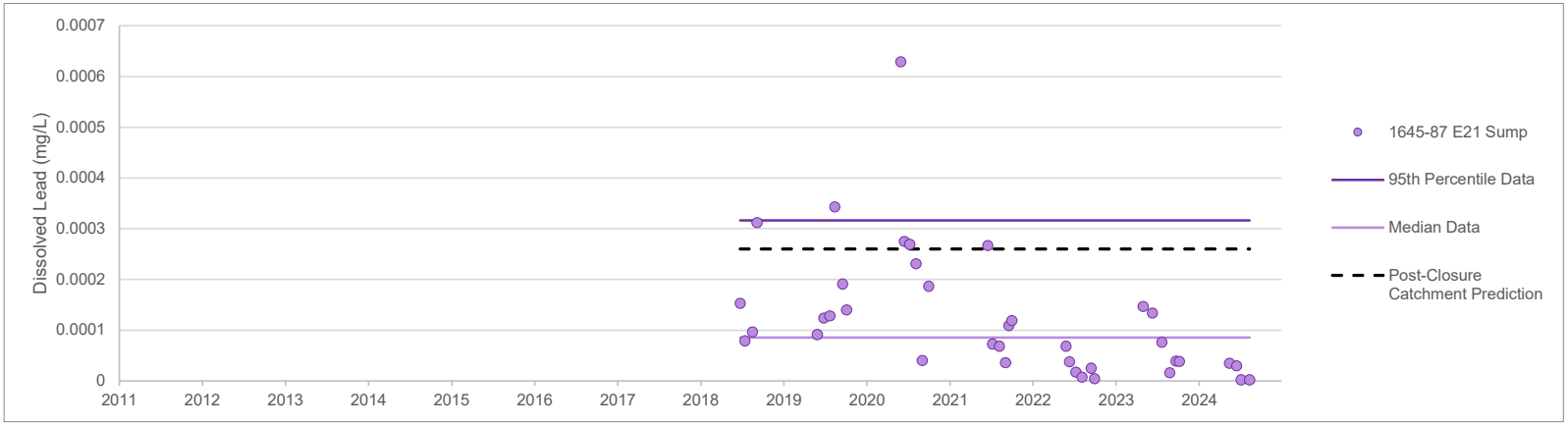
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.78	Wildlife	None
Median	0.14	Human recreational	6.0
Count	38	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

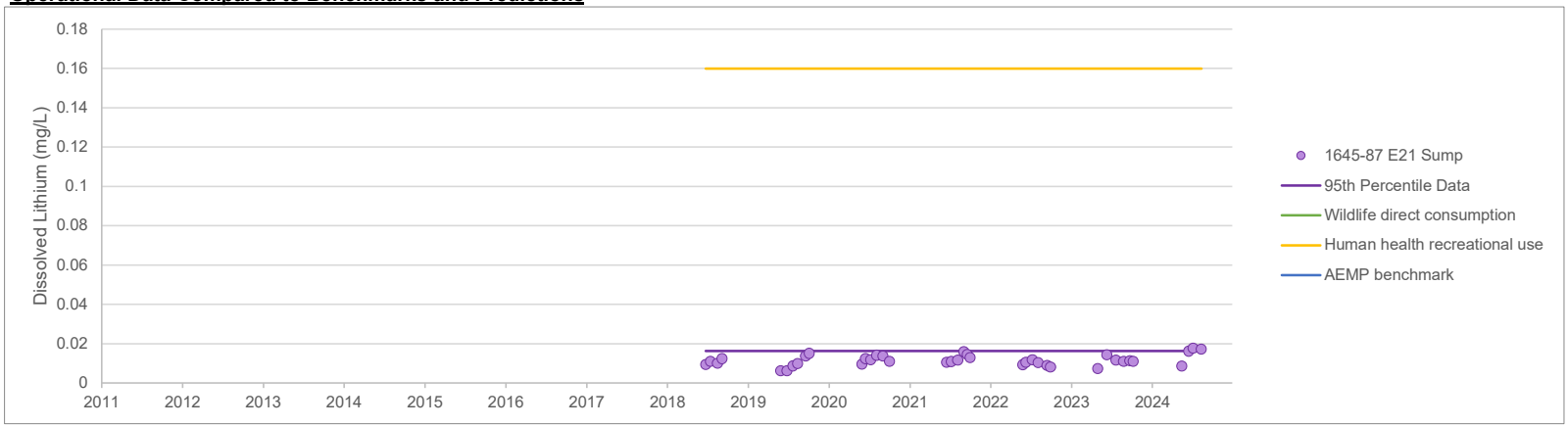


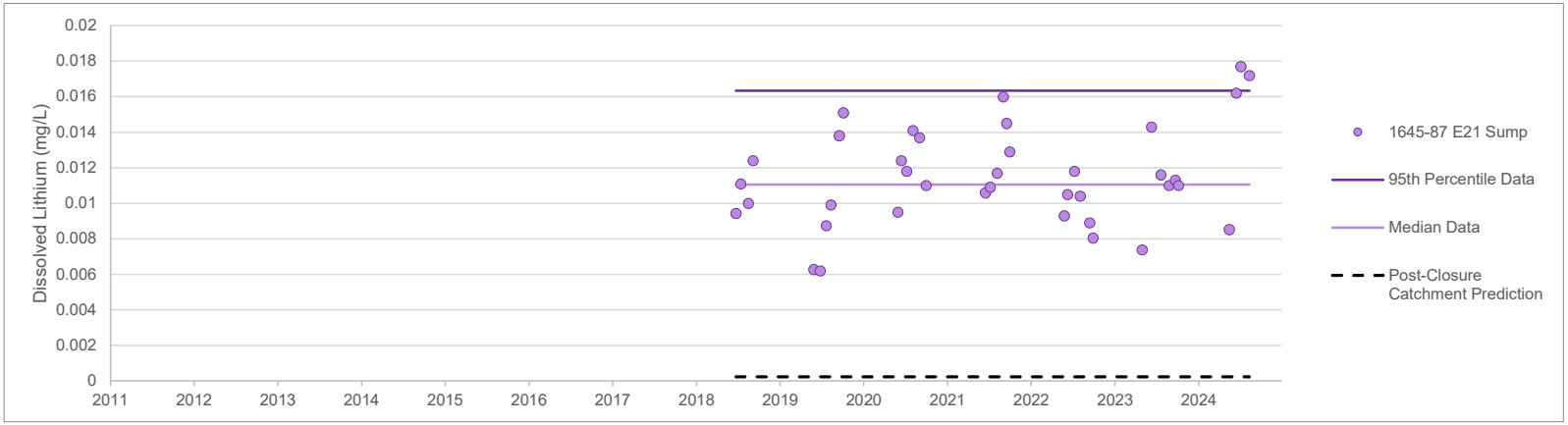


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00032	Wildlife	0.10
Median	0.00009	Human recreational	0.10
Count	38	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



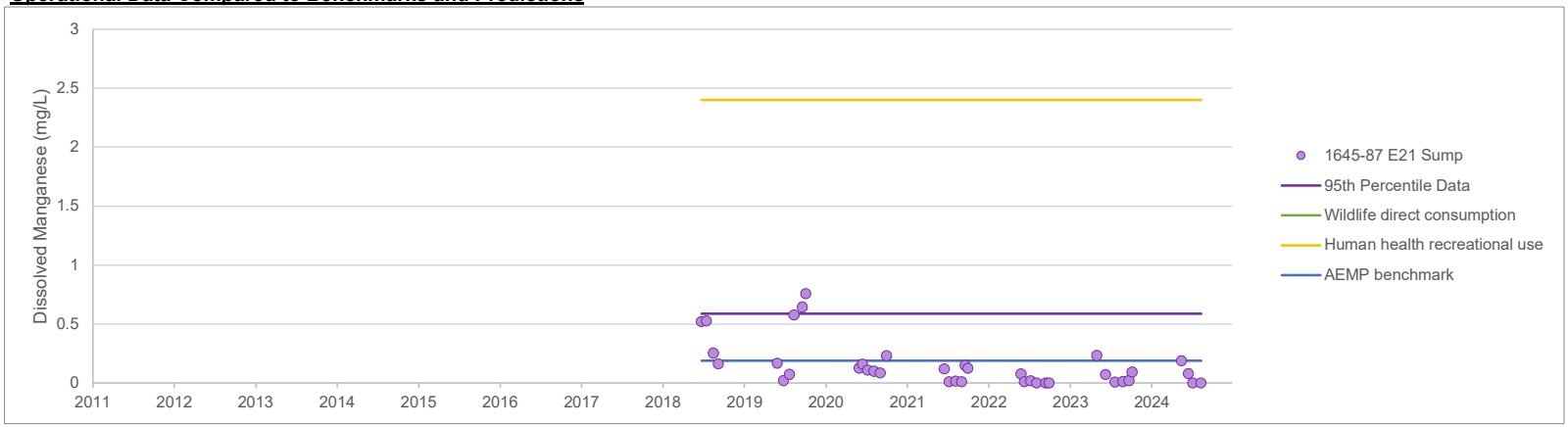


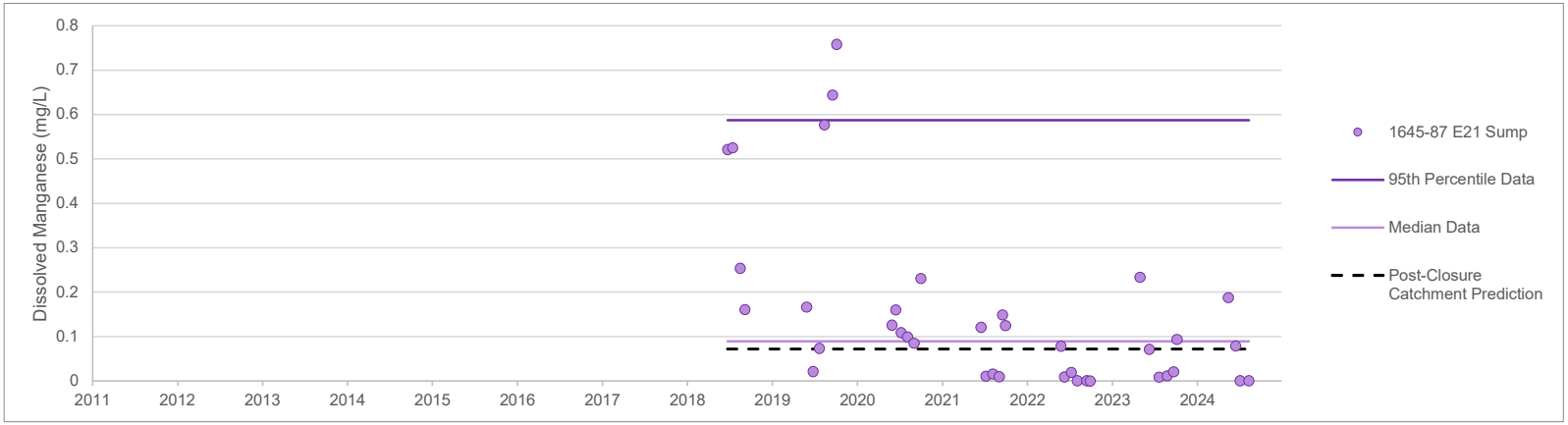
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.016	Wildlife	None
Median	0.011	Human recreational	0.16
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

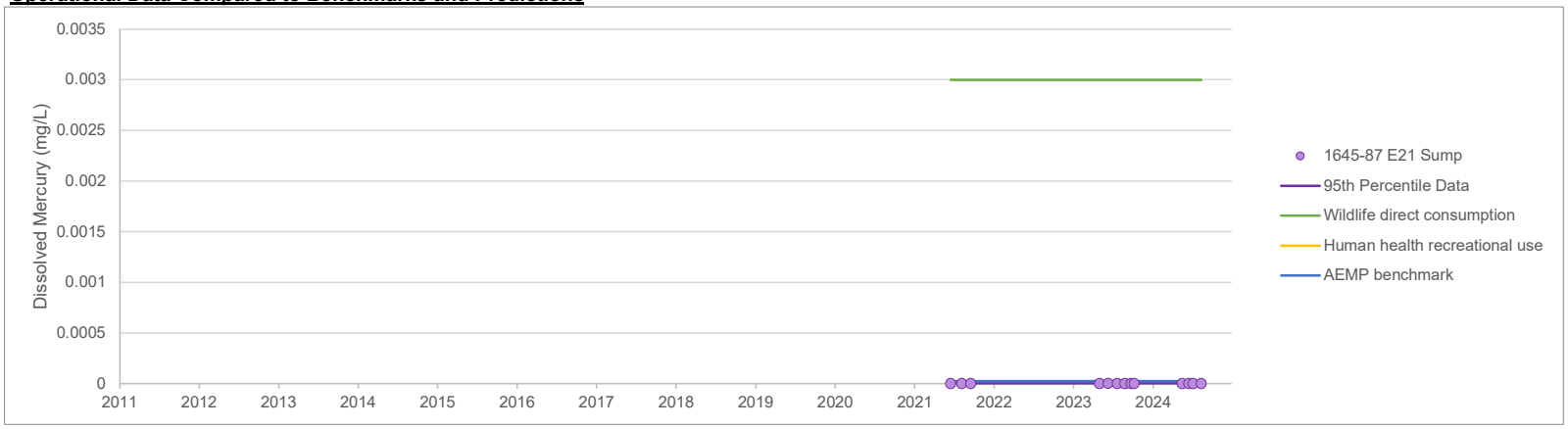


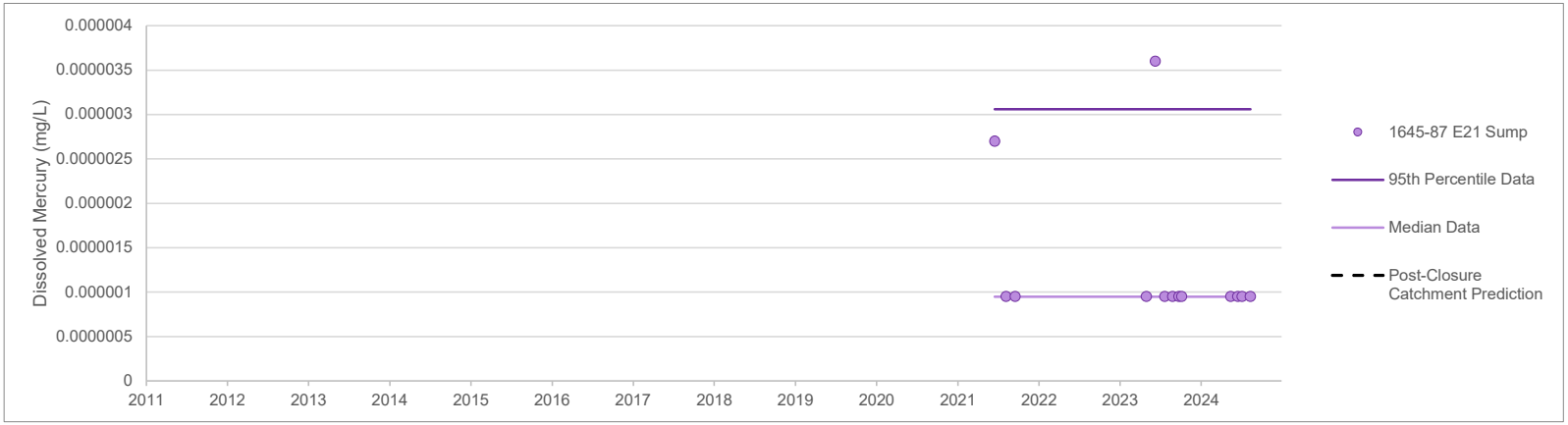


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.587	Wildlife	None
Median	0.090	Human recreational	2.4
Count	38	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

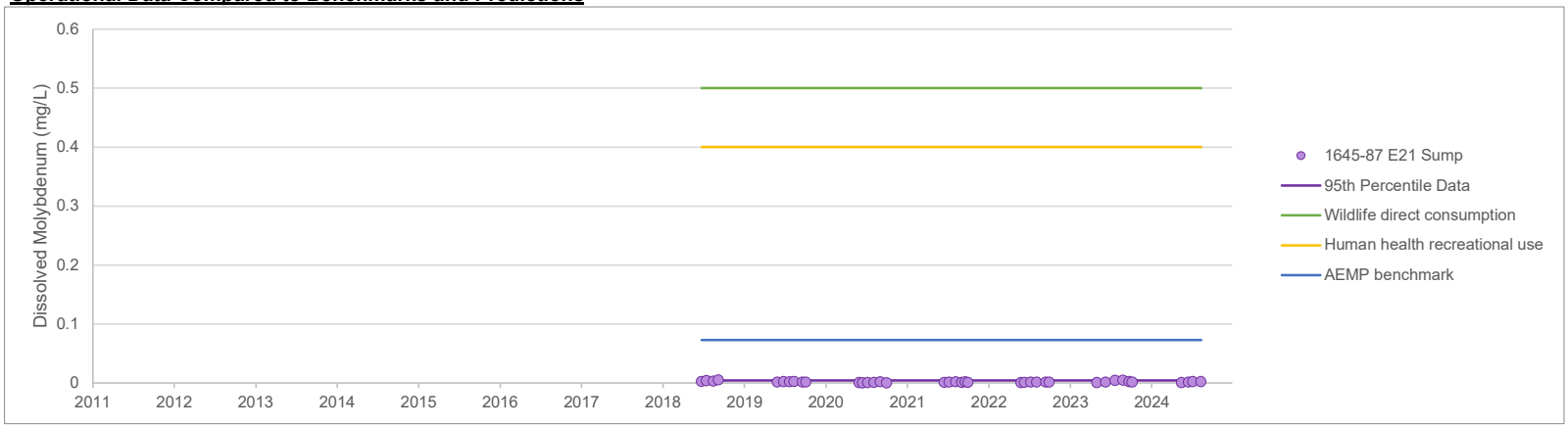


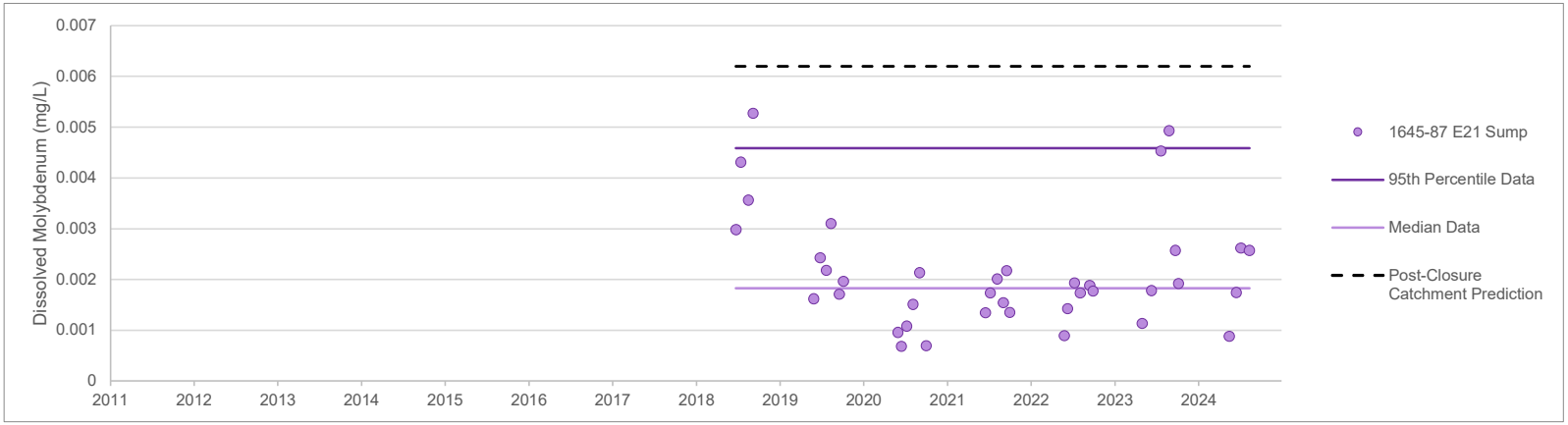


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000031	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	13	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



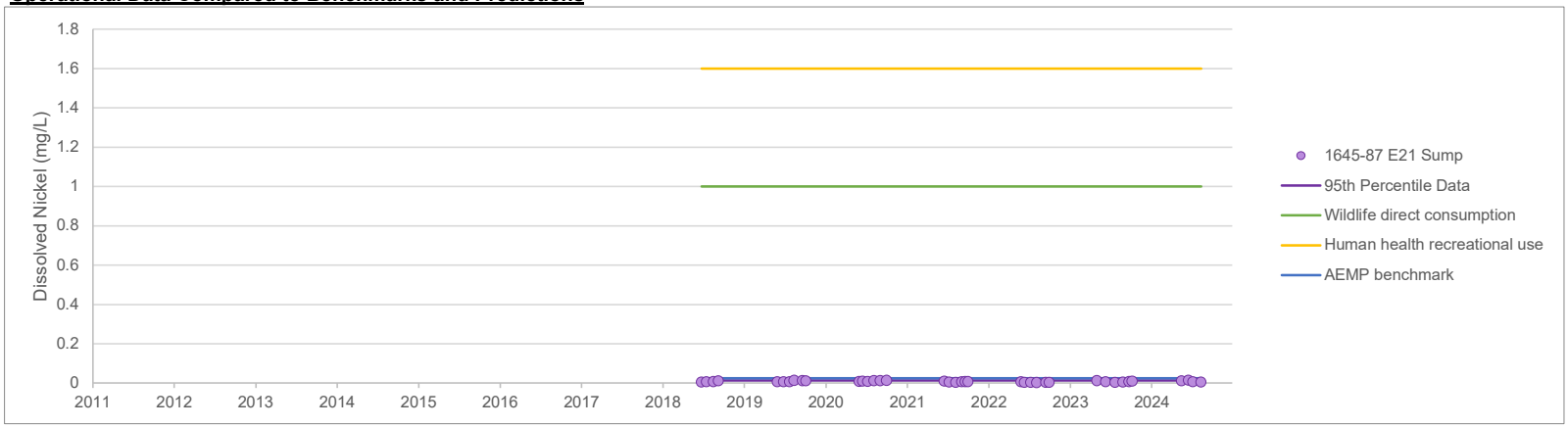


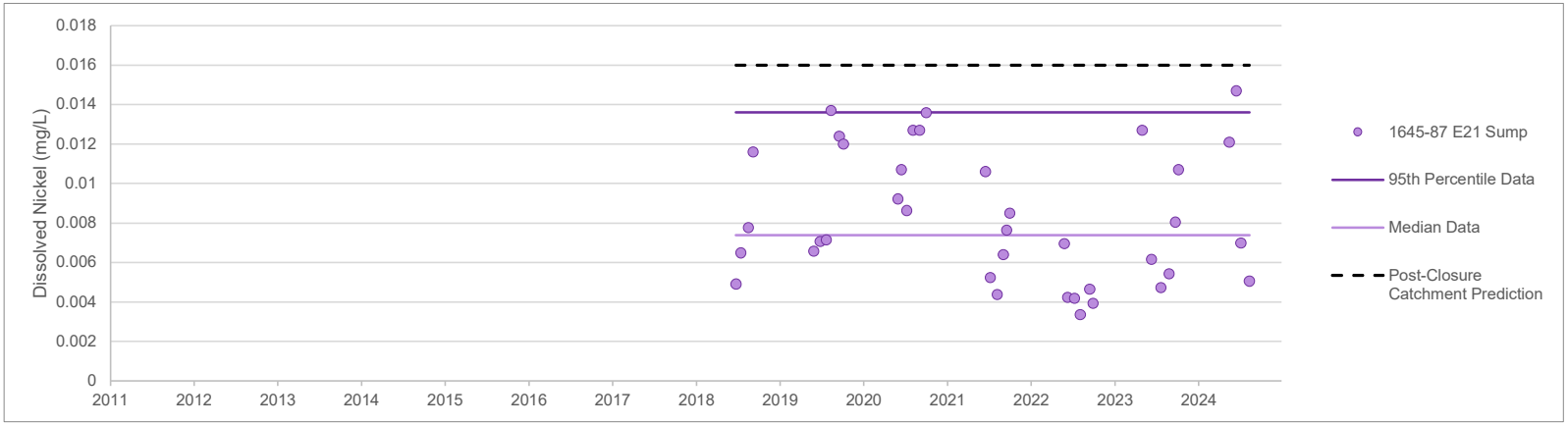
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0046	Wildlife	0.5
Median	0.0018	Human recreational	0.4
Count	38	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



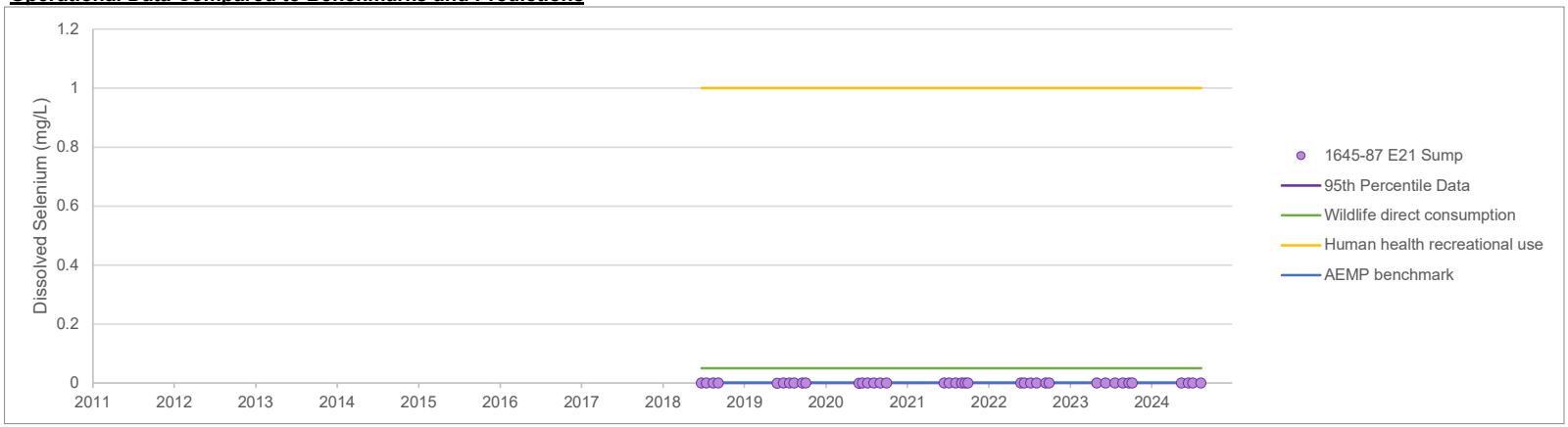


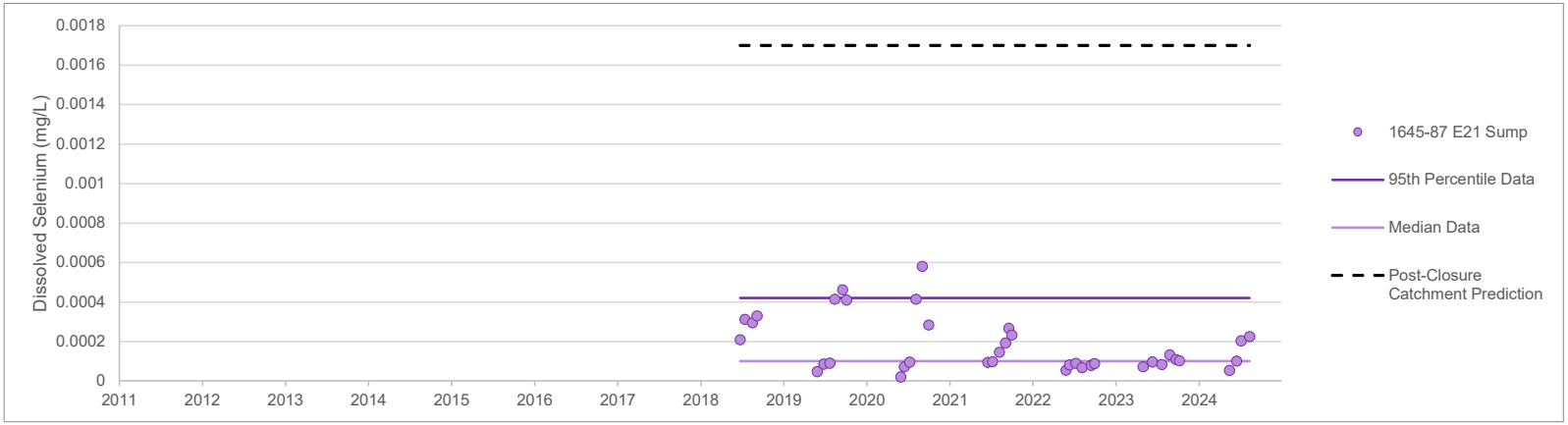
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.014	Wildlife	1.0
Median	0.007	Human recreational	1.6
Count	38	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



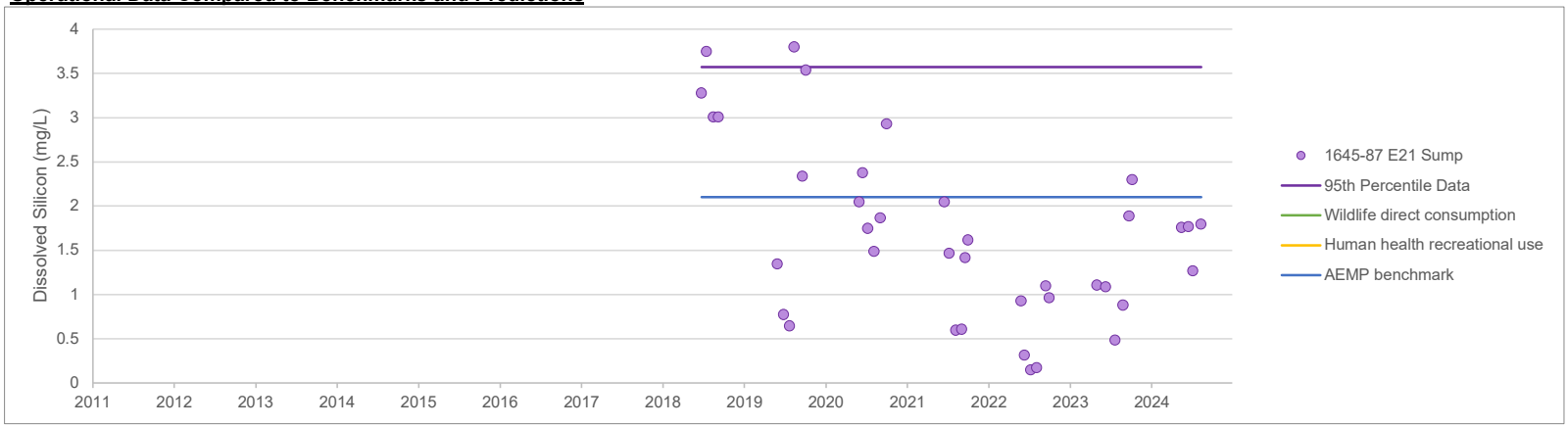


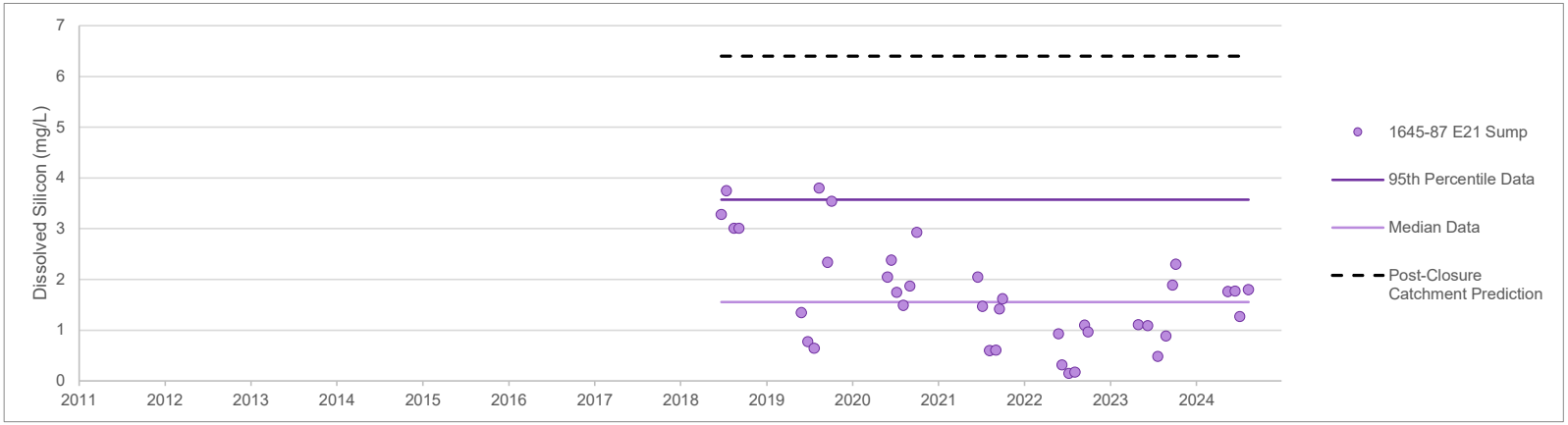
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00042	Wildlife	0.1
Median	0.00010	Human recreational	1.0
Count	38	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



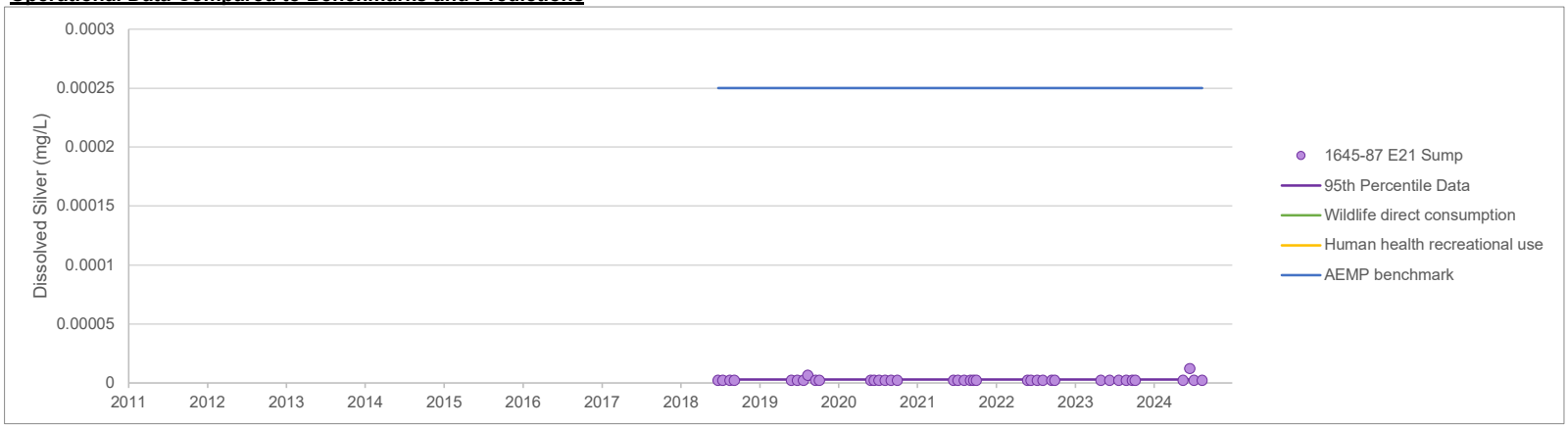


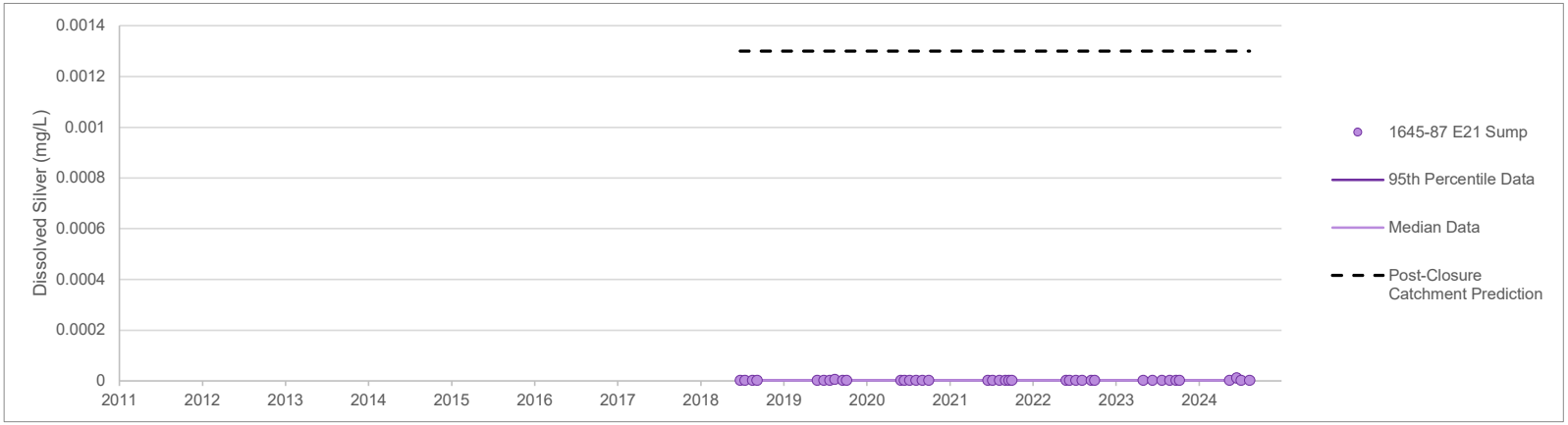
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.57	Wildlife	None
Median	1.56	Human recreational	None
Count	38	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions

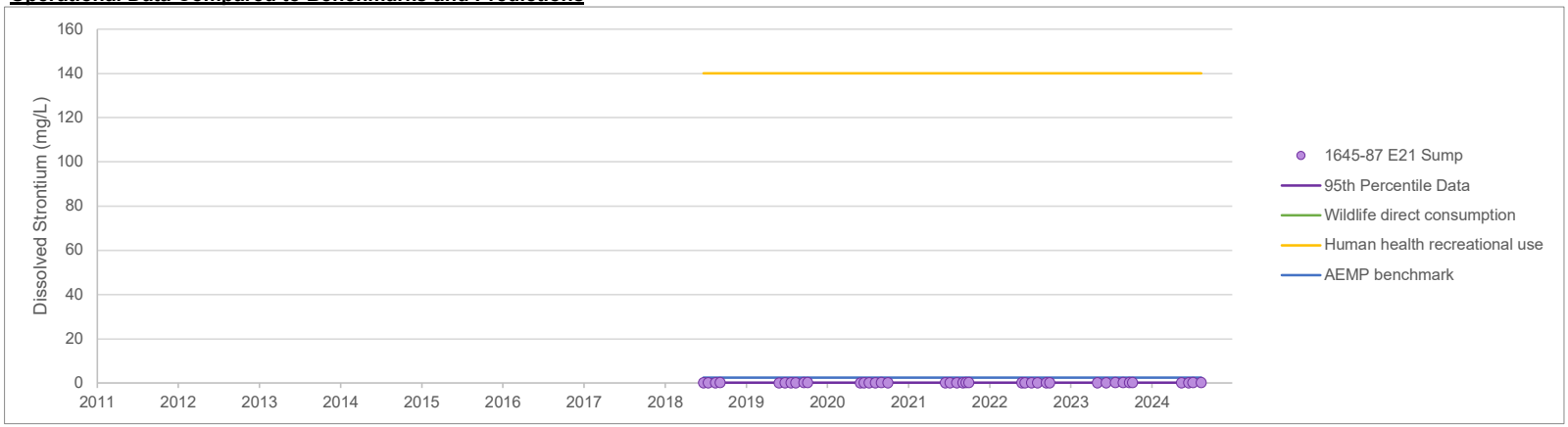


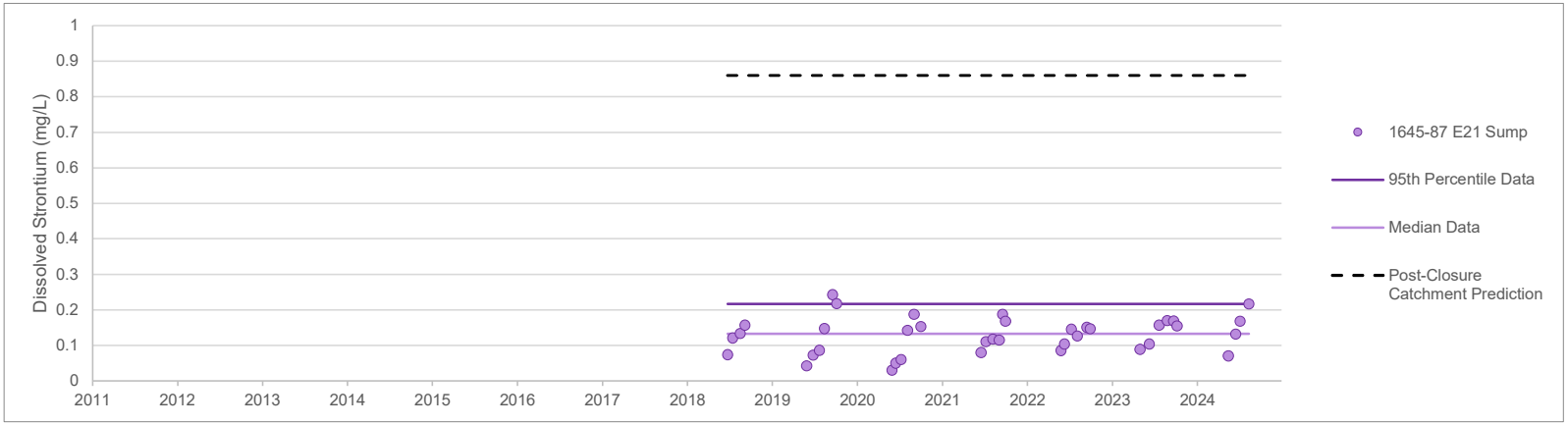


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000003	Wildlife	None
Median	0.000003	Human recreational	None
Count	38	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions

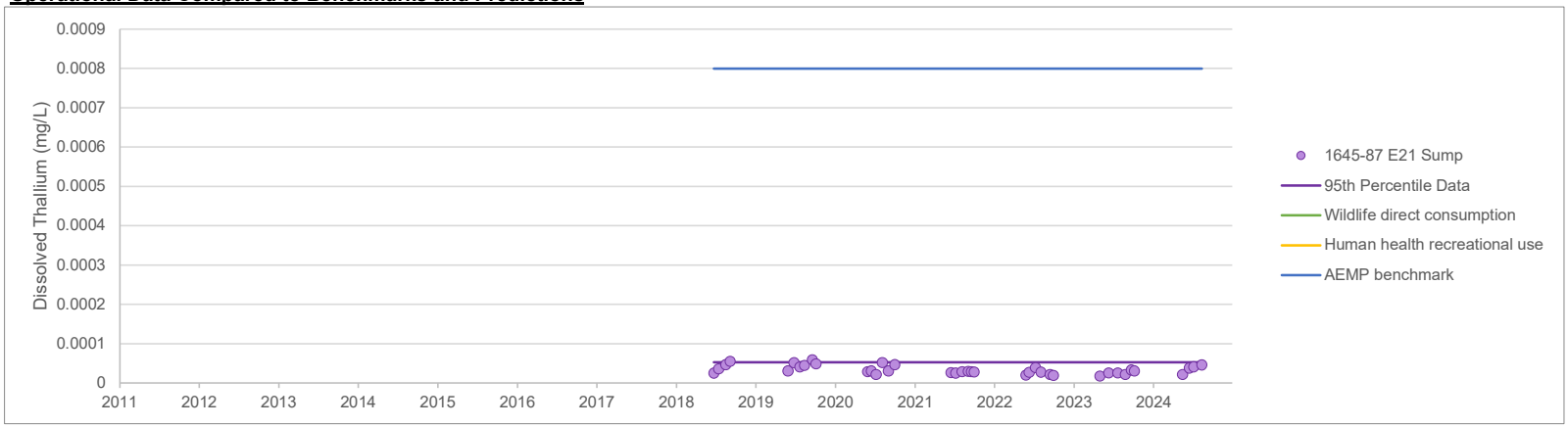


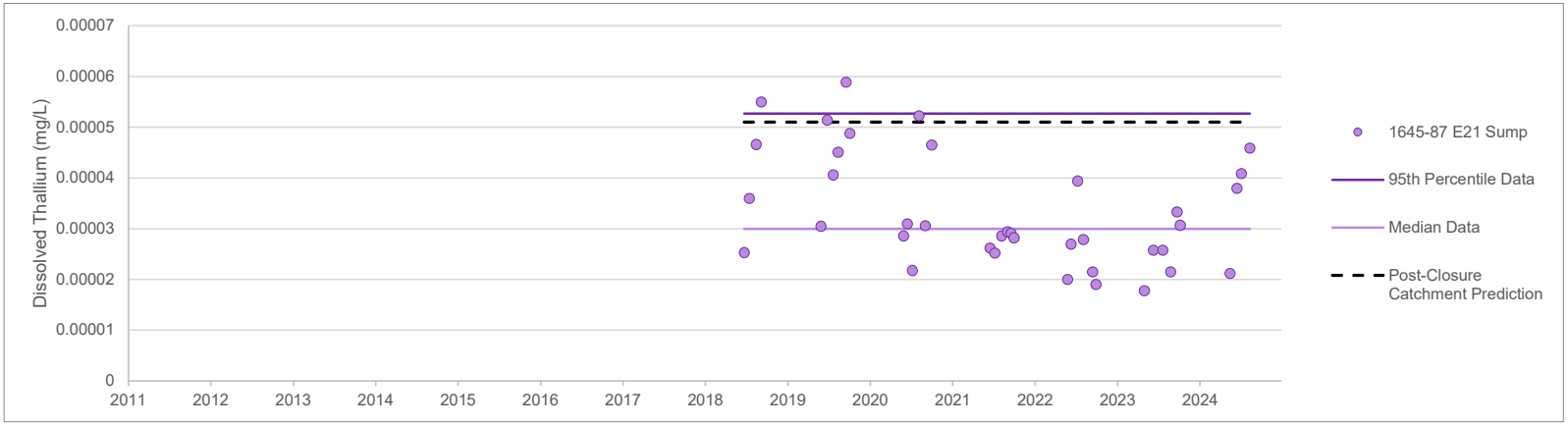


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	0.22	Wildlife	None
Median	0.13	Human recreational	140
Count	38	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions

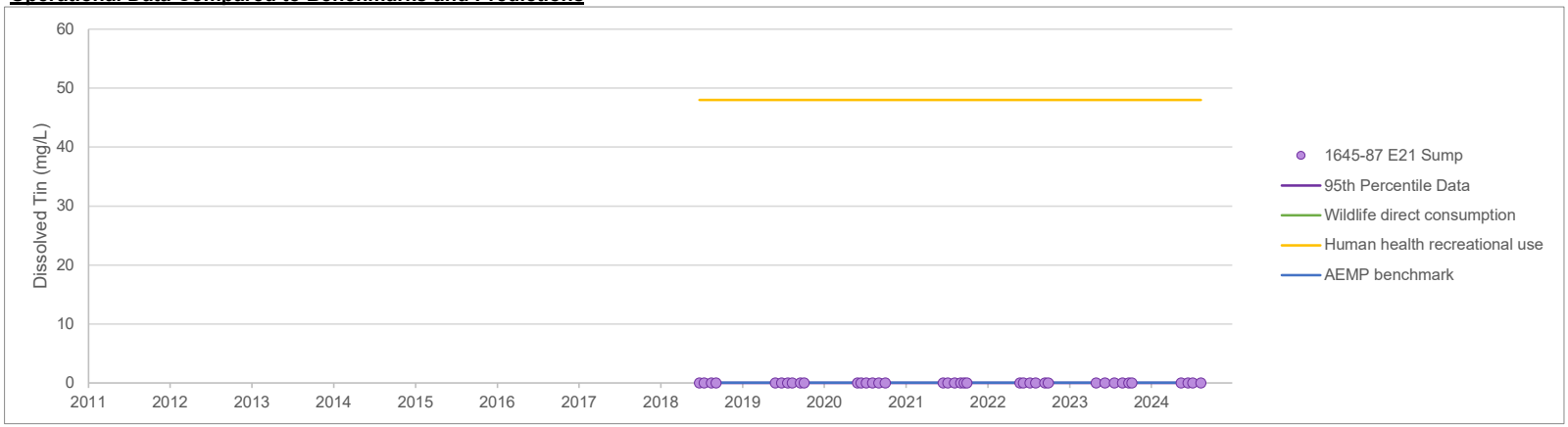


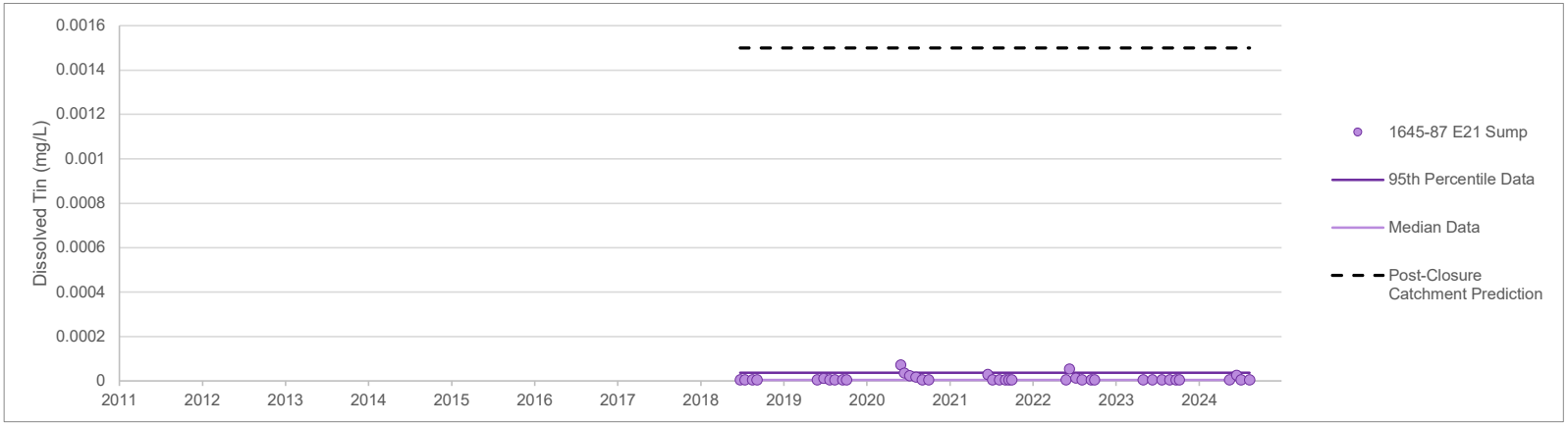


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00005	Wildlife	None
Median	0.00003	Human recreational	None
Count	38	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

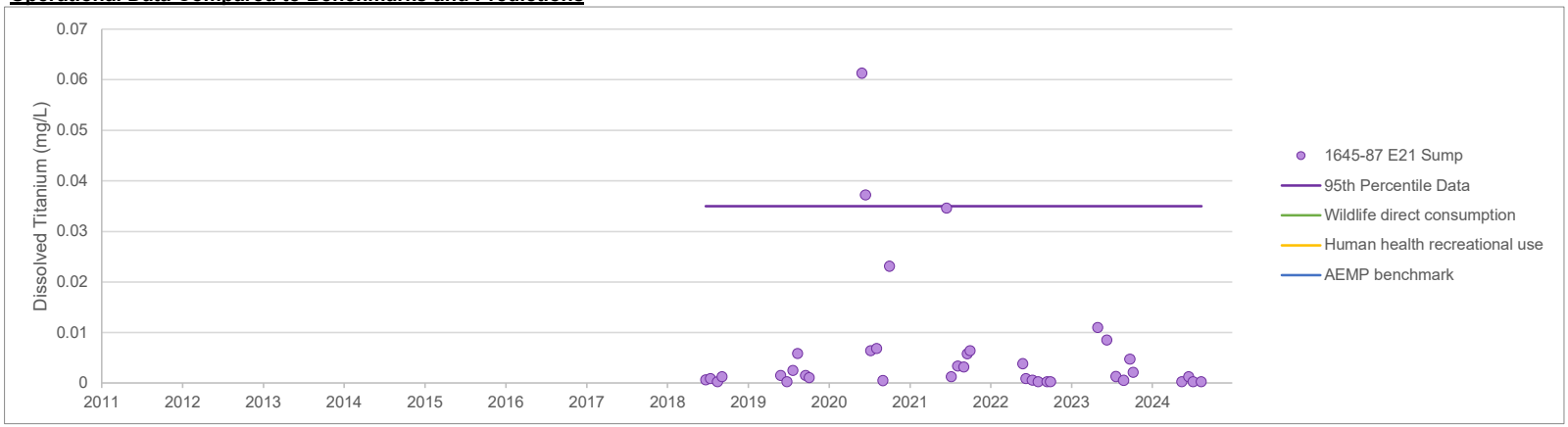


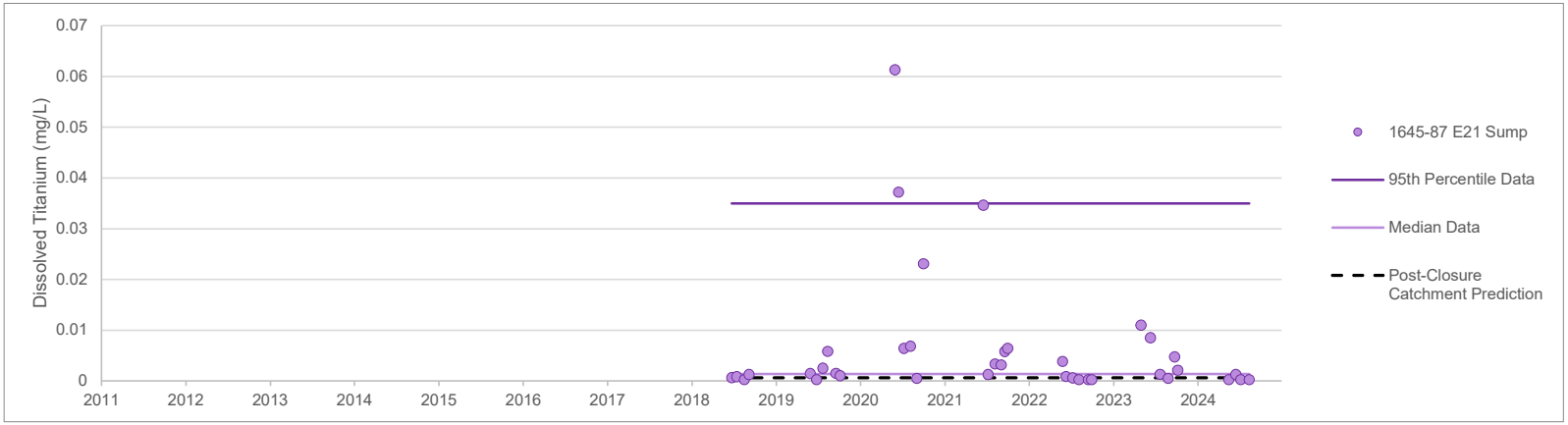


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00004	Wildlife	None
Median	0.00001	Human recreational	48
Count	38	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

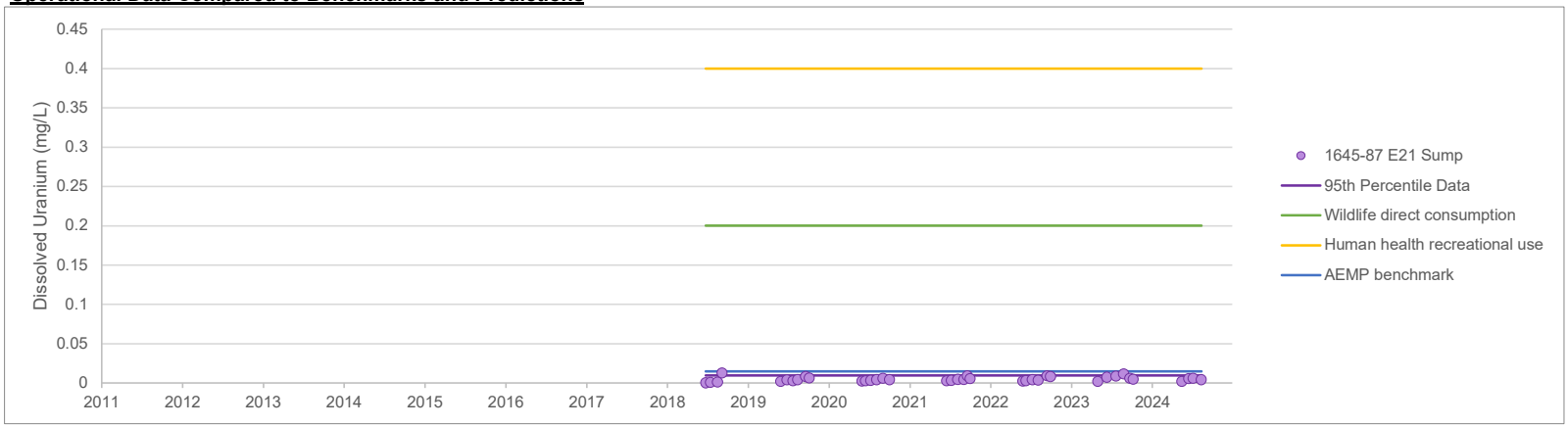


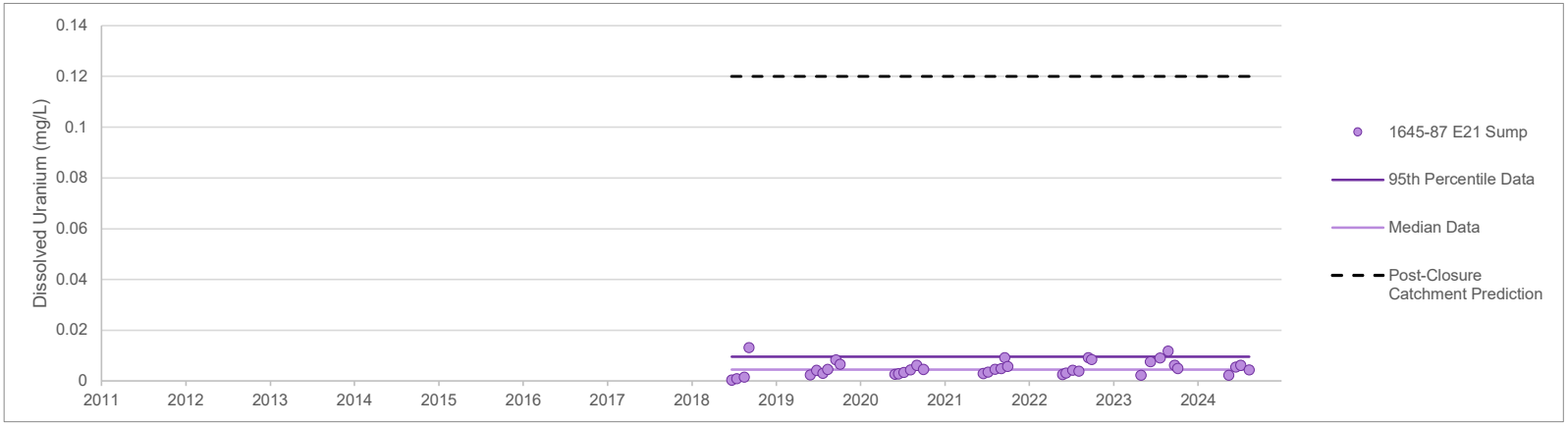


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0350	Wildlife	None
Median	0.0014	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

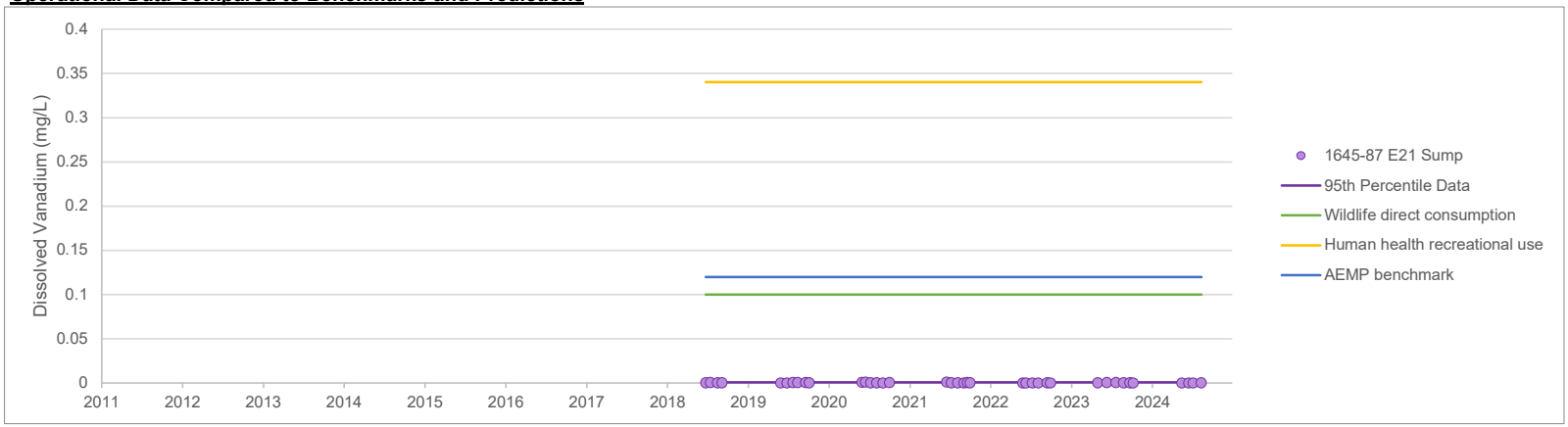


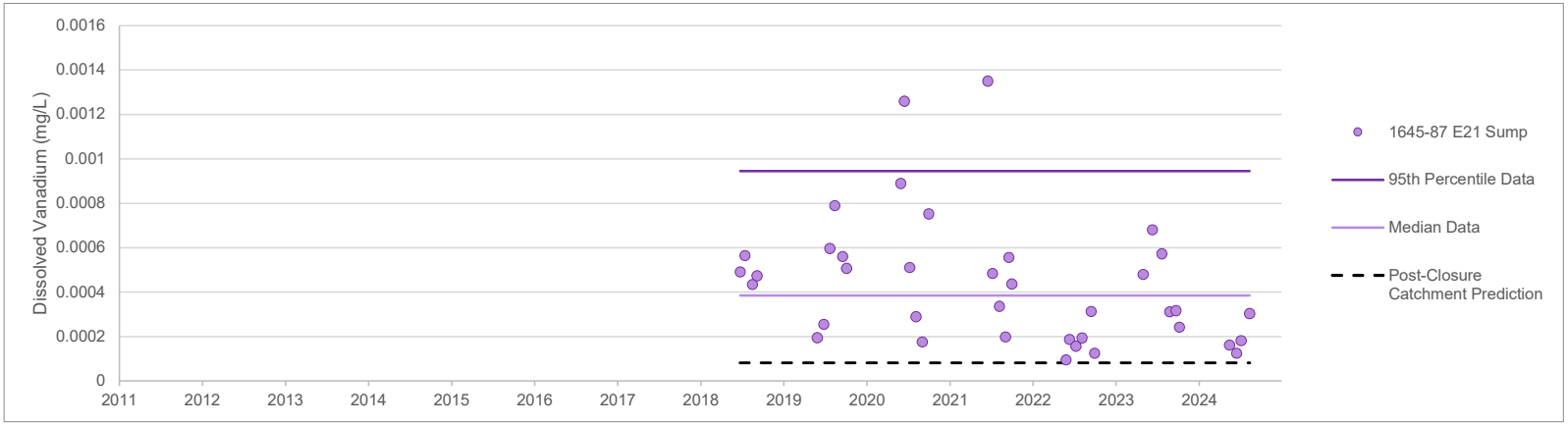


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0096	Wildlife	0.2
Median	0.0044	Human recreational	0.4
Count	38	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



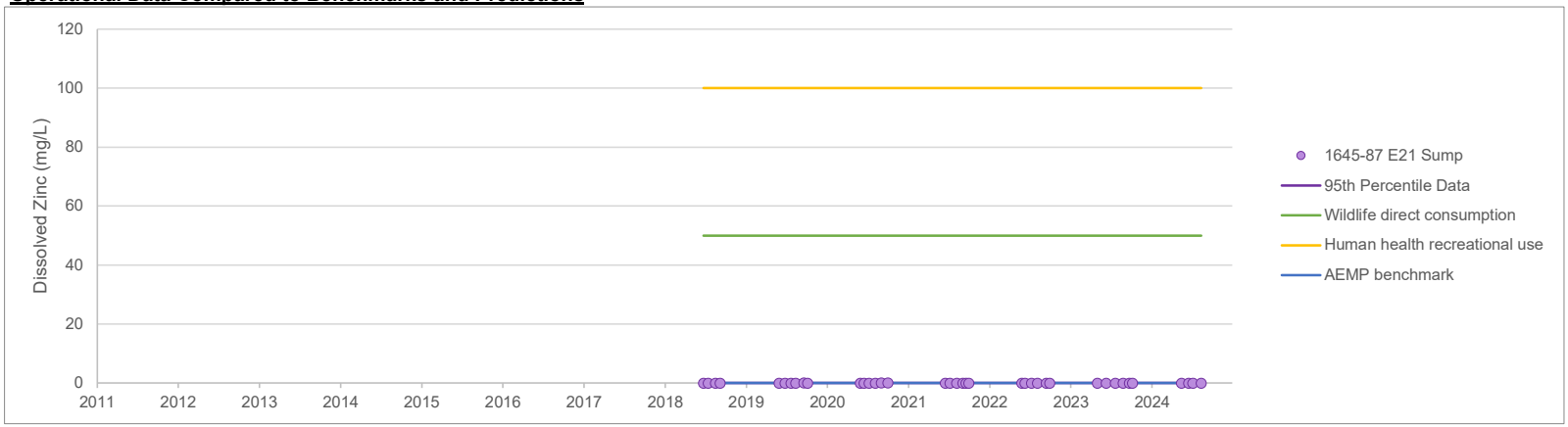


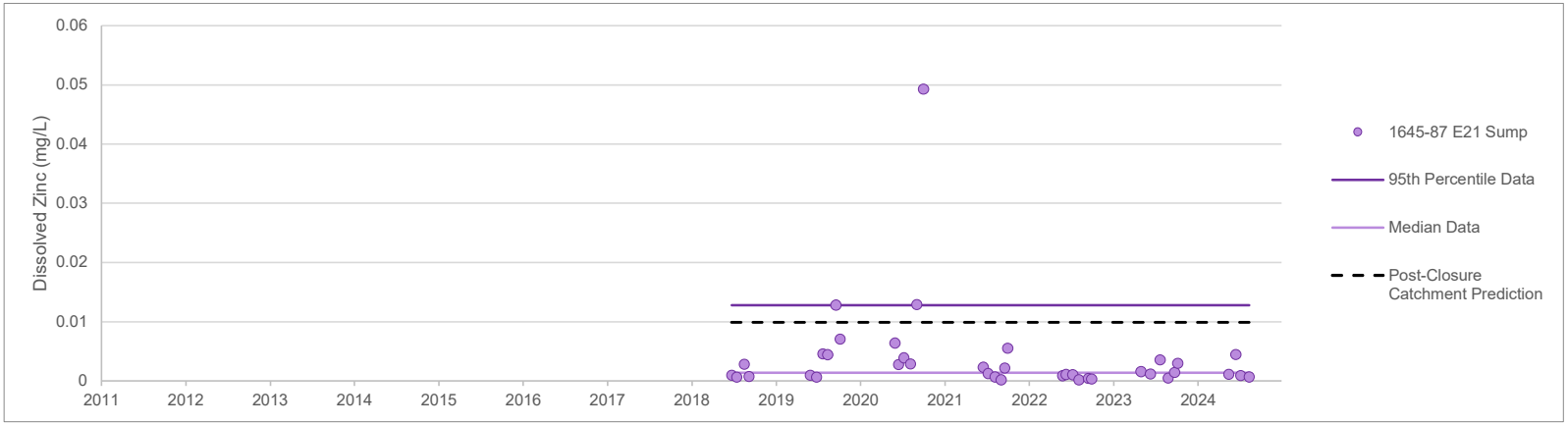
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0009	Wildlife	0.1
Median	0.0004	Human recreational	0.3
Count	38	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

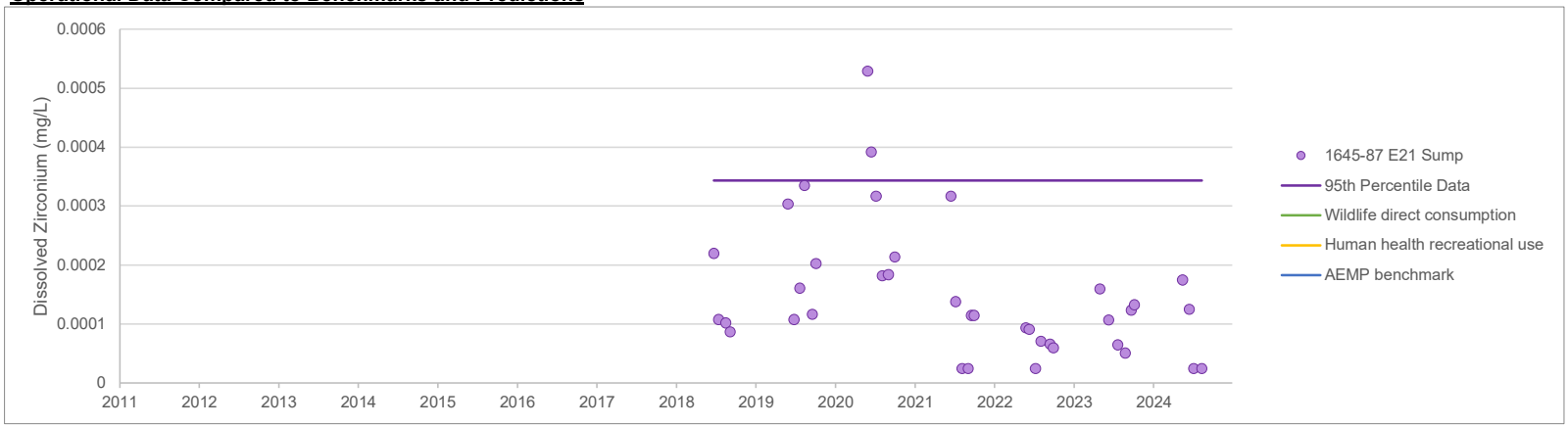


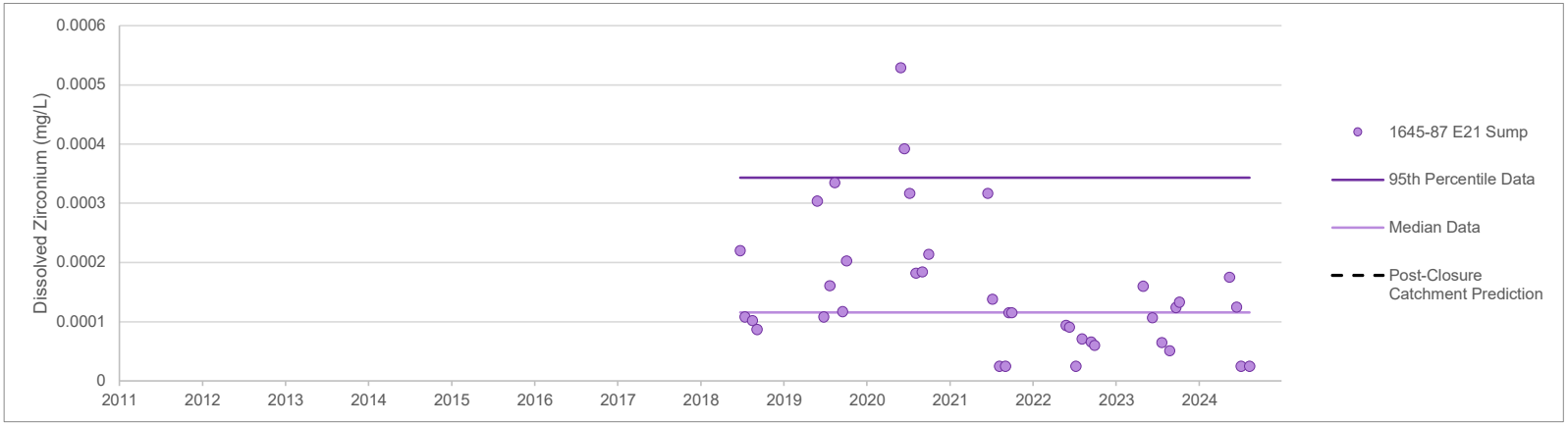


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.013	Wildlife	50
Median	0.001	Human recreational	100
Count	38	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0001	Human recreational	None
Count	38	AEMP	None

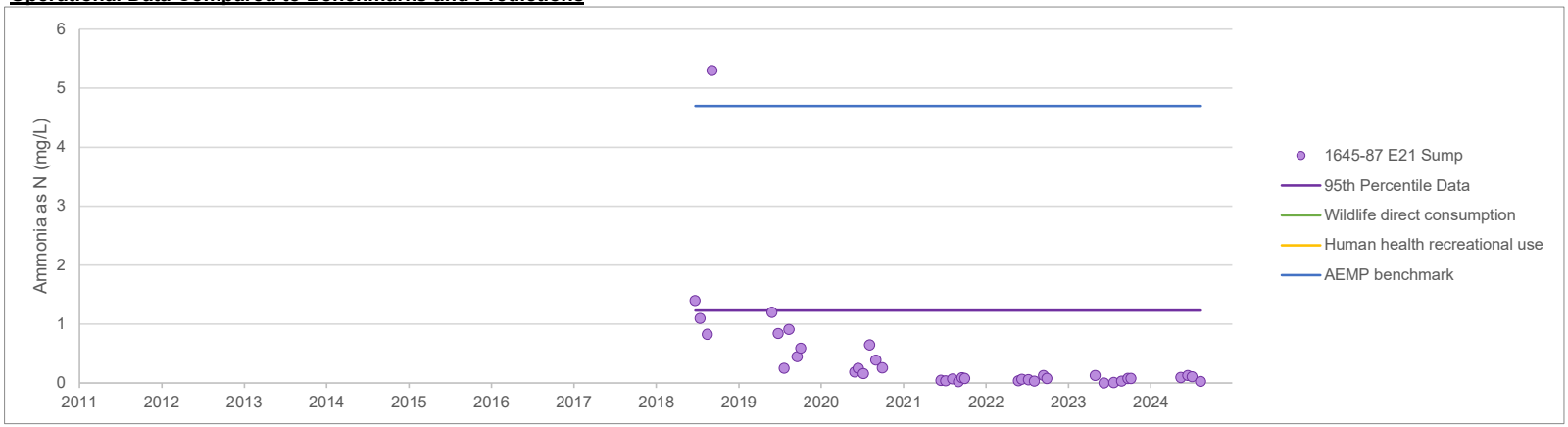
RioTinto | Diavik

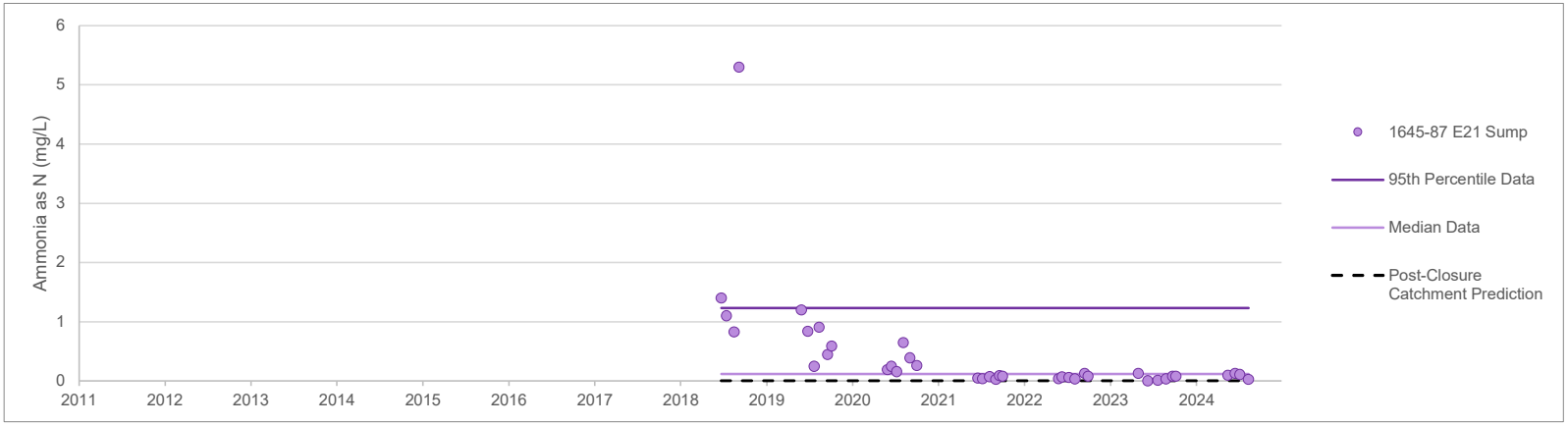
Sump E21

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions

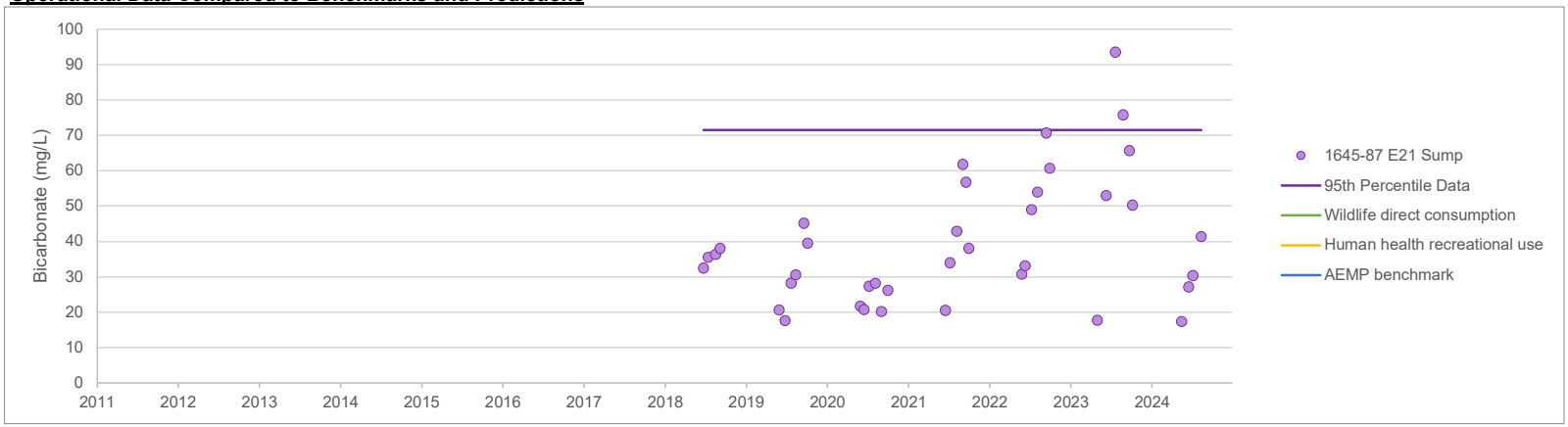


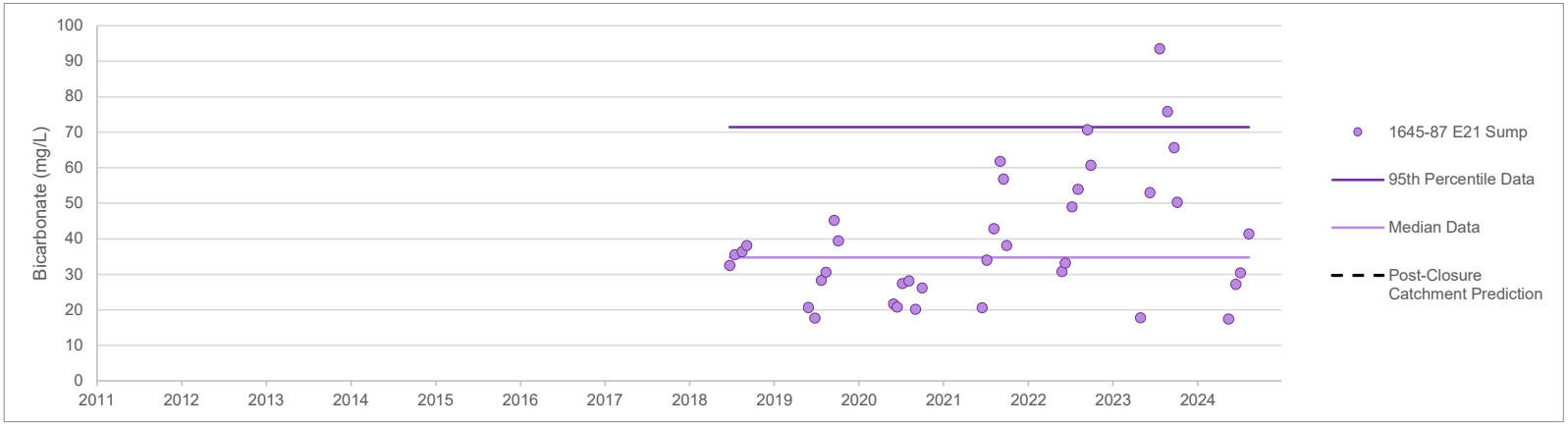


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	1.23	Wildlife	None
Median	0.12	Human recreational	None
Count	38	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions



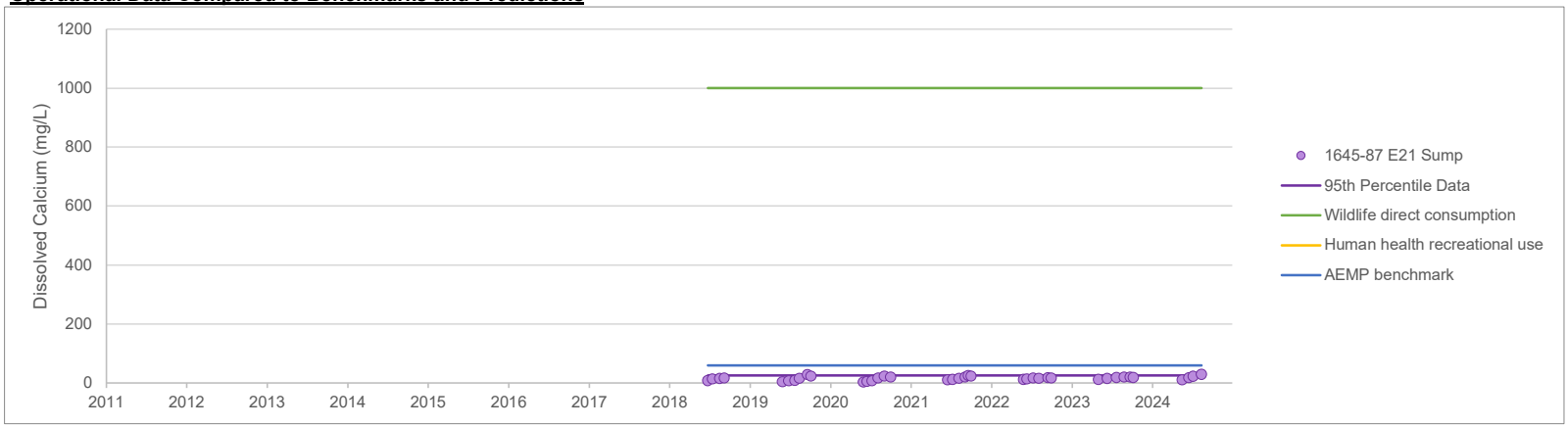


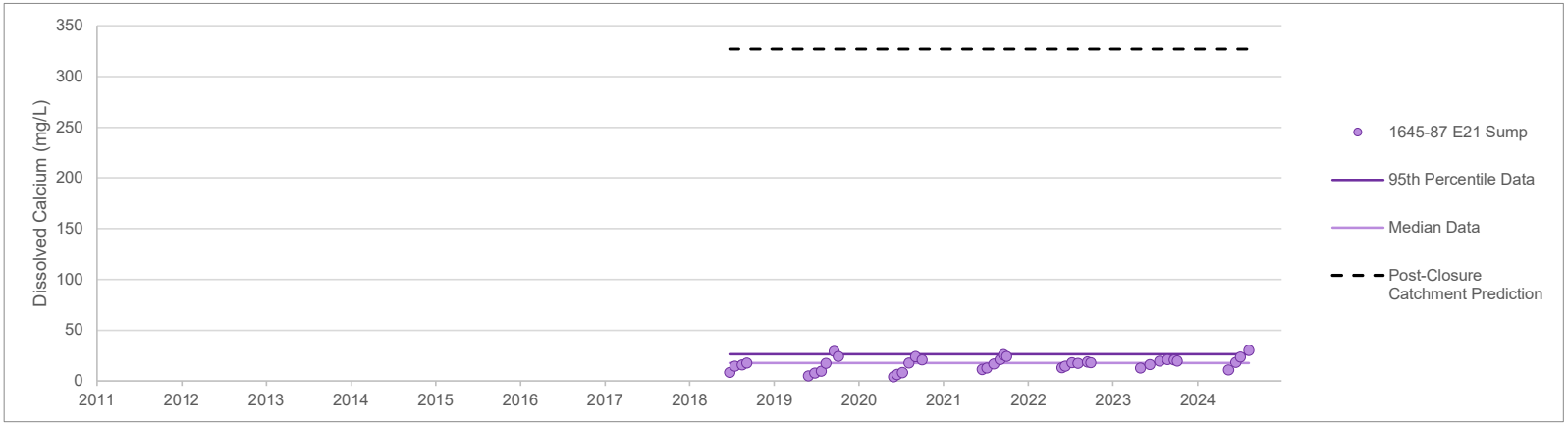
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	71.5	Wildlife	None
Median	34.8	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



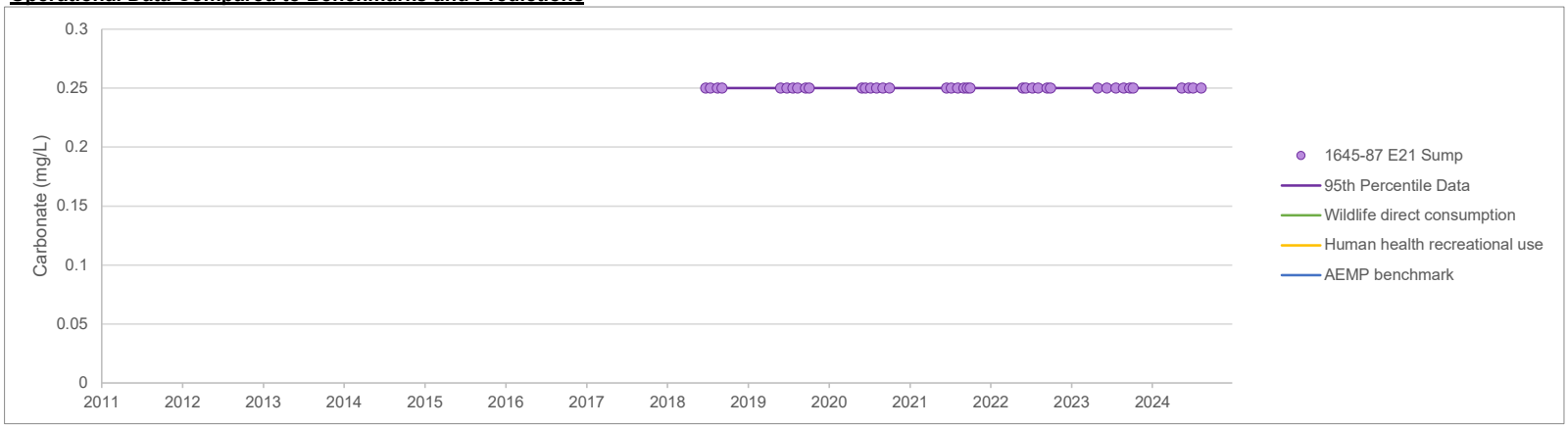


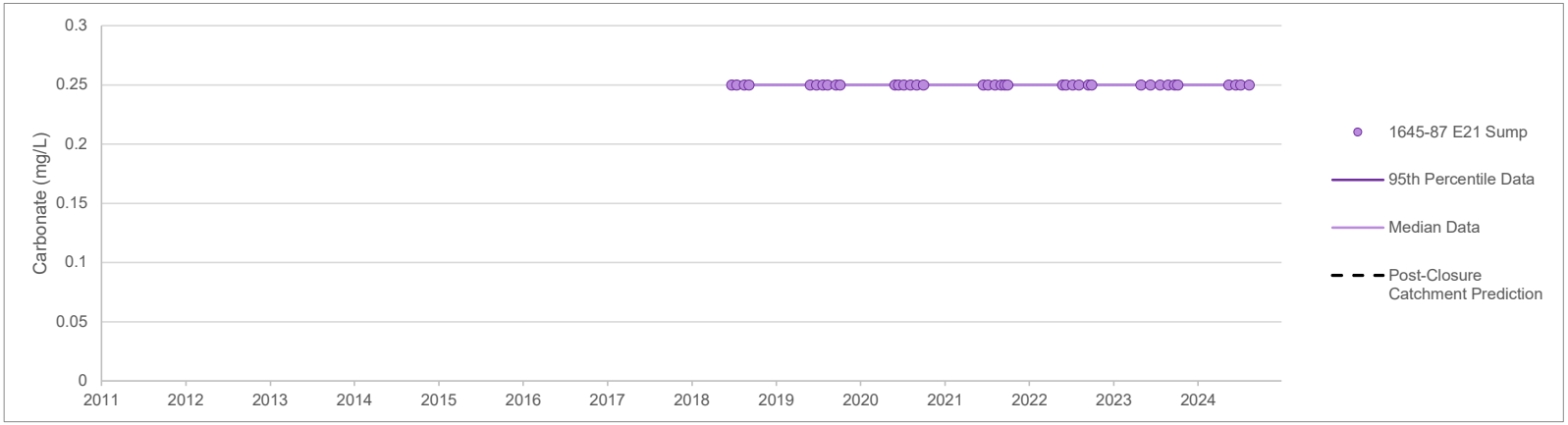
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	26.4	Wildlife	1000
Median	17.6	Human recreational	None
Count	38	AEMP	60

Operational Data Compared to Benchmarks and Predictions



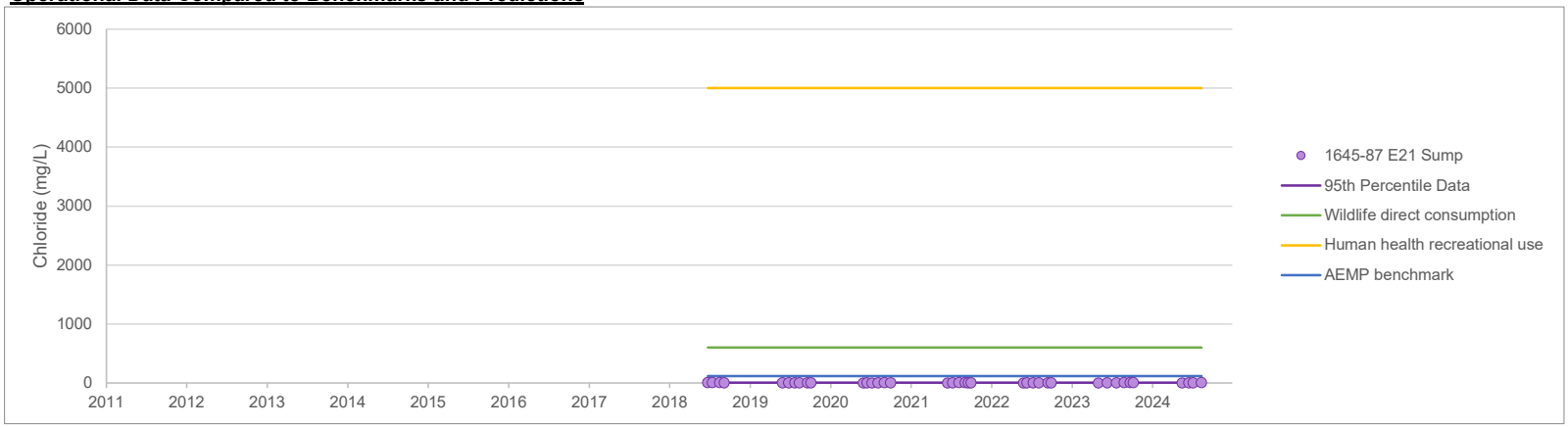


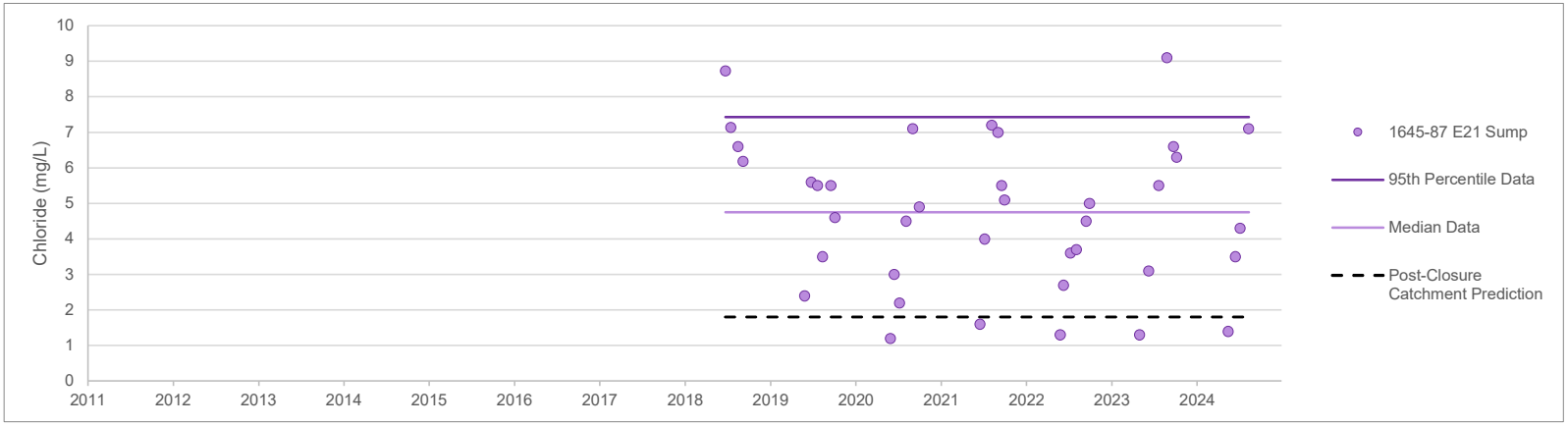
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



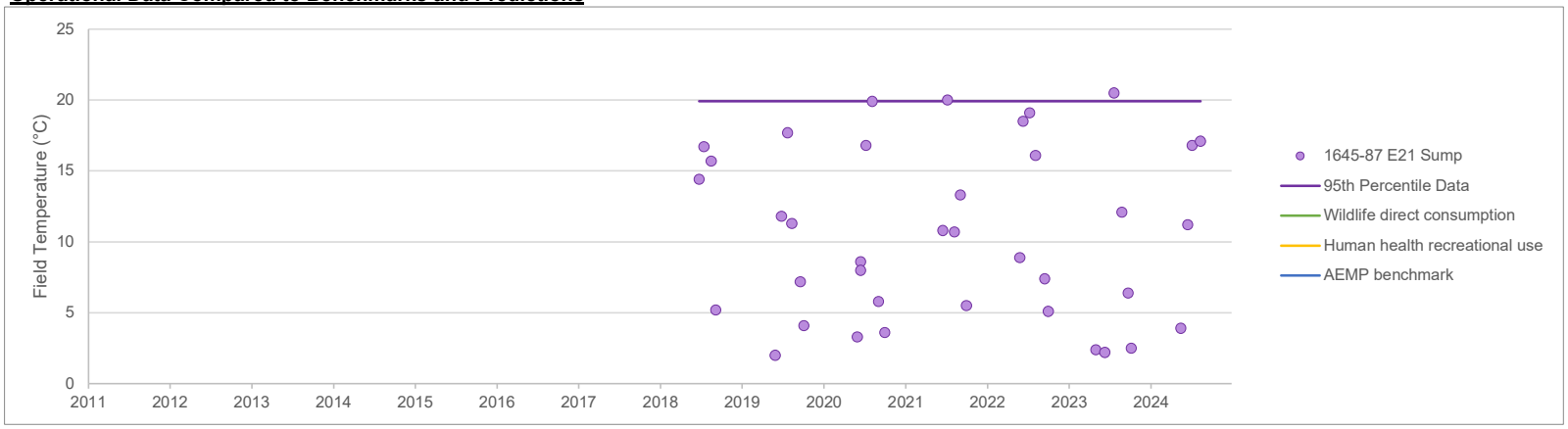


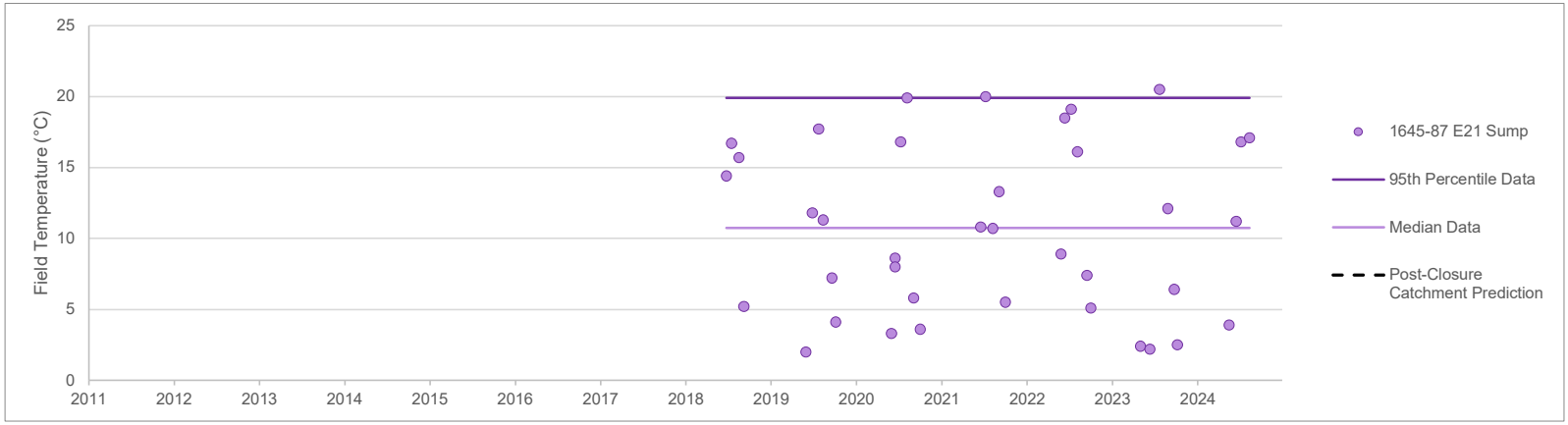
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	7.4	Wildlife	600
Median	4.8	Human recreational	5000
Count	38	AEMP	120

Operational Data Compared to Benchmarks and Predictions

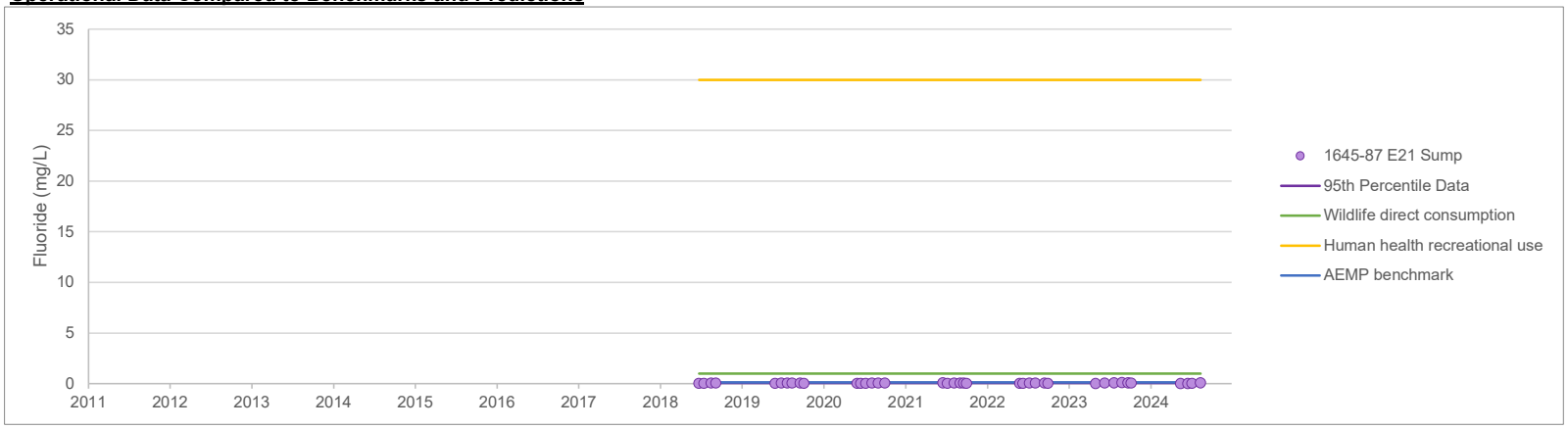


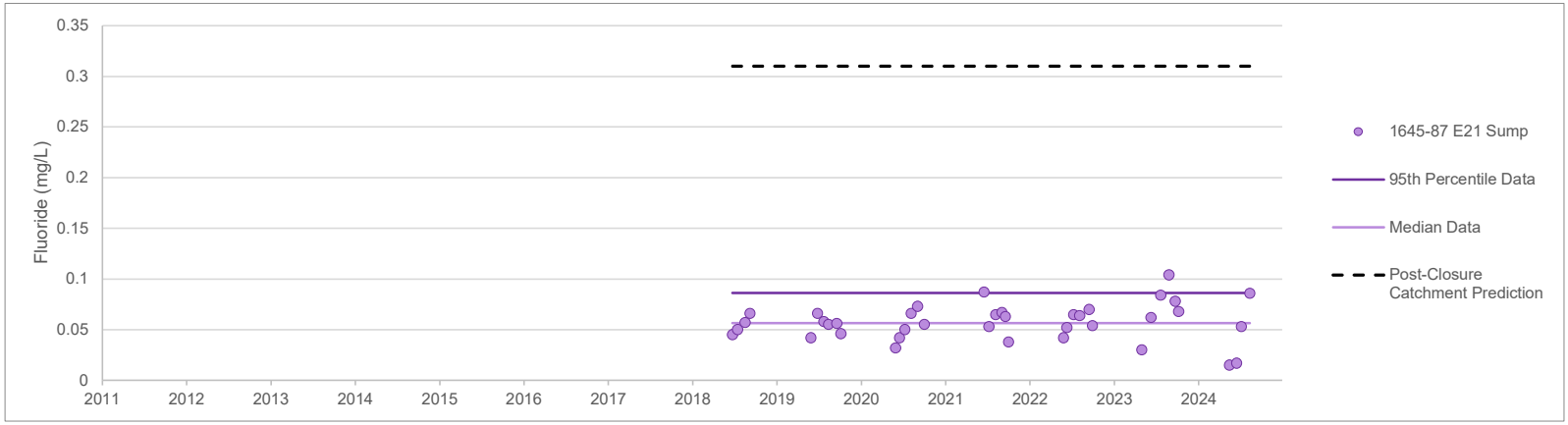


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	19.9	Wildlife	None
Median	10.8	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

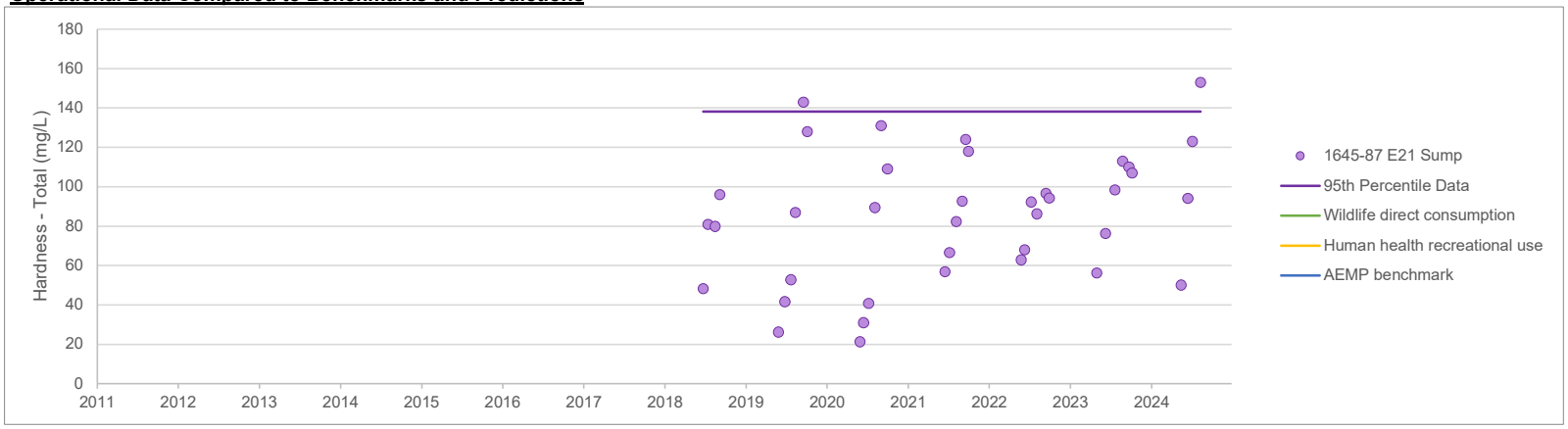


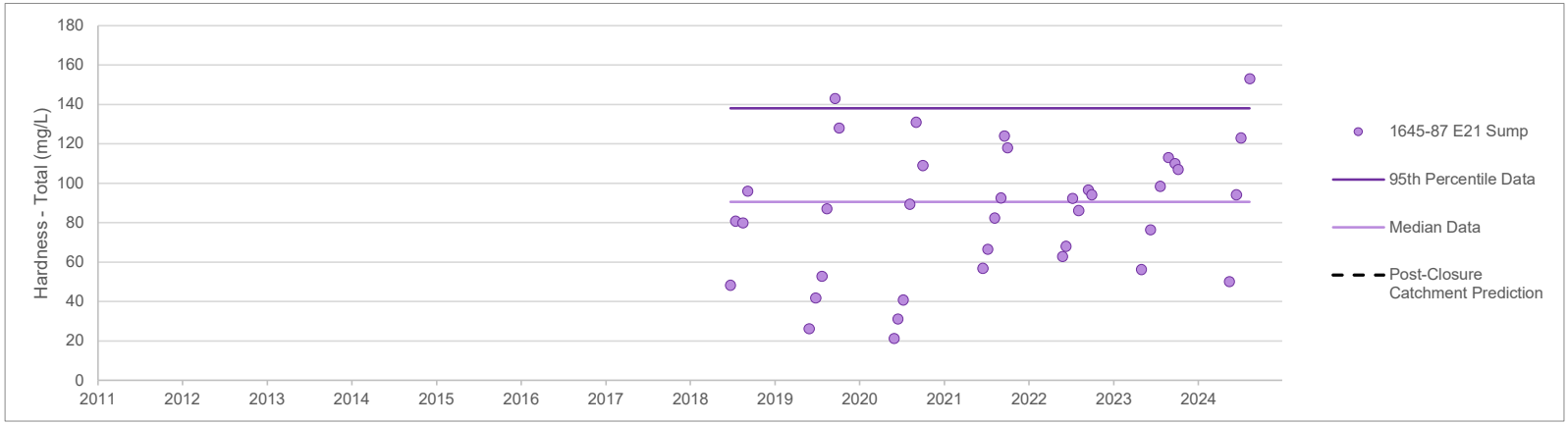


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.09	Wildlife	1
Median	0.06	Human recreational	30
Count	38	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



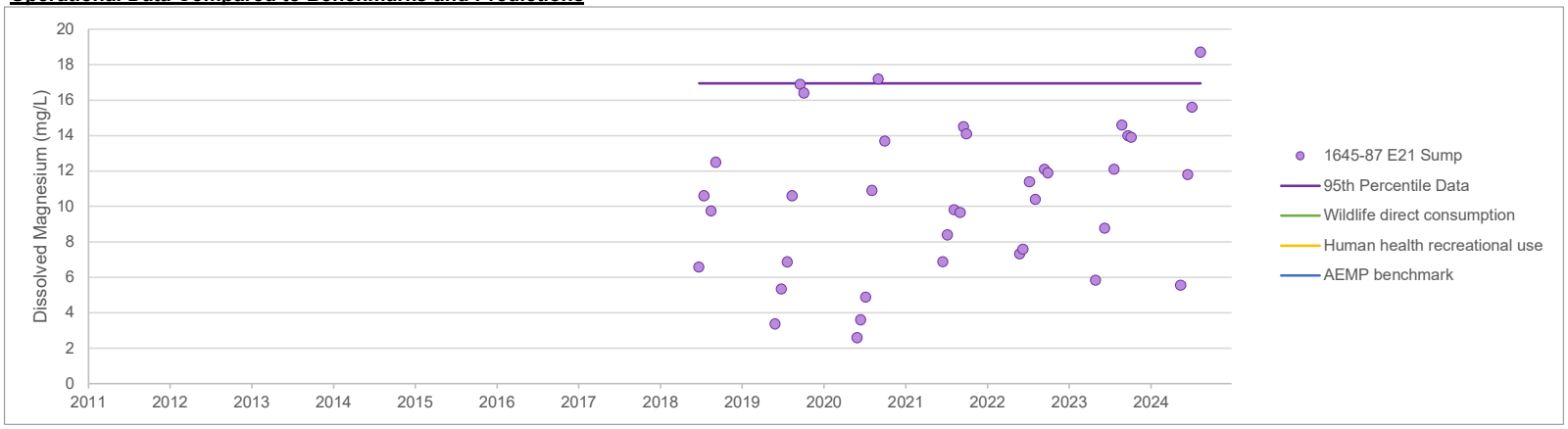


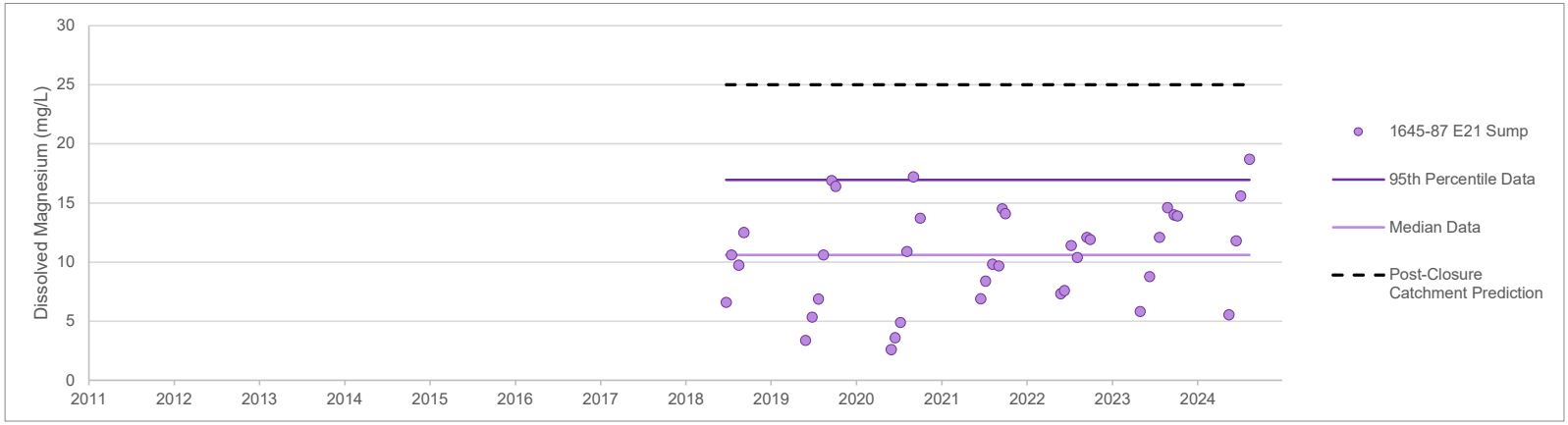
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	138	Wildlife	None
Median	91	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

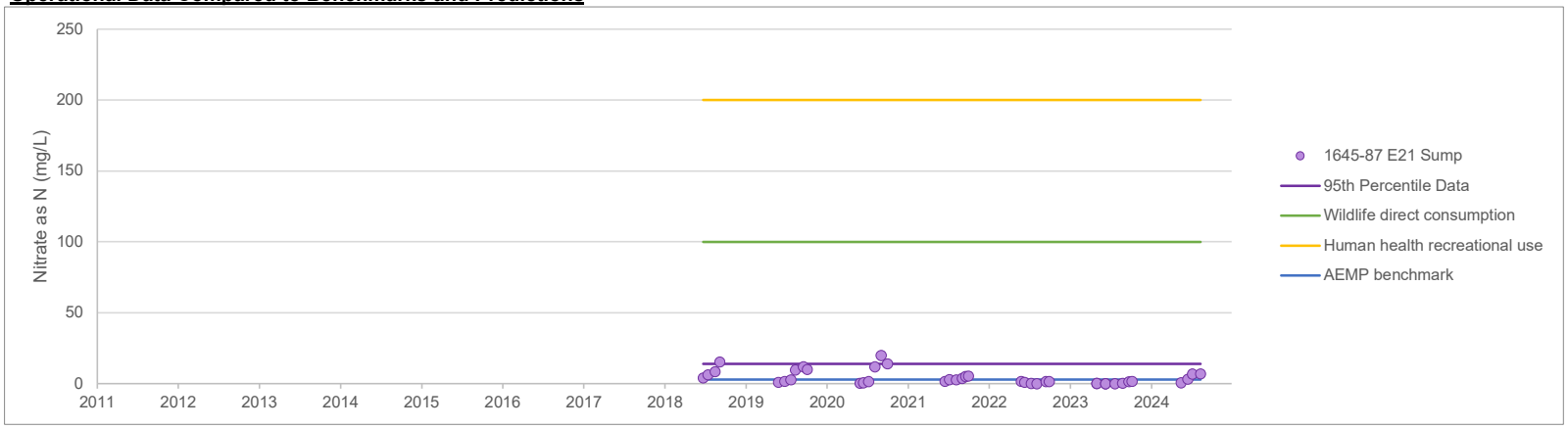


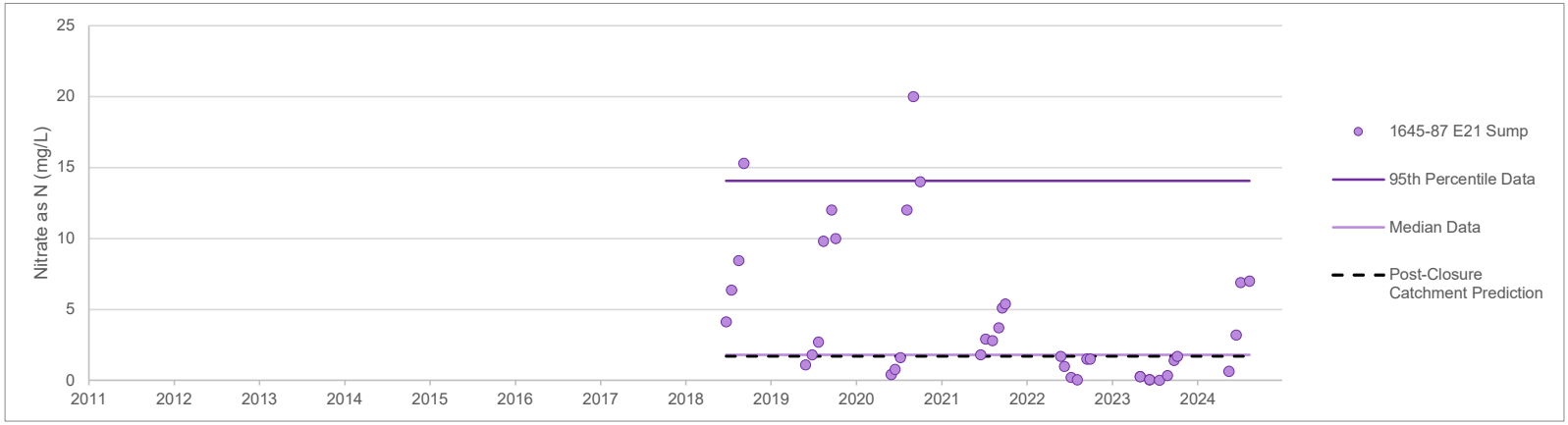


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	16.9	Wildlife	None
Median	10.6	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

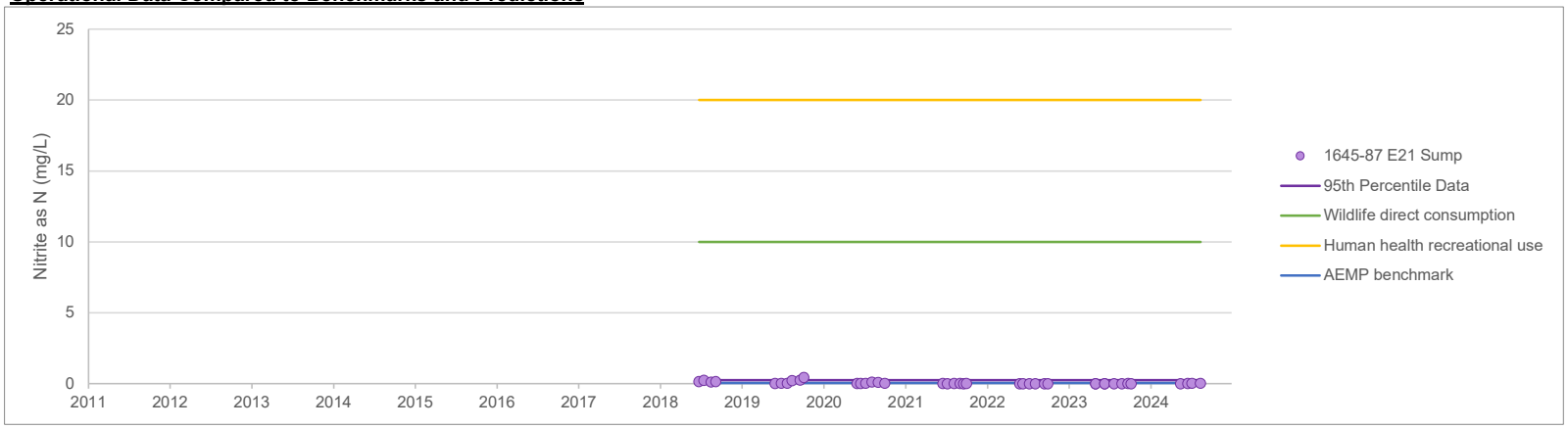


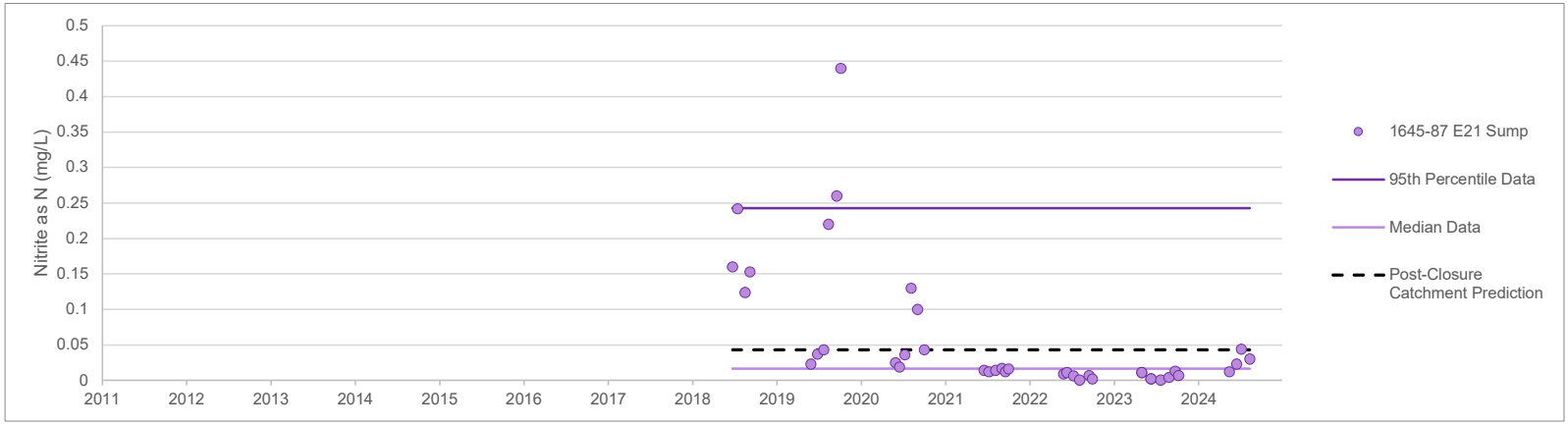


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	14.1	Wildlife	100
Median	1.8	Human recreational	200
Count	40	AEMP	3

Operational Data Compared to Benchmarks and Predictions



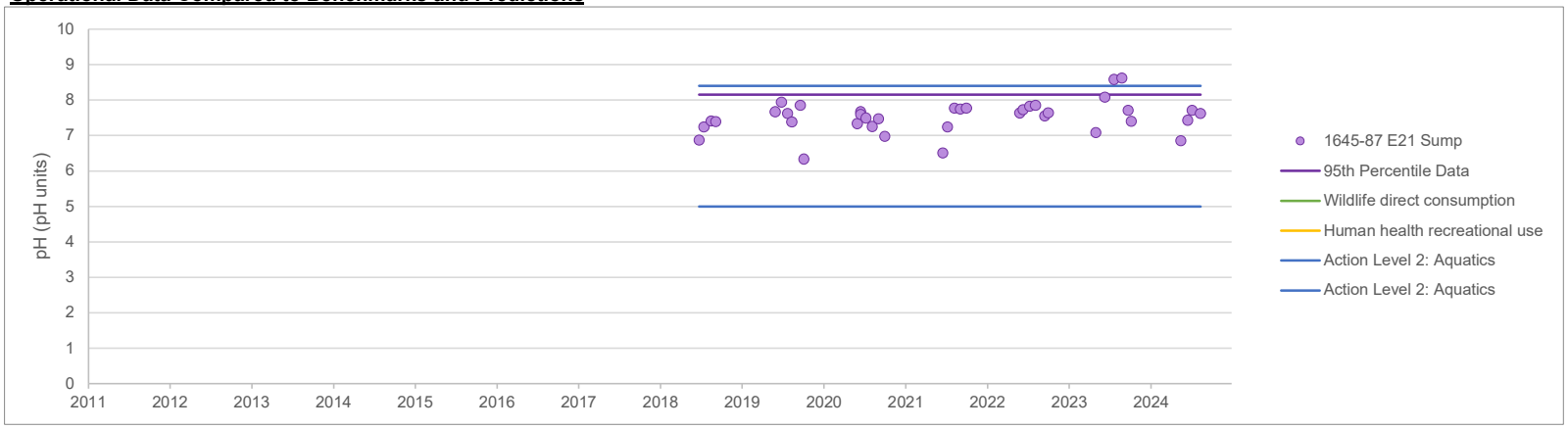


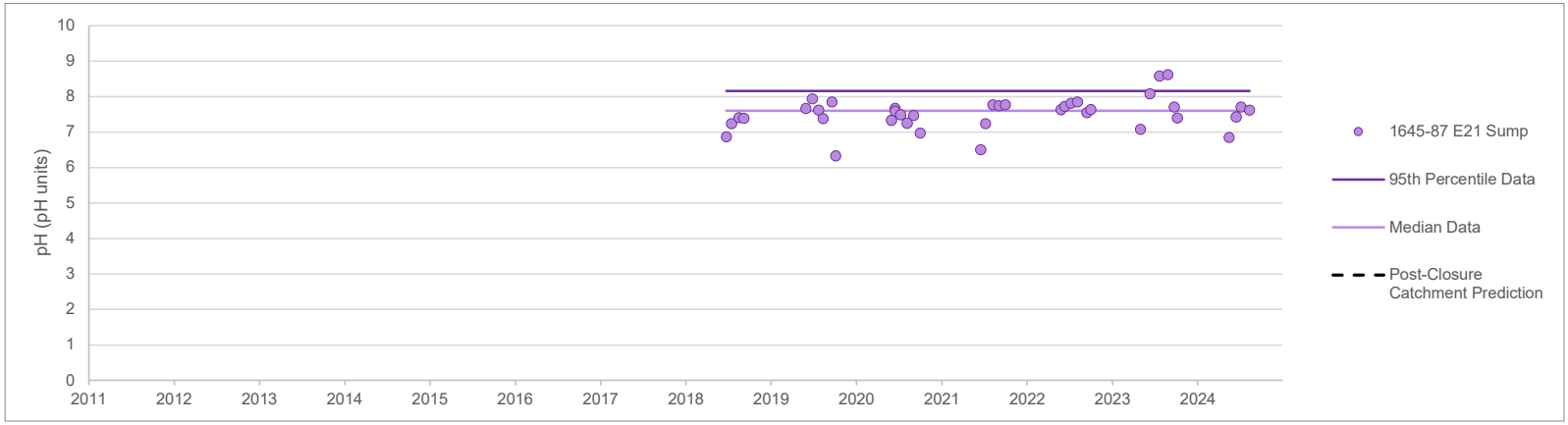
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.243	Wildlife	10.0
Median	0.017	Human recreational	20.0
Count	40	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



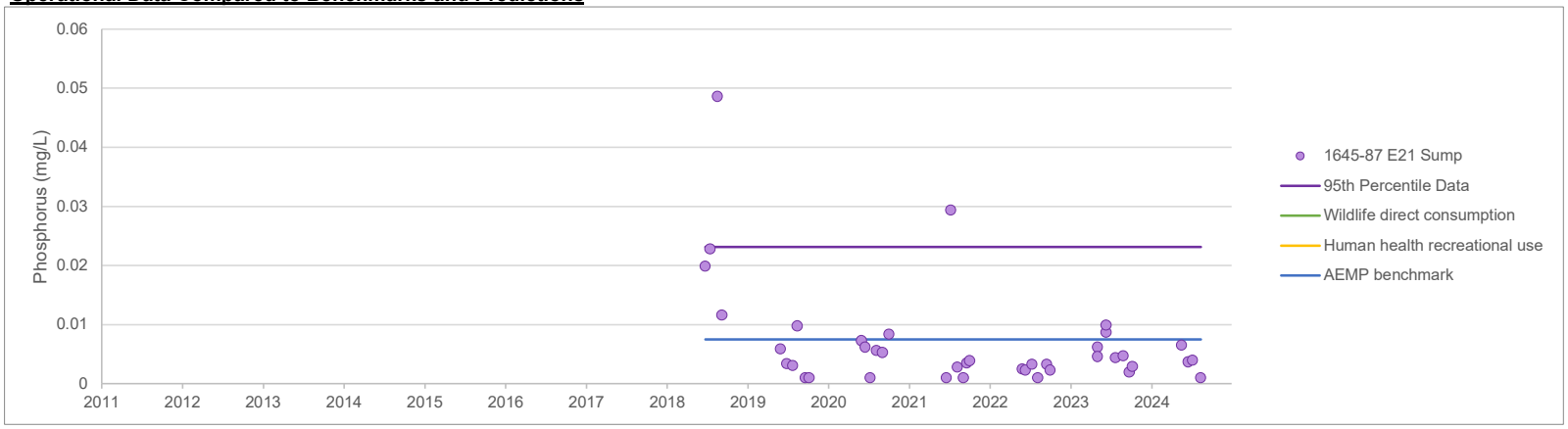


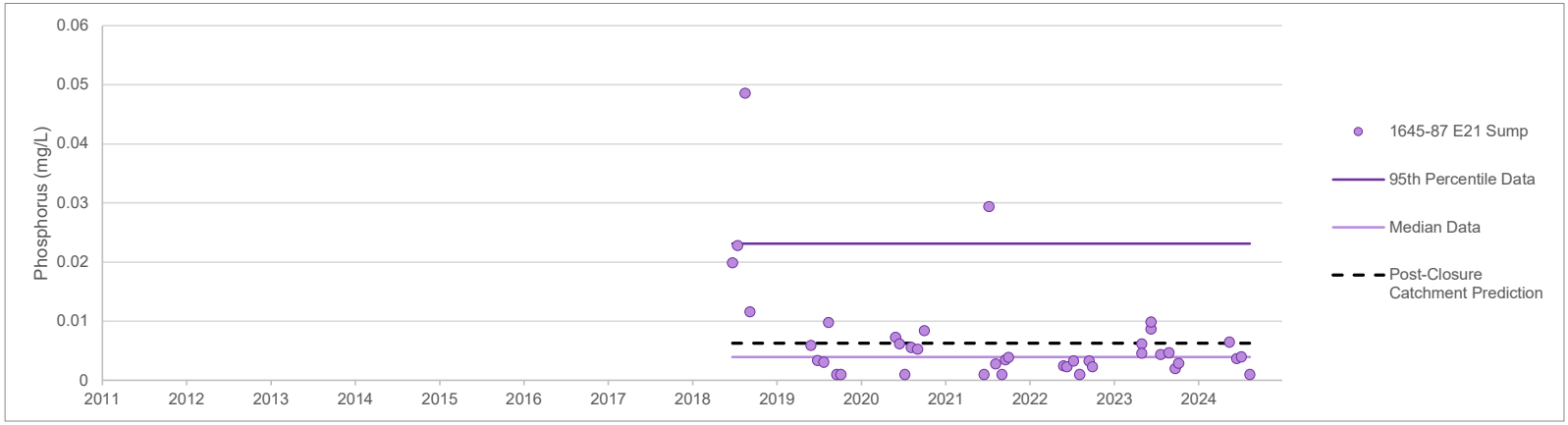
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	8.2	Wildlife	None
Median	7.6	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions

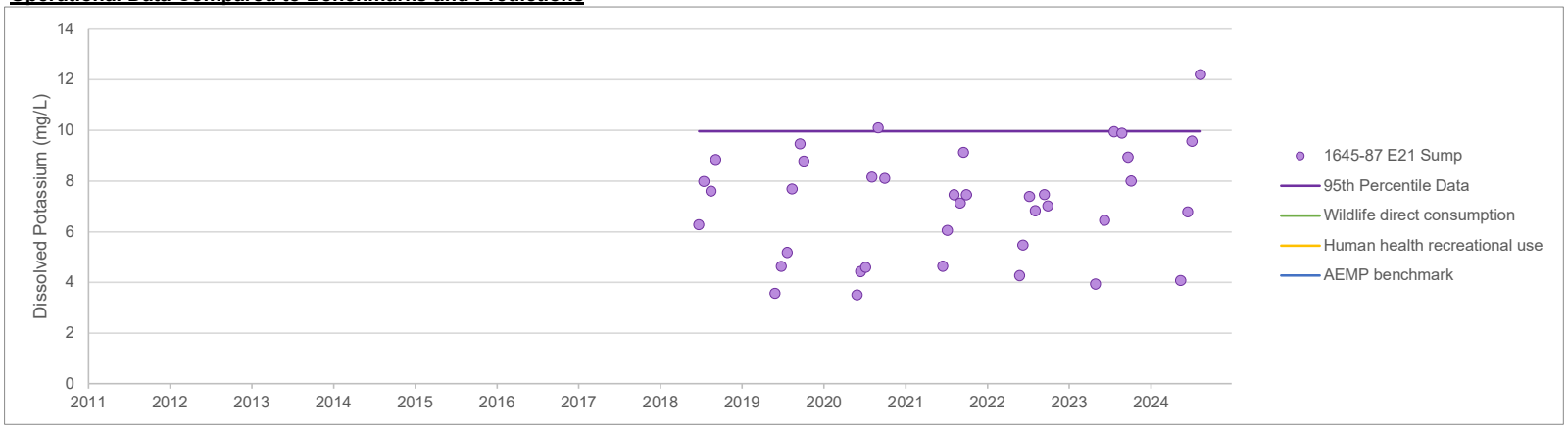


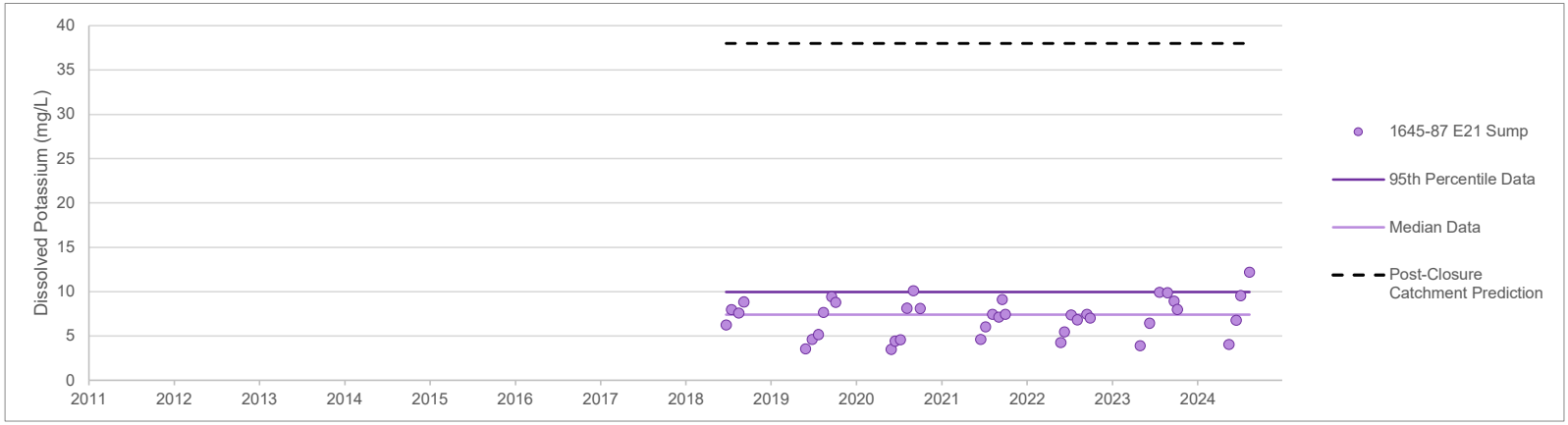


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.023	Wildlife	None
Median	0.004	Human recreational	None
Count	40	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions

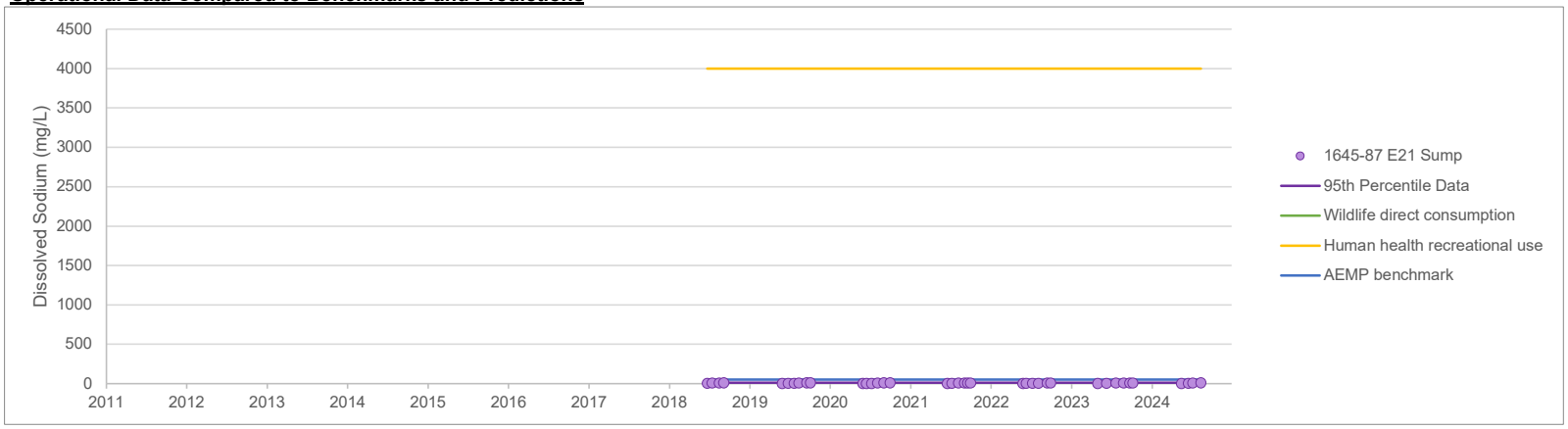


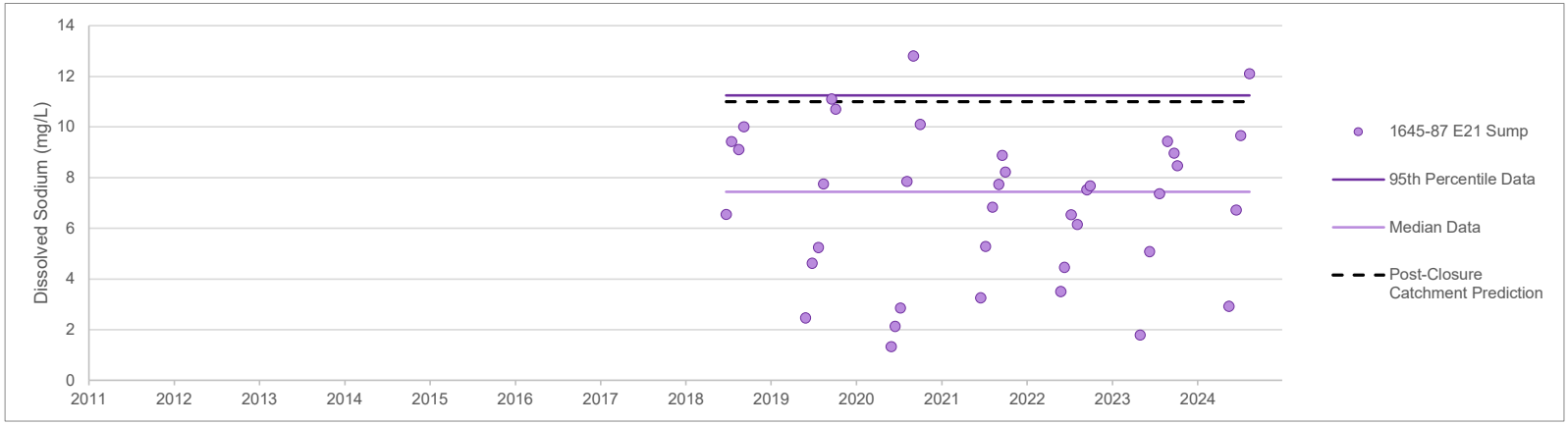


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	10.0	Wildlife	None
Median	7.4	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



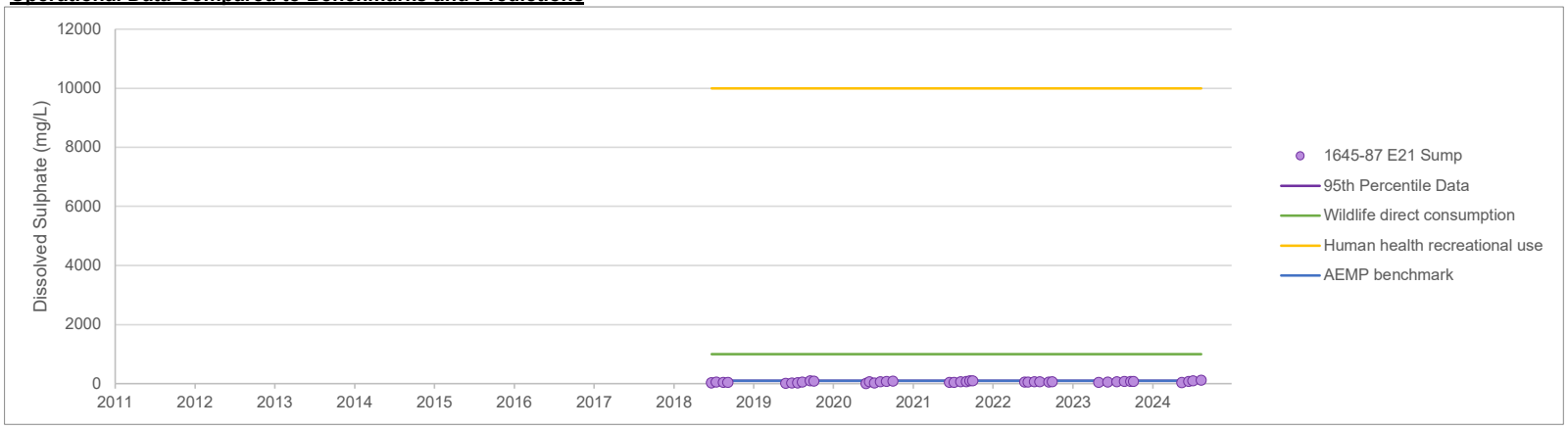


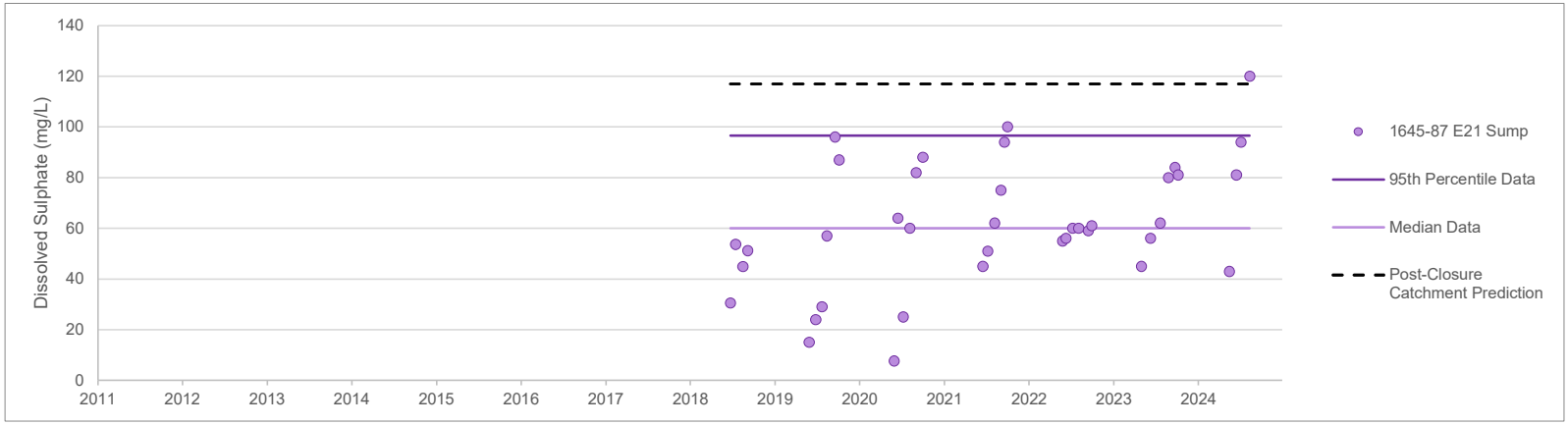
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	11.3	Wildlife	None
Median	7.4	Human recreational	4000
Count	38	AEMP	52

Operational Data Compared to Benchmarks and Predictions



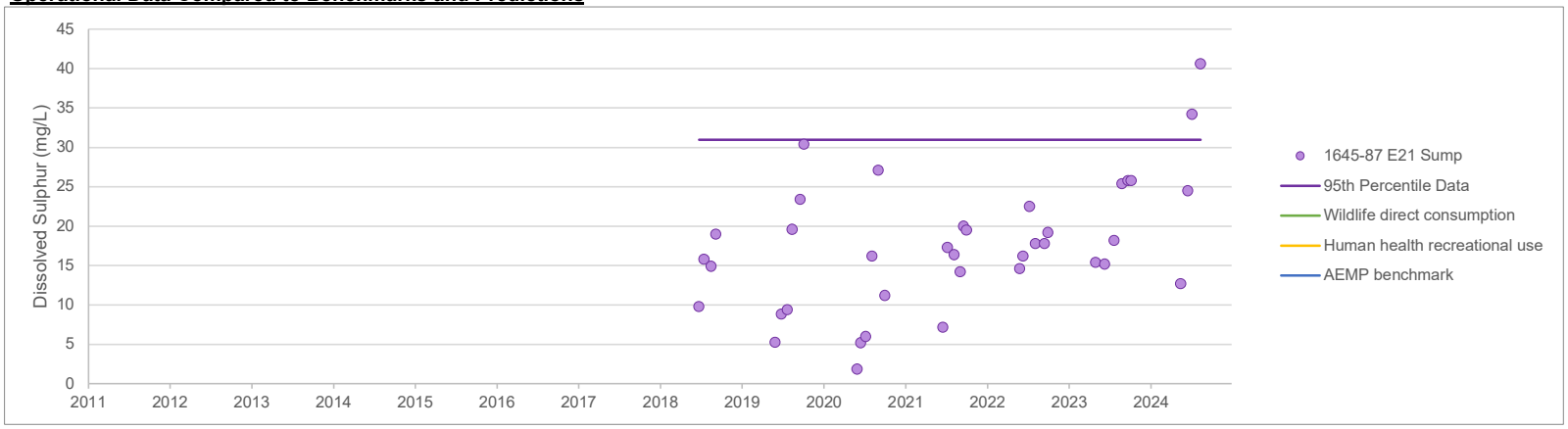


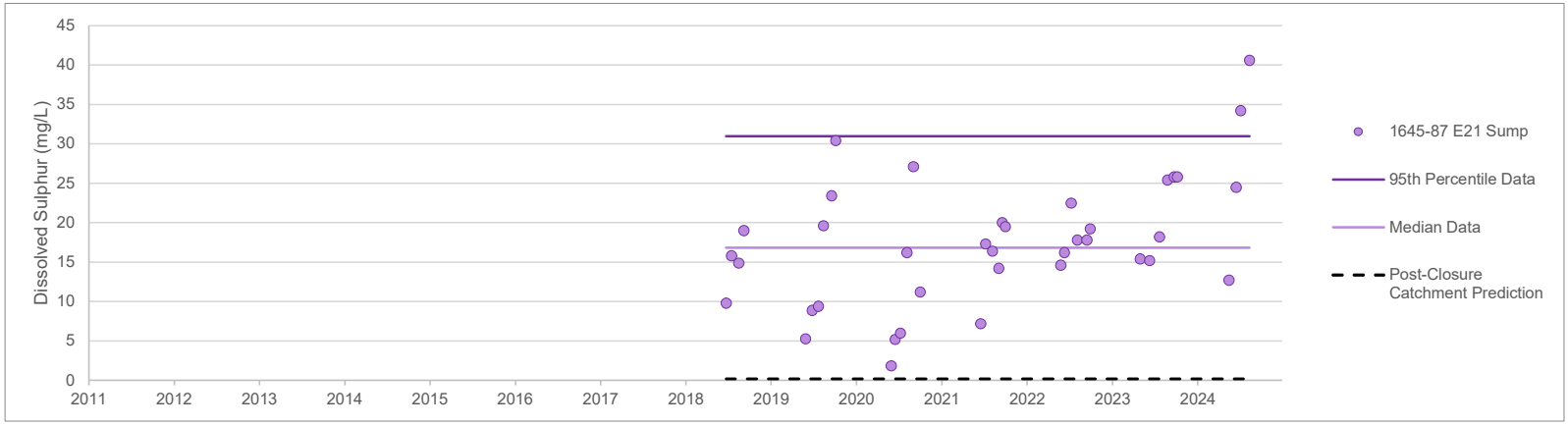
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	97	Wildlife	1000
Median	60	Human recreational	10000
Count	38	AEMP	100

Operational Data Compared to Benchmarks and Predictions



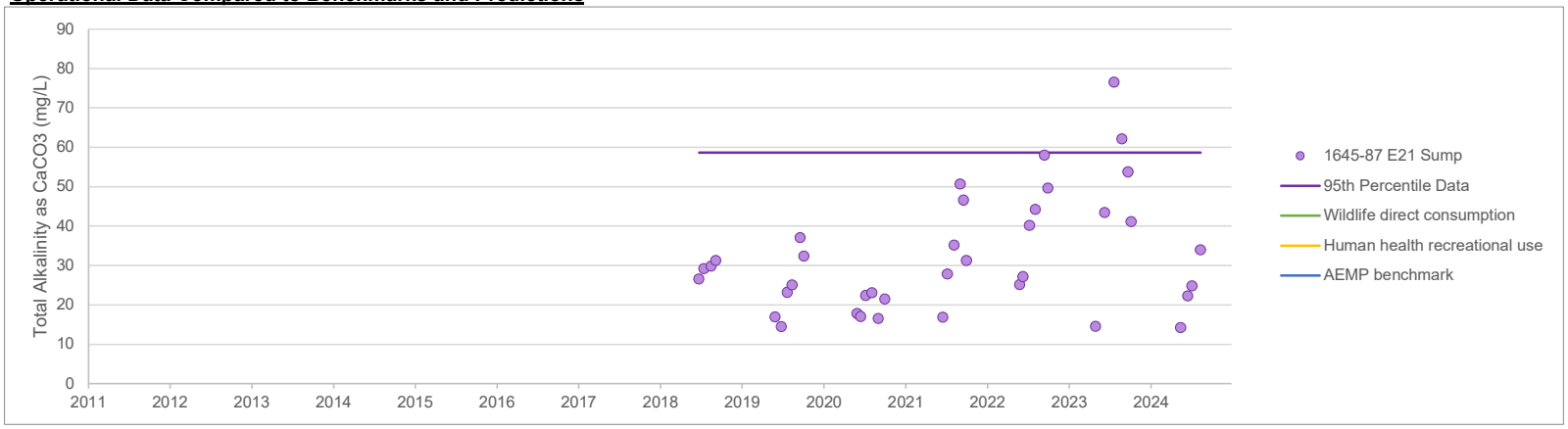


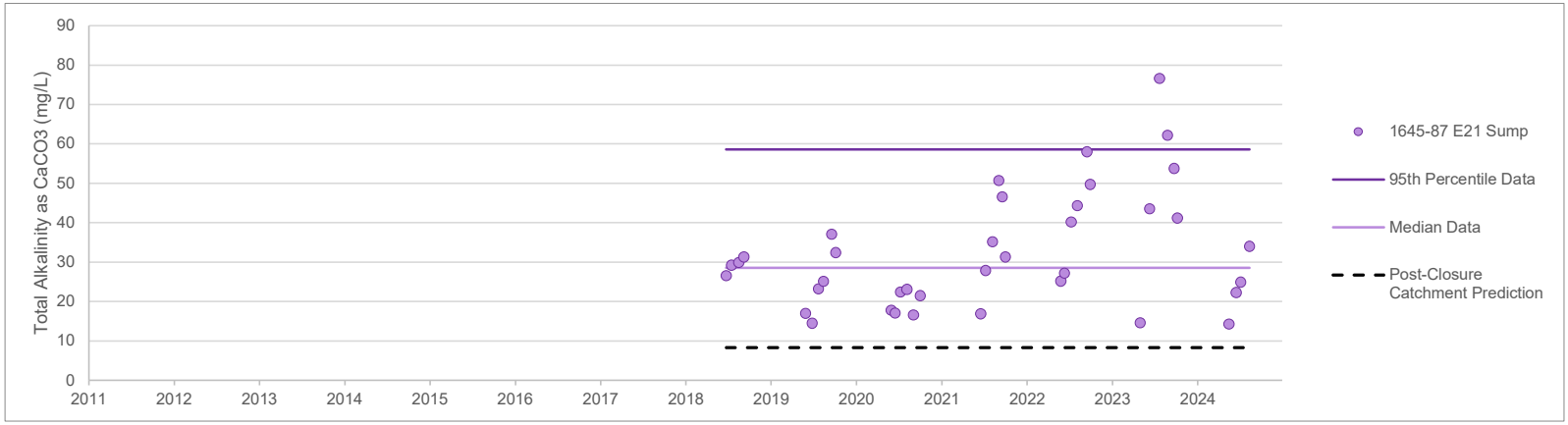
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	31.0	Wildlife	None
Median	16.9	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



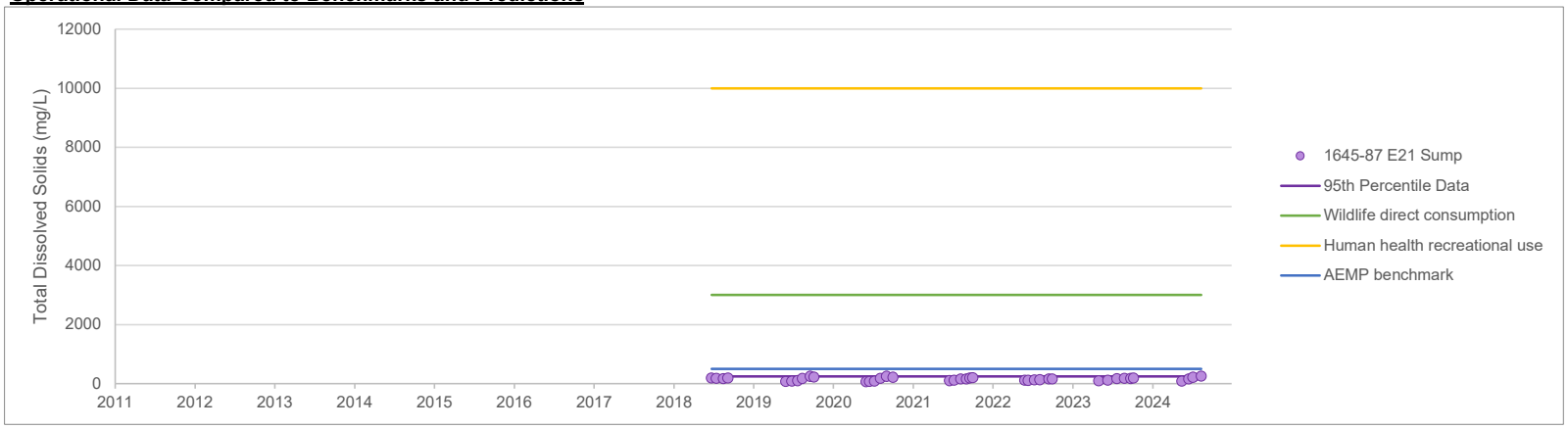


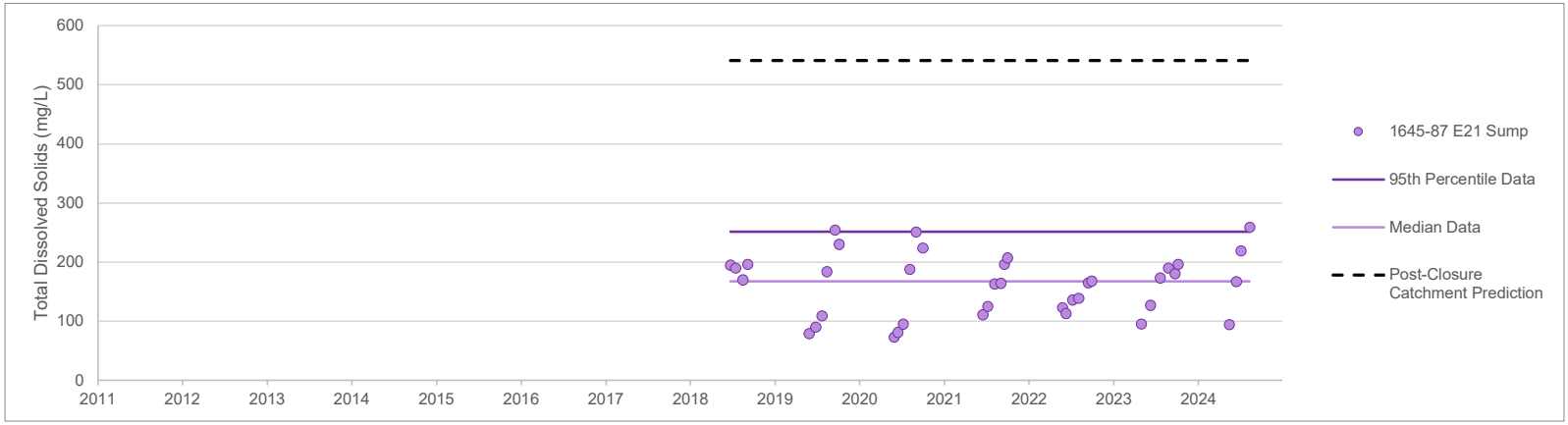
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	58.6	Wildlife	None
Median	28.6	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions



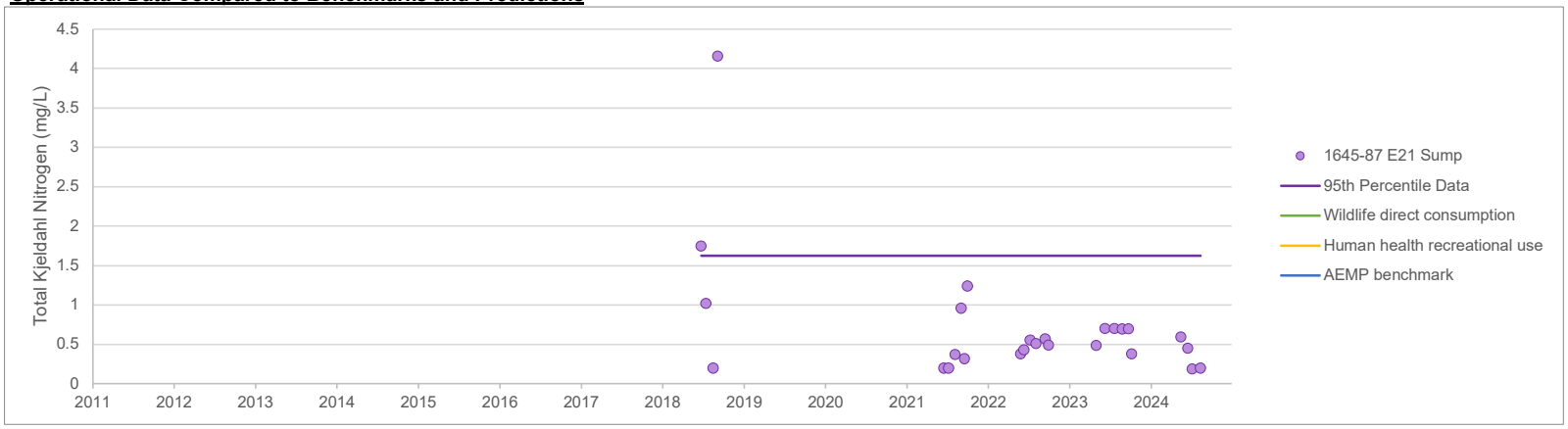


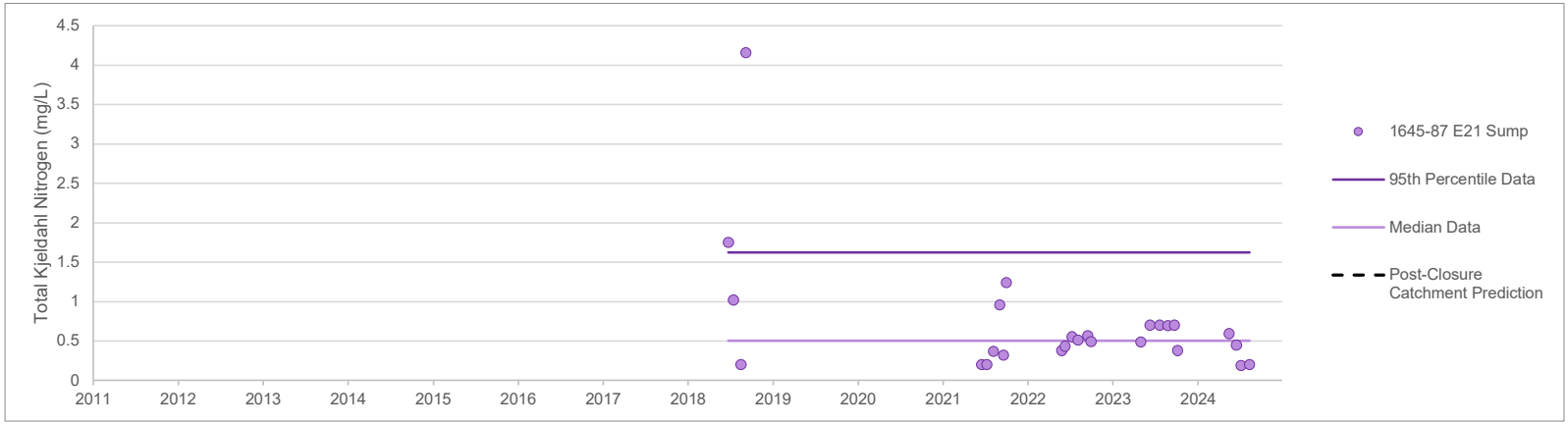
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	251	Wildlife	3000
Median	168	Human recreational	10000
Count	38	AEMP	500

Operational Data Compared to Benchmarks and Predictions



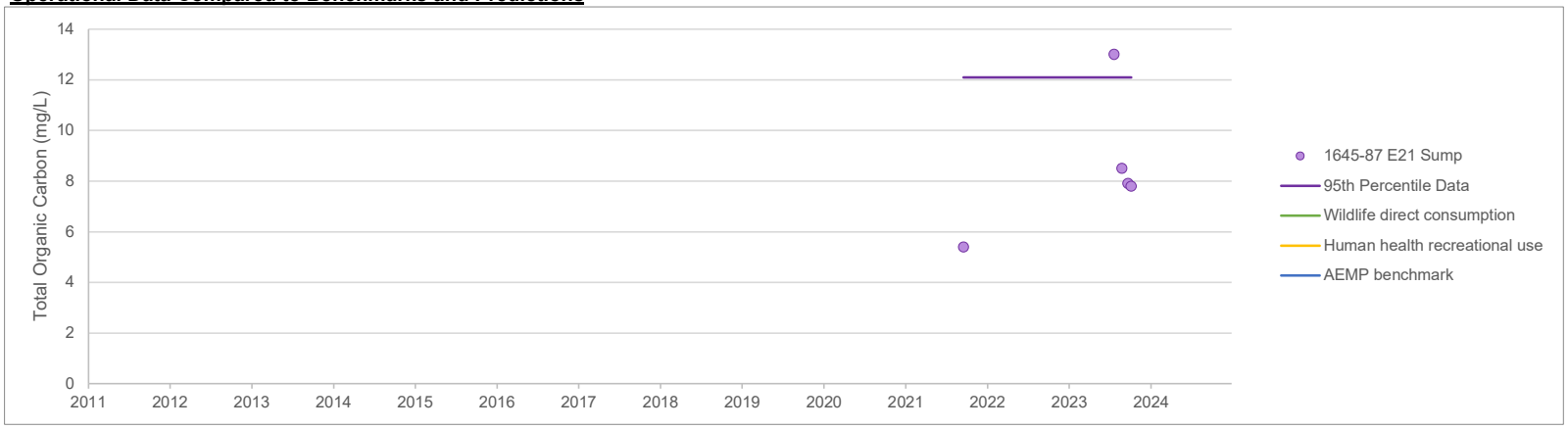


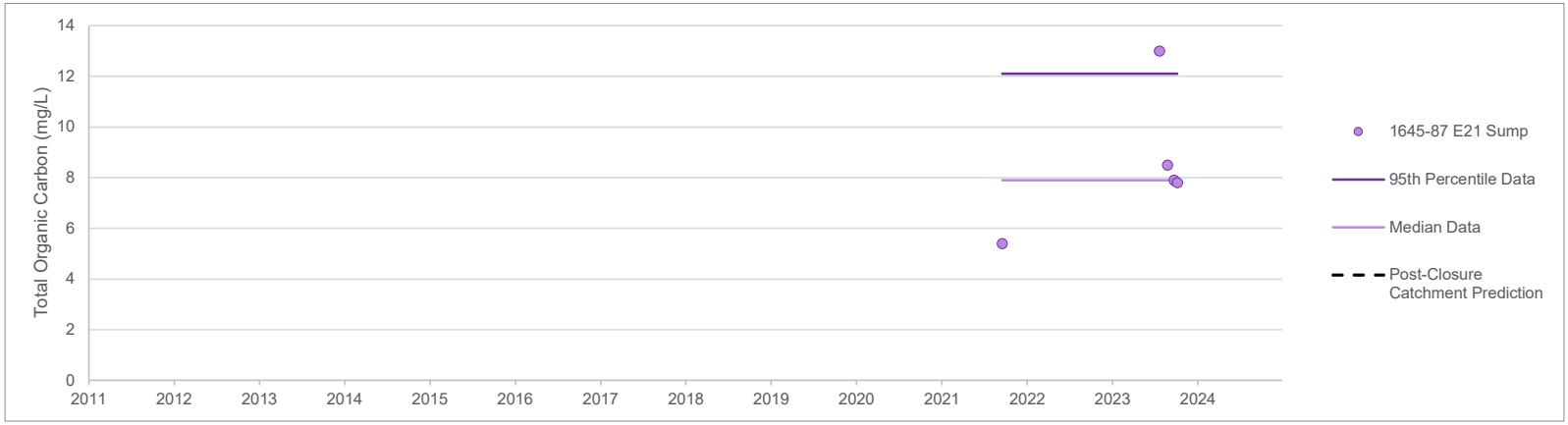
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.6	Wildlife	None
Median	0.5	Human recreational	None
Count	26	AEMP	None

Operational Data Compared to Benchmarks and Predictions

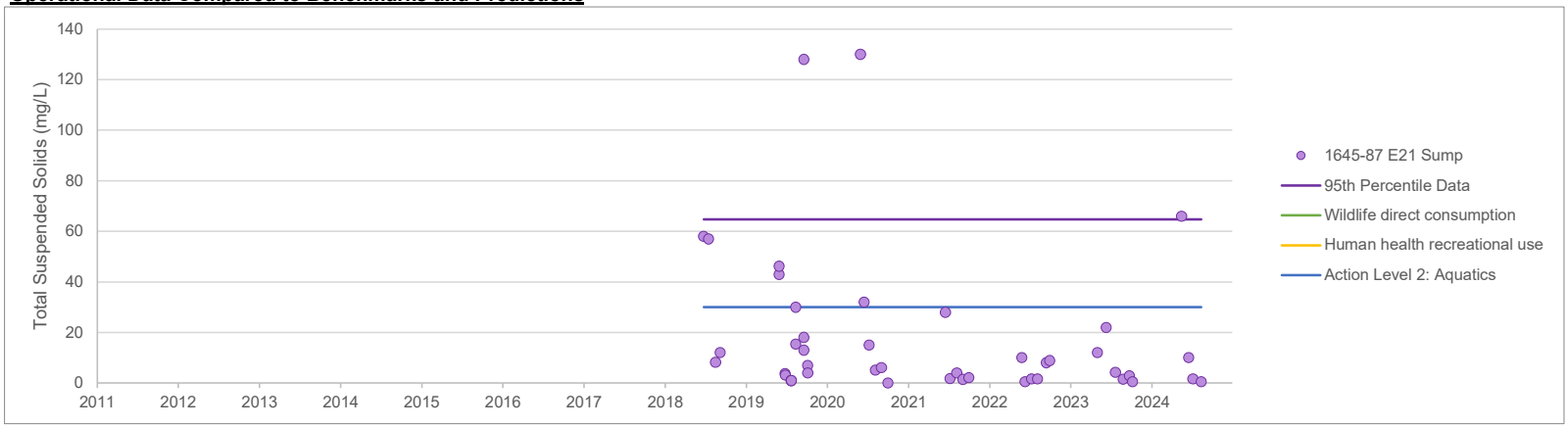


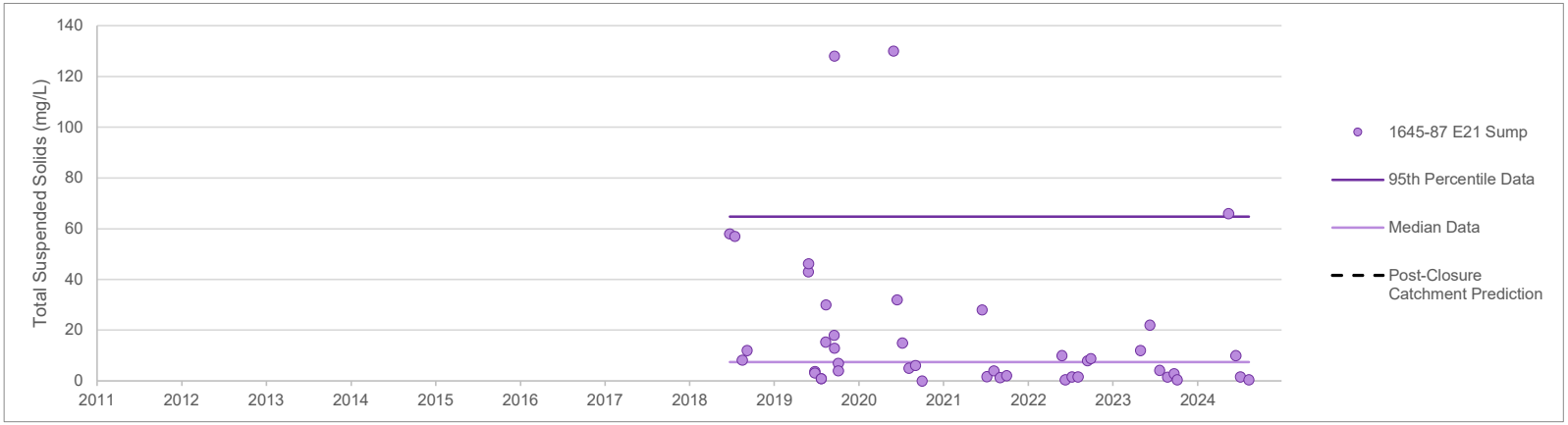


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	12.1	Wildlife	None
Median	7.9	Human recreational	None
Count	5	AEMP	None

Operational Data Compared to Benchmarks and Predictions

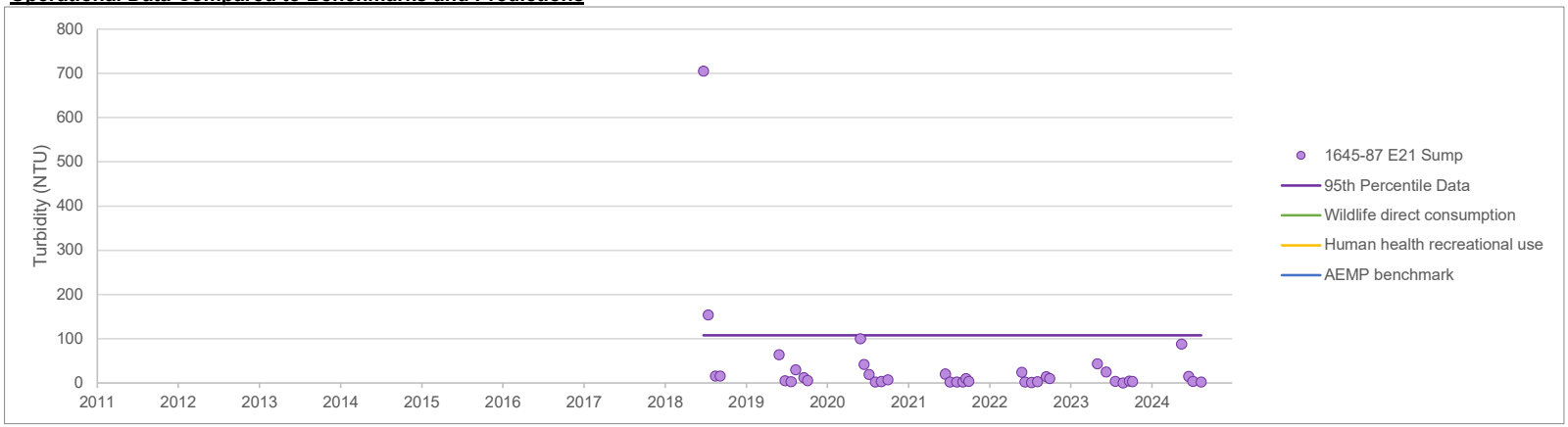


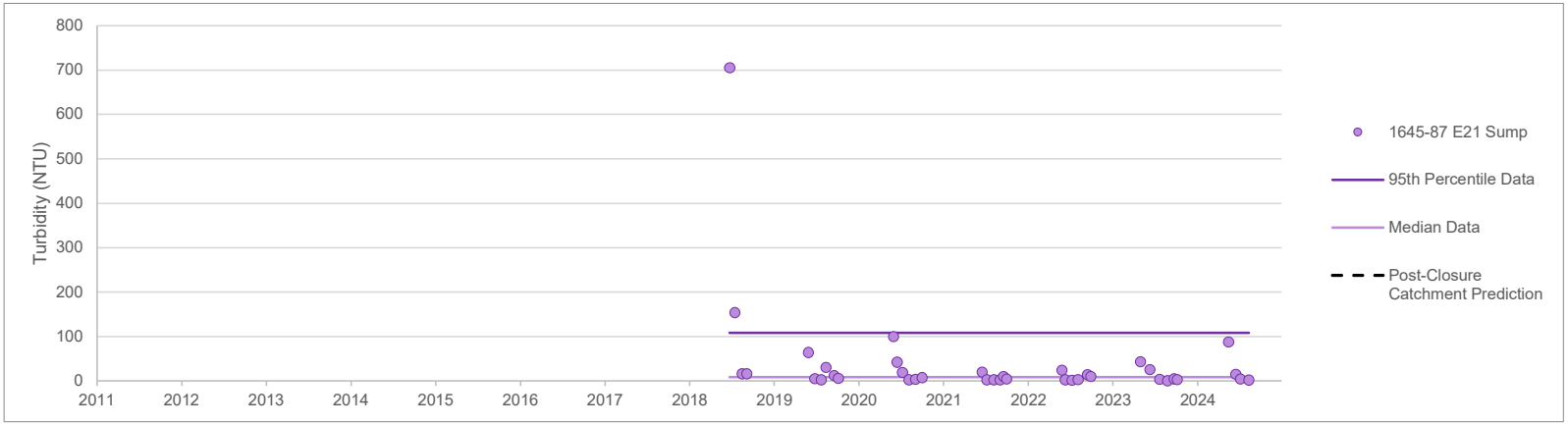


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	64.8	Wildlife	None
Median	7.5	Human recreational	None
Count	44	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



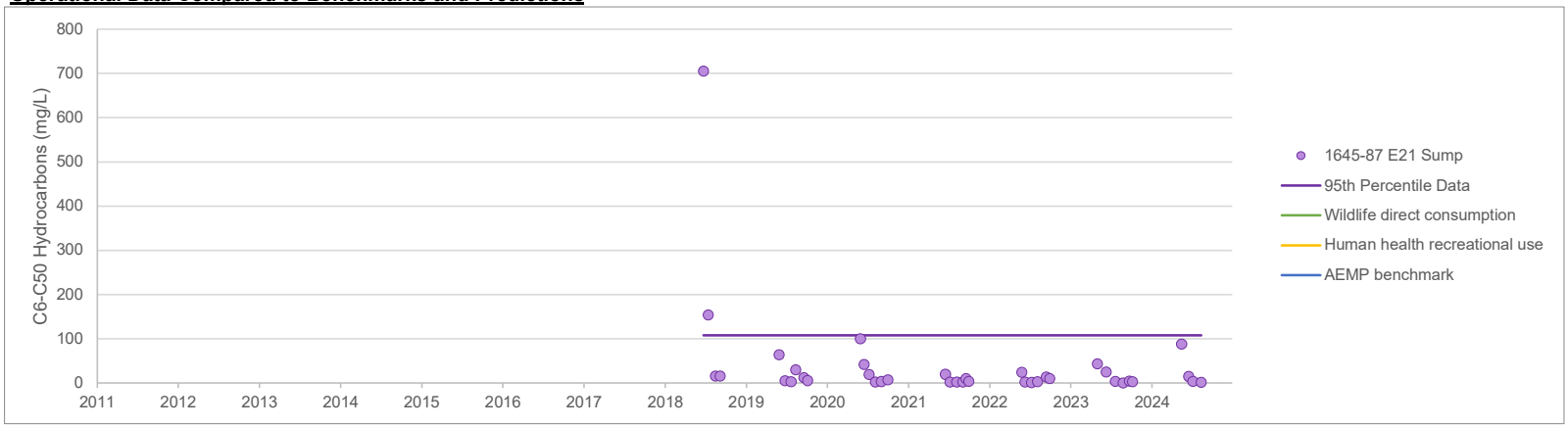


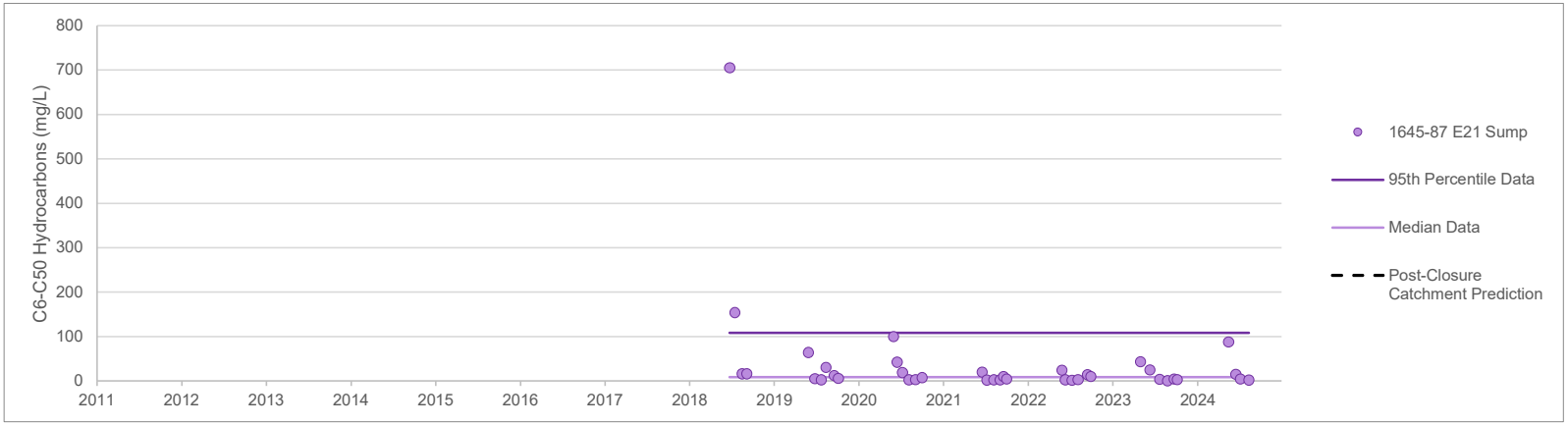
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	108.1	Wildlife	None
Median	8.6	Human recreational	None
Count	38	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

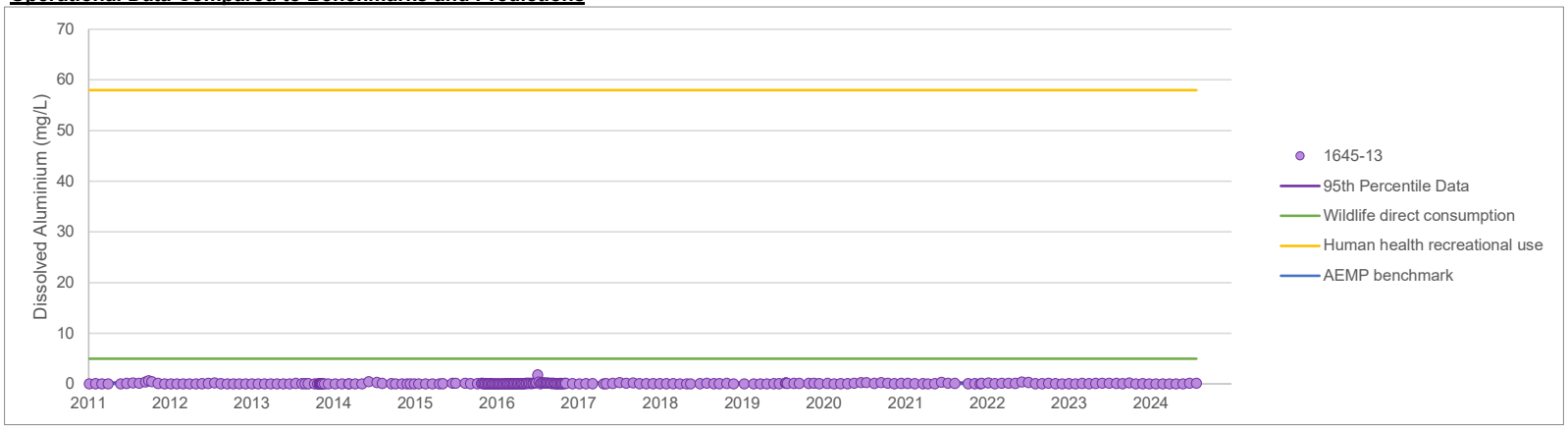
SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	5	AEMP	None

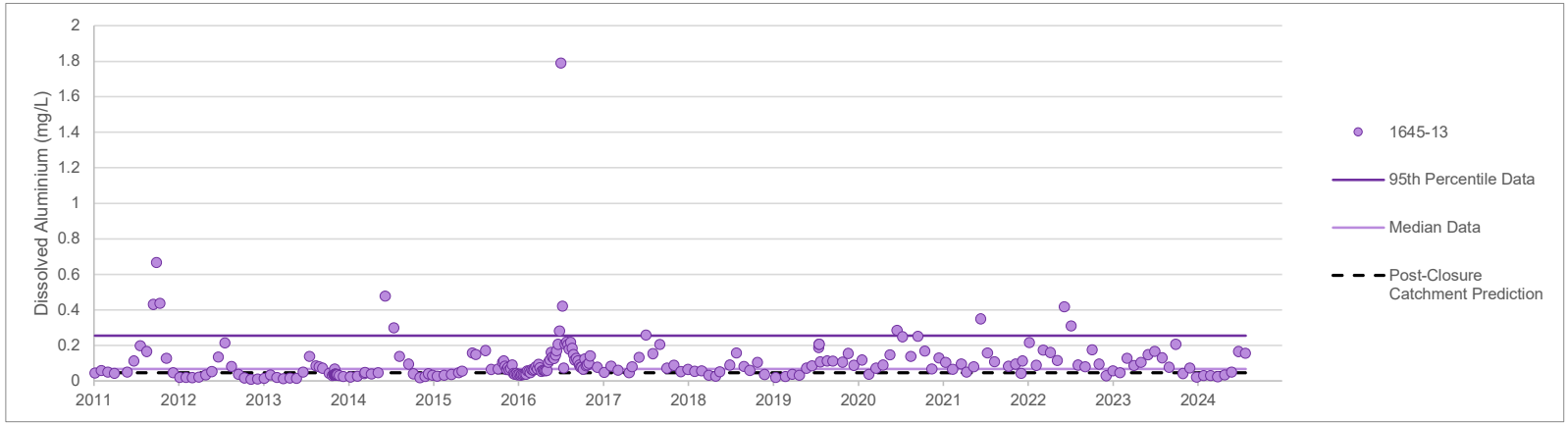
North Inlet

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



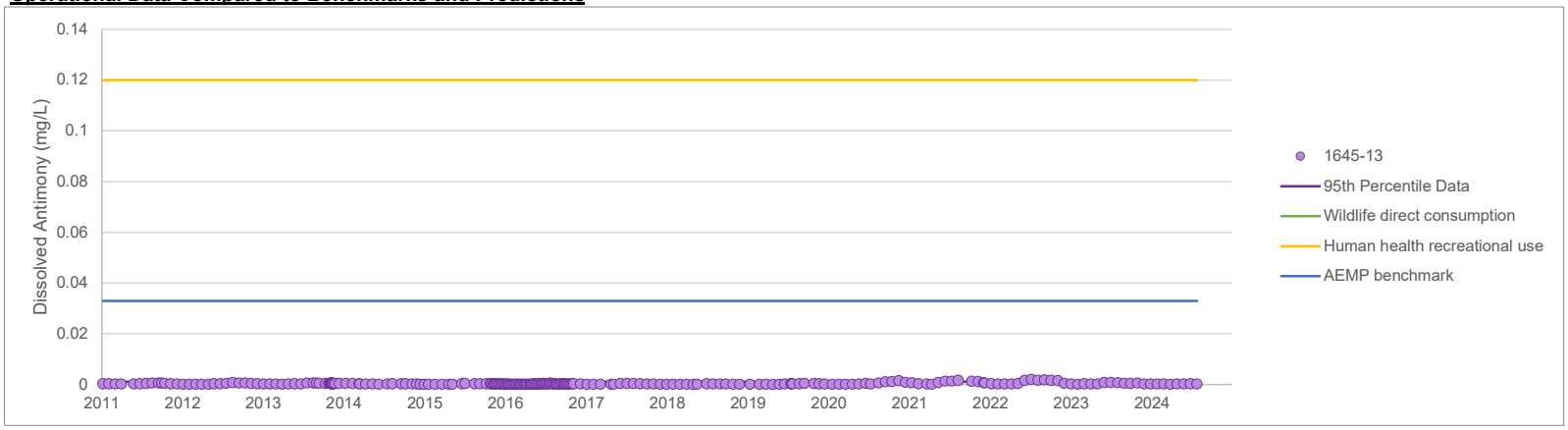


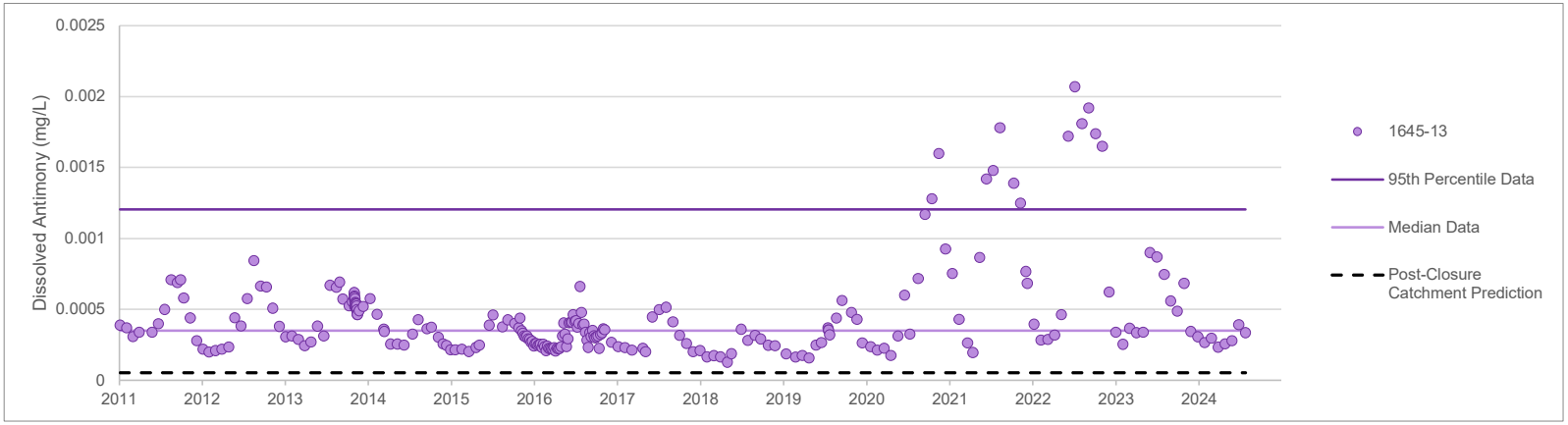
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.255	Wildlife	5.0
Median	0.068	Human recreational	58.0
Count	252	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions



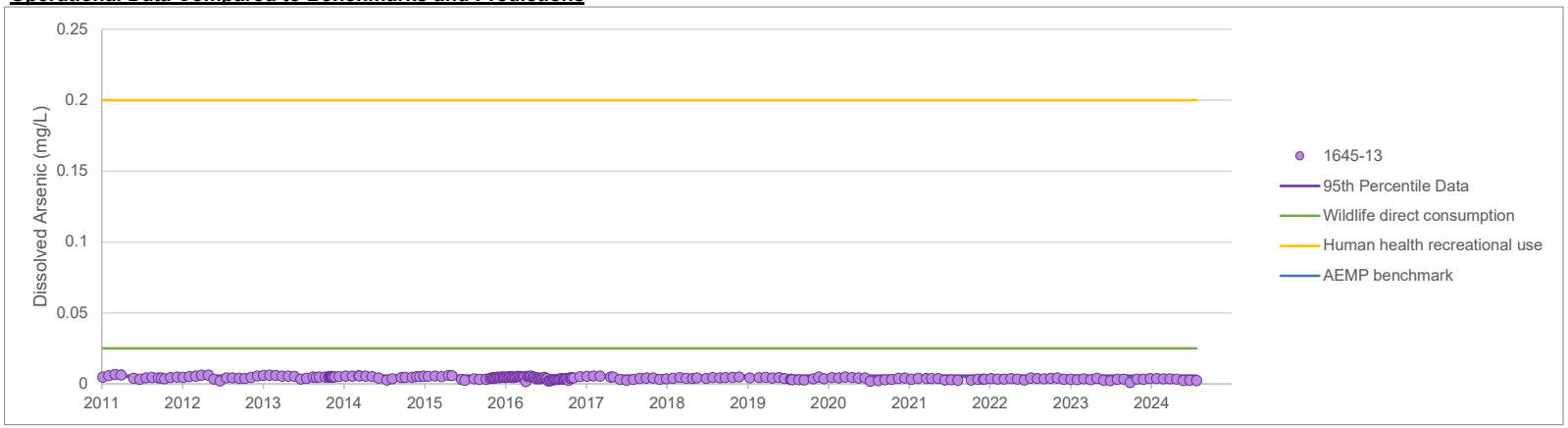


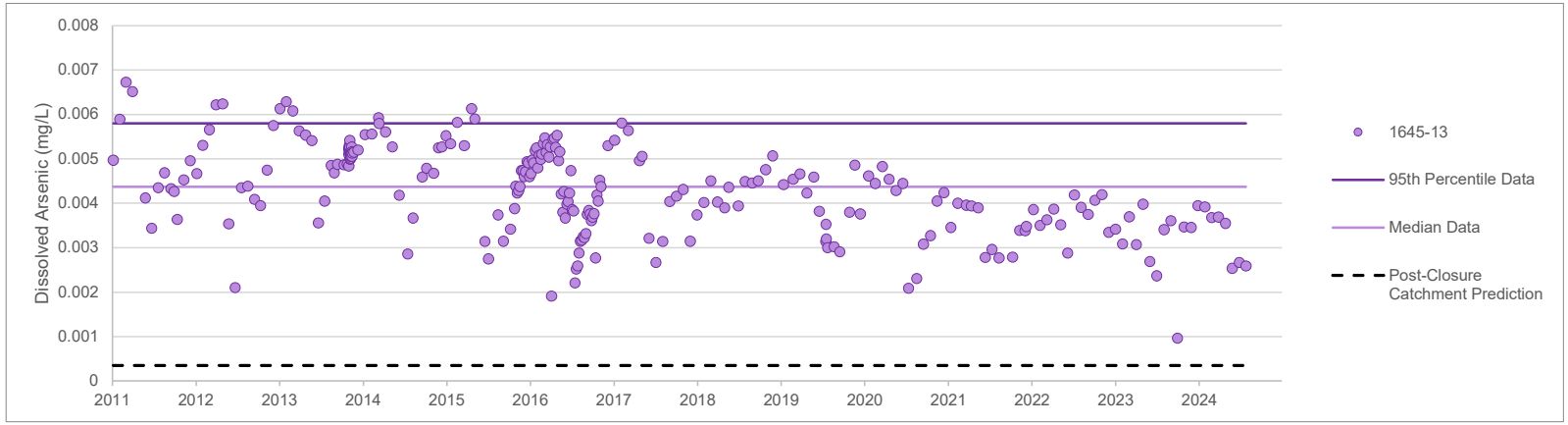
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00121	Wildlife	None
Median	0.00035	Human recreational	0.12
Count	252	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions

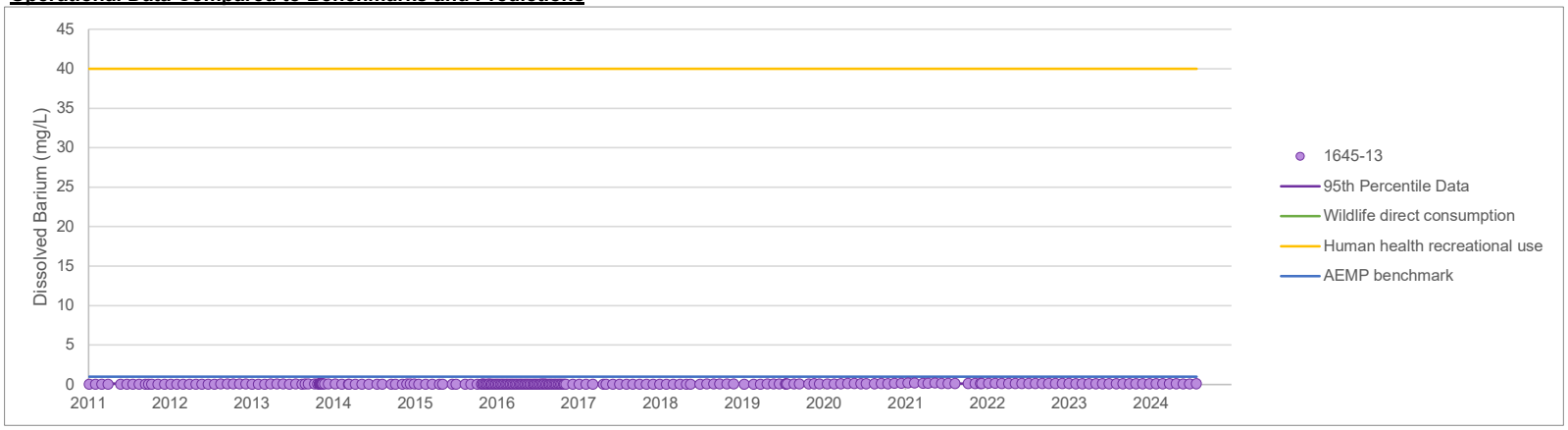


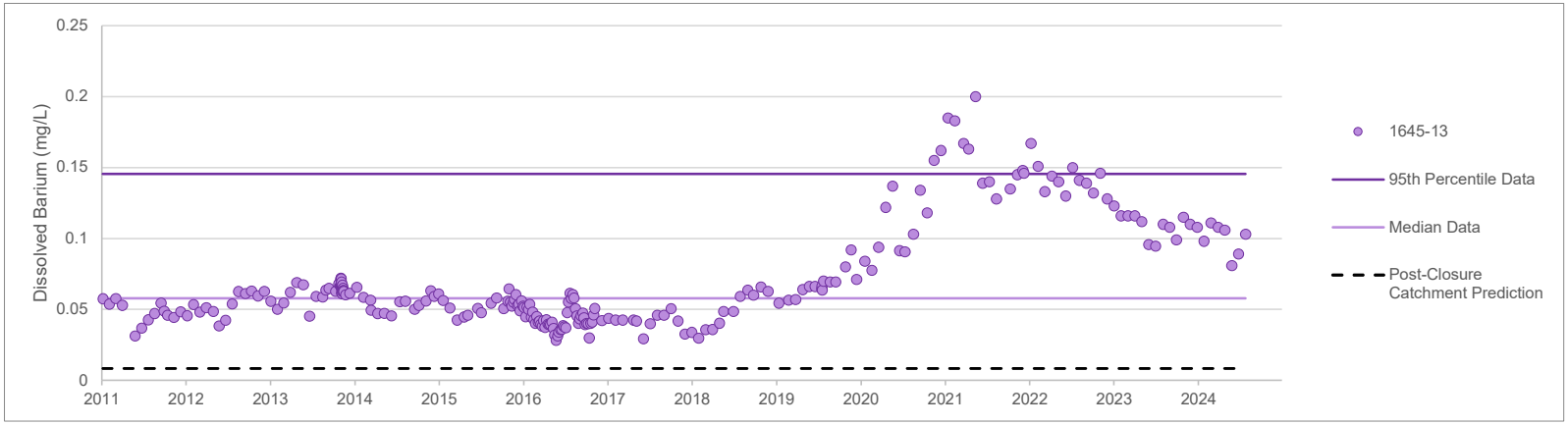


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0058	Wildlife	0.03
Median	0.0044	Human recreational	0.20
Count	252	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

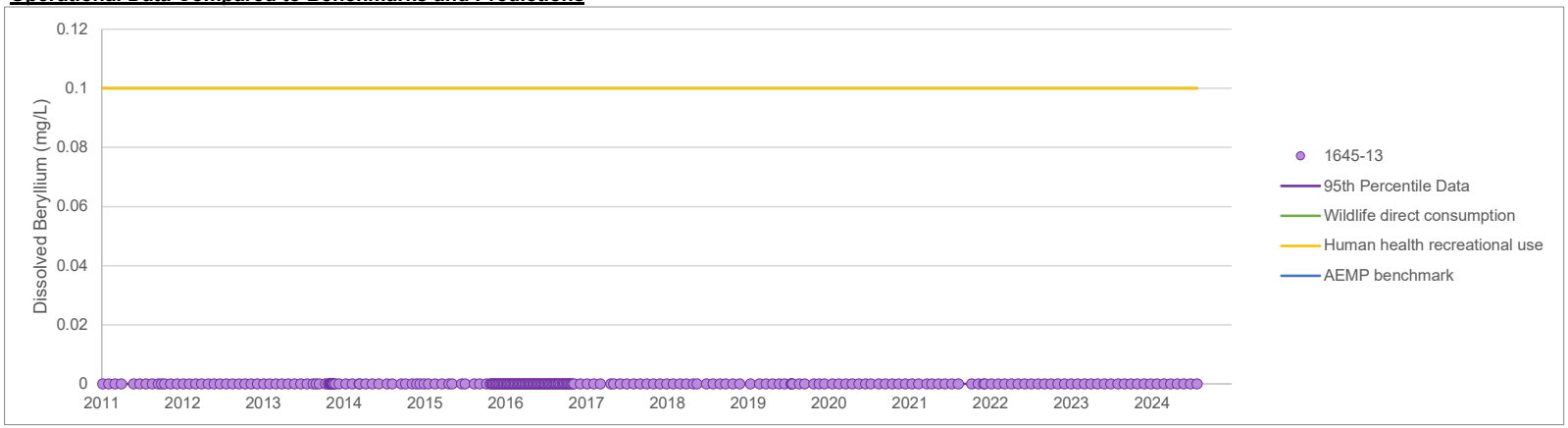


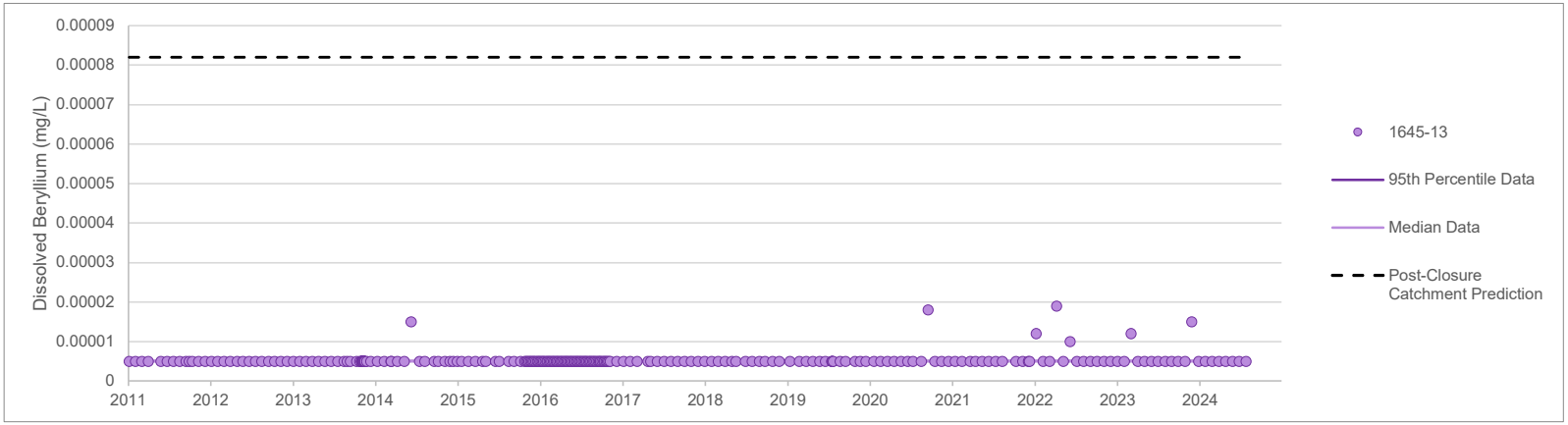


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.145	Wildlife	None
Median	0.058	Human recreational	40.0
Count	252	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions

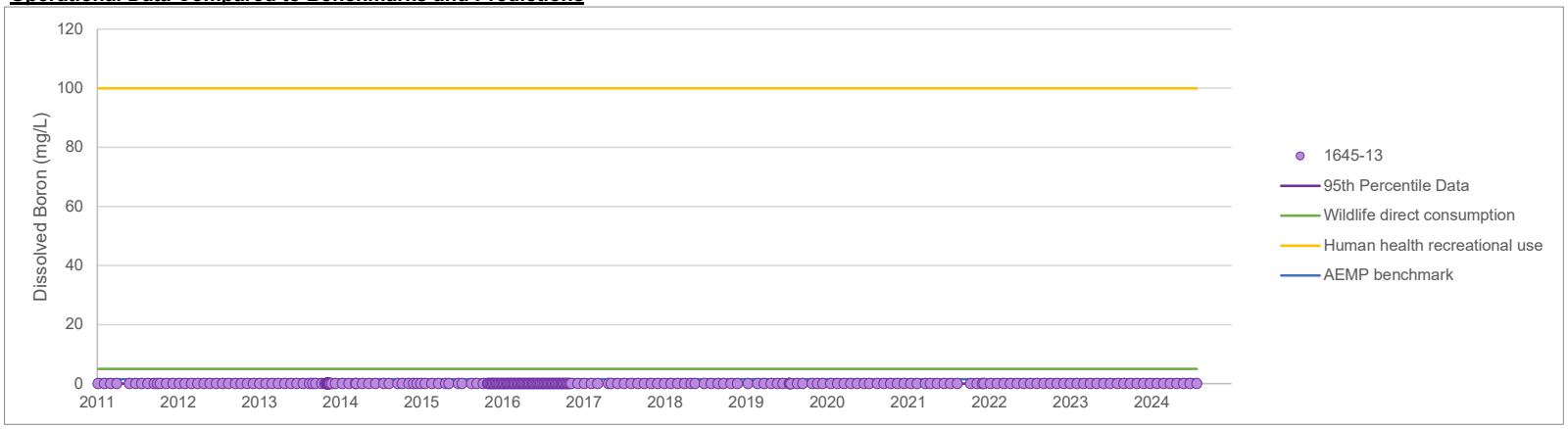


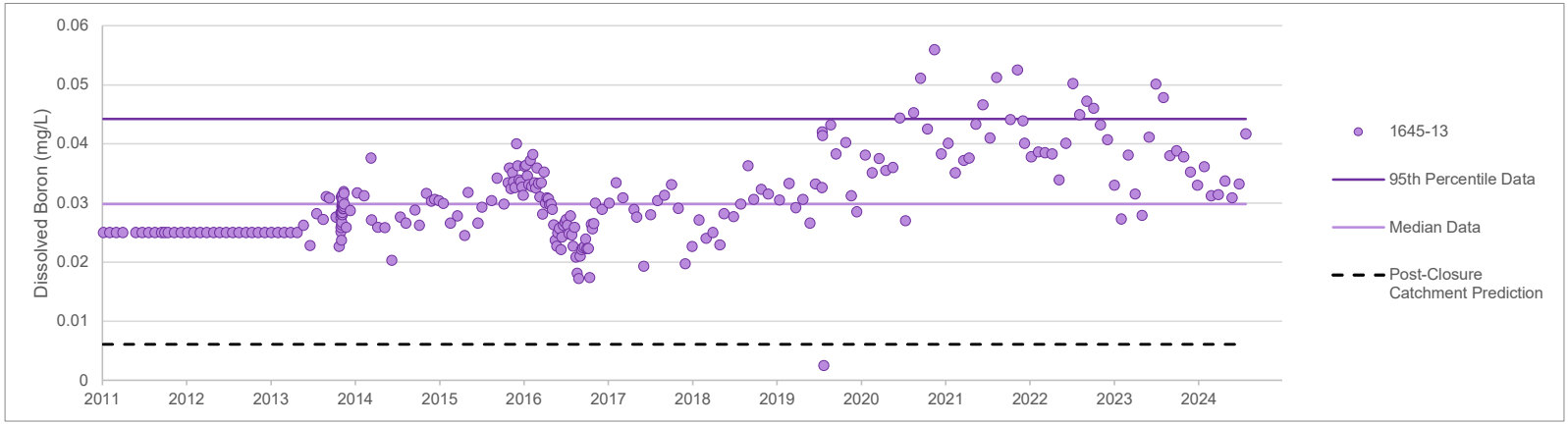


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000005	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions

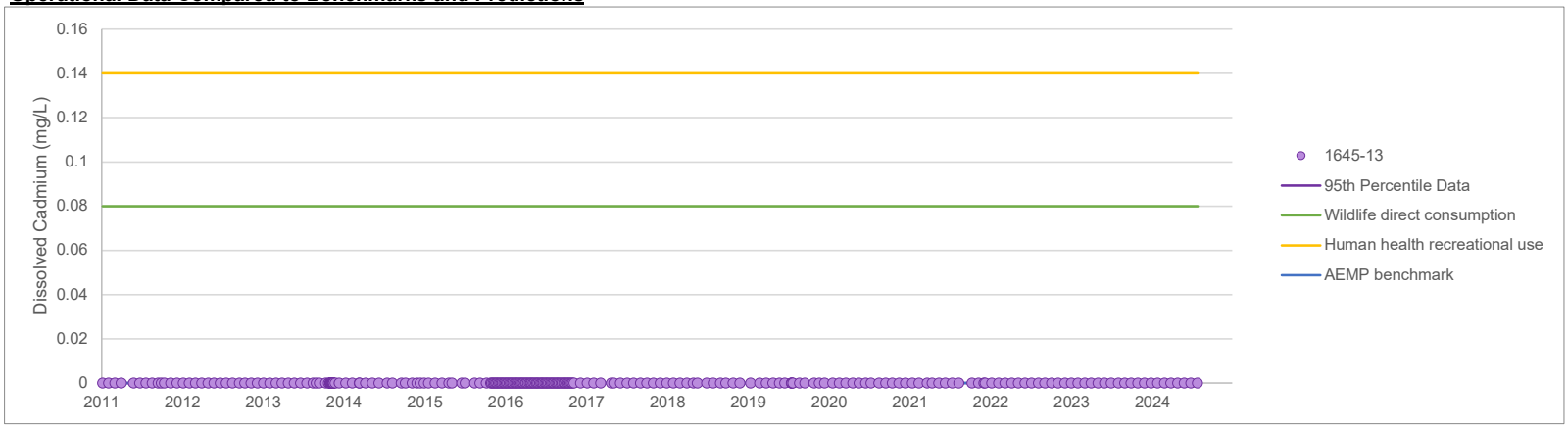


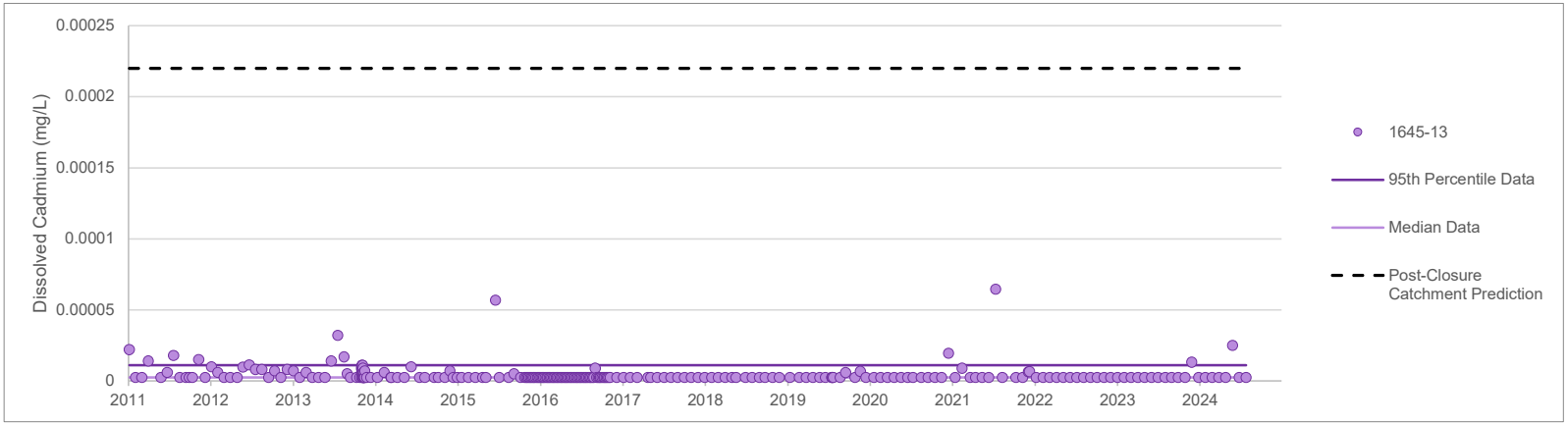


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.044	Wildlife	5.0
Median	0.030	Human recreational	100.0
Count	252	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

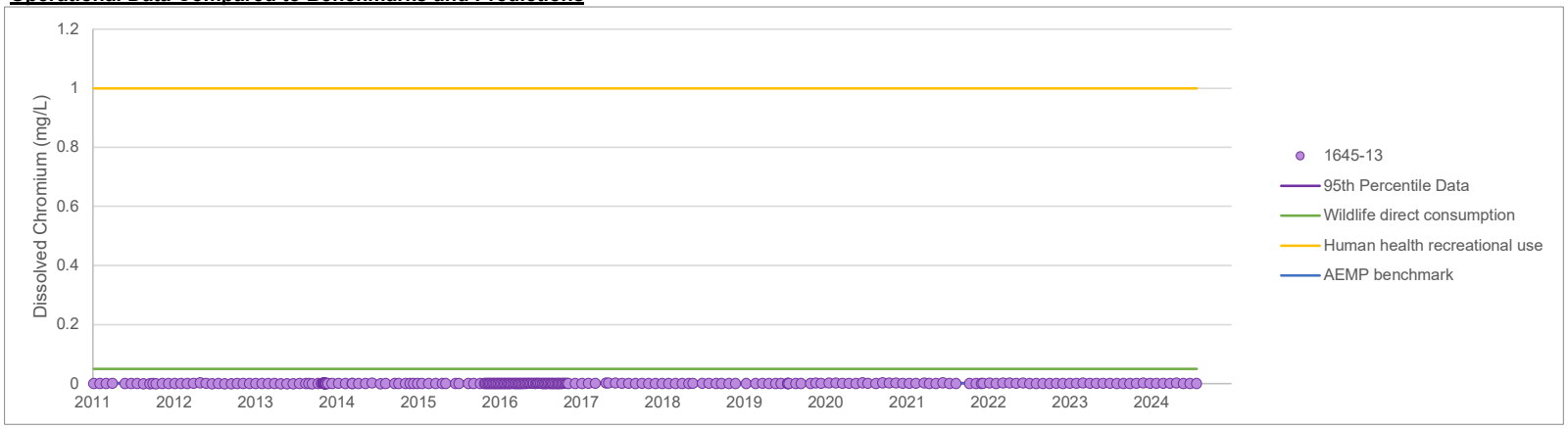


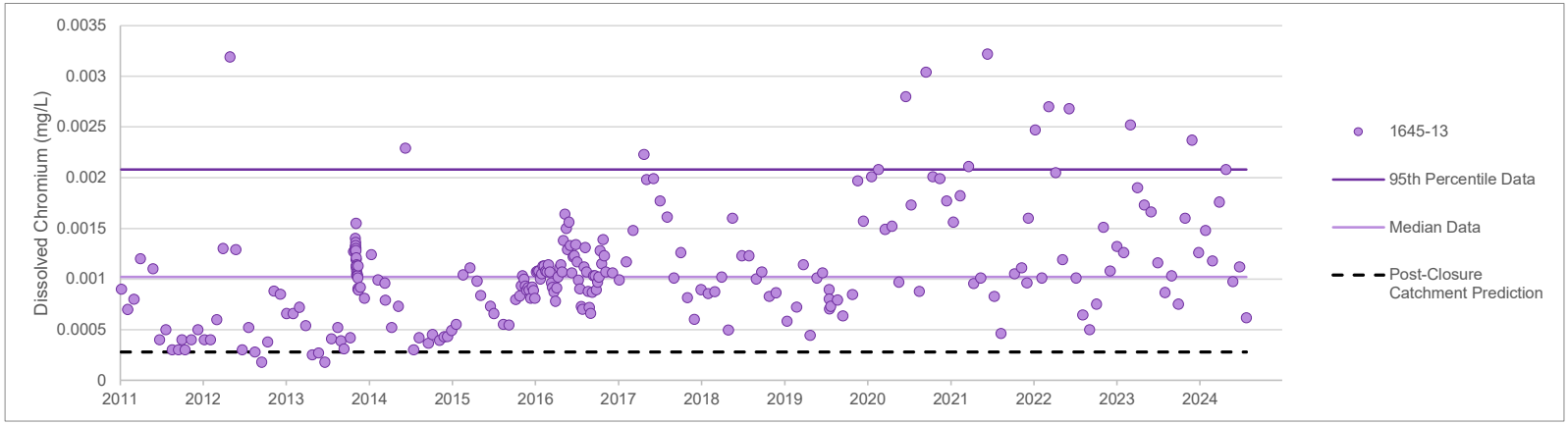


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00001	Wildlife	0.08
Median	0.00000	Human recreational	0.14
Count	252	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions

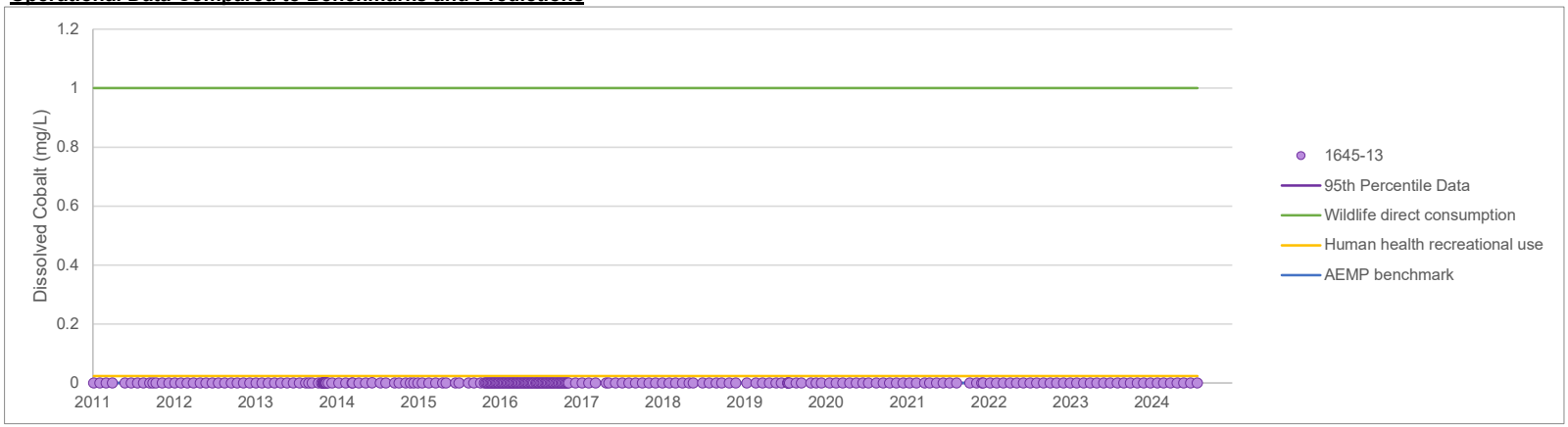


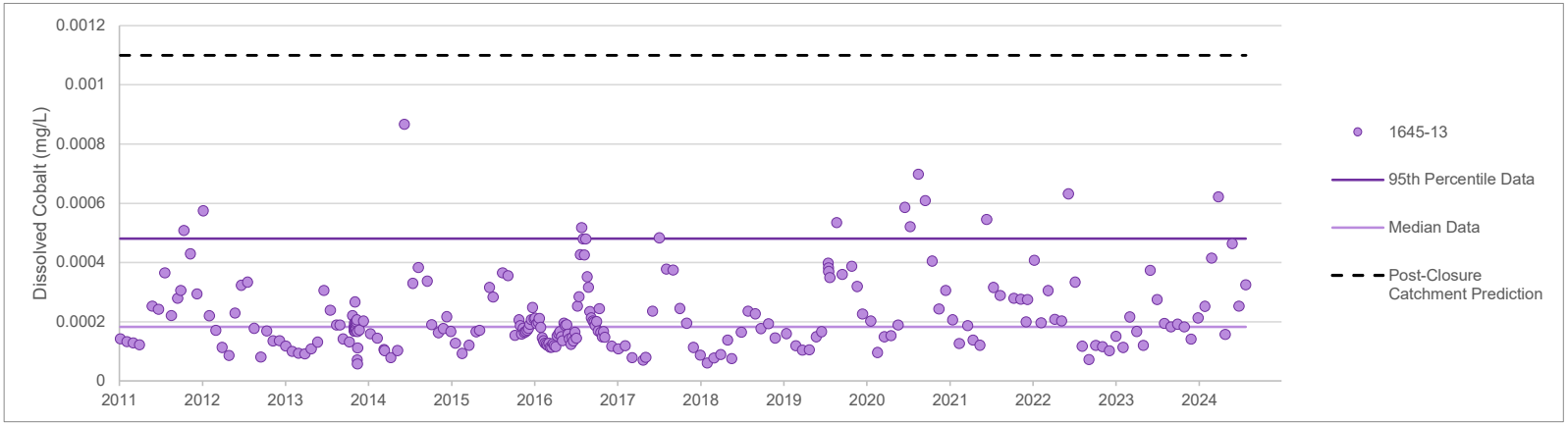


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00208	Wildlife	0.05
Median	0.00102	Human recreational	1.0
Count	252	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

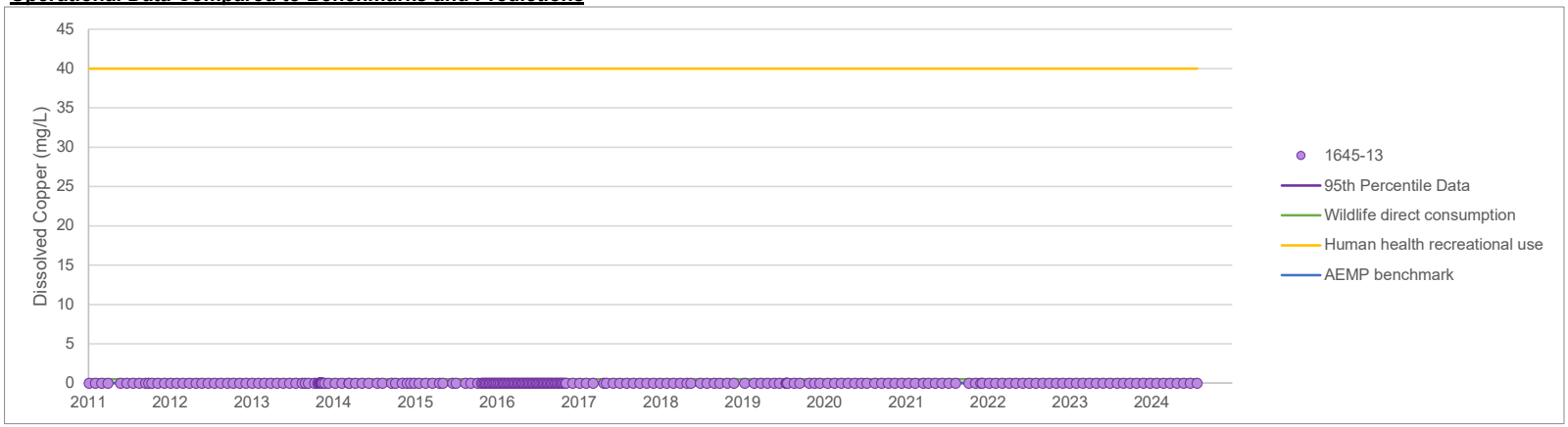


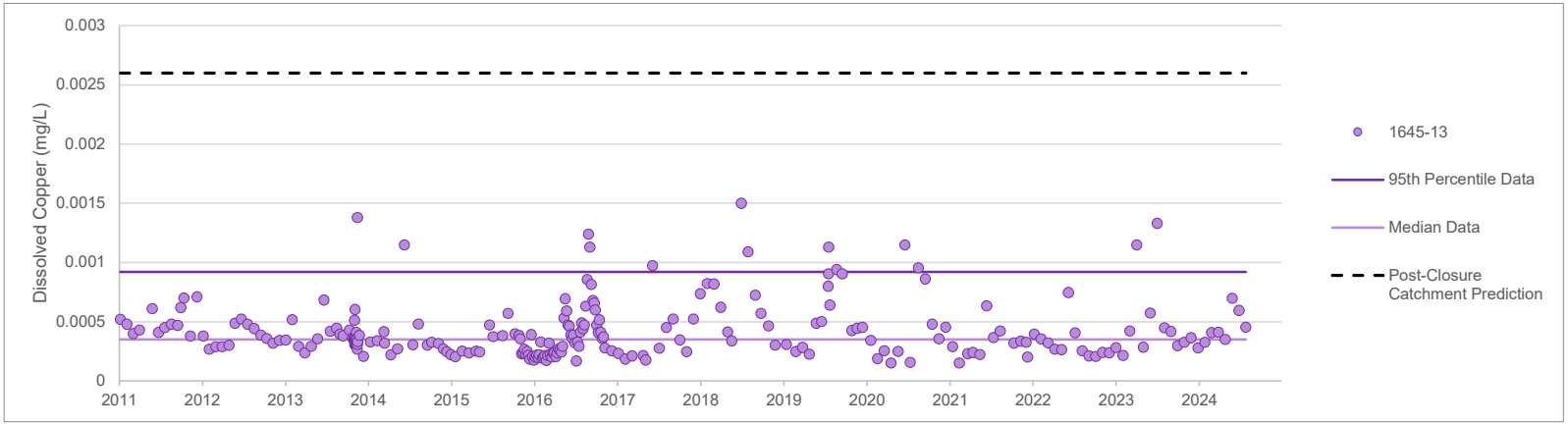


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0005	Wildlife	1.0
Median	0.0002	Human recreational	0.02
Count	252	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

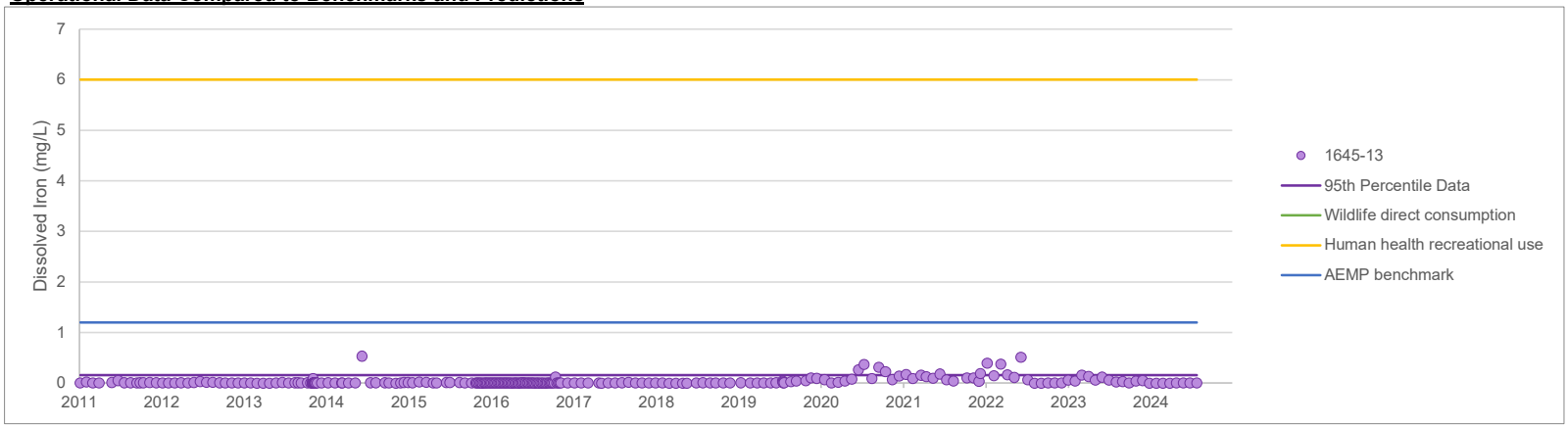


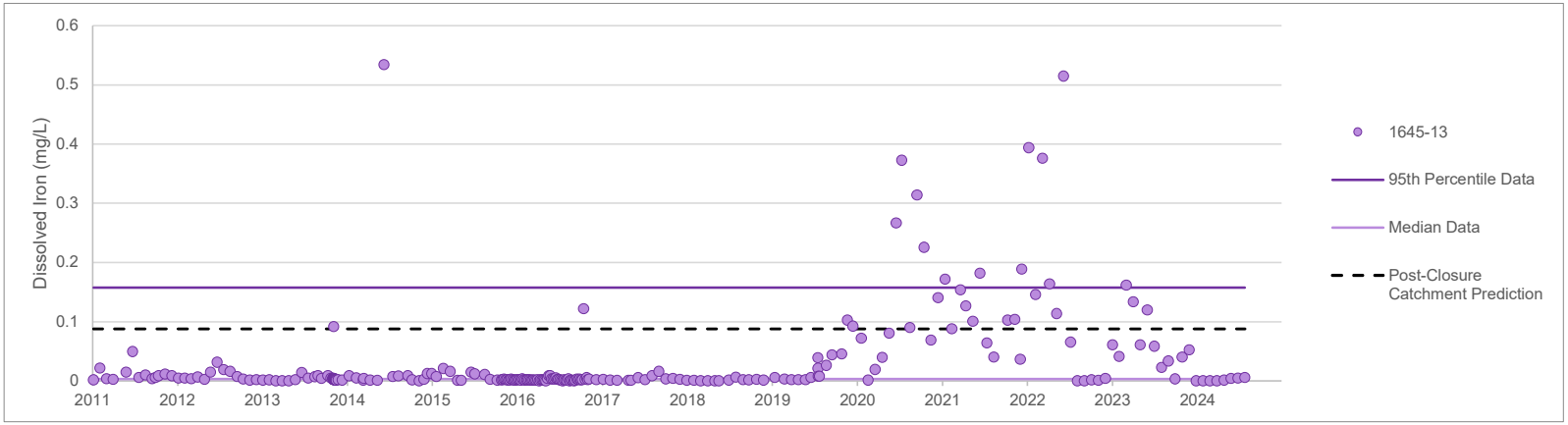


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0009	Wildlife	0.5
Median	0.0004	Human recreational	40.0
Count	252	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions

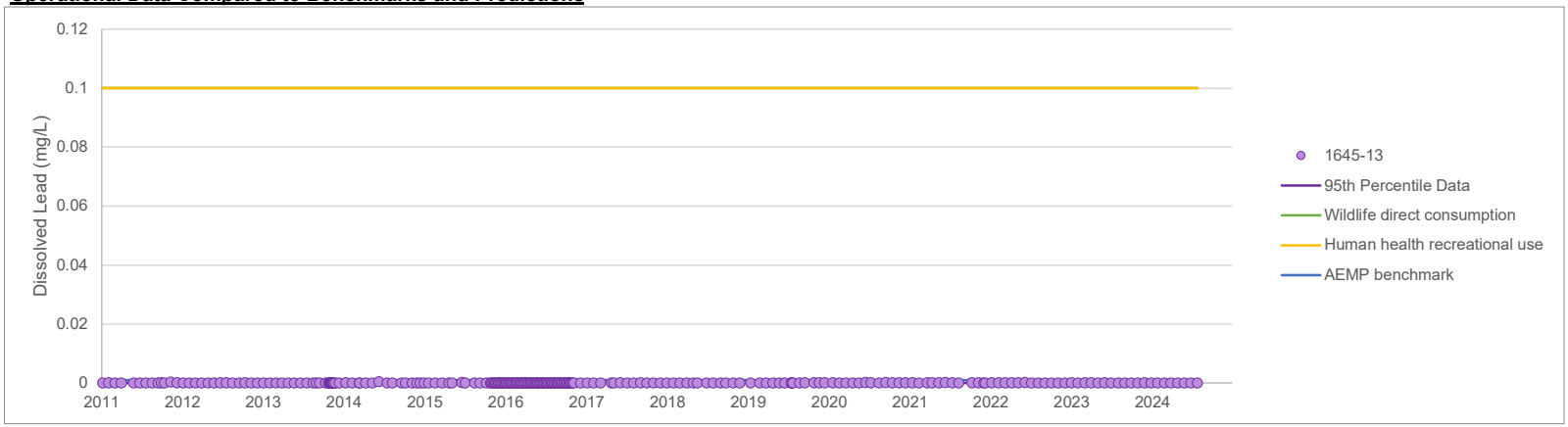


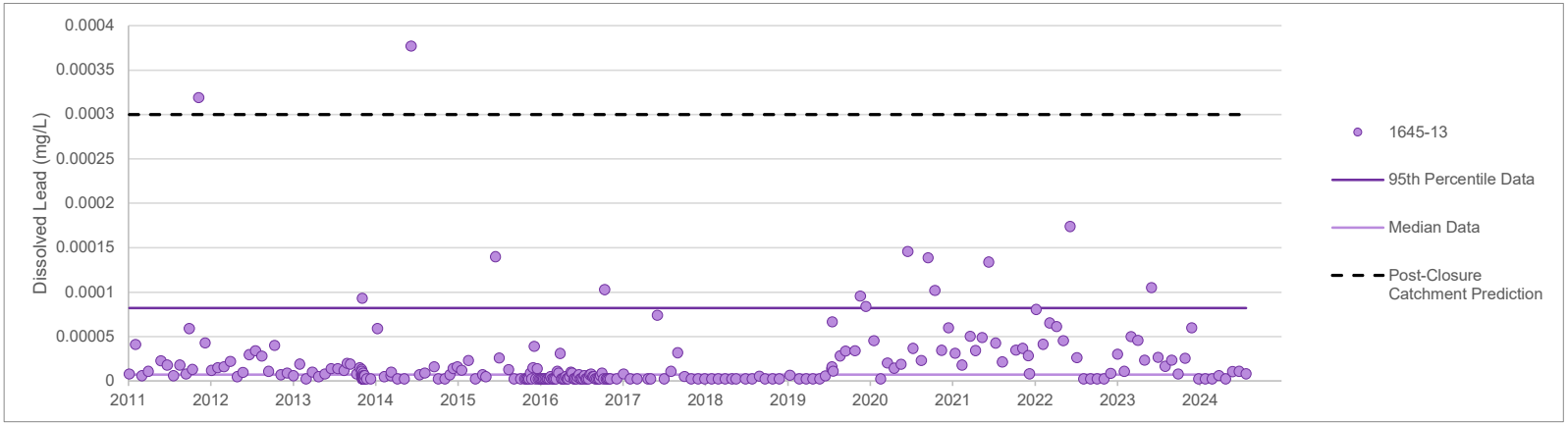


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.16	Wildlife	None
Median	0.00	Human recreational	6.0
Count	252	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

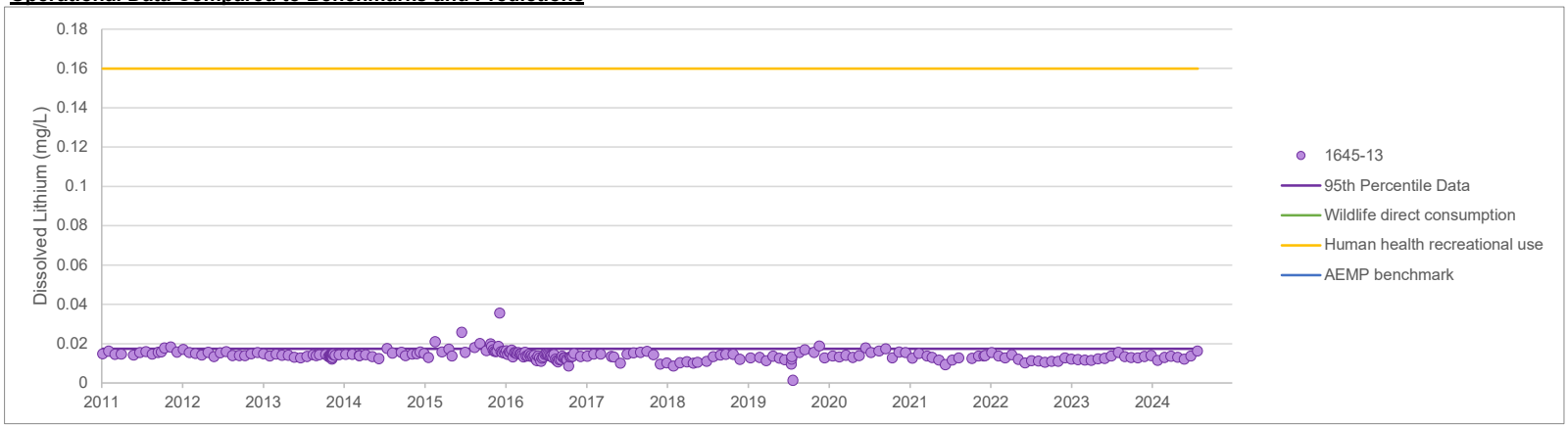


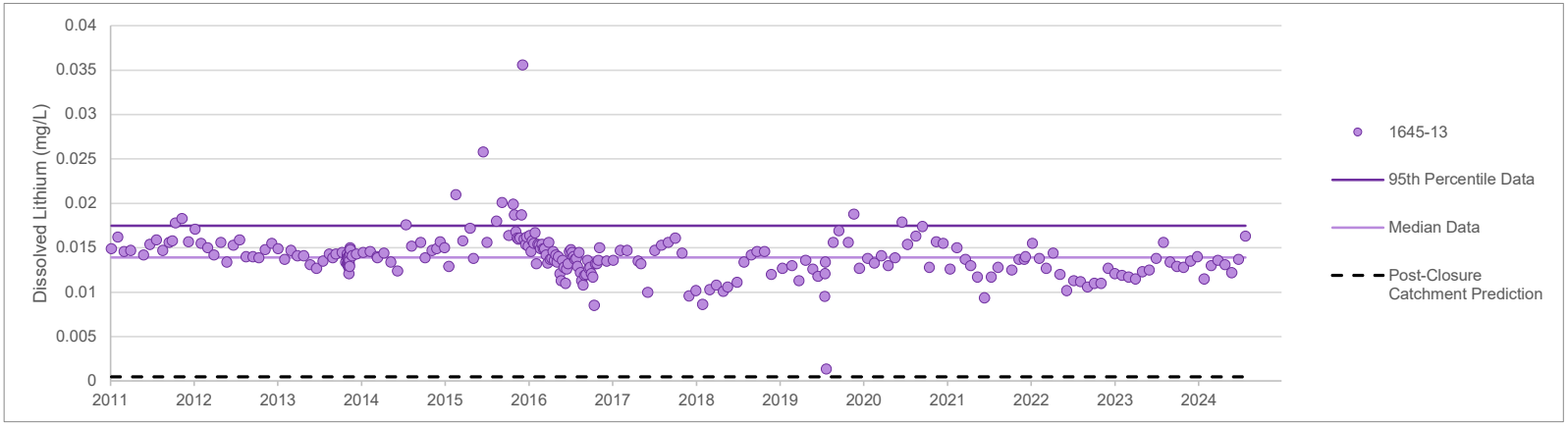


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00008	Wildlife	0.10
Median	0.00001	Human recreational	0.10
Count	252	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

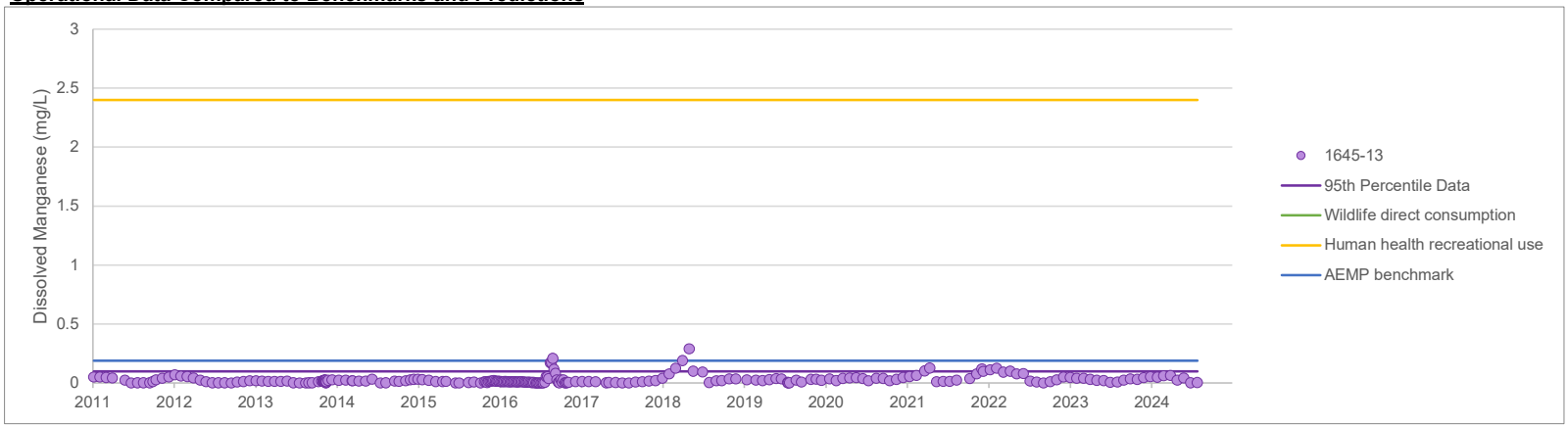


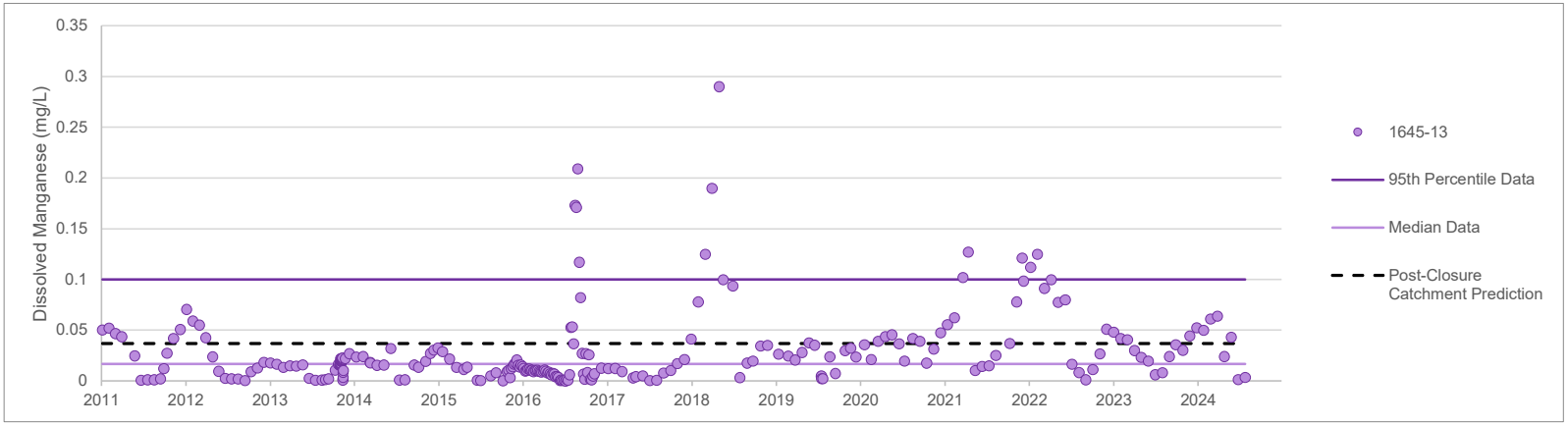


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.017	Wildlife	None
Median	0.014	Human recreational	0.16
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions



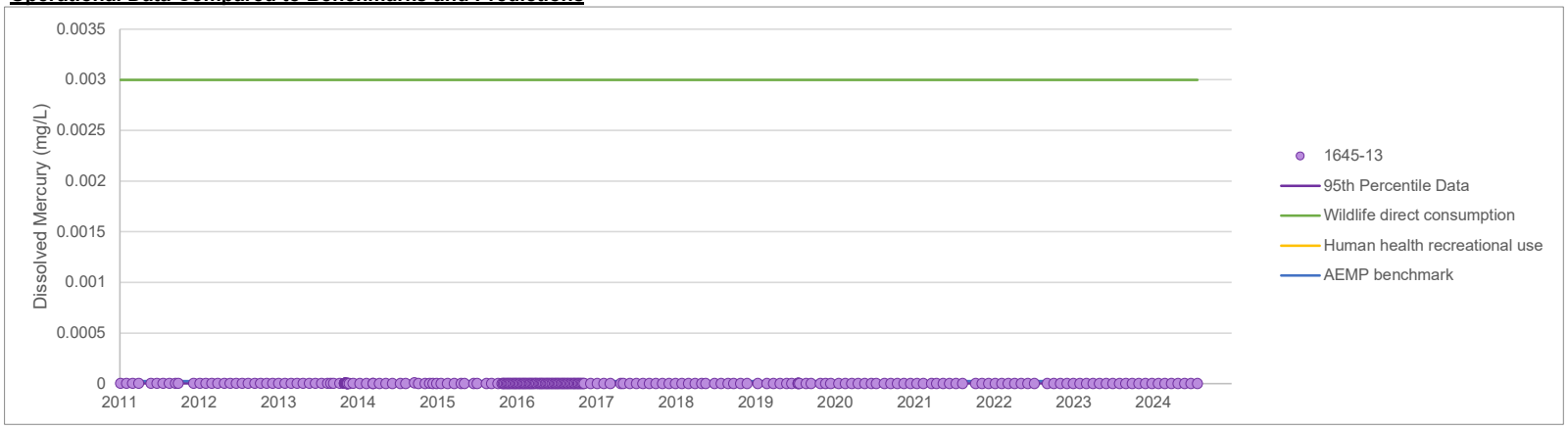


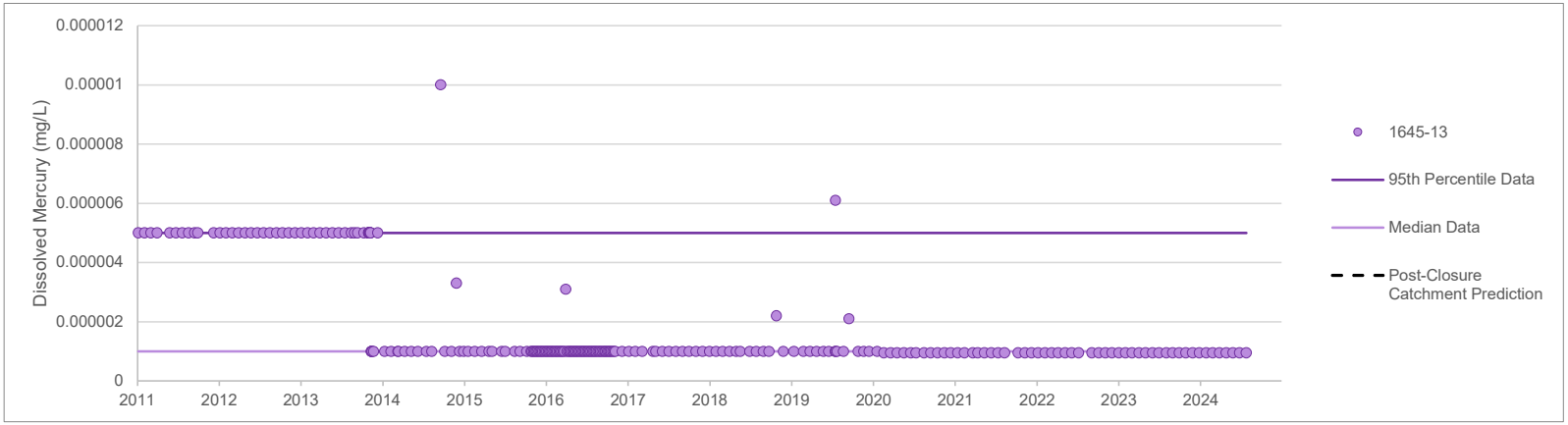
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.100	Wildlife	None
Median	0.017	Human recreational	2.4
Count	252	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

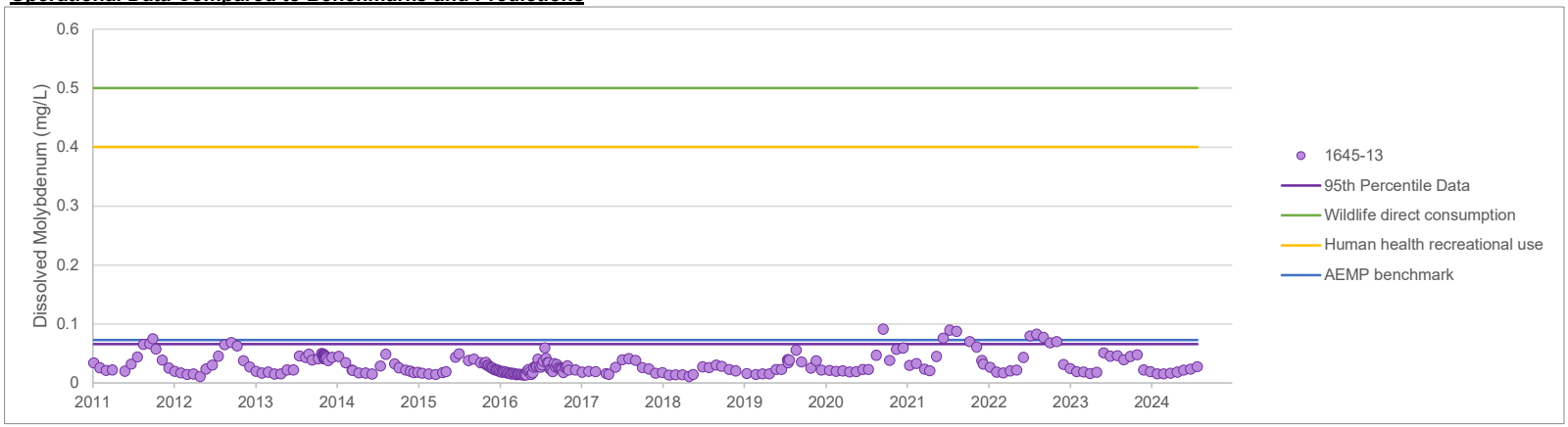


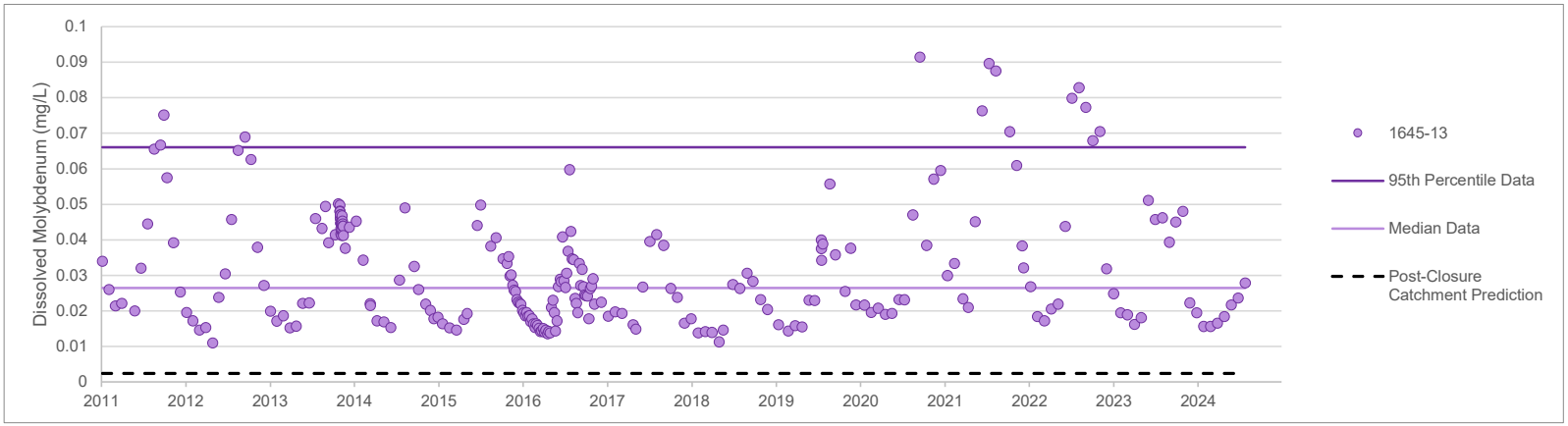


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	240	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



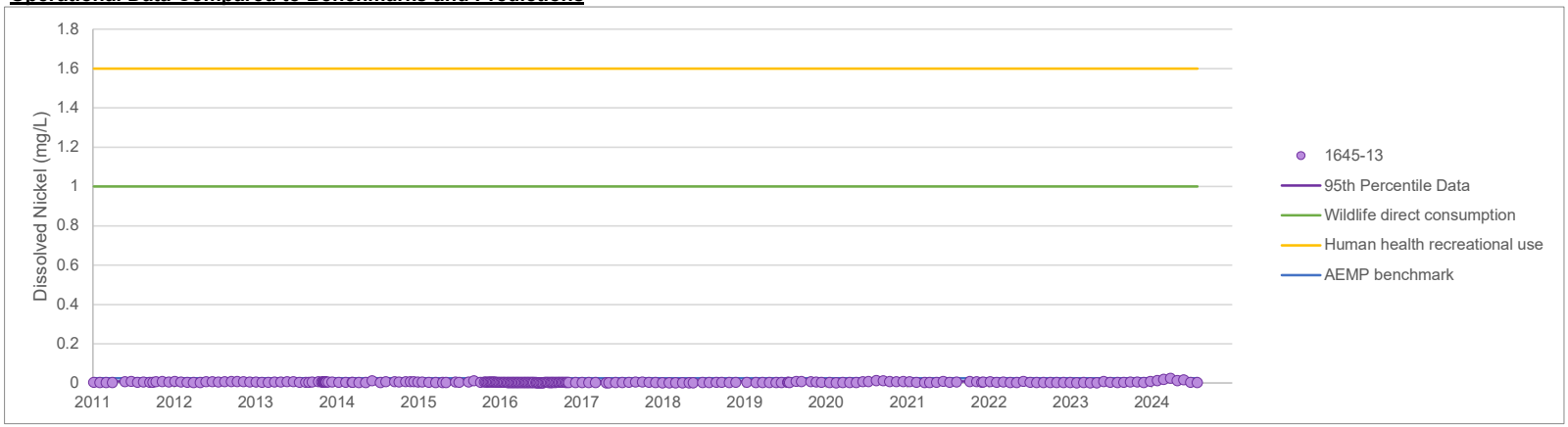


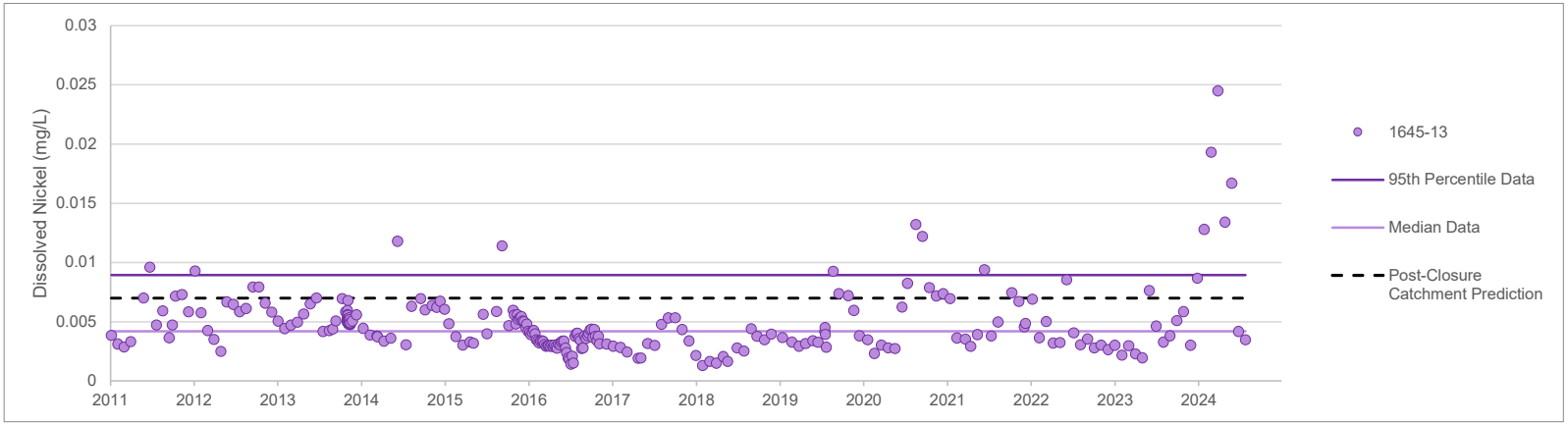
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.0660	Wildlife	0.5
Median	0.0265	Human recreational	0.4
Count	252	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

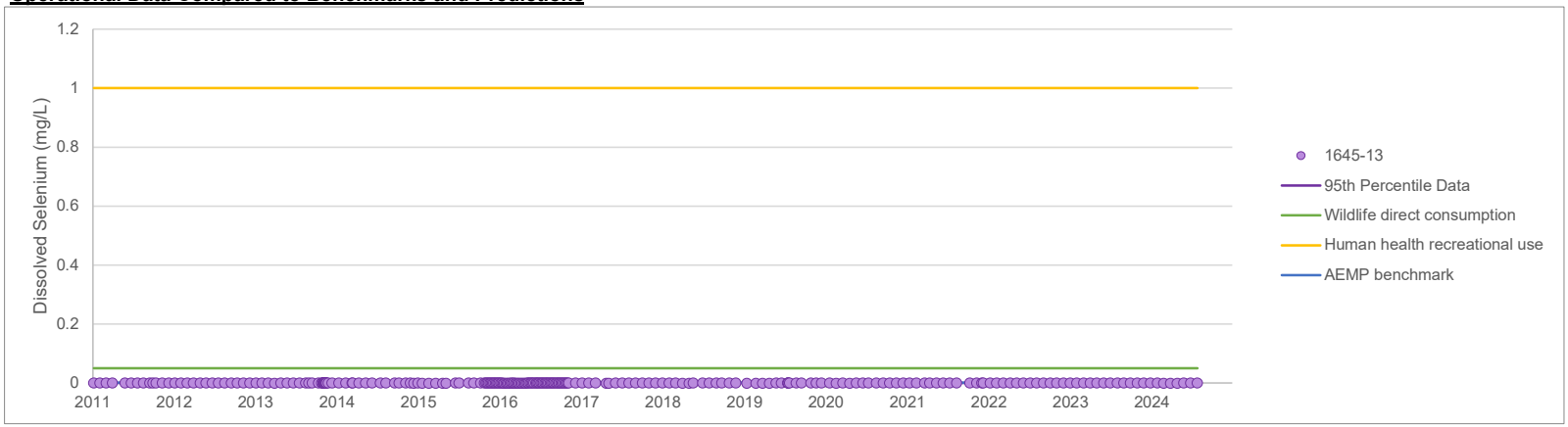


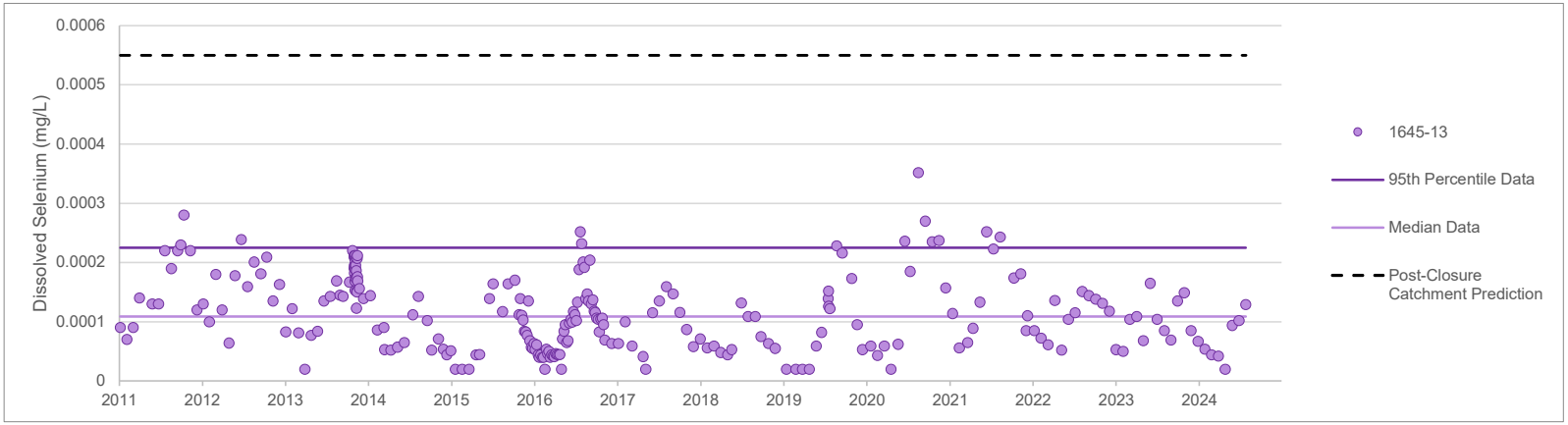


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.009	Wildlife	1.0
Median	0.004	Human recreational	1.6
Count	252	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



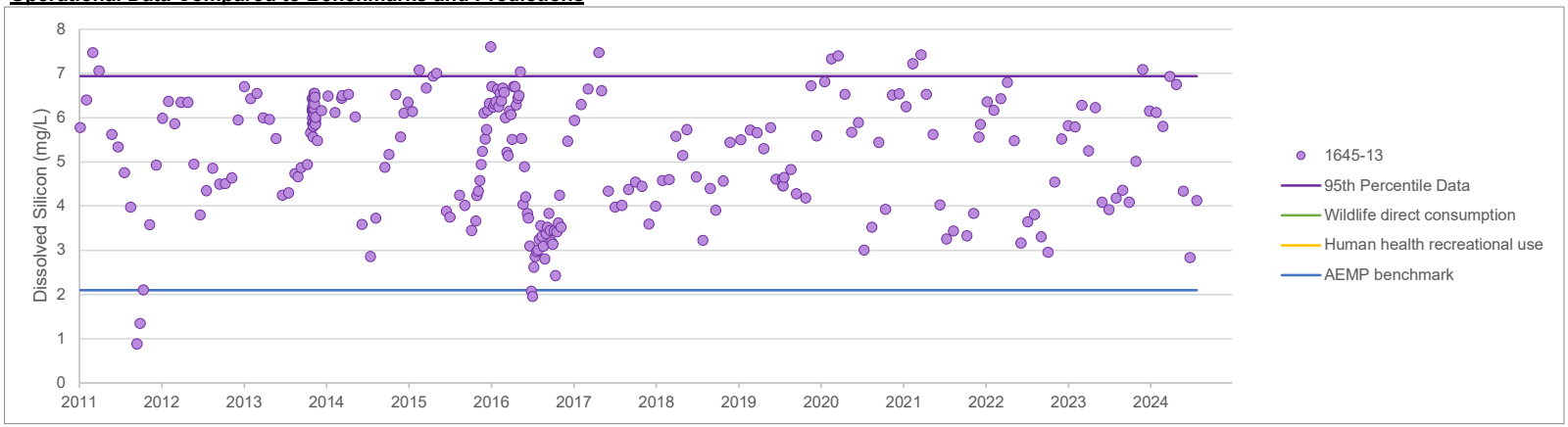


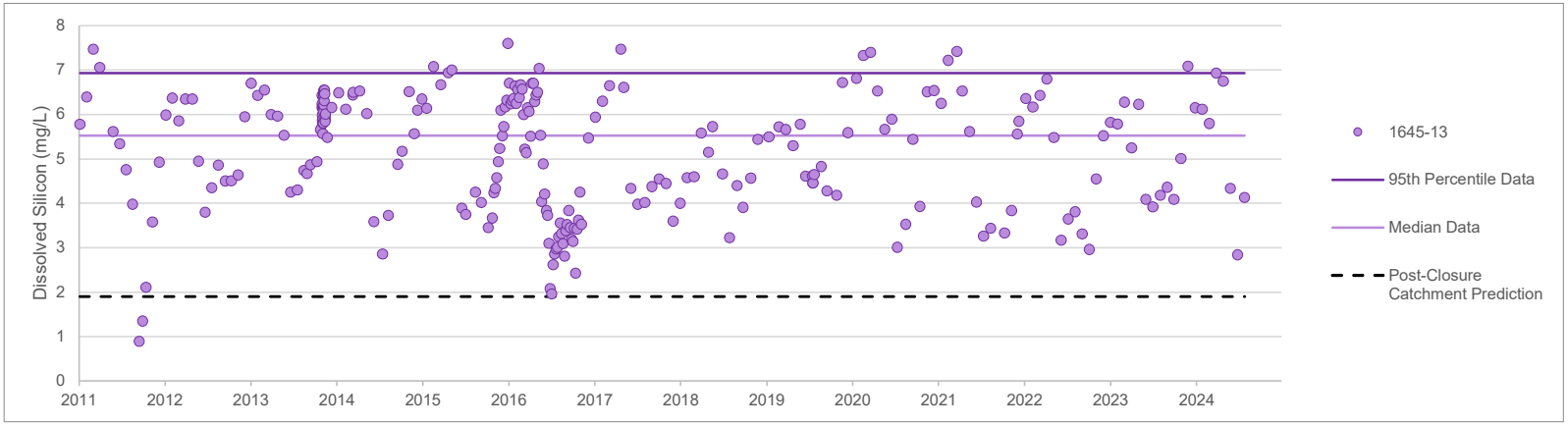
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00023	Wildlife	0.1
Median	0.00011	Human recreational	1.0
Count	252	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

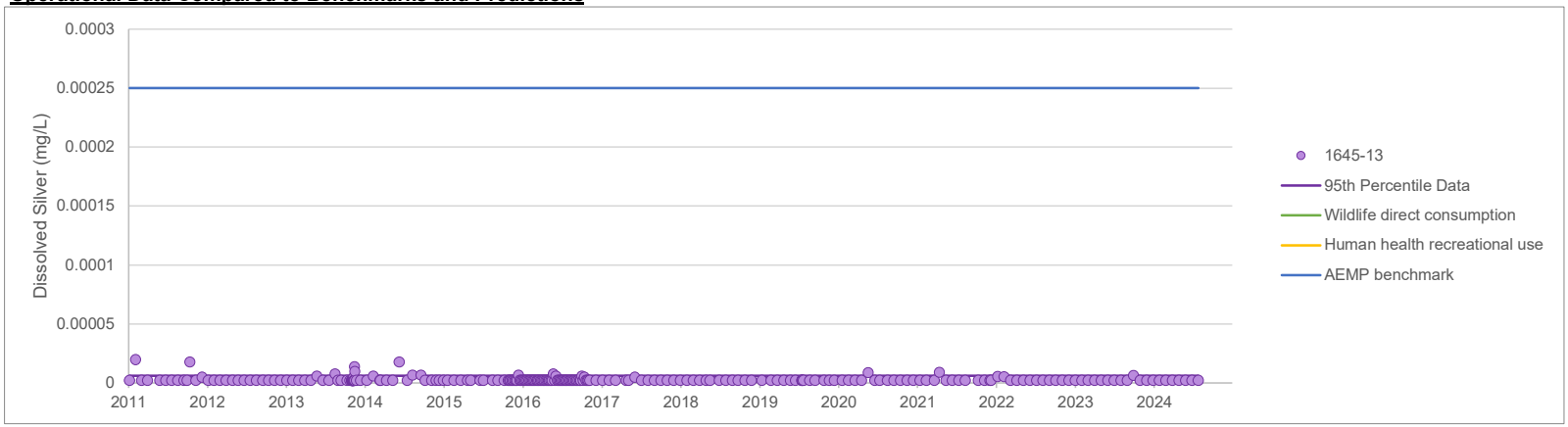


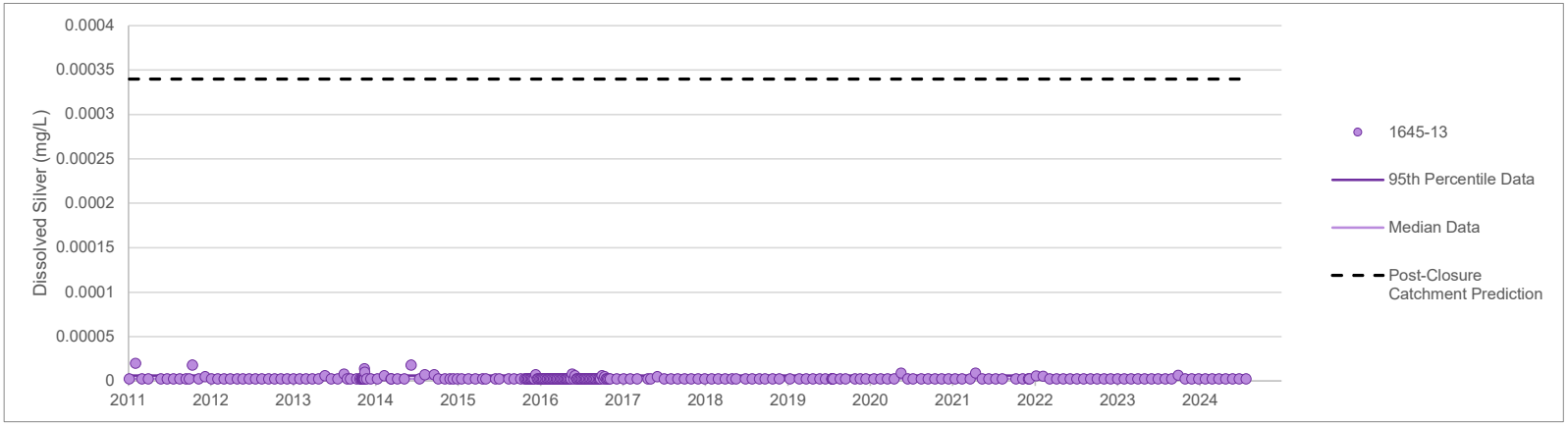


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	6.93	Wildlife	None
Median	5.53	Human recreational	None
Count	252	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions

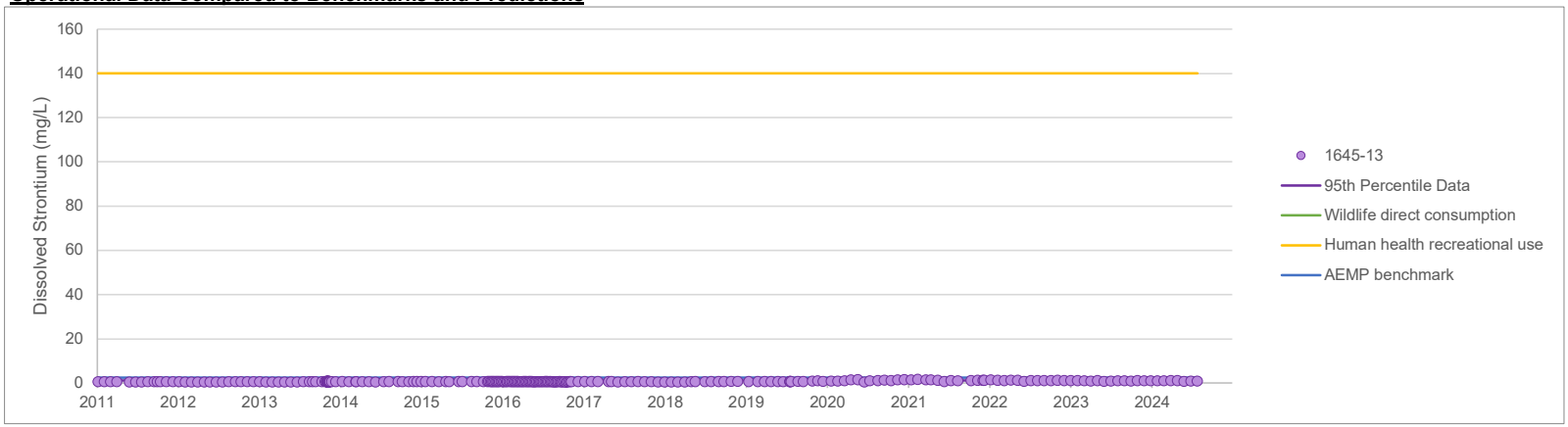


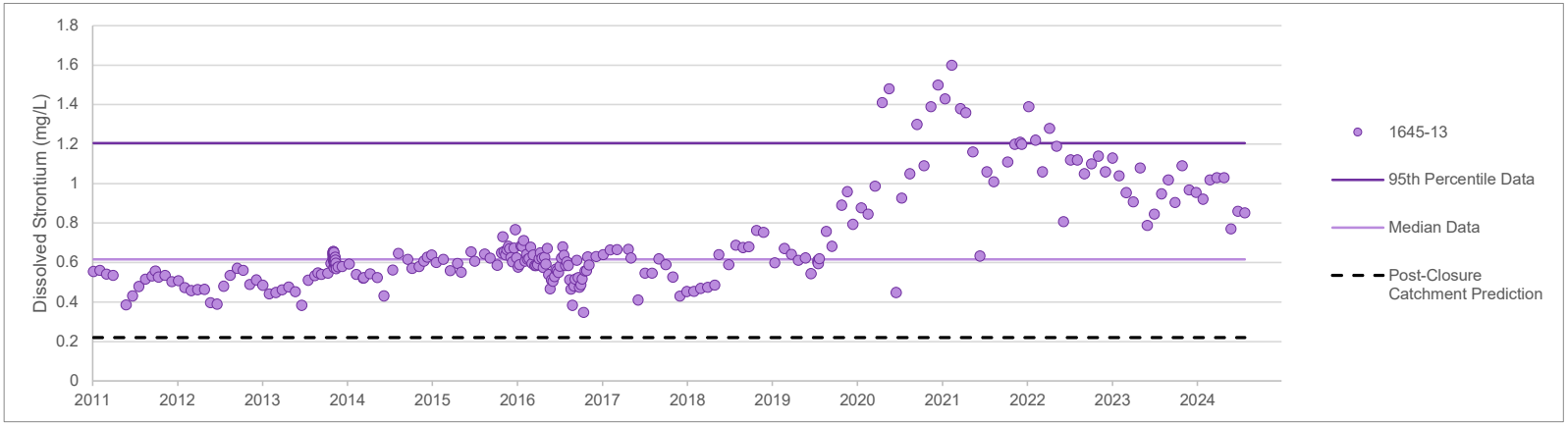


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000006	Wildlife	None
Median	0.000003	Human recreational	None
Count	252	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions

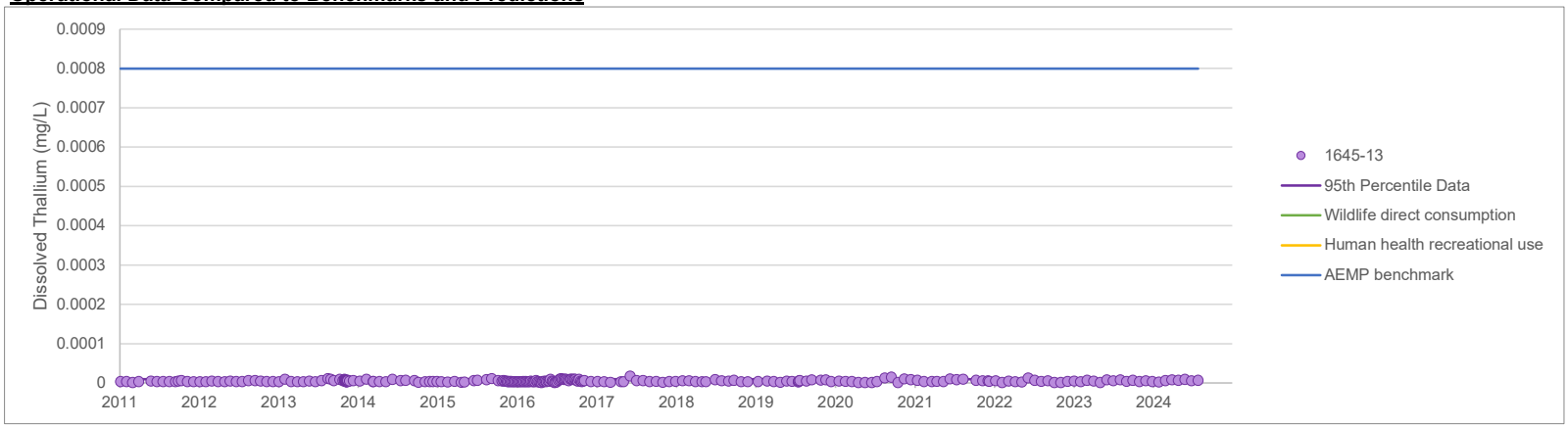


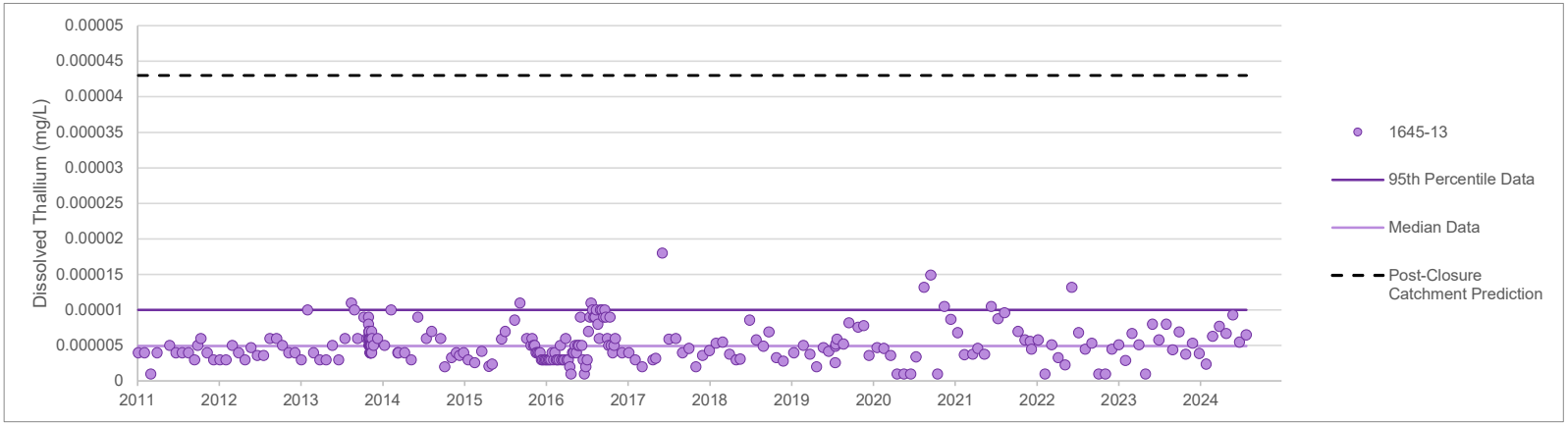


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	1.20	Wildlife	None
Median	0.62	Human recreational	140
Count	252	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions



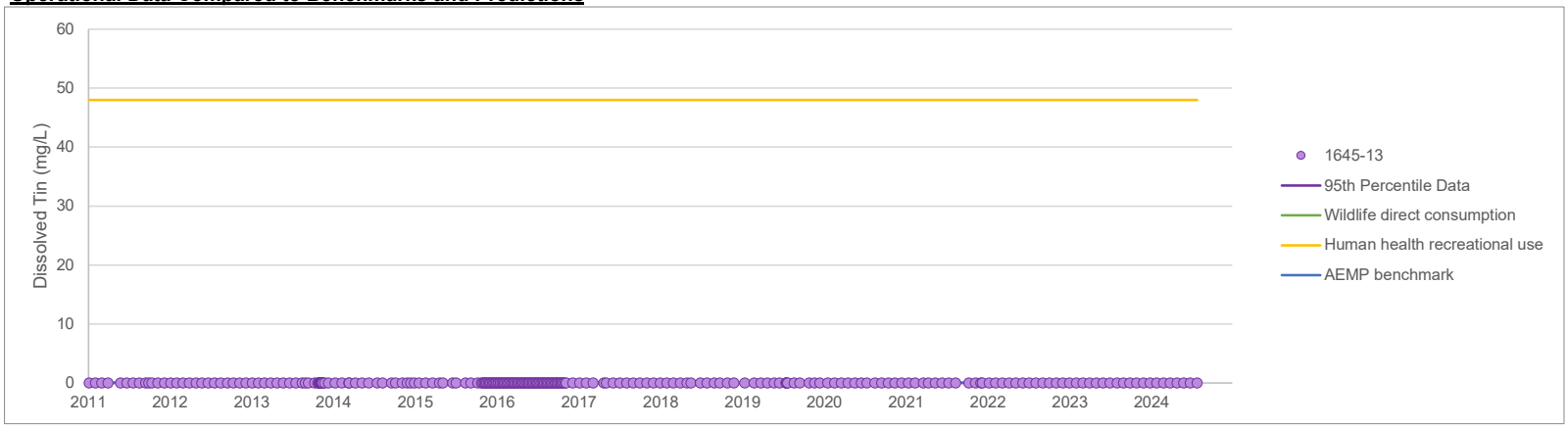


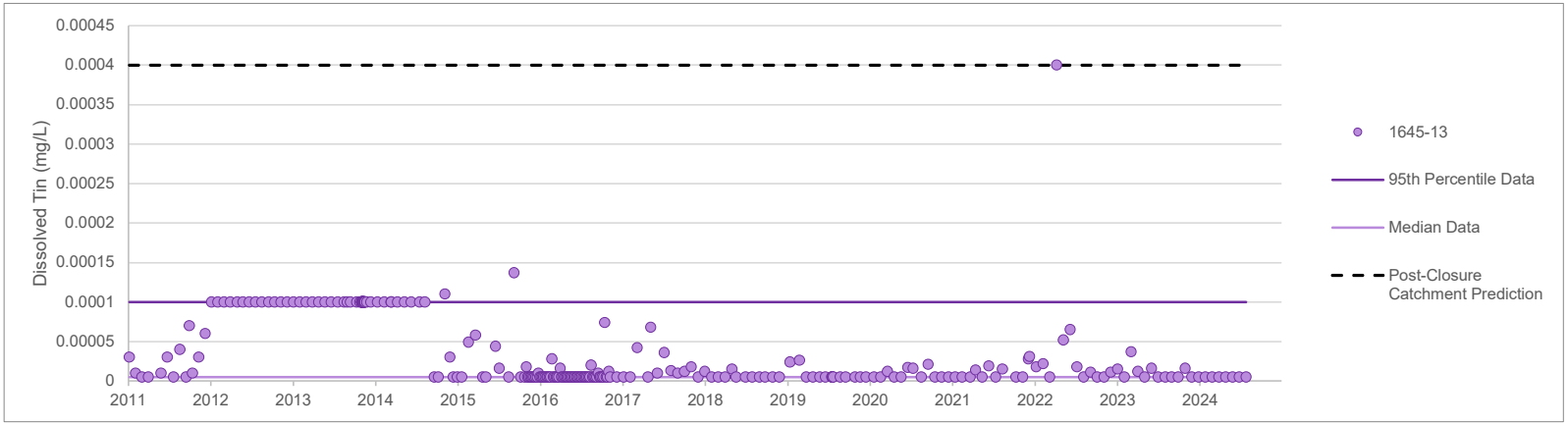
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00001	Wildlife	None
Median	0.00000	Human recreational	None
Count	252	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

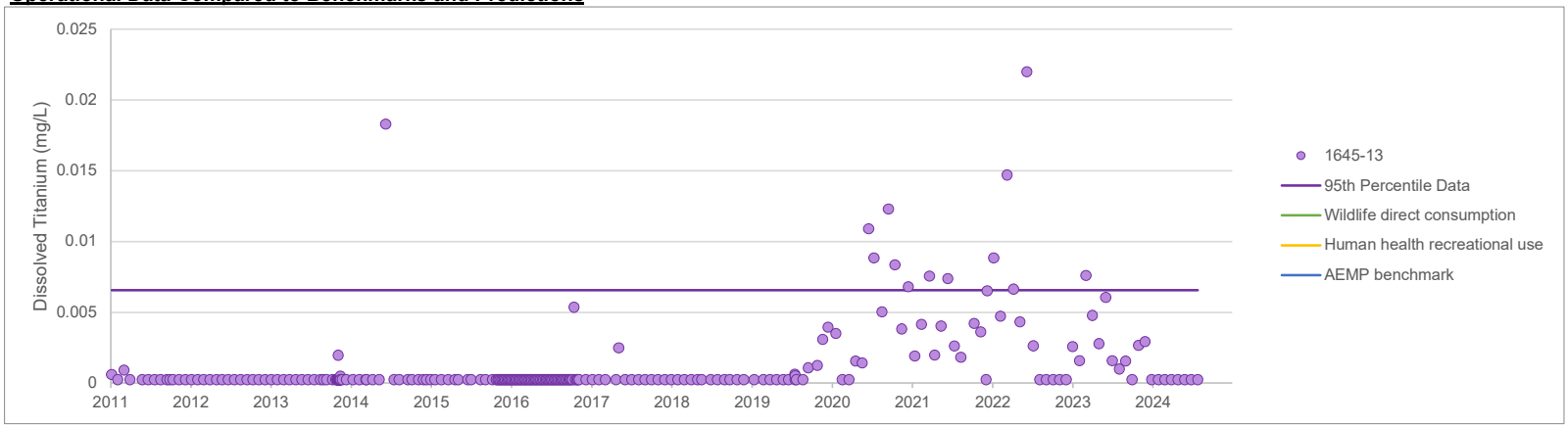


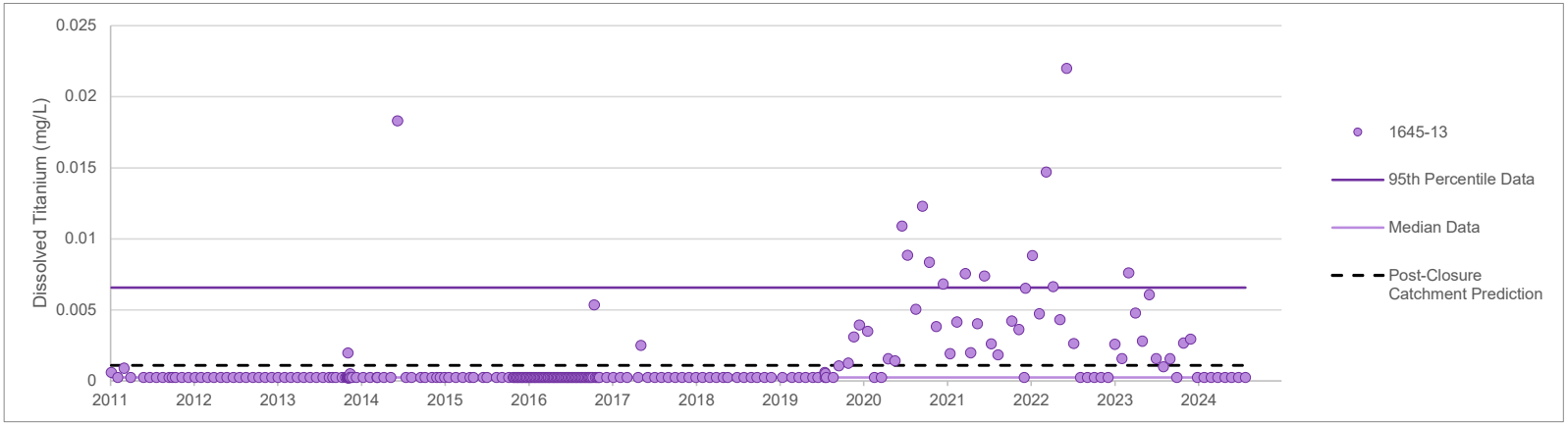


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00010	Wildlife	None
Median	0.00001	Human recreational	48
Count	252	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

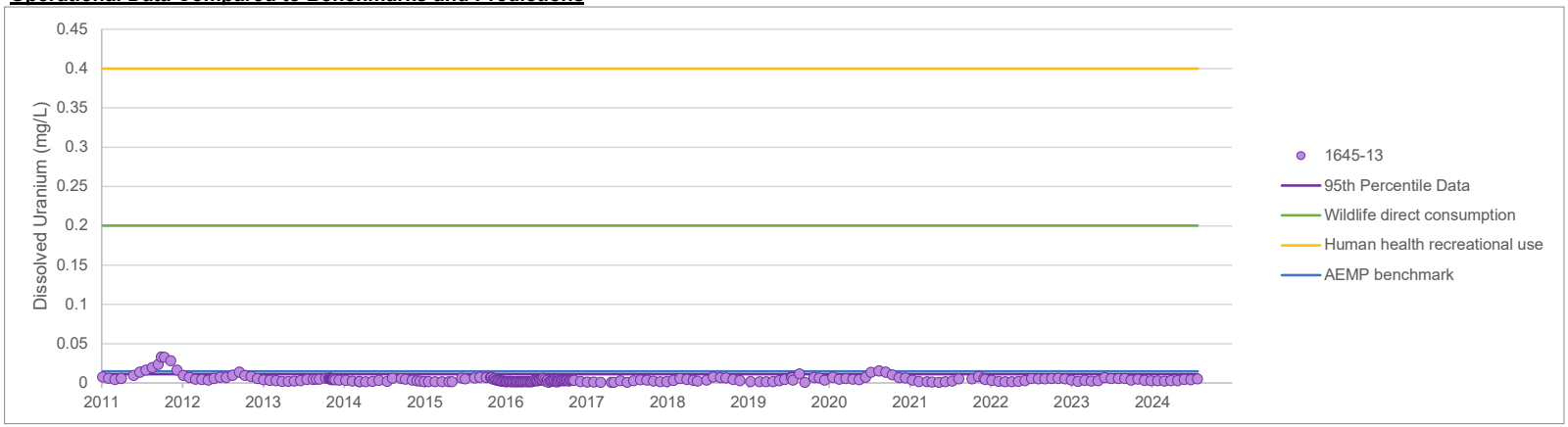


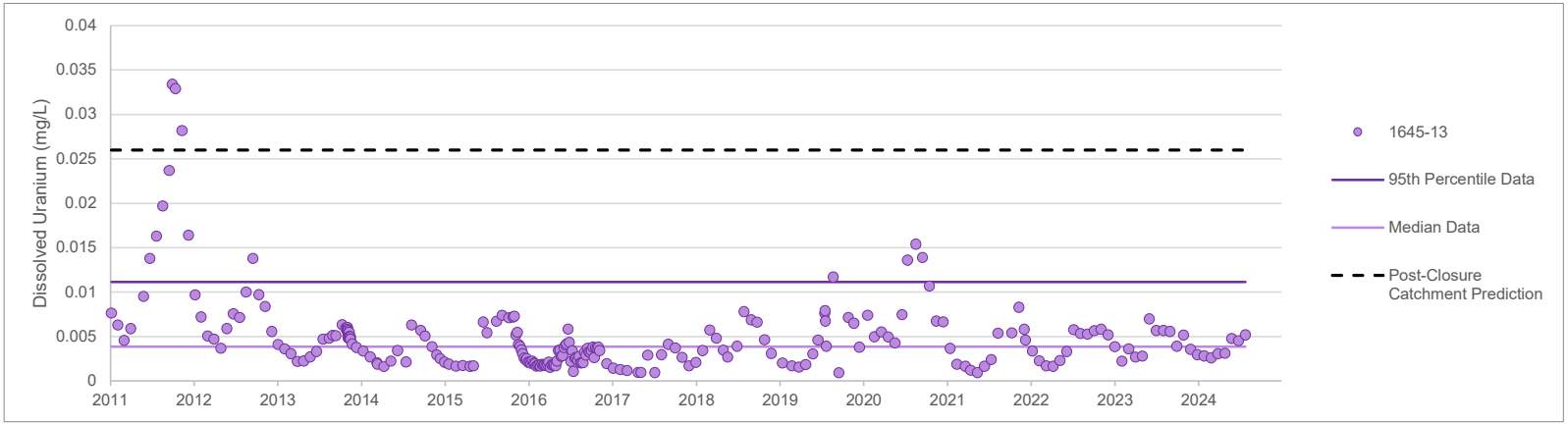


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0066	Wildlife	None
Median	0.0003	Human recreational	None
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions

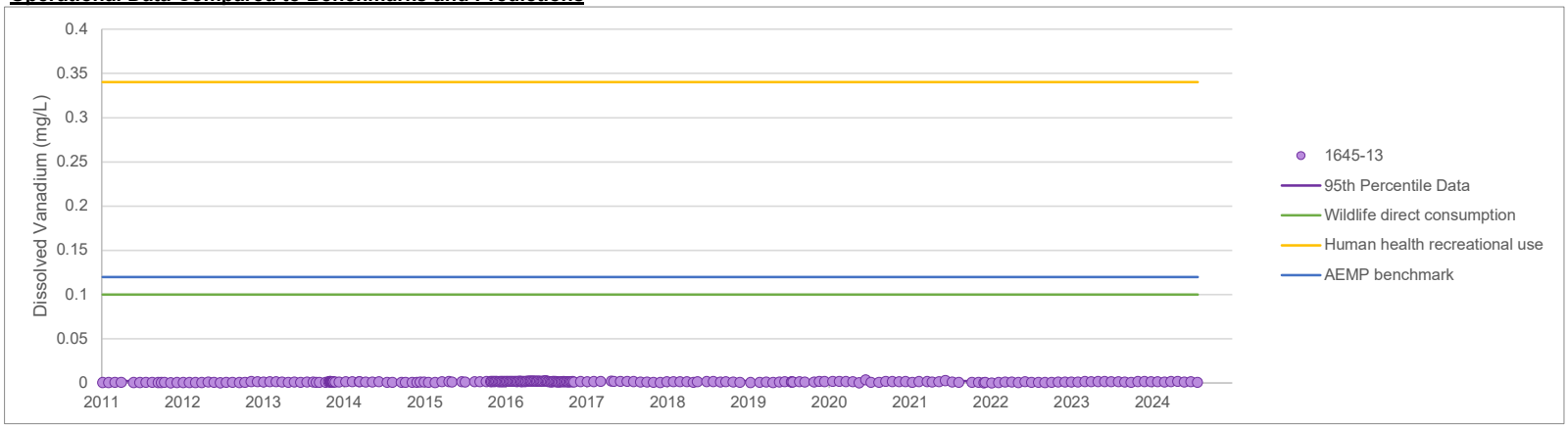


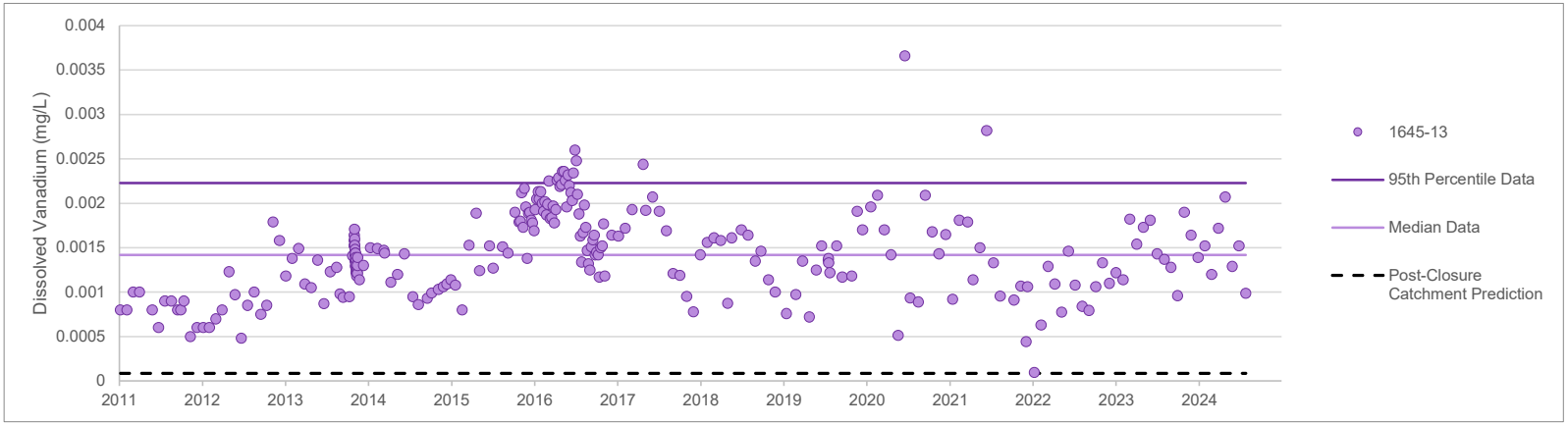


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0112	Wildlife	0.2
Median	0.0039	Human recreational	0.4
Count	252	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions

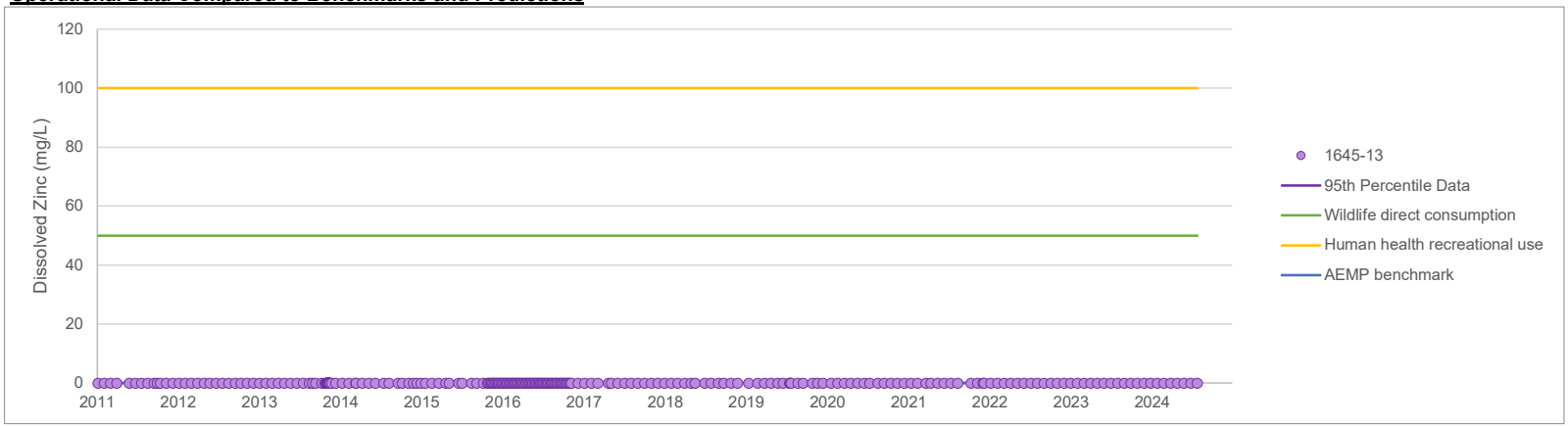


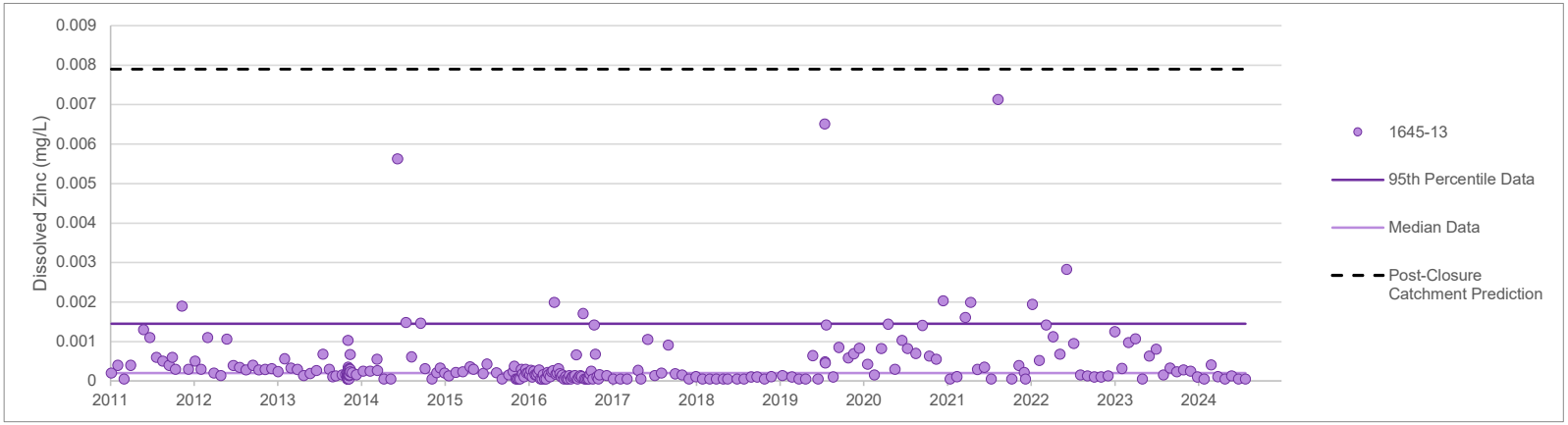


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0022	Wildlife	0.1
Median	0.0014	Human recreational	0.3
Count	252	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

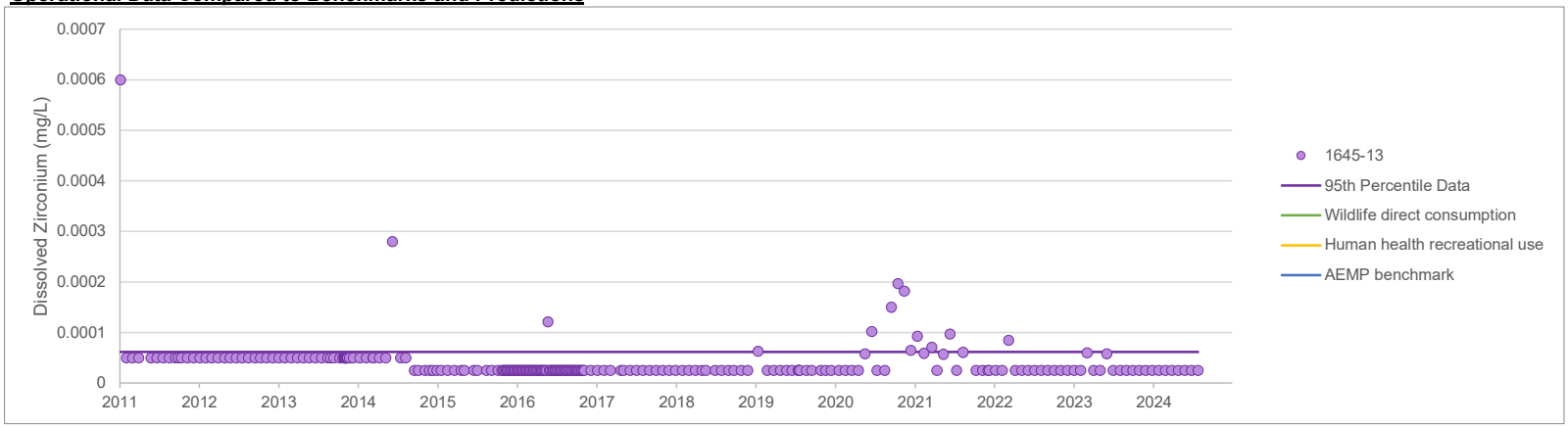


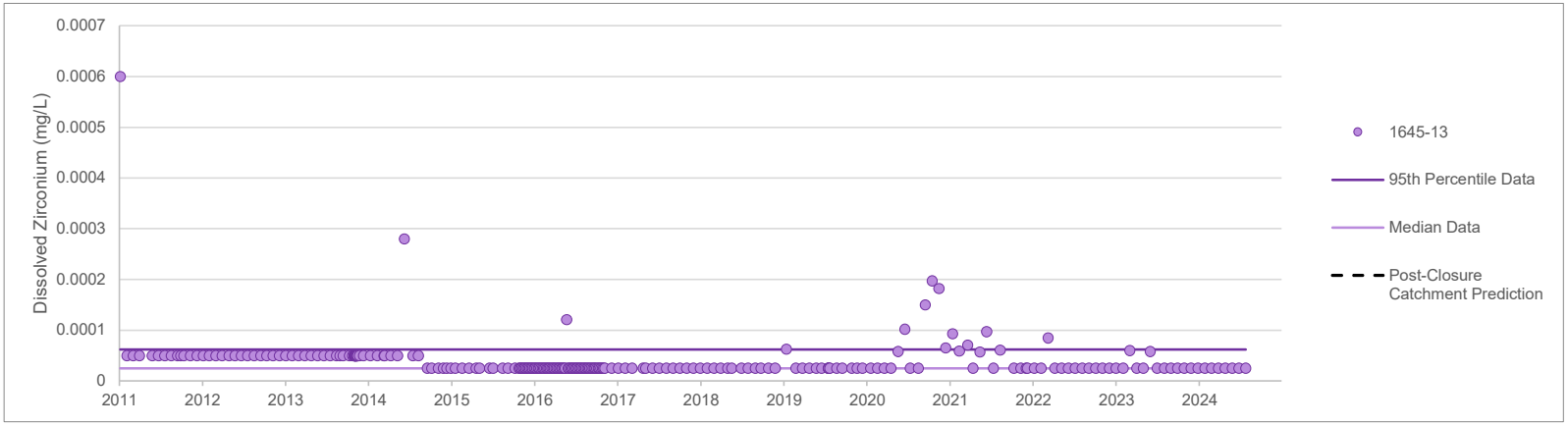


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.001	Wildlife	50
Median	0.000	Human recreational	100
Count	252	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0001	Wildlife	None
Median	0.0000	Human recreational	None
Count	252	AEMP	None

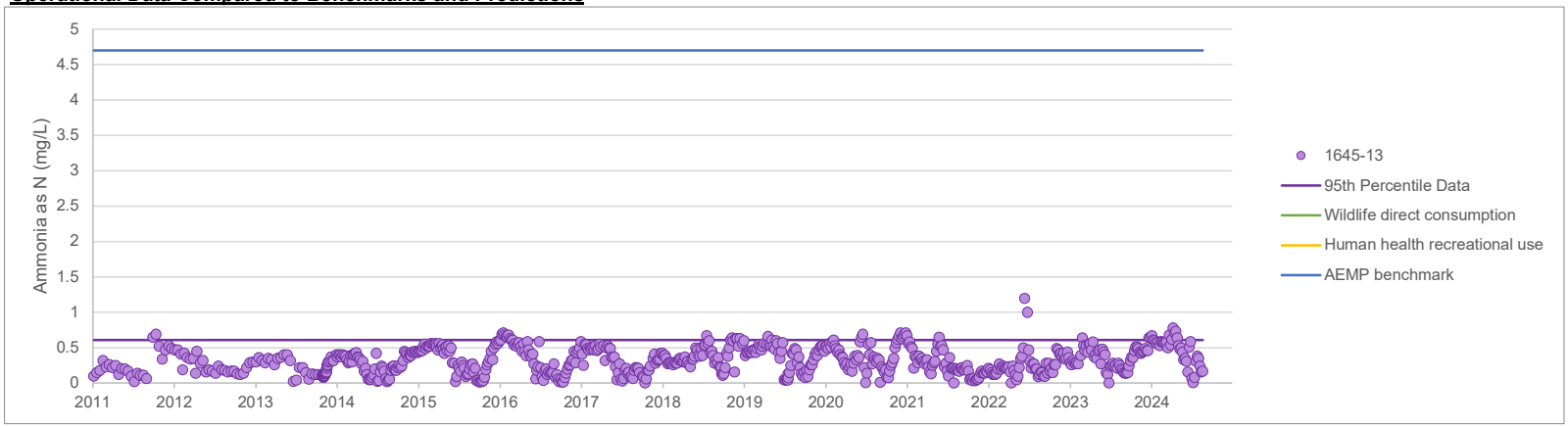
RioTinto | Diavik

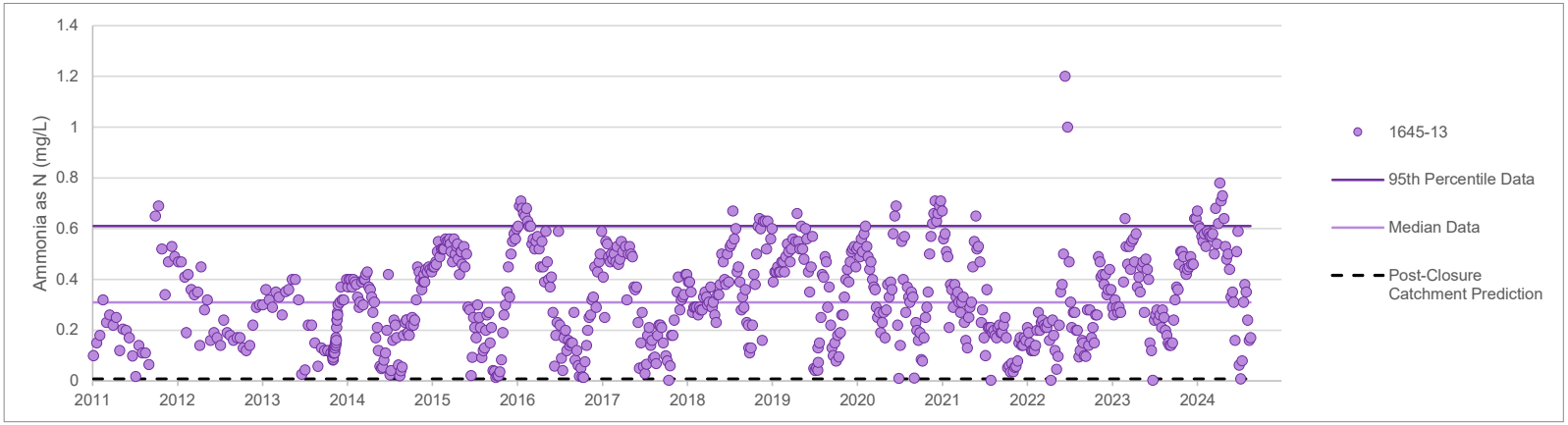
North Inlet

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions

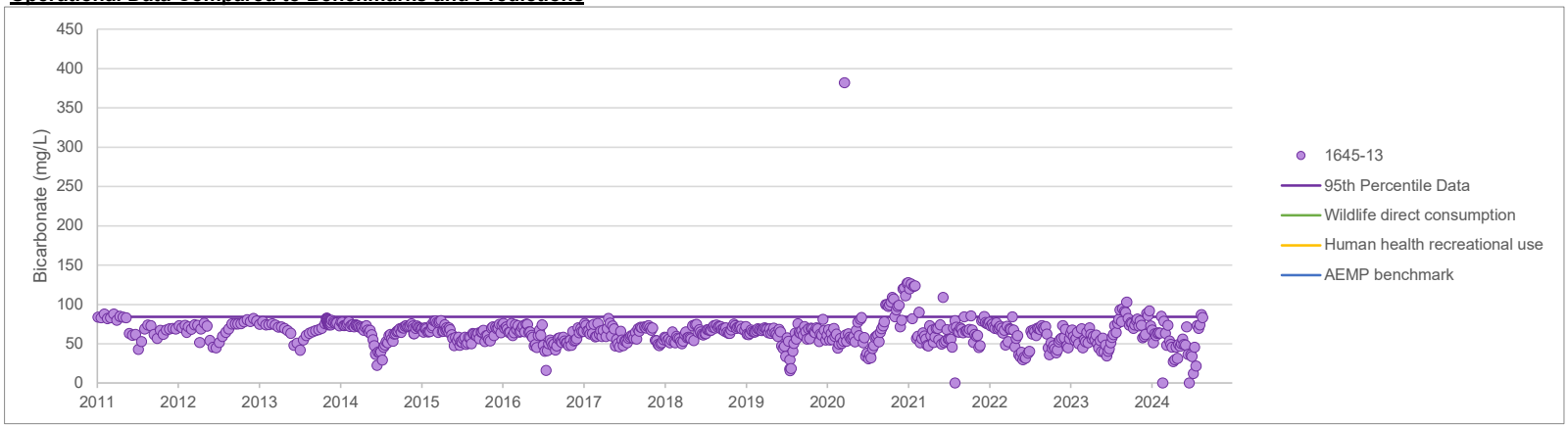


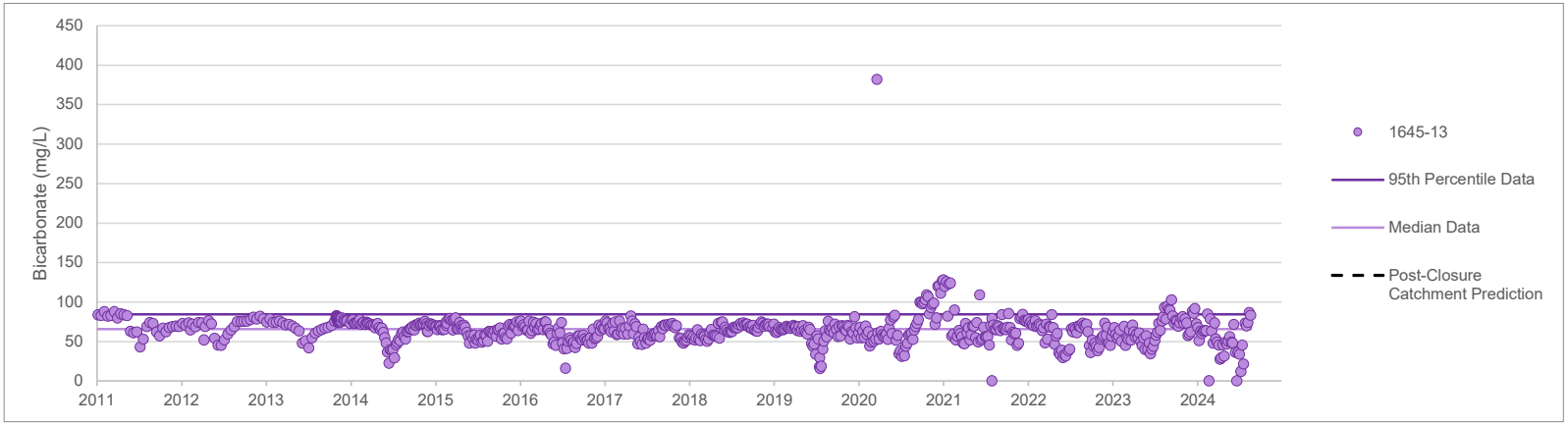


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	0.61	Wildlife	None
Median	0.31	Human recreational	None
Count	768	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions

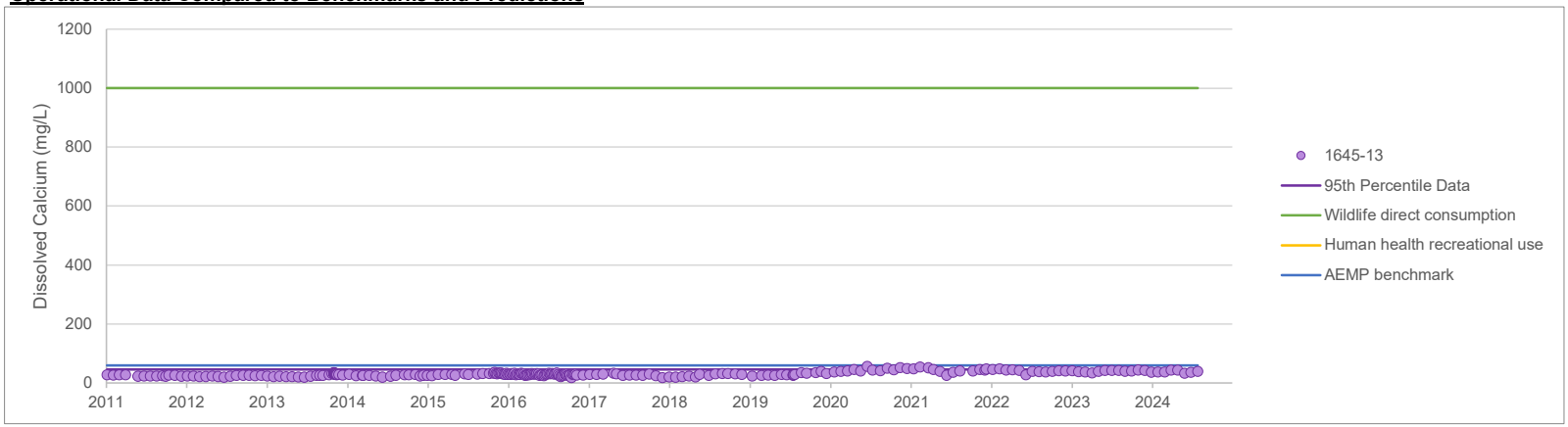


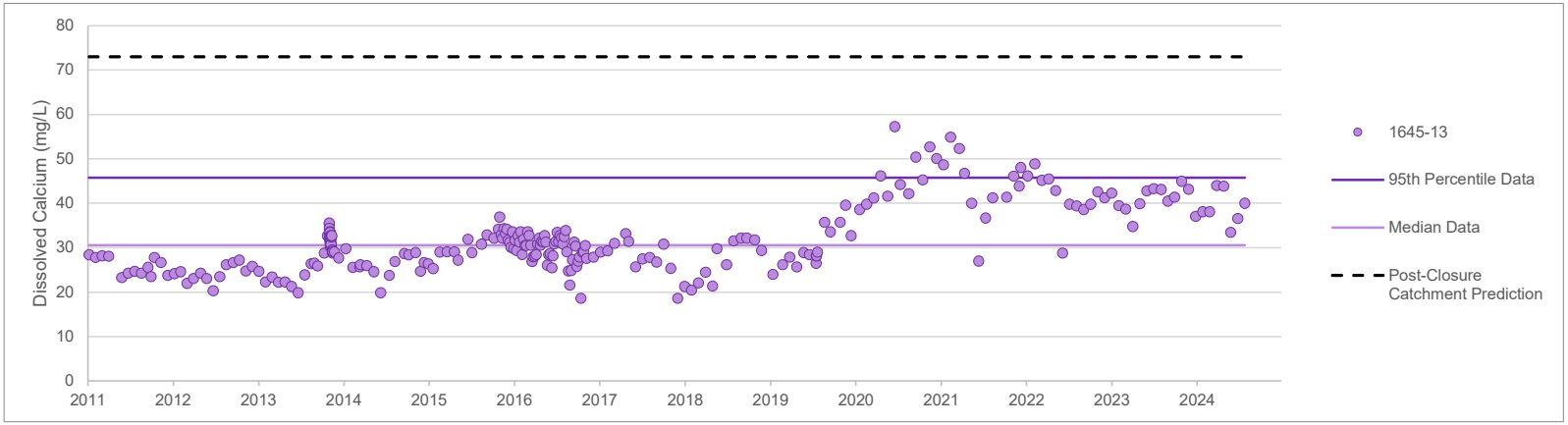


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	84.3	Wildlife	None
Median	65.7	Human recreational	None
Count	770	AEMP	None

Operational Data Compared to Benchmarks and Predictions



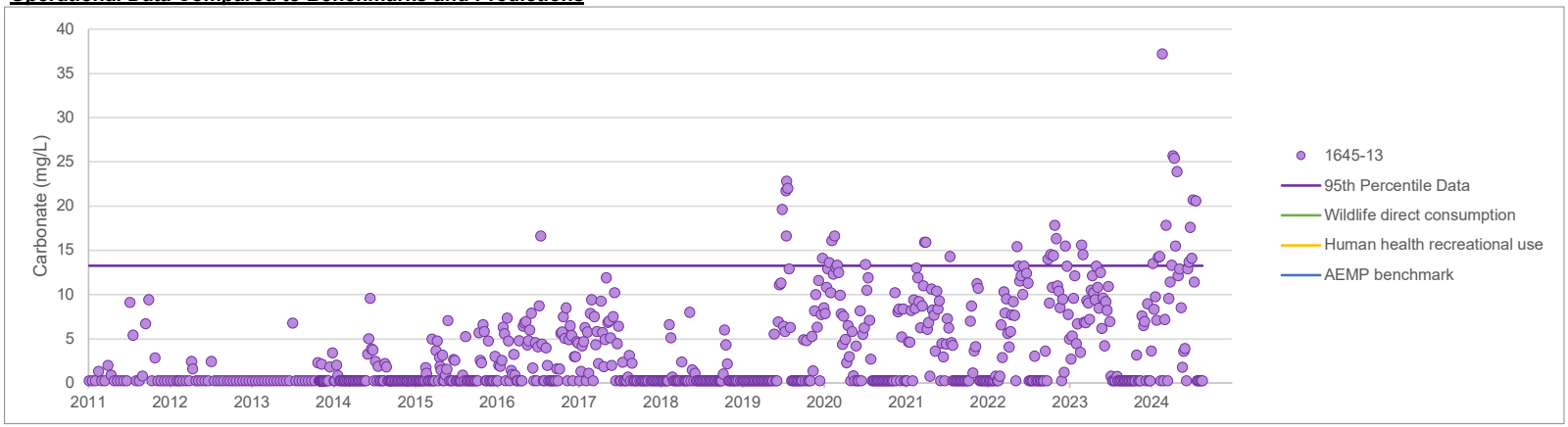


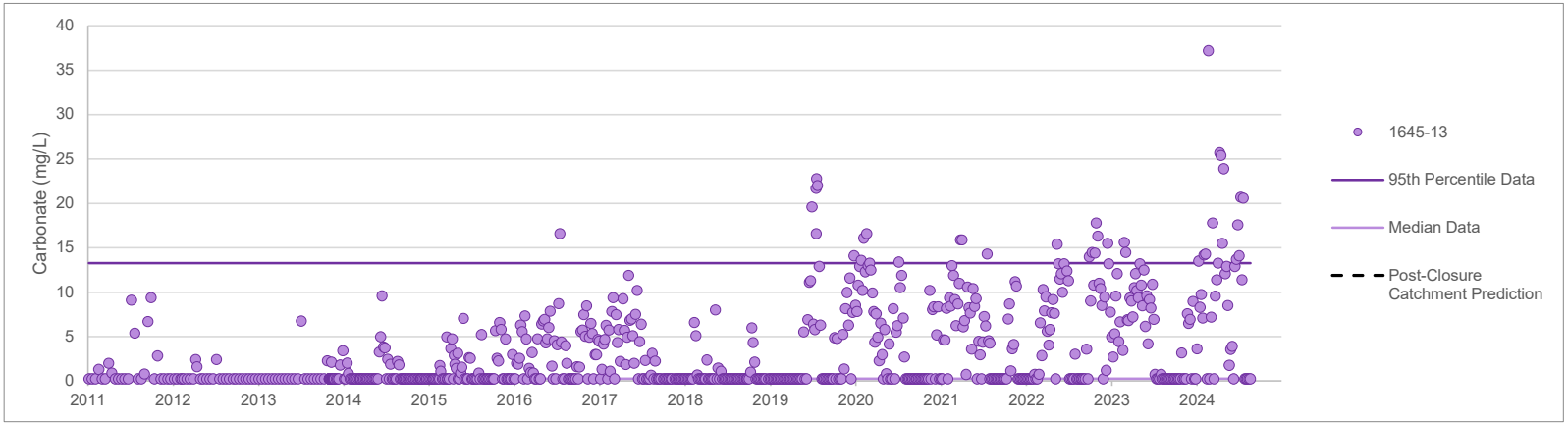
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	45.8	Wildlife	1000
Median	30.6	Human recreational	None
Count	252	AEMP	60

Operational Data Compared to Benchmarks and Predictions



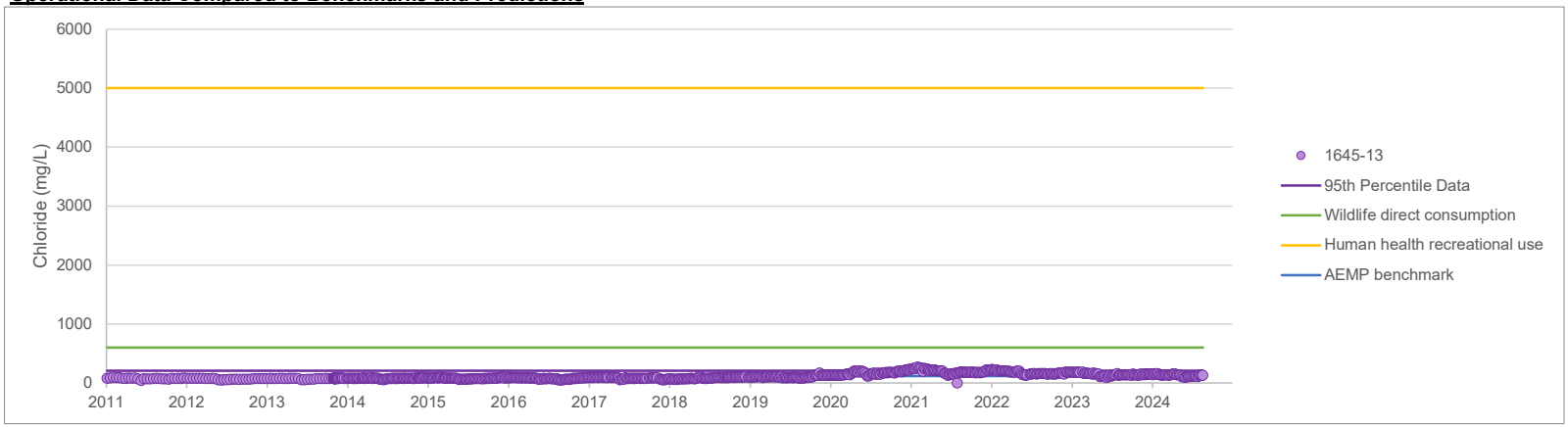


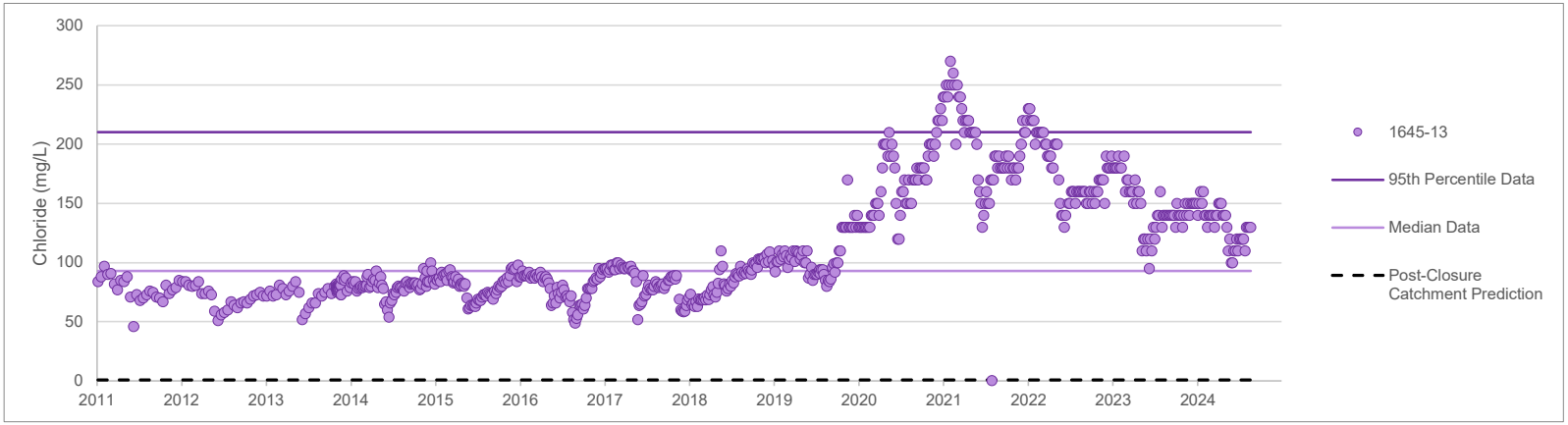
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	13.26	Wildlife	None
Median	0.25	Human recreational	None
Count	770	AEMP	None

Operational Data Compared to Benchmarks and Predictions



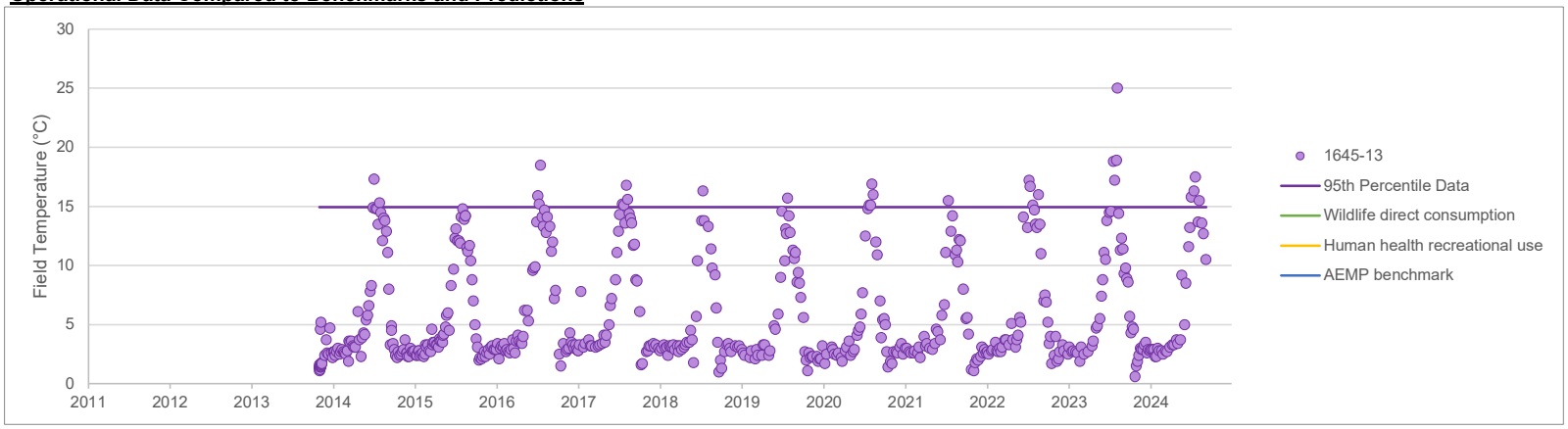


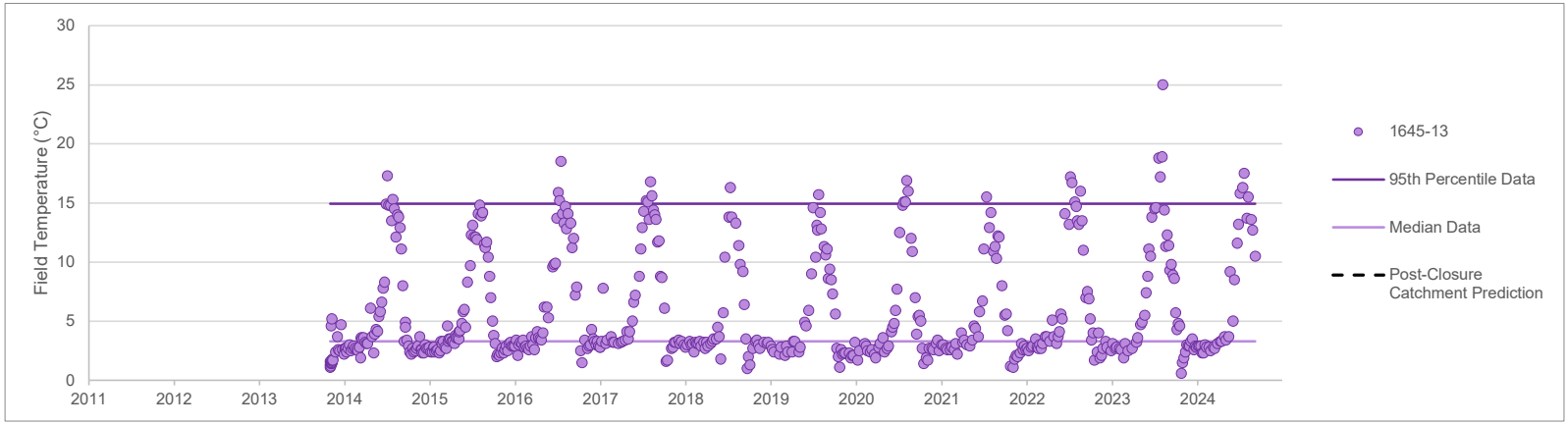
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	210.0	Wildlife	600
Median	93.0	Human recreational	5000
Count	767	AEMP	120

Operational Data Compared to Benchmarks and Predictions

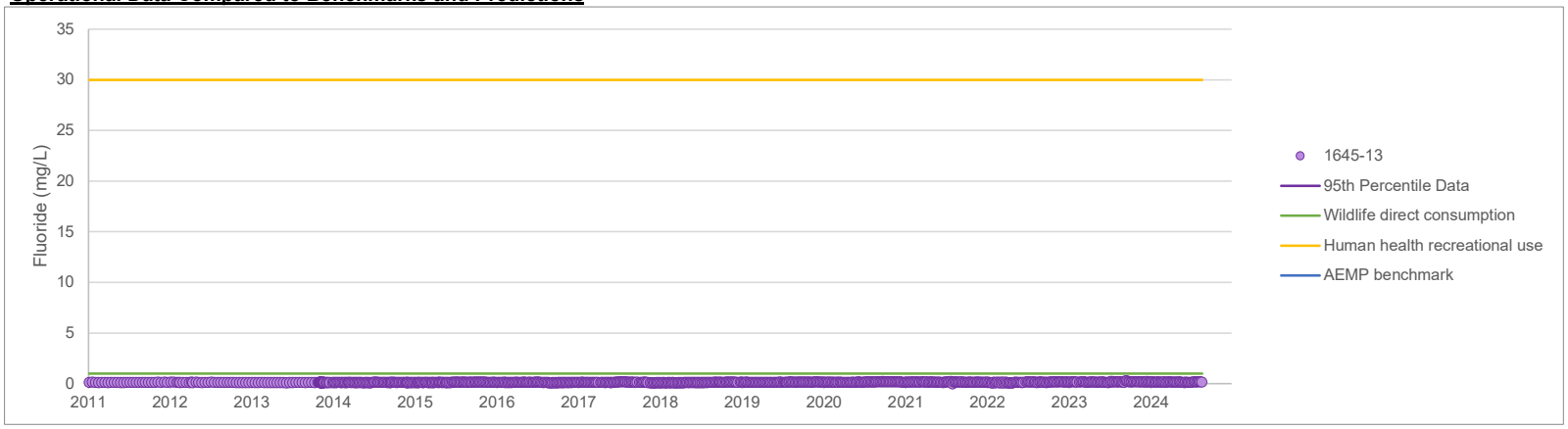


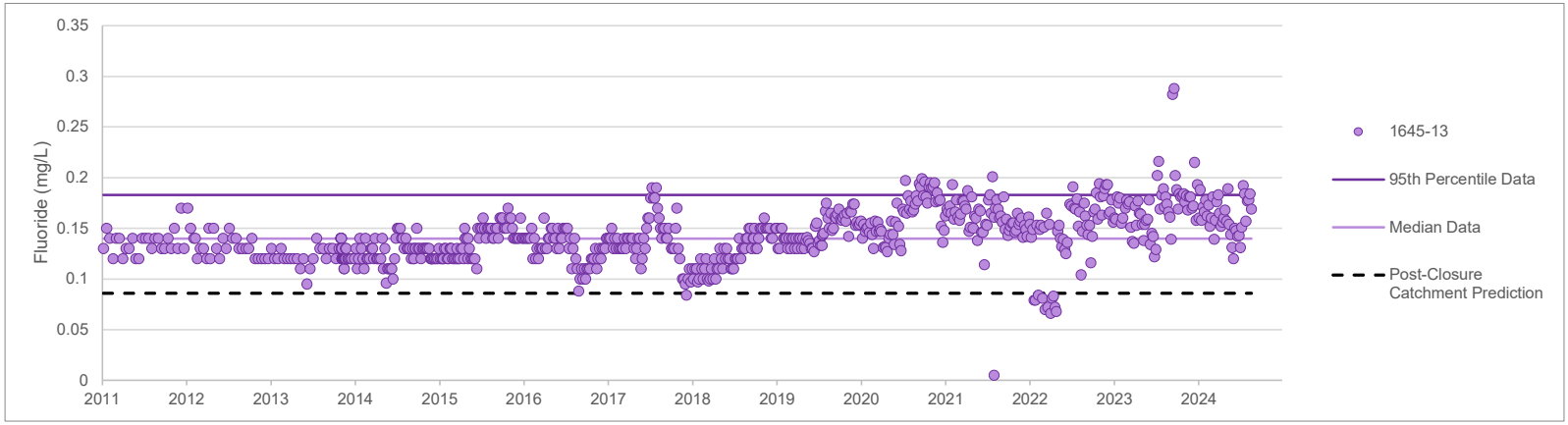


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	14.9	Wildlife	None
Median	3.3	Human recreational	None
Count	557	AEMP	None

Operational Data Compared to Benchmarks and Predictions

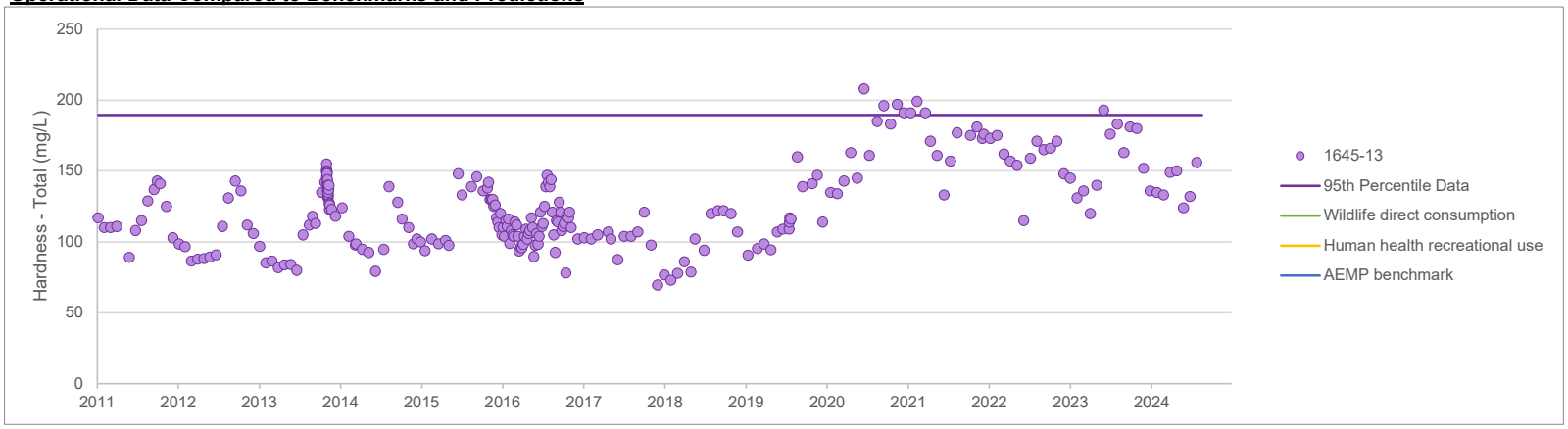


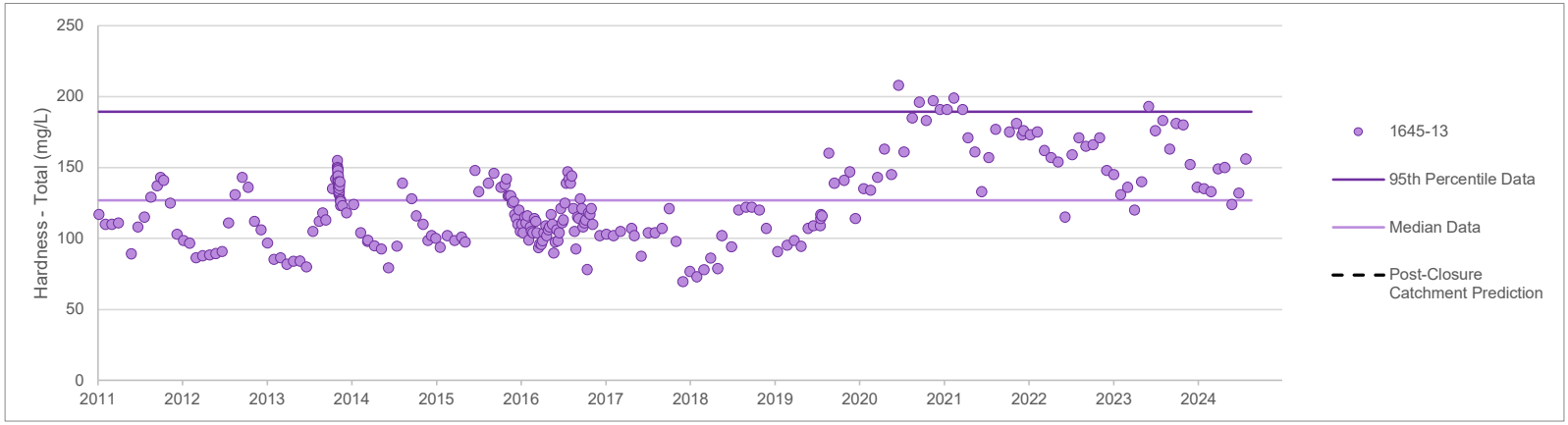


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.18	Wildlife	1
Median	0.14	Human recreational	30
Count	770	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

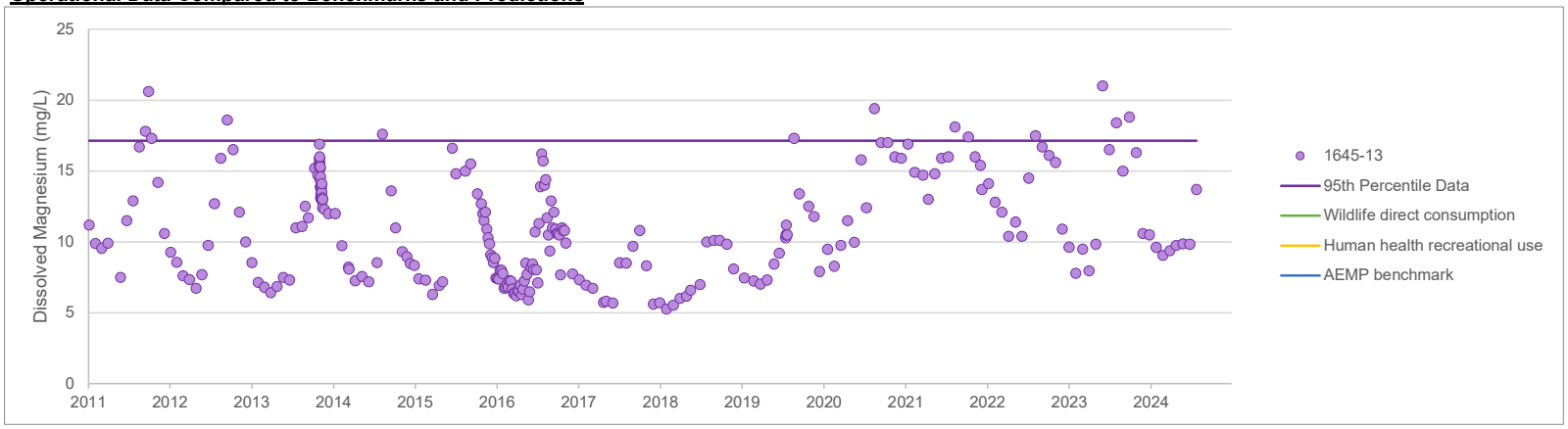


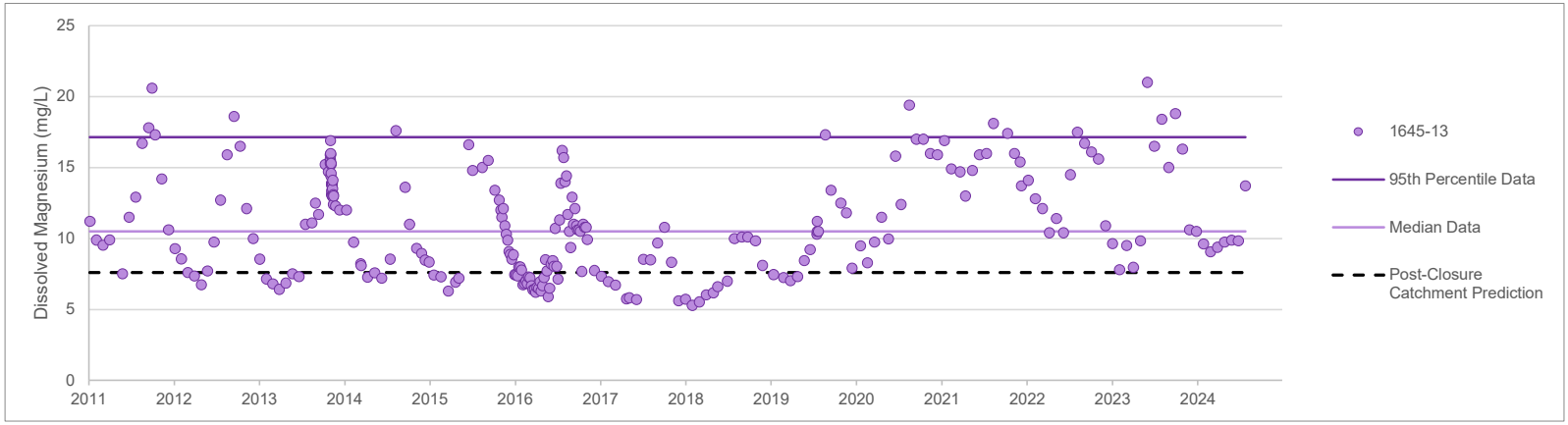


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	189	Wildlife	None
Median	127	Human recreational	None
Count	772	AEMP	None

Operational Data Compared to Benchmarks and Predictions

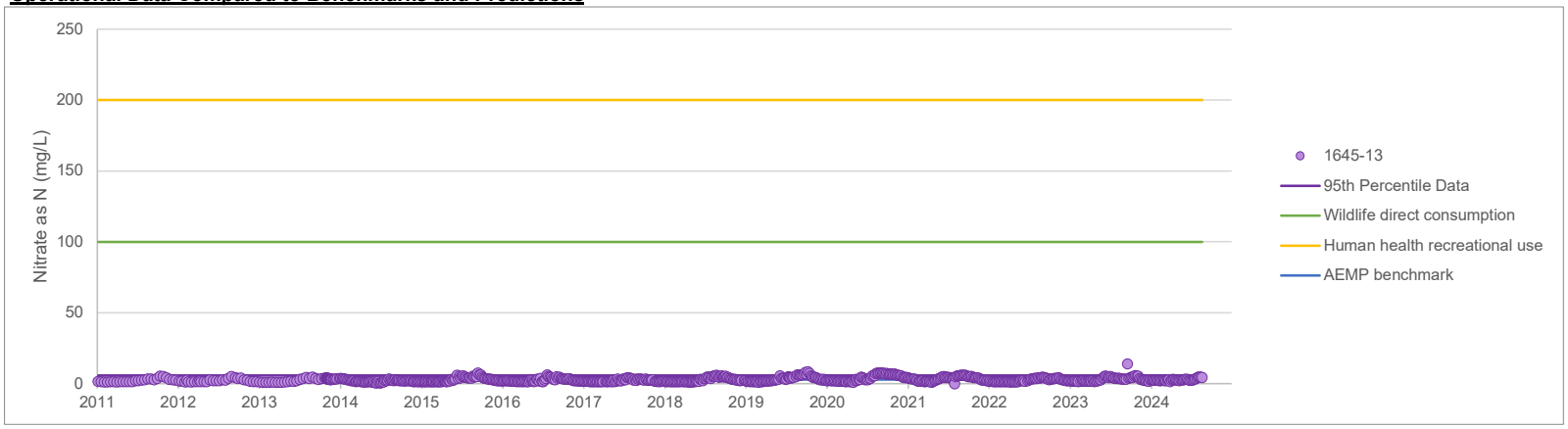


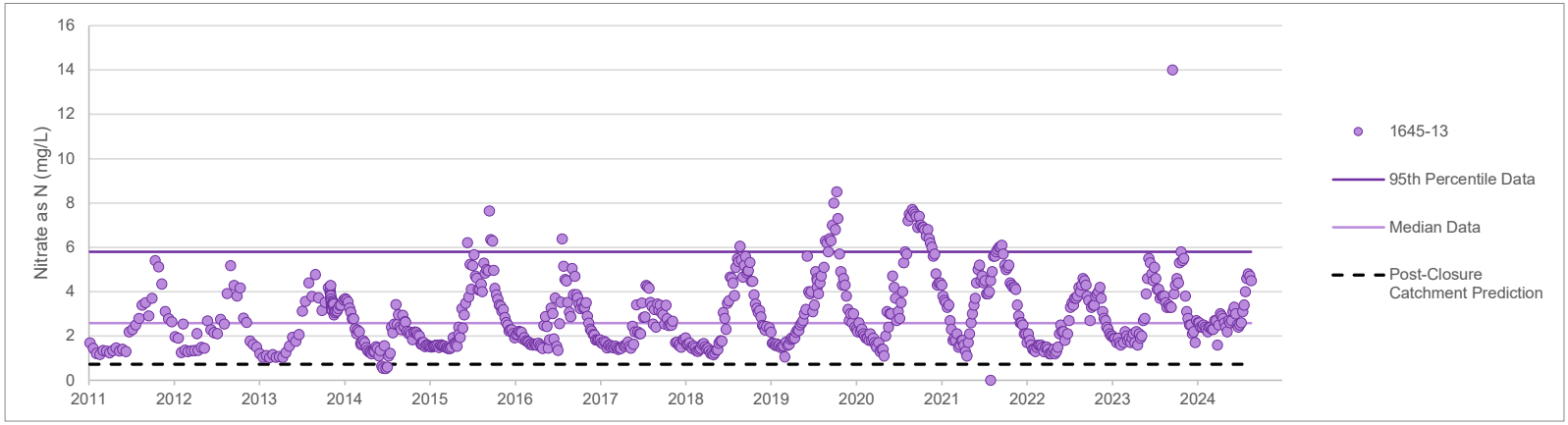


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	17.1	Wildlife	None
Median	10.5	Human recreational	None
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions

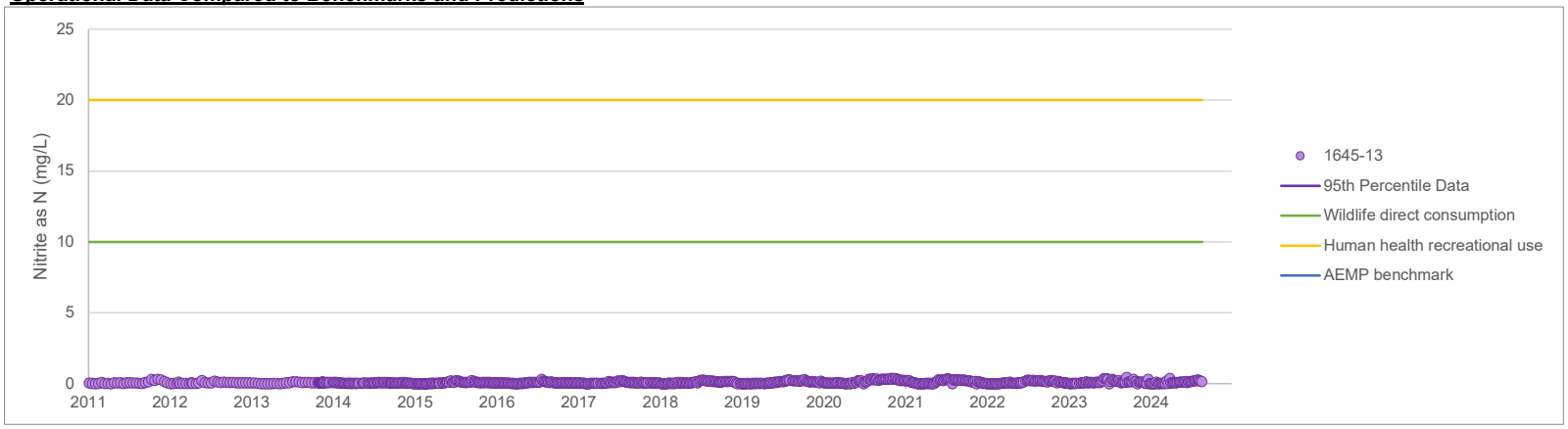


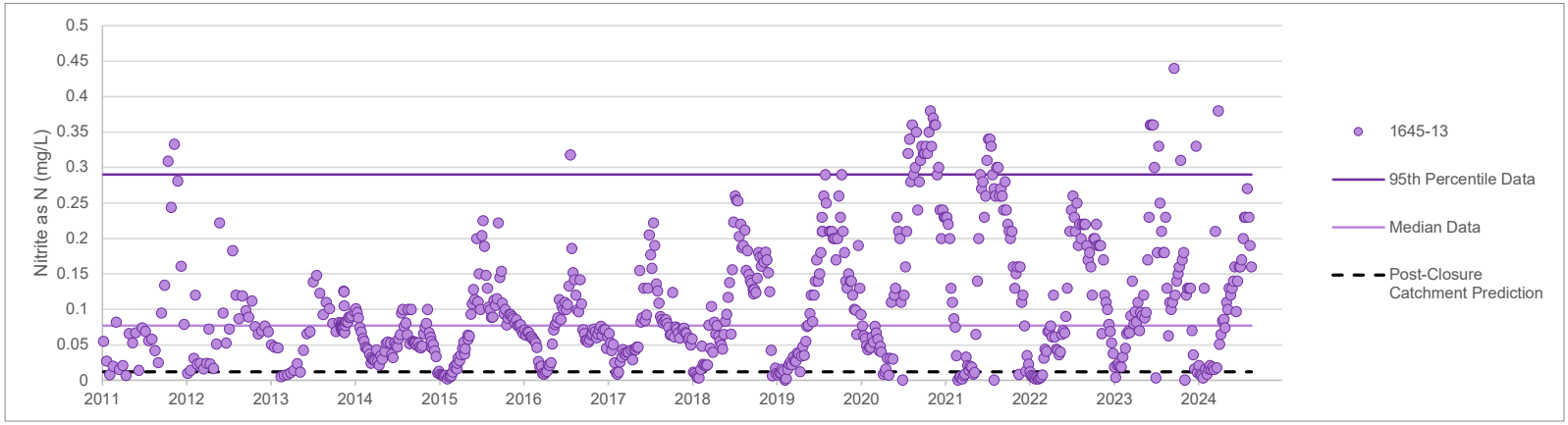


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	5.8	Wildlife	100
Median	2.6	Human recreational	200
Count	768	AEMP	3

Operational Data Compared to Benchmarks and Predictions



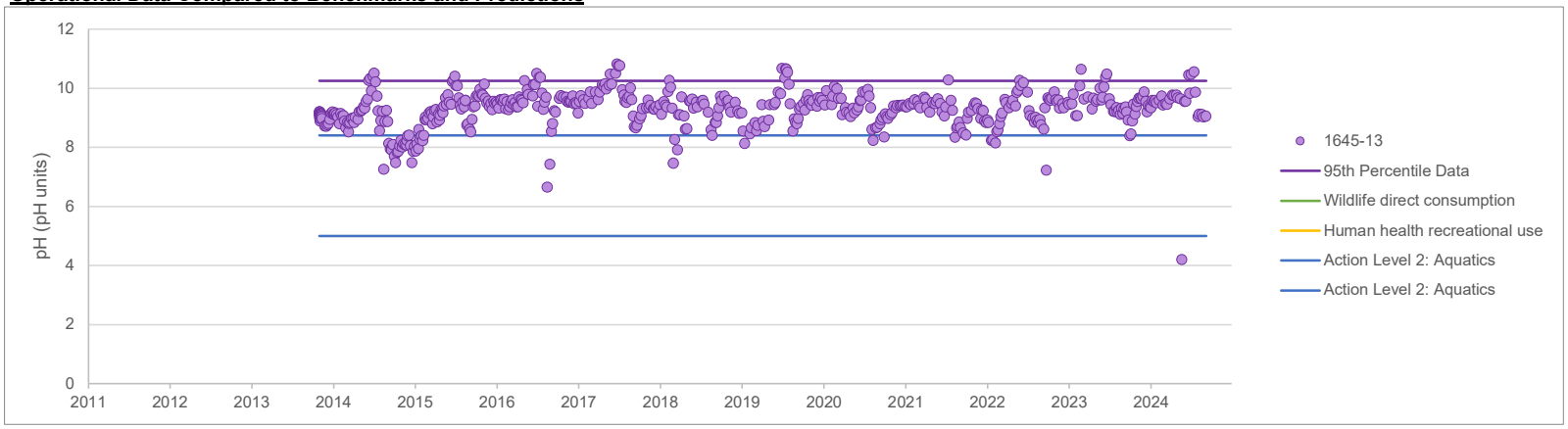


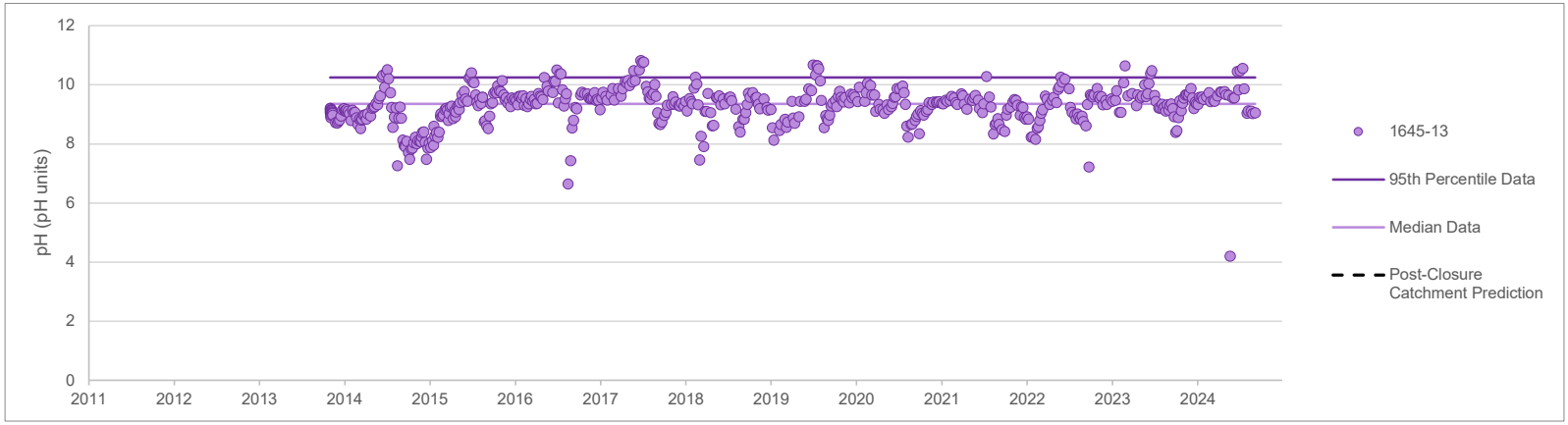
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.290	Wildlife	10.0
Median	0.077	Human recreational	20.0
Count	767	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



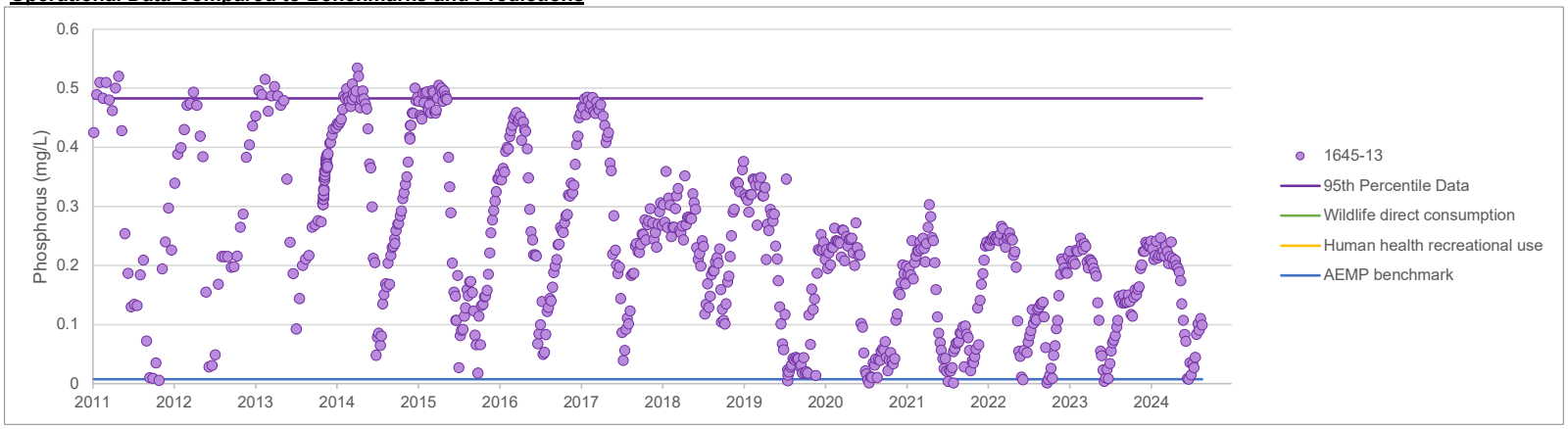


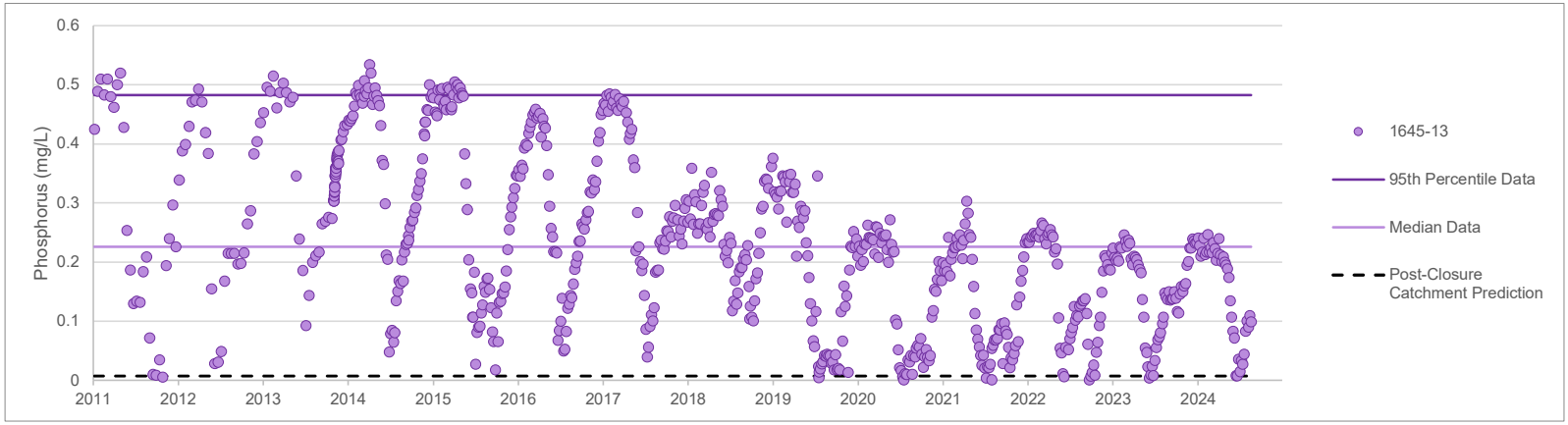
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	10.3	Wildlife	None
Median	9.4	Human recreational	None
Count	556	AEMP	None

Operational Data Compared to Benchmarks and Predictions

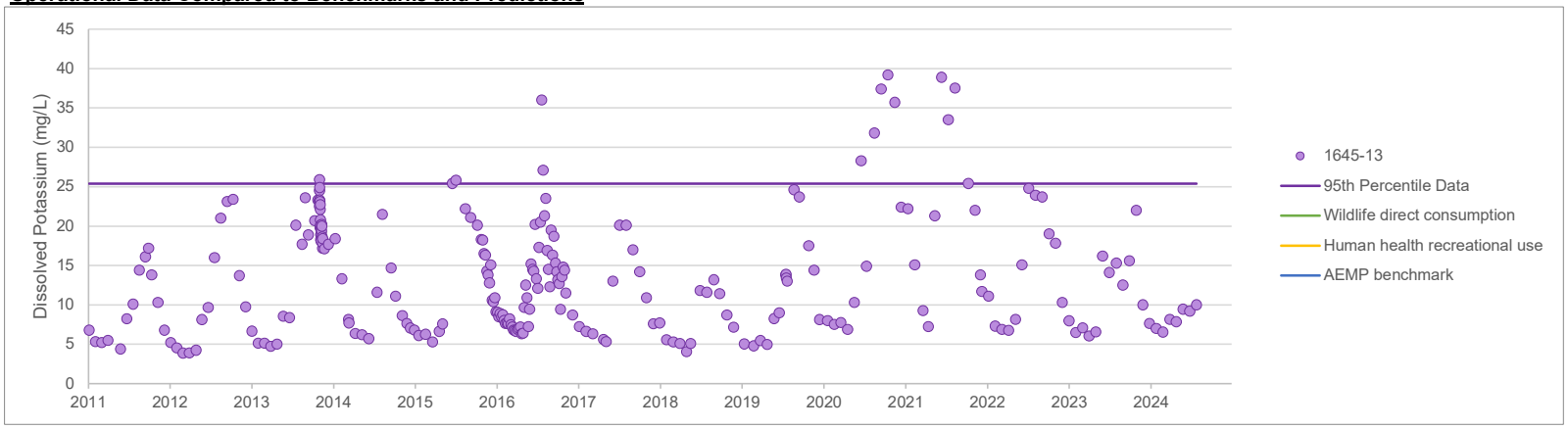


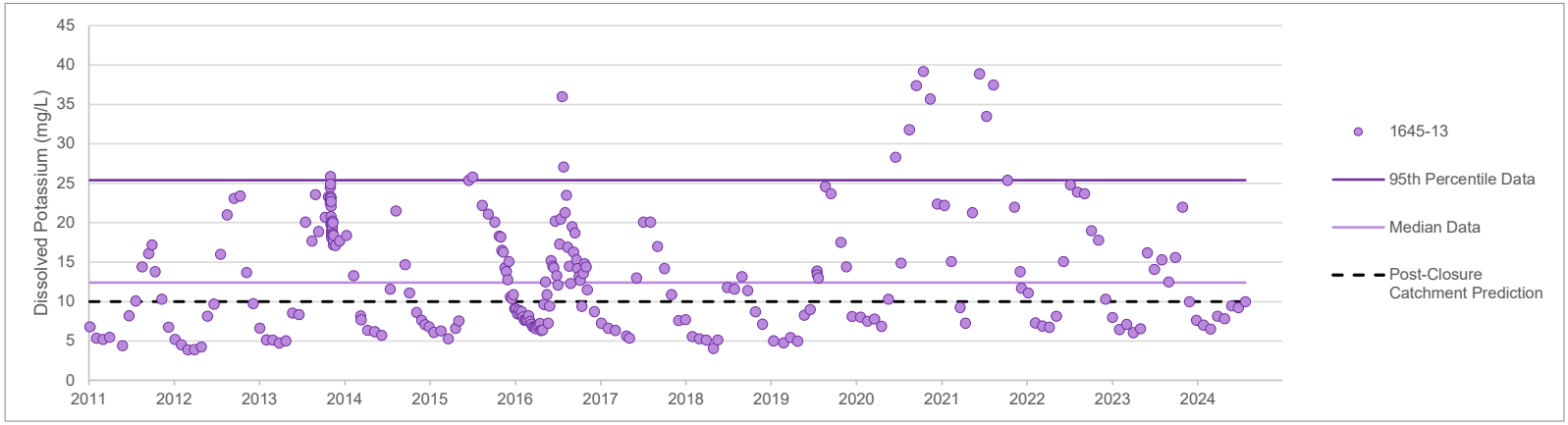


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.483	Wildlife	None
Median	0.226	Human recreational	None
Count	769	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



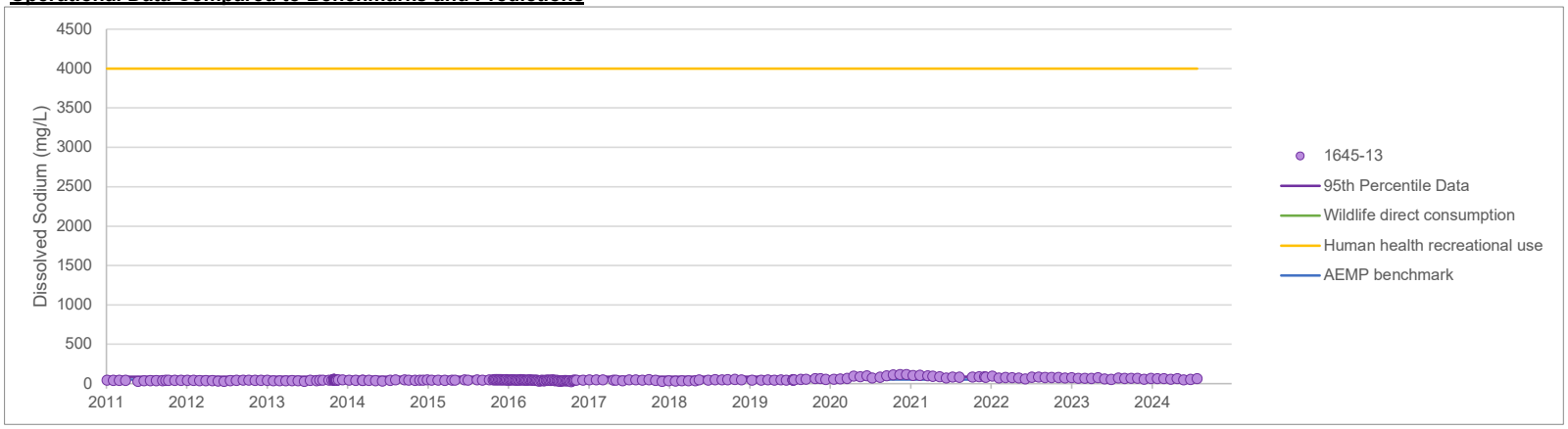


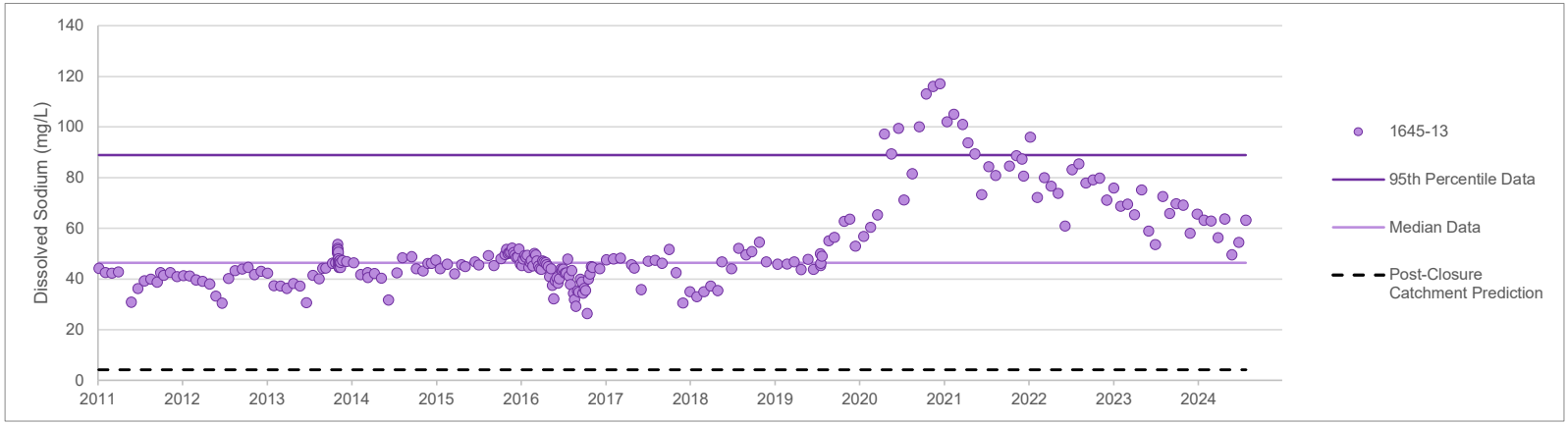
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	25.4	Wildlife	None
Median	12.4	Human recreational	None
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions



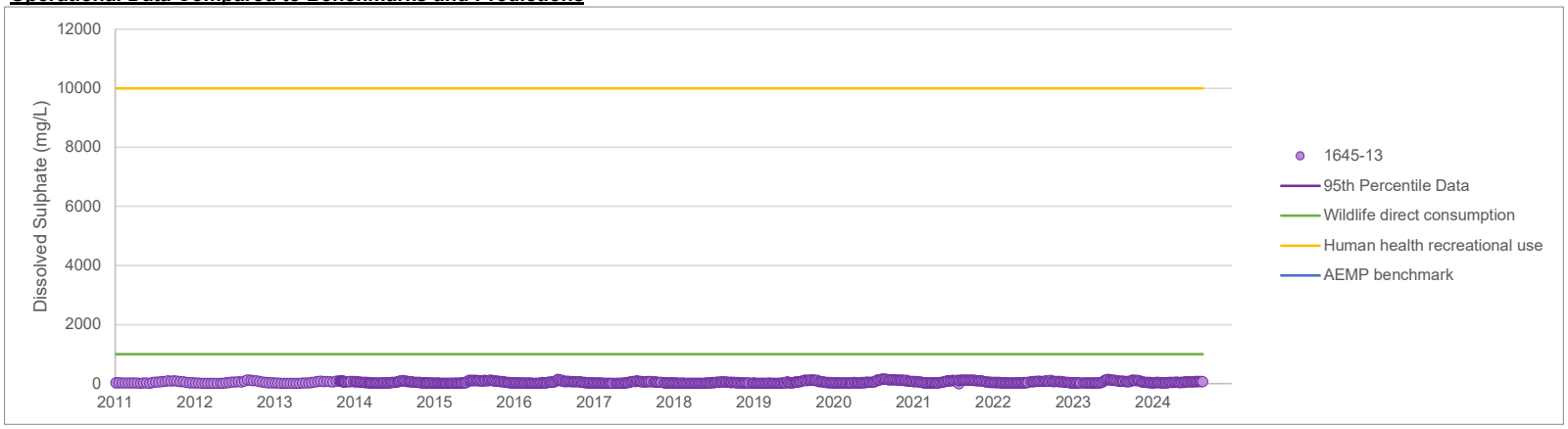


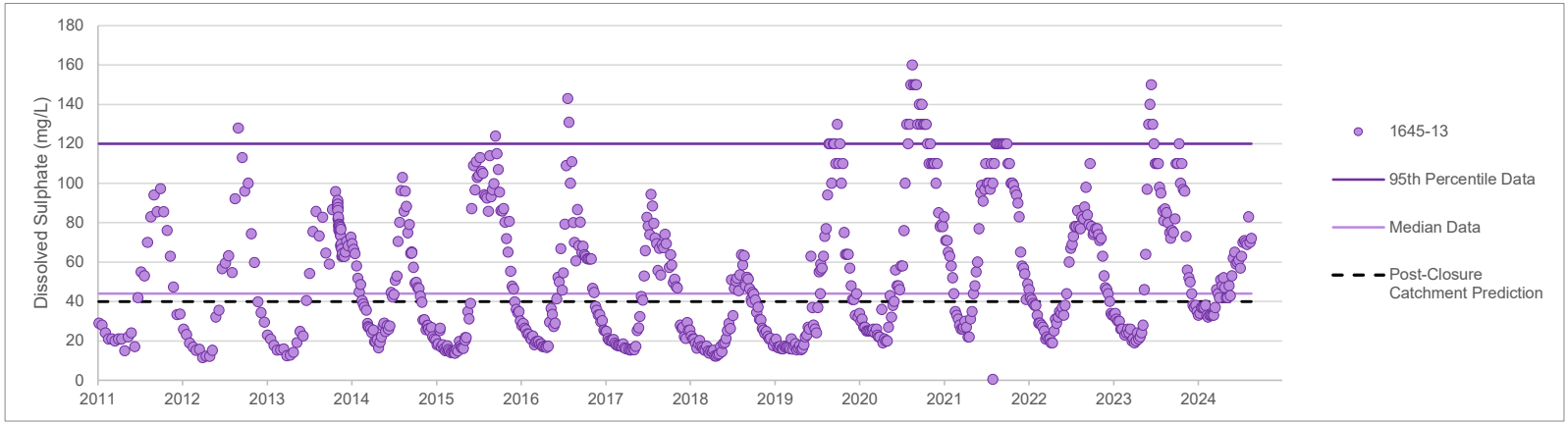
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	89.0	Wildlife	None
Median	46.4	Human recreational	4000
Count	252	AEMP	52

Operational Data Compared to Benchmarks and Predictions



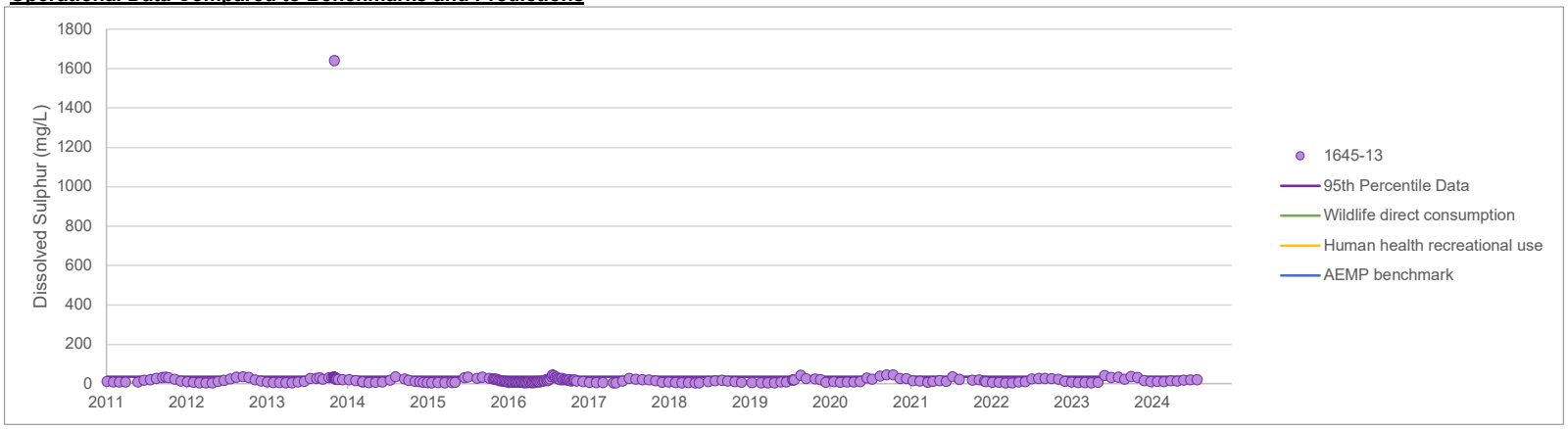


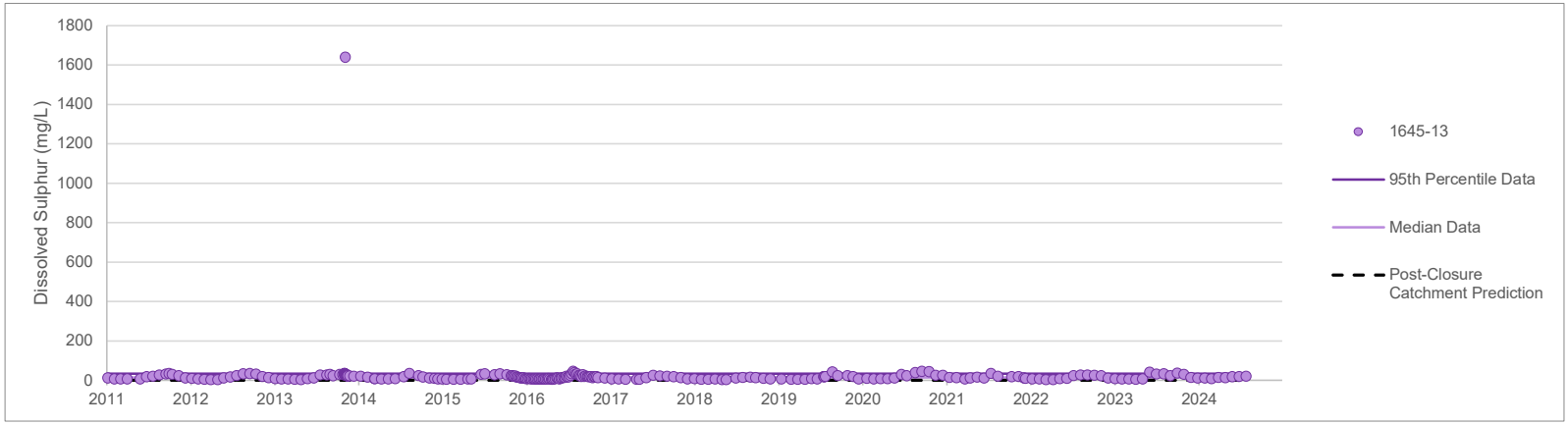
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	120	Wildlife	1000
Median	44	Human recreational	10000
Count	767	AEMP	100

Operational Data Compared to Benchmarks and Predictions

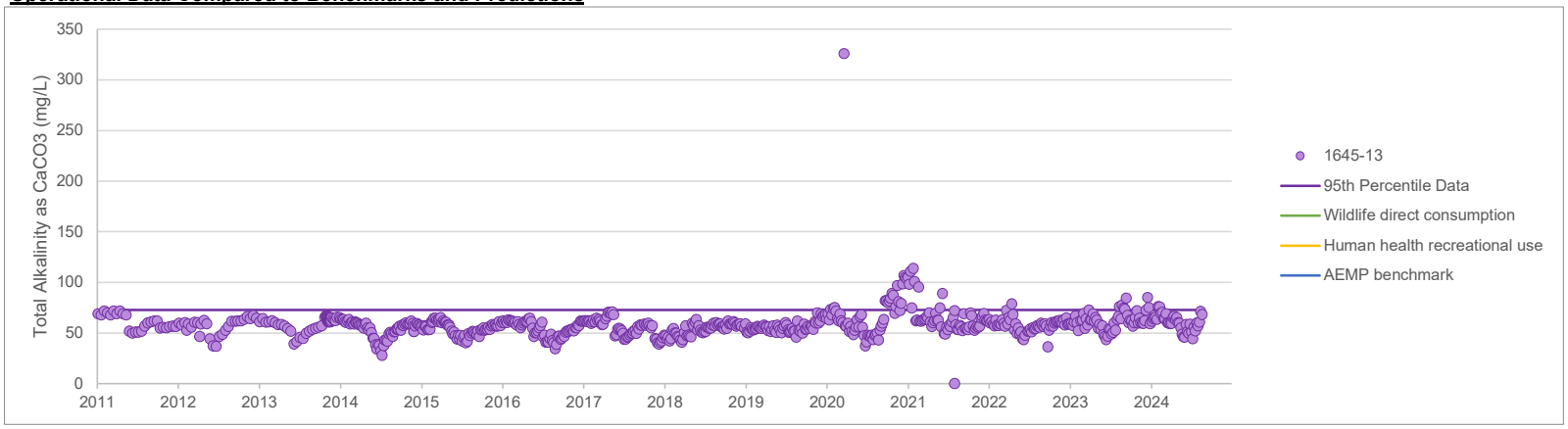


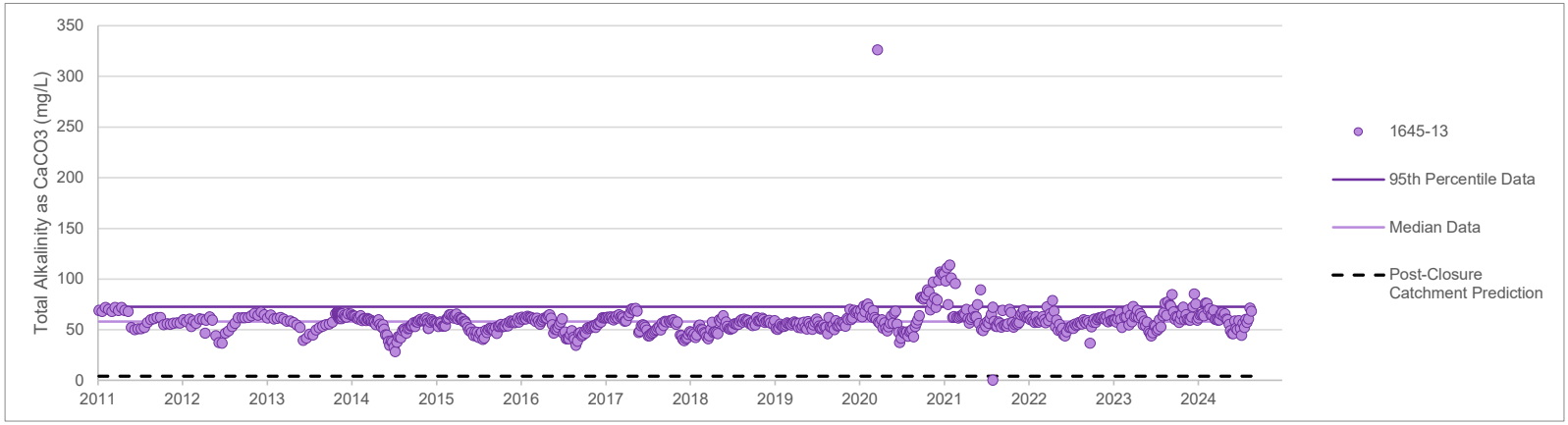


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	34.8	Wildlife	None
Median	15.3	Human recreational	None
Count	252	AEMP	None

Operational Data Compared to Benchmarks and Predictions



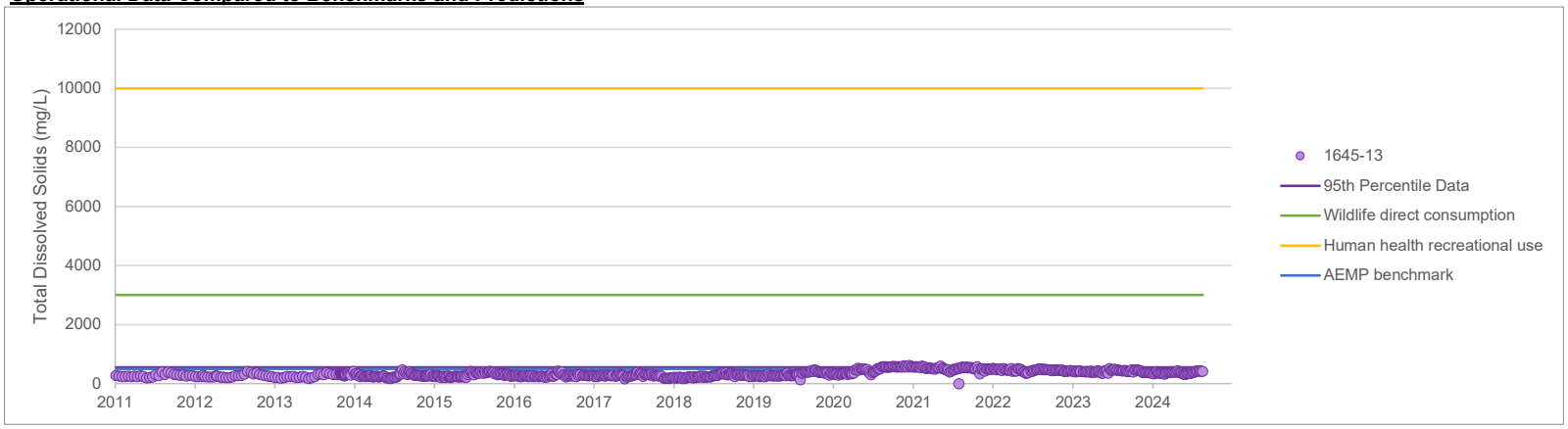


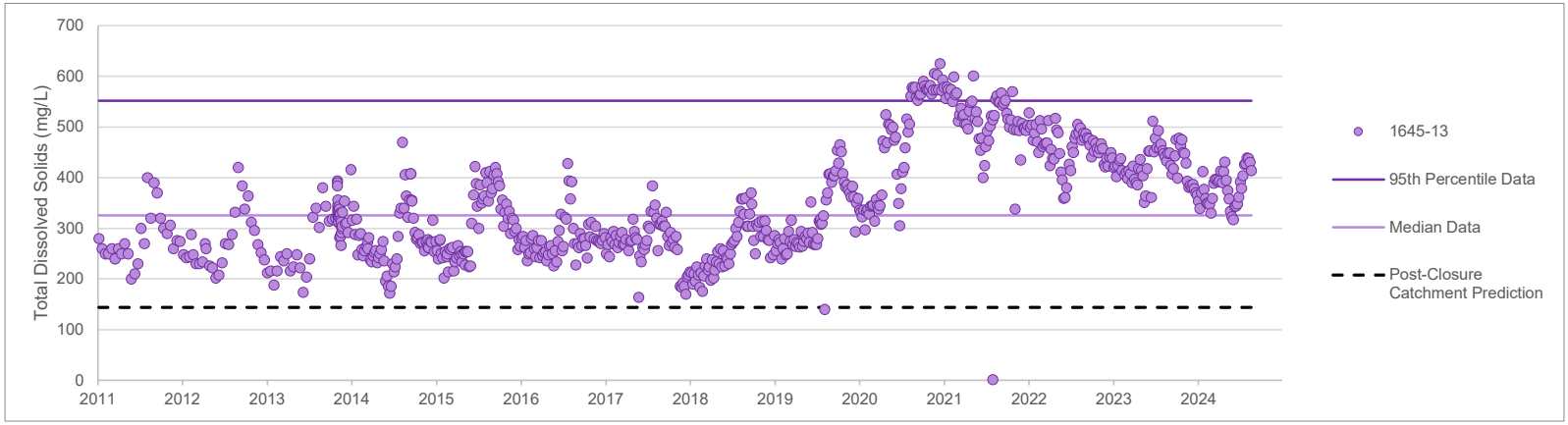
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	72.8	Wildlife	None
Median	58.0	Human recreational	None
Count	770	AEMP	None

Operational Data Compared to Benchmarks and Predictions



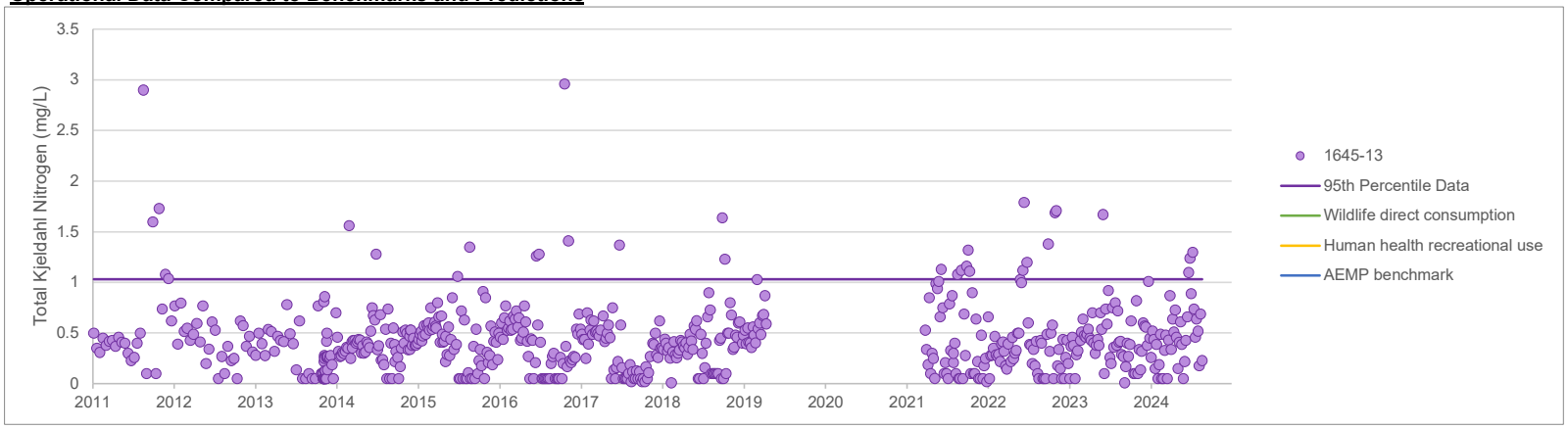


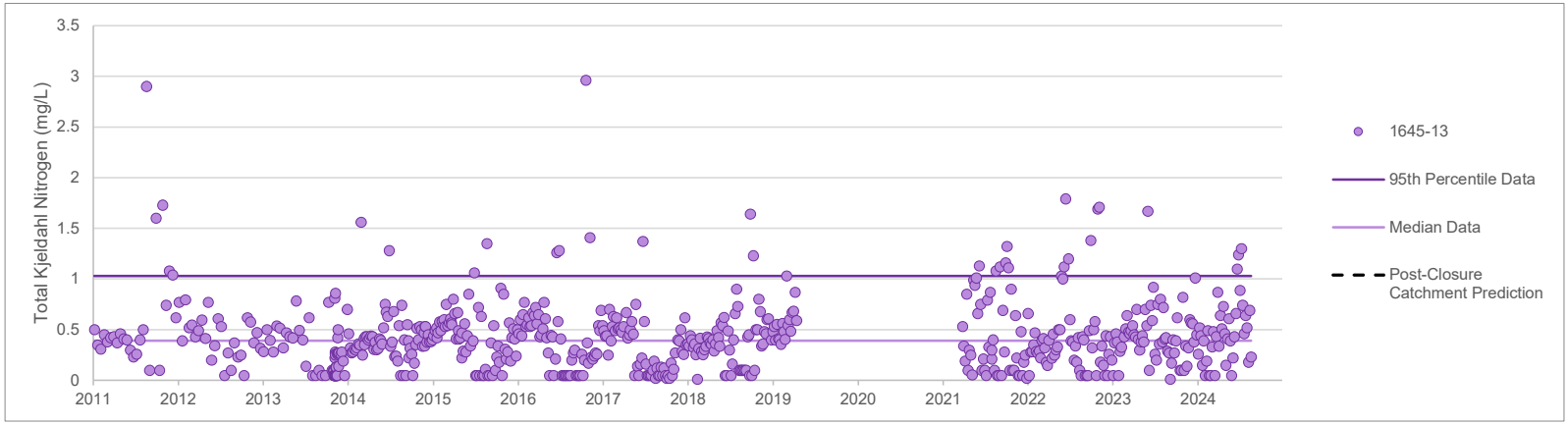
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	552	Wildlife	3000
Median	326	Human recreational	10000
Count	770	AEMP	500

Operational Data Compared to Benchmarks and Predictions



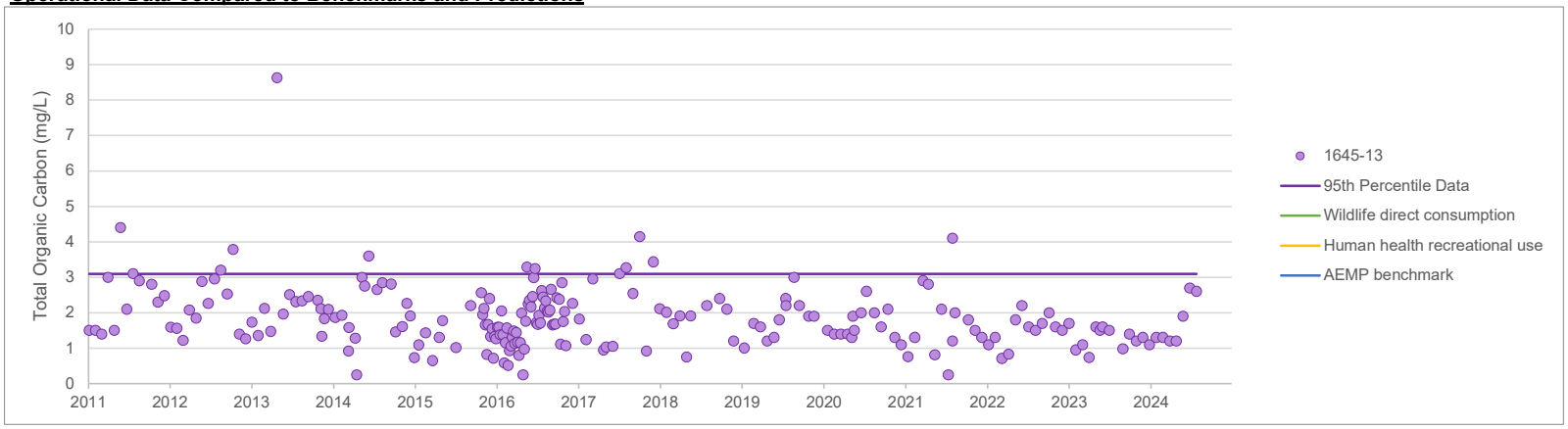


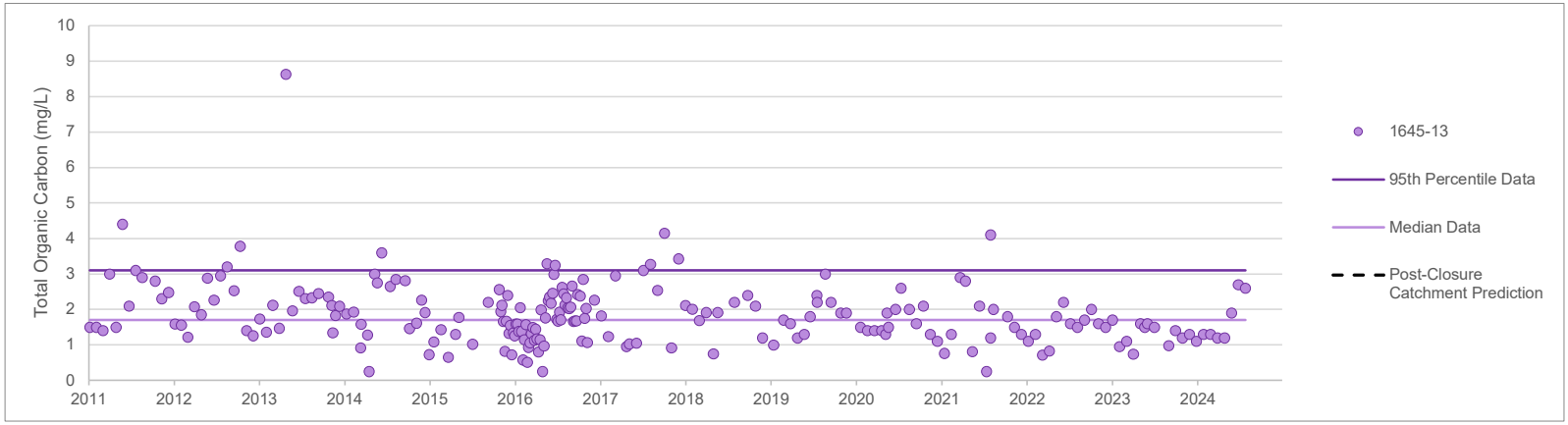
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	1.0	Wildlife	None
Median	0.4	Human recreational	None
Count	644	AEMP	None

Operational Data Compared to Benchmarks and Predictions

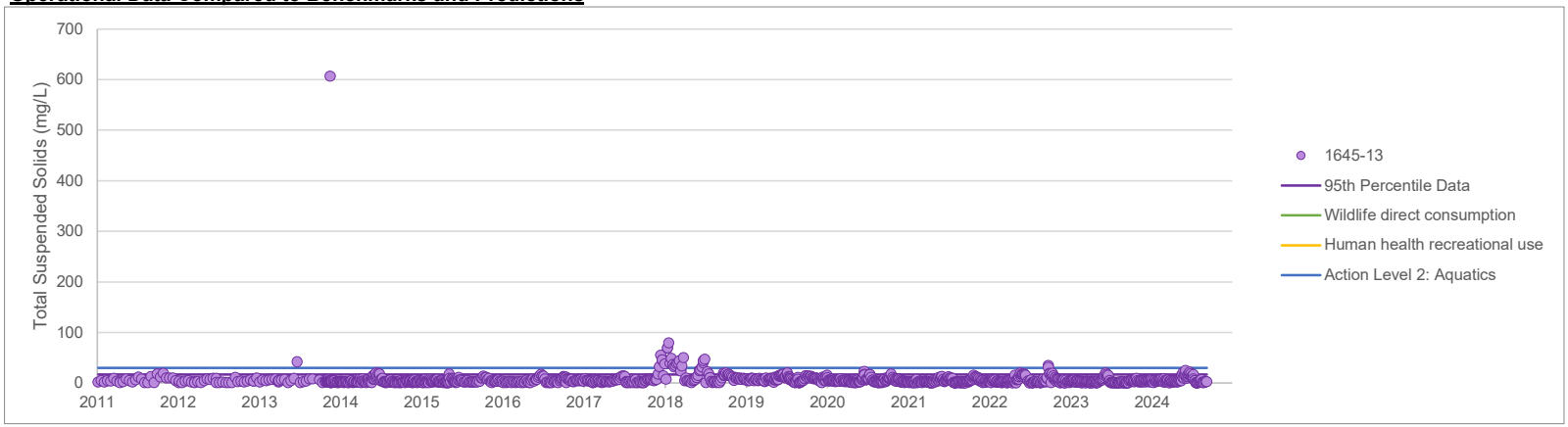


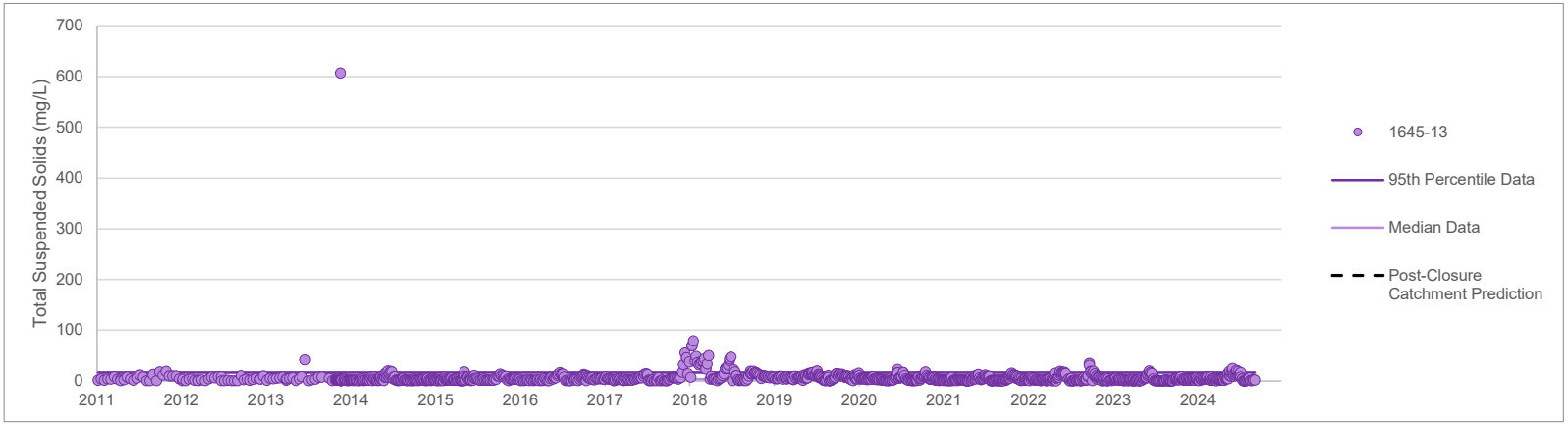


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	3.1	Wildlife	None
Median	1.7	Human recreational	None
Count	221	AEMP	None

Operational Data Compared to Benchmarks and Predictions



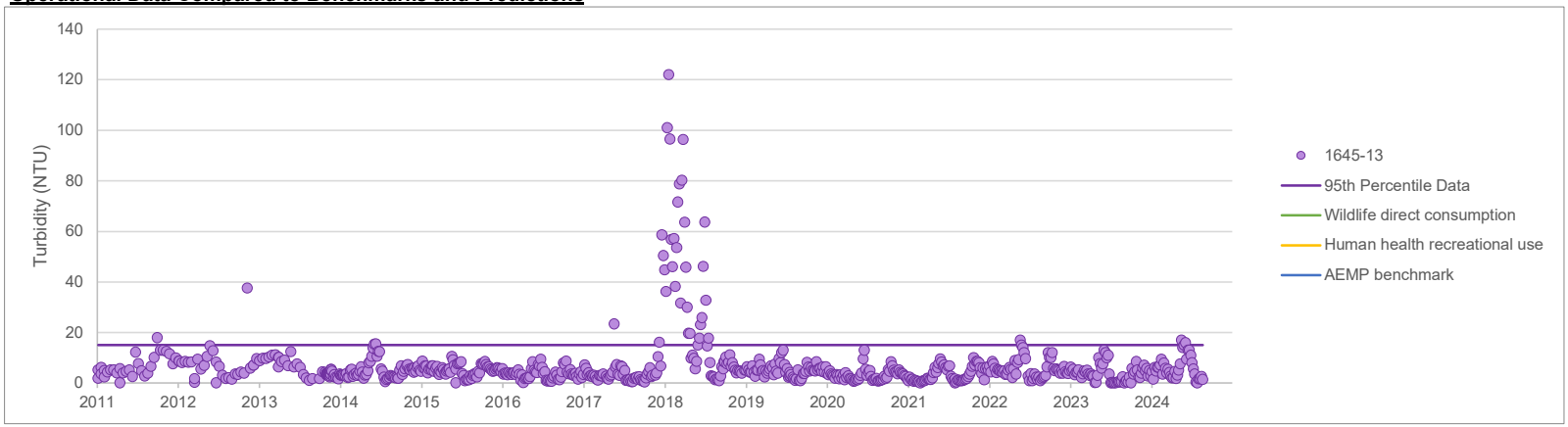


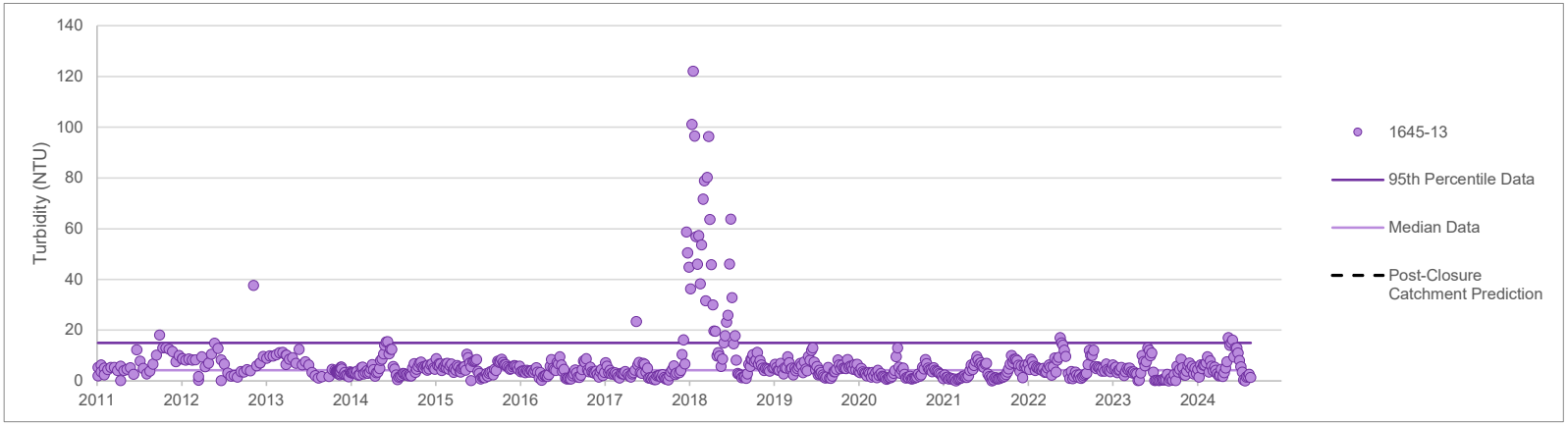
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	16.9	Wildlife	None
Median	4.0	Human recreational	None
Count	1389	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



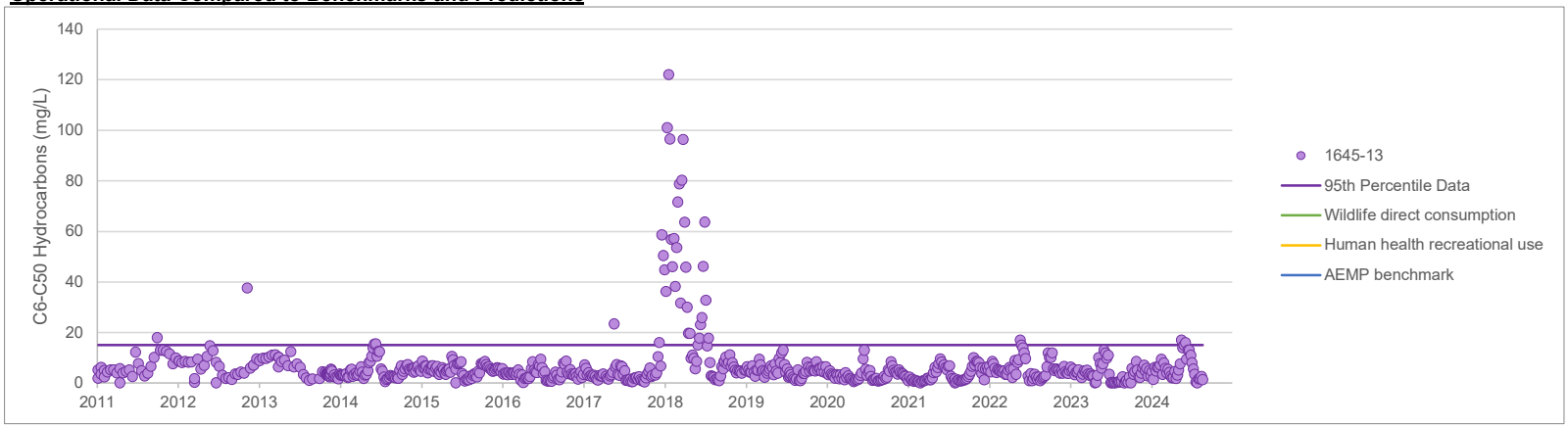


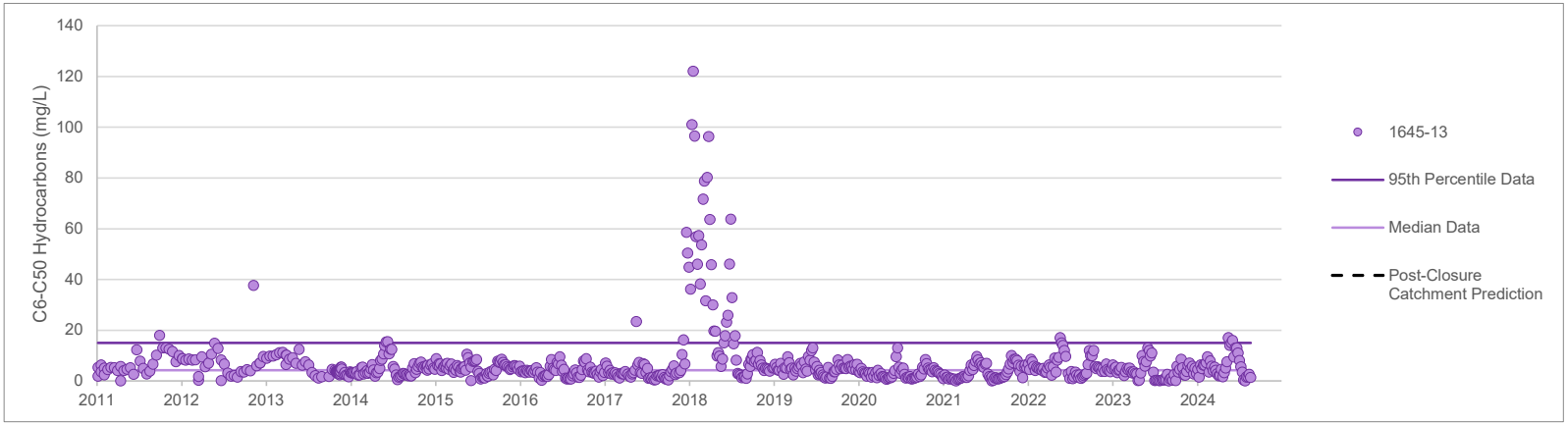
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	15.0	Wildlife	None
Median	4.3	Human recreational	None
Count	781	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

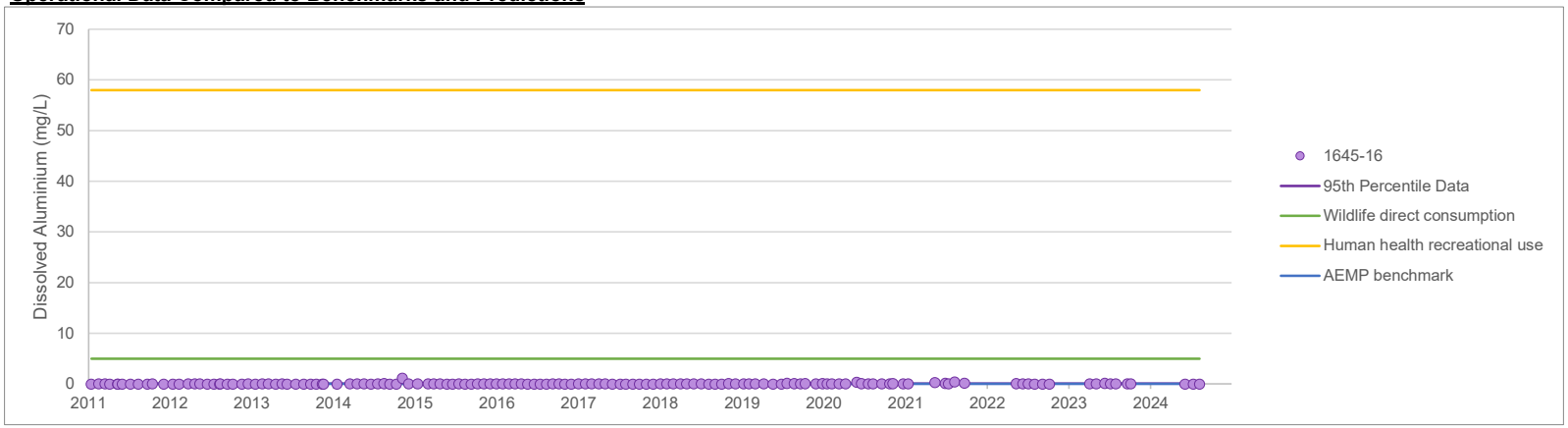
SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.22	Wildlife	None
Median	0.13	Human recreational	None
Count	472	AEMP	None

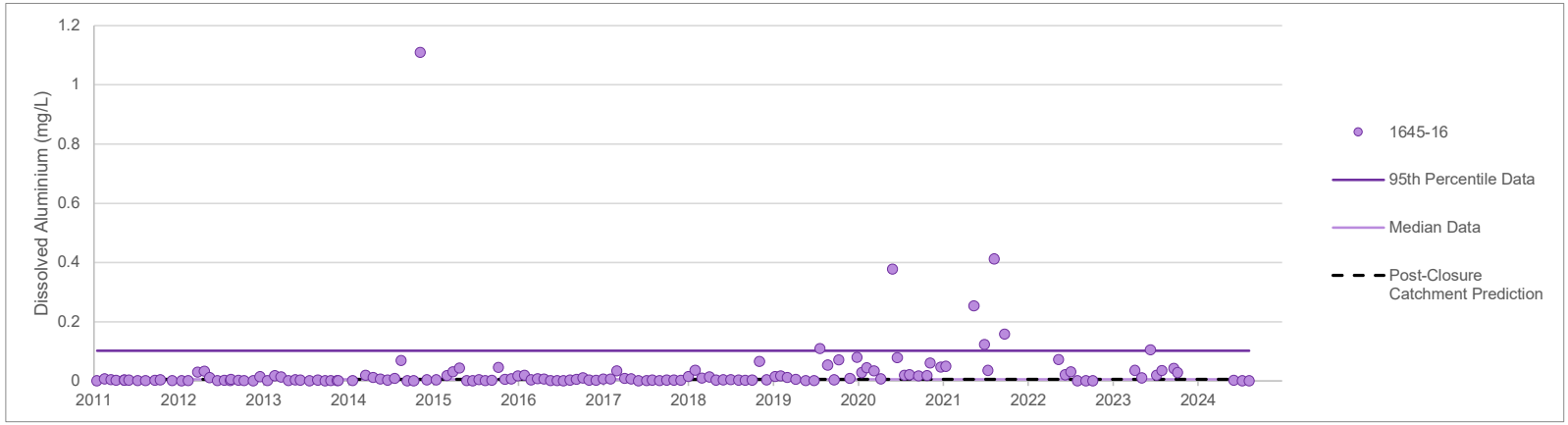
PKCF Pond

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



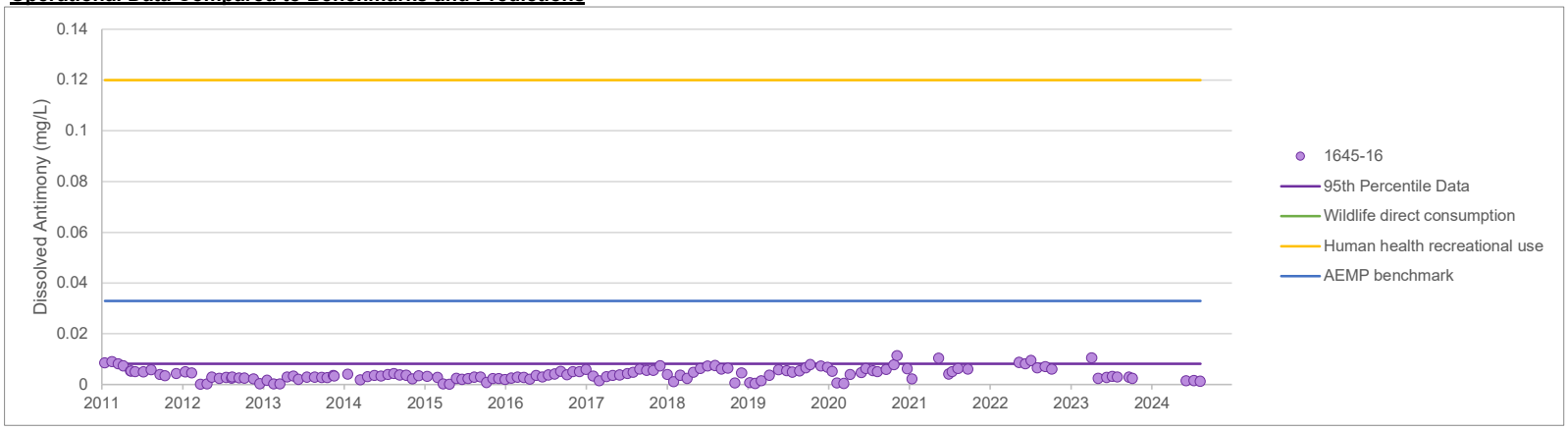


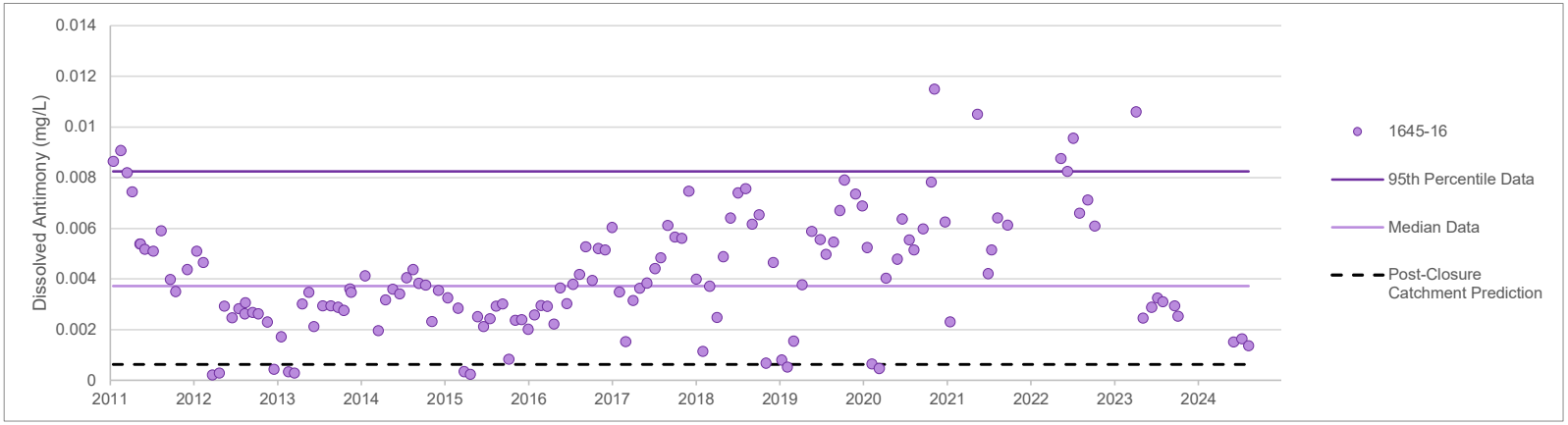
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.103	Wildlife	5.0
Median	0.005	Human recreational	58.0
Count	143	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions

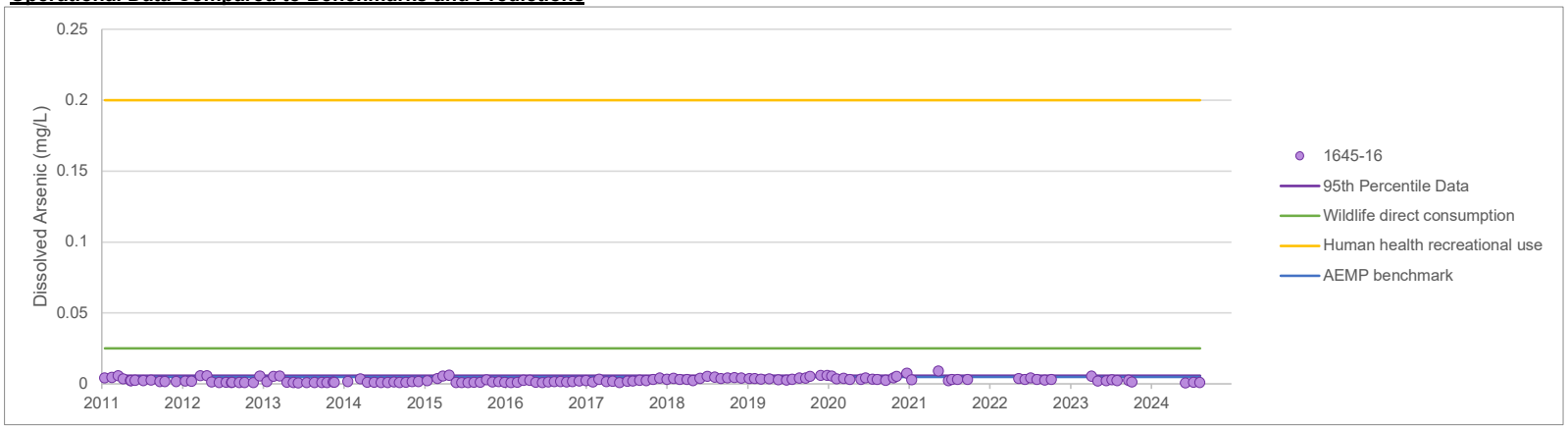


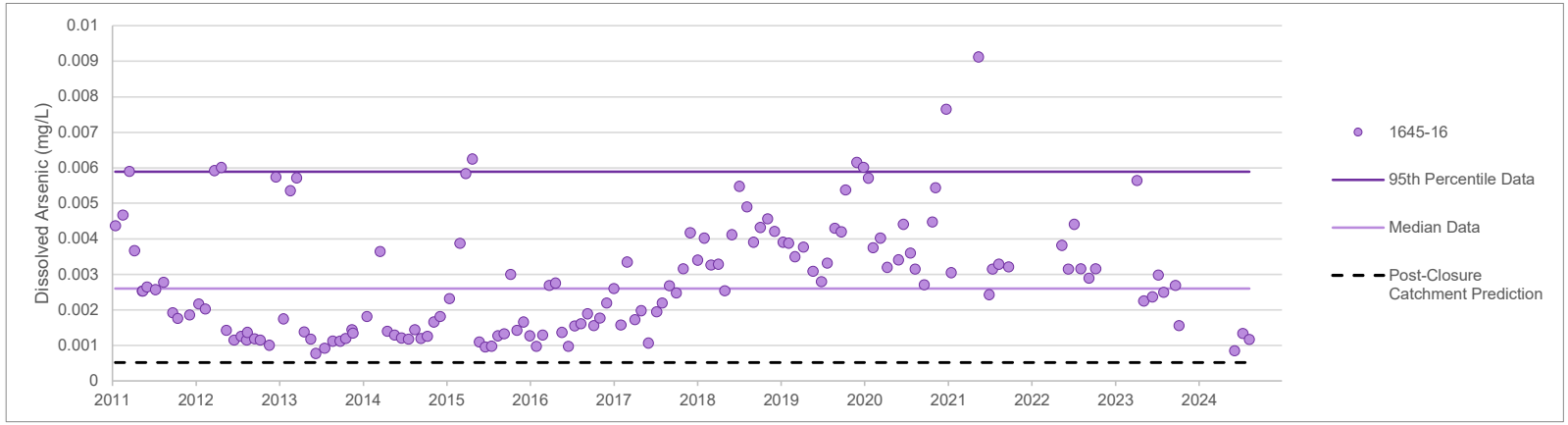


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00824	Wildlife	None
Median	0.00372	Human recreational	0.12
Count	143	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



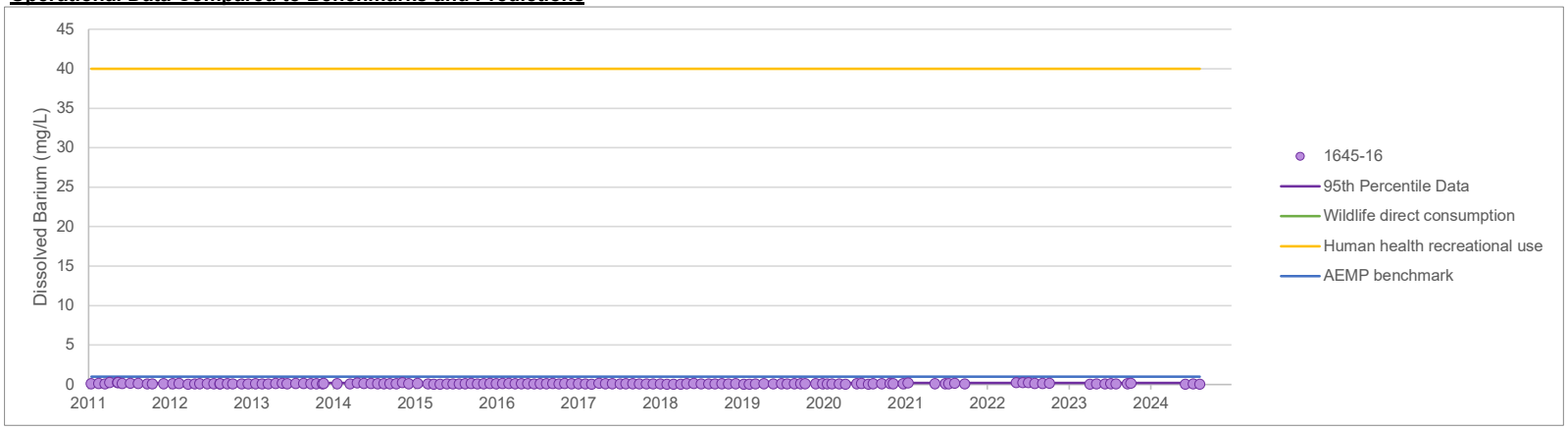


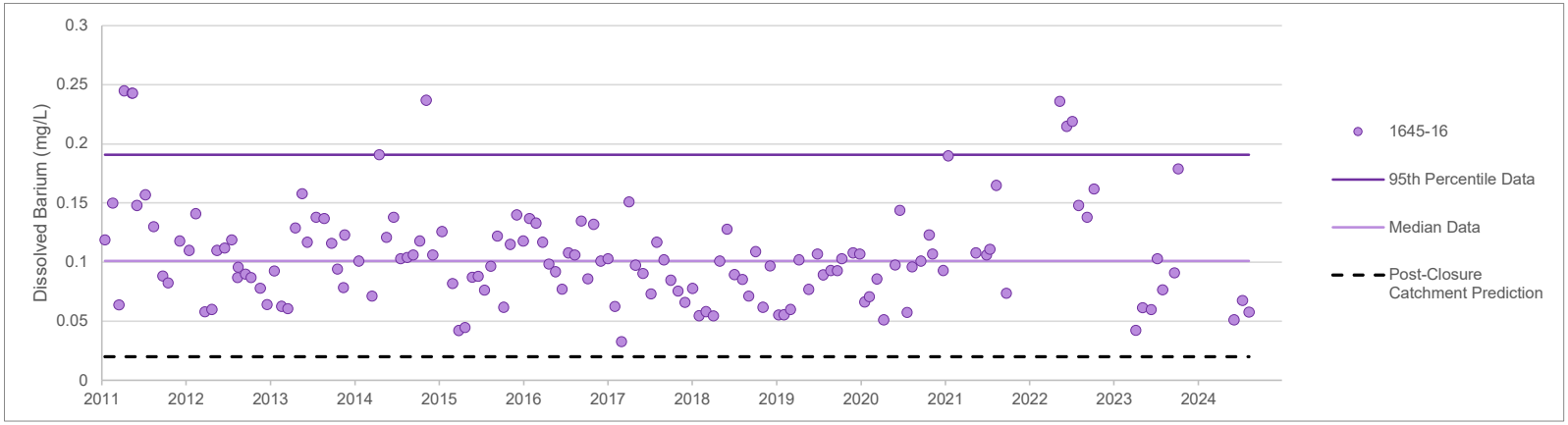
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0059	Wildlife	0.03
Median	0.0026	Human recreational	0.20
Count	143	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

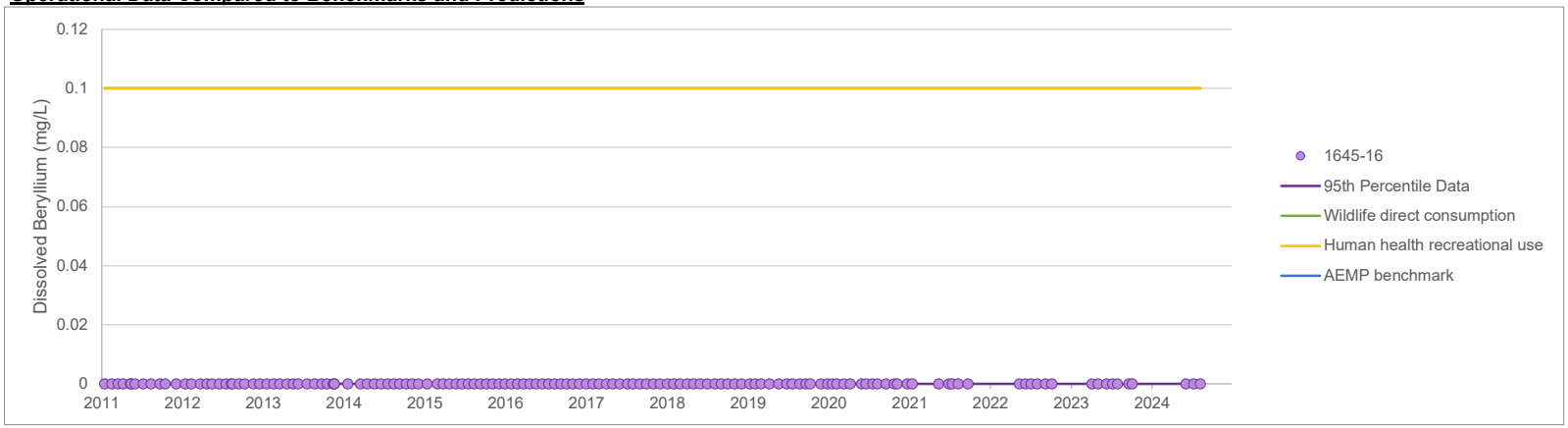


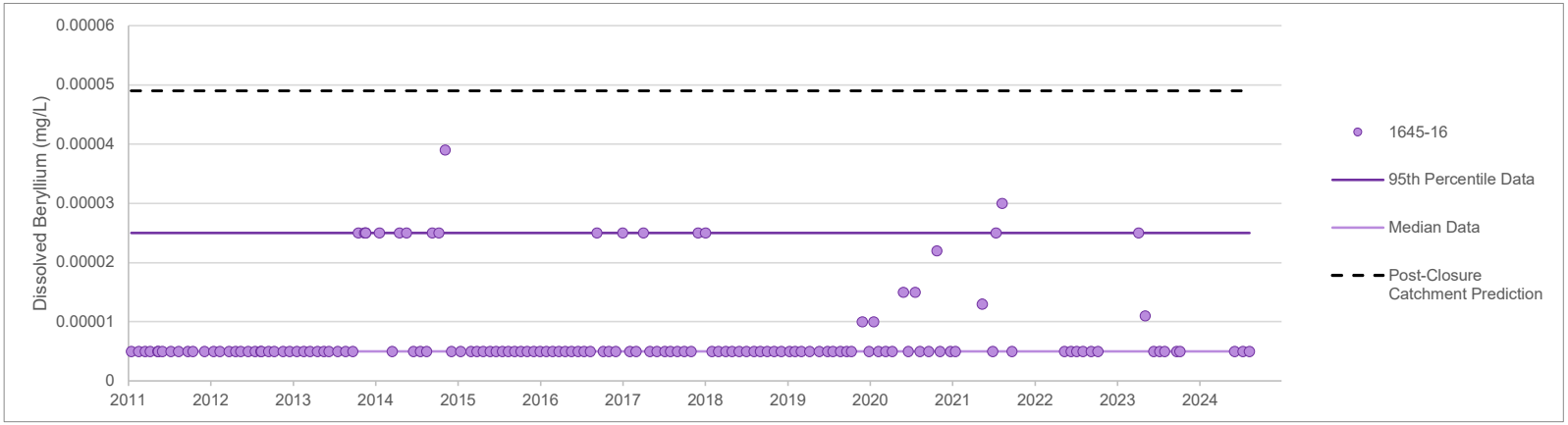


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.191	Wildlife	None
Median	0.101	Human recreational	40.0
Count	143	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions

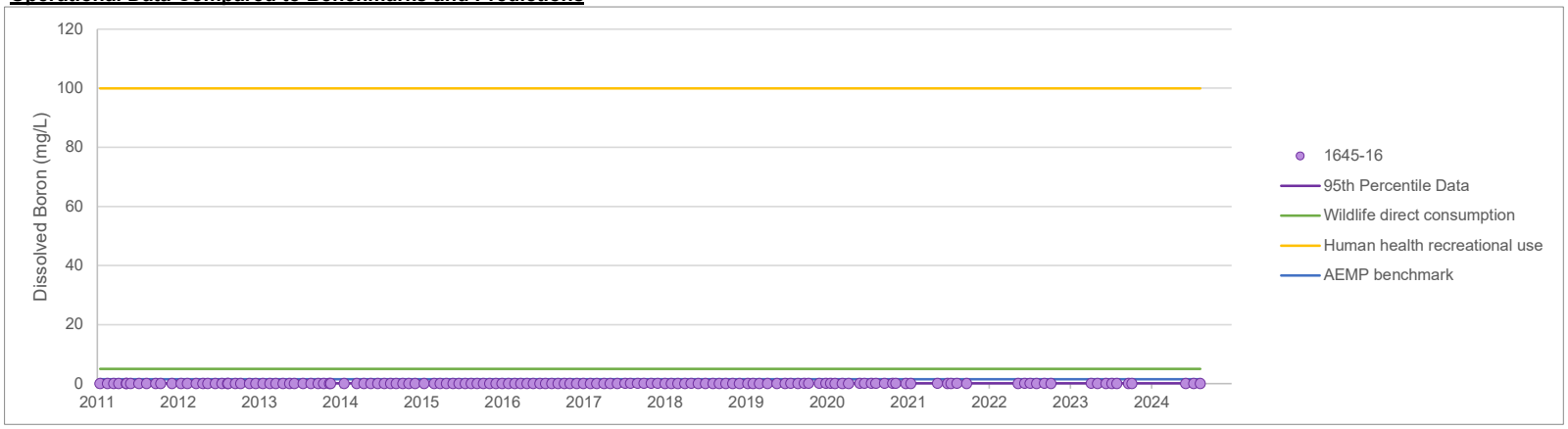


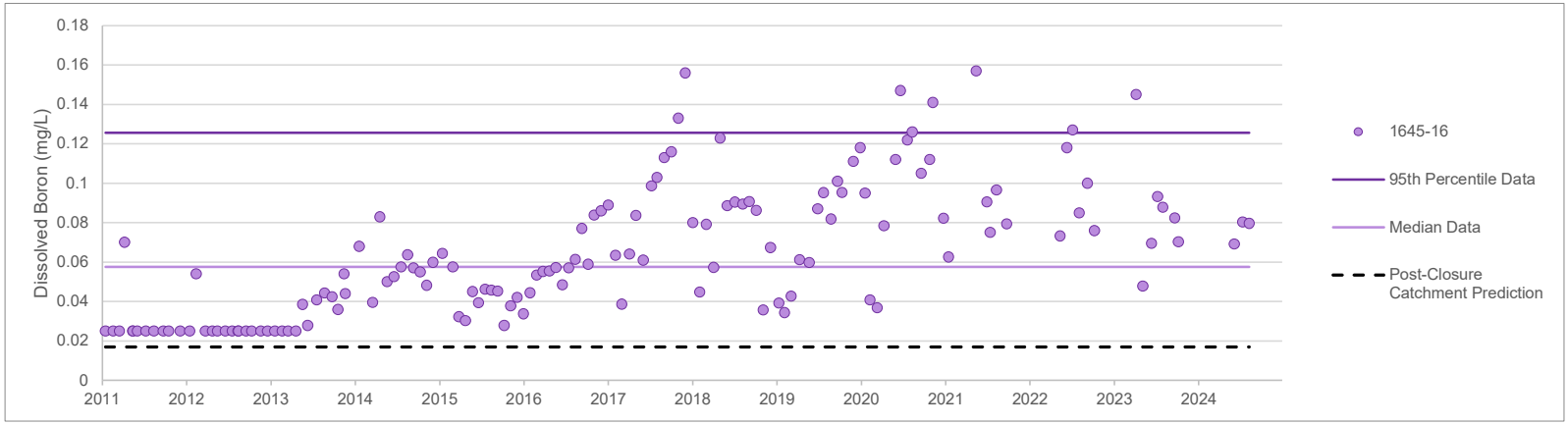


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000025	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	144	AEMP	None

Operational Data Compared to Benchmarks and Predictions

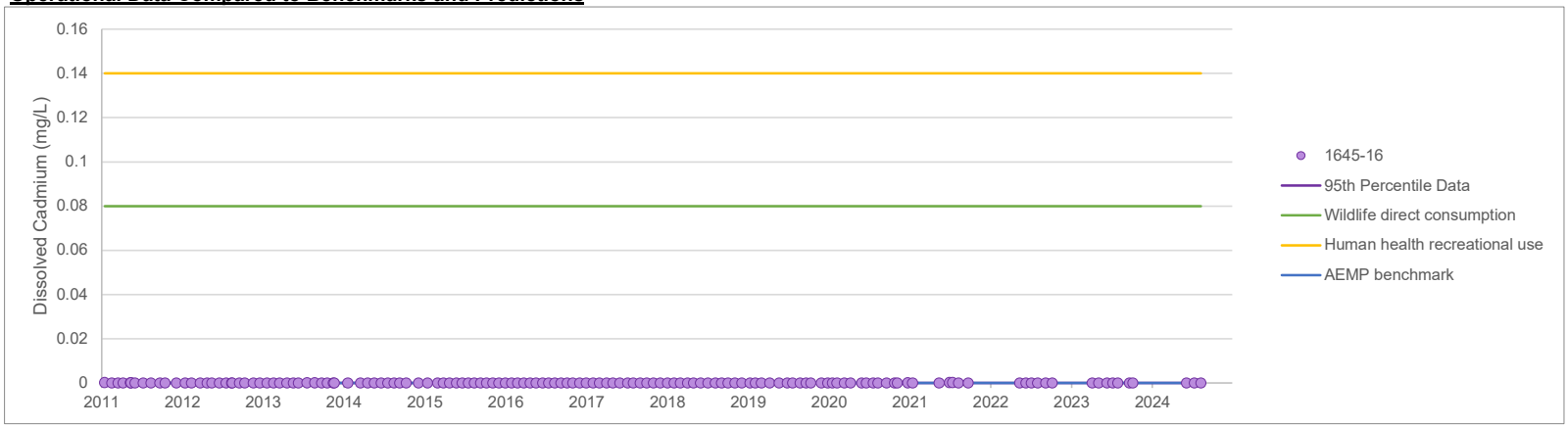


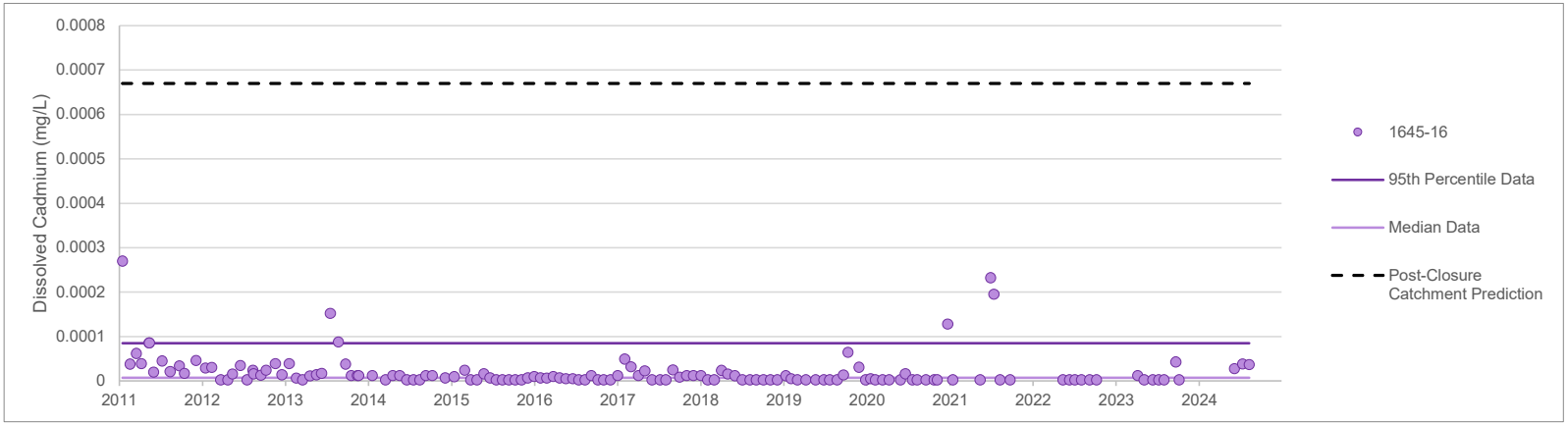


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.126	Wildlife	5.0
Median	0.058	Human recreational	100.0
Count	143	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

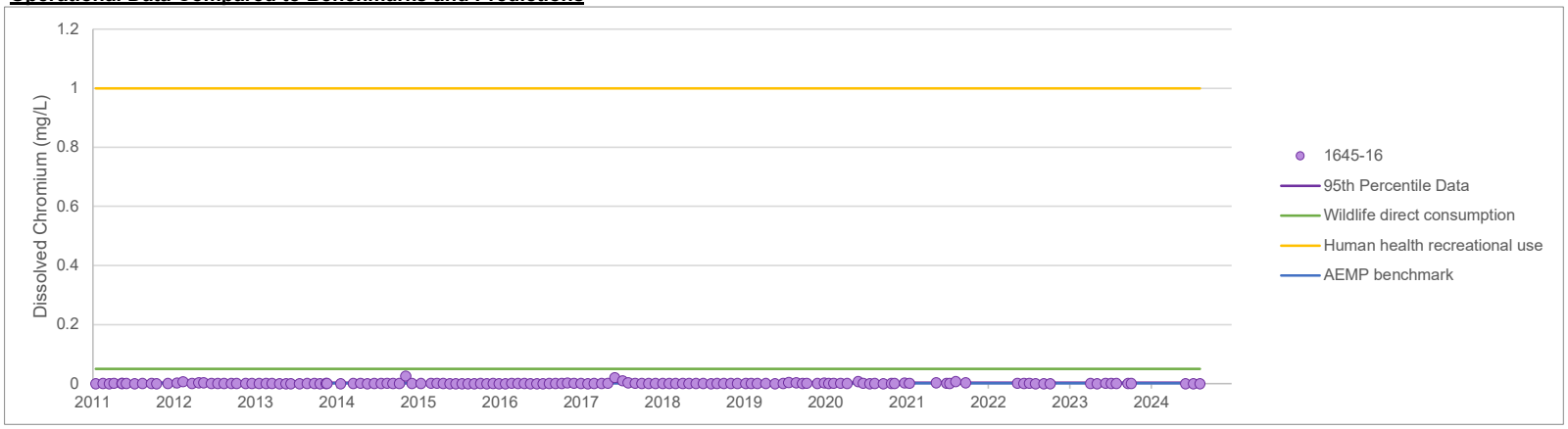


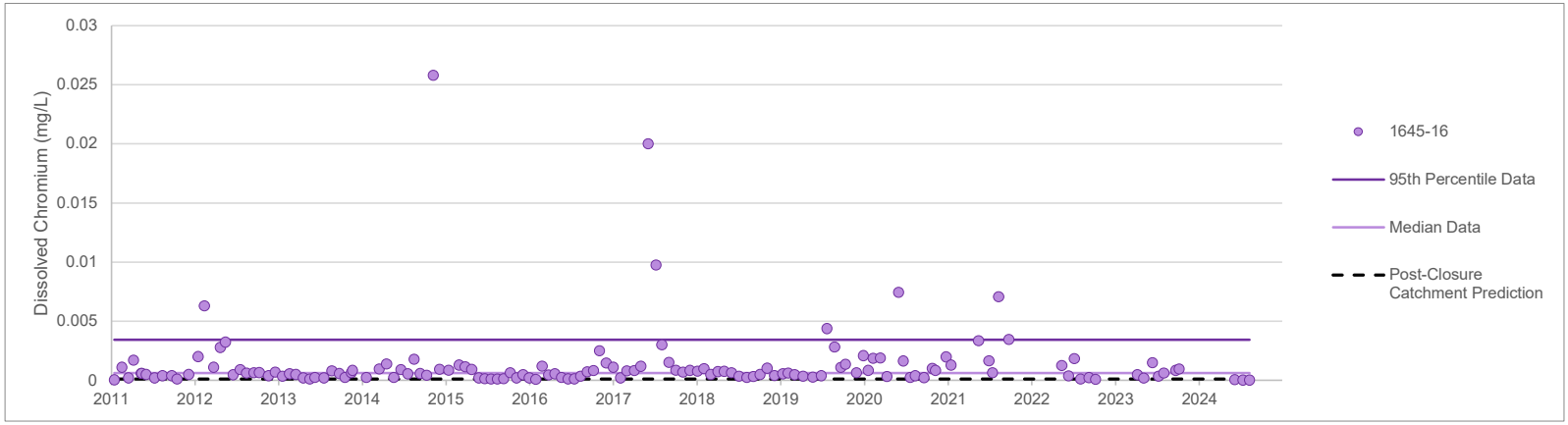


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00008	Wildlife	0.08
Median	0.00001	Human recreational	0.14
Count	142	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions

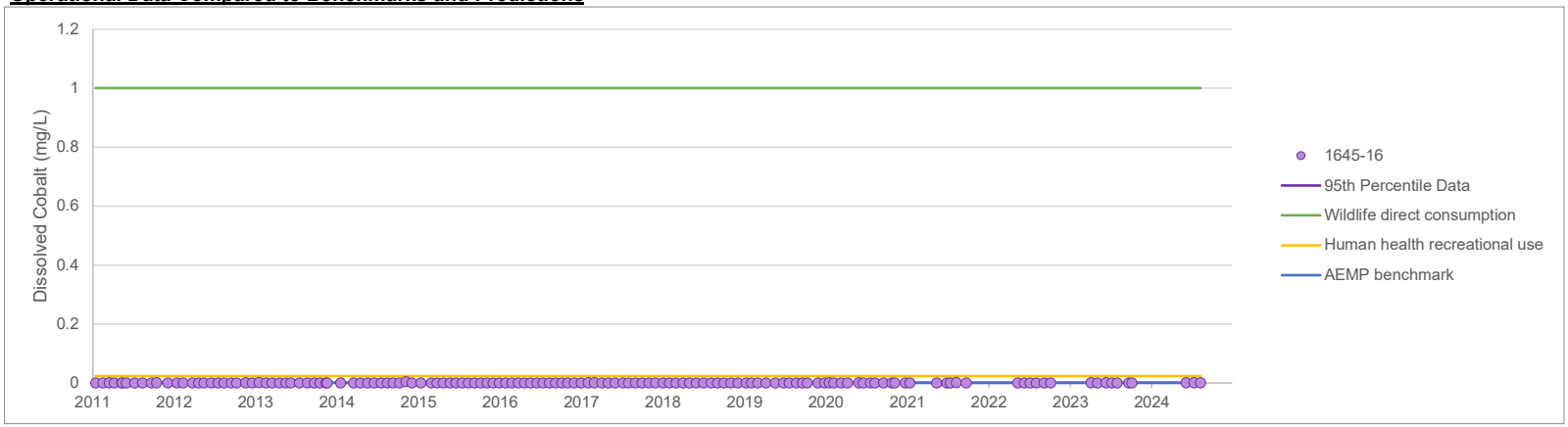


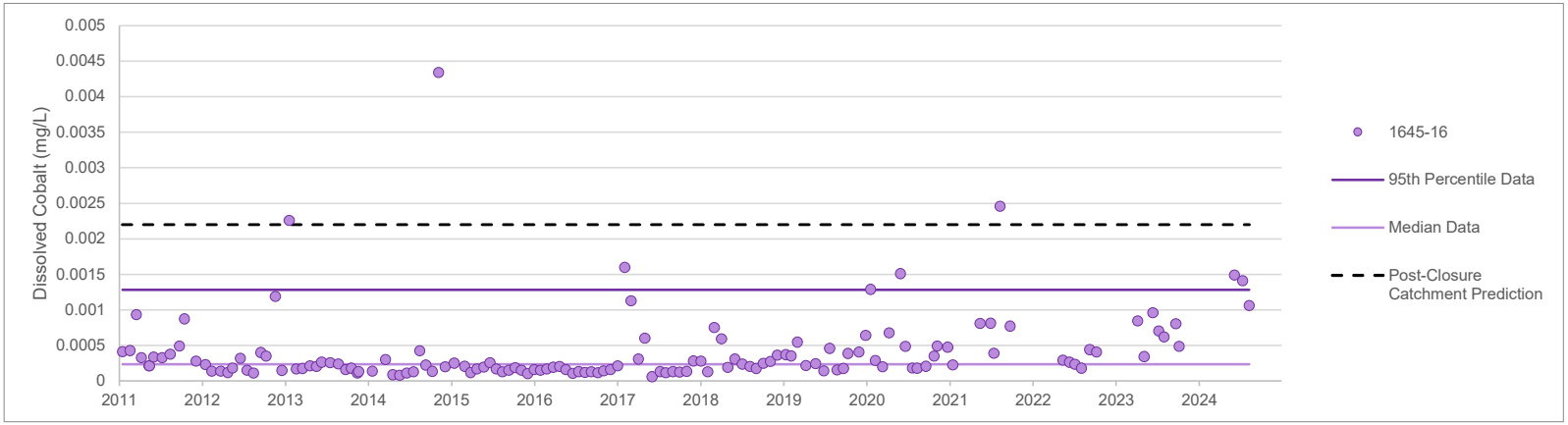


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00345	Wildlife	0.05
Median	0.00063	Human recreational	1.0
Count	142	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

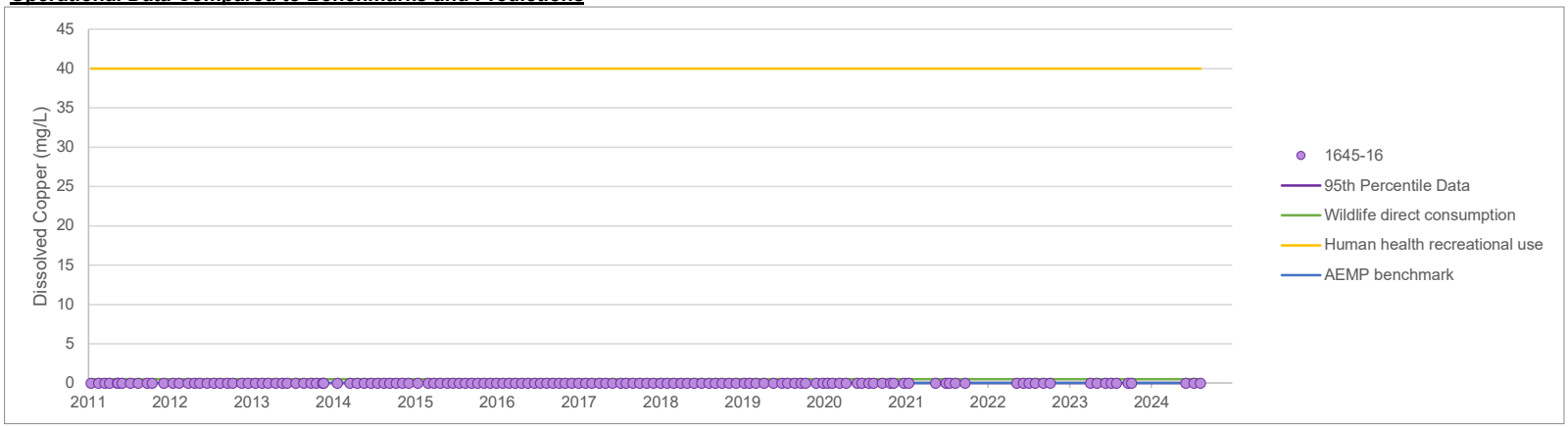


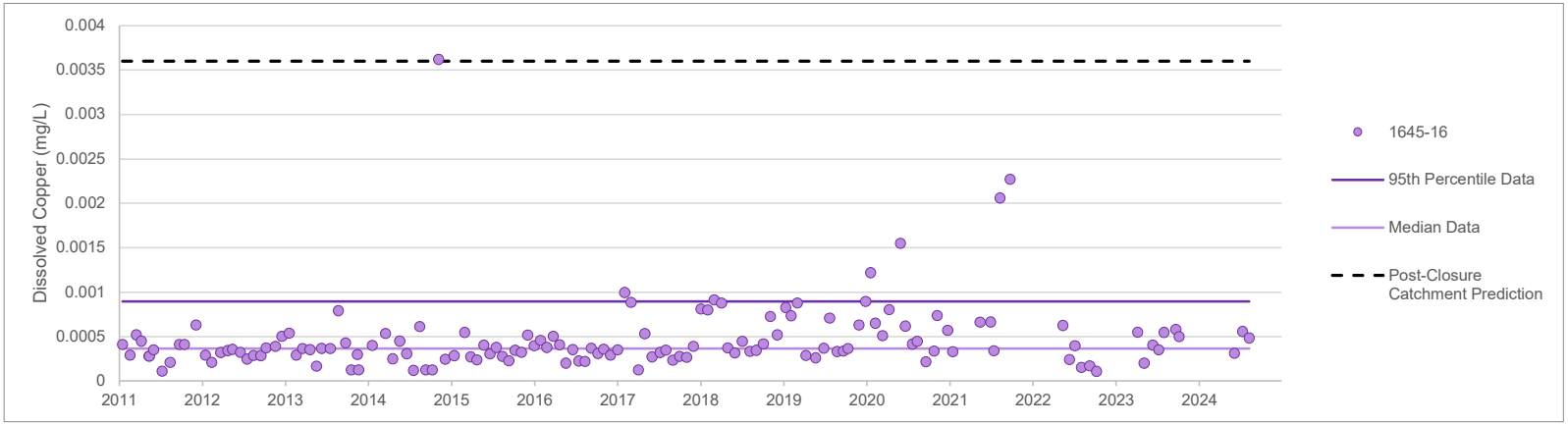


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0013	Wildlife	1.0
Median	0.0002	Human recreational	0.02
Count	142	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

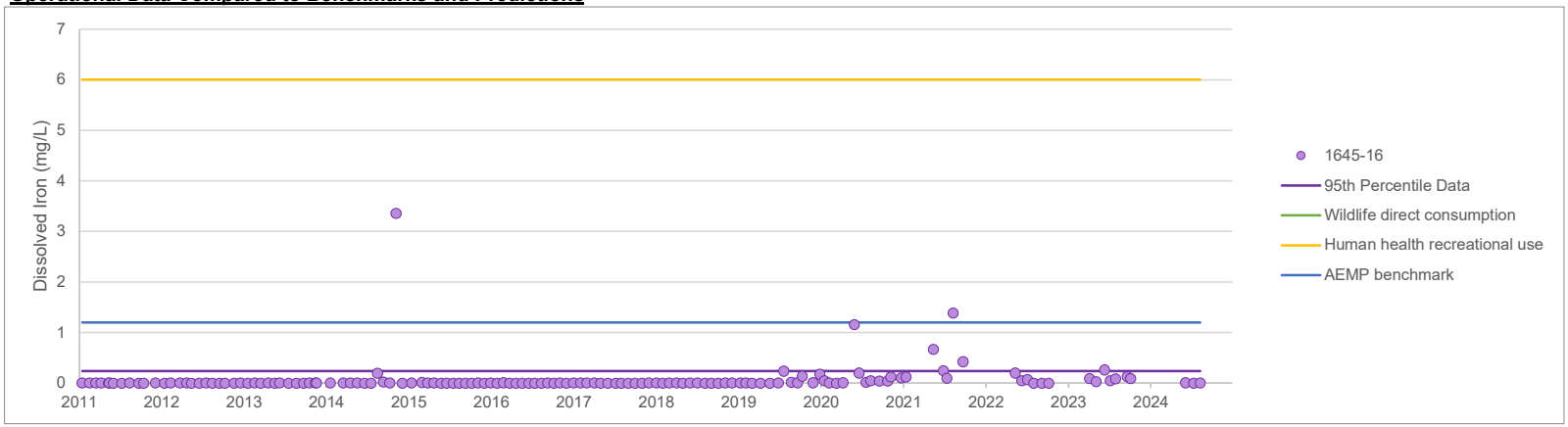


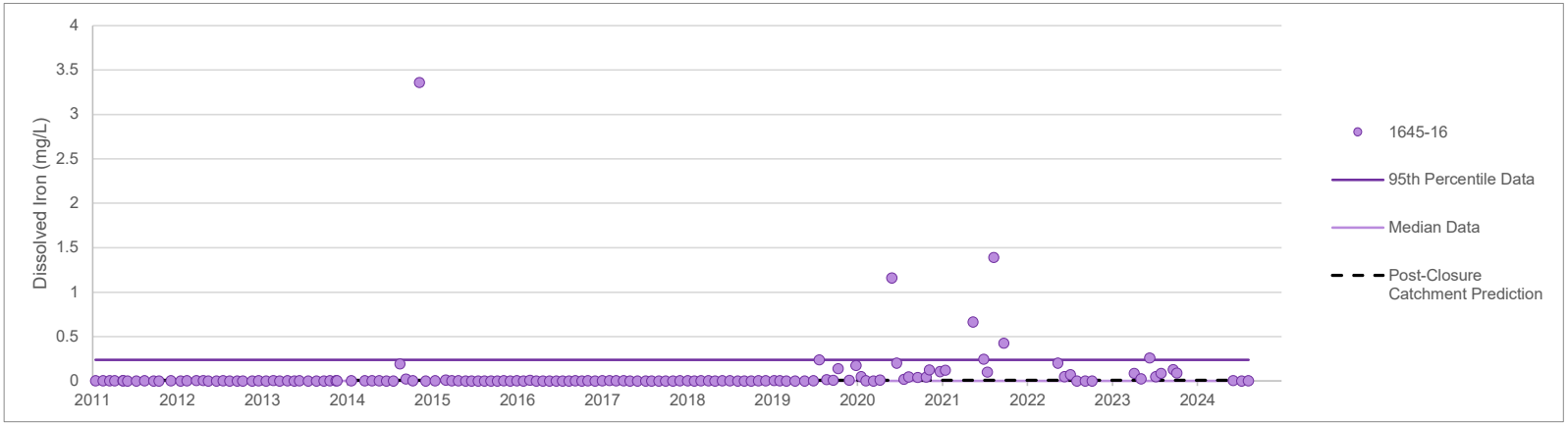


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0009	Wildlife	0.5
Median	0.0004	Human recreational	40.0
Count	142	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions

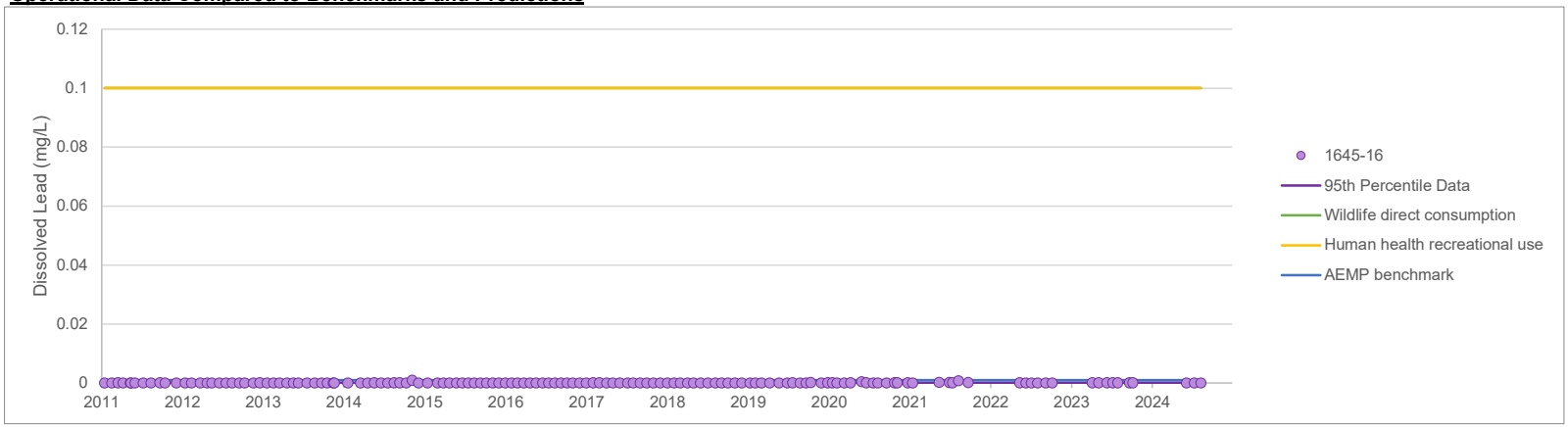


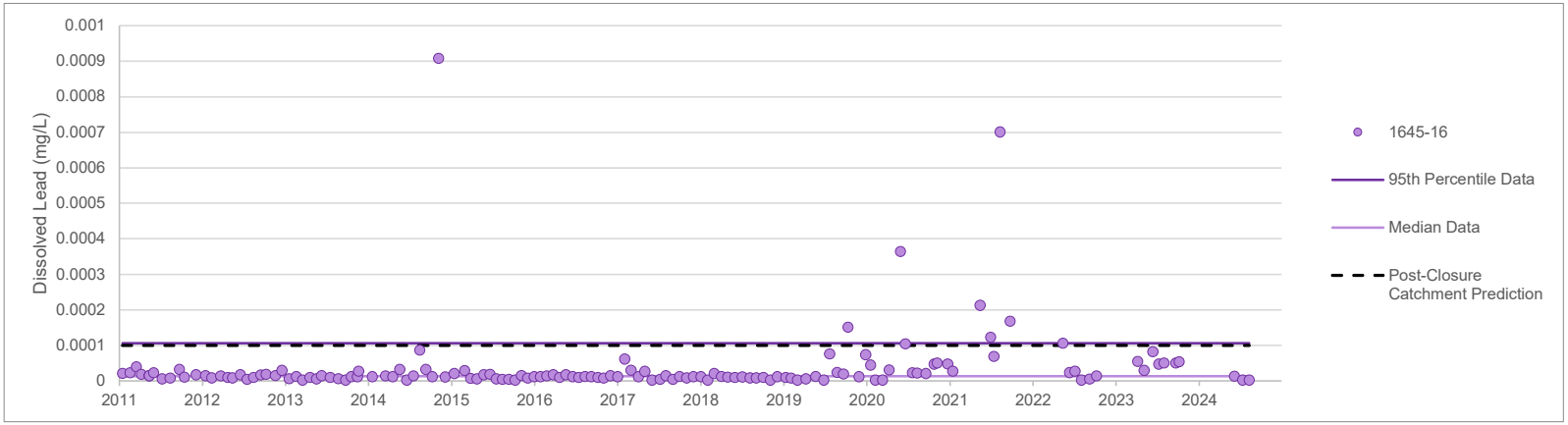


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.24	Wildlife	None
Median	0.00	Human recreational	6.0
Count	142	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

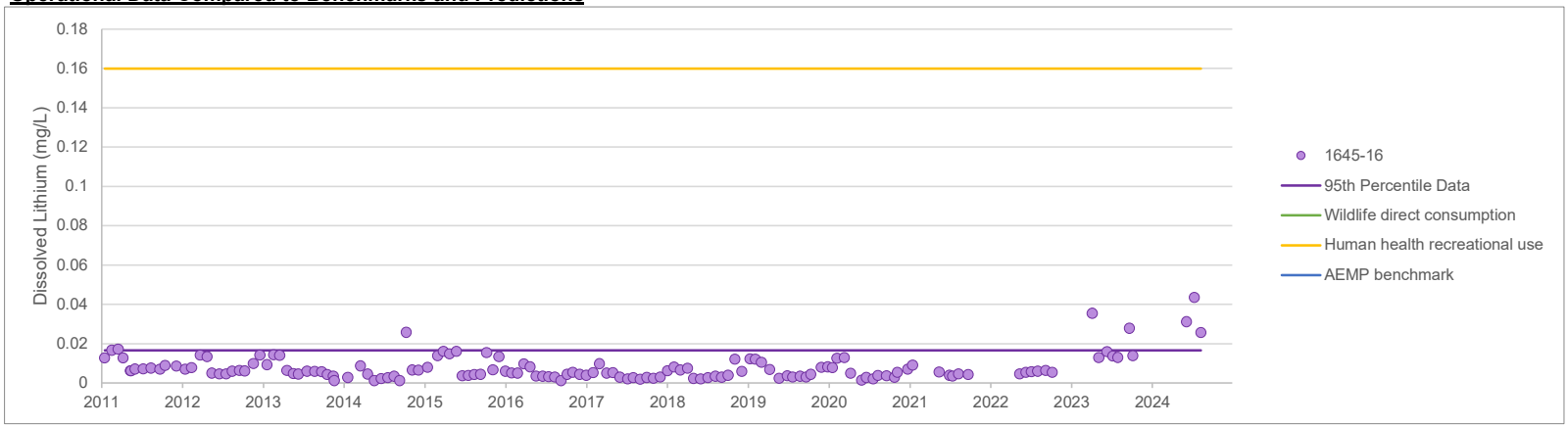


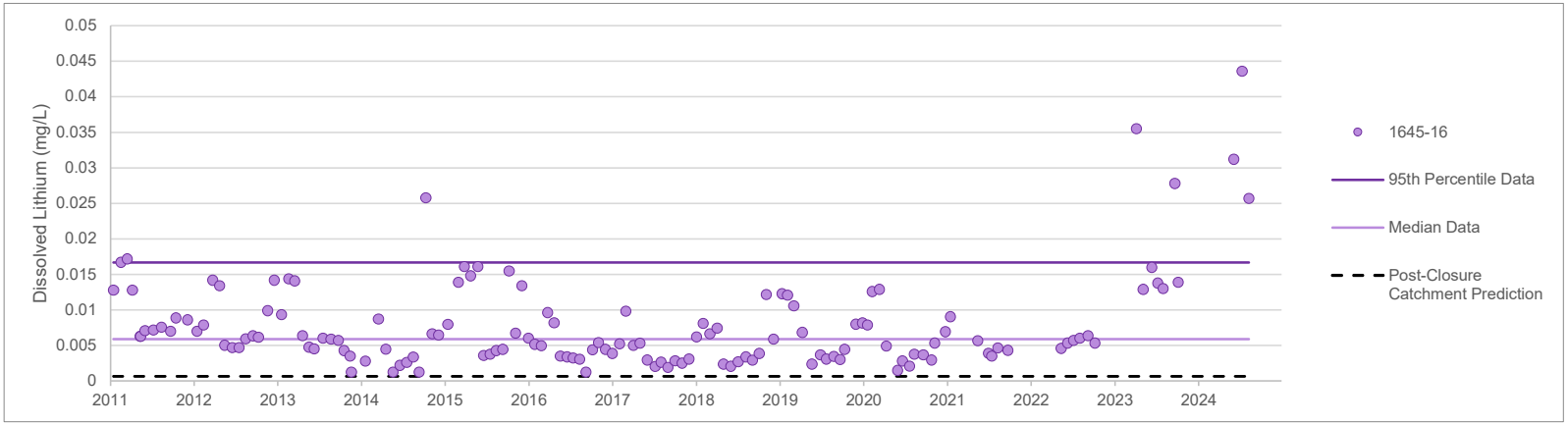


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00011	Wildlife	0.10
Median	0.00001	Human recreational	0.10
Count	142	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

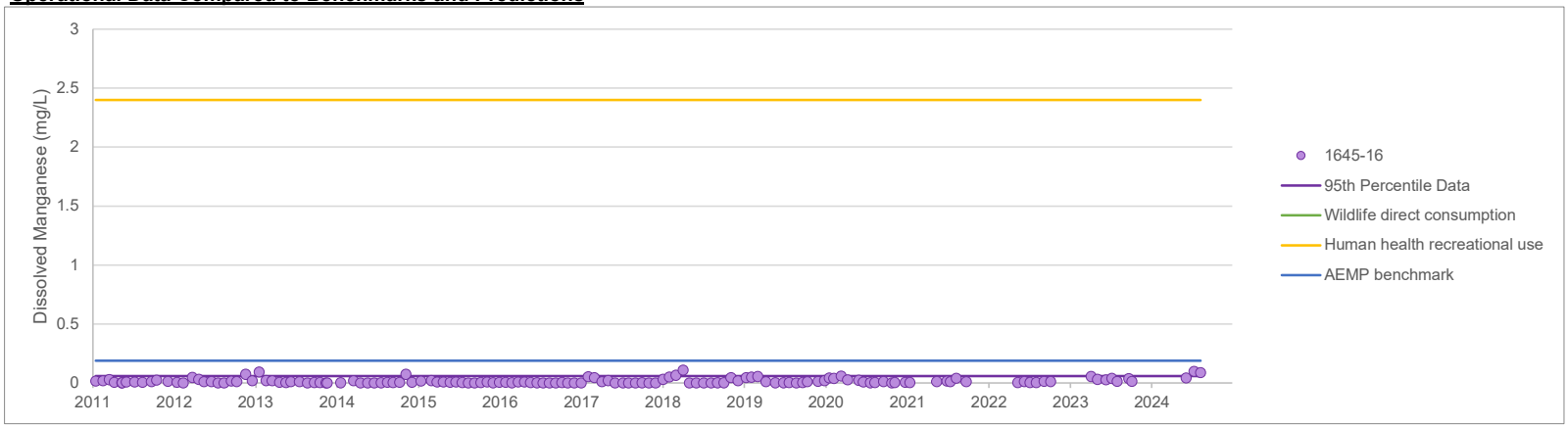


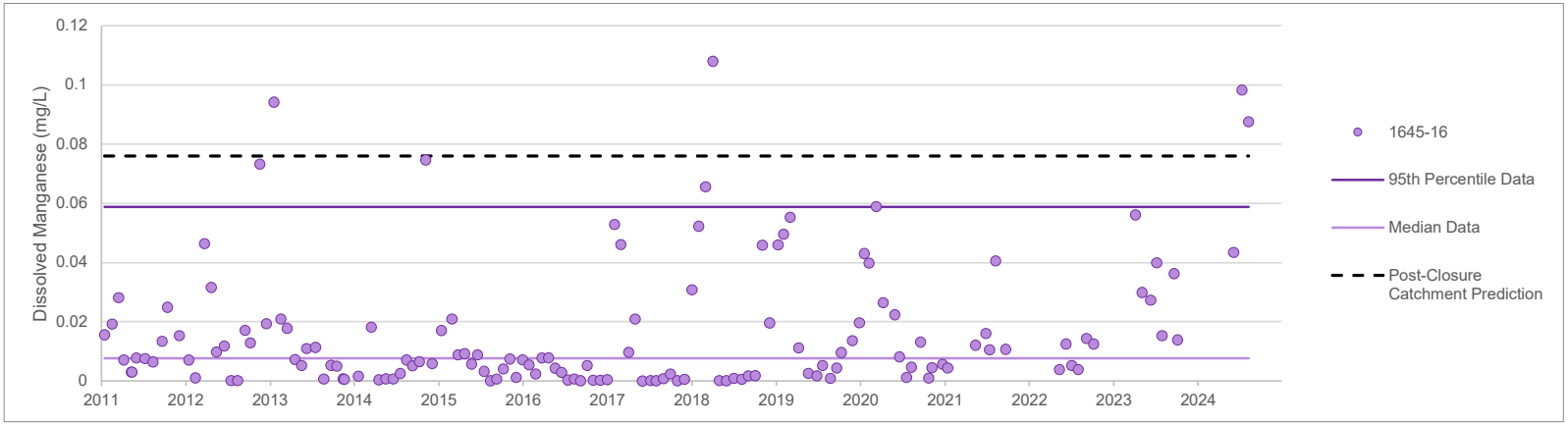


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.017	Wildlife	None
Median	0.006	Human recreational	0.16
Count	142	AEMP	None

Operational Data Compared to Benchmarks and Predictions

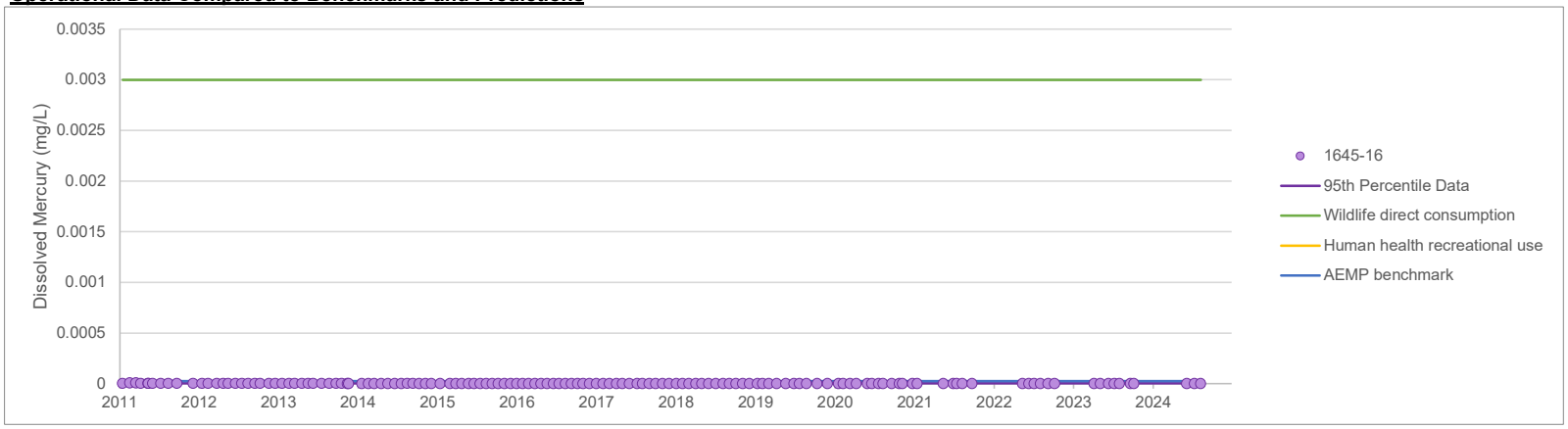


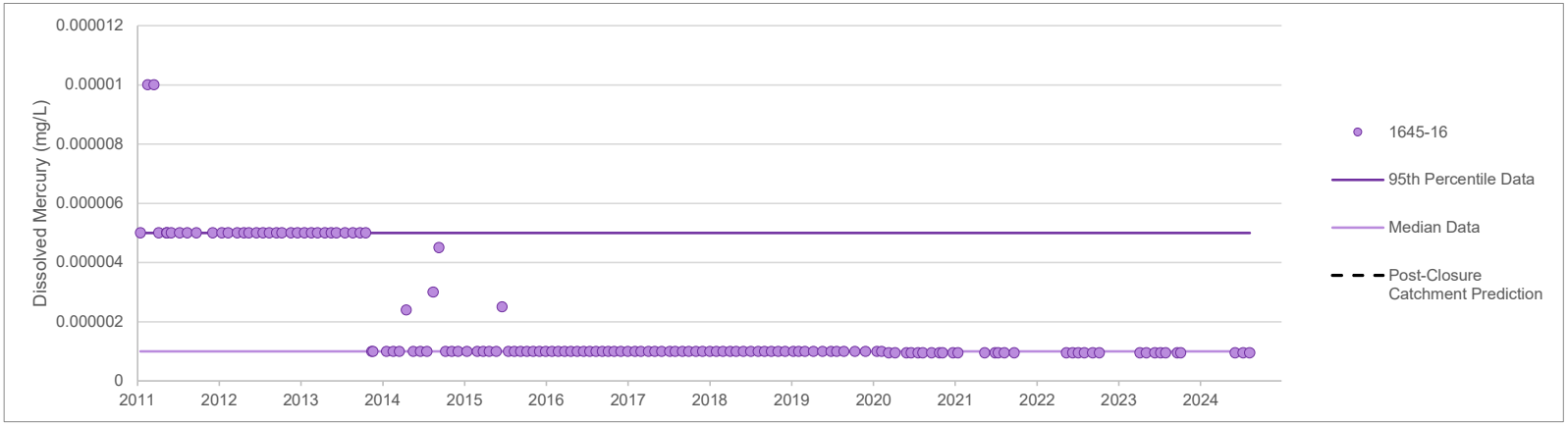


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.059	Wildlife	None
Median	0.008	Human recreational	2.4
Count	142	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

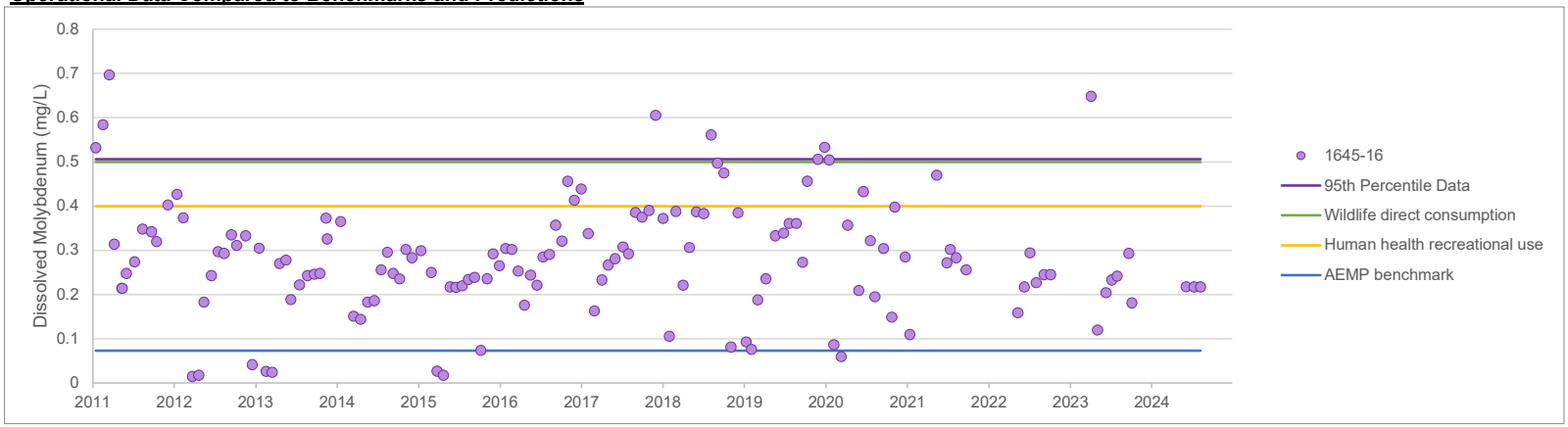


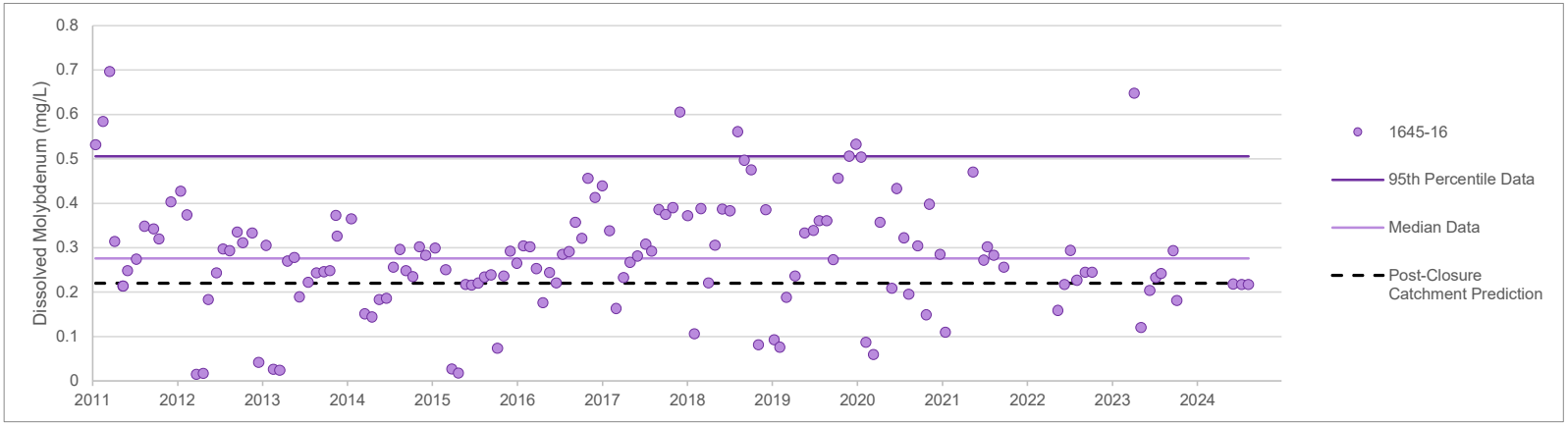


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000050	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	140	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions

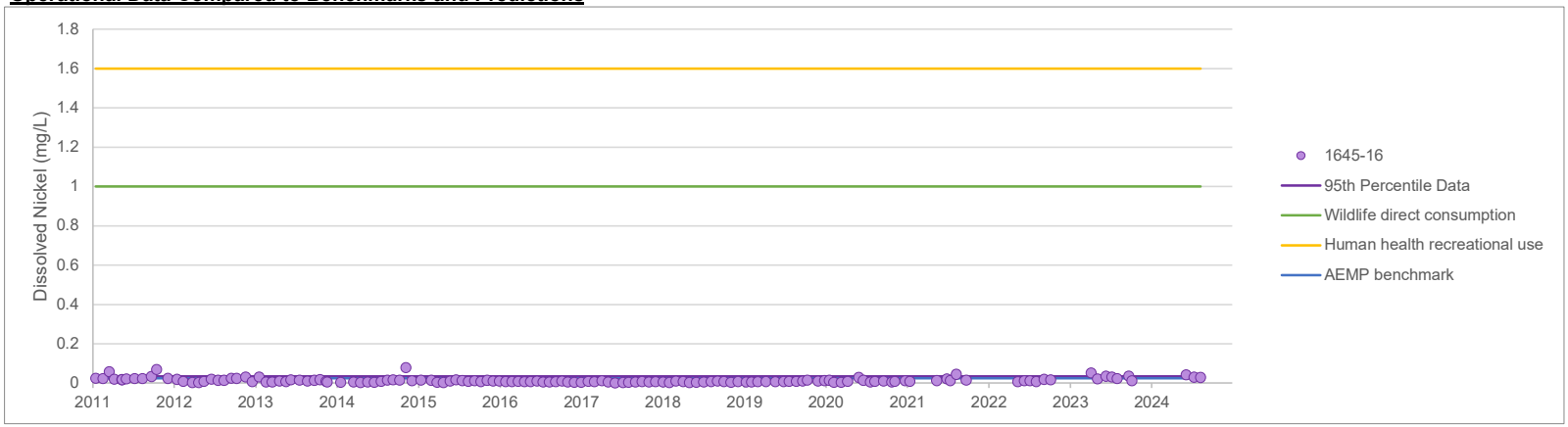


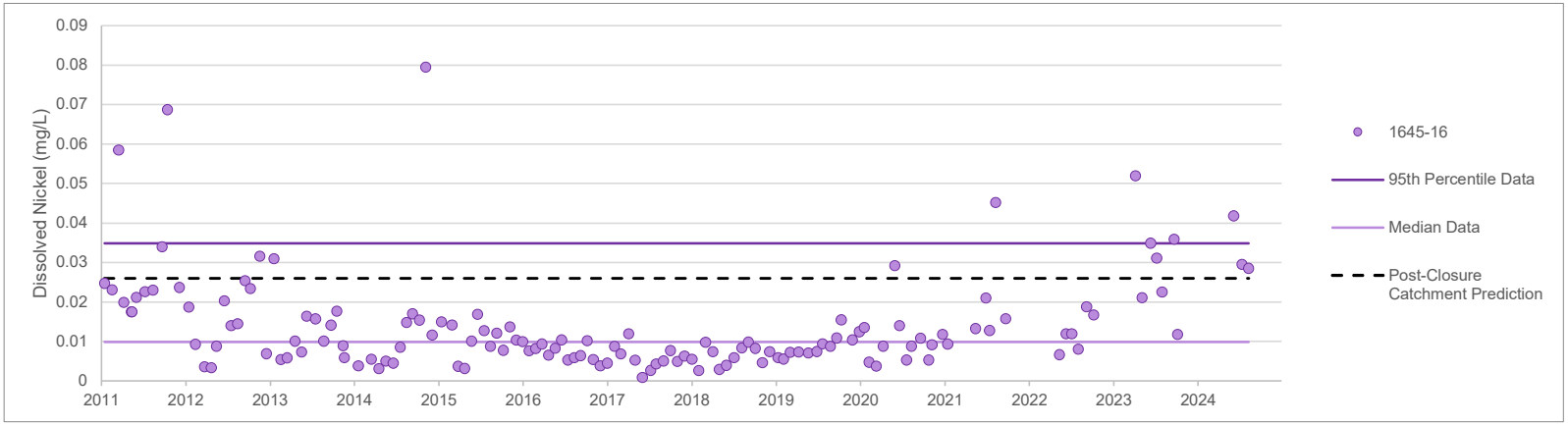


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.5059	Wildlife	0.5
Median	0.2760	Human recreational	0.4
Count	142	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



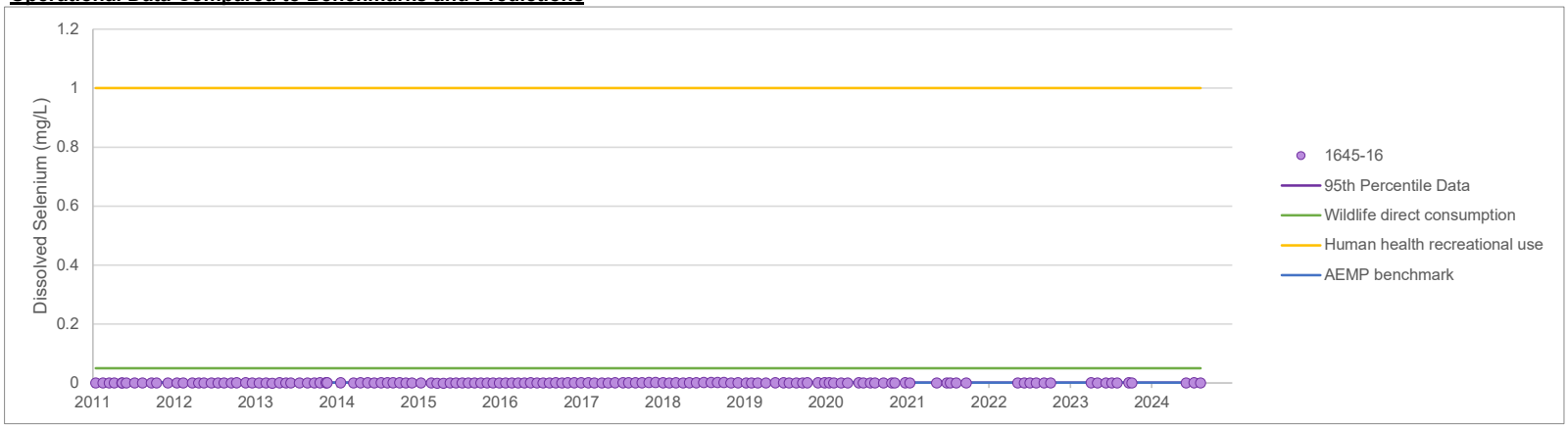


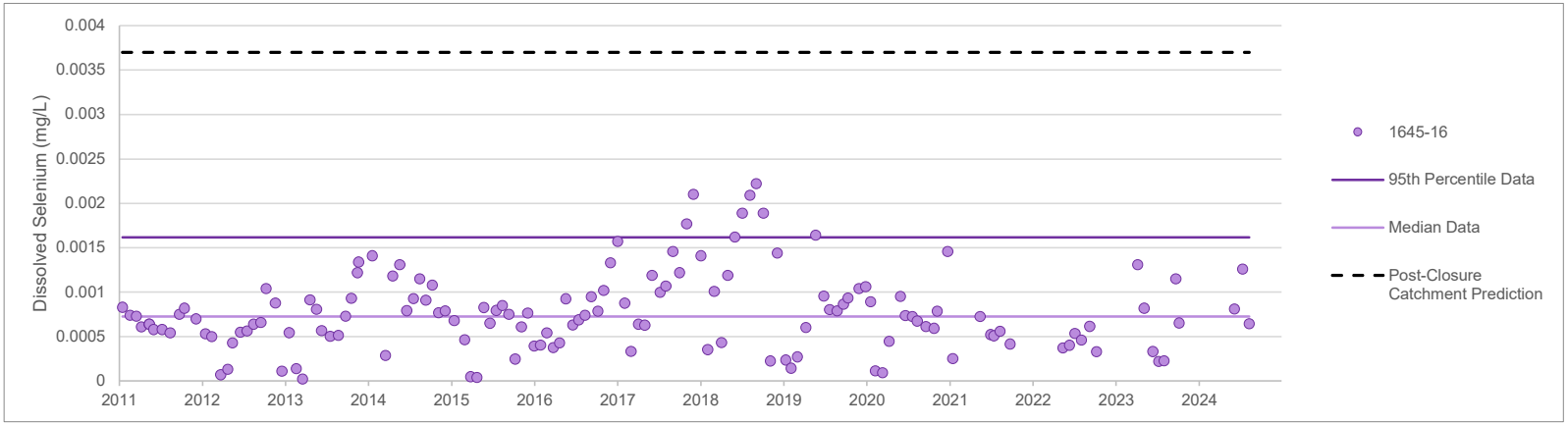
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.035	Wildlife	1.0
Median	0.010	Human recreational	1.6
Count	142	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions

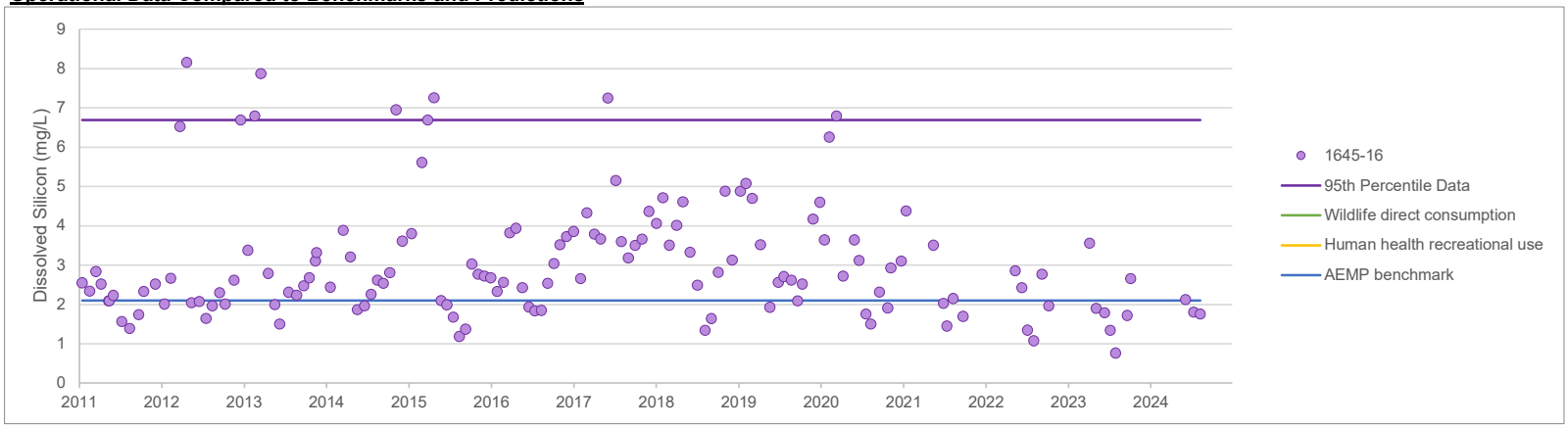


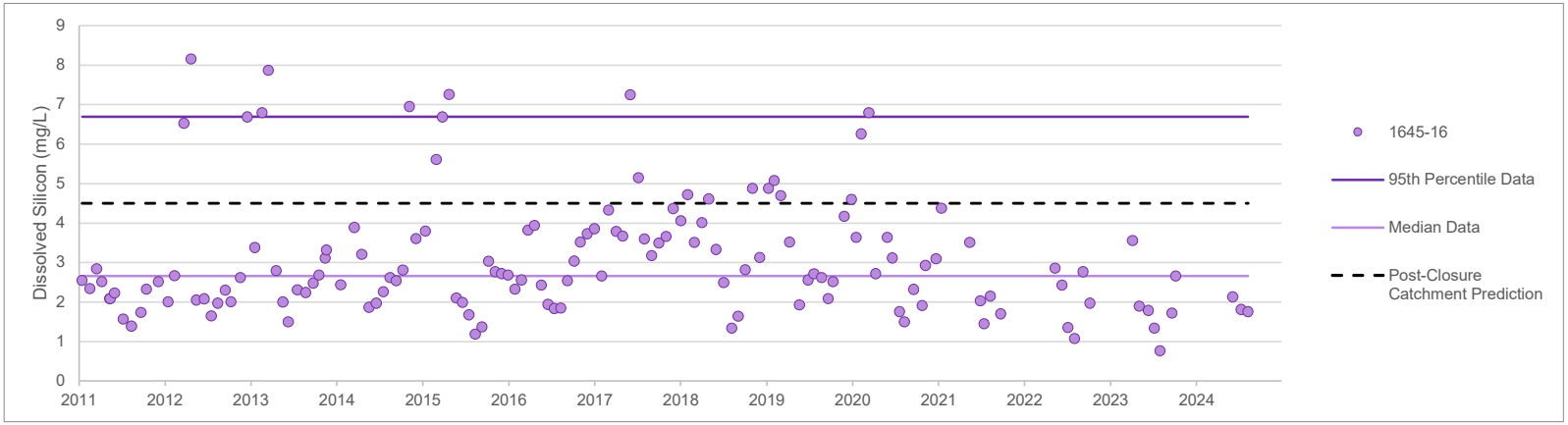


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00162	Wildlife	0.1
Median	0.00073	Human recreational	1.0
Count	142	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions

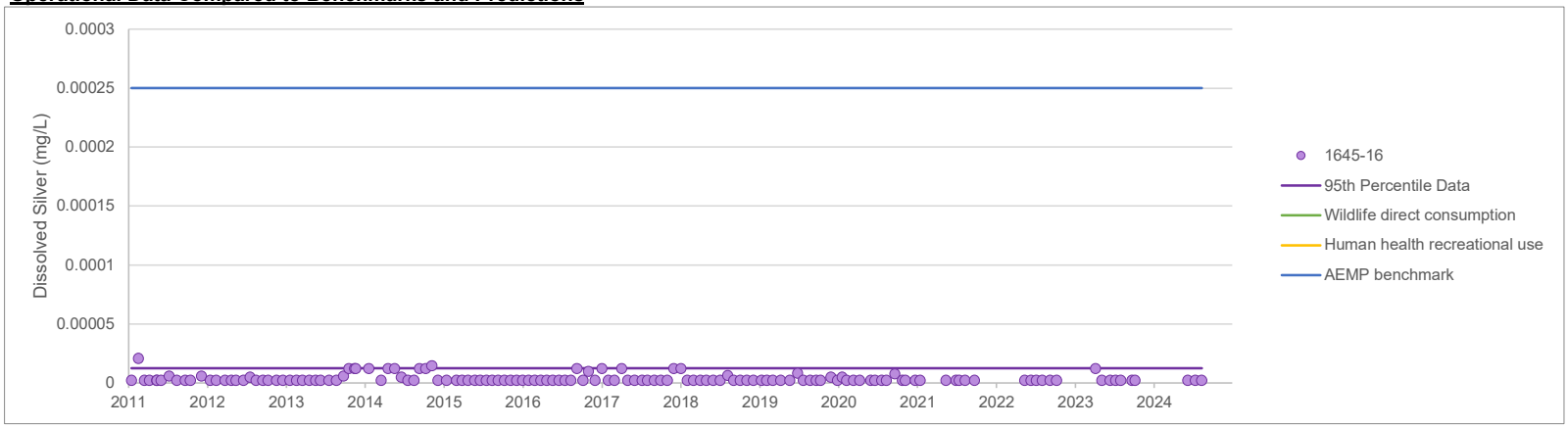


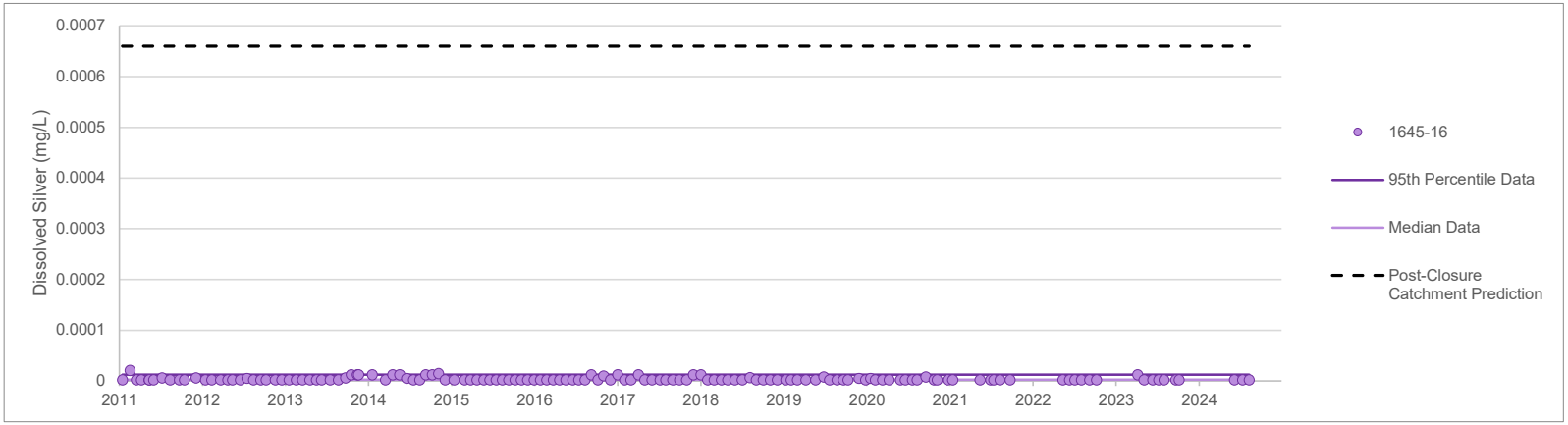


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	6.69	Wildlife	None
Median	2.66	Human recreational	None
Count	142	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



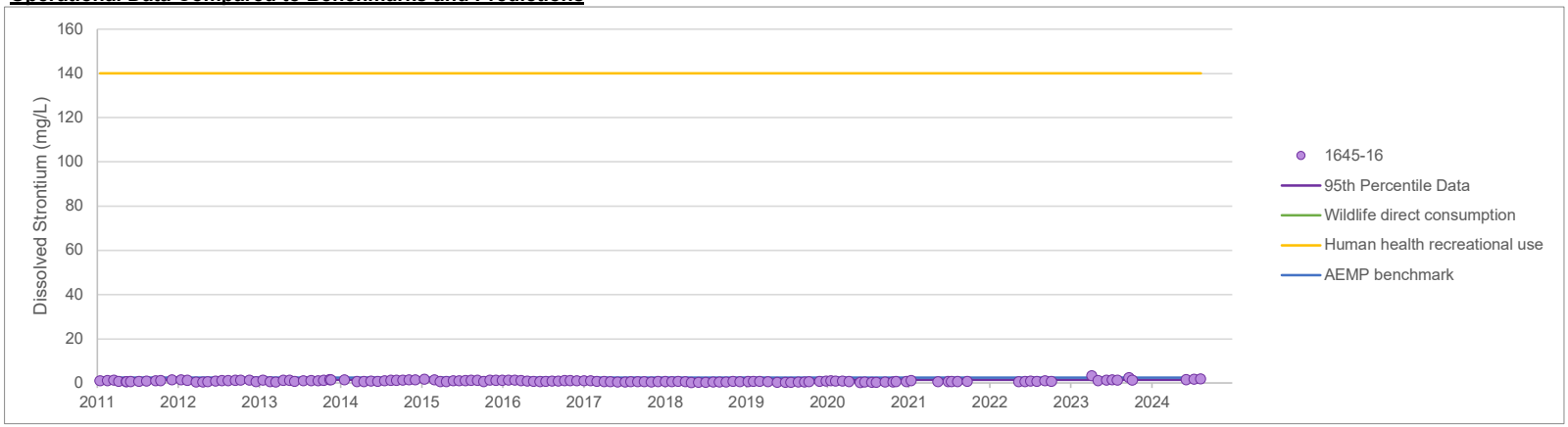


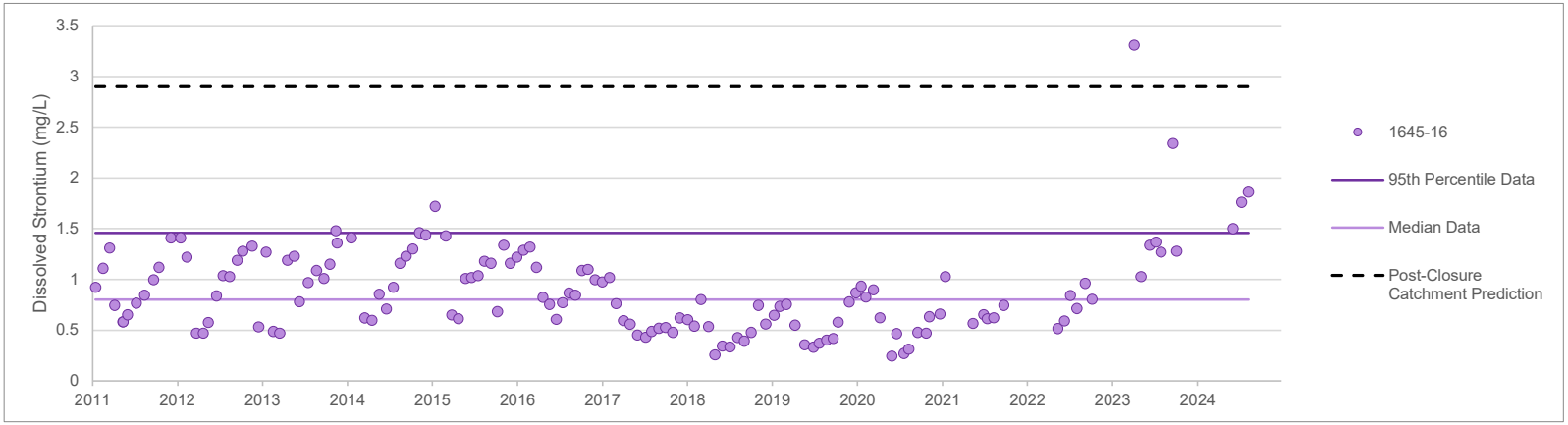
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000013	Wildlife	None
Median	0.000003	Human recreational	None
Count	142	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions

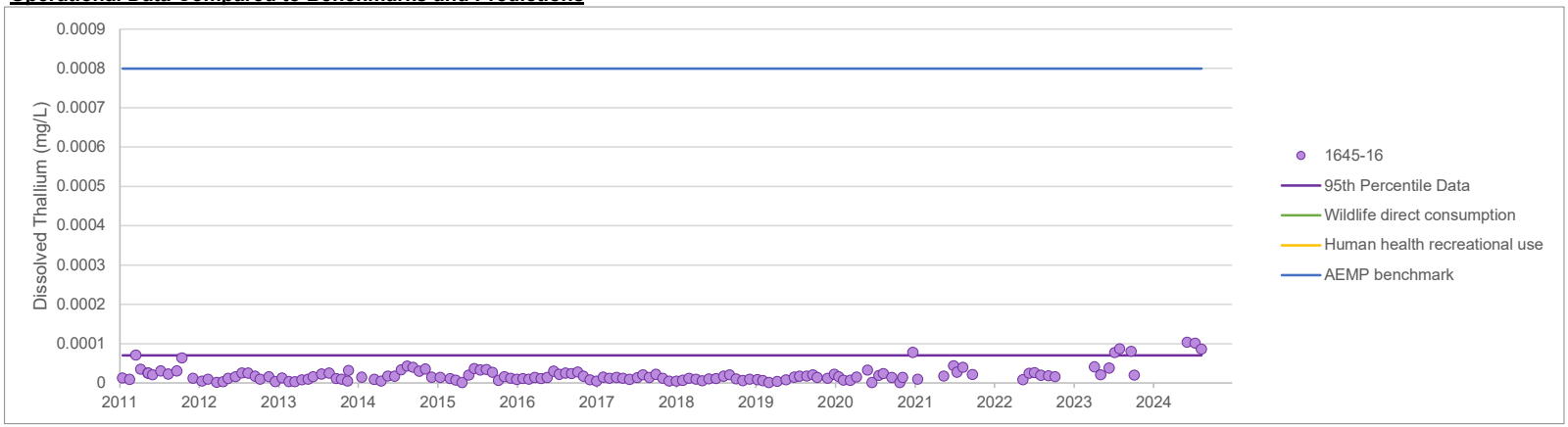


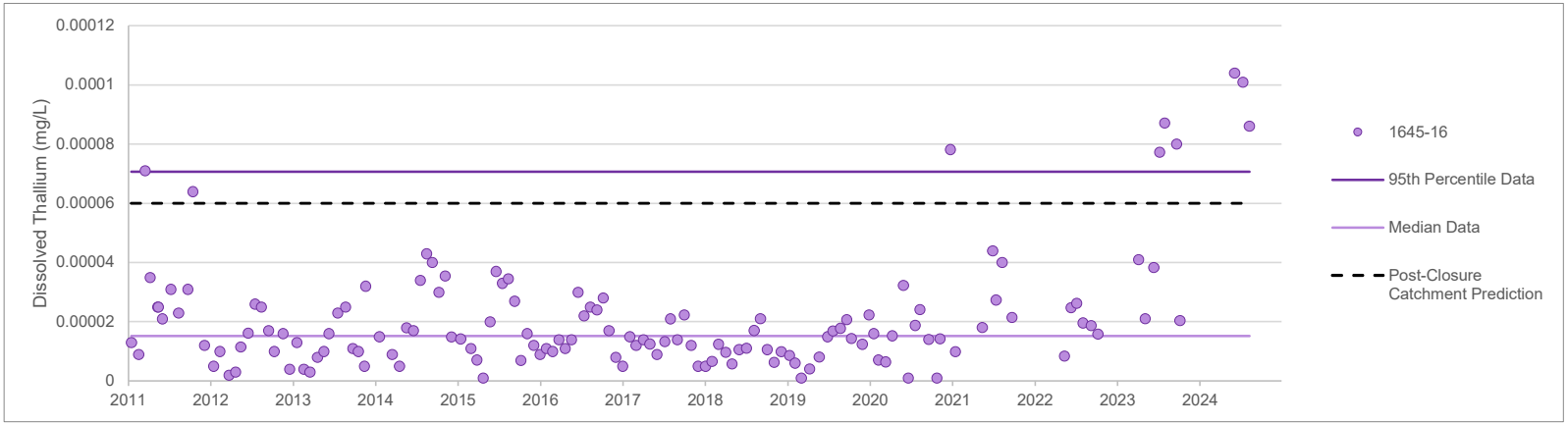


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	1.46	Wildlife	None
Median	0.80	Human recreational	140
Count	142	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions

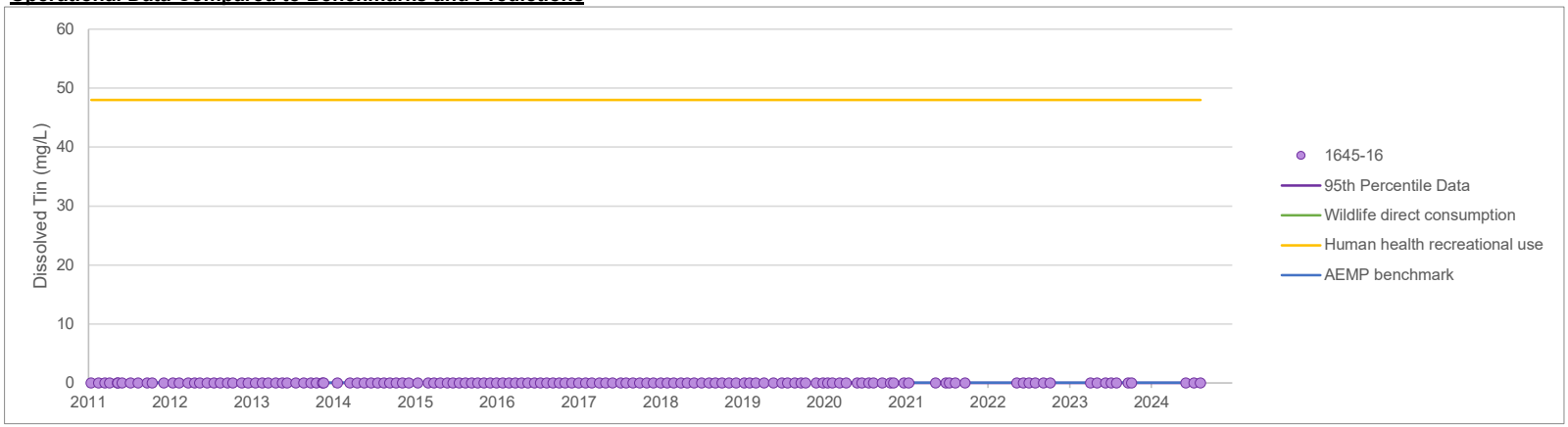


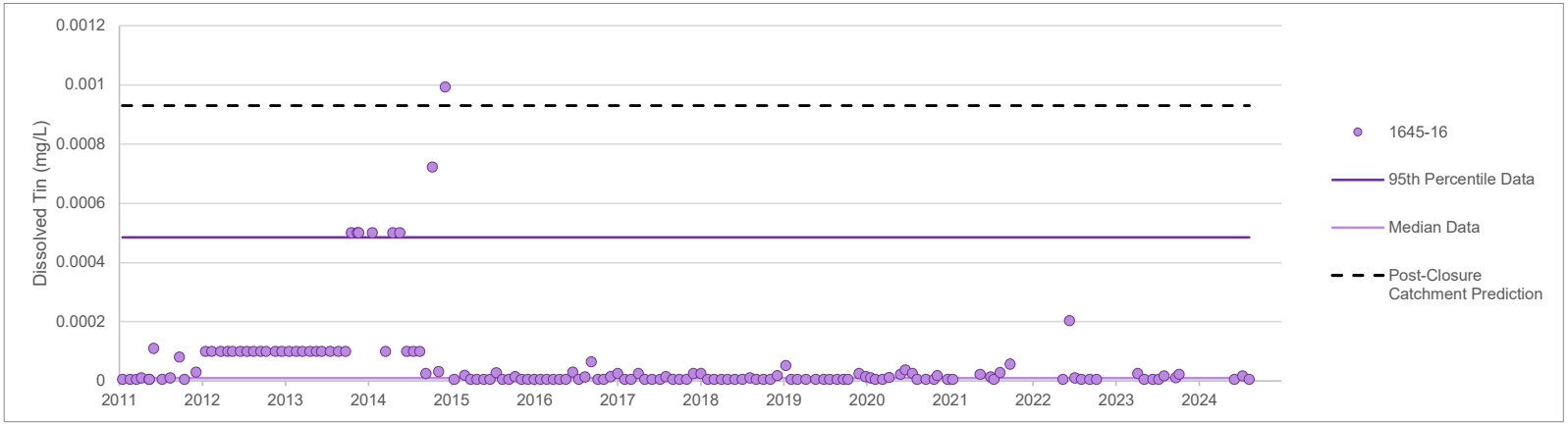


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00007	Wildlife	None
Median	0.00002	Human recreational	None
Count	142	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

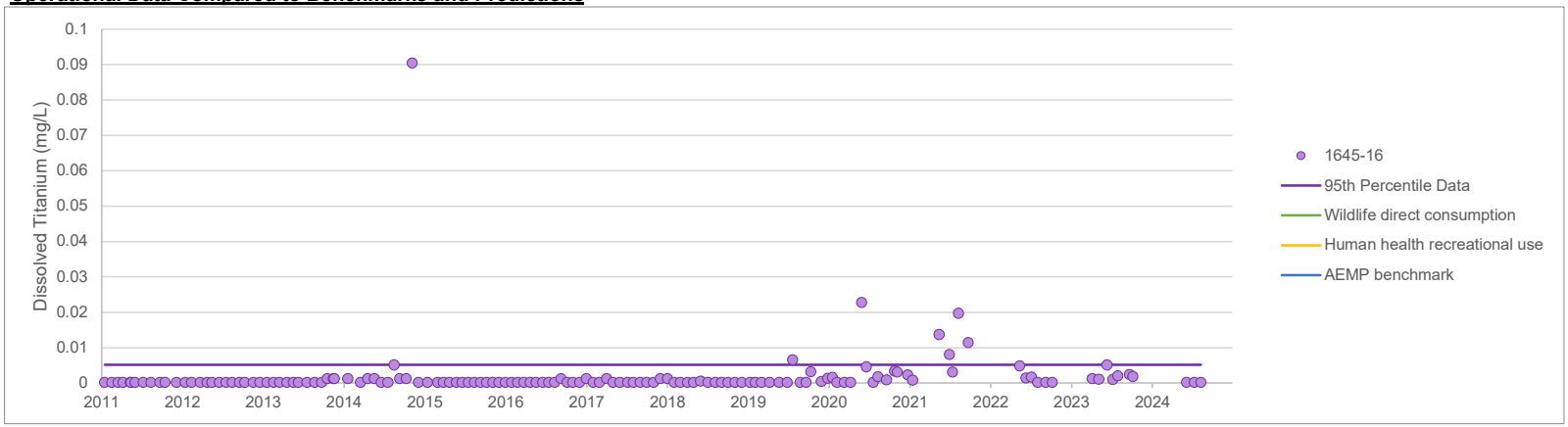


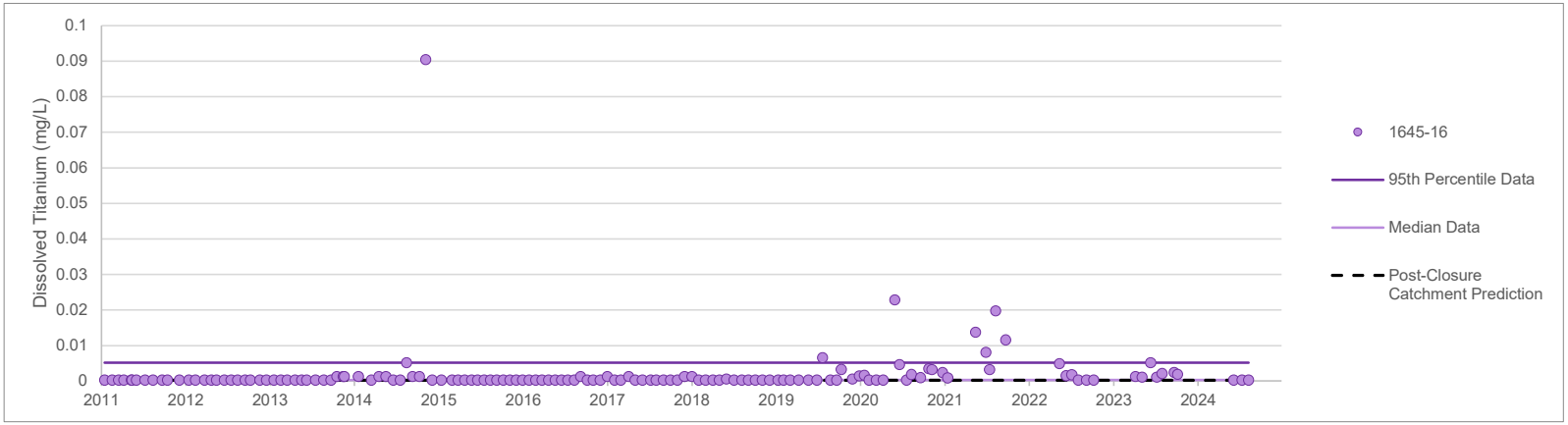


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00049	Wildlife	None
Median	0.00001	Human recreational	48
Count	142	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions



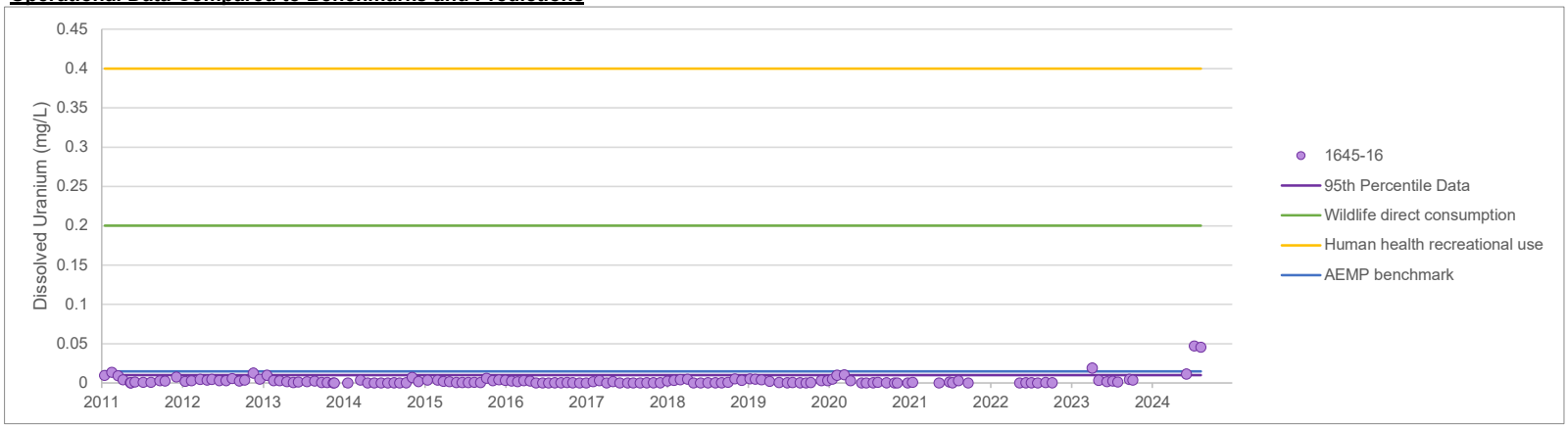


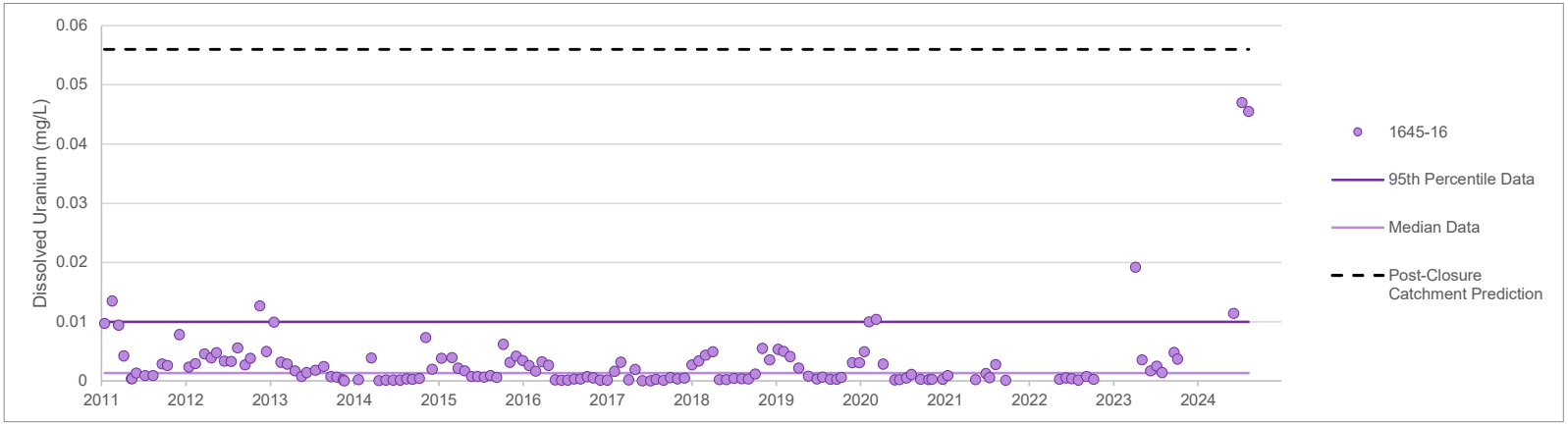
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0051	Wildlife	None
Median	0.0003	Human recreational	None
Count	142	AEMP	None

Operational Data Compared to Benchmarks and Predictions

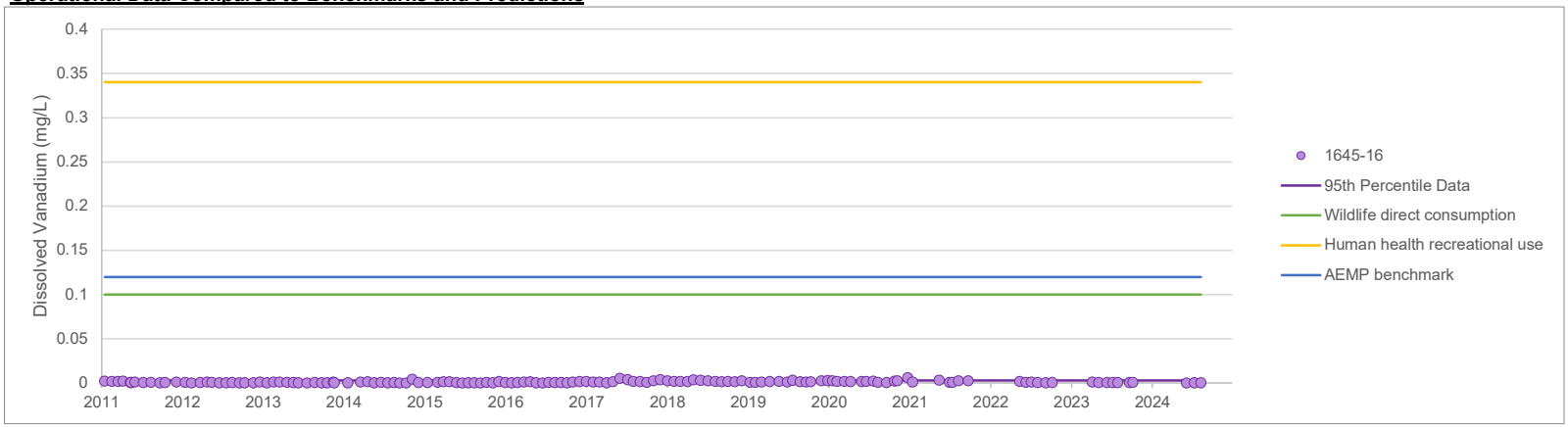


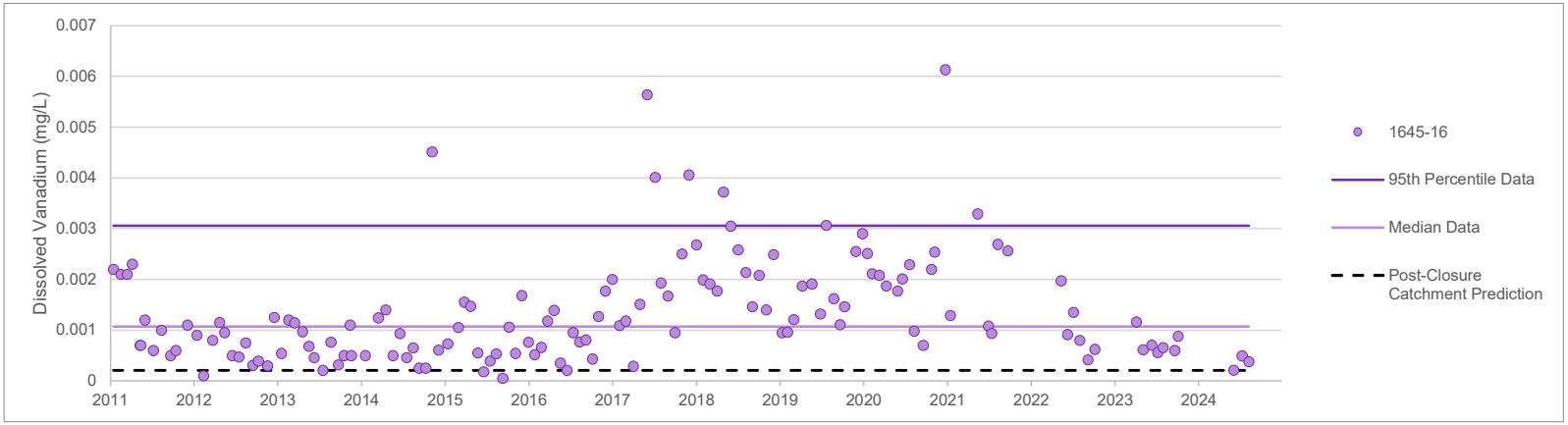


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.0100	Wildlife	0.2
Median	0.0014	Human recreational	0.4
Count	142	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



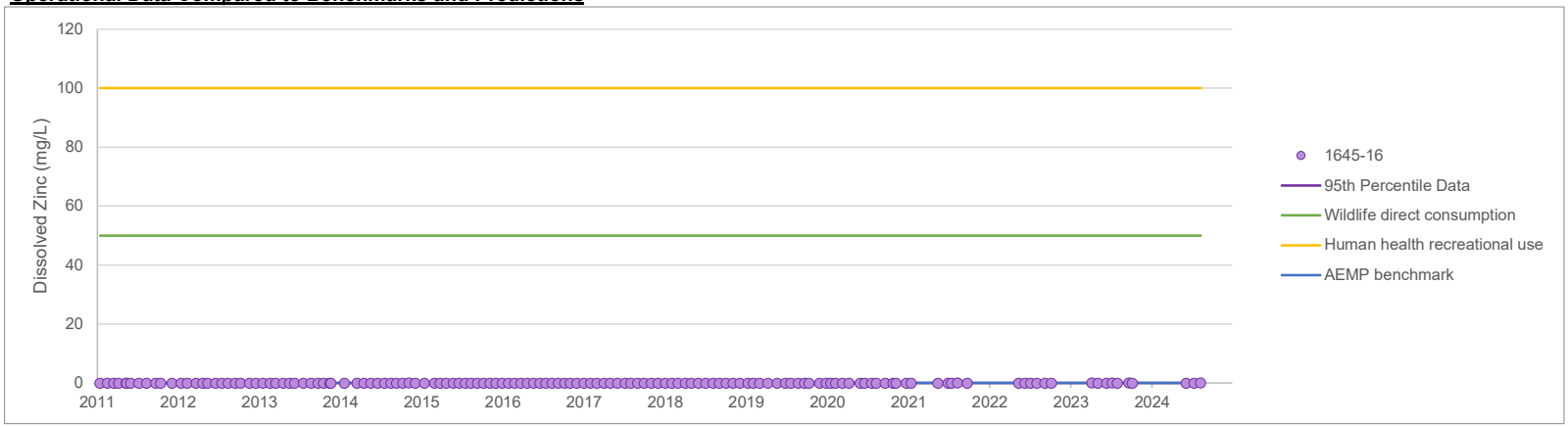


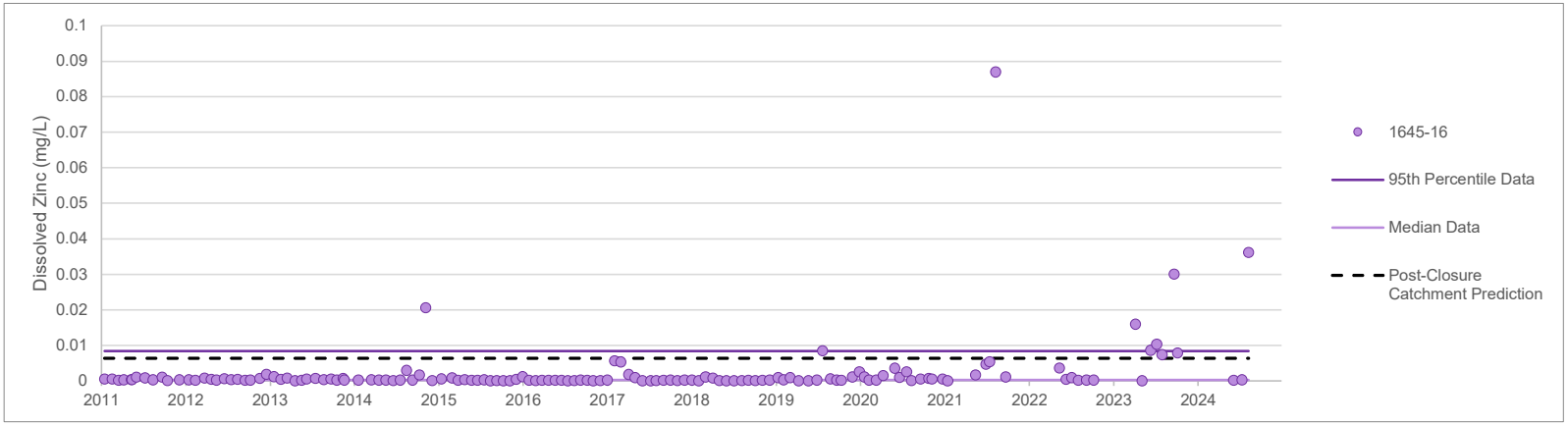
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0031	Wildlife	0.1
Median	0.0011	Human recreational	0.3
Count	142	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

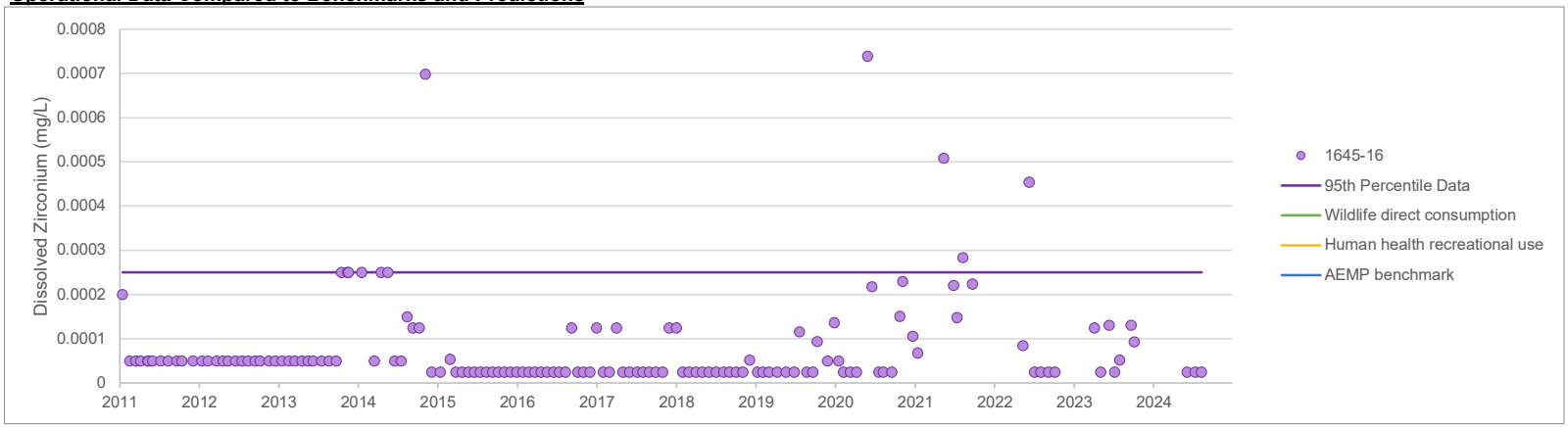


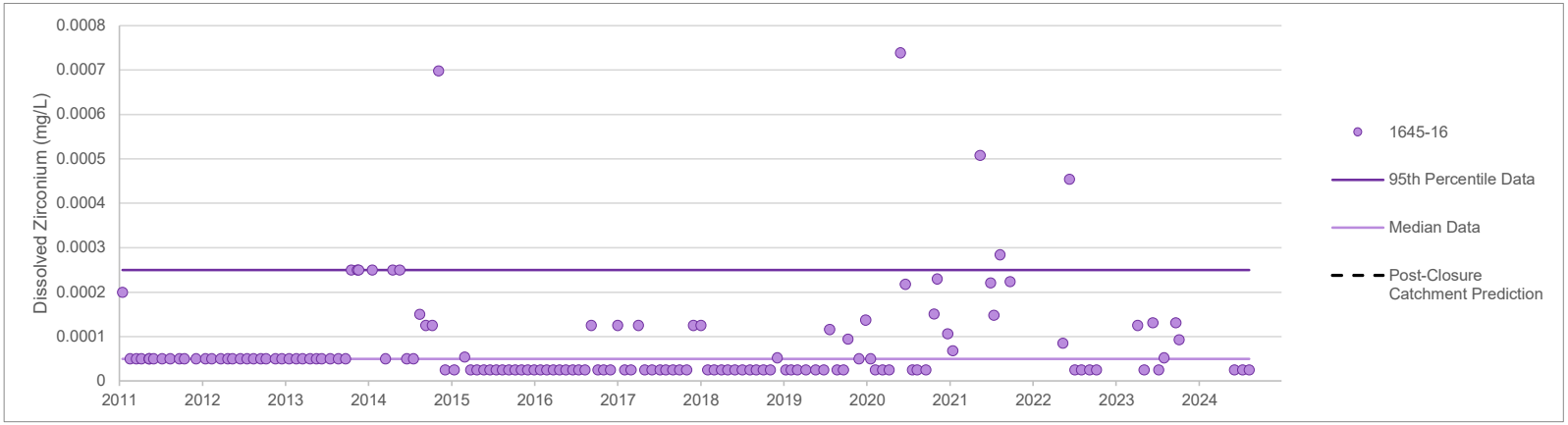


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.008	Wildlife	50
Median	0.000	Human recreational	100
Count	142	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0001	Human recreational	None
Count	142	AEMP	None

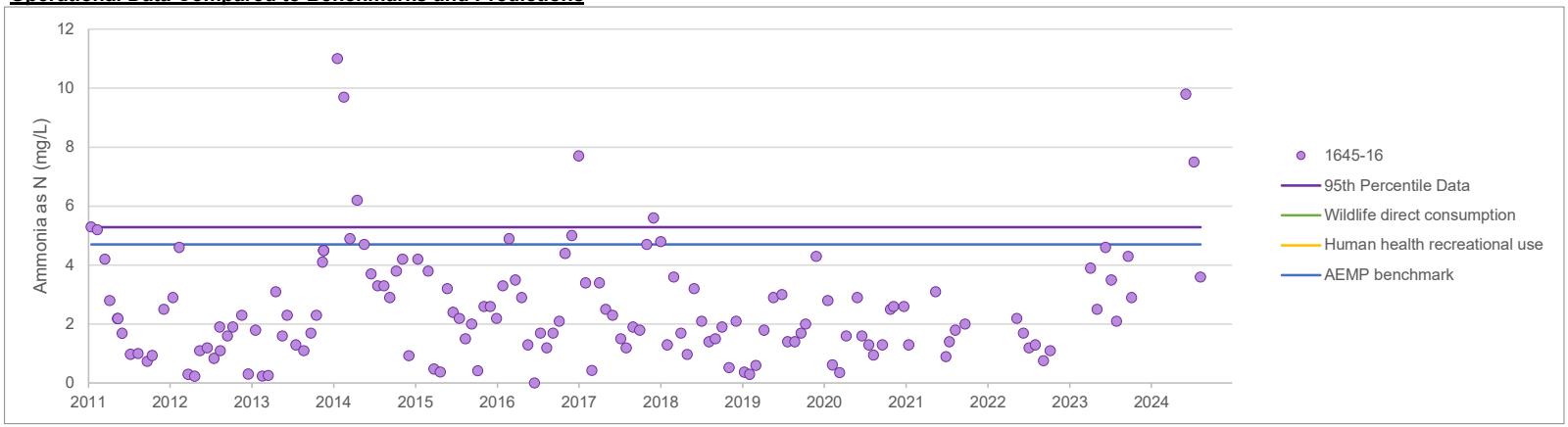
RioTinto | Diavik

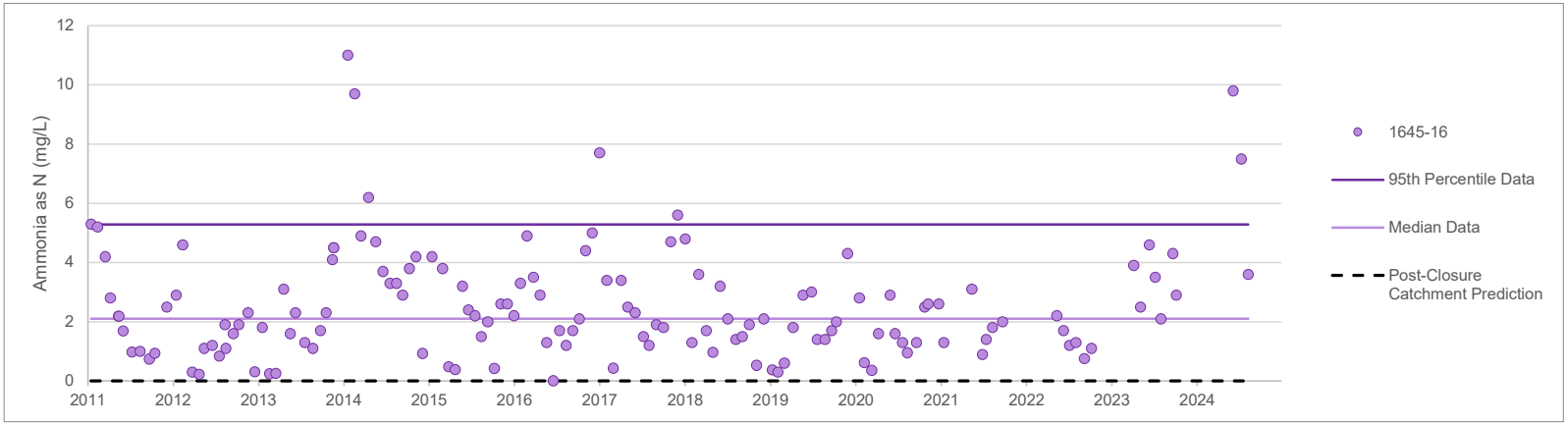
PKCF Pond

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions

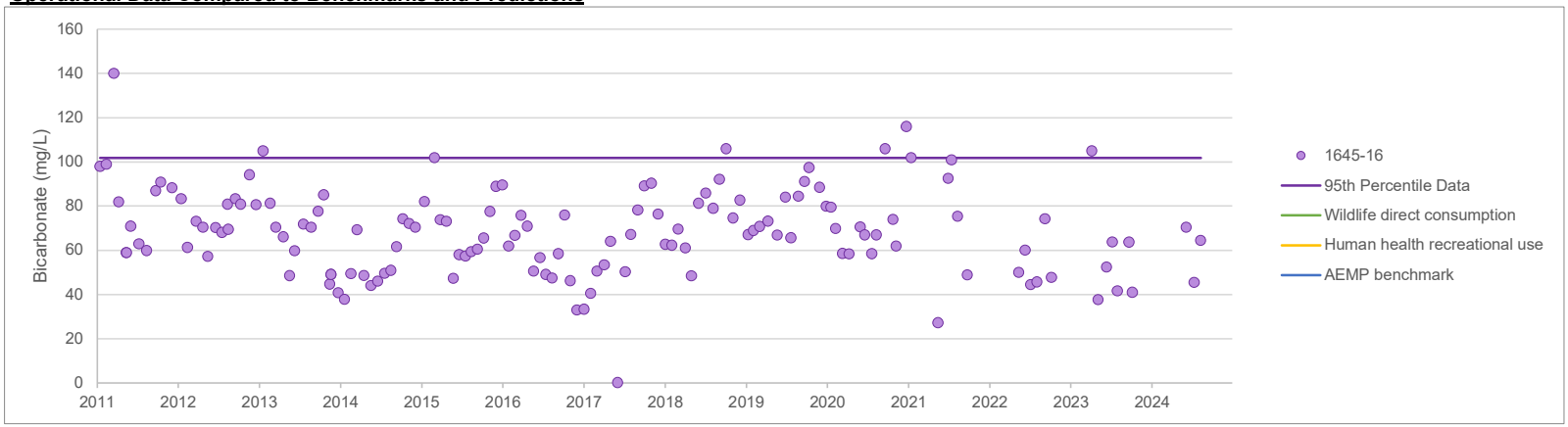


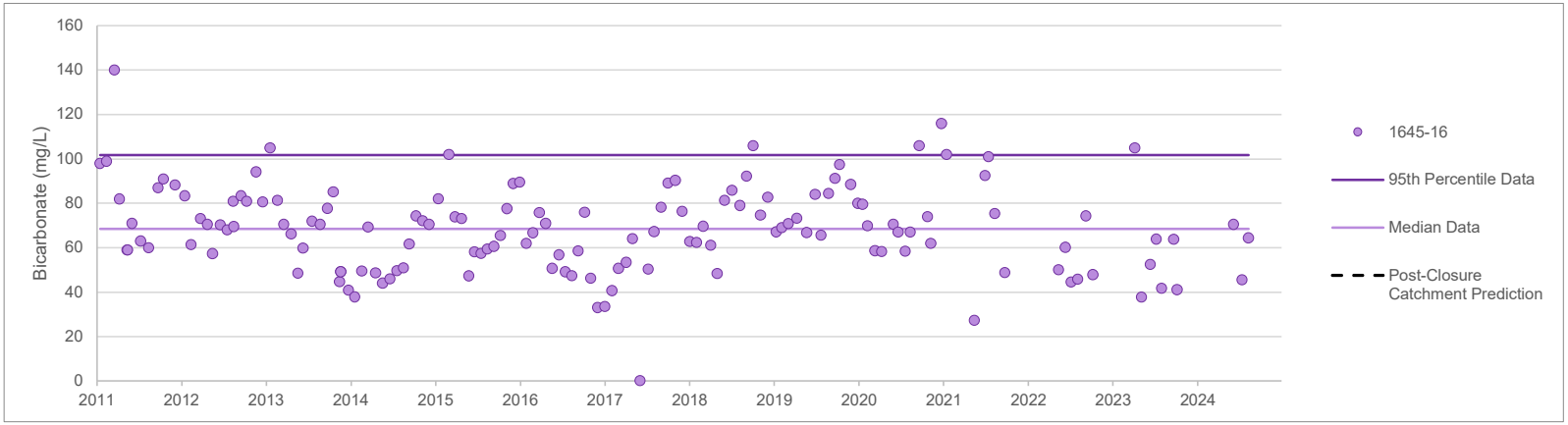


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	5.29	Wildlife	None
Median	2.10	Human recreational	None
Count	144	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions

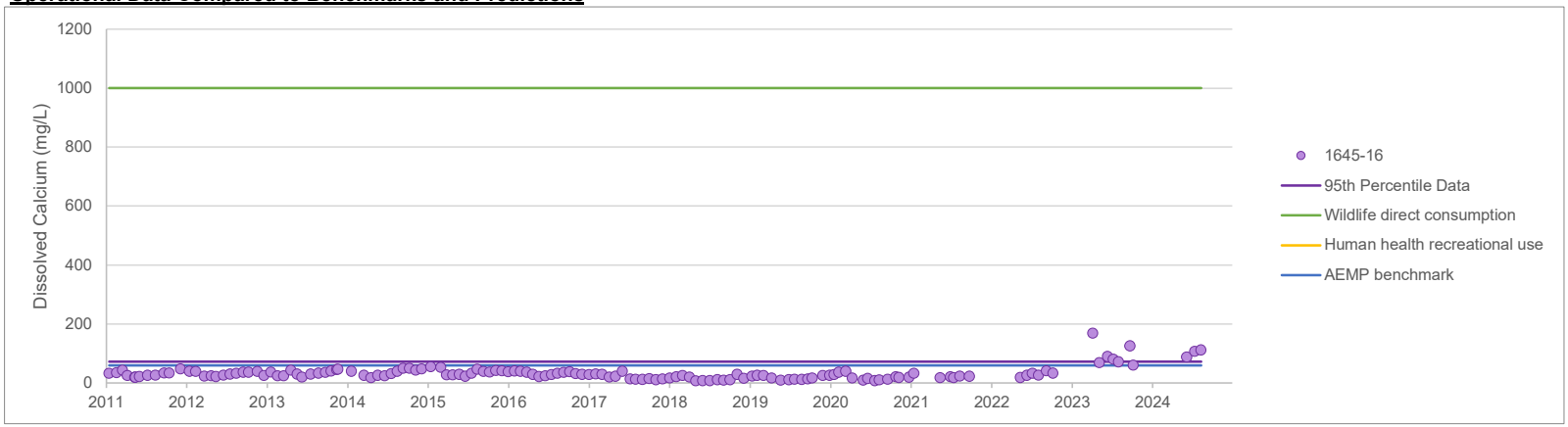


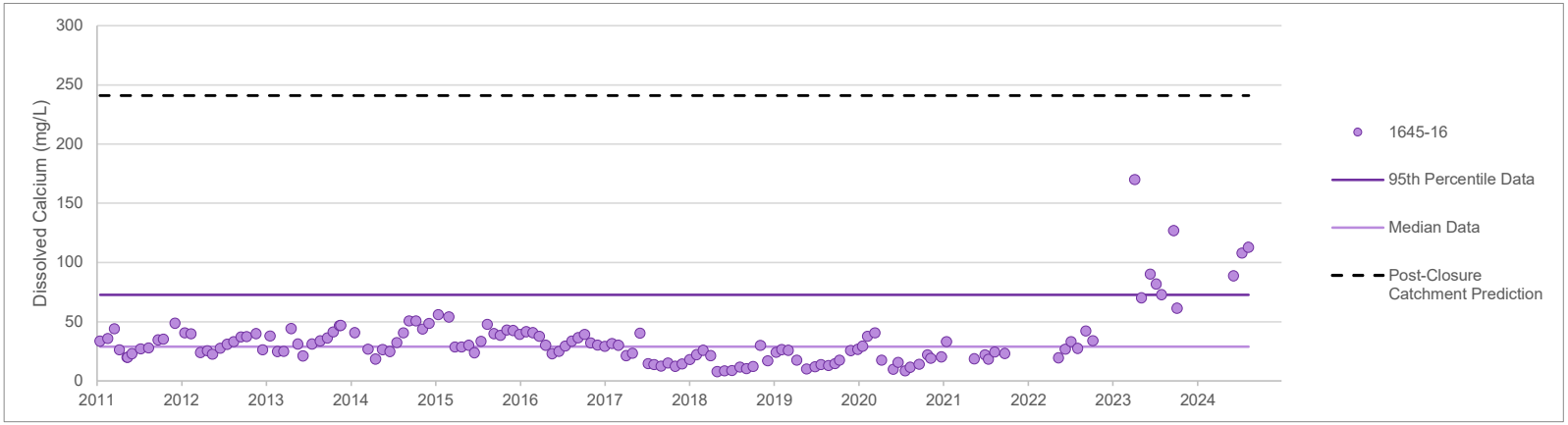


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	101.8	Wildlife	None
Median	68.6	Human recreational	None
Count	146	AEMP	None

Operational Data Compared to Benchmarks and Predictions



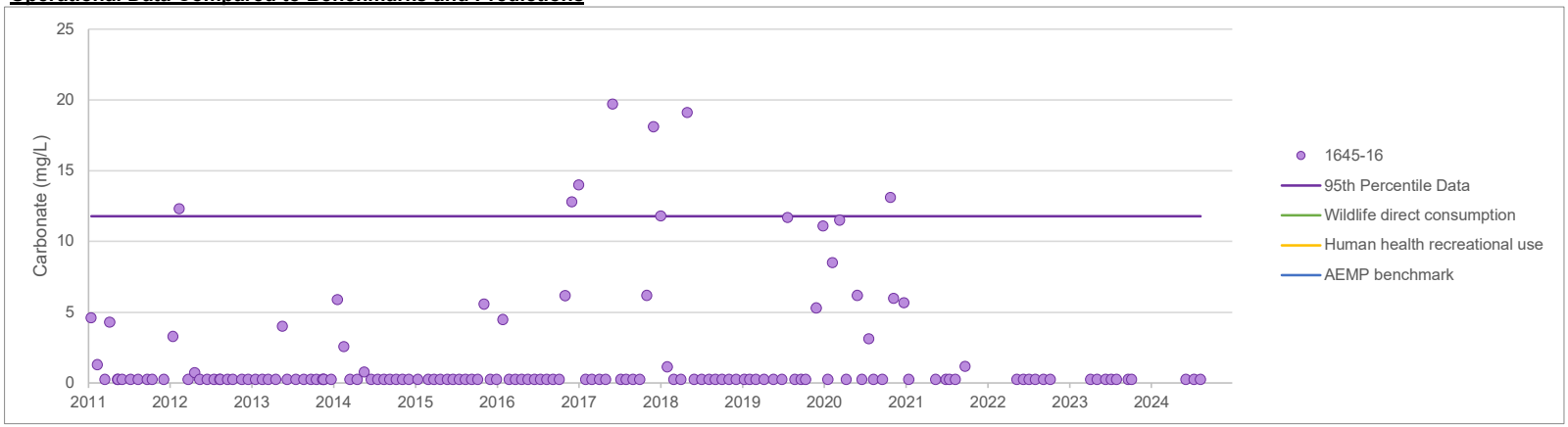


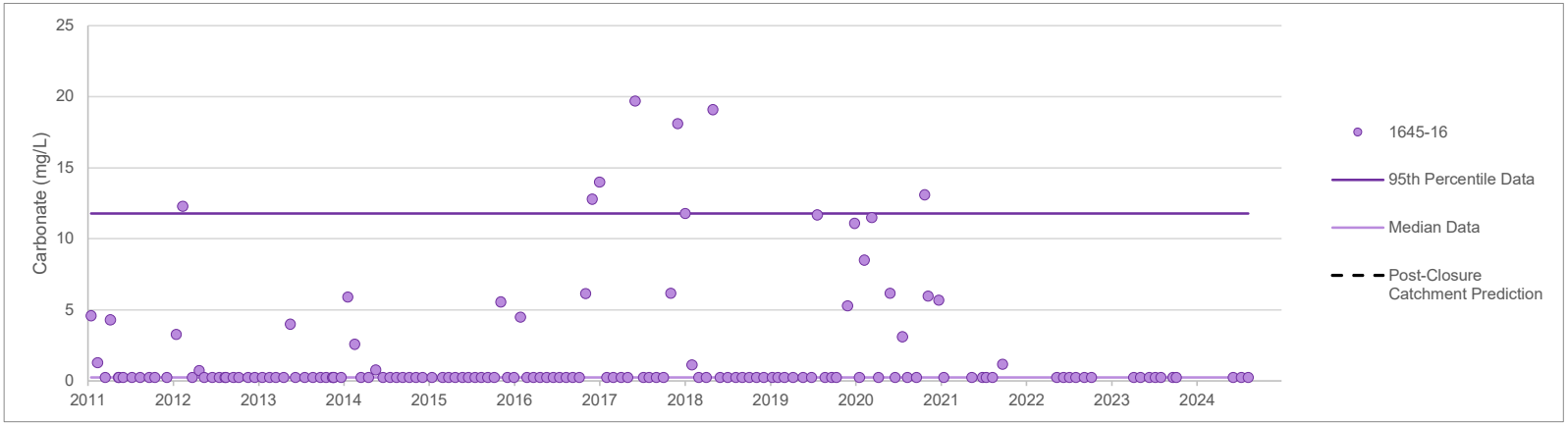
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	72.8	Wildlife	1000
Median	29.1	Human recreational	None
Count	142	AEMP	60

Operational Data Compared to Benchmarks and Predictions

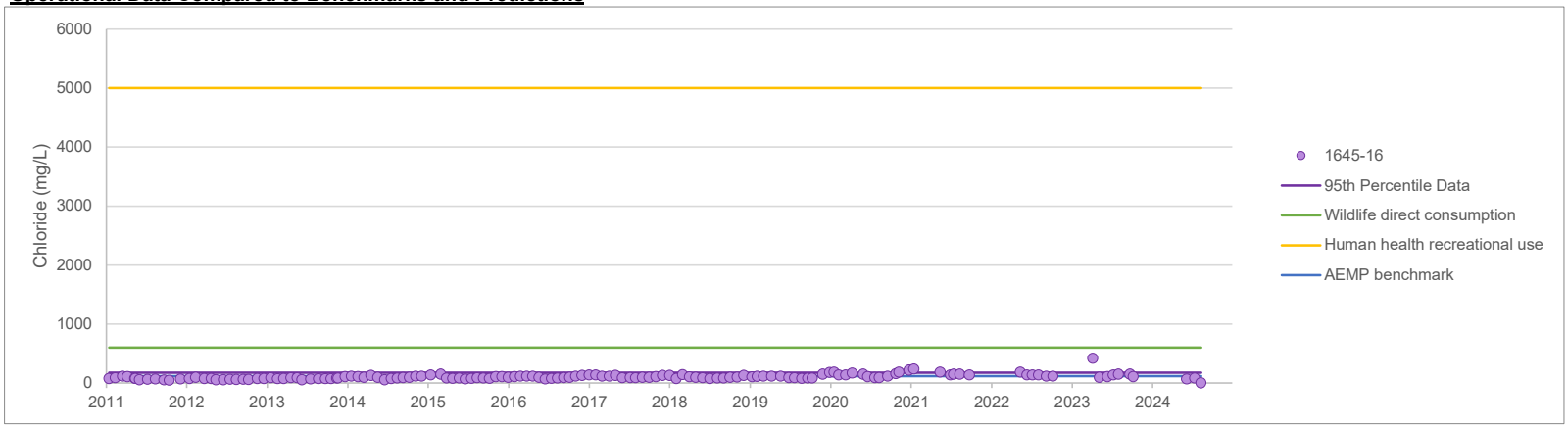


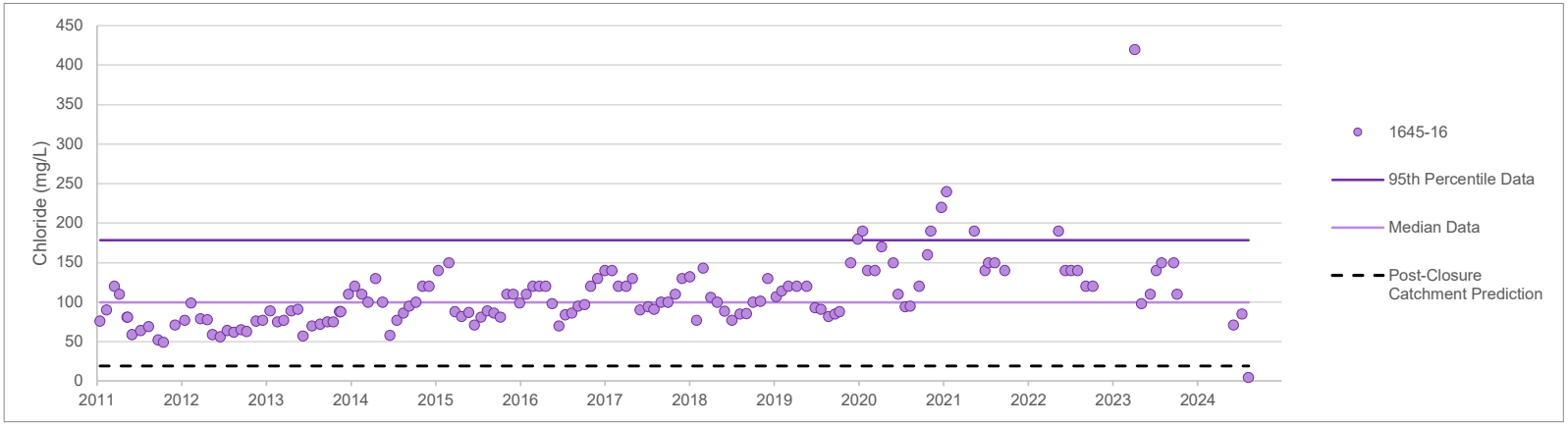


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	11.78	Wildlife	None
Median	0.25	Human recreational	None
Count	146	AEMP	None

Operational Data Compared to Benchmarks and Predictions



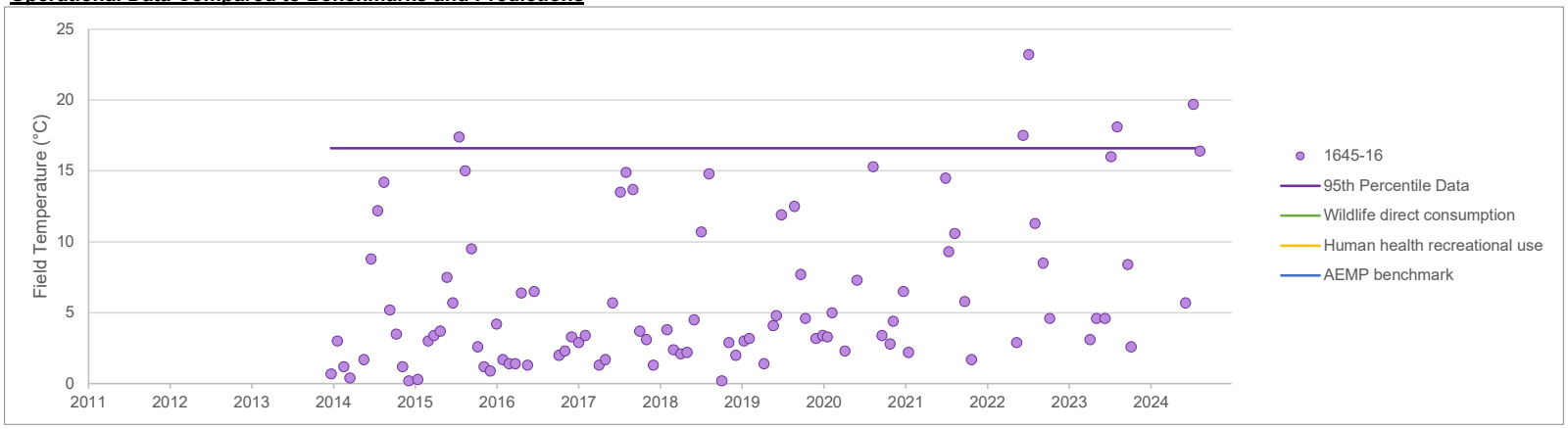


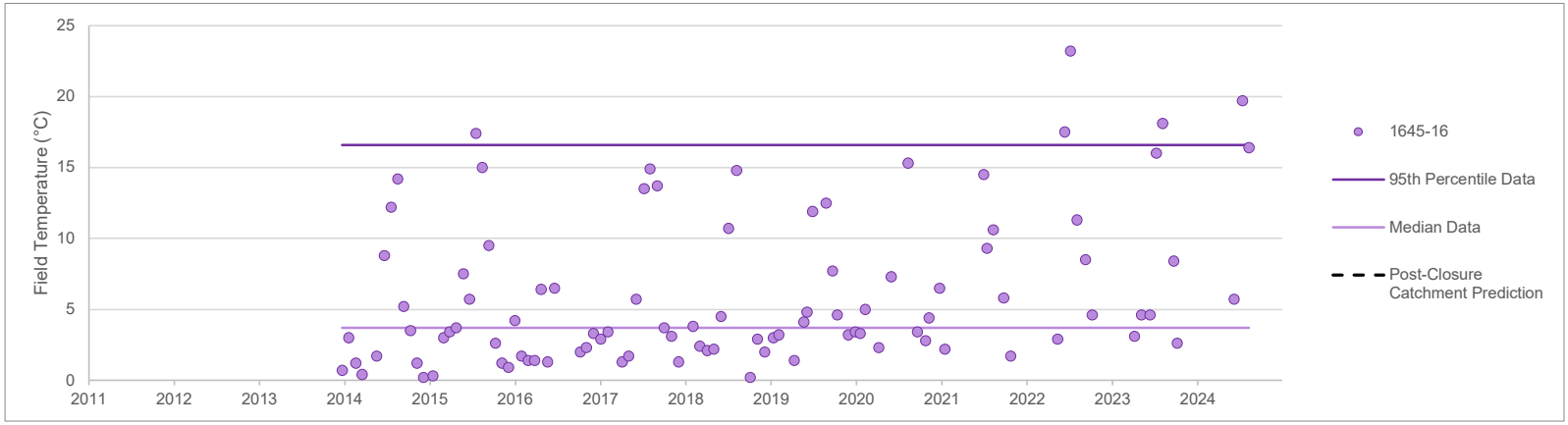
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	178.5	Wildlife	600
Median	99.5	Human recreational	5000
Count	144	AEMP	120

Operational Data Compared to Benchmarks and Predictions

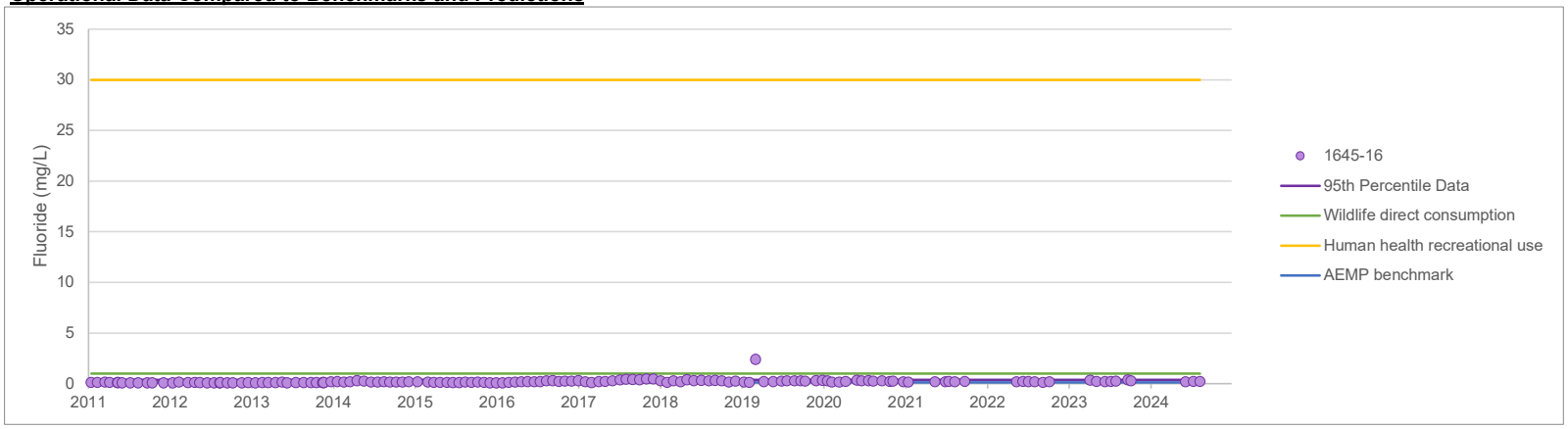


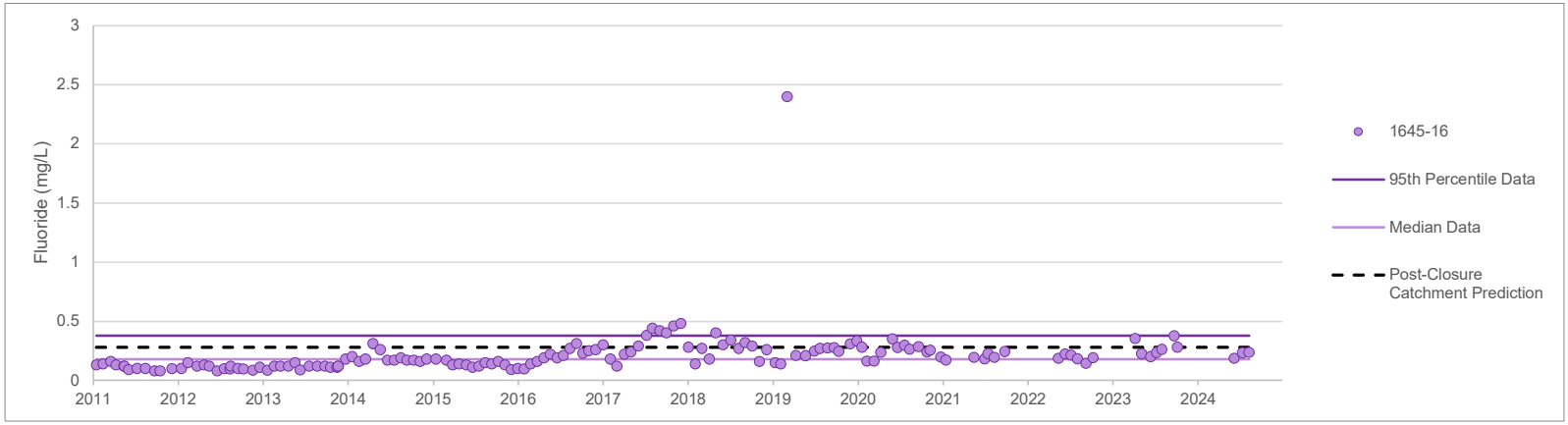


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	16.6	Wildlife	None
Median	3.7	Human recreational	None
Count	97	AEMP	None

Operational Data Compared to Benchmarks and Predictions



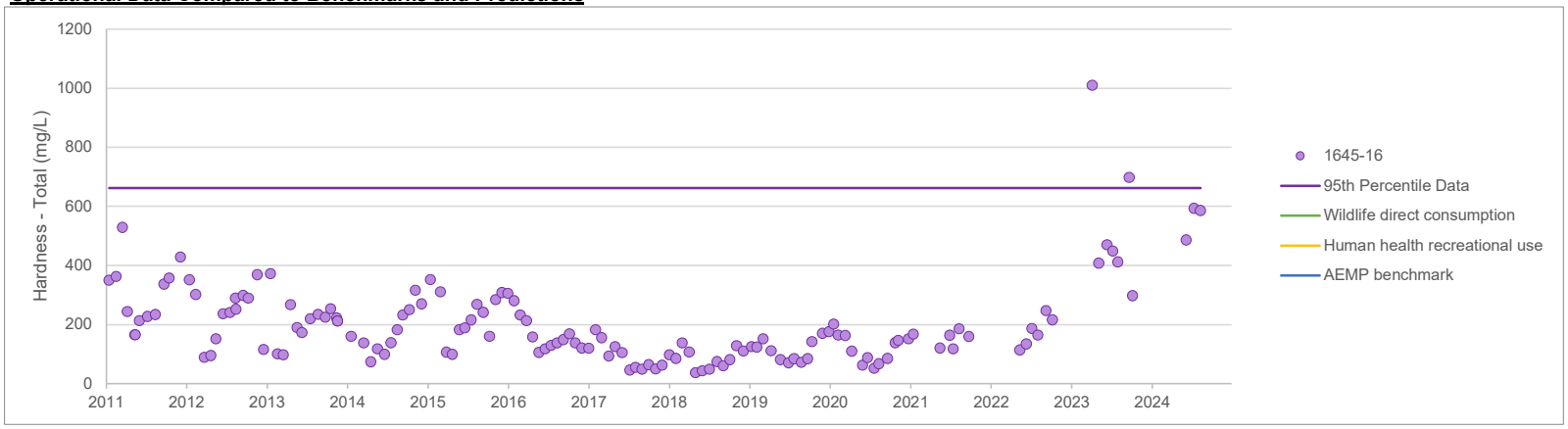


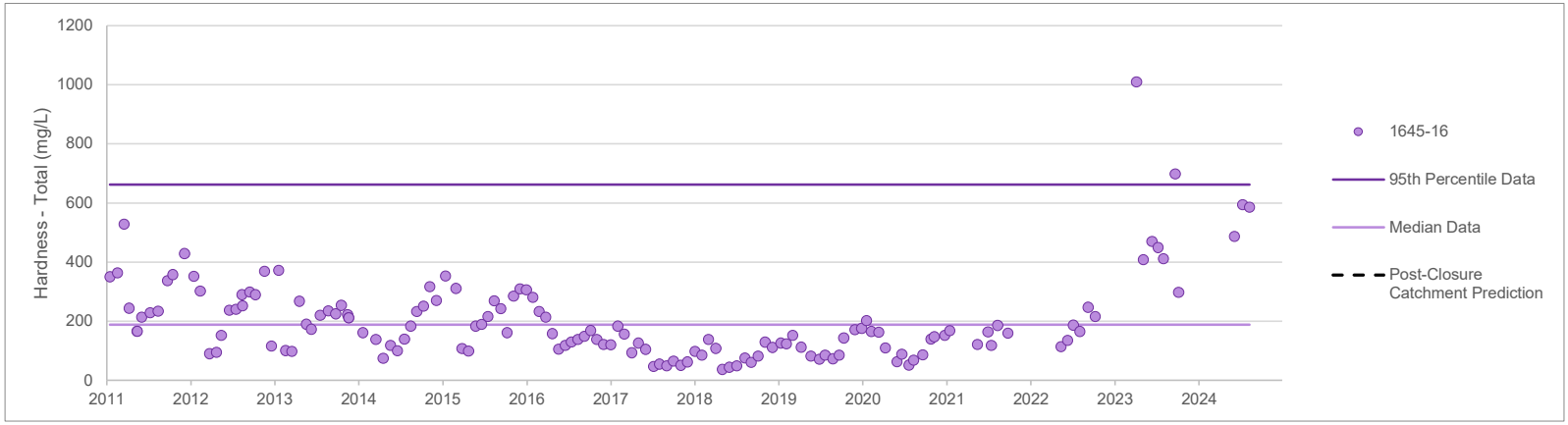
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.38	Wildlife	1
Median	0.18	Human recreational	30
Count	146	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

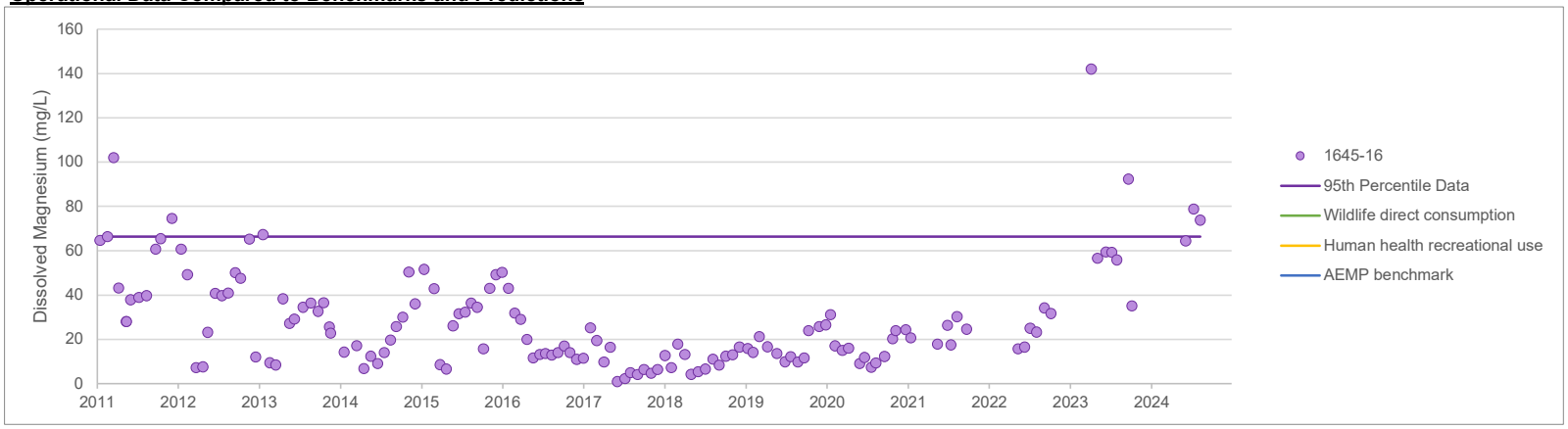


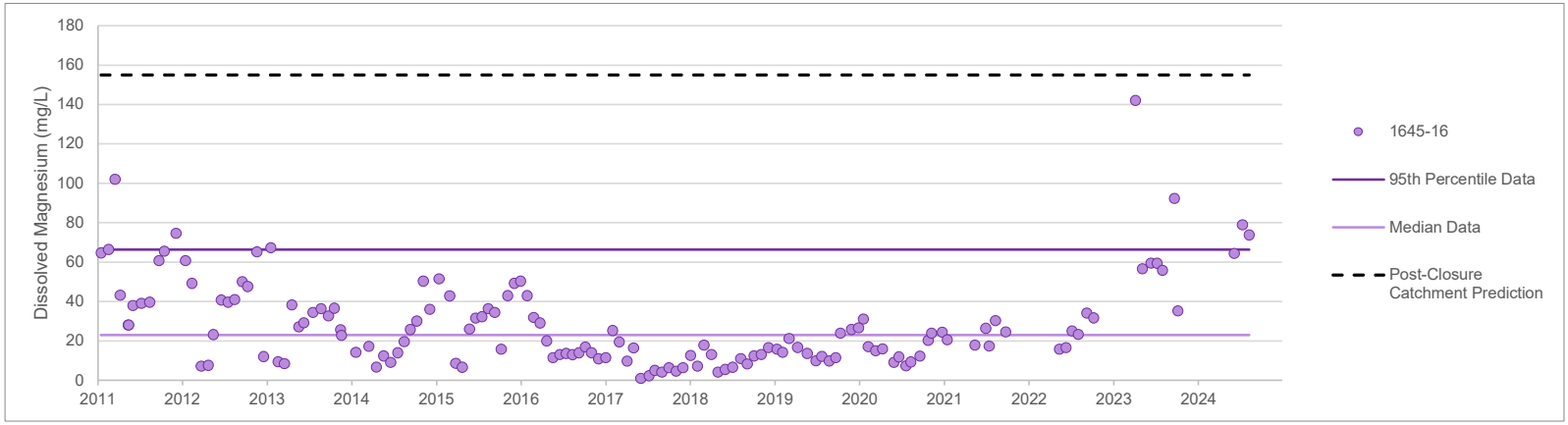


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	662	Wildlife	None
Median	188	Human recreational	None
Count	145	AEMP	None

Operational Data Compared to Benchmarks and Predictions

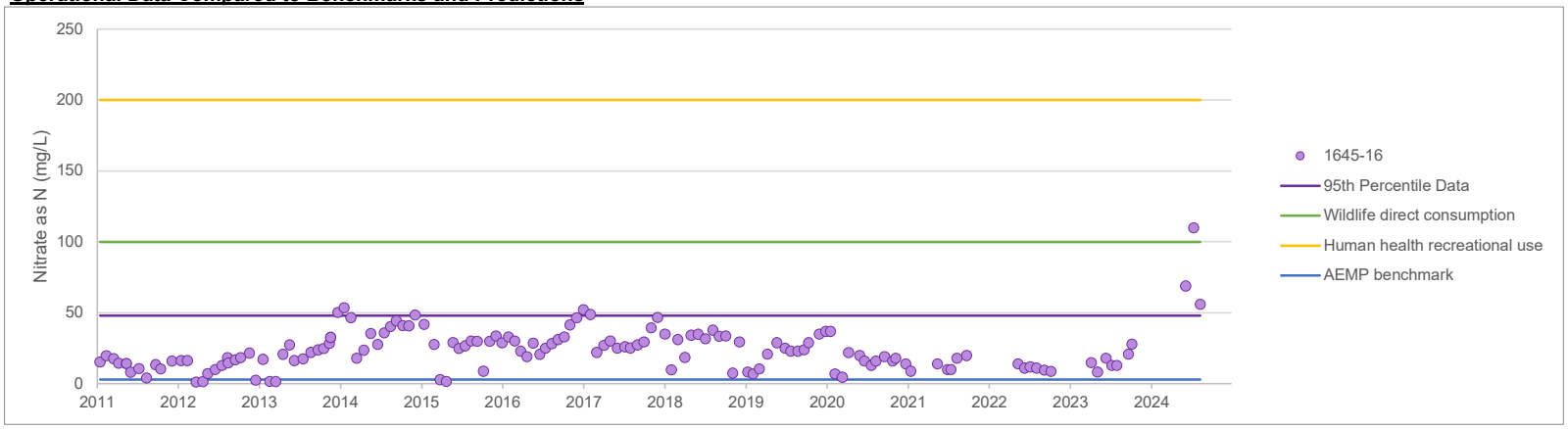


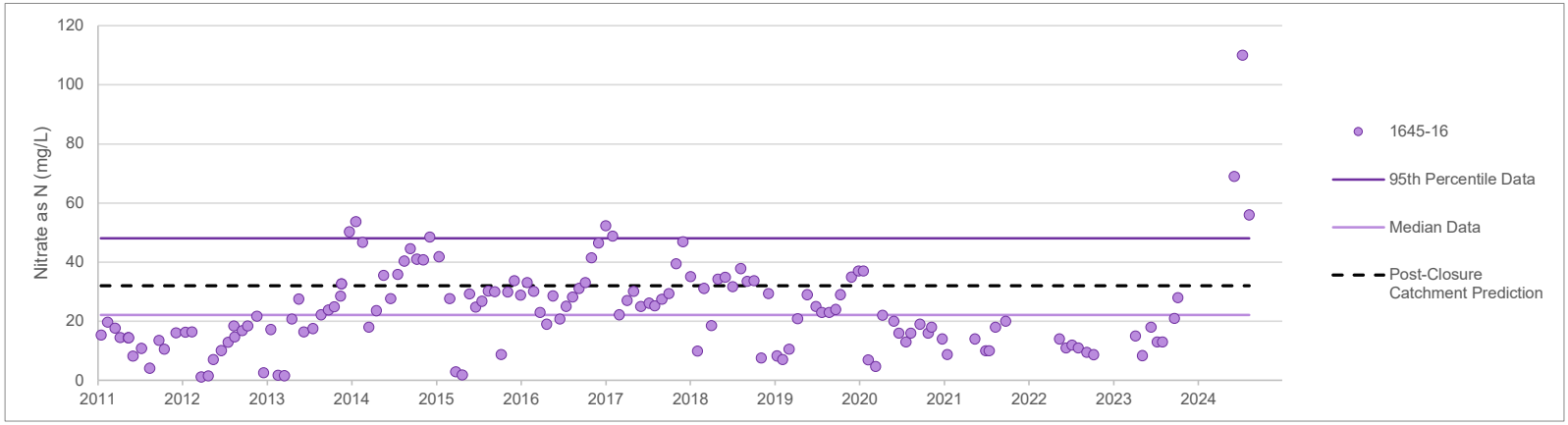


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	66.4	Wildlife	None
Median	23.1	Human recreational	None
Count	142	AEMP	None

Operational Data Compared to Benchmarks and Predictions



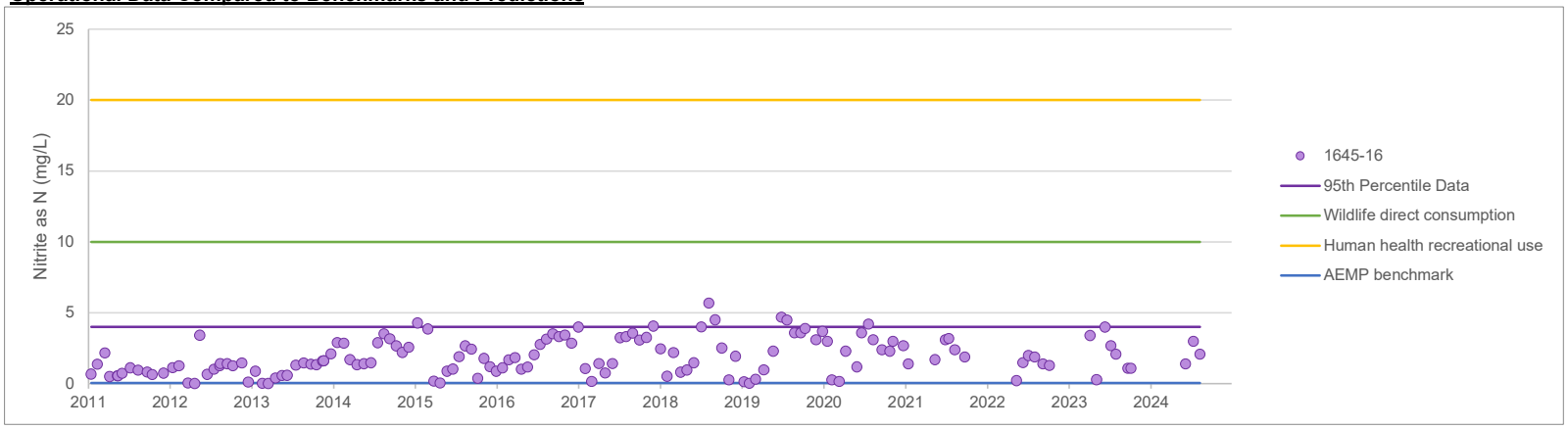


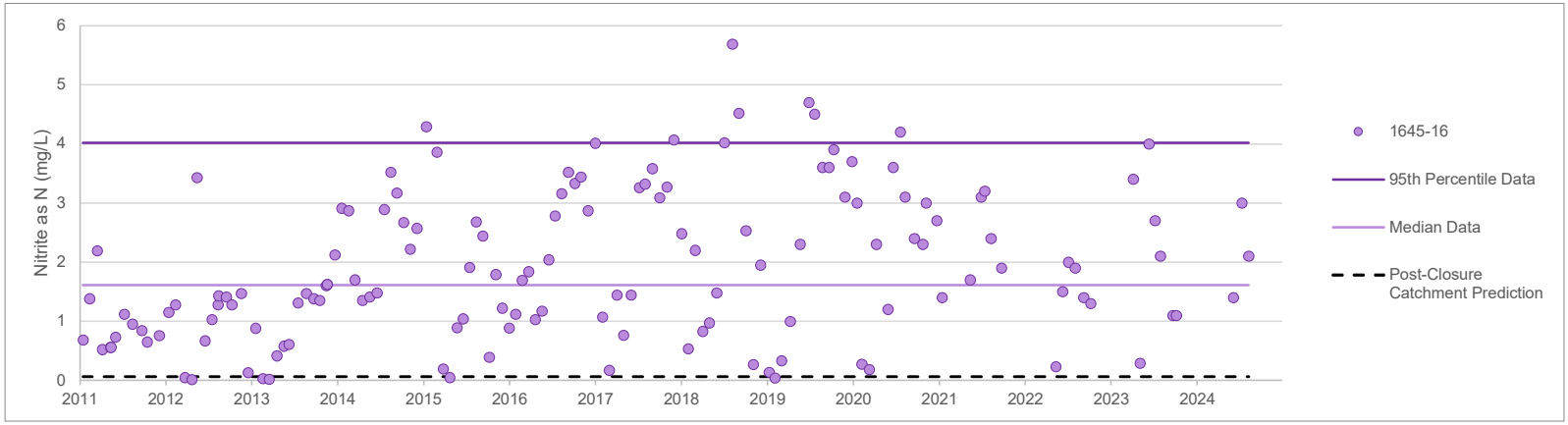
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	48.1	Wildlife	100
Median	22.1	Human recreational	200
Count	146	AEMP	3

Operational Data Compared to Benchmarks and Predictions

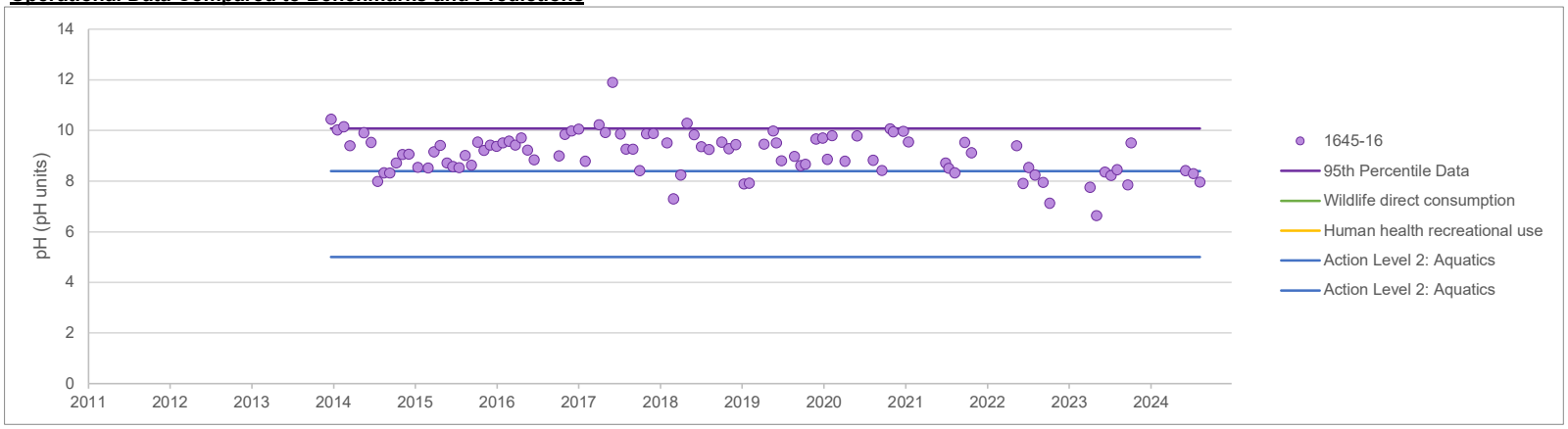


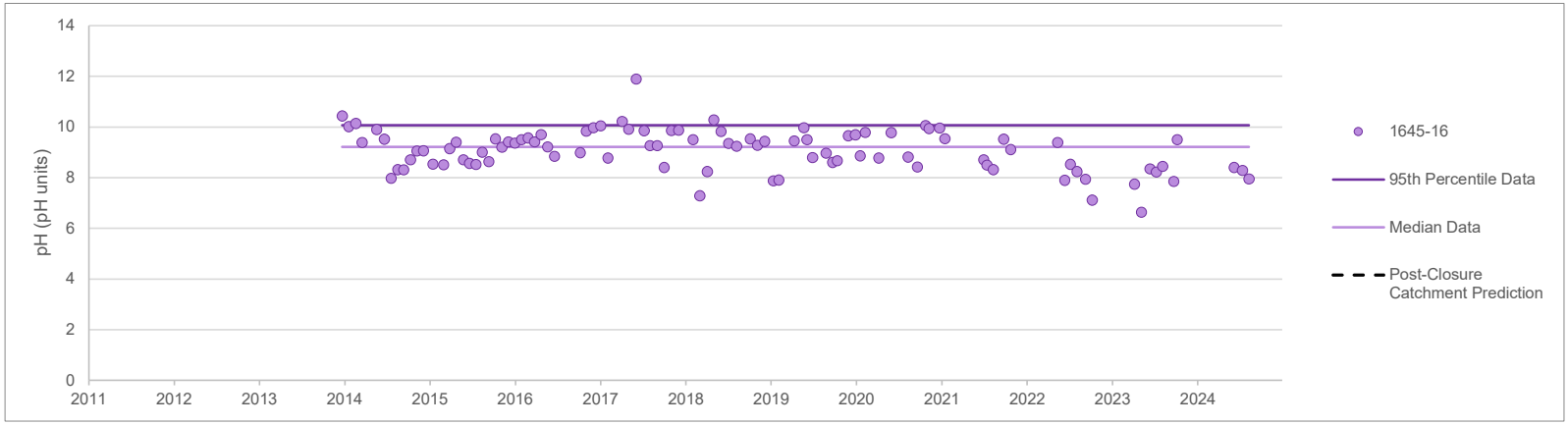


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	4.018	Wildlife	10.0
Median	1.610	Human recreational	20.0
Count	146	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



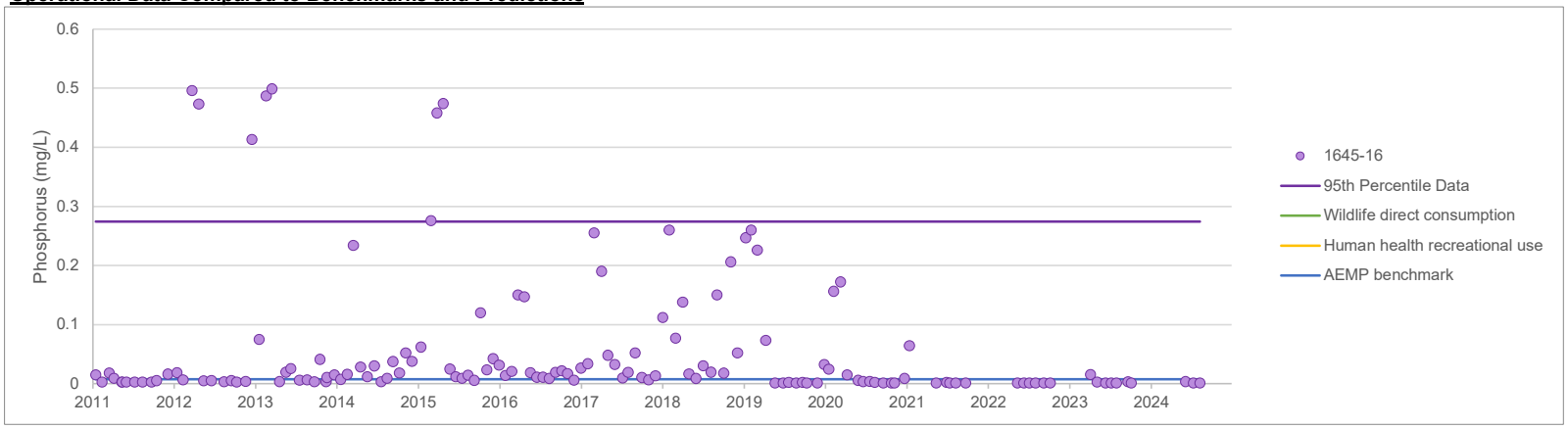


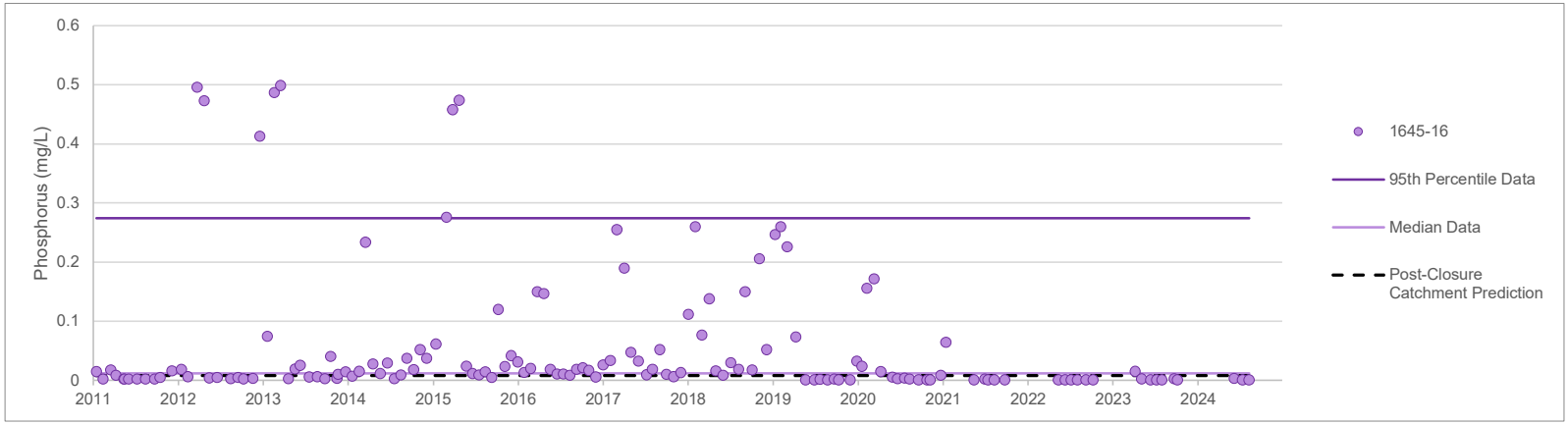
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	10.1	Wildlife	None
Median	9.2	Human recreational	None
Count	97	AEMP	None

Operational Data Compared to Benchmarks and Predictions

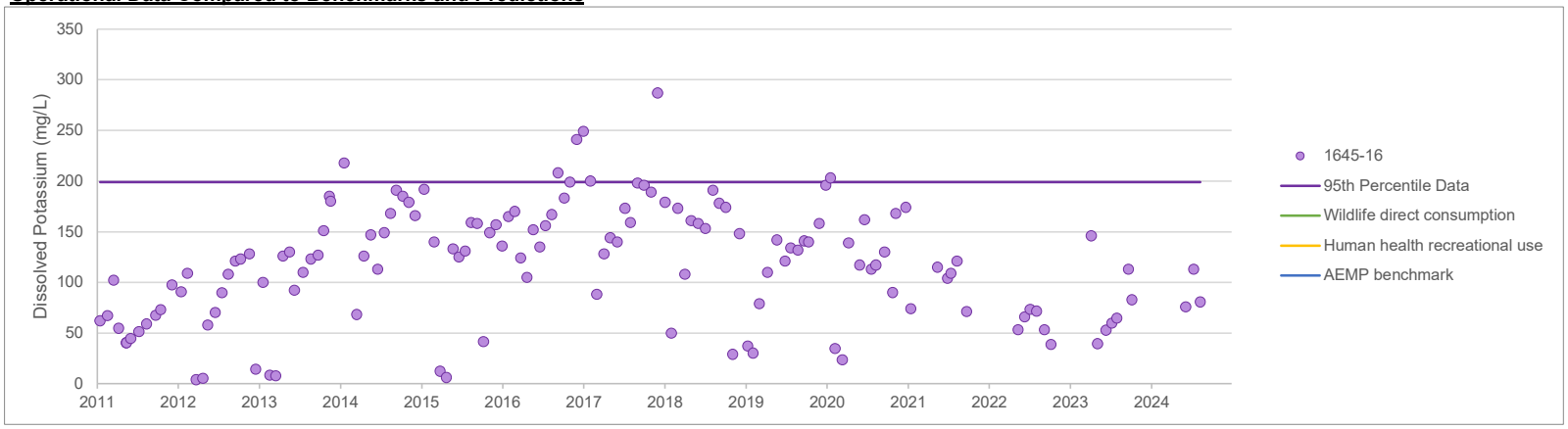


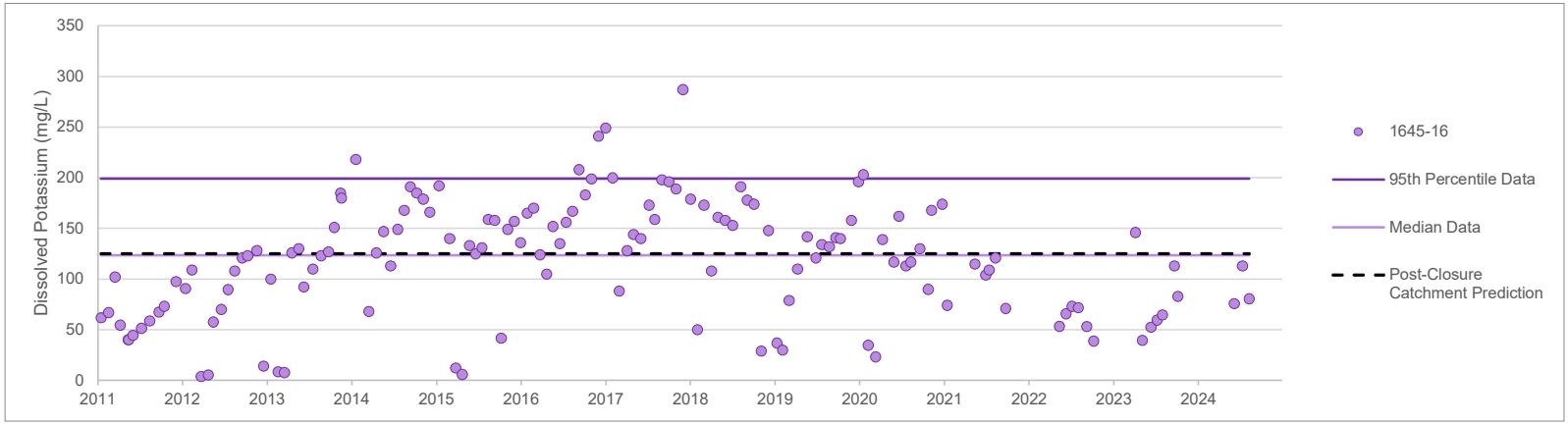


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.274	Wildlife	None
Median	0.012	Human recreational	None
Count	143	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



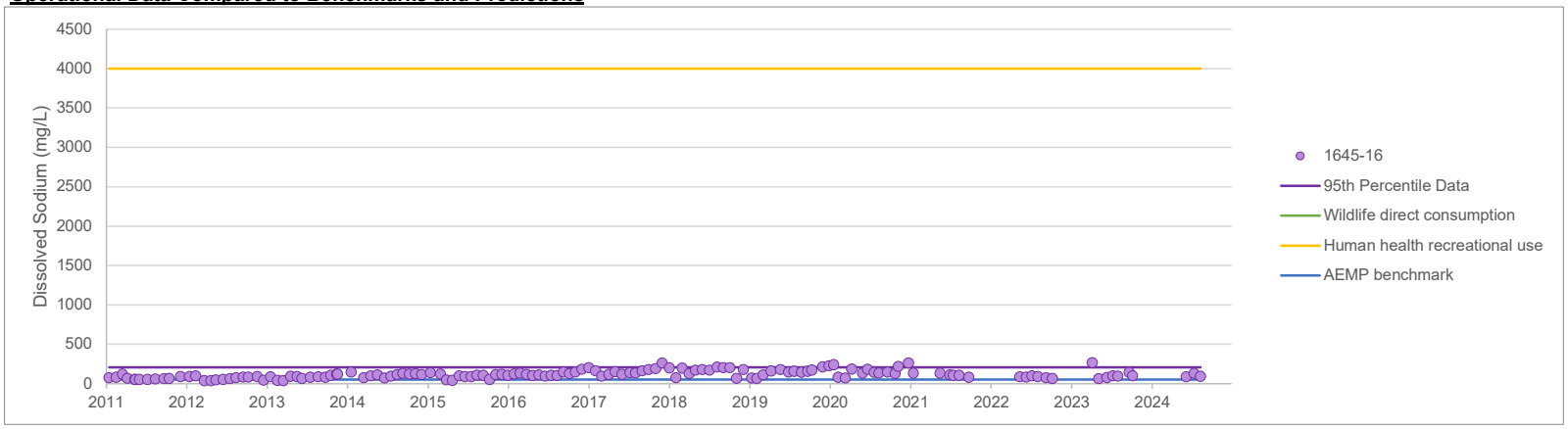


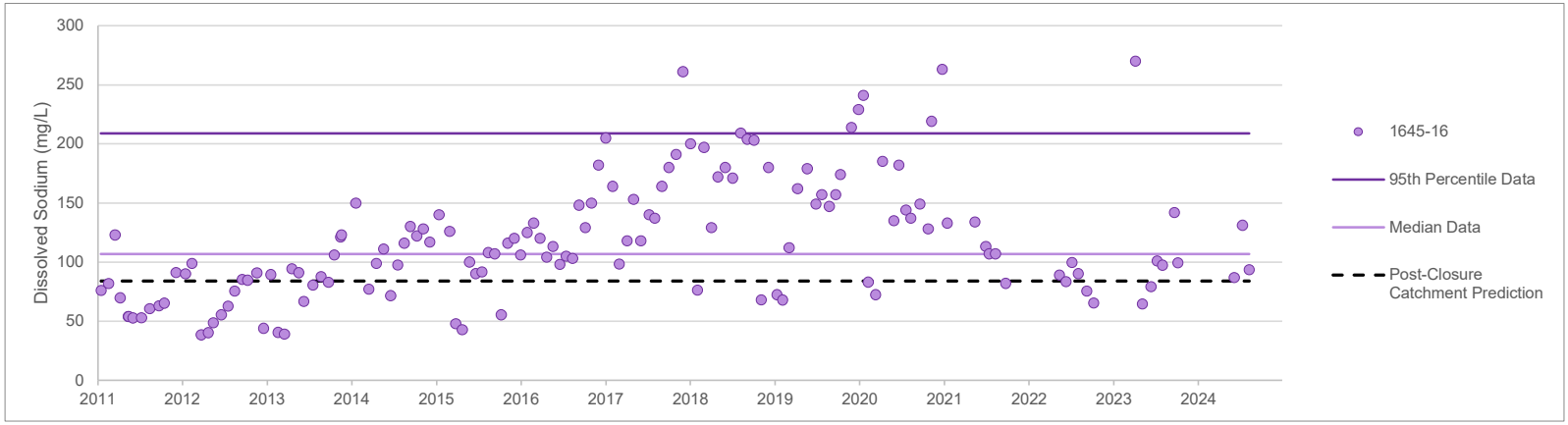
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	199.0	Wildlife	None
Median	123.5	Human recreational	None
Count	142	AEMP	None

Operational Data Compared to Benchmarks and Predictions



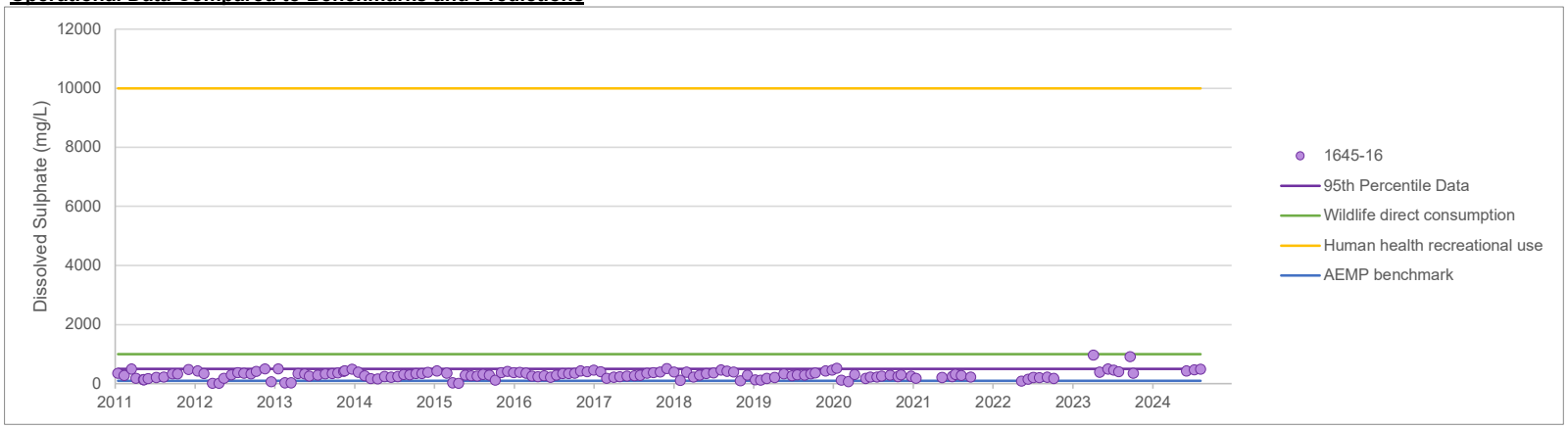


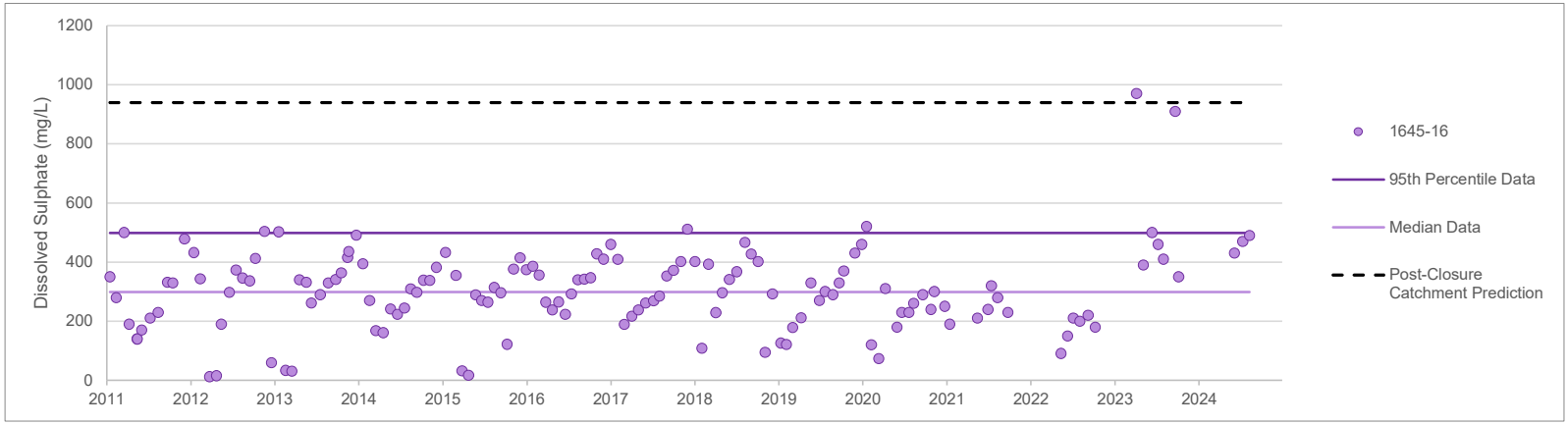
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	208.8	Wildlife	None
Median	107.0	Human recreational	4000
Count	142	AEMP	52

Operational Data Compared to Benchmarks and Predictions

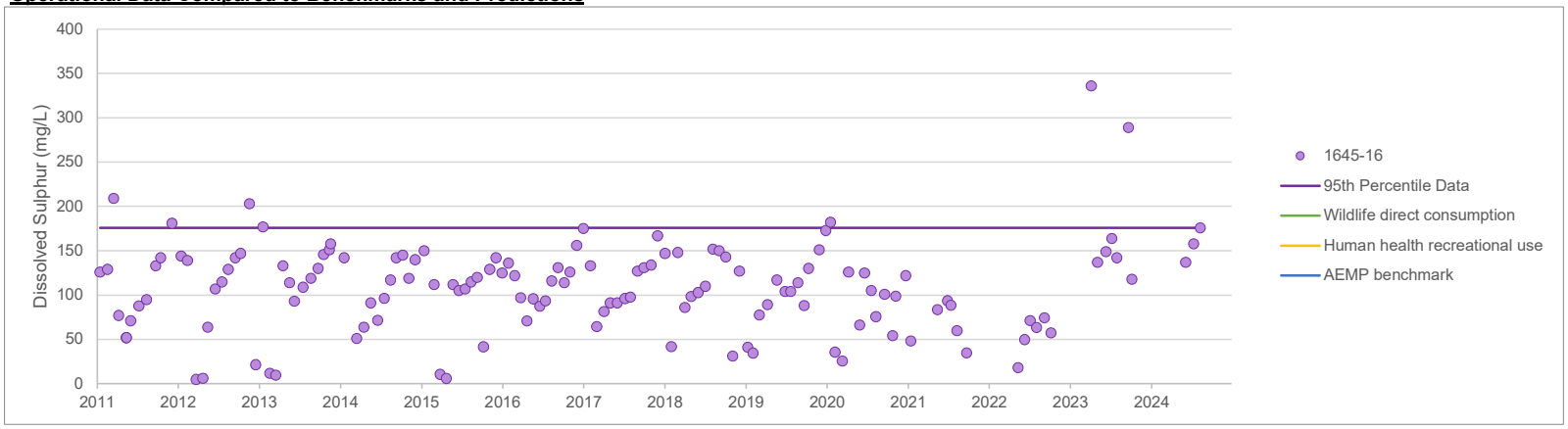


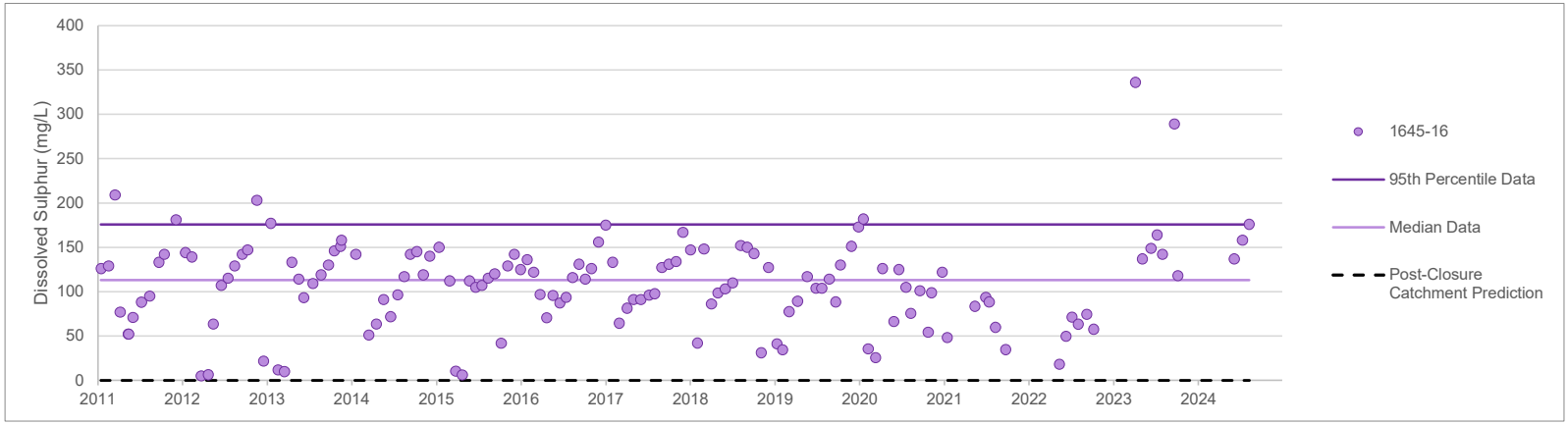


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	499	Wildlife	1000
Median	299	Human recreational	10000
Count	144	AEMP	100

Operational Data Compared to Benchmarks and Predictions



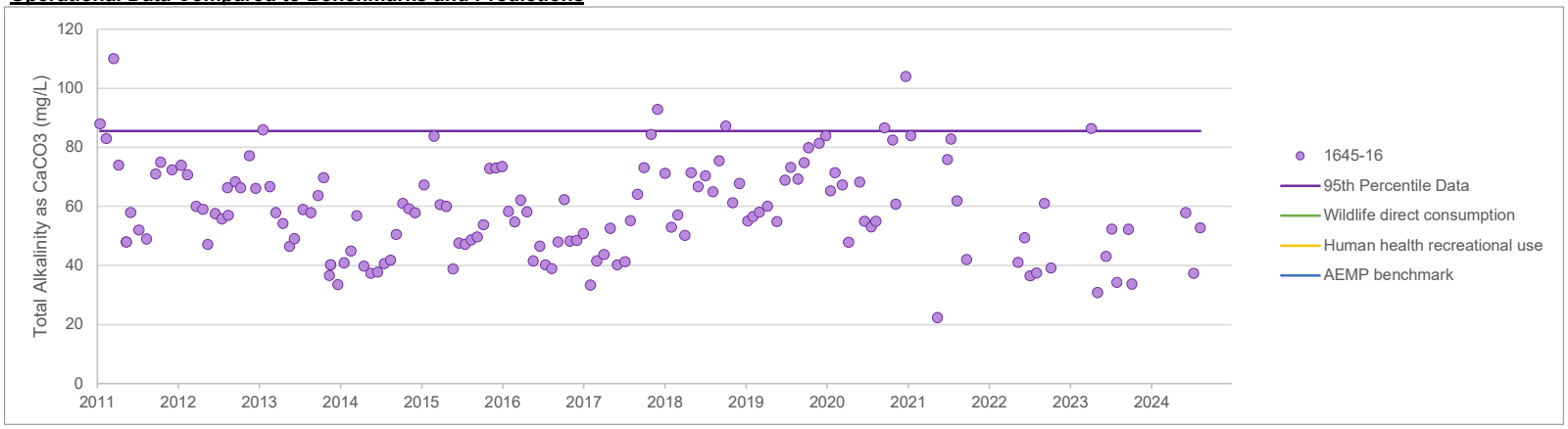


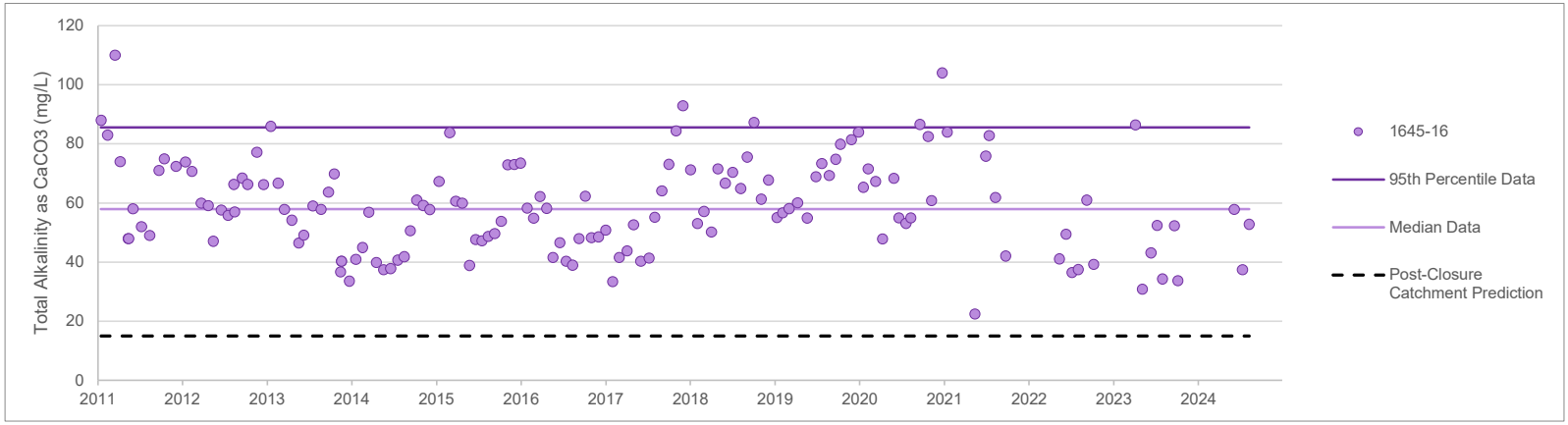
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	176.0	Wildlife	None
Median	113.0	Human recreational	None
Count	142	AEMP	None

Operational Data Compared to Benchmarks and Predictions



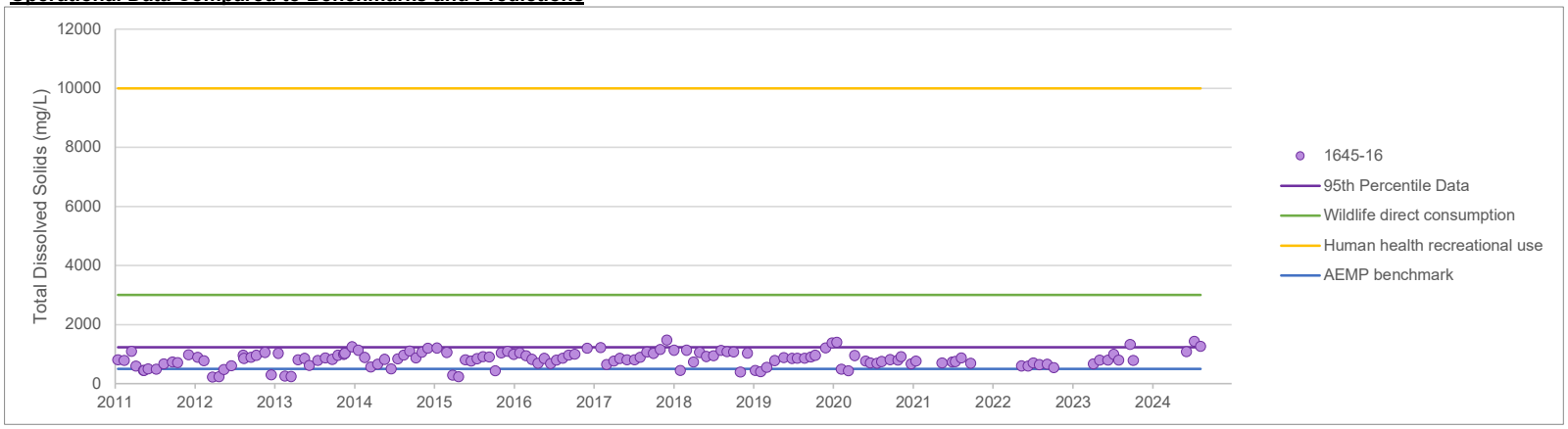


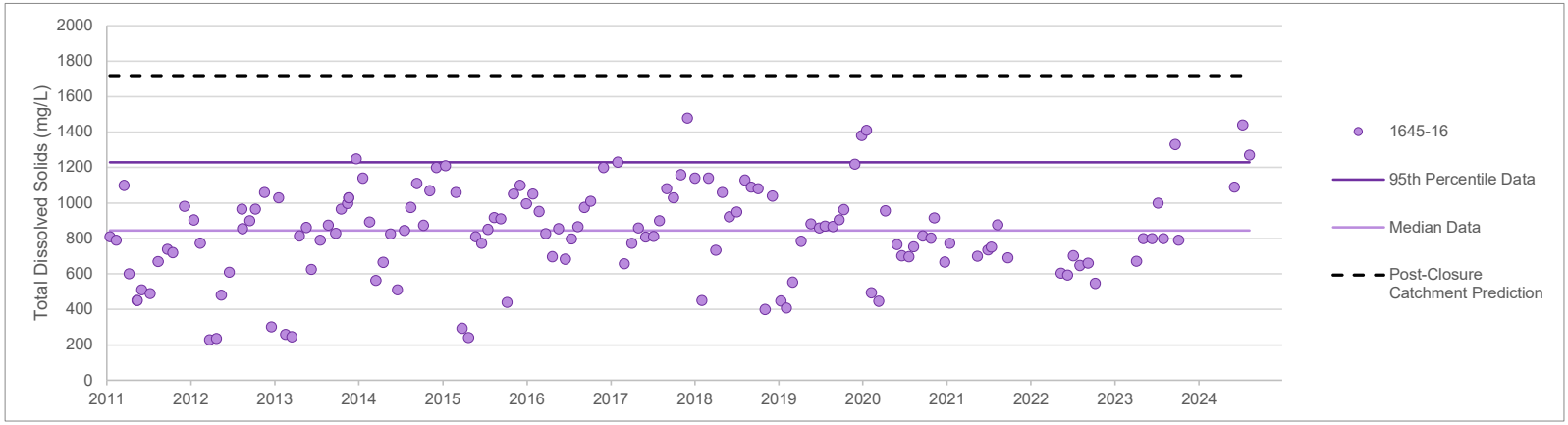
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	85.5	Wildlife	None
Median	57.9	Human recreational	None
Count	146	AEMP	None

Operational Data Compared to Benchmarks and Predictions



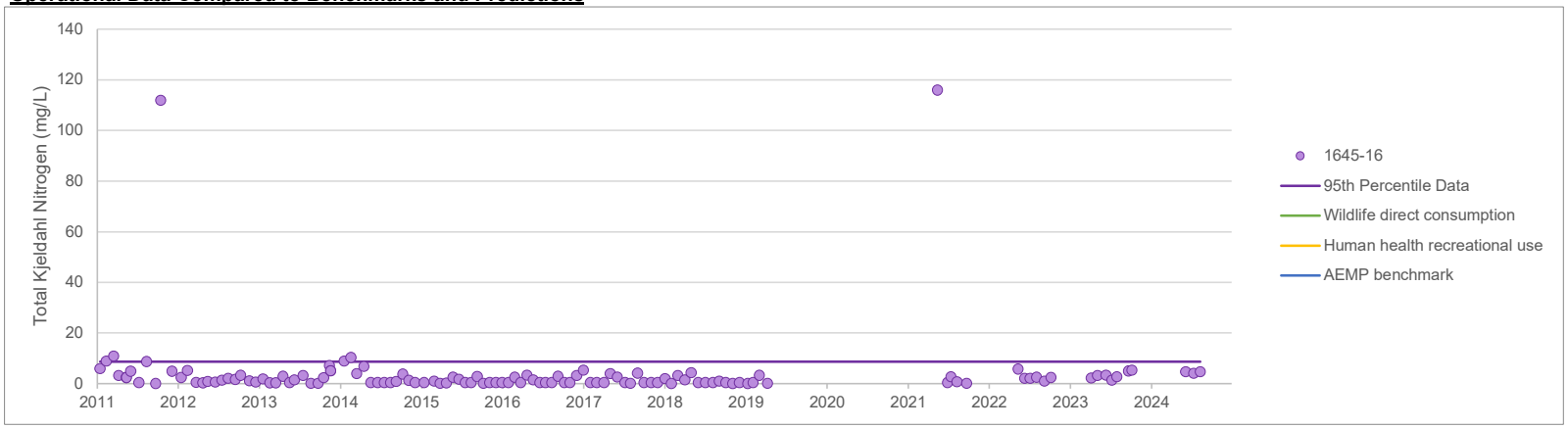


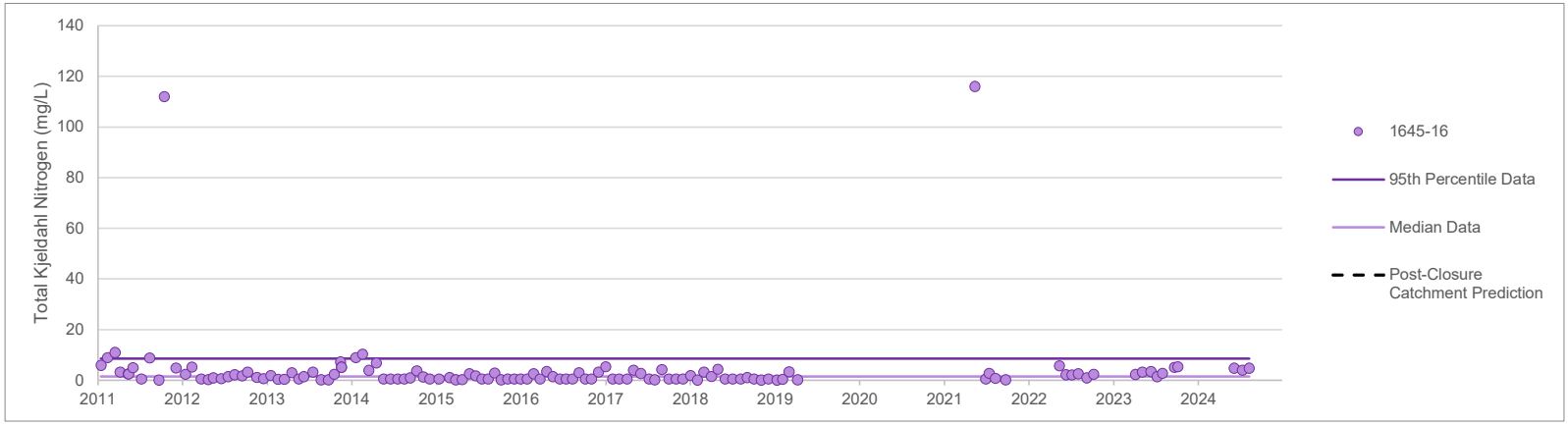
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	1229	Wildlife	3000
Median	846	Human recreational	10000
Count	143	AEMP	500

Operational Data Compared to Benchmarks and Predictions



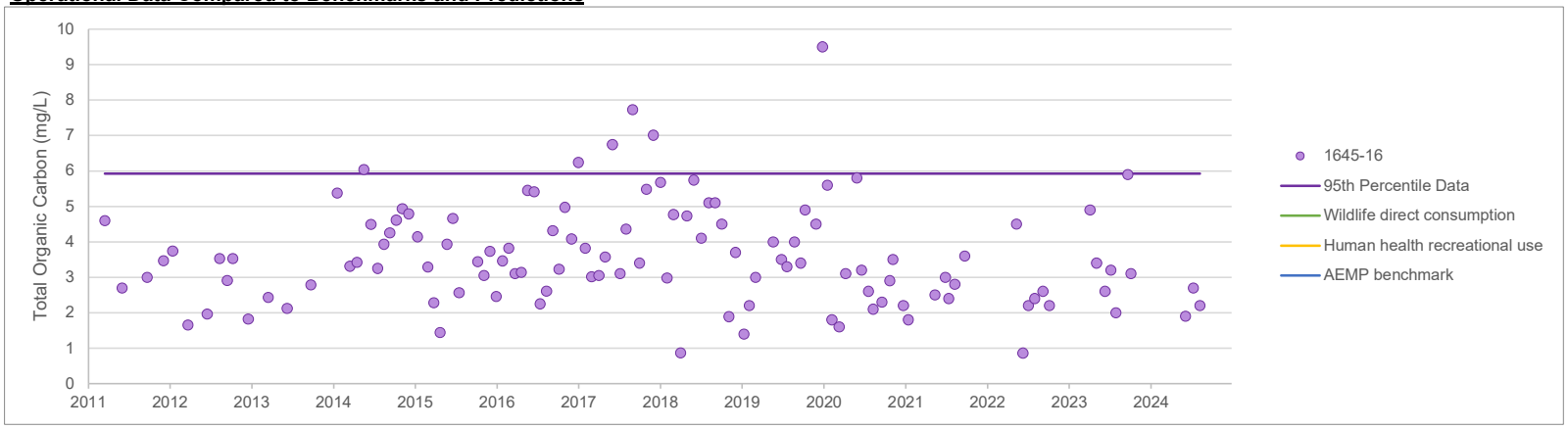


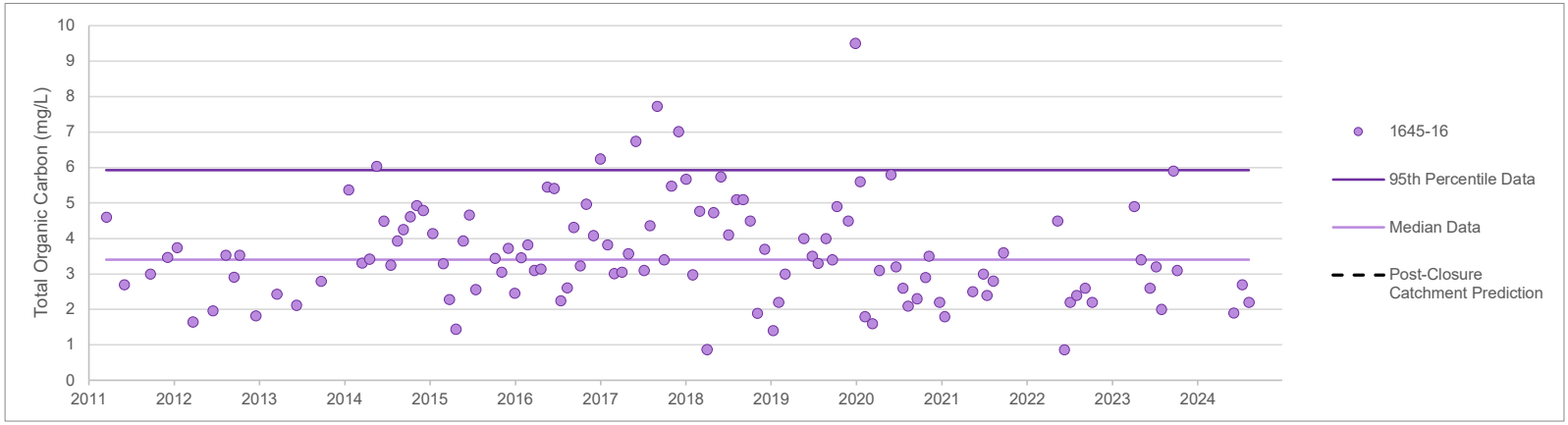
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	8.7	Wildlife	None
Median	1.5	Human recreational	None
Count	123	AEMP	None

Operational Data Compared to Benchmarks and Predictions

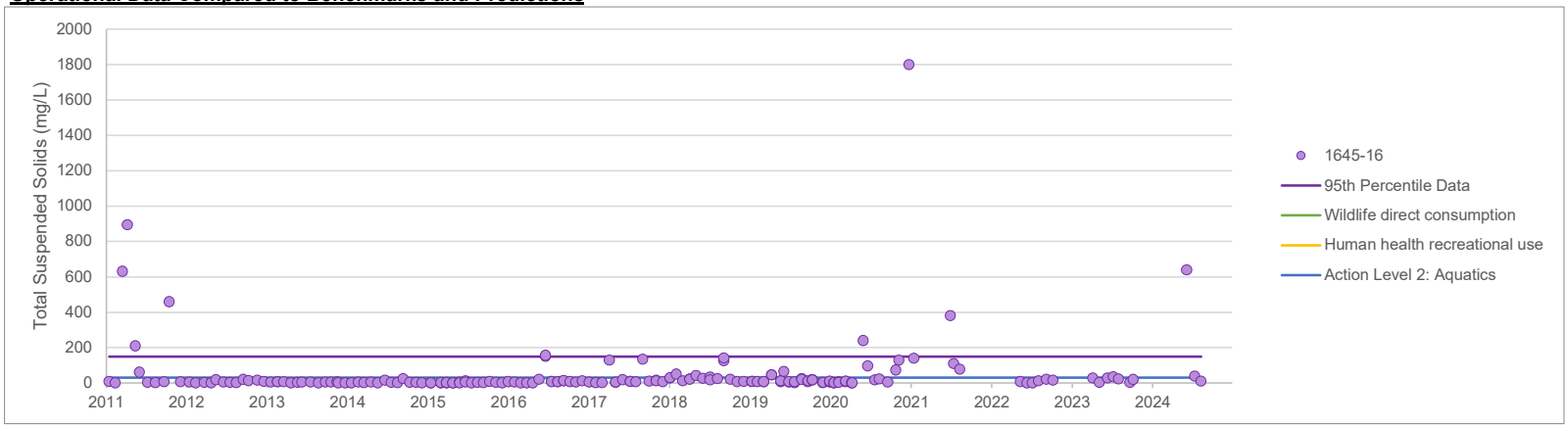


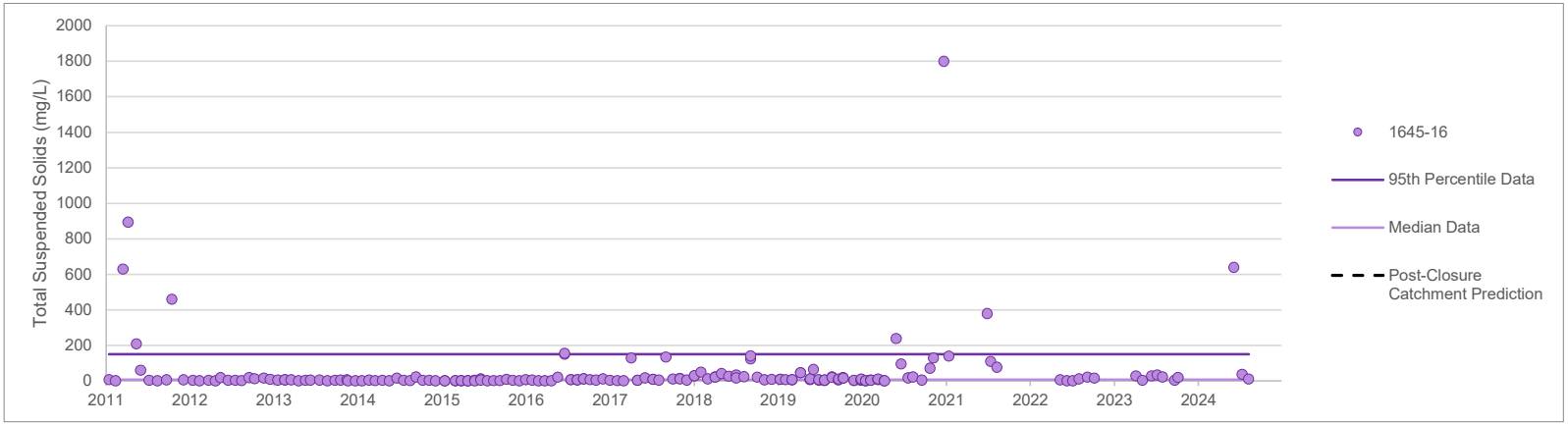


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	5.9	Wildlife	None
Median	3.4	Human recreational	None
Count	117	AEMP	None

Operational Data Compared to Benchmarks and Predictions



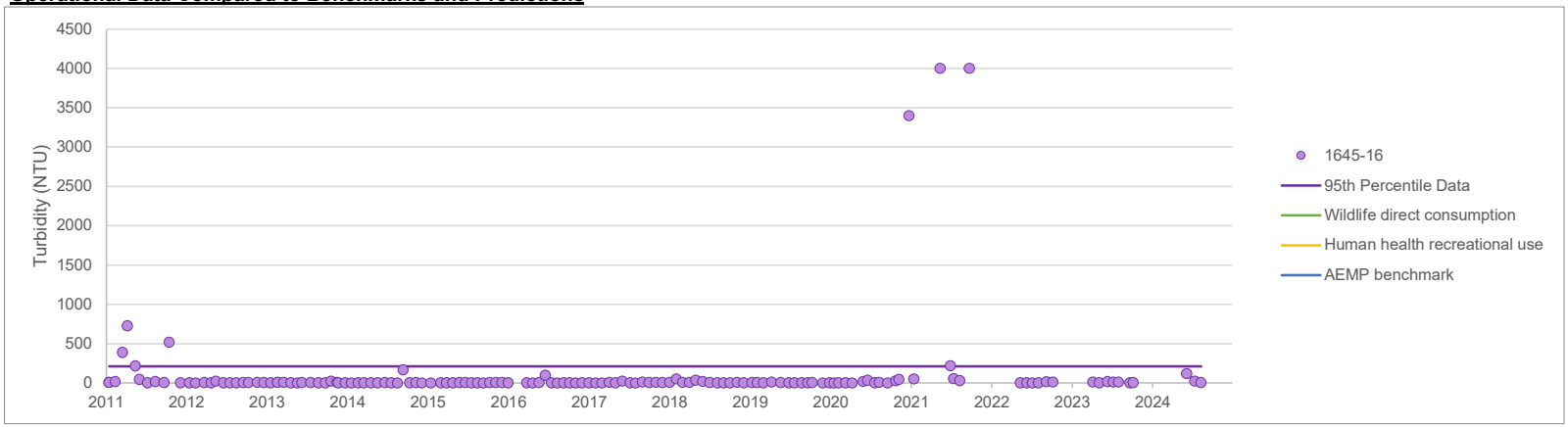


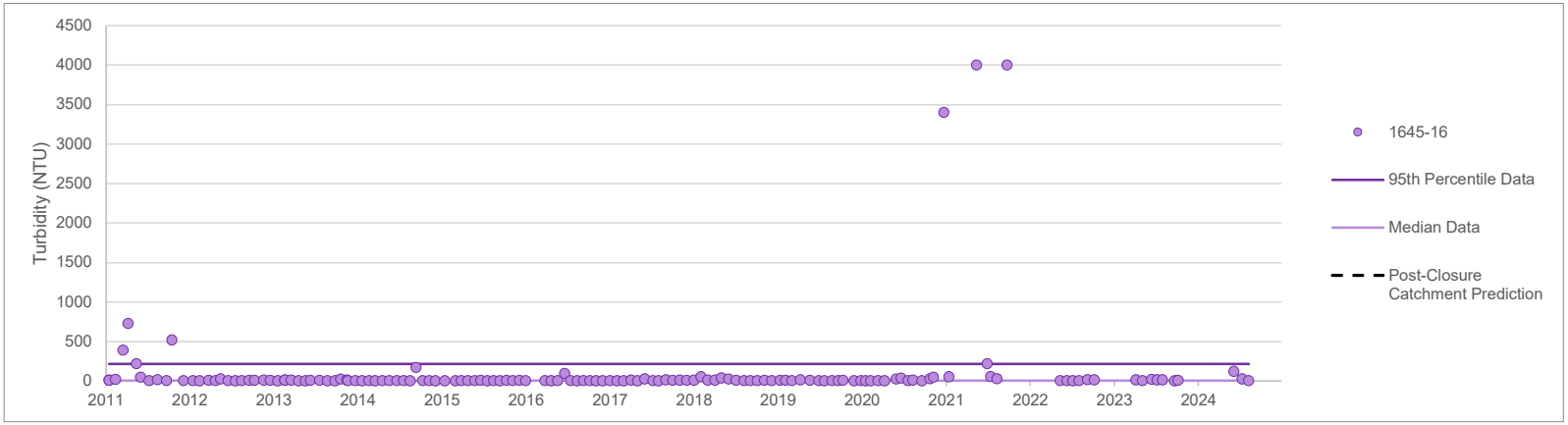
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	150.0	Wildlife	None
Median	8.0	Human recreational	None
Count	183	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



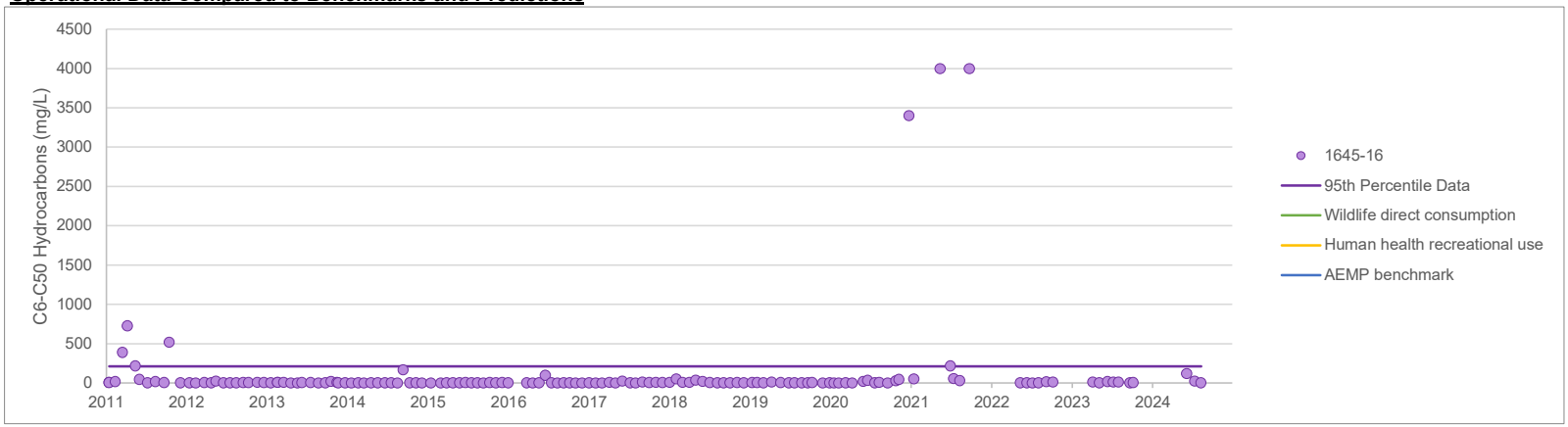


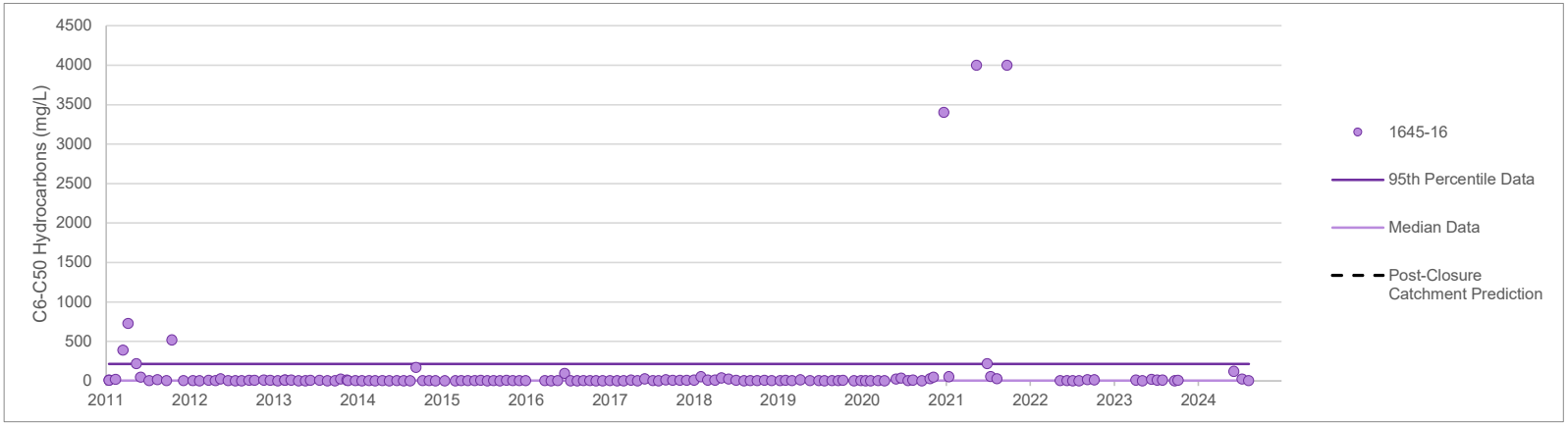
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	214.1	Wildlife	None
Median	5.3	Human recreational	None
Count	143	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

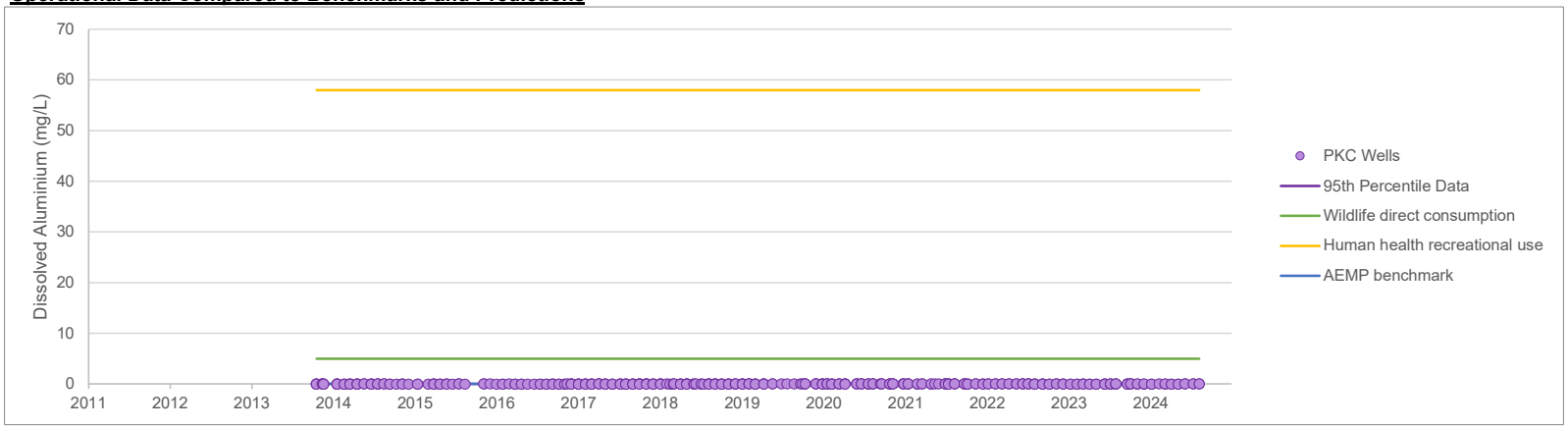
SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.63	Wildlife	None
Median	0.14	Human recreational	None
Count	72	AEMP	None

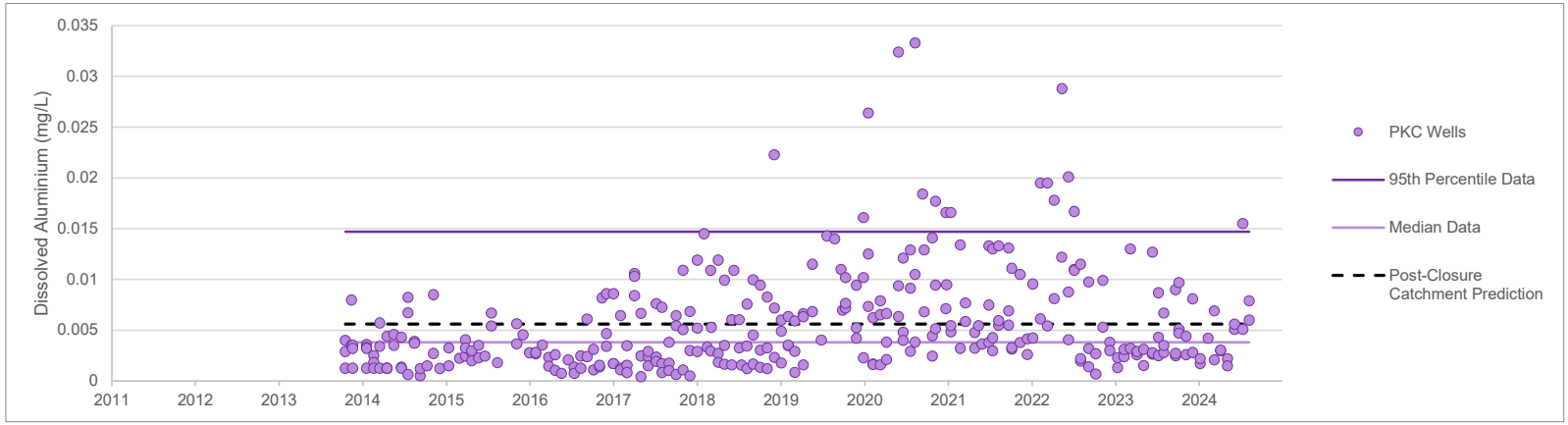
PKCF Wells

Dissolved Metals

Aluminium
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silicon
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc
Zirconium

Operational Data Compared to Benchmarks and Predictions



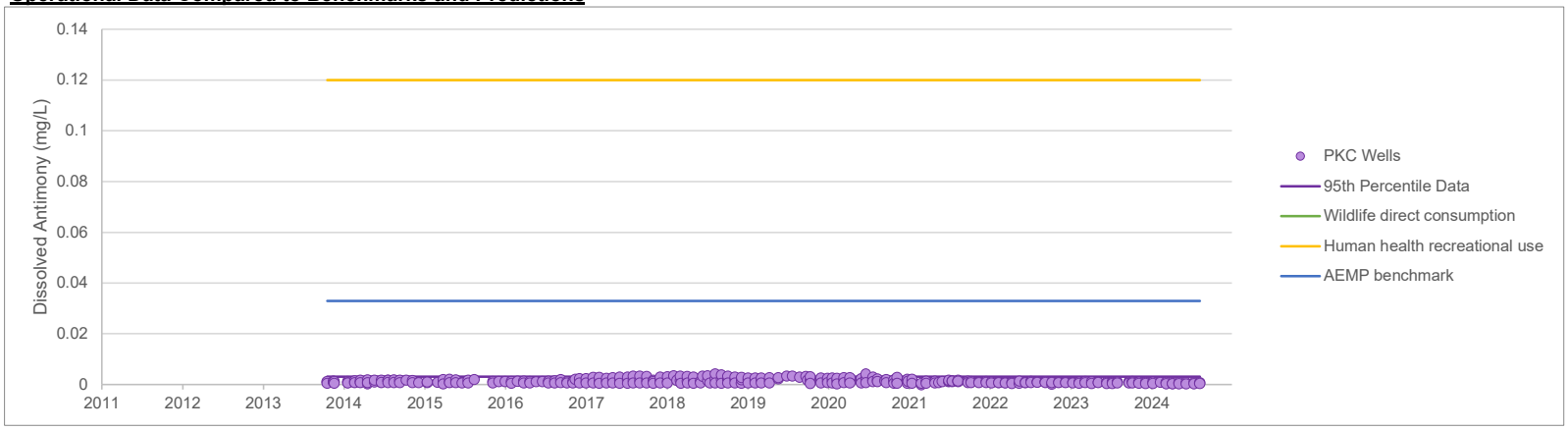


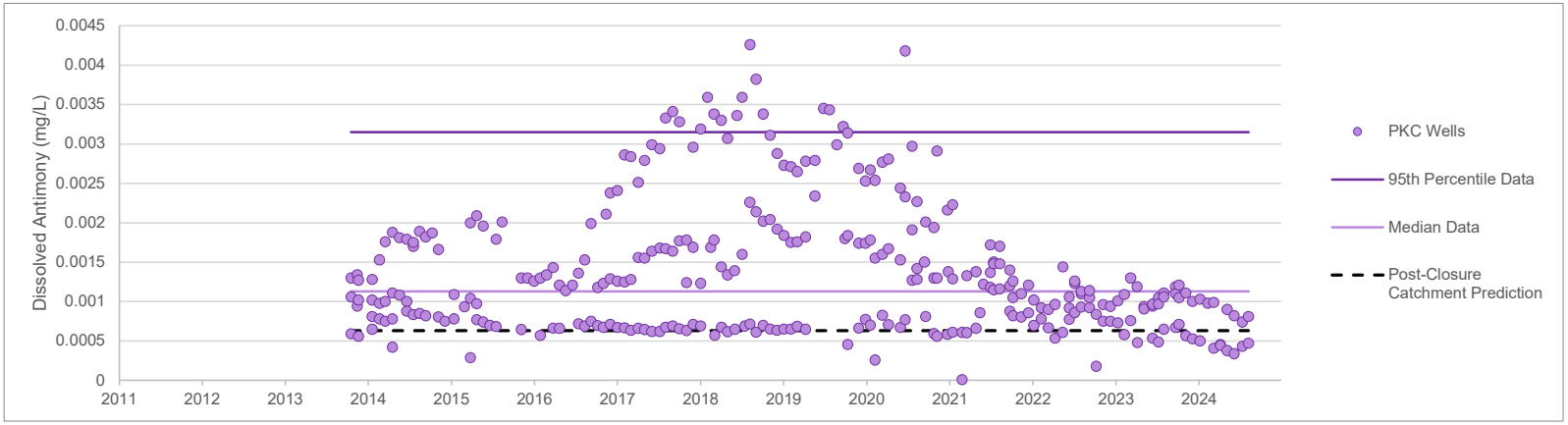
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Aluminium (mg/L)	Benchmark	Dissolved Aluminium (mg/L)
95th Percentile	0.015	Wildlife	5.0
Median	0.004	Human recreational	58.0
Count	317	AEMP	0.043

Operational Data Compared to Benchmarks and Predictions

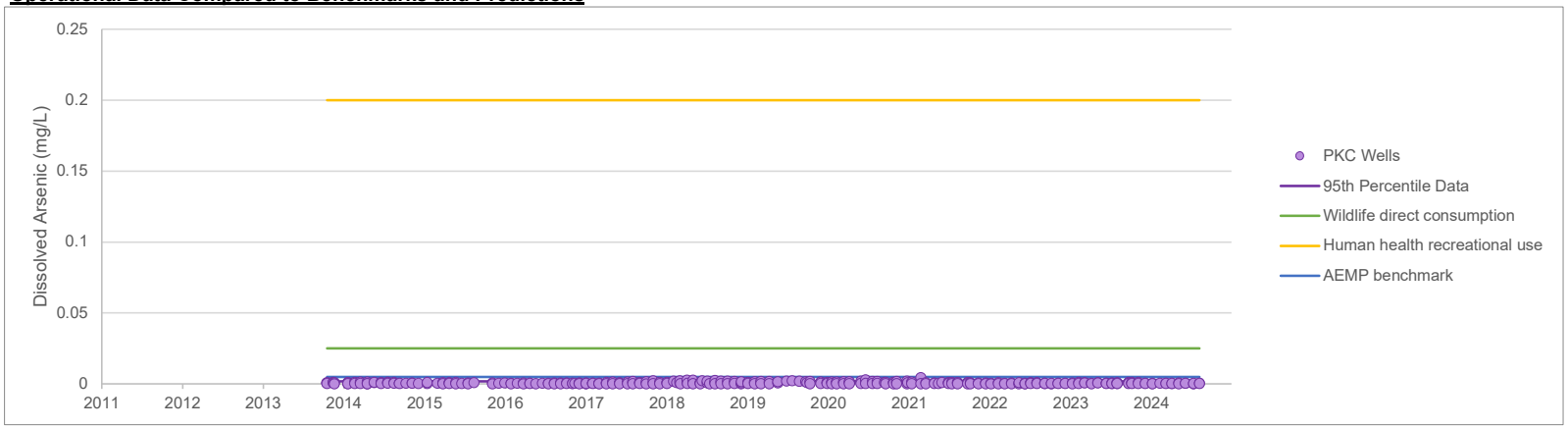


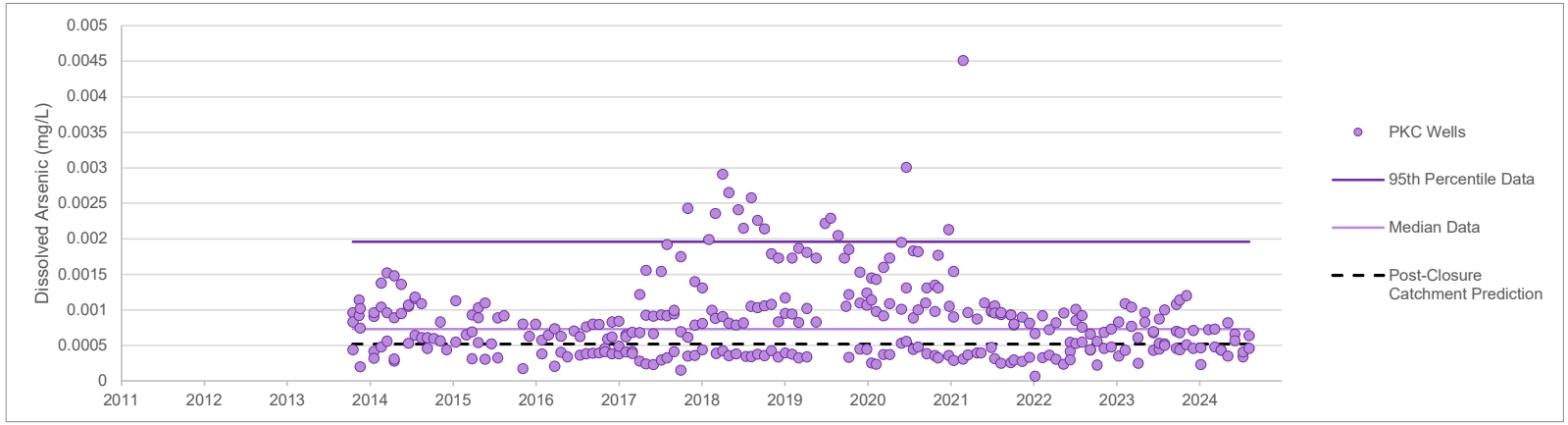


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Antimony (mg/L)	Benchmark	Dissolved Antimony (mg/L)
95th Percentile	0.00315	Wildlife	None
Median	0.00113	Human recreational	0.12
Count	317	AEMP	0.033

Operational Data Compared to Benchmarks and Predictions



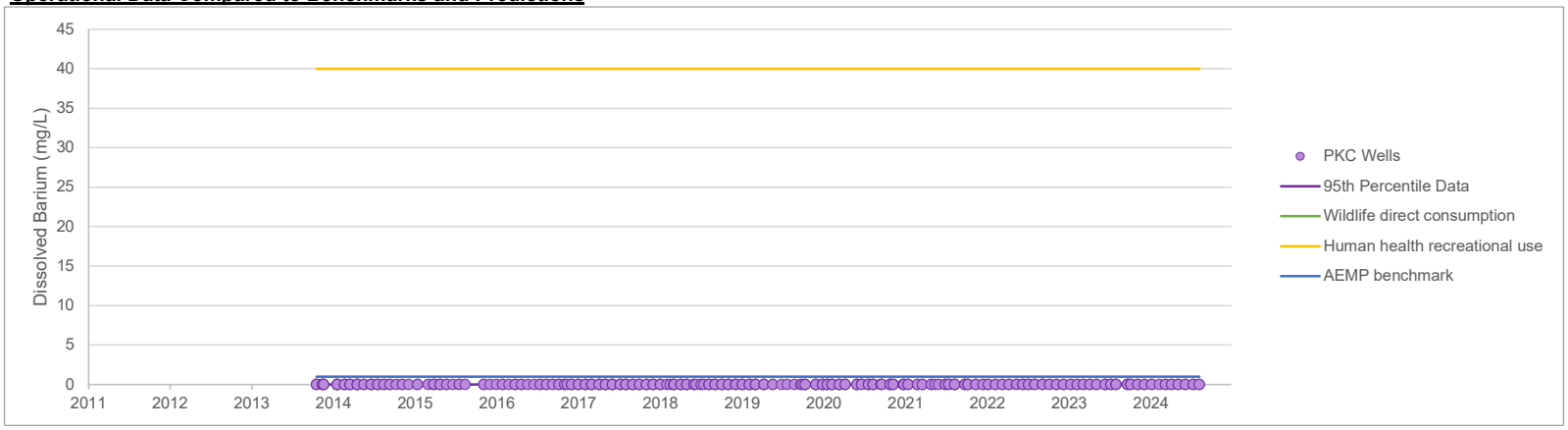


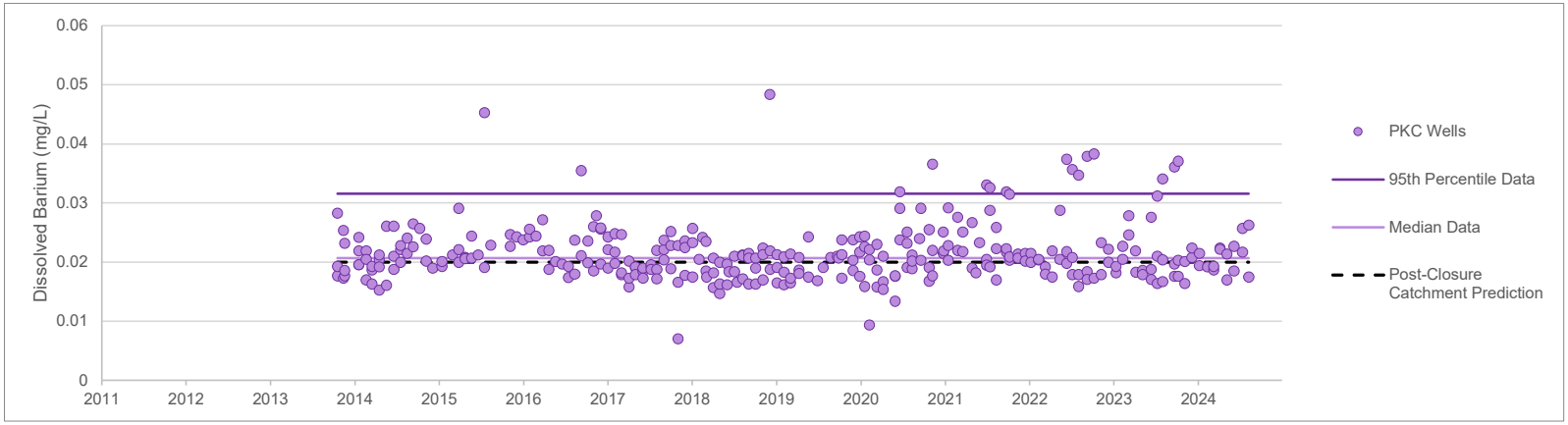
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Arsenic (mg/L)	Benchmark	Dissolved Arsenic (mg/L)
95th Percentile	0.0020	Wildlife	0.03
Median	0.0007	Human recreational	0.20
Count	317	AEMP	0.005

Operational Data Compared to Benchmarks and Predictions

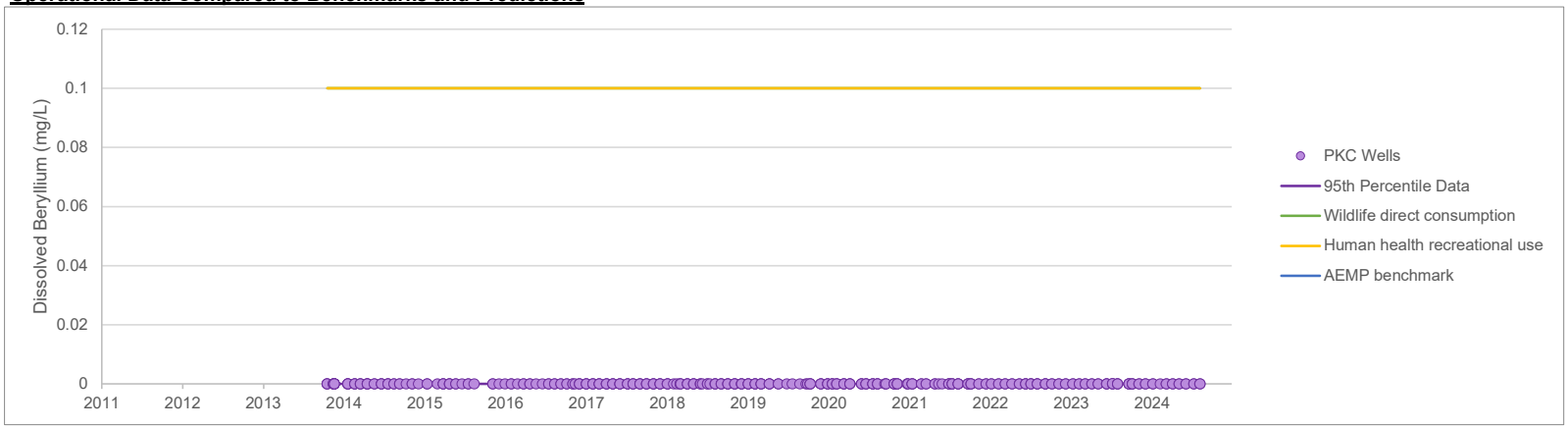


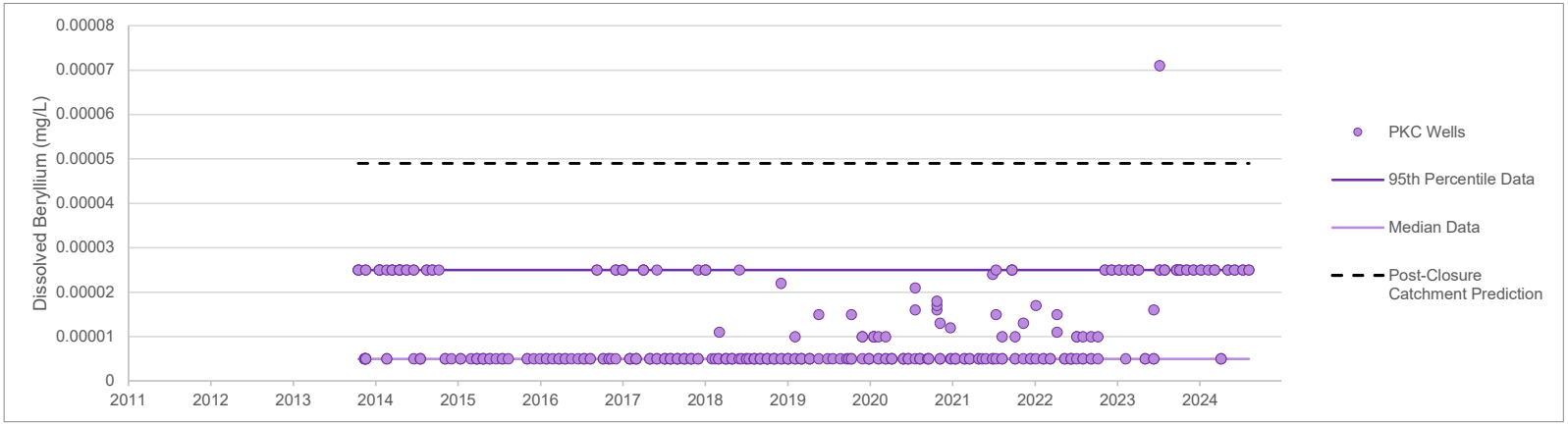


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Barium (mg/L)	Benchmark	Dissolved Barium (mg/L)
95th Percentile	0.032	Wildlife	None
Median	0.021	Human recreational	40.0
Count	317	AEMP	1.0

Operational Data Compared to Benchmarks and Predictions



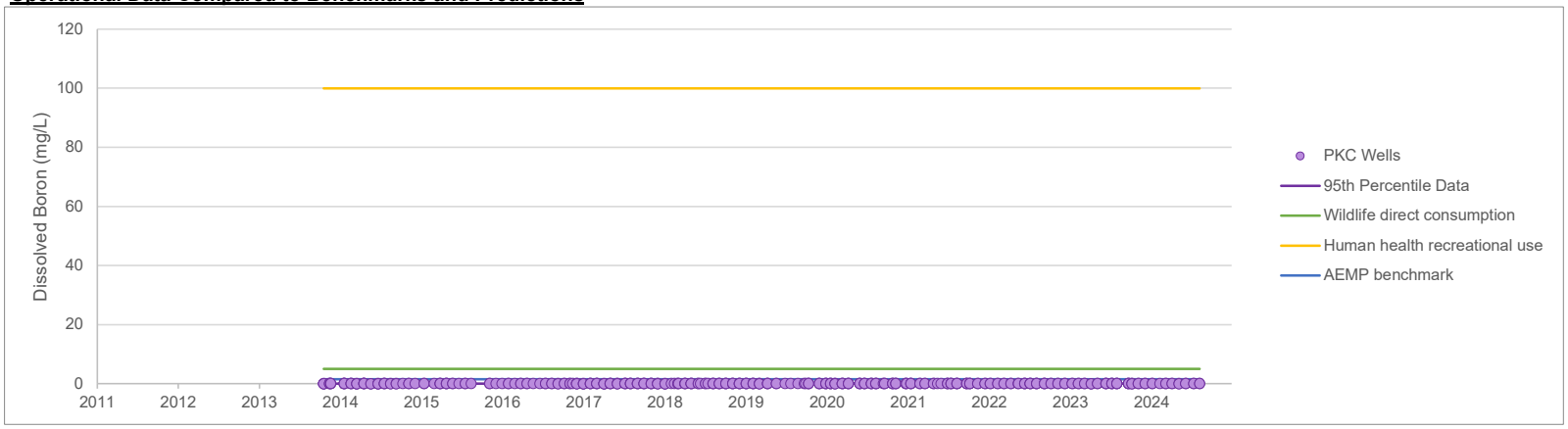


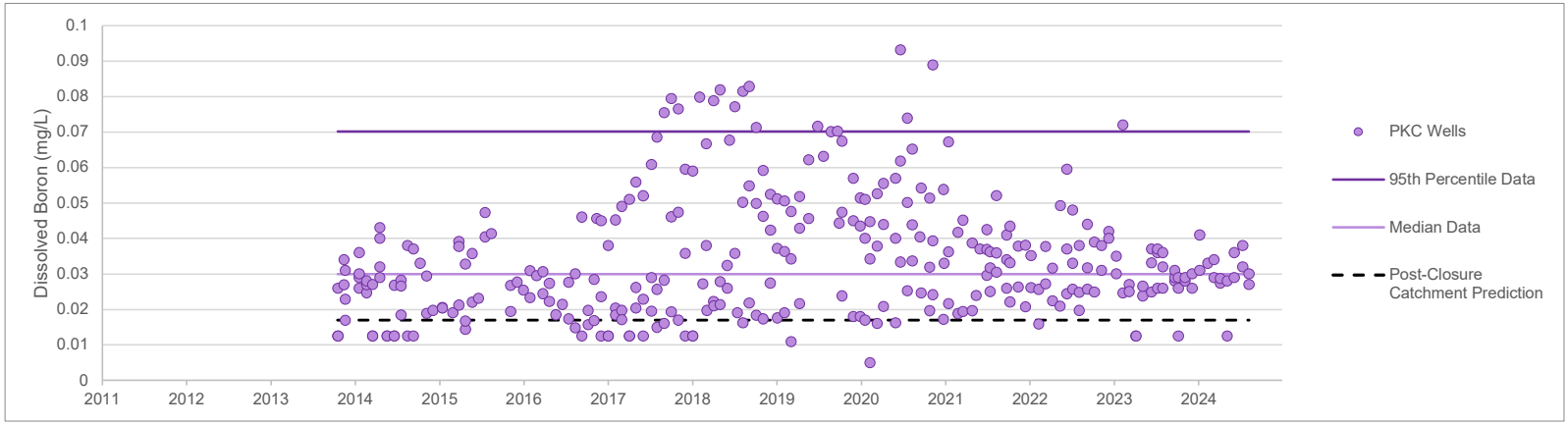
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Beryllium (mg/L)	Benchmark	Dissolved Beryllium (mg/L)
95th Percentile	0.000025	Wildlife	0.10
Median	0.000005	Human recreational	0.10
Count	320	AEMP	None

Operational Data Compared to Benchmarks and Predictions

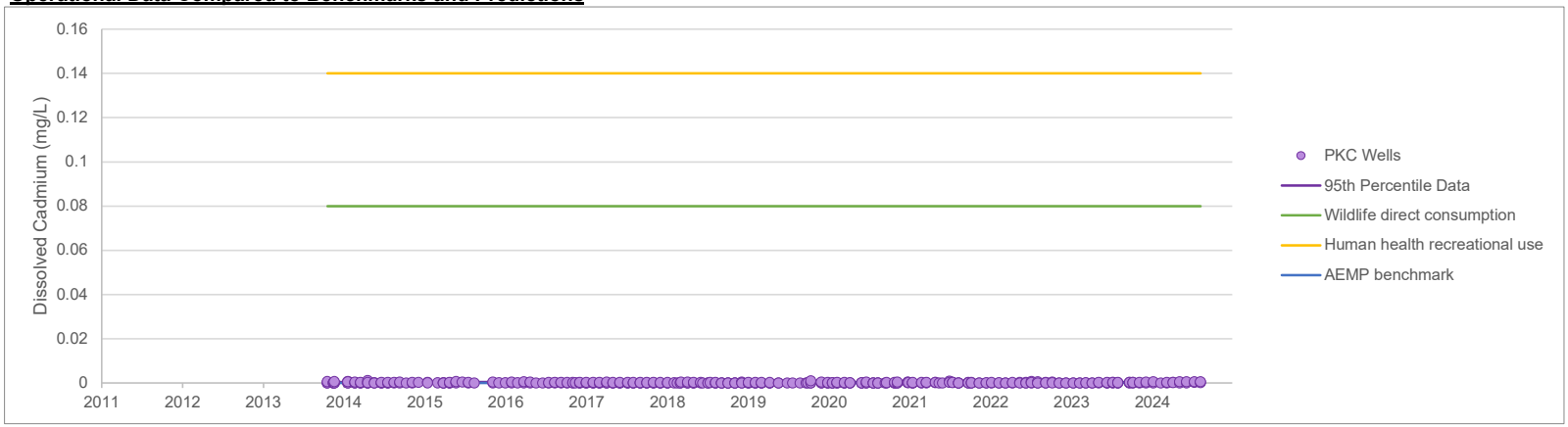


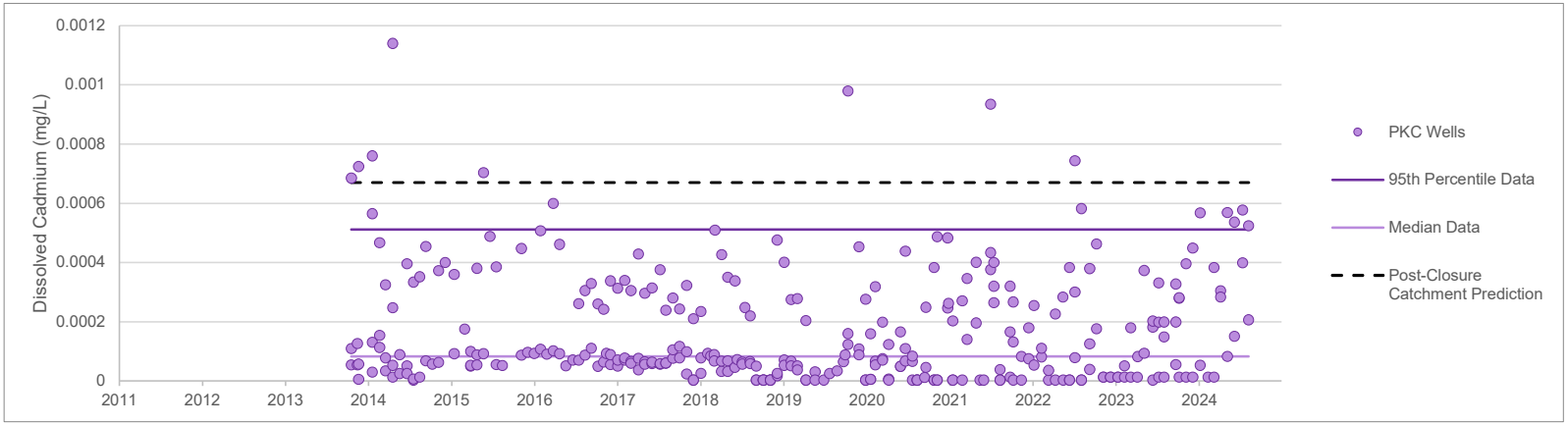


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Boron (mg/L)	Benchmark	Dissolved Boron (mg/L)
95th Percentile	0.070	Wildlife	5.0
Median	0.030	Human recreational	100.0
Count	317	AEMP	1.5

Operational Data Compared to Benchmarks and Predictions

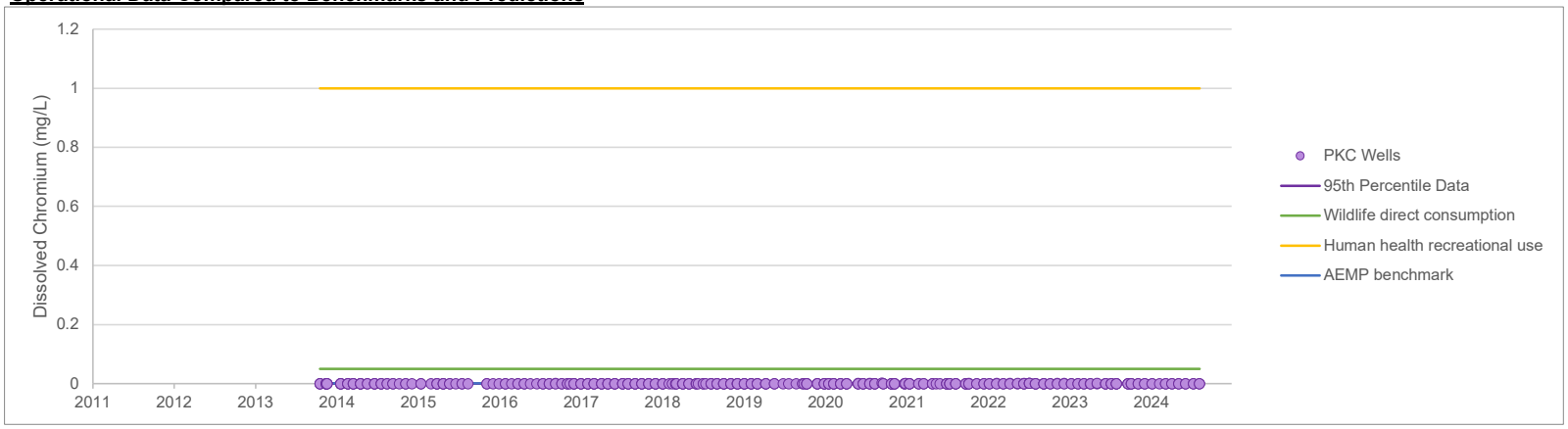


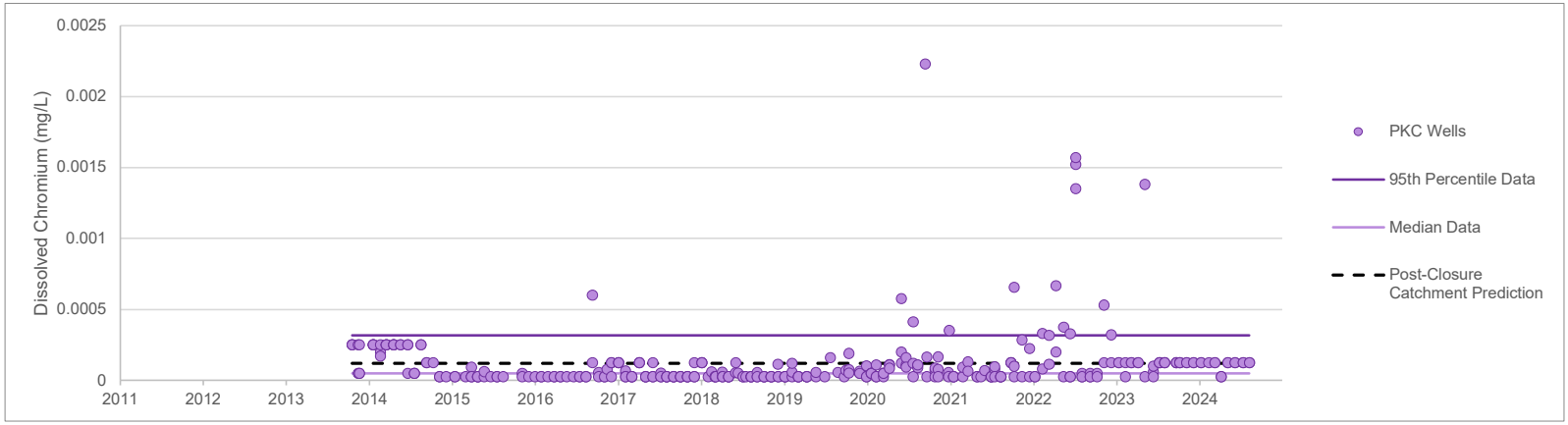


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cadmium (mg/L)	Benchmark	Dissolved Cadmium (mg/L)
95th Percentile	0.00051	Wildlife	0.08
Median	0.00008	Human recreational	0.14
Count	317	AEMP	0.000

Operational Data Compared to Benchmarks and Predictions



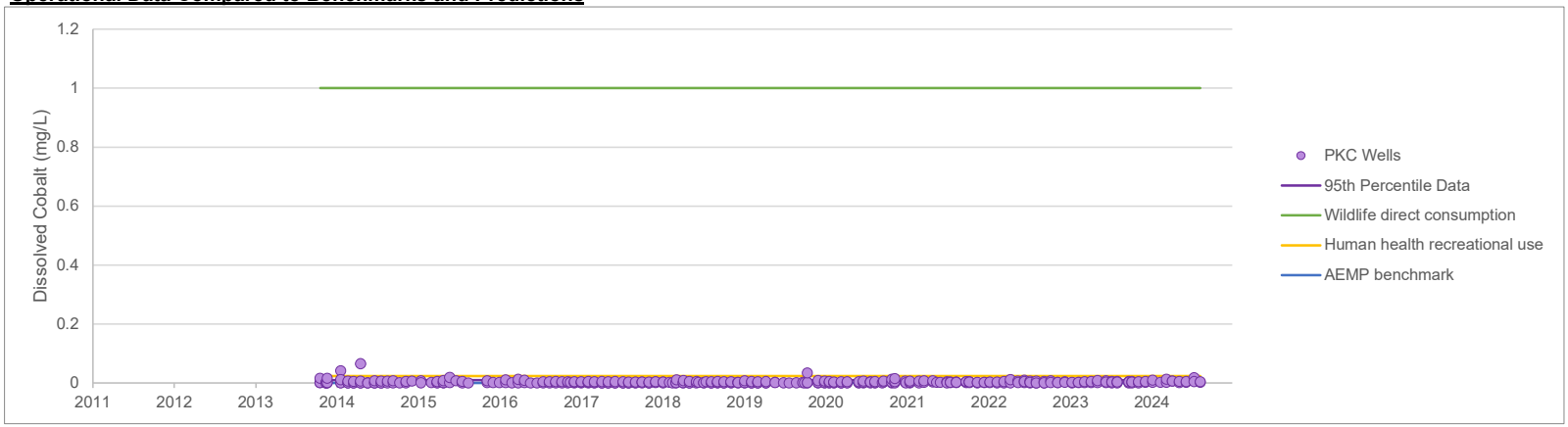


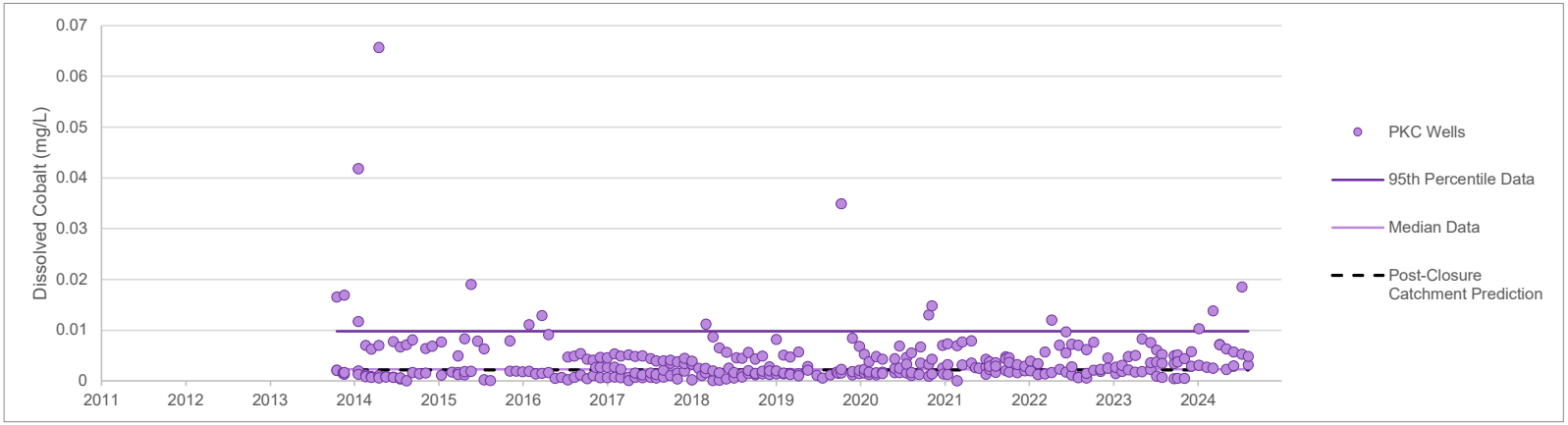
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Chromium (mg/L)	Benchmark	Dissolved Chromium (mg/L)
95th Percentile	0.00032	Wildlife	0.05
Median	0.00005	Human recreational	1.0
Count	317	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



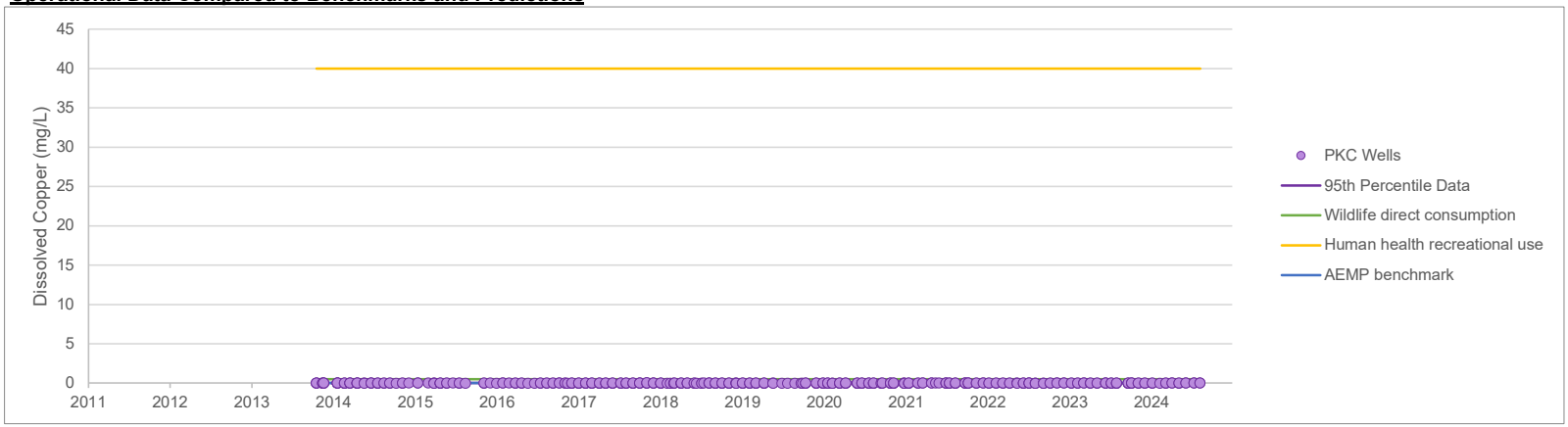


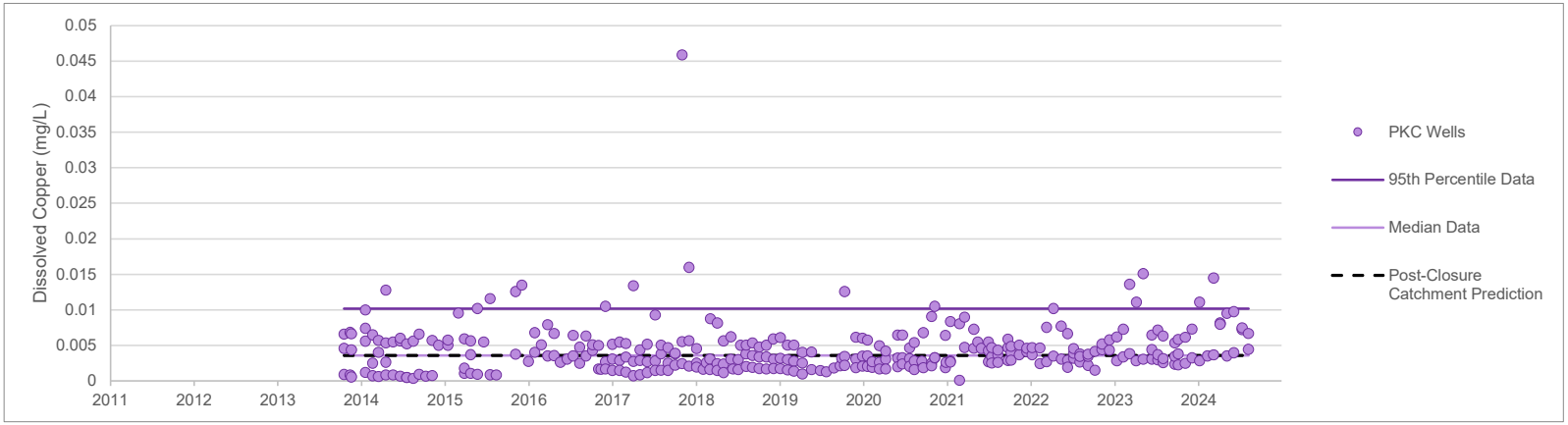
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Cobalt (mg/L)	Benchmark	Dissolved Cobalt (mg/L)
95th Percentile	0.0098	Wildlife	1.0
Median	0.0023	Human recreational	0.02
Count	317	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



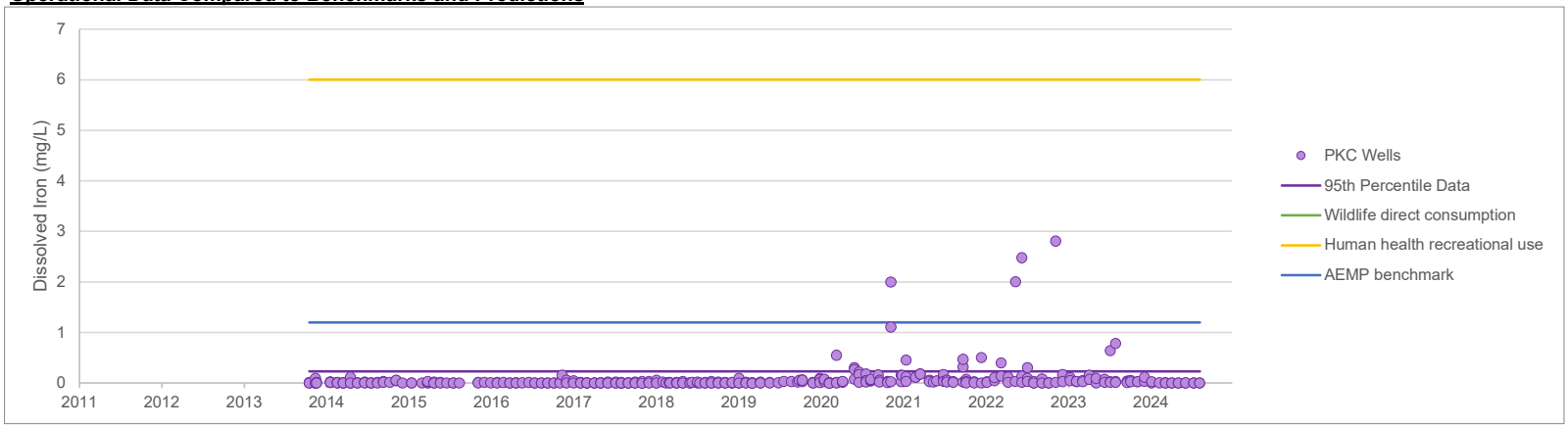


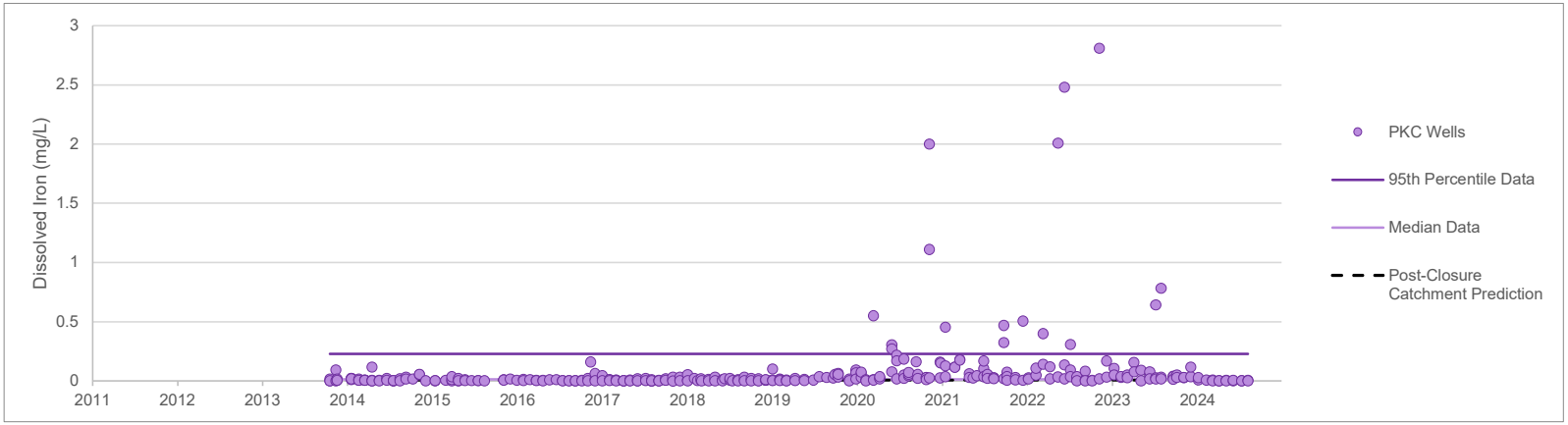
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Copper (mg/L)	Benchmark	Dissolved Copper (mg/L)
95th Percentile	0.0102	Wildlife	0.5
Median	0.0036	Human recreational	40.0
Count	317	AEMP	0.002

Operational Data Compared to Benchmarks and Predictions



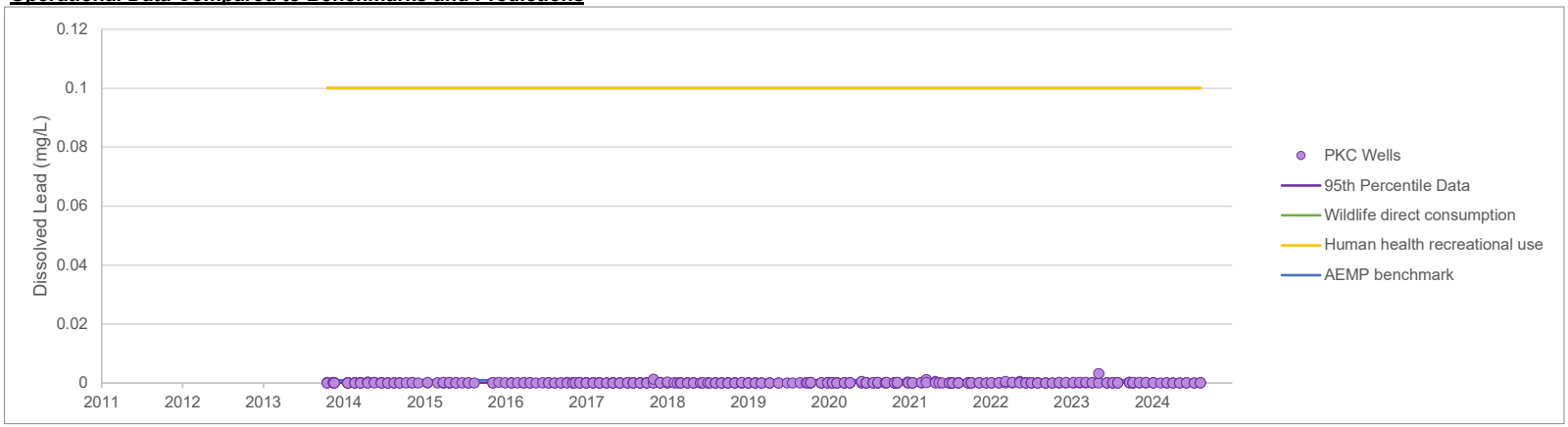


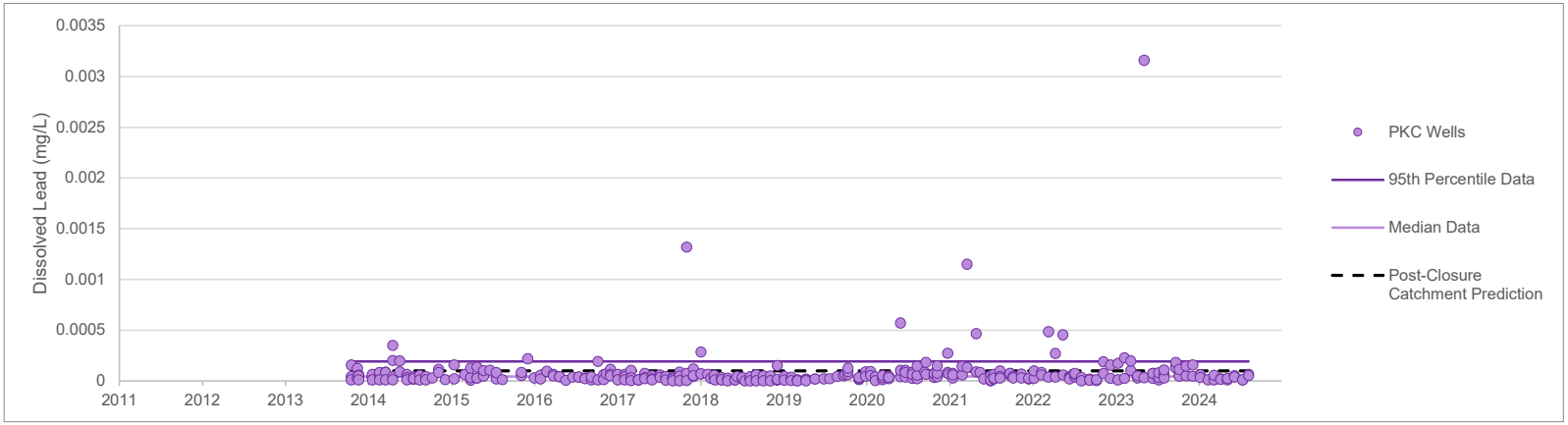
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Iron (mg/L)	Benchmark	Dissolved Iron (mg/L)
95th Percentile	0.23	Wildlife	None
Median	0.02	Human recreational	6.0
Count	317	AEMP	1.20

Operational Data Compared to Benchmarks and Predictions

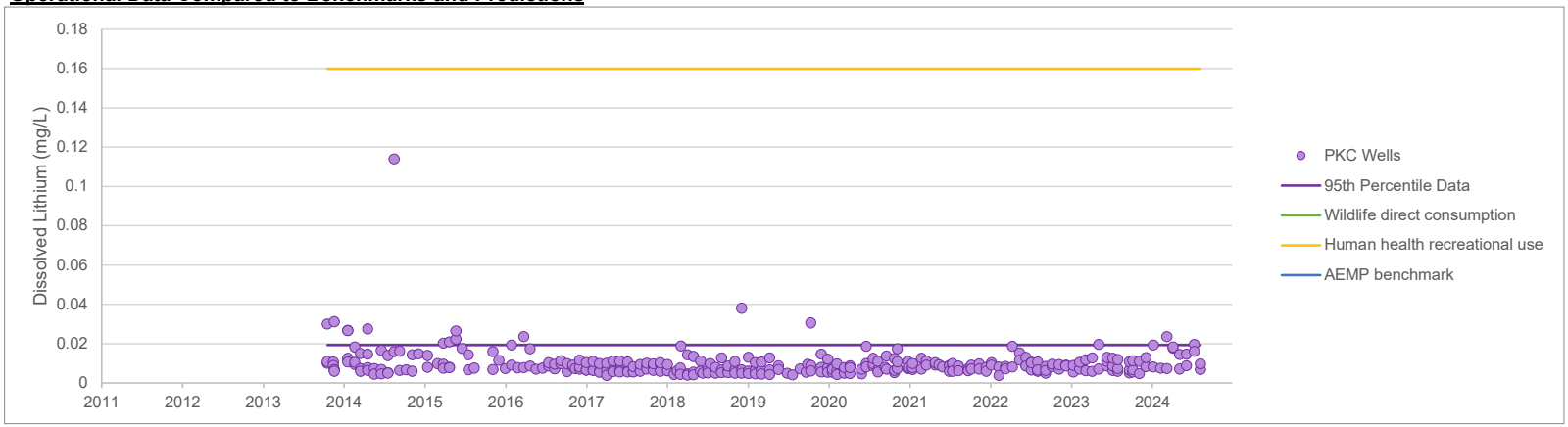


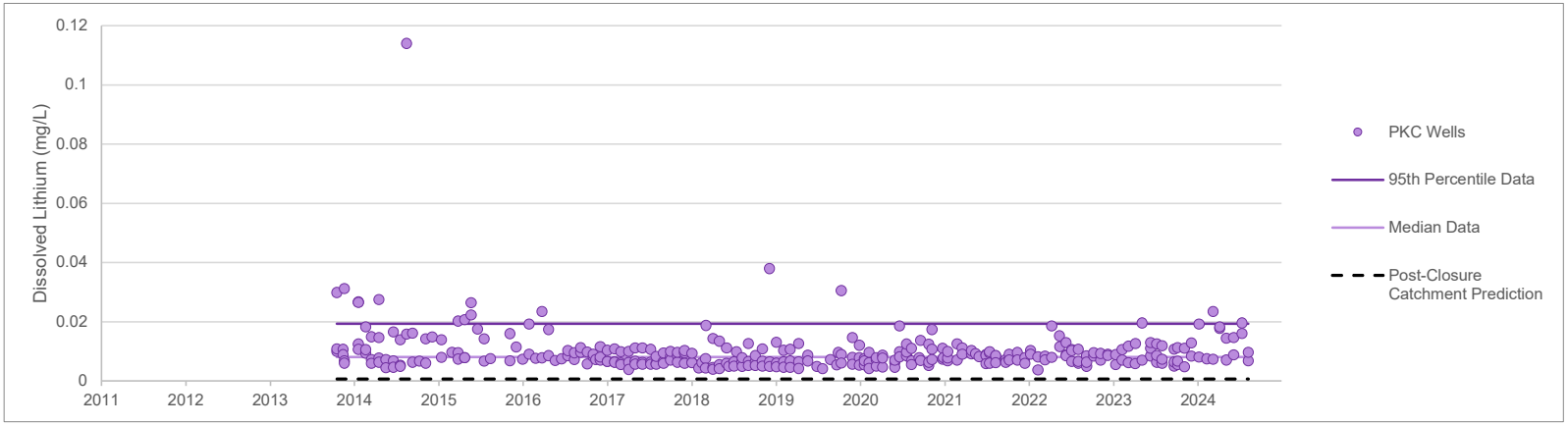


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lead (mg/L)	Benchmark	Dissolved Lead (mg/L)
95th Percentile	0.00019	Wildlife	0.10
Median	0.00004	Human recreational	0.10
Count	317	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



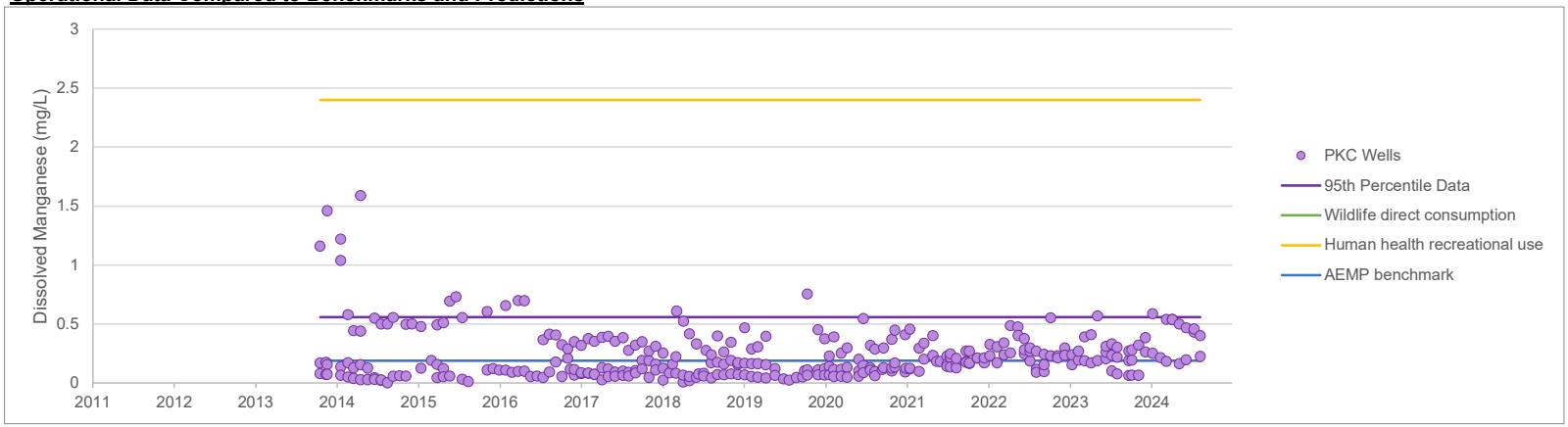


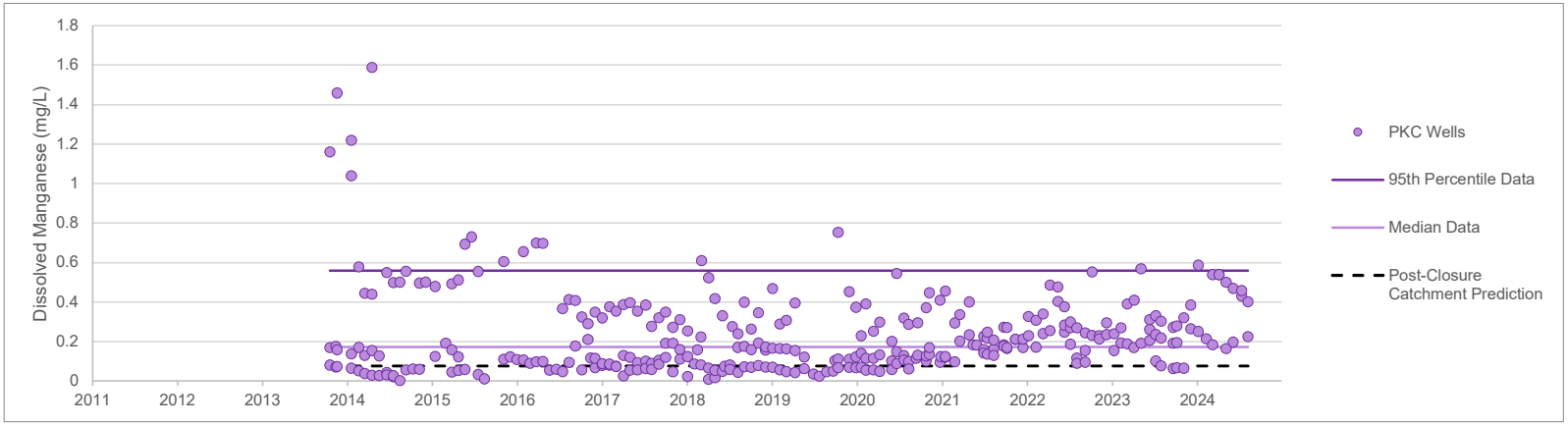
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Lithium (mg/L)	Benchmark	Dissolved Lithium (mg/L)
95th Percentile	0.019	Wildlife	None
Median	0.008	Human recreational	0.16
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions

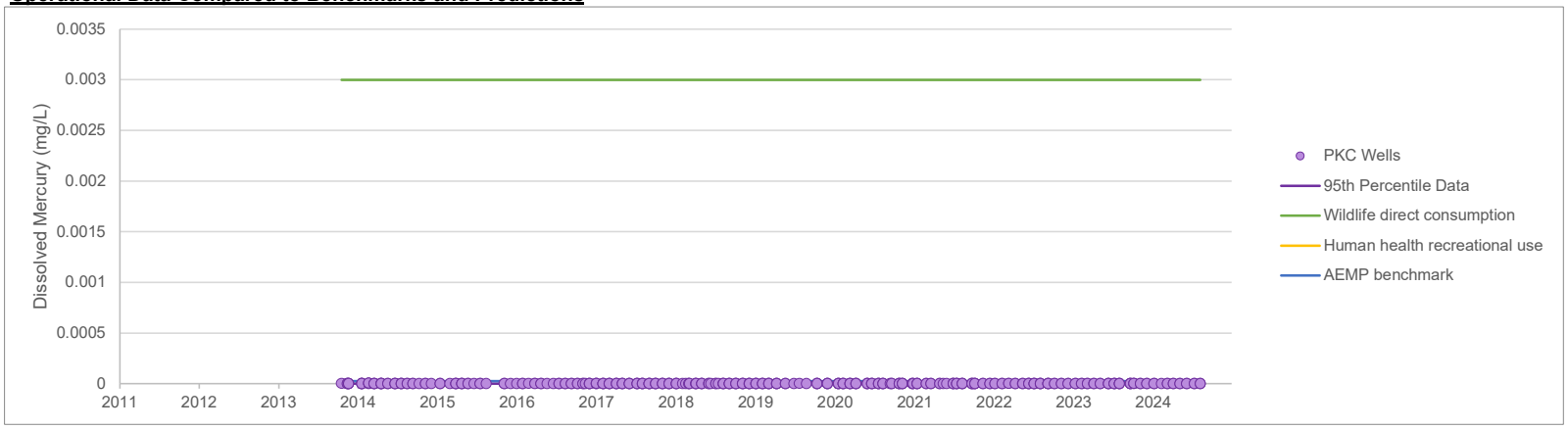


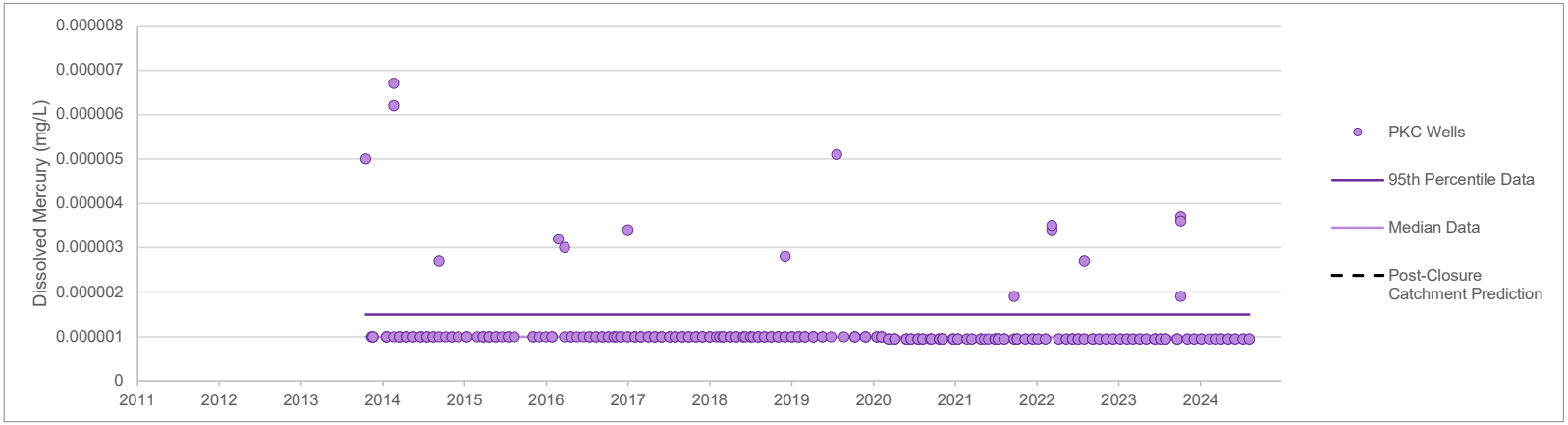


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Manganese (mg/L)	Benchmark	Dissolved Manganese (mg/L)
95th Percentile	0.559	Wildlife	None
Median	0.173	Human recreational	2.4
Count	317	AEMP	0.19

Operational Data Compared to Benchmarks and Predictions

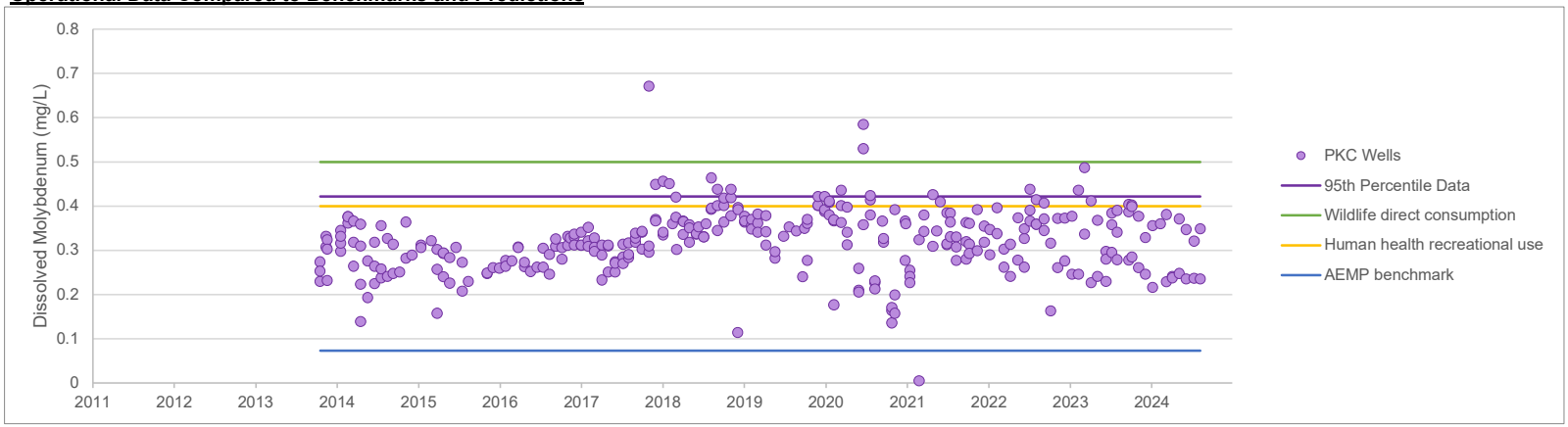


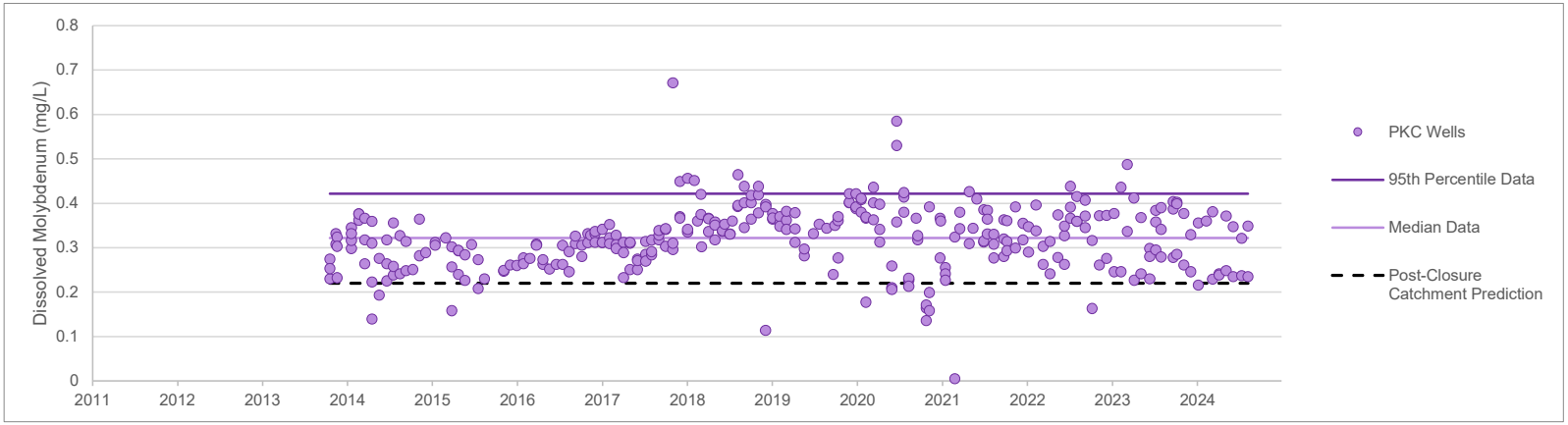


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Mercury (mg/L)	Benchmark	Dissolved Mercury (mg/L)
95th Percentile	0.0000015	Wildlife	0.003
Median	0.0000010	Human recreational	None
Count	310	AEMP	0.000026

Operational Data Compared to Benchmarks and Predictions



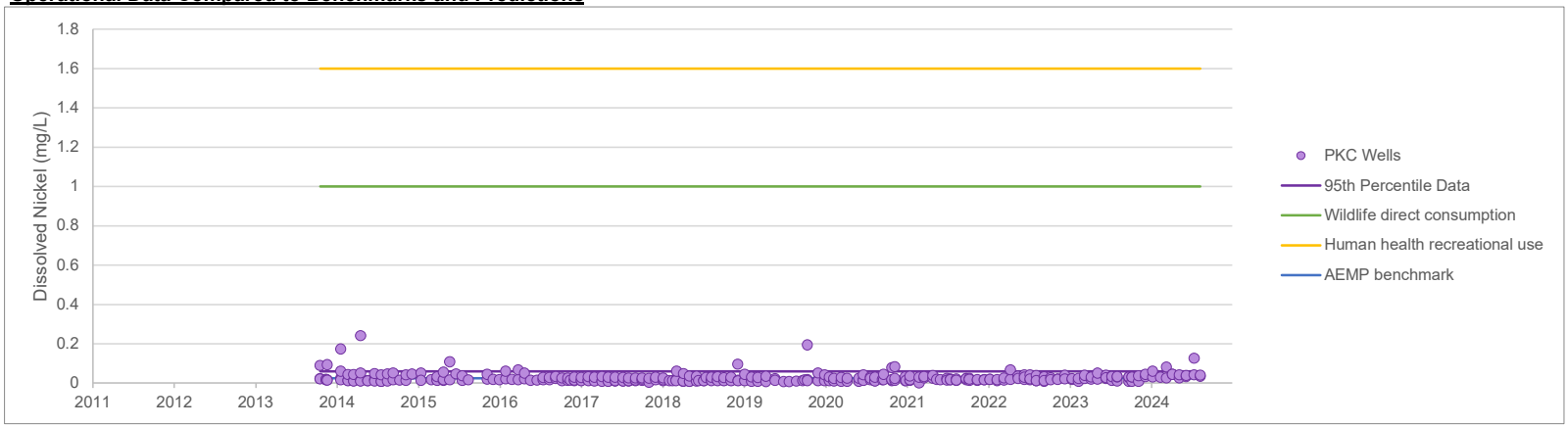


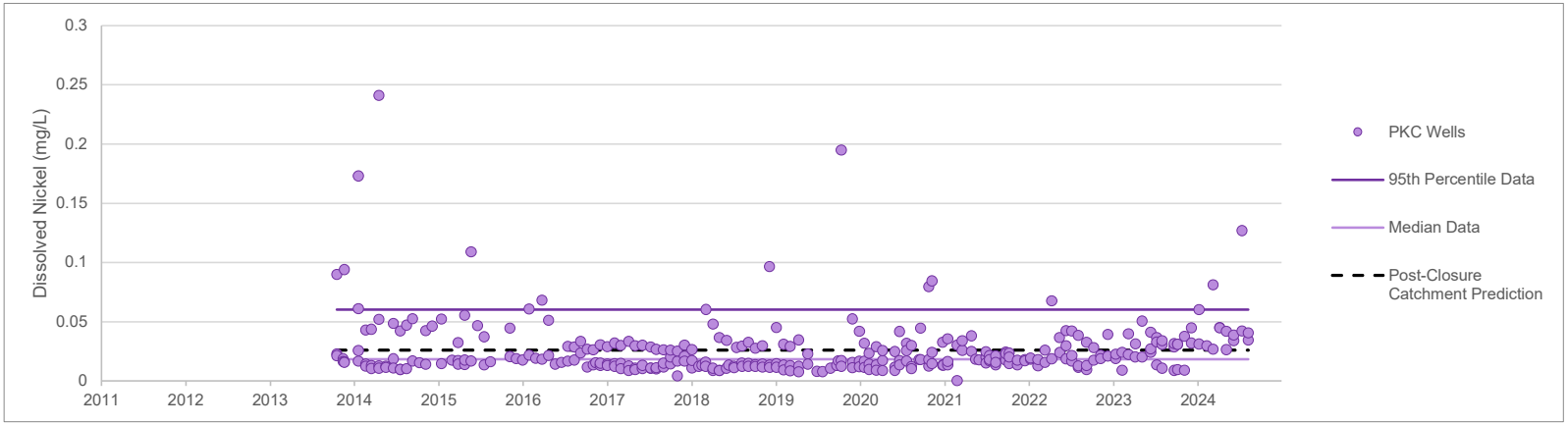
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Molybdenum (mg/L)	Benchmark	Dissolved Molybdenum (mg/L)
95th Percentile	0.4220	Wildlife	0.5
Median	0.3220	Human recreational	0.4
Count	317	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

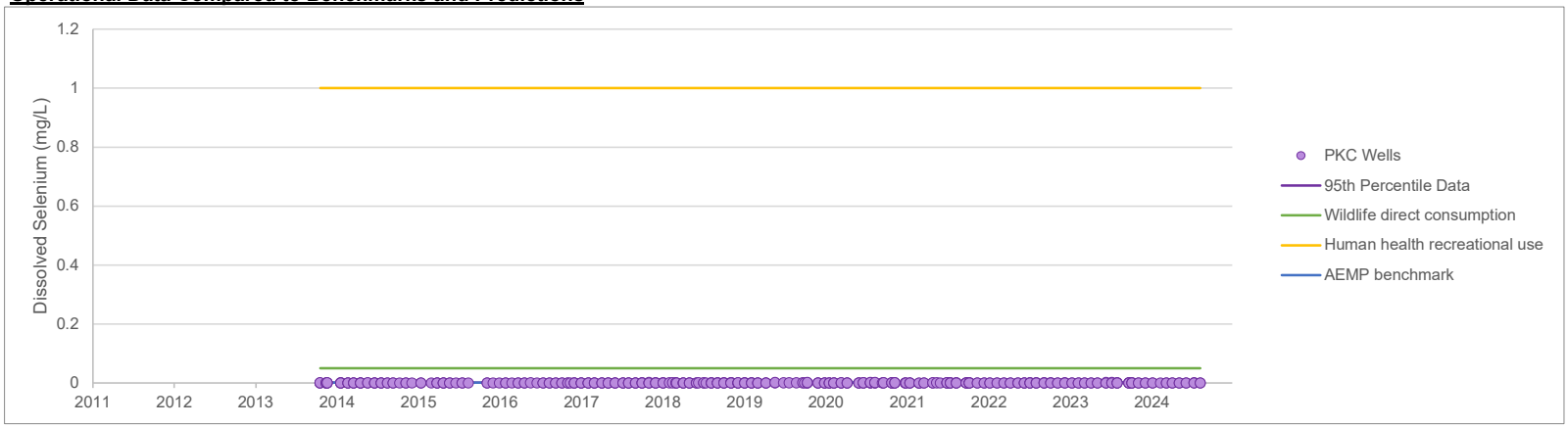


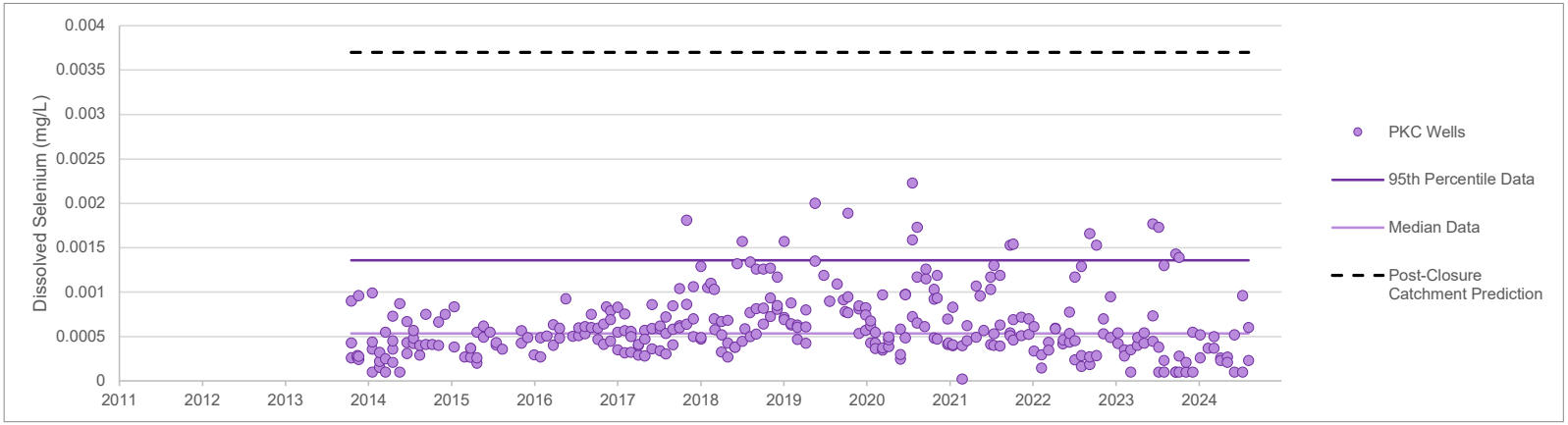


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Nickel (mg/L)	Benchmark	Dissolved Nickel (mg/L)
95th Percentile	0.060	Wildlife	1.0
Median	0.019	Human recreational	1.6
Count	317	AEMP	0.025

Operational Data Compared to Benchmarks and Predictions



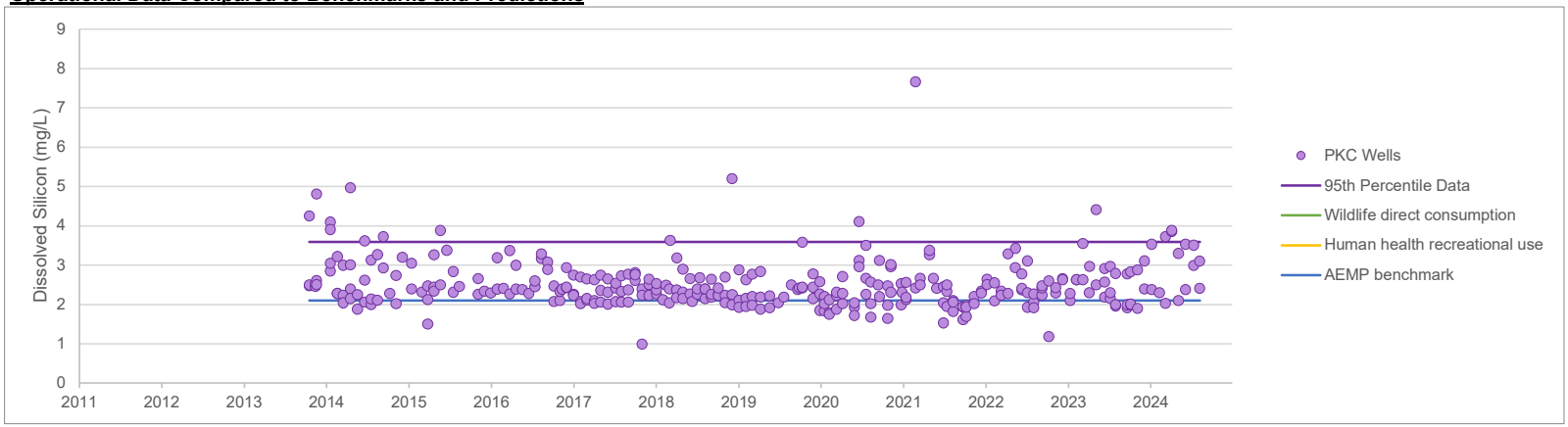


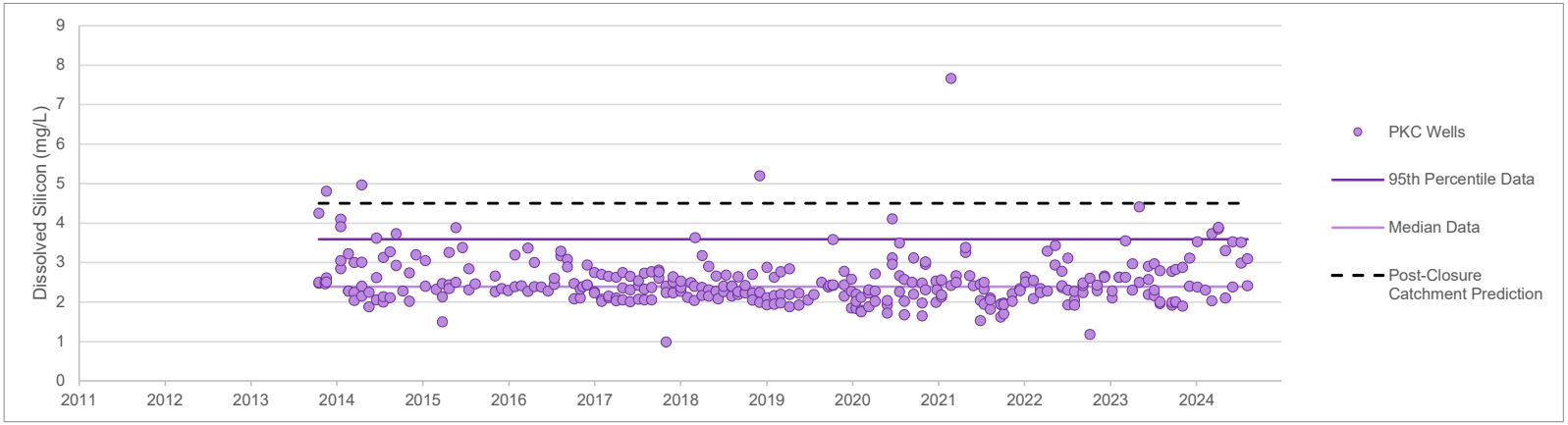
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Selenium (mg/L)	Benchmark	Dissolved Selenium (mg/L)
95th Percentile	0.00136	Wildlife	0.1
Median	0.00054	Human recreational	1.0
Count	317	AEMP	0.001

Operational Data Compared to Benchmarks and Predictions



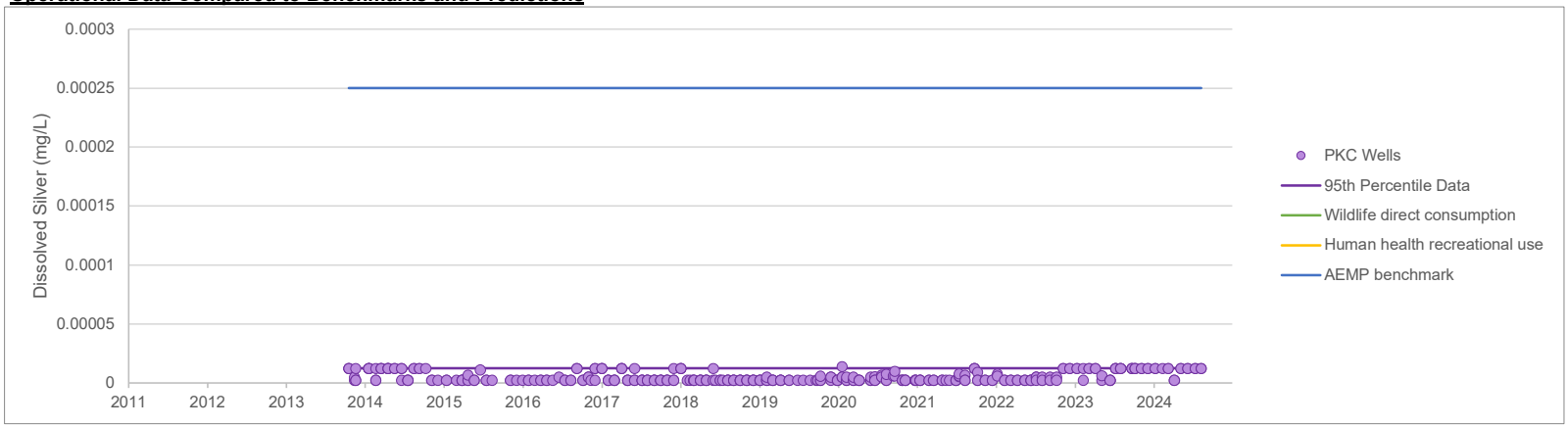


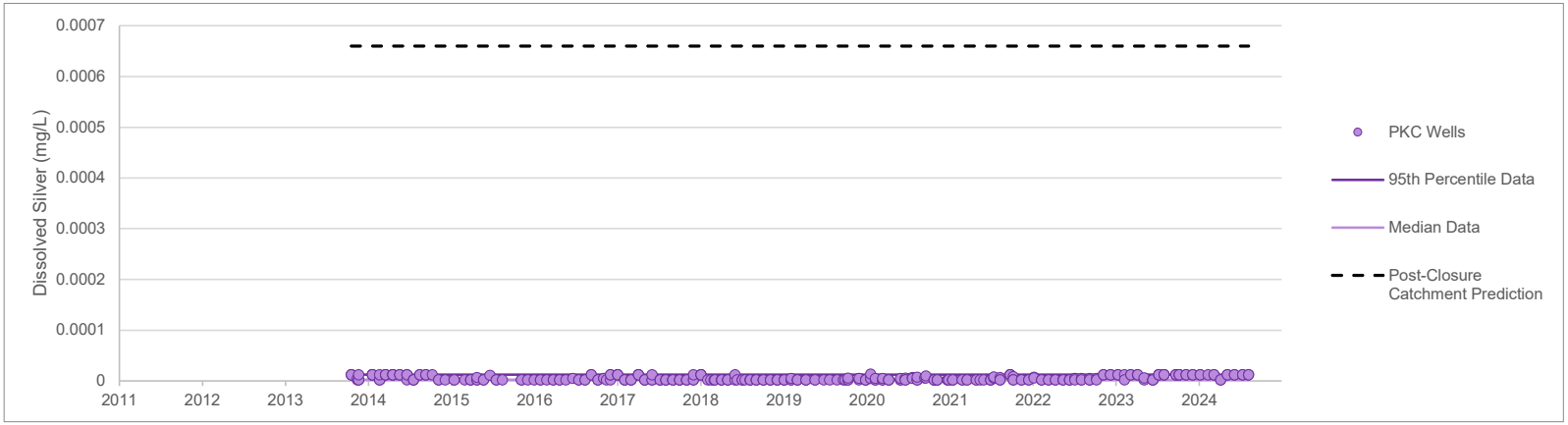
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silicon (mg/L)	Benchmark	Dissolved Silicon (mg/L)
95th Percentile	3.59	Wildlife	None
Median	2.39	Human recreational	None
Count	317	AEMP	2.1

Operational Data Compared to Benchmarks and Predictions



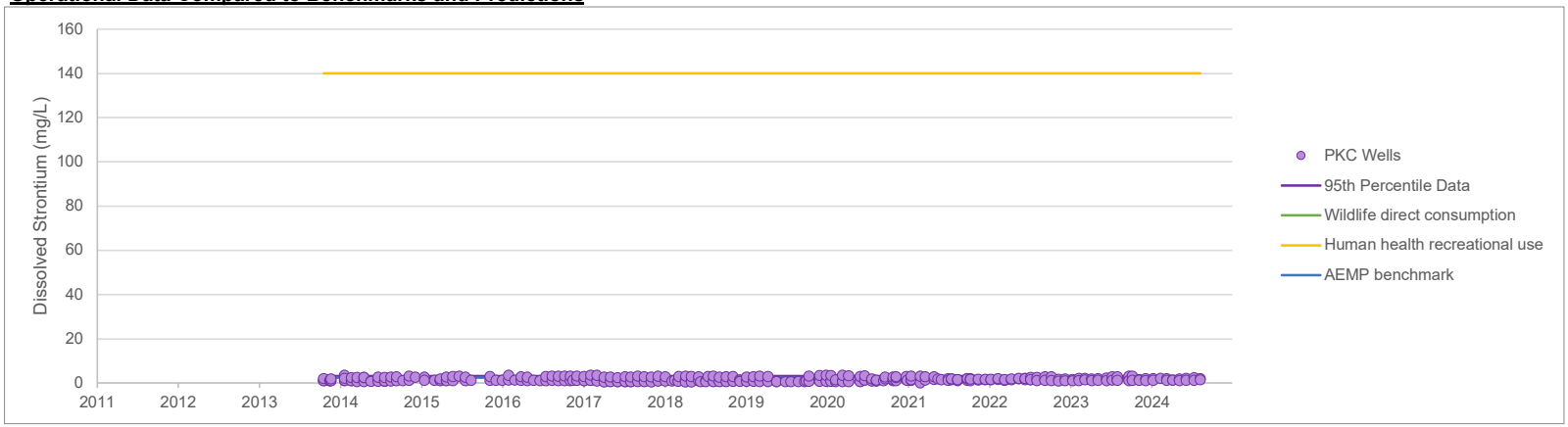


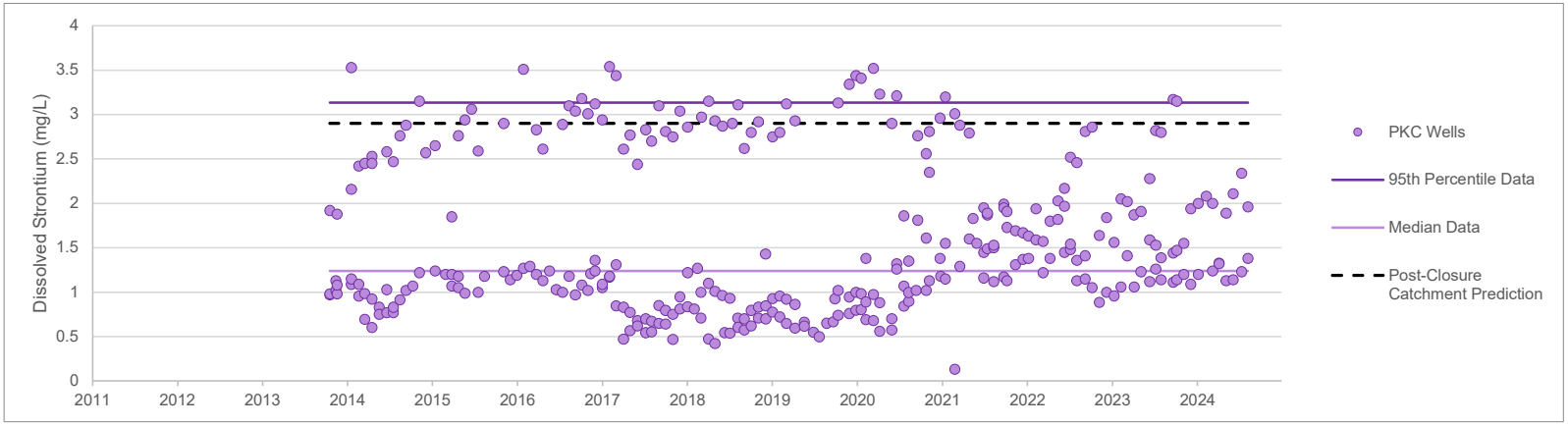
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Silver (mg/L)	Benchmark	Dissolved Silver (mg/L)
95th Percentile	0.000013	Wildlife	None
Median	0.000003	Human recreational	None
Count	317	AEMP	0.00025

Operational Data Compared to Benchmarks and Predictions

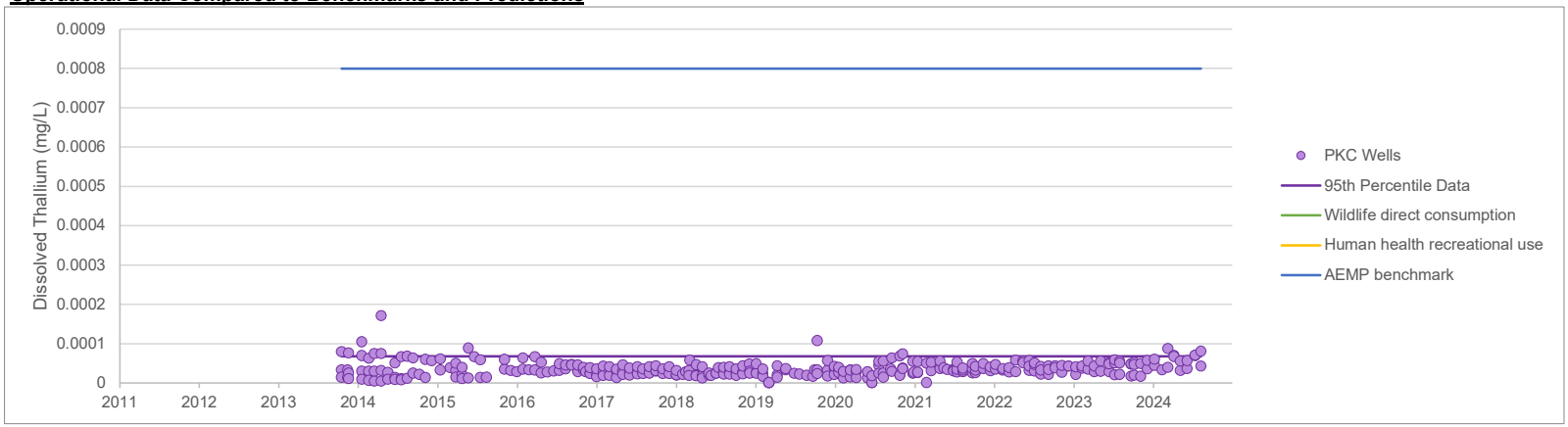


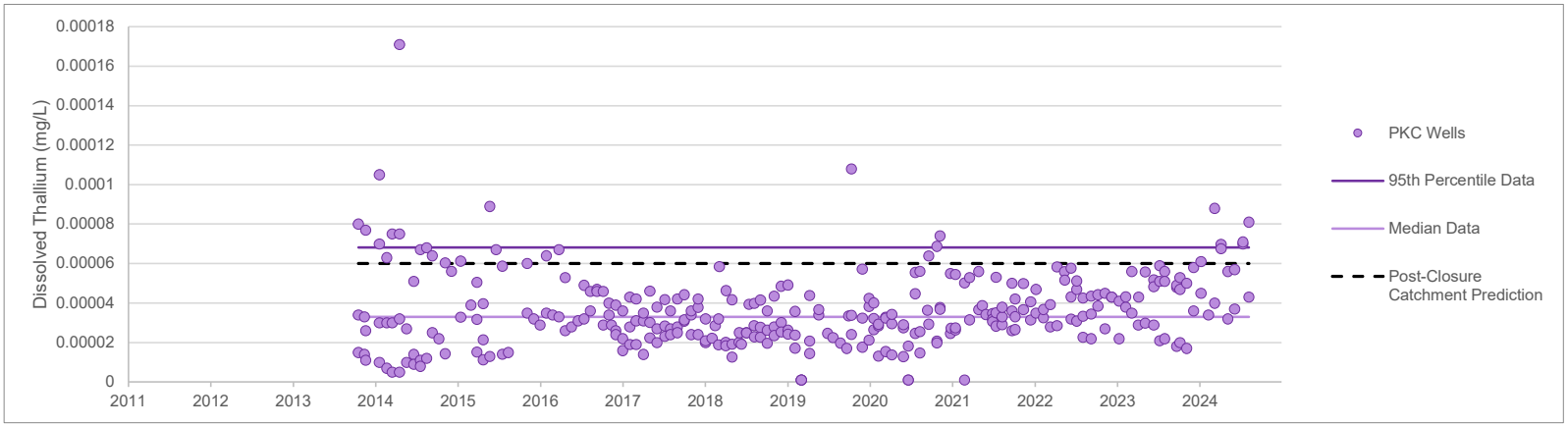


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Strontium (mg/L)	Benchmark	Dissolved Strontium (mg/L)
95th Percentile	3.13	Wildlife	None
Median	1.24	Human recreational	140
Count	317	AEMP	2.5

Operational Data Compared to Benchmarks and Predictions

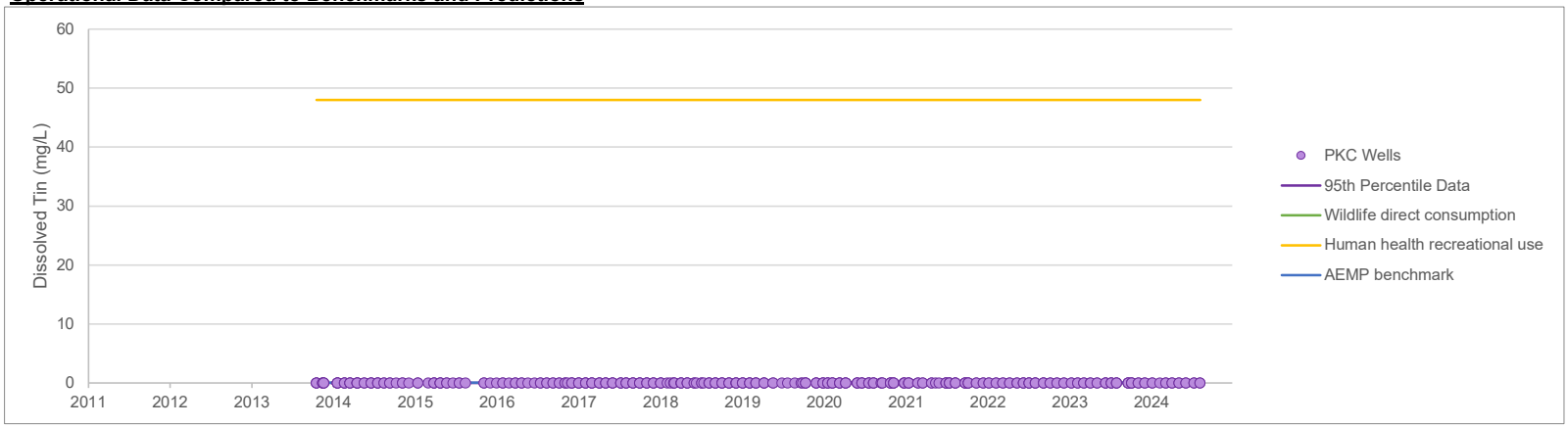


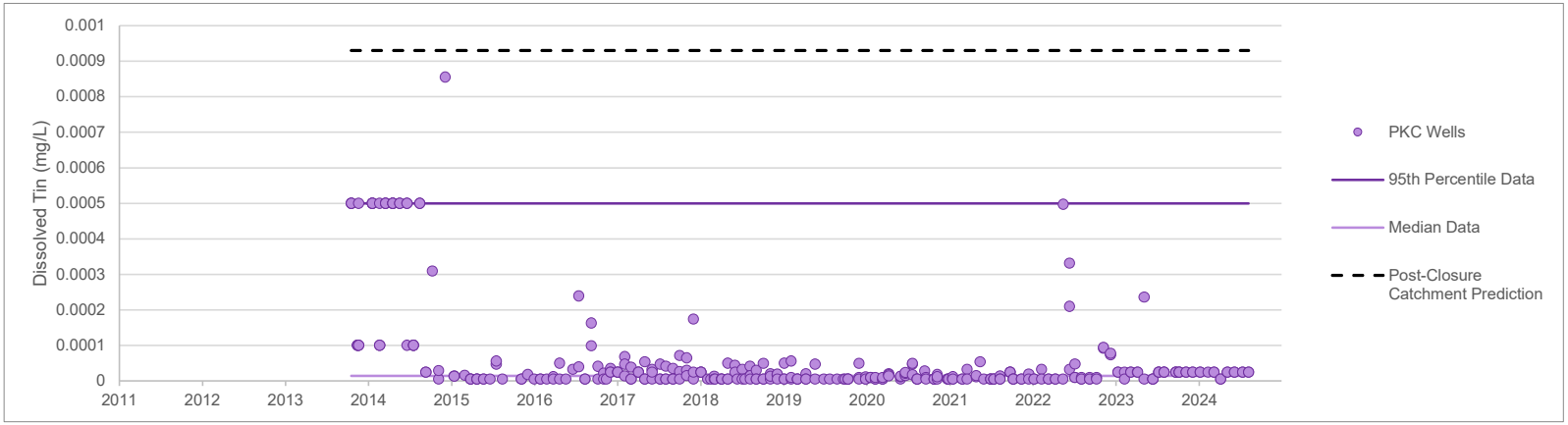


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Dissolved Thallium (mg/L)	Benchmark	Dissolved Thallium (mg/L)
95th Percentile	0.00007	Wildlife	None
Median	0.00003	Human recreational	None
Count	317	AEMP	0.0008

Operational Data Compared to Benchmarks and Predictions

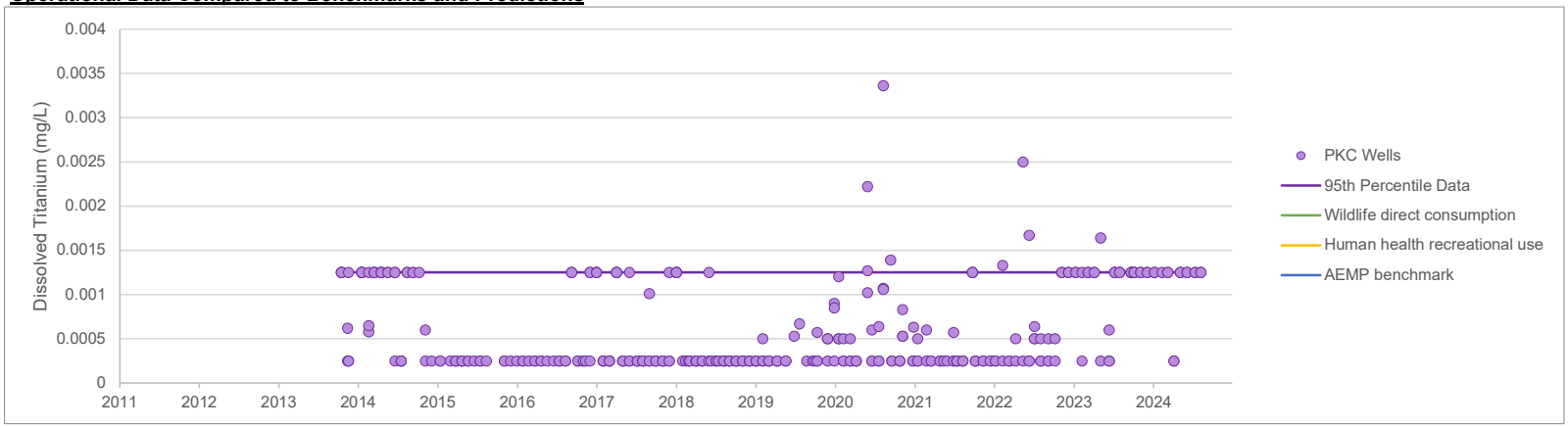


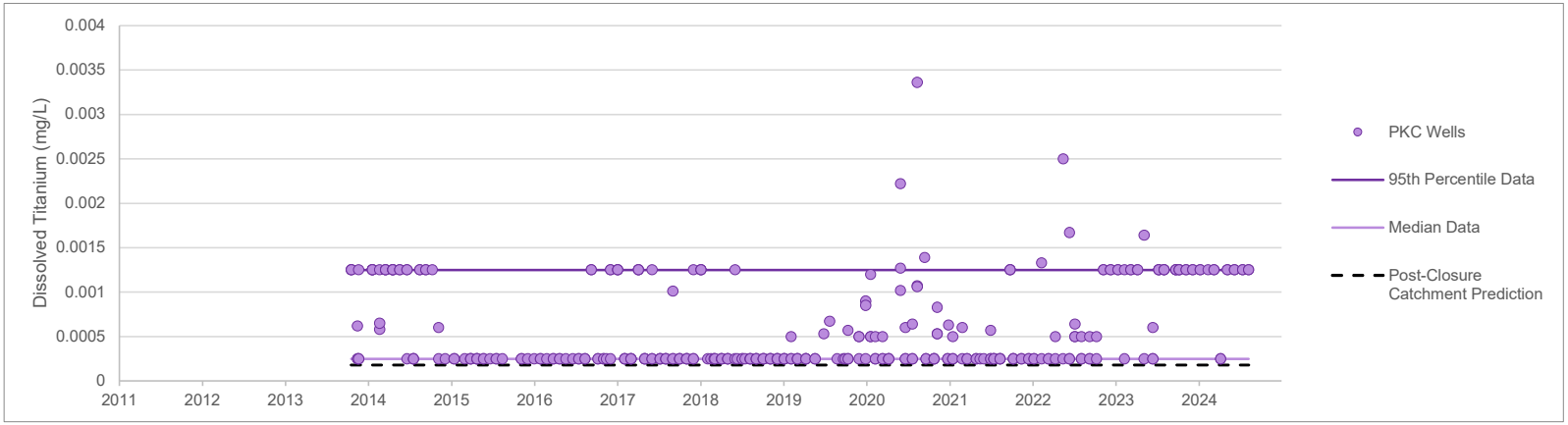


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Tin (mg/L)	Benchmark	Dissolved Tin (mg/L)
95th Percentile	0.00050	Wildlife	None
Median	0.00001	Human recreational	48
Count	317	AEMP	0.073

Operational Data Compared to Benchmarks and Predictions

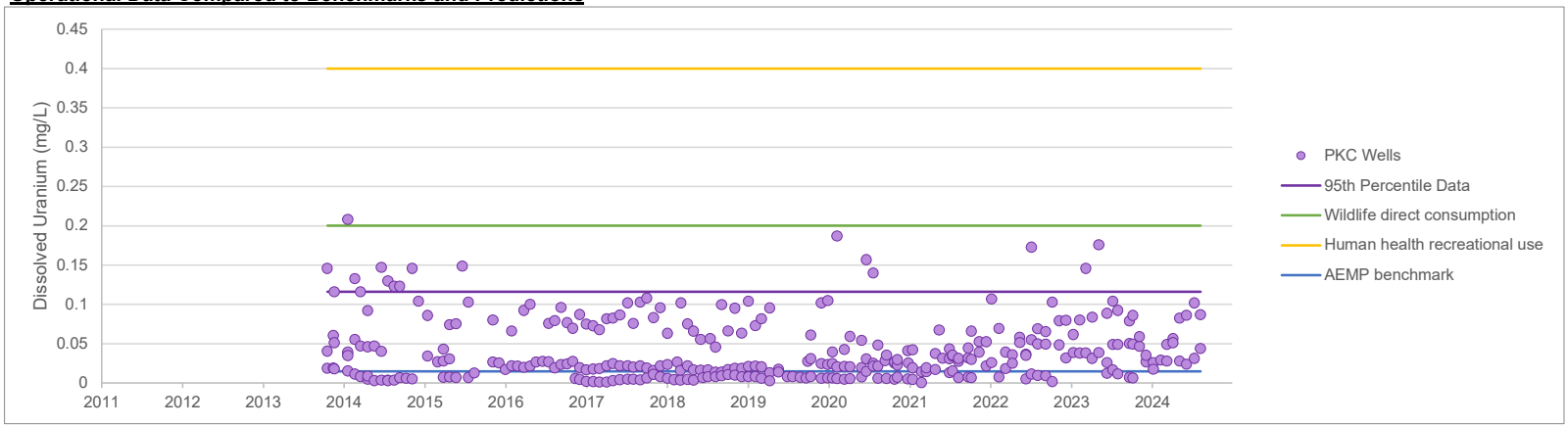


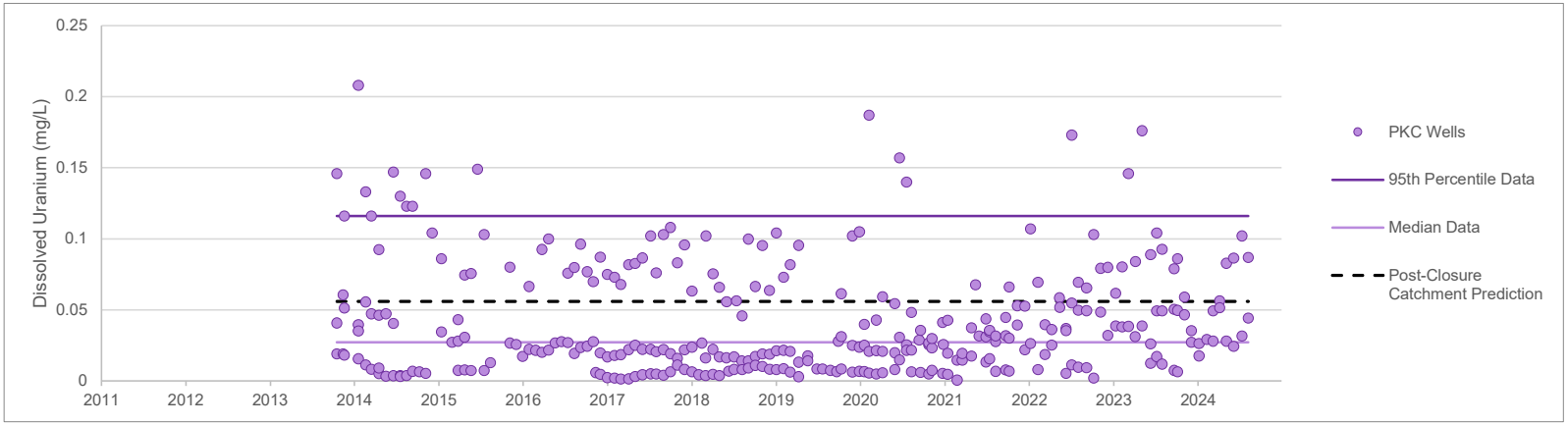


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Titanium (mg/L)	Benchmark	Dissolved Titanium (mg/L)
95th Percentile	0.0013	Wildlife	None
Median	0.0003	Human recreational	None
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions

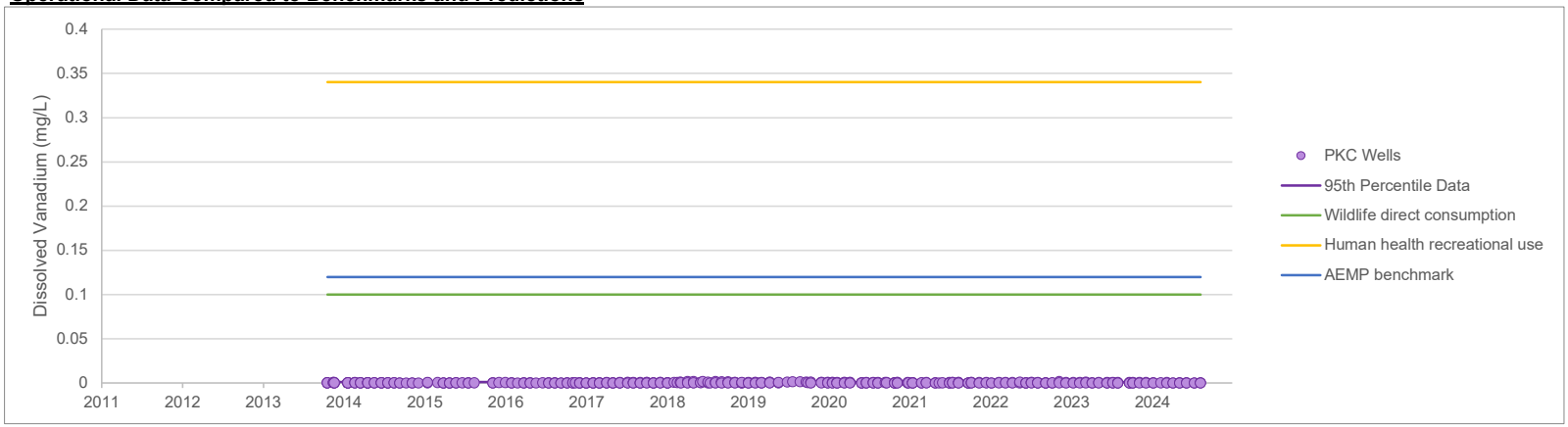


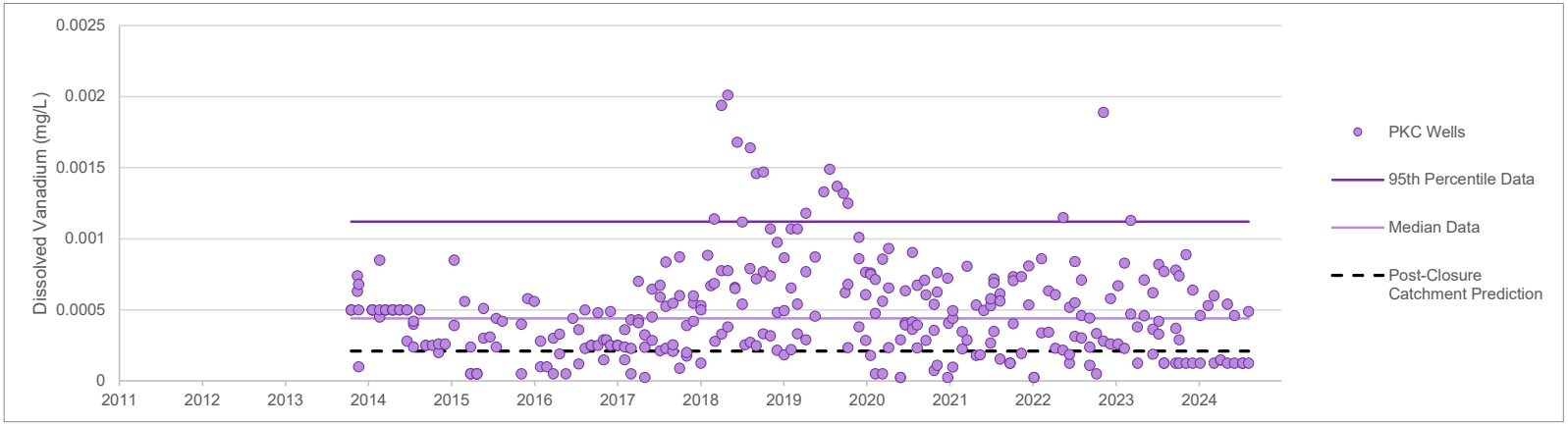


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Uranium (mg/L)	Benchmark	Dissolved Uranium (mg/L)
95th Percentile	0.1160	Wildlife	0.2
Median	0.0272	Human recreational	0.4
Count	317	AEMP	0.015

Operational Data Compared to Benchmarks and Predictions



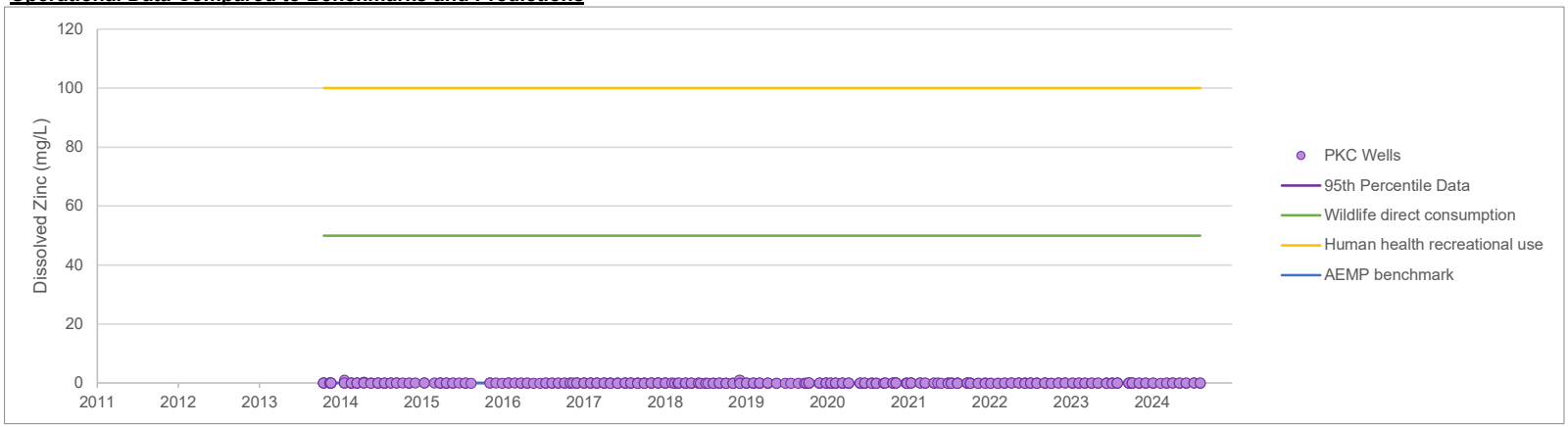


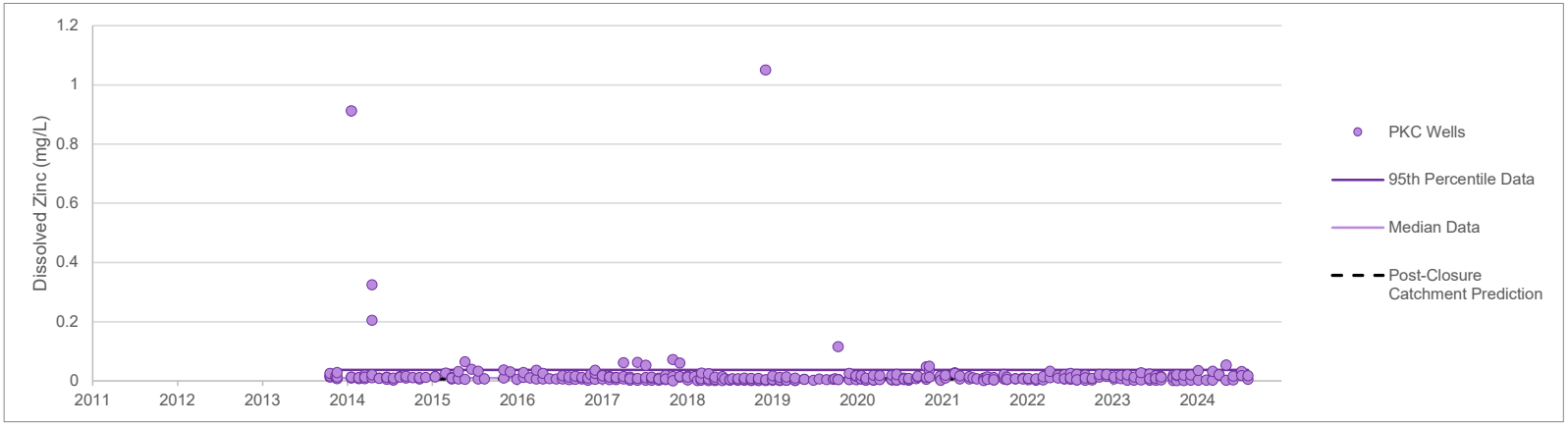
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Vanadium (mg/L)	Benchmark	Dissolved Vanadium (mg/L)
95th Percentile	0.0011	Wildlife	0.1
Median	0.0004	Human recreational	0.3
Count	317	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions

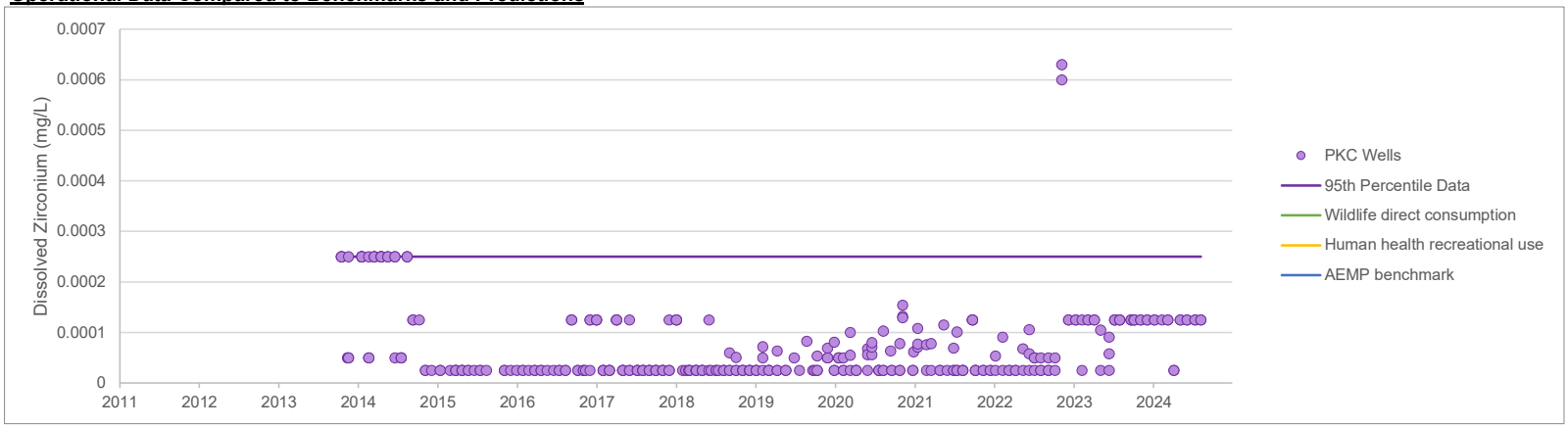


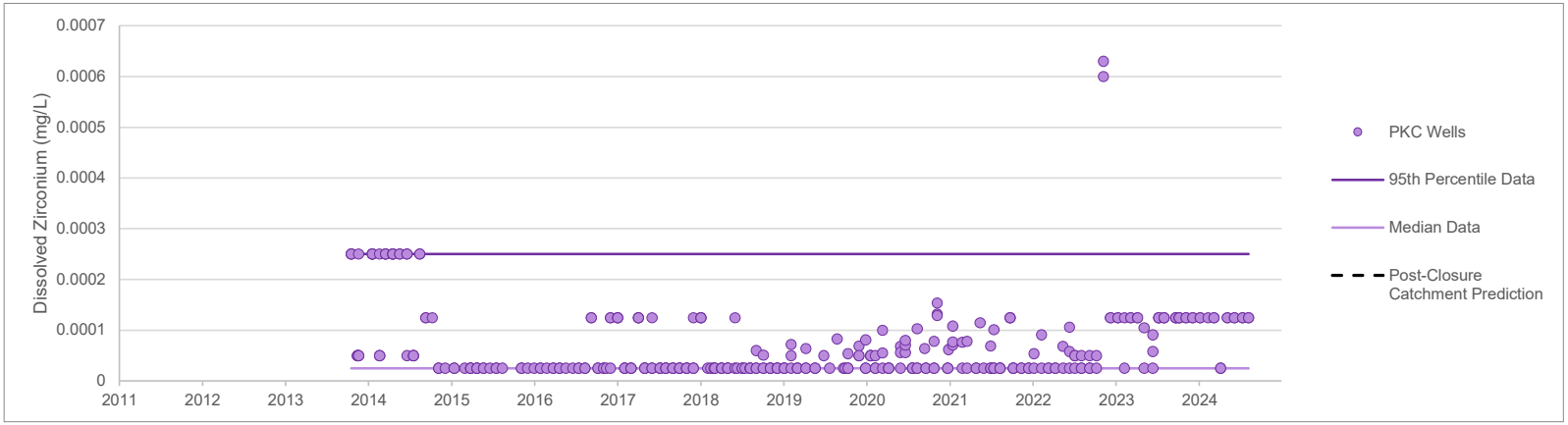


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zinc (mg/L)	Benchmark	Dissolved Zinc (mg/L)
95th Percentile	0.037	Wildlife	50
Median	0.010	Human recreational	100
Count	317	AEMP	0.006

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Zirconium (mg/L)	Benchmark	Dissolved Zirconium (mg/L)
95th Percentile	0.0003	Wildlife	None
Median	0.0000	Human recreational	None
Count	317	AEMP	None

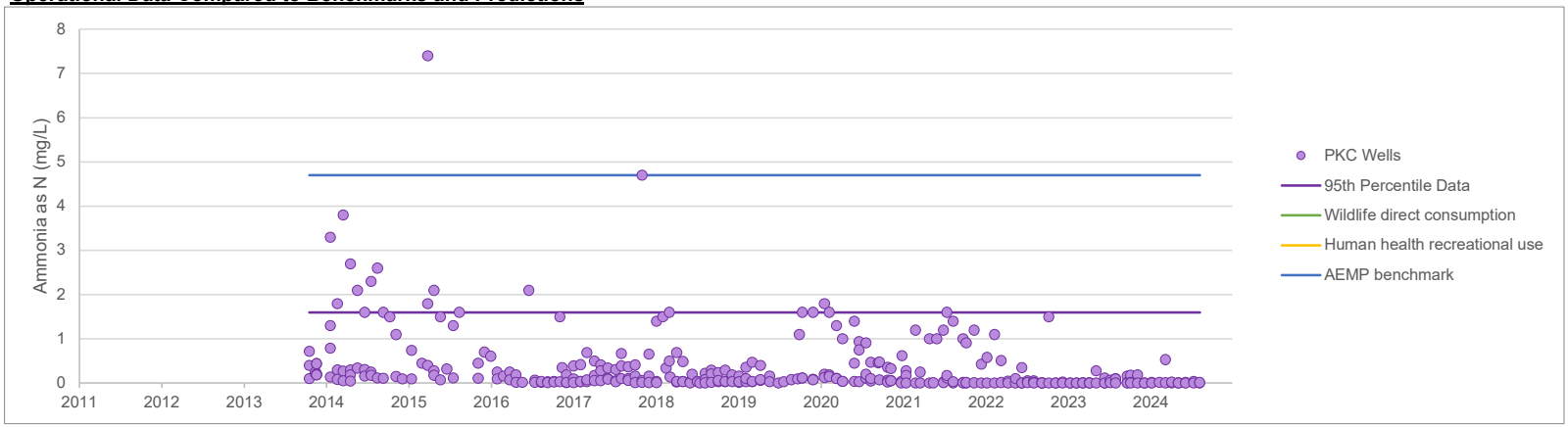
RioTinto | Diavik

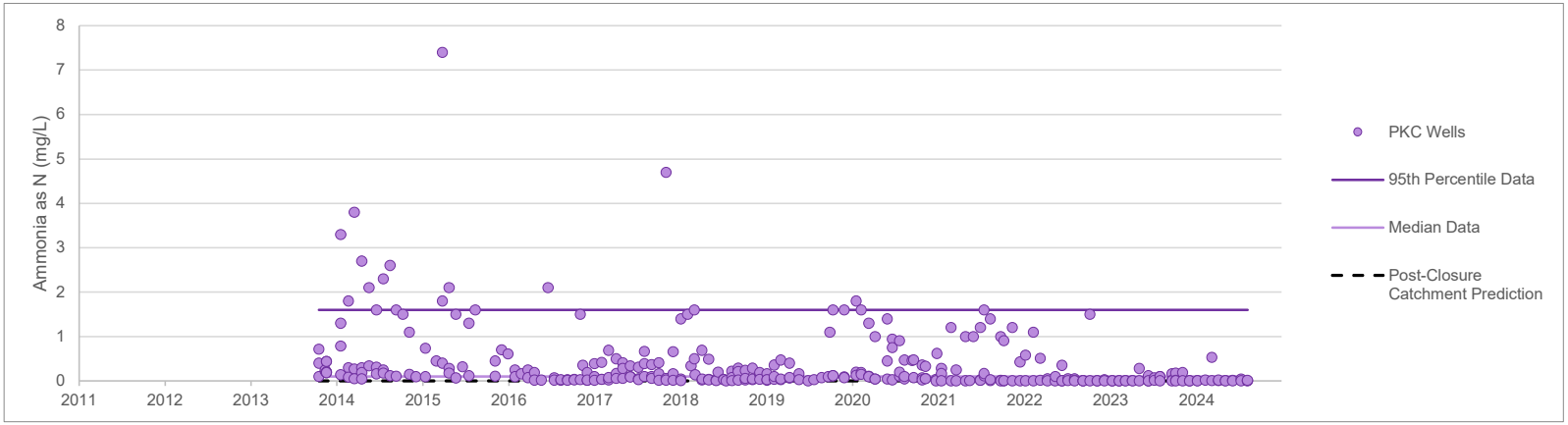
PKCF Wells

Major Ions, Nutrients, and Field Parameters

Ammonia as N
Bicarbonate
Calcium
Carbonate
Chloride
Field Temperature
Fluoride
Hardness - Total
Magnesium
Nitrate as N
Nitrite as N
pH - DDMI Field
Phosphorus
Potassium
Sodium
Sulphate
Sulphur
Total Alkalinity as CaCO3
Total Dissolved Solids
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Suspended Solids
Turbidity
C6-C50 Hydrocarbons

Operational Data Compared to Benchmarks and Predictions

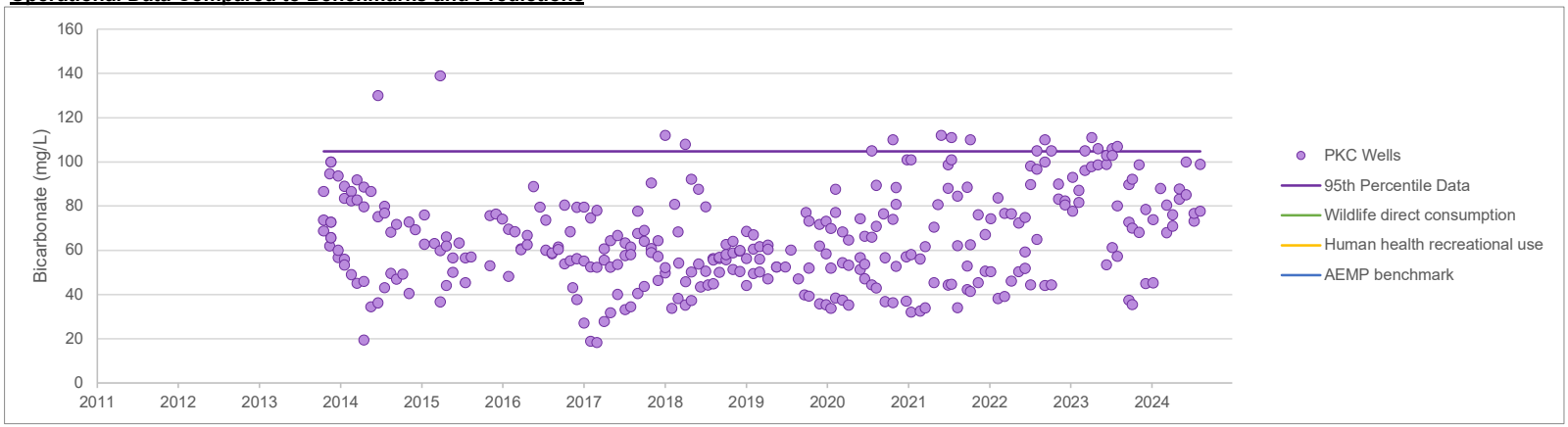


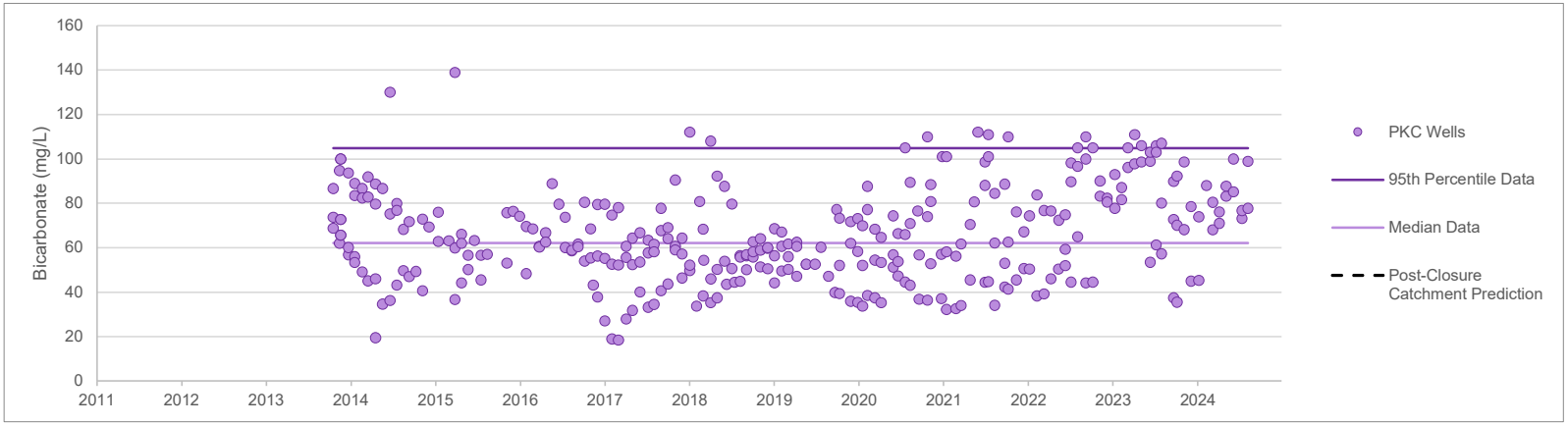


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Ammonia as N (mg/L)	Benchmark	Ammonia as N (mg/L)
95th Percentile	1.60	Wildlife	None
Median	0.10	Human recreational	None
Count	317	AEMP	4.70

Operational Data Compared to Benchmarks and Predictions

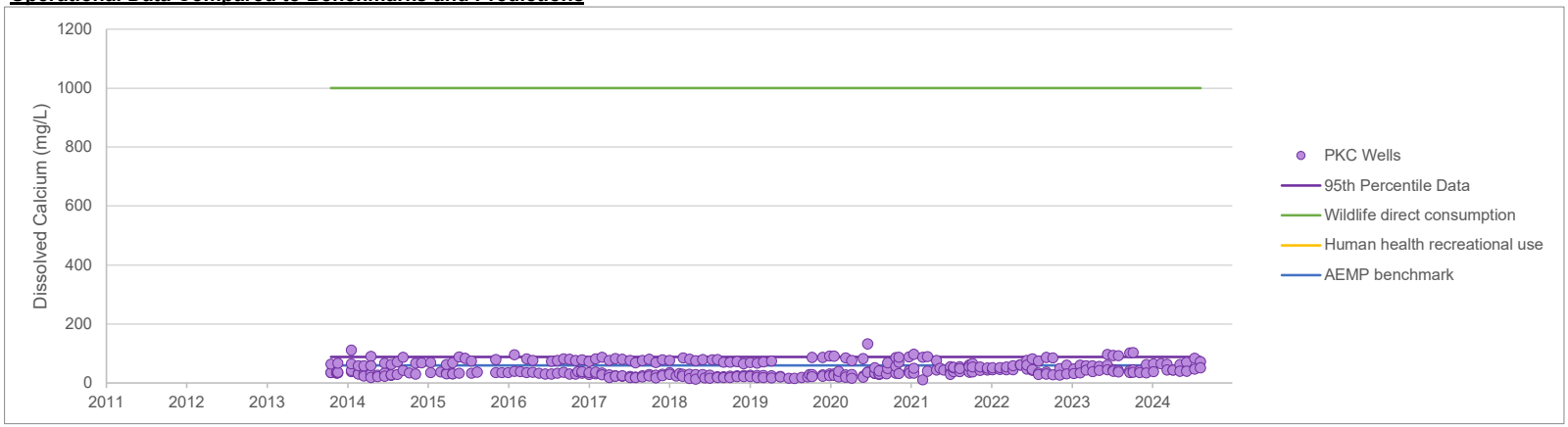


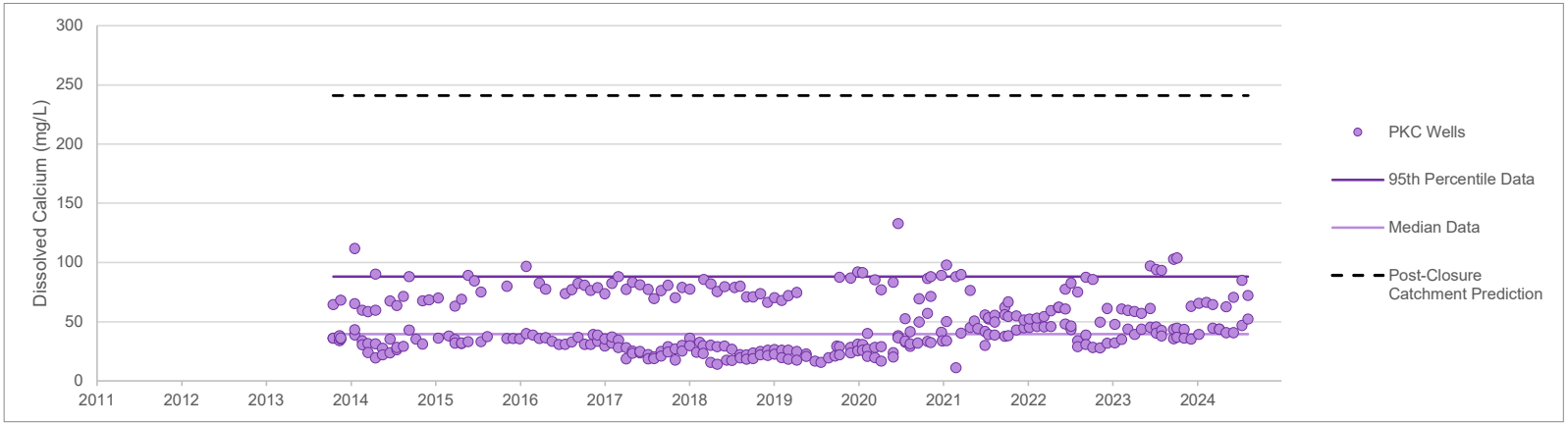


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Bicarbonate (mg/L)	Benchmark	Bicarbonate (mg/L)
95th Percentile	104.8	Wildlife	None
Median	62.2	Human recreational	None
Count	323	AEMP	None

Operational Data Compared to Benchmarks and Predictions



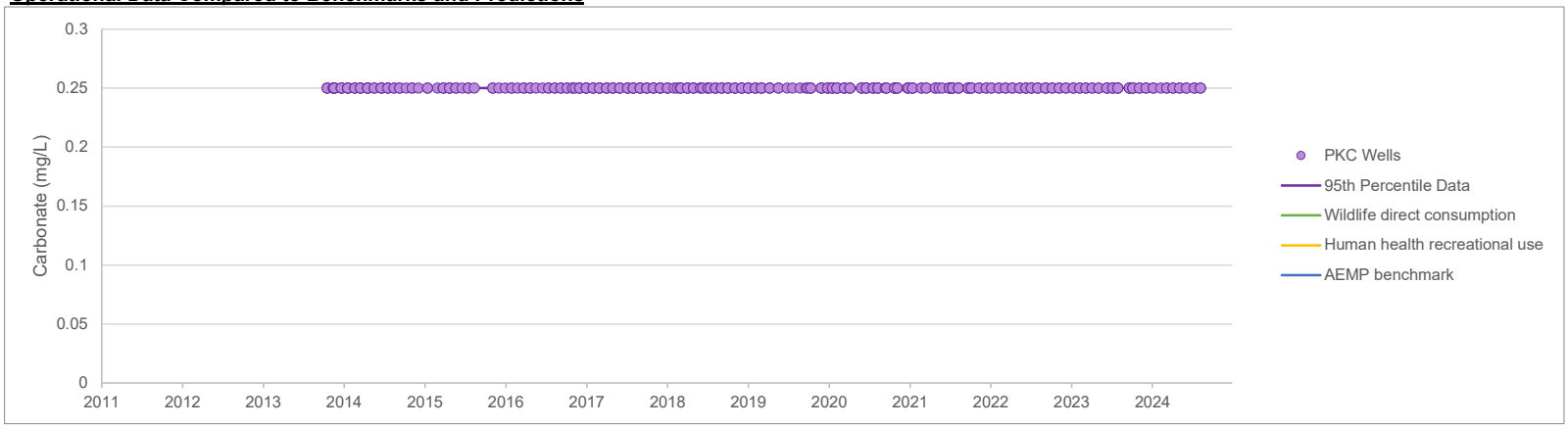


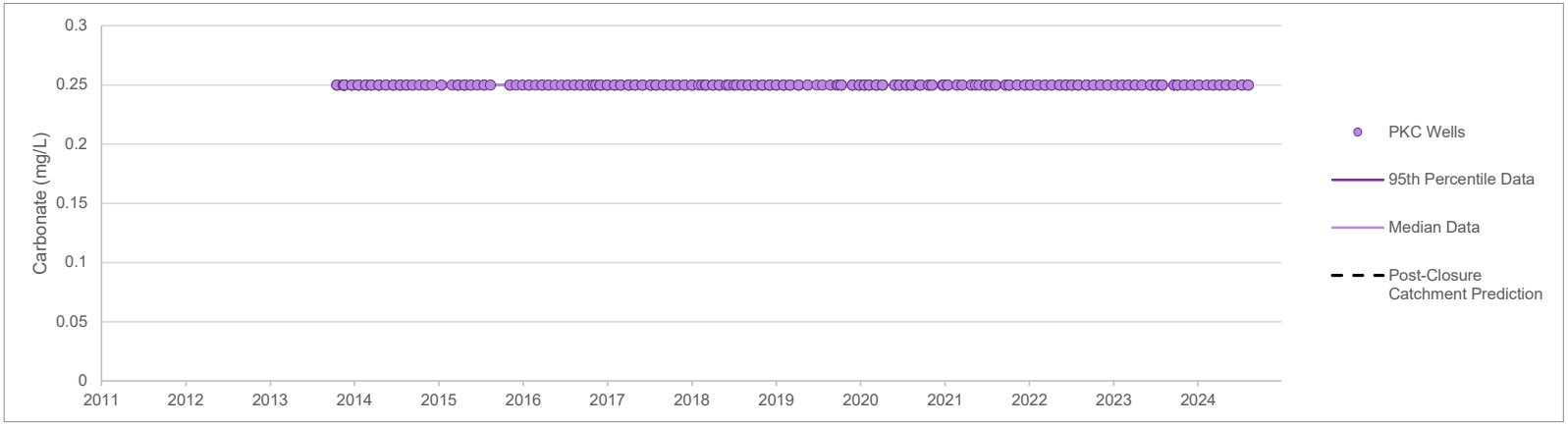
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Calcium (mg/L)	Benchmark	Dissolved Calcium (mg/L)
95th Percentile	88.2	Wildlife	1000
Median	39.5	Human recreational	None
Count	317	AEMP	60

Operational Data Compared to Benchmarks and Predictions

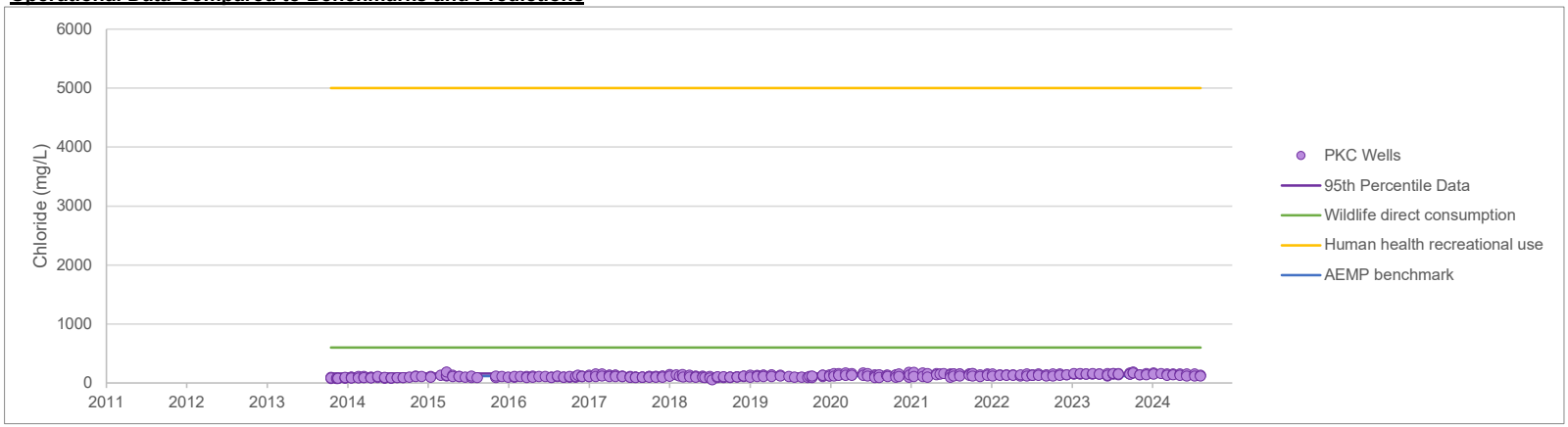


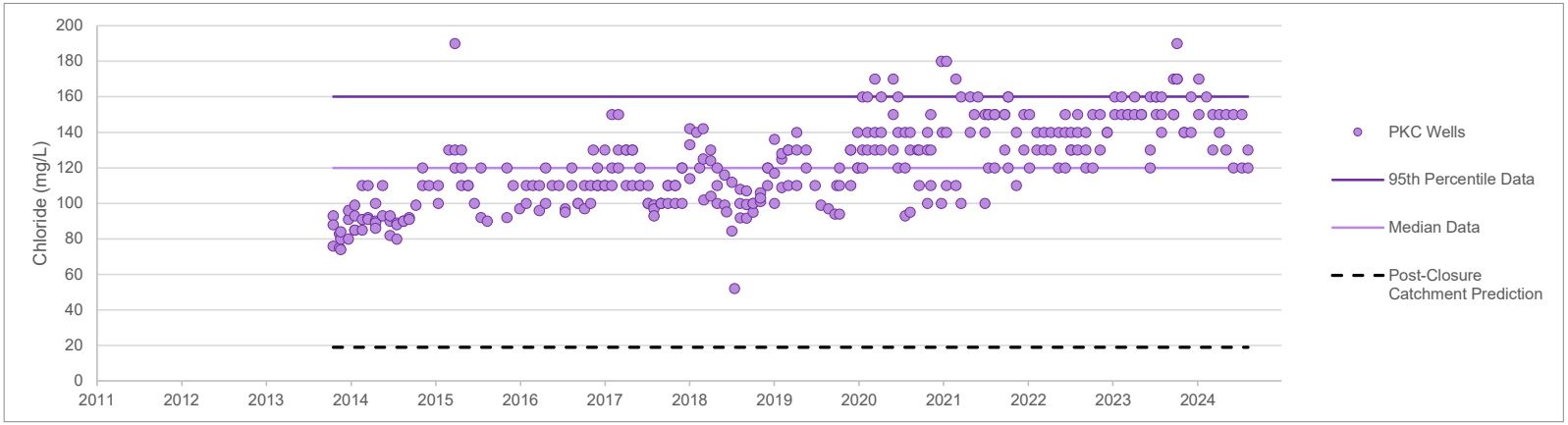


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Carbonate (mg/L)	Benchmark	Carbonate (mg/L)
95th Percentile	0.25	Wildlife	None
Median	0.25	Human recreational	None
Count	323	AEMP	None

Operational Data Compared to Benchmarks and Predictions



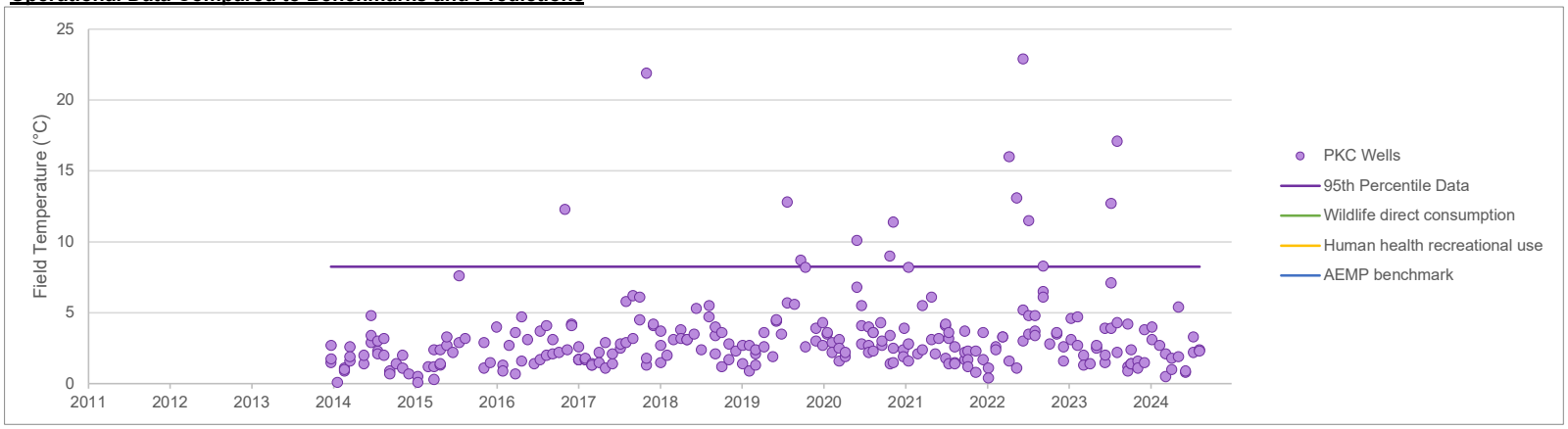


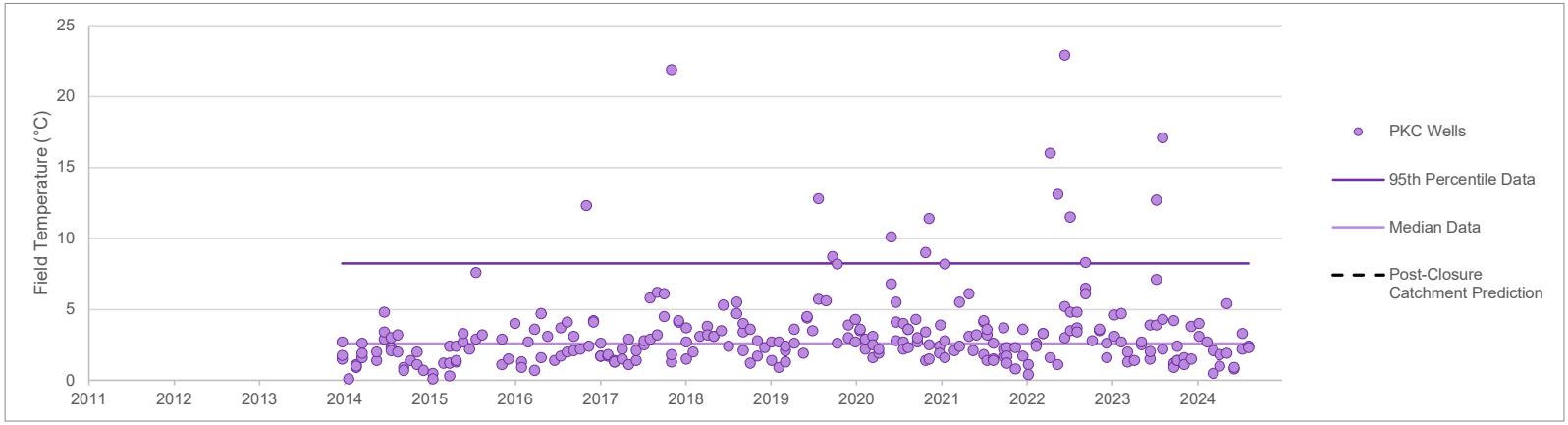
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Chloride (mg/L)	Benchmark	Chloride (mg/L)
95th Percentile	160.0	Wildlife	600
Median	120.0	Human recreational	5000
Count	320	AEMP	120

Operational Data Compared to Benchmarks and Predictions

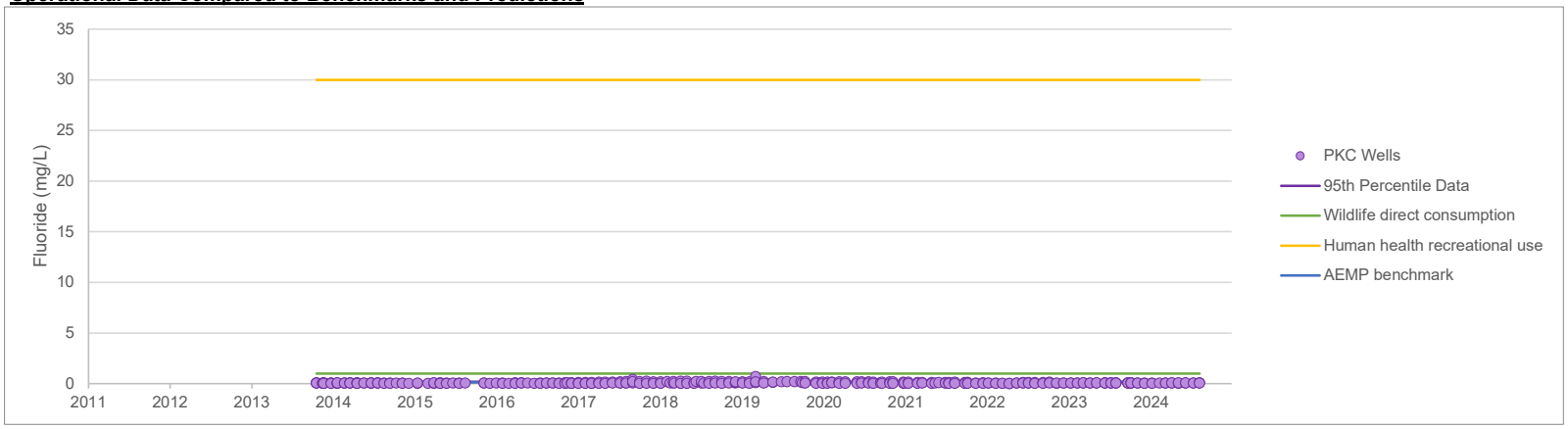


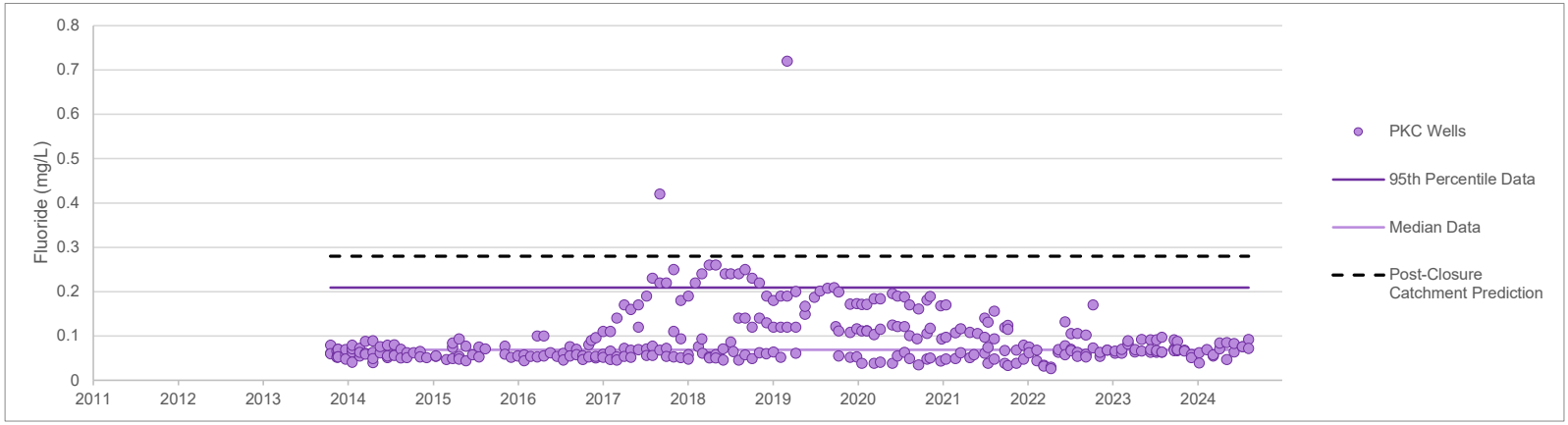


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Field Temperature (°C)	Benchmark	Field Temperature (°C)
95th Percentile	8.3	Wildlife	None
Median	2.6	Human recreational	None
Count	271	AEMP	None

Operational Data Compared to Benchmarks and Predictions

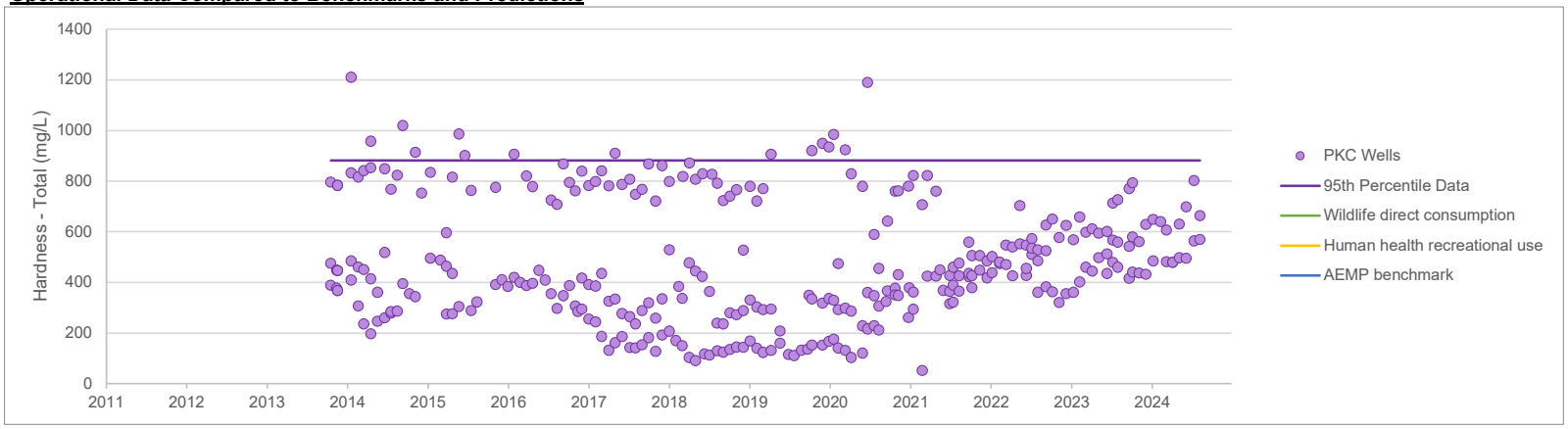


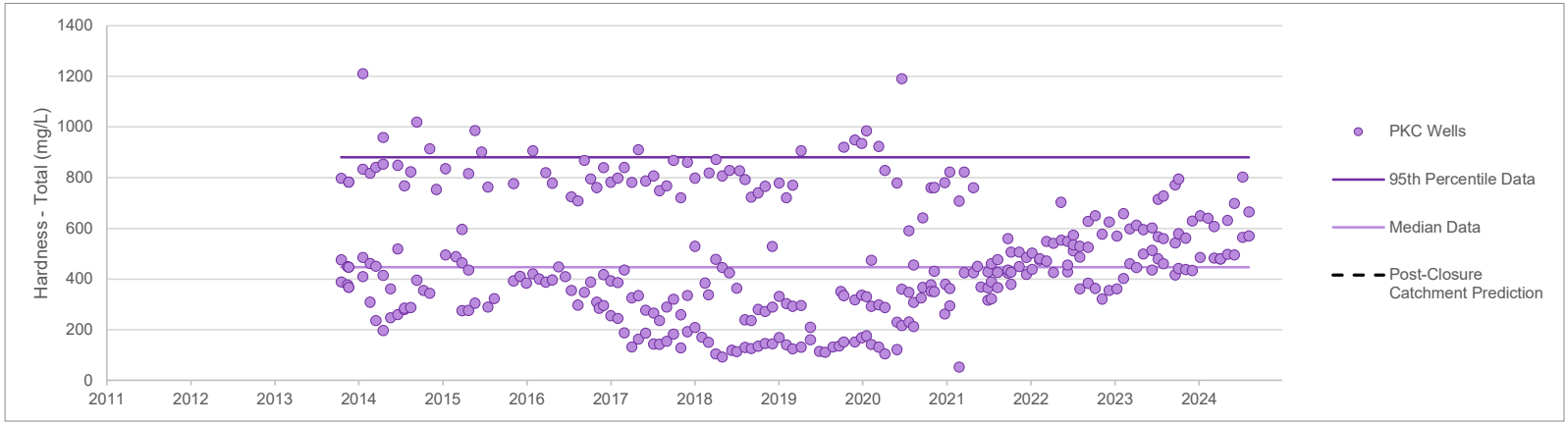


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Fluoride (mg/L)	Benchmark	Fluoride (mg/L)
95th Percentile	0.21	Wildlife	1
Median	0.07	Human recreational	30
Count	323	AEMP	0.12

Operational Data Compared to Benchmarks and Predictions



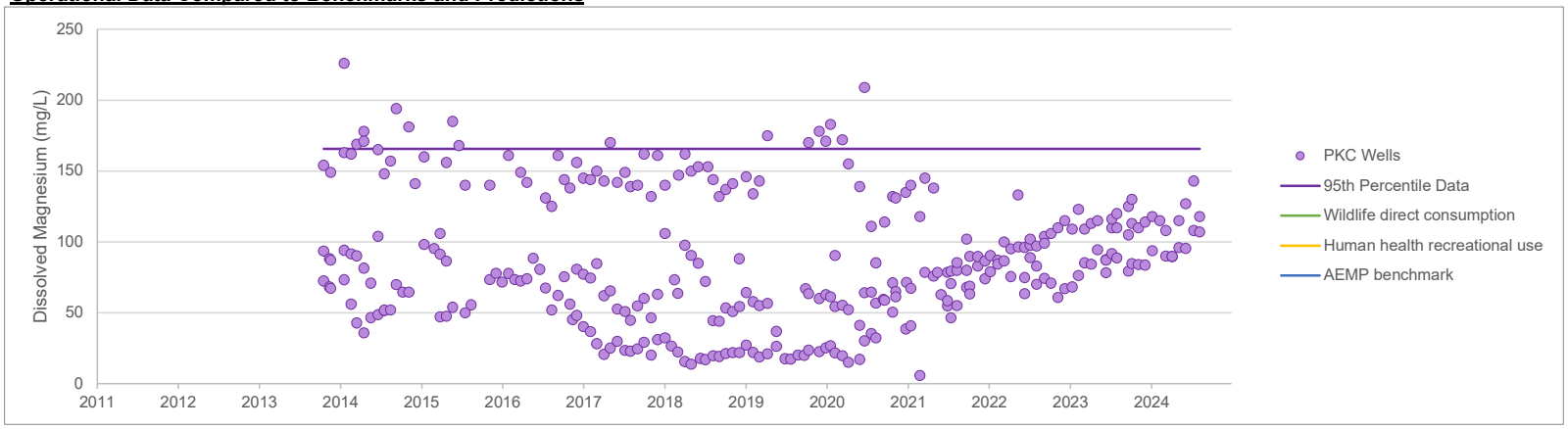


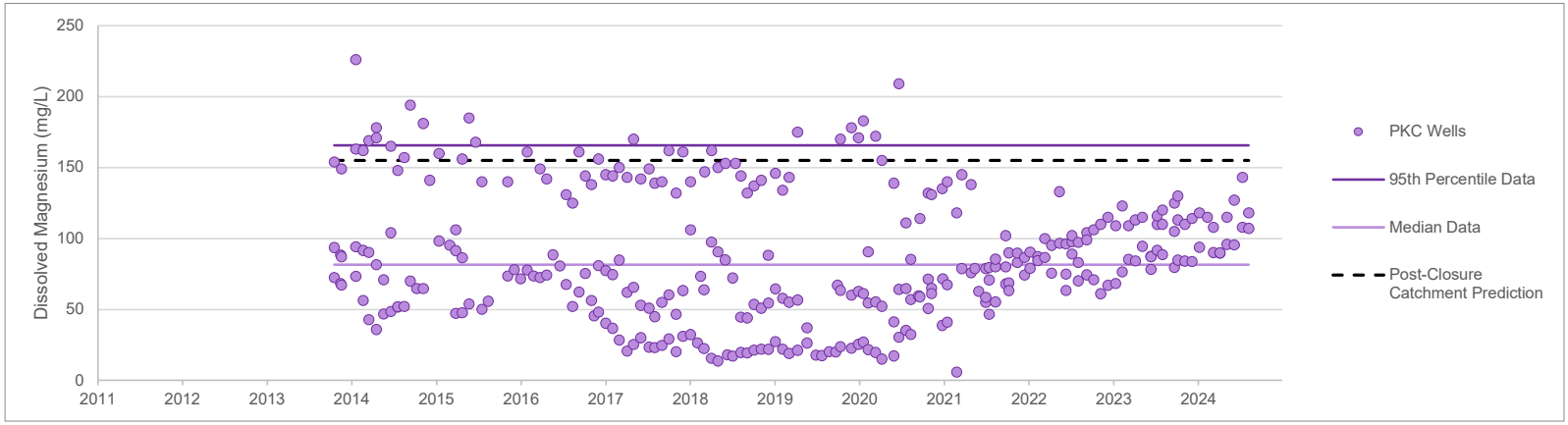
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Hardness - Total (mg/L)	Benchmark	Hardness - Total (mg/L)
95th Percentile	881	Wildlife	None
Median	447	Human recreational	None
Count	320	AEMP	None

Operational Data Compared to Benchmarks and Predictions

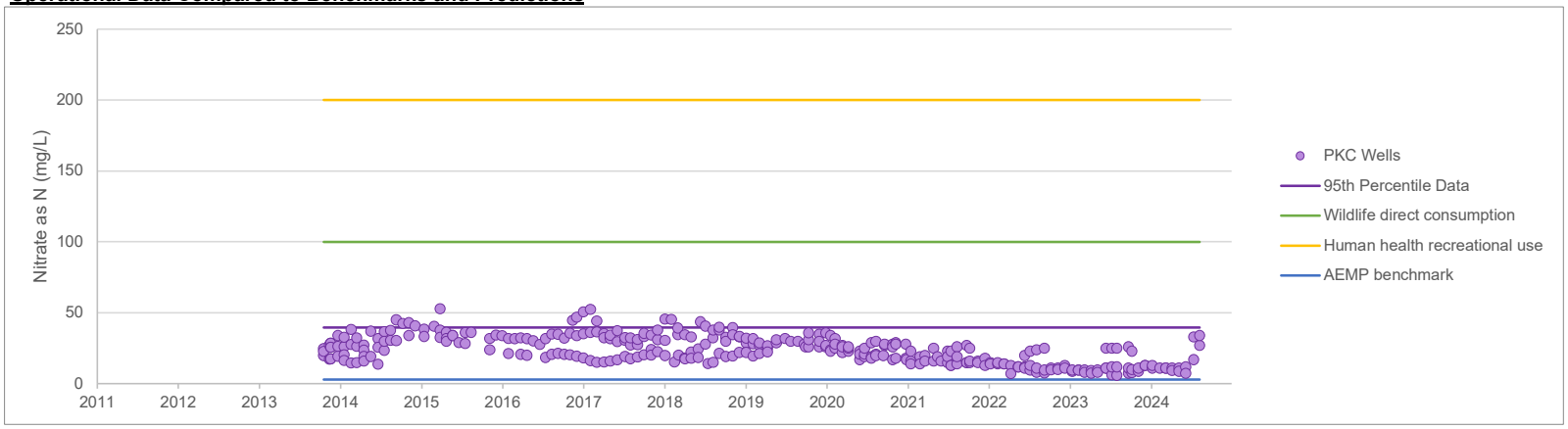


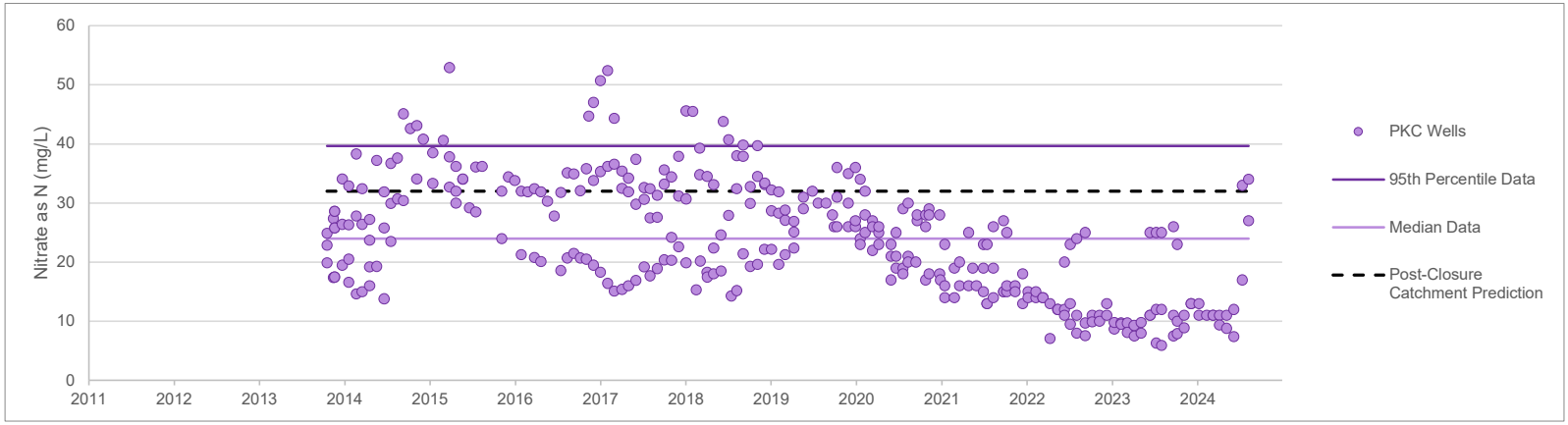


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Magnesium (mg/L)	Benchmark	Dissolved Magnesium (mg/L)
95th Percentile	165.6	Wildlife	None
Median	81.5	Human recreational	None
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions

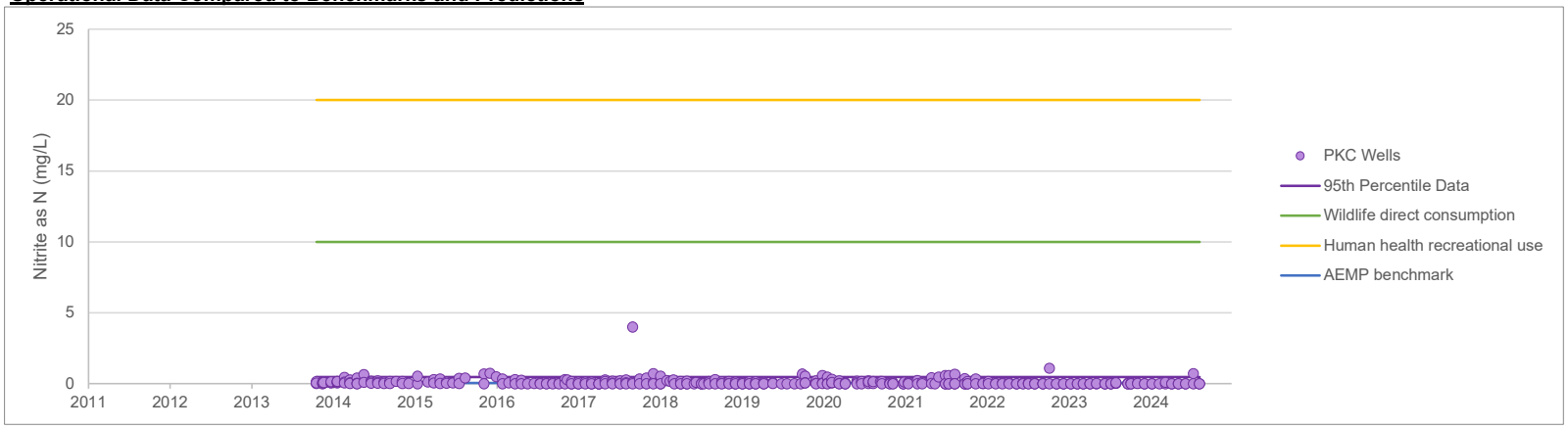


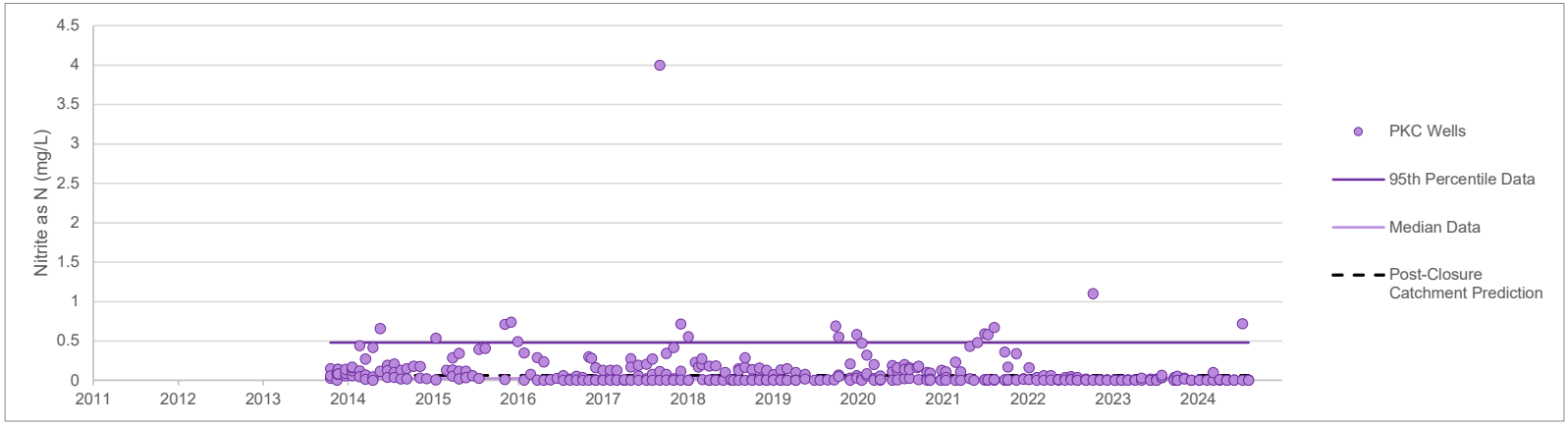


Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	Nitrate as N (mg/L)	Benchmark	Nitrate as N (mg/L)
95th Percentile	39.7	Wildlife	100
Median	24.0	Human recreational	200
Count	323	AEMP	3

Operational Data Compared to Benchmarks and Predictions

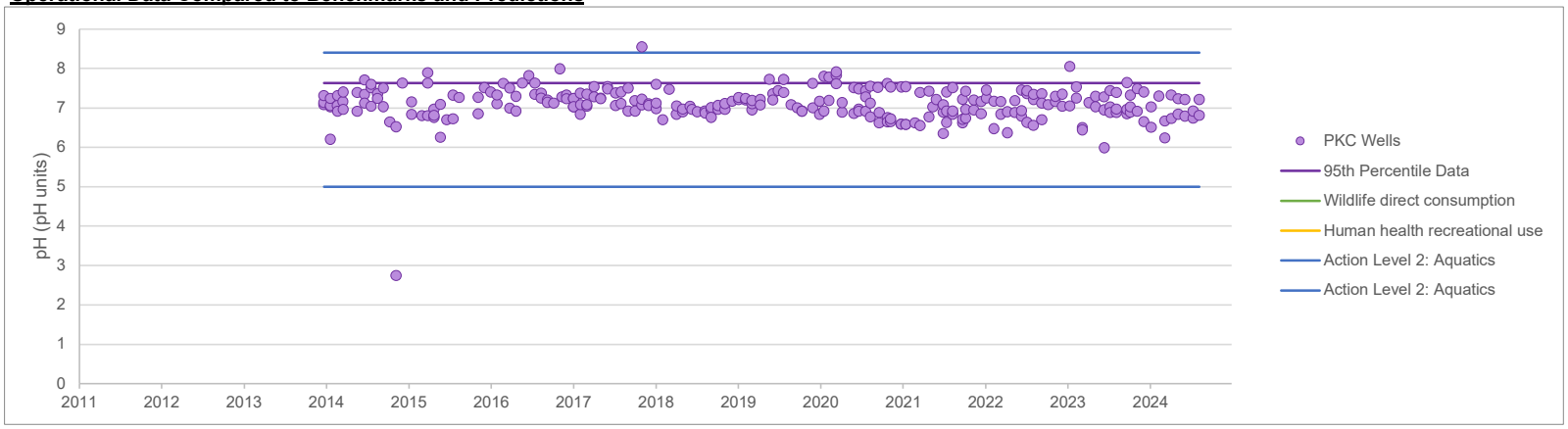


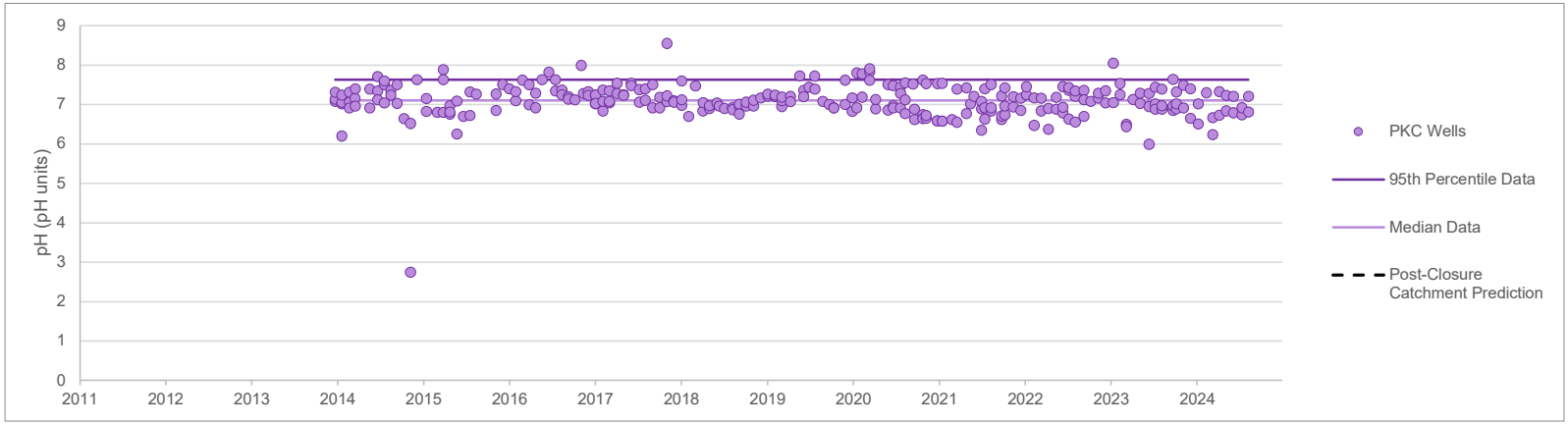


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Nitrite as N (mg/L)	Benchmark	Nitrite as N (mg/L)
95th Percentile	0.480	Wildlife	10.0
Median	0.025	Human recreational	20.0
Count	322	AEMP	0.060

Operational Data Compared to Benchmarks and Predictions



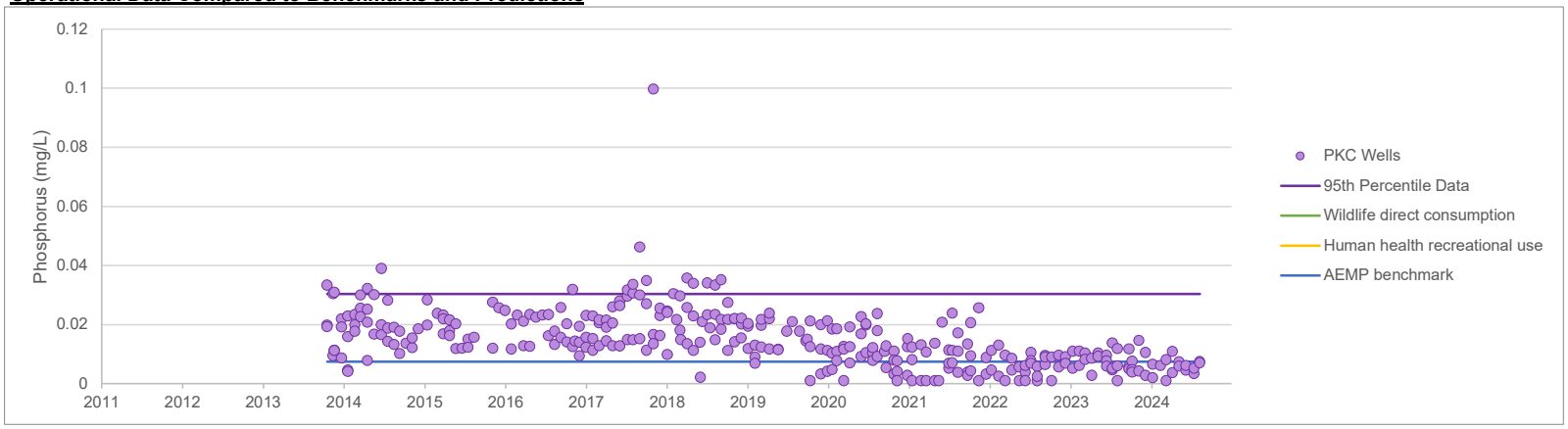


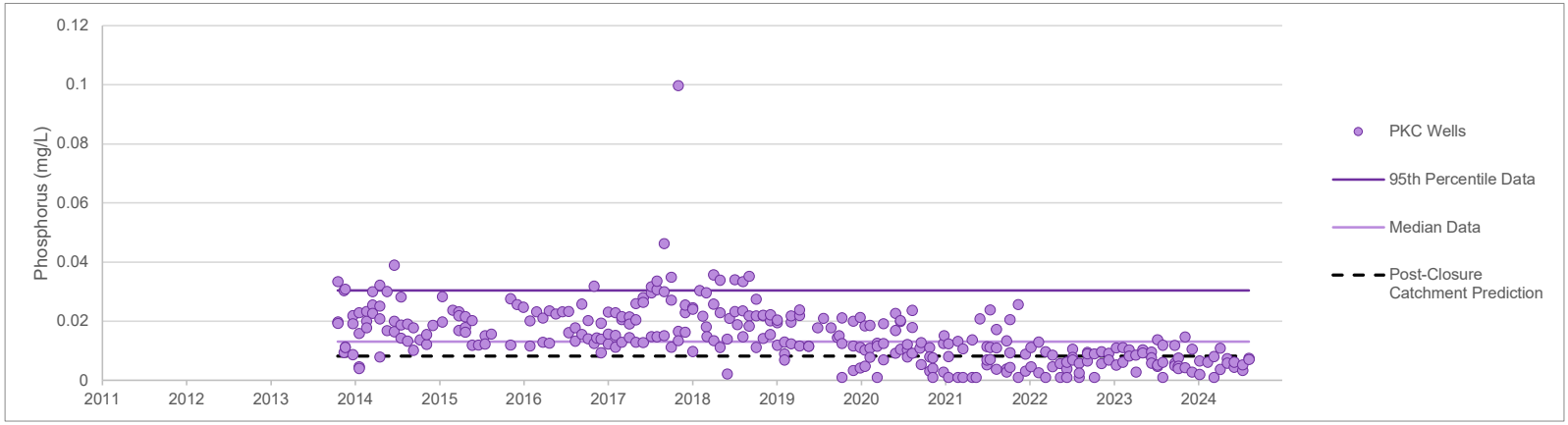
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	pH (pH units)	Benchmark	pH (pH units)
95th Percentile	7.6	Wildlife	None
Median	7.1	Human recreational	None
Count	273	AEMP	None

Operational Data Compared to Benchmarks and Predictions

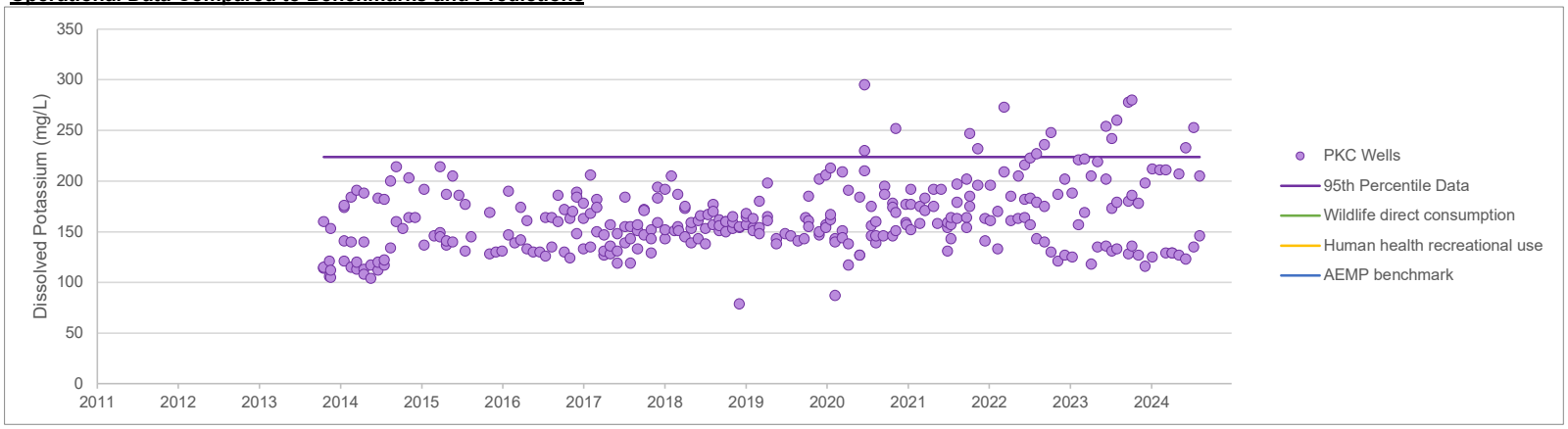


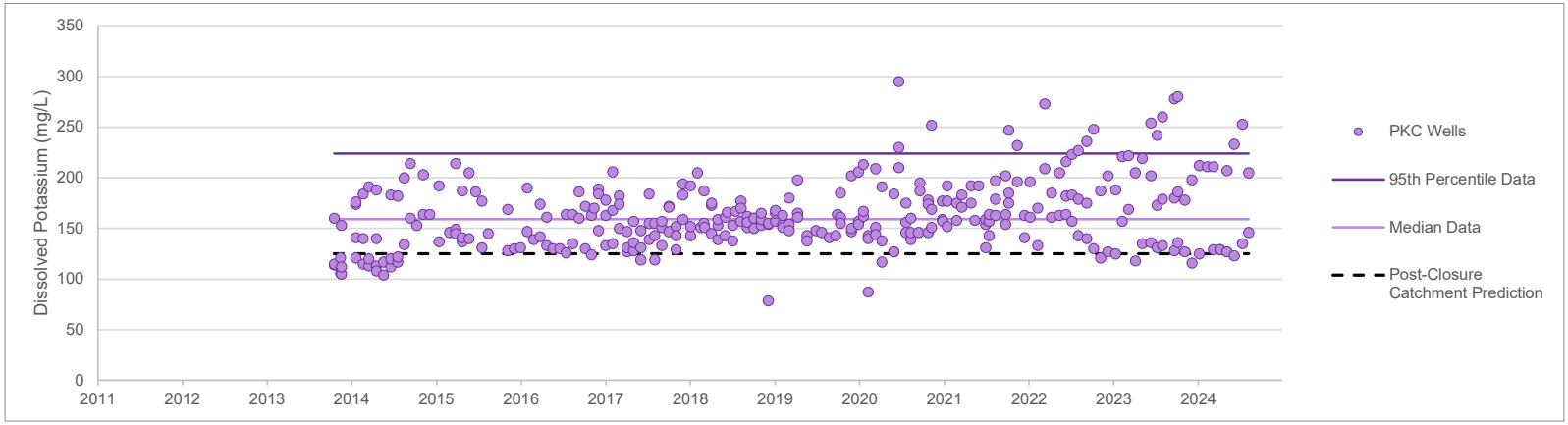


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Phosphorus (mg/L)	Benchmark	Phosphorus (mg/L)
95th Percentile	0.030	Wildlife	None
Median	0.013	Human recreational	None
Count	320	AEMP	0.008

Operational Data Compared to Benchmarks and Predictions



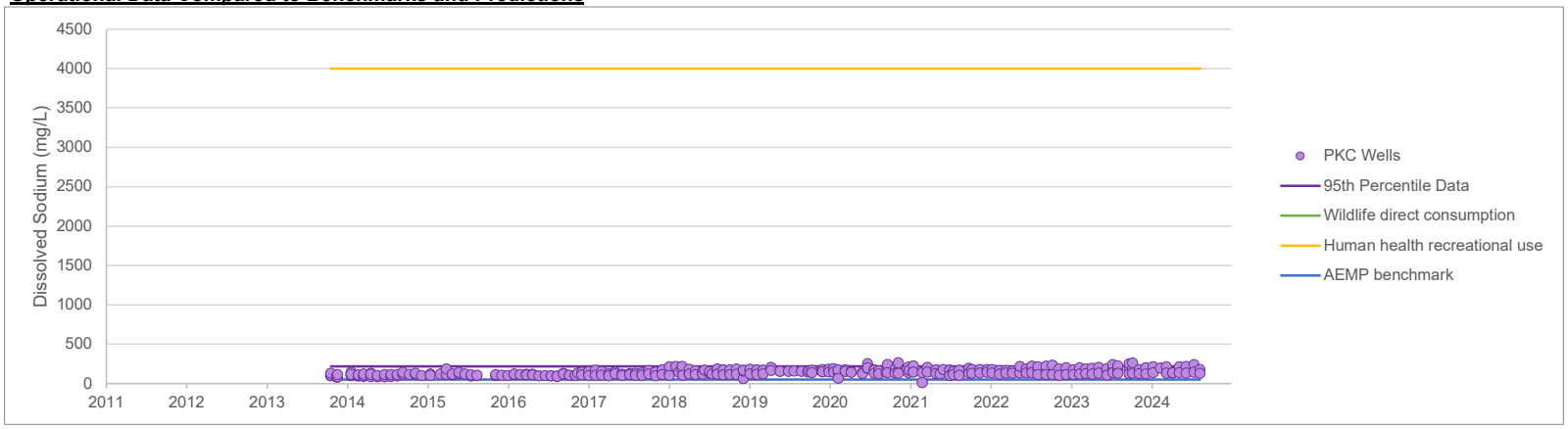


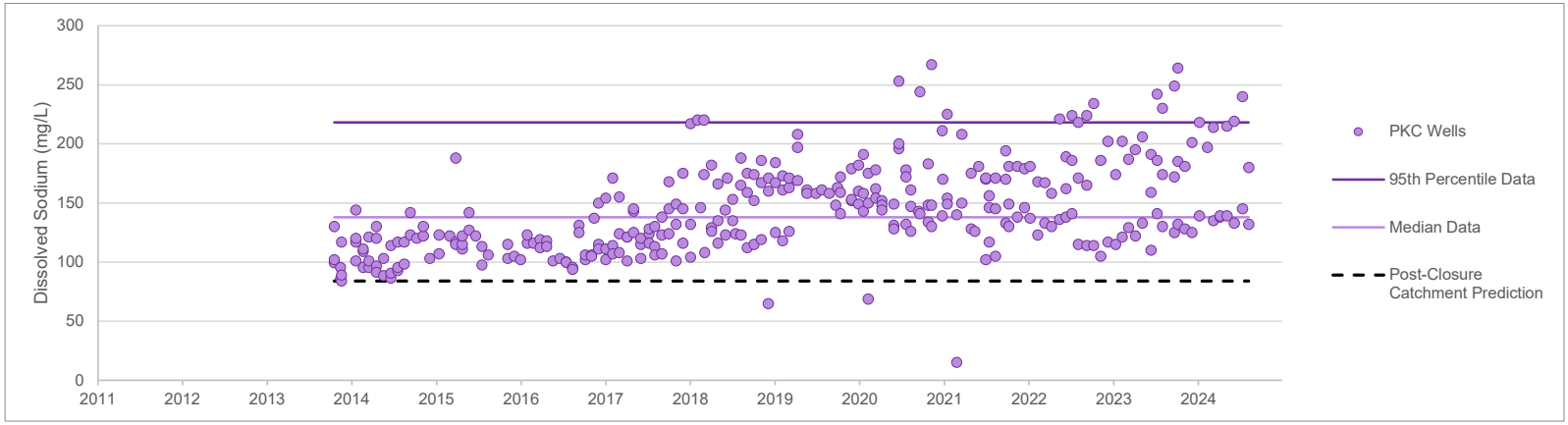
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Potassium (mg/L)	Benchmark	Dissolved Potassium (mg/L)
95th Percentile	223.8	Wildlife	None
Median	159.0	Human recreational	None
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions



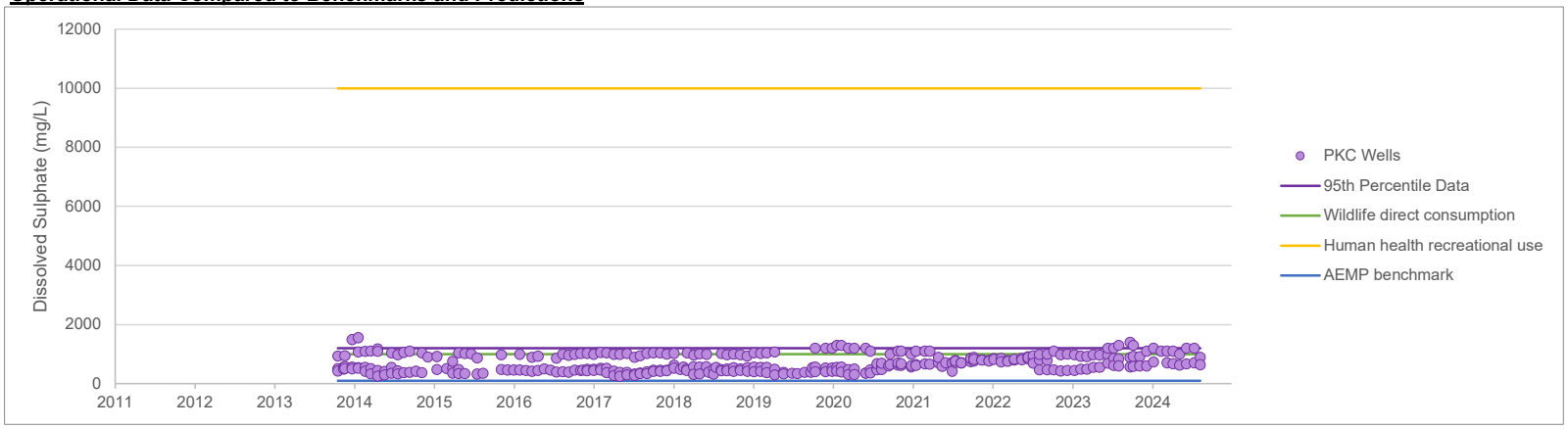


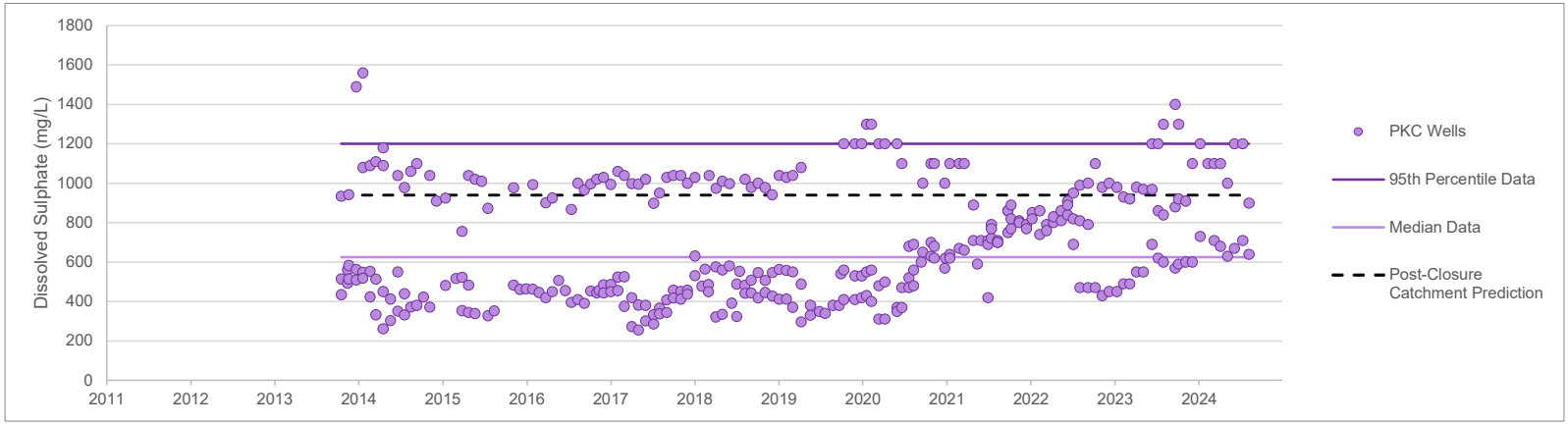
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sodium (mg/L)	Benchmark	Dissolved Sodium (mg/L)
95th Percentile	218.2	Wildlife	None
Median	138.0	Human recreational	4000
Count	317	AEMP	52

Operational Data Compared to Benchmarks and Predictions



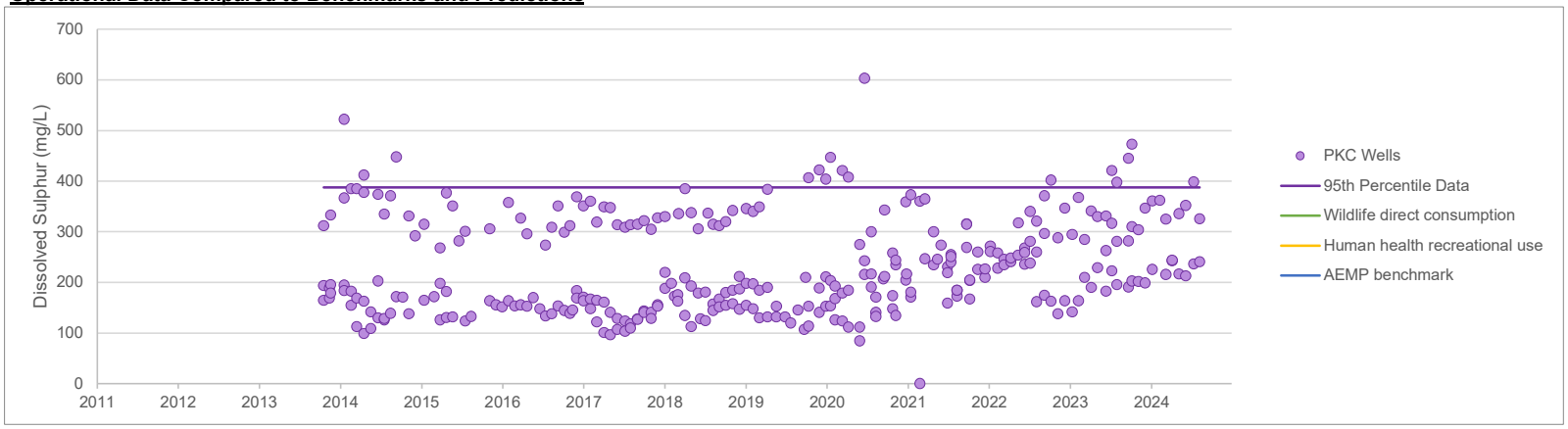


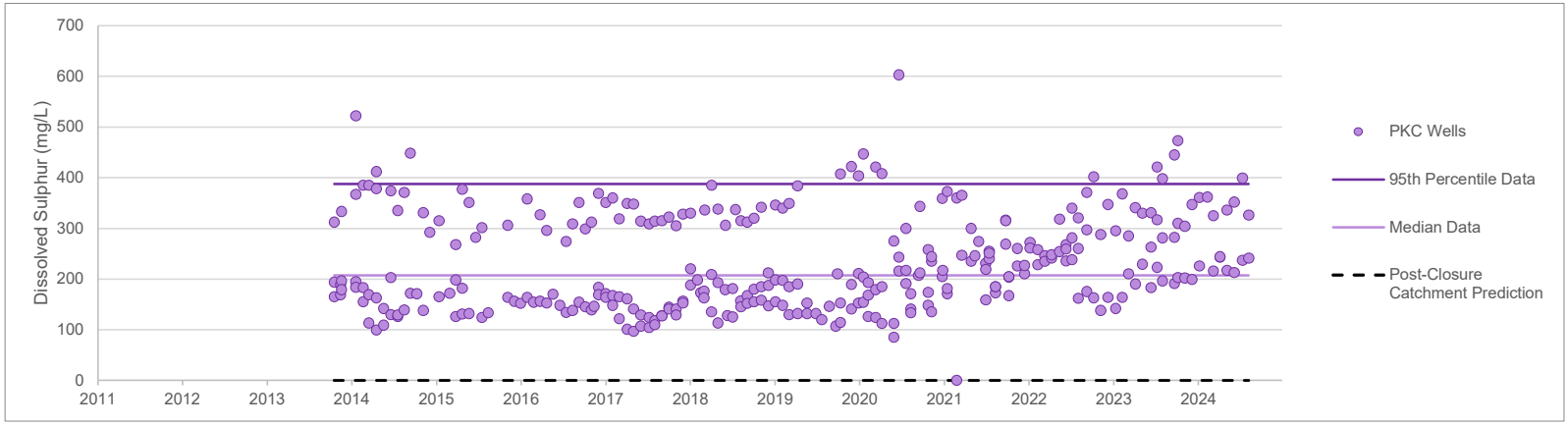
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphate (mg/L)	Benchmark	Dissolved Sulphate (mg/L)
95th Percentile	1200	Wildlife	1000
Median	625	Human recreational	10000
Count	320	AEMP	100

Operational Data Compared to Benchmarks and Predictions



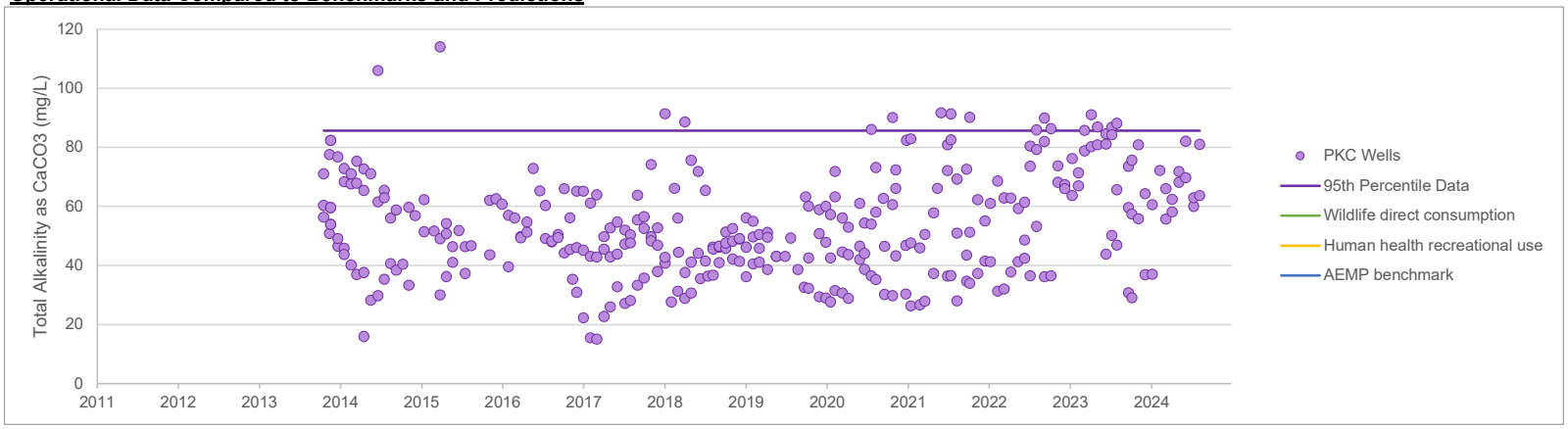


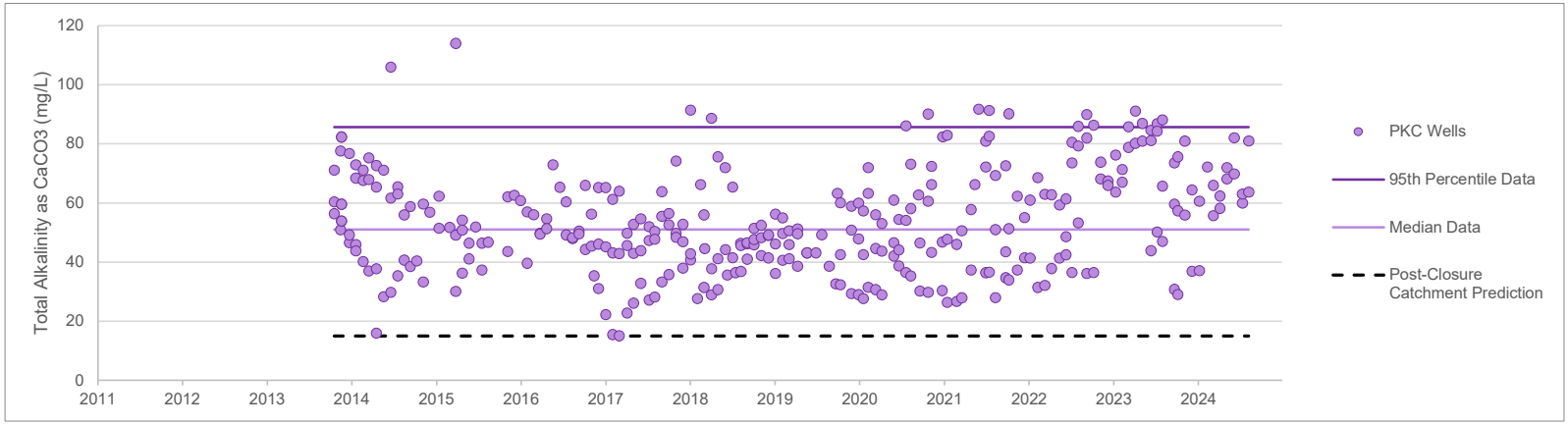
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Dissolved Sulphur (mg/L)	Benchmark	Dissolved Sulphur (mg/L)
95th Percentile	387.6	Wildlife	None
Median	207.0	Human recreational	None
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions



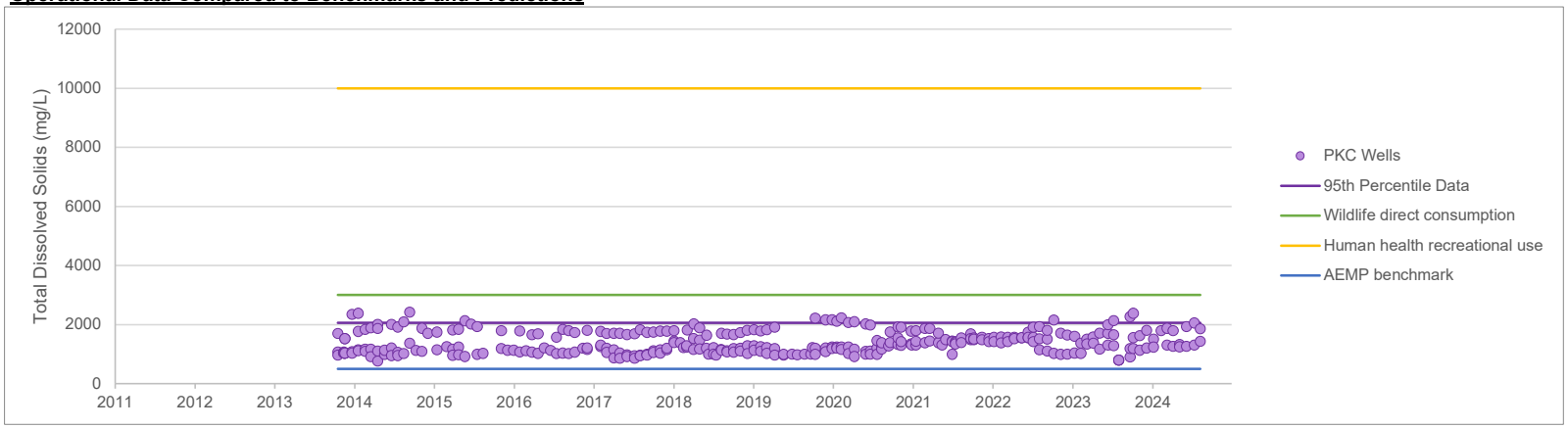


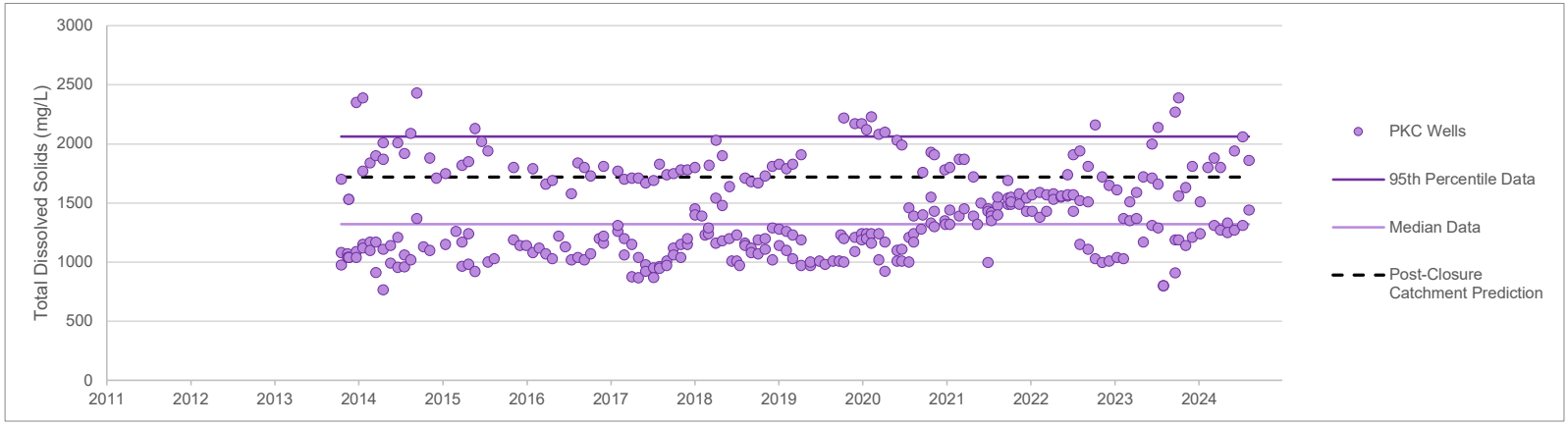
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Alkalinity as CaCO3 (mg/L	Benchmark	Total Alkalinity as CaCO3 (mg/L
95th Percentile	85.7	Wildlife	None
Median	51.0	Human recreational	None
Count	323	AEMP	None

Operational Data Compared to Benchmarks and Predictions

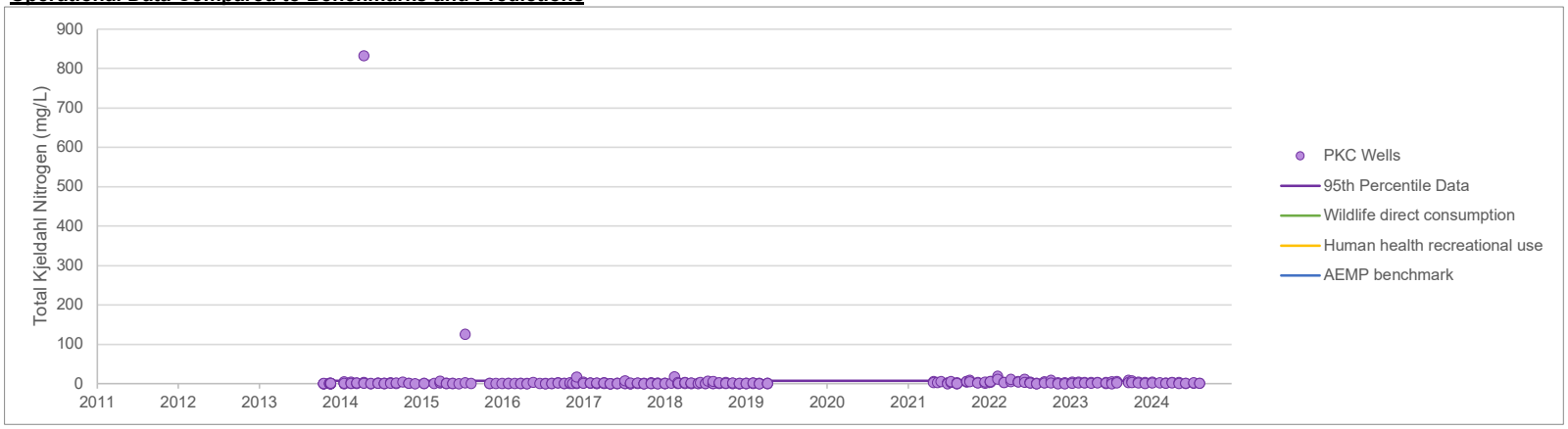


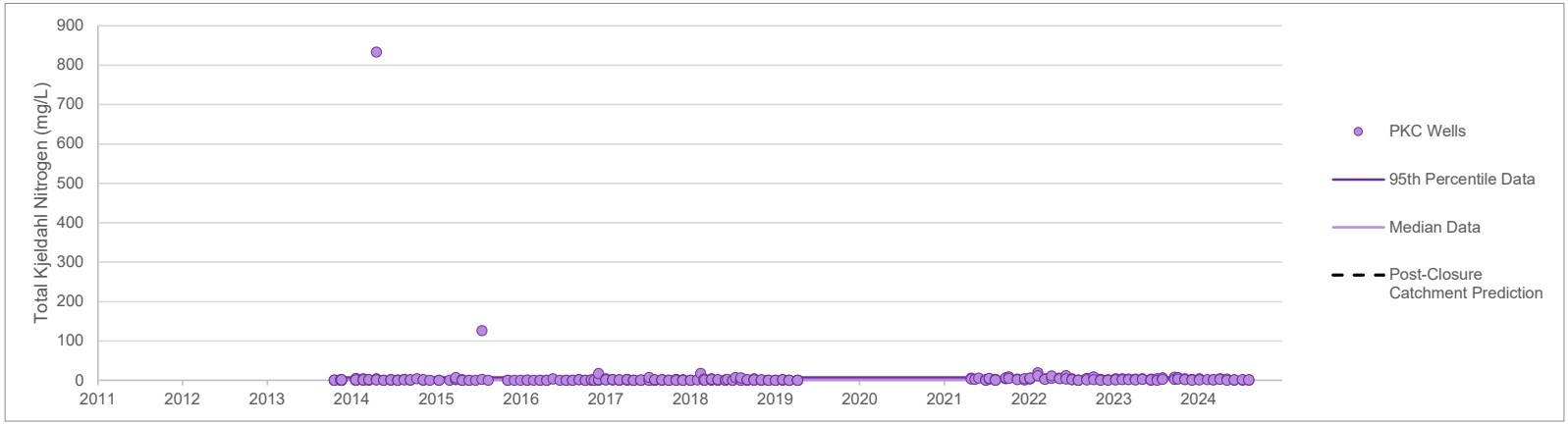


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Dissolved Solids (mg/L)	Benchmark	Total Dissolved Solids (mg/L)
95th Percentile	2063	Wildlife	3000
Median	1320	Human recreational	10000
Count	318	AEMP	500

Operational Data Compared to Benchmarks and Predictions

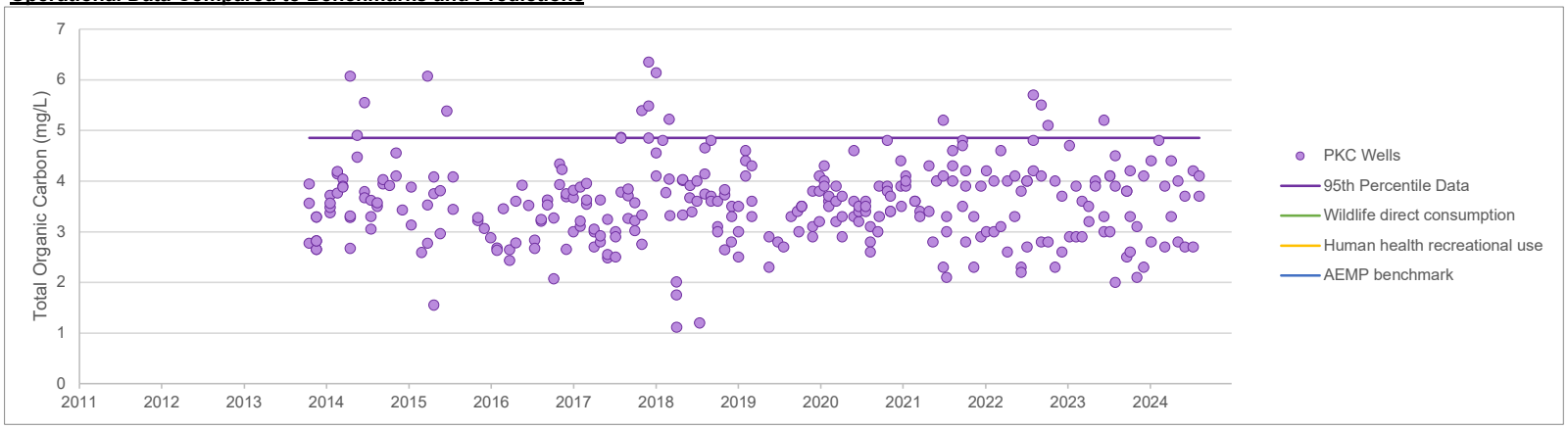


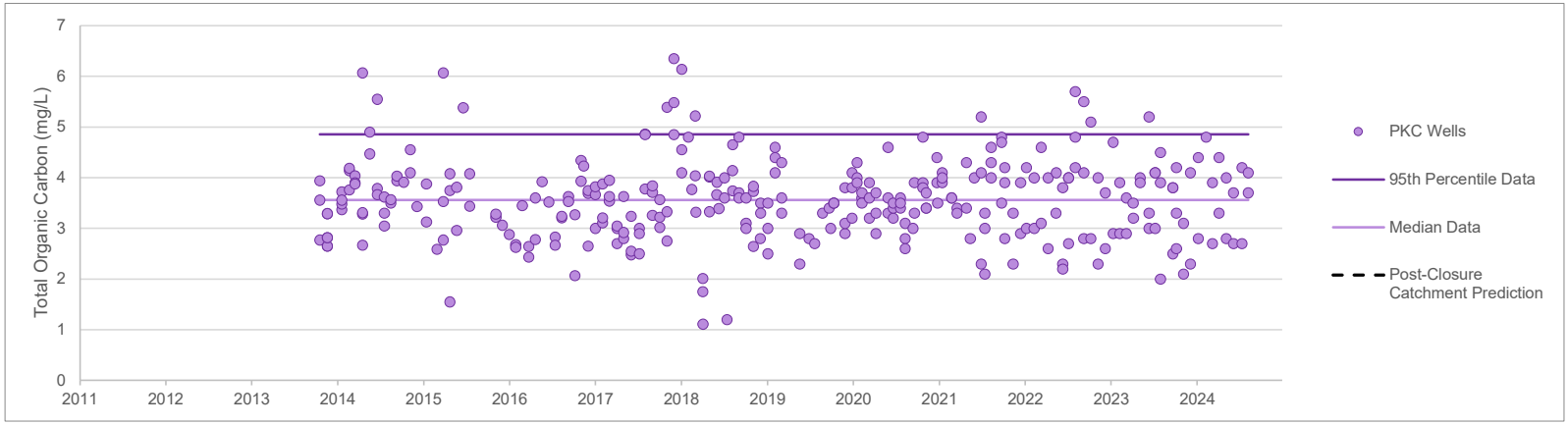


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Kjeldahl Nitrogen (mg/L)	Benchmark	Total Kjeldahl Nitrogen (mg/L)
95th Percentile	7.2	Wildlife	None
Median	1.4	Human recreational	None
Count	262	AEMP	None

Operational Data Compared to Benchmarks and Predictions

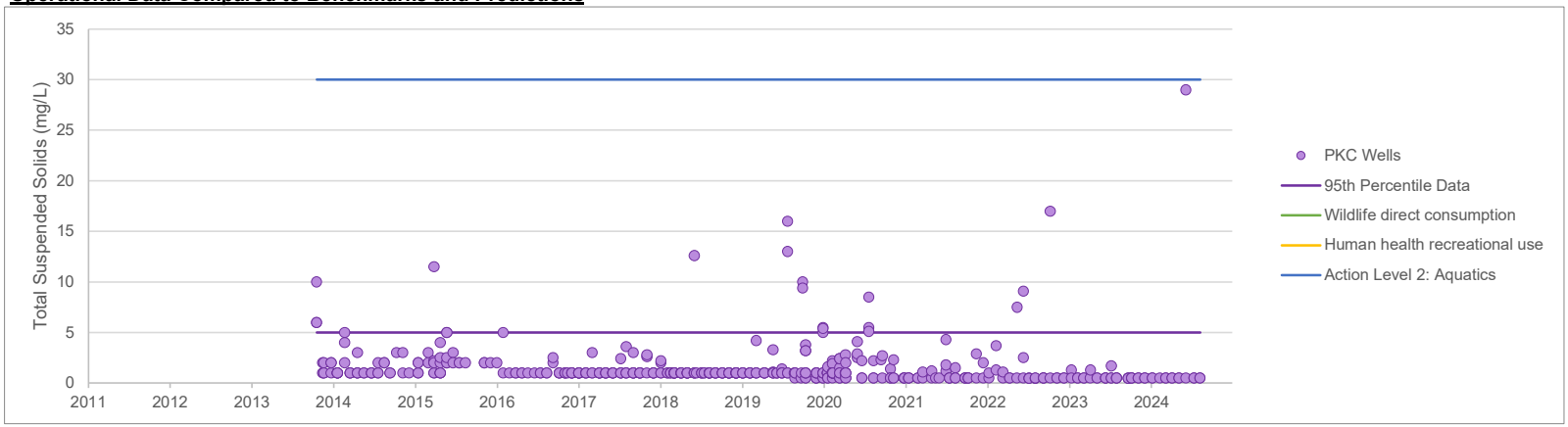


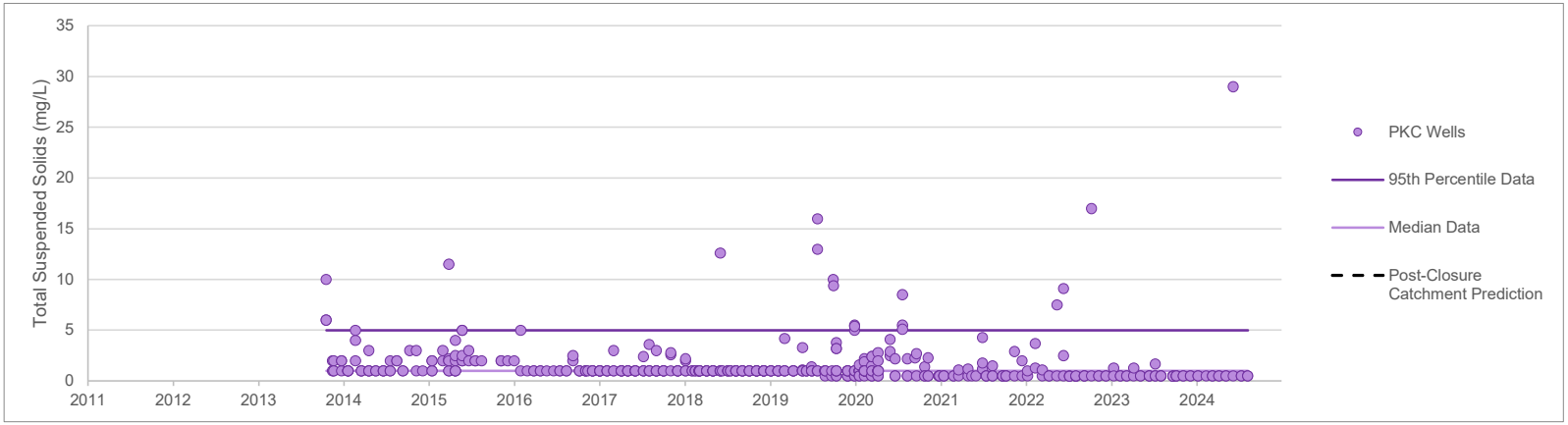


Notes:
Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Organic Carbon (mg/L)	Benchmark	Total Organic Carbon (mg/L)
95th Percentile	4.9	Wildlife	None
Median	3.6	Human recreational	None
Count	314	AEMP	None

Operational Data Compared to Benchmarks and Predictions



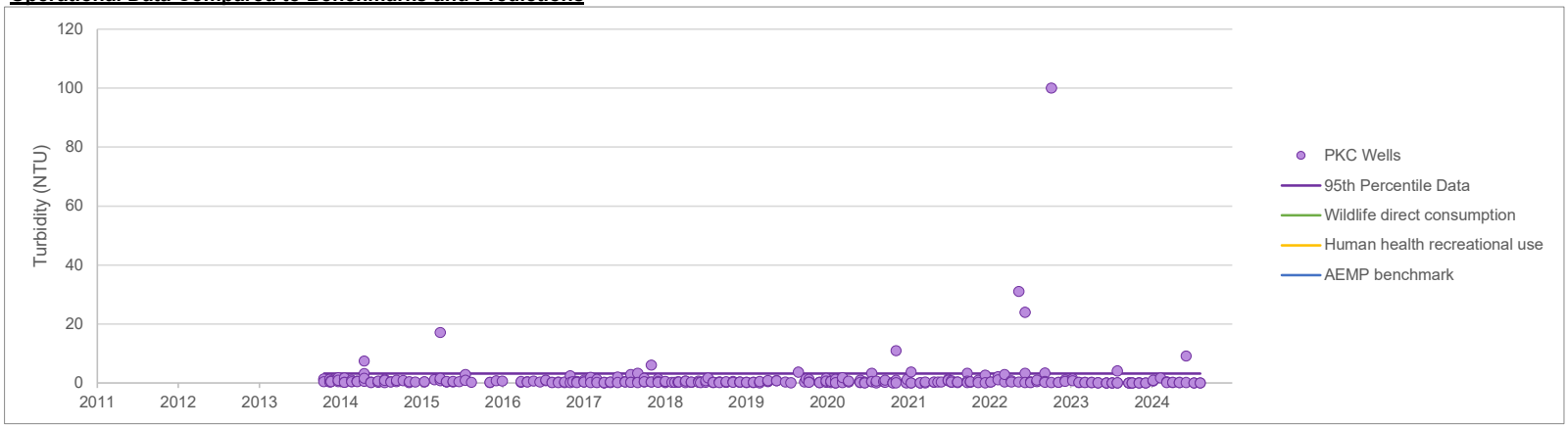


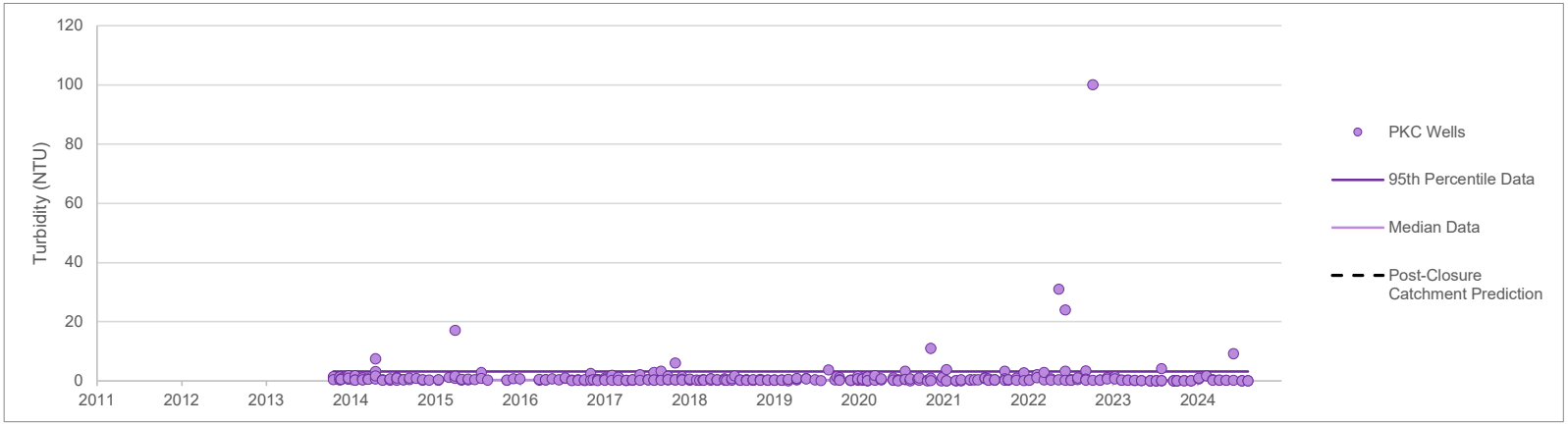
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Total Suspended Solids (mg/L)	Benchmark	Total Suspended Solids (mg/L)
95th Percentile	5.0	Wildlife	None
Median	1.0	Human recreational	None
Count	423	AEMP	30.0

Operational Data Compared to Benchmarks and Predictions



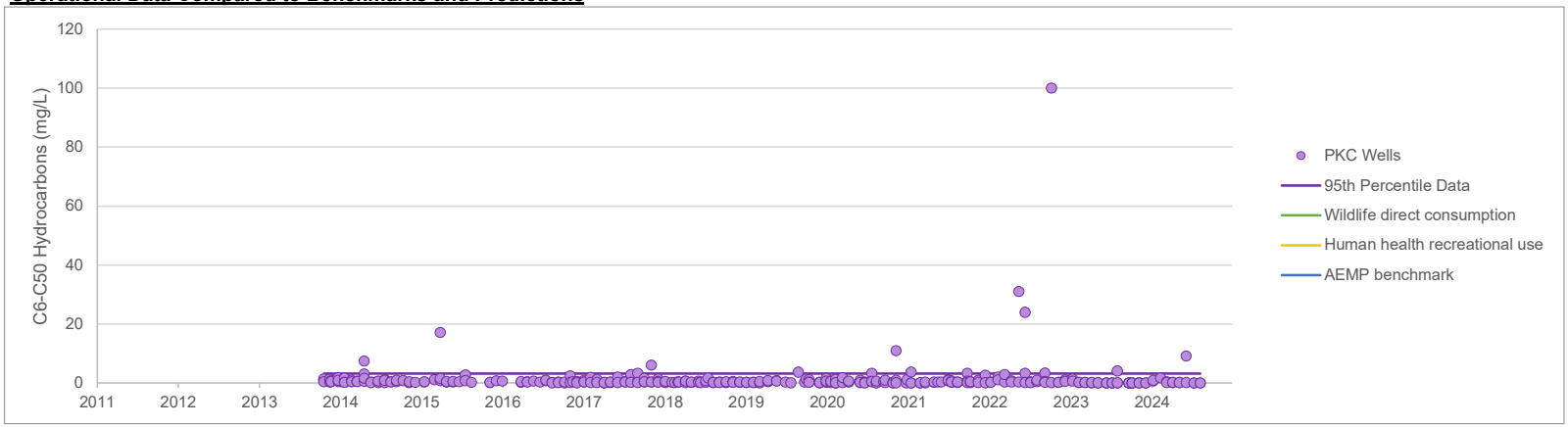


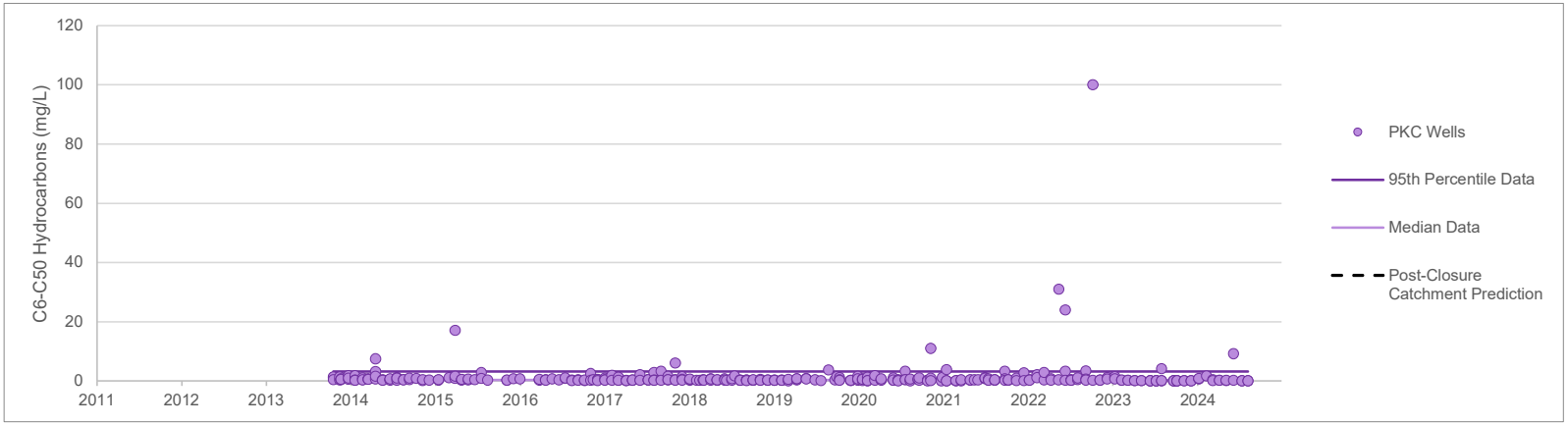
Notes:

Wildlife direct consumption, Human health recreational use, and AEMP benchmarks do not exist for every parameter

SNP Statistic	Turbidity (NTU)	Benchmark	Turbidity (NTU)
95th Percentile	3.2	Wildlife	None
Median	0.3	Human recreational	None
Count	317	AEMP	None

Operational Data Compared to Benchmarks and Predictions





Notes:
Wildlife direct consumption,
Human health recreational use,
and AEMP benchmarks do not exist
for every parameter

SNP Statistic	C6-C50 Hydrocarbons (mg/L)	Benchmark	C6-C50 Hydrocarbons (mg/L)
95th Percentile	0.13	Wildlife	None
Median	0.13	Human recreational	None
Count	3	AEMP	None

RioTinto | Diavik

Toxicity Sample Summary

Summary of results of toxicity samples collected between fall 2020 and summer 2024 at 11 Surveillance Network Program stations in the Drainage Collection and Control network.

Sample Location	Sample Date	48-h *Daphnia magna* [a]	96-h Rainbow Trout [b]	7-d *Ceriodaphnia dubia* [c]		72-h *Pseudokirchneriella subcapitata* [d]
		Survival (% in full-strength dilution)	Survival (% in full-strength dilution)	Survival (% in full-strength dilution relative to control)	Reproduction (% in full-strength dilution relative to control)	Growth (mean cell yield) (% in full-strength dilution relative to control)
1645-76 (Pond 3)	22-Nov-20	-	100 [e]	**22** [e,f]	**14** [e,f,g]	**47** [e,h,i]
1645-87 (Sump E21)	22-Nov-20	-	100 [e]	100 [e]	109 [e]	130 [e]
1645-16 (NW Decant)	22-Nov-20	-	100 [e]	-	-	337
1645-67 (Pond 1)	27-Jun-21	100	-	100	97	181
1645-68 (Pond 2)	27-Jun-21	100	-	-	-	109
1645-76 (Pond 3)	27-Jun-21	100	-	100	103	299
1645-69 (Pond 5)	27-Jun-21	100	-	100	71	295
1645-76 (Pond 3)	26-Jul-21	100 [e]	-	90 [e]	102 [e]	215 [e]
1645-68 (Pond 2)	8-Aug-21	100	-	90	70	173
1645-44 (Pond 7)	8-Aug-21	100	-	80	74	104
1645-45 (Pond 10)	8-Aug-21	100	-	100	93	376
1645-46 (Pond 11)	8-Aug-21	100	-	86	67	239
1645-47 (Pond 12)	8-Aug-21	100	-	100	127	196
1645-74 (Pond 13)	8-Aug-21	100	-	90	108	269
1645-87 (Sump E21)	8-Aug-21	100	-	100	101	200
1645-67 (Pond 1)	19-Sep-21	100	-	100	112	110
1645-68 (Pond 2)	19-Sep-21	100	-	90	110	108
1645-76 (Pond 3)	19-Sep-21	100	-	100	**47**	135
1645-42 (Pond 4)	19-Sep-21	-	-	-	-	-
1645-69 (Pond 5)	19-Sep-21	100	-	100	85	170
1645-44 (Pond 7)	19-Sep-21	100	-	100	190	71
1645-45 (Pond 10)	19-Sep-21	100	-	111	121	161
1645-46 (Pond 11)	19-Sep-21	100	-	111	108	166
1645-47 (Pond 12)	19-Sep-21	100	-	100	100	123
1645-74 (Pond 13)	19-Sep-21	100	-	100	190	150
1645-87 (Sump E21)	19-Sep-21	100	-	100	96	166
1645-44 (Pond 7)	11-Jul-22	100 [e]	-	-	-	-
1645-67 (Pond 1)	18-Jul-22	100	-	-	-	-
1645-68 (Pond 2)	18-Jul-22	100	-	-	-	-
1645-76 (Pond 3)	18-Jul-22	100	-	-	-	-
1645-42 (Pond 4)	18-Jul-22	100	-	-	-	-
1645-69 (Pond 5)	18-Jul-22	100	-	-	-	-
1645-44 (Pond 7)	18-Jul-22	100	-	-	-	-
1645-45 (Pond 10)	18-Jul-22	100	-	-	-	-
1645-46 (Pond 11)	18-Jul-22	100	-	-	-	-
1645-47 (Pond 12)	18-Jul-22	100	-	-	-	-
1645-74 (Pond 13)	18-Jul-22	100	-	-	-	-
1645-87 (Sump E21)	18-Jul-22	100	-	-	-	-
1645-67 (Pond 1)	22-Aug-22	100 [e]	-	90 [e]	93 [e]	92
1645-68 (Pond 2)	22-Aug-22	100 [e]	-	90 [e]	93 [e]	305
1645-76 (Pond 3)	22-Aug-22	100 [e]	-	90 [e]	92 [e]	lab error
1645-42 (Pond 4)	22-Aug-22	100 [e]	-	100 [e]	94 [e]	lab error - recollected
1645-69 (Pond 5)	22-Aug-22	100 [e]	-	100 [e]	105 [e]	lab error - recollected
1645-44 (Pond 7)	29-Aug-22	90 [e]	-	100 [e]	135 [e]	157
1645-45 (Pond 10)	29-Aug-22	100 [e]	-	100 [e]	33 [e]	96
1645-46 (Pond 11)	29-Aug-22	100 [e]	-	90 [e]	96 [e]	169
1645-47 (Pond 12)	29-Aug-22	100 [e]	-	100 [e]	104 [e]	178
1645-74 (Pond 13)	22-Aug-22	100 [e]	-	100 [e]	135 [e]	lab error - recollected
1645-87 (Sump E21)	29-Aug-22	90 [e]	-	100 [e]	96 [e]	158
1645-42 (Pond 4)	12-Sep-22	-	-	-	-	200
1645-69 (Pond 5)	12-Sep-22	-	-	-	-	280
1645-74 (Pond 13)	12-Sep-22	-	-	-	-	223
1645-44 (Pond 7)	3-Oct-22	100 [e]	-	100 [e]	100 [e]	126
1645-76 (Pond 3)	10-Oct-22	-	-	-	-	143
1645-68 (Pond 2)	16-May-23	100 [e]	-	100 [e]	128 [e]	146 [e]
1645-44 (Pond 7)	16-May-23	100 [e]	-	100 [e]	110 [e]	93 [e]
1645-76 (Pond 3)	22-May-23	100 [e]	-	125 [e]	122 [e]	-
1645-42 (Pond 4)	22-May-23	100 [e]	-	100	126	-
1645-69 (Pond 5)	22-May-23	100 [e]	-	100	138	-
1645-46 (Pond 11)	22-May-23	100 [e]	-	100 [e]	119 [e]	-
1645-45 (Pond 10)	22-May-23	100 [e]	-	111	145	-
1645-67 (Pond 1)	19-Jun-23	100 [e]	-	-	-	-
1645-76 (Pond 3)	19-Jun-23	100 [e]	-	-	-	-
1645-42 (Pond 4)	19-Jun-23	100 [e]	-	100 [e]	106 [e]	-
1645-69 (Pond 5)	19-Jun-23	100 [e]	-	100 [e]	107 [e]	-
1645-45 (Pond 10)	19-Jun-23	100 [e]	-	90 [e]	100 [e]	-
1645-46 (Pond 11)	19-Jun-23	100 [e]	-	100 [e]	126 [e]	-
1645-76 (Pond 3)	26-Jun-23	-	-	90 [e]	94 [e]	-
1645-76 (Pond 3)	7-Aug-23	100 [e]	-	100 [e]	75 [e]	-
1645-42 (Pond 4)	7-Aug-23	100 [e]	-	100 [e]	80 [e]	-
1645-69 (Pond 5)	7-Aug-23	100 [e]	-	100 [e]	80 [e]	-
1645-45 (Pond 10)	7-Aug-23	100 [e]	-	70 [e]	**24** [e,f,g]	-
1645-46 (Pond 11)	7-Aug-23	100 [e]	-	100 [e]	134 [e]	-
1645-67 (Pond 1)	28-Aug-23	100 [e]	-	100 [e]	103 [e]	-
1645-68 (Pond 2)	29-Aug-23	100 [e]	-	99 [e]	65 [e]	142 [e]
1645-44 (Pond 7)	29-Aug-23	100 [e]	-	111 [e]	132 [e]	212 [e]
1645-47 (Pond 12)	28-Aug-23	100 [e]	-	90 [e]	78 [e]	-
1645-74 (Pond 13)	28-Aug-23	100 [e]	-	111 [e]	104 [e]	-
1645-87 (Sump E21)	28-Aug-23	100 [e]	-	100 [e]	91 [e]	-
1645-67 (Pond 1)	13-Sep-23	100 [e]	-	90 [e]	108 [e]	-
1645-76 (Pond 3)	13-Sep-23	100 [e]	-	**0** [e,f,g]	**0** [e,f,g]	-
1645-68 (Pond 2)	18-Sep-23	100 [e]	100 [e]	100 [e]	76 [e]	117 [e]
1645-69 (Pond 5)	18-Sep-23	100 [e]	-	100 [e]	86 [e]	-
1645-44 (Pond 7)	18-Sep-23	100 [e]	100 [e]	100 [e]	78 [e]	212 [e]
1645-45 (Pond 10)	18-Sep-23	100 [e]	-	90 [e]	93 [e]	-
1645-46 (Pond 11)	18-Sep-23	100 [e]	-	111 [e]	93 [e]	-
1645-42 (Pond 4)	25-Sep-23	100 [e]	-	90 [e]	75 [e]	-
1645-47 (Pond 12)	25-Sep-23	100 [e]	-	89 [e]	84 [e]	-
1645-74 (Pond 13)	25-Sep-23	100 [e]	-	100 [e]	104 [e]	-
1645-87 (Sump E21)	25-Sep-23	100 [e]	-	111 [e]	100 [e]	-
1645-68 (Pond 2)	27-May-24	100	100	100	119	-
1645-68 (Pond 2)	27-May-24	100	100	100	121	-
1645-68 (Pond 2)	27-May-24	100	100	100	78	-
1645-44 (Pond 7)	27-May-24	100	100	100	96	-
1645-44 (Pond 7)	27-May-24	100	100	100	97	-
1645-44 (Pond 7)	27-May-24	100	100	90	81	-

Notes:

Bolded values indicate the test result failed test criteria. An acute toxicity test was considered a fail if survival of the test organisms was less than 50%. A chronic toxicity test is considered a fail if the test result for the lethal endpoint (i.e., survival) or sublethal endpoints (i.e., reproduction and growth) is less than 50% relative to control.

(a) 48-hour Single concentration survival test using *D. magna* , unless full-dilution series is indicated. Values represent percent survival in full-strength dilution.

(b) 96-hour Single concentration series survival test using rainbow trout (*Oncorhynchus mykiss*). Values represent percent survival in full-strength dilution.

(c) 7-day Single concentration survival and reproduction test using *C. dubia* , unless full-dilution series is indicated. Values represent percent survival and reproduction in full-strength dilution relative to the control.

(d) 72-h Single concentration growth inhibition test using *P. subcapitata* , unless full-dilution series is indicated. Values represent mean cell growth in full-strength dilution relative to the control.

(e) Full-dilution series.

(f) The test result in the 6.25 % v/v (16x dilution) treatment was considered a pass (i.e., greater than or equal to 50% relative to control).

(g) The test result in the 12.5 % v/v (8x dilution) treatment was considered a pass (i.e., greater than or equal to 50% relative to control).

(h) The test result in the 5.7% v/v (16x dilution) treatment was considered a pass (i.e., greater than or equal to 50% relative to control).

(i) The test result in the 11.4 % v/v (8x dilution) treatment was considered a pass (i.e., greater than or equal to 50% relative to control).

h= hour; d =day; % = percentage; v/v = volume per volume; "-" = data not available

RioTinto | Diavik

Toxicity Sample Lab Results

Detailed laboratory result files for the toxicity samples collected between fall 2020 and summer 2024 at 11 Surveillance Network Program stations in the Drainage Collection and Control network

www.bvlabs.com

BUREAU VERITAS LABORATORIES
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: POND 3, E21 SUMP, NW DECANT SUMP

SAMPLING DATE: NOVEMBER 22, 2020

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas Laboratories

Job No.: C086558
December 2020

Summary of Test Results for Samples from
Diavik Diamond Mines Inc.
Sample Date: November 22, 2020

Job C086558

Sample: POND 3

Test		IC25 (% v/v)
P. subcapitata:	Cell yield	63.1 (49.2, 66.3)

Sample: E21 SUMP

Test		IC25 (% v/v)
P. subcapitata:	Cell yield	>90.91 (N/A, N/A)

Sample: NW DECANT SUMP

Test		IC25 (% v/v)
P. subcapitata:	Cell yield	>90.91 (N/A, N/A)

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas Laboratories / Burnaby, BC
Effluent Sample	
Name of Samples	Pond 3, E21 Sump, and NW Decant Sump
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2020/Nov/22
Date (y/m/d) of sample receipt at lab	2020/Nov/24 @ 10:00
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 12:27
Initial cell density of inoculum	9409 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test started	**Pond 3**: 2020/Nov/25 @ 13:00 **E21 Sump**: 2020/ Nov/25 @ 12:58 **NW Decant Sump**: 2020/ Nov/25 @ 12:56
Date & time test ended	2020/Nov/28 @ 12:00
Persons performing test	D. Lai
Mean test temperature	26 °C
Procedure/rate/duration of aeration of sample before test	No aeration of sample
pH adjustment	No pH adjustment
pH of aqueous sample before preparation and use in toxicity test	See “Data Summary” data sheet

pH of sample before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	NaHCO3, CaSO4, MgSO4, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3822-4177 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2020/Nov/28
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**Pond 3**: Yes, significant growth stimulation was found in 1.42% up to 22.728% v/v concentrations. See Dunnett Multiple Comparison Test in CETIS. **E21 Sump**: Yes, significant growth stimulation was found in 2.841 up to the 90.91% v/v concentration. See Dunnett Multiple Comparison Test in CETIS. **NW Decant Sump**: Yes, significant growth stimulation was found in 1.42 up to the 90.91% v/v concentration. See Mann-Whitney U Two-Sample Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**Pond 3**: CETIS v1.9.7.9 – Linear Interpolation (ICPIN) Data was corrected for hormesis as Linear Interpolation (ICPIN) does not take into account the effect of hormesis. Corrected data was used to calculate the IC25. **E21 Sump**: CETIS v1.9.7.9 – Linear Interpolation (ICPIN) **NW Decant Sump**: CETIS v1.9.7.9 – Linear Interpolation (ICPIN)
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	None

QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV **Pond 3**: 17% **E21 Sump**: 12% **NW Decant Sump**: 20% • Trend in the controls? **Pond 3**: No **E21 Sump**: No **NW Decant Sump**: No • Algal cells increased by: **Pond 3**: 39.93 **E21 Sump**: 39.19 **NW Decant Sump**: 38.35
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.0451; 2SD: (0.0350, 0.0582) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0274; 2SD: (0.0144, 0.0521) 3SD: (0.0104, 0.0719)
Invalid Ref tox test?	No The IC50 was outside of 2SD of the previous mean but within 3SD of the previous mean. The results of the reference toxicant test indicated that the test organisms were less sensitive to the reference toxicant ($ZnSO_4 \cdot 7H_2O$). The data was reviewed, and the test appeared normal. The test was included in the control chart.
Date of ref tox test (y/m/d)	2020/Nov/17
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Report Date: 28 Nov-20 18:06 (p 1 of 2)
Test Code/ID: SL-4388-0520 / 05-3660-4601

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	18-9263-8617	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 18:05	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5D79C72E119CF4DC7FDFE87C6D5681B	**Editor ID:**	

Batch ID:	17-0292-6282	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	25 Nov-20 13:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	28 Nov-20 12:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	10-8617-5883	**Code:**	C086558	**Project:**	2-11-0691
Sample Date:	22 Nov-20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	24 Nov-20 10:00	**CAS (PC):**		**Station:**	POND 3
Sample Age:	85h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Untransformed	C <> T	<1.42	1.42	---	>70.42	11.1	27.79%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42*	4.108	2.919	11.1	9	CDF	0.0033	Significant Effect
		2.841*	5.589	2.919	11.1	9	CDF	0.0001	Significant Effect
		5.682*	6.312	2.919	11.1	9	CDF	2.2E-05	Significant Effect
		11.364*	7.307	2.919	11.1	9	CDF	<1.0E-05	Significant Effect
		22.728*	5.629	2.919	11.1	9	CDF	9.6E-05	Significant Effect
		45.455	0.8114	2.919	11.1	9	CDF	0.9633	Non-Significant Effect
		90.91*	5.566	2.919	11.1	9	CDF	0.0001	Significant Effect

Auxiliary Tests

ttribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
utlier	Grubbs Extreme Value Test	2.563	2.893	0.1908	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.563		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6252.02	893.145	7	28.31	<1.0E-05	Significant Effect
Error	662.46	31.5457	21			
Total	6914.47		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.932	18.48	0.4360	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9393	0.9004	0.0962	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	39.93	34.18	45.68	37.72	32.8	52.4	2.433	17.23%	0.00%
1.42		3	55.55	42.01	69.09	57.25	49.45	59.95	3.148	9.82%	-39.11%
2.841		3	61.18	41.14	81.23	56.6	56.45	70.5	4.659	13.19%	-53.22%
5.682		3	63.93	57.87	69.99	62.55	62.5	66.75	1.408	3.82%	-60.11%
11.364		3	67.72	51.4	84.03	64.05	63.8	75.3	3.792	9.70%	-69.58%
22.728		3	61.33	54.2	68.47	59.75	59.6	64.65	1.659	4.68%	-53.60%
45.455		3	43.02	35.06	50.98	44.15	39.4	45.5	1.85	7.45%	-7.73%
90.91		3	18.77	14.41	23.12	18.9	16.95	20.45	1.013	9.35%	53.00%

Analyst: DCH 7020 QA: KY DCH 7020

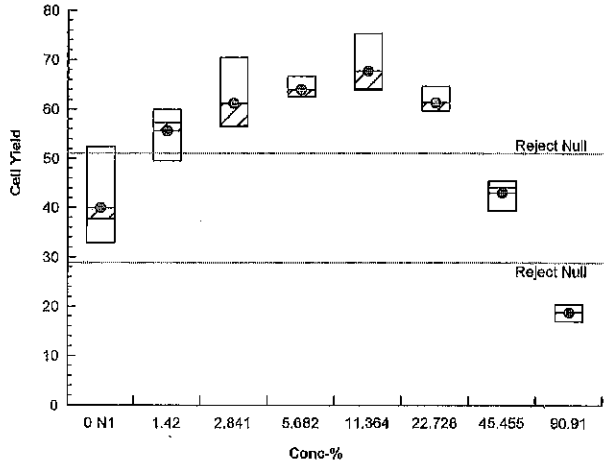
Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

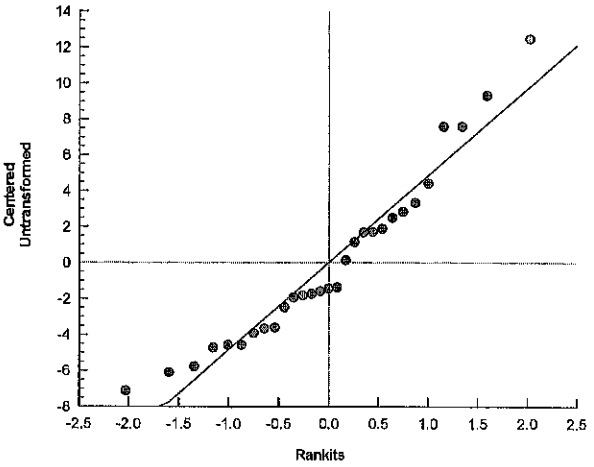
Analysis ID:	18-9263-8617	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 18:05	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5D79C72E119CF4DC7FDFE87C6D5681B	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	41.8	35.35	34.15	37.45	52.4	47.5	38	32.8
1.42		57.25	49.45	59.95					
2.841		70.5	56.6	56.45					
5.682		62.55	66.75	62.5					
11.364		75.3	63.8	64.05					
22.728		59.6	64.65	59.75					
45.455		39.4	45.5	44.15					
90.91		20.45	18.9	16.95					

Graphics





CETIS Analytical Report

Report Date: 28 Nov-20 17:53 (p 1 of 2)
Test Code/ID: SL-4388-0520 / 05-3660-4601

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	17-6177-7936	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 17:53	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:		MD5 Hash:	5D79C72E119CF4DC7FDFE87C6D5681B	Editor ID:	

Batch ID:	17-0292-6282	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	25 Nov-20 13:00	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	28 Nov-20 12:00	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	10-8617-5883	Code:	C086558	Project:	2-11-0691
Sample Date:	22 Nov-20	Material:	Water	Source:	Diavik
Receipt Date:	24 Nov-20 10:00	CAS (PC):		Station:	POND 3
Sample Age:	85h	Client:	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	377337	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC10	29.67	26.49	33.96	3.371	2.944	3.775
IC15	33.87	28.96	41.31	2.953	2.421	3.454
IC20	38.64	31.28	50.11	2.588	1.995	3.197
IC25	44.07	33.72	52.82	2.269	1.893	2.965
IC40	57.27	48.56	64.15	1.746	1.559	2.059
IC50	67.65	60.47	74.52	1.478	1.342	1.654

not corrected for hormesis. DMC 2020 nov26

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	39.93	37.72	32.8	52.4	17.23%	0.00%	58.27	0.00%
1.42		3	55.55	57.25	49.45	59.95	9.82%	-39.11%	58.27	0.00%
2.841		3	61.18	56.6	56.45	70.5	13.19%	-53.22%	58.27	0.00%
5.682		3	63.93	62.55	62.5	66.75	3.82%	-60.11%	58.27	0.00%
11.364		3	67.72	64.05	63.8	75.3	9.70%	-69.58%	58.27	0.00%
22.728		3	61.33	59.75	59.6	64.65	4.68%	-53.60%	58.27	0.00%
45.455		3	43.02	44.15	39.4	45.5	7.45%	-7.73%	43.02	26.18%
90.91		3	18.77	18.9	16.95	20.45	9.35%	53.00%	18.77	67.80%

Cell Yield Detail

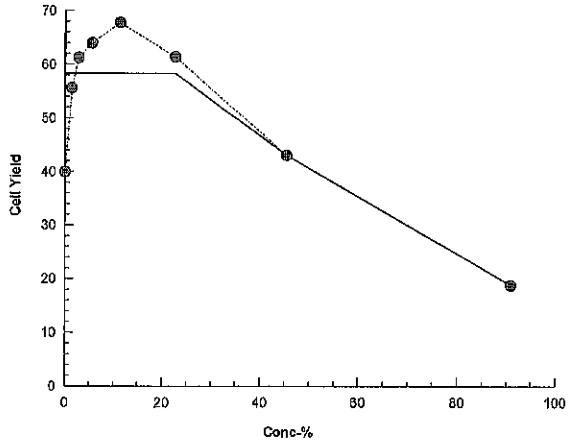
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	41.8	35.35	34.15	37.45	52.4	47.5	38	32.8
1.42		57.25	49.45	59.95					
2.841		70.5	56.6	56.45					
5.682		62.55	66.75	62.5					
11.364		75.3	63.8	64.05					
22.728		59.6	64.65	59.75					
45.455		39.4	45.5	44.15					
90.91		20.45	18.9	16.95					

Analyst: DMC 2020 Nov26 QA: KA 2020 Dec14

Alga Growth Inhibition Test — Bureau Veritas Laboratories

nalysis ID:	17-6177-7936	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 17:53	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:		MD5 Hash:	5D79C72E119CF4DC7FDFE87C6D5681B	Editor ID:	

Graphics



CETIS Analytical Report

Report Date:	14 Dec-20 13:39 (p 1 of 2)
Test Code/ID:	SL-4388-0520 / 05-3660-4601

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

Analysis ID:	12-8467-7973	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	14 Dec-20 13:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	14 Dec-20 13:38	**MD5 Hash:**	BA93F2F97FA459790BBC7E98A2D40C58	**Editor ID:**	003-103-615-8

Batch ID:	17-0292-6282	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	25 Nov-20 13:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	28 Nov-20 12:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	10-8617-5883	**Code:**	C086558	**Project:**	2-11-0691
Sample Date:	22 Nov-20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	24 Nov-20 10:00	**CAS (PC):**		**Station:**	POND 3
Sample Age:	85h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1292980	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC10	51.84	38.76	52.87	1.929	1.891	2.58
IC15	55.35	41.95	57.01	1.807	1.754	2.384
IC20	59.1	45.4	61.46	1.692	1.627	2.203
IC25	63.09	49.18	66.25	1.585	1.509	2.033
IC40	76.74	63.34	82.92	1.303	1.206	1.579
IC50	87.42	72.73	---	1.144	---	1.375

Data corrected for normess
Data used to calculate the IC25
KA 2020 Dec 14

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	39.93	37.72	32.8	52.4	17.23%	0.00%	39.93	0.00%
1.42		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
2.841		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
5.682		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
11.364		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
22.728		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
45.455		3	39.93	39.93	39.93	39.93	0.00%	0.00%	39.93	0.00%
90.91		3	18.77	18.9	16.95	20.45	9.35%	53.00%	18.77	53.00%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	41.8	35.35	34.15	37.45	52.4	47.5	38	32.8
1.42		39.93	39.93	39.93					
2.841		39.93	39.93	39.93					
5.682		39.93	39.93	39.93					
11.364		39.93	39.93	39.93					
22.728		39.93	39.93	39.93					
45.455		39.93	39.93	39.93					
90.91		20.45	18.9	16.95					

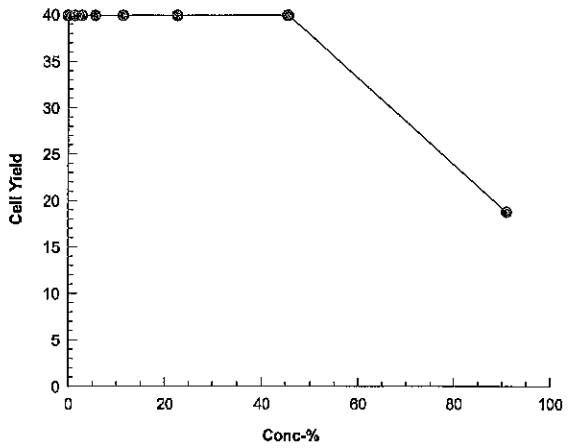
2020 Dec 14

Analyst: KA 2020 Dec 14 QA: MO

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

Analysis ID:	12-8467-7973	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	14 Dec-20 13:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	14 Dec-20 13:38	**MD5 Hash:**	BA93F2F97FA459790BBC7E98A2D40C58	**Editor ID:**	003-103-615-8

Graphics



2020
Dec/14

Client Name: Diavik Diamond Mines Inc.
Sample ID: Pond 3
Date Sampled: 2020 Nov 22
Job / Sample #: C086558, YX4618
Date & Time Started: 2020 Nov 25 @ 13:00
Date & Time Ended: 2020 Nov 28 @ 12:00
Analyst(s): D. Lai
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	46.3	39.3	41.80	39.93	6.88	17
Lab Control	D3	39.7	33.0	35.35			
Lab Control	D4	31.8	38.5	34.15			
Lab Control	D5	40.8	36.1	37.45			
Lab Control	D8	47.3	59.5	52.40			
Lab Control	D9	53.1	43.9	47.50			
Lab Control	D10	36.7	41.3	38.00			
Lab Control	D11	33.8	33.8	32.80			
1.420	C8	64.1	52.4	57.25	55.55	5.45	10
1.420	E8	48.7	52.2	49.45			
1.420	F8	54.4	67.5	59.95			
2.841	C7	70.1	72.9	70.50	61.18	8.07	13
2.841	E7	51.8	63.4	56.60			
2.841	F7	52.6	62.3	56.45			
5.682	C6	68.6	58.5	62.55	63.93	2.44	4
5.682	E6	59.4	76.1	66.75			
5.682	F6	57.9	69.1	62.50			
11.364	C5	74.0	78.6	75.30	67.72	6.57	10
11.364	E5	59.3	70.3	63.80			
11.364	F5	71.6	58.5	64.05			
22.728	C4	68.5	52.7	59.60	61.33	2.87	5
22.728	E4	70.2	61.1	64.65			
22.728	F4	66.0	55.5	59.75			
45.455	C3	42.9	37.9	39.40	43.02	3.20	7
45.455	E3	50.6	42.4	45.50			
45.455	F3	45.5	44.8	44.15			
90.91	C2	17.8	25.1	20.45	18.77	1.75	9
90.91	E2	22.8	17.0	18.90			
90.91	F2	20.8	15.1	16.95			

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C086558, YX4618

Date Sampled: 2020 Nov 22

Sample ID: Pond 3

Date Received: 2020 Nov 24

Culture Date: ~~23 Nov~~ Nov 22 2020 DRS

Date & Time Started: 2020 Nov 25 @ 1300

Culture Description: Green

Date & Time Ended: 2020 nov 28 @ 1200

Light Intensity at Surface (lux): 3822-4177

Analyst(s): D.Lao

Instrument ID(s): BBY2-0290, BBY2-0006, BBY2-0111, BBY2-0408

Temperature (°C):

Day 0: 26 Day 1: 26 Day 2: 26 Day 3: 26

Sample Water Quality

Intial pH: 7.5 Initial Temp (°C): 24.0 Sample Description: clear, colorless

Initial Filtered pH (well B2): 7.8 Final Filtered pH (well B2): 8.0

Control Water Quality

Initial Filtered pH (well D6): 7.4 Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 20.7 (*10^4 cells/mL)

Time of inoculum prep: 1227

Therefore, (**Xi**) 2070 cells were initially put into each test well and the initial cell density

was (**Xd**) 9409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 20.7x10⁴) * 0.02] = 2070 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2070) * (4.5455)] = 9409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2020 Nov 26	Y	N	Y	dml
2020 nov 27	Y	N	Y	dml
2020 nov 28	Y	N		dml

CETIS Analytical Report

Report Date:	28 Nov-20 18:05 (p 1 of 2)
Test Code/ID:	SL-4388-0620 / 08-0499-1671

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	17-0075-5497	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 18:04	Analysis:	Parametric-Control vs Treatments	Status Level:	1
Edit Date:		MD5 Hash:	B4CF990B803A55B21C1AE67D62FD1C51	Editor ID:	

Batch ID:	13-3540-4717	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	25 Nov-20 12:58	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	28 Nov-20 12:00	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	09-8517-9693	Code:	C86558	Project:	2-11-0691
Sample Date:	22 Nov-20	Material:	Water	Source:	Diavik
Receipt Date:	24 Nov-20 10:00	CAS (PC):		Station:	E21 Sump
Sample Age:	85h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Untransformed	C <> T	1.42	2.841	2.009	70.42	11.1	28.32%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42	2.265	2.919	11.1	9	CDF	0.1866	Non-Significant Effect
		2.841*	3.269	2.919	11.1	9	CDF	0.0231	Significant Effect
		5.682*	3.584	2.919	11.1	9	CDF	0.0113	Significant Effect
		11.364*	4.373	2.919	11.1	9	CDF	0.0018	Significant Effect
		22.728*	7.065	2.919	11.1	9	CDF	<1.0E-05	Significant Effect
		45.455*	4.404	2.919	11.1	9	CDF	0.0016	Significant Effect
		90.91*	3.089	2.919	11.1	9	CDF	0.0345	Significant Effect

Auxiliary Tests

ttribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.022	2.893	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.022		0.1087	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1962.57	280.366	7	8.888	4.3E-05	Significant Effect
Error	662.462	31.5458	21			
Total	2625.03		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.519	18.48	0.8332	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9272	0.9004	0.0467	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	39.19	35.38	43	39.85	33.85	44.85	1.61	11.62%	0.00%
1.42		3	47.8	34.75	60.85	46.6	43.25	53.55	3.033	10.99%	-21.98%
2.841		3	51.62	46.46	56.77	52.25	49.3	53.3	1.197	4.02%	-31.72%
5.682		3	52.82	35.24	70.4	53.8	45.3	59.35	4.086	13.40%	-34.78%
11.364		3	55.82	42.18	69.45	57.1	49.8	60.55	3.169	9.83%	-42.43%
22.728		3	66.05	51.99	80.11	68.7	59.55	69.9	3.268	8.57%	-68.55%
45.455		3	55.93	34.55	77.31	59.6	46.1	62.1	4.969	15.39%	-42.73%
90.91		3	50.93	35.15	66.72	51.9	44.15	56.75	3.669	12.48%	-29.97%

Analyst: 2020 Nov 26 QA: 2020 Dec 14

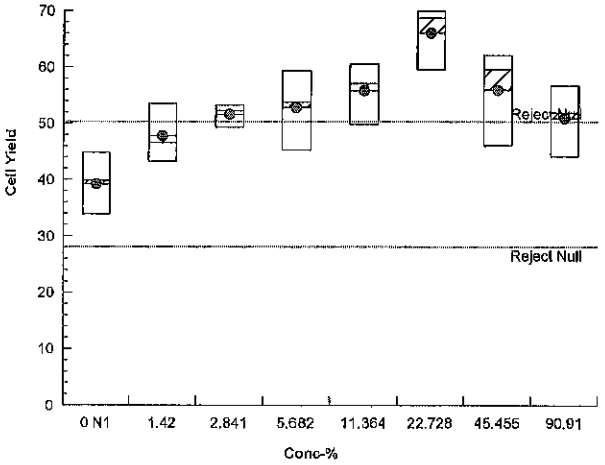
Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

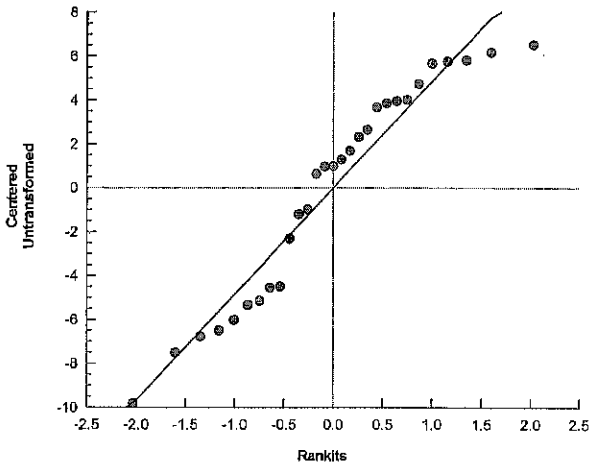
nalysis ID:	17-0075-5497	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 18:04	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B4CF990B803A55B21C1AE67D62FD1C51	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	43.2	41.5	44.85	38.2	34.7	34.05	33.85	43.15
1.42		43.25	46.6	53.55					
2.841		52.25	49.3	53.3					
5.682		59.35	53.8	45.3					
11.364		49.8	57.1	60.55					
22.728		68.7	69.9	59.55					
45.455		59.6	62.1	46.1					
90.91		51.9	56.75	44.15					

Graphics





CETIS Analytical Report

Report Date:	28 Nov-20 17:56 (p 1 of 2)
Test Code/ID:	SL-4388-0620 / 08-0499-1671

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	13-9050-2102	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 17:56	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:		MD5 Hash:	B4CF990B803A55B21C1AE67D62FD1C51	Editor ID:	

Batch ID:	13-3540-4717	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	25 Nov-20 12:58	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	28 Nov-20 12:00	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	09-8517-9693	Code:	C86558	Project:	2-11-0691
Sample Date:	22 Nov-20	Material:	Water	Source:	Diavik
Receipt Date:	24 Nov-20 10:00	CAS (PC):		Station:	E21 Sump
Sample Age:	85h	Client:	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	2036003	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC10	>90.91	---	---	<1.1	---	---
IC15	>90.91	---	---	<1.1	---	---
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	39.19	39.85	33.85	44.85	11.62%	0.00%	52.75	0.00%
1.42		3	47.8	46.6	43.25	53.55	10.99%	-21.98%	52.75	0.00%
2.841		3	51.62	52.25	49.3	53.3	4.02%	-31.72%	52.75	0.00%
5.682		3	52.82	53.8	45.3	59.35	13.40%	-34.78%	52.75	0.00%
11.364		3	55.82	57.1	49.8	60.55	9.83%	-42.43%	52.75	0.00%
22.728		3	66.05	68.7	59.55	69.9	8.57%	-68.55%	52.75	0.00%
45.455		3	55.93	59.6	46.1	62.1	15.39%	-42.73%	52.75	0.00%
90.91		3	50.93	51.9	44.15	56.75	12.48%	-29.97%	50.93	3.44%

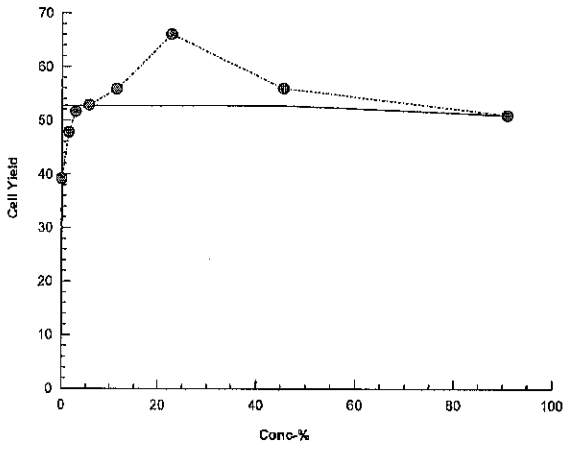
Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	43.2	41.5	44.85	38.2	34.7	34.05	33.85	43.15
1.42		43.25	46.6	53.55					
2.841		52.25	49.3	53.3					
5.682		59.35	53.8	45.3					
11.364		49.8	57.1	60.55					
22.728		68.7	69.9	59.55					
45.455		59.6	62.1	46.1					
90.91		51.9	56.75	44.15					

Alga Growth Inhibition Test — Bureau Veritas Laboratories

nalysis ID:	13-9050-2102	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 17:56	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:		MD5 Hash:	B4CF990B803A55B21C1AE67D62FD1C51	Editor ID:	

Graphics



Pseudokirchneriella subcapitata Test
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: E21 Sump
Date Sampled: 2020 Nov 22
Job / Sample #: C086558, YX4619
Date & Time Started: 2020 Nov 25 @ 12:58
Date & Time Ended: 2020 Nov 28 @ 12:00
Analyst(s): D. Lai
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	43.6	44.8	43.20	39.19	4.55	12
Lab Control	D3	46.7	38.3	41.50			
Lab Control	D4	58.2	33.5	44.85			
Lab Control	D5	29.9	48.5	38.20			
Lab Control	D8	33.5	37.9	34.70			
Lab Control	D9	29.0	41.1	34.05			
Lab Control	D10	37.6	32.1	33.85			
Lab Control	D11	51.6	36.7	43.15			
1.420	C8	55.7	32.8	43.25	47.80	5.25	11
1.420	E8	45.4	49.8	46.60			
1.420	F8	54.1	55.0	53.55			
2.841	C7	52.4	54.1	52.25	51.62	2.07	4
2.841	E7	59.0	41.6	49.30			
2.841	F7	52.8	55.8	53.30			
5.682	C6	58.3	62.4	59.35	52.82	7.08	13
5.682	E6	66.7	42.9	53.80			
5.682	F6	44.4	48.2	45.30			
11.364	C5	48.6	53.0	49.80	55.82	5.49	10
11.364	E5	52.8	63.4	57.10			
11.364	F5	70.9	52.2	60.55			
22.728	C4	75.8	63.6	68.70	66.05	5.66	9
22.728	E4	61.8	80.0	69.90			
22.728	F4	51.2	69.9	59.55			
45.455	C3	54.8	66.4	59.60	55.93	8.61	15
45.455	E3	62.8	63.4	62.10			
45.455	F3	46.8	47.4	46.10			
90.91	C2	60.6	45.2	51.90	50.93	6.36	12
90.91	E2	45.4	70.1	56.75			
90.91	F2	47.6	42.7	44.15			

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C086558, YX4619

Date Sampled: 2020 Nov 22

Sample ID: E21 Sump

Date Received: 2020 Nov 24

Culture Date: ~~23 Nov~~ Nov 22 2020 DCM

Date & Time Started: 2020 Nov 25 @ 1258

Culture Description: Green

Date & Time Ended: 2020 nov 28 @ 1200

Light Intensity at Surface (lux): 3822-4477

Analyst(s): D. Lai

Instrument ID(s): BBY2-0290, BBY2-0006, BBY2-0111, BBY2-0408

Temperature (°C):

Day 0: 26 Day 1: 26 Day 2: 26 Day 3: 26

Sample Water Quality

Intial pH: 6.7 Initial Temp (°C): 22.9 Sample Description: Clear, yellow

Initial Filtered pH (well B2): 7.2 Final Filtered pH (well B2): 8.0

Control Water Quality

Initial Filtered pH (well D6): 7.4 Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 20.7 (*10^4 cells/mL)

Time of inoculum prep: 1227

Therefore, (**Xi**) 2070 cells were initially put into each test well and the initial cell density was (**Xd**) 9409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 20.7x10^4) * 0.02] = 2070 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2070) * (4.5455)] = 9409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2020 Nov 26	Y	N	Y	dml
2020 Nov 27	Y	N	Y	dml
2020 Nov 28	Y	N		dml

CETIS Analytical Report

Report Date: 28 Nov-20 18:04 (p 1 of 2)
Test Code/ID: SL-4388-0720 / 05-1994-1674

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

Analysis ID:	01-8032-8641	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	28 Nov-20 18:03	Analysis:	Nonparametric-Two Sample	Status Level:	1
Edit Date:		MD5 Hash:	EBA9538AA4830927212832EB75123525	Editor ID:	

Batch ID:	13-4158-9973	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	25 Nov-20 12:56	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	28 Nov-20 12:00	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	17-2212-1229	Code:	C086558	Project:	2-11-0691
Sample Date:	22 Nov-20	Material:	Water	Source:	Diavik
Receipt Date:	24 Nov-20 10:00	CAS (PC):		Station:	NW Decant Sump
Sample Age:	85h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Untransformed	C <> T	<1.42	1.42	---	>70.42	30.22	78.79%

Mann-Whitney U Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42*	24	---	0	9	Exact	0.0121	Significant Effect
		2.841*	24	---	0	9	Exact	0.0121	Significant Effect
		5.682*	24	---	0	9	Exact	0.0121	Significant Effect
		11.364*	24	---	0	9	Exact	0.0121	Significant Effect
		22.728*	24	---	0	9	Exact	0.0121	Significant Effect
		45.455*	24	---	0	9	Exact	0.0121	Significant Effect
		90.91*	24	---	0	9	Exact	0.0121	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.792	2.893	0.0776	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.792		1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	25311.1	3615.87	7	9.288	3.1E-05	Significant Effect
Error	8175.45	389.307	21			
Total	33486.6		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	22.09	18.48	0.0024	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9262	0.9004	0.0438	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	38.35	32.08	44.62	36.72	30.25	52.9	2.652	19.56%	0.00%
1.42		3	57.88	46.5	69.27	56.5	54.15	63	2.647	7.92%	-50.93%
2.841		3	67.28	56.51	78.06	67.95	62.65	71.25	2.505	6.45%	-75.45%
5.682		3	63.65	47	80.3	66.45	56	68.5	3.871	10.53%	-65.97%
11.364		3	88.85	57.31	120.4	84.5	78.9	103.2	7.33	14.29%	-131.68%
22.728		3	100	52.08	148	98.7	81.45	120	11.15	19.30%	-160.89%
45.455		3	100.4	4.725	196.1	90.35	67.95	143	22.24	38.36%	-161.89%
90.91		3	129.1	24.12	234.2	144	81.45	162	24.41	32.74%	-236.77%

Analyst: 2020 Nov 30 QA: 2020 DEC 14

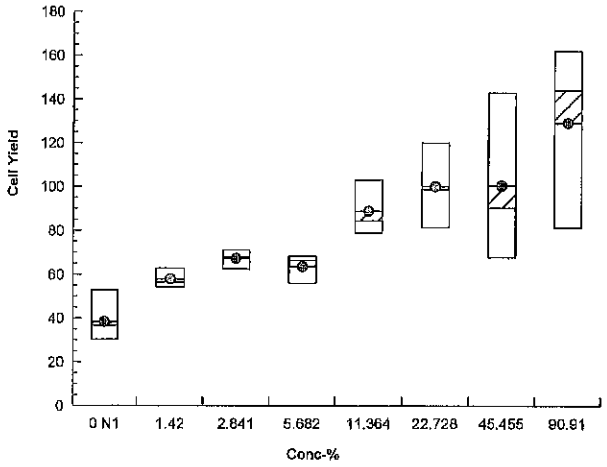
Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

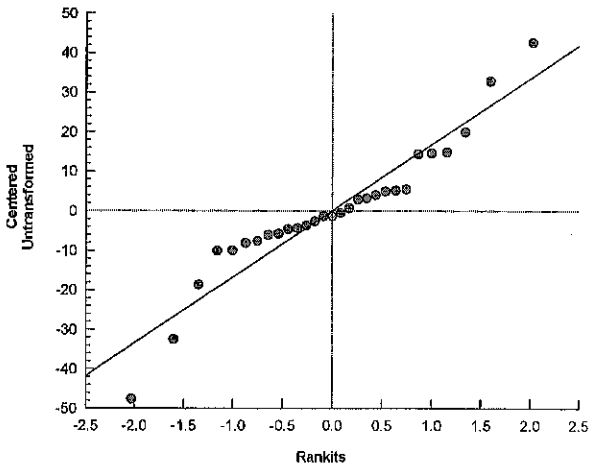
Analysis ID:	01-8032-8641	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 18:03	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	EBA9538AA4830927212832EB75123525	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	43.8	32.3	52.9	30.25	32.6	41.5	35.7	37.75
1.42		63	56.5	54.15					
2.841		62.65	71.25	67.95					
5.682		66.45	56	68.5					
11.364		78.9	103.2	84.5					
22.728		120	98.7	81.45					
45.455		90.35	67.95	143					
90.91		81.45	162	144					

Graphics





CETIS Analytical Report

Report Date: 28 Nov-20 17:59 (p 1 of 2)
Test Code/ID: SL-4388-0720 / 05-1994-1674

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	09-0741-6422	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 17:58	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	EBA9538AA4830927212832EB75123525	**Editor ID:**	

Batch ID:	13-4158-9973	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	25 Nov-20 12:56	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	28 Nov-20 12:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	17-2212-1229	**Code:**	C086558	**Project:**	2-11-0691
Sample Date:	22 Nov-20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	24 Nov-20 10:00	**CAS (PC):**		**Station:**	NW Decant Sump
Sample Age:	85h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	2068107	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC10	>90.91	---	---	<1.1	---	---
IC15	>90.91	---	---	<1.1	---	---
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	38.35	36.72	30.25	52.9	19.56%	0.00%	80.71	0.00%
1.42		3	57.88	56.5	54.15	63	7.92%	-50.93%	80.71	0.00%
2.841		3	67.28	67.95	62.65	71.25	6.45%	-75.45%	80.71	0.00%
5.682		3	63.65	66.45	56	68.5	10.53%	-65.97%	80.71	0.00%
11.364		3	88.85	84.5	78.9	103.2	14.29%	-131.68%	80.71	0.00%
22.728		3	100	98.7	81.45	120	19.30%	-160.89%	80.71	0.00%
45.455		3	100.4	90.35	67.95	143	38.36%	-161.89%	80.71	0.00%
90.91		3	129.1	144	81.45	162	32.74%	-236.77%	80.71	0.00%

Cell Yield Detail

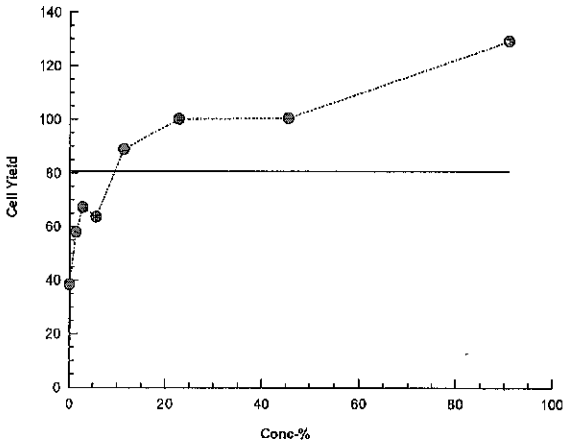
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	43.8	32.3	52.9	30.25	32.6	41.5	35.7	37.75
1.42		63	56.5	54.15					
2.841		62.65	71.25	67.95					
5.682		66.45	56	68.5					
11.364		78.9	103.2	84.5					
22.728		120	98.7	81.45					
45.455		90.35	67.95	143					
90.91		81.45	162	144					

Analyst: DWC 2020 NOV 26 QA: KT 2020 DEC 14

Alga Growth Inhibition Test — **Bureau Veritas Laboratories**

nalysis ID:	09-0741-6422	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	28 Nov-20 17:58	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	EBA9538AA4830927212832EB75123525	**Editor ID:**	

Graphics



Pseudokirchneriella subcapitata Test
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: Decant
Date Sampled: 2020 Nov 22
Job / Sample #: C086558, YX4620
Date & Time Started: 2020 Nov 25 @ 12:56
Date & Time Ended: 2020 Nov 28 @ 12:00
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	44.2	45.4	43.80	38.35	7.50	20
Lab Control	D3	32.5	34.1	32.30			
Lab Control	D4	63.2	44.6	52.90			
Lab Control	D5	24.1	38.4	30.25			
Lab Control	D8	37.9	29.3	32.60			
Lab Control	D9	44.5	40.5	41.50			
Lab Control	D10	36.2	37.2	35.70			
Lab Control	D11	36.2	41.3	37.75			
1.420	C8	57.9	70.1	63.00	57.88	4.58	8
1.420	E8	56.2	58.8	56.50			
1.420	F8	44.5	65.8	54.15			
2.841	C7	57.3	70.0	62.65	67.28	4.34	6
2.841	E7	83.2	61.3	71.25			
2.841	F7	80.1	57.8	67.95			
5.682	C6	73.1	61.8	66.45	63.65	6.70	11
5.682	E6	56.2	57.8	56.00			
5.682	F6	76.2	62.8	68.50			
11.364	C5	73.2	86.6	78.90	88.85	12.70	14
11.364	E5	109.0	99.3	103.15			
11.364	F5	86.3	84.7	84.50			
22.728	C4	108.0	134.0	120.00	100.05	19.31	19
22.728	E4	92.4	107.0	98.70			
22.728	F4	77.1	87.8	81.45			
45.455	C3	95.8	86.9	90.35	100.43	38.53	38
45.455	E3	62.3	75.6	67.95			
45.455	F3	124.0	164.0	143.00			
90.91	C2	92.1	72.8	81.45	129.15	42.28	33
90.91	E2	144.0	182.0	162.00			
90.91	F2	157.0	133.0	144.00			

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C086558, YX4620

Date Sampled: 2020 Nov 22

Sample ID: Decant

Date Received: 2020 Nov 24

Culture Date: ~~23 Nov~~ 22 Nov 2020

Date & Time Started: 2020 Nov 25 @ 1256

Culture Description: Green

Date & Time Ended: 2020 nov 28 @ 1200

Light Intensity at Surface (lux): 3822-4177

Analyst(s): D.Lai

Instrument ID(s): BBY2-0290, BBY2-0006, BBY2-0111, bby2-0405

Temperature (°C):

Day 0: 26 Day 1: 26 Day 2: 26 Day 3: 26

Sample Water Quality

Intial pH: 9.4 Initial Temp (°C): 24.0 Sample Description: cloudy brown

Initial Filtered pH (well B2): 9.2 Final Filtered pH (well B2): 8.8

Control Water Quality

Initial Filtered pH (well D6): 7.4 Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 20.7 (*10^4 cells/mL)

Time of inoculum prep: 1227

Therefore, (**Xi**) 2070 cells were initially put into each test well and the initial cell density was (**Xd**) 9409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * **X**) * 0.02] = [(0.5 * 207x10⁴) * 0.02] = 2070 cells

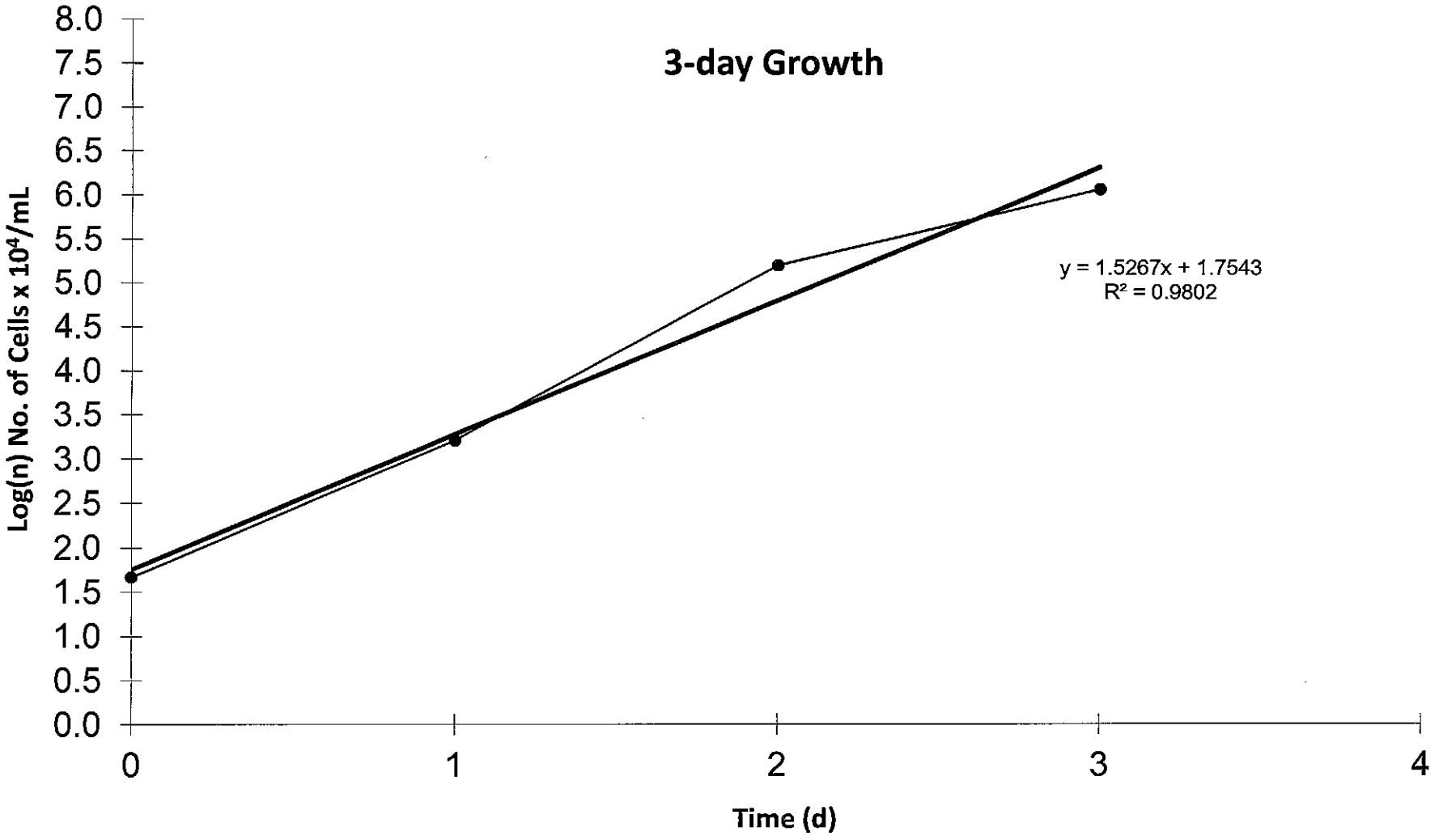
To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2070) * (4.5455)] = 9409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2020 Nov 26	Y	N	Y	dml
2020 nov 27	Y	N	Y	dml
2020 Nov 28	Y	N		dml

***Pseudokirchneriella subcapitata* Growth Curve using CP191214; Date: 2020/JUL/14**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C086558

Client Project Name & Number: - INT

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100 (N/A) Statistical Method: Visual

Sample Name : NW DECANT SUMP Sample Matrix : Grab Water

Description: Light Black, Very Hazy Sample Number: YX4620-01

Sample Collected: Nov 22, 2020 Sampling Method : N/A Site Collection: N/A

Sample Collected By: GC Volume Received: 40 L Temp.Upon Arrival: 3 °C Storage: 2-6°C

Sample Received: Nov 24, 2020 10:00 AM pH: 9.2 Dissolved Oxygen: 64.7 %

Analysis Start : Nov 26, 2020 10:17 AM Temperature : 14 °C Sample Conductance: 1248 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	15	8.2	299	9.1	0	0	0	0	0	0	0	0
6.25	15	8.8	372	9.0	0	0	0	0	0	0	0	0
12.5	15	8.4	407	9.0	0	0	0	0	0	0	0	0
25	15	8.5	541	8.7	0	0	0	0	0	0	0	0
50	15	8.7	789	8.3	0	0	0	0	0	0	0	0
100	14	9.3	1258	7.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.9	299	8.4	0	0	0	0
6.25	0	0	0	0	15	8.0	373	8.7	0	0	0	0
12.5	0	0	0	0	15	8.0	376	8.7	0	0	0	0
25	0	0	0	0	15	7.9	535	8.6	0	0	0	0
50	0	0	0	0	15	7.8	777	8.6	0	0	0	0
100	0	0	0	0	15	7.6	1300	8.3	4	40.0	0	0

Comments : LC50 calculated using Linear Interpolation

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 60 Pre-aeration Time : 30 min. Rate of Aeration 6.5±1 mL/min/L

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.3 ± 0.1 g Length (Mean) +- SD : 3.53 ± 0.22 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.2 – 0.4 g Length (Range) : 3.00 – 3.80 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: Nov 13, 2020

Test Endpoint 96 hrs LC50 (95% confidence interval) : 11.4 (10.8, 12.0)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 10.1 (8.61, 11.9) mg/L Concentration : 0,8,10,12,15,20 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C086558

Client Project Name & Number: - INT

Sample Number: YX4620-01

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Dustin Banks, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor

Date: Dec 14, 2020 03:33 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C086558

Client Project Name & Number: - INT

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : E21 SUMP

Description:	YELLOW, HAZY			Sample Number:	YX4619-01
Sample Collected:	Nov 22, 2020	Sampling Method :	N/A	Site Collection:	N/A
Sample Collected By:	GC	Volume Received:	40 L	Temp.Upon Arrival:	3 °C Storage: 2-6°C
Sample Received:	Nov 24, 2020 10:00 AM	pH:	6.4	Dissolved Oxygen:	91.7 %
Analysis Start :	Nov 26, 2020 10:17 AM	Temperature :	14 °C	Sample Conductance:	354 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	16	7.8	308	8.9	0	0	0	0	0	0	0	0
6.25	16	7.9	308	9.0	0	0	0	0	0	0	0	0
12.5	15	7.6	312	9.0	0	0	0	0	0	0	0	0
25	15	7.5	318	9.1	0	0	0	0	0	0	0	0
50	15	7.3	332	9.3	0	0	0	0	0	0	0	0
100	14	6.8	362	9.5	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.8	304	8.1	0	0	0	0
6.25	0	0	0	0	15	8.0	303	8.7	0	0	0	0
12.5	0	0	0	0	15	7.9	310	8.8	0	0	0	0
25	0	0	0	0	15	7.9	318	8.5	0	0	0	0
50	0	0	0	0	15	7.8	339	8.7	0	0	0	0
100	0	0	0	0	15	7.3	371	8.5	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.2 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.3 ± 0.1 g	Length (Mean) +- SD :	3.48 ± 0.21 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.2 – 0.4 g	Length (Range) :	3.10 – 3.80 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Nov 13, 2020

Test Endpoint 96 hrs LC50 (95% confidence interval) :	11.4 (10.8, 12.0)mg/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	10.1 (8.61, 11.9) mg/L	Concentration :	0,8,10,12,15,20 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C086558

Client Project Name & Number: - INT

Sample Number: YX4619-01

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Dustin Banks, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor

Date: Dec 10, 2020 01:25 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C086558

Client Project Name & Number: - INT

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND 3

Description:	PALE YELLOW, CLEAR			Sample Number:	YX4618-01
Sample Collected:	Nov 22, 2020	Sampling Method :	N/A	Site Collection:	N/A
Sample Collected By:	GC	Volume Received:	40 L	Temp.Upon Arrival: 3 °C	Storage: 2-6°C
Sample Received:	Nov 24, 2020 10:00 AM	pH:	7.1	Dissolved Oxygen:	110.9 %
Analysis Start :	Nov 26, 2020 11:47 AM	Temperature :	14 °C	Sample Conductance:	2430 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	16	7.8	307	8.7	0	0	0	0	0	0	0	0
6.25	16	7.8	470	8.8	0	0	0	0	0	0	0	0
12.5	16	7.8	625	9.0	0	0	0	0	0	0	0	0
25	16	7.7	912	9.0	0	0	0	0	0	0	0	0
50	15	7.4	1444	9.3	0	0	0	0	0	0	0	0
100	15	7.3	2474	9.5	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	16	8.0	308	8.5	0	0	0	0
6.25	0	0	0	0	15	7.8	469	8.1	0	0	0	0
12.5	0	0	0	0	15	7.6	624	7.7	1	10.0	0	0
25	0	0	0	0	16	7.7	928	8.2	0	0	0	0
50	0	0	0	0	16	7.9	1462	8.8	0	0	0	0
100	0	0	0	0	15	7.4	2515	8.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	120 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.2 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.3 ± 0.0 g	Length (Mean) +- SD :	3.60 ± 0.09 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.3 – 0.4 g	Length (Range) :	3.40 – 3.70 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Nov 13, 2020

Test Endpoint 96 hrs LC50 (95% confidence interval) :	11.4 (10.8, 12.0)mg/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	10.1 (8.61, 11.9) mg/L	Concentration : 0,8,10,12,15,20 mg/L	

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C086558

Client Project Name & Number: - INT

Sample Number: YX4618-01

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Dustin Banks, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor

Date: Dec 10, 2020 01:24 PM

Toxicity Test Results

YX4618-POND 3 and YX4619-E21 SUMP

Final Report

December 18, 2020

Submitted to: **Bureau Veritas Canada**
Edmonton, AB

4, 6125 12 Street SE, Calgary, AB T2H 2K1

TABLE OF CONTENTS

Page

Signature Page iii

Summary iv

1.0 Introduction 1

2.0 Methods 2

3.0 Results 3

4.0 QA/QC 5

5.0 References 6

List of Tables

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test. 2

Table 2. YX4618-POND 3 Results: *Ceriodaphnia dubia* survival and reproduction test. 3

Table 3. YX4619-E21 SUMP Results: *Ceriodaphnia dubia* survival and reproduction test. 4

Table 4. Reference toxicant test results. 5

List of Appendices

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data
APPENDIX B – Chain-of-Custody Forms

SIGNATURE PAGE

Report By:
Michelle Fritz, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

SUMMARY

Sample and Test Type Information

Sample ID (Internal ID)	YX4618-POND 3 (2021-0592-01) YX4619-E21 SUMP (2021-0592-02)
Sample collection date	November 22, 2020
Sample receipt date	November 25, 2020
Sample receipt temperature	4.8°C, 3.6°C
Test types	5 – 8 day *Ceriodaphnia dubia* survival and reproduction

Summary of Results

	% v/v (95% CL)	
Endpoint	**YX4618-POND 3**	**YX4619-E21 SUMP**
C. dubia		
Survival LC50	19.1 (9.8 – 37.3)	>100
Reproduction IC25	6.6 (1.4 – 8.1)	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration, CL = Confidence Limit

1.0 INTRODUCTION

Nautilus Environmental Company Inc. conducted toxicity tests for Bureau Veritas Canada. Samples YX4618-POND 3 and YX4619-E21 SUMP were both collected on November 22, 2020 and delivered to the Nautilus Environmental laboratory in Calgary, AB on November 25, 2020. The samples were transported in sixteen 1-L plastic bottles and were received at temperatures of 4.8°C and 3.6°C, respectively. Testing was initiated on November 25, 2020. The sample was stored in the dark at 4 ± 2°C prior to testing. The following toxicity test was performed on each sample:

- *Ceriodaphnia dubia* survival and reproduction

This report describes the results of these toxicity tests. Copies of raw laboratory data sheets and statistical analyses for the test species are provided in Appendices A. The chain-of-custody form is provided in Appendix B.

2.0 METHODS

Methods for the toxicity test are summarized in Table 1. Testing was conducted according to procedures described by the Environment Canada protocol (2007). Statistical analyses for all tests were performed using CETIS (Tidepool Scientific Software, version 1.9.4.11).

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test.

Test species	*Ceriodaphnia dubia*
Organism source	In-house culture
Organism age	<24 hour old neonates, produced within a 12-hour window
Test type	Static-renewal
Test duration	5 – 8 days
Test vessel	16 x 135 mm glass test tube
Test volume	15 mL
Test solution depth	10 cm
Test concentrations	Seven concentrations, plus laboratory control
Test replicates	10 per treatment
Number of organisms	1 per replicate
Control/dilution water	20% Perrier water and 80% deionized water supplemented with vitamin B12 (2µg/L) and Na_2SeO_4 (5µg Se/L)
Test solution renewal	Daily (100% renewal)
Test temperature	25 ± 1°C
Feeding	Daily with *Pseudokirchneriella subcapitata* and YCT
Light intensity	100 to 600 lux at water surface
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test measurements	pH, conductivity, dissolved oxygen and temperature measured daily; evaluated for survival and reproduction daily
Test protocol	Environment Canada (2007), EPS 1/RM/21
Statistical software	CETIS version 1.9.4.11
Test endpoints	Survival and reproduction
Test acceptability criteria for controls	≥80% survival; ≥15 young per surviving control producing three broods; ≥60% of controls producing three or more broods, no ephippia present
Reference toxicant	Sodium chloride (NaCl)

3.0 RESULTS

Results of the toxicity test are summarized in Table 2 for sample YX4618-POND 3. There were adverse effects observed on survival and reproduction of *C. dubia*, resulting in an LC50 and IC25 of 19.1% and 6.6%, respectively (Table 2).

Table 2. YX4618-POND 3 Results: *Ceriodaphnia dubia* survival and reproduction test.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	90	24.4 ± 4.3
1.56	100	21.3 ± 7.4
3.12	90	18.4 ± 6.1
6.25	80	19.1 ± 4.6
12.5	30	12.6 ± 4.7
25	60	4.2 ± 2.3
50	30	5.1 ± 2.8
100	20	3.5 ± 1.5
Test endpoint (% v/v)		
LC50 (95% CL)	19.1 (9.8 – 37.3)	--
IC25 (95% CL)	--	6.6 (1.4 – 8.1)

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration, CL=Confidence Limit

Results of the toxicity tests are summarized in Table 3 for sample YX4619-E21 SUMP. There were no adverse effects observed on survival or reproduction of *C. dubia*, resulting in an LC50 and IC25 of >100% (Table 3).

Table 3. YX4619-E21 SUMP Results: *Ceriodaphnia dubia* survival and reproduction test.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	25.6 ± 10.4
1.56	90	28.6 ± 5.1
3.12	100	26.1 ± 5.5
6.25	100	26.5 ± 3.3
12.5	100	28.3 ± 4.9
25	100	27.0 ± 3.8
50	100	28.1 ± 3.7
100	100	27.8 ± 4.0
Test endpoint (% v/v)		
LC50	>100	--
IC25	--	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration

4.0 QA/QC

The health histories of the test organisms used in the exposures were acceptable and met the requirements of the Environment Canada protocol. The tests met all control acceptability criteria and water quality parameters remained within ranges specified in the protocols throughout the tests. There were no deviations from the test methodologies. Uncertainty associated with these tests is best described by the standard deviations around the means.

Results of the reference toxicant tests conducted during the testing program are summarized in Table 4. The reference toxicant tests were performed under the same conditions as those used during testing. Results for these tests fell within the acceptable range for organism performance of two standard deviations of the mean, based on historical results obtained by the laboratory with these tests. Thus, the sensitivity of the organisms used in these tests was appropriate.

Table 4. Reference toxicant test results.

Test Species	Endpoint (95% CL)	Historical Mean (2 SD Range)	CV (%)	Test Date
C. dubia	Survival (LC50): 1.9 (1.8-2.1) g/L NaCl	1.8 (1.6–2.1)	4.2	November 30, 2020
	Reproduction (IC50): 1.5 (1.4-1.6) g/L NaCl	1.5 (1.2–1.9)	7.2	

SD = Standard Deviation, CV = Coefficient of Variation, LC = Lethal Concentration, IC = Inhibition Concentration, CL=Confidence Limit

5.0 REFERENCES

Environment Canada. 2007. Biological test method: test of reproduction and survival using the cladoceran *Ceriodaphnia dubia*. EPS 1/RM/21, Second Edition, February 2007.

Tidepool Scientific Software. 2018. CETIS comprehensive environmental toxicity information system, version 1.9.4.11 Tidepool Scientific Software, McKinleyville, CA. 275 pp.

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAXIIO Reference 2021-0592-01

Test Log

Date	Day	Time	Technician	Chem. Cart Used	Subsample Fed (✓)	Daily Data Review	Subsample Used	
2020/11/25	0	1540	LC	2	✓	SC	Day 0	✓
2020/11/26	1	0900	MW	2	✓	SC	Day 1	✓
2020/11/27	2	0905	CB	2	✓	SC	Day 2	✓
2020/11/28	3	1100	ST	2	✓	MW	Day 3	✓
2020/11/29	4	1005	CB	2	✓	LF	Day 4	✓
2020/11/30	5	1054	CB	2	✓	MW	Day 5	✓
2020/12/01	6	0950	SC	2	✓	ST	Day 6	✓
2020/12/02	7	1130	MW	2	—	ST	Day 7	—
	8						-	

Sample Information

Initial pH: 7.5
Initial EC (µS/cm): 2980
Initial DO (mg/L): 9.4
Initial Temp (°C): 13
Filtered with 60 µm nitex screen
Yes / No
Sample pre-aerated/hardness/pH adjust:
Yes / No
*if yes, describe procedure, rate and duration

Test Specifics

Food expiration: 12/12, 12/26

Dilution water vessel and preparation date: 2 11/24, 1:11/19 #3 11/19, ~~3 11/10~~ MW 6 11/19

Control Validity
Day 7

Cup	Number of Young	Number of Broods
1	17	2
2	29	3
3	28	
4	25	
5	~~18~~	— MW
6	21	
7	28	
8	25	
9	28	
10	25	✓

Average # of Young: 25

% with ≥ 3 Broods: 90

Control Mortality: 10
(must be ≤20%)

Reproduction Validity Criteria: the average number of young produced in first three broods is ≥ 15, when 60% of control organsims had 3 or more broods: Yes / No

Reviewed By: W Date Reviewed: 2020/12/01

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDO Client MAXIIO Reference 2021-0592-01

Chemistry

pH (units) (range: 6.5-8.5)

New Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
Day								
0	7.8	7.9	7.9	7.9	7.9	7.9	7.8	7.4
1	7.8	7.9	8.0	8.0	8.0	8.0	7.9	7.8
2	8.1	8.0	8.0	8.0	8.0	8.0	7.9	7.8
3	8.1	8.2	8.1	8.1	8.1	8.1	8.1	8.0
4	8.1	8.1	8.1	8.1	8.0	8.0	8.0	7.9
5	8.1	8.0	8.0	8.0	8.0	7.9	8.0	7.9
6	7.9	8.0	8.1	8.1	7.9	7.9	7.9	8.0
7								
8								

Old Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	8.1	8.1	8.1	8.1	8.1	8.1	8.0	7.8
2	8.1	8.0	8.0	8.0	7.9	8.0	7.9	7.8
3	8.2	8.1	8.1	8.1	8.1	8.6	8.1	7.9
4	8.0	8.0	7.9	8.0	8.0	8.0	8.0	7.9
5	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
7	7.8	7.8	7.9	7.9	7.9	7.9	8.0	7.9
8								

Conductance (µS/cm)

New Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0	200	259	309	425	617	978	1645	2970
1	202	256	308	420	619	974	1637	3020
2	208	257	308	410	608	975	1639	3120
3	210	270	326	433	639	1024	1686	3100
4	201	246	306	412	611	981	1631	3050
5	207	258	314	420	618	1005	1732	3140
6	238	295	342	445	669	1060	1757	3190
7								
8								

Old Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	213	263	316	427	610	988	1672	2920
2	227	264	315	422	609	962	1621	2970
3	235	271	315	421	639	1007	1660	3090
4	203	293	333	438	670	1018	1684	3040
5	243	272	325	426	637	1009	1704	3140
6	247	291	331	437	639	1028	1741	3220
7	224	345	345	454	653	1039	1701	3250
8		240						

Dissolved Oxygen (mg/L) (40-100% saturation)

New Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
1	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
2	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
3	7.2	7.2	7.2	7.2	7.2	7.2	7.3	7.3
4	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
5	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
6	7.3	7.1	7.3	7.3	7.3	7.3	7.1	7.3
7								
8								

Old Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
2	6.9	6.9	6.9	6.9	6.9	7.0	6.9	7.0
3	7.0	7.0	6.9	6.9	6.9	6.9	6.9	6.9
4	6.8	6.9	6.9	6.9	7.0	7.0	7.0	7.0
5	6.9	6.9	6.9	6.9	6.9	6.9	7.0	7.0
6	7.0	7.0	7.0	6.9	6.9	6.9	6.9	6.9
7	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
8								

Temperature 24 - 26 (°C)

New Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0	24	24	24	24	24	24	24	24
1	24	24	24	24	24	24	24	24
2	24	24	24	24	24	24	24	24
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7								
8								

Old Solutions

Conc. (%)	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	24	24	24	24	24	24	24	24
2	24	24	24	24	24	24	24	24
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7	24	24	24	24	24	24	24	24
8								

DO Levels (40-100% saturation)* -
2.9 to 7.3 mg/L at 24°C
2.9 to 7.2 mg/L at 25°C
2.8 to 7.1 mg/L at 26°C

*corrected for altitude

Reviewed By: W Date Reviewed: 2020/12/04

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAXIO Reference 2021-0592-01

Biology

(#, young produced; 0, no young; X, dead; X#, young produced-dead; —,young produced after 3rd brood)

Brood organisms produced during an organism's 4th or subsequent brood are not included in brood counts

Day	1	2	3	4	5	6	7	8
Cup	CTL							
1	0	0	0	0	8	9	0	
2	↓	↓	↓	4	8	0	17	
3				4	13		11	
4				6	10		9	
5				3	10		X5 →	
6				3	7		11	
7				2	10		11 16	
8				2	9		14	
9				5	10		13	
10				3	10		12	

Day	1	2	3	4	5	6	7	8
Cup	1.6 %							
1	0	0	0	6	11	0	0	
2	↓	↓	↓	5	8		0	
3				3	7		9	
4				4	12		14	
5				3	12		0	
6				3	9		0	
7				5	12		16	
8				3	10		8	
9				6	11		12	
10				3	10		11	

Day	1	2	3	4	5	6	7	8
Cup	3.1 %							
1	0	0	0	0	4	7	0	
2	↓	↓	↓	4	9	6	—	
3				4	9	8	X0 →	
4				4	10		0	
5				3	10		0	
6				3	11		8	
7				5	12		13	
8				2	8		6	
9				3	0	7	12	
10				3	8	0	13	

Day	1	2	3	4	5	6	7	8
Cup	6.3 %							
1	0	0	0	6	8	0	0	
2	↓	↓	↓	0	4	8	0	
3				6	10	8	11	
4				2	8		14	
5				3	6		10	
6				3	11		9	
7				6	8		12 2	
8				3	12		3	
9				4	9		X5 →	
10				4	9		X7 →	

Day	1	2	3	4	5	6	7	8
Cup	13 %							
1	0	0	0	2	10	0	X0 →	
2	↓	↓	↓	2	10		X0 →	
3				5	6		X0 →	
4				0	6		5	
5				4	10		X0 →	
6				3	12		X0 →	
7				3	10		X0 →	
8				0	4		X0 →	
9				3	8		6	
10				2	4		2	

Day	1	2	3	4	5	6	7	8
Cup	25 %							
1	0	0	0	3	0	0	0	
2	↓	↓	↓	5	↓	↓	0	
3				3			0	
4				3			0	
5				6			X0 →	
6				3			0	
7				4	3		0	
8				4	0		X0 →	
9				3	5		X0 →	
10				X0	—	—	—	

Day	1	2	3	4	5	6	7	8
Cup	50 %							
1	0	0	0	4	X0	—	—	—
2	↓	↓	↓	4	0	0	X0 →	
3				3	3		5	
4				3	8		0	
5				4	8		0	
6				4	5		X0 →	
7				3	3		X0 →	
8				2	3		X0 →	
9				3	0		X0 →	
10				2	X0	—	—	—

Day	1	2	3	4	5	6	7	8
Cup	100 %							
1	0	0	0	0	0	2	0	
2	↓	↓	↓	2	↓	0	X0 →	
3				2		X0	—	
4				3	2	0	X0 →	
5				2	6	X0	—	
6				4		X0	—	
7				3		2	0	
8				3		X0	—	
9				2	2	X0	—	
10				2	4	0	X0 →	

Reviewed By: W Date Reviewed: 2021/12/01

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Test Organism Information

Client: MAXIIO

Culture history for adults used in the test for sample reference: 2021-0592-01

Day Used: 2020/11/25

Test organisms appeared healthy before use: Yes/No

Number of young produced per brood adult within first three broods:

Brood	row/replicate	B4	C1	~~C3~~ C2	C4	C5	D2	D3	D4	E3		
	number of young	4	4	5	5	5	5	6	6	6		
	number of young	10	10	10	9	13	12	11	11	15		
	number of young	13	12	15	12	16	14	10	17	15		
	number of young	16	17	13	14	17	13	18	15	13		

Culture(s) Used for Testing: Thurs A1

Number of Adults Alive in Culture

7 days prior: 25	day used: 25

Notes: all cups have 1 adult

Average No. of young in first 3 broods: 30
(must be ≥15)

Culture % mortality (7-days prior to testing): 0%
(must be ≤20%)

Number of young produced by each brood organism in last complete brood is ≥8: Y
Yes (Y) or No (N)

Reviewed By: LO

Date Reviewed: 2020/12/07

CETIS Analytical Report

Test Code/ID: 2021-0592-01 CD / 21-4607-7275

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	06-3595-8944	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:28	**Analysis:**	Trimmed Spearman-Kärber	**Status Level:**	1

Batch ID:	00-8893-6499	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Michelle Provincial		
Start Date:	25 Nov-20	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW		
Ending Date:	02 Dec-20	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	14-7921-2029	**Code:**	2021-0592-01	**Project:**	
Sample Date:	22 Nov-20	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	25 Nov-20	**CAS (PC):**		**Station:**	YX4618-POND 3
Sample Age:	72h (4.8 °C)	**Client:**	Bureau Veritas Canada		

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0.1	21.05%	1.282	0.1451	19.13	9.807	37.33

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Group	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	N	10	0.9000	0.0000	1.0000	0.3162	35.14%	0.0%	9/10	0.95	0.0%
1.6		10	1.0000	1.0000	1.0000	0.0000	0.00%	-11.11%	10/10	0.95	0.0%
3.2		10	0.9000	0.0000	1.0000	0.3162	35.14%	0.0%	9/10	0.9	5.26%
6.3		10	0.8000	0.0000	1.0000	0.4216	52.70%	11.11%	8/10	0.8	15.79%
12		10	0.3000	0.0000	1.0000	0.4830	161.00%	66.67%	3/10	0.45	52.63%
25		10	0.6000	0.0000	1.0000	0.5164	86.07%	33.33%	6/10	0.45	52.63%
50		10	0.3000	0.0000	1.0000	0.4830	161.00%	66.67%	3/10	0.3	68.42%
100		10	0.2000	0.0000	1.0000	0.4216	210.80%	77.78%	2/10	0.2	78.95%

7d Survival Rate Detail

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.2		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000
12		0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100		1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000

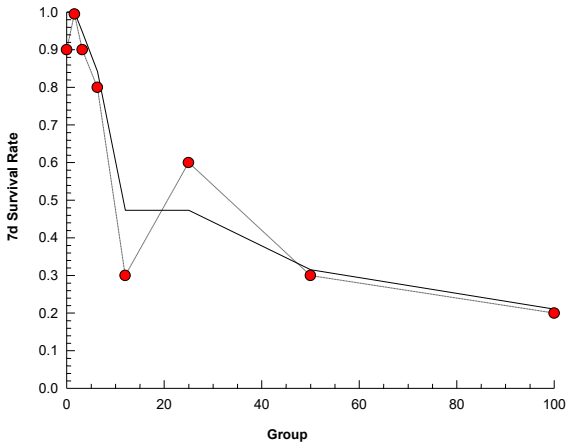
7d Survival Rate Binomials

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
1.6		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.2		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1
12		0/1	0/1	0/1	1/1	0/1	0/1	0/1	0/1	1/1	1/1
25		1/1	1/1	1/1	1/1	0/1	1/1	1/1	0/1	0/1	0/1
50		0/1	0/1	1/1	1/1	1/1	0/1	0/1	0/1	0/1	0/1
100		1/1	0/1	0/1	0/1	0/1	0/1	1/1	0/1	0/1	0/1

Ceriodaphnia 7-d Survival and Reproduction Test | **Nautilus Environmental Calgary**

Analysis ID:	06-3595-8944	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:28	**Analysis:**	Trimmed Spearman-Kärber	**Status Level:**	1

Graphics



CETIS Analytical Report

Test Code/ID: 2021-0592-01 CD / 21-4607-7275

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	05-8194-6641	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	00-8893-6499	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Michelle Provincial		
Start Date:	25 Nov-20	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW		
Ending Date:	02 Dec-20	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	14-7921-2029	**Code:**	2021-0592-01	**Project:**	
Sample Date:	22 Nov-20	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	25 Nov-20	**CAS (PC):**		**Station:**	YX4618-POND 3
Sample Age:	72h (4.8 °C)	**Client:**	Bureau Veritas Canada		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	838974	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	2.659	3.306	0.5320	No Outliers Detected

Point Estimates

Level		95% LCL	95% UCL
IC1	0.07811	0.03637	1.673
IC5	0.4565	0.1956	2.007
IC10	1.121	0.4294	3.051
IC15	1.889	0.709	6.42
IC20	2.634	1.043	7.18
IC25	6.615	1.443	8.083
IC40	9.735	7.549	12.99
IC50	12.46	10.11	15.25

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Group	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	10	24.4	17	29	4.326	17.73%	0.0%	24.4	0.0%
1.6		10	21.3	12	33	7.439	34.93%	12.7%	21.3	12.7%
3.2		10	18.4	11	30	6.059	32.93%	24.59%	18.75	23.16%
6.3		10	19.1	12	27	4.606	24.11%	21.72%	18.75	23.16%
12		10	12.6	4	21	4.695	37.26%	48.36%	12.6	48.36%
25		10	4.2	0	8	2.348	55.89%	82.79%	4.65	80.94%
50		10	5.1	2	11	2.846	55.80%	79.1%	4.65	80.94%
100		10	3.5	2	6	1.509	43.12%	85.66%	3.5	85.66%

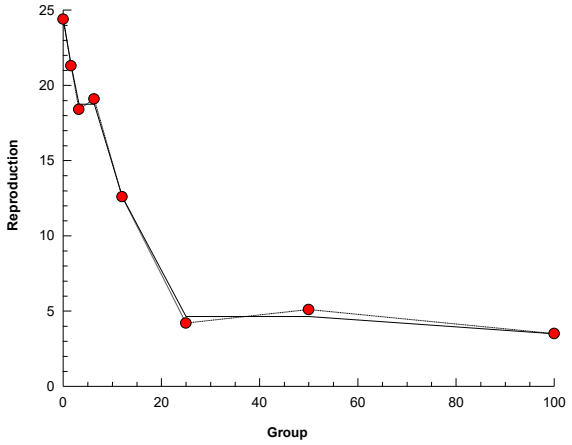
Reproduction Detail

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	17	29	28	25	18	21	28	25	28	25
1.6		17	13	19	30	15	12	33	21	29	24
3.2		13	19	11	14	13	22	30	16	22	24
6.3		14	12	27	24	19	23	16	18	18	20
12		21	12	11	11	14	15	13	4	17	8
25		3	5	3	3	6	3	7	4	8	0
50		4	4	11	3	4	9	6	5	3	2
100		2	2	2	5	2	4	5	3	4	6

Ceriodaphnia 7-d Survival and Reproduction Test | **Nautilus Environmental Calgary**

Analysis ID:	05-8194-6641	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method COD Client MAXIIO Reference 2021-0592-02

Test Log

Date	Day	Time	Technician	Chem. Cart Used	Subsample Fed (✓)	Daily Data Review	Subsample Used	
2020/11/25	0	1450	LC	2	✓	LC	Day 0	✓
2020/11/26	1	1140	LF	2	✓	LC	Day 1	✓
2020/11/27	2	0925	CB	2	✓	LC	Day 2	✓
2020/11/28	3	1210	ST	2/3	✓	MW	Day 3	✓
2020/11/29	4	1020	CB	2	✓	LF	Day 4	✓
2020/11/30	5	1825	CB	2	✓	MW	Day 5	✓
2020/12/01	6	1035	MF	2	✓	ST	Day 6	✓
2020/12/02	7	1500	MF	2	✓	LF	Day 7	✓
	8						-	

Sample Information

Initial pH: 6.6
Initial EC (µS/cm): 452
Initial DO (mg/L): 8.6
Initial Temp (°C): 13
Filtered with 60 µm nitex screen
Yes/No
Sample pre-aerated/hardness/pH adjust:
Yes/No
*If yes, describe procedure, rate and duration

Test Specifics

Food expiration: 12/12, 12/26, 12/19

Dilution water vessel and preparation date: #3 11/19 #6 11/19 2 11/24
1: 11/19

Cup	Control Validity Day 7 Number of Young	Number of Broods
1	—	—
2	22	3
3	29	↓
4	0	0
5	35	MF 3
6	33	
7	30	
8	25	
9	29	
10	27	

Average # of Young: 26

% with ≥ 3 Broods: 80%

Control Mortality: ~~10%~~ 0%
(must be ≤20%)

Reproduction Validity Criteria: the average number of young produced in first three broods is ≥ 15, when 60% of control organsims had 3 or more broods: **Yes / No**

Reviewed By: [illegible] Date Reviewed: 2020/12/01

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAXIIO Reference 2021-0592-02

Chemistry

New Solutions

Conc. (%) / Day	CTL	1.6	3.1	6.3	13	25	50	100
pH (units) (range: 6.5-8.5)								
0	8.0	8.0	8.0	7.9	7.9	7.7	7.3	7.0
1	7.9	8.0	8.0	8.0	7.9	7.8	7.7	7.2
2	8.0	8.0	8.0	8.0	7.9	7.8	7.3	6.7
3	7.8	7.9	7.9	7.9	7.9	8.0	7.9	7.8
4	7.8	7.9	8.0	8.0	8.0	8.0	7.8	7.2
5	7.9	7.9	7.9	8.0	8.0	7.9	7.9	7.2
6	8.1	8.0	8.0	8.0	8.0	7.9	7.9	7.5
7								
8								
Conductance (µS/cm)								
0	192	202	207	216	234	265	326	449
1	191	206	209	216	229	266	325	456
2	199	210	215	223	239	271	331	458
3	203	215	220	228	245	280	344	470
4	205	204	208	216	232	262	333	456
5	200	210	214	222	217	227	345	470
6	207	236	314	238	250	288	350	475
7								
8								
Dissolved Oxygen (mg/L) (40-100% saturation)								
0	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
1	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
2	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
4	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
5	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
6	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
7								
8								
Temperature 24 - 26 (°C)								
0	24	24	24	24	24	24	24	24
1	24	24	24	24	24	24	24	24
2	24	24	24	24	24	24	24	24
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7								
8								

Old Solutions

Conc. (%) / Day	CTL	1.6	3.1	6.3	13	25	50	100
pH (units) (range: 6.5-8.5)								
0								
1	8.0	8.0	8.1	8.0	8.0	7.9	7.8	7.4
2	8.0	8.0	8.0	7.9	7.8	7.8	7.7	7.4
3	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.5
4	7.9	7.9	7.9	7.9	7.9	7.8	7.8	7.4
5	7.9	7.9	7.9	7.9	7.8	7.8	7.7	7.4
6	7.8	7.9	7.8	7.8	7.8	7.8	7.7	7.4
7	7.8	7.8	7.8	7.8	7.8	7.7	7.7	7.4
8								
Conductance (µS/cm)								
0								
1	196	209	212	220	238	265	330	453
2	194	215	213	217	230	262	325	442
3	203	214	219	224	243	273	336	453
4	217	219	223	230	244	279	346	470
5	216	216	219	227	244	280	347	474
6	217	219	223	231	250	283	357	483
7	238	230	241	248	264	295	356	471
8								
Dissolved Oxygen (mg/L) (40-100% saturation)								
0								
1	7.3	7.3	7.3	7.2	7.2	7.3	7.2	7.1
2	6.9	6.9	7.0	7.0	6.9	6.9	6.9	6.9
3	7.0	7.0	7.0	7.0	6.9	6.9	6.9	6.9
4	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
5	6.8	6.9	6.8	6.8	6.7	6.6	6.6	6.6
6	6.8	6.8	6.8	6.8	6.7	6.5	6.5	6.5
7	7.0	6.9	6.8	6.8	6.8	6.7	6.7	6.6
8								
Temperature 24 - 26 (°C)								
0								
1	24	24	24	24	24	24	24	24
2	24	24	24	24	24	24	24	24
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7	24	24	24	24	24	24	24	24
8								

DO Levels (40-100% saturation)* -
2.9 to 7.3 mg/L at 24°C
2.9 to 7.2 mg/L at 25°C
2.8 to 7.1 mg/L at 26°C

*corrected for altitude

Reviewed By: LD Date Reviewed: 2021/12/04

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAX110 Reference 2021-0592-02

Biology

(#, young produced; 0, no young; X, dead; X#, young produced-dead; —,young produced after 3rd brood)

Brood organisms produced during an organism's 4th or subsequent brood are not included in brood counts

*killed by tech. exclude from stats.

Day	1	2	3	4	5	6	7	8
Cup	CTL							
1	0	*X0	—	—	—	—	—	—
2	↓	0	0	3	8	0	11	
3	↓	↓	↓	4	11	0	#14	
4	↓	↓	↓	0	0	↓	0	
5	↓	↓	↓	5	12	↓	18	
6	↓	↓	↓	6	11	↓	16	
7	↓	↓	↓	3	13	↓	14	
8	↓	↓	↓	3	6	↓	#16	
9	↓	↓	↓	6	10	↓	#13	
10	↓	↓	↓	6	11	↓	10	

Day	1	2	3	4	5	6	7	8
Cup	1.6 %							
1	0	0	0	3	12	0	15	
2	↓	↓	↓	6	12	↓	16	
3	↓	↓	↓	3	10	↓	#14	
4	↓	↓	↓	5	11	↓	#14	
5	↓	↓	↓	3	11	↓	16	
6	↓	↓	↓	6	13	↓	15	
7	↓	↓	↓	4	14	X0	—	—
8	↓	↓	↓	4	12	14	—	
9	↓	↓	↓	0	12	0	10	
10	↓	↓	↓	3	10	0	16	

Day	1	2	3	4	5	6	7	8
Cup	3.1 %							
1	0	0	0	4	10	0	#15	
2	↓	↓	↓	5	10	↓	#18	
3	↓	↓	↓	5	12	↓	7	
4	↓	↓	↓	4	8	8	—	
5	↓	↓	↓	5	10	0	14	
6	↓	↓	↓	3	14	↓ MF	15	
7	↓	↓	↓	3	10	X0	17	—
8	↓	↓	↓	0	5	14 MF	0	
9	↓	↓	↓	3	9	0	10	
10	↓	↓	↓	3	10	0	13	

Day	1	2	3	4	5	6	7	8
Cup	6.3 %							
1	0	0	0	5	6	0	12	
2	↓	↓	↓	4	10	↓	12	
3	↓	↓	↓	4	13	↓	14	
4	↓	↓	↓	3	10	↓	16	
5	↓	↓	↓	3	14	↓	15	
6	↓	↓	↓	3	10	↓	10	
7	↓	↓	↓	4	10	↓	13	
8	↓	↓	↓	4	10	↓	12	
9	↓	↓	↓	3	8	↓	12	
10	↓	↓	↓	4	10	↓	11	

Day	1	2	3	4	5	6	7	8
Cup	13 %							
1	0	0	0	4	8	0	15	
2	↓	↓	↓	6	11	↓	17	
3	↓	↓	↓	3	12	↓	9	
4	↓	↓	↓	3	6	↓	11	
5	↓	↓	↓	3	10	↓	10	
6	↓	↓	↓	3	12	↓	12	
7	↓	↓	↓	6	12	↓	13	
8	↓	↓	↓	3	10	↓	18	
9	↓	↓	↓	6	11	↓	#15	
10	↓	↓	↓	5	12	↓	17	

Day	1	2	3	4	5	6	7	8
Cup	25 %							
1	0	0	0	6	10	10	—	
2	↓	↓	↓	5	14	6	—	
3	↓	↓	↓	4	13	0	#15	
4	↓	↓	↓	5	10	↓	14	
5	↓	↓	↓	6	10	↓	15	
6	↓	↓	↓	4	10	↓	16	
7	↓	↓	↓	5	6	↓	#11	
8	↓	↓	↓	5	8	↓	16	
9	↓	↓	↓	3	12	↓	12	
10	↓	↓	↓	3	8	↓	10	

Day	1	2	3	4	5	6	7	8
Cup	50 %							
1	0	0	0	4	10	0	15	
2	↓	↓	↓	5	0	11	8	
3	↓	↓	↓	6	12	0	14	
4	↓	↓	↓	4	6	↓	#14	
5	↓	↓	↓	5	10	↓	8	
6	↓	↓	↓	6	10	↓	15	
7	↓	↓	↓	5	10	↓	14	
8	↓	↓	↓	4	13	↓	17	
9	↓	↓	↓	3	10	↓	#14	
10	↓	↓	↓	6	6	↓	16	

Day	1	2	3	4	5	6	7	8
Cup	100 %							
1	0	0	0	0	4	10	11	—
2	↓	↓	↓	4	6	8	21	
3	↓	↓	↓	6	10	8	16	
4	↓	↓	↓	5	6	14	—	
5	↓	↓	↓	5	6	0	17	
6	↓	↓	↓	5	6	↓	19	
7	↓	↓	↓	3	10	↓	14	
8	↓	↓	↓	0	6	↓	13	
9	↓	↓	↓	4	10	↓	#17	
10	↓	↓	↓	6	12	12	—	

Reviewed By: W Date Reviewed: 2020/12/04

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Test Organism Information

Client: MAX 110

Culture history for adults used in the test for sample reference: 2021-0592-07

Day Used: 2020/11/25

Test organisms appeared healthy before use: Yes/No

Number of young produced per brood adult within first three broods:

Brood	row/replicate	A2	A4	B5	A1	B1	D5	E3	E4			
	number of young	5	5	5	3	12	5	2	4			
	number of young	11	11	13	9	13	10	9	9			
	number of young	16	12	16	10	-	11	9	7			
	number of young	16	16	13	12	12	13	12	10			

Culture(s) Used for Testing: Thurs A1 Tues B2

Number of Adults Alive in Culture	7 days prior: 25	day used: 25

Notes: all cups have 1 adult

Average No. of young in first 3 broods: 27
(must be ≥15)

Culture % mortality (7-days prior to testing): 0
(must be ≤20%)

Number of young produced by each brood organism in last complete brood is ≥8: Y
Yes (Y) or No (N)

Reviewed By: W Date Reviewed: 2020/12/04

CETIS Analytical Report

Test Code/ID: 2021-0592-02 CD / 21-4455-3175

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	02-5134-5282	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	19-3901-2030	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Michelle Provincial		
Start Date:	25 Nov-20	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW		
Ending Date:	02 Dec-20	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	11-2830-8198	**Code:**	2021-0592-02	**Project:**	
Sample Date:	22 Nov-20	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	25 Nov-20	**CAS (PC):**		**Station:**	YX4619-E21 SUMP
Sample Age:	72h (3.8 °C)	**Client:**	Bureau Veritas Canada		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	187126	200	Yes	Two-Point Interpolation

Point Estimates

Level		95% LCL	95% UCL
LC1	0.952	0.2498	n/a
LC5	>100	n/a	n/a
LC10	>100	n/a	n/a
LC15	>100	n/a	n/a
LC20	>100	n/a	n/a
LC25	>100	n/a	n/a
LC40	>100	n/a	n/a
LC50	>100	n/a	n/a

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Group	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	N	9	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	9/9	1	0.0%
1.6		10	0.9000	0.0000	1.0000	0.3162	35.14%	10.0%	9/10	0.9857	1.43%
3.2		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%
6.3		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%
12		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%
25		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%
50		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%
100		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.9857	1.43%

7d Survival Rate Detail

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
3.2		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

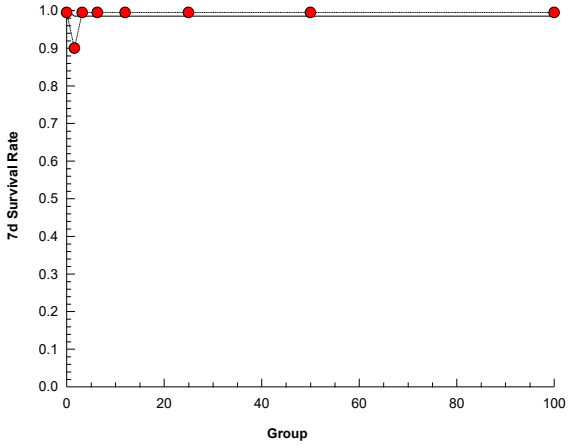
Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	02-5134-5282	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

7d Survival Rate Binomials

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
1.6		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
3.2		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



CETIS Analytical Report

Test Code/ID: 2021-0592-02 CD / 21-4455-3175

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	08-9533-4745	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	19-3901-2030	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Michelle Provincial		
Start Date:	25 Nov-20	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW		
Ending Date:	02 Dec-20	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	11-2830-8198	**Code:**	2021-0592-02	**Project:**	
Sample Date:	22 Nov-20	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	25 Nov-20	**CAS (PC):**		**Station:**	YX4619-E21 SUMP
Sample Age:	72h (3.8 °C)	**Client:**	Bureau Veritas Canada		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	646119	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	4.967	3.302	2.8E-07	Outlier Detected

Point Estimates

Level		95% LCL	95% UCL
IC1	>100	n/a	n/a
IC5	>100	n/a	n/a
IC10	>100	n/a	n/a
IC15	>100	n/a	n/a
IC20	>100	n/a	n/a
IC25	>100	n/a	n/a
IC40	>100	n/a	n/a
IC50	>100	n/a	n/a

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Group	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	9	25.56	0	35	10.35	40.48%	0.0%	27.24	0.0%
1.6		10	28.6	18	34	5.103	17.84%	-11.91%	27.24	0.0%
3.2		10	26.1	16	33	5.527	21.18%	-2.13%	27.24	0.0%
6.3		10	26.5	23	32	3.274	12.36%	-3.7%	27.24	0.0%
12		10	28.3	20	34	4.855	17.15%	-10.74%	27.24	0.0%
25		10	27	21	32	3.771	13.97%	-5.65%	27.24	0.0%
50		10	28.1	23	34	3.665	13.04%	-9.96%	27.24	0.0%
100		10	27.8	19	32	3.967	14.27%	-8.78%	27.24	0.0%

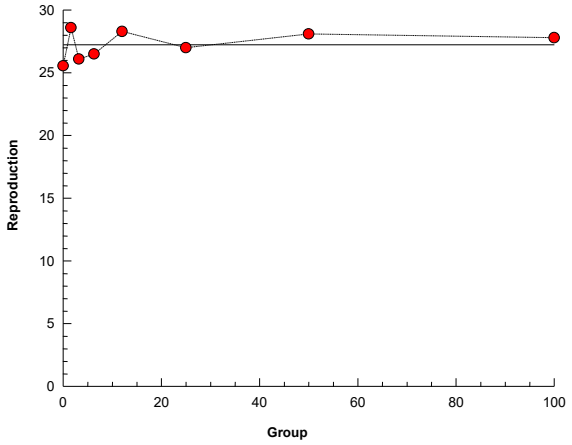
Reproduction Detail

Group	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	22	29	0	35	33	30	25	29	27	
1.6		30	34	27	30	32	34	18	30	22	29
3.2		29	33	24	20	29	32	30	16	22	26
6.3		23	26	31	29	32	23	27	26	23	25
12		27	34	24	20	23	27	31	31	32	34
25		26	25	32	29	31	30	22	29	25	21
50		29	24	32	24	23	31	29	34	27	28
100		25	31	32	25	28	30	27	19	31	30

Ceriodaphnia 7-d Survival and Reproduction Test | **Nautilus Environmental Calgary**

Analysis ID:	08-9533-4745	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	15 Dec-20 11:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



APPENDIX B – Chain-of-Custody Forms

Sent To: **Hydroqual Laboratories**
6125 12 Street SE
Calgary , AB, T2H 2K1
Tel: (403) 253-7121

CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

COC # C086558-CHYR-01-01

REPORT INFORMATION	
Company:	Bureau Veritas Laboratories
Address:	9331 - 48th Street, Edmonton, Alberta, T6B 2R4
Contact Name:	Geraldlyn Gouthro
Email:	geraldlyn.gouthro@bvlabs.com, customerservice@bvlabs.com
Phone:	(780) 577-7173
BV Labs Project #:	C086558

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Ceriodaphnia Dubia, 7 day										ADDITIONAL SAMPLE INFORMATION
	2021-0892																
1	YX4618-POND 3 -01	GRAB	2020/11/22		GC	8	X	4.8°C									(P: 02)
2	YX4619-E21 SUMP -02	GRAB	2020/11/22		GC	8	X	3.6°C									(P: 02)
3																	
4	2020/11/25																
5	09:30																
6	Jxxoc																
7	JC																
8	16x1L bottles																
9	Yes S/Yes I																
10	Good Condition																

REGULATORY CRITERIA

n/a

SPECIAL INSTRUCTIONS

Please inform BV Labs immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

TURNAROUND TIME

☐ Rush Required

2020/12/21

Date Required

Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
1. David Tidman	2020/11/24	13:27	1.		
2.			2.		

END OF REPORT

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-67, 1645-76, 1645-68, AND 1645-69

SAMPLING DATE: JUNE 27, 2021

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C145638
July 2021

Summary of Test Results for Samples from
Diavik Diamond Mines Inc.
Sample Date: June 27, 2021

Job C145638

Sample: 1645-67

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-76

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-68

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-69

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Effluent Sample	
Name of Samples	1645-67, 1645-76, 1645-68, and 1645-69
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2021/Jun/27
Date (y/m/d) of sample receipt at lab	2021/Jun/29 @ 08:00
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 11:46
Initial cell density of inoculum	10409 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test started	**1645-67**: 2021/Jun/29 @ 11:54 **1645-76**: 2021/Jun/29 @ 12:00 **1645-68**: 2021/Jun/29 @ 11:56 **1645-69**: 2021/Jun/29 @ 11:58
Date & time test ended	2021/Jul/02 @ 11:50
Persons performing test	D. Lai, N. Shergill
Mean test temperature	25 °C
Procedure/rate/duration of aeration of sample before test	No aeration of sample
pH adjustment	No pH adjustment

pH of aqueous sample before preparation and use in toxicity test	See “Data Summary” data sheet
pH of sample before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	NaHCO3, CaSO4, MgSO4, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3986-4250 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the test, no deviations from the test method, and no problems with the test.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2021/Jul/02
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**1645-67**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-76**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-68**: No. See Equal Variance t Two-Sample Test in CETIS. **1645-69**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v1.9.7.9 – Equal Variance t Two-Sample Test
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	None

QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV **1645-67**: 11% **1645-76**: 19% **1645-68**: 16% **1645-69**: 20% • Trend in the controls? **1645-67**: No **1645-76**: No **1645-68**: No **1645-69**: No • Algal cells increased by: **1645-67**: 30.03 **1645-76**: 37.18 **1645-68**: 33.68 **1645-69**: 30.59
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.0273; 2SD: (0.0203, 0.0385) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0326; 2SD: (0.0155, 0.0684)
Invalid Ref tox test?	No
Date of ref tox test (y/m/d)	2021/Jun/18
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Report Date: 02 Jul-21 17:16 (p 1 of 2)
Test Code/ID: SL-4388-0321 / 13-4949-6623

Alga Growth Inhibition Test — Bureau Veritas

Analysis ID:	05-6147-0847	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	02 Jul-21 17:16	Analysis:	Parametric-Two Sample	Status Level:	1
Edit Date:		MD5 Hash:	3EF473CDCE0D82DA9276A4CBC4E3838	Editor ID:	

Batch ID:	16-0431-2387	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	29 Jun-21 11:54	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	02 Jul-21 11:50	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	72h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	10-0353-2811	Code:	C145638	Project:	2-11-0691
Sample Date:	27 Jun-21 16:35	Material:	Water	Source:	Diavik
Receipt Date:	29 Jun-21 08:00	CAS (PC):		Station:	1645-67
Sample Age:	43h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	17.28%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	10.06	2.145	5.19	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.892	2.586	0.7408	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.892		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2368.04	2368.04	1	101.1	<1.0E-05	Significant Effect
Error	327.852	23.418	14			
Total	2695.89		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.44	8.885	0.1254	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9836	0.8408	0.9856	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	30.03	27.31	32.74	29.88	25.3	34.65	1.148	10.82%	0.00%
90.91		8	54.36	49.32	59.39	54.05	46.5	63.2	2.13	11.08%	-81.04%

Cell Yield Detail

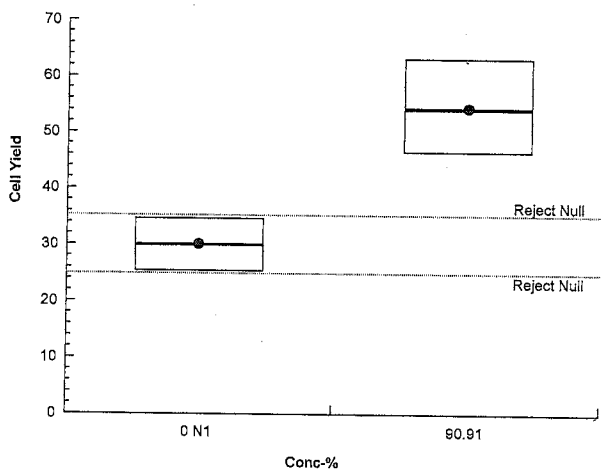
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	28.7	28.85	34.65	26.5	32.55	30.9	25.3	32.75
90.91		61.05	51.1	46.5	57.4	53	55.1	47.5	63.2

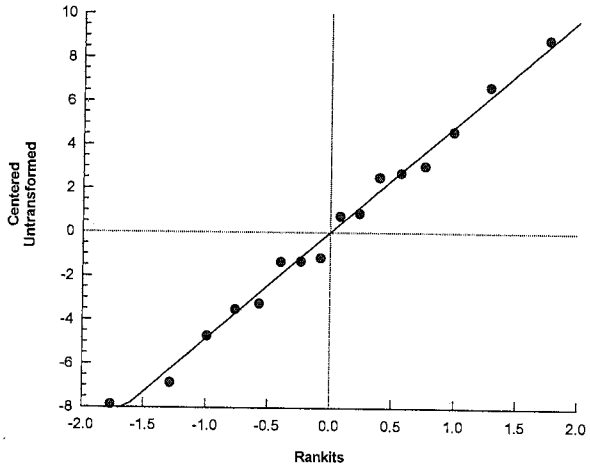
Analyst: 2021 JUL 02 QA: KT 2021 JUL 06

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	05-6147-0847	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:16	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3EF473CDCE0D82DA9276A4CBC4E3838	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-67
Date Sampled: 2021 Jun 27
Job /Sample #: C145638 AAU650
Date & Time Started: 2021 Jun 29 @ 11:54
Date & Time Ended: 2021 Jul 02 @ 11:50
Analyst(s): D. Lai
Instrument ID: BBy2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	28.8	30.6	28.70	30.03	3.25	11
Lab Control	D3	26.4	33.3	28.85			
Lab Control	D4	31.7	39.6	34.65			
Lab Control	D5	20.7	34.3	26.50			
Lab Control	D8	33.1	34.0	32.55			
Lab Control	D9	27.2	36.6	30.90			
Lab Control	D10	26.4	26.2	25.30			
Lab Control	D11	35.4	32.1	32.75			
90.91	C2	57.7	66.4	61.05	54.36	6.02	11
90.91	E2	46.4	57.8	51.10			
90.91	F2	46.5	48.5	46.50			
90.91	G2	56.5	60.3	57.40			
90.91	C3	54.0	54.0	53.00			
90.91	E3	47.4	64.8	55.10			
90.91	F3	38.1	58.9	47.50			
90.91	G3	66.2	62.2	63.20			

Client Name: Diavik

Job / Sample #: C145638 AAU650

Date Sampled: 2021 Jun 27

Sample ID: 1645-67

Date Received: 2021 Jun 29

Culture Date: 2021 Jun 26

Date & Time Started: 2021 Jun ~~26~~ 29 @ 1154

Culture Description: Green

Date & Time Ended: 2021 Jul 02 @ 1150

Light Intensity at Surface (lux): 3986-4250

Analyst(s): D. Lai NSwergal

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 jun 22

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: DML

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.7 Initial Temp (°C): 26.3 Sample Description: clear, pale gold

Initial Filtered pH (well B2): 7.8

Final Filtered pH (well B2): 8.2

Control Water Quality

Initial Filtered pH (well D6): 7.5

Final Filtered pH (well D7): 7.8

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.9 (*10^4 cells/mL)

Time of inoculum prep: 1146

Therefore, (**Xi**) 2290 cells were initially put into each test well and the initial cell density was (**Xd**) 10409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.9x10⁴) * 0.02] = 2290 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2290) * (4.5455)] = 10409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Jun 30	N	Y	Y	NJ
2021 Jul 01	Y	Y	Y	NJ
2021 Jul 02	Y	N		DML

@ end time 2021 Jul 02

CETIS Analytical Report

Report Date: 02 Jul-21 17:22 (p 1 of 2)
Test Code/ID: SL-4388-0621 / 06-8459-4326

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	20-5223-2778	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:22	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	EDF26DA46C5D2D4FCC2ECFCED6E1E3	**Editor ID:**	

Batch ID:	19-5828-5288	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	29 Jun-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	02 Jul-21 11:50	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	17-0846-2421	**Code:**	1645-76	**Project:**	2-11-0691
Sample Date:	27 Jun-21 16:10	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Jun-21 08:00	**CAS (PC):**		**Station:**	1645-76
Sample Age:	44h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	33.70%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	12.65	2.145	12.53	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.898	2.586	0.7271	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.898		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
etween	21844.8	21844.8	1	160	<1.0E-05	Significant Effect
Error	1911.14	136.51	14			
Total	23756		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	4.331	8.885	0.0720	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9769	0.8408	0.9347	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	37.17	31.19	43.16	36.6	28.2	51	2.53	19.25%	0.00%
90.91		8	111.1	98.62	123.5	111.8	89.65	130.5	5.266	13.41%	-198.79%

Cell Yield Detail

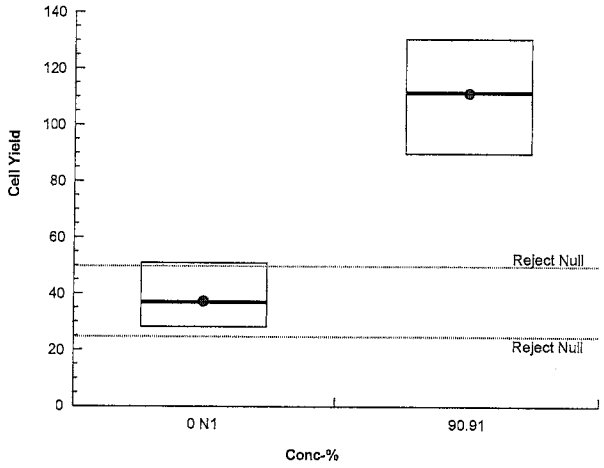
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	51	28.2	29.35	39.25	37.35	35.25	35.85	41.15
90.91		89.65	126.5	101.2	122	95.25	109.5	130.5	114

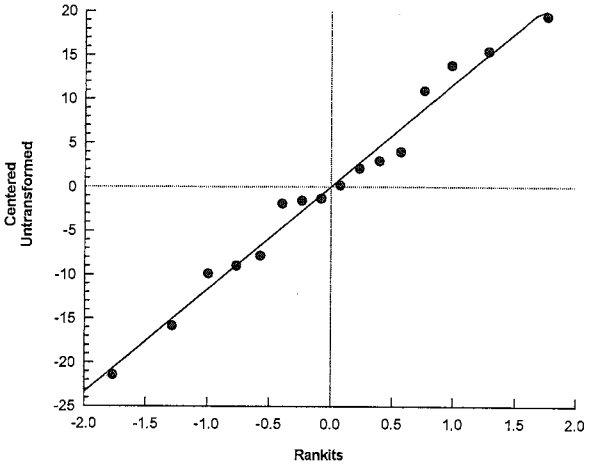
Analyst: JWC 2021 JUL02 QA: KA 2021 Jul 06

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	20-5223-2778	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:22	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	EDF26DA46C5D2D4FCC2ECFCED6E1E3	**Editor ID:**	

Graphics





Client Name: Diavik
Sample ID: 1645-76
Date Sampled: 2021 Jun 27
Job /Sample #: C145638 AAU651
Date & Time Started: 2021 Jun 29 @ 12:00
Date & Time Ended: 2021 Jul 02 @ 11:50
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	52.2	51.8	51.00	37.18	7.16	19
Lab Control	D3	25.4	33.0	28.20			
Lab Control	D4	29.7	31.0	29.35			
Lab Control	D5	37.4	43.1	39.25			
Lab Control	D8	41.2	35.5	37.35			
Lab Control	D9	40.7	31.8	35.25			
Lab Control	D10	38.7	35.0	35.85			
Lab Control	D11	45.8	38.5	41.15			
90.91	C2	92.2	89.1	89.65	111.08	14.89	13
90.91	E2	109.0	146.0	126.50			
90.91	F2	109.0	95.4	101.20			
90.91	G2	123.0	123.0	122.00			
90.91	C3	99.0	93.5	95.25			
90.91	E3	121.0	100.0	109.50			
90.91	F3	133.0	130.0	130.50			
90.91	G3	122.0	108.0	114.00			

Client Name: Diavik

Job / Sample #: C145638 AAU651

Date Sampled: 2021 Jun 27

Sample ID: 1645-76

Date Received: 2021 Jun 29

Culture Date: 2021 Jun 26

Date & Time Started: 2021 Jun ~~26~~ 29 (A) @ 1200

Culture Description: Green

Date & Time Ended: 2021 Jul 02 @ 1150

Light Intensity at Surface (lux): 3986-4250

Analyst(s): D. Lai NS

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 jun 22

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: DML

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.6 Initial Temp (°C): 25.1 Sample Description: Clear, colorless

Initial Filtered pH (well B2): 7.9

Final Filtered pH (well B2): 8.1

Control Water Quality

Initial Filtered pH (well D6): 7.5

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.9 (*10^4 cells/mL)

Time of inoculum prep: 1146

Therefore, (**Xi**) 2290 cells were initially put into each test well and the initial cell density was (**Xd**) 10409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.9x10⁴) * 0.02] = 2290 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2290) * (4.5455)] = 10409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Jun 30	N	N	Y	NS
2021 Jul 01	Y	Y	Y	NS
2021 Jul 02	Y	N		dml

(A) WE DMC 2021 Jul 02

CETIS Analytical Report

Report Date: 02 Jul-21 17:17 (p 1 of 2)
Test Code/ID: SL-4388-0421 / 15-0496-3775

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	16-4771-1151	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:17	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	F688CE3D6A2A4E2F19BF54F5F1F12378	**Editor ID:**	

Batch ID:	12-7361-1468	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	29 Jun-21 11:56	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	02 Jul-21 11:50	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	04-6610-9022	**Code:**	1645-68	**Project:**	2-11-0691
Sample Date:	27 Jun-21 16:21	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Jun-21 08:00	**CAS (PC):**		**Station:**	1645-68
Sample Age:	44h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% passed cell yield endpoint	18.67%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91	1.03	2.145	6.287	14	CDF	0.3205	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.757	2.586	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.757		1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
etween	36.4514	36.4514	1	1.061	0.3205	Non-Significant Effect
rror	481.125	34.3661	14			
Total	517.576		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.278	8.885	0.7541	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9376	0.8408	0.3211	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	33.68	29.09	38.27	33.72	24	43.5	1.942	16.31%	0.00%
90.91		8	36.7	31.51	41.89	36.92	27.1	46.65	2.196	16.92%	-8.96%

Cell Yield Detail

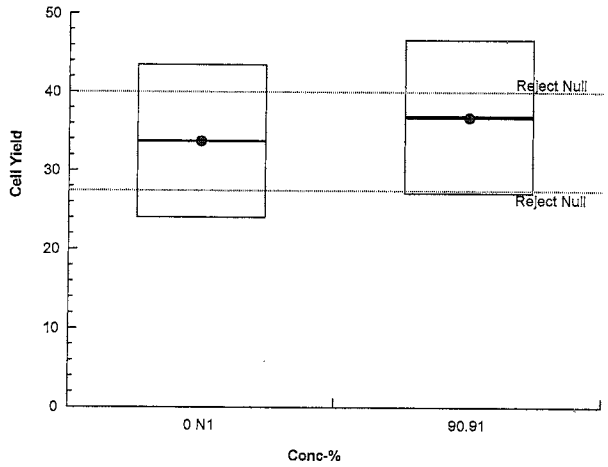
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	31.35	35	35.9	43.5	31.7	32.45	24	35.55
90.91		46.65	29.9	36.25	42.1	37.6	38.05	27.1	35.95

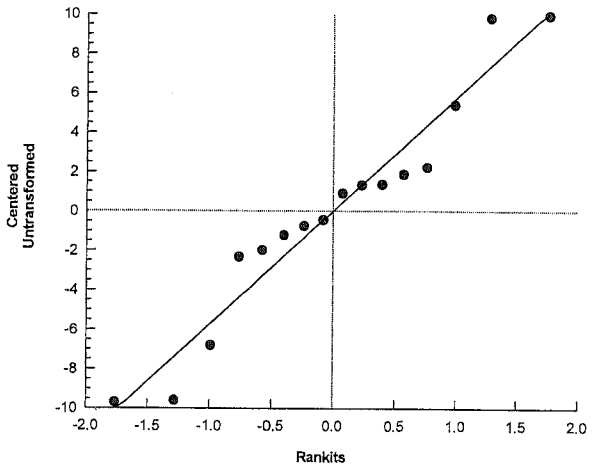
Analyst: DMC 2021 Jul 02 QA: KT 2021 Jul 06

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	16-4771-1151	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:17	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	F688CE3D6A2A4E2F19BF54F5F1F12378	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-68
Date Sampled: 2021 Jun 27
Job /Sample #: C145638 AAU652
Date & Time Started: 2021 Jun 29 @ 11:56
Date & Time Ended: 2021 Jul 02 @ 11:50
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	35.7	29.0	31.35	33.68	5.49	16
Lab Control	D3	43.4	28.6	35.00			
Lab Control	D4	38.6	35.2	35.90			
Lab Control	D5	38.9	50.1	43.50			
Lab Control	D8	27.8	37.6	31.70			
Lab Control	D9	38.0	28.9	32.45			
Lab Control	D10	20.3	29.7	24.00			
Lab Control	D11	33.2	39.9	35.55			
90.91	C2	48.4	46.9	46.65	36.70	6.21	17
90.91	E2	27.4	34.4	29.90			
90.91	F2	36.8	37.7	36.25			
90.91	G2	43.9	42.3	42.10			
90.91	C3	40.4	36.8	37.60			
90.91	E3	48.3	29.8	38.05			
90.91	F3	30.8	25.4	27.10			
90.91	G3	45.1	28.8	35.95			

Client Name: Diavik

Job / Sample #: C145638 AAU652

Date Sampled: 2021 Jun 27

Sample ID: 1645-68

Date Received: 2021 Jun 29

Culture Date: 2021 Jun 26

Date & Time Started: 2021 Jun ~~26~~ 29 @ 1156

Culture Description: Green

Date & Time Ended: 2021 Jul 02 @ 1150

Light Intensity at Surface (lux): 3986-4250

Analyst(s): D. Lai NShergao

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Jun 22

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: DML

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.7 Initial Temp (°C): 26.1 Sample Description: Clear, pale gold

Initial Filtered pH (well B2): 7.6

Final Filtered pH (well B2): 7.8

Control Water Quality

Initial Filtered pH (well D6): 7.5

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.9 (*10^4 cells/mL)

Time of inoculum prep: 1146

Therefore, (**Xi**) 2290 cells were initially put into each test well and the initial cell density was (**Xd**) 10409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.9x10⁴) * 0.02] = 2290 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2290) * (4.5455)] = 10409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Jun 30	N	N	Y	NS
2021 Jul 01	Y	Y	Y	NS
2021 Jul 02	Y	N		DML

Date DML 2021 Jul 02

CETIS Analytical Report

Report Date: 02 Jul-21 17:20 (p 1 of 2)
Test Code/ID: SL-4388-0521 / 01-7964-8791

Alga Growth Inhibition Test — Bureau Veritas

nalysis ID:	00-2547-0849	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	02 Jul-21 17:20	Analysis:	Parametric-Two Sample	Status Level:	1
Edit Date:		MD5 Hash:	622515F9FEAA904D7B91DCAACEEF7A5	Editor ID:	

Batch ID:	11-5403-8132	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	29 Jun-21 11:58	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	02 Jul-21 11:50	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	72h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	14-6400-0213	Code:	1645-69	Project:	2-11-0691
Sample Date:	27 Jun-21 16:48	Material:	Water	Source:	Diavik
Receipt Date:	29 Jun-21 08:00	CAS (PC):		Station:	1645-69
Sample Age:	43h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	25.63%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	16.35	2.145	7.841	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.794	2.586	0.9727	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.794		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
etween	14298.2	14298.2	1	267.5	<1.0E-05	Significant Effect
rror	748.429	53.4592	14			
Total	15046.6		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.961	8.885	0.3941	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9633	0.8408	0.7219	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	30.59	25.56	35.61	31.35	19.15	38.45	2.124	19.64%	0.00%
90.91		8	90.37	83.34	97.41	91.07	77.7	101.6	2.975	9.31%	-195.46%

Cell Yield Detail

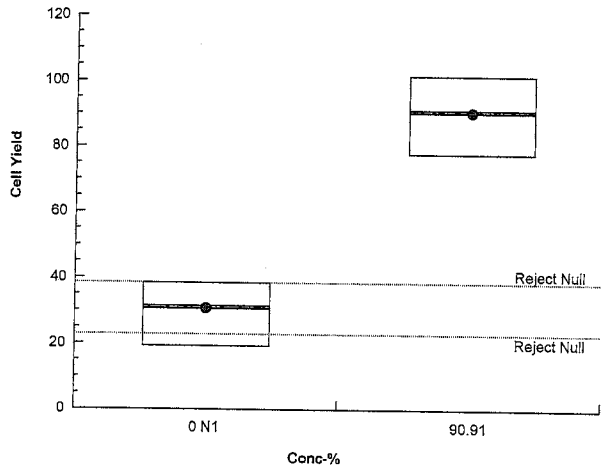
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	30.35	30.75	31.95	35.75	32.85	25.45	19.15	38.45
90.91		80.85	99.5	93.25	94.1	77.7	88.9	101.6	87.1

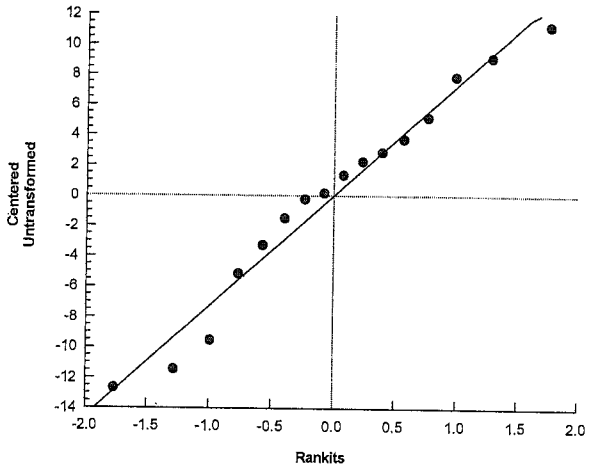
Analyst: JMC 2021 Jul 02 QA: KF 2021 Jul 06

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	00-2547-0849	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	02 Jul-21 17:20	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	622515F9FEAA904D7B91DCAACEEF7A5	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-69
Date Sampled: 2021 Jun 27
Job /Sample #: C145638 AAU653
Date & Time Started: 2021 Jun 29 @ 11:58
Date & Time Ended: 2021 Jul 02 @ 11:50
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	30.8	31.9	30.35	30.59	6.01	20
Lab Control	D3	30.7	32.8	30.75			
Lab Control	D4	33.1	32.8	31.95			
Lab Control	D5	41.4	32.1	35.75			
Lab Control	D8	27.7	40.0	32.85			
Lab Control	D9	29.7	23.2	25.45			
Lab Control	D10	18.4	21.9	19.15			
Lab Control	D11	43.4	35.5	38.45			
90.91	C2	81.5	82.2	80.85	90.38	8.42	9
90.91	E2	101.0	100.0	99.50			
90.91	F2	102.0	86.5	93.25			
90.91	G2	100.0	90.2	94.10			
90.91	C3	88.2	69.2	77.70			
90.91	E3	98.7	81.1	88.90			
90.91	F3	87.2	118.0	101.60			
90.91	G3	96.9	79.3	87.10			

Client Name: Diavik

Job / Sample #: C145638 AAU653

Date Sampled: 2021 Jun 27

Sample ID: 1645-69

Date Received: 2021 Jun 29

Culture Date: 2021 Jun 26

Date & Time Started: 2021 Jun ~~26~~ 29 @ 1158

Culture Description: Green

Date & Time Ended: 2021 Jul 02 @ 1150

Light Intensity at Surface (lux): 3986-4250

Analyst(s): D. Lai NSwergold

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 jun 22

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: DMC

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 8.4 Initial Temp (°C): 26.2 Sample Description: Clear, pale gold

Initial Filtered pH (well B2): 8.6

Final Filtered pH (well B2): 9.2

Control Water Quality

Initial Filtered pH (well D6): 7.5

Final Filtered pH (well D7): 7.6

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.9 (*10^4 cells/mL)

Time of inoculum prep: 1146

Therefore, (**Xi**) 2290 cells were initially put into each test well and the initial cell density was (**Xd**) 10409 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 229x10⁴) * 0.02] = 2290 cells

To calculate the initial cell density:

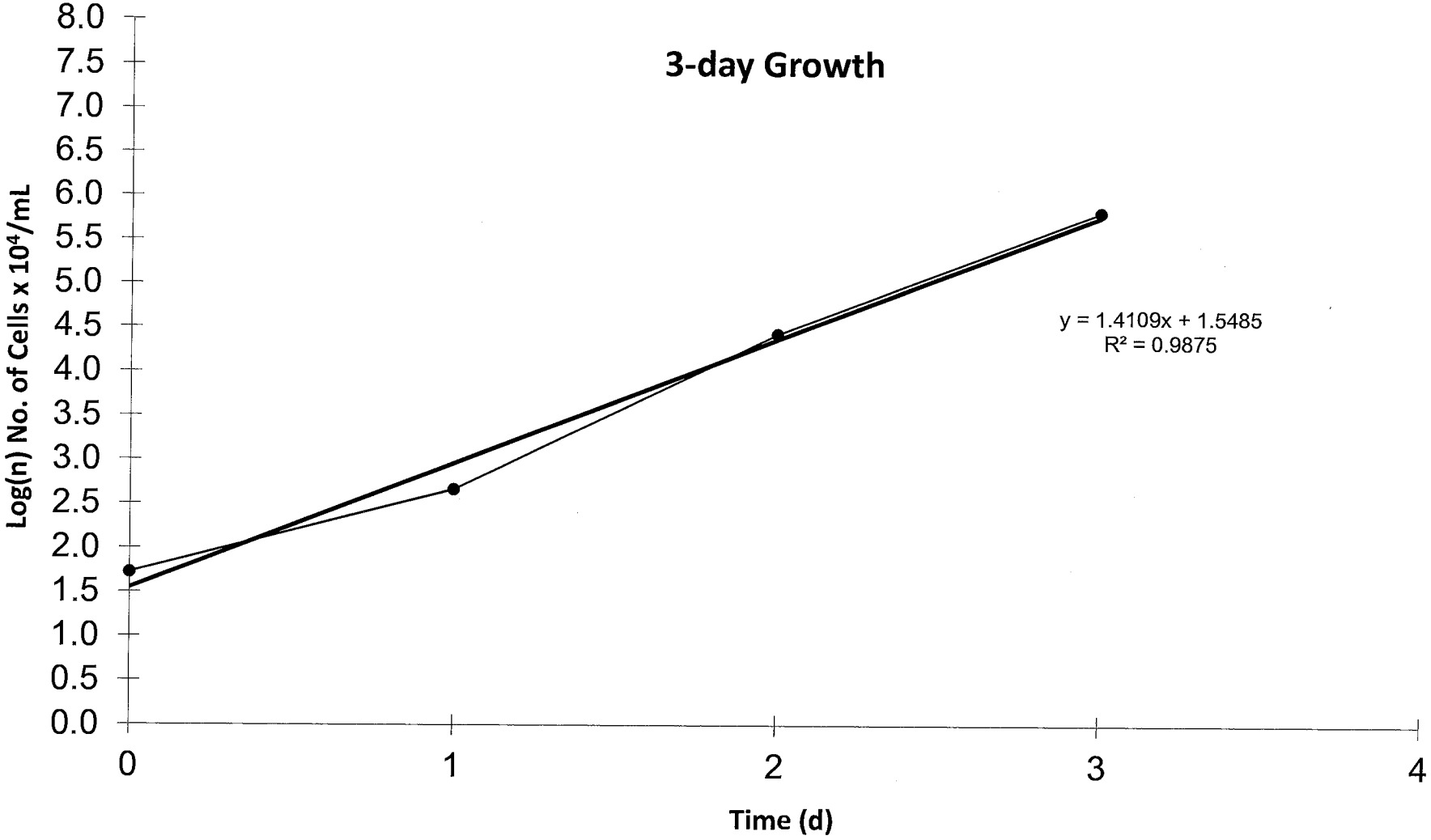
Xd = [(Xi) * (1000/220)] = [(2290) * (4.5455)] = 10409 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Jun 30	N	N	Y	NS
2021 Jul 01	Y	Y	Y	NS
2021 Jul 02	Y	N		DMC

DMC 2021 Jul 02

Pseudokirchneriella subcapitata **Growth Curve using CP201216; Date: 2021/Jan/05**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C145638-AAU653
Client Sample ID: 1645-69
Date sample collected: 44374
Test Performed By: THR, CSH, KMG, DBA, CT9
Test Initiation Date: 2021/06/30
Test End Date: 2021/07/06
Dates when subsamples used: 2021/06/30, 2021/07/01, 2021/07/02, 2021/07/03, 2021/07/04, 2021/07/05

Chemistries prior to test:
Dissolved Oxygen(mg/L): 9.7
Temperature (°C): 24
pH(pH units): 8.4
Conductivity (µS/cm): 699

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Log-X	N/A
	7 day Reproduction Result		Significant	Equal Variance t Two-Sample Test	Log-X	N/A

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.41	1.00	2.00	Binomial/Graphical	Log-X	N/A
	7 day Reproduction Result	IC50	1.31	1.09	1.4	Linear interpolation	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.60	0.980	2.63	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	0.934	1.68			
Reference Toxicant Test Initiation Date:			2021/06/30					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Reference toxicant test concentration 0.5g/L analyzed with 9 organisms

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	28
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/06/30 2021/07/04 2021/07/01 2021/07/02 2021/07/03
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		4		13		16						0.0%	28	4.2
	2	0		0		0		5		8		17								
	3	0		0		0		6		11		16								
	4	0		0		0		4		8		17								
	5	0		0		0		5		4		13								
	6	0		0		0		3		8		10								
	7	0		0		0		6		6		13								
	8	0		0		0		6		11		13								
	9	0		0		0		6		10		14								
	10	0		0		0		5		8		14								
100%	1	0		0		0		6		11		11						0.0%	19.9	4.4
	2	0		0		0		5		12		0								
	3	0		0		0		8		14		0								
	4	0		0		0		7		14		0								
	5	0		0		0		7		13		0								
	6	0		0		0		5		10		0								
	7	0		0		0		6		8		0								
	8	0		0		0		6		8		6								
	9	0		0		0		9		8		0								
	10	0		0		0		5		10		10								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/06/30	25	7.9	7.3	2021/07/01	25	7.5	6.0
100		24	8.4	9.4		25	8.0	5.7
Control	2021/07/01	25	7.8	7.3	2021/07/02	25	7.7	6.7
100		25	8.3	8.6		25	8.1	6.7
Control	2021/07/02	25	7.9	7.2	2021/07/03	25	7.6	6.6
100		25	8.3	9.0		25	8.0	6.6
Control	2021/07/03	26	8.0	7.0	2021/07/04	25	7.8	6.5
100		25	8.3	7.5		25	8.1	6.2
Control	2021/07/04	25	8.0	7.1	2021/07/05	25	7.8	6.5
100		25	8.4	8.5		25	8.2	6.3
Control	2021/07/05	25	8.1	7.2	2021/07/06	25	7.6	6.5
100		26	8.4	7.5		25	8.0	6.4
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C145638-AAU651
Client Sample ID: 1645-76
Date sample collected: 44374
Test Performed By: CSH, THR, KMG, DBA, CT9
Test Initiation Date: 2021/06/30
Test End Date: 2021/07/06
Dates when subsamples used: 2021/06/30, 2021/07/01, 2021/07/02, 2021/07/03, 2021/07/04, 2021/07/05

Chemistries prior to test:
Dissolved Oxygen(mg/L): 8.7
Temperature (°C): 25
pH(pH units): 7.5
Conductivity (µS/cm): 1267

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Log-X	N/A
	7 day Reproduction Result		Non-Significant	Equal Variance t Two-Sample Test	Log-X	N/A

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.41	1.00	2.00	Binomial/Graphical	Log-X	N/A
	7 day Reproduction Result	IC50	1.31	1.09	1.4	Linear interpolation	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.60	0.980	2.63	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	0.934	1.68			
Reference Toxicant Test Initiation Date:			2021/06/30					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Reference toxicant test concentration 0.5g/L analyzed with 9 organisms

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	28
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/06/30 2021/07/01 2021/07/02
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		0		14		13						0.0%	27.7	5.0
	2	0		0		0		6		9		20								
	3	0		0		0		6		7		11								
	4	0		0		0		5		11		14								
	5	0		0		0		6		10		13								
	6	0		0		0		5		7		18								
	7	0		0		0		5		4		7								
	8	0		0		0		5		11		13								
	9	0		0		0		7		7		13								
	10	0		0		0		7		9		14								
100%	1	0		0		0		4		12		15						0.0%	28.6	7.8
	2	0		0		0		6		12		15								
	3	0		0		0		7		14		14								
	4	0		0		0		7		9		6								
	5	0		0		0		3		10		15								
	6	0		0		0		7		9		19								
	7	0		0		0		5		8		0								
	8	0		0		0		6		14		18								
	9	0		0		0		6		8		7								
	10	0		0		0		6		10		14								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/06/30	25	7.8	7.2	2021/07/01	25	7.7	6.8
100		24	7.5	8.5		25	7.6	6.7
Control	2021/07/01	25	7.8	7.2	2021/07/02	25	7.7	6.7
100		25	7.3	7.9		25	7.6	6.8
Control	2021/07/02	25	7.9	7.2	2021/07/03	25	7.5	6.6
100		25	7.4	7.9		25	7.5	6.6
Control	2021/07/03	26	7.9	6.9	2021/07/04	25	7.8	6.5
100		26	7.4	7.1		25	7.6	6.4
Control	2021/07/04	25	8.0	7.1	2021/07/05	25	7.7	6.5
100		25	7.4	7.5		25	7.6	6.4
Control	2021/07/05	25	8.1	7.2	2021/07/06	25	7.4	6.6
100		26	7.5	7.0		25	7.4	6.4
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C145638-AAU650
Client Sample ID: 1645-67
Date sample collected: 44374
Test Performed By: CSH, THR, KMG, DBA, CT9
Test Initiation Date: 2021/06/30
Test End Date: 2021/07/06
Dates when subsamples used: 2021/06/30, 2021/07/01, 2021/07/02, 2021/07/03, 2021/07/04, 2021/07/05

Chemistries prior to test:
Dissolved Oxygen(mg/L): 9.5
Temperature (°C): 24
pH(pH units): 7.7
Conductivity (µS/cm): 478

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Log-X	N/A
	7 day Reproduction Result		Non-Significant	Equal Variance t Two-Sample Test	Log-X	N/A

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.41	1.00	2.00	Binomial/Graphical	Log-X	N/A
	7 day Reproduction Result	IC50	1.31	1.09	1.4	Linear interpolation	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.60	0.980	2.63	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	0.934	1.68			
Reference Toxicant Test Initiation Date:			2021/06/30					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Reference toxicant test concentration 0.5g/L analyzed with 9 organisms

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	28
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/06/30 2021/07/04 2021/07/01 2021/07/02 2021/07/03
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		14		14						0.0%	26.3	5.6
	2	0		0		0		5		10		0								
	3	0		0		0		7		9		15								
	4	0		0		0		6		11		13								
	5	0		0		0		0		12		11								
	6	0		0		0		6		7		11								
	7	0		0		0		5		7		14								
	8	0		0		0		3		12		14								
	9	0		0		0		5		7		10								
	10	0		0		0		5		11		12								
100%	1	0		0		0		6		10		17						0.0%	25.4	7.0
	2	0		0		0		5		11		0								
	3	0		0		0		6		11		0								
	4	0		0		0		6		14		13								
	5	0		0		0		7		15		0								
	6	0		0		0		5		10		14								
	7	0		0		0		5		11		13								
	8	0		0		0		4		12		15								
	9	0		0		0		5		11		0								
	10	0		0		0		6		10		12								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/06/30	25	7.8	7.3	2021/07/01	25	7.6	6.6
100		24	7.7	9.3		25	7.4	6.7
Control	2021/07/01	25	7.7	7.1	2021/07/02	25	7.7	6.6
100		25	7.6	8.6		25	7.5	6.6
Control	2021/07/02	25	7.9	7.1	2021/07/03	26	7.5	6.5
100		25	7.6	8.7		26	7.4	6.5
Control	2021/07/03	25	7.7	6.9	2021/07/04	25	7.7	6.5
100		26	7.5	8.0		25	7.5	6.4
Control	2021/07/04	25	7.8	7.0	2021/07/05	25	7.6	6.3
100		25	7.4	8.1		25	7.3	5.7
Control	2021/07/05	25	8.0	7.1	2021/07/06	25	7.5	6.5
100		26	7.4	7.1		25	7.2	5.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C145638

Client Project Name & Number: CLOSURE — Sample Number: AAU653-02

Test Result:

48 hrs Mortality % 0 Statistical Method: Visual

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-69

Description:	Pale gold, clear			Sample Prior to Analysis:	
Sample Collected:	Jun 27, 2021 04:48 PM	Sampling Method :	N/A	pH:	8.3
Sample Collected By:	BP	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Jun 29, 2021 08:00 AM	Volume Received:	1 x ECO1	Dissolved Oxygen:	106.5 %
Analysis Start :	Jun 30, 2021 10:36 AM	Avg Temp Arrival:	7 °C	Sample Conductance:	708 µS/cm
End :	Jul 02, 2021 11:01 AM	Storage:	2-6°C	Hardness:	292 mg $CaCO_3$/L

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Immobility (#)
% vol/vol	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	48 hrs	48 hrs
0	20	20	9.1	9.0	8.0	7.9	359	0	0	0
0	20	20	9.1	9.0	8.0	7.9	359	0	0	0
0	20	20	9.1	9.0	8.0	7.9	359	0	0	0
100	20	20	9.2	8.9	8.4	8.3	706	0	0	0
100	20	20	9.2	8.9	8.4	8.3	706	0	0	0
100	20	20	9.2	8.9	8.4	8.4	706	0	0	0

Comments : All neonates appeared and behaved normally during the test.

Culture/Control/Dilution Water: Reconstituted Water-Moderately Hard

Hardness: 104 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	185 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	18.5 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : Aquatic Biosystems

Age at Test Initiation :	<24 hrs	Average Brood Size :	20.7
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	0
Culture Temperature :	20 ± 2 °C	Time To First Brood :	9 Days
Culture Diet	4 mL algae + 1 mL YCT; Sun. 2 mL algae + 0.5 mL YCT.		

Reference chemical: Zinc Test Date: Jun 17, 2021

Test Endpoint 48 hrs LC50 (95% confidence interval) : 0.40 (0.28, 0.57)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 0.46 (0.23, 0.89) mg/L Concentration : 0,0.05,0.1,0.5,1,5,10 mg/L

Test Method BV Labs' BBY2SOP-00007 is based on the latest version of EPS 1/RM/14.

Method Deviations: None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C145638

Client Project Name & Number: CLOSURE

Sample Number: AAU653-02

Analyst : Luke Nicholls

Verified By : Kimberly Tamaki, Scientist, Ecotoxicology

Date: Jul 07, 2021 12:11 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C145638

Client Project Name & Number: CLOSURE — Sample Number: AAU652-02

Test Result:

48 hrs Mortality % >100 Statistical Method: Visual

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68

Description:	Pale gold, clear			Sample Prior to Analysis:	
Sample Collected:	Jun 27, 2021 04:21 PM	Sampling Method :	N/A	pH:	7.3
Sample Collected By:	BP	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Jun 29, 2021 08:00 AM	Volume Received:	1 x ECO1	Dissolved Oxygen:	100.2 %
Analysis Start :	Jun 30, 2021 10:34 AM	Avg Temp Arrival:	7 °C	Sample Conductance:	125 µS/cm
End :	Jul 02, 2021 10:58 AM	Storage:	2-6°C	Hardness:	60 mg $CaCO_3$/L

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Immobility (#)
% vol/vol	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	48 hrs	48 hrs
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
100	20	20	8.9	8.8	7.3	7.7	125	0	0	0
100	20	20	8.9	8.8	7.3	7.8	125	0	0	0
100	20	20	8.9	8.8	7.3	7.8	125	0	0	0

Comments : All neonates appeared and behaved normally during the test.

Culture/Control/Dilution Water: Reconstituted Water-Moderately Hard

Hardness: 104 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	0 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	185 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	18.5 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : Aquatic Biosystems

Age at Test Initiation :	<24 hrs	Average Brood Size :	20.7
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	0
Culture Temperature :	20 ± 2 °C	Time To First Brood :	9 Days
Culture Diet	4 mL algae + 1 mL YCT; Sun. 2 mL algae + 0.5 mL YCT.		

Reference chemical: Zinc Test Date: Jun 17, 2021

Test Endpoint 48 hrs LC50 (95% confidence interval) : 0.40 (0.28, 0.57)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 0.46 (0.23, 0.89) mg/L Concentration : 0,0.05,0.1,0.5,1,5,10 mg/L

Test Method BV Labs' BBY2SOP-00007 is based on the latest version of EPS 1/RM/14.

Method Deviations: None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C145638

Client Project Name & Number: CLOSURE

Sample Number: AAU652-02

Analyst : Luke Nicholls

Verified By : Kimberly Tamaki, Scientist, Ecotoxicology

Date: Jul 07, 2021 12:08 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C145638

Client Project Name & Number: CLOSURE — Sample Number: AAU651-02

Test Result:

48 hrs Mortality % 0 Statistical Method: Visual

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-76

Description:	Clear, colourless			Sample Prior to Analysis:	
Sample Collected:	Jun 27, 2021 04:10 PM	Sampling Method :	N/A	pH:	7.7
Sample Collected By:	BP	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Jun 29, 2021 08:00 AM	Volume Received:	1 x ECO1	Dissolved Oxygen:	102.0 %
Analysis Start :	Jun 30, 2021 10:32 AM	Avg Temp Arrival:	7 °C	Sample Conductance:	1264 µS/cm
End :	Jul 02, 2021 10:54 AM	Storage:	2-6°C	Hardness:	224 mg $CaCO_3$/L

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Immobility (#)
% vol/vol	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	48 hrs	48 hrs
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
100	20	20	9.0	8.9	7.7	7.8	1262	0	0	0
100	20	20	9.0	8.9	7.7	7.8	1262	0	0	0
100	20	20	9.0	8.9	7.7	7.9	1262	0	0	0

Comments : All neonates appeared and behaved normally during the test.

Culture/Control/Dilution Water: Reconstituted Water-Moderately Hard

Hardness: 104 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	185 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	18.5 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : Aquatic Biosystems

Age at Test Initiation :	<24 hrs	Average Brood Size :	20.7
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	0
Culture Temperature :	20 ± 2 °C	Time To First Brood :	9 Days
Culture Diet	4 mL algae + 1 mL YCT; Sun. 2 mL algae + 0.5 mL YCT.		

Reference chemical: Zinc Test Date: Jun 17, 2021

Test Endpoint 48 hrs LC50 (95% confidence interval) : 0.40 (0.28, 0.57)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 0.46 (0.23, 0.89) mg/L Concentration : 0,0.05,0.1,0.5,1,5,10 mg/L

Test Method BV Labs' BBY2SOP-00007 is based on the latest version of EPS 1/RM/14.

Method Deviations: None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C145638

Client Project Name & Number: CLOSURE

Sample Number: AAU651-02

Analyst : Luke Nicholls

Verified By : Kimberly Tamaki, Scientist, Ecotoxicology

Date: Jul 07, 2021 12:05 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C145638

Client Project Name & Number: CLOSURE — Sample Number: AAU650-02

Test Result:

48 hrs Mortality % 0 Statistical Method: Visual

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-67

Description:	pale gold, clear			Sample Prior to Analysis:	
Sample Collected:	Jun 27, 2021 04:35 PM	Sampling Method :	N/A	pH:	7.9
Sample Collected By:	BP	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Jun 29, 2021 08:00 AM	Volume Received:	1 x ECO1	Dissolved Oxygen:	106.0 %
Analysis Start :	Jun 30, 2021 10:30 AM	Avg Temp Arrival:	7 °C	Sample Conductance:	481 µS/cm
End :	Jul 02, 2021 10:49 AM	Storage:	2-6°C	Hardness:	168 mg $CaCO_3$/L

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Immobility (#)
% vol/vol	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	Initial	48 hrs	48 hrs	48 hrs
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
0	20	20	9.1	8.9	8.0	7.9	359	0	0	0
100	20	20	9.2	8.7	7.9	7.8	482	0	0	0
100	20	20	9.2	8.7	7.9	7.8	482	0	0	0
100	20	20	9.2	8.8	7.9	7.7	482	0	0	0

Comments : All neonates appeared and behaved normally during the test.

Culture/Control/Dilution Water: Reconstituted Water-Moderately Hard

Hardness: 104 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	185 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	18.5 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : Aquatic Biosystems

Age at Test Initiation :	<24 hrs	Average Brood Size :	20.7
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	0
Culture Temperature :	20 ± 2 °C	Time To First Brood :	9 Days
Culture Diet	4 mL algae + 1 mL YCT; Sun. 2 mL algae + 0.5 mL YCT.		

Reference chemical: Zinc Test Date: Jun 17, 2021

Test Endpoint 48 hrs LC50 (95% confidence interval) : 0.40 (0.28, 0.57)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 0.46 (0.23, 0.89) mg/L Concentration : 0,0.05,0.1,0.5,1,5,10 mg/L

Test Method BV Labs' BBY2SOP-00007 is based on the latest version of EPS 1/RM/14.

Method Deviations: None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C145638

Client Project Name & Number: CLOSURE

Sample Number: AAU650-02

Analyst : Luke Nicholls

Verified By : Kimberly Tamaki, Scientist, Ecotoxicology

Date: Jul 07, 2021 11:59 AM

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-68, 1645-45, 1645-74, 1645-46, 1645-87, AND 1645-47

SAMPLING DATE: AUGUST 08, 2021

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C157648
September 2021

Summary of Test Results for Samples from
Diavik Diamond Mines Inc.
Sample Date: August 08, 2021

Job C157648

Sample: 1645-68

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	Yes

Sample: 1645-45

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No

Sample: 1645-74

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No

Sample: 1645-46

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	Yes

Sample: 1645-87

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No

Sample: 1645-47

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Ceriodaphnia dubia Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	6 samples each collected in >3 separate containers
Test Type	Static-renewal
Effluent Sample	
Sample name	1645-68, 1645-45, 1645-74, 1645-46, 1645-87, and 1645-47
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2021/Aug/08
Date (y/m/d)/time of sample receipt at lab	2021/ Aug/10 @ 11:02
Test Organisms	
Species	*Ceriodaphnia dubia*
Source	In-house culture started from organisms obtained from Aquatic Research Organisms, Hampton, NH.
Age at start of test	<24 hours old; within 12 hours of each other
Unusual appearance, behaviour or treatment of test organisms, before use in test	None
Mean percent mortality of brood in 7d preceding test	The mean percent mortality was 1.43. See "*Ceriodaphnia* Culture Health - Mortality Records" sheet
Mean number of surviving young produced per adult in culture during 7d preceding test	The mean number of surviving young was 23.3. See "*Ceriodaphnia* Culture Health – Mortality and Mean Neonates"
Number of young produced in the 3rd or subsequent brood	See "*Ceriodaphnia dubia* - Clearing Records"
Ephippia in the culture	No Ephippia present
Test Conditions & Facilities	
Test method	BBY2 SOP-00001 *Ceriodaphnia dubia* Chronic Survival and Reproduction Test EPS 1/RM/21, 2nd Ed., February 2007
Dates or days when subsamples used	See "Initial Measurements and Observations" sheet
Date test started (y/m/d)	2021/Aug/10
Date (y/m/d) of test completion	2021/Aug/17
Test vessels	20 mL glass culture tubes
Persons performing test	N. Shergill, Y. Su, M. Hamad, K. Tamaki, M. Mazziotti, T. Wollelo
Rate of preaeration	Minimal and controlled (100 bubbles/min)
Duration of preaeration	See "Initial Measurements and Observations" sheet

Rate/duration of aeration during test	No aeration
Procedure for pH adjustment	No pH adjustment of samples
Procedure for filtration	Sample were filtered through a 60 µm nitex mesh when native organisms were observed
Source of control/dilution water & quantity of chemicals added	Lab Control - Type I deionized water hardened to 88 mg/L $CaCO_3$ with 20% Perrier water, Vitamin B_{12} & Selenium
Number and concentration of test solutions	100% and lab control
Volume and depth of solution in test vessels	15 mL & 9 cm
Number of replicates per conc.	10
Number of organisms per test vessel	1
DO & pH of sample just before its use	See “Initial Measurements and Observations”
Temperature, DO, & pH of test solutions and controls	See daily water quality on “Observation and Measurements”
Test solution renewal intervals	See “Initial Measurements and Observations”
Test observations and/or deviations from test method and standard practices	Although every effort is made to adhere to must conditions outlined in the reference method, it is important to note deviations do not automatically invalidate the test. Deviations are assessed for their impact on the test result and are qualified appropriately. Two deviations occurred during the test exposures. **1645-46**: Due to an analyst error, 1 *Ceriodaphnia dubia* was missing from the 100% v/v concentration on day 1 of testing. The reference method specifies that each concentration must consist of 10 replicates. The replicate with the missing test organism was removed from the calculations and statistical analysis. **1645-47**: Due to an analyst error, 1 *Ceriodaphnia dubia* was injured during the test solution renewal in the control on day 5 of testing. The reference method specifies that each concentration must consist of 10 replicates. The replicate with the injured test organism was removed from the calculations and statistical analysis. The deviations appear to have had a negligible impact on the test result as all other culture and quality indicators, including control organism survival and reproduction met method criteria.
Outliers?	**1645-68**: Yes, replicate 3 of the 100% v/v concentration was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis. **1645-45**: None **1645-74**: Yes, replicate 4 of the 100% v/v concentration was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis. **1645-46**: None **1645-87**: None **1645-47**: None

QA	
Did the test pass the test validity criteria of: •Mean mortality of the control adults is ≤20% •Average of ≥15 neonates/surviving adult in the controls •3 broods produced by ≥60% of control organisms by the end of the 8th day.	Did Lab controls meet validity criteria? Yes •Mean mortality in Lab controls: **1645-68**: 0% **1645-45**: 0% **1645-74**: 0% **1645-46**: 10% **1645-87**: 0% **1645-47**: 0% •Average live young produced/surviving adult: **1645-68**: 30.5 **1645-45**: 31.8 **1645-74**: 26.5 **1645-46**: 30.0 **1645-87**: 27.4 **1645-47**: 29.8 •Percent of Lab control organisms producing 3 broods: **1645-68**: 100% **1645-45**: 90% **1645-74**: 100% **1645-46**: 100% **1645-87**: 100% **1645-47**: 90%
Reference toxicant test LC50 (95% CL) (mg NaCl/L) for survival	1700 (1580, 1810)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for survival	1821 2SD (1422, 2331)
Reference toxicant test IC50 (95% CL) (mg NaCl/L) for reproduction	1320 (1240, 1420)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for reproduction	1435 2SD (1176, 1751)
Invalid Reference toxicant test?	No
Date of reference toxicant test (y/m/d) and duration	2021/Aug/11 6 days
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Report Date:	26 Aug-21 16:19 (p 1 of 1)
Test Code/ID:	CD-4388-0321 / 01-8678-2240

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	06-6012-5287	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	26 Aug-21 16:18	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	6894918390AF8E31150D83D1D9A08A86	**Editor ID:**	

Batch ID:	06-6526-6521	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:45	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:35	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-7508-6467	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 09:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0.5000	Exact	0.5000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		9	1	10	0.9000	0.1000	10.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%

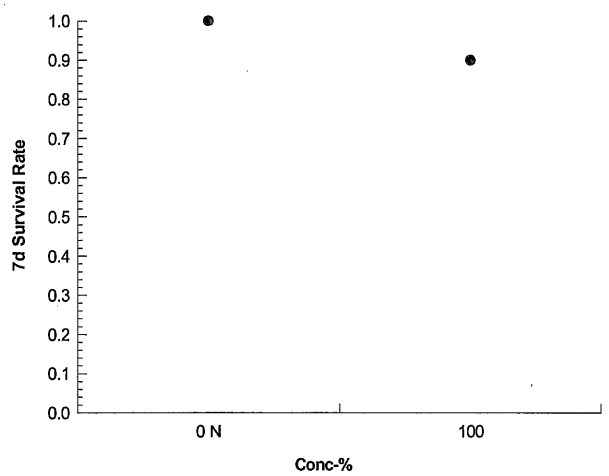
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Sept 08

 Analyst: YY 2021 Aug 26 QA: MO

CETIS Analytical Report

Report Date: 26 Aug-21 16:19 (p 1 of 2)
Test Code/ID: CD-4388-0321 / 01-8678-2240

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	04-8619-2305	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	26 Aug-21 16:18	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	11BEF34DA50EFF886D50548157C61012	**Editor ID:**	

Batch ID:	06-6526-6521	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:45	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:35	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-7508-6467	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 09:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% failed reproduction endpoint	17.04%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100*	66.5	---	1	18	Exact	0.0011	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	3.251	2.708	0.0017	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	432.45	432.45	1	9.633	0.0061	Significant Effect
Error	808.1	44.8944	18			
Total	1240.55		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	4.592	6.541	0.0331	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8616	0.866	0.0084	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	30.5	27.63	33.37	31	23	35	1.267	13.14%	0.00%
100		10	21.2	15.06	27.34	23	0	31	2.715	40.50%	30.49%

Reproduction Detail

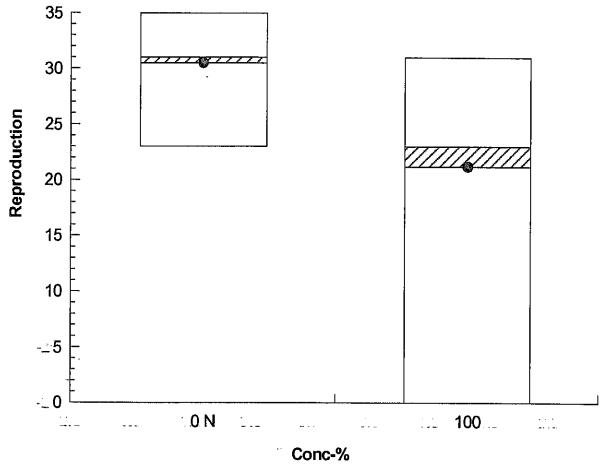
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	35	34	34	30	29	26	28	34	32
100		18	18	0	22	31	27	24	20	24	28

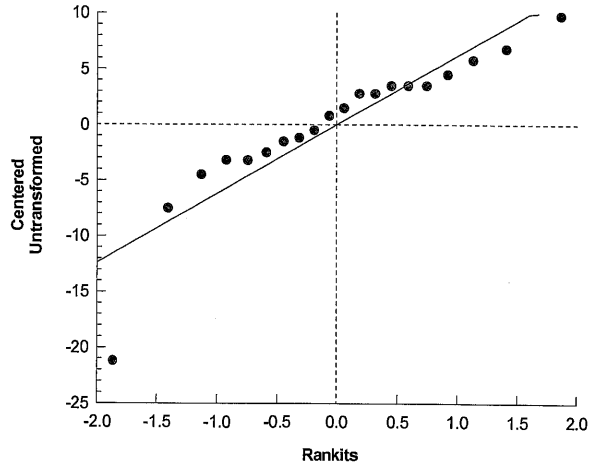
Analyst: KH 2021 Aug26 QA: MO 2021 Sept08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	04-8619-2305	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	26 Aug-21 16:18	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	11BEF34DA50EFF886D50548157C61012	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, Y. Su, K. Tamaki, M. Hamad, N. Shergill

Job / Sample #: C157648 / ADN205
Sample ID: 1645-68
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	23							18
2	35							18
3	34							0
4	34							22
5	30							31
6	29							27
7	26							24
8	28							20
9	34							24
10	32							28
Mean	30.5	--	--	--	--	--	--	21.2
SD	4.0	--	--	--	--	--	--	8.6

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							0
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	90
SD (%)	0.0	--	--	--	--	--	--	31.6

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Mélanie Mazziotti
2021 Aug 31

Proofed by: [illegible] 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC.

Job / Sample #: C157648/ADN205

Date Started August 10, 2021

Sample ID: 1645-68

Date Ended: Aug 17, 2021

Organism Lot #: AB 2021 Aug02

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	115.5	25.9	7.6	20	106.8	24.7	gs
1	August 11, 2021	133.0	25.0	N/A	20	108.1	25.0	TW
2	August 12, 2021	104.2	25.4	N/A	20	97.7	24.8	gs
3	August 13, 2021	91.3	25.4	N/A	N/A	N/A	N/A	TW
4	August 14, 2021	110.9	25.2	N/A	20	101.6	25.0	MM/tm
5	August 15, 2021	118.0	25.2	N/A	20	106.9	25.2	gs
6	2021 Aug 16	102.3	25.2	N/A	20	98.4	24.7	KT
7				N/A	Ⓐ			

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description yellow, clear Initials gs

Sample Hardness (mg/L $CaCO_3$) 96 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: 16:15-16:35	gs
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:45	
	Bottle / Carboy #: 1 removed native organisms. gs	
1	Date: August 11, 2021 Pre - Aerated From: 15:47-16:07	TW gs
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 17:10	
	Bottle / Carboy #: 2 removed native organisms. gs	
2	Date: August 12, 2021 Pre - Aerated From: 17:20-17:40	gs
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 18:25	
	Bottle / Carboy #: 2 removed native organisms, gs	
3	Date: August 13, 2021 Pre - Aerated From: N/A	TW MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:19	
	Bottle / Carboy #: 3 Sieved to remove native organisms	
4	Date: August 14, 2021 Pre - Aerated From: 10:00-10:20	MM/tm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:49	
	Bottle / Carboy #: 4 (Sample sieved to remove native organisms)	
5	Date: August 15, 2021 Pre - Aerated From: 10:20-10:40	gs KT
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:08	
	Bottle / Carboy #: 5 (sample sieved to remove native organisms)	
6	Date: 2021 Aug 16 pre-aerated from: 1431-1454	KT
	Feeding PKS = 100ul YCT = 50ul H2O Δ @ 1539	
	bottle #3 sample sieved to remove native organisms	
7	Date: 2021 Aug 17	MM
	Test ended @ 14:35	
8	Date: Ⓐ	

Ⓐ N/A KT 2021 Aug 26

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.

Sample ID: 1645-68 Job / Sample #: C157648 | ADN205

Analyst(s): Y.SU, T.Wollelo, M. Nazzari; MHamad, N.Sinergulo, C.Tamuli

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	207	188	187	186	181	187	186	
Temp. (°C)	Initial	24.4	25.1	24.3	25.0	25.1	24.5	25.3	
	Final	25.4	25.3	25.3	25.1	25.0	25.4	24.4	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	8.0	8.0	7.9	8.0	8.0	7.8	7.9	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	
	Final	8.4	8.1	8.2	8.2	8.1	8.3	8.2	

100.00%	Day	1 254	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	(A) ~~254~~	252	255	253	257	253	253	
	Final	261	263	266	267	262	262	259	
Temp. (°C)	Initial	24.5	24.4	24.6	25.5	25.3	24.8	24.7	
	Final	25.5	25.2	24.8	25.0	25.0	25.5	24.3	
D.O. (mg/L)	Initial	8.7	8.9	8.1	7.2	8.6	8.6	8.4	
	Final	7.9	7.8	7.9	7.9	7.2	7.9	7.9	
pH	Initial	7.6	7.7	7.8	7.7	7.7	7.8	7.7	
	Final	7.9	7.9	8.0	8.0	7.8	7.9	7.9	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

N/A Aug 17

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS MM	MM YS	YS MM	TW MHm	MHm NS	NS KT	KT MM	
Daily WQ Reviewed by:		YS MM	MM YS	YS MM	TW MHm	MHm NS	NS KT	KT MM	

(A) WG. YS 20210909 10

ECOTOXICOLOG | ***Ceriodaphnia dubia* Survi[illegible]d Reproduction Test**

Client Name: DIAVIK DIAMOND MINES INC.

Job / Sample #: C157648 / ADN205

Analyst (s): M. Mazziotti, K[illegible], MHamad, N[illegible] - 4.50

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11B

Hardness (mg/L $CaCO_3$): 88

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	[illegible] MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0	0	0	0	0	0	MM
4	5	5	7	6	6	6	5	3	5	3	[illegible]
5	9	14	15	16	10	8	9	12	12	14	[illegible]
6	0	0	12	0	14	0	12	13	0	15	KT
7	9	16	0	~~11~~ 12 (B)	0	15	0	0	17	0	MM
8						(C)					
Total	23	35	34	34	30	29	26	28	34	32	MM KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(B) WE MM 2021 Aug 17

(C) N/AKT 2021 Aug 26

Concentration: 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	[illegible] MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0	0	0	0	0	0	MM
4	0	1	0	6	5	6	4	4	4	7	[illegible]
5	5	7	~~0~~ 0x (A)	8	12	8	10	6	8	14	[illegible]
6	13	0	|	0	0	0	0	0	0	12	KT
7	0	10	|	8	14	13	10	10	12	0	MM
8		(C)	|					(C)			
Total	18	18	0x	22	31	27	24	20	24	28	MM KT

(A) During double check found deceased - NS 2021 Aug 15

CETIS Analytical Report

Report Date:	27 Aug-21 13:37 (p 1 of 1)
Test Code/ID:	CD-4388-0421 / 10-0798-8145

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	20-8113-5646	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:35	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	

Batch ID:	18-0616-1899	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 18:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:20	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	05-4248-3910	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 11:12	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-45
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

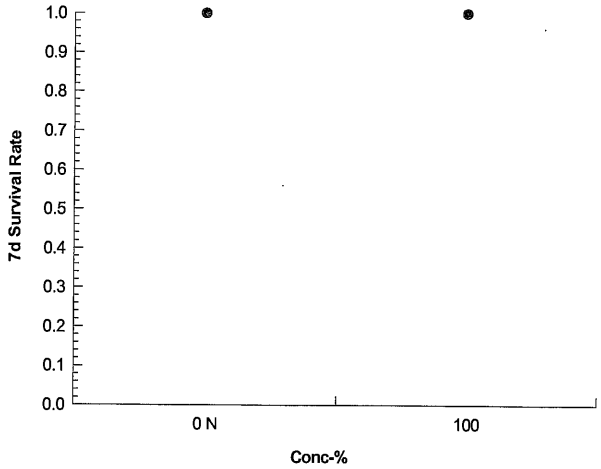
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



Analyst: KT 2021 Aug 27 QA: MO 2021 Sep 08

CETIS Analytical Report

Report Date: 27 Aug-21 13:36 (p 1 of 2)
Test Code/ID: CD-4388-0421 / 10-0798-8145

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-0482-1000	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:35	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2BBA336BA40B16F67BBFAF9EAE9F83F5	**Editor ID:**	

Batch ID:	18-0616-1899	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 18:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:20	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	05-4248-3910	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 11:12	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-45
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	11.87%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.057	1.734	3.773	18	CDF	0.1522	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.006	2.708	0.7109	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	26.45	26.45	1	1.117	0.3045	Non-Significant Effect
Error	426.1	23.6722	18			
Total	452.55		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.168	6.541	0.8204	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9637	0.866	0.6203	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	31.8	28.19	35.41	32	25	38	1.597	15.88%	0.00%
100		10	29.5	26.16	32.84	30	20	37	1.478	15.84%	7.23%

Reproduction Detail

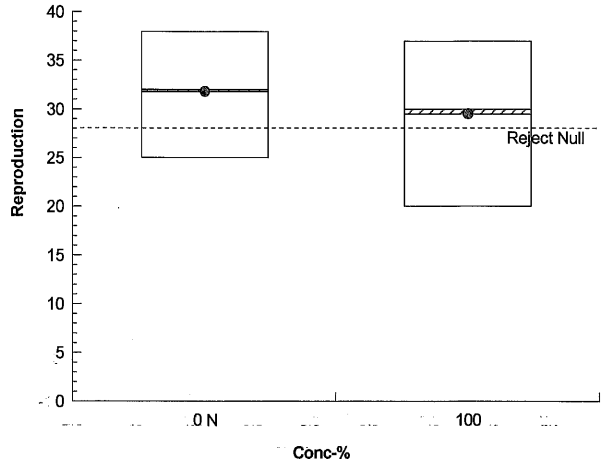
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	29	36	26	27	37	36	25	29	35	38
100		37	26	32	30	32	26	30	20	33	29

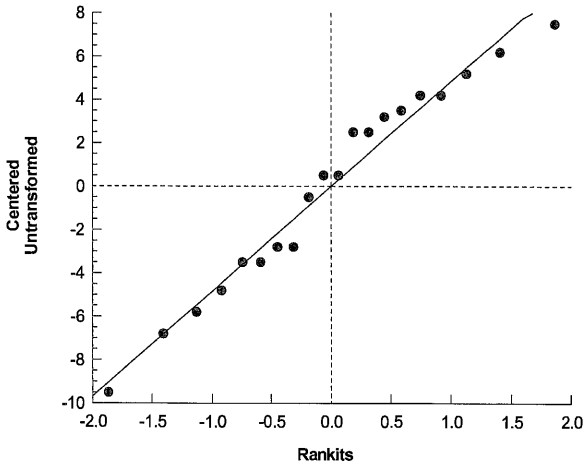
Analyst: KT 2021 Aug 27 QA: MO 2021 Sep 08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-0482-1000	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:35	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2BBA336BA40B16F67BBFAF9EAE9F83F5	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, Y. Su, K. Tamaki, M. Hamad, N. Shergill

Job / Sample #: C157648 / ADN206
Sample ID: 1645-45
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	29							37
2	36							26
3	26							32
4	27							30
5	37							32
6	36							26
7	25							30
8	29							20
9	35							33
10	38							29
Mean	31.8	--	--	--	--	--	--	29.5
SD	5.1	--	--	--	--	--	--	4.7

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Mélanie Mazziotti 2021 Aug 31

Proofed by: [illegible] 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC.

Job / Sample #: C157648/ADN206

Date Started August 10, 2021

Sample ID: 1645-45

Date Ended: Aug 17, 2021

Organism Lot #: AB2021Aug02

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	108.3	24.1	8.1	20	102.3	24.1	yp
1	August 11, 2021	123.1	25.4	N/A	20	107.1	25.2	TW
2	August 12, 2021	109.5	25.6	N/A	20	99.7	24.9	yp
3	August 13, 2021	116.3	25.6	N/A	20	102.4	24.6	TW
4	August 14, 2021	114.4	25.3	N/A	20	104.2	25.0	mtm
5	August 15, 2021	118.6	25.2	N/A	20	(A) ~~7~~ 108.8	25.1	yp
6	Aug 16, 2021	115.0	25.3	N/A	20	103.3	24.8	KT
7				N/A	(B)			

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description pale yellow, clear Initials yp

Sample Hardness (mg/L $CaCO_3$) 228 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: 16:20 – 16:40	yp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 1800	
	Bottle / Carboy #: 1	
1	Date: August 11, 2021 Pre - Aerated From: 15:47 – 16:07	TW yp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 17:25	
	Bottle / Carboy #: 2	
2	Date: August 12, 2021 Pre - Aerated From: 17:20 – 17:40	yp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 18:10	
	Bottle / Carboy #: 3	
3	Date: August 13, 2021 Pre - Aerated From: 10:21 – 10:21	TW / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:15	
	Bottle / Carboy #: 4 Removed native organisms by sieving	
4	Date: August 14, 2021 Pre - Aerated From: 10:03 – 10:20	TW / mtm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:32	
	Bottle / Carboy #: 5 (C) ~~Removed native organisms by sieving~~	
5	Date: August 15, 2021 Pre - Aerated From: 10:20 – 10:40	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:17	
	Bottle / Carboy #: 6 Sample sieved to remove native organisms	
6	Date: 2021 Aug 16 Preaerated from 1434-1454	KT
	Feeding PKS = 100 µl YG = 50 µl H2O2 @ 16a	
	bottle #3 sample sieved to remove native organisms	
7	Date: 2021 Aug 17	MM
	Test ended @ 15:20	
8	Date: (B)	

(A) WB. YS 2021 Aug 15

(B) N/A KT 2021 Aug 27

(C) WETW 2021 Sep 08 LE

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.
Sample ID: 1645-45
Job / Sample #: C157648 / ADN206
Analyst(s): Y.SU, T.Wollelo, M. Nazziotti, MHamad, N.Shergill, KHamad

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	209	182	187	188	188	186	187	
Temp. (°C)	Initial	24.4	25.1	24.3	25.0	25.1	24.5	25.3	
	Final	25.4	25.0	25.0	25.1	25.0	25.4	25.1	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	7.9	7.9	8.0	8.0	7.9	7.9	7.8	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	(A)
	Final	8.4	8.2	8.3	8.3	8.0	8.3	8.2	

100.00%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	975	969	967	960	971	970	971	
	Final	961	971	965	970	983	970	960	
Temp. (°C)	Initial	24.1	24.6	24.9	24.7	25.3	25.0	24.8	
	Final	25.5	25.6	24.9	25.0	25.0	25.4	25.1	
D.O. (mg/L)	Initial	8.6	8.5	8.4	8.6	8.6	8.8	8.5	
	Final	7.9	7.9	8.0	8.0	7.2	7.8	7.8	
pH	Initial	8.1	8.2	8.1	8.1	8.2	8.0	8.1	
	Final	8.2	8.1	8.2	8.2	8.0	8.2	8.2	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final				(A)				

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS YS	MM YS	YS MM	TW MHm	MHm YS	NS KH	KH MM	
Daily WQ Reviewed by:		YS YS	MM YS	YS MM	TW MHm	MHm YS	NS KH	KH MM	

(A) N/A KH 2021 Aug 27

ECOTOXICOLOG[illegible] ***Ceriodaphnia dubia* Surviv[illegible]d Reproduction Test**

Client Name DIAVIK DIAMOND MINES INC.

Job / Sample #: C157648 / ADN2086
WeKt 2021 Aug 27

Analyst (s): M. Mazziotti, Y. Su, K Tamaki, M Hamad, N Sivergilo

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11 B

Hardness (mg/L $CaCO_3$): 88,

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	MM
3	0	0	0	0	0	0	0	0	0	0	MM
4	2	6	4	4	6	4	1	4	5	5	m
5	12	14	8	14	16	18	10	8	14	21	MM KT
6	15	0	13	9	0	0	14	0	0	12	KT
7	0	16	1	3	15	14	0	17	16	0	MM
8			26			(A)					
Total	29	36	~~25~~ (B)	27	37	36	25	29	35	38	MM KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration : 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	MM
3	0	0	0	0	0	0	0	0	0	0	MM
4	4	5	5	4	5	5	5	2	5	5	m
5	18	8	14	12	14	8	11	10	14	12	MM KT
6	14	0	0	0	0	0	0	8	0	12	KT
7	1	13	13	14	13	13	14	0	14	0	MM
8	37					(A)					
Total	~~36~~ (B)	26	32	30	32	26	30	20	33	29	MM KT

(A) N/A KT 2021 Aug 27
(B) calculation error KT 2021 Aug 27

CETIS Analytical Report

Report Date:	27 Aug-21 13:39 (p 1 of 1)
Test Code/ID:	CD-4388-0521 / 13-7240-5495

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-1101-7854	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:38	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	68A8001C08205B33C9AE5A220217508E	**Editor ID:**	

Batch ID:	05-8873-0127	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 18:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:13	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	18-5972-8876	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 10:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-74
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0.5000	Exact	0.5000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		9	1	10	0.9000	0.1000	10.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%

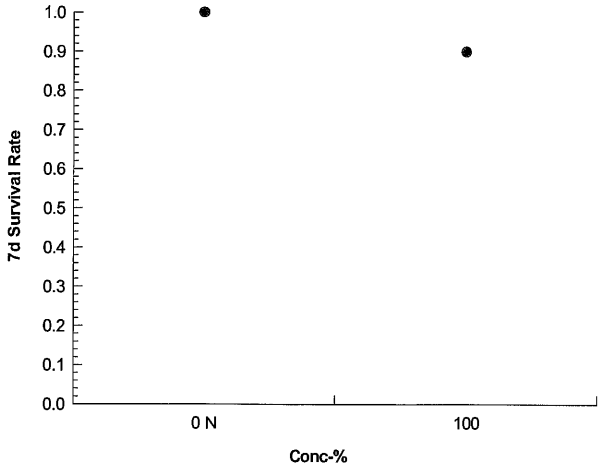
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Sept 08

Analyst: KY 2021 Aug 27 QA: MO

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-9362-9398	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:38	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	DA7E20709275D2FE27233A209EF91EDB	**Editor ID:**	

Batch ID:	05-8873-0127	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 18:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:13	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	18-5972-8876	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 10:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-74
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	22.23%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	135	---	1	18	Exact	0.9908	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	3.868	2.708	<1.0E-05	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	22.05	22.05	1	0.382	0.5443	Non-Significant Effect
Error	1038.9	57.7167	18			
Total	1060.95		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	24.65	6.541	5.4E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6326	0.866	<1.0E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	26.5	24.98	28.02	27.5	23	29	0.6708	8.00%	0.00%
100		10	28.6	21.07	36.13	32.5	0	35	3.331	36.83%	-7.92%

Reproduction Detail

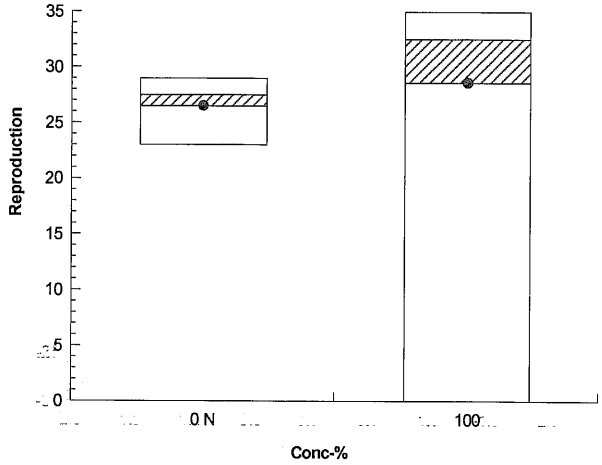
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	28	27	29	28	28	24	24	26	28
100		31	33	34	0	35	32	25	28	33	35

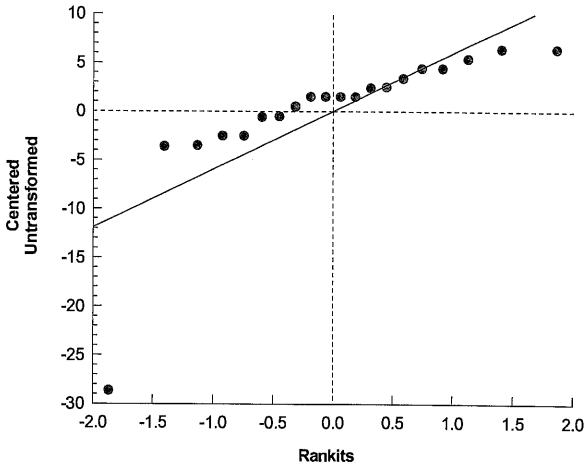
Analyst: VT 2021 Aug 27 QA: MO 2021 Sep 08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-9362-9398	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:38	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	DA7E20709275D2FE27233A209EF91EDB	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, Y. Su, K. Tamaki, M. Hamad, N. Shergill

Job / Sample #: C157648 / ADN207
Sample ID: 1645-74
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	23							31
2	28							33
3	27							34
4	29							0
5	28							35
6	28							32
7	24							25
8	24							28
9	26							33
10	28							35
Mean	26.5	--	--	--	--	--	--	28.6
SD	2.1	--	--	--	--	--	--	10.5

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							0
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	90
SD (%)	0.0	--	--	--	--	--	--	31.6

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Melanie Mazziotti 2021 Aug 31

Proofed by: [illegible] 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC.

Job / Sample #: C157648/ADN207

Date Started August 10, 2021

Sample ID: 1645-74

Date Ended: Aug 17, 2021

Organism Lot #: AB2021B0902

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐ .

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	108.5	15.3	8.0	20	101.6	14.5	gp
1	August 11, 2021	120.4	25.4	N/A	20	104.1	25.4	TW
2	August 12, 2021	104.0	15.6	N/A	20	98.0	24.9	gp
3	August 13, 2021	90.6	25.5	N/A	N/A	N/A	N/A	TW
4	August 14, 2021	105.2	24.8	N/A	20	102.1	25.0	mm
5	August 15, 2021	103.2	15.2	N/A	20	101.9	15.3	gp
6	2021 Aug 16	104.2	25.2	N/A	20	101.0	24.7	KT
7				~~N/A~~	Ⓒ			

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BB42-0408

Sample Description clear, pale yellow Initials gp

Sample Hardness (mg/L $CaCO_3$) 180 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: Ⓐ ~~14~~ 16:15 – 16:35	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 1800	
	Bottle / Carboy #: 1	
1	Date: August 11, 2021 Pre - Aerated From: 15:47 – 16:07	TW gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 17:26	
	Bottle / Carboy #: 2	
2	Date: August 12, 2021 Pre - Aerated From: 17:20 – 17:40	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 18:05	
	Bottle / Carboy #: 2	
3	Date: August 13, 2021 Pre - Aerated From: N/A	TW MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:32	
	Bottle / Carboy #: 3 Sieved to remove native organisms Ⓑ	
4	Date: August 14, 2021 Pre - Aerated From: ~~N/A~~ 10:00-10:20	mlm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:20	
	Bottle / Carboy #: 4 Sample sieved to remove native organisms	
5	Date: August 15, 2021 Pre - Aerated From: 10:20 – 10:40	gp NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:23	
	Bottle / Carboy #: 5 Sample sieved to remove native organisms.	
6	Date: 2021 Aug 16 Pre-aerated from: 1434-1454	KT
	Feeding PKS = 100 ul YCT = 50 ul H2O Δ @ 1609	
	bottle #3 Seived sample to remove native organisms	
7	Date: Aug 17, 2021	MM
	Test ended @ 15:13	
8	Date: Ⓒ	

Ⓐ WE. gp 2021 Aug 10 Ⓑ WE MM 2021 Aug 14 Ⓒ N/A KT 2021 Aug 27

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.
Sample ID: 1645-74
Job / Sample #: C157648 / ADN207
Analyst(s): Y. Su, T. Wollelo, M. Pazziotti, Nenergi, O Kikmali, M Hamay

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	209	188	187	189	181	187	187	
Temp. (°C)	Initial	24.4	25.1	24.3	25.0	25.1	24.5	25.3	
	Final	25.5	25.2	25.1	25.0	25.0	25.4	24.9	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	8.0	7.9	7.9	7.9	7.8	7.8	7.9	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	
	Final	8.4	8.1	8.3	8.3	8.1	8.3	8.2	

100.00%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	568	568	574	570	572	567	569	
	Final	564	591	579	577	576	572	566	
Temp. (°C)	Initial	24.5	24.6	24.9	25.5	25.3	25.0	24.7	
	Final	25.6	25.0	24.7	25.0	25.0	25.4	25.0	
D.O. (mg/L)	Initial	8.5	8.7	8.3	7.5	8.6	8.6	(A) ~~7.9~~ 8.4	(B)
	Final	8.0	8.1	7.9	8.0	7.2	7.7	7.7	
pH	Initial	8.0	8.0	8.0	7.7	8.0	8.0	(A) ~~8.4~~ 7.9	
	Final	8.4	8.2	8.3	8.2	8.2	8.3	8.2	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial						(B)		
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS YS	MM YS	YS MM	TW MM	MHM YS	NS KT	KT MM	
Daily WQ Reviewed by:		YS YS	MM YS	YS MM	TW MM	MHM YS	NS KT	KT MM	

(A) WRG 2021 Aug 16

(B) N/A KT 2021 Aug 27.

ECOTOXICOLOG ***Ceriodaphnia dubia* Survi .id Reproduction Test**

Client Name DIAVIK DIAMOND MINES INC. Job / Sample #: C157648 / ADN207

Analyst (s): M. Mazziotti · 9.84 KTamaki, MHamach, NSharguo

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11 B,

Hardness (mg/L $CaCO_3$): 88

Concentration : 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	MM
4	5	5	5	4	6	5	4	5	5	6	
5	8	7	9	12	8	10	7	5	9	8	NJ
6	10	0	13	0	0	0	13	0	12	14	KT
7	~~15~~ (A)	~~0~~ (A) 16	0	13	14	13	0	14	0	0	MM
8							(B)				
Total	23	28	27	29	28	28	24	24	26	28	MM KT

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	OX	0	0	0	0	0	0	
3	0	0	0		0	0	0	0	0	0	MM
4	5	5	7		6	7	7	6	6	7	
5	10	12	8		14	8	6	7	12	14	NJ
6	16	0	0		0	0	12	0	0	14	KT
7	0	16	19		15	17	0	15	15	0	MM
8		(B)			35			(B)			
Total	31	33	34	OX	~~25~~ (C)	32	25	28	33	35	MM KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) MM KT 2021 Aug 16

(B) NF KT 2021 Aug 27

(C) calculation error KT 2021 Aug 27

CETIS Analytical Report

Report Date: 27 Aug-21 13:44 (p 1 of 1)
Test Code/ID: CD-4388-0621 / 06-3041-9894

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	21-2312-3309	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:44	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AB312A43F864B97B5C562F89077EB1AA	**Editor ID:**	

Batch ID:	02-0917-0385	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:05	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	06-2757-6073	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 11:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-46
Sample Age:	54h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	100	0.4582	Exact	0.4582	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	9	1	10	0.9000	0.1000	0.00%
100		7	2	9	0.7778	0.2222	13.58%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	0.00%
100		9	0.7778	0.4388	1.0000	1.0000	0.0000	1.0000	0.1470	56.69%	13.58%

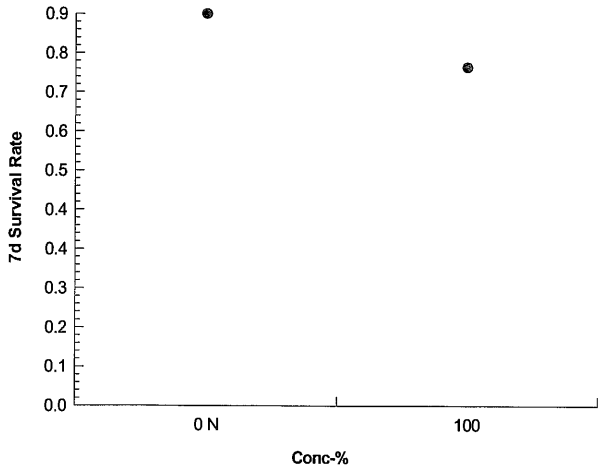
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1
100		1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	

Graphics



Analyst: 2021 Aug 27 QA: 2021 Sept 08

CETIS Analytical Report

Test Code/ID: CD-4388-0621 / 06-3041-9894

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	06-5675-8780	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:44	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5AD22DC06DA9AE4FC075284B0BC57A7	**Editor ID:**	

Batch ID:	02-0917-0385	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 15:05	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	06-2757-6073	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 11:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-46
Sample Age:	54h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% failed reproduction endpoint	22.67%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100*	58.5	---	3	17	Exact	0.0041	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.421	2.681	0.1583	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	481.081	481.081	1	6.513	0.0206	Significant Effect
Error	1255.66	73.8621	17			
Total	1736.74		18			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	8.413	6.693	0.0044	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8238	0.8605	0.0026	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	30.3	27.4	33.2	31	23	36	1.283	13.39%	0.00%
100		9	20.22	11.18	29.27	26	0	29	3.922	58.18%	33.26%

Reproduction Detail

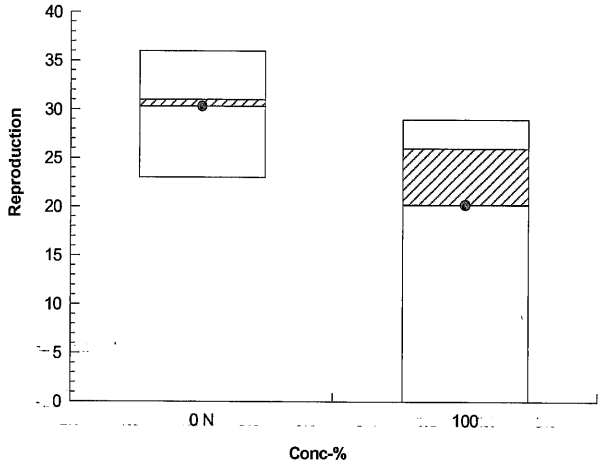
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	29	34	26	33	36	32	27	23	30	33
100		29	29	23	28	26	21	0	0	26	

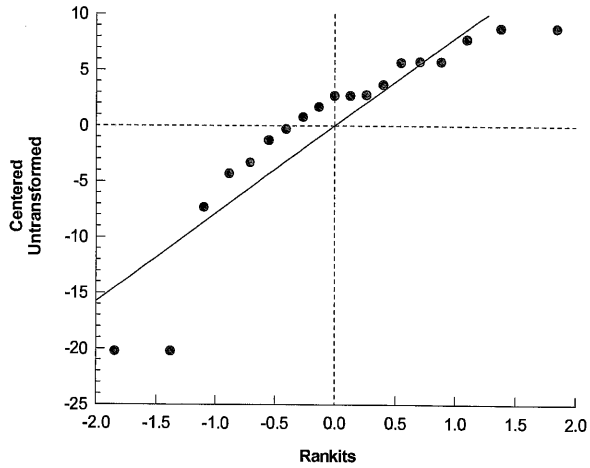
Analyst: 2021 Aug 27 QA: 2021 Sept 08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	06-5675-8780	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:44	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5AD22DC06DA9AE4FC075284B0BC57A7	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, Y. Su, K. Tamaki, M. Hamad, N. Shergill

Job / Sample #: C157648 / ADN208
Sample ID: 1645-46
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	29							29
2	34							29
3	26							23
4	33							28
5	36							26
6	32							21
7	27							0
8	23							0
9	30							26
10	33							M
Mean	30.3	--	--	--	--	--	--	20.2
SD	4.1	--	--	--	--	--	--	11.8

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							0
8	1							0
9	1							1
10	0							M
Mean (%)	90	--	--	--	--	--	--	78
SD (%)	31.6	--	--	--	--	--	--	44.1

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Mélanie Mazziotti 2021 Aug 31

Proofed by: [illegible] 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC. Job / Sample #: C157648/ADN208

Date Started August 10, 2021 Sample ID: 1645-46

Date Ended: Aug 17, 2021 Organism Lot #: AB2021Aug02

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ✓ Worksheet Created: □

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	111.5	24.8	8.1	20	103.1	24.4	gp
1	August 11, 2021	128.1	25.1	N/A	20	108.1	25.0	gp
2	August 12, 2021	108.4	25.6	N/A	20	99.9	24.9	gp
3	August 13, 2021	115.7	25.6	N/A	20	102.2	24.7	TW
4	August 14, 2021	114.3	25.2	N/A	20	105.1	24.8	MM
5	August 15, 2021	119.4	25.2	N/A	20	111.0	25.2	gp
6	2021 Aug 16	116.3	25.3	N/A	20	105.3	24.9	KT
7				N/A	(B)			

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BB42-0408

Sample Description pale yellow, clear Initials gp

Sample Hardness (mg/L $CaCO_3$) 188 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: 16:15 – 16:35	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:52	
	Bottle / Carboy #: 1	
1	Date: August 11, 2021 Pre - Aerated From: 15:47 – 16:07	TW / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: ~~15:15~~ @ 17:15	
	Bottle / Carboy #: 2	
2	Date: August 12, 2021 Pre - Aerated From: 17:20 – 17:40	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 18:05	
	Bottle / Carboy #: 3	
3	Date: August 13, 2021 Pre - Aerated From: 10:01 – 10:21	TW / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:25	
	Bottle / Carboy #: 4 Removed native organisms by sieving	
4	Date: August 14, 2021 Pre - Aerated From: 10:00 – 10:20	MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:00	
	Bottle / Carboy #: 5 (sample sieved to remove native organisms)	
5	Date: August 15, 2021 Pre - Aerated From: 10:20 – 10:40	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:31	
	Bottle / Carboy #: 6 sample sieved to remove native organisms	
6	Date: 2021 Aug 16 Pre aerated from: 1434-1491	KT
	Feeding: PKS = 100µL YCT = 50µL H2O Δ @ 1545	
	bottle #7 Sample sieved to remove native organisms	
7	Date: Aug 17, 2021	MM
	Test ended @ 15:05	
8	Date:	

(A) WE MM 2021 Aug 11 (B) N/A KT 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.

Sample ID: 1645-46 Job / Sample #: C157648 / ADN 208

Analyst(s): Y. Su, T. Wollelo, M. Pazziotti, M Hamad, N. Sherguo. K Umaci

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	209	189	187	186	188	185	186	
Temp. (°C)	Initial	24.4	25.1	24.3	25.0	25.1	24.5	25.2	
	Final	25.4	25.0	25.2	25.1	25.0	25.5	24.8	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	8.0	7.9	7.9	8.0	7.6	8.0	7.8	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	
	Final	8.4	8.2	8.3	8.2	8.1	8.3	8.2	

100.00%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	432	430	432	424	441	431	432	
	Final	433	451	437	436	452	438	431	
Temp. (°C)	Initial	24.4	24.5	24.8	24.7	25.3	24.9	24.9	
	Final	25.5	25.0	24.7	25.0	25.0	25.4	24.6	
D.O. (mg/L)	Initial	8.7	8.9	8.5	8.5	8.6	8.9	8.7	
	Final	8.0	8.0	7.9	7.9	7.9	7.9	7.7	
pH	Initial	8.1	8.2	8.0	8.2	8.2	8.0	8.2	
	Final	8.4	8.1	8.3	8.2	8.1	8.4	8.3	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								(A)
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial					(A)			
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS MN	MM YS	YS MM	TW MHm	MHm YS	NS KH	KH MM	
Daily WQ Reviewed by:		YS MM	MM YS	YS MM	TW MHm	MHm YS	NS KH	KH MM	

(A) N/A KH 2024Aug27

ECOTOXICOLOG ***Ceriodaphnia dubia* Survi[illegible]d Reproduction Test**

Client Name DIAVIK DIAMOND MINES INC. Job / Sample #: C157648 / ADN208

Analyst (s): YSU, M. Mazzioti, KTamaki, MHamad, NSherguo

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11 B,

Hardness (mg/L $CaCO_3$): 88,

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	YS
3	0	0	0	0	0	0	0	0	0	0	MM
4	5	5	5	4	4	5	5	6	6	4	m
5	12	14	8	15	16	14	8	5	12	14	YS NS
6	0	0	0	0	0	0	14	0	0	15	KT
7	12	15	13	14	16	13	0	12	12	0x	MM
8					(4)						(4)
Total	29	34	26	33	36	32	27	23	30	33x	MM KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration : 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0 M	MM YS
2	0	0	0	0	0	0	0x	0x	0		YS
3	0	0	0	0	0	0			0		MM
4	5	8	6	5	4	5			6		m
5	7	8	8	10	6	5			8		YS NS
6	0	0	0	0	0	0			0		KT
7	17	13	9	13	16	11			12		MM
8				(4)					(4)		(4)
Total	29	29	23	28	26	21	0x	0x	26	0M	MM KT

(4) N/A KT 2021 Aug 27.

CETIS Analytical Report

Report Date:	27 Aug-21 13:47 (p 1 of 1)
Test Code/ID:	CD-4388-0721 / 13-1710-1948

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	03-7582-5146	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:47	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	

Batch ID:	19-8907-1060	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	12-2520-7034	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 16:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-87
Sample Age:	50h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

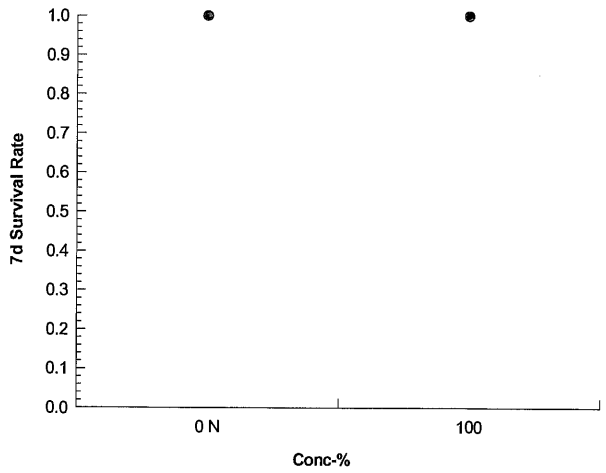
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



Analyst: KA 2021 Aug 27 QA: mo 2021 Sept 08

CETIS Analytical Report

Test Code/ID: CD-4388-0721 / 13-1710-1948

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	10-5688-5660	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:47	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4704868F8FFCA7C1D245EF736B531DED	**Editor ID:**	

Batch ID:	19-8907-1060	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	12-2520-7034	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 16:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-87
Sample Age:	50h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	12.94%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	-0.1957	1.734	3.544	18	CDF	0.5765	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.203	2.708	0.3832	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.8	0.8	1	0.0383	0.8470	Non-Significant Effect
Error	376	20.8889	18			
Total	376.8		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.602	6.541	0.1706	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9786	0.866	0.9152	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	27.4	24.96	29.84	27	21	32	1.077	12.43%	0.00%
100		10	27.8	23.87	31.73	28.5	18	36	1.737	19.76%	-1.46%

Reproduction Detail

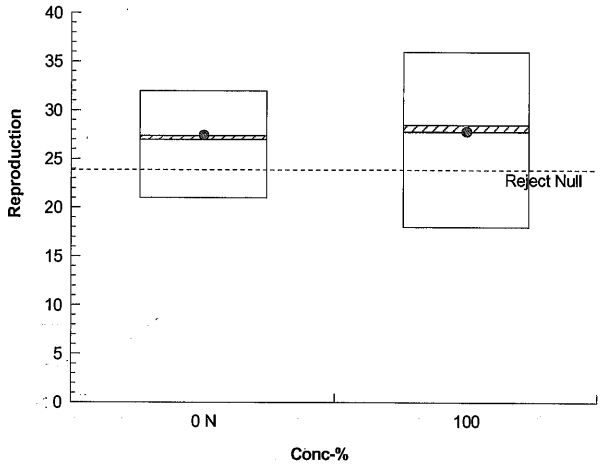
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	21	30	26	32	30	31	28	25	26	25
100		31	36	27	30	34	22	18	30	25	25

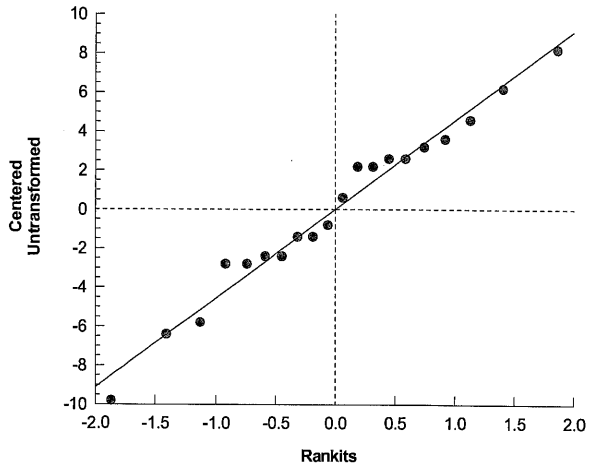
Analyst: KT 2021 Aug 27 QA: MO 2021 Sep 08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	10-5688-5660	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:47	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4704868F8FFCA7C1D245EF736B531DED	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, Y. Su, K. Tamaki, M. Hamad, N. Shergill

Job / Sample #: C157648 / ADN209
Sample ID: 1645-87
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	21							31
2	30							36
3	26							27
4	32							30
5	30							34
6	31							22
7	28							18
8	25							30
9	26							25
10	25							25
Mean	27.4	--	--	--	--	--	--	27.8
SD	3.4	--	--	--	--	--	--	5.5

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Mélanie Mazziotti
2021 Sept 08

Proofed by: [illegible] 2021 Aug 27.

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC.

Job / Sample #: C157648/ADN209

Date Started August 10, 2021

Sample ID: 1645-87

Date Ended: Aug 17, 2021

Organism Lot #: AB2021Au902

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	109.9	24.9	7.9	20	101.9	24.6	gp
1	August 11, 2021	129.1	25.3	N/A	20	104.8	25.5	TW
2	August 12, 2021	104.1	25.0	N/A	20	99.2	24.8	gp
3	August 13, 2021	93.8	25.4	N/A	N/A	N/A	N/A	TW
4	August 14, 2021	111.8	25.2	N/A	20	103.0	24.9	MMm
5	August 15, 2021	111.0	25.3	N/A	20	105.2	25.2	gp
6	2021 Aug16	113.7	25.3	N/A	20	102.7	24.7	KH
7				N/A			(D)	

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BB42-0408

Sample Description pale yellow, clear Initials gp

Sample Hardness (mg/L $CaCO_3$) 92 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: (A) ~~14~~ 16:15 - 16:35	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:52	
	Bottle / Carboy #: 1	
1	Date: August 11, 2021 Pre - Aerated From: 15:47 - 16:07	TW / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 17:15	
	Bottle / Carboy #: 2	
2	Date: August 12, 2021 Pre - Aerated From: 17:20 - 17:40	gp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 18:05	
	Bottle / Carboy #: 2	
3	Date: August 13, 2021 Pre - Aerated From: N/A	TW / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:25	
	Bottle / Carboy #: 3, sieved to remove native organisms	
4	Date: August 14, 2021 Pre - Aerated From: 10:00-10:20	MMm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: ~~14:09~~ 16:09	
	Bottle / Carboy #: 4 (Sample sieved to remove native organisms) (B)	
5	Date: August 15, 2021 Pre - Aerated From: 10:20 - 10:40	gp NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:37	
	Bottle / Carboy #: 5 Sample sieved to remove native organisms	
6	Date: 2021 Aug16 Pre-aerated from: 1434-1454	KH
	Feeding PKS = 100µL YCT = 50 µL H101 (C) ~~1352~~ 1552	
	bottle # 3 Sieved sample to remove native organisms.	
7	Date: 2021 Aug 17	MM
	Test ended @ 14:55	
8	Date: (P)	

(A) WZ.YS 2021Aug10 (B) WZMMM2021Aug14 (C) WZKH 2021Aug16

(D) N/A KH 2021Aug27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.

Sample ID: 1645-87 Job / Sample #: C157648 / ADN209

Analyst(s): Y. Su, T. Wollelo, M. Razzaqi, M Hamad, N. Shergeo

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	206	183	187	188	186	186	187	
Temp. (°C)	Initial	24.4	25.1	24.3	24.9	25.1	24.5	25.3	
	Final	25.3	25.1	25.1	25.0	25.0	25.5	24.7	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	8.0	7.9	8.0	8.0	7.8	8.0	7.8	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	
	Final	8.3	8.1	8.2	8.2	8.1	8.3	8.2	

100.00%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	254	245	248	245	246	246	248	
	Final	262	262	258	253	252	256	252	
Temp. (°C)	Initial	24.5	24.7	24.6	25.4	25.3	25.0	24.7	
	Final	25.5	25.1	24.8	24.9	25.0	25.5	24.6	
D.O. (mg/L)	Initial	8.6	8.5	8.2	7.7	8.5	8.5	8.5	
	Final	8.0	7.9	7.8	7.9	7.6	7.9	7.7	
pH	Initial	(A) ~~8.1~~ 7.9	8.0	8.0	7.8	8.0	7.8	7.9	
	Final	8.0	8.0	(B) ~~8~~ 7.9	7.9	7.9	8.0	7.8	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								(C)
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final					(C)			
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS YS	MM YS	YS MM	TW MHM	MHM YS	NS KT	KT MM	
Daily WQ Reviewed by:		YS YS	MM YS	YS MM	TW MHM	MHM YS	NS KT	KT MM	

(A) 2021 Aug 10

(B) DE MM 2021 Aug 13

(C) N/A KT 2021 Aug 29

ECOTOXICOLOG *Ceriodaphnia dubia* **Survi\ d Reproduction Test**

Client Name DIAVIK DIAMOND MINES INC. Job / Sample #: C157648 | ADN209

Analyst (s): Y, SU, M. Mazziotti Kilomelli, MHamad, NSherglo

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11 B,

Hardness (mg/L $CaCO_3$): 88,

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	MM
4	5	4	2	5	6	2	4	4	5	4	M
5	7	10	12	13	8	14	8	5	4	8	
6	9	0	12	0	0	0	0	0	0	13	Kt
7	0	16	0	14	16	15	16	16	17	0	MM
8								(4)			
Total	21	30	26	32	30	31	28	25	26	25	Kt MM

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration : 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	MM
4	4	4	6	5	7	5	5	6	5	4	M
5	12	14	5	10	8	0	7	12	6	8	
6	0	0	0	0	0	0	6	0	0	13	Kt
7	15	18	16	15	19	17	7	12	14	0	MM
8							(4)				
Total	31	36	27	30	34	22	18	30	25	25	MM Kt

(4) N/A Kt 2021 Aug 27.

CETIS Analytical Report

Report Date:	27 Aug-21 13:49 (p 1 of 1)
Test Code/ID:	CD-4388-0821 / 19-4609-0905

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	05-6110-5039	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:49	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	71D6289F3DF24B054BDFA60A3AF96FBC	**Editor ID:**	

Batch ID:	12-5070-9666	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:45	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:47	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	16-7468-6328	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 15:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-47
Sample Age:	51h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	9	0	9	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

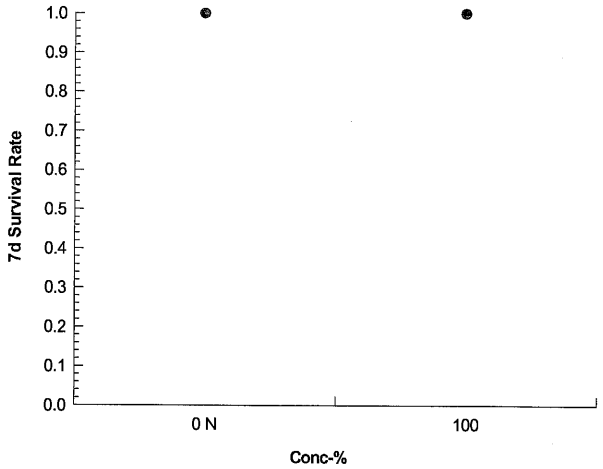
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



Analyst: 2021 AUG 27 QA: MO 2021 Sept 08

CETIS Analytical Report

Test Code/ID: CD-4388-0821 / 19-4609-0905

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	12-4223-0102	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:49	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	7861FECB4219B70104AB6EFD17279013	**Editor ID:**	

Batch ID:	12-5070-9666	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Y. Su
Start Date:	10 Aug-21 17:45	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	17 Aug-21 14:47	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	16-7468-6328	**Code:**	C157648	**Project:**	General Misc. Bioassays
Sample Date:	08 Aug-21 15:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	10 Aug-21 11:02	**CAS (PC):**		**Station:**	1645-47
Sample Age:	51h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	11.71%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	-3.952	1.74	3.488	17	CDF	0.9995	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.052	2.681	0.5787	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	297.292	297.292	1	15.62	0.0010	Significant Effect
Error	323.656	19.0386	17			
Total	620.947		18			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.69	7.339	0.4714	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9921	0.8605	0.9997	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	9	29.78	26.91	32.65	30	24	36	1.245	12.54%	0.00%
100		10	37.7	34.23	41.17	37.5	29	46	1.535	12.88%	-26.60%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	27	31	27	30	31	28	36	34	
100		35	36	29	40	38	46	37	42	33	41

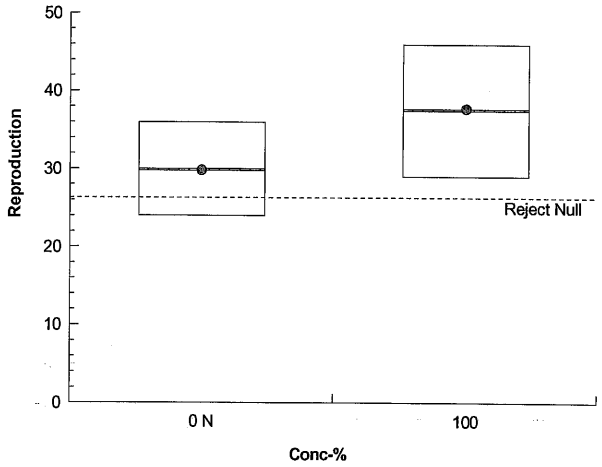
2021 Sept 08

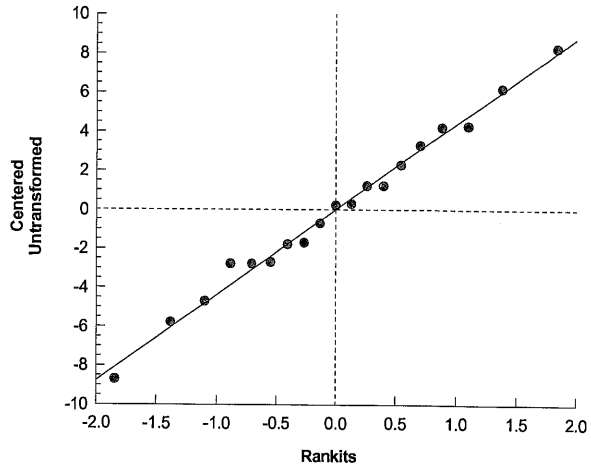
Analyst: 2021 Aug 27 QA: mo

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	12-4223-0102	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	27 Aug-21 13:49	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	7861FECB4219B70104AB6EFD17279013	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 10, 2021
End Date: August 17, 2021
Analyst(s): M. Mazziotti, M. Hamad, Y. Su, K. Tamaki, N. Shergill

Job / Sample #: C157648 / ADN210
Sample ID: 1645-47
Organism Lot #: AB2021 Aug 02

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	24							35
2	27							36
3	31							29
4	27							40
5	30							38
6	31							46
7	28							37
8	M							42
9	36							33
10	34							41
Mean	29.8	--	--	--	--	--	--	37.7
SD	3.7	--	--	--	--	--	--	4.9

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	M							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: Mélanie Mazziotti 2021 Aug 31

Proofed by: [illegible] 2021 Aug 27

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIVIK DIAMONDS MINES INC. Job / Sample #: C157648/ADN210

Date Started August 10, 2021 Sample ID: 1645-47

Date Ended: Aug 17, 2021 Organism Lot #: AB2021Aug02

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☑ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 10, 2021	108.6	24.6	8.0	20	100.5	24.2	ys
1	August 11, 2021	118.8	25.0	N/A	20	106.1	25.0	TW
2	August 12, 2021	105.5	25.2	N/A	20	98.9	25.0	ys
3	August 13, 2021	86.9	25.5	N/A	N/A	N/A	N/A	TW
4	August 14, 2021	110.0	25.2	N/A	20	102.1	25.0	m
5	August 15, 2021	110.4	25.2	N/A	20	103.2	25.2	ys
6	2021 Aug16	104.3	25.3	N/A	20	100.1	25.0	KT
7				N/A		Ⓐ		

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description clear, light yellow Initials ys

Sample Hardness (mg/L $CaCO_3$) 136 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 10, 2021 Pre - Aerated From: 16:20 – 16:40	ys
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:45	
	Bottle / Carboy #: 1	
1	Date: August 11, 2021 Pre - Aerated From: 15:47 – 16:07	TW / ys
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 17:10	
	Bottle / Carboy #: 2	
2	Date: August 12, 2021 Pre - Aerated From: 17:20 – 17:40	ys
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:10	
	Bottle / Carboy #: 2	
3	Date: August 13, 2021 Pre - Aerated From: N/A	TW/MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:19	
	Bottle / Carboy #: 3 Sieved to remove native organisms	
4	Date: August 14, 2021 Pre - Aerated From: 10:00-10:20	mltm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:57	
	Bottle / Carboy #: 4 (Sample sieved to remove native organisms	
5	Date: August 15, 2021 Pre - Aerated From: 10:20 – 10:40	ys
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:03	
	Bottle / Carboy #: 5 sample sieved to remove native organisms	
6	Date: 2021 Aug16 Pre Aerated from: 14:34-14:54	KT
	Feeding: PKS = 100µL YCT = 50µL H2O Δ @ 15:31	
	bottle #3 sample ~~sieved~~ sieved. to remove native organisms	
7	Date: Aug 17 2021	MM
	Test ended @ 14:47	
8	Date: Ⓑ	

Ⓐ wekt 2021 Aug16 Ⓑ N/A KT 2021 Aug27

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: DIAVIK DIAMOND MINES INC.
Sample ID: 1645-47
Job / Sample #: C157648/ ADN210
Analyst(s): Y.SU T.Wolfelo, M.Nazziotti, MHamad, N.Shergill Vijamala

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	197	175	177	177	179	176	172	
	Final	207	205	187	187	182	187	185	
Temp. (°C)	Initial	24.4	25.1	24.3	25.0	25.1	24.5	25.3	
	Final	25.5	25.1	25.1	25.0	25.0	25.2	24.4	
D.O. (mg/L)	Initial	8.4	8.3	8.1	8.2	8.1	8.3	8.2	
	Final	8.0	7.8	7.8	7.9	7.6	8.0	7.8	
pH	Initial	8.3	8.3	8.3	8.3	8.2	8.3	8.2	
	Final	8.4	8.2	8.2	8.2	8.2	8.3	8.2	

100.00%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	371	367	366	362	366	366	367	
	Final	376	381	374	371	373	375	373	
Temp. (°C)	Initial	24.2	24.4	24.8	25.5	25.3	25.0	25.0	
	Final	25.5	25.2	24.7	25.0	25.0	25.3	24.4	
D.O. (mg/L)	Initial	8.5	8.5	8.2	7.1	8.5	8.7	8.3	
	Final	7.5	7.9	7.7	7.8	7.2	7.6	7.5	
pH	Initial	8.0	7.9	7.8	7.8	7.9	7.9	8.2	
	Final	8.0	8.0	8.0	8.0	7.9	7.9	7.9	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								(D)
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial					(A)			
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		YS YS	MM YS	YS MM	TW MHM	MHM YS	NS KT	KT MM	
Daily WQ Reviewed by:		YS YS	MM YS	YS MM	TW MHM	MHM YS	NS KT	KT MM	

(A) N/A KT 2021 Aug 27

ECOTOXICOLOG *Ceriodaphnia dubia* Survi d Reproduction Test

Client Name DIAVIK DIAMOND MINES INC. Job / Sample #: C157648 / ADN210

Analyst (s): M. Mazziotti, M Hamad, Y. Su, K Tamaki, N Strergiou

Concentration: Control

Control Water Batch: Date(s): 2021 Aug 11B

Hardness (mg/L $CaCO_3$): 88,

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	ys MM
2	0	0	0	0	0	0	0	0	0	0	ys
3	0	0	0	0	0	0	0	0	0	0	MM
4	4	6	4	6	4	5	7	4	6	6	m
5	8	11	14	5	8	14	10	12 (A)	14	15	ys
6	0	0	0	0	0	0	11		0	13	Kt
7	12	10	13	16	18	12	0		16	0	MM
8					(B)					(B)	
Total	24	27	31	27	30	31	28	16x	36	34	MM

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration : 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	ys MM
2	0	0	0	0	0	0	0	0	0	0	ys
3	0	0	0	0	0	0	0	0	0	0	MM
4	7	5	0	4	4	6	6	7	5	8	m
5	12	13	14	16	18	15	14	17	8	20	ys
6	0	0	0	0	0	0	0	0	0	13	Kt
7	16	18	15	20	16	25	17	18	20	0	MM
8							(B)				
Total	35	36	29	40	38	46	37	42	33	41	MM

(A) accidentally sanized cerio, ys 2021 Aug 15 _ BLNC made. ys

(B) N/A Kt 2021 Aug 27

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: AB2021 Aug 02

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	02-Aug	70			70		
1	03-Aug		0	0	70	0.00%	
2	04-Aug		0	0	70	0.00%	
3	05-Aug		0	1	69	0.00%	
4	06-Aug		0	0	69	0.00%	
5	07-Aug		0	0	69	0.00%	
6	08-Aug		1	1	67	1.45%	
7	09-Aug		0	0	67	0.00%	1.43%
8	10-Aug		0	0	67	0.00%	1.43%
9	11-Aug		0	0	67	0.00%	1.43%
10					67	0.00%	1.45%
11					67	0.00%	1.45%
12					67	0.00%	1.45%
13					67	0.00%	0.00%
14					67	0.00%	0.00%
15					67	0.00%	0.00%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug	09-Aug	
Replicate 1	0	0	3	0	4	16	23*	23
Replicate 2	0	0	0	6	2	15	0	23
Replicate 3	0	0	0	3	6	16	0	25
Replicate 4	0	0	0	5	6	6	0	17
Replicate 5	0	0	0	5	4	11	0	20
Replicate 6	0	0	0	6	3	13	0	22
Replicate 7	0	0	0	5	5	12	0	22
Replicate 8	0	0	0	6	8	12	0	26
Replicate 9	0	0	0	0	4	12	18	34
Replicate 10	0	0	3	0	6	12	22*	21
Mean								**23.3**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments:

Proofed: Kt 2021 Aug 27

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2021 ~~Aug~~ Jul (A) 30 PKS Batch: 2021 ~~Aug~~ Jul (A) 30, 2021 Water Batch: 2020 Jul 30 Aug 03

Culture Date: AB2021 Aug 02 Analyst(s): TW, MM, L, mo

Date	Aug 03	Aug 04	Aug 05	Aug 06	Aug 07	Aug 08	Aug 09	Aug 10	Aug 10
Time	08:08/10	08:59	08:45	09:23	6:18	08:42	08:04	07:04	13:41
Tracking/Clear	clear	Clear	clear	Clear	clear	Clear	clear	clear	track
YCT (µL)	50	50	50	50	50	50	50	50	—
PKS (µL)	100	100	100	100	100	100	100	100	—
Test tube #	Brood size								
1	0	0	3	0	4	16	23 A	0	0 B
2	0	0	0	6	2	15	0	14	0
3	0	0	0	3	6	16	0	17	0
4	0	0	0	5	6	6	0	14	0
5	0	0	0	5	4	11	0	17	0
6	0	0	0	6	3	13	0	19	0
7	0	0	0	5	5	12	0	15	0
8	0	0	0	6	8	12	0	18	0
9	0	0	0	0	4	12	18 A	0	0
10	0	0	3	0	6	12	22 A	0	18 B
11	0	0	✓	0	✓	W	0	✓✓	0
12	0	0	0	✓	✓	W	0	✓✓	0
13	0	0	0	✓	✓	0	✓✓ A	✓✓	0
14	0	0	0	✓	✓	0	✓✓ A	✓✓	0
15	0	0	0	✓	✓	W	0	✓✓	0
16	0	0	0	✓		W	0	✓✓	0
17	0	0	✓	0	✓	W	0	✓✓	0
18	0	0	0	(B) ~~0~~ ✓	0	W	0	✓✓	0
19	0	0	0	✓	✓	W	0	0✓✓	0
20	0	0	✓	0	✓	W	✓✓ A	0	✓✓ B
21	0	0	✓	0	✓	0 M	→	→	→
22	0	0	0	✓	0	0 x	→	→	→
23	0	0	0	✓	✓	W	0	✓✓	0
24	0	0	0	0	✓	0	✓✓ A	✓✓	0
25	0	0	0	✓	✓	W	0	✓✓	0
26	0	0	0	✓	✓	W	0	✓✓✓	0
27	0	0	0	✓	✓	W	0	✓✓	0
28	0	0	0	✓	0	W	0	✓✓	0
29	0	0	0	✓	0	W	0	✓✓	0
30	0	0	✓	0		W	✓✓ A	0	✓✓✓ B
31	0	0	✓	0	✓	W	✓✓✓ A	0	0 B
32	0	0	0	✓	✓	W	0	✓✓	0
33	0	0	0	✓	✓	W	0	✓✓	0
34	0	0	0	✓	✓	W	0	✓✓	0
35	0	0	0	✓	✓	W	0	✓✓	0
# Missing/Lost	0	0	0	0	0	01	0	0	0
# Dead	0	0	0	0	0	01	0	0	0
Analyst	TW	MM	TW	MM	L	mo	TW	TW	TW
Time	09:16	09:02	08:57	09:33	6:24	08:51	08:13	07:14	13:44

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

DIVIDE

A -	D -
B - 6 Tests	E -
C -	F -

(A) WE TW 2021 Aug 05

(B) WE MM 2021 Aug 06

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2021 Aug 02 Analyst(s): TW, MM, mo

Test tube #	Brood size								
Date	Aug 03	Aug 04	Aug 05	Aug 06	Aug 07	Aug 08	Aug 09	Aug 10	Aug 10
Time	09:17	09:02	08:53	0833	6:34	08:51	08:14	07:14	13:45
36	0	0	0	V	/	W	0	W	0
37	0	0	0	V	/	W	0	W	0
38	0	0	0	V	/	W	0	W	0
39	0	0	0	V	/	W	0	W	0
40	0	0	V	0	/	W	W A	0	0 B
41	0	0	V	0	/	W	0	W	0
42	0	0	0	V	/	W	0	W	0
43	0	0	0	V	/	W	0	W	0
44	0	0	0	V	/	W	0	W	0
45	0	0	0	V	/	W	0	W	0
46	0	0	0	V	/	W	0	W	0
47	0	0	V	0	/	W	W	0	0
48	0	0	0	V	/	W	0	W	0
49	0	0	0	V	/	W	0	W	0
50	0	0	0	0	/	W	W	0	W B
51	0	0	V	0	/	W	W	0	0
52	0	0	0	0	/	W	0	W	0
53	0	0	0	0	/	W	0	W	0
54	0	0	0	V	/	W	0	W	0
55	0	0	0	V		W	0	W	0
56	0	0	0	0	0	W	0	W	0
57	0	0	V	0	/	W	0	W	0
58	0	0	0	V	/	W	0	W	0
59	0	0	0	V	/	W	0	W	0
60	0	0	0	V	/	W	W	0	0 B
61	0	0	V	0	/	W	W	0	W B
62	0	0	0	V	0	W	0	W	0
63	0	0	0	V	/	W	0	W	0
64	0	0	0	V		W	0	W	0
65	0	0	0	V	0	W	0	W	0
66	0	0	0	V	0	W	0	W	0
67	0	0	0	V	/	W	0	W	0
68	0	0	0	0	0	W	W	0	0
69	0	0	V	0	/	W	W	0	0 B
70	0	0	0 M						
# Missing/Lost	0	0	1	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	TW	MM	TW	MM	L	mo	TW	TW	TW
Time	09:28	09:08	09:01	09:42	6:31	08:57	08:23	07:23	13:47

DWETW 2021 Aug 03

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test. Neonates used in tests must be < 24 hours old and within 12 hours of each other.
US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other. Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size				
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24	A - Rx #1
Time	10:10am	8:25am	8:15pm	8:00am	B - Client # 123
1	√	√	√√	√√ A	
2	√	√	√√	√√ B	

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB 200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2021 Aug03 PKS Batch: 2021 Aug03 Water Batch:

Culture Date: AB 2021 Aug 02 Analyst(s): TW

Date	Aug10	Aug10	Aug11						
Time	15:47	21:50	08:04						
Tracking/Clear	track	track	clear						
YCT (µL)	—	—	50						
PKS (µL)	—	—	100						
Test tube #	Brood size								
1	14	0	0						
2	0	0	17 A						
3	0	0	24 A						
4	0	0	17 A						
5	0	0	18 A						
6	0	0	17 A						
7	0	16	0						
8	0	14	0						
9	0	14	0						
10	0	0	0						
11	0	√√√	0						
12	0	0	√√ B						
13	0	0	√√ B						
14	0	0	√√ B						
15	0	0	√√ B						
16	0	0	√√ B						
17	0	√√√	0						
18	0	0	√√ Ⓐ AC						
19	0	√√√	0						
20	0	0	0						
21									
22									
23	0	0	√√√ A						
24	0	0	√√ A						
25	0	0	√√ A						
26	0	0	√√ Ⓐ A						
27	0	√√√	0						
28	0	√√√	0						
29	0	√√√	0						
30	0	0	0						
31	√√	0	0						
32	0	√√√	0						
33	0	0	√√ B						
34	0	0	√√ B						
35	0	0	√√ B						
# Missing/Lost	0	0	0						
# Dead	0	0	0						
Analyst	yp	EM	TW						
Time	15:50	21:56	08:13						

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - lona + CO_2 + med cup + medcup CO_2
B - LG + CO_2
C - RX
D -
E -
F -

Ⓐ WEMO 2021 Aug11

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB 200707

Culture Date: AB 2021 Aug 02 Analyst(s): TW

Test tube #	Brood size								
Date	2021 Aug 10	2021 Aug 10	Aug 11						
Time	15:50	21:56	08:14						
36	0	0	✓✓✓ B						
37	0	✓✓✓	0						
38	0	0	✓✓✓ (A)(B)(C)						
39	0	✓✓✓	0						
40	✓✓✓	0	0						
41	0	0	✓✓ C						
42	0	✓✓✓	0						
43	0	0	✓✓✓ A						
44	0	0	✓✓✓ A						
45	0	0	✓✓✓ C						
46	0	0	✓✓ C						
47	0	✓✓✓	0						
48	0	✓✓✓	0						
49	0	✓✓✓	0						
50	D.	0	0						
51	✓	0	0						
52	0	0	(B) 0 ✓✓ C						
53	0	0	✓✓ B						
54	0	0	✓✓ C						
55	0	0	✓✓ C						
56	0	0	✓✓ C						
57	0	✓✓✓	0						
58	0	✓✓✓	0						
59	0 (A)	✓✓✓	0						
60	✓ 0 ✓✓	0	0						
61	0	0	0						
62	0	✓✓✓	0						
63	0	0	✓✓✓						
64	0	✓✓✓	0						
65	0	0	✓✓ C						
66	0	✓✓✓	0						
67	0	✓✓✓	0						
68	0	✓✓✓	0						
69	✓✓✓	0	0						
70	0								
# Missing/Lost	0	0	0						
# Dead	0	0	0						
Analyst	MZ	EM	08:23						
Time	15:56	22:00	TW						

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

(A) MZ. 2021 Aug 10
(B) WEEM 2021 aug 10
(C) WEMO 2021 Aug 11

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C157648-ADN211
Client Sample ID: 1645-44
Date sample collected: 44416
Test Performed By: CSH, CT9, DBA, KMG, THR
Test Initiation Date: 2021/08/11
Test End Date: 2021/08/17
Dates when subsamples used: 2021/08/11, 2021/08/12, 2021/08/13, 2021/08/14, 2021/08/15, 2021/08/16

Chemistries prior to test:
Dissolved Oxygen(mg/L): 7.4
Temperature (°C): 26
pH(pH units): 6.3
Conductivity (µS/cm): 188

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	N/A	Untransformed
	7 day Reproduction Result		Significant	Wilcoxon Rank Sum Two-Sample Test	N/A	Untransformed

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.23	1.03	1.47	Untrimmed Spearman-Karber	N/A	N/A
	7 day Reproduction Result	IC50	1.21	0.796	1.39	Linear Interpolation	N/A	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.58	0.967	2.59	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	0.896	1.73			
Reference Toxicant Test Initiation Date:			2021/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Reference toxicant test concentration 2g/L analyzed with 9 organisms.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	3.4
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	30
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/08/12 2021/08/16 2021/08/13 2021/08/14 2021/08/15
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		5		0		17		19						0.0%	41.3	3.8
	2	0		0		6		0		15		24								
	3	0		0		5		0		16		22								
	4	0		0		5		0		16		23								
	5	0		0		7		13		0		21								
	6	0		0		4		0		17		19								
	7	0		0		6		12		0		22								
	8	0		0		5		0		6		21								
	9	0		0		7		0		14		24								
	10	0		0		7		0		14		21								
100%	1	0		0		9		0		8		20						20.0%	30.7	13.6
	2	0		0		4		0		9		22								
	3	0		0		6		0	X											
	4	0		0		8		0		7		16								
	5	0		0		5		8		0		23								
	6	0		0		4		0		14		23								
	7	0		0		6		11		0		28								
	8	0		0		7		0		9		17								
	9	0		0		6		0	X											
	10	0		0		6		0		10		21								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/08/11	25	7.9	7.1	2021/08/12	25	7.9	6.4
100		24	6.8	7.5		25	7.2	6.6
Control	2021/08/12	25	7.8	7.1	2021/08/13	25	7.4	6.3
100		25	6.9	7.7		25	7.0	6.2
Control	2021/08/13	25	8.0	7.1	2021/08/14	25	7.4	6.5
100		25	7.0	7.7		25	6.8	6.4
Control	2021/08/14	26	7.6	7.0	2021/08/15	24	7.5	6.9
100		26	6.8	7.3		24	6.9	6.8
Control	2021/08/15	24	7.9	7.5	2021/08/16	25	7.6	6.3
100		25	6.4	8.0		25	7.0	5.9
Control	2021/08/16	25	7.9	7.0	2021/08/17	25	7.4	6.0
100		25	6.8	7.7		25	6.8	5.7
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN205-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 09:33 AM — Sampling Method : N/A — pH: 6.8

Sample Collected By: BP — Site Collection: N/A — Temperature : 21 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 1 L — Dissolved Oxygen: 9.5 mg/L

Analysis Start : Aug 11, 2021 11:26 AM — Avg Temp Arrival: 14 °C — Sample Conductance: 234 µS/cm

End : Aug 13, 2021 10:26 AM — Storage: 2-6°C — Hardness: 100 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	294	8.1	0	0	0	0	20	7.9	303	8.4
0	20	8.3	294	8.1	0	0	0	0	19	8.0	303	8.4
0	20	8.0	294	8.1	0	0	0	0	20	7.9	298	8.3
100	22	7.1	238	8.7	0	0	0	0	20	7.4	235	8.1
100	22	7.1	238	8.8	0	0	0	0	20	7.3	233	8.0
100	22	7.1	238	8.8	0	0	0	0	20	7.4	237	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Native daphnia present in sample.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN205-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:31 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN206-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-45 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 11:12 AM — Sampling Method : N/A — pH: 7.6

Sample Collected By: BP — Site Collection: N/A — Temperature : 22 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 9.2 mg/L

Analysis Start : Aug 11, 2021 11:24 AM — Avg Temp Arrival: 14 °C — Sample Conductance: 914 µS/cm

End : Aug 13, 2021 10:24 AM — Storage: 2-6°C — Hardness: 240 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	294	8.1	0	0	0	0	20	8.0	298	8.4
0	20	8.0	295	8.1	0	0	0	0	20	8.0	298	8.1
0	20	8.1	294	8.1	0	0	0	0	20	8.0	301	8.4
100	22	7.7	909	8.4	0	0	0	0	20	8.0	880	8.3
100	22	7.7	916	8.5	0	0	0	0	20	8.0	884	8.0
100	22	7.8	917	8.5	0	0	0	0	20	8.0	887	8.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Native daphnia present in sample.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN206-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:30 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN207-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-74 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 10:35 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: BP — Site Collection: N/A — Temperature : 22 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 8.5 mg/L

Analysis Start : Aug 11, 2021 11:27 AM — Avg Temp Arrival: 14 °C — Sample Conductance: 535 µS/cm

End : Aug 13, 2021 10:28 AM — Storage: 2-6°C — Hardness: 200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	293	8.1	0	0	0	0	19	8.2	310	8.4
0	20	8.1	294	8.1	0	0	0	0	20	7.9	299	8.2
0	20	8.0	293	8.1	0	0	0	0	20	8.0	300	8.3
100	21	7.4	523	8.2	0	0	0	0	20	8.1	514	8.0
100	21	7.4	526	8.3	0	0	0	0	20	8.1	516	7.9
100	21	7.4	527	8.3	0	0	0	0	19	8.2	534	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Native daphnia present in sample.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN207-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:29 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN208-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-46 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 11:33 AM — Sampling Method : N/A — pH: 7.5

Sample Collected By: BP — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 9.5 mg/L

Analysis Start : Aug 11, 2021 11:48 AM — Avg Temp Arrival: 14 °C — Sample Conductance: 387 µS/cm

End : Aug 13, 2021 10:52 AM — Storage: 2-6°C — Hardness: 200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	292	8.1	0	0	0	0	20	8.1	297	8.2
0	20	8.0	292	8.1	0	0	0	0	20	8.0	298	8.2
0	20	8.0	294	8.1	0	0	0	0	20	8.1	301	8.3
100	21	7.7	395	8.8	0	0	0	0	20	8.1	394	7.8
100	21	7.7	396	8.9	0	0	0	0	20	8.2	399	8.2
100	21	7.7	395	8.9	0	0	0	0	20	8.2	397	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN208-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:25 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN209-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-87 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 04:04 PM — Sampling Method : N/A — pH: 7.1

Sample Collected By: BP — Site Collection: N/A — Temperature : 22 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 9.3 mg/L

Analysis Start : Aug 11, 2021 11:50 AM — Avg Temp Arrival: 14 °C — Sample Conductance: 230 µS/cm

End : Aug 13, 2021 10:57 AM — Storage: 2-6°C — Hardness: 100 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	292	8.1	0	0	0	0	20	8.1	299	8.4
0	20	8.0	294	8.1	0	0	0	0	20	8.1	298	8.3
0	20	8.0	294	8.1	0	0	0	0	20	8.1	300	8.3
100	21	7.4	227	8.9	0	0	0	0	20	7.6	230	8.1
100	22	7.3	231	8.6	0	0	0	0	20	7.6	230	8.2
100	22	7.4	231	8.6	0	0	0	0	20	7.5	230	8.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 33.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN209-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:24 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN210-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-47 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 03:04 PM — Sampling Method : N/A — pH: 7.1

Sample Collected By: BP — Site Collection: N/A — Temperature : 22 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 9.1 mg/L

Analysis Start : Aug 11, 2021 12:16 PM — Avg Temp Arrival: 14 °C — Sample Conductance: 341 µS/cm

End : Aug 13, 2021 11:17 AM — Storage: 2-6°C — Hardness: 140 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	299	8.0	0	0	0	0	20	8.2	308	8.3
0	20	8.0	296	8.1	0	0	0	0	20	8.1	298	8.1
0	20	8.0	296	8.1	0	0	0	0	20	8.1	314	8.4
100	22	7.4	342	8.7	0	0	0	0	20	7.7	336	8.2
100	22	7.4	343	8.8	0	0	0	0	20	7.7	337	8.1
100	22	7.4	342	8.7	0	0	0	0	20	7.7	335	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 24.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN210-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:24 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C157648

Client Project Name & Number: Closure — Sample Number: ADN211-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 08, 2021 03:29 PM — Sampling Method : N/A — pH: 6.9

Sample Collected By: BP — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 10, 2021 11:02 AM — Volume Received: 0.5 L — Dissolved Oxygen: 9.6 mg/L

Analysis Start : Aug 11, 2021 12:18 PM — Avg Temp Arrival: 14 °C — Sample Conductance: 163 µS/cm

End : Aug 13, 2021 11:25 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	294	8.2	0	0	0	0	20	8.1	301	8.3
0	20	8.1	295	8.1	0	0	0	0	20	8.0	304	8.2
0	20	8.0	295	8.2	0	0	0	0	20	8.1	297	8.2
100	21	6.8	173	8.8	0	0	0	0	20	7.2	178	8.0
100	21	6.8	170	8.8	0	0	0	0	20	7.1	176	8.1
100	21	6.8	171	8.8	0	0	0	0	20	7.0	174	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 24.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C157648
Client Project Name & Number:		Closure	Sample Number:	ADN211-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 06, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.37 (5.16, 7.88) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kyle Monaghan, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics Supervisor Date: Aug 13, 2021 03:10 PM

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-68, 1645-45, 1645-74, 1645-46, 1645-87, 1645-47, AND 1645-44

SAMPLING DATE: AUGUST 08, 2021

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C157508
September 2021

Summary of Test Results for Samples from
Diavik Diamond Mines Inc.
Sample Date: August 08, 2021

Job C157508

Sample: 1645-68

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-45

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-74

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-46

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-87

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-47

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-44

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Effluent Sample	
Name of Samples	1645-68, 1645-45, 1645-74, 1645-46, 1645-87, 1645-47, and 1645-44
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2021/Aug/08
Date (y/m/d) of sample receipt at lab	2021/Aug/09 @ 18:30
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 11:27
Initial cell density of inoculum	10182 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test started	2021/Aug/10 @ 12:00
Date & time test ended	2021/Aug/13 @ 11:00, and 2021/Aug/13 @ 11:10
Persons performing test	D. Lai, E. Marus
Mean test temperature	25 °C
Procedure/rate/duration of aeration of sample before test	No aeration of sample
pH adjustment	No pH adjustment

pH of aqueous sample before preparation and use in toxicity test	See “Data Summary” data sheet
pH of sample before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	NaHCO3, CaSO4, MgSO4, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3980-4160 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the test, no deviations from the test method, and no problems with the test.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2021/Aug/13
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**1645-68**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-45**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Unequal Variance t Two-Sample Test in CETIS. **1645-74**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-46**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-87**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-47**: Yes, significant growth stimulation was found in 90.91% v/v concentration. See Equal Variance t Two-Sample Test in CETIS. **1645-44**: No, see Equal Variance t Two-Sample Test in CETIS.

Name and citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v1.9.7.9 – Equal Variance t Two-Sample Test CETIS v1.9.7.9 – Unequal Variance t Two-Sample Test
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	**1645-68**: Yes, replicate 2 of the 90.91% v/v concentration was determined to be an outlier; however, it was not removed from the statistical analysis. **1645-45**: None **1645-74**: None **1645-46**: None **1645-87**: None **1645-47**: None **1645-44**: None
QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%)

CETIS Analytical Report

Report Date: 13 Aug-21 16:26 (p 1 of 2)
Test Code/ID: SL-4388-0921 / 06-0101-3014

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	10-1005-3116	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:26	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	FB2FF6D7956B2B86C4D04564115E24E0	**Editor ID:**	

Batch ID:	07-1916-1423	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	02-3978-8206	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 09:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-68
Sample Age:	50h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	16.84%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	9.357	2.145	8.49	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.751	2.586	0.0195	Outlier Detected
Control Trend	Mann-Kendall Trend Test	2.751		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5487.11	5487.11	1	87.56	<1.0E-05	Significant Effect
Error	877.384	62.6703	14			
Total	6364.49		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	4.063	8.885	0.0843	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9087	0.8408	0.1110	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	50.4	46.24	54.56	49.05	44.3	59.25	1.759	9.87%	0.00%
90.91		8	87.44	79.05	95.82	89.52	66.4	99.15	3.546	11.47%	-73.49%

Cell Yield Detail

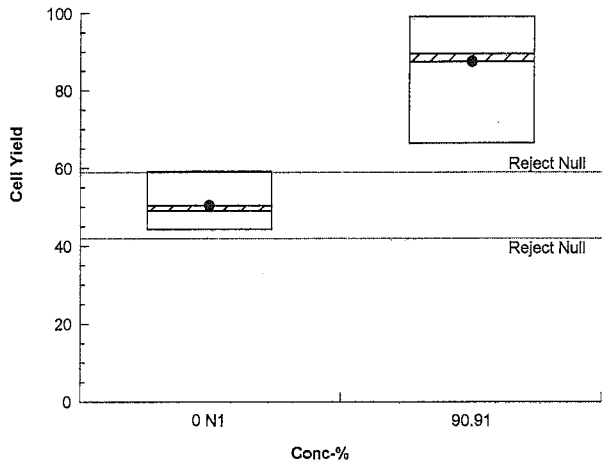
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	47.8	55.5	49.75	48.35	52.05	46.2	44.3	59.25
90.91		86.35	66.4	92.8	86.3	92.7	99.15	93.6	82.2

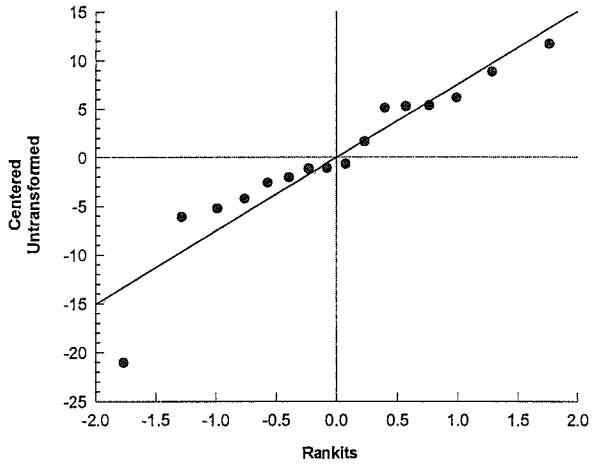
Analyst: Dec 2021 NG QA: KT 2021 Aug 26

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	10-1005-3116	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:26	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	FB2FF6D7956B2B86C4D04564115E24E0	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-68
Date Sampled: 8/8/2021
Job /Sample #: C157508 ADM298
Date & Time Started: 2021 Aug 10 @ 12:00
Date & Time Ended: 2021 Aug 13 @ 11:00
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	46.4	51.2	47.80	50.40	4.98	10
Lab Control	D3	69.9	43.1	55.50			
Lab Control	D4	57.0	44.5	49.75			
Lab Control	D5	47.6	51.1	48.35			
Lab Control	D8	45.9	60.2	52.05			
Lab Control	D9	47.8	46.6	46.20			
Lab Control	D10	40.5	50.1	44.30			
Lab Control	D11	59.4	61.1	59.25			
90.91	C2	84.6	90.1	86.35	87.44	10.03	11
90.91	E2	73.5	61.3	66.40			
90.91	F2	101.0	86.6	92.80			
90.91	G2	83.5	91.1	86.30			
90.91	C3	87.6	99.8	92.70			
90.91	E3	97.3	103.0	99.15			
90.91	F3	99.6	89.6	93.60			
90.91	G3	103.0	63.4	82.20			

Client Name: Diavik

Job / Sample #: C157508 ADM298

Date Sampled: 8-Aug-21

Sample ID: 1645-68

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @1200

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021aug04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.3 Initial Temp (°C): 24.8 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 7.7

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.8

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 22140 cells were initially put into each test well and the initial cell density

was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4x10^4) * 0.02] = 22140 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(22140) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug 11	Y	N	Y	EM
2021 aug 12	Y	N	Y	EM
2021 aug 13	Y	N		EM

@WE2021Aug16 em

CETIS Analytical Report

Report Date: 13 Aug-21 16:25 (p 1 of 2)
Test Code/ID: SL-4388-1021 / 06-2845-9260

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	21-2589-5463	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D61FC68CA41411FA874245441A06617E	**Editor ID:**	

Batch ID:	20-5282-2499	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	19-2287-8199	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 11:12	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-45
Sample Age:	49h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	49.99%

Unequal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	12.72	2.306	22.84	8	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.188	2.586	0.2822	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.188		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	63441	63441	1	161.7	<1.0E-05	Significant Effect
Error	5492.25	392.303	14			
Total	68933.3		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	10.54	8.885	0.0060	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.972	0.8408	0.8702	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	45.69	38.79	52.58	42.57	36.35	58.35	2.915	18.05%	0.00%
90.91		8	171.6	149.2	194	164.5	142	213.5	9.465	15.60%	-275.65%

Cell Yield Detail

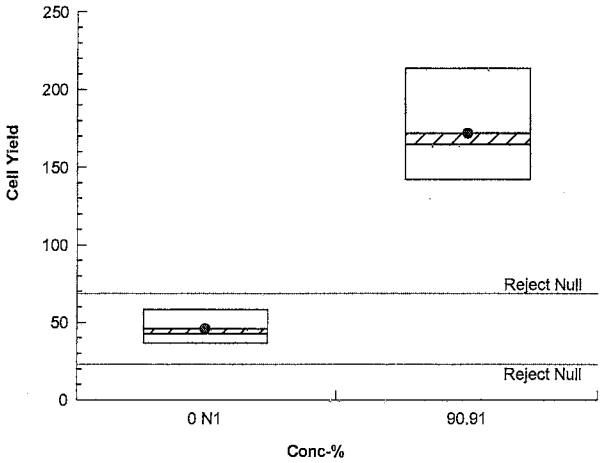
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	36.35	38.75	58.35	52	44.6	54.75	40.55	40.15
90.91		153.5	175.5	151.5	213.5	148.5	142	188	200.5

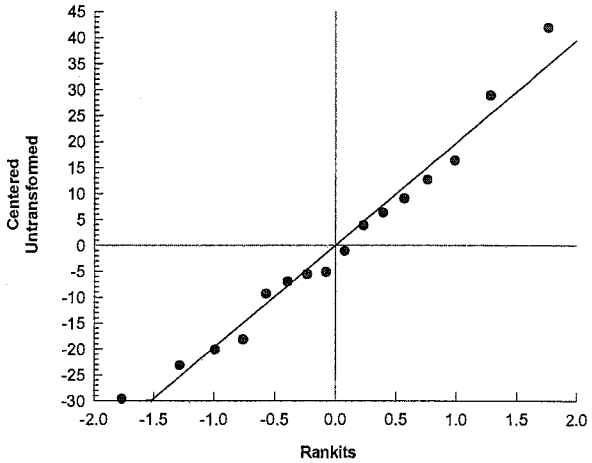
Analyst: DMC 2021 Aug 13 QA: KL 2021 Aug 26

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	21-2589-5463	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D61FC68CA41411FA874245441A06617E	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-45
Date Sampled: 8/8/2021
Job /Sample #: C157508 ADM299
Date & Time Started: 2021 Aug 10 @ 12:00
Date & Time Ended: 2021 Aug 13 @ 11:00
Analyst(s): E. Marus
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	40.3	34.4	36.35	45.69	8.25	18
Lab Control	D3	38.7	40.8	38.75			
Lab Control	D4	54.6	64.1	58.35			
Lab Control	D5	62.9	43.1	52.00			
Lab Control	D8	49.2	42.0	44.60			
Lab Control	D9	54.0	57.5	54.75			
Lab Control	D10	47.9	35.2	40.55			
Lab Control	D11	41.2	41.1	40.15			
90.91	C2	153.0	156.0	153.50	171.63	26.77	16
90.91	E2	125.0	228.0	175.50			
90.91	F2	149.0	156.0	151.50			
90.91	G2	209.0	220.0	213.50			
90.91	C3	161.0	138.0	148.50			
90.91	E3	129.0	157.0	142.00			
90.91	F3	142.0	236.0	188.00			
90.91	G3	231.0	172.0	200.50			

Client Name: Diavik

Job / Sample #: C157508 ADM299

Date Sampled: 8-Aug-21

Sample ID: 1645-45

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @1700

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021aug04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.4 Initial Temp (°C): 24.2 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 8.2

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 8.0

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4x10^4) * 0.02] = 2240 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug 11	Y	N	Y	EM
2021 aug 12	Y	N	Y	EM
2021 aug 13	Y	N		EM

@WEEM2021Aug16

CETIS Analytical Report

Report Date: 13 Aug-21 16:26 (p 1 of 2)
Test Code/ID: SL-4388-1121 / 16-2798-5369

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	19-9494-1581	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5E4E093B4C42BF10C460D54F0D44C3F9	**Editor ID:**	

Batch ID:	04-9440-4753	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	17-6790-1100	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 10:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-74
Sample Age:	49h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	28.08%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	12.9	2.145	13.08	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.471	2.586	0.0880	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.471		0.1788	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	24766.9	24766.9	1	166.5	<1.0E-05	Significant Effect
Error	2082.92	148.78	14			
Total	26849.8		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.127	8.885	0.1556	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9177	0.8408	0.1549	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	46.58	39.48	53.68	45.15	37.55	63.85	3.002	18.23%	0.00%
90.91		8	125.3	112.7	137.8	123.8	96.15	145	5.309	11.99%	-168.93%

Cell Yield Detail

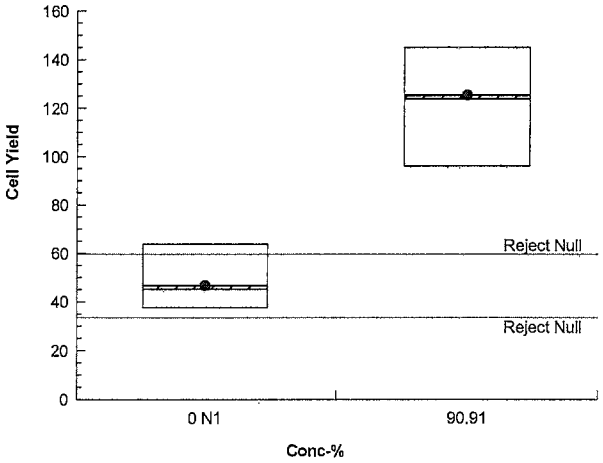
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	37.55	47.4	39.65	47	41.25	52.65	63.85	43.3
90.91		131	145	126.5	96.15	141	121	121	120.5

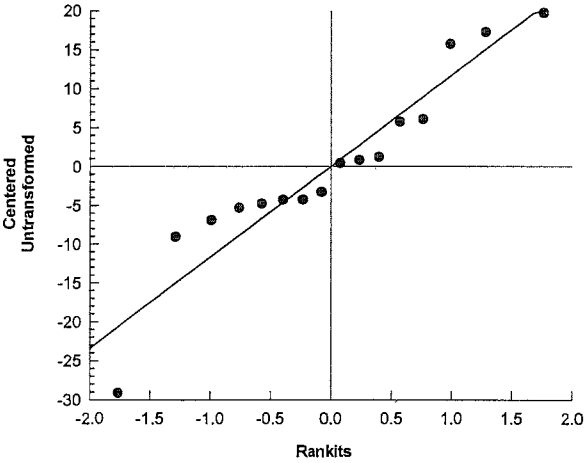
Analyst: DMc 2021 Aug 3 QA: KT 2021 Aug 6

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	19-9494-1581	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	5E4E093B4C42BF10C460D54F0D44C3F9	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-74
Date Sampled: 8/8/2021
Job /Sample #: C157508 ADM300
Date & Time Started: 2021 Aug 10 @ 12:00
Date & Time Ended: 2021 Aug 13 @ 11:00
Analyst(s): D. lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	40.8	36.3	37.55	46.58	8.49	18
Lab Control	D3	45.5	51.3	47.40			
Lab Control	D4	40.1	41.2	39.65			
Lab Control	D5	50.5	45.5	47.00			
Lab Control	D8	52.5	32.0	41.25			
Lab Control	D9	61.5	45.8	52.65			
Lab Control	D10	51.3	78.4	63.85			
Lab Control	D11	56.6	32.0	43.30			
90.91	C2	134.0	130.0	131.00	125.27	15.02	12
90.91	E2	159.0	133.0	145.00			
90.91	F2	118.0	137.0	126.50			
90.91	G2	113.0	81.3	96.15			
90.91	C3	139.0	145.0	141.00			
90.91	E3	115.0	129.0	121.00			
90.91	F3	110.0	134.0	121.00			
90.91	G3	118.0	125.0	120.50			

Client Name: Diavik

Job / Sample #: C157508 ADM300

Date Sampled: 8-Aug-21

Sample ID: 1645-74

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @1200 @

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021 aug 04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.5 Initial Temp (°C): 24.8 Sample Description: slightly yellow, clear

Initial Filtered pH (well B2): 8.1

Final Filtered pH (well B2): 8.2

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density

was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4x10⁴) * 0.02] = 2240 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug 11	Y	N	Y	EM
2021 aug 12	Y	N	Y	EM
2021 aug 13	Y	N		EM

@ WEEM 2021 aug 16

CETIS Analytical Report

Report Date: 13 Aug-21 16:25 (p 1 of 2)
Test Code/ID: SL-4388-1221 / 09-3426-1350

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	20-1864-2703	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	71B5AECF07819B804E84D3FE3CBF74E2	**Editor ID:**	

Batch ID:	03-5072-9538	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	05-1323-4046	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 11:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-46
Sample Age:	48h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	18.07%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	16.45	2.145	10.54	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.699	2.586	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.699		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	26118.6	26118.6	1	270.5	<1.0E-05	Significant Effect
Error	1351.56	96.54	14			
Total	27470.2		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.108	8.885	0.8959	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9502	0.8408	0.4933	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	58.32	50.32	66.32	57.42	45.95	73.45	3.384	16.41%	0.00%
90.91		8	139.1	130.7	147.5	142.5	123	151.5	3.562	7.24%	-138.56%

Cell Yield Detail

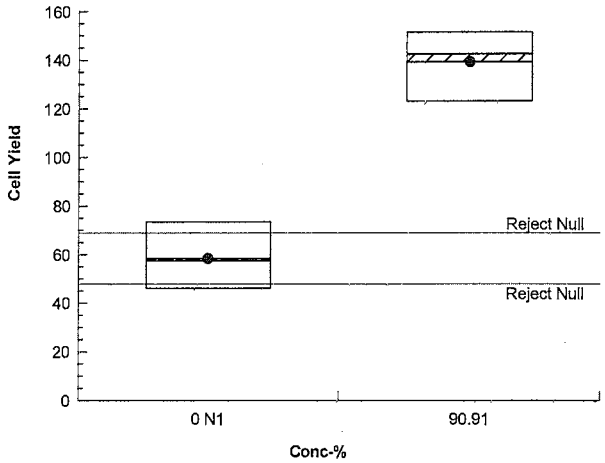
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	56.85	65.75	47.15	65.75	53.65	73.45	58	45.95
90.91		145.5	144	123	126	141	146	151.5	136

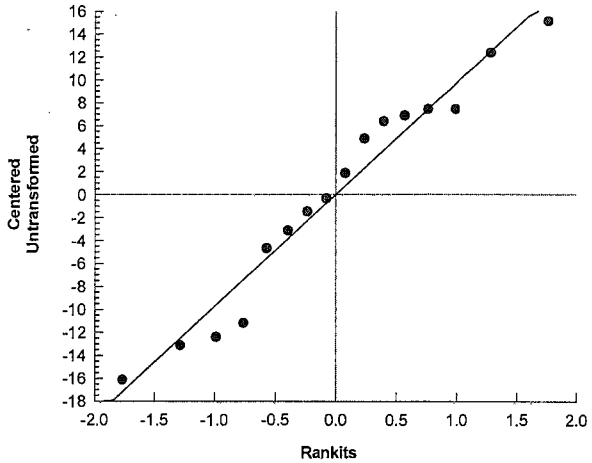
Analyst: Aug 13 2021 QA: 2021 Aug 26

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	20-1864-2703	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	71B5AECF07819B804E84D3FE3CBF74E2	**Editor ID:**	

Graphics





Client Name: Diavik
Sample ID: 1645-46
Date Sampled: 2021/08/08
Job /Sample #: C157508 ADM301
Date & Time Started: 10-Aug-21 @ 1700
Date & Time Ended: 13-Aug-21 @ 1100
Analyst(s): E. Marus
Instrument ID: BBY2-0006, BBY2-0290, BBY4-0098

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	51.5	64.2	56.85	58.32	9.57	16
Lab Control	D3	52.1	81.4	65.75			
Lab Control	D4	50.8	45.5	47.15			
Lab Control	D5	53.2	80.3	65.75			
Lab Control	D8	56.9	52.4	53.65			
Lab Control	D9	73.2	75.7	73.45			
Lab Control	D10	54.8	63.2	58.00			
Lab Control	D11	44.9	49.0	45.95			
90.91	C2	150.0	143.0	145.50	139.13	10.07	7
90.91	E2	167.0	123.0	144.00			
90.91	F2	110.0	138.0	123.00			
90.91	G2	119.0	135.0	126.00			
90.91	C3	140.0	144.0	141.00			
90.91	E3	152.0	142.0	146.00			
90.91	F3	124.0	181.0	151.50			
90.91	G3	151.0	123.0	136.00			

Client Name: Diavik

Job / Sample #: C157508 ADM301

Date Sampled: 8-Aug-21

Sample ID: 1645-46

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @ 1200

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021 aug04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.6 Initial Temp (°C): 24.6 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 8.3

Final Filtered pH (well B2): 8.1

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 8.0

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4x10^4) * 0.02] = 2240 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug11	Y	N	Y	EM
2021 aug12	Y	N	Y	EM
2021 aug13	Y	N		EM

@WE2021Aug16

CETIS Analytical Report

Report Date: 13 Aug-21 17:31 (p 1 of 2)
Test Code/ID: SL-4388-1521 / 19-7636-1446

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-1828-0194	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 17:31	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	837F08A95888A2BB9FF9C2C82935B9B9	**Editor ID:**	

Batch ID:	06-3116-8575	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	14-3457-5381	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 16:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-87
Sample Age:	44h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	31.13%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	6.897	2.145	19.37	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.889	2.586	0.7472	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.889		0.1788	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	15515.8	15515.8	1	47.56	<1.0E-05	Significant Effect
Error	4567.12	326.223	14			
Total	20082.9		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	4.283	8.885	0.0740	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9539	0.8408	0.5533	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	62.22	52.93	71.52	60.35	49	85.35	3.929	17.86%	0.00%
90.91		8	124.5	105.3	143.7	120.5	91.55	155.5	8.131	18.47%	-100.09%

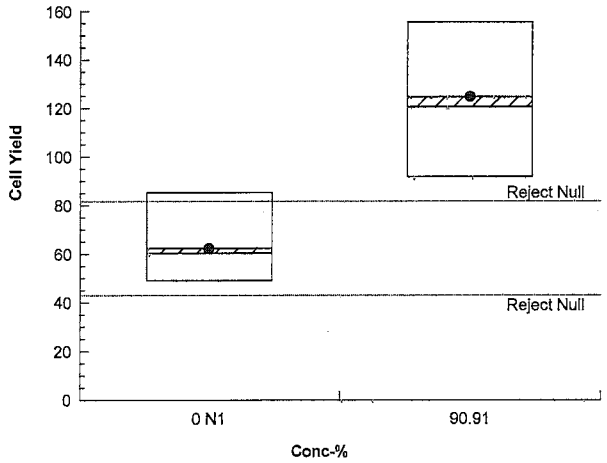
Cell Yield Detail

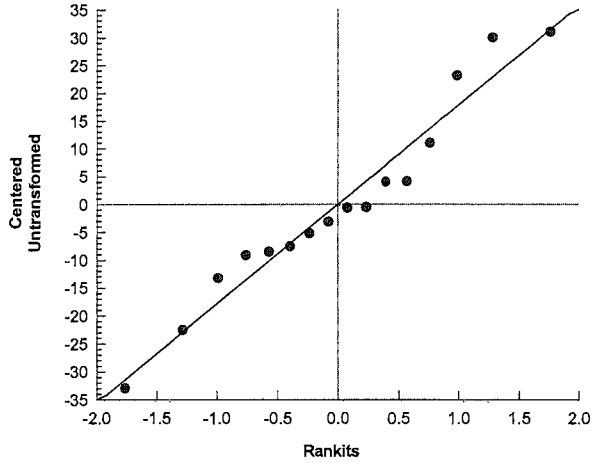
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	66.25	85.35	66.4	59.1	49	53.05	61.6	57.05
90.91		91.55	154.5	124	116	117	102	135.5	155.5

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	13-1828-0194	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 17:31	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	837F08A95888A2BB9FF9C2C82935B9B9	**Editor ID:**	

Graphics





Client Name: Diavik
Sample ID: 1645-87
Date Sampled: 2021/08/08
Job /Sample #: C157508 ADM302
Date & Time Started: 10-Aug-21 @1200
Date & Time Ended: 13-Aug-21 @1100
Analyst(s): E. Marus
Instrument ID: BBY2-0006, BBY4-0098, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	54.6	79.9	66.25	62.23	11.11	18
Lab Control	D3	83.1	89.6	85.35			
Lab Control	D4	81.4	53.4	66.40			
Lab Control	D5	62.2	58.0	59.10			
Lab Control	D8	54.9	45.1	49.00			
Lab Control	D9	47.6	60.5	53.05			
Lab Control	D10	64.1	61.1	61.60			
Lab Control	D11	62.0	54.1	57.05			
90.91	C2	74.1	111.0	91.55	124.51	23.00	18
90.91	E2	160.0	151.0	154.50			
90.91	F2	126.0	124.0	124.00			
90.91	G2	114.0	120.0	116.00			
90.91	C3	108.0	128.0	117.00			
90.91	E3	102.0	104.0	102.00			
90.91	F3	171.0	102.0	135.50			
90.91	G3	163.0	150.0	155.50			

Client Name: Diavik

Job / Sample #: C157508 ADM302

Date Sampled: 8-Aug-21

Sample ID: 1645-87

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @1200

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021 aug 04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.4 Initial Temp (°C): 24.6 Sample Description: light yellow, clear

Initial Filtered pH (well B2): 7.9

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.6

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density

was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4 x10⁴) * 0.02] = 2240 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug 11	Y	N	Y	EM
2021 aug 12	Y	N	Y	EM
2021 aug 13	Y	N		EM

@WEEM2021Aug16

CETIS Analytical Report

Report Date: 13 Aug-21 16:25 (p 1 of 2)
Test Code/ID: SL-4388-1321 / 01-2628-4647

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	09-8452-6756	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	8CA241402E97212903D5FFE420019939	**Editor ID:**	

Batch ID:	09-1941-2545	**Test Type:**	Cell Growth	**Analyst:**	E. Marus
Start Date:	10 Aug-21 12:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	13 Aug-21 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	08-0482-9028	**Code:**	C157508	**Project:**	2-11-0691
Sample Date:	08 Aug-21 15:04	**Material:**	Water	**Source:**	Diavik
Receipt Date:	09 Aug-21 18:30	**CAS (PC):**		**Station:**	1645-47
Sample Age:	45h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	24.13%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	8.494	2.145	11.77	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.069	2.586	0.4280	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.069		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8688.57	8688.57	1	72.14	<1.0E-05	Significant Effect
Error	1686.09	120.435	14			
Total	10374.7		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.246	8.885	0.1431	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9763	0.8408	0.9272	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	48.78	42.48	55.07	47.45	38.55	61.25	2.663	15.44%	0.00%
90.91		8	95.38	84.04	106.7	95.25	73.45	113	4.798	14.23%	-95.55%

Cell Yield Detail

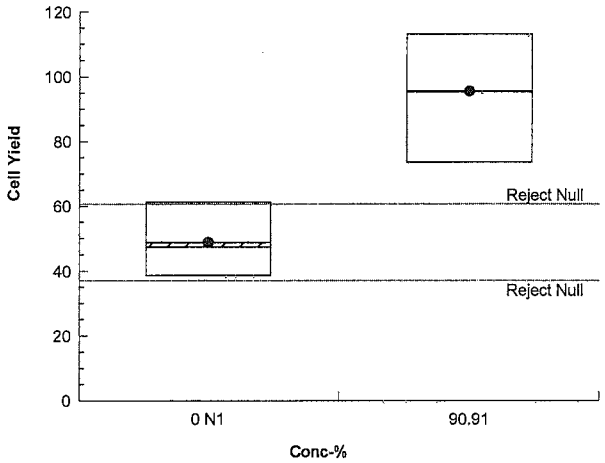
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	50.4	43.2	53.95	38.55	61.25	54.55	43.8	44.5
90.91		111	94.75	73.45	113	95.1	100.2	95.4	80.2

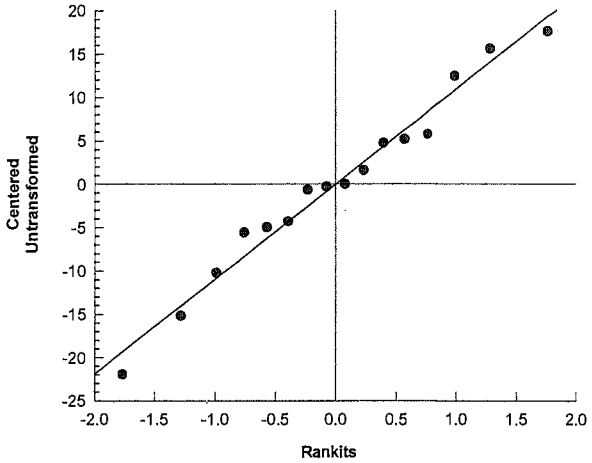
Analyst: AMS 2021 Aug 13 QA: KT 2021 Aug 26

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	09-8452-6756	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:25	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	8CA241402E97212903D5FFE420019939	**Editor ID:**	

Graphics





Client Name: Diavik
Sample ID: 1645-47
Date Sampled: 8/8/2021
Job /Sample #: C157508 ADM303
Date & Time Started: 2021 Aug 10 @ 12:00
Date & Time Ended: 2021 Aug 13 @ 11:00
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	55.7	47.1	50.40	48.78	7.53	15
Lab Control	D3	39.8	48.6	43.20			
Lab Control	D4	53.6	56.3	53.95			
Lab Control	D5	30.5	48.6	38.55			
Lab Control	D8	71.5	53.0	61.25			
Lab Control	D9	49.7	61.4	54.55			
Lab Control	D10	45.5	44.1	43.80			
Lab Control	D11	52.6	38.4	44.50			
90.91	C2	122.0	102.0	111.00	95.38	13.57	14
90.91	E2	89.5	102.0	94.75			
90.91	F2	76.7	72.2	73.45			
90.91	G2	107.0	121.0	113.00			
90.91	C3	96.9	95.3	95.10			
90.91	E3	104.0	98.3	100.15			
90.91	F3	84.8	108.0	95.40			
90.91	G3	79.5	82.9	80.20			

Client Name: Diavik

Job / Sample #: C157508 ADM303

Date Sampled: 8-Aug-21

Sample ID: 1645-47

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @1200

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 1100

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021 aug 04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.5 Initial Temp (°C): 24.6 Sample Description: Clear, light yellow

Initial Filtered pH (well B2): 7.9

Final Filtered pH (well B2): 8.0

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.6

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density

was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4x10⁴) * 0.02] = 2240 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 aug 11	Y	N	Y	EM
2021 aug 12	Y	N	Y	EM
2021 aug 13	Y	N		EM

@WEEM2021Aug16

CETIS Analytical Report

Report Date:	13 Aug-21 16:22 (p 1 of 2)
Test Code/ID:	SL-4388-1421 / 16-7738-1329

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	06-8538-5085	Endpoint:	Cell Yield	CETIS Version:	CETISv1.9.7
Analyzed:	13 Aug-21 16:22	Analysis:	Parametric-Two Sample	Status Level:	1
Edit Date:		MD5 Hash:	4C7D5BCC254A065A09747CB3EE699F4B	Editor ID:	

Batch ID:	04-4763-3321	Test Type:	Cell Growth	Analyst:	E. Marus
Start Date:	10 Aug-21 12:00	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	13 Aug-21 ~~11:00~~ 1110	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h Week 2021 Aug 26	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	16-4247-8234	Code:	C157508	Project:	2-11-0691
Sample Date:	08 Aug-21 15:29	Material:	Water	Source:	Diavik
Receipt Date:	09 Aug-21 18:30	CAS (PC):		Station:	1645-44
Sample Age:	45h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% passed cell yield endpoint	17.96%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91	0.4306	2.145	9.776	14	CDF	0.6733	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.983	2.586	0.5624	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.983		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	15.4056	15.4056	1	0.1854	0.6733	Non-Significant Effect
Error	1163.48	83.1055	14			
Total	1178.88		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.081	8.885	0.3545	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9609	0.8408	0.6775	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	54.43	45.57	63.29	52.7	39.55	71.9	3.746	19.47%	0.00%
90.91		8	56.39	50.25	62.53	58.25	41.35	63.1	2.597	13.02%	-3.61%

Cell Yield Detail

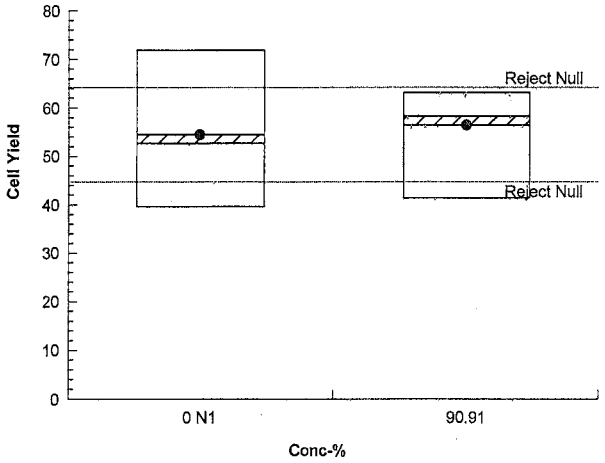
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	43.3	71.9	53.45	51.95	39.55	63.8	60.05	51.45
90.91		41.35	58.05	61.6	63.1	63.1	52.15	58.45	53.35

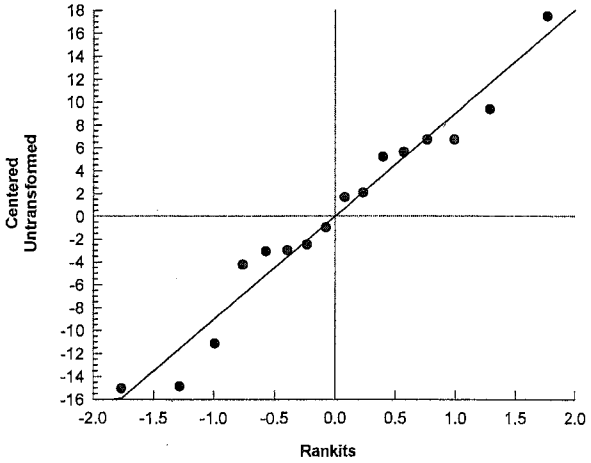
Analyst: JMC 2021 Aug 13 QA: KT 2021 Aug 26

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	06-8538-5085	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	13 Aug-21 16:22	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4C7D5BCC254A065A09747CB3EE699F4B	**Editor ID:**	

Graphics





Client Name: Diavik
Sample ID: 1645-44
Date Sampled: 2021/08/08
Job /Sample #: C157508 ADM304
Date & Time Started: 2021 Aug 10 @ 12:00
Date & Time Ended: 2021 Aug 13 @ 11:10
Analyst(s): D. Lai, E. Marus
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	43.1	45.5	43.30	54.43	10.60	19
Lab Control	D3	80.3	65.5	71.90			
Lab Control	D4	52.3	56.6	53.45			
Lab Control	D5	52.3	53.6	51.95			
Lab Control	D8	59.0	22.1	39.55			
Lab Control	D9	54.5	75.1	63.80			
Lab Control	D10	68.8	53.3	60.05			
Lab Control	D11	55.4	49.5	51.45			
90.91	C2	39.4	45.3	41.35	56.39	7.34	13
90.91	E2	66.2	51.9	58.05			
90.91	F2	75.1	50.1	61.60			
90.91	G2	56.2	72.0	63.10			
90.91	C3	73.2	55.0	63.10			
90.91	E3	40.7	65.6	52.15			
90.91	F3	51.4	67.5	58.45			
90.91	G3	49.9	58.8	53.35			

Client Name: Diavik

Job / Sample #: C157508 ADM304

Date Sampled: 8-Aug-21

Sample ID: 1645-44

Date Received: 9-Aug-21

Culture Date: 7-Aug-21

Date & Time Started: 2021 Aug 10 @ 1200

Culture Description: Green

Date & Time Ended: 2021 Aug 13 @ ~~1200~~ 11:10

Light Intensity at Surface (lux): 3980-4160

Analyst(s): D. Lai, E. Marus

Instrument ID(s): BBY2-0006, BBY4-0098, BBY2-0128, BBY2-0290, BBY2-0406, BBY2-0368

Reagent Water Preparation:

Date of reconstituted water prep: 2021 aug04

Hardness (~20 mg/L $CaCO_3$): 21

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 25.0 Day 1: 25.0 Day 2: 25.0 Day 3: 25.0

Sample Water Quality

Initial pH: 7.2 Initial Temp (°C): 24.0 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 7.4

Final Filtered pH (well B2): 7.4

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.5

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.4 (*10^4 cells/mL)

Time of inoculum prep: 1127

Therefore, (**Xi**) 2240 cells were initially put into each test well and the initial cell density was (**Xd**) 10,182 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.4×10^4) * 0.02] = 2240 cells

To calculate the initial cell density:

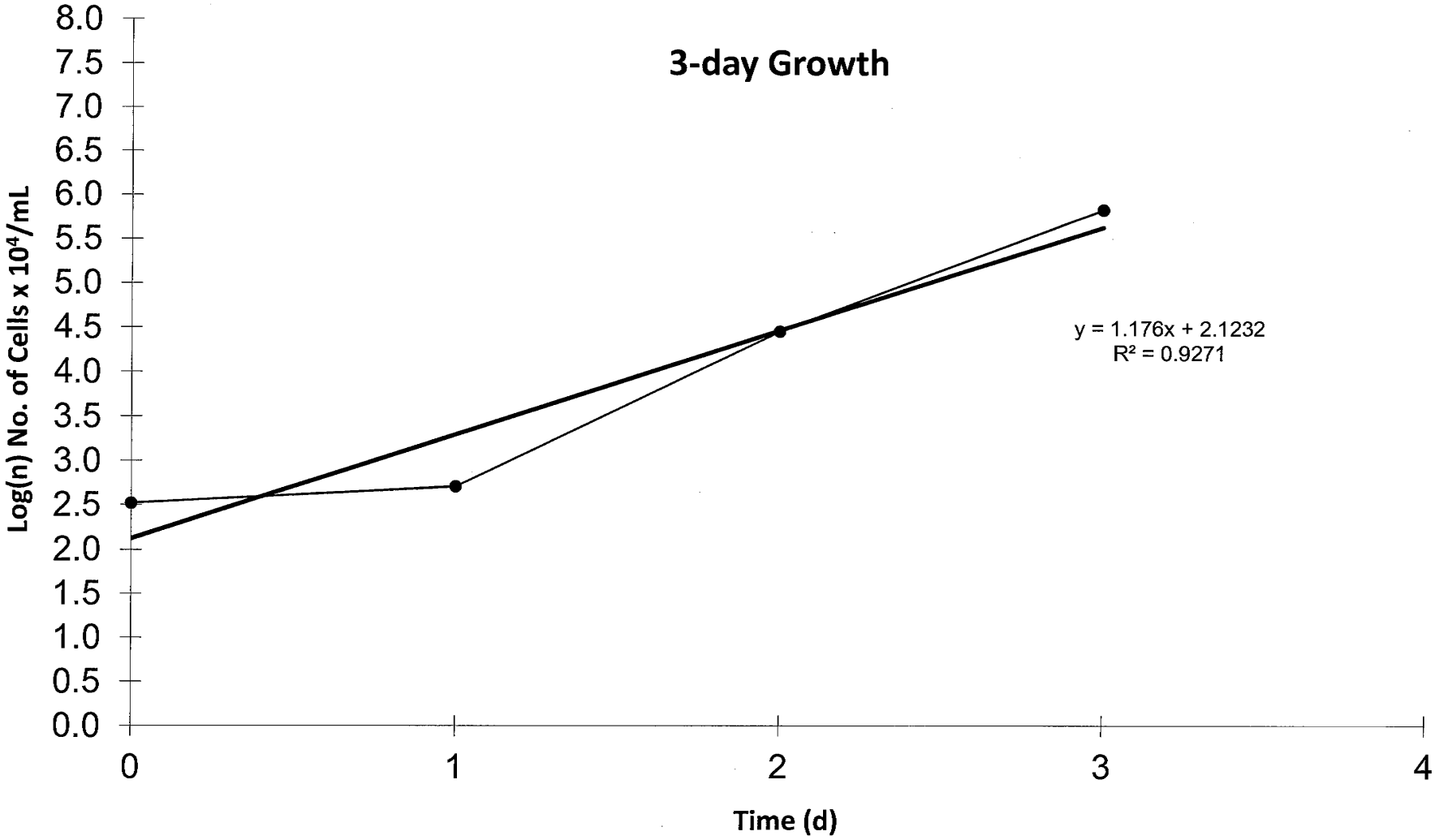
Xd = [(Xi) * (1000/220)] = [(2240) * (4.5455)] = 10,182 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021aug11	Y	N	Y	EM
2021aug12	Y	N	Y	EM
2021aug13	Y	N		EM

@ WEEM2021Aug16

***Pseudokirchneriella subcapitata* Growth Curve using CP201216; Date: 2021/July/06**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-44, 1645-45, 1645-46, 1645-47, 1645-67, 1645-68, 1645-69, 1645-74, 1645-76, 1645-87

SAMPLING DATE: SEPTEMBER 19, 2021

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C170357
October 2021

Summary of Test Results for Samples from
Diavik Diamond Mines Inc.
Sample Date: September 19, 2021

Job C170357

Sample: 1645-44

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No
P. subcapitata:	Cell yield	Yes

Sample: 1645-45

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No
P. subcapitata:	Cell yield	No

Sample: 1645-46

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No
P. subcapitata:	Cell yield	No

Sample: 1645-47

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No
P. subcapitata:	Cell yield	No

Sample: 1645-67

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-68

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-69

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	Yes
P. subcapitata:	Cell yield	No

Sample: 1645-74

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: 1645-76

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	Yes
P. subcapitata:	Cell yield	No

Sample: 1645-87

Test		Significant Effect (Inhibition)
Ceriodaphnia dubia:	Survival	No
	Reproduction	No
P. subcapitata:	Cell yield	No

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Ceriodaphnia dubia Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	7 samples each collected in >3 containers
Test Type	Static-renewal
Effluent Sample	
Sample name	1645-44, 1645-45, 1645-46, 1645-47, 1645-69, 1645-76, and 1645-87
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2021/Sep/19
Date (y/m/d)/time of sample receipt at lab	2021/Sep/21 @ 08:00
Test Organisms	
Species	*Ceriodaphnia dubia*
Source	In-house culture started from organisms obtained from Aquatic Research Organisms, Hampton, NH.
Age at start of test	<24 hours old; within 12 hours of each other
Unusual appearance, behaviour or treatment of test organisms, before use in test	None
Mean percent mortality of brood in 7d preceding test	The mean percent mortality was 1.25. See "*Ceriodaphnia* Culture Health - Mortality Records" sheet
Mean number of surviving young produced per adult in culture during 7d preceding test	The mean number of surviving young was 27.0. See "*Ceriodaphnia* Culture Health – Mortality and Mean Neonates"
Number of young produced in the 3rd or subsequent brood	See "*Ceriodaphnia dubia* - Clearing Records"
Ephippia in the culture	No Ephippia present
Test Conditions & Facilities	
Test method	BBY2 SOP-00001 *Ceriodaphnia dubia* Chronic Survival and Reproduction Test EPS 1/RM/21, 2nd Ed., February 2007
Dates or days when subsamples used	See "Initial Measurements and Observations" sheet
Date test started (y/m/d)	2021/Sep/22
Date (y/m/d) of test completion	2021/Sep/28 and 2021/Sep/29
Test vessels	20 mL glass culture tubes
Persons performing test	N. Shergill, Y. Su, M. Hamad, D. Lai, K. Tamaki, M. O'Toole, E. Marus, M. Mazziotti
Rate of preaeration	Minimal and controlled (100 bubbles/min)
Duration of preaeration	See "Initial Measurements and Observations" sheet
Rate/duration of aeration during test	No aeration

Procedure for pH adjustment	No pH adjustment of samples
Procedure for filtration	**1645-45:** Sample was filtered through a 60 µm mesh to remove native organisms. **1645-47:** Sample was filtered through a 60 µm mesh to remove native organisms.
Source of control/dilution water & quantity of chemicals added	Lab Control - Type I deionized water hardened to 92-100 mg/L $CaCO_3$ with 20% Perrier water, Vitamin B_{12} & Selenium
Number and concentration of test solutions	100% and lab control
Volume and depth of solution in test vessels	15 mL & 9 cm
Number of replicates per conc.	10
Number of organisms per test vessel	1
DO & pH of sample just before its use	See “Initial Measurements and Observations”
Temperature, DO, & pH of test solutions and controls	See daily water quality on “Observation and Measurements”
Test solution renewal intervals	See “Initial Measurements and Observations”
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Survival endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v1.9.7.9: Fisher Exact Test
Mean percent survival for 1st generation in each test solution at test end	See CETIS reports for mean percent survival
Reproduction endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v1.9.7.9: Equal Variance t Two-Sample Test CETIS v1.9.7.9: Wilcoxon Rank Sum Two-Sample Test
Mean number of neonates in each test solution at test end	See CETIS reports for mean numbers
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	**1645-46**: Replicate 4 of the control was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis. **1645-69**: Replicate 8 of the 100% concentration was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis.

QA	
Did the test pass the test validity criteria of: •Mean mortality of the control adults is ≤20% •Average of ≥15 neonates/surviving adult in the controls •3 broods produced by ≥60% of control organisms by the end of the 8th day.	Did Lab controls meet validity criteria? Yes •Mean mortality in Lab controls: • **1645-44**: 0% • **1645-45**: 10% • **1645-46**: 10% • **1645-47**: 0% • **1645-69**: 0% • **1645-76**: 0% • **1645-87**: 0% •Average live young produced/surviving adult: • **1645-44**: 31.7 • **1645-45**: 24.2 • **1645-46**: 25.7 • **1645-47**: 28.9 • **1645-69**: 24.8 • **1645-76**: 26.0 • **1645-87**: 31.2 •Percent of Lab control organisms producing 3 broods: • **1645-44**: 90% • **1645-45**: 90% • **1645-46**: 90% • **1645-47**: 80% • **1645-69**: 100% • **1645-76**: 100% • **1645-87**: 90%
Reference toxicant test LC50 (95% CL) (mg NaCl/L) for survival	1890 (1720, 2070)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for survival	1819 2SD (1419, 2331)
Reference toxicant test IC50 (95% CL) (mg NaCl/L) for reproduction	1550 (1360, 1660)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for reproduction	1439 2SD (1204, 1721)
Invalid Reference toxicant test?	No
Date of reference toxicant test (y/m/d) and duration	2021/Sep/08 6 days
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Report Date:	19 Oct-21 09:24 (p 1 of 1)
Test Code/ID:	CD-4388-1021 / 01-2914-0717

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	20-5576-8867	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:23	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:	19 Oct-21 9:23	**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	003-103-615-8

Batch ID:	13-3364-1468	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:09	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:54	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	16-5426-0431	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 13:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-44
Sample Age:	75h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 6d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

6d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

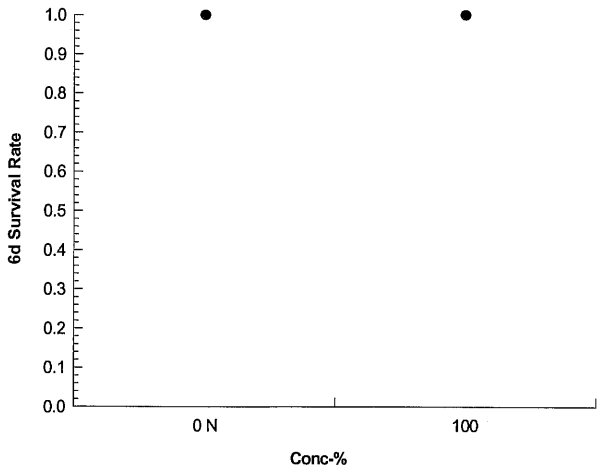
6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Oct19

Analyst: VT 2021 Oct19 QA: mo

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	17-0150-6787	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:23	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 9:23	**MD5 Hash:**	72285557BAF0741703CAA2929036232B	**Editor ID:**	003-103-615-8

Batch ID:	13-3364-1468	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:09	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:54	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 21h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	16-5426-0431	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 13:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-44
Sample Age:	75h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	8.37%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0.85	1.734	2.652	18	CDF	0.2032	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.983	2.708	0.7606	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8.45	8.45	1	0.7226	0.4065	Non-Significant Effect
Error	210.5	11.6944	18			
Total	218.95		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.841	6.541	0.3769	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.981	0.866	0.9462	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	31.7	29.65	33.75	31	28	37	0.9074	9.05%	0.00%
100		10	30.4	27.62	33.18	31	24	37	1.231	12.81%	4.10%

Reproduction Detail

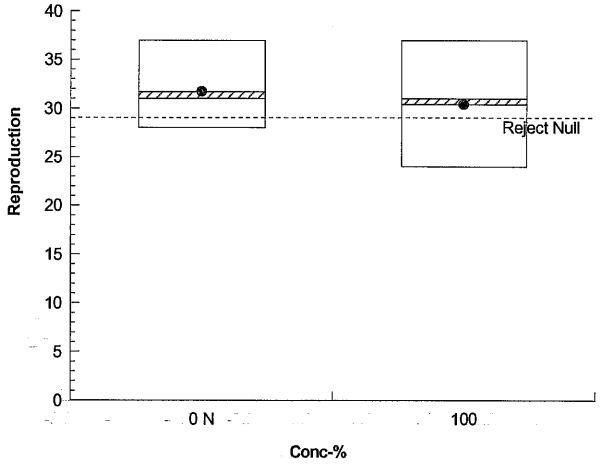
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	33	31	31	30	35	28	37	33	31	28
100		31	32	29	24	28	37	31	31	35	26

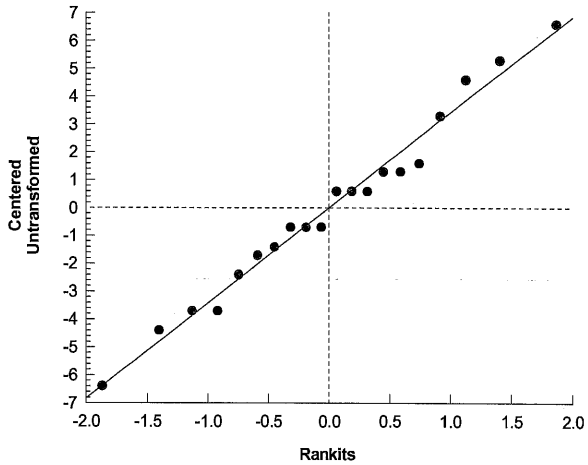
Analyst: KH 2021 Oct 19 QA: mo 2021 Oct 19

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	17-0150-6787	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:23	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 9:23	**MD5 Hash:**	72285557BAF0741703CAA2929036232B	**Editor ID:**	003-103-615-8

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 28, 2021
Analyst(s): K. Tamaki, M. Mazziotti, Y. Su, M. O'Toole, M. Hamad, D. Lai, E. Marus

Job / Sample #: C170357/AGJ773
Sample ID: 1645-44
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	33							31
2	31							32
3	31							29
4	30							24
5	35							28
6	28							37
7	37							31
8	33							31
9	31							35
10	28							26
Mean	31.7	--	--	--	--	--	--	30.4
SD	2.9	--	--	--	--	--	--	3.9

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2021 Oct 19

Proofed by: [illegible] 2021 Oct 19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ773

Date Started September 22, 2021

Sample ID: 1645-44

Date Ended: Sept 28, 2021

Organism Lot #: AB 2021 Sep 13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	133	26.0	7.4	20	97.0	25.9	NS
1	September 23, 2021	112.7	25.5	N/A	20	104.6	25.7	EM
2	September 24, 2021	84.4	25.2	N/A	N/A	N/A	N/A	MM
3	September 25, 2021	107.3	25.0	N/A	20	102.2	24.9	[illegible]
4	September 26, 2021	116.3	24.9	N/A	20	103.0	24.9	[illegible]
5	September 27, 2021	109.3	25.3	N/A	20	105.7	24.9	[illegible]
6				N/A			Ⓐ	
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BB42-0408

Sample Description pale yellow Initials NS

Sample Hardness (mg/L $CaCO_3$) 140 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33-12:53	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:09	
	Bottle / Carboy #: 1 4 wl EM2021Sept23	
1	Date: September 23, 2021 Pre - Aerated From: 7:15 - 7:34	EM VK
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1550	
	Bottle / Carboy #: 1	
2	Date: September 24, 2021 Pre - Aerated From: N/A	MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:18	
	Bottle / Carboy #: 3	
3	Date: September 25, 2021 Pre - Aerated From: 7:00-7:20	[illegible]
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:17	
	Bottle / Carboy #: 3	
4	Date: September 26, 2021 Pre - Aerated From: 10:20-10:40	[illegible]
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1520	
	Bottle / Carboy #: 2	
5	Date: September 27, 2021 Pre - Aerated From: 10:16-10:36	[illegible]
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:04	
	Bottle / Carboy #: 2	
6	Date: Sept 28, 2021	[illegible]
	Test ends @ 13:54	
7	Date:	
	Ⓐ	
8	Date:	

Ⓐ N/A VK 2021 OCT 19

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ773

Analyst (s): K. Kitumaki, M. Mazziotti, Y. Su, M. O'Toole, E. Marks, D. Lai, M. Hamad (B)

Concentration: Control

Control Water Batch: Date(s): Sept 21, 2021 Sept 25

Hardness (mg/L $CaCO_3$): ~~92~~ 92, 100 2021 Sept 22

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	Kt
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	0	4	4	3	4	4	5	3	4	4	EM
5	14	8	9	8	7	8	12	9	10	9	[illegible] mo
6	19	19	18	19	24	16	20	21	17	15	[illegible]
7											
8								(A)			
Total	33	31	31	30	35	28	37	33	31	28	CR Kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration: 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	Kt
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	4	4	3	3	5	3	3	3	4	4	EM
5	8	10	11	9	9	12	10	9	9	8	[illegible] mo
6	19	18	15	12	14	22	18	19	22	14	[illegible]
7											
8								(A)			
Total	31	32	29	24	28	37	31	31	35	~~28~~ 26	CR Kt

(B) Written for M. Hamad - mo 2021 Oct 19

calculation error Kt 2021 Oct 19

(A) N/A Kt 2021 Oct 19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-44 Job / Sample #: C170357/AGJ773

Analyst(s): CTrumble, M.Hamad, M. Mazzuolli, Y.Su, M.O'Toole, N.Snergale, E.Manns

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	177	173	176	175	175		
	Final	182	184	185	187	189	187		
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0		
	Final	24.9	25.2	25.2	25.0	25.1	24.7		
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3		
	Final	8.0	7.9	7.8	7.7	7.7	7.8		
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3		
	Final	8.1	8.1	8.1	8.1	8.6	8.1		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	214	213	212	219	213	212		
	Final	223	225	223	227	223	223		
Temp. (°C)	Initial	26.0	24.9	25.2	24.9	24.9	24.9		
	Final	25.0	25.2	25.2	24.9	25.7	25.0		
D.O. (mg/L)	Initial	7.9	8.8	7.3	8.6	8.4	8.7		
	Final	7.9	7.7	7.6	7.8	7.7	7.6		
pH	Initial	7.6	7.0	7.1	7.1	(A) ~~7.8~~ 7.1	(B) ~~7.5~~ 7.0		
	Final	7.7	7.4	7.6	7.8	7.4	7.8		

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

NS 2021 Sept 27

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS CT	EM MM	MM MM	MM EM	EM EM	MO EM		
Daily WQ Reviewed by:		NS CT	EM MM	MM MM	MM EM	EM EM	MO EM		

(A) WE. 4/2021 Sept 26
(B) WE MO 2021 Sep 27
(C) N/A KT 20210CT9

CETIS Analytical Report

Report Date:	19 Oct-21 09:13 (p 1 of 1)
Test Code/ID:	CD-4388-0921 / 11-3266-0393

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	10-4567-9082	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:13	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	24C1C0A81A7CBF5375BC2D0E5646B8C5	**Editor ID:**	

Batch ID:	16-6539-2666	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:48	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 10:49	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	14-8343-2621	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 11:14	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-45
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	9	1	10	0.9000	0.1000	0.00%
100		10	0	10	1.0000	0.0000	-11.11%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-11.11%

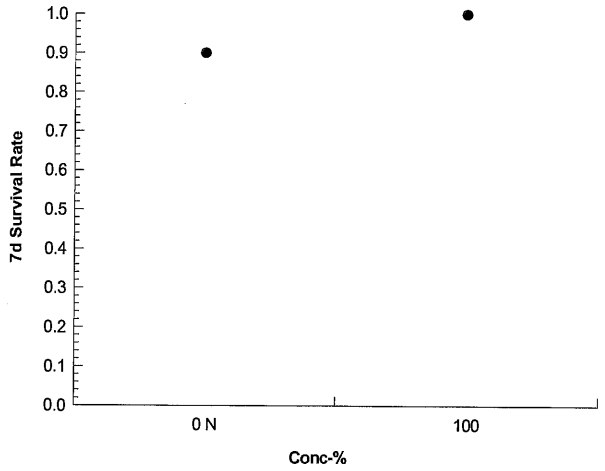
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Oct 19

Analyst: 2021 Oct 19 QA: mo

CETIS Analytical Report

Report Date: 19 Oct-21 09:13 (p 1 of 2)
Test Code/ID: CD-4388-0921 / 11-3266-0393

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-6597-2639	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:13	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AFB497538A823EB93A2379E1269B7E02	**Editor ID:**	

Batch ID:	16-6539-2666	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:48	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 10:49	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	14-8343-2621	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 11:14	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-45
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	15.59%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	-2.283	1.734	3.569	18	CDF	0.9826	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.656	2.708	0.0640	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	110.45	110.45	1	5.214	0.0348	Significant Effect
Error	381.3	21.1833	18			
Total	491.75		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.47	6.541	0.5755	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9461	0.866	0.3116	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	22.9	19.31	26.49	24	11	29	1.588	21.93%	0.00%
100		10	27.6	24.64	30.56	26.5	24	37	1.31	15.01%	-20.52%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	26	25	23	25	11	22	27	29	21	20
100		37	24	28	24	30	25	29	24	25	30

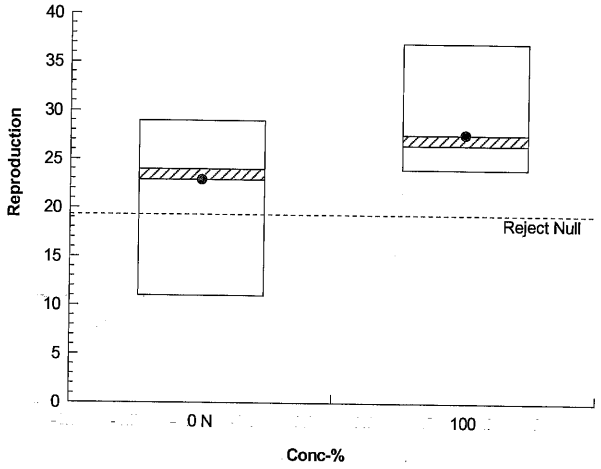
2021 OCT19

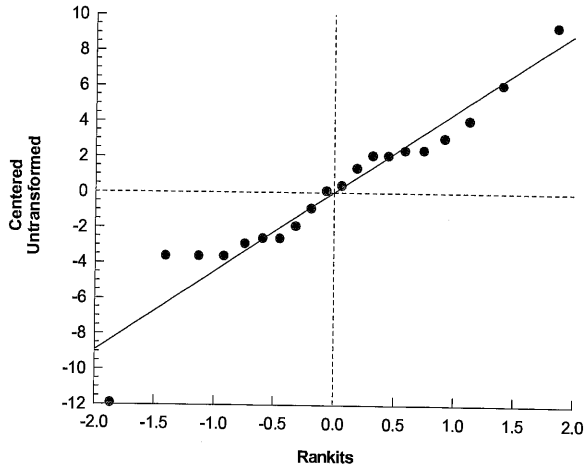
Analyst: KT 2021 OCT19 QA: mo

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-6597-2639	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:13	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AFB497538A823EB93A2379E1269B7E02	**Editor ID:**	

Graphics





Analyst: KT 2021 Oct 19 QA: mo 2021 Oct 19

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 29, 2021
Analyst(s): K. Tamaki, M. Mazziotti, M. Hamad, D. Lai, M. O'Toole, N. Shergill, E. Marus

Job / Sample #: C170357/AGJ767
Sample ID: 1645-45
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	26							37
2	25							24
3	23							28
4	25							24
5	11							30
6	22							25
7	27							29
8	29							24
9	21							25
10	20							30
Mean	22.9	--	--	--	--	--	--	27.6
SD	5.0	--	--	--	--	--	--	4.1

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	0							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	90	--	--	--	--	--	--	100
SD (%)	31.6	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2021OCT19

Proofed by: [illegible] 2021OCT19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ767

Date Started September 22, 2021

Sample ID: 1645-45

Date Ended: 2021 Sep29

Organism Lot #: AB2021 Sep13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	102.9	24.6	8.2	20	97.3	24.4	NS
1	September 23, 2021	97.9	25.4	N/A	n/a	n/a	n/a	EM
2	September 24, 2021	87.5	25.2	N/A	n/a	n/a	n/a	mlm
3	September 25, 2021	93.1	25.3	N/A	n/a	n/a	n/a	mm
4	September 26, 2021	90.7	25.1	N/A	N/A	N/A	N/A	[illegible]
5	September 27, 2021	70.0	25.3	N/A	N/A	N/A	N/A	mo
6	Sept 28, 2021	94.0	25.1	N/A	n/a	n/a	n/a	NS
7				N/A		Ⓒ		

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BB42 - D408

Sample Description pale yellow

Initials NS

Sample Hardness (mg/L $CaCO_3$) 320

Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 1233 – ~~13:03~~ 12:53 (A)	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 16:48	
	Bottle / Carboy #: 1 Sieve native organisms	
1	Date: September 23, 2021 Pre - Aerated From: n/a	EM KK
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:08	
	Bottle / Carboy #: 1 Sieve native organisms	
2	Date: September 24, 2021 Pre - Aerated From: N/A	mlm /MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:35	
	Bottle / Carboy #: 3 Sieve native organisms	
3	Date: September 25, 2021 Pre - Aerated From: N/A	mlm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:48	
	Bottle / Carboy #: 3 Sieve native organisms	
4	Date: September 26, 2021 Pre - Aerated From: N/A	[illegible]
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: Ⓒ ~~13~~ 15:05	
	Bottle / Carboy #: 2	
5	Date: September 27, 2021 Pre - Aerated From: N/A	mo
	Ⓓ Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:36	
	Bottle / Carboy #: 2 Sieved native organisms	
6	Date: 2021 Sept 28 Pre-Aerated from: n/a	NS
	Feeding vol PKS (µL): 100 YCT (µL): 50 Transfer @ 15:36	
	Bottle / Carboy #3 Sieve native organisms	
7	Date: 2021 Sept 29 Test take down @ 10:49	NS

Ⓑ WE EM 2021 Sept 23

Ⓒ NAKT 2021 Oct 19

Ⓓ WE mo 2021 Oct 19

Ⓐ wrong time 20min only - NS 2021 Sept 22

ECOTOXICOLO

***Ceriodaphnia dubia* Surv ... nd Reproduction Test**

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ767

Analyst (s): CTamaki, M. Mazziotti, MHamad, DLai, M.O'Toole, N. Sheargill, EMacKay

Concentration: Control

Control Water Batch: Date(s): Sept21, 2021 Sept25

Hardness (mg/L $CaCO_3$): 97, 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	MM
4	4	3	4	4	4	5	4	6	4	3	EM
5	8	6	10	11	7x	7	10	11	7	7	mo dm
6	0	16	0	0	|	0	0	0	0	0	NS
7	14	0	9	10	|	10	13	12	10	10	NS
8				(A)	|					(A)	
Total	26	25	23	25	11x	~~23~~	27	29	21	20	KT NS

X = dead adult
M = missing/lost adult
P = pale adult 22
S = small adult
Oct 12 2021 CR
(#) immobilised neonates
* dead neonates present

Concentration: 100%

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	m
4	5	4	4	5	3	4	4	3	4	5	EM
5	13	12	12	8	15	9	15	9	12	13	mo dm
6	0	8	0	0	12	0	0	0	0	0	NS
7	19	0	12	11	0	12	10	12	9	12	NS
8							(A)				
Total	37	24	28	24	30	25	29	24	25	30	KT CR

(A) N/A KT 28 OCT 19

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-45 Job / Sample #: C170357/AGJ767

Analyst(s): N. Sherqee E. Mans K. Czinski, M. Mazziotti, Y. Su M. O'Toole Mitaman

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	172	173	175	175	175	177	
	Final	181	185	184	182	177	186	187	
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0	24.2	
	Final	24.5	25.3	24.9	24.9	25.0	25.0	24.5	
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3	8.2	
	Final	8.3	7.9	7.8	7.8	7.6	8.0	8.1	
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3	8.2	
	Final	8.2	8.1	8.1	8.1	8.1	8.2	8.0	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	828	838	842	837	843	841	843	
	Final	831	840	848	855	846	843	838	
Temp. (°C)	Initial	24.4	25.4	25.2	25.2	25.2	25.3	25.0	
	Final	24.6	25.4	24.9	24.7	25.1	25.1	24.9	
D.O. (mg/L)	Initial	8.3	8.4	7.3	7.8	7.7	5.7	7.6	
	Final	6.9	6.8	6.8	7.1	7.1	7.1	7.8	
pH	Initial	8.4	7.7	7.8	7.8	7.9	7.8	8.2	
	Final	8.4	8.2	8.3	8.2	8.3	8.3	8.1	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

NS 2024 Sept 22

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KC	EM MM	MHM MM	m EM	EM	mo NS	NS	
Daily WQ Reviewed by:		NS KC	EM MM	MHM MM	m EM	EM	mo NS	NS	

CANAKC 2021 OCT 19

CETIS Analytical Report

Report Date:	19 Oct-21 09:35 (p 1 of 1)
Test Code/ID:	CD-4388-1121 / 09-5706-3410

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	08-4600-8711	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:35	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	A94B1A17FA458D360A5B361EE91E4179	**Editor ID:**	

Batch ID:	12-1041-5244	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 11:07	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-5941-4558	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 11:30	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-46
Sample Age:	77h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	9	1	10	0.9000	0.1000	0.00%
100		10	0	10	1.0000	0.0000	-11.11%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-11.11%

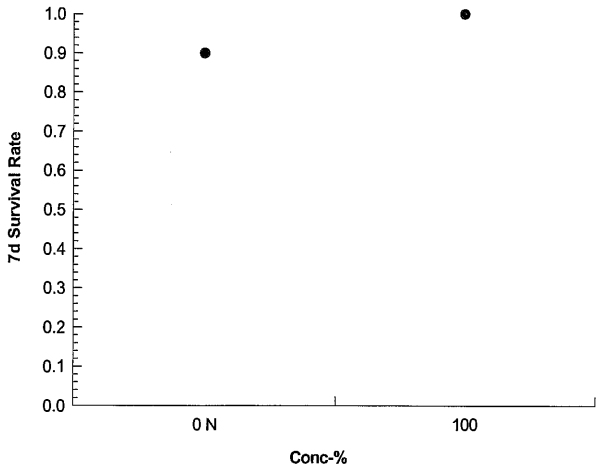
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



Analyst: KT 2021 Oct 19 QA: mo 2021 Oct 19

CETIS Analytical Report

Test Code/ID: CD-4388-1121 / 09-5706-3410

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	01-8474-8114	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:35	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3C147244378E5CF44F81FE855E666CAF	**Editor ID:**	

Batch ID:	12-1041-5244	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:52	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 11:07	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-5941-4558	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 11:30	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-46
Sample Age:	77h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	24.13%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	108.5	---	3	18	Exact	0.6094	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	3.302	2.708	0.0011	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	16.2	16.2	1	0.3136	0.5824	Non-Significant Effect
Error	929.8	51.6556	18			
Total	946		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.922	6.541	0.0542	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8235	0.866	0.0020	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	23.1	16.61	29.59	24.5	0	32	2.869	39.28%	0.00%
100		10	24.9	21.62	28.18	25.5	15	30	1.449	18.40%	-7.79%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	28	26	31	0	22	23	27	32	19	23
100		15	30	23	20	28	25	26	28	29	25

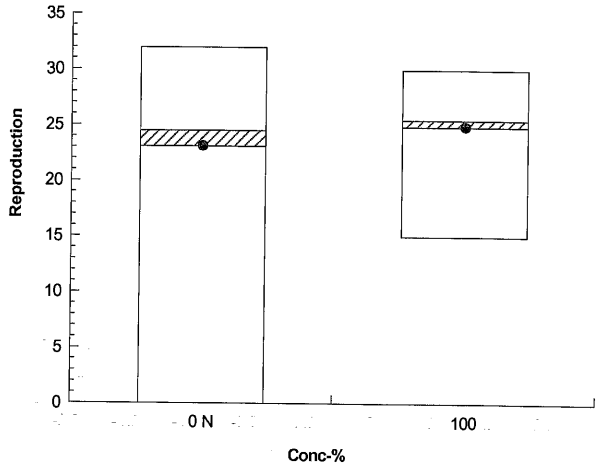
Analyst: KH 2021 OCT19 QA: mo 2021 OCT19

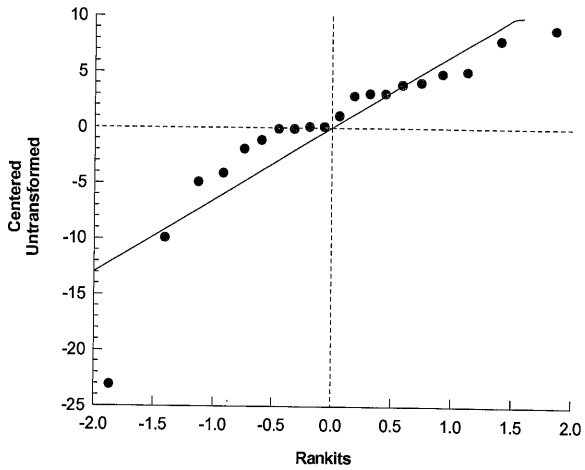
Ceriodaphnia 7-d Survival and Reproduction Test

Bureau Veritas

Analysis ID:	01-8474-8114	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:35	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3C147244378E5CF44F81FE855E666CAF	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 29, 2021
Analyst(s): K. Tamaki, M. Mazziotti, Y. Su, M. O'Toole, N. Shergill, D. Lai, M. Hamad, E. Marus

Job / Sample #: C170357/AGJ769
Sample ID: 1645-46
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	28							15
2	26							30
3	31							23
4	0							20
5	22							28
6	23							25
7	27							26
8	32							28
9	19							29
10	23							25
Mean	23.1	--	--	--	--	--	--	24.9
SD	9.1	--	--	--	--	--	--	4.6

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	0							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	90	--	--	--	--	--	--	100
SD (%)	31.6	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2021Oct19

Proofed by: [illegible] 2021Oct19

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ769

Date Started September 22, 2021

Sample ID: 1645-46

Date Ended: 2021Sep29

Organism Lot #: AB2021 Sep13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	134.5	24.5	7.8	20	99.1	26.0	NS
1	September 23, 2021	112.2	25.5	N/A	20	103.7	25.3	EM
2	September 24, 2021	110.5	25.2	N/A	20	104.3	25.1	mltm
3	September 25, 2021	111.3	25.3	N/A	20	107.3	25.0	mltm
4	September 26, 2021	119.4	25.2	N/A	20	100.5	24.9	ys
5	September 27, 2021	121.8	25.2	N/A	20	110.9	24.7	mo
6	Sept. 28, 2021	103.4	25.3	N/A	20	100.8	24.6 Ⓐ	NS
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BBU2-0408

Sample Description pale yellow, clear Initials NS

Sample Hardness (mg/L $CaCO_3$) 232 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33 - 12:53 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 16:52 Bottle / Carboy #: 1	NS
1	Date: September 23, 2021 Pre - Aerated From: 7:14 - 7:34 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1521 Bottle / Carboy #: 1	EM KT
2	Date: September 24, 2021 Pre - Aerated From: 06:30 - 06:50 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:49 Bottle / Carboy #: 3	mltm MM
3	Date: September 25, 2021 Pre - Aerated From: 07:00 - 07:20 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:56 Bottle / Carboy #: 3	mltm
4	Date: September 26, 2021 Pre - Aerated From: 10:30 - 10:50 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:45 Bottle / Carboy #: 2	ys
5	Date: September 27, 2021 Pre - Aerated From: 10:16 - 10:36 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:48 Bottle / Carboy #: 6	ys
6	Date: September 28, 2021 Pre-Aerated from: 1508 - ~~1535~~ 1528 Ⓑ Feeding vol PKS (µL): 100 YCT (µL): 50 Test ~~Ⓐ~~ Δ: 15:50 Bottle #: 7	NS
7	Date: Sept 29, 2021 Test take down @ 11:07.	NS
8	Date: Ⓐ	

Ⓐ NI KT 2021 OCT 19 WEG 2021 OCT 19

Ⓑ we NS 2021 Oct 19 late entry

ECOTOXICOLO[illegible] ***Ceriodaphnia dubia* Surv[illegible]nd Reproduction Test**

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ769

Analyst (s): K Tamaki, M. Mazziotti, Y. Su, M. O'Toole, N. Sherrard, E Marks, M Hamad, D. Lai

Concentration: Control

Control Water Batch: Date(s): Sep 21, 2021, Sept 25

Hardness (mg/L $CaCO_3$): 92, 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0x	0	0	0	0	0	0	Kt dm
2	0	0	0	|	0	0	0	0	0	0	MM MM
3	0	0	0	|	0	0	0	0	0	0	[illegible]
4	3	4	4	|	3	4	4	5	4	3	EM
5	9	7	10	|	6	6	8	10	6	8	ys mo
6	0	0	0	|	0	0	0	0	0	0	NS
7	16	15	17	|	13	13	15	17	9	12	NS
8		(A)							(A)		
Total	28	26	31	0x	~~21~~ 22 (B)	23	27	32	19	23	CR Kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration: 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	Kt dm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	5	5	4	4	6	5	4	5	6	4	EM
5	8	7	9	8	10	8	12	10	14	11	ys mo
6	2	18	0	0	12	0	0	0	9	0	NS
7	0	0	10	8	0	12	10	13	0	10	NS
8							(A)				
Total	15	30	23	20	28	25	26	28	29	25	CR Kt

(A) N/A Kt 2021 Oct 19
(B) calculation error Kt 2021 Oct 19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-46 Job / Sample #: C170357/AGJ769

Analyst(s): K Tumaki, MHamad, M Mazziotti, M.O'Toole, E.Marks, N.Sverguio, Y.Su

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	172	173	175	175	175	177	
	Final	182	187	185	182	187	187	188	
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0	24.2	
	Final	24.7	25.3	24.9	24.9	25.1	25.0	25.0	
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3	8.2	
	Final	8.1	8.0	7.9	8.0	7.7	7.9	7.9	
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3	8.2	
	Final	8.2	8.1	8.1	8.1	8.2	8.2	8.0	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	459	457	464	462	457	458	455	
	Final	463	463	470	483	466	464	460	
Temp. (°C)	Initial	26.0	24.9	25.2	25.1	24.9	24.7	24.8	
	Final	24.7	25.3	24.9	25.0	25.2	25.3	25.1	
D.O. (mg/L)	Initial	8.1	8.9	8.8	8.7	8.3	9.2	8.4	
	Final	7.9	8.0	7.9	7.9	7.6	7.8	7.8	
pH	Initial	8.1	7.8	7.7	7.7	7.8	7.8	8.2	
	Final	8.3	8.2	8.2	8.2	8.3	8.3	8.1	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KT	EM MM	MHm MM	MHm EM	EM	mo NS	NS NS	
Daily WQ Reviewed by:		NS KT	EM MM	MHm MM	MHm EM	EM	mo NS	NS NS	

NS 22/8 pX 22

(A) NA KT 20240CT15

CETIS Analytical Report

Report Date: 19 Oct-21 09:49 (p 1 of 1)
Test Code/ID: CD-4388-1221 / 07-0397-8633

Ceriodaphnia 7-d Survival and Reproduction Test — Bureau Veritas

Analysis ID:	15-0415-0745	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:49	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:	19 Oct-21 9:48	**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	003-103-615-8

Batch ID:	10-6438-3847	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:05	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-0101-9240	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 14:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-47
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 6d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

6d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

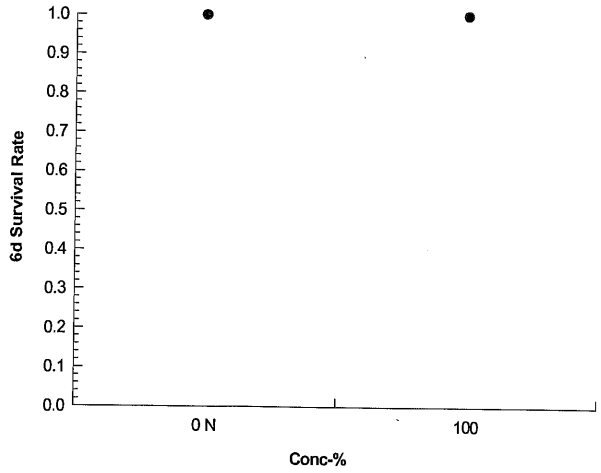
6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Oct 19

Analyst: KT 2021 Oct 19 QA: mo

CETIS Analytical Report

Report Date: 19 Oct-21 09:49 (p 1 of 2)
Test Code/ID: CD-4388-1221 / 07-0397-8633

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	12-6754-5586	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:49	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 9:48	**MD5 Hash:**	C0EBD0161D65CDA8E77B49FB65AC919	**Editor ID:**	003-103-615-8

Batch ID:	10-6438-3847	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:05	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-0101-9240	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 14:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-47
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	14.32%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	102	---	7	18	Exact	0.4209	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.484	2.708	0.1357	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05	0.05	1	0.001756	0.9670	Non-Significant Effect
Error	512.5	28.4722	18			
Total	512.55		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.059	6.541	0.9333	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8483	0.866	0.0050	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	28.9	25.14	32.66	30.5	16	34	1.663	18.20%	0.00%
100		10	28.8	24.93	32.67	30	16	36	1.711	18.79%	0.35%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	28	16	33	27	33	31	26	30	31	34
100		27	30	16	31	34	28	26	30	30	36

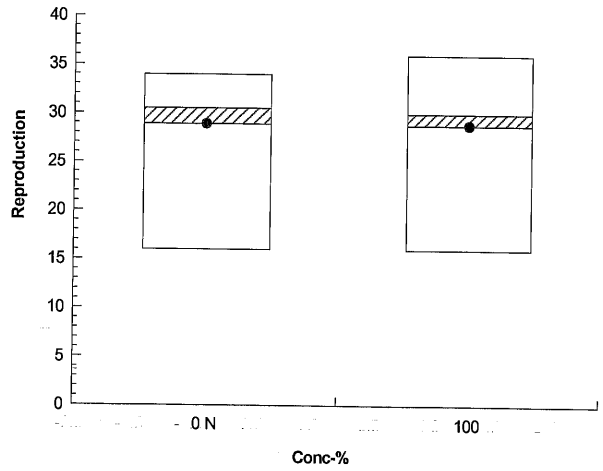
Analyst: KY 2021 Oct19 QA: mo 2021 Oct19

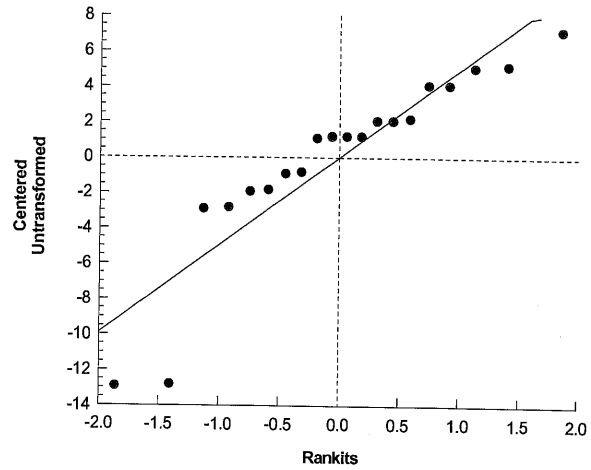
Ceriodaphnia 7-d Survival and Reproduction Test

Bureau Veritas

Analysis ID:	12-6754-5586	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:49	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 9:48	**MD5 Hash:**	C0EBD0161D65CDA8E77B49FB65AC919	**Editor ID:**	003-103-615-8

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 28, 2021
Analyst(s): K. Tamaki, M. Mazziotti, M. Hamad, D. Lai, Y. Su, E. Marus

Job / Sample #: C170357/AGJ772
Sample ID: 1645-47
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	28							27
2	16							30
3	33							16
4	27							31
5	33							34
6	31							28
7	26							26
8	30							30
9	31							30
10	34							36
Mean	28.9	--	--	--	--	--	--	28.8
SD	5.3	--	--	--	--	--	--	5.4

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: KTamaki 20210ct19

Proofed by: [illegible] 20210ct19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ772

Date Started September 22, 2021

Sample ID: 1645-47

Date Ended: Sept 28, 2021

Organism Lot #: AB 2021Sep13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	130	128	7.3	20	97.2	25.9	NS
1	September 23, 2021	111.2	25.4	N/A	20	106.8	25.5	EM
2	September 24, 2021	117.2	25.2	N/A	20	111.3	25.0	mitm
3	September 25, 2021	116.2	25.1	N/A	20	110.3	25.0	mtm
4	September 26, 2021	120.6	25.1	N/A	20	111.5	25.0	yp
5	September 27, 2021	122.2	25.2	N/A	20	107.6	24.8	mo
6				N/A			(B)	
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BB42-0408

Sample Description pale yellow, clear Initials NS

Sample Hardness (mg/L $CaCO_3$) 184 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33-12:53	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:05	
	Bottle / Carboy #: 1 Sieve sample to remove native organisms.	
1	Date: September 23, 2021 Pre - Aerated From: 7:14-7:34	EM KT
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1547	
	Bottle / Carboy #: 1 sieve sample to remove native organisms	
2	Date: September 24, 2021 Pre - Aerated From: 06:30-06:50	mitm / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:08	
	Bottle / Carboy #: 2 Sieve sample to remove native organisms	
3	Date: September 25, 2021 Pre - Aerated From: 07:00-07:20	mtm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:07	
	Bottle / Carboy #: 2 Sieve sample to remove native organisms	
4	Date: September 26, 2021 Pre - Aerated From: 10:35-10:55	yp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:10	
	Bottle / Carboy #: 3 Sieved samples to remove organisms	
5	Date: September 27, 2021 Pre - Aerated From: 10:30-10:50	mo
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: ~~13~~ (A) 15:40	
	Bottle / Carboy #: 6 Sieved sample to remove native organisms	
6	Date: Sept 28, 2021	yp
	Test ends @ 13:12	
7	Date:	
8	Date: (B)	

(A) WE.yp 2021Sept28

(B) NA KT 2021OCT8

ECOTOXICOLO(***Ceriodaphnia dubia* Surv nd Reproduction Test**

Client Name Diavik Diamond

Job / Sample #: C170357/AGJ772

Analyst (s): KTamaki, M. Mazziotti, M Hamad, D. Lai - Y. Su, E Marks

Concentration: Control

Control Water Batch: Date(s): Sept 21, 2021 Sept 25

Hardness (mg/L $CaCO_3$): 92, 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	m
4	4	4	5	4	3	0	4	3	4	4	EM
5	9	12	12	9	14	14	9	10	11	12	dml
6	15	0	16	14	16	17	13	17	16	18	ys
7		A	~~33~~	~~27~~	~~33~~	~~31~~	~~26~~	~~30~~	~~31~~	~~34~~	
8										4	
Total	~~18~~	16	33	~~29~~	33	31	26	30	31	34	CK KT

X = dead adult 28 - Oct 12 2021 CK
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) CK LE Oct 5 2021

Concentration : 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	m
4	0	4	5	4	4	5	3	0	6	5	EM
5	10	11	11	11	12	9	8	11	9	15	dml
6	17	15	0	16	18	14	15	19	15	16	ys
7											
8									B		
Total	27	30	16	31	34	28	26	30	30	36	CK KT

(B) NIA KT 2021 OCT 19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-47 Job / Sample #: C170357/AGJ772

Analyst(s): [illegible], MHamad, M Mazziotti, Y. Su, M. O'Toole, EMaus, NSnerigao

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	172	173	176	175	175		
	Final	186	180	185	192	186	191		
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0		
	Final	24.8	25.2	25.0	24.9	24.6	24.7		
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3		
	Final	8.2	7.5	7.7	7.9	7.4	7.7		
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3		
	Final	8.2	7.9	8.0	7.6	8.0	8.1		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	489	487	496	491	492	493		
	Final	445	497	504	498	501	497		⊛
Temp. (°C)	Initial	20.0	24.9	25.1	25.0	24.9	24.8		
	Final	25.1	25.4	25.1	25.1	24.6	24.8		
D.O. (mg/L)	Initial	7.9	8.9	9.0	9.0	9.1	9.0		
	Final	7.8	7.3	7.6	7.7	7.5	7.7		
pH	Initial	8.0	7.5	7.7	7.6	7.6	7.3		
	Final	7.8	7.6	7.7	7.6	7.7	7.8		

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

NS 7021 Sept 22

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KT	EM MM	MHM NS	MM EM	DS EM	MO DS		
Daily WQ Reviewed by:		NS KT	EM MM	MHM NS	MM EM	DS EM	MO DS		

ANA KT 2021OCT19

CETIS Analytical Report

Report Date:	19 Oct-21 09:59 (p 1 of 1)
Test Code/ID:	CD-4388-1321 / 06-2515-0097

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	20-6132-4819	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:58	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	

Batch ID:	06-0438-9955	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:50	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 10:54	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	07-3845-9408	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 10:54	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-69
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

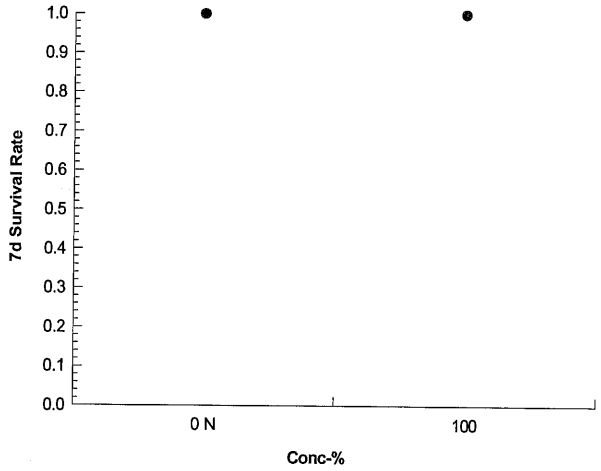
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Oct 19

Analyst: KT 2021 Oct 19 QA: MO

CETIS Analytical Report

Report Date: 19 Oct-21 09:59 (p 1 of 2)
Test Code/ID: CD-4388-1321 / 06-2515-0097

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	17-4090-7692	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:58	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3FBCDD458C73FFB0FA406A29A80078C7	**Editor ID:**	

Batch ID:	06-0438-9955	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:50	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 10:54	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	07-3845-9408	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 10:54	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-69
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% failed reproduction endpoint	8.09%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100*	3.198	1.734	2.006	18	CDF	0.0025	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.819	2.708	0.0285	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	68.45	68.45	1	10.22	0.0050	Significant Effect
Error	120.5	6.69444	18			
Total	188.95		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.707	6.541	0.0642	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9214	0.866	0.1053	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	24.8	23.59	26.01	25.5	22	27	0.5333	6.80%	0.00%
100		10	21.1	18.78	23.42	22	14	25	1.027	15.39%	14.92%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	27	26	22	26	26	26	23	24	25
100		24	23	21	20	23	19	19	14	25	23

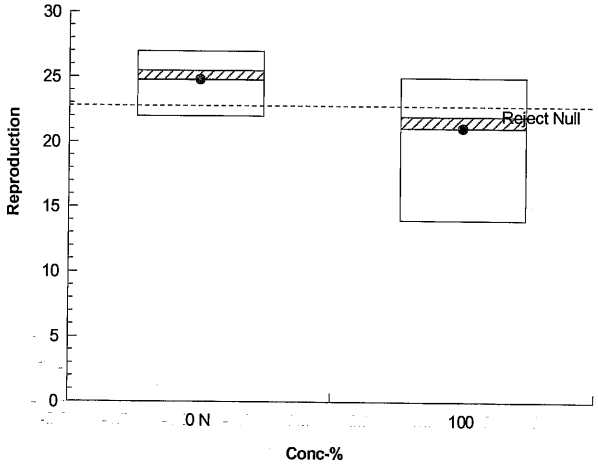
2021 Oct 19

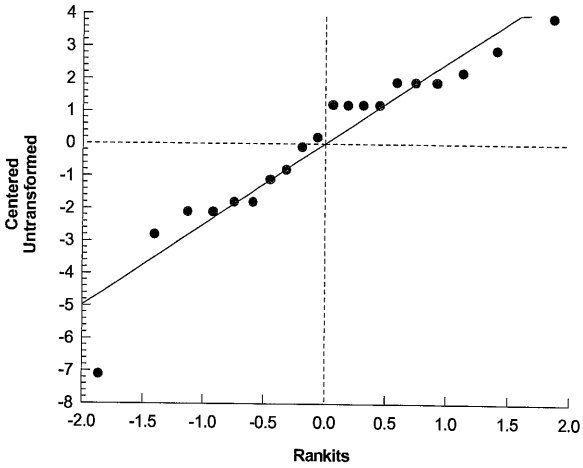
Analyst: VH 2021 Oct 19 QA: mo

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	17-4090-7692	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 9:58	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3FBCDD458C73FFB0FA406A29A80078C7	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 29, 2021
Analyst(s): K. Tamaki, M. Mazziotti, D. Lai, M. O'Toole, Y. Su, N. Shergill, M. Hamad, E. Marus

Job / Sample #: C170357/AGJ768
Sample ID: 1645-69
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	23							24
2	27							23
3	26							21
4	22							20
5	26							23
6	26							19
7	26							19
8	23							14
9	24							25
10	25							23
Mean	24.8	--	--	--	--	--	--	21.1
SD	1.7	--	--	--	--	--	--	3.2

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2021Oct19

Proofed by: [illegible] 2021Oct19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ768

Date Started September 22, 2021

Sample ID: 1645-69

Date Ended: 2021Sep29

Organism Lot #: AB 2021Sep13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	133	26.0	7.9	20	97.5	25.9	NS
1	September 23, 2021	115.6	25.4	N/A	20	104.6	25.6	EM
2	September 24, 2021	122.2	25.2	N/A	20	114.3	25.1	mlm
3	September 25, 2021	120.7	25.3	N/A	20	115.7	25.1	mlm
4	September 26, 2021	121.8	25.3	N/A	20	114.4	25.1	yp
5	September 27, 2021	126.0	25.3	N/A	20	110.5	24.8	mo
6	Sept. 28, 2021	112.9	25.3	N/A	20	100.3	24.5	NS
7				N/A			Ⓒ	

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BBU2 - 0408

Sample Description pale yellow, clear

Initials NS

Sample Hardness (mg/L $CaCO_3$) 456

Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33 - ~~13:03~~ 12:53 (A)	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 1650	
	Bottle / Carboy #: 1	
1	Date: September 23, 2021 Pre - Aerated From: 7:14 - 7:34	EM KT
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1515	
	Bottle / Carboy #: 1	
2	Date: September 24, 2021 Pre - Aerated From: 06:30 - 06:50	mlm / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:39	
	Bottle / Carboy #: 3	
3	Date: September 25, 2021 Pre - Aerated From: 07:00 - 07:20	mlm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:50	
	Bottle / Carboy #: 4	
4	Date: September 26, 2021 Pre - Aerated From: 10:40 - ~~10:11:00~~ Ⓑ 11:00	yp
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:35	
	Bottle / Carboy #: 5	
5	Date: September 27, 2021 Pre - Aerated From: 10:16 - 10:36	mo
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:46	
	Bottle / Carboy #: 6	
6	Date: Sept 28, 2021 Pre-Aerated from: 1508 - 1528.	NS
	Feeding vol PKS (µL): 100 YCT (µL): 50 Test H_2O Δ @ 15:39	
	Bottle # 7	
7	Date: Sept 29, 2021 Test take down @ 10:54.	NS
8	Date: Ⓒ	

Ⓐ 20 min not 30 min we 10 2021 Sept 22 Ⓑ WE.yp 2021 Sept 26

Ⓒ N/A KT 2021 Oct 19

ECOTOXICOLO

***Ceriodaphnia dubia* Sur[illegible] and Reproduction Test**

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ768

Analyst (s): KTamaki, M. Mazzieotti, D.Law, M.O'Toole, Y.Su, N.Smergale, EMarks, Mitamad

Concentration: Control

Control Water Batch: Date(s): ~~Sep 29~~ Sep 27, 2021 Sept 25

Hardness (mg/L $CaCO_3$): 92, 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	mlm
4	4	3	4	6	5	5	4	5	6	7	EM
5	6	10	10	8	9	10	9	8	10	10	mo dm
6	0	14	0	0	12	0	0	0	0	0	NS
7	13	0	12	8	0	11	13	10	8	8	NS
8	~~X~~ (B)							(A)			
Total	23	27	26	~~32~~ (B) 22	26	26	26	23	24	25	CR KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration: 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	4	4	3	3	4	4	5	4	6	6	EM
5	11	10	12	8	11	8	8	8	12	10	mo dm
6	0	0	0	0	0	0	0	2	0	0	NS
7	9	9	6	9	8	7	6	10	7	7	NS
8								(A)			
Total	24	23	21	20	23	19	19	14	25	23	CR KT

(A) NA KT 2021 Oct 19

(B) We KT 2021 Oct 19

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond
Sample ID: 1645-69
Job / Sample #: C170357/AGJ768
Analyst(s): CTamaki, MHamad, M. Mazzioth, Y. Su, M. O'Toole, F Manis, N. Sherzad

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	172	173	175	175	175	177	
	Final	182	184	185	178	186	186	186	
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0	24.2	
	Final	24.6	25.3	25.0	25.0	25.2	25.2	25.2	
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3	8.2	
	Final	8.0	8.1	7.5	7.6	7.8	7.9	7.4	
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3	8.2	
	Final	8.2	8.1	8.1	8.1	8.2	8.2	8.1	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1089	1066	1083	1077	1078	1080	1074	
	Final	1077	1068	1086	1088	1091	1080	1074	
Temp. (°C)	Initial	25.9	24.9	25.2	25.1	25.1	24.8	24.2	
	Final	24.6	25.2	25.0	24.8	25.1	25.2	25.2	
D.O. (mg/L)	Initial	8.2	8.8	9.1	9.0	9.2	9.1	8.4	
	Final	7.9	7.8	7.9	7.9	7.9	7.8	7.5	
pH	Initial	8.1	7.7	7.7	7.8	7.8	8.0	8.0	
	Final	8.2	8.2	8.2	8.1	8.2	8.3	8.2	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KT	EM MM	mlim MM	mlim EM	gs EM	mo NS	NS NS	
Daily WQ Reviewed by:		NS KT	EM MM	mlim MM	mlim EM	gs EM	mo NS	NS NS	

Apr 22

④ NA KT20210079

CETIS Analytical Report

Report Date:	19 Oct-21 10:10 (p 1 of 1)
Test Code/ID:	CD-4388-1421 / 18-3274-9434

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-9495-5454	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:09	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	

Batch ID:	19-7382-7979	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:55	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 11:12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	06-2398-1504	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 09:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-76
Sample Age:	79h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

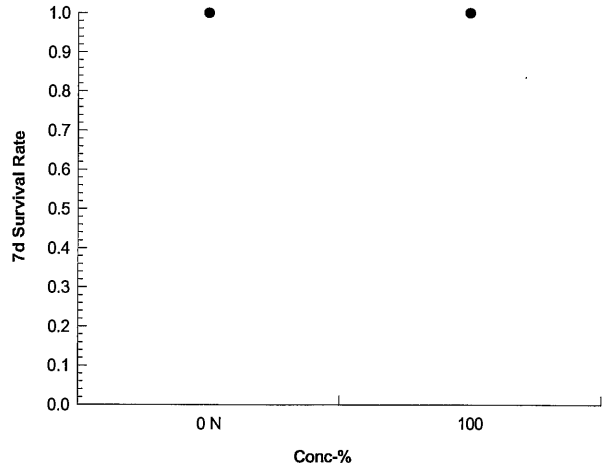
7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 OCT 19

Analyst: KT 2021 OCT 19 QA: MO

CETIS Analytical Report

Report Date: 19 Oct-21 10:10 (p 1 of 2)
Test Code/ID: CD-4388-1421 / 18-3274-9434

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	18-1136-1512	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:09	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	098EA7FBAC5F17232D15F142522E4F3F	**Editor ID:**	

Batch ID:	19-7382-7979	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 16:55	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	29 Sep-21 11:12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 18h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	06-2398-1504	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 09:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-76
Sample Age:	79h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% failed reproduction endpoint	12.71%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100*	7.293	1.734	3.305	18	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.929	2.708	0.8874	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	966.05	966.05	1	53.19	<1.0E-05	Significant Effect
Error	326.9	18.1611	18			
Total	1292.95		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.497	6.541	0.5572	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.972	0.866	0.7968	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	26	22.66	29.34	26	18	33	1.476	17.95%	0.00%
100		10	12.1	9.372	14.83	11.5	7	19	1.206	31.52%	53.46%

Reproduction Detail

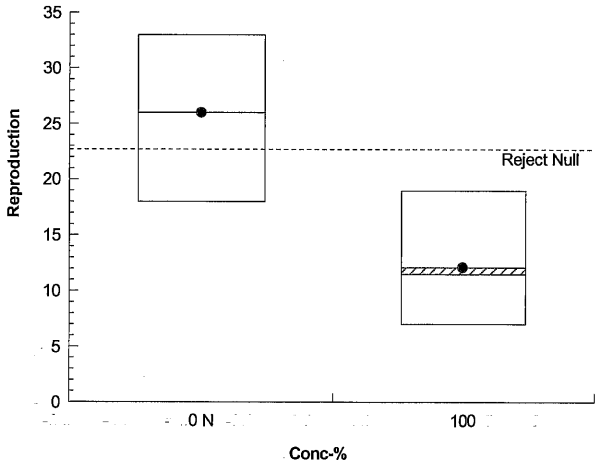
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	18	26	25	33	30	20	31	26	24	27
100		8	11	13	11	7	12	19	17	9	14

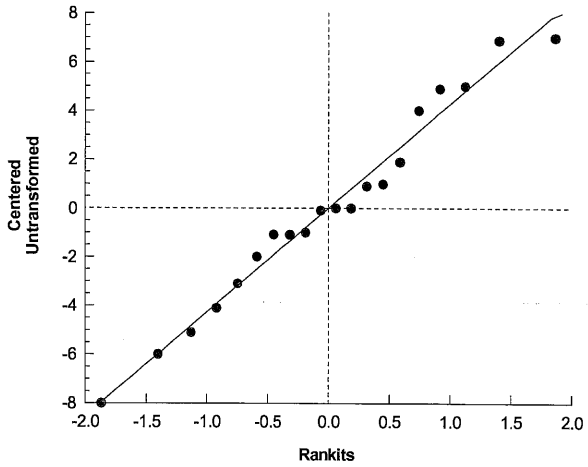
Analyst: KA 2021 OCT 14 QA: MO 2021 OCT 19

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	18-1136-1512	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:09	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	098EA7FBAC5F17232D15F142522E4F3F	**Editor ID:**	

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 29, 2021
Analyst(s): K. Tamaki, M. Mazziotti, Y. Su, M. O'Toole, N. Shergill, D. Lai, M. Hamad, E. Marus

Job / Sample #: C170357/AGJ770
Sample ID: 1645-76
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	18							8
2	26							11
3	25							13
4	33							11
5	30							7
6	20							12
7	31							19
8	26							17
9	24							9
10	27							14
Mean	26.0	--	--	--	--	--	--	12.1
SD	4.7	--	--	--	--	--	--	3.8

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: KTamaki 2021Oct19

Proofed by: 2021Oct19

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ770

Date Started September 22, 2021

Sample ID: 1645-76

Date Ended: 2021 Sep 29

Organism Lot #: AB 2021 ~~Oct~~ Sep 13 wek 2021 oct19

Before Use Measurements After Temperature Adjustment

Deviations - See BLNC ☐

Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	123	26.0	7.7	20	98.7	26.0	NS
1	September 23, 2021	111.8	25.6	N/A	20	102.3	25.7	EM
2	September 24, 2021	118.2	25.2	N/A	20	111.7	25.0	mltm
3	September 25, 2021	115.1	25.3	N/A	20	108.2	25.1	mltm
4	September 26, 2021	117.5	25.0	N/A	20	105.7	25.0	[illegible]
5	September 27, 2021	120.1	25.3	N/A	20	106.3	24.8	mo
6	September 28, 2021	106.8	24.9	N/A	20	100.5	24.5	NS
7				N/A				(A)

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BB42-0408

Sample Description brown, hard to see through

Initials NS

Sample Hardness (mg/L $CaCO_3$) 308

Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33 - 12:53 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 16:55 Bottle / Carboy #: 1	NS
1	Date: September 23, 2021 Pre - Aerated From: 7:14 - 7:34 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1532 Bottle / Carboy #: 1	EM VX
2	Date: September 24, 2021 Pre - Aerated From: 06:30 - 06:50 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:53 Bottle / Carboy #: 2	mltm MM
3	Date: September 25, 2021 Pre - Aerated From: 07:00 - 07:20 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:02 Bottle / Carboy #: 2	m
4	Date: September 26, 2021 Pre - Aerated From: 10:30 - 10:50 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:50 Bottle / Carboy #: 3	[illegible]
5	Date: September 27, 2021 Pre - Aerated From: 10:30 - 10:50 Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:54 Bottle / Carboy #: 6	mo [illegible]
6	Date: Sept. 28, 2021 Pre-Aerated from: 1508 - ~~1538~~ 1528 Late writing error 2021 oct 19 NS Feeding vol. PKS (µL): 100 YCT (µL): 50 Test H_2O A@ 15:55 Bottle #7.	NS
7	Date: Sept 29, 2021 Test take down @ 1112 NS 2021 Sep 29	NS
8	Date:	

(A) NA 2021 oct 19

Client Name Diavik Diamond

Job / Sample #: C170357/AGJ770

Analyst (s): KTanaki, M. Mazziotti, Y. Su, M. O'Toole, N. Shergill, EMams, Dkq, Mitamad

Concentration: Control

Control Water Batch: Date(s): Sept21, 2021 Sept 25

Hardness (mg/L $CaCO_3$): 92, 100

Concentration (% v/v): ~~150~~ 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	4	4	3	4	5	4	4	5	3	4	EM
5	9	9	13	10	14	8	16	8	12	13	yp mo
6	0	13	0	0	11	0	0	0	9	0	NS
7	5	0	9	19	0	8	11	13	0	10	NS
8									(A)		
Total	18	26	25	33	30	20	31	26	24	27	NS KT

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KT dml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	3	3	4	3	2	3	3	4	4	5	EM
5	5	8	9	0	5	9	6	0	5	2	yp mo
6	0	0	0	8	0	0	10	7	0	7	NS
7	0	0	0	0	0	0	0	6	0	0	NS
8							(A)				
Total	8	11	13	11	7	12	19	17	9	14	CR KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) N/A KT 2021 Oct 9

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-76 Job / Sample #: C170357/AGJ770

Analyst(s): K. Tamaki, M. Hamad, M. Mazzioti, Y. Su, M. O'Toole, N. Shergao, E. Mandy

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	172	173	176	175	175	177	
	Final	200	183	185	183	185	184	187	
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0	24.2	
	Final	24.7	25.2	25.0	25.1	24.9	25.2	25.3	
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3	8.2	
	Final	8.2	8.0	7.8	7.8	8.0	7.8	7.9	
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3	8.2	
	Final	8.2	8.1	8.1	8.1	8.2	8.2	8.1	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1098	1098	1104	1110	1099	1099	1098	
	Final	1105	1091	1105	1105	1101	1098	1104	(B)
Temp. (°C)	Initial	26.0	24.9	25.1	24.5	25.0	24.8	24.5	
	Final	24.8	25.3	24.9	24.8	25.1 (A)	~~24.5~~ 24.3	25.4	
D.O. (mg/L)	Initial	8.1	8.0	9.1	9.0	8.7	8.8	8.3	
	Final	8.0	8.0	7.8	7.9	7.9 (A)	~~8.3~~ 7.7	7.8	
pH	Initial	8.1	7.6	7.7	7.6	8.0	7.8	8.0	
	Final	8.0	8.0	8.0	7.8	8.1	8.0	8.0	

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

NS 2021 Sept 22

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KT	EM MM	mtm MM	MZ EM	EM	mo NS	NS NS	
Daily WQ Reviewed by:		NS KT	EM MM	mtm MM	EM	EM	mo NS	NS NS	

(A) WE NS 2021 Sept. 28

(B) NA KT 2021 OCT 19

CETIS Analytical Report

Report Date:	19 Oct-21 10:21 (p 1 of 1)
Test Code/ID:	CD-4388-1521 / 08-3453-0130

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-8475-6880	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:20	**Analysis:**	Single 2x2 Contingency Table	**Status Level:**	1
Edit Date:	19 Oct-21 10:20	**MD5 Hash:**	CA33D061EAA2BC91EA053D408250377E	**Editor ID:**	003-103-615-8

Batch ID:	16-5816-3472 WE mo 2021 Oct 19	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:~~10~~00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:26	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	19-3985-2176	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 15:10	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-87
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 6d survival rate endpoint

Fisher Exact Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	1.0000	Exact	1.0000	Non-Significant Effect

6d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

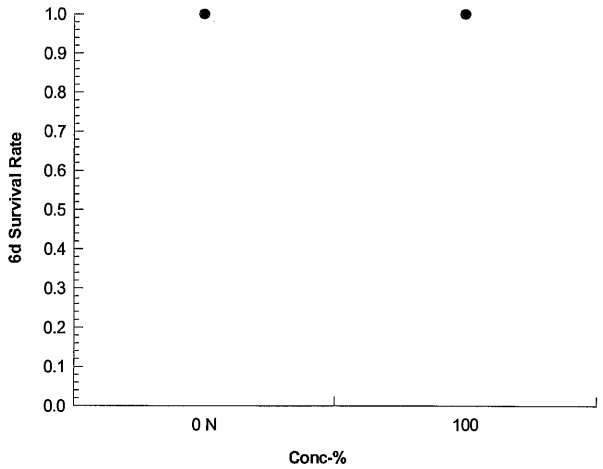
6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



2021 Oct 19

 Analyst: KH 2021 Oct 19 QA: MO

CETIS Analytical Report

Test Code/ID: CD-4388-1521 / 08-3453-0130

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	19-7354-6623	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:20	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 10:20	**MD5 Hash:**	4BE8CC2F6C43E707808B001C9D523CEF	**Editor ID:**	003-103-615-8

Batch ID:	16-5816-3472	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	22 Sep-21 17:1000 WE mo 2021 Oct 19	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	28 Sep-21 13:26	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	19-3985-2176	**Code:**	C170357	**Project:**	General Misc. Bioassays
Sample Date:	19 Sep-21 15:10	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-87
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	100% passed reproduction endpoint	14.55%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	93	---	4	18	Exact	0.1898	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.491	2.708	0.1315	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	9.8	9.8	1	0.2858	0.5995	Non-Significant Effect
Error	617.2	34.2889	18			
Total	627		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.306	6.541	0.6970	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8455	0.866	0.0045	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	31.2	27.3	35.1	32	17	36	1.724	17.48%	0.00%
100		10	29.8	25.34	34.26	31	16	39	1.971	20.91%	4.49%

Reproduction Detail

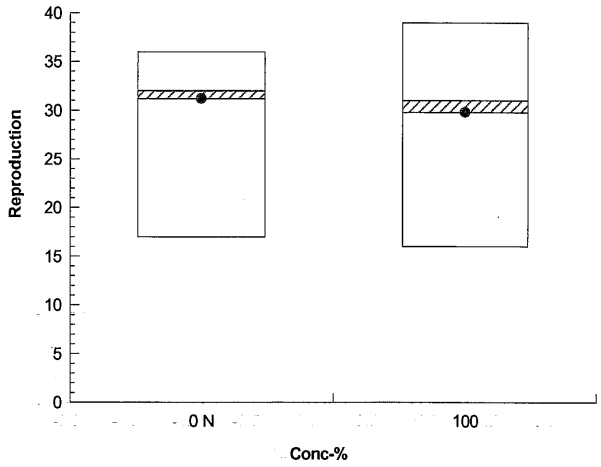
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	36	35	17	31	32	34	32	35	29	31
100		31	35	16	32	24	29	32	39	29	31

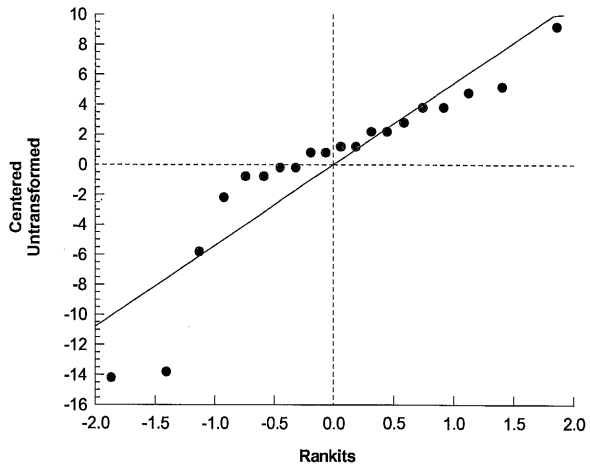
Analyst: KT 2021 Oct 19 QA: mo 2021 Oct 19

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	19-7354-6623	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	19 Oct-21 10:20	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1
Edit Date:	19 Oct-21 10:20	**MD5 Hash:**	4BE8CC2F6C43E707808B001C9D523CEF	**Editor ID:**	003-103-615-8

Graphics





ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond
Start Date: September 22, 2021
End Date: September 28, 2021
Analyst(s): K. Tamaki, M. Mazziotti, M. Hamad, D. Lai, Y. Su, E. Marus

Job / Sample #: C170357/AGJ771
Sample ID: 1645-87
Organism Lot #: AB 2021 Sep 13

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	36							31
2	35							35
3	17							16
4	31							32
5	32							24
6	34							29
7	32							32
8	35							39
9	29							29
10	31							31
Mean	31.2	--	--	--	--	--	--	29.8
SD	5.5	--	--	--	--	--	--	6.2

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1							1
2	1							1
3	1							1
4	1							1
5	1							1
6	1							1
7	1							1
8	1							1
9	1							1
10	1							1
Mean (%)	100	--	--	--	--	--	--	100
SD (%)	0.0	--	--	--	--	--	--	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2021Oct 19

Proofed by: [illegible] 2021Oct19

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Job / Sample #: C170357/AGJ771

Date Started September 22, 2021

Sample ID: 1645-~~86~~ 87 WC 13-2021 Sept 22

Date Ended: Sept 28, 2021

Organism Lot #: AB2021 Sep13

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 22, 2021	128	26.0	7.7	20	98.7	26.0	NS
1	September 23, 2021	111.7	25.4	N/A	20	105.9	25.2	EM
2	September 24, 2021	98.5	25.2	N/A	n/a	n/a	n/a	MHM
3	September 25, 2021	99.1	24.8	N/A	n/a	n/a	n/a	m
4	September 26, 2021	113.5	25.0	N/A	20	100.8	25.1	[illegible]
5	September 27, 2021	84.5	25.4	N/A	n/a	n/a	n/a	mo
6				N/A			Ⓐ	
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BB42-0408

Sample Description pale yellow & clear Initials NS

Sample Hardness (mg/L $CaCO_3$) 180 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 22, 2021 Pre - Aerated From: 12:33-12:53	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 17:00	
	Bottle / Carboy #: 1	
1	Date: September 23, 2021 Pre - Aerated From: 7:14 - 7:34	EM KT
	Feeding volume PKS (µL): 100 YCT (µL): ~~15~~ 50 Test Water Change @: 1538	
	Bottle / Carboy #: 1 week 2020 OCT19.	
2	Date: September 24, 2021 Pre - Aerated From: N/A	MHM / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:04	
	Bottle / Carboy #: 2	
3	Date: September 25, 2021 Pre - Aerated From: N/A	MH
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:11	
	Bottle / Carboy #: 2	
4	Date: September 26, 2021 Pre - Aerated From: 10:24 - 10:44	[illegible]
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:30	
	Bottle / Carboy #: 2	
5	Date: September 27, 2021 Pre - Aerated From: N/A	dm / mo
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1600	
	Bottle / Carboy #: 3	
6	Date: 2021 Sept 28	[illegible]
	Test ends @ 13:26	
7	Date:	
8	Date: Ⓐ	

Ⓐ N/A 2020OCT19

ECOTOXICOLO

Ceriodaphnia dubia Surv nd Reproduction Test

Client Name Diavik Diamond

Job / Sample #: C170357/AGJ771

Analyst (s): KTamaki, M. Mazziotti, MHamed, D.Lai, Y.Su, EMarks

Concentration: Control

Control Water Batch: Date(s): Sept21, 2021 Sept25

Hardness (mg/L $CaCO_3$): 92, 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KTdml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	m
4	4	5	5	4	3	3	4	3	4	4	EM
5	13	13	12	8	11	14	8	11	9	10	dml
(A) ~~6~~	~~9~~	~~12~~	~~12~~	~~9~~	~~14~~	~~14~~	~~9~~	~~10~~	~~11~~	~~12~~	~~dml~~ (A)
6 (A)	19	17	0	19	18	17	20	21	16	17	yp
8									(B)		
Total	36	35	17	31	32	34	32	35	29	31	CR KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration : 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	KTdml
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	m
4	5	4	3	4	4	4	5	3	4	4	EM
5	10	13	13	10	12	10	9	15	11	10	dml
6	16	18	0	18	8	15	18	21	14	17	yp
7							(B)				
8											
Total	31	35	16	32	24	29	32	39	~~30~~ 29	31	CR KT

calculation error
KT 2021 OCT 19

(A) WEDML 2021 Sept27

(B) N/A KT 2021 OCT 19

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/12
Tab - Blank WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond

Sample ID: 1645-86 Job / Sample #: C170357/AGJ771

Analyst(s): K Tamaki, M. Hamad, M. Mazziotti, Y. Su, M. O'Toole, N Sheargeld, E. Mans

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	178	173	176	175	175		
	Final	183	187	185	187	196	198		
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.9	25.0		
	Final	24.8	25.2	25.1	25.1	24.7	25.0		
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.4	8.3	8.3		
	Final	8.1	7.7	7.7	7.8	7.5	7.8		
pH	Initial	8.1	8.1	8.2	8.1	8.2	8.3		
	Final	8.2	8.0	8.0	7.9	8.1	8.2		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	315	320	322	314	318	312		
	Final	325	328	331	323	327			▽
Temp. (°C)	Initial	26.0	24.9	25.2	24.9	25.0	24.9		
	Final	24.9	25.3	24.9	25.0	24.7	25.1		
D.O. (mg/L)	Initial	8.1	9.0	8.2	8.3	8.4	7.2		
	Final	7.9	7.4	7.6	7.8	7.4	7.5		
pH	Initial	8.0	7.7	7.6	7.7	7.8	7.7		
	Final	7.9	7.7	7.8	7.7	7.9	8.0		

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								

	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial								
	Final								
Temp. (°C)	Initial								
	Final								
D.O. (mg/L)	Initial								
	Final								
pH	Initial								
	Final								
Analyst		NS KT	EM MM	MM MM	MM EM	EM	MO		
Daily WQ Reviewed by:		NS KT	EM MM	MM MM	MM EM	EM	MO		

NS 21 Sept 22

④ N/A KT 20210079

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00246/3

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: AB 2021 Sept 13

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	13-Sep	80			80		
1	14-Sep		0	0	80	0.00%	
2	15-Sep		0	0	80	0.00%	
3	16-Sep		1	0	79	1.25%	
4	17-Sep		0	0	79	0.00%	
5	18-Sep		0	0	79	0.00%	
6	19-Sep		0	0	79	0.00%	
7	20-Sep		0	0	79	0.00%	1.25%
8	21-Sep		0	0	79	0.00%	1.25%
9	22-Sep		0	0	79	0.00%	1.25%
10					79	0.00%	0.00%
11					79	0.00%	0.00%
12					79	0.00%	0.00%
13					79	0.00%	0.00%
14					79	0.00%	0.00%
15					79	0.00%	0.00%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	
Replicate 1	0	0	4	11	0	13	12*	28
Replicate 2	0	0	2	12	0	21	18*	35
Replicate 3	0	0	2	10	0	13	15*	25
Replicate 4	0	0	4	9	0	17	17*	30
Replicate 5	0	0	4	0	8	13	15*	25
Replicate 6	0	0	0	5	11	0	16	32
Replicate 7	0	0	4	6	0	11	11*	21
Replicate 8	0	0	3	7	0	12	13*	22
Replicate 9	0	0	0	6	7	14	0	27
Replicate 10	0	0	2	9	0	14	17*	25
Mean								**27.0**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments:

Proofed: KH 2021Oct19

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB 200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2021 Aug 26 PKS Batch: 2021 Aug 26 Water Batch: 2021 Sept 03 2021 Sept 15

Culture Date: AB 2021 Sept 13 Analyst(s): NS, MM, mo

Date	Sept 14	Sept 15	Sept 16	Sept 17	Sept 18	Sept 19	Sept 20	Sept 20	Sept 21
Time	10:45	09:10	08:41	09:49	09:04	09:38	08:59	16:13	08:37
Tracking/Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	track	Clear
YCT (µL)	50	50	50	50	50	50	50	—	50
PKS (µL)	100	100	100	100	100	100	100	—	100
Test tube #	Brood size								
1	0	0	4	11	0	13	12	0	16
2	0	0	2	12	0	21	18	0	14
3	0	0	2	10	0	13	15	0	0
4	0	0	4	9	0	17	17	0	16
5	0	0	4	0	8	13	15	0	0
6	0	0	0	5	11	0	16	0	14
7	0	0	4	6	0	11	11	0	0
8	0	0	3	7	0	12	13	0	15
9	0	0	0	6	7	14	0	0	17
10	0	0	2	Ⓐ ~~9~~ 9	0	14	17	0	21
11	0	0	√	√√	0	W	W	0	0
12	0	0	√	√	0	W	W	0	W
13	0	0	√	√	0	W	W	0	0
14	0	0	√	W	0	W	W	0	0
15	0	0	√	0	W	W	W	0	0
16	0	0	0	√	W	0	W	0	W A
17	0	0	√	W	0	W	W	0	0
18	0	0	√	√	0	W	W	0	0
19	0	0	√	√	W	0	W	0	√√
20	0	0	√	√	0	W	W	0	W
21	0	0	√	√	0	W	W	0	0
22	0	0	√	√	0	W	W	0	0
23	0	0	√	√	0	W	W	0	0
24	0	0	√	W	0	W	W	0	0
25	0	0	√	0	W	W	W	0	0
26	0	0	√	√	W	0	W	0	W A
27	0	0	√	W	0	W	W	0	0
28	0	0	√ X						0
29	0	0	0	√	W	0	W	0	W A
30	0	0	0	W	0	W	W	0	W
31	0	0	√	W	0	W	W	0	W
32	0	0	√	W	0	W	W	0	W
33	0	0	0	√	0	W	W	0	0
34	0	0	0	W	0	W	W	0	W
35	0	0	√	0	W	W	W	0	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	01	0	0	0	0	0	0
Analyst	NS	NS	NS	MM	MM	NS	mo	NS	NS
Time	10:52	09:17	08:47	09:59	09:11	09:48	09:05	16:14	08:47

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A -	D -
B -	E -
C -	F -

Ⓐ we MM 2021 Sept 17

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB2a6707

Culture Date: AB2021 Sept 13 Analyst(s): NS, MM, mo

Test tube #	Brood size								
Date	Sept 14	Sept 15	Sept 16	Sept 17	Sept 18	Sept 19	Sept 20	Sept 20	Sept 21
Time	10:53	0917	08:47	09:59	09:11	09:48	09:05	1614	08:47
36	0	0	0	V	VV	0	W	0	VV
37	0	0	0	VV	0	W	W	0	0
38	0	0	0	W	0	W	W	0	W
39	0	0	0	V	VV	0	W	0	W
40	0	0	0	VV	0	V	W	0	W
41	0	0	✓	W	0	VV	W	0	W A
42	0	0	✓	W	0	W	W	0	VV A
43	0	0	0	V	VV	W	0	0	W A
44	0	0	V	V	0	W	W	0	W A
45	0	0	✓	0	VV	W	W	0	0
46	0	0	0	V	VV	0	W	0	W A
47	0	0	✓	W	0	W	W	0	VV A
48	0	0	✓	W	0	W	W	0	VV A
49	0	0	0	V	W	W	0	V V	W ~~0~~ (B)
50	0	0	0	W	0	W	W	0	W
51	0	0	✓	W	0	W	W	0	W
52	0	0	V	W	0	W	W	0	0
53	0	0	✓	W	0	W	W	0	W
54	0	0	✓	W	0	W	W	0	W
55	0	0	✓	0	W	W	W	0	W
56	0	0	0	V	W	0	W	0	W
57	0	0	0	0	VV	W	W	0	0
58	0	0	0	W	0	W	W	0	W
59	0	0	0	W	W	0	W	0	W
60	0	0	✓	W	0	W	W	0	W
61	0	0	✓	W	0	W	W	0	0
62	0	0	0	W	0	W	W	0	W
63	0	0	✓	W	0	W	W	0	W
64	0	0	✓	W	0	W	W	0	W
65	0	0 (A)	✓ ✓	0	W	W	W	0	0
66	0	0	✓	W	W	0	W	0	W
67	0	0	✓	W	0	W	W	0	0
68	0	0	✓	W	0	W	W	0	0
69	0	0	0	V	VV	0	W	0	W
70	0	0	0	W	0	W	W	0	W
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	NS	NS	NS	MM	MM	NS	mo	NS	NS
Time	10:58	0922	08:57	10:07	09:17	09:54	09:11	1616	0855

(A) we NS2021 Sept 16

(B) we NS2021 Sept 21

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

ECOTOXICOLOGY

CERIODAPHNIA DUBIA - CLEARING RECORDS

BUREAU VERITAS LABORATORIES
BBY2FCD-00242/6

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2021 Aug26 (B) (A) PKS Batch: 2021 Aug26 Water Batch: 2021 Sept 15

Culture Date: AB 2021 Sept ~~20~~ 14 13 Analyst(s): mo, NS, yn

Date	(A) Aug Sept21	Sept21	Sep21	Sep22 (21:57)	Sep22				
Time	09:41	14:22	track	08:44	16:15				
Tracking/Clear	Track	track/clear	Track	Clear	track/clear				
YCT (µL)	50	—	—	50	—				
PKS (µL)	100	—	—	100	—				
Test tube #				Brood size					
1	0	0	0	0	19 C				
2	0	0	0	0	0				
3	0	12 A	0	0	0				
4	0	0	0	0	0				
5	0	15 A	0	0	0				
6	0	0	0	0	20 C				
7	0	9	0	0	0				
8	0	0	0	0	0				
9	0	0	0	12 D	0				
10	0	0	0	0	13 C				
11	0	√	0	0	0				
12	0	0	0	0	W C				
13	0	√√ A	0	0	0				
14	0	√√ A	0	0	0				
15	0	0	√√√	0	0				
16	0	0	0	√	W C				
17	0	√√ A	0	0	0				
18	0	√√ A	0	0	0				
19	0	0	0	WW D	0				
20	0	0	0	0	0				
21	0	√√ A	0	0	0				
22	0	√√ A	0	0	0				
23	0	√√ A	0	0	0				
24	0	√√ A	0	0	0				
25	0	0	√√√	0	0				
26	0	0	0	W D	0				
27	0	√√ B	0	0	0				
28	0	0							
29	0	0	0	W D	0				
30	0	0	0	0	0				
31	0	0	0	0	0				
32	0	0	0	0	0				
33	0	√√ B	0	0	0				
34	0	0	0	0	0				
35	0	0	√√√	0	0				
# Missing/Lost	0	0	0	0	0				
# Dead	0	0	0	0	0				
Analyst	NS	yn	MKS	mo	NS				
Time	09:47	14:29	21:43	08:49	16:18				

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - WQ8 D - 44, 87, 47
B - WQ36 E -
C - 45, 69 F -

(A) 2021 Sept 21, Remove line since cultures changed. (NS) 76

(B) WQ-yn 2021 Sept 21

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture (A) AB200707

Culture Date: AB2021 Sept ~~20~~ 14 13 Analyst(s): mo, NS, m

Test tube #	Brood size								
Date	Sept 21	Sept21	Sep21	Sep22	Sept22				
Time	09:48	14:30	21:43	08:49	16:18				
36	0	0	0	0	0				
37	0	✓✓B	0	0	0				
38	0	0	0	0	0				
39	0	0	0	W D	0				
40	0	0	0	0	W C				
41	0	0	0	0	0				
42	0	0	0	0	W C				
43	0	0	0	W D	0				
44	0	0	0	0	0				
45	0	✓✓B	0	0	0				
46	0	0	0	W D	0				
47	0	0	0	0	0				
48	0	0	0	0	W C				
49	0	0	0	W D	0				
50	0	0	0	0	W C				
51	0	0	0	0	W C				
52	0	✓	0	0	0				
53	0	0	0	0	0				
54	0	0	0	0	W				
55	0	✓✓B	0	0	0				
56	0	0	0	W D	0				
57	0	✓	~~X~~ 0	0	0				
58	0	0	0	0	0				
59	0	0	0	W D	0				
60	0	0	0	0	W				
61	0	✓✓B	0	0	0				
62	0	0	0	0	W				
63	0	✓✓B	0	0	0				
64	0	0	0	0	W				
65	0	✓✓B	0	0	0				
66	0	0	0	W	0				
67	0	✓✓B	0	0	0				
68	0	✓✓B	0	0	0				
69	0	0	0	W	0				
70	0	0	0	0	✓✓				
# Missing/Lost	0	0	0	0	0				
# Dead	0	0	0	0	0				
Analyst	NS	m	MKJ	mo	NS				
Time	09:55	14:30	21:48	08:54	16:20				

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size				
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24	A - Rx #1
Time	10:10am	8:25am	8:15pm	8:00am	B - Client # 123
1	√	√	√√	√√ A	
2	√	√	√√	√√ B	

(A) WZ-m 2021 Sept 21

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Effluent Sample	
Name of Samples	1645-44, 1645-45, 1645-46, 1645-47, 1645-67, 1645-68, 1645-69, 1645-74, 1645-76, and 1645-87
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2021/Sep/19
Date (y/m/d) of sample receipt at lab	2021/Sep/21 @ 08:00
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	4 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 12:05
Initial cell density of inoculum	10136 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test started	2021/Sep/22 @ 12:30
Date & time test ended	2021/Sep/25 @ 11:30 - 13:00
Persons performing test	D. Lai, E. Marus, M. O’Toole
Mean test temperature	24 °C
Procedure/rate/duration of aeration of sample before test	No aeration of sample
pH adjustment	No pH adjustment
pH of aqueous sample before preparation and use in toxicity test	See “Data Summary” data sheet

pH of sample before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	NaHCO3, CaSO4, MgSO4, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3986-4250 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the test, no deviations from the test method, and no problems with the test.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2021/Sep/25
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**1645-44**: No, significant growth stimulation was not observed. **1645-45**: Yes, significant growth stimulation was observed **1645-46**: Yes, significant growth stimulation was observed **1645-47**: Yes, significant growth stimulation was observed **1645-67**: No, significant growth stimulation was not observed. **1645-68**: No, significant growth stimulation was not observed. **1645-69**: Yes, significant growth stimulation was observed **1645-74**: Yes, significant growth stimulation was observed **1645-76**: Yes, significant growth stimulation was observed **1645-87**: Yes, significant growth stimulation was observed See Equal Variance t Two-Sample Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v1.9.7.9 – Equal Variance t Two-Sample Test
Weighting techniques applied?	N/A
Residuals Analysis	N/A

Outliers?	**1645-76**: Replicate 2 of the 90.91% v/v concentration was determined to be an outlier; however, it was not removed from the statistical analysis.
QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV • **1645-44**: 19% • **1645-45**: 18% • **1645-46**: 14% • **1645-47**: 19% • **1645-67**: 9% • **1645-68**:12% • **1645-69**: 20% • **1645-74**: 16% • **1645-76**: 9% • **1645-87**: 9% • Trend in the controls? No • Algal cells increased by: • **1645-44**: 68.84 • **1645-45**: 70.43 • **1645-46**: 77.51 • **1645-47**: 82.63 • **1645-67**: 84.44 • **1645-68**: 78.54 • **1645-69**: 72.84 • **1645-74**: 81.88 • **1645-76**: 80.83 • **1645-87**: 79.13
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.0570; 2SD: (0.0324, 0.0932) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0343; 2SD: (0.0157, 0.0748)
Invalid Ref tox test?	No
Date of ref tox test (y/m/d)	2021/Oct/01
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Test Code/ID: SL-4388-1621 / 14-2218-6069

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	09-7357-7322	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:28	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	743D043911CAF298C46827718E9FAA21	**Editor ID:**	

Batch ID:	07-0223-1258	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 11:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	19-6261-9134	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 13:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-44
Sample Age:	71h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	16.45%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	3.73	2.14	11.3	14	CDF	0.0023	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.22	2.59	0.2542	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.22		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1548.42	1548.42	1	13.9	0.0023	Significant Effect
Error	1560.95	111.497	14			
Total	3109.37		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.37	8.89	0.1313	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.942	0.841	0.3806	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	68.8	57.9	79.8	68.2	54.9	91.4	4.64	19.05%	0.00%
90.91		8	49.2	43.2	55.1	48.7	40.1	59.7	2.53	14.53%	28.58%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	54.9	69.5	83.8	69.4	91.4	67.1	56.4	58.2
90.91		47.3	40.1	50	46.2	59.7	41	58.2	50.8

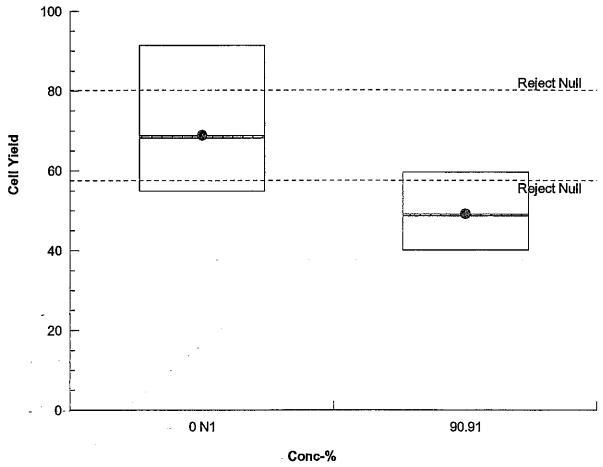
2021 Sep25

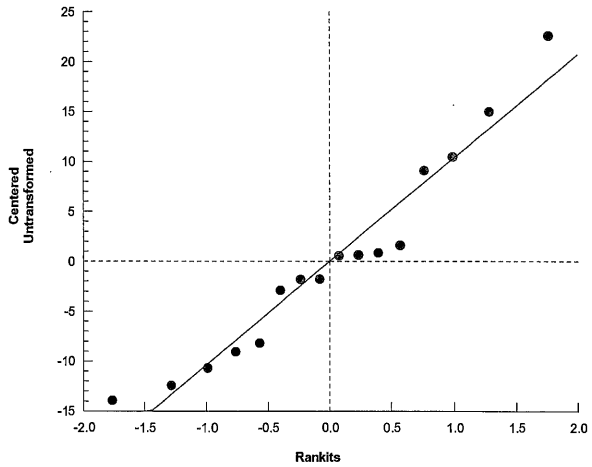
Analyst: MO QA: 4 OCT 19 2021

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	09-7357-7322	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:28	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	743D043911CAF298C46827718E9FAA21	**Editor ID:**	

Graphics





2021 Sep 25 2021 OCT 19

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-44
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ773
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 11:30
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	54.5	57.3	54.90	68.84	13.11	19
Lab Control	D3	63.5	77.5	69.50			
Lab Control	D4	66.7	103.0	83.85			
Lab Control	D5	69.4	71.4	69.40			
Lab Control	D8	88.8	96.1	91.45			
Lab Control	D9	65.9	70.2	67.05			
Lab Control	D10	57.0	57.8	56.40			
Lab Control	D11	62.6	55.7	58.15			
90.91	C2	46.1	50.6	47.35	49.16	7.14	15
90.91	E2	45.1	37.1	40.10			
90.91	F2	62.8	39.2	50.00			
90.91	G2	47.2	47.3	46.25			
90.91	C3	51.9	69.4	59.65			
90.91	E3	36.5	47.4	40.95			
90.91	F3	65.8	52.7	58.25			
90.91	G3	61.7	41.8	50.75			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 773

Date Sampled: 2021 Sept 19

Sample ID: 1645-44

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 11:30

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 21

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 6.6 Initial Temp (°C): 26.2 Sample Description: Clear, colorless

Initial Filtered pH (well B2): 7.5

Final Filtered pH (well B2): 7.5

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.8

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) ~~22.3x10^4~~ 10136 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	N	Y	EM
2021 Sep 24	Y	N	Y	DML
2021 Sep 25	Y	N		MO

QWEEM2021OCT19E

CETIS Analytical Report

Test Code/ID: SL-4388-1721 / 06-5121-4781

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	03-9730-2082	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:31	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D5BE19A1E68A2FC3074110B34536672B	**Editor ID:**	

Batch ID:	09-5606-7555	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 12:01	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	20-4769-5084	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 11:14	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-45
Sample Age:	73h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	20.23%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	6.4	2.14	14.3	14	CDF	1.7E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.19	2.59	0.2847	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.19		0.9049	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7227.13	7227.13	1	40.9	1.7E-05	Significant Effect
Error	2472.07	176.576	14			
Total	9699.19		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.14	8.89	0.8702	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.908	0.841	0.1063	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	70.4	59.7	81.2	67.2	56.2	91.5	4.55	18.25%	0.00%
90.91		8	113	101	124	112	99.6	141	4.85	12.14%	-60.35%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	60.2	71.4	83.7	56.2	91.5	59.4	77.9	63
90.91		104	116	99.6	99.9	120	116	108	141

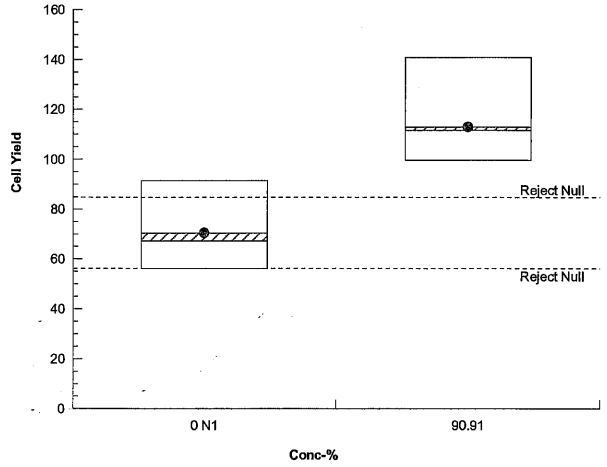
2021 Sep25

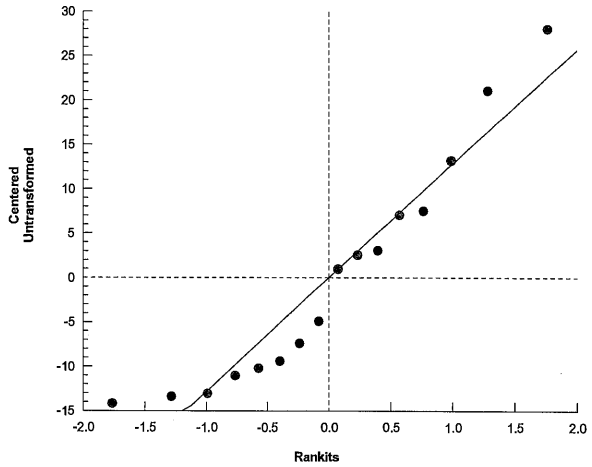
Analyst: mo QA: 2021 4 Oct 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	03-9730-2082	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:31	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D5BE19A1E68A2FC3074110B34536672B	**Editor ID:**	

Graphics





2021 Sep25 2021 OCT19

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-45
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ767
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 12:01
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	59.3	63.2	60.25	70.43	12.86	18
Lab Control	D3	82.5	62.3	71.40			
Lab Control	D4	88.9	80.4	83.65			
Lab Control	D5	56.6	57.9	56.25			
Lab Control	D8	107.0	78.0	91.50			
Lab Control	D7	64.0	56.8	59.40			
Lab Control	D10	72.1	85.8	77.95			
Lab Control	D11	53.5	74.6	63.05			
90.91	C2	93.1	116.0	103.55	112.94	13.71	12
90.91	E2	120.0	113.0	115.50			
90.91	F2	99.1	102.0	99.55			
90.91	G2	108.0	93.8	99.90			
90.91	C3	110.0	132.0	120.00			
90.91	E3	124.0	110.0	116.00			
90.91	F3	117.0	101.0	108.00			
90.91	G3	147.0	137.0	141.00			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 767

Date Sampled: 2021 Sept 19

Sample ID: 1645-45

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 12:01

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.9 Initial Temp (°C): 25.8 Sample Description: Clear, light yellow

Initial Filtered pH (well B2): 8.3

Final Filtered pH (well B2): 8.7

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density

was (**Xd**) ~~22.3×10^4~~ 10136 (a) cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3×10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	N	Y	EM
2021 Sep 24	Y	N	Y	DML
2021 Sep 25	Y	N		mo

(a) WE EM 20210CT19 LE

CETIS Analytical Report

Test Code/ID: SL-4388-1821 / 15-4758-2901

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	12-4718-0232	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:32	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	313D4F08F7A5443675BBFF47C33C3EDB	**Editor ID:**	

Batch ID:	04-5698-4024	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 12:40	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	00-5295-4871	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 11:30	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-46
Sample Age:	73h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	17.80%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	7.94	2.14	13.8	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.37	2.59	0.1369	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.37		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	10429.5	10429.5	1	63	<1.0E-05	Significant Effect
Error	2316.45	165.461	14			
Total	12746		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.99	8.89	0.3853	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5884	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	77.5	68.7	86.3	73.8	65.7	95	3.72	13.58%	0.00%
90.91		8	129	116	141	132	99.1	148	5.25	11.54%	-65.88%

Cell Yield Detail

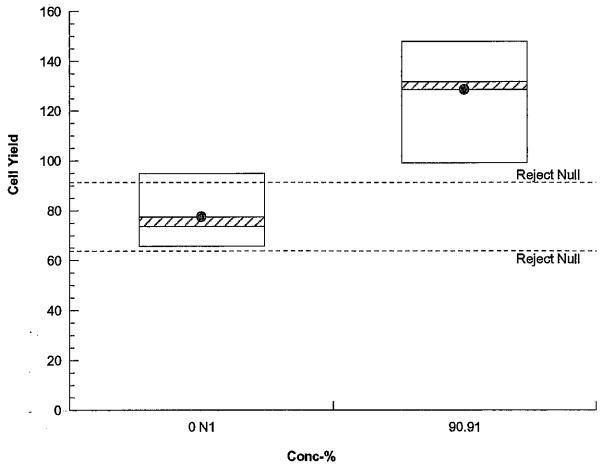
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	67.1	71.9	86.1	86.9	95	65.7	73.8	73.8
90.91		122	139	134	136	99.1	148	121	130

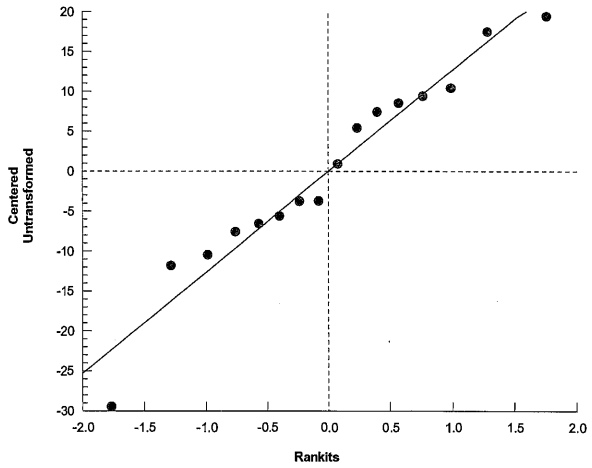
Analyst: MO 2021 Sep25 QA: KT 2021 Oct8

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	12-4718-0232	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 13:32	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	313D4F08F7A5443675BBFF47C33C3EDB	**Editor ID:**	

Graphics





Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-46
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ769
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 12:40
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	62.8	73.3	67.05	77.51	10.53	14
Lab Control	D3	72.8	73.0	71.90			
Lab Control	D4	95.4	78.7	86.05			
Lab Control	D5	89.8	86.0	86.90			
Lab Control	D8	91.0	101.0	95.00			
Lab Control	D9	71.2	62.2	65.70			
Lab Control	D10	58.3	91.2	73.75			
Lab Control	D11	74.9	74.6	73.75			
90.91	C2	122.0	124.0	122.00	128.58	14.84	12
90.91	E2	140.0	140.0	139.00			
90.91	F2	148.0	122.0	134.00			
90.91	G2	134.0	140.0	136.00			
90.91	C3	96.2	104.0	99.10			
90.91	E3	134.0	164.0	148.00			
90.91	F3	122.0	122.0	121.00			
90.91	G3	144.0	117.0	129.50			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 769

Date Sampled: 2021 Sept 19

Sample ID: 1645-46

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 12:40

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M.O' Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.5 Initial Temp (°C): 25 Sample Description: Clear, light yellow

Initial Filtered pH (well B2): 8.1

Final Filtered pH (well B2): 8.8

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) ~~22.3x10⁴~~ 10136 (a) cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10⁴) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	N	Y	EM
2021 Sept 24	Y	N	Y	DML
2021 Sep 25	Y	N		MO

(a) WEEM2021OCT19

CETIS Analytical Report

Test Code/ID: SL-4388-1921 / 13-4525-0263

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-7980-3122	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:30	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B38CE9B1CA0B451CC01EA0BE321D11B	**Editor ID:**	

Batch ID:	05-8835-1052	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	20-1177-1054	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 14:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-47
Sample Age:	70h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	22.50%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	2.23	2.14	18.6	14	CDF	0.0425	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.02	2.59	0.4977	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.02		0.3987	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1497.69	1497.69	1	4.98	0.0425	Significant Effect
Error	4209.04	300.646	14			
Total	5706.73		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.41	8.89	0.6649	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.881	0.841	0.0402	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	82.6	69.4	95.8	79.3	67.8	116	5.59	19.14%	0.00%
90.91		8	102	86.3	118	95.1	83.7	134	6.63	18.38%	-23.42%

Cell Yield Detail

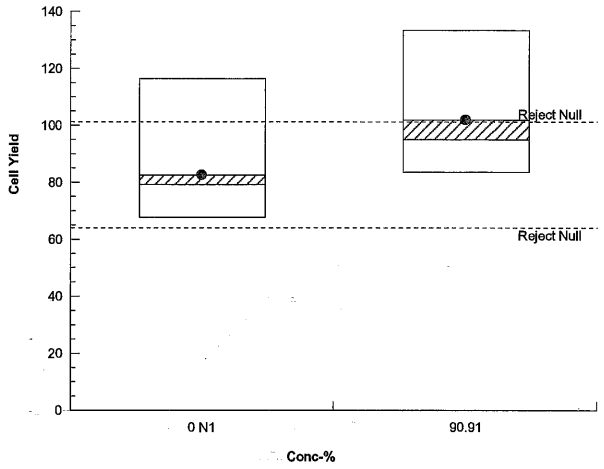
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	71.8	85.2	116	81.1	91.1	70.1	67.8	77.6
90.91		83.7	134	92.8	97.3	114	86.1	86.7	122

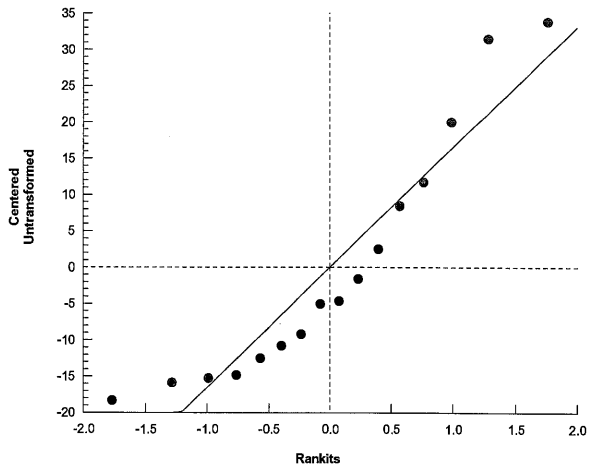
Analyst: 2021 Sep 25 QA: 2021 OCT 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-7980-3122	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:30	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B38CE9B1CA0B451CC01EA0BE321D11B	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-47
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ772
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	91.6	54.0	71.80	82.63	15.81	19
Lab Control	D3	95.8	76.5	85.15			
Lab Control	D4	115.0	120.0	116.50			
Lab Control	D5	88.2	75.9	81.05			
Lab Control	D8	96.6	87.6	91.10			
Lab Control	D9	74.1	68.0	70.05			
Lab Control	D10	69.9	67.6	67.75			
Lab Control	D11	88.1	69.1	77.60			
90.91	C2	94.5	74.8	83.65	101.98	18.74	18
90.91	E2	129.0	140.0	133.50			
90.91	F2	89.4	98.2	92.80			
90.91	G2	105.0	91.7	97.35			
90.91	C3	130.0	99.4	113.70			
90.91	E3	80.4	93.8	86.10			
90.91	F3	68.4	107.0	86.70			
90.91	G3	119.0	127.0	122.00			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 772

Date Sampled: 2021 Sept 19

Sample ID: 1645-47

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.0 Initial Temp (°C): 25.2 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 7.7

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density

was (**Xd**) ~~22.3x10^4~~ 10136 @ cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	N	Y	EM
2021 Sep 24	Y	N	Y	DML
2021 Sep 25	Y	Y		mo

@WEEM20210CT19LE

CETIS Analytical Report

Test Code/ID: SL-4388-2021 / 09-6287-3696

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	07-7693-7575	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:32	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D0AF2C603E9EFFD902D436EBDB9A4CF	**Editor ID:**	

Batch ID:	19-6674-1646	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	13-4167-3704	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 10:33	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-67
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% passed cell yield endpoint	20.82%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91	1.07	2.14	17.6	14	CDF	0.3045	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.02	2.59	0.5022	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.02		0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	305.376	305.376	1	1.14	0.3045	Non-Significant Effect
Error	3762.06	268.719	14			
Total	4067.44		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	7.99	8.89	0.0136	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.952	0.841	0.5174	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	84.4	78	90.9	83.3	75.6	99.1	2.73	9.16%	0.00%
90.91		8	93.2	74.9	111	88.1	61.2	120	7.73	23.45%	-10.35%

Cell Yield Detail

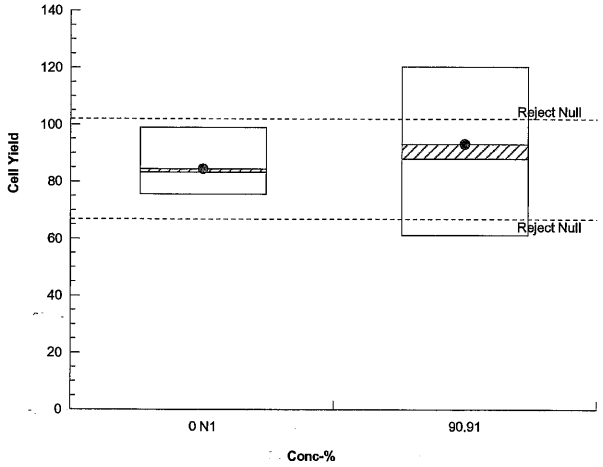
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	76.3	82.4	89.8	87.8	84.2	75.6	80.2	99.1
90.91		70.9	116	86.2	88.1	114	88.1	61.2	120

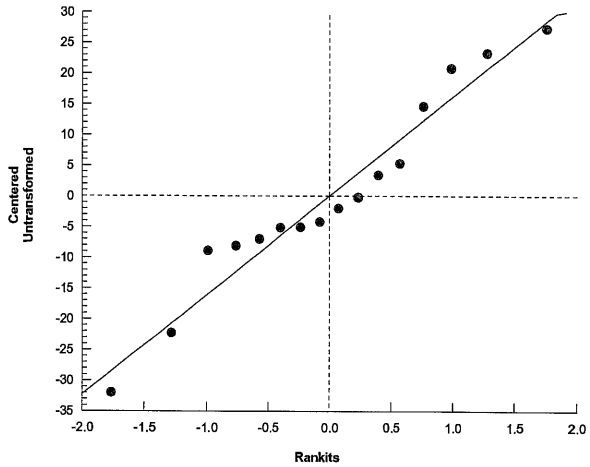
2021 Sep 25 Analyst: MO QA: KH 2021 Oct 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	07-7693-7575	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:32	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D0AF2C603E9EFFD902D436EBDB9A4CF	**Editor ID:**	

Graphics





2021 Sep 25

Analyst: mo QA: KT 2021 0079

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-67
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ764
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	81.1	73.6	76.35	84.44	7.73	9
Lab Control	D3	81.1	85.8	82.45			
Lab Control	D4	88.0	93.5	89.75			
Lab Control	D5	89.2	88.5	87.85			
Lab Control	D8	77.4	93.1	84.25			
Lab Control	D9	78.8	74.4	75.60			
Lab Control	D10	76.6	85.9	80.25			
Lab Control	D11	92.1	108.0	99.05			
90.91	C2	79.1	64.7	70.90	93.18	21.86	23
90.91	E2	125.0	110.0	116.50			
90.91	F2	106.0	68.4	86.20			
90.91	G2	80.6	97.5	88.05			
90.91	C3	109.0	121.0	114.00			
90.91	E3	93.1	85.1	88.10			
90.91	F3	67.7	56.7	61.20			
90.91	G3	122.0	121.0	120.50			

Client Name: Diavik

Job / Sample #: C170357/ AGJ764

Date Sampled: 2021 Sept 19

Sample ID: 1645 - 67

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.2 Initial Temp (°C): 24.9 Sample Description: clear, colorless

Initial Filtered pH (well B2): 7.7

Final Filtered pH (well B2): 8.0

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 8.0

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) ~~22.3x10^4~~ @ 10136 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10 136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	N	Y	EM
2021 Sep 24	Y	N	Y	DML
2021 Sep 25	Y	Y		mo

@WEEM2021oct19

CETIS Analytical Report

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-3959-6207	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:33	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B06C349EFE2416192E6A986FB4E48F09	**Editor ID:**	

Batch ID:	01-3825-8044	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	08-0297-9372	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 09:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-68
Sample Age:	76h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% passed cell yield endpoint	12.97%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91	1.37	2.14	10.2	14	CDF	0.1911	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.72	2.59	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.72		0.0610	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	170.302	170.302	1	1.89	0.1911	Non-Significant Effect
Error	1263.06	90.2188	14			
Total	1433.37		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.1	8.89	0.8989	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.926	0.841	0.2101	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	78.5	70.4	86.7	80.7	66.2	94.3	3.44	12.39%	0.00%
90.91		8	85.1	77.3	92.8	85.3	73.5	96.4	3.27	10.89%	-8.31%

Cell Yield Detail

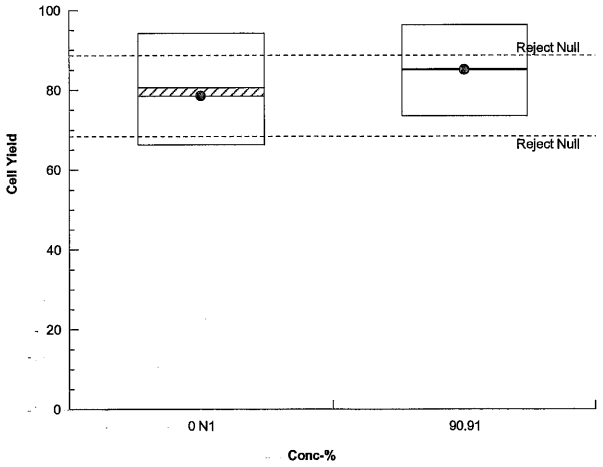
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	70.3	66.2	82.3	79.1	82.6	67.8	85.7	94.3
90.91		83.1	95.2	76.2	92.8	87.6	75.8	73.5	96.4

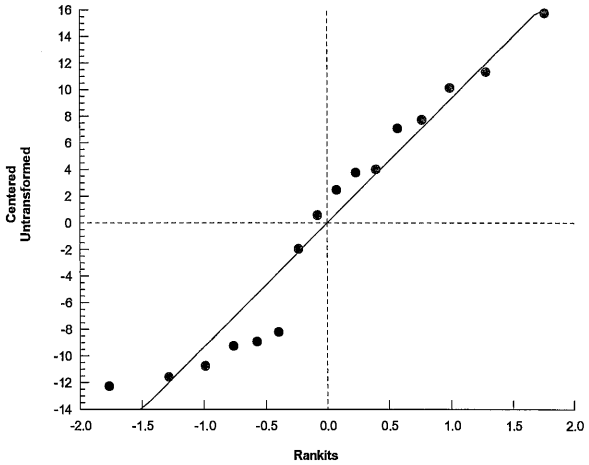
Analyst: mo 2021 Sep 25 QA: CH 2021 Oct 19

Alga Growth Inhibition Test **Bureau Veritas**

Analysis ID:	13-3959-6207	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 15:33	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B06C349EFE2416192E6A986FB4E48F09	**Editor ID:**	

Graphics





Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-68
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ765
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	73.0	69.7	70.35	78.54	9.73	12
Lab Control	D3	61.6	72.9	66.25			
Lab Control	D4	88.0	78.6	82.30			
Lab Control	D5	98.5	61.7	79.10			
Lab Control	D8	84.3	82.8	82.55			
Lab Control	D9	77.3	60.3	67.80			
Lab Control	D10	78.7	94.6	85.65			
Lab Control	D11	76.6	114.0	94.30			
90.91	C2	91.4	76.8	83.10	85.06	9.26	11
90.91	E2	104.0	88.4	95.20			
90.91	F2	72.8	81.5	76.15			
90.91	G2	90.0	97.6	92.80			
90.91	C3	89.2	87.9	87.55			
90.91	E3	78.8	74.8	75.80			
90.91	F3	66.5	82.5	73.50			
90.91	G3	85.8	109.0	96.40			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 765

Date Sampled: 2021 Sept 19

Sample ID: 1645 – 68

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M.O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 6.8 Initial Temp (°C): 24.5 Sample Description: Clear, light yellow

Initial Filtered pH (well B2): 7.6

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) ~~22.3x10⁴~~ 10136 (a) cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10⁴) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021Sept23	Y	N	Y	EM
2021Sep24	Y	N	Y	DML
2021 Sep 25	Y	Y		MO

(a) WEEM20210CT19

CETIS Analytical Report

Report Date:	25 Sep-21 18:18 (p 1 of 2)
Test Code/ID:	SL-4388-2221 / 17-2609-2436

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	14-1229-1762	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:18	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B06B517252E4D6470825856444FA0BF7	**Editor ID:**	

Batch ID:	11-5892-0644	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	08-3098-6778	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 10:54	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-69
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	29.23%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	5.11	2.14	21.3	14	CDF	0.0002	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.55	2.59	0.0601	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.55		0.3987	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	10307.3	10307.3	1	26.2	0.0002	Significant Effect
Error	5517.12	394.08	14			
Total	15824.4		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.74	8.89	0.2064	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.939	0.841	0.3378	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	72.8	60.7	85	68.4	51.8	90.7	5.13	19.92%	0.00%
90.91		8	124	104	144	124	95.9	172	8.5	19.44%	-69.69%

Cell Yield Detail

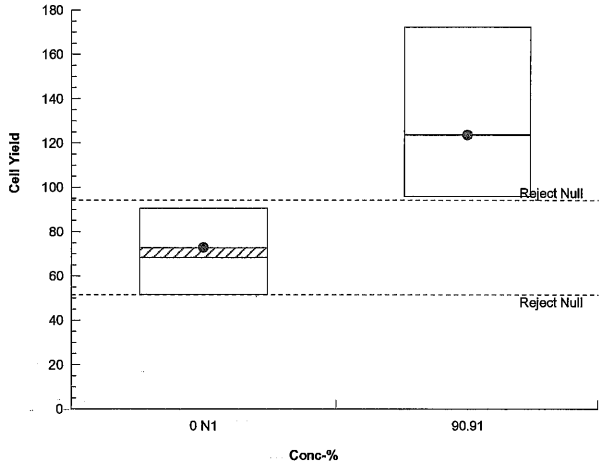
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	65.2	63.6	51.8	88.8	87.7	63.3	71.7	90.7
90.91		95.9	126	122	136	102	108	126	172

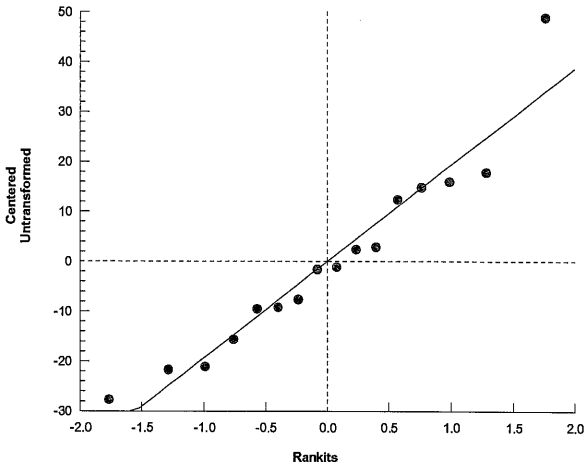
2021 Sep25

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	14-1229-1762	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:18	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	B06B517252E4D6470825856444FA0BF7	**Editor ID:**	

Graphics





2021 Sep 25

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-69
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ768
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	63.8	68.6	65.20	72.84	14.51	20
Lab Control	D3	68.6	60.6	63.60			
Lab Control	D4	44.5	61.0	51.75			
Lab Control	D5	90.9	88.7	88.80			
Lab Control	D8	74.3	103.0	87.65			
Lab Control	D9	55.1	73.5	63.30			
Lab Control	D10	60.7	84.7	71.70			
Lab Control	D11	95.3	88.1	90.70			
90.91	C2	75.8	118.0	95.90	123.60	24.03	19
90.91	E2	131.0	124.0	126.50			
90.91	F2	123.0	123.0	122.00			
90.91	G2	132.0	142.0	136.00			
90.91	C3	97.8	108.0	101.90			
90.91	E3	101.0	117.0	108.00			
90.91	F3	143.0	111.0	126.00			
90.91	G3	189.0	158.0	172.50			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 768

Date Sampled: 2021 Sept 19

Sample ID: 1645 – 69

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.6 Initial Temp (°C): 24.7 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 8.1

Final Filtered pH (well B2): 9.3

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 8.2

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) ~~22.3 x10⁴~~ @ cells/mL. 10136

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * ~~22.3x10⁴~~) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021Sept23	Y	~~Y~~ N WE 2021 Sept 23	N	EM
2021 Sep24	Y	Y	Y	~~M~~ DML WE DML 2021 Sep24
2021 Sep 25	Y	Y		mo

@WE EM 2021 OCT 19 LE

CETIS Analytical Report

Test Code/ID: SL-4388-2321 / 07-6481-4779

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	03-3408-2349	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:19	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AF0D6ECC2A0B77191447DC51447251EF	**Editor ID:**	

Batch ID:	14-0061-2638	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	21-2051-0198	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 10:13	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-74
Sample Age:	74h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	15.27%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	7.05	2.14	12.5	14	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.89	2.59	0.7462	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.89		0.3987	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6763.01	6763.01	1	49.7	<1.0E-05	Significant Effect
Error	1903.45	135.961	14			
Total	8666.46		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.61	8.89	0.5435	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.897	0.841	0.0712	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	81.9	71	92.7	83	60.6	96.8	4.58	15.82%	0.00%
90.91		8	123	114	132	129	108	132	3.61	8.29%	-50.22%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	93.3	75.8	96.8	73.6	72.5	90.2	60.6	92.2
90.91		108	131	115	110	130	132	128	130

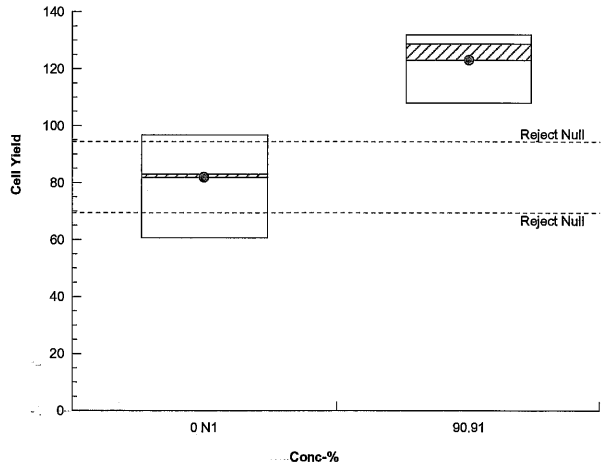
2021 Sep25

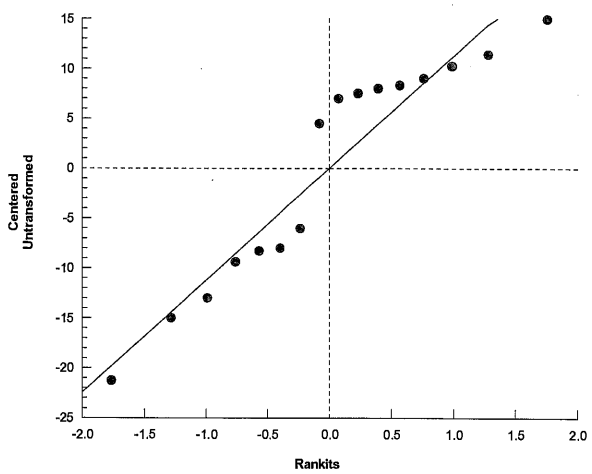
Analyst: MO QA: KT 2021 Oct 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	03-3408-2349	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:19	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AF0D6ECC2A0B77191447DC51447251EF	**Editor ID:**	

Graphics





2021 Sep 25

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-74
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ766
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	95.2	93.4	93.30	81.88	12.96	16
Lab Control	D3	76.4	77.3	75.85			
Lab Control	D4	108.0	87.7	96.85			
Lab Control	D5	77.5	71.7	73.60			
Lab Control	D8	73.5	73.5	72.50			
Lab Control	D9	92.4	90.0	90.20			
Lab Control	D10	68.8	54.4	60.60			
Lab Control	D7	95.2	91.1	92.15			
90.91	C2	111.0	107.0	108.00	123.00	10.20	8
90.91	E2	122.0	142.0	131.00			
90.91	F2	112.0	120.0	115.00			
90.91	G2	114.0	108.0	110.00			
90.91	C3	137.0	126.0	130.50			
90.91	E3	129.0	137.0	132.00			
90.91	F3	123.0	134.0	127.50			
90.91	G3	134.0	128.0	130.00			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 766

Date Sampled: 2021 Sept 19

Sample ID: 1645 – 74

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M.O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 21

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.4 Initial Temp (°C): 24.1 Sample Description: clear, light yellow

Initial Filtered pH (well B2): 8.0

Final Filtered pH (well B2): 8.4

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 8.0

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 12:05

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) 101036 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 101036 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021Sept23	Y	N	Y	EM
2021 Sep24	Y	N	Y	DLC
2021 Sep25	Y	Y		MO

CETIS Analytical Report

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-6328-4607	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:21	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	8C46D10D2EEEA34F5CE84C9B1E737AC	**Editor ID:**	

Batch ID:	18-5311-0901	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	14-3534-8856	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 09:45	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-76
Sample Age:	75h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	20.32%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	3.67	2.14	16.4	14	CDF	0.0025	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.84	2.59	0.0106	Outlier Detected
Control Trend	Mann-Kendall Trend Test	2.84		1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3161.25	3161.25	1	13.5	0.0025	Significant Effect
Error	3282.26	234.447	14			
Total	6443.51		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	7.25	8.89	0.0180	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.899	0.841	0.0771	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	80.8	74.5	87.1	80	72.3	91.6	2.67	9.33%	0.00%
90.91		8	109	92	126	105	85.8	151	7.18	18.63%	-34.78%

Cell Yield Detail

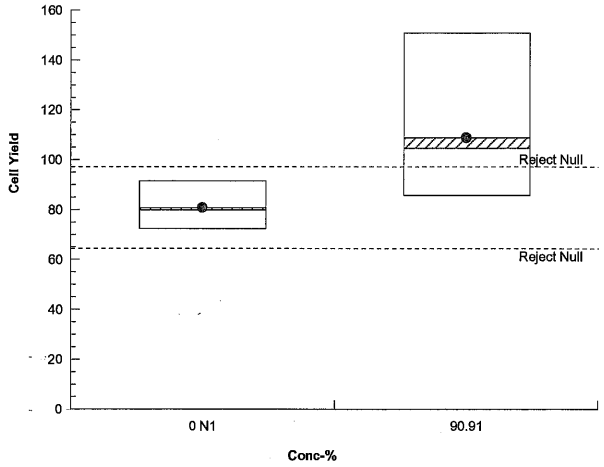
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	78.6	81.4	74.9	89.9	85.2	72.6	72.3	91.6
90.91		93.1	151	106	97.6	85.8	120	103	114

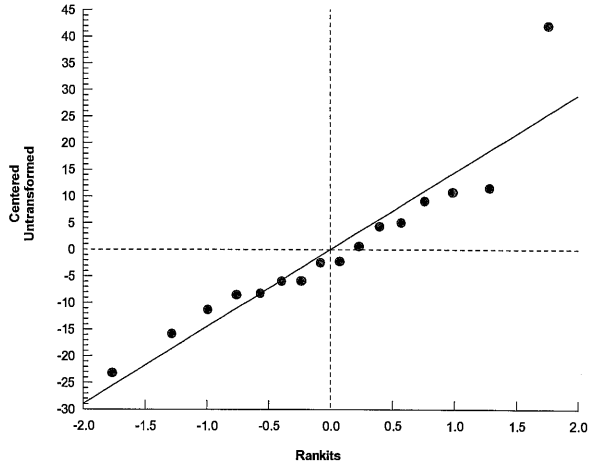
Analyst: MO 2021 Sep 25 QA: KT 2021 Oct 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-6328-4607	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:21	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	8C46D10D2EEEA34F5CE84C9B1E737AC	**Editor ID:**	

Graphics





2021 Sep 25 Analyst: MNO QA: KT 2021 OCT 19

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-76
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ770
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	75.1	84.1	78.60	80.83	7.54	9
Lab Control	D3	87.9	77.0	81.45			
Lab Control	D4	82.3	69.6	74.95			
Lab Control	D5	102.0	79.8	89.90			
Lab Control	D8	75.1	97.3	85.20			
Lab Control	D9	69.9	77.3	72.60			
Lab Control	D10	72.6	74.0	72.30			
Lab Control	D11	82.2	103.0	91.60			
90.91	C2	94.2	94.0	93.10	108.94	20.30	19
90.91	E2	149.0	155.0	151.00			
90.91	F2	102.0	113.0	106.50			
90.91	G2	105.0	92.2	97.60			
90.91	C3	99.0	74.6	85.80			
90.91	E3	132.0	111.0	120.50			
90.91	F3	103.0	105.0	103.00			
90.91	G3	126.0	104.0	114.00			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 770

Date Sampled: 2021 Sept 19

Sample ID: 1645-76

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M. O'Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 Sept 19

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.5 Initial Temp (°C): 24.4 Sample Description: clear, colorless

Initial Filtered pH (well B2): 7.9

Final Filtered pH (well B2): 9.5

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 1205

Therefore, (**Xi**) 2230 cells were initially put into each test well and the initial cell density was (**Xd**) 10136 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 2230 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2230) * (4.5455)] = 10136 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021Sept23	Y	Y	Y	EM
2021Sep24	Y	Y	Y	DML
2021 Sep 25	Y	~~N~~ Y		MO

WE mo 2021 Sep 25

CETIS Analytical Report

Report Date:	25 Sep-21 18:23 (p 1 of 2)
Test Code/ID:	SL-4388-2521 / 02-0896-3929

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-2260-9389	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:23	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	87C676393C8BEA275B8E6288389720E6	**Editor ID:**	

Batch ID:	14-5566-7845	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	22 Sep-21 12:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-21 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	21-1469-7742	**Code:**	C170357	**Project:**	2-11-0691
Sample Date:	19 Sep-21 15:10	**Material:**	Water	**Source:**	Diavik
Receipt Date:	21 Sep-21 08:00	**CAS (PC):**		**Station:**	1645-87
Sample Age:	69h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	18.01%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	6.33	2.14	14.2	14	CDF	1.9E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.1	2.59	0.3812	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	2.1		0.0610	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7062.3	7062.3	1	40	1.9E-05	Significant Effect
Error	2471.26	176.518	14			
Total	9533.56		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	5.53	8.89	0.0382	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.928	0.841	0.2288	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	79.1	73	85.3	75.1	70.5	88.8	2.6	9.29%	0.00%
90.91		8	121	107	136	128	94.2	138	6.11	14.27%	-53.10%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	70.5	74.5	75.4	74.8	85.8	88.7	74.5	88.8
90.91		94.2	128	138	138	127	99	112	133

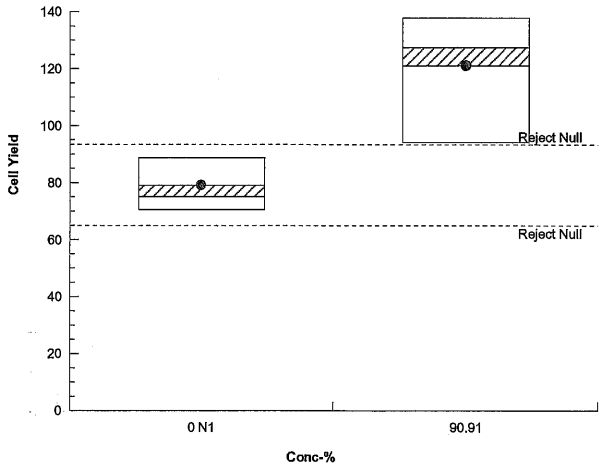
2021 Sep 25

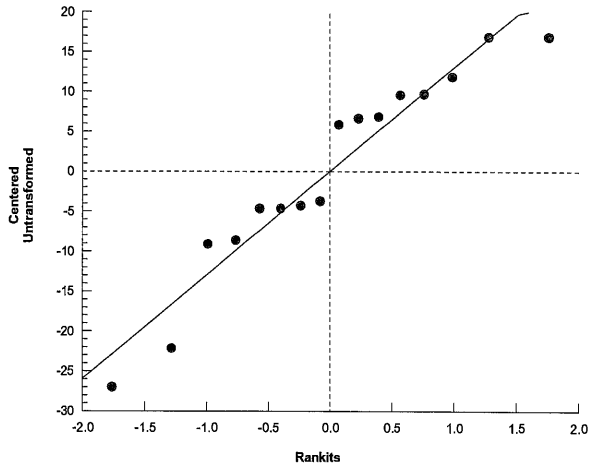
Analyst: MO QA: KH 2021 Oct 19

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-2260-9389	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.7
Analyzed:	25 Sep-21 18:23	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	87C676393C8BEA275B8E6288389720E6	**Editor ID:**	

Graphics





2021 Sep 25 Analyst: MO QA: KH 2021 OCT 19

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-87
Date Sampled: 2021 Sept 19
Job /Sample #: C170357/ AGJ771
Date & Time Started: 2021 Sept 22 @ 12:30
Date & Time Ended: 2021 Sept 25 @ 13:00
Analyst(s): M. O'Toole
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	71.7	71.3	70.50	79.13	7.35	9
Lab Control	D3	61.7	89.3	74.50			
Lab Control	D4	77.8	75.0	75.40			
Lab Control	D5	76.4	75.3	74.85			
Lab Control	D8	83.4	90.1	85.75			
Lab Control	D9	93.1	86.3	88.70			
Lab Control	D10	80.1	70.9	74.50			
Lab Control	D11	75.6	104.0	88.80			
90.91	C2	95.0	95.3	94.15	121.14	17.29	14
90.91	E2	142.0	116.0	128.00			
90.91	F2	141.0	137.0	138.00			
90.91	G2	145.0	133.0	138.00			
90.91	C3	133.0	123.0	127.00			
90.91	E3	99.0	101.0	99.00			
90.91	F3	125.0	101.0	112.00			
90.91	G3	128.0	140.0	133.00			

Client Name: Diavik

Job / Sample #: C170357/ AGJ 771

Date Sampled: 2021 Sept 19

Sample ID: 1645 - 87

Date Received: 2021 Sept 22

Culture Date: 2021 Sept 18

Date & Time Started: 2021 Sept 22 @ 1230

Culture Description: Green

Date & Time Ended: 2021 Sept 25 @ 13:00

Light Intensity at Surface (lux): 3986-4250

Analyst(s): E. Marus, D. Lai, M.O. Toole

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0405

Reagent Water Preparation:

Date of reconstituted water prep: 2021 sept 21

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: EM

Temperature (°C):

Day 0: 24.0 Day 1: 24.0 Day 2: 24 Day 3: 24

Sample Water Quality

Initial pH: 7.4 Initial Temp (°C): 24.6 Sample Description: Clear, colorless.

Initial Filtered pH (well B2): 7.9

Final Filtered pH (well B2): 8.0

Control Water Quality

Initial Filtered pH (well D6): 7.8

Final Filtered pH (well D7): 7.9

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.3 (*10^4 cells/mL)

Time of inoculum prep: 1205

Therefore, (**Xi**) 22230 cells were initially put into each test well and the initial cell density

was (**Xd**) 101365 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.3x10^4) * 0.02] = 22230 cells

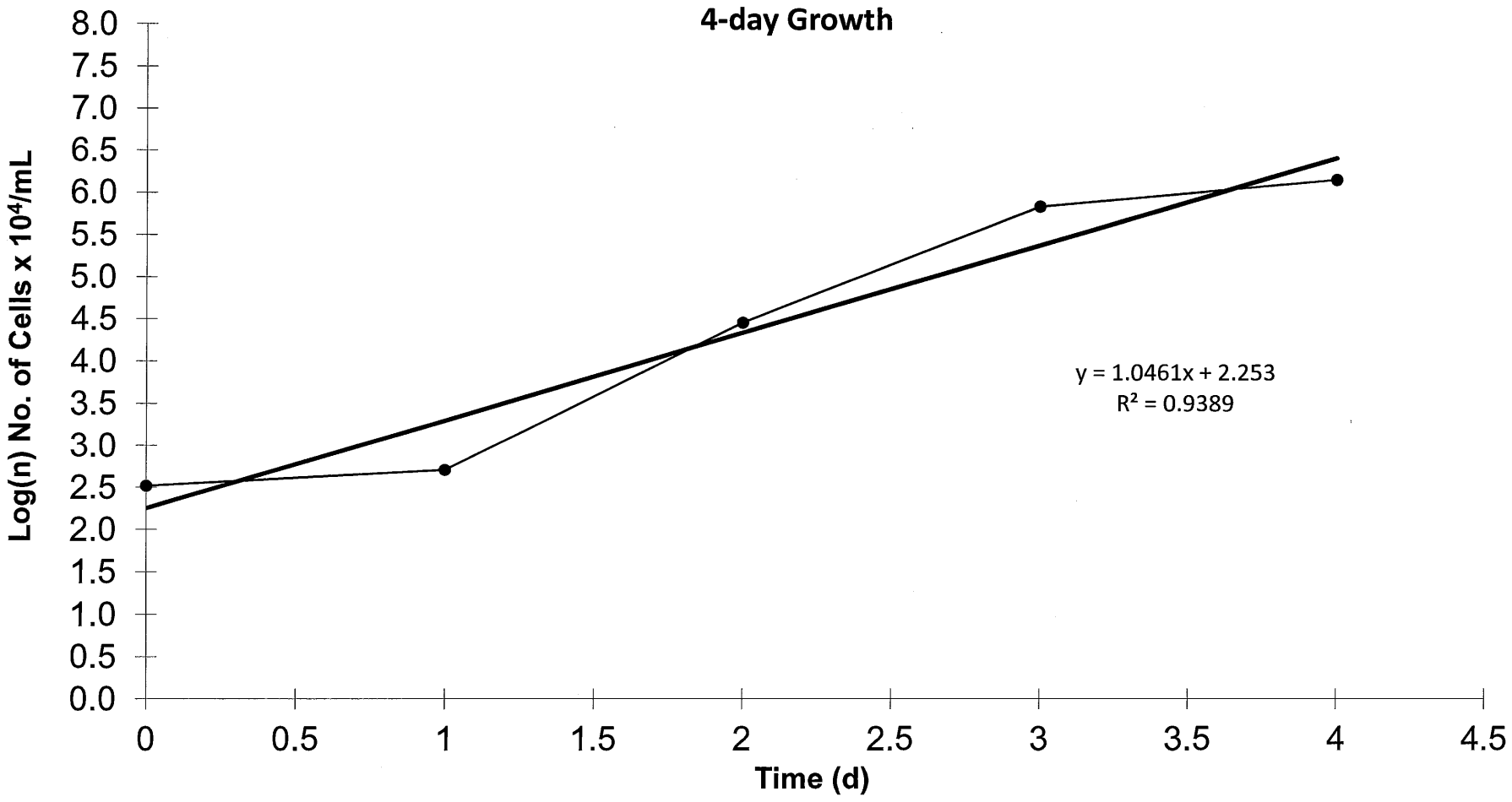
To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(22230) * (4.5455)] = 101365 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2021 Sept 23	Y	Y	Y	EM
2021 Sep 24	Y	N	Y	DML
2021 Sep 25	Y	N		MO

***Pseudokirchneriella subcapitata* Growth Curve using CP201216; Date: 2021/July/06**
E.C.~4000lux, 24 °C, 0.5ml culture to 50 mL nutrient medium



Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C170357-AGJ766 **Client Sample ID:** 1645-74
Date sample collected: 44458 **Test Performed By:** CSH, DBA, CT9, KMG, THR
Test Initiation Date: 2021/09/24
Test End Date: 2021/09/30
Dates when subsamples used: 2021/09/24 2021/09/28
2021/09/25 2021/09/29
2021/09/26
2021/09/27

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.5 **Temperature (°C):** 25
pH(pH units): 7.2 **Conductivity (µS/cm):** 695

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Untransformed	N/A
	7 day Reproduction Result		Non-Significant	Equal Variance t Two-Sample Test	Untransformed	N/A

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.20	0.906	1.35	Linear Interpolation	Log-X	0.5-10
Control Chart Data (g/L)	7 day Survival Result	LC50	1.55	0.981	2.45	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.24	0.893	1.72			
Reference Toxicant Test Initiation Date:			2021/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Sample was analyzed 5 days after sample collection due to lab error during initial set up that was within hold time. Sample analysis must be within 3 days of sampling as stipulated by the reference method. All other test quality indicators met requirements.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	24
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes & Fisherbrand 16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/09/24 2021/09/28 2021/09/25 2021/09/29 2021/09/26 2021/09/27
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		7		8						0.0%	22	4.6
	2	0		0		0		5		4		11								
	3	0		0		0		6		5		6								
	4	0		0		0		6		6		11								
	5	0		0		0		7		8		11								
	6	0		0		0		7		9		13								
	7	0		0		0		7		7		14								
	8	0		0		0		7		7		1								
	9	0		0		0		6		7		6								
	10	0		0		0		6		7		8								
100%	1	0		0		0		7		15		20						0.0%	41.7	2.3
	2	0		0		0		7		14		22								
	3	0		0		0		9		15		18								
	4	0		0		0		8		15		22								
	5	0		0		0		6		12		20								
	6	0		0		0		7		14		24								
	7	0		0		0		7		13		21								
	8	0		0		0		7		16		18								
	9	0		0		0		5		13		21								
	10	0		0		0		9		13		19								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/09/24	24	7.9	7.4	2021/09/25	24	7.9	6.4
100		24	7.5	8.3		24	7.9	6.4
Control	2021/09/25	24	8.1	7.4	2021/09/26	25	8.0	6.6
100		25	7.4	8.0		25	7.9	6.4
Control	2021/09/26	24	8.2	7.3	2021/09/27	25	8.1	6.7
100		25	7.5	7.8		25	8.1	6.7
Control	2021/09/27	25	8.2	7.3	2021/09/28	25	8.1	6.6
100		25	7.5	8.0		25	8.0	6.6
Control	2021/09/28	25	8.1	7.2	2021/09/29	24	7.4	6.4
100		25	7.5	8.0		24	7.8	6.4
Control	2021/09/29	24	8.0	7.2	2021/09/30	25	7.8	6.2
100		24	7.4	8.2		24	7.9	6.1
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C170357-AGJ765
Client Sample ID: 1645-68
Date sample collected: 44458
Test Performed By: CSH, KMG, DBA, CT9, THR
Test Initiation Date: 2021/09/21
Test End Date: 2021/09/27
Dates when subsamples used: 2021/09/21, 2021/09/22, 2021/09/23, 2021/09/24, 2021/09/25, 2021/09/26

Chemistries prior to test:
Dissolved Oxygen(mg/L): 9.8
pH(pH units): 6.7
Temperature (°C): 24
Conductivity (µS/cm): 285

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Untransformed	N/A
	7 day Reproduction Result		Non-Significant	Wilcoxon Rank Sum Two-Sample Test	Untransformed	100-5

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.20	0.906	1.35	Linear Interpolation	Log-X	0.5-10
Control Chart Data (g/L)	7 day Survival Result	LC50	1.55	0.981	2.45	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.24	0.893	1.72			
Reference Toxicant Test Initiation Date:			2021/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Indigenous organisms observed in sample throughout testing.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	18
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	21
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/09/21 2021/09/25 2021/09/22 2021/09/26 2021/09/23 2021/09/24
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		6		11						0.0%	23	6.7
	2	0		0		0		6		8		14								
	3	0		0		0		8		9		11								
	4	0		0		0		5		7		11								
	5	0		0		0		3		3		0								
	6	0		0		0		6		9		9								
	7	0		0		0		5		6		8								
	8	0		0		0		7		9		13								
	9	0		0		0		6		9		12								
	10	0		0		0		5		7		11								
100%	1	0		0		0		6		8		12						10.0%	25.4	10.8
	2	0		0		0		6		13		16								
	3	0		0		0		5		14		15								
	4	0		0		0		6		10		13								
	5	0		0	X															
	6	0		0		0		7		13		13								
	7	0		0		0		0		7		7								
	8	0		0		0		7		10		10								
	9	0		0		0		5		8		12								
	10	0		0		0		4		13		14								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/09/21	25	8.0	7.3	2021/09/22	25	7.6	6.3
100		24	7.1	9.4		25	7.5	6.5
Control	2021/09/22	26	8.2	7.1	2021/09/23	25	7.7	6.6
100		25	7.1	8.5		25	7.6	6.7
Control	2021/09/23	25	7.8	7.4	2021/09/24	25	7.9	6.5
100		24	7.0	8.4		24	7.5	6.7
Control	2021/09/24	24	7.9	7.4	2021/09/25	25	7.9	6.5
100		24	7.0	8.4		25	7.4	6.6
Control	2021/09/25	24	8.1	7.4	2021/09/26	25	7.3	6.4
100		25	6.8	7.8		25	7.3	6.5
Control	2021/09/26	25	8.2	7.3	2021/09/27	25	7.5	6.5
100		25	7.0	7.7		26	7.3	6.5
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C170357-AGF764
Client Sample ID: 1645-67
Date sample collected: 44458
Test Performed By: CSH, CT9, DBA, KMG, THR
Test Initiation Date: 2021/09/22
Test End Date: 2021/09/28
Dates when subsamples used: 2021/09/22, 2021/09/23, 2021/09/24, 2021/09/25, 2021/09/26, 2021/09/27

Chemistries prior to test:
Dissolved Oxygen(mg/L): 9.5
Temperature (°C): 25
pH(pH units): 7.1
Conductivity (µS/cm): 714

Test Results			Significant or non-significant	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results	7 day Survival Result	Effect	Non-Significant	Fisher Exact Test	Untransformed	N/A
	7 day Reproduction Result		Non-Significant	Equal Variance t Two-Sample Test	Untransformed	N/A

Reference Toxicant Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.20	0.906	1.35	Linear Interpolation	Log-X	0.5-10
Control Chart Data (g/L)	7 day Survival Result	LC50	1.55	0.981	2.45	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.24	0.893	1.72			
Reference Toxicant Test Initiation Date:			2021/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Biosystems, Colorado
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in tes	None
Mean % mortality of brood organisms during 7-day period proceding test:	20
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	30
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture. The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 20 x 150 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 1.9.3.0
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	20
Number of test concentrations:	1 and a negative control
Concentrations tested (%):	100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	2021/09/22 2021/09/26 2021/09/23 2021/09/27 2021/09/24 2021/09/25
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		4		2		6								0.0%	22.6	7.9
	2	0		0		4		4		0		16								
	3	0		0		6		6		15										
	4	0		0		4		6		0		16								
	5	0		0		4		4		0		0								
	6	0		0		5		7		0		21								
	7	0		0		6		5		10										
	8	0		0		4		5		0		16								
	9	0		0		6		5		8										
	10	0		0		5		9		0		17								
100%	1	0		0		5		6		18								0.0%	25.2	6.0
	2	0		0		7		8		11										
	3	0		0		7		4		12										
	4	0		0		6		4		13										
	5	0		0		5		3		8										
	6	0		0		6		7		0		22								
	7	0		0		6		8		16										
	8	0		0		7		8		13										
	9	0		0		5		5		6										
	10	0		0		5		10		11										

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	2021/09/22	25	8.2	7.1	2021/09/23	25	7.9	6.4
100		24	7.3	9.2		25	7.5	6.3
Control	2021/09/23	25	8.1	7.3	2021/09/24	25	7.9	6.6
100		24	7.3	8.3		24	7.5	6.4
Control	2021/09/24	24	7.9	7.4	2021/09/25	25	7.8	6.5
100		24	7.2	8.2		25	7.4	6.4
Control	2021/09/25	25	8.1	7.4	2021/09/26	25	7.9	6.4
100		25	7.1	8.3		25	7.4	6.3
Control	2021/09/26	24	7.6	7.2	2021/09/27	25	8.1	6.5
100		25	7.2	8.0		26	7.6	6.3
Control	2021/09/27	25	8.2	7.2	2021/09/28	26	7.7	6.4
100		25	7.3	7.9		26	7.5	5.8
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ773-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 01:45 PM — Sampling Method : N/A — pH: 6.5

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 122.7 %

Analysis Start : Sep 22, 2021 01:04 PM — Avg Temp Arrival: 5 °C — Sample Conductance: 187 µS/cm

End : Sep 24, 2021 12:38 PM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	308	8.4	0	0	0	0	19	8.1	311	8.5
0	20	8.1	310	8.4	0	0	0	0	20	8.0	312	8.2
0	20	8.0	309	8.3	0	0	0	0	19	8.1	317	8.4
100	20	7.0	195	9.6	0	0	0	0	20	7.1	200	8.2
100	20	6.7	192	9.6	0	0	0	0	19	7.0	197	8.3
100	20	6.6	192	9.6	0	0	0	0	19	7.0	209	8.5

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ773-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot

Verified By : Dustin Banks, Team Lead, Bioassay

Date: Oct 19, 2021 03:35 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ772-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-47 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 02:35 PM — Sampling Method : N/A — pH: 6.6

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 111.0 %

Analysis Start : Sep 23, 2021 11:00 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 436 µS/cm

End : Sep 25, 2021 11:01 AM — Storage: 2-6°C — Hardness: 180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	312	8.4	0	0	0	0	19	7.8	321	8.4
0	20	8.1	314	8.4	0	0	0	0	20	7.7	314	8.2
0	20	8.1	312	8.4	0	0	0	0	20	7.7	312	8.2
100	20	7.1	445	9.2	0	0	0	0	20	7.5	445	8.3
100	20	7.1	447	9.2	0	0	0	0	20	7.4	445	8.2
100	20	7.1	445	9.2	0	0	0	0	20	7.3	445	8.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ772-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:53 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ771-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-87 — Sample Matrix : Grab Water

Description: Pale yellow, hazy — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 03:10 PM — Sampling Method : N/A — pH: 6.9

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 112.0 %

Analysis Start : Sep 23, 2021 10:58 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 274 µS/cm

End : Sep 25, 2021 10:59 AM — Storage: 2-6°C — Hardness: 120 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	311	8.3	0	0	0	0	19	8.0	317	8.5
0	20	8.1	312	8.3	0	0	0	0	20	7.6	314	7.9
0	20	8.0	311	8.4	0	0	0	0	20	7.6	312	8.2
100	20	7.4	282	9.5	0	0	0	0	19	7.4	295	8.3
100	20	7.4	281	9.7	0	0	0	0	20	7.2	287	8.1
100	20	7.4	281	9.7	0	0	0	0	20	7.1	292	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ771-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:53 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ770-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-76 — Sample Matrix : Grab Water

Description: gray, very hazy — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 09:45 AM — Sampling Method : N/A — pH: 7.3

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 112.6 %

Analysis Start : Sep 22, 2021 12:32 PM — Avg Temp Arrival: 5 °C — Sample Conductance: 963 µS/cm

End : Sep 24, 2021 11:32 AM — Storage: 2-6°C — Hardness: 240 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	309	8.4	0	0	0	0	20	7.9	310	8.2
0	20	8.1	311	8.4	0	0	0	0	20	8.0	314	7.9
0	20	8.0	311	8.4	0	0	0	0	20	8.0	316	8.3
100	20	7.5	991	8.9	0	0	0	0	20	7.7	985	8.0
100	20	7.5	990	9.0	0	0	0	0	20	7.7	988	8.0
100	20	7.5	993	8.9	0	0	0	0	20	7.7	995	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ770-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:52 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ769-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-46 — Sample Matrix : Grab Water

Description: Yellow, hazy — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 11:30 AM — Sampling Method : N/A — pH: 7.4

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 114.0 %

Analysis Start : Sep 23, 2021 10:57 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 404 µS/cm

End : Sep 25, 2021 10:55 AM — Storage: 2-6°C — Hardness: 180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.8	311	8.3	0	0	0	0	20	7.7	318	8.2
0	20	8.1	313	8.4	0	0	0	0	20	7.6	313	8.2
0	20	8.1	313	8.4	0	0	0	0	20	7.8	315	8.3
100	20	7.6	412	9.6	0	0	0	0	19	8.1	423	8.2
100	20	7.6	412	9.7	0	0	0	0	20	7.9	415	7.8
100	20	7.6	414	9.7	0	0	0	0	20	7.9	414	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ769-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:51 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ768-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-69 — Sample Matrix : Grab Water

Description: pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 10:54 AM — Sampling Method : N/A — pH: 7.7

Sample Collected By: N/A — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 122.3 %

Analysis Start : Sep 22, 2021 11:30 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 920 µS/cm

End : Sep 24, 2021 10:58 AM — Storage: 2-6°C — Hardness: 400 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.8	308	8.2	0	0	0	0	19	8.0	318	8.3
0	20	7.9	309	8.4	0	0	0	0	20	7.9	311	8.1
0	20	8.1	309	8.4	0	0	0	0	19	8.1	320	8.5
100	18	7.9	922	10.1	0	0	0	0	20	8.0	959	8.2
100	18	7.8	929	10.2	0	0	0	0	20	8.0	974	8.1
100	18	7.8	929	10.1	0	0	0	0	20	8.1	979	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ768-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:50 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ767-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-45 — Sample Matrix : Grab Water

Description: yellow, hazy — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 11:14 AM — Sampling Method : N/A — pH: 7.9

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 102.0 %

Analysis Start : Sep 22, 2021 11:29 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 743 µS/cm

End : Sep 24, 2021 10:57 AM — Storage: 2-6°C — Hardness: 320 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	309	8.4	0	0	0	0	19	7.8	318	8.3
0	20	8.0	310	8.4	0	0	0	0	19	8.1	320	8.3
0	20	8.1	310	8.4	0	0	0	0	20	7.8	313	8.0
100	19	8.0	732	8.8	0	0	0	0	20	8.3	751	7.8
100	19	8.0	737	8.8	0	0	0	0	20	8.2	756	7.7
100	19	7.9	739	8.8	0	0	0	0	20	8.3	756	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Indigenous organisms present in sample and removed via pipette.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ767-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:49 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ766-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-74 — Sample Matrix : Grab Water

Description: pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 10:13 AM — Sampling Method : N/A — pH: 7.3

Sample Collected By: N/A — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 109.0 %

Analysis Start : Sep 22, 2021 11:26 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 583 µS/cm

End : Sep 24, 2021 10:56 AM — Storage: 2-6°C — Hardness: 280 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.8	308	8.4	0	0	0	0	19	8.1	310	8.4
0	20	7.9	310	8.3	0	0	0	0	19	8.1	335	8.6
0	20	8.0	309	8.4	0	0	0	0	19	8.0	313	8.4
100	18	7.6	587	9.7	0	0	0	0	19	7.8	622	8.0
100	18	7.6	590	9.8	0	0	0	0	19	7.9	624	7.8
100	18	7.4	591	9.7	0	0	0	0	19	7.9	640	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ766-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:49 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ765-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68 — Sample Matrix : Grab Water

Description: yellow, clear with debris — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 09:00 AM — Sampling Method : N/A — pH: 6.8

Sample Collected By: N/A — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 109.0 %

Analysis Start : Sep 22, 2021 11:24 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 245 µS/cm

End : Sep 24, 2021 10:55 AM — Storage: 2-6°C — Hardness: 120 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	308	8.4	0	0	0	0	20	8.0	314	8.1
0	20	8.0	308	8.4	0	0	0	0	19	8.1	318	8.3
0	20	8.0	309	8.4	0	0	0	0	20	8.1	316	8.2
100	18	7.0	251	9.9	0	0	0	0	19	7.5	274	8.1
100	18	6.9	249	10.0	0	0	0	0	20	7.4	265	7.9
100	18	6.9	250	10.0	0	0	0	0	20	7.5	268	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ765-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:48 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C170357

Client Project Name & Number: Closure — Sample Number: AGJ764-02

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-67 — Sample Matrix : Grab Water

Description: very pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Sep 19, 2021 10:33 AM — Sampling Method : N/A — pH: 7.1

Sample Collected By: N/A — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 21, 2021 08:00 AM — Volume Received: 0.5 L — Dissolved Oxygen: 110.0 %

Analysis Start : Sep 22, 2021 11:22 AM — Avg Temp Arrival: 5 °C — Sample Conductance: 659 µS/cm

End : Sep 24, 2021 10:53 AM — Storage: 2-6°C — Hardness: 260 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	306	8.4	0	0	0	0	20	8.0	310	8.1
0	20	8.1	308	8.4	0	0	0	0	19	8.0	321	8.4
0	20	8.1	309	8.4	0	0	0	0	20	7.9	316	8.2
100	19	7.3	680	9.8	0	0	0	0	20	7.5	716	8.3
100	19	7.3	683	9.8	0	0	0	0	20	7.4	706	8.1
100	19	7.2	683	9.9	0	0	0	0	20	7.4	713	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C170357
Client Project Name & Number:		Closure	Sample Number:	AGJ764-02

Reference chemical:	Sodium Chloride	Test Date:	Sep 15, 2021
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.69 (6.20, 7.21)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.50 (5.37, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Sample Logistics and Ecotoxicology Supervisor Date: Oct 01, 2021 02:45 PM

Toxicity Test Results of *Daphnia magna*, *Ceriodaphnia dubia* and *Pseudokirchneriella subcapitata*

Sample collected July 26, 2021

Final Report

October 1, 2021

Submitted to: **Bureau Veritas**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

TABLE OF CONTENTS

Page

Signature Page ii

Summary iii

1.0 Introduction 1

2.0 Methods 1

3.0 Results 5

4.0 QA/QC 8

5.0 References 9

List of Tables

Table 1. Summary of test conditions: 48-h *Daphnia magna* LC50 test. 2
Table 2. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test. 3
Table 3. Summary of test conditions: *Pseudokirchneriella subcapitata* growth inhibition test. 4
Table 4. Results: *Daphnia magna* survival test. 5
Table 5. Results: *Ceriodaphnia dubia* survival and reproduction test. 6
Table 6. Results: *Pseudokirchneriella subcapitata* growth inhibition test. 7
Table 7. Reference toxicant test results. 8

List of Appendices

APPENDIX A – *Daphnia magna* Toxicity Test Data
APPENDIX B – *Ceriodaphnia dubia* Toxicity Test Data
APPENDIX C – *Pseudokirchneriella subcapitata* Toxicity Test Data
APPENDIX D – Analytical Chemistry
APPENDIX E – Chain-of-Custody Form

SIGNATURE PAGE

Report By: Karen Lee, R.P.Bio Project Biologist	Reviewed By: Armando Tang, R.P.Bio Senior Reviewer

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the sample tested.

SUMMARY

Sample Information and Test Type

Sample ID	Pond 3
Sample collection date	July 26, 2021
Sample receipt date	July 29, 2021
Sample receipt temperature	0.5 – 1.9°C
	48-h *Daphnia magna* survival
Test types	*Ceriodaphnia dubia* survival and reproduction
	72-h *Pseudokirchneriella subcapitata* growth inhibition

Summary of Results

Endpoint	**% v/v**
Daphnia magna	
Survival LC50	>100
Ceriodaphnia dubia	
Survival LC50	>100
Reproduction IC25	>100
Reproduction IC50	>100
Pseudokirchneriella subcapitata	
Growth IC25	>95.2
Growth IC50	>95.2
With metal mining nutrient	
Growth IC25	>95.2
Growth IC50	>95.2

LC = Lethal Concentration, IC = Inhibition Concentration

1.0 INTRODUCTION

Nautilus Environmental Company Inc. conducted toxicity tests for Bureau Veritas on a sample identified as Pond 3. The sample was collected on July 26, 2021 and delivered to the Nautilus Environmental laboratory in Burnaby, BC on July 29, 2021. The sample was transported in six 10-L plastic containers, and were received at temperatures ranging from 0.5 to 1.9°C. The sample were stored in the dark at 4 ± 2°C prior testing. The following toxicity tests were performed on the sample:

- 48-h *Daphnia magna* survival
- *Ceriodaphnia dubia* survival and reproduction
- 72-h *Pseudokirchneriella subcapitata* growth inhibition

The results of the toxicity tests are presented in this report. Copies of raw laboratory data sheets and statistical analyses for each test species are provided in Appendices A to C. The chain-of-custody form is provided in Appendix D.

2.0 METHODS

Methods for the toxicity tests are summarized in Tables 1 to 3. Testing was conducted according to procedures described by Environment Canada (2000, 2007a and 2007b). Due to the high pH of the full strength sample, a pH-adjusted sample was also conducted for *D. magna*. An additional *P. subcapitata* test was conducted using media containing nutrients used for testing mining metal effluents, which contain less EDTA than the standard recipe for media used for routine algae culturing; the results of this test would implicate divalent metals in any toxicity observed. The standard recipe contains 300mg/L EDTA and the recipe used for mining metal effluents contains 75mg/L EDTA. Statistical analyses for all the tests were performed using CETIS (Tidepool Scientific Software, 2013).

Table 1. Summary of test conditions: 48-h *Daphnia magna* LC50 test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Statistical software	CETIS Version 1.9.4
Test endpoint	Survival (48-hour LC50)
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

Table 2. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test.

Test species	*Ceriodaphnia dubia*
Organism source	In-house culture
Organism age	<24 hour old neonates, produced within a 12 hour window
Test type	Static-renewal
Test duration	7 ± 1 day
Test vessel	20-mL glass test tube
Test volume	15 mL
Test solution depth	10 cm
Test concentrations	Seven concentrations, plus laboratory control
Test replicates	10 per treatment
Number of organisms	1 per replicate
Control/dilution water	20% Perrier water and 80% deionized water + 5 µg/L Se and 2 µg/L vitamin B12
Test solution renewal	Daily (100% renewal)
Test temperature	25 ± 1°C
Feeding	Daily with *Pseudokirchneriella subcapitata* and TCC[1] (3:1 ratio)
Light intensity	100 to 600 lux at water surface
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen, pH and conductivity measured daily; hardness and alkalinity of undiluted sample measured at test initiation; survival and reproduction checked daily
Test protocol	Environment Canada (2007a), EPS 1/RM/21
Statistical software	CETIS Version 1.9.4
Test endpoints	Survival and reproduction
Test acceptability criteria for controls	≥80% survival; ≥15 young per surviving control producing three broods; ≥60% of controls producing three or more broods; no ephippia present
Reference toxicant	Sodium chloride (NaCl)

[1] TCC = Trout chow and Cerophyl

Table 3. Summary of test conditions: *Pseudokirchneriella subcapitata* growth inhibition test.

Test species	*Pseudokirchneriella subcapitata*, strain CPCC# 37
Organism source	In-house axenic culture, obtained from Canadian Phycological Culture Center, and originally isolated from Nivelta River, Norway.
Organism age	3-to 7-day old culture in logarithmic growth phase
Test type	Static
Test duration	72 hours
Test vessel	Microplate
Test volume	220 µL
Test concentrations	Seven concentrations, plus laboratory control
Test replicates	4 per treatment; 8 for laboratory control
Number of organisms	10,000 cells/mL
Control/dilution water	Deionized water supplemented with nutrients
Test solution renewal	None
Test temperature	24 ± 2°C
Feeding	None
Light intensity	3600 to 4400 lux
Photoperiod	24 hours light
Aeration	None
Test measurements	Test area temperature measured daily; temperature and pH measured at test initiation; pH of two control wells measured at test termination
Test protocol	Environment Canada (2007b), EPS 1/RM/25
Statistical software	CETIS Version 1.9.4
Test endpoints	Algal cell growth inhibition
Test acceptability criteria for controls	>16-fold increase in number of algal cells; CV ≤ 20%; no trend when analyzed using Mann-Kendall test
Reference toxicant	Zinc (added as $ZnSO_4$)

3.0 RESULTS

Results of the toxicity tests are summarized in Tables 4 to 6. No adverse effects were observed for any of the tests, resulting in LC and IC values greater than the highest test concentration for each of these endpoints in the toxicity tests. Significant *P. subcapitata* cell yield stimulation was observed in all test concentrations above 11.9% in the culturing nutrients and above 3.0% in the test using metal mining nutrients; percent stimulation ranged between 0.5% and 114.9%. Higher algal growth was observed in the standard algae culturing nutrient (57.8 x 10^4 cells/mL) compared to the nutrient used for metal mining (33.0 x 10^4 cells/mL) in the 95.2% concentration. However, because there was no toxicity observed in the sample (IC25 >95.2%), no conclusion could be made as to whether using the two different media would have changed or reduced toxicity.

Table 4. Results: *Daphnia magna* survival test.

Concentration (% v/v)	Survival (%)
Laboratory Control	100
6.25	100
12.5	100
25	100
50	100
100	100
100 (pH adjusted to 8.5)	100
Test endpoint (% v/v)	
LC50	>100

LC = Lethal Concentration

Table 5. Results: *Ceriodaphnia dubia* survival and reproduction test.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	24.7 ± 2.4
1.56	80	22.7 ± 9.1
3.12	90	24.1 ± 3.2
6.25	90	24.9 ± 2.5
12.5	100	26.4 ± 2.5
25	100	27.1 ± 2.0
50	90	24.8 ± 7.9
100	90	25.1 ± 9.0
Test endpoint (% v/v)		
LC50	>100	--
IC25	--	>100
IC50	--	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration

Table 6. Results: *Pseudokirchneriella subcapitata* growth inhibition test.

Concentration (% v/v)	Culturing Nutrient (300 mg/L EDTA) Cell Yield (x 10^4 cells/mL) (Mean ± SD)	Culturing Nutrient (300 mg/L EDTA) Stimulation (%)	Metal Mining Nutrient (75 mg/L EDTA) Cell Yield (x 10^4 cells/mL) (Mean ± SD)	Metal Mining Nutrient (75 mg/L EDTA) Stimulation (%)
Laboratory Control	26.9 ± 2.3	--	25.5 ± 2.1	--
1.5	26.2 ± 1.3	--	27.2 ± 5.1	6.9
3.0	27.0 ± 0.8	0.5	27.5 ± 4.4*	7.8
6.0	30.0 ± 2.9	11.6	39.0 ± 6.4*	52.9
11.9	37.0 ± 3.4*	37.7	44.5 ± 3.5*	74.5
23.8	37.8 ± 2.6*	40.5	43.2 ± 3.8*	69.6
47.6	51.2 ± 7.3*	90.7	48.5 ± 4.0*	90.2
95.2	57.8 ± 4.8*	114.9	33.0 ± 2.9*	29.4
Test endpoint (% v/v)				
IC25	>95.2		>95.2	
IC50	>95.2		>95.2	

SD = Standard Deviation, IC = Inhibition Concentration
* Asterisk indicates cell yield which was significantly greater than the Laboratory Control.

4.0 QA/QC

The health history of the test organisms used in the exposure was acceptable and met the requirements of the Environment Canada protocol. The tests met all control acceptability criteria and water quality parameters remained within ranges specified in the protocol throughout the tests. Uncertainty associated with the tests are best described by the standard deviation around the mean and/or the confidence intervals around the point estimates. The sample was tested six days outside of holding time for *C. dubia* and *P. subcapitata*; the client was aware of this deviation and requested to proceed with testing outside of holding time. There were no additional deviations from the test methodologies.

Results of the reference toxicant tests conducted during the testing program are summarized in Table 7. Results for these tests fell within the range for organism performance of the mean and two standard deviations, based on historical results obtained by the laboratory with these tests. Thus, the sensitivity of the organisms used in these tests was appropriate. The reference toxicant tests were performed under the same conditions as those used for the sample.

Table 7. Reference toxicant test results.

Test Species	Endpoint	Historical Mean (2 SD Range)	CV (%)	Test Date
D. magna	Survival (LC50): 5.5 g/L NaCl	5.5 (3.8 – 8.0)	19	July 28, 2021
C. dubia	Survival (LC50): 2.0 g/L NaCl	2.0 (1.8 – 2.2)	5	August 10, 2021
	Reproduction (IC50): 1.8 g/L NaCl	1.8 (1.4 – 2.3)	13	
P. subcapitata	Growth (IC50): 28.3 µg/L Zn	32.0 (26.8 – 38.3)	9	August 4, 2021

SD = Standard Deviation, CV = Coefficient of Variation, LC = Lethal Concentration, IC = Inhibition Concentration

5.0 REFERENCES

Environment Canada. 2000. Biological test method: reference method for determining acute lethality of effluents to *Daphnia magna*. Environmental Protection Series, Report EPS 1/RM/14, Second Edition, December 2000, including 2016 amendments. Environment Canada, Method Development and Applications Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 6 pp.

Environment Canada. 2007a. Biological test method: test of reproduction and survival using the cladoceran *Ceriodaphnia dubia*. Environmental Protection Series, Report EPS 1/RM/21, Second Edition, February 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 74 pp.

Environment Canada. 2007b. Biological test method: growth inhibition test using the freshwater alga. Environmental Protection Series, Report EPS 1/RM/25, Second Edition, March 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 53 pp.

Tidepool Scientific Software. 2013. CETIS comprehensive environmental toxicity information system, version 1.9.4.11 Tidepool Scientific Software, McKinleyville, CA. 222 pp.

APPENDIX A – *Daphnia magna* Toxicity Test Data

Daphnia magna Summary Sheet

Client: B.V.
Work Order No.: 211460

Start Date/Time: July 29 12021 @ 1145 h
Test Species: *Daphnia magna*
Set up by: CCS

Test Validity Criteria:
≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:
T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Sample Information:

Sample ID: Pond 3
Sample Date: July 26 12021
Date Received: July 29 12021
Sample Volume: 6 x 10L

Test Organism Information:

Broodstock No.: 071421C
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 19
Mortality (%) in previous 7 d: 0
Days to first brood: 9

NaCl Reference Toxicant Results:

Reference Toxicant ID: DMDC78
Stock Solution ID: 21Na02
Date Initiated: July 28 12021
48-h LC50 (95% CL): 5.5 (4.4-6.9) g/LNaCL

Reference Toxicant Mean and Historical Range: 5.5 (3.8-8.0) g/L NaCL
Reference Toxicant CV (%): 19

Test Results: The 48 hr LC 50 is estimated to be >100 % (v/v).

Reviewed by: [signature]
Date reviewed: Aug 11, 2021

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: B.V.
Sample ID: Pond 3
Work Order No.: 211460
CER #: 5

Start Date/Time: July 29 2021 @ 1145 h
Test Organism: *D.magna*
Organisms/volume: 10/200mL
Set up by: CCi

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.5	19.5	8.8	~~7.9~~ 8.1	8.1	7.9	7.7	7.9	365	366
	B														
	C														
	D														
6.25	A	10	10	0	19.5	19.5	19.5	8.6	8.3	8.2	7.8	7.9	7.9	430	432
	B														
	C														
	D														
12.5	A	10	10	0	19.5	19.5	19.5	8.6	8.3	8.3	~~7~~ 8.0	7.9	7.9	495	495
	B														
	C														
	D														
25	A	10	10	0	19.5	19.5	19.5	8.6	8.4	8.3	8.2	7.9	7.9	619	621
	B														
	C														
	D														
50	A	10	10	0	19.5	19.5	19.5	8.6	8.4	8.3	8.4	8.0	7.9	844	846
	B														
	C														
	D														
100	A	10	10	0	20.0	19.5	~~8~~ 19.5	8.7	8.4	8.3	8.9	8.2	7.8	1341	1343
	B														
	C														
100 (pH adjusted)	D	10	10	0	19.~~8~~5	19.5	19.5	8.7	8.5	8.3	8.5	7.9	~~7~~ 7.67	1341	1331
Technician Initials		CCi	GM	GM	CCi	CCi	GM	CCi	CCi	GM	CCi	CCi	GM	CCi	GM

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	98	84
Highest conc.	250	30
Hardness adjusted	—	

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.5		20.0
DO (mg/L)	11.6	Aerated for 5 mins	8.7
pH	8.9		8.9
Cond (µS/cm)	1343		1341
Salinity (ppt)	0.7		0.7

Sample Description: Clear, yellowish, odourless w/ no particulates

Comments:

Mortality: Heartbeat checked under microscope not required

Batch#: 071421C 7-d previous # young/brood: 19 Previous 7-d Mortality (%): 0 Day of 1st Brood: 9

Reviewed by: Date reviewed: Aug. 11, 2021

Client: BV

W.O.#: 211460

Hardness and Alkalinity Datasheet

	Alkalinity						Hardness			
Sample ID	Subsample Date	Date Measured	Sample Volume (mL)	(mL) 0.02N HCL/H_2SO_4 used to pH 4.5	(mL) of 0.02N HCL/H_2SO_4 used to pH 4.2	Total Alkalinity (mg/L$CaCO_3$)	Sample Volume (mL)	Volume of 0.01M EDTA Used (mL)	Total Hardness (mg/L $CaCO_3$)	Technician
Pond 3	Jul 29/21	Jul 29/21	10 ①	0.4	0.5	30	10 ①	2.5	250	CA/GM
	↓	↓								
MHW			50	4.3	4.4	84	50	4.9	98	CA

Notes: ① Diluted up to 100 mL w/ DI water

Reviewed by: [signature] Date Reviewed: Aug 11, 2021

APPENDIX B – *Ceriodaphnia dubia* Toxicity Test Data

Ceriodaphnia dubia Summary Sheet

Client: Bureau Veritas Labs
Work Order No.: 211462

Start Date/Time: Aug 4/21 @ 1430h
Set up by: SAK/JZL

Sample Information:

Sample ID: Pond 3
Sample Date: Jul 26/21
Date Received: Jul 29/21
Sample Volume: 6x10L

Test Validity Criteria:

1) Mean survival of first generation controls is ≥80 %
2) At least 60% of controls have produced three broods within 8 days
3) An average of ≥15 live young produced per surviving female in the control solutions during the first three broods.
4) Invalid if ephippia observed in any control solution at any time.

WQ Ranges:

T (°C) = 25 ± 1; DO (mg/L) = 3.3 to 8.4 ; pH = 6.0 to 8.5

Test Organism Information:

Broodstock No.: BB072921A
Age of young (Day 0): <24-h (within 12-h)
Avg No. young in first 3 broods of previous 7 d: ~~24~~ 25 A
Mortality (%) in previous 7 d: 10
Individual female # used ≥8 young on test day #3-7, 11-14, 16-20

NaCl Reference Toxicant Results:

Reference Toxicant ID: Cd291
Stock Solution ID: 21Na02
Date Initiated: Aug 10/21

7-d LC50 (95% CL): 2.0 (1.7 - 2.3) g/L NaCL
7-d IC50 (95% CL): 1.8 (1.4 - 1.9) g/L NaCL

7-d LC50 Reference Toxicant Mean and Historical Range: 2.0 (1.8-2.2) g/L NaCL CV (%): 5
7-d IC50 Reference Toxicant Mean and Historical Range: 1.8 (1.4-2.3) g/L NaCL CV (%): 13

Test Results:

	Survival	Reproduction
LC50 % (v/v) (95% CL)	>100	
IC25 % (v/v) (95% CL)		>100
IC50 % (v/v) (95% CL)		>100

Reviewed by: [illegible]
Date reviewed: Sept 2/21

Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas Labs
Sample ID: Pond 3
Work Order #: 211462

Start Date & Time: Aug 4/21 @ 1430h
Stop Date & Time: Aug 10/21 @ 1500h
CER #: 4
Test Species: *Ceriodaphnia dubia*

% (v/v)

Concentration	Days													
	0	1		2		3		4		5		6		7
Control	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	25.0	24.0	25.0	24.0	25.0	24.0	24.5	24.0	25.0	25.0	25.0	24.0		
DO (mg/L)	8.1	7.2	8.2	7.3	8.2	7.0	8.0	7.6	8.0	7.5	8.1	7.1		
pH	7.9	7.7	8.0	7.7	8.0	7.6	8.0	7.6	8.0	7.6	7.9	7.6		
Cond. (µS/cm)	①~~307~~	207		207		208		206		209		212		
Initials	JZL	JZL		JZL		JZL		RZS		AK		JZL		

① 207

Concentration	Days													
	0	1		2		3		4		5		6		7
1.56	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.5	24.0	24.5	24.0		
DO (mg/L)	7.8	7.3	7.9	7.4	7.9	7.1	7.5	7.5	7.4	7.2	8.2	7.2		
pH	7.8	7.7	8.0	7.7	8.1	7.6	7.8	7.4	7.8	7.6	8.0	7.6		
Cond. (µS/cm)	226	218		214		214		228		225		233		
Initials	JZL	JZL		JZL		JZL		RZS		AK		JZL		

Concentration	Days													
	0	1		2		3		4		5		6		7
12.5	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.5	24.0	24.5	24.0		
DO (mg/L)	7.8	7.4	8.0	7.5	8.0	7.2	7.6	7.5	7.8	7.5	8.2	7.2		
pH	7.9	7.7	8.1	7.6	8.1	7.5	7.8	7.4	7.8	7.6	8.1	7.5		
Cond. (µS/cm)	353	349		345		344		345		343		347		
Initials	JZL	JZL		JZL		JZL		RZS		AK		JZL		

Concentration	Days													
	0	1		2		3		4		5		6		7
100	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.5	24.0	25.0	24.0		
DO (mg/L)	8.0	7.4	8.0	7.5	8.0	7.2	7.7	7.2	7.9	7.5	8.3	7.3		
pH	8.3	7.6	8.5	7.4	8.5	7.3	7.9	7.3	7.8	7.2	8.4	7.3		
Cond. (µS/cm)	1312	1316		1342		1336		1347		1345		1334		
Initials	JZL	JZL		JZL		JZL		RZS		AK		JZL		

Thermometer: CER #4 DO meter/probe: 1 / 1 pH meter/probe: 1 / 1 Conductivity meter/probe: 1 / 1

	Control	100%		
Hardness*	100	250		
Alkalinity*	94	30		

* mg/L as CaCO3

Analysts: SAK, JZL, RZS

Reviewed by: AMO

Date reviewed: Sept 2/21

Sample Description: clear, yellowish, odourless w/ no particulates

Comments: Broodboard Used: BB07921A (#3-7, 11-14, 16-20)

Chronic Freshwater Toxicity Test
C. dubia Reproduction Data

Client: Bureau Veritas Labs
Sample ID: Pond 3
Work Order: 211462

Start Date & Time: Aug 4/21 @ 1430h
Stop Date & Time: Aug 10/21 @ 1500h
Set up by: JZL

% (v/v)

Days	Concentration: Control										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	4	4	/	JZL
4	37x	4	5	5	5	✓	2	✓	✓	4	JW
5	JW	7	8	8	8	9	9	10	9	9	CK
6		12	13	14	14	13	11	14	12	9	JZL
7											
8											
Total	7x	23	26	27	27	22	22	28	25	22	KJL

Days	Concentration: 1.56										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	5	6	6	6	6	5	5	6	5	5	JW
5	9	10	10	11	X	X	11	8	10	12	CK
6	12	11	11	11			11	11	13	11	JZL
7											
8											
Total	26	27	27	28	6x	5x	27	25	28	28	KJL

Days	Concentration: 3.12										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	5	5	5	5	4	3	4	4	4	6	JW
5	11	9	11	11	10	9	11	9	9	11	CK
6	10	8	10	12	10	11	2x	10	11	11	JZL
7											
8											
Total	26	22	26	28	24	23	17x	23	24	28	KJL

Days	Concentration: 6.25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	6	4	6	5	4	4	6	5	6	5	JW
5	10	10	10	10	9	8	5	9	9	11	CK
6	11	13	13	10	11	10	10x	9	10	10	JZL
7											
8											
Total	27	27	29	25	24	22	21x	23	25	26	KJL

Days	Concentration: 12.5										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	4	6	4	5	5	4	6	5	5	✓	JW
5	9	12	11	10	10	11	11	7	11	11	CK
6	12	12	12	11	12	11	13	10	11	13	JZL
7											
8		30n									
Total	25	~~30~~	27	26	27	26	30	22	27	24	KJL

Days	Concentration: 25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	5	5	6	4	6	5	4	5	3	6	JW
5	9	11	11	10	11	11	10	10	10	12	CK
6	12	11	10	10	12	13	12	11	13	13	JZL
7											
8											
Total	26	27	27	24	29	29	26	26	26	31	KJL

Days	Concentration: 50										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	6	5	5	5	5	6	4	5	5	6	JW
5	12	12	3	10	11	11	12	X	10	10	CK
6	10	12	9	12	11	12	14		11	14	JZL
7											
8											
Total	28	29	17	27	27	29	30	5x	26	30	KJL

Days	Concentration: 100										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	JZL
2	/	/	/	/	/	/	/	/	/	/	JZL
3	/	/	/	/	/	/	/	/	/	/	JZL
4	5	5	6	6	6	6	X	6	4	5	JW
5	11	9	9	9	7	8		13	11	13	CK
6	11	13	12	14	13	11		12	13	13	JZL
7											
8											
Total	27	27	27	29	26	25	0x	31	28	31	KJL

Days	Concentration:										
	A	B	C	D	E	F	G	H	I	J	Init
1											
2											
3											
4											
5											
6											
7											
8											
Total											

Notes: X = mortality.

Comments: 1. Total # Young only based on the first 3 Broods. Fourth and subsequent broods not included in total count.

③ Technician error, lost in transfer

2. Ephippia present in Controls (Y) (N) ?

Reviewed by: A

Date reviewed: Sept 2/21

CETIS Summary Report

Report Date: 08 Sep-21 12:26 (p 1 of 2)
Test Code/ID: 211462 / 19-3876-7099

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Batch ID:	10-4679-0133	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Karen Lee		
Start Date:	04 Aug-21 14:30	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	20% Perrier Water		
Ending Date:	10 Aug-21 15:00	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
16-2920-5026	6d Survival Rate	Linear Interpolation (ICPIN)	✓	EC5	0.7995	0.3896	n/a	125.1	1
			✓	EC10	100	0.9309	n/a	1	
			✓	EC15	>100	n/a	n/a	<1	
			✓	EC20	>100	n/a	n/a	<1	
			✓	EC25	>100	n/a	n/a	<1	
			✓	EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	
03-1575-8195	Reproduction	Linear Interpolation (ICPIN)		IC5	>100	n/a	n/a	<1	1
			✓	IC10	>100	n/a	n/a	<1	
			✓	IC15	>100	n/a	n/a	<1	
			✓	IC20	>100	n/a	n/a	<1	
			✓	IC25	>100	n/a	n/a	<1	
			✓	IC40	>100	n/a	n/a	<1	
			✓	IC50	>100	n/a	n/a	<1	

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	9	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.56		10	0.8000	0.4984	1.0000	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
3.12		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
6.25		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
100		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	9	24.67	22.78	26.55	22	28	0.8165	2.449	9.93%	0.00%
1.56		10	22.7	16.18	29.22	5	28	2.883	9.117	40.16%	7.97%
3.12		10	24.1	21.78	26.42	17	28	1.027	3.247	13.47%	2.30%
6.25		10	24.9	23.13	26.67	21	29	0.781	2.47	9.92%	-0.95%
12.5		10	26.4	24.64	28.16	22	30	0.7775	2.459	9.31%	-7.03%
25		10	27.1	25.65	28.55	24	31	0.6403	2.025	7.47%	-9.86%
50		10	24.8	19.14	30.46	5	30	2.502	7.913	31.91%	-0.54%
100		10	25.1	18.64	31.56	0	31	2.858	9.036	36.00%	-1.76%

Sep 7/21

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
1.56		1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	26	27	27	22	22	28	25	22	
1.56		26	27	27	28	6	5	27	25	28	28
3.12		26	22	26	28	24	23	17	23	24	28
6.25		27	27	29	25	24	22	21	23	25	26
12.5		25	30	27	26	27	26	30	22	27	24
25		26	27	27	24	29	29	26	26	26	31
50		28	29	17	27	27	29	30	5	26	30
100		27	27	27	29	26	25	0	31	28	31

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
1.56		1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date:	12 Aug-21 08:54 (p 1 of 2)
Test Code/ID:	211462 / 19-3876-7099

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	16-2920-5026	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	12 Aug-21 8:54	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	10-4679-0133	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Karen Lee		
Start Date:	04 Aug-21 14:30	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	20% Perrier Water		
Ending Date:	10 Aug-21 15:00	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1318979	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	0.7995	0.3896	n/a	125.1	n/a	256.7
EC10	100	0.9309	n/a	1	n/a	107.4
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	N	9	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	9/9	1	0.0%
1.56		10	0.8000	0.0000	1.0000	0.4216	52.70%	20.0%	8/10	0.92	8.0%
3.12		10	0.9000	0.0000	1.0000	0.3162	35.14%	10.0%	9/10	0.92	8.0%
6.25		10	0.9000	0.0000	1.0000	0.3162	35.14%	10.0%	9/10	0.92	8.0%
12.5		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.92	8.0%
25		10	1.0000	1.0000	1.0000	0.0000	0.00%	0.0%	10/10	0.92	8.0%
50		10	0.9000	0.0000	1.0000	0.3162	35.14%	10.0%	9/10	0.9	10.0%
100		10	0.9000	0.0000	1.0000	0.3162	35.14%	10.0%	9/10	0.9	10.0%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
1.56		1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

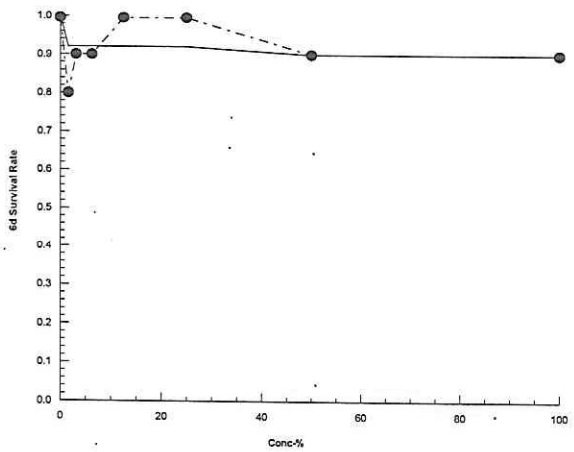
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
1.56		1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1

Analyst: KJL QA: Sept 2/21

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	16-2920-5026	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	12 Aug-21 8:54	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



CETIS Analytical Report

Report Date:	08 Sep-21 12:26 (p 1 of 2)
Test Code/ID:	211462 / 19-3876-7099

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	03-1575-8195	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	08 Sep-21 12:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	10-4679-0133	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Karen Lee		
Start Date:	04 Aug-21 14:30	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	20% Perrier Water		
Ending Date:	10 Aug-21 15:00	**Species:**	Ceriodaphnia dubia	**Brine:**			
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1257990	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	Mean	%Effect
0	N	9	24.67	22	28	2.449	9.93%	0.0%	24.98	0.0%
1.56		10	22.7	5	28	9.117	40.16%	7.97%	24.98	0.0%
3.12		10	24.1	17	28	3.247	13.47%	2.3%	24.98	0.0%
6.25		10	24.9	21	29	2.47	9.92%	-0.95%	24.98	0.0%
12.5		10	26.4	22	30	2.459	9.31%	-7.03%	24.98	0.0%
25		10	27.1	24	31	2.025	7.47%	-9.87%	24.98	0.0%
50		10	24.8	5	30	7.913	31.91%	-0.54%	24.95	0.11%
100		10	25.1	0	31	9.036	36.00%	-1.76%	24.95	0.11%

Reproduction Detail

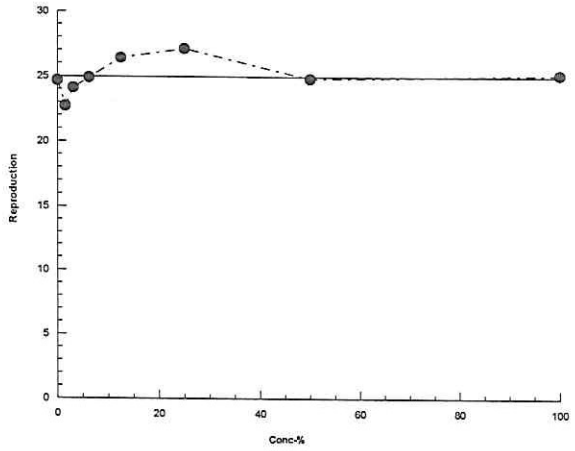
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	26	27	27	22	22	28	25	22	
1.56		26	27	27	28	6	5	27	25	28	28
3.12		26	22	26	28	24	23	17	23	24	28
6.25		27	27	29	25	24	22	21	23	25	26
12.5		25	30	27	26	27	26	30	22	27	24
25		26	27	27	24	29	29	26	26	26	31
50		28	29	17	27	27	29	30	5	26	30
100		27	27	27	29	26	25	0	31	28	31

Analyst: JSL QA: A Sept 7/21

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	03-1575-8195	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	08 Sep-21 12:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



Client: BV Lab

W.O.#: 211462

Hardness and Alkalinity Datasheet

	Alkalinity						Hardness			
Sample ID	Subsample Date	Date Measured	Sample Volume (mL)	(mL) 0.02N HCL/H_2SO_4 used to pH 4.5	(mL) of 0.02N HCL/H_2SO_4 used to pH 4.2	Total Alkalinity (mg/L$CaCO_3$)	Sample Volume (mL)	Volume of 0.01M EDTA Used (mL)	Total Hardness (mg/L $CaCO_3$)	Technician
Pond 3	July 29/21 →		10 ①	0.4	0.5	30	10 ①	2.5	250	JRL
Control water (20% permer)	Aug 6/21 →		100	9.6	9.8	94	50	5.0	100	JRL

Notes: ① Diluted to 100mL w/ DI

Reviewed by: A

Date Reviewed: Sept 2/21

APPENDIX C – *Pseudokirchneriella subcapitata* Toxicity Test Data

Pseudokirchneriella subcapitata Summary Sheet

Client: Bureau Veritas
Work Order No.: 211461

Start Date: Aug. 4/21 @ 1400h
Set up by: SAM

Sample Information:

Sample ID: Pond 3
Sample Date: July 26/21
Date Received: July 29/21
Sample Volume: 6 × 10L

Test Organism Information:

Culture Date: July 30/21
Age of culture (Day 0): 5d

Zinc Reference Toxicant Results:

Reference Toxicant ID: SC218
Stock Solution ID: 21Zn01
Date Initiated: Aug. 4/21

72-h IC50 (95% CL): 28.3 (24.7 – 32.2) µg/L Zn

72-h IC50 Reference Toxicant Mean and Range: 32 (26.8 – 38.3) µg/L Zn CV (%): 9

Test Results:

	Algal Growth
IC25 %(v/v) (95% CL)	>95.2
IC50 %(v/v) (95% CL)	>95.2

Reviewed by: JCu

Date reviewed: Sep. 9/21

72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client: Bureau Veritas

Setup by: SAK

Sample ID: Pond 3 (with culture nutrient)

Test Date/Time: Aug 4/21 @ 1400h

Work Order No.: 211461

CER #: 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: July 30/21

Age of Culture: 5d

Culture Health: Good

Culture Count: 1 220 2 222

Average: 221

Culture Cell Density (c1): 221 x10⁴ cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 221 x10⁴ cells/ml = 6.0 mL

Time Zero Counts: 1 22 2 23

Average: 22.5

No. of Cells/mL: 22.5 x10⁴ cells/mL

Initial Density: # cells/mL ÷ 220 µL x 10 µL = 10227 cells/mL

Concentration %(v/v)	Water Quality pH 0 h	Water Quality Temp (°C) 0 h	Incubator Temperature (°C) 0 h	24 h	48 h	72 h	Microplates rotated 2X per day? 0 h	24 h	48 h	72 h
Control	6.7	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
1.5	6.8	24.0	↓	↓	↓	↓	↓	↓	↓	↓
3	6.7	23.0	↓	↓	↓	↓	↓	↓	↓	↓
6	6.7	↓	↓	↓	↓	↓	↓	↓	↓	↓
11.9	6.9	↓	↓	↓	↓	↓	↓	↓	↓	↓
23.8	~~6.7~~ 7.1	↓	↓	↓	↓	↓	↓	↓	↓	↓
47.6	7.6	↓	↓	↓	↓	↓	↓	↓	↓	↓
95.2	8.1	↓	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAK	SAK	SAK	SAK	SAK	JOL	SAK	SAK	SAK	JOL

Initial control pH: Well 1: 6.8 Well 2: 6.8

Final control pH: Well 1: 6.9 Well 2: 6.9

Light intensity (lux): 4230

Date measured: Aug 4/21

Thermometer: 1 Light meter: 1 pH meter/probe: 1/1

Sample Description: Clear, yellowish, odourless, w/no particulates

Comments:

Reviewed: JOL

Date reviewed: Aug. 31/21

Version 1.3; Issued July 19, 2017

Nautilus Environmental Company Inc.

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug. 4/21 @ 1400h
Work Order #: 211461
Termination Date: Aug. 7/21 @ 1400h
Sample ID: Pond 3 ~~KRJ~~ (with extra nitrate +)
Test set up by: SAM
%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					SAM
	B	25					
	C	25					
	D	26					
	E	29					
	F	29					
	G	28					
	H	31					
1.5	A	27					
	B	29					
	C	27					
	D	26					
3	A	28					
	B	27					
	C	28					
	D	29					
6	A	28					
	B	29					
	C	33					
	D	34					
11.9	A	39					
	B	37					
	C	42					
	D	34					
23.8	A	37					
	B	41					
	C	36					
	D	41					
47.6	A	57					
	B	40	44				
	C	58					
	D	52					
95.2	A	63					
	B	52					
	C	59					
	D	61					

Comments:

Reviewed by: JCu
Date Reviewed: Aug. 31/21

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 211461
Sample ID: Pond 3

Start Date/Time: 4-Aug-21 @1400h
Termination Date/Time 7-Aug-21 @1400h

Initial Cell Density: 10227 cell/mL

	225000
	0.22
	0.01
	10227.27

Concentration	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	30				30	29.0	mean	26.9
	B	25				25	24.0	SD	2.295181
	C	25				25	24.0	CV	8.547438
	D	26				26	25.0		
	E	29				29	28.0		
	F	29				29	28.0		
	G	28				28	27.0		
	H	31				31	30.0		
1.5	A	27				27	26.0		
	B	29				29	28.0		
	C	27				27	26.0		
	D	26				26	25.0		
3	A	28				28	27.0		
	B	27				27	26.0		
	C	28				28	27.0		
	D	29				29	28.0		
6	A	28				28	27.0		
	B	29				29	28.0		
	C	33				33	32.0		
	D	34				34	33.0		
11.9	A	39				39	38.0		
	B	37				37	36.0		
	C	42				42	41.0		
	D	34				34	33.0		
23.8	A	37				37	36.0		
	B	41				41	40.0		
	C	36				36	35.0		
	D	41				41	40.0		
47.6	A	57				57	56.0		
	B	40	44			42	41.0		
	C	58				58	57.0		
	D	52				52	51.0		
95.2	A	63				63	62.0		
	B	52				52	51.0		
	C	59				59	58.0		
	D	61				61	60.0		

Reviewed by: JCL

Date reviewed: Aug 31/21

CETIS Analytical Report

Report Date: 31 Aug-21 16:45 (p 1 of 2)
Test Code/ID: 211461a / 14-4412-6123

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	15-3001-6427	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:24	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Batch ID:	04-4873-1588	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel
Start Date:	04 Aug-21 14:00 ✓	**Protocol:**	EC/EPS 1/RM/25 ✓	**Diluent:**	
Ending Date:	07 Aug-21 ✓	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	
Test Length:	58h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture **Age:** 5d

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30 ✓	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories ✓
Receipt Date:	29 Jul-21 09:43 ✓	**CAS (PC):**		**Station:**	Pond 3 ✓
Sample Age:	8d 22h (0.5 °C) ✓	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C < T	6	11.9	8.45	16.67	20.46%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5	-0.2871	2.526	5.5	10	CDF	0.9670	Non-Significant Effect
	3	0.05742	2.526	5.5	10	CDF	0.9155	Non-Significant Effect
	6	1.435	2.526	5.5	10	CDF	0.3389	Non-Significant Effect
	11.9*	4.651	2.526	5.5	10	CDF	2.4E-04	Significant Effect
	23.8*	4.995	2.526	5.5	10	CDF	9.4E-05	Significant Effect
	47.6*	11.2	2.526	5.5	10	CDF	<1.0E-37	Significant Effect
	95.2*	14.18	2.526	5.5	10	CDF	<1.0E-37	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	3.224	2.991	0.0171	Outlier Detected
Control Trend	Mann-Kendall Trend Test	3.224		0.4054	Non-Significant Trend in Controls

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4348.43	621.204	7	49.15	<1.0E-37	Significant Effect
Error	353.875	12.6384	28			
Total	4702.31		35			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	16.42	18.48	0.0215	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9483	0.9166	0.0927	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	26.88	24.96	28.79	27.5	24	30	0.8115	8.54%	0.00%
1.5		4	26.25	24.25	28.25	26	25	28	0.6292	4.79%	2.33%
3		4	27	25.7	28.3	27	26	28	0.4082	3.02%	-0.47%
6		4	30	25.32	34.68	30	27	33	1.472	9.81%	-11.63%
11.9		4	37	31.64	42.36	37	33	41	1.683	9.10%	-37.67%
23.8		4	37.75	33.57	41.93	38	35	40	1.315	6.97%	-40.47%
47.6		4	51.25	39.6	62.9	53.5	41	57	3.66	14.28%	-90.70%
95.2		4	57.75	50.13	65.37	59	51	62	2.394	8.29%	-114.88%

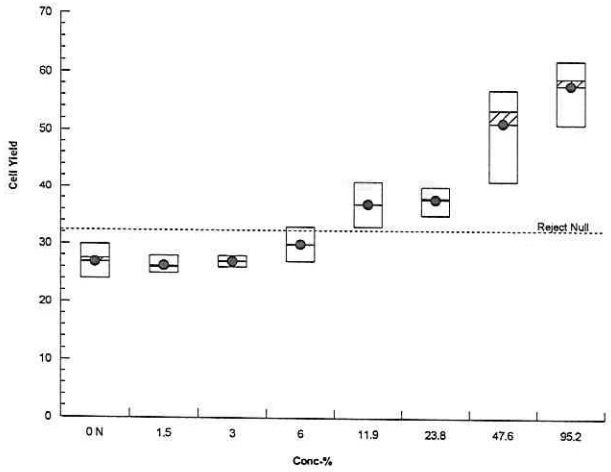
EC Alga Growth Inhibition Test — **Nautilus Environmental**

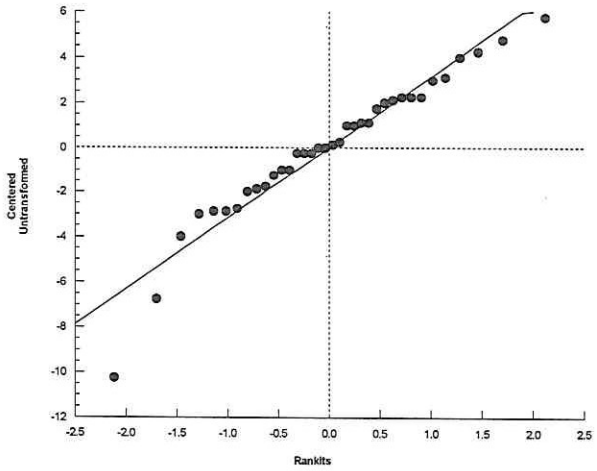
Analysis ID:	15-3001-6427	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:24	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	24	24	25	28	28	27	30
1.5		26	28	26	25				
3		27	26	27	28				
6		27	28	32	33				
11.9		38	36	41	33				
23.8		36	40	35	40				
47.6		56	41	57	51				
95.2		62	51	58	60				

Graphics





CETIS Analytical Report

Report Date: 31 Aug-21 16:46 (p 1 of 4)
Test Code/ID: 211461a / 14-4412-6123

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	14-2299-6700	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	04-4873-1588	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel		
Start Date:	04 Aug-21 14:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**			
Ending Date:	07 Aug-21	**Species:**	Pseudokirchneriella subcapitata	**Brine:**			
Test Length:	58h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:**	5d

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1259072	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	3.224	2.991	0.0171	Outlier Detected
Control Trend	Mann-Kendall Trend Test	3.224		0.4054	Non-Significant Trend in Controls

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>95.2	n/a	n/a	<1.05	n/a	n/a
IC10	>95.2	n/a	n/a	<1.05	n/a	n/a
IC15	>95.2	n/a	n/a	<1.05	n/a	n/a
IC20	>95.2	n/a	n/a	<1.05	n/a	n/a
IC25	>95.2	n/a	n/a	<1.05	n/a	n/a
IC40	>95.2	n/a	n/a	<1.05	n/a	n/a
IC50	>95.2	n/a	n/a	<1.05	n/a	n/a

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	Mean	%Effect
0	N	8	26.88	24	30	2.295	8.54%	0.0%	36.73	0.0%
1.5		4	26.25	25	28	1.258	4.79%	2.33%	36.73	0.0%
3		4	27	26	28	0.8165	3.02%	-0.47%	36.73	0.0%
6		4	30	27	33	2.944	9.81%	-11.63%	36.73	0.0%
11.9		4	37	33	41	3.367	9.10%	-37.67%	36.73	0.0%
23.8		4	37.75	35	40	2.63	6.97%	-40.47%	36.73	0.0%
47.6		4	51.25	41	57	7.32	14.28%	-90.7%	36.73	0.0%
95.2		4	57.75	51	62	4.787	8.29%	-114.9%	36.73	0.0%

Cell Yield Detail

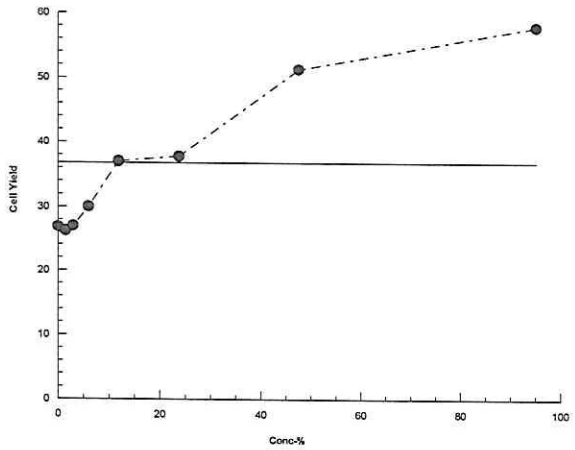
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	24	24	25	28	28	27	30
1.5		26	28	26	25				
3		27	26	27	28				
6		27	28	32	33				
11.9		38	36	41	33				
23.8		36	40	35	40				
47.6		56	41	57	51				
95.2		62	51	58	60				

Analyst: SKR QA: SCR 9/21

EC Alga Growth Inhibition Test — Nautilus Environmental

Analysis ID:	14-2299-6700	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	03-2131-6351	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	04-4873-1588	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel		
Start Date:	04 Aug-21 14:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**			
Ending Date:	07 Aug-21	**Species:**	Pseudokirchneriella subcapitata	**Brine:**			
Test Length:	58h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:**	5d

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	132800	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Control Trend	Mann-Kendall Trend Test			0.4054	Non-Significant Trend in Controls

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>95.2	n/a	n/a	<1.05	n/a	n/a
IC10	>95.2	n/a	n/a	<1.05	n/a	n/a
IC15	>95.2	n/a	n/a	<1.05	n/a	n/a
IC20	>95.2	n/a	n/a	<1.05	n/a	n/a
IC25	>95.2	n/a	n/a	<1.05	n/a	n/a
IC40	>95.2	n/a	n/a	<1.05	n/a	n/a
IC50	>95.2	n/a	n/a	<1.05	n/a	n/a

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	Mean	%Effect
0	N	8	26.88	24	30	2.295	8.54%	0.0%	37.16	0.0%
1.5		4	26.25	25	28	1.258	4.79%	2.33%	37.16	0.0%
3		4	27	26	28	0.8165	3.02%	-0.47%	37.16	0.0%
6		4	30	27	33	2.944	9.81%	-11.63%	37.16	0.0%
11.9		4	37	33	41	3.367	9.10%	-37.67%	37.16	0.0%
23.8		4	37.75	35	40	2.63	6.97%	-40.47%	37.16	0.0%
47.6		3	54.67	51	57	3.215	5.88%	-103.4%	37.16	0.0%
95.2		4	57.75	51	62	4.787	8.29%	-114.9%	37.16	0.0%

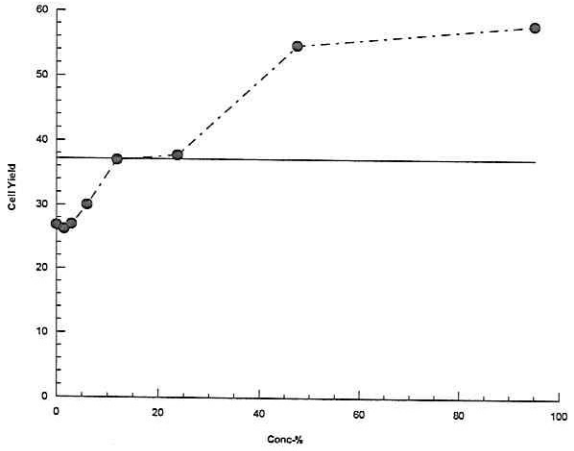
Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	24	24	25	28	28	27	30
1.5		26	28	26	25				
3		27	26	27	28				
6		27	28	32	33				
11.9		38	36	41	33				
23.8		36	40	35	40				
47.6		56	Outlier	57	51				
95.2		62	51	58	60				

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	03-2131-6351	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



Pseudokirchneriella subcapitata Summary Sheet

Client: Bureau Veritas
Work Order No.: 211461

Start Date: Aug. 4/21 @ 1400h
Set up by: SKL

Sample Information:

Sample ID: Pond 3 (with metal mining nutrient)
Sample Date: July 26/21
Date Received: July 29/21
Sample Volume: 6 x 10L

Test Organism Information:

Culture Date: July 30/21
Age of culture (Day 0): 5d

Zinc Reference Toxicant Results:

Reference Toxicant ID: SC218
Stock Solution ID: ~~21N~~ 21ZnO1
Date Initiated: Aug. 4/21

72-h IC50 (95% CL): 28.3 (24.7-32.2) mg/L Zn

72-h IC50 Reference Toxicant Mean and Range: 32.0 (26.8-38.3) mg/L Zn CV (%): 9

Test Results:

	Algal Growth
IC25 %(v/v) (95% CL)	>95.2
IC50 %(v/v) (95% CL)	>95.2

Reviewed by: JGh

Date reviewed: Sep. 9/21

72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client: Bureau Veritas

Setup by: SAL

Sample ID: Pond 3 (with metal mining nutrient)

Test Date/Time: August 4/21 @ 1400h

Work Order No.: 211461

CER #: 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: July 30/21

Age of Culture: 5d

Culture Health: Good

Culture Count: 1 220 2 222

Average: 5d

Culture Cell Density (c1): Good

v1 = 220,000 cells/ml x 60 ml / (c1) 221 x10⁴ cells/ml = 6.0 mL

Time Zero Counts: 1 22 2 23

Average: 22.5

No. of Cells/mL: 22.5 x10⁴ cells/mL

Initial Density: # cells/mL ÷ 220 µL x 10 µL = 10227 cells/mL

Concentration %(v/v)	Water Quality pH 0 h	Water Quality Temp (°C) 0 h	Incubator Temperature (°C) 0 h	24 h	48 h	72 h	Microplates rotated 2X per day? 0 h	24 h	48 h	72 h
Control	6.7	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
1.5	6.8	24.0	↓	↓	↓	↓	↓	↓	↓	↓
3	6.7	23.0	↓	↓	↓	↓	↓	↓	↓	↓
6	6.7	↓	↓	↓	↓	↓	↓	↓	↓	↓
11.9	6.8	↓	↓	↓	↓	↓	↓	↓	↓	↓
23.8	7.1	↓	↓	↓	↓	↓	↓	↓	↓	↓
47.6	7.6	↓	↓	↓	↓	↓	↓	↓	↓	↓
95.2	8.0	↓	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAL	SAL	SAL	SAL	SAL	JOL	SAL	SAL	SAL	JOL

Initial control pH: Well 1: 6.8 Well 2: 6.8

Final control pH: Well 1: 6.9 Well 2: 6.9

Light intensity (lux): 4230

Date measured: Aug. 4/21

Thermometer: 1 Light meter: 1 pH meter/probe: 1 / 1

Sample Description: Clear, yellowish, odourless, w/no particulates

Comments:

Reviewed: JOL

Date reviewed: Sep. 9/21

Version 1.3; Issued July 19, 2017

Nautilus Environmental Company Inc.

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: August 4/21 @ 1400h
Work Order #: 211461
Termination Date: Aug. 7/21 @ 1400h
Sample ID: Pond 3 ~~that~~ an (with metal mining influent)
Test set up by: SKM
%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	26					SKM
	B	26					
	C	29					
	D	25					
	E	24					
	F	25					
	G	27					
	H	30					
1.5	A	34					
	B	24					
	C	~~34~~ 31					
	D	24					
3	A	24					
	B	34					
	C	26					
	D	30					
6	A	45					
	B	34					
	C	35					
	D	46					
11.9	A	43					
	B	42					
	C	48					
	D	49					
23.8	A	48					
	B	39					
	C	45					
	D	45					
47.6	A	46					
	B	50					
	C	55					
	D	47					
95.2	A	36					
	B	31					
	C	32					
	D	37					

Comments:

Reviewed by: JGu
Date Reviewed: Aug. 31/21

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 211461
Sample ID: Pond 3 (with metal mixing nutrient)

Start Date/Time: 4-Aug-21 @1400h
Termination Date/Time 7-Aug-21 @1400h

Initial Cell Density: 10227 cell/mL

225000
0.22
0.01
10227.27

Concentration	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	26				26	25.0	mean	25.5
	B	26				26	25.0	SD	2.070197
	C	29				29	28.0	CV	8.12566
	D	25				25	24.0		
	E	24				24	23.0		
	F	25				25	24.0		
	G	27				27	26.0		
	H	30				30	29.0		
1.5	A	34				34	33.0		
	B	24				24	23.0		
	C	31				31	30.0		
	D	24				24	23.0		
3	A	24				24	23.0		
	B	34				34	33.0		
	C	26				26	25.0		
	D	30				30	29.0		
6	A	45				45	44.0		
	B	34				34	33.0		
	C	35				35	34.0		
	D	46				46	45.0		
11.9	A	43				43	42.0		
	B	42				42	41.0		
	C	48				48	47.0		
	D	49				49	48.0		
23.8	A	48				48	47.0		
	B	39				39	38.0		
	C	45				45	44.0		
	D	45				45	44.0		
47.6	A	46				46	45.0		
	B	50				50	49.0		
	C	55				55	54.0		
	D	47				47	46.0		
95.2	A	36				36	35.0		
	B	31				31	30.0		
	C	32				32	31.0		
	D	37				37	36.0		

Reviewed by: JGu

Date reviewed: Sep. 9/21

CETIS Analytical Report

Report Date: 31 Aug-21 16:38 (p 1 of 2)
Test Code/ID: 211461b / 11-3656-3733

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	14-3299-8539	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:18	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Batch ID:	09-6876-5428	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel
Start Date:	04 Aug-21 14:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	
Ending Date:	07 Aug-21	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	
Test Length:	58h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture **Age:** 5d

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3 (with metal mining nutrient)
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C < T	3	6	4.243	33.33	24.12%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5	0.7189	2.526	6.15	10	CDF	0.6892	Non-Significant Effect
	3	0.8216	2.526	6.15	10	CDF	0.6404	Non-Significant Effect
	6*	5.545	2.526	6.15	10	CDF	2.0E-05	Significant Effect
	11.9*	7.805	2.526	6.15	10	CDF	<1.0E-37	Significant Effect
	23.8*	7.291	2.526	6.15	10	CDF	<1.0E-37	Significant Effect
	47.6*	9.448	2.526	6.15	10	CDF	<1.0E-37	Significant Effect
	95.2*	3.081	2.526	6.15	10	CDF	0.0142	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	1.687	2.991	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.687		0.9061	Non-Significant Trend in Controls

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2629.06	375.579	7	23.77	<1.0E-37	Significant Effect
Error	442.5	15.8036	28			
Total	3071.56		35			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	6.231	18.48	0.5130	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9516	0.9166	0.1178	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	25.5	23.77	27.23	25	23	29	0.7319	8.12%	0.00%
1.5		4	27.25	19.2	35.3	26.5	23	33	2.529	18.56%	-6.86%
3		4	27.5	20.44	34.56	27	23	33	2.217	16.13%	-7.84%
6		4	39	28.85	49.15	39	33	45	3.189	16.35%	-52.94%
11.9		4	44.5	38.91	50.09	44.5	41	48	1.756	7.89%	-74.51%
23.8		4	43.25	37.24	49.26	44	38	47	1.887	8.73%	-69.61%
47.6		4	48.5	42.07	54.93	47.5	45	54	2.021	8.33%	-90.20%
95.2		4	33	28.32	37.68	33	30	36	1.472	8.92%	-29.41%

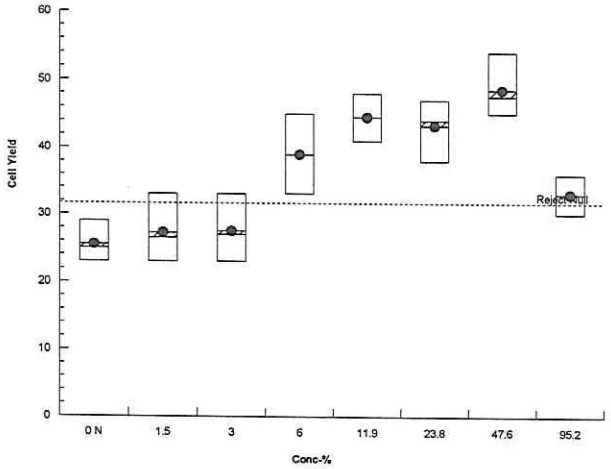
EC Alga Growth Inhibition Test — **Nautilus Environmental**

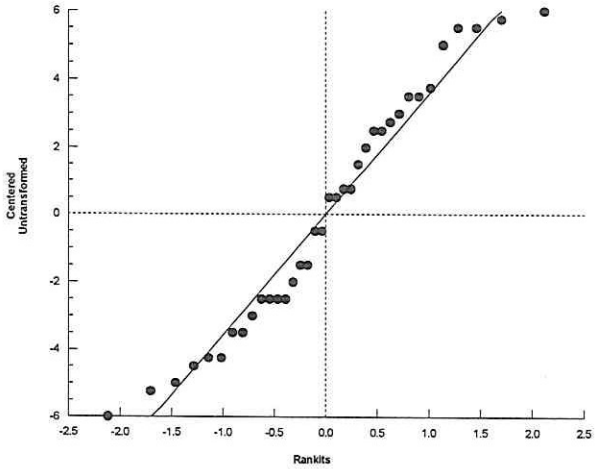
Analysis ID:	14-3299-8539	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:18	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	25	25	28	24	23	24	26	29
1.5		33	23	30	23				
3		23	33	25	29				
6		44	33	34	45				
11.9		42	41	47	48				
23.8		47	38	44	44				
47.6		45	49	54	46				
95.2		35	30	31	36				

Graphics





CETIS Analytical Report

Report Date: 31 Aug-21 16:38 (p 1 of 2)
Test Code/ID: 211461b / 11-3656-3733

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	20-3170-4946	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:19	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Batch ID:	09-6876-5428	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel		
Start Date:	04 Aug-21 14:00	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**			
Ending Date:	07 Aug-21	**Species:**	Pseudokirchneriella subcapitata	**Brine:**			
Test Length:	58h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:**	

Sample ID:	07-9176-6934	**Code:**	2F316796	**Project:**	
Sample Date:	26 Jul-21 16:30	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	29 Jul-21 09:43	**CAS (PC):**		**Station:**	Pond 3 (with metal mining nutrient)
Sample Age:	8d 22h (0.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	797758	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value Test	1.687	2.991	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1.687		0.9061	Non-Significant Trend in Controls

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	68.38	51.69	n/a	1.462	n/a	1.935
IC10	>95.2	n/a	n/a	<1.05	n/a	n/a
IC15	>95.2	n/a	n/a	<1.05	n/a	n/a
IC20	>95.2	n/a	n/a	<1.05	n/a	n/a
IC25	>95.2	n/a	n/a	<1.05	n/a	n/a
IC40	>95.2	n/a	n/a	<1.05	n/a	n/a
IC50	>95.2	n/a	n/a	<1.05	n/a	n/a

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	Mean	%Effect
0	N	8	25.5	23	29	2.07	8.12%	0.0%	36.5	0.0%
1.5		4	27.25	23	33	5.058	18.56%	-6.86%	36.5	0.0%
3		4	27.5	23	33	4.435	16.13%	-7.84%	36.5	0.0%
6		4	39	33	45	6.377	16.35%	-52.94%	36.5	0.0%
11.9		4	44.5	41	48	3.512	7.89%	-74.51%	36.5	0.0%
23.8		4	43.25	38	47	3.775	8.73%	-69.61%	36.5	0.0%
47.6		4	48.5	45	54	4.041	8.33%	-90.2%	36.5	0.0%
95.2		4	33	30	36	2.944	8.92%	-29.41%	33	9.59%

Cell Yield Detail

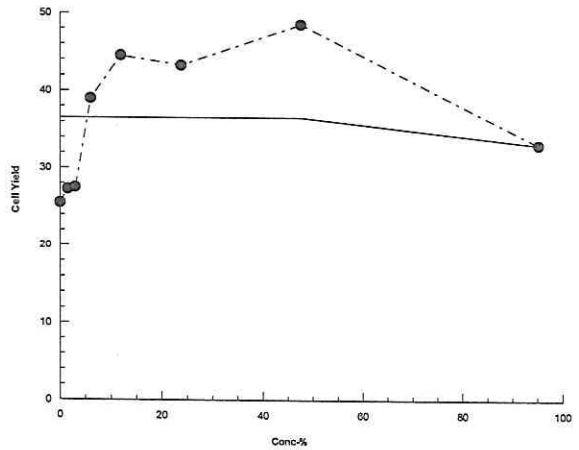
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	25	25	28	24	23	24	26	29
1.5		33	23	30	23				
3		23	33	25	29				
6		44	33	34	45				
11.9		42	41	47	48				
23.8		47	38	44	44				
47.6		45	49	54	46				
95.2		35	30	31	36				

Analyst: SKK QA: JGH Sep. 9/21

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	20-3170-4946	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv1.9.4
Analyzed:	31 Aug-21 16:19	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



APPENDIX D – Analytical Chemistry

Your P.O. #: 3104707597
Your Project #: TIE TEST
Your C.O.C. #: W39266

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2021/09/03
Report #: R3067490
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C157522
Received: 2021/07/28, 16:42

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acidity pH 4.5 & pH 8.3 (as CaCO3)	1	N/A	2021/08/27	AB SOP-00005	SM 23 2310 B m
Alkalinity - Low Level	1	N/A	2021/08/29	AB SOP-00005	SM 23 2320 B m
Low level chloride/sulphate by AC	1	N/A	2021/08/26	AB SOP-00020	SM23-4500-Cl/SO4-E m
Carbon (DOC) Lab filtered (1)	1	N/A	2021/08/27	AB SOP-00087	MMCW 119 1996 m
Conductance - Low Level	1	N/A	2021/08/27	AB SOP-00005	SM 23 2510 B m
CCME Hydrocarbons (F2-F4 in water) (2)	1	2021/08/26	2021/08/27	AB SOP-00037	CCME PHC-CWS m
Fluoride - Low Level	1	N/A	2021/08/27	AB SOP-00005	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (3)	1	N/A	2021/09/01	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2021/08/27	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CV-Lab Filtered	1	2021/08/27	2021/08/27	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV	1	2021/08/27	2021/08/27	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2021/08/27	BBY WI-00033	Auto Calc
Elements by ICPMS Low Level (dissolved) (4)	1	N/A	2021/08/27	CAL SOP-00265	EPA 6020 m
Elements by ICPMS Digested LL (total)	1	2021/08/27	2021/08/31	CAL SOP-00265	EPA 6020 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2021/09/01	BBY WI-00033	Auto Calc
Ammonia-N Dissolved, LL (Unfiltered) (5)	1	N/A	2021/08/27	AB SOP-00007	SM 23 4500 NH3 A G m
Ammonia-N Low Level (Preserved)	1	N/A	2021/08/27	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate + Nitrite-N (calculated) Low Lev	1	N/A	2021/08/27		Auto Calc
Nitrogen (Nitrite - Nitrate) Low Level	1	N/A	2021/08/27	AB SOP-00023	SM 23 4110 B m
pH @25°C (6)	1	N/A	2021/08/29	AB SOP-00005	SM 23 4500-H+B m
Orthophosphate by Konelab (low level) (7)	1	N/A	2021/08/26	AB SOP-00025	SM 23 4500-P A, F m
Total Hydrocarbons C6-C50 in Water (8)	1	N/A	2021/08/27		Auto Calc
Total Dissolved Solids (Calculated)	1	N/A	2021/08/27	CAL WI-00053	Auto Calc
Total Dissolved Solids - Low Level	1	2021/08/26	2021/08/26	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Dissolved) (9)	1	N/A	2021/08/27		Auto Calc
Total Kjeldahl Nitrogen (Total)	1	N/A	2021/08/27	BBY WI-00033	Auto Calc
Nitrogen (Dissolved)	1	2021/08/27	2021/08/27	AB SOP-00093	SM 23 4500-N C m
Nitrogen (Total)	1	2021/08/27	2021/08/27	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (10)	1	N/A	2021/08/27	AB SOP-00087	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - UF/UP (11)	1	2021/08/27	2021/08/27	AB SOP-00024	SM 23 4500-P A,B,F m
Total Phosphorus - Low Level	1	2021/08/27	2021/08/27	AB SOP-00024	SM 23 4500-P A,B,F m

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your P.O. #: 3104707597
Your Project #: TIE TEST
Your C.O.C. #: W39266

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2021/09/03
Report #: R3067490
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C157522
Received: 2021/07/28, 16:42

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Suspended Solids (NFR)	1	2021/08/26	2021/08/26	AB SOP-00061	SM 23 2540 D m
Turbidity	1	N/A	2021/08/27	CAL SOP-00081	SM 23 2130 B m
Volatile HC-BTEX	1	2021/08/25	2021/08/27		Auto Calc
BTEX/MTBE/Styrene/VPH in Water GC/MS/FID	1	2021/08/27	2021/08/27	CAL SOP-00240	BC MELP VH 2017

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(2) Silica gel clean up employed.
(3) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) Dissolved Ammonia > Total Ammonia Imbalance: When applicable, Dissolved Ammonia and Total Ammonia results were reviewed and data quality meets acceptable levels unless otherwise noted.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your P.O. #: 3104707597
Your Project #: TIE TEST
Your C.O.C. #: W39266

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2021/09/03
Report #: R3067490
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C157522
Received: 2021/07/28, 16:42

reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.
(7) Orthophosphate > Total Phosphorus Imbalance: When applicable, Orthophosphate, Total Phosphorus and dissolved Phosphorus results were reviewed and data quality meets acceptable levels unless otherwise noted.
(8) Total Hydrocarbons C6-C50 calculated as a sum of CCME PHC fractions 1-4.
(9) Dissolved TKN > Total TKN Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(10) TOC present in the sample should be considered as non-purgeable TOC.
(11) Dissolved Phosphorus > Total Phosphorus Imbalance: When applicable, Dissolved Phosphorus and Total Phosphorus results were reviewed and data quality meets acceptable levels unless otherwise noted.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Rhecie Phayouphone, Key Account Specialist
Email: Rhecie.Phayouphone@bureauveritas.com
Phone# (403)735-2283
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Calculated Parameters				
Dissolved Hardness (CaCO3)	mg/L	230	0.50	A330826
Total Hardness (CaCO3)	mg/L	244	0.50	A330824
Nitrate plus Nitrite (N)	mg/L	20	0.010	A331270
Calculated Total Dissolved Solids	mg/L	810	0.50	A331476
Dissolved Total Kjeldahl Nitrogen (Calc)	mg/L	<1.0	1.0	A331468
Total Total Kjeldahl Nitrogen (Calc)	mg/L	<0.20	0.20	A330978
Misc. Inorganics				
Fluoride (F)	mg/L	0.185	0.010	A332821
Dissolved Organic Carbon (C)	mg/L	2.4 (1)	0.20	A333910
pH	pH	6.77	N/A	A335316
Acidity (pH 4.5)	mg/L	<1.0	1.0	A333667
Alkalinity (Total as CaCO3)	mg/L	52.9	0.50	A335315
Total Organic Carbon (C)	mg/L	2.7	0.20	A332791
Acidity (pH 8.3)	mg/L	<1.0	1.0	A333667
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	A335315
Bicarbonate (HCO3)	mg/L	64.5	0.50	A335315
Carbonate (CO3)	mg/L	<0.50	0.50	A335315
Hydroxide (OH)	mg/L	<0.50	0.50	A335315
Total Suspended Solids	mg/L	4.1	1.0	A332177
Anions				
Orthophosphate (P)	mg/L	<0.0010	0.0010	A332761
Dissolved Chloride (Cl)	mg/L	130	0.50	A332520
Dissolved Sulphate (SO4)	mg/L	310	2.5	A332520
Nutrients				
Total Ammonia (N)	mg/L	0.56	0.0050	A333935
Dissolved Nitrite (N)	mg/L	1.7	0.0010	A333162
Dissolved Phosphorus (P)	mg/L	<0.0020 (1)	0.0020	A333601
Total Phosphorus (P)	mg/L	<0.0020	0.0020	A333600
Dissolved Nitrate (N)	mg/L	19	0.010	A333162
Dissolved Nitrogen (N)	mg/L	20	1.0	A333547
Total Nitrogen (N)	mg/L	20	0.20	A333539

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample filtered and preserved past method specified hold time

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Lab Filtered Nutrients				
Dissolved Ammonia (N)	mg/L	0.57 (1)	0.0050	A333938
Physical Properties				
Conductivity	uS/cm	1360	1.0	A332815
Physical Properties				
Turbidity	NTU	1.8	0.10	A333962
Total Dissolved Solids	mg/L	865	1.0	A333179

RDL = Reportable Detection Limit
(1) Sample filtered and preserved past method specified hold time

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
C6-C50 Hydrocarbons	mg/L	<0.25	0.25	A331023
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A328986
F3 (C16-C34 Hydrocarbons)	mg/L	<0.10	0.10	A328986
F4 (C34-C50 Hydrocarbons)	mg/L	<0.20	0.20	A328986
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	101		A328986
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

MERCURY BY COLD VAPOR (WATER)

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Elements				
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A334116
Lab Filtered Elements				
Dissolved Mercury (Hg)	ug/L	<0.0019	0.0019	A334114
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	13.8	0.20	A334340
Dissolved Antimony (Sb)	ug/L	5.25	0.020	A334340
Dissolved Arsenic (As)	ug/L	2.51	0.020	A340596
Dissolved Barium (Ba)	ug/L	82.4	0.020	A340596
Dissolved Beryllium (Be)	ug/L	0.015	0.010	A334340
Dissolved Bismuth (Bi)	ug/L	<0.0050	0.0050	A334340
Dissolved Boron (B)	ug/L	84.1	5.0	A340596
Dissolved Cadmium (Cd)	ug/L	<0.0050	0.0050	A334340
Dissolved Chromium (Cr)	ug/L	0.091	0.050	A334340
Dissolved Cobalt (Co)	ug/L	0.913	0.0050	A334340
Dissolved Copper (Cu)	ug/L	0.910	0.050	A334340
Dissolved Iron (Fe)	ug/L	3.7	1.0	A334340
Dissolved Lead (Pb)	ug/L	0.0159	0.0050	A334340
Dissolved Lithium (Li)	ug/L	15.1	0.50	A334340
Dissolved Manganese (Mn)	ug/L	23.4	0.050	A334340
Dissolved Molybdenum (Mo)	ug/L	232	0.050	A334340
Dissolved Nickel (Ni)	ug/L	14.7	0.020	A334340
Dissolved Selenium (Se)	ug/L	0.895	0.040	A334340
Dissolved Silicon (Si)	ug/L	429	50	A334340
Dissolved Silver (Ag)	ug/L	<0.0050	0.0050	A334340
Dissolved Strontium (Sr)	ug/L	713	0.050	A340596
Dissolved Thallium (Tl)	ug/L	0.0536	0.0020	A340596
Dissolved Tin (Sn)	ug/L	<0.010	0.010	A334340
Dissolved Titanium (Ti)	ug/L	<0.50	0.50	A334340
Dissolved Uranium (U)	ug/L	25.2	0.0020	A340596
Dissolved Vanadium (V)	ug/L	0.768	0.050	A334340
Dissolved Zinc (Zn)	ug/L	<0.10	0.10	A334340
Dissolved Zirconium (Zr)	ug/L	<0.050	0.050	A334340
Dissolved Calcium (Ca)	mg/L	32.8	0.010	A331463
Dissolved Magnesium (Mg)	mg/L	33.4	0.0050	A331463
Dissolved Potassium (K)	mg/L	90.2	0.010	A331463
Dissolved Sodium (Na)	mg/L	93.4	0.010	A331463
Dissolved Sulphur (S)	mg/L	95.4	0.50	A331463
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Total Metals by ICPMS				
Total Aluminum (Al)	ug/L	40.8	3.0	A334611
Total Antimony (Sb)	ug/L	4.26	0.020	A334611
Total Arsenic (As)	ug/L	2.81	0.020	A339957
Total Barium (Ba)	ug/L	88.5	0.050	A339957
Total Beryllium (Be)	ug/L	0.010	0.010	A334611
Total Bismuth (Bi)	ug/L	0.011	0.010	A334611
Total Boron (B)	ug/L	84	10	A339957
Total Cadmium (Cd)	ug/L	<0.0050	0.0050	A334611
Total Chromium (Cr)	ug/L	0.42	0.10	A334611
Total Cobalt (Co)	ug/L	1.07	0.010	A334611
Total Copper (Cu)	ug/L	0.87	0.10	A334611
Total Iron (Fe)	ug/L	43.8	5.0	A334611
Total Lead (Pb)	ug/L	0.065	0.020	A334611
Total Lithium (Li)	ug/L	17.4	0.50	A334611
Total Manganese (Mn)	ug/L	41.2	0.10	A334611
Total Molybdenum (Mo)	ug/L	254	0.050	A334611
Total Nickel (Ni)	ug/L	12.5	0.10	A334611
Total Phosphorus (P)	ug/L	13.9	5.0	A334611
Total Selenium (Se)	ug/L	1.02	0.040	A334611
Total Silicon (Si)	ug/L	704	50	A334611
Total Silver (Ag)	ug/L	<0.010	0.010	A334611
Total Strontium (Sr)	ug/L	692	0.050	A339957
Total Thallium (Tl)	ug/L	0.0619	0.0020	A339957
Total Tin (Sn)	ug/L	<0.20	0.20	A334611
Total Titanium (Ti)	ug/L	4.4	2.0	A334611
Total Uranium (U)	ug/L	27.4	0.0050	A339957
Total Vanadium (V)	ug/L	0.72	0.20	A334611
Total Zinc (Zn)	ug/L	7.5	1.0	A334611
Total Zirconium (Zr)	ug/L	<0.10	0.10	A334611
Total Calcium (Ca)	mg/L	33.5	0.050	A331464
Total Magnesium (Mg)	mg/L	38.9	0.050	A331464
Total Potassium (K)	mg/L	118	0.050	A331464
Total Sodium (Na)	mg/L	121	0.050	A331464
Total Sulphur (S)	mg/L	121	0.60	A331464
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		AEL656		
Sampling Date				
	UNITS	**POND 3**	**RDL**	**QC Batch**
Volatiles				
Xylenes (Total)	ug/L	<0.57	0.57	A331025
VH C6-C10	ug/L	<140	140	A331025
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	A330980
VPH (VH6 to 10 - BTEX)	ug/L	<140	140	A331025
Benzene	ug/L	<0.40	0.40	A330980
Toluene	ug/L	<0.40	0.40	A330980
Ethylbenzene	ug/L	<0.40	0.40	A330980
m & p-Xylene	ug/L	<0.40	0.40	A330980
o-Xylene	ug/L	<0.40	0.40	A330980
Styrene	ug/L	<0.40	0.40	A330980
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	99		A330980
4-Bromofluorobenzene (sur.)	%	102		A330980
D4-1,2-Dichloroethane (sur.)	%	96		A330980
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

GENERAL COMMENTS

Sample AEL656 [POND 3] : Sample was analyzed past method specified hold time for Alkalinity - Low Level. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Conductance - Low Level. Sample was analyzed past method specified hold time for Fluoride - Low Level. Sample was analyzed past method specified hold time for Low level chloride/sulphate by AC. Sample was analyzed past method specified hold time for Total Suspended Solids (NFR). Sample was analyzed past method specified hold time for Orthophosphate by Konelab (low level). Sample was analyzed past method specified hold time for Total Dissolved Solids - Low Level. Sample was analyzed past method specified hold time for Acidity pH 4.5 & pH 8.3 (as CaCO3). Sample was analyzed past method specified hold time for CCME Hydrocarbons (F2-F4 in water). Sample was analyzed past method specified hold time for Ammonia-N Dissolved, LL (Unfiltered). Sample was analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample was analyzed past method specified hold time for Total Phosphorus - Low Level. Sample was analyzed past method specified hold time for BTEX/MTBE/Styrene/VPH in Water GC/MS/FID. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for Nitrogen (Nitrite - Nitrate) Low Level. Sample was analyzed past method specified hold time for Nitrogen (Total). Sample was analyzed past method specified hold time for Mercury (Dissolved) by CV-Lab Filtered. Sample was analyzed past method specified hold time for Mercury (Total) by CV. Sample was analyzed past method specified hold time for Carbon (DOC) Lab filtered. Sample was analyzed past method specified hold time for Carbon (Total Organic). Sample was analyzed past method specified hold time for Nitrogen (Dissolved).

RESULTS OF CHEMICAL ANALYSES OF WATER Comments

Sample AEL656 [POND 3] pH @25°C: Part 02 used, Part 01 was preserved
Sample AEL656 [POND 3] Alkalinity - Low Level: Part 02 used, Part 01 is preserved.

Sample AEL656, Elements by ICPMS Low Level (dissolved): Test repeated.
Sample AEL656, Elements by ICPMS Digested LL (total): Test repeated.

Results relate only to the items tested.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

QUALITY ASSURANCE REPORT

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A328986	O-TERPHENYL (sur.)	2021/08/26			98	60 - 140	99	%				
A330980	1,4-Difluorobenzene (sur.)	2021/08/26	97	70 - 130	96	70 - 130	98	%				
A330980	4-Bromofluorobenzene (sur.)	2021/08/26	100	70 - 130	102	70 - 130	99	%				
A330980	D4-1,2-Dichloroethane (sur.)	2021/08/26	98	70 - 130	99	70 - 130	95	%				
A328986	F2 (C10-C16 Hydrocarbons)	2021/08/26			92	60 - 140	<0.10	mg/L				
A328986	F3 (C16-C34 Hydrocarbons)	2021/08/26			94	60 - 140	<0.10	mg/L				
A328986	F4 (C34-C50 Hydrocarbons)	2021/08/26			98	60 - 140	<0.20	mg/L				
A330980	Benzene	2021/08/26	93	50 - 140	95	60 - 130	<0.40	ug/L	NC	30		
A330980	Ethylbenzene	2021/08/26	100	50 - 140	103	60 - 130	<0.40	ug/L	NC	30		
A330980	m & p-Xylene	2021/08/26	98	50 - 140	100	60 - 130	<0.40	ug/L	NC	30		
A330980	Methyl-tert-butylether (MTBE)	2021/08/26	99	50 - 140	100	60 - 130	<4.0	ug/L	NC	30		
A330980	o-Xylene	2021/08/26	102	50 - 140	105	60 - 130	<0.40	ug/L	NC	30		
A330980	Styrene	2021/08/26	92	50 - 140	95	60 - 130	<0.40	ug/L	NC	40		
A330980	Toluene	2021/08/26	94	50 - 140	96	60 - 130	<0.40	ug/L	NC	30		
A332177	Total Suspended Solids	2021/08/26	99	80 - 120	94	80 - 120	<1.0	mg/L	NC	20		
A332520	Dissolved Chloride (Cl)	2021/08/26	NC	80 - 120	106	80 - 120	0.86, RDL=0.50 (1)	mg/L	3.1	20		
A332520	Dissolved Sulphate (SO4)	2021/08/26	NC	80 - 120	99	80 - 120	<0.50	mg/L	0.23	20		
A332761	Orthophosphate (P)	2021/08/26	94	80 - 120	107	80 - 120	<0.0010	mg/L	2.3	20		
A332791	Total Organic Carbon (C)	2021/08/27	108	80 - 120	109	80 - 120	<0.20	mg/L	NC	20		
A332815	Conductivity	2021/08/26			100	90 - 110	<1.0	uS/cm	0	20		
A332821	Fluoride (F)	2021/08/26	96	80 - 120	104	80 - 120	<0.010	mg/L	1.9	20		
A333162	Dissolved Nitrate (N)	2021/08/27	NC	80 - 120	101	80 - 120	<0.0020	mg/L	1.2	20		
A333162	Dissolved Nitrite (N)	2021/08/27	99	80 - 120	99	80 - 120	<0.0010	mg/L				
A333179	Total Dissolved Solids	2021/08/26	102	80 - 120	88	80 - 120	<1.0	mg/L	NC	20		
A333539	Total Nitrogen (N)	2021/08/27	NC	80 - 120	109	80 - 120	<0.020	mg/L	0.66	20	101	80 - 120
A333547	Dissolved Nitrogen (N)	2021/08/27	NC	80 - 120	104	80 - 120	<0.020	mg/L	2.9	20	99	80 - 120
A333600	Total Phosphorus (P)	2021/08/27	108	80 - 120	99	80 - 120	<0.0020	mg/L	9.4	20	82	80 - 120
A333601	Dissolved Phosphorus (P)	2021/08/27	99	80 - 120	85	80 - 120	<0.0020	mg/L	7.6	20	84	80 - 120
A333667	Acidity (pH 4.5)	2021/08/27					<1.0	mg/L	NC	20		
A333667	Acidity (pH 8.3)	2021/08/27			101	80 - 120	<1.0	mg/L	3.4	20		

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A333910	Dissolved Organic Carbon (C)	2021/08/27	103	80 - 120	114	80 - 120	<0.20	mg/L	1.4	20		
A333935	Total Ammonia (N)	2021/08/27	85	80 - 120	98	80 - 120	<0.0050	mg/L	2.7	20		
A333938	Dissolved Ammonia (N)	2021/08/27	NC	80 - 120	94	80 - 120	<0.0050	mg/L	0.45	20		
A333962	Turbidity	2021/08/27			103	80 - 120	<0.10	NTU	2.8	20		
A334114	Dissolved Mercury (Hg)	2021/08/27	100	80 - 120	99	80 - 120	<0.0019	ug/L	NC	20		
A334116	Total Mercury (Hg)	2021/08/27	96	80 - 120	100	80 - 120	<0.0019	ug/L	NC	20		
A334340	Dissolved Aluminum (Al)	2021/08/27	103	80 - 120	96	80 - 120	<0.20	ug/L	9.5	20		
A334340	Dissolved Antimony (Sb)	2021/08/27	NC	80 - 120	125 (2)	80 - 120	<0.020	ug/L	8.4	20		
A334340	Dissolved Beryllium (Be)	2021/08/27	107	80 - 120	107	80 - 120	<0.010	ug/L	NC	20		
A334340	Dissolved Bismuth (Bi)	2021/08/27	100	80 - 120	85	80 - 120	<0.0050	ug/L	NC	20		
A334340	Dissolved Cadmium (Cd)	2021/08/27	100	80 - 120	103	80 - 120	<0.0050	ug/L	NC	20		
A334340	Dissolved Chromium (Cr)	2021/08/27	105	80 - 120	104	80 - 120	<0.050	ug/L	11	20		
A334340	Dissolved Cobalt (Co)	2021/08/27	103	80 - 120	101	80 - 120	<0.0050	ug/L	2.6	20		
A334340	Dissolved Copper (Cu)	2021/08/27	96	80 - 120	94	80 - 120	<0.050	ug/L	9.2	20		
A334340	Dissolved Iron (Fe)	2021/08/27	118	80 - 120	114	80 - 120	<1.0	ug/L	8.6	20		
A334340	Dissolved Lead (Pb)	2021/08/27	104	80 - 120	100	80 - 120	<0.0050	ug/L	NC	20		
A334340	Dissolved Lithium (Li)	2021/08/27	105	80 - 120	100	80 - 120	<0.50	ug/L	1.5	20		
A334340	Dissolved Manganese (Mn)	2021/08/27	104	80 - 120	104	80 - 120	<0.050	ug/L	0.26	20		
A334340	Dissolved Molybdenum (Mo)	2021/08/27	NC	80 - 120	102	80 - 120	<0.050	ug/L	1.4	20		
A334340	Dissolved Nickel (Ni)	2021/08/27	101	80 - 120	101	80 - 120	<0.020	ug/L	4.2	20		
A334340	Dissolved Selenium (Se)	2021/08/27	107	80 - 120	103	80 - 120	<0.040	ug/L	1.5	20		
A334340	Dissolved Silicon (Si)	2021/08/27	84	80 - 120	74 (2)	80 - 120	<50	ug/L	3.0	20		
A334340	Dissolved Silver (Ag)	2021/08/27	94	80 - 120	91	80 - 120	<0.0050	ug/L	NC	20		
A334340	Dissolved Tin (Sn)	2021/08/27	110	80 - 120	101	80 - 120	<0.010	ug/L	NC	20		
A334340	Dissolved Titanium (Ti)	2021/08/27	106	80 - 120	109	80 - 120	<0.50	ug/L	NC	20		
A334340	Dissolved Vanadium (V)	2021/08/27	108	80 - 120	102	80 - 120	<0.050	ug/L	8.7	20		
A334340	Dissolved Zinc (Zn)	2021/08/27	113	80 - 120	124 (2)	80 - 120	<0.10	ug/L	NC	20		
A334340	Dissolved Zirconium (Zr)	2021/08/27	107	80 - 120	115	80 - 120	<0.050	ug/L	NC	20		
A334611	Total Aluminum (Al)	2021/08/31	100	80 - 120	106	80 - 120	<3.0	ug/L	1.6	20		
A334611	Total Antimony (Sb)	2021/08/31	95	80 - 120	96	80 - 120	<0.020	ug/L	2.1	20		
A334611	Total Beryllium (Be)	2021/08/31	103	80 - 120	107	80 - 120	<0.010	ug/L	5.0	20		

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A334611	Total Bismuth (Bi)	2021/08/31	100	80 - 120	102	80 - 120	<0.010	ug/L	NC	20		
A334611	Total Cadmium (Cd)	2021/08/31	94	80 - 120	98	80 - 120	<0.0050	ug/L	NC	20		
A334611	Total Chromium (Cr)	2021/08/31	101	80 - 120	104	80 - 120	<0.10	ug/L	1.8	20		
A334611	Total Cobalt (Co)	2021/08/31	99	80 - 120	103	80 - 120	<0.010	ug/L	6.2	20		
A334611	Total Copper (Cu)	2021/08/31	97	80 - 120	103	80 - 120	<0.10	ug/L	5.6	20		
A334611	Total Iron (Fe)	2021/08/31	95	80 - 120	105	80 - 120	<5.0	ug/L	3.0	20		
A334611	Total Lead (Pb)	2021/08/31	99	80 - 120	100	80 - 120	<0.020	ug/L	0.35	20		
A334611	Total Lithium (Li)	2021/08/31	100	80 - 120	106	80 - 120	<0.50	ug/L	0.72	20		
A334611	Total Manganese (Mn)	2021/08/31	103	80 - 120	103	80 - 120	<0.10	ug/L	4.5	20		
A334611	Total Molybdenum (Mo)	2021/08/31	NC	80 - 120	105	80 - 120	<0.050	ug/L	1.1	20		
A334611	Total Nickel (Ni)	2021/08/31	101	80 - 120	105	80 - 120	<0.10	ug/L	6.7	20		
A334611	Total Phosphorus (P)	2021/08/31	106	80 - 120	102	80 - 120	<5.0	ug/L	8.5	20		
A334611	Total Selenium (Se)	2021/08/31	96	80 - 120	101	80 - 120	<0.040	ug/L	9.2	20		
A334611	Total Silicon (Si)	2021/08/31	74 (2)	80 - 120	73 (2)	80 - 120	<50	ug/L	15	20		
A334611	Total Silver (Ag)	2021/08/31	94	80 - 120	99	80 - 120	<0.010	ug/L	0.33	20		
A334611	Total Tin (Sn)	2021/08/31	100	80 - 120	100	80 - 120	<0.20	ug/L	NC	20		
A334611	Total Titanium (Ti)	2021/08/31	108	80 - 120	111	80 - 120	<2.0	ug/L	18	20		
A334611	Total Vanadium (V)	2021/08/31	104	80 - 120	104	80 - 120	<0.20	ug/L	6.7	20		
A334611	Total Zinc (Zn)	2021/08/31	96	80 - 120	118	80 - 120	<1.0	ug/L	NC	20		
A334611	Total Zirconium (Zr)	2021/08/31	109	80 - 120	104	80 - 120	<0.10	ug/L	NC	20		
A335315	Alkalinity (PP as CaCO3)	2021/08/29					<0.50	mg/L	NC	20		
A335315	Alkalinity (Total as CaCO3)	2021/08/29			97	80 - 120	<0.50	mg/L	1.1	20		
A335315	Bicarbonate (HCO3)	2021/08/29					<0.50	mg/L	1.1	20		
A335315	Carbonate (CO3)	2021/08/29					<0.50	mg/L	NC	20		
A335315	Hydroxide (OH)	2021/08/29					<0.50	mg/L	NC	20		
A335316	pH	2021/08/29			99	97 - 103			0.24	N/A		
A339957	Total Arsenic (As)	2021/09/03	92	80 - 120	91	80 - 120	<0.020	ug/L				
A339957	Total Barium (Ba)	2021/09/03	86	80 - 120	95	80 - 120	<0.050	ug/L				
A339957	Total Boron (B)	2021/09/03	NC	80 - 120	97	80 - 120	<10	ug/L				
A339957	Total Strontium (Sr)	2021/09/02	NC	80 - 120	102	80 - 120	<0.050	ug/L	4.4	20		
A339957	Total Thallium (Tl)	2021/09/03	91	80 - 120	95	80 - 120	<0.0020	ug/L				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A339957	Total Uranium (U)	2021/09/03	95	80 - 120	96	80 - 120	<0.0050	ug/L				
A340596	Dissolved Arsenic (As)	2021/09/03			95	80 - 120	<0.020	ug/L				
A340596	Dissolved Barium (Ba)	2021/09/03			94	80 - 120	<0.020	ug/L				
A340596	Dissolved Boron (B)	2021/09/03			104	80 - 120	<5.0	ug/L				
A340596	Dissolved Strontium (Sr)	2021/09/03			108	80 - 120	<0.050	ug/L				
A340596	Dissolved Thallium (Tl)	2021/09/03			93	80 - 120	<0.0020	ug/L				
A340596	Dissolved Uranium (U)	2021/09/03			93	80 - 120	<0.0020	ug/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Method blank is <2x RDL.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: C157522
Report Date: 2021/09/03

DIAVIK DIAMOND MINES INC.
Client Project #: TIE TEST
Your P.O. #: 3104707597
Sampler Initials: .

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Gita Pokhrel, Laboratory Supervisor

Janet Gao, B.Sc., QP, Supervisor, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

APPENDIX E – Chain-of-Custody Form

TESTING LOCATION (Please Circle)

NAUTILUS ENVIRONMENTAL

Burnaby
8664 Commerce Court
Burnaby, British Columbia, Canada
V5A 4N7
Phone 604.420.8773

Calgary
#4, 6125 12 Street SE
Calgary, Alberta, Canada
T2H 2K1
Phone 403.253.7121

Chain of Custody

Date_____Page__of__

Report to:
Company: B.V.
Address:
City/Prov/PC:
Contact:
Phone:
Email:

Invoice To:
Company:
Address:
City/Prov/PC:
Contact:
Phone:
Email:
PO No.:

Sample Collection By:

Sample Type: Grab ◯ OR Composite ◯

ANALYSES REQUIRED

	SAMPLE ID	DATE (DD/MM/YY)	TIME	MATRIX	# OF CONTAINERS AND VOLUME (e.g. 1 x 20 L)	COMMENTS	48h D.magna	72h P.sub	7-d C.dubia	TIE							Receipt Temperature (°C)
1	Pond 3	July 26/21			6x10L												0.5-1.9
2																	
3																	
4																	
5							211460	211461	211462	211463							
6																	
7																	
8																	
9																	
10																	

SPECIAL INSTRUCTIONS/COMMENTS (CLIENT)

See Study Plan for TIE (Diavik)

SAMPLE RECEIPT DETAILS (LABORATORY)

1. Total No. of Containers	6	4. Ice Present in Cooler?	Y / N
2. Courier	None	5. Seal Present?	Y / N
3. Good Condition?	Y / N	6. Initials Present on Seal?	Y / N

SAMPLE DESCRIPTION AND COMMENTS (LABORATORY)

RELINQUISHED BY (CLIENT)

(Printed Name) (Signature)

(Company) (Date DD/MM/YY and Time)

RECEIVED BY (LABORATORY)

TH (Printed Name) Tyrone (Signature)

Nautilus (Company) July 29/21 @ 9:43 (Date DD/MM/YY and Time)

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling, or transport of the sample, application or interpretation of the test data or results in part or in whole.

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.

Form 020; Version 1.2; Revised by CC 2016/10/06

END OF REPORT

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C249768

Client Project Name & Number: Closure — Sample Number: AXA265-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND 7 — Sample Matrix : Water

Description: PALE YELLOW, CLEAR — Sample Prior to Analysis:

Sample Collected: Jul 11, 2022 10:10 AM — Sampling Method : N/A — pH: 7.7

Sample Collected By: BD — Site Collection: N/A — Temperature : 19 °C

Sample Received: Jul 12, 2022 11:01 AM — Volume Received: 1 L — Dissolved Oxygen: 9.1 mg/L

Analysis Start : Jul 12, 2022 03:19 PM — Avg Temp Arrival: 16 °C — Sample Conductance: 217 µS/cm

End : Jul 14, 2022 02:19 PM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.8	418	8.1	0	0	0	0	21	8.0	452	8.0
6.25	20	7.8	408	8.2	0	0	0	0	21	8.0	436	7.9
12.5	20	7.8	397	8.3	0	0	0	0	21	8.0	434	8.1
25	20	7.8	371	8.3	0	0	0	0	21	7.9	406	7.9
50	20	7.7	327	8.4	0	0	0	0	21	7.8	359	7.9
100	21	7.0	224	8.5	0	0	0	0	21	7.4	246	7.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C249768
Client Project Name & Number:		Closure	Sample Number:	AXA265-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 01, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.19 (4.60, 8.31) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Jul 22, 2022 09:01 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN302-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 3.333

Sample Name : Pond 13 — Sample Matrix : Grab Water

Description: YELLOW, CLEAR — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 10:50 AM — Sampling Method : N/A — pH: 7.0

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 71.0 %

Analysis Start : Jul 20, 2022 10:14 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 662 µS/cm

End : Jul 22, 2022 09:18 AM — Storage: 2-6°C — Hardness: 240 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	389	8.3	0	0	0	0	21	7.8	405	7.5
0	20	8.1	392	8.2	0	0	0	0	21	8.0	409	7.5
0	20	7.9	392	8.2	0	0	0	0	21	8.0	417	7.6
100	19	6.9	645	5.8	0	0	0	0	21	8.0	666	7.5
100	19	7.1	647	5.8	0	0	0	0	21	8.1	668	7.6
100	19	6.8	645	5.6	0	0	0	0	21	8.2	675	7.3

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	1	10.0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Indigenous organisms and daphnia present in sample. The daphnia were removed from sample via pipette prior to test initiation.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 0 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.2

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN302-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:26 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN301-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 12 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 09:51 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 112.0 %

Analysis Start : Jul 21, 2022 11:00 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 379 µS/cm

End : Jul 23, 2022 10:29 AM — Storage: 2-6°C — Hardness: 140 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	19	7.8	362	8.4	0	0	0	0	21	8.0	379	7.8
0	19	7.8	363	8.3	0	0	0	0	21	7.9	380	7.9
0	19	7.8	364	8.4	0	0	0	0	20	8.0	384	8.0
100	20	7.2	395	9.0	0	0	0	0	21	7.5	404	7.7
100	20	7.3	396	9.0	0	0	0	0	21	7.6	403	7.7
100	20	7.3	397	9.0	0	0	0	0	21	7.6	404	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 200 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN301-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kaylie Lyons, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:25 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN297-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 5 — Sample Matrix : Grab Water

Description: PALE YELLOW WITH DEBRIS — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 11:08 AM — Sampling Method : N/A — pH: 8.3

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 118.0 %

Analysis Start : Jul 20, 2022 09:53 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 782 µS/cm

End : Jul 22, 2022 09:07 AM — Storage: 2-6°C — Hardness: 340 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	390	8.2	0	0	0	0	21	7.9	405	7.6
0	20	8.0	391	8.2	0	0	0	0	21	8.0	408	7.5
0	20	8.1	391	8.2	0	0	0	0	21	8.1	411	7.7
100	18	8.4	761	9.6	0	0	0	0	21	8.1	818	7.6
100	18	8.3	761	9.7	0	0	0	0	21	8.2	816	7.5
100	18	8.3	761	9.7	0	0	0	0	21	8.2	824	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 34.6

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.3

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN297-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:24 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN296-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 4 — Sample Matrix : Grab Water

Description: CLEAR, COLOURLESS — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 10:55 AM — Sampling Method : N/A — pH: 7.6

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 120.0 %

Analysis Start : Jul 20, 2022 09:52 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 1438 µS/cm

End : Jul 22, 2022 09:00 AM — Storage: 2-6°C — Hardness: 340 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	392	8.1	0	0	0	0	21	8.1	407	7.5
0	20	8.1	393	8.2	0	0	0	0	21	8.1	409	7.5
0	20	7.9	393	8.2	0	0	0	0	21	8.2	409	7.5
100	18	7.8	1390	9.4	0	0	0	0	21	7.9	1467	7.3
100	18	7.6	1395	9.4	0	0	0	0	21	7.9	1460	7.6
100	18	7.7	1395	9.4	0	0	0	0	21	8.0	1449	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 35.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN296-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:23 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN295-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 3 — Sample Matrix : Grab Water

Description: Clear, colourless with debris — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 10:28 AM — Sampling Method : N/A — pH: 7.4

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 111.0 %

Analysis Start : Jul 20, 2022 09:38 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 1317 µS/cm

End : Jul 22, 2022 08:41 AM — Storage: 2-6°C — Hardness: 380 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	390	8.3	0	0	0	0	20	8.0	413	7.9
0	20	8.0	392	8.3	0	0	0	0	21	7.9	406	7.5
0	20	8.3	392	8.2	0	0	0	0	21	8.0	408	7.7
100	20	7.4	1311	9.1	0	0	0	0	21	7.6	1342	7.6
100	20	7.5	1327	9.1	0	0	0	0	21	7.6	1356	7.6
100	20	7.5	1325	9.1	0	0	0	0	21	7.6	1404	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 35.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN295-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:21 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN300-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 11 — Sample Matrix : Grab Water

Description: Pale yellow clear with debris — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 11:25 AM — Sampling Method : N/A — pH: 7.6

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 110.0 %

Analysis Start : Jul 21, 2022 10:56 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 371 µS/cm

End : Jul 23, 2022 10:27 AM — Storage: 2-6°C — Hardness: 200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	19	7.7	362	8.4	0	0	0	0	21	7.9	378	7.7
0	19	7.7	363	8.4	0	0	0	0	21	7.9	382	7.8
0	19	7.8	364	8.5	0	0	0	0	21	8.0	378	7.7
100	20	7.5	424	8.6	0	0	0	0	21	8.0	430	7.7
100	20	7.8	425	8.7	0	0	0	0	21	8.0	431	7.6
100	20	7.7	426	8.7	0	0	0	0	21	8.1	441	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 200 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN300-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kaylie Lyons, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:20 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN299-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 10 — Sample Matrix : Grab Water

Description: GREY, HAZY — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 11:17 AM — Sampling Method : N/A — pH: 8.5

Sample Collected By: JH — Site Collection: N/A — Temperature : 21 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 102.0 %

Analysis Start : Jul 20, 2022 10:05 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 664 µS/cm

End : Jul 22, 2022 09:10 AM — Storage: 2-6°C — Hardness: 280 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	390	8.2	0	0	0	0	21	7.8	402	7.6
0	20	8.0	392	8.2	0	0	0	0	21	8.0	407	7.5
0	20	8.1	392	8.2	0	0	0	0	21	8.0	411	7.5
100	19	8.6	795	8.6	0	0	0	0	21	8.4	838	7.2
100	19	8.5	798	8.6	0	0	0	0	21	8.5	841	7.2
100	19	8.5	798	8.6	0	0	0	0	21	8.5	835	7.3

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.2

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN299-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration :	0,1.71,2.56,3.82,5.7,8.5 g/L

Test Method EPS 1/RM/14

Method Deviations: None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:19 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN298-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 7 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 09:25 AM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JH — Site Collection: N/A — Temperature : 21 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 107.0 %

Analysis Start : Jul 20, 2022 09:59 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 231 µS/cm

End : Jul 22, 2022 09:15 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	390	8.1	0	0	0	0	21	7.9	406	7.5
0	20	8.1	393	8.2	0	0	0	0	21	8.0	415	7.4
0	20	8.1	392	8.2	0	0	0	0	21	8.1	409	7.5
100	19	6.7	237	9.0	0	0	0	0	21	7.4	260	7.3
100	19	6.7	235	9.1	0	0	0	0	21	7.3	260	7.4
100	19	6.8	235	9.0	0	0	0	0	21	7.3	255	7.4

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.2

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN298-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:18 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN294-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 2 — Sample Matrix : Grab Water

Description: YELLOW, CLEAR WITH DEBRIS — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 10:36 AM — Sampling Method : N/A — pH: 7.0

Sample Collected By: JH — Site Collection: N/A — Temperature : 21 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 109.0 %

Analysis Start : Jul 20, 2022 09:26 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 206 µS/cm

End : Jul 22, 2022 08:36 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	389	8.2	0	0	0	0	21	8.0	411	7.5
0	20	8.0	393	8.2	0	0	0	0	21	8.0	415	7.7
0	20	7.9	393	8.2	0	0	0	0	21	8.1	409	7.6
100	20	7.1	209	8.7	0	0	0	0	21	7.6	223	7.6
100	20	7.0	206	8.9	0	0	0	0	21	7.6	221	7.3
100	20	7.0	206	8.7	0	0	0	0	21	7.6	220	7.4

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Daphnia present in sample and removed via pipette prior to test initiation.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN294-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 26, 2022 09:17 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN293-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : Pond 1 — Sample Matrix : Grab Water

Description: Pale Yellow with debris — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 11:00 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 108.0 %

Analysis Start : Jul 20, 2022 09:29 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 585 µS/cm

End : Jul 22, 2022 08:32 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	390	8.2	0	0	0	0	21	8.0	411	7.5
0	20	8.0	393	8.3	0	0	0	0	21	8.0	407	7.5
0	20	8.1	393	8.3	0	0	0	0	21	8.2	414	7.6
100	20	7.3	613	8.8	0	0	0	0	21	8.0	631	7.5
100	20	7.3	615	8.9	0	0	0	0	21	8.0	641	7.2
100	20	7.4	619	8.9	0	0	0	0	21	8.0	643	7.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Daphnia present in sample and removed via pipette prior to test initiation.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN293-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 25, 2022 04:23 PM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C251925

Client Project Name & Number: Closure — Sample Number: AXN292-01

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : E21 — Sample Matrix : Grab Water

Description: CLEAR, COLOURLESS — Sample Prior to Analysis:

Sample Collected: Jul 18, 2022 09:40 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JH — Site Collection: N/A — Temperature : 20 °C

Sample Received: Jul 19, 2022 11:33 AM — Volume Received: 1 L — Dissolved Oxygen: 103.0 %

Analysis Start : Jul 20, 2022 09:34 AM — Avg Temp Arrival: 10 °C — Sample Conductance: 232 µS/cm

End : Jul 22, 2022 09:48 AM — Storage: 2-6°C — Hardness: 240 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	390	8.2	0	0	0	0	21	7.9	407	7.6
0	20	8.0	391	8.2	0	0	0	0	21	8.0	407	7.6
0	20	8.1	392	8.2	0	0	0	0	21	8.2	413	7.7
100	20	7.2	234	8.7	0	0	0	0	21	7.5	252	7.5
100	20	7.2	233	8.7	0	0	0	0	21	7.6	250	7.6
100	20	7.2	232	8.8	0	0	0	0	21	7.7	249	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : Indigenous organisms present in sample.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 35.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C251925
Client Project Name & Number:		Closure	Sample Number:	AXN292-01

Reference chemical:	Sodium Chloride	Test Date:	Jul 13, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.05 (4.57, 5.59)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.16 (4.60, 8.26) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kruti Patel , Kyle Monaghan, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Jul 25, 2022 04:20 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE332-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 1 — Sample Matrix : Grab Water

Description: Hazy, pale yellow — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 10:50 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: N/A — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 107.0 %

Analysis Start : Aug 24, 2022 10:30 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 1033 µS/cm

End : Aug 26, 2022 10:02 AM — Storage: 2-6°C — Hardness: 320 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	332	8.3	0	0	1	10	21	7.9	331	7.7
6.25	20	7.8	379	8.4	0	0	0	0	21	8.0	371	7.6
12.5	20	7.9	423	8.4	0	0	0	0	21	8.0	416	7.7
25	20	7.8	519	8.4	0	0	0	0	21	8.0	512	7.8
50	20	7.6	717	8.6	0	0	0	0	21	7.9	700	7.6
100	20	7.2	1055	9.0	0	0	0	0	21	7.8	1028	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	1	10
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.6

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.6

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE332-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kaylie Lyons, Kruti Patel , Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:16 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE333-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 2 — Sample Matrix : Grab Water

Description: CLEAR, YELLOW — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 10:00 AM — Sampling Method : N/A — pH: 7.0

Sample Collected By: N/A — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 98.0 %

Analysis Start : Aug 24, 2022 10:33 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 255 µS/cm

End : Aug 26, 2022 10:02 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	331	8.3	0	0	0	0	21	8.0	326	7.7
6.25	20	7.8	329	8.3	0	0	0	0	21	8.0	328	7.7
12.5	20	7.9	325	8.3	0	0	0	0	21	8.0	321	7.6
25	20	7.8	317	8.3	0	0	0	0	21	7.9	314	7.6
50	20	7.6	296	8.4	0	0	0	0	21	7.8	294	7.6
100	20	6.9	261	8.4	0	0	0	0	21	7.5	261	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	1	10	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 0 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 32.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.2

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE333-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kaylie Lyons, Kruti Patel

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:19 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE334-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 3 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 09:35 AM — Sampling Method : N/A — pH: 7.7

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 106.0 %

Analysis Start : Aug 24, 2022 10:35 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 1343 µS/cm

End : Aug 26, 2022 10:04 AM — Storage: 2-6°C — Hardness: 380 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	332	8.4	0	0	0	0	21	8.0	334	7.8
6.25	20	8.0	403	8.4	0	0	0	0	21	7.8	397	7.7
12.5	20	8.0	453	8.4	0	0	0	0	21	8.1	448	7.8
25	20	8.0	583	8.5	0	0	0	0	21	8.0	582	7.7
50	20	7.9	880	8.6	0	0	0	0	21	8.0	858	7.7
100	19	7.7	1352	8.9	0	0	0	0	21	7.7	1341	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 32.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.2

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE334-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kaylie Lyons, Kruti Patel

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:20 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE335-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 4 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 09:05 AM — Sampling Method : N/A — pH: 7.7

Sample Collected By: N/A — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 122.0 %

Analysis Start : Aug 24, 2022 10:39 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 1401 µS/cm

End : Aug 26, 2022 10:04 AM — Storage: 2-6°C — Hardness: 300 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	330	8.4	0	0	0	0	21	8.1	332	7.8
6.25	20	8.0	397	8.4	0	0	0	0	21	8.0	390	7.6
12.5	20	8.0	479	8.4	0	0	0	0	21	8.1	472	7.6
25	20	8.0	606	8.5	0	0	0	0	21	8.0	604	7.7
50	20	7.9	882	8.8	0	0	0	0	21	8.0	866	7.5
100	20	7.8	1410	9.5	0	0	0	0	21	7.9	1399	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 36.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 14.3

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE335-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kaylie Lyons, Kruti Patel

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:22 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE336-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 5 — Sample Matrix : Grab Water

Description: Clear, light yellow — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 11:15 AM — Sampling Method : N/A — pH: 7.9

Sample Collected By: N/A — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 111.0 %

Analysis Start : Aug 24, 2022 10:46 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 914 µS/cm

End : Aug 26, 2022 10:05 AM — Storage: 2-6°C — Hardness: 280 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	331	8.4	0	0	0	0	21	8.0	333	7.8
6.25	20	8.0	367	8.4	0	0	0	0	21	8.0	362	7.6
12.5	20	8.0	401	8.4	0	0	0	0	21	8.1	395	7.6
25	20	8.0	489	8.4	0	0	0	0	21	8.1	490	7.7
50	20	8.0	640	8.6	0	0	0	0	21	8.0	628	7.7
100	20	7.9	923	8.9	0	0	0	0	21	8.1	907	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : Daphnia present in sample and removed via pipette prior to test initiation.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 35.1

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE336-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Kaylie Lyons, Kruti Patel

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:25 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C263077

Client Project Name & Number: CLOSURE — Sample Number: BAE337-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond 13 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 22, 2022 10:20 AM — Sampling Method : N/A — pH: 7.4

Sample Collected By: N/A — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 23, 2022 11:41 AM — Volume Received: 1 L — Dissolved Oxygen: 103.0 %

Analysis Start : Aug 24, 2022 11:59 AM — Avg Temp Arrival: 9 °C — Sample Conductance: 522 µS/cm

End : Aug 26, 2022 12:01 PM — Storage: 2-6°C — Hardness: 160 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	330	8.4	0	0	0	0	21	8.0	326	7.7
6.25	20	7.9	342	8.3	0	0	0	0	20	8.0	342	7.9
12.5	20	7.9	354	8.3	0	0	0	0	21	8.0	355	7.9
25	20	7.9	379	8.3	0	0	0	0	21	7.9	371	7.7
50	20	7.7	429	8.4	0	0	0	0	21	8.0	417	7.7
100	20	7.4	526	8.5	0	0	0	0	21	8.0	511	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 35.1

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C263077
Client Project Name & Number:		CLOSURE	Sample Number:	BAE337-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 12, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	4.86 (4.50, 5.24)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.02 (4.45, 8.14) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Kyle Monaghan

Verified By : Cara Shurgot, Analyst 2 Date: Aug 27, 2022 12:27 PM

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C263077-BAE332
Client Sample ID: POND 1
Date sample collected: 8/22/2022
Test Performed By: CT9, CSH, NM9, THR, KLY, KMG
Test Initiation Date: 8/24/2022
Test End Date: 8/30/2022
Dates when subsamples used: 8/24/2022 8/28/2022
8/25/2022 8/29/2022
8/26/2022
8/27/2022

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 7.8
Temperature (°C): 24
pH(pH units): 7.3
Conductivity (µS/cm): 1184

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	100-7
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.22	1.89	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	1.02	1.24	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.30	1.05	1.61			
Reference Toxicant Test Initiation Date:			2022/08/10					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	24
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/25/2022 8/29/2022 8/26/2022 8/27/2022 8/28/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		8		13						0.0%	27	5.9
	2	0		0		0		6		12		16								
	3	0		0		0		7		10		16								
	4	0		0		0		6		11		14								
	5	0		0		0		7		11		12								
	6	0		0		0		7		12		0								
	7	0		0		0		5		11		0								
	8	0		0		0		6		10		14								
	9	0		0		0		5		12		12								
	10	0		0		0		3		12		10								
1.56	1	0		0		0		6		10		12						0.0%	26	7.7
	2	0		0		0		6		12		14								
	3	0		0		0		6		7		0								
	4	0		0		0		6		11		15								
	5	0		0		0		9		13		14								
	6	0		0		0		6		10		10								
	7	0		0		0		6		10		0								
	8	0		0		0		4		6		10								
	9	0		0		0		5		11		17								
	10	0		0		0		4		12		10								
3.13	1	0		0		0		7		12		10						0.0%	27	5.2
	2	0		0		0		5		10		0								
	3	0		0		0		4		12		11								
	4	0		0		0		6		12		13								
	5	0		0		0		5		10		9								
	6	0		0		0		5		13		10								
	7	0		0		0		5		10		9								
	8	0		0		0		5		11		16								
	9	0		0		0		6		10		13								
	10	0		0		0		6		13		14								
6.25	1	0		0		0		6		10		10						0.0%	21	6.8
	2	0		0		0		6		11		6								
	3	0		0		0		5		11		12								
	4	0		0		0		4		8		12								
	5	0		0		0		5		0		5								
	6	0		0		0		6		8		0								
	7	0		0		0		4		7		0								
	8	0		0		0		4		10		13								
	9	0		0		0		5		11		9								
	10	0		0		0		4		7		13								
12.5	1	0		0		0		4		8		10						0.0%	28	4.6
	2	0		0		0		7		14		12								
	3	0		0		0		7		15		15								
	4	0		0		0		6		12		14								
	5	0		0		0		3		11		9								
	6	0		0		0		6		9		11								
	7	0		0		0		5		9		14								
	8	0		0		0		6		12		10								
	9	0		0		0		5		12		11								
	10	0		0		0		6		9		11								
25	1	0		0		0		5		9		0						0.0%	22	7.0
	2	0		0		0		5		10		0								
	3	0		0		0		6		10		12								
	4	0		0		0		5		11		14								
	5	0		0		0		6		12		0								
	6	0		0		0		6		12		12								
	7	0		0		0		5		11		0								
	8	0		0		0		6		10		14								
	9	0		0		0		4		12		0								
	10	0		0		0		6		9		10								
50	1	0		0		0		8		12		12						0.0%	32	4.0
	2	0		0		0		7		11		20								
	3	0		0		0		8		13		16								
	4	0		0		0		8		11		10								
	5	0		0		0		5		11		14								
	6	0		0		0		7		12		10								
	7	0		0		0		6		12		13								
	8	0		0		0		5		15		18								
	9	0		0		0		5		12		16								
	10	0		0		0		6		10		11								
100	1	0		0		0		8		9		13						10.0%	25	10.5
	2	0		0		0		5		7		16								
	3	0		0		0		7		8		15								
	4	0		0		0		6		11		12								
	5	0		0		0		4		14		8								
	6	0		0		0		5		12		0								
	7	0		0		0	X													
	8	0		0		0		4		12		18								
	9	0		0		0		6		13		17								
	10	0		0		0		5		9		6								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/24	24	8.2	7.4	22/08/25	25	7.2	6.7
1.56		24	8.2	7.3		25	7.7	6.7
3.13		24	8.2	7.4		25	7.5	6.7
6.25		24	8.1	7.4		24	7.6	6.7
12.5		24	8.0	7.4		24	8.0	6.9
25		24	7.8	7.5		24	7.6	6.9
50		24	7.5	7.5		24	7.6	6.9
100		24	7.0	7.7		24	7.7	7.0
Control	22/08/25	24	7.8	7.3	22/08/26	25	7.5	6.1
1.56		24	7.7	7.3		26	7.7	6.2
3.13		24	7.7	7.4		25	7.7	6.3
6.25		24	7.9	7.4		25	7.7	6.1
12.5		24	7.7	7.4		26	7.7	6.2
25		24	7.6	7.5		25	7.7	6.2
50		24	7.4	7.6		25	7.6	6.3
100		25	7.1	8.2		24	7.5	6.3
Control	22/08/26	24	7.9	7.2	22/08/27	25	8.0	5.3
1.56		24	8.0	7.3		25	7.9	5.6
3.13		24	8.2	7.3		25	7.9	5.8
6.25		24	8.0	7.3		25	7.9	5.6
12.5		24	8.0	7.4		25	7.8	5.9
25		24	7.7	7.4		25	7.8	6.0
50		24	7.6	7.6		25	7.8	5.9
100		25	7.1	7.8		24	7.5	6.0
Control	22/08/27	24	7.8	7.0	22/08/28	25	7.5	5.9
1.56		24	7.8	7.1		25	7.5	5.8
3.13		24	8.0	7.1		24	7.5	5.9
6.25		24	7.9	7.1		24	7.6	5.9
12.5		24	7.9	7.2		24	7.7	5.6
25		24	7.7	7.3		24	7.8	6.3
50		24	7.4	7.5		24	7.6	6.3
100		24	6.8	7.8		24	7.5	6.2
Control	22/08/28	24	7.9	7.1	22/08/29	25	8.0	6.3
1.56		24	7.9	7.1		25	8.1	6.2
3.13		24	7.9	7.1		24	8.1	6.3
6.25		24	7.9	7.2		24	8.0	6.2
12.5		24	7.9	7.2		24	8.1	6.2
25		24	7.7	7.3		24	7.6	6.4
50		24	7.5	7.5		24	7.9	6.4
100		24	7.1	7.8		24	8.0	6.6
Control	22/08/29	24	7.8	7.2	22/08/30	24	8.3	5.8
1.56		24	8.0	7.3		24	8.0	5.9
3.13		24	8.0	7.3		24	8.1	6.0
6.25		24	8.0	7.3		24	8.0	5.8
12.5		24	7.9	7.3		24	7.9	5.8
25		24	7.8	7.4		24	7.8	5.7
50		24	7.6	7.6		24	7.8	5.8
100		24	7.0	7.8		24	7.6	5.7
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C263077-BAE333
Client Sample ID: POND 2
Date sample collected: 8/22/2022
Test Performed By: CT9, CSH, NM9, KLY, KMG
Test Initiation Date: 8/24/2022
Test End Date: 8/31/2022
Dates when subsamples used: 8/24/2022, 8/25/2022, 8/26/2022, 8/27/2022, 8/28/2022, 8/29/2022, 8/30/2022

Chemistries prior to test:
Dissolved Oxygen(mg/L): 7.5
Temperature (°C): 25
pH(pH units): 7.3
Conductivity (µS/cm): 280

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	100-7
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.22	1.89	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	1.02	1.24	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.30	1.05	1.61			
Reference Toxicant Test Initiation Date:			2022/08/10					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13% concentration analyzed with 9 organisms.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	24
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/25/2022 8/30/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		8		0		10				0.0%	28	3.0
	2	0		0		0		6		7		0		12						
	3	0		0		0		5		9		0		10						
	4	0		0		0		5		11		0		12						
	5	0		0		0		7		12		0		15						
	6	0		0		0		5		10		0		12						
	7	0		0		0		6		10		0		14						
	8	0		0		0		5		9		0		13						
	9	0		0		0		5		10		0		13						
	10	0		0		0		6		9		0		13						
1.56	1	0		0		0		5		11		0		13				0.0%	29	2.5
	2	0		0		0		6		9		0		14						
	3	0		0		0		5		12		0		12						
	4	0		0		0		6		8		0		12						
	5	0		0		0		5		13		0		16						
	6	0		0		0		5		10		0		11						
	7	0		0		0		8		8		0		14						
	8	0		0		0		7		12		0		13						
	9	0		0		0		6		11		0		11						
	10	0		0		0		6		12		0		10						
3.13	1	0		0		0		5		10		0		14				11.1%	25	9.9
	2	0		0		0		6		11		0		9						
	3	N/A		N/A		N/A		N/A		N/A		N/A		N/A						
	4	0		0		0		6		10		0		13						
	5	0		0		0		7		12		0		15						
	6	0		0		0		5		10		0		12						
	7	0		0		0		6		11		0		11						
	8	0		0		0		5		12		0		12						
	9	0		0		0		4		8		0		8						
	10	0		0		0	X													
6.25	1	0		0		0		5		8		0		7				0.0%	30	3.8
	2	0		0		0		7		10		0		13						
	3	0		0		0		7		10		0		14						
	4	0		0		0		6		10		0		14						
	5	0		0		0		7		12		0		14						
	6	0		0		0		7		10		0		12						
	7	0		0		0		8		12		0		13						
	8	0		0		0		6		10		0		13						
	9	0		0		0		7		11		0		15						
	10	0		0		0		6		11		0		13						
12.5	1	0		0		0		5		10		0		16				0.0%	31	3.4
	2	0		0		0		7		13		0		15						
	3	0		0		0		6		10		0		15						
	4	0		0		0		8		10		0		14						
	5	0		0		0		6		10		0		13						
	6	0		0		0		6		10		0		15						
	7	0		0		0		10		9		0		12						
	8	0		0		0		6		9		0		13						
	9	0		0		0		6		13		0		17						
	10	0		0		0		4		10		0		10						
25	1	0		0		0		7		10		0		15				10.0%	25	9.4
	2	0		0		0		4		11		0		13						
	3	0		0		0		0	X											
	4	0		0		0		5		8		0		15						
	5	0		0		0		5		8		0		14						
	6	0		0		0		5		11		0		11						
	7	0		0		0		3		9		0		12						
	8	0		0		0		6		13		0		14						
	9	0		0		0		2		11		0		10						
	10	0		0		0		5		12		0		13						
50	1	0		0		0		5		10		0		17				0.0%	30	4.6
	2	0		0		0		4		9		0		16						
	3	0		0		0		7		17		0		12						
	4	0		0		0		5		10		0		11						
	5	0		0		0		4		11		0		16						
	6	0		0		0		3		8		0		9						
	7	0		0		0		5		11		0		14						
	8	0		0		0		6		9		0		13						
	9	0		0		0		7		11		0		17						
	10	0		0		0		6		9		0		14						
100	1	0		0		0		6		10		0		12				10.0%	26	9.9
	2	0		0		0		6		9		0		10						
	3	0		0		0		6		11		0		14						
	4	0		0		0		8		12		0		16						
	5	0		0		0		4		8		0		12						
	6	0		0		0		7		12		0		15						
	7	0		0		0		0	X											
	8	0		0		0		5		10		0		12						
	9	0		0		0		4		9		0		12						
	10	0		0		0		4		9		0		13						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/24	25	7.9	7.3	22/08/25	26	7.7	6.8
1.56		25	8.0	7.3		26	7.8	6.8
3.13		24	8.0	7.5		26	7.9	6.9
6.25		24	8.1	7.4		26	7.8	7.1
12.5		24	8.1	7.5		26	7.8	6.9
25		24	8.0	7.5		25	7.7	6.9
50		26	7.2	7.3		25	7.6	7.1
100		26	7.2	7.2		25	7.6	7.0
Control	22/08/25	24	7.8	7.3	22/08/26	24	7.6	6.0
1.56		24	7.7	7.3		24	7.7	6.1
3.13		24	7.8	7.3		25	7.8	6.1
6.25		24	7.8	7.3		24	7.7	6.0
12.5		24	7.8	7.3		24	7.6	6.1
25		24	7.7	7.4		24	7.7	5.9
50		24	7.5	7.5		24	7.5	6.0
100		25	7.0	7.7		24	7.3	5.9
Control	22/08/26	24	7.9	7.2	22/08/27	26	8.3	5.0
1.56		24	7.9	7.2		26	8.1	5.4
3.13		24	8.0	7.3		26	8.0	5.6
6.25		24	8.0	7.3		26	7.9	5.6
12.5		24	8.0	7.3		26	7.9	5.6
25		24	7.9	7.4		25	7.7	5.5
50		24	7.7	7.4		25	7.6	5.5
100		24	7.2	7.6		25	7.3	5.5
Control	22/08/27	24	7.9	7.0	22/08/28	24	7.8	5.5
1.56		24	8.0	7.1		25	7.8	5.7
3.13		24	8.0	7.1		24	7.9	5.7
6.25		24	8.0	7.1		24	7.8	5.7
12.5		24	8.0	7.1		24	7.8	5.5
25		24	7.8	7.2		24	7.6	5.6
50		24	7.6	7.4		24	7.5	5.1
100		24	7.2	7.6		24	7.2	5.4
Control	22/08/28	24	8.5	7.1	22/08/29	25	7.7	6.1
1.56		24	8.4	7.2		26	7.7	5.9
3.13		24	8.3	7.2		25	7.6	6.0
6.25		24	8.3	7.2		25	7.7	6.0
12.5		24	8.2	7.2		25	7.8	6.0
25		24	8.1	7.3		25	7.6	5.9
50		24	7.8	7.3		25	7.4	5.9
100		24	7.2	7.5		25	7.3	5.8
Control	22/08/29	24	8.0	7.1	22/08/30	26	8.3	6.1
1.56		24	8.1	7.2		26	8.1	6.1
3.13		24	8.2	7.3		26	8.1	6.2
6.25		24	8.2	7.3		25	7.9	6.2
12.5		24	8.1	7.3		26	7.9	6.2
25		24	8.0	7.4		25	7.8	6.2
50		24	7.7	7.5		25	7.7	6.2
100		24	7.2	7.8		25	7.5	6.0
Control	22/08/30	24	8.5	7.4	22/08/31	24	7.3	5.5
1.56		24	8.4	7.4		24	7.4	5.4
3.13		24	8.1	7.4		25	7.5	5.7
6.25		24	8.3	7.4		24	7.4	5.5
12.5		24	7.7	7.5		24	7.4	5.8
25		24	8.0	7.5		24	7.3	5.8
50		24	7.7	7.7		24	7.3	5.9
100		24	7.2	7.9		24	7.1	5.7
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C263077-BAE334
Client Sample ID: POND 3
Date sample collected: 8/22/2022
Test Performed By: CT9, CSH, NM9, KLY, KPG, KMG
Test Initiation Date: 8/24/2022
Test End Date: 8/30/2022
Dates when subsamples used: 8/24/2022 8/28/2022
8/25/2022 8/29/2022
8/26/2022
8/27/2022

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.2
Temperature (°C): 24
pH(pH units): 7.9
Conductivity (µS/cm): 1491

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.22	1.89	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	1.02	1.24	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.30	1.05	1.61			
Reference Toxicant Test Initiation Date:			2022/08/10					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	24
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/24/2022 8/28/2022 8/25/2022 8/29/2022 8/26/2022 8/27/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		10		11						0.0%	24	5.1
	2	0		0		0		5		10		13								
	3	0		0		0		8		0		8								
	4	0		0		0		5		0		9								
	5	0		0		0		6		11		11								
	6	0		0		0		5		11		10								
	7	0		0		0		6		10		13								
	8	0		0		0		5		8		10								
	9	0		0		0		3		11		11								
	10	0		0		0		5		10		9								
1.56	1	0		0		0		5		7		0						0.0%	22	6.8
	2	0		0		0		4		9		14								
	3	0		0		0		7		8		14								
	4	0		0		0		4		4		9								
	5	0		0		0		6		4		11								
	6	0		0		0		5		11		14								
	7	0		0		0		5		9		14								
	8	0		0		0		5		8		11								
	9	0		0		0		4		11		0								
	10	0		0		0		6		8		0								
3.13	1	0		0		0		6		10		13						10.0%	26	5.7
	2	0		0		0		7		10		15								
	3	0		0		0		8		7		0								
	4	0		0		0		6		7		14								
	5	0		0		0		6		11		0	X							
	6	0		0		0		6		9		15								
	7	0		0		0		5		10		15								
	8	0		0		0		6		11		11								
	9	0		0		0		4		10		14								
	10	0		0		0		5		9		13								
6.25	1	0		0		0		6		10		13						0.0%	26	3.9
	2	0		0		0		5		8		13								
	3	0		0		0		5		8		11								
	4	0		0		0		8		0		12								
	5	0		0		0		6		8		15								
	6	0		0		0		5		9		15								
	7	0		0		0		4		6		9								
	8	0		0		0		8		5		12								
	9	0		0		0		4		7		13								
	10	0		0		0		5		12		13								
12.5	1	0		0		0		5		9		13						10.0%	17	9.8
	2	0		0		0		5		10		12								
	3	0		0		0		5		0		0								
	4	0		0		0		3		7		15								
	5	0		0		0		4		0		13								
	6	0		0		0		5		8		0								
	7	0		0		0		6		9		13								
	8	0		0		0	X													
	9	0		0		0		6		12		0								
	10	0		0		0		2		10		0								
25	1	0		0		0		4		12		11						0.0%	28	4.8
	2	0		0		0		6		12		14								
	3	0		0		0		6		12		13								
	4	0		0		0		5		10		14								
	5	0		0		0		7		11		16								
	6	0		0		0		3		8		9								
	7	0		0		0		5		12		14								
	8	0		0		0		5		12		13								
	9	0		0		0		6		11		13								
	10	0		0		0		3		9		8								
50	1	0		0		0		5		6		14						0.0%	25	8.7
	2	0		0		0		3		11		13								
	3	0		0		0		6		10		19								
	4	0		0		0		3		10		14								
	5	0		0		0		4		0		0								
	6	0		0		0		6		9		12								
	7	0		0		0		5		11		14								
	8	0		0		0		5		10		13								
	9	0		0		0		6		10		0								
	10	0		0		0		5		11		12								
100	1	0		0		0		4		9		0						10.0%	22	10.1
	2	0		0		0		5		9		16								
	3	0		0		0		6		8		10								
	4	0		0		0		6		10		14								
	5	0		0		0		5		10		14								
	6	0		0		0		6		9		11								
	7	0		0		0		5		10		13								
	8	0		0		0		6		11		11								
	9	0		0		0		3		10		0								
	10	0		0		0	X													

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/24	24	7.9	7.2	22/08/25	24	8.0	6.7
1.56		24	7.9	7.3		24	8.1	6.7
3.13		24	8.0	7.3		24	8.1	6.7
6.25		24	8.0	7.4		24	8.0	6.8
12.5		24	8.0	7.4		24	7.9	6.8
25		24	8.0	7.5		24	7.8	6.7
50		24	7.9	7.7		24	7.7	6.8
100		25	7.7	8.1		24	7.6	6.9
Control	22/08/25	24	8.3	7.4	22/08/26	26	7.7	5.8
1.56		24	8.2	7.4		26	7.6	5.9
3.13		24	8.2	7.4		26	7.7	5.9
6.25		24	8.1	7.4		26	7.7	6.1
12.5		24	8.1	7.5		25	7.7	6.1
25		24	8.0	7.6		25	7.6	6.0
50		24	8.0	7.8		25	7.5	6.0
100		24	7.8	8.3		25	7.4	6.0
Control	22/08/26	24	7.8	7.2	22/08/27	24	8.3	4.7
1.56		24	7.9	7.2		24	8.0	4.8
3.13		24	7.9	7.2		24	8.0	5.2
6.25		24	8.1	7.3		24	7.9	5.2
12.5		24	8.1	7.3		24	7.9	5.3
25		24	8.0	7.4		24	7.8	5.1
50		24	7.9	7.6		24	7.7	5.1
100		24	7.8	8.0		24	7.5	5.3
Control	22/08/27	24	7.8	7.0	22/08/28	25	7.9	5.1
1.56		24	7.9	7.1		25	7.9	5.3
3.13		24	8.0	7.1		24	7.8	5.5
6.25		24	8.0	7.2		24	7.8	5.6
12.5		24	8.0	7.2		24	7.8	5.5
25		24	8.0	7.3		24	7.8	5.5
50		24	7.8	7.5		24	7.5	5.2
100		24	7.7	8.1		24	7.4	5.2
Control	22/08/28	24	7.9	7.1	22/08/29	25	8.4	6.2
1.56		24	8.0	7.1		25	8.2	6.0
3.13		24	8.0	7.2		25	8.3	6.2
6.25		24	8.1	7.2		25	8.2	6.3
12.5		24	8.1	7.3		25	8.1	6.2
25		24	8.1	7.4		24	8.0	6.3
50		24	8.0	7.6		24	7.8	6.4
100		24	7.7	8.1		24	7.7	6.4
Control	22/08/29	24	8.3	7.1	22/08/30	24	7.4	5.5
1.56		24	8.3	7.2		25	7.4	5.2
3.13		24	8.3	7.3		24	7.6	5.3
6.25		24	8.3	7.3		24	7.6	5.4
12.5		24	8.2	7.4		25	7.5	5.3
25		24	8.2	7.5		24	7.6	5.4
50		24	8.1	7.8		24	7.4	5.2
100		24	7.8	8.2		24	7.3	5.0
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: POND 1, POND 2, POND 4, POND 5, AND POND 13

SAMPLING DATE: AUGUST 22, 2022

Prepared for:

Diavik Diamond Mines Inc.
P.O. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C263077
September 2022

Summary of Test Results for Samples from
Diavik Diamond Mines Ltd.
Sample Date: August 22, 2022
Job C263077

Sample: Pond 1

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: Pond 2

Test		Significant Effect (Inhibition)
P. subcapitata:	Cell yield	No

Sample: Pond 4

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

Sample: Pond 5

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

Sample: Pond 13

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Effluent Sample	
Name of Samples	Pond 1 & Pond 2
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2022/Aug/22
Date (y/m/d) of sample receipt at lab	2022/Aug/23 @ 11:41
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 11:39
Initial cell density of inoculum	10,046 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test started	**Pond 1**: 2022/Aug/24 @ 11:40 **Pond 2**: 2022/Aug/24 @ 11:42
Date & time test ended	2022/Aug/27 @ 11:00
Persons performing test	D. Lai, M. Thompson
Mean test temperature	25 °C
Procedure/rate/duration of aeration of sample before test	No aeration
pH adjustment	No pH adjustment
pH of aqueous sample before preparation and use in toxicity test	See “Data Summary” data sheet

pH of sample before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	NaHCO3, CaSO4, MgSO4, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3904-4004 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing else unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2022/Aug/27
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**Pond 1**: None **Pond 2**: Yes, significant stimulation was observed in the 90.91% concentration. See Equal Variance t Two-Sample Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**Pond 1**: CETIS v2.1.2.3 – Equal Variance t Two-Sample Test **Pond 2**: CETIS v2.1.2.3 – Equal Variance t Two-Sample Test
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	**Pond 1**: None **Pond 2**: None

QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV: o **Pond 1:** 20% o **Pond 2:** 19% • Trend in the controls? o **Pond 1:** No o **Pond 2:** No • Algal cells increased by: o **Pond 1:** 38.15 o **Pond 2:** 25.19
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.036; 2SD: (0.0271, 0.0478) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0436; 2SD: (0.0236, 0.0807)
Invalid Ref tox test?	No
Date of ref tox test (y/m/d)	2022/Aug/30
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Report Date: 19 Sep-22 12:47 (p 1 of 2)
Test Code/ID: SL-4388-0922 / 05-4606-9149

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	10-6213-2765	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 11:10	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	F29F5083350D68F8DBB5C23EB191CECB	**Editor ID:**	

Batch ID:	01-8661-5339	**Test Type:**	Cell Growth	**Analyst:**	D. Lai
Start Date:	24 Aug-22 11:40	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	27 Aug-22 11:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	71h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	21-0295-9644	**Code:**	C263077	**Project:**	2-11-0691
Sample Date:	22 Aug-22 10:50	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 1
Sample Age:	49h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% passed cell yield endpoint	19.72%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91	14	0.8643	2.145	7.522	CDF	0.4020	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.67	2.586	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	0.5484	0.05	0.5484	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	36.7539	36.7539	1	0.747	0.4020	Non-Significant Effect
Error	688.855	49.2039	14			
Total	725.609		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.546	8.885	0.5793	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.92	0.8408	0.1685	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	38.15	31.69	44.61	38.82	26.95	48	2.733	20.26%	0.00%
90.91		8	35.12	29.92	40.32	36.25	23.8	41.2	2.198	17.70%	7.95%

Cell Yield Detail

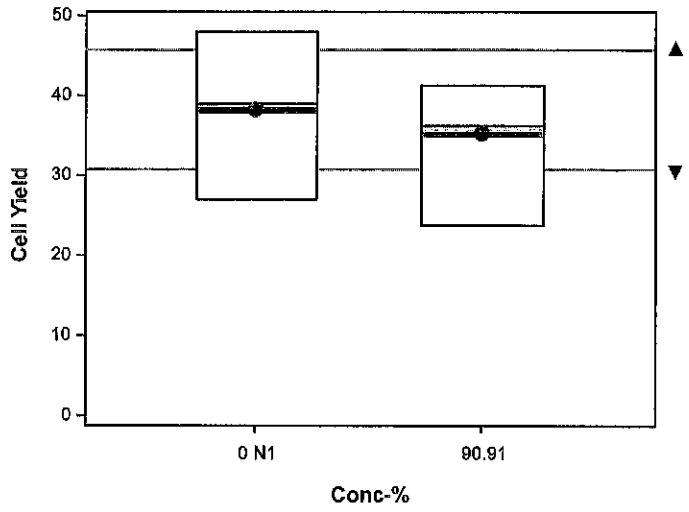
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	44.7	48	28.9	35.55	26.95	44.05	34.95	42.1
90.91		34.35	23.8	33.6	41	29.05	39.8	38.15	41.2

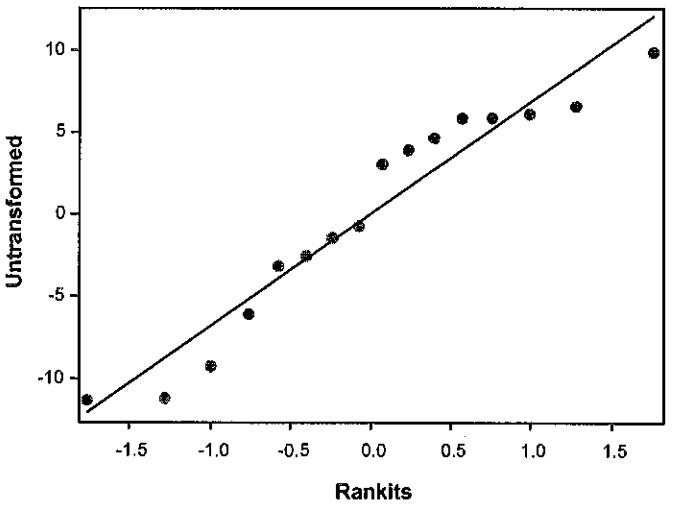
Analyst: Sept 2022 Sep 19 2022 Sep 19 QA: MT

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	10-6213-2765	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 11:10	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	F29F5083350D68F8DBB5C23EB191CECB	**Editor ID:**	

Graphics





Analyst: [illegible] 2022 Sep 19 QA: MH

Client Name: Diavik Diamond Mines Inc.
Sample ID: POND 1
Date Sampled: 2022 Aug 22
Job /Sample #: C263077 / BAE332
Date & Time Started: 2022 Aug 24 @ 11:40
Date & Time Ended: 2022 Aug 27 @ 11:00
Analyst(s): D. Lai
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	53.6	37.8	44.70	38.15	7.73	20
Lab Control	D3	50.1	47.9	48.00			
Lab Control	D4	26.1	33.7	28.90			
Lab Control	D5	25.2	47.9	35.55			
Lab Control	D8	26.2	29.7	26.95			
Lab Control	D9	43.3	46.8	44.05			
Lab Control	D10	33.4	38.5	34.95			
Lab Control	D11	44.8	41.4	42.10			
90.91	C2	36.7	34.0	34.35	35.12	6.22	18
90.91	E2	31.4	16.2	23.80			
90.91	F2	37.5	31.7	33.60			
90.91	G2	44.3	39.7	41.00			
90.91	C3	33.0	27.1	29.05			
90.91	E3	44.0	37.6	39.80			
90.91	F3	38.4	39.9	38.15			
90.91	G3	35.3	49.1	41.20			

Proofed: mt 2022 Sep 19

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE332

Date Sampled: 2022 Aug 22

Sample ID: POND 1

Date Received: 2022 Aug 23

Culture Date: 2022 Aug 21

Date & Time Started: 2022 Aug 24 @ 1140

Culture Description: green

Date & Time Ended: 2022 Aug 27 @ 1100

Light Intensity at Surface (lux): 3904 - 4004

Analyst(s): D. Lai M. Thompson

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0461

Reagent Water Preparation:

Date of reconstituted water prep: 2022 Aug 24

Hardness (~20 mg/L $CaCO_3$): 22

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: MT

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.3 Initial Temp (°C): 23.7 Sample Description: clear, yellow

Initial Filtered pH (well B2): 7.4

Final Filtered pH (well B2): 8.2

Control Water Quality

Initial Filtered pH (well D6): 7.5

Final Filtered pH (well D7): 7.4

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.1x10⁴ (*10^4 cells/mL)

Time of inoculum prep: 1139

Therefore, (**Xi**) 2210 cells were initially put into each test well and the initial cell density was (**Xd**) 10,046 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.1x10⁴) * 0.02] = 2210 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2210) * (4.5455)] = 10,046 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2022 Aug 25	Y	Y	Y	dml
2022 Aug 26	Y	Y	Y	dml
2022 Aug 27	Y	Y		dml

CETIS Analytical Report

Report Date: 19 Sep-22 12:47 (p 1 of 2)
Test Code/ID: SL-4388-1022 / 14-8900-2113

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	20-5743-3633	Endpoint:	Cell Yield	CETIS Version:	CETISv2.1.2
Analyzed:	09 Sep-22 11:15	Analysis:	Parametric-Two Sample	Status Level:	1
Edit Date:		MD5 Hash:	0C9CEE649AAAA8B4939F984E8F85A77F	Editor ID:	

Batch ID:	20-8157-4121	Test Type:	Cell Growth	Analyst:	D. Lai
Start Date:	24 Aug-22 11:42	Protocol:	EC/EPS 1/RM/25	Diluent:	Algal Culture Media
Ending Date:	27 Aug-22 11:00	Species:	Pseudokirchneriella subcapitata	Brine:	Not Applicable
Test Length:	71h	Taxon:	Chlorophyta	Source:	Canadian Phycological Cult Age:

Sample ID:	10-7459-7193	Code:	C263077	Project:	2-11-0691
Sample Date:	22 Aug-22 10:00	Material:	Water	Source:	Diavik
Receipt Date:	23 Aug-22 11:41	CAS (PC):		Station:	Pond 2
Sample Age:	50h	Client:	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C <> T	90.91% failed cell yield endpoint	38.28%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		90.91*	14	11.48	2.145	9.645	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.144	2.586	0.3313	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	0.5484	0.05	0.5484	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
etween	10663.1	10663.1	1	131.8	<1.0E-05	Significant Effect
Error	1132.42	80.8873	14			
Total	11795.6		15			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	5.771	8.885	0.0340	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9802	0.8408	0.9654	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	25.19	21.11	29.28	24.2	17.95	32.25	1.728	19.40%	0.00%
90.91		8	76.82	67.01	86.64	74.68	61.9	95.45	4.152	15.28%	-204.94%

Cell Yield Detail

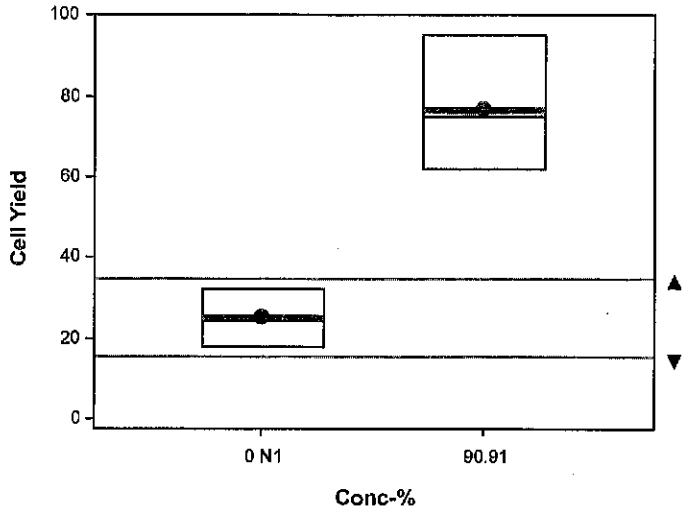
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	22.9	30.15	17.95	32.25	28.85	25.35	23.05	21.05
90.91		89.85	95.45	69.3	82.85	76.15	73.2	61.9	65.9

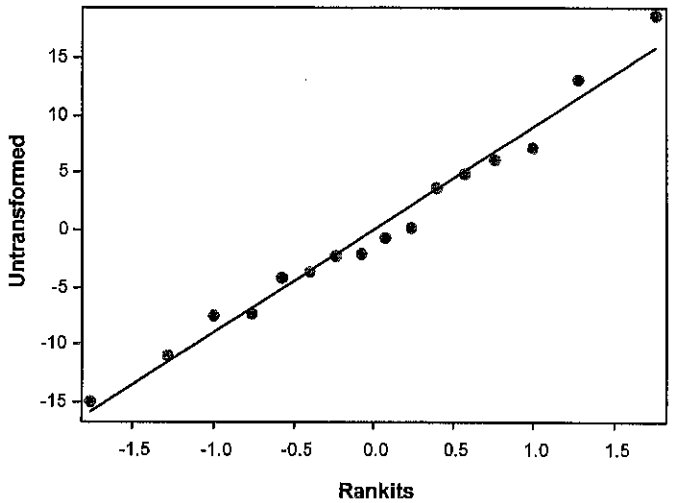
Analyst: Dave Bergman QA: MT 2022 Sep 19

Alga Growth Inhibition Test — **Bureau Veritas**

nalysis ID:	20-5743-3633	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 11:15	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	0C9CEE649AAAA8B4939F984E8F85A77F	**Editor ID:**	

Graphics





Client Name: Diavik Diamond Mines Inc.
Sample ID: POND 2
Date Sampled: 2022 Aug 22
Job /Sample #: C263077 / BAE333
Date & Time Started: 2022 Aug 24 @ 11:42
Date & Time Ended: 2022 Aug 27 @ 11:00
Analyst(s): D. Lai
Instrument ID: BBY2-0006, BBY2-0290

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	21.8	26.0	22.90	25.19	4.89	19
Lab Control	D3	31.2	31.1	30.15			
Lab Control	D4	14.8	23.1	17.95			
Lab Control	D5	27.8	38.7	32.25			
Lab Control	D8	23.1	36.6	28.85			
Lab Control	D9	26.5	26.2	25.35			
Lab Control	D10	23.0	25.1	23.05			
Lab Control	D11	17.4	26.7	21.05			
90.91	C2	90.9	90.8	89.85	76.83	11.74	15
90.91	E2	104.0	88.9	95.45			
90.91	F2	75.4	65.2	69.30			
90.91	G2	83.8	83.9	82.85			
90.91	C3	80.3	74.0	76.15			
90.91	E3	90.0	58.4	73.20			
90.91	F3	64.3	61.5	61.90			
90.91	G3	73.3	60.5	65.90			

Proofed: MT 2022Sep 19

Client Name: Diavik Diamond Mines Inc.
Job / Sample #: C263077 / BAE333
Date Sampled: 2022 Aug 22
Sample ID: POND 2
Date Received: 2022 Aug 23
Culture Date: 2022 Aug 21
Date & Time Started: 2022 Aug 24 @ 1142
Culture Description: green
Date & Time Ended: 2022 Aug 27 @ 1100
Light Intensity at Surface (lux): 3904 - 4004
Analyst(s): D. Lai M. Thompson
Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0128, BBY4-0098, BBY2-0461

Reagent Water Preparation:

Date of reconstituted water prep: 2022 Aug 24
Hardness (~20 mg/L $CaCO_3$): 22
Volume prepared: 150 mL reconstituted water to 1L DI water
Analyst: MT

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.4 Initial Temp (°C): 25.4 Sample Description: clear, yellow
Initial Filtered pH (well B2): 7.6
Final Filtered pH (well B2): 8.1

Control Water Quality

Initial Filtered pH (well D6): 7.5
Final Filtered pH (well D7): 7.8

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (X): 22.1 (*10^4 cells/mL)

Time of inoculum prep: 1139

Therefore, (Xi) 2210 cells were initially put into each test well and the initial cell density was (Xd) 10,046 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.1x10^4) * 0.02] = 2210 cells

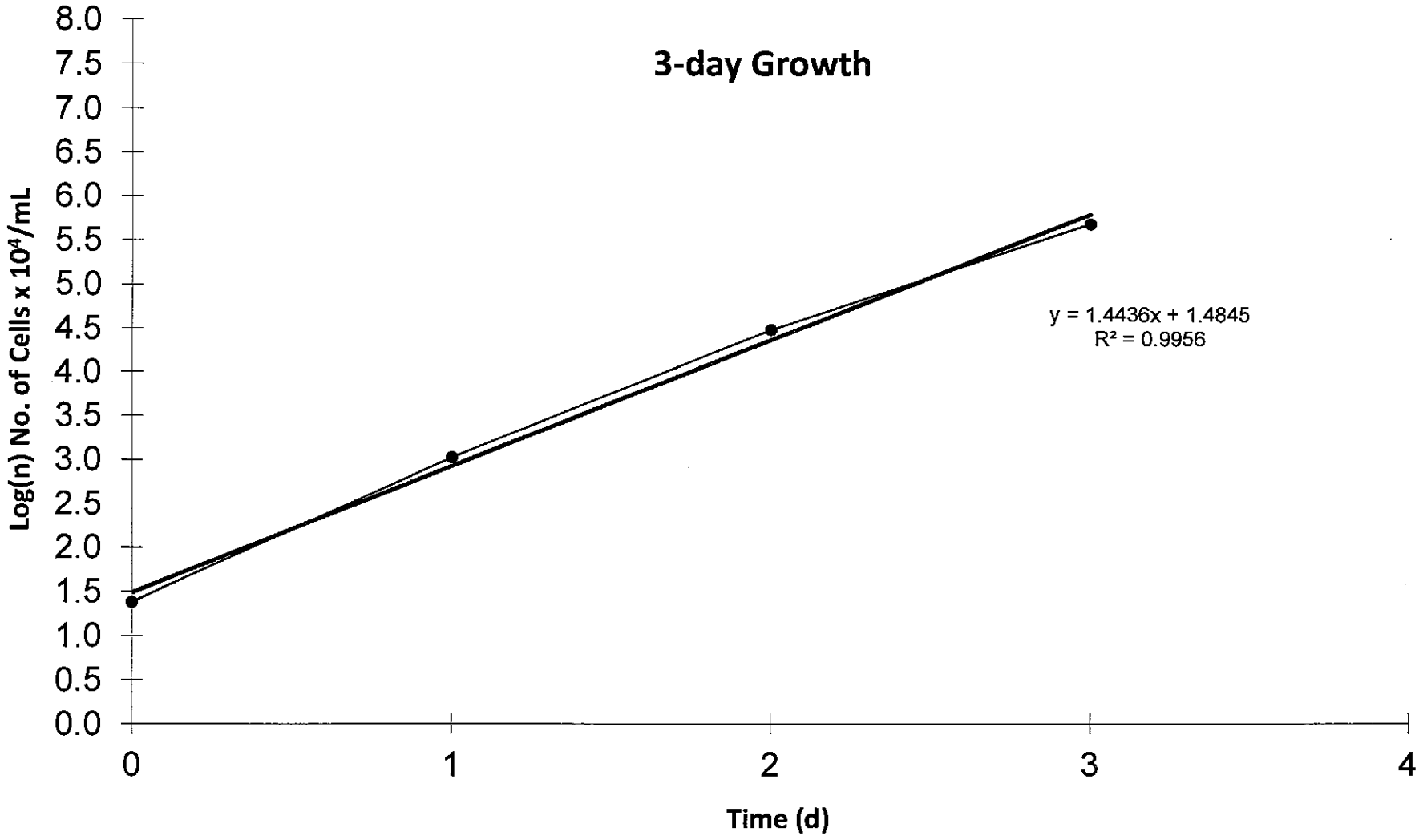
To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2210) * (4.5455)] = 10,046 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2022 Aug 25	Y	Y	Y	dml
2022 Aug 26	Y	Y	Y	dml
2022 Aug 27	Y	Y		dml

***Pseudokirchneriella subcapitata* Growth Curve using CP211209; Date: 2022/Jul/05**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



Ceriodaphnia dubia Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	3 samples, each collected in 8 containers
Test Type	Static-renewal
Effluent Sample	
Sample name	Pond 4, Pond 5, and Pond 13
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2022/Aug/22
Date (y/m/d)/time of sample receipt at lab	2022/Aug/23 @ 11:41
Test Organisms	
Species	*Ceriodaphnia dubia*
Source	In house culture started from organisms obtained from Aquatic Biosystems Inc., Fort Collins, Colorado
Age at start of test	<24 hours old; within 12 hours of each other
Unusual appearance, behaviour or treatment of test organisms, before use in test	None
Mean percent mortality of brood in 7d preceding test	The mean percent mortality was 0.0 and 1.43. See "*Ceriodaphnia dubia,* Culture Health - Mortality and Mean Neonates"
Mean number of surviving young produced per adult in culture during the first 3 broods	The mean number of surviving young was 23.6 and 27.9. See "*Ceriodaphnia dubia,* Culture Health - Mortality and Mean Neonates"
Number of young produced in the 3rd or subsequent brood	See "*Ceriodaphnia dubia* - Clearing Records
Ephippia in the culture	No Ephippia present
Test Conditions & Facilities	
Test method	EPS 1/RM/21, 2nd Ed., February 2007 BBY2SOP-00001 *Ceriodaphnia dubia* Chronic Survival and Reproduction Test
Dates or days when subsamples used	See "Initial Measurements and Observations" sheet
Date test started (y/m/d)	2022/Aug/24
Date (y/m/d) of test completion	2022/Aug/31
Test vessels	20 mL glass culture tubes
Persons performing test	M. Hamad, M. Mazziotti, N. Shergill, D. Lai, K. Tamaki, P. Fang
Rate of preaeration	Minimal and controlled (100 bubbles/min)
Duration of preaeration	See "Initial Measurements and Observations" sheet

Rate/duration of aeration during test	No aeration
Procedure for pH adjustment	No pH adjustment of the sample
Procedure for filtration	**Pond 4:** No filtration of the sample **Pond 5:** The sample was sieve through a nitex mesh to remove native organisms **Pond 13:** No filtration of the sample
Source of control/dilution water & quantity of chemicals added	Type I deionized water hardened to 84 mg/L $CaCO_3$ with 20% Perrier water, Vitamin B_{12} & Selenium
Number and concentration of test solutions	7 conc. (100, 50, 25, 12.5, 6.25, 3.13, and 1.56% v/v) plus control
Volume and depth of solution in test vessels	15 mL & 9 cm
Number of replicates per conc.	10
Number of organisms per test vessel	1
DO & pH of sample just before its use	See “Initial Measurements and Observations” sheet
Temperature, DO, & pH of test solutions and controls	See daily water quality for each concentration on "Observations & Measurement Data sheet"
Test solution renewal intervals	See “Initial Measurements and Observations” sheet
Test observations and/or deviations from test method and standard practices	Although every effort is made to adhere to must conditions outlined in the reference method, it is important to note deviations do not automatically invalidate the test. Deviations are assessed for their impact on the test result and are qualified appropriately. One deviation occurred during the Pond 5 test exposure. Due to an analyst error, 1 Ceriodaphnia dubia was missing from the 100% v/v concentration on day 3 of testing. The reference method specifies that each concentration must consist of 10 replicates. The replicate with the missing test organism was removed from the calculations and statistical analysis. The deviation appears to have had a negligible impact on the test result as all other culture and quality indicators, including control organism reproduction met method criteria. There was nothing else unusual about the tests, no other deviations from test method, and no other problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Survival endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v2.1.2.3: Linear Interpolation (ICPIN)
Mean percent survival for 1st generation in each test solution at test end	See CETIS reports for mean percent survival
Reproduction endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v2.1.2.3: Linear Interpolation (ICPIN)

Mean number of neonates in each test solution at test end	See CETIS reports for mean numbers
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	**Pond 4:** Yes, replicate 5 of the control was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis. **Pond 5:** Yes, replicate 9 of the 25% v/v concentration was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis. **Pond 13:** None
QA	
Did the test pass the test validity criteria of: •Mean mortality of the control adults is ≤20% •Average of ≥15 neonates/surviving adult in the control •3 broods produced by ≥60% of control organisms by the end of the 8th day.	Yes, •Mean mortality of control adults is: • **Pond 4:** 0% • **Pond 5:** 0% • **Pond 13:** 0% •Average live young produced/surviving adult: • **Pond 4:** 15.9 • **Pond 5:** 19.2 • **Pond 13:** 17.3 •Percent of control organisms producing 3 broods: • **Pond 4:** 80% • **Pond 5:** 100% • **Pond 13:** 100%
Reference toxicant test LC50 (95% CL) (mg NaCl/L) for survival	1579 (1424, 1751)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for survival	1753 2SD (1550, 1990)
Reference toxicant test IC50 (95% CL) (mg NaCl/L) for reproduction	1487 (1343, 1575)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for reproduction	1421 2SD (1180, 1710)
Invalid Reference toxicant test?	No
Date of reference toxicant test (y/m/d) and duration	2022/Aug/17 6 days
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	14-5645-8992	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:30	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:30	**MD5 Hash:**	1C9036AAFDF46AA43AB2B32569E516E3	**Editor ID:**	002-543-972-3

Batch ID:	17-7786-6061	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 16:49	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 11:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 19h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-5512-3542	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 09:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 4
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	737483	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail

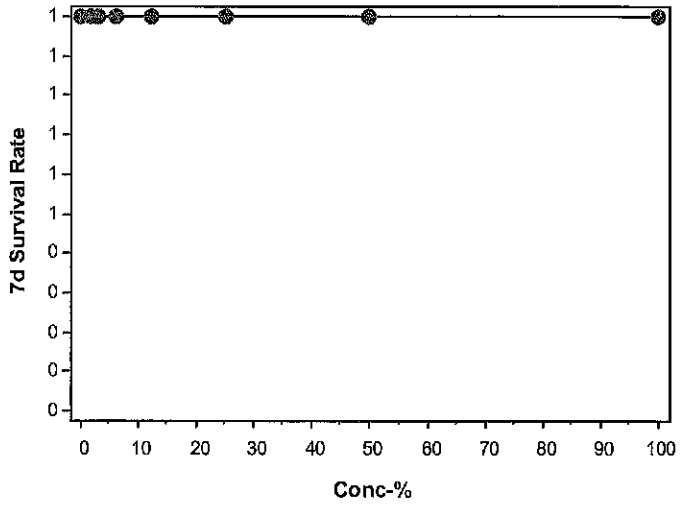
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

2022 Sep09 Analyst: MO QA: KI 2022 SEP12

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	14-5645-8992	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:30	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:30	**MD5 Hash:**	1C9036AAFDF46AA43AB2B32569E516E3	**Editor ID:**	002-543-972-3

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-6113-1063	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:30	**MD5 Hash:**	2622C33B3CB7C2BB6ACDD180C67F2FF	**Editor ID:**	002-543-972-3

Batch ID:	17-7786-6061	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 16:49	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 11:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 19h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-5512-3542	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 09:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 4
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	139009	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	78.42	63.19	---	1.3	---	1.6
IC20	91.06	74.19	---	1.1	---	1.3
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	10	15.9	18	0	24	42.91%	0.00%	19.39	0.00%
1.56		10	16.7	17.5	10	23	21.32%	-5.03%	19.39	0.00%
3.13		10	21.6	21.5	17	27	15.15%	-35.85%	19.39	0.00%
6.25		10	20.2	20	13	26	23.66%	-27.04%	19.39	0.00%
12.5		10	19.1	18.33	13	26	19.19%	-20.13%	19.39	0.00%
25		10	22.5	22	20	26	8.70%	-41.51%	19.39	0.00%
50		10	19.7	19	15	24	15.70%	-23.90%	19.39	0.00%
100		10	14.9	15	10	18	15.32%	6.29%	14.9	23.16%

Reproduction Detail

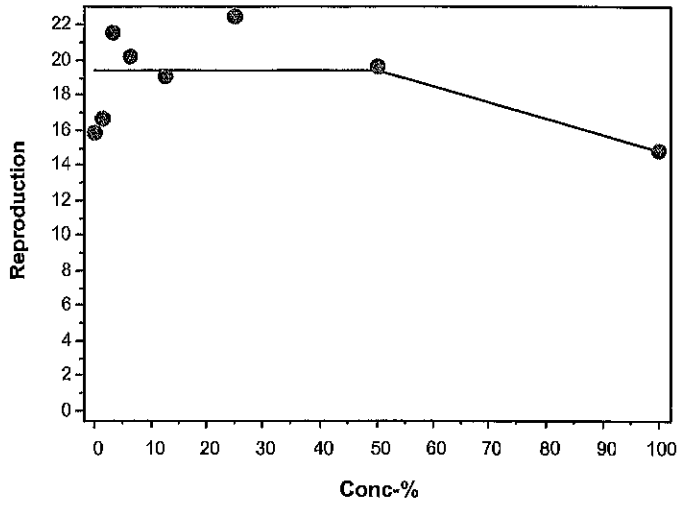
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	22	18	18	0	20	11	13	18	15
1.56		14	15	15	18	18	16	23	18	10	20
3.13		20	20	25	24	22	27	23	17	21	17
6.25		25	26	13	17	18	23	22	15	26	17
12.5		18	16	19	20	21	26	23	18	13	17
25		21	23	26	21	25	22	24	20	22	21
50		23	19	23	22	18	19	24	15	17	17
100		14	14	15	18	15	14	18	10	15	16

2022 Sep09 7072

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-6113-1063	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:30	**MD5 Hash:**	2622C33B3CB7C2BB6ACDD180C67F2FF	**Editor ID:**	002-543-972-3

Graphics



2022 Sep09 Analyst: mo QA: KT Sep12 2022

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 24, 2022
End Date: August 31, 2022
Analyst(s): M. Mazziotti, K. Tamaki, D. Lai, M. Hamad, N. Shergill, P. Fang

Job / Sample #: C263077 / BAE335
Sample ID: Pond 4
Organism Lot #: AB2022Aug15

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	24	14	20	25	18	21	23	14
2	22	15	20	26	16	23	19	14
3	18	15	25	13	19	26	23	15
4	18	18	24	17	20	21	22	18
5	0	18	22	18	21	25	18	15
6	20	16	27	23	26	22	19	14
7	11	23	23	22	23	24	24	18
8	13	18	17	15	18	20	15	10
9	18	10	21	26	13	22	17	15
10	15	20	17	17	17	21	17	16
Mean	15.9	16.7	21.6	20.2	19.1	22.5	19.7	14.9
SD	6.8	3.6	3.3	4.8	3.7	2.0	3.1	2.3

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	100	100	100
SD (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: 2022 Sep 09

Proofed by: 2022 Sep 02

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc. Job / Sample #: C263077 / BAE335

Date Started August 24, 2022 Sample ID: Pond 4

Date Ended: Aug 31, 2022 Organism Lot #: AB 2022 Aug 15

Before Use Measurements **After Temperature Adjustment** Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 24, 2022	137.6	24.9	7.9	20	116.7	24.5	MM
1	August 25, 2022	126.9	25.1	N/A	20	121.1	25.2	mlm
2	August 26, 2022	125.0	25.3	N/A	20	116.1	25.2	mlm
3	August 27, 2022	121.5	25.0	N/A	20	117.3	25.0	mlm
4	August 28, 2022	123.8	25.0	N/A	20	103.1	24.9	NS
5	August 29, 2022	127.9	25.0	N/A	20	117.8	24.9	NS
6	Aug 30, 2022	117.6	25.4	N/A	20	105.8	25.4	NS
7				N/A Ⓐ				

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description Clear, colorless Initials MM

Sample Hardness (mg/L $CaCO_3$) 392 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 24, 2022 Pre - Aerated From: 15:13 - 15:33	MM, dm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 16:49	
	Bottle / Carboy #: 1 Seeding checked by: dm	
1	Date: August 25, 2022 Pre - Aerated From: 07:10-07:30	mlm / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:29	
	Bottle / Carboy #: 2	
2	Date: August 26, 2022 Pre - Aerated From: 07:20-07:40	mlm / kt
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:07	
	Bottle / Carboy #: 3	
3	Date: August 27, 2022 Pre - Aerated From: 11:30-11:50	mlm / mlm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:49	
	Bottle / Carboy #: 4	
4	Date: August 28, 2022 Pre - Aerated From: 10:19 - 10:39	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:53	
	Bottle / Carboy #: 5	
5	Date: August 29, 2022 Pre - Aerated From: 11:10 - 11:30	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:39	
	Bottle / Carboy #: 6	
6	Date: Aug 30, 2022 Pre-Aerated from: 15:00 - 15:20	NS / pr
	Feeding volume PKS (µL): 100 YCT (µL): 50	
	Bottle # 7 Test water change @ 16:42	
7	Date: Aug 31, 2022 Test take down @ 11:55.	NS
	Ⓐ	
8	Date:	

Ⓐ N/A MO 2022 Sep 09

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 4 Job / Sample #: C263077 / BAE335

Analyst(s): M. Mazzieri, MHamad [illegible], N.Shergill, P.Fang

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	174	173	173	176	177	179	165	
	Final	185	186	186	188	190	193 (A)	204	200
Temp. (°C)	Initial	24.9	25.0	24.5	24.4	24.1	24.6	24.9	
	Final	24.9	24.6	24.4	24.0	24.3	25.0	24.4	
D.O. (mg/L)	Initial	8.0	8.2	8.3	8.3	8.3	8.4	8.4	
	Final	7.9	7.9	7.8	8.2	8.1	8.1	8.1	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.2	8.2	8.2	8.2	8.1	8.2	8.0	

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	200	227	199	205	200	192	
	Final	209	215	233	217	215	214	200	
Temp. (°C)	Initial	24.7	25.0	24.6	24.4	24.2	24.6	25.0	
	Final	25.0	24.6	24.4	24.2	24.6	25.1	25.3	
D.O. (mg/L)	Initial	8.2	8.3	8.2	8.2	8.4	8.4	8.3	
	Final	7.8	7.8	7.8	8.2	8.0	8.1	7.6	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	N/A
	Final	8.2	8.2	8.2	8.2	8.2	8.3	8.0	

NO 2022 Sep09

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	224	232	242	237	228	231	220	
	Final	237	243	249	232	239	244	228	
Temp. (°C)	Initial	24.7	25.0	24.7	24.4	24.4	24.6	25.0	
	Final	24.9	24.6	24.4	24.5	24.8	25.1	25.4	
D.O. (mg/L)	Initial	8.2	8.3	8.3	8.3	8.4	8.4	8.3	
	Final	7.8	7.8	7.8	8.2	7.9	8.1	7.6	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.5	8.2	
	Final	8.2	8.2	8.2	8.2	8.1	8.3	8.0	

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	274	289	333	336	283	287	271	
	Final	288	293	347	290	294	296	280	
Temp. (°C)	Initial	24.7	25.0	24.7	24.4	24.5	24.6	25.0	
	Final	24.8	24.6	24.4	24.7	24.8	25.2	25.4	
D.O. (mg/L)	Initial	8.3	8.4	8.3	8.3	8.4	8.5	8.3	
	Final	7.9	7.8	7.8	8.2	7.9	8.2	7.6	
pH	Initial	8.3	8.2	8.2	8.3	8.3	8.3	8.2	
	Final	8.2	8.2	8.2	8.2	8.2	8.3	8.0	
Analyst		MM MM	MHm Kt	MHm m	m NS	NS NS	NS PL	PL NS	
Daily WQ Reviewed by:		MM MM	MHm Kt	MHm m	m NS	NS NS	NS PL	PL NS	

(A) W EMHM 2022 Sep13

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 4

Job / Sample #: C263077 / BAE335

12.5%	Day	1	2 (B)	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	381	~~289~~ 399	456	423	352	378	377	
	Final	342	379	419	369	294	343	372	
Temp. (°C)	Initial	24.7	25.0	24.7	24.4	24.4	24.6	25.0	
	Final	24.8	24.6	24.4	24.7	24.9	25.2	25.3	
D.O. (mg/L)	Initial	8.4	8.5	8.4	8.4	8.4	8.5	8.4	
	Final	7.9	7.8	7.9	8.2	7.9	8.2	7.6	
pH	Initial	8.3	8.2	8.2	8.2	8.3	8.2	8.2	
	Final	8.2	8.1	8.1	8.2	8.1	8.2	8.0	

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	563	576	622	619	554	582	577	
	Final	578	577	624	547	570	596	577	
Temp. (°C)	Initial ~~Final~~ (A)	24.7	25.0	24.6	24.4	24.5	24.6	25.0	N/A mo 2022 Sep 01
	Final	24.9	24.6	24.4	24.8	24.9	25.2	25.3	
D.O. (mg/L)	Initial	8.5	8.6	8.6	8.5	8.4	8.6	8.4	
	Final	7.9	7.8	7.8	8.2	7.8	8.2	7.6	
pH	Initial	8.2	8.1	8.2	8.2	8.2	8.2	8.2	
	Final	8.2	8.1	8.1	8.2	8.1	8.2	8.0	

50%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	936	1008	1198	1077	936	941	960	
	Final	943	995	1176	910	950	966	944	
Temp. (°C)	Initial	24.7	24.9	24.7	24.4	24.5	24.9	25.2	
	Final	24.9	24.7	24.4	24.8	24.9	25.1	25.4	
D.O. (mg/L)	Initial	8.8	9.0	9.0	8.9	8.5	8.7	8.5	
	Final	7.9	7.9	8.0	8.2	7.8	8.1	7.6	
pH	Initial	8.1	8.0	8.1	8.1	8.2	8.1	8.1	
	Final	8.2	8.1	8.1	8.2	8.1	8.2	8.0	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1659	1671	1675	1677	1655	1662	1679	
	Final	1666	1687	1691	1705	1673	1683	1676	
Temp. (°C)	Initial	24.5	25.1	24.8	24.6	24.8	25.0	25.4	
	Final	24.9	24.6	24.4	24.9	24.9	25.2	25.5	
D.O. (mg/L)	Initial	9.7	9.9	9.3	9.1	8.5	9.2	8.8	
	Final	8.1	8.0	8.0	8.1	7.8	8.2	7.7	
pH	Initial	8.0	7.9	8.0	8.0	8.1	8.0	8.0	
	Final	8.1	8.1	8.1	8.2	8.1	~~8.2~~ 8.3 (C)	8.0	
Analyst		MM MM	MM CT	MM	MM NS	NS NS	NS PN	PN	
Daily WQ Reviewed by:		MM MM	MM CT	MM	MM NS	NS NS	NS PN	PN	

(A) WE MM 2022 Aug 24

(B) WE MM 2022 Aug 25

(C) WE PN 2022 Aug 30

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE335

Sample ID: Pond 4

Analyst (s): M. Mazziotti, K. Tomaki, N. Shergee, D. Fang, M. Hamad, D. Lai

Concentration: Control

Control Water Batch: Date(s): 2022 Aug 19

Hardness (mg/L $CaCO_3$): 84

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KT KT
3	0	0	0	0	0	0	0	0	0	0	MM MM
4	4	5	3	4	0	3	2	3	3	0	NS NS
5	10	7	6	8	0	7	7	4	8	6	NS NS
6	0	0	0	0	0	0	2	0	0	1	PL PL
7	10	10	9	6	0	10	3	6	7	8	NS NS
8							(A)				
Total	24	22	18	18	0	20	11	13	18	15	MO PL

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KT KT
3	0	0	0	0	0	0	0	0	0	0	MM MM
4	3	3	3	3	2	2	3	3	2	4	NS NS
5	7	6	6	7	8	5	7	7	7	8	NS NS
6	0	0	0	0	0	0	0	0	0	0	PL PL
7	4	6	6	8	8	9	13	8	1	8	NS NS
8						(A)					
Total	14	15	15	18	18	16	23	18	10	20	MO PL

(A) NIA MO 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE335

Sample ID: Pond 4

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	NN MM
2	0	0	0	0	0	0	0	0	0	0	KG dm
3	0	0	0	0	0	0	0	0	0	0	M M
4	2	3	4	4	5	4	5	2	3	2	NS NS
5	8	7	10	7	8	12	10	6	9	5	NS NS
6	0	0	0	0	0	0	0	1	0	10	PL PL
7	10	10	11	13	9	11	8	8	9	0	NS NS
8						(#)					
Total	20	20	25	24	22	27	23	17	21	17	MO PL

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	NN MM
2	0	0	0	0	0	0	0	0	0	0	KG dm
3	0	0	0	0	0	0	0	0	0	0	M M
4	4	3	2	1	2	2	4	1	4	4	NS NS
5	12	8	5	7	7	9	11	7	9	6	NS NS
6	9	0	0	0	0	0	0	0	0	0	PL PL
7	0	15	6	9	9	12	7	7	13	7	NS NS
8						(A)					
Total	25	26	13	17	18	23	22	15	26	17	MO PL

(A) NIA mo2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE335

Sample ID: Pond 4

Concentration (%v/v) 12.5

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KF dm
3	0	0	0	0	0	0	0	0	0	0	mh m
4	3	2	2	1	2	6	4	3	4	2	NS NS
5	8	6	9	7	9	10	8	5	3	5	NS NS
6	0	0	0	0	0	0	0	0	0	10	PR PR
7	7	8	8	12	10	10	11	10	6	0	NS NS
8							(A)				
Total	18	16	19	20	21	26	23	18	13	17	MO PR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 25

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KF dm
3	0	0	0	0	0	0	0	0	0	0	m m
4	4	5	6	5	4	2	4	3	4	5	NS NS
5	8	7	10	9	9	9	10	9	8	6	NS NS
6	0	0	0	0	0	0	0	0	0	0	PR PR
7	9	11	10	7	12	11	10	8	10	10	NS NS
8						(A)					
Total	21	23	26	21	25	22	24	20	22	21	MO PR

(A) NIA mo 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE335

Sample ID: Pond 4

Concentration (%v/v) 50

Concentration (% v/v): 100

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KF
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	5	4	4	5	4	4	6	3	3	4	NS NS
5	9	7	9	7	7	7	9	5	6	5	NS NS
6	0	0	0	0	0	0	0	0	0	0	[illegible]
7	9	8	10	10	7	8	9	7	8	8	NS NS
8							(A)				
Total	23	19	23	22	18	19	24	15	17	17	MO [illegible]

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MN MM
2	0	0	0	0	0	0	0	0	0	0	KF
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	2	3	3	2	2	1	5	3	5	2	NS NS
5	6	7	8	0	6	0	9	4	6	7	NS NS
6	0	0	0	7	0	7	0	0	0	1	[illegible]
7	6	4	4	9	7	6	4	3	4	6	NS NS
8						(A)					
Total	14	14	15	18	15	14	18	10	15	16	MO [illegible]

(A) NIA mo 2022 Sep 09

CETIS Analytical Report

Test Code/ID: CD-4388-0422 / 18-6844-8942

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	03-5297-3197	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:34	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:34	**MD5 Hash:**	A2B2AB4A95FF7B1AB2F31EF0E8CCC61	**Editor ID:**	002-543-972-3

Batch ID:	17-0875-8572	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 16:59	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 12:35	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	02-4580-3105	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 11:15	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 5
Sample Age:	54h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	2007955	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		9	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	9/9	1.0000	0.00%

7d Survival Rate Detail

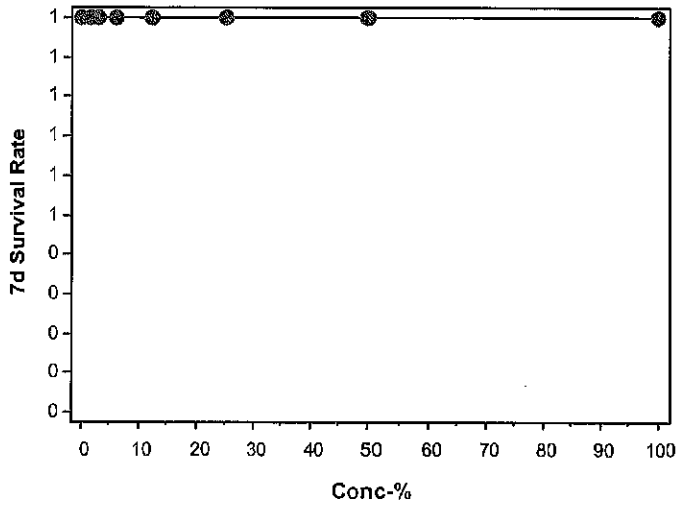
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	

2022 Sep09 2022 KJ SEP12

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	03-5297-3197	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:34	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:34	**MD5 Hash:**	A2B2AB4A95FF7B1AB2F31EF0E8CCC61	**Editor ID:**	002-543-972-3

Graphics



2022 Sep09 Analyst: MO QA: KT 2022 Sep12

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-0805-6058	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:35	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:34	**MD5 Hash:**	4AAEE2CCC5DA045D37F0C7D43D5D44B	**Editor ID:**	002-543-972-3

Batch ID:	17-0875-8572	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 16:59	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 12:35	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	02-4580-3105	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 11:15	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 5
Sample Age:	54h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1141834	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	19.2	19	15	25	16.25%	0.00%	19.67	0.00%
1.56		10	19.7	20	17	23	9.59%	-2.60%	19.67	0.00%
3.13		10	20.1	19.67	16	24	15.64%	-4.69%	19.67	0.00%
6.25		10	19.5	17.75	13	26	21.52%	-1.56%	19.5	0.86%
12.5		10	19.1	20	11	25	20.42%	0.52%	19.1	2.90%
25		10	17.8	19.5	0	23	37.99%	7.29%	18.94	3.71%
50		10	18.9	19.5	13	26	19.87%	1.56%	18.94	3.71%
100		9	20.11	20	15	26	17.83%	-4.75%	18.94	3.71%

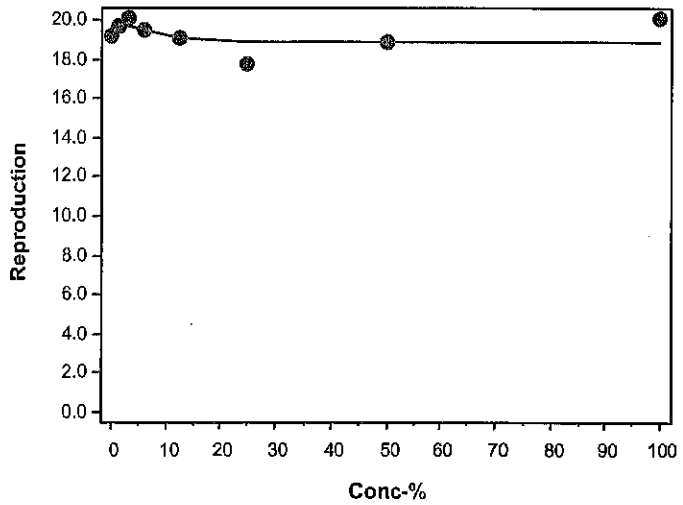
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	25	18	16	20	22	21	21	17	15	17
1.56		21	21	18	20	20	17	18	21	18	23
3.13		19	23	24	24	22	21	16	19	16	17
6.25		26	24	24	21	17	17	16	17	13	20
12.5		21	25	18	18	21	20	20	22	15	11
25		21	22	23	23	20	16	19	16	0	18
50		21	15	21	21	17	20	26	13	19	16
100		18	24	18	17	26	20	23	20	15	

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-0805-6058	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:35	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:34	**MD5 Hash:**	4AAEE2CCC5DA045D37F0C7D43D5D44B	**Editor ID:**	002-543-972-3

Graphics



ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 24, 2022
End Date: August 31, 2022
Analyst(s): M. Mazziotti, K. Tamaki, M. Hamad, N. Shergill, P. Fang, D. Lai

Job / Sample #: C263077 / BAE336
Sample ID: Pond 5
Organism Lot #: AB2022Aug15

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	25	21	19	26	21	21	21	18
2	18	21	23	24	25	22	15	24
3	16	18	24	24	18	23	21	18
4	20	20	24	21	18	23	21	17
5	22	20	22	17	21	20	17	M
6	21	17	21	17	20	16	20	26
7	21	18	16	16	20	19	26	20
8	17	21	19	17	22	16	13	23
9	15	18	16	13	15	0	19	20
10	17	23	17	20	11	18	16	15
Mean	19.2	19.7	20.1	19.5	19.1	17.8	18.9	20.1
SD	3.1	1.9	3.1	4.2	3.9	6.8	3.8	3.6

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	M
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	100	100	100
SD (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: [illegible] 2022 Sep 09

Proofed by: [illegible] 2022 Sep 12

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE336

Date Started August 24, 2022

Sample ID: Pond 5

Date Ended: 2022 Aug 31

Organism Lot #: AB2022 Aug 15

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☑ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 24, 2022	118.6	24.8	8.1	20	106.4	24.5	MM
1	August 25, 2022	117.5	25.1	N/A	20	110.7	25.0	mltm
2	August 26, 2022	117.8	25.2	N/A	20	110.1	24.8	mltm
3	August 27, 2022	112.8	25.0	N/A	20	106.7	25.0	mtm
4	August 28, 2022	116.3	25.2	N/A	20	102.3	24.3	NS
5	August 29, 2022	119.4	25.1	N/A	20	102.2	24.7	NS
6	Aug 30, 2022	113.2	25.2	N/A	20	106.6	25.4	NS
7				N/A	Ⓑ			

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description Pale yellow, clear Initials MM

Sample Hardness (mg/L $CaCO_3$) 448 Initials MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 24, 2022 Pre - Aerated From: 15:13 - 15:33	MM dml
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 16:59	
	Bottle / Carboy #: 1 Presence of native organisms Ⓐ Seeding checked by: dml	
1	Date: August 25, 2022 Pre - Aerated From: 07:10-07:30	mltm / MM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:44	
	Bottle / Carboy #: 2 Sample sieved due to native organisms	
2	Date: August 26, 2022 Pre - Aerated From: 07:20-07:40	mltm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 1520	
	Bottle / Carboy #: 3 Sample sieved due to native organisms	
3	Date: August 27, 2022 Pre - Aerated From: 14:50-15:10	mltm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:26	
	Bottle / Carboy #: 4 Sample sieved due to native organisms	
4	Date: August 28, 2022 Pre - Aerated From: 10:19 - 10:39	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:25	
	Bottle / Carboy #: 5 Sample sieved due to native organisms	
5	Date: August 29, 2022 Pre - Aerated From: 11:10-11:30	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 16:09	
	Bottle / Carboy #: 6 Sample sieved due to native organisms.	
6	Date: Aug 30, 2022 Pre-Aerated from: 15:00 - 15:20	NS
	Feeding vol PKS (µL): 100 YCT (µL): 50 Transfer time: 16:34	
	Sample sieved due to native organisms. Bottle # 7	
7	Date: Aug 31, 2022 Test take down @ 12:35.	NS
	Ⓑ	
8	Date:	

Ⓐ Sample was sieved - MM 2022 Aug 24 Ⓑ N/A MO 2022 Sep 09

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 5 Job / Sample #: C263077 / BAE336

Analyst(s): M. Mazzotti, M Hamad [illegible], N. Shergueo

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	174	173	173	176	177	179	166	
	Final	185	185	185	189	190	188	189	
Temp. (°C)	Initial	24.9	25.0	24.5	24.4	24.1	24.6	24.9	
	Final	24.9	24.8	24.8	24.4	24.4	24.6	25.4	
D.O. (mg/L)	Initial	8.0	8.2	8.3	8.3	8.3	8.4	8.4	
	Final	8.0	7.8	8.2	8.1	8.2	8.1	7.8	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.2	8.2	8.2	8.2	8.1	8.2	8.0	

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	189	189	192	198	197	197	182	
	Final	199	198	197	206	210	209	196	
Temp. (°C)	Initial	24.7	24.8	24.5	24.4	24.3	24.7	24.7	NIAMO
	Final	24.9	24.9	24.7	24.6	24.7	24.8	25.4	2022
D.O. (mg/L)	Initial	8.3	8.4	8.4	8.4	8.3	8.4	8.3	Sep09
	Final	7.9	7.7	7.8	7.9	7.9	8.0	7.4	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.3	
	Final	8.2	8.1	8.2	8.1	7.8	8.2	8.0	

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	205	207	218	208	209	210	204	
	Final	216	223	214	223	221	222	215	
Temp. (°C)	Initial	24.7	24.8	24.8	24.3	24.4	24.7	24.8	
	Final	24.9	24.9	25.7	24.8	25.1	24.9	25.4	
D.O. (mg/L)	Initial	8.3	8.3	8.4	8.4	8.4	8.4	8.3	
	Final	7.8	7.8	7.8	7.7	7.6	8.0	7.6	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.2	8.2	8.2	8.1	8.0	8.2	8.0	

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	235	246	265	247	241	241	234	
	Final	246	249	226	251	253	254	245	
Temp. (°C)	Initial	24.7	25.0	24.6	24.4	24.4	24.7	24.8	
	Final	24.9	24.9	24.7	25.0	25.1	24.9	25.4	
D.O. (mg/L)	Initial	8.3	8.3	8.4	8.4	8.4	8.4	8.4	
	Final	7.8	7.8	7.8	7.7	7.5	8.0	7.8	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.2	8.2	8.2	8.1	8.1	8.2	8.0	
Analyst		MM MM	MHM KT	MHMMM	MM NS	NS NS	NS NS	NS M	
Daily WQ Reviewed by:		MM MM	MHM KT	MM MM	MM NS	NS NS	NS NS	NS MM	

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 5

Job / Sample #: C263077 / BAE336

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	310	312	347	326	300	301	297	
	Final	322	313	313	318	306	313	307	
Temp. (°C)	Initial	24.7	24.9	24.6	24.3	24.4	24.7	24.8	
	Final	24.9	24.9	24.5	25.0	25.1	25.0	25.3	
D.O. (mg/L)	Initial	8.3	8.3	8.4	8.4	8.4	8.4	8.4	
	Final	7.9	7.8	7.8	7.7	7.5	8.0	7.5	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.3	8.2	8.2	8.2	8.1	8.2	8.0	

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	476	483	502	456	423	417	407	NWA NO 2022 Sep09
	Final	441	410	400 (C)	448	430	426	416	
Temp. (°C)	~~Final~~ Initial (A)	24.6	24.8	24.6	24.4	24.4	24.8	24.8	
	Final	24.9	24.9	24.6	25.0	25.1	25.1	25.4	
D.O. (mg/L)	Initial	8.3	8.4	8.4	8.5	8.4	8.4	8.4	
	Final	7.9	7.9	8.0	7.7	7.6	8.0	7.5	
pH	Initial	8.3	8.2	8.2	8.3	8.3	8.3	8.2	
	Final	8.3	8.2	8.2	8.2	8.2	8.2	8.1	

50%	Day	1	2	3 (B)	4 (C)	5	6	7	8
Conductivity (µs/cm)	Initial	647	675	800	742	652	643	634	
	Final	655	639	597 (C)	628	653	647	643	
Temp. (°C)	Initial	24.5	25.0	24.6	24.5	24.5	24.8	24.8	
	Final	24.9	24.9	24.5	25.1	25.1	25.1	25.5	
D.O. (mg/L)	Initial	8.4	8.5	8.6	8.6	8.4	8.4	8.4	
	Final	7.9	7.9	8.0	7.8	7.7	8.0	7.5	
pH	Initial	8.2	8.2	8.2	8.2	8.3	8.3	8.2	
	Final	8.3	8.2	8.3	8.2	8.2	8.3	8.1	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1062	1064	1061	1067	1072	1057	1067	
	Final	1070	1080	1072	1066	1070	1063	1062	
Temp. (°C)	Initial	24.5	24.9	24.5	24.7	24.5	24.8	24.9	
	Final	24.9	24.9	24.5	25.1	25.1	25.1	25.4	
D.O. (mg/L)	Initial	8.8	8.7	8.8	8.8	8.5	8.4	8.5	
	Final	7.9	7.9	8.0	7.8	7.8	8.1	7.6	
pH	Initial	8.2	8.1	8.2	8.1	8.2	8.2	8.1	
	Final	8.3	8.3	8.3	8.2	8.2	8.3	8.2	
Analyst		MM MM	MHM KT	MHM MHM	MHM NS	NS NS	NS NS	NS NS	
Daily WQ Reviewed by:		MM MM	MHM KT	MHM MHM	MHM NS	NS NS	NS NS	NS NS	

(A) WE MM 2022 Aug 24

(B) WQ Measurement Confirmed (MHM 2022 Aug 26)

(C) WQ measurement confirmed by verifying with two different meters (MHM 2022 Aug 27

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE336

Sample ID: Pond 5

Analyst (s): M. Mazziotti KTanaki; MHamad, NSherquell; D. Fang

Concentration: Control

Control Water Batch: Date(s): 2022 Aug 19

Hardness (mg/L $CaCO_3$): 84

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KT dml
3	0	0	0	0	0	0	0	0	0	0	MHM MHM
4	4	2	2	4	3	3	4	2	4	3	NS NS
5	9	7	4	5	7	7	6	6	6	5	NS NS
6	0	0	0	0	0	0	0	0	0	9	NS NS
7	12	9	10	11	12	11	11	9	5	0	NS NS
8							(A)				
Total	25	18	16	20	22	21	21	17	15	17	MO PR

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	KT dml
3	0	0	0	0	0	0	0	0	0	0	MHM MHM
4	3	3	3	3	4	3	3	4	2	3	NS NS
5	8	6	5	7	7	6	5	6	5	9	NS NS
6	0	0	0	0	0	0	0	0	0	11	NS NS
7	10	12	10	10	9	8	10	11	11	0	NS NS
8							(A)				
Total	21	21	18	20	20	17	18	21	18	23	MO PR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) NIA MO 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE336

Sample ID: Pond 5

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0	0	0	0	0	0	mth mth
4	3	2	4	6	4	4	4	5	4	4	NS NS
5	6	9	10	8	6	6	5	5	6	5	NS NS
6	0	0	0	0	0	0	0	0	6	8	NS NS
7	10	12	10	10	12	11	7	9	0	0	NS NS
8							(A)				
Total	19	23	24	24	22	21	16	19	16	17	mo [illegible]

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	5	5	5	6	5	2	2	3	2	5	NS NS
5	8	7	11	6	5	5	5	6	5	4	NS NS
6	0	0	0	0	0	0	0	0	0	11	NS NS
7	13	12	8	9	7	10	9	8	6	0	NS NS
8						(A)					
Total	26	24	24	21	17	17	16	17	13	20	mo [illegible]

(A) NIA mo 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE336

Sample ID: Pond 5

Concentration (%v/v) 12.5

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dm KT
3	0	0	0	0	0	0	0	0	0	0	MM mm
4	3	3	4	3	4	4	3	5	3	3	NS NS
5	8	11	6	8	7	8	7	7	4	4	NS NS
6	0	0	0	0	0	0	0	0	0	4	NS NS
7	10	11	8	7	10	8	10	10	8	0	NS
8						(A)					
Total	21	25	18	18	21	20	20	22	15	11	MO PV

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 25

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dm KT
3	0	0	0	0	0	0	0	0	0	0	MM mm
4	4	4	4	4	1	3	2	4	0	4	NS NS
5	9	9	9	10	8	6	9	5	0	7	NS NS
6	0	0	0	0	0	0	0	0	Sp 0	0	NS NS
7	8	9	10	9	11	7	8	7	SpD	7	NS NS
8						(A)					
Total	21	22	23	23	20	16	19	16	0	18	MO PV

(A) NIA MO 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE336

Sample ID: Pond 5

Concentration (%v/v) 50

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	4	3	4	4	4	1	4	3	4	4	NS NS
5	10	5	8	8	8	9	11	3	7	5	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	7	7	9	9	5	10	11	7	8	7	NS
8							(A)				
Total	21	15	21	21	17	20	26	13	19	16	MO DL

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	[illegible]
3	0	0	0	0	0m	0	0	0	0	0	[illegible]
4	6	5	4	4	|	4	4	4	4	3	NS NS
5	7	9	8	6	|	9	9	9	8	6	NS NS
6	* 0	0	0	0	|	0	0	0	0	0	NS NS
7	5	10	6	7	|	13	7	10	8	6	NS NS
8						(A)					
Total	18	24	18	17	0m	26	20	23	20	15	MO DL

* on day 6 all adult cerio have a "fuzzy" coating around body – NS 2022 Aug 30

(A) NIA MO 2022 Sep 09

CETIS Analytical Report

Report Date:	09 Sep-22 09:42 (p 1 of 4)
Test Code/ID:	CD-4388-0522 / 18-7017-0984

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-6472-1005	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:41	**MD5 Hash:**	1C9036AAFDF46AA43AB2B32569E516E3	**Editor ID:**	002-543-972-3

Batch ID:	10-6040-8542	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 17:09	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 13:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	00-5058-4775	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 10:20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 13
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1558277	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail

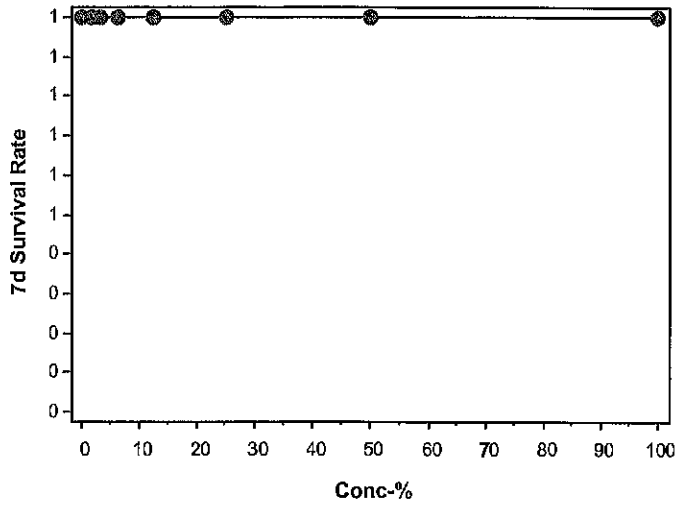
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

2022 Sep09 2022

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	15-6472-1005	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:41	**MD5 Hash:**	1C9036AAFDF46AA43AB2B32569E516E3	**Editor ID:**	002-543-972-3

Graphics



2022 Sep 09 2022

Analyst: MO QA: KT SEP12

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	03-7080-4395	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:41	**MD5 Hash:**	9B66F1B8288F1AEF4BFBCA7A822CC3B2	**Editor ID:**	002-543-972-3

Batch ID:	10-6040-8542	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	M. Mazziotti
Start Date:	24 Aug-22 17:09	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	31 Aug-22 13:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	00-5058-4775	**Code:**	C263077	**Project:**	General Misc. Bioassays
Sample Date:	22 Aug-22 10:20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	23 Aug-22 11:41	**CAS (PC):**		**Station:**	Pond 13
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	552473	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	10	17.3	17.67	14	21	13.36%	0.00%	19.68	0.00%
1.56		10	21.3	21.5	16	25	11.72%	-23.12%	19.68	0.00%
3.13		10	18.2	19.67	12	22	19.00%	-5.20%	19.68	0.00%
6.25		10	18.4	19.6	14	21	14.54%	-6.36%	19.68	0.00%
12.5		10	21.2	20.5	17	27	15.05%	-22.54%	19.68	0.00%
25		10	18.5	21.2	11	25	25.64%	-6.94%	19.68	0.00%
50		10	19.2	19	14	23	15.49%	-10.98%	19.68	0.00%
100		10	23.3	24.2	19	26	10.90%	-34.68%	19.68	0.00%

Reproduction Detail

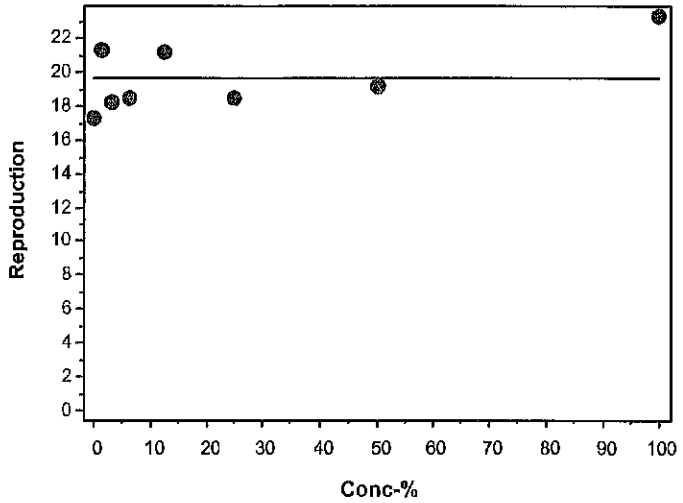
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	14	15	20	17	15	18	21	19	18	16
1.56		23	25	20	22	23	20	16	23	21	20
3.13		21	20	22	21	12	20	18	16	13	19
6.25		14	20	19	20	15	21	20	15	19	21
12.5		17	20	27	21	20	18	21	25	24	19
25		13	18	22	25	22	22	11	15	15	22
50		16	19	14	23	17	19	19	22	20	23
100		25	26	26	25	23	19	23	21	25	20

2022 Sep09 2022

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	03-7080-4395	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	09 Sep-22 9:41	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	09 Sep-22 9:41	**MD5 Hash:**	9B66F1B8288F1AEF4BFBCA7A822CC3B2	**Editor ID:**	002-543-972-3

Graphics



2022 Sep09 Analyst: MO QA: KT 2022 Sep12

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: August 24, 2022
End Date: August 31, 2022
Analyst(s): M. Mazziotti, D. Lai, M. Hamad, N. Shergill

Job / Sample #: C263077 / BAE337
Sample ID: Pond 13
Organism Lot #: AB2022Aug16

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	14	23	21	14	17	13	16	25
2	15	25	20	20	20	18	19	26
3	20	20	22	19	27	22	14	26
4	17	22	21	20	21	25	23	25
5	15	23	12	15	20	22	17	23
6	18	20	20	21	18	22	19	19
7	21	16	18	20	21	11	19	23
8	19	23	16	15	25	15	22	21
9	18	21	13	19	24	15	20	25
10	16	20	19	21	19	22	23	20
Mean	17.3	21.3	18.2	18.4	21.2	18.5	19.2	23.3
SD	2.3	2.5	3.5	2.7	3.2	4.7	3.0	2.5

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	100	100	100
SD (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: 2022 Sep 09

Proofed by: 2022 SEP 12

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE337

Date Started August 24, 2022

Sample ID: Pond 13

Date Ended: Aug 31, 2022

Organism Lot #: AB 2022 Aug 16

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 24, 2022	104.1	24.5	7.4	20	100.1	24.6	MM
1	August 25, 2022	100.0	24.9	N/A	n/a	n/a	n/a	mlm
2	August 26, 2022	100.4	25.2	N/A	n/a	n/a	n/a	mlm
3	August 27, 2022	99.4	25.0	N/A	n/a	n/a	n/a	mlm
4	August 28, 2022	Ⓐ ~~102.7~~ 99.0	25.2	N/A	n/a	n/a	n/a	NS
5	August 29, 2022	99.8	25.0	N/A	n/a	n/a	n/a	NS
6	Aug 30, 2022	100.0	25.8	N/A	n/a	n/a	n/a	NS
7				N/A	Ⓐ			

Ⓐ Due NS 2022 Aug 28

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BBY2-0408

Sample Description: Light yellow, clear — Initials: MM

Sample Hardness (mg/L $CaCO_3$): 172 — Initials: MM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 24, 2022 — Pre - Aerated From: 15:13 - 15:33 Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Seeded @: 17:09 Bottle / Carboy #: 1 — Seeding checked by: dml	MM dml
1	Date: August 25, 2022 — Pre - Aerated From: n/a Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Water Change @: 16:32 Bottle / Carboy #: 2	mlm / MM
2	Date: August 26, 2022 — Pre - Aerated From: n/a Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Water Change @: 16:31 Bottle / Carboy #: 3	dml
3	Date: August 27, 2022 — Pre - Aerated From: n/a Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Water Change @: 15:10 Bottle / Carboy #: 4	mlm
4	Date: August 28, 2022 — Pre - Aerated From: n/a Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Water Change @: 15:57 Bottle / Carboy #: 5	NS
5	Date: August 29, 2022 — Pre - Aerated From: n/a Feeding volume PKS (µL): 100 — YCT (µL): 50 — Test Water Change @: 16:44 Bottle / Carboy #: 6	NS
6	Date: Aug 30, 2022 Pre-Aerated from: n/a Feeding vol PKS (µL): 100 YCT (µL): 50 Transfer time @ 15:32 Bottle #7	NS
7	Date: Aug 31, 2022 Test transfer @ 13:00. Ⓐ	NS
8	Date:	

Ⓐ N/A MD 2022 Sep 09

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 13 Job / Sample #: C263077 / BAE337

Analyst(s): M. Nazzioli, MHamad, D. Lai, N. Shergill

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	174	173	173	176	177	179	166	
	Final	185	186	187	188	189	190	179	
Temp. (°C)	Initial	24.9	25.0	24.5	24.4	24.1	24.6	24.8	
	Final	24.8	24.8	24.6	24.7	24.6	24.7	25.1	
D.O. (mg/L)	Initial	8.0	8.2	8.3	8.3	8.3	8.4	8.2	
	Final	8.0	7.9	7.9	8.1	8.2	8.3	7.8	
pH	Initial	8.3	8.2	8.3	8.3	8.3	8.3	8.2	
	Final	8.3	8.2	8.2	8.3	8.2	8.2	8.0	

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	180	184	185	189	188	171	172	NHAmo 2022
	Final	191	192	193	193	199	190	182	
Temp. (°C)	Initial	24.8	24.8	24.5	24.3	24.3	24.8	24.9	Sep09
	Final	24.8	24.8	24.6	24.7	24.8	24.9	25.5	
D.O. (mg/L)	Initial	8.0	8.3	8.3	8.3	8.3	8.3	8.3	
	Final	7.9	7.9	7.9	8.2	8.1	8.2	7.8	
pH	Initial	8.3	8.2	8.2	8.2	8.3	8.2	8.2	
	Final	8.2	8.2	8.2	8.2	8.2	8.2	8.0	

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	186	192	194	196	191	180	179	
	Final	197	200	203	197	202	191	190	
Temp. (°C)	Initial	24.9	24.8	24.5	24.4	24.4	24.8	24.9	
	Final	24.8	24.7	24.4	24.8	25.0	24.9	25.8	
D.O. (mg/L)	Initial	8.1	8.3	8.3	8.3	8.4	8.3	8.3	
	Final	7.9	7.9	7.9	8.1	8.1	8.2	7.7	
pH	Initial	8.3	8.2	8.2	8.2	8.3	8.2	8.2	
	Final	8.2	8.2	8.2	8.2	8.2	8.2	8.0	

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	198	209	211	219	204	191	193	
	Final	210	208	213	209	215	202	204	
Temp. (°C)	Initial	24.9	24.9	24.5	24.4	24.3	24.9	24.9	
	Final	24.9	24.8	24.5	24.9	25.1	25.0	25.7	
D.O. (mg/L)	Initial	8.2	8.2	8.3	8.3	8.4	8.3	8.3	
	Final	7.8	7.9	8.0	8.1	8.0	8.3	7.4	
pH	Initial	8.2	8.1	8.2	8.2	8.2	8.2	8.2	
	Final	8.2	8.2	8.2	8.2	8.2	8.2	8.0	
Analyst		MM MM	MHM dml	MHM MHM	MHM NS	NS NS	NS NS	NS M	
Daily WQ Reviewed by:		MM MM	MHM dml	MHM MM	MHM NS	NS NS	NS NS	NS ~	

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc.

Sample ID: Pond 13 Job / Sample #: C263077 / BAE337

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	224	238	234	247	218	215	217	
	Final	236	220	241	220	228	227	224	
Temp. (°C)	Initial	24.9	25.0	24.5	24.4	24.4	25.0	25.0	
	Final	24.9	24.6	24.7	25.0	25.2	25.0	25.5	
D.O. (mg/L)	Initial	8.2	8.2	8.3	8.3	8.4	8.3	8.3	
	Final	7.9	7.9	8.0	8.1	8.0	8.3	7.8	
pH	Initial	8.2	8.0	8.1	8.1	8.2	8.1	8.1	
	Final	8.2	8.2	8.2	8.2	8.2	8.2	8.0	

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	273	287	320	379	276	268	271	NHAMO 2022 Sep09
	Final	284	277	300	263	283	280	280	
Temp. (°C)	~~Final~~ Initial (A)	24.9	24.8	24.4	24.5	24.4	25.0	25.0	
	Final	24.9	24.8	24.7	24.9	25.1	25.1	25.5	
D.O. (mg/L)	Initial	8.2	8.3	8.3	8.3	8.4	8.3	8.3	
	Final	7.8	7.8	7.8	8.1	8.0	8.3	7.8	
pH	Initial	8.1	7.9	7.9	8.0	8.0	7.9	7.9	
	Final	8.2	8.1	8.1	8.2	8.1	8.2	7.9	

50%	Day	1	(B) 2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	369	448	446	483	371	372	371	
	Final	382	368	383	363	374	381	381	
Temp. (°C)	Initial	24.7	24.9	24.4	24.4	24.6	25.1	25.0	
	Final	24.9	25.0	24.6	25.0	25.1	25.1	25.5	
D.O. (mg/L)	Initial	8.2	8.2	8.3	8.3	8.3	8.3	8.3	
	Final	7.8	7.8	7.7	8.1	8.0	8.2	7.8	
pH	Initial	7.9	7.6	7.6	7.7	7.7	7.7	7.7	
	Final	8.2	8.2	8.1	8.2	8.0	8.2	7.9	

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	569	574	567	563	575	574	571	
	Final	580	571	593	585	581	580	580	
Temp. (°C)	Initial	24.6	24.9	24.4	24.4	24.7	25.1	25.2	
	Final	24.8	24.9	24.6	24.9	25.1	25.2	25.7	
D.O. (mg/L)	Initial	8.3	8.1	8.3	8.2	8.4	8.3	8.3	
	Final	7.8	7.7	7.8	8.0	8.0	8.2	7.8	
pH	Initial	7.6	7.4	7.5	7.5	7.4	7.4	7.4	
	Final	8.1	8.1	8.1	8.2	8.0	8.1	7.8	
Analyst		MM MM	MM dm	MM MM	MM NS	NS NS	NS NS	NS MM	
Daily WQ Reviewed by:		MM MM	MM dm	MM MM	MM NS	NS NS	NS NS	NS MM	

(A) WC MM 2022 Aug 24

(B) WQ double checked DMC 2022 Aug 26

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE337

Sample ID: Pond 13

Analyst (s): M. Mazziotti, D. Lal, M. Hamed, N. Shergill

Concentration: Control

Control Water Batch: Date(s): 2022 Aug 19

Hardness (mg/L $CaCO_3$): 84

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dml
3	0	0	0	0	0	0	0	0	0	0	mlm mlm
4	2	3	4	2	4	4	3	3	4	3	NS NS
5	4	6	8	7	6	6	8	7	7	5	NS NS
6	8	0	0	0	0	0	0	0	0	0	NS NS
7	0	6	8	8	5	8	10	9	7	8	NS
8						(A)					
Total	14	15	20	17	15	18	21	19	18	16	mo Kt

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dml
3	0	0	0	0	0	0	0	0	0	0	mlm
4	3	4	4	3	3	3	3	4	5	4	NS NS
5	10	9	7	10	8	8	7	8	8	7	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	10	12	9	9	12	9	6	11	8	9	NS NS
8					(A)						
Total	23	25	20	22	23	20	16	23	21	20	mo Kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) N/A mo 2022 Sep 09

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE337

Sample ID: Pond 13

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dmi
3	0	0	0	0	0	0	0	0	0	0	M m
4	5	3	3	4	3	4	1	1	2	5	NS NS
5	8	6	7	8	5	10	7	7	4	5	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	8	11	12	9	4	6	10	8	7	9	NS NS
8						(A)					
Total	21	20	22	21	12	20	18	16	13	19	mo KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Job / Sample #: C263077 / BAE337

Sample ID: Pond 13

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates)										Analyst
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dmi
3	0	0	0	0	0	0	0	0	0	0	mtm m
4	3	4	4	4	4	5	5	2	5	2	NS NS
5	4	6	9	7	5	9	9	4	4	5	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	7	10	6	9	6	7	6	9	10	14	NS
8						(A)					
Total	14	20	19	20	15	21	20	15	19	21	mo KT

(A) NIA mo 2022 Sep09

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE337

Sample ID: Pond 13

Concentration (%v/v) 12.5

Concentration (% v/v): 25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dml
3	0	0	0	0	0	0	0	0	0	0	MHM MHM
4	2	1	6	2	0	2	5	5	4	3	NS NS
5	7	9	10	10	9	6	10	11	10	9	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	8	10	11	9	11	10	6	9	10	7	NS NS
8						(A)					
Total	17	20	27	21	20	18	21	25	24	19	mo KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dml
3	0	0	0	0	0	0	0	0	0	0	M M
4	2	4	5	5	5	5	4	4	2	4	NS NS
5	3	6	10	9	9	9	7	7	7	10	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	8	8	7	11	8	8	0	4	6	8	NS
8					(A)						
Total	13	18	22	25	22	22	11	15	15	22	mo KT

(A) NIA mo 2022 Sep 09

Client Name Diavik Diamond Mines Inc.

Job / Sample #: C263077 / BAE337

Sample ID: Pond 13

Concentration (%v/v) 50

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dm
3	0	0	0	0	0	0	0	0	0	0	mtm mtm
4	5	3	2	5	2	2	7	6	4	3	NS NS
5	7	10	8	9	7	8	8	9	6	10	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	4	6	4	9	8	9	4	7	10	10	NS
8							(A)				
Total	16	19	14	23	17	19	19	22	20	23	mo KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM MM
2	0	0	0	0	0	0	0	0	0	0	dm
3	0	0	0	0	0	0	0	0	0	0	[illegible]
4	4	4	4	5	3	4	4	3	6	3	NS NS
5	10	9	13	9	8	10	10	9	8	7	NS NS
6	0	0	0	0	0	0	0	0	0	0	NS NS
7	11	13	9	11	12	5	9	9	11	10	NS
8							(A)				
Total	25	26	26	25	23	19	23	21	25	20	mo KT

(A) N/A mo 2022 Sep 09

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: 2022 Aug 15

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	15-Aug	70			70		
1	16-Aug		0	0	70	0.00%	
2	17-Aug		0	0	70	0.00%	
3	18-Aug		0	0	70	0.00%	
4	19-Aug		0	0	70	0.00%	
5	20-Aug		0	0	70	0.00%	
6	21-Aug		0	0	70	0.00%	
7	22-Aug		0	0	70	0.00%	0.00%
8	23-Aug		0	2	68	0.00%	0.00%
9	24-Aug		0	0	68	0.00%	0.00%
10	25-Aug		0	0	68	0.00%	0.00%
11					68	0.00%	0.00%
12					68	0.00%	0.00%
13					68	0.00%	0.00%
14					68	0.00%	0.00%
15					68	0.00%	0.00%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	
Replicate 1	0	0	5	9	0	9	12*	23
Replicate 2	0	0	4	10	0	10	13*	24
Replicate 3	0	0	5	8	0	9	13*	22
Replicate 4	0	0	5	9	0	11	14*	25
Replicate 5	0	0	5	8	0	6	15*	19
Replicate 6	0	0	4	10	0	10	13*	24
Replicate 7	0	0	4	8	0	12	16*	24
Replicate 8	0	0	6	12	0	9	15*	27
Replicate 9	0	0	5	11	0	10	14*	26
Replicate 10	0	0	4	9	0	9	15*	22
Mean								**23.6**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments:

Reviewed by: KWMcD 2022 Sep 12

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2022 July 29, 2022 Aug 16 PKS Batch: 2022 July 29, 2022 Aug 16 Water Batch: 2022 Aug 04, 2022 Aug 19

Culture Date: AB 2022 Aug 15 Analyst(s): MH MT KK, MMO

Date	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21	Aug 22	Aug 23	Aug 23
Time	10:57	05:54	07:03	09:43	07:32	07:58	09:24	07:10	16:19
Tracking/Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	track
YCT (µL)	50	50	50	50	50	50	50	50	—
PKS (µL)	150	150	150	100	100	100	100	100	—
Test tube #	Brood size								
1	0	0	5	9	0	9	12 A	0	16
2	0	0	4	10	0	10	13 A	15	0
3	0	0	5	8	0	9	13	0	16
4	0	0	5	9	0	11	14	0	17
5	0	0	5	8	0	6	15	14	0
6	0	0	4	10	0	10	13 A	0	17
7	0	0	4	8	0	12	16	0	17
8	0	0	6	12	0	9	15	16	0
9	0	0	5	11	0	10	11	13	0
10	0	0	4	9	0	9	15	13	0
11	0	0	√	√√	0	√√	√√	0	W
12	0	0	√	√√	0	√√	√√ A	√√	0
13	0	0	√	√	0	√√	√√ A	0	√√
14	0	0	√	√√	0	√√	√√	√√	0
15	0	0	√	√√	0	√√	√√	√√	0
16	0	0	√	√√	0	√√	√√	0	W
17	0	0	√	√√	0	√√	√√ A	0	OM
18	0	0	√	√√	0	√√	√√	√√	0
19	0	0	√	√	0	√√	√√ A	0	W
20	0	0	√	√√	0	√√	√√	√√	0
21	0	0	√	√√	0	√√	√√	0	W
22	0	0	√	√√	0	√√	√√	√√	0
23	0	0	√	√√	0	√√	√√ A	0	W
24	0	0	√	√√	0	√√	√√	0	W
25	0	0	√	√	0	√√	√√	0	W
26	0	0	√	√√	0	√√	√√	0	W
27	0	0	√	√√	0	√√	√√	0	W
28	0	0	√	√	0	√√	√√ A	0	OM
29	0	0	√	√√	0	√√	√√	√√	0
30	0	0	√	√√	0	√√	√√ A	√√√	0
31	0	0	√	√√	0	√√	√√	√√	W
32	0	0	√	√	0	√√	√√	√√	0
33	0	0	√	√√	0	√√	√√	0	W
34	0	0	√	√√	0	√√	√√	0	W
35	0	0	√	√√	0	√√	√√	√√	0
# Missing/Lost	0	0	0	0	0	0	0	0	2
# Dead	0	0	0	0	0	0	0	0	0
Analyst	MH	MHM	MHM	MH	MHM	MT	KK	MK	MMO
Time	11:03	05:01	07:13	09:53	07:38	08:08	09:31	07:14	16:25

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - (A) Aug 2022	D -
B -	E -
C -	F -

(A) week 4 2022 Aug 22

ECOTOXICOLOGY

CERIODAPHNIA DUBIA - CLEARING RECORDS

BUREAU VERITAS LABORATORIES
BBY2FCD-00242/6

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2022 Aug 15

Analyst(s): mr Mt Kl, mo

Test tube #	Brood size								
Date	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21	Aug 22	Aug 23	Aug 25
Time	11:03	06:01	07:14	09:53	07:35	08:08	09:31	07:15	16:25
36	0	0	✓	✓✓	0	✓✓	✓✓	0	W
37	0	0	✓	✓✓	0	✓✓	✓✓	0	W
38	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
39	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
40	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
41	0	0	✓	✓✓	0	✓✓	✓✓	0	W
42	0	0	✓	✓✓	0	✓✓	✓✓	0	W
43	0	0	✓	✓✓	0	✓✓	✓✓	0	W
44	0	0	✓	✓	0	✓✓	✓✓	0	W
45	0	0	✓	✓✓	0	✓✓	✓✓	0	0
46	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	W
47	0	0	✓	✓✓	0	✓✓	✓✓	0	0
48	0	0	✓	✓	0	✓✓	✓✓	✓✓	0
49	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
50	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
51	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
52	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
53	0	0	✓	✓✓	0	✓✓	✓✓	0	W
54	0	0	✓	✓✓	0	✓✓	✓✓	0	W
55	0	0	✓	✓✓	0	✓✓	✓✓	0	0
56	0	0	✓	✓✓	0	✓✓	✓✓	0	W
57	0	0	✓	✓✓	0	✓✓	✓✓	0	W
58	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
59	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
60	0	0	✓	✓	0	✓✓	✓✓	✓✓	0
61	0	0	✓	✓✓	0	✓✓	✓✓	0	W
62	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
63	0	0	✓	✓✓	0	✓✓	✓✓	0	W
64	0	0	✓	✓	0	✓✓	✓✓	✓✓	0
65	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
66	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
67	0	0	✓	✓✓	0	✓✓	✓✓	0	W
68	0	0	✓	✓	0	✓✓	✓✓	✓✓	0
69	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
70	0	0	✓	✓✓	0	✓✓	✓✓	✓✓	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	mr	MHM	MHM	mr	MHM	Mt	Kl	MHM	mo
Time	11:11	06:07	07:19	10:00	07:43	08:14	09:36	07:22	16:30

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: PKS Batch: Water Batch:

Culture Date: AB 2022 Aug 15 Analyst(s): MM, MMKt

Date	Aug 23	Aug 24	Aug 24	Aug 24	Aug 25				
Time	22:20	05:20	14:39	21:08	06:35				
Tracking/Clear	track	Clear	Track	track	clear				
YCT (µL)	—	50	—	—	50				
PKS (µL)	—	100	—	—	100				
Test tube #	Brood size								
1	0	0	0	21 B	0				
2	0	0	0	18 B	0				
3	0	0	0	17 B	0				
4	0	0	0	17 B	0				
5	0	0	0	14 B	0				
6	0	0	0	19 B	0				
7	0	0	0	19 B	0				
8	0	0	0	16 B	0				
9	0	0	0	18 B	0				
10	0	0	16 (A) A	0	0				
11	0	0	0	0	0				
12	0	0	√√√ (A) A	0	0				
13	0	0	0	√√	0				
14	0	0	0	√√ B	0				
15	0	0	0	√√	0				
16	0	0	0	√√√	0				
17									
18	0	0	0	√√	0				
19	0	0	0 (A)	√√	0				
20	0	0	√√√ A	0	0				
21	0	0	0	√√	0				
22	0	0	0	√√	0				
23	0	0	0	√√	0				
24	0	0	0	√√	0				
25	0	0	0	√√	0				
26	0	0	0	√√	0				
27	0	0	0	0	√√				
28									
29	0	0	0	√√	0				
30	0	0	√√ (A) A	0	0				
31	0	0	0 (A)	√√	0				
32	0	0	√√ A	0	0				
33	0	0	0	√√	0				
34	0	0	0	√√	0				
35	0	0	0	√√	√√				
# Missing/Lost	0	0	0	0	0				
# Dead	0	0	0	0	0				
Analyst	MMM	MMM	MM	(B) Kt	MMM				
Time	22:21	05:24	14:41	21:13	06:40				

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - Pond 4, 5 D -
B - SANDHILL E -
C - F -

(B) Week 1 2022 Aug 24

(A) Test tubes were cleaned (100µL PKS, 50µL YCT). MM 2022 Aug 24

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2022 Aug15 Analyst(s): MM, MMKt

Test tube #	Brood size								
Date	Aug23	Aug24	Aug24	Aug21	Aug25				
Time	22:21	05:24	14:42	21:13	06:40				
36	0	0	0	✓✓	0				
37	0	0	0	✓✓✓	0				
38	0	0	✓✓✓A(A)	0	0				
39	0	0	✓✓✓A(A)	0	0				
40	0	0	✓✓✓A(A)	0	0				
41	0	0	0	✓✓✓	0				
42	0	0	0	✓✓✓	0				
43	0	0	0	✓✓	0				
44	0	0	0	✓✓✓	0				
45	0	0	0	✓✓	0				
46	0	0	0	✓✓	0				
47	0	0	0	✓✓✓	0				
48	0	0	✓✓✓ A(A)	0	0				
49	0	0	✓✓✓ A(A)	0	0				
50	0	0	✓✓✓	0	0				
51	0	0	0	✓✓	0				
52	0	0	✓✓	0	0				
53	0	0	0	✓✓✓	0				
54	0	0	0	✓✓✓	0				
55	0	0	0	✓✓	0				
56	0	0	0	✓✓	0				
57	0	0	0	✓✓	0				
58	0	0	0	✓✓	0				
59	0	0	0	✓✓	0				
60	0	0	✓✓✓	0	0				
61	0	0	0	✓✓	0				
62	0	0	0	✓✓	0				
63	0	0	0	✓✓✓	0				
64	0	0	0	✓✓	0				
65	0	0	0	✓✓✓	0				
66	0	0	0	✓✓	0				
67	0	0	0	✓✓	0				
68	0	0	✓✓✓	0	0				
69	0	0	0	✓✓	0				
70	0	0	✓✓✓	0	0				
# Missing/Lost	0	0	0	0	0				
# Dead	0	0	0	0	0				
Analyst	MMM		MM	Kt	MMM				
Time	22:24		14:44	21:15	06:45				

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size				
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24	A - Rx #1
Time	10:10am	8:25am	8:15pm	8:00am	B - Client # 123
1	√	√	√√	√√ A	
2	√	√	√√	√√ B	

(A) Test tubes were cleared (100 µL PKS, 50 µL YCT) - MM 2022 Aug 24.

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: 2022 Aug 16

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	16-Aug	70			70		
1	17-Aug		0	0	70	0.00%	
2	18-Aug		0	0	70	0.00%	
3	19-Aug		0	0	70	0.00%	
4	20-Aug		0	0	70	0.00%	
5	21-Aug		0	0	70	0.00%	
6	22-Aug		1	0	69	1.43%	
7	23-Aug		0	0	69	0.00%	1.43%
8	24-Aug		0	0	69	0.00%	1.43%
9	25-Aug		0	0	69	0.00%	1.43%
10					69	0.00%	1.43%
11					69	0.00%	1.43%
12					69	0.00%	1.43%
13					69	0.00%	0.00%
14					69	0.00%	0.00%
15					69	0.00%	0.00%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	
Replicate 1	0	0	4	0	7	15	0	26
Replicate 2	0	0	0	6	8	12	0	26
Replicate 3	0	0	0	2	12	14	0	28
Replicate 4	0	0	0	5	9	17	0	31
Replicate 5	0	0	0	2	7	15	0	24
Replicate 6	0	0	0	5	9	12	0	26
Replicate 7	0	0	0	5	7	14	0	26
Replicate 8	0	0	5	0	8	15	13*	28
Replicate 9	0	0	6	0	9	16	13*	31
Replicate 10	0	0	0	0	9	13	11	33
Mean								**27.9**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments:

Reviewed by: KCMalu 2022 Sep 12

ECOTOXICOLOGY

CERIODAPHNIA DUBIA - CLEARING RECORDS

BUREAU VERITAS LABORATORIES
BBY2FCD-00242/6

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2022Jly29 2022 Aug 16 PKS Batch: 2022 Jly29 2022 Aug 16 Water Batch: 2022 Aug12(A), 2022 Aug 19
Culture Date: AB2022Aug16 Analyst(s): MHM MT Kt, MO

Date	Aug17	Aug18	Aug19	Aug20	Aug21	Aug22	Aug23	Aug23	Aug23
Time	05:46	07:24	10:02	07:44	08:17	0822	07:26	16:06	22:17
Tracking/Clear	clear	clear	clear	clear	clear	clear	clear	track	track
YCT (µL)	50	50	50	50	50	50	50	—	—
PKS (µL)	150	150	100	100	100	100	100	—	—
Test tube #	Brood size								
1	0	0	4	0	7	15	0	19	0
2	0	0	0	6	8	12	0	20	0
3	0	0	0	2	12	14	0	13	0
4	0	0	0	5	9	17	0	15	0
5	0	0	0	2	7	15	0	13	0
6	0	0	0	5	9	12	0	14	0
7	0	0	0	5	7	14	0	10	0
8	0	0	5	0	8	15	13 A	0	0
9	0	0	6	0	9	16	13 A	0	0
10	0	0	0	0	9	13	11	0	0
11	0	0	√	0	√√	√√	√0	W	0
12	0	0	0	√	√	X			
13	0	0	0	√	√	√√	0		
14	0	0	0	√	√√	√√	0	W	0
15	0	0	0	√	√√	√√	0	W	0
16	0	0	0	√	√√	√√	0	W	0
17	0	0	0	√	√	√√	0	W	0
18	0	0	√	0	√	√√	0	W	0
19	0	0	√	0	√√	√√	√√	W	0
20	0	0	0	0	√√	√√	0	0	0
21	0	0	√	0	√√	√√	√√	0	0
22	0	0	0	√	√√	√√	0	W	0
23	0	0	0	√	√√	√√	0	W	0
24	0	0	0	√	√√	√√	0	W	0
25	0	0	√	0	√√	√√	0	W	0
26	0	0	0	√	√√	√√	0	0	0
27	0	0	0	√	√√	√√	0	W	0
28	0	0	√	0	√	√√	0	W	0
29	0	0	√	0	√√	√√	0	W	0
30	0	0	√	0	√√	√√	√√ A	0	0
31	0	0	√	0	√√	√√	√√ A	0	0
32	0	0	0	√	√√	√√	0	0	0
33	0	0	0	√	√√	√√	0	W	0
34	0	0	0	0	√√	√√	0	W	0
35	0	0	√	0	√√	√√	0	W	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	1	0	0	0
Analyst	MHM	MHM	[illegible]	MHM	MT	Kt	MHM	MO	MHM
Time	05:52	07:30	10:12	07:50	08:31	0829	07:33	16:11	22:18

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - Aug23 D -
B - E -
C - F -

(A) WE MO 2022 Aug 23

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2022 Aug 16 Analyst(s): Mt, mo

Test tube #	Brood size								
Date	Aug17	Aug18	Aug19	Aug20	Aug21	Aug22	Aug23	Aug23	Aug23
Time	08:52	07:30	10:12	07:50	08:32	08:29	07:33	16:11	22:18
36	0	0	0	✓	✓✓	✓✓	0	W	0
37	0	0	0	✓	✓✓	✓✓	0	W	0
38	0	0	✓	0	✓	✓✓	✓✓	0	0
39	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
40	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
41	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
42	0	0	0	✓	✓✓	✓✓	0	W	0
43	0	0	0	✓	✓✓	✓✓	0	W	0
44	0	0	0	✓	✓✓	✓✓	0	W	0
45	0	0	✓	0	✓	✓✓	0	W	0
46	0	0	0	✓	✓✓	✓✓	0	W	0
47	0	0	0	✓	✓✓	✓✓	0	W	0
48	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
49	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
50	0	0	✓	0	✓✓	✓✓	✓✓ A	0	0
51	0	0	✓	0	✓✓	✓✓	✓✓	0	0
52	0	0	0	✓	✓✓	✓✓	0	W	0
53	0	0	0	✓	✓✓	✓✓	0	W	0
54	0	0	0	✓	✓✓	✓✓	0	W	0
55	0	0	✓	0	✓✓	✓✓	0	W	0
56	0	0	0	✓	✓✓	✓✓	0	W	0
57	0	0	0	✓	✓✓	✓✓	0	W	0
58	0	0	✓	0	✓✓	✓✓	✓✓	0	0
59	0	0	✓	0	✓	✓✓	✓✓	0	0
60	0	0	✓	0	✓✓	✓✓	✓✓	0	0
61	0	0	✓	0	✓✓	✓✓	✓✓	0	0
62	0	0	0	✓	✓✓	✓✓	0	W	0
63	0	0	0	✓	✓✓	✓✓	0	W	0
64	0	0	0	✓	✓✓	✓✓	0	W	0
65	0	0	✓	0	✓✓	✓✓	0	W	0
66	0	0	0	✓	✓✓	✓✓	0	W	0
67	0	0	0	✓	✓	✓✓	0	W	0
68	0	0	✓	0	✓	✓✓	✓✓	0	0
69	0	0	✓	0	✓✓	✓✓	✓✓	0	0
70	0	0	✓	0	✓✓	✓✓	✓✓	0	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	mtm	mtm	Rx	mtm	Mt	KT	mtm	mo	mtm
Time	05:56	07:36	10:17	07:54	08:41	08:34	mtm	16:15	22:19

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

ECOTOXICOLOGY

CERIODAPHNIA DUBIA - CLEARING RECORDS

BUREAU VERITAS LABORATORIES
BBY2FCD-00242/6

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: PKS Batch: Water Batch:

Culture Date: AB2022 Aug 16 Analyst(s): MM Kt

Date	Aug 23	Aug 24	Aug 24	Aug 25					
Time	05:08	14:46	21:7	06:22					
Tracking/Clear	clear	Track	track	clear					
YCT (µL)	50	–	–	50					
PKS (µL)	100	–	–	100					
Test tube #	Brood size								
1	0	0	13	0					
2	0	0	17	0					
3	0	0	16	0					
4	0	0	21	0					
5	0	0	17	0					
6	0	0	17	0					
7	0	0	16	0					
8	0	0	13	0					
9	0	17 (A) A	0	0					
10	0	13 (A) A	0	0					
11	0	0	√√	0					
12									
13	0	0	0	√√√					
14	0	0	0	√√					
15	0	0	√√	0					
16	0	0	0	√√					
17	0	0	0	√√					
18	0	0	√√	0					
19	0	√√ (A) A	0	0					
20	0	√√ (A) A	0	0					
21	0	0	√√√	0					
22	0	0	0	√√√					
23	0	0	0	√√					
24	0	0	0	√√√					
25	0	0	√√√	0					
26	0	0	0	√√					
27	0	0	0	√√					
28	0	0	√√	0					
29	0	0	√√	0					
30	0	√√ (A) A	0	0					
31	0	0	√√	0					
32	0	0	√√ (B) (B)	0 √√					
33	0	0	√ 0 (B)	0					
34	0	0	0 √ (B)	(B) √					
35	0	0	√	0					
# Missing/Lost	0	0	0	0					
# Dead	0	0	0	0					
Analyst	MM	MM	Kt	MM					
Time	05:13	14:49	21:21	06:28					

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - Pond 13	D -
B -	E -
C -	F -

(A) Test tubes were cleared (100 µL PKS, 50 µL YCT) - MM 2022 Aug 24

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2022 Aug 16 Analyst(s): MM Kt

Test tube #	Brood size								
Date	Aug 23	Aug 24	Aug 24	Aug 25					
Time	05:13	14:49	21:21	06:28					
36	0	0	✓✓✓	0					
37	0	0	✓✓	0					
38	0	✓✓✓ A(A)	0	0					
39	0	✓✓✓ A(A)	0	0					
40	0	✓✓ A(A)	0	0					
41	0	0	✓✓✓✓	0					
42	0	0	✓✓	0					
43	0	0	0	0					
44	0	0	✓✓✓	0					
45	0	0	✓✓	0					
46	0	0	✓✓	0					
47	0	0	✓✓✓	0					
48	0	0	✓✓✓	0					
49	0	✓✓ A(A)	0	0					
50	0	✓✓✓ A(A)	0	0					
51	0	✓✓	(B) 0 ✓✓	0					
52	0	0	(B) ✓✓ 0	(B) 0 ✓✓					
53	0	0	0	✓✓					
54	0	0	0	✓✓					
55	0	0	✓✓	0					
56	0	0	✓✓ (B)	(B) 0					
57	0	0	(B) 0 ✓✓	0					
58	0	0	✓✓✓	0					
59	0	✓✓	✓ 0 (B)	0					
60	0	✓✓	✓ 0 (B)	0					
61	0	0	✓✓	0					
62	0	0	✓✓	0					
63	0	0	✓✓	0					
64	0	0	✓✓	0					
65	0	0	✓✓	0					
66	0	0	✓✓	0					
67	0	0	✓✓	0					
68	0	0	✓✓✓	0					
69	0	✓✓	0	0					
70	0	✓✓✓	0	0					
# Missing/Lost	0	0	0	0					
# Dead	0	0	0	0					
Analyst	MHM	MM	Kt	MHM					
Time	05:18	14:51	21:26	06:34					

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

(A) Test tubes were cleared (100µl PKS, 50µl YCT) - MM 2022 Aug 24
(B) MM Kt 2022 Aug 24

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C265312

Client Project Name & Number: CLOSURE — Sample Number: BAR939-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond-12 — Sample Matrix : Grab Water

Description: yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 29, 2022 02:36 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JT — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 30, 2022 10:28 AM — Volume Received: 1 L — Dissolved Oxygen: 109.0 %

Analysis Start : Aug 31, 2022 11:38 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 403 µS/cm

End : Sep 02, 2022 10:50 AM — Storage: 2-6°C — Hardness: 140 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	331	8.1	0	0	0	0	21	8.0	337	7.8
6.25	20	8.0	336	8.1	0	0	0	0	21	7.9	342	7.8
12.5	20	7.9	340	8.1	0	0	0	0	21	7.9	346	7.8
25	20	7.8	349	8.2	0	0	0	0	21	7.9	356	7.8
50	20	7.7	368	8.4	0	0	0	0	21	7.8	375	7.8
100	20	7.1	408	9.0	0	0	0	0	21	7.4	415	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 31.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 6.9

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C265312
Client Project Name & Number:		CLOSURE	Sample Number:	BAR939-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 26, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.99 (5.05, 7.13)g/L	Statistical Method :	Probit
Historical Mean LC50 (warning limits) :	5.91 (4.34, 8.04) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Sep 08, 2022 01:22 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C265312

Client Project Name & Number: CLOSURE — Sample Number: BAR938-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : E21 — Sample Matrix : Grab Water

Description: pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 29, 2022 02:07 PM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JT — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 30, 2022 10:28 AM — Volume Received: 1 L — Dissolved Oxygen: 108.0 %

Analysis Start : Aug 31, 2022 11:37 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 252 µS/cm

End : Sep 02, 2022 10:46 AM — Storage: 2-6°C — Hardness: 100 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	331	8.0	0	0	0	0	21	7.9	336	7.6
6.25	20	8.0	327	7.9	0	0	0	0	21	8.0	334	7.8
12.5	20	7.9	322	8.1	0	0	0	0	21	7.9	329	7.7
25	20	8.0	313	8.1	0	0	0	0	21	7.9	321	7.7
50	20	7.9	294	8.4	0	0	0	0	21	7.7	303	7.6
100	20	7.5	255	8.8	0	0	0	0	21	7.5	266	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	1	10	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 31.6

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C265312
Client Project Name & Number:		CLOSURE	Sample Number:	BAR938-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 26, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.99 (5.05, 7.13)g/L	Statistical Method :	Probit
Historical Mean LC50 (warning limits) :	5.91 (4.34, 8.04) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Chelsea Tessier, Natasha Lloyd

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Sep 08, 2022 01:27 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C265312

Client Project Name & Number: CLOSURE — Sample Number: BAR936-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond-11 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 29, 2022 03:15 PM — Sampling Method : N/A — pH: 7.9

Sample Collected By: JT — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 30, 2022 10:28 AM — Volume Received: 1 L — Dissolved Oxygen: 115.0 %

Analysis Start : Aug 31, 2022 10:30 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 388 µS/cm

End : Sep 02, 2022 09:32 AM — Storage: 2-6°C — Hardness: 200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	331	8.1	0	0	0	0	20	7.7	344	7.6
6.25	20	8.0	336	8.1	0	0	0	0	21	8.0	343	7.7
12.5	20	8.0	341	8.2	0	0	0	0	21	7.9	355	7.5
25	20	8.0	348	8.3	0	0	0	0	21	7.9	356	7.6
50	20	8.0	364	8.5	0	0	0	0	21	7.9	370	7.6
100	20	7.9	397	9.2	0	0	0	0	20	8.2	413	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 31.6

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C265312
Client Project Name & Number:		CLOSURE	Sample Number:	BAR936-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 26, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.99 (5.05, 7.13)g/L	Statistical Method :	Probit
Historical Mean LC50 (warning limits) :	5.91 (4.34, 8.04) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Natasha Lloyd, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Sep 08, 2022 01:29 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C265312

Client Project Name & Number: CLOSURE — Sample Number: BAR935-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond-10 — Sample Matrix : Grab Water

Description: Yellow, slightly hazy — Sample Prior to Analysis:

Sample Collected: Aug 29, 2022 02:45 PM — Sampling Method : N/A — pH: 8.3

Sample Collected By: JT — Site Collection: N/A — Temperature : 18 °C

Sample Received: Aug 30, 2022 10:28 AM — Volume Received: 1 L — Dissolved Oxygen: 108.0 %

Analysis Start : Aug 31, 2022 10:25 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 838 µS/cm

End : Sep 02, 2022 09:25 AM — Storage: 2-6°C — Hardness: 300 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	331	8.1	0	0	0	0	20	7.7	345	7.5
6.25	20	8.1	372	8.1	0	0	0	0	21	7.8	380	7.5
12.5	20	8.1	405	8.2	0	0	0	0	21	7.9	409	7.4
25	20	8.2	465	8.3	0	0	0	0	21	8.1	474	7.5
50	20	8.2	602	8.4	0	0	0	0	21	8.1	607	7.3
100	19	8.2	858	9.0	0	0	0	0	21	8.3	860	7.3

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : Indigenous organisms present in sample.

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 31.4

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 6.9

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C265312
Client Project Name & Number:		CLOSURE	Sample Number:	BAR935-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 26, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.99 (5.05, 7.13)g/L	Statistical Method :	Probit
Historical Mean LC50 (warning limits) :	5.91 (4.34, 8.04) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Chelsea Tessier, Natasha Lloyd, Tami Horvath

Chelsea Tessier

Verified By : Chelsea Tessier, Ecotoxicology Supervisor Date: Sep 08, 2022 01:30 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C265312

Client Project Name & Number: CLOSURE — Sample Number: BAR937-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : Pond-7 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 29, 2022 01:41 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JT — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 30, 2022 10:28 AM — Volume Received: 1 L — Dissolved Oxygen: 112.0 %

Analysis Start : Sep 03, 2022 10:18 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 249 µS/cm

End : Sep 05, 2022 10:30 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	336	8.2	0	0	0	0	21	7.9	331	7.3
6.25	20	8.0	334	8.2	0	0	0	0	21	7.9	332	7.3
12.5	20	8.0	330	8.2	0	0	0	0	21	7.9	324	7.3
25	21	8.0	323	8.2	0	0	0	0	21	7.9	314	7.7
50	21	7.8	303	8.2	0	0	0	0	21	7.8	294	7.6
100	22	7.1	266	8.2	0	0	0	0	21	7.3	258	7.5

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	1	10	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 225 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 30.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 7 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C265312
Client Project Name & Number:		CLOSURE	Sample Number:	BAR937-02

Reference chemical:	Sodium Chloride	Test Date:	Aug 26, 2022
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.99 (5.05, 7.13)g/L	Statistical Method :	Probit
Historical Mean LC50 (warning limits) :	5.91 (4.34, 8.04) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kaylie Lyons, Natasha Lloyd

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2022 10:15 AM

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: E21 AND POND-12

SAMPLING DATE: AUGUST 29, 2022

Prepared for:

Diavik Diamond Mines Inc.
P.O. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C265312
September 2022

Summary of Test Results for Samples from
Diavik Diamond Mines Ltd.
Sample Date: August 29, 2022
Job C265312

Sample: E21

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

Sample: POND-12

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Ceriodaphnia dubia Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	2 samples, each collected in 8 containers
Test Type	Static-renewal
Effluent Sample	
Sample name	E21 and POND-12
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2022/Aug/29
Date (y/m/d)/time of sample receipt at lab	2022/Aug/30 @ 10:28
Test Organisms	
Species	*Ceriodaphnia dubia*
Source	In house culture started from organisms obtained from Aquatic Biosystems Inc., Fort Collins, Colorado
Age at start of test	<24 hours old; within 12 hours of each other
Unusual appearance, behaviour or treatment of test organisms, before use in test	None
Mean percent mortality of brood in 7d preceding test	The mean percent mortality was 0.0. See "*Ceriodaphnia dubia,* Culture Health - Mortality and Mean Neonates"
Mean number of surviving young produced per adult in culture during the first 3 broods	The mean number of surviving young was 25.8. See "*Ceriodaphnia dubia,* Culture Health - Mortality and Mean Neonates"
Number of young produced in the 3rd or subsequent brood	See "*Ceriodaphnia dubia* - Clearing Records
Ephippia in the culture	No Ephippia present
Test Conditions & Facilities	
Test method	EPS 1/RM/21, 2nd Ed., February 2007 BBY2SOP-00001 *Ceriodaphnia dubia* Chronic Survival and Reproduction Test
Dates or days when subsamples used	See "Initial Measurements and Observations" sheet
Date test started (y/m/d)	2022/Aug/31
Date (y/m/d) of test completion	2022/Sep/06
Test vessels	20 mL glass culture tubes
Persons performing test	M. Hamad, N. Shergill, P. Fang, M. Thompson
Rate of preaeration	Minimal and controlled (100 bubbles/min)
Duration of preaeration	See "Initial Measurements and Observations" sheet

Rate/duration of aeration during test	No aeration
Procedure for pH adjustment	No pH adjustment of the sample
Procedure for filtration	No filtration of the sample
Source of control/dilution water & quantity of chemicals added	Type I deionized water hardened to 84-92 mg/L $CaCO_3$ with 20% Perrier water, Vitamin B_{12} & Selenium
Number and concentration of test solutions	7 conc. (100, 50, 25, 12.5, 6.25, 3.13, and 1.56% v/v) plus control
Volume and depth of solution in test vessels	15 mL & 9 cm
Number of replicates per conc.	10
Number of organisms per test vessel	1
DO & pH of sample just before its use	See “Initial Measurements and Observations” sheet
Temperature, DO, & pH of test solutions and controls	See daily water quality for each concentration on "Observations & Measurement Data sheet"
Test solution renewal intervals	See “Initial Measurements and Observations” sheet
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the test, no deviations from test method, and no problems with the test.
Results	Results contained in this report refer only to the testing of samples as submitted.
Survival endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v2.1.2.3: Linear Interpolation (ICPIN)
Mean percent survival for 1st generation in each test solution at test end	See CETIS reports for mean percent survival
Reproduction endpoint statistics	
Name & citation of program(s) and methods used for calculating statistical endpoint(s)	CETIS v2.1.2.3: Linear Interpolation (ICPIN)
Mean number of neonates in each test solution at test end	See CETIS reports for mean numbers
Weighting techniques applied?	N/A
Residuals Analysis	N/A
Outliers?	**E21:** Yes, replicate 3 of the 25% v/v concentration and replicates 1 and 2 of the 100% v/v concentration were determined to be outliers for reproduction; however, they were not removed from the statistical analysis. **POND-12:** Yes, replicate 3 of the 12.5% v/v concentration and replicate 9 of the 50% v/v concentration were determined to be outliers for reproduction; however, they were not removed from the statistical analysis.

QA	
Did the test pass the test validity criteria of: •Mean mortality of the control adults is ≤20% •Average of ≥15 neonates/surviving adult in the control •3 broods produced by ≥60% of control organisms by the end of the 8th day.	Yes, •Mean mortality of control adults is: • **E21:** 0% • **POND-12:** 0% •Average live young produced/surviving adult: • **E21:** 24.5 • **POND-12:** 21.6 •Percent of control organisms producing 3 broods: • **E21:** 100% • **POND-12:** 100%
Reference toxicant test LC50 (95% CL) (mg NaCl/L) for survival	1579 (1424, 1751)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for survival	1753 2SD (1550, 1990)
Reference toxicant test IC50 (95% CL) (mg NaCl/L) for reproduction	1487 (1343, 1575)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for reproduction	1421 2SD (1180, 1710)
Invalid Reference toxicant test?	No
Date of reference toxicant test (y/m/d) and duration	2022/Aug/17 6 days
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-5702-3677	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:30	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	728C4B3041DE3DB89E96B5913F227ED7	**Editor ID:**	

Batch ID:	14-3761-6271	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	06 Sep-22 15:20	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	12-3199-0478	**Code:**	C265312	**Project:**	General Misc. Bioassays
Sample Date:	29 Aug-22 14:07	**Material:**	Water	**Source:**	Diavik
Receipt Date:	30 Aug-22 10:28	**CAS (PC):**		**Station:**	E21
Sample Age:	48h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1503592	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9667	3.33%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%

6d Survival Rate Detail

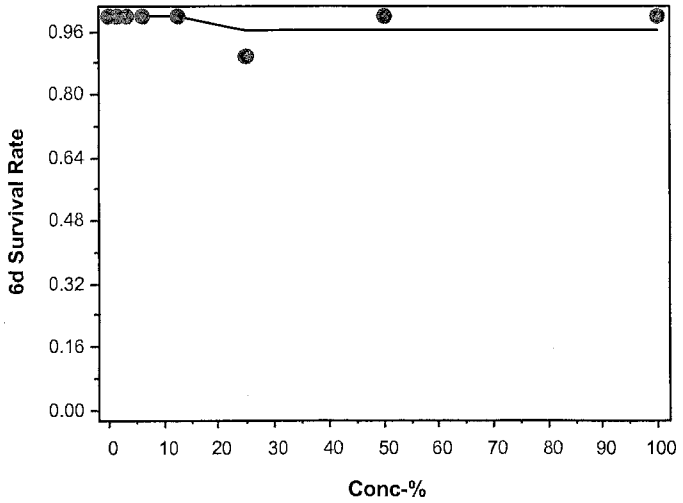
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

2022 Sep07 2022 Sep08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-5702-3677	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:30	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	728C4B3041DE3DB89E96B5913F227ED7	**Editor ID:**	

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	21-4624-9295	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4195976EE938770AE7F7369CD4B729F3	**Editor ID:**	

Batch ID:	14-3761-6271	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	06 Sep-22 15:20	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	12-3199-0478	**Code:**	C265312	**Project:**	General Misc. Bioassays
Sample Date:	29 Aug-22 14:07	**Material:**	Water	**Source:**	Diavik
Receipt Date:	30 Aug-22 10:28	**CAS (PC):**		**Station:**	E21
Sample Age:	48h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	711561	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	10	24.5	24	21	28	10.76%	0.00%	24.5	0.00%
1.56		10	21.3	21.75	17	28	14.85%	13.06%	22.33	8.86%
3.13		10	22.5	23	16	25	12.08%	8.16%	22.33	8.86%
6.25		10	23.2	23	21	25	5.67%	5.31%	22.33	8.86%
12.5		10	21.8	21	19	28	13.64%	11.02%	21.95	10.41%
25		10	20	21.5	7	25	26.14%	18.37%	21.95	10.41%
50		10	22.4	23.75	16	25	12.49%	8.57%	21.95	10.41%
100		10	23.6	23.5	11	36	27.91%	3.67%	21.95	10.41%

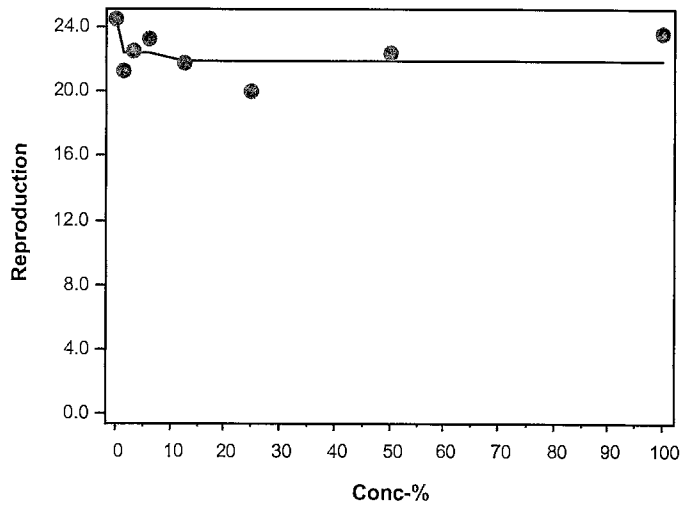
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	23	24	23	21	24	28	21	28
1.56		17	18	20	24	28	21	19	22	22	22
3.13		23	20	16	24	25	23	23	25	22	24
6.25		24	22	25	23	21	23	24	23	22	25
12.5		25	23	20	21	19	19	23	19	21	28
25		24	19	7	21	25	16	23	22	21	22
50		25	22	16	24	24	21	24	25	20	23
100		11	36	18	21	23	22	24	27	26	28

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	21-4624-9295	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4195976EE938770AE7F7369CD4B729F3	**Editor ID:**	

Graphics



Analyst: mo 2022 Sep07 QA: KA 2022 Sep08

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamon Mines Inc
Start Date: August 31, 2022
End Date: September 6, 2022
Analyst(s): N. Shergill, M. Hamad, P. Fang, M. Thompson

Job / Sample #: C265312 / BAR938
Sample ID: E21
Organism Lot #: AB2022Aug22

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	27	17	23	24	25	24	25	11
2	26	18	20	22	23	19	22	36
3	23	20	16	25	20	7	16	18
4	24	24	24	23	21	21	24	21
5	23	28	25	21	19	25	24	23
6	21	21	23	23	19	16	21	22
7	24	19	23	24	23	23	24	24
8	28	22	25	23	19	22	25	27
9	21	22	22	22	21	21	20	26
10	28	22	24	25	28	22	23	28
Mean	24.5	21.3	22.5	23.2	21.8	20.0	22.4	23.6
SD	2.6	3.2	2.7	1.3	3.0	5.2	2.8	6.6

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	0	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	90	100	100
SD (%)	0.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: 2022Sep07

Proofed by: 2022SEP08

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/13
Tab - Observations, Page 1 of 1

Ceriodaphnia dubia Survival and ReproductionTest

WE mt 2022Sep 05

Client Name: Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR939~~ BAR938

Date Started August 31, 2022

Sample ID: (A) ~~Pond 12~~ E21

Date Ended: Sept 06, 2022

Organism Lot #: AB 2022 Aug 22

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 31, 2022	114.9	24.4	7.8	20	111.1	24.2	mtm
1	September 1, 2022	109.9	25.1	N/A	20	106.8	25.1	mtm
2	September 2, 2022	113.9	25.4	N/A	20	103.5	25.3	mtm
3	September 3, 2022	113.3	25.3	N/A	20	104.5	25.1	mtm
4	September 4, 2022	112.2	25.3	N/A	20	104.8	24.9	NS
5	September 5, 2022	111.8	25.5	N/A	20	106.3	25.5	mt
6				N/A	N/A	mt 2022 Sep 07		
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: B342-0408

Sample Description Clear & colourless Initials NS

Sample Hardness (mg/L $CaCO_3$) 88 Initials mtm

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 31, 2022 Pre - Aerated From: 11:40-12:00	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 14:30	
	Bottle / Carboy #: 1 Seeding checked by: NS	
1	Date: September 1, 2022 Pre - Aerated From: 07:40-08:00	mtm/DL
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 13:49	
	Bottle / Carboy #: 2	
2	Date: September 2, 2022 Pre - Aerated From: 11:55-12:15	m
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 12:44	
	Bottle / Carboy #: 3	
3	Date: September 3, 2022 Pre - Aerated From: 12:00-12:20	mtm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 13:34	
	Bottle / Carboy #: 4	
4	Date: September 4, 2022 Pre - Aerated From: 09:21-09:41	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:18	
	Bottle / Carboy #: 5	
5	Date: September 5, 2022 Pre - Aerated From: 09:49-10:09	mt
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:13	
	Bottle / Carboy #: 6	
6	Date: 2022 Sept. 6 Test take down @ 15:20	NS
7	Date: NS 2022 Sept 06	
8	Date:	

(A) WE mtm 2022 Aug 31

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/13
Tab - Daily WQ, Page 1 of 2

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc
Sample ID: ~~Pond 12~~ E21
Job / Sample #: C265312 / ~~BAR039~~ BAR938 WE mt 2022Sep05
Analyst(s): (A) MHamad, D. Fang, NSnerguie, M. Thompson

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	167	171	173	171	173	178		
	Final	177	178	181 (B)	~~190~~ 182	188	191		
Temp. (°C)	Initial	24.6	24.4	24.4	24.0	24.2	24.7		
	Final	25.2	25.0	24.7	24.9	24.6	24.5		
D.O. (mg/L)	Initial	8.3	8.3	8.4	8.4	8.4	8.4		
	Final	7.9	8.0	8.2	8.2	7.9	8.1		
pH	Initial	8.2	8.3	8.3	8.3	8.4	8.3		
	Final	8.2	8.2	8.3 (B)	~~8.7~~ 8.0	8.2	8.2		

1.56%	Day	1	(A) 2 171	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	170	~~191~~	174	173	175	179		
	Final	180	184	181 (B)	~~200~~ 183	191	191		
Temp. (°C)	Initial	24.5	24.8	24.4	24.1	24.1	24.8		
	Final	25.3	25.2	25.0	24.8	24.4	24.6		
D.O. (mg/L)	Initial	8.3	8.4	8.4	8.4	8.4	8.4		
	Final	7.9	8.0	8.1 (B)	~~8.1~~ 8.2	7.9	8.1		NIAMD
pH	Initial	8.2	8.3	8.3	8.3	8.3	8.3		2022
	Final	8.1	8.1	8.3	8.0	8.2	8.2		Sep07

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	171	173	176	174	176	184		
	Final	180	181	183 (B)	183 ~~217~~	192	196		
Temp. (°C)	Initial	24.5	24.6	24.4	24.2	24.1	24.8		
	Final	25.3	25.2	25.0	25.0	24.3	24.8		
D.O. (mg/L)	Initial	8.4	8.5	8.4	8.5	8.5	8.4		
	Final	7.9	7.9	8.3	8.0	7.8	8.1		
pH	Initial	8.2	8.3	8.3	8.3	8.3	8.3		
	Final	8.1	8.1	8.3	8.1	8.2	8.2		

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	173	177	181	180	178	184 (C)		
	Final	182	186	183	185	194	196		
Temp. (°C)	Initial	24.4	24.4	24.4	24.1	24.1	24.8		
	Final	25.3	25.1	25.0	25.0	24.4	25.0		
D.O. (mg/L)	Initial	8.4	8.5	8.4	8.5	8.5	8.4		
	Final	7.8	7.7	8.2	8.0	7.7	8.0		
pH	Initial	8.2	8.3	8.3	8.3	8.3	8.3		
	Final	8.1	8.1	8.3	8.2	8.1	8.2		
Analyst		MM DR	MHMM	MHMM	MHM NS	NS MT	MT NS		
Daily WQ Reviewed by:		MM DR	MM MM	MM MM	MM NS	NS MT	MT NS		

(A) WE MHM 2022 Sep01 (B) Wrong Entry - NS 2022 Sep04
(C) Double checked WQ - mt 2022 Sep~~02~~05
WE mt 2022Sep05

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc

Sample ID: ~~Pond 12~~ E21
WE MT 2022Sep05

Job / Sample #: C265312 / ~~BAR939~~ BAR938
WE MT 2022Sep05

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	179	187	184	184	182	189		
	Final	188	189	184	190	198	201		
Temp. (°C)	Initial	24.5	24.8	24.7	24.2	24.1	24.7		
	Final	25.1	25.2	25.1	25.0	24.5	25.1		
D.O. (mg/L)	Initial	8.4	8.5	8.4	8.6	8.5	8.4		
	Final	7.8	7.7	8.2	8.0	7.8	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.3	8.3		
	Final	8.1	8.1	8.3	8.2	8.1	8.2		

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	192	199	203	199	193	197		
	Final	196	203	199	200	207	209		
Temp. (°C)	Final	24.5	24.8	24.8	24.1	24.1	24.8		
	Final	25.3	25.1	25.1	25.0	24.5	25.1		
D.O. (mg/L)	Initial	8.5	8.5	8.4	8.6	8.5	8.4		
	Final	7.8	7.6	8.1	8.0	7.7	8.0		
pH	Initial	8.2	8.1	8.1	8.2	8.2	8.2		N/A mo 2022Sep07
	Final	8.1	8.1	8.3	8.2	8.1	8.2		

50%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	215	225	233	229	214	214		
	Final	217	233	197	217	226	226		
Temp. (°C)	Initial	24.3	24.7	24.9	24.1	24.1	24.8		
	Final	25.3	25.2	25.2	25.0	24.3	25.0		
D.O. (mg/L)	Initial	8.7	8.6	8.4	8.7	8.6	8.5		
	Final	7.8	7.5	8.1	8.0	(A) ~~8.0~~ 7.6	8.0		
pH	Initial	8.1	8.1	8.1	8.1	8.1	8.2		
	Final	8.0	8.0	8.2	8.1	(A) ~~7~~ 8.0	8.1		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	251	256	251	248	250	251		
	Final	258	263	262	258	264	262		
Temp. (°C)	Initial	24.1	24.8	25.1	25.0	24.6	24.9		
	Final	25.3	25.1	25.1	25.0	24.4	25.2		
D.O. (mg/L)	Initial	9.0	8.6	8.4	8.6	8.6	8.7		
	Final	7.8	7.6	8.0	8.0	7.6	8.0		
pH	Initial	7.9	7.9	8.0	8.0	7.9	7.9		
	Final	7.9	7.9	8.1	8.0	7.9	8.0		
Analyst		MHM DL	MHM MM	MM MHM	MHM NS	NS MT	MT NS		
Daily WQ Reviewed by:		MHM DL	MHM MM	MM MHM	MHM NS	NS MT	MT NS		

(A) WE MT 2022Sep05

ECOTOXICC

Ceriodaphnia dubia Sur and Reproduction Test

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR039~~ WE MT 2022Sep05 BAR938

Sample ID: ~~Pond 12~~ E21

Analyst (s): D. Fang, MHamad, N.Sneyanse, M.Thompson

Concentration: Control

Control Water Batch: Date(s): 2022 Aug 30, 2022 Sep 02

Hardness (mg/L $CaCO_3$): 92, 88

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	DR DR
2	0	0	0	0	0	0	0	0	0	0	MH M
3	0	0	3	0	0	0	0	8	4	4	MH
4	6	4	0	5	3	2	6	0	0	0	NS NS
5	9	11	10	6	8	9	9	9	7	9	MT
6	12	11	10	13	12	10	9	11	10	15	NS
7							(A)				
8											
Total	27	26	23	24	23	21	24	28	21	28	mo KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	DR DR
2	0	0	0	0	0	0	0	0	0	0	M M
3	0	0	4	0	0	0	0	0	0	0	M
4	2	2	0	5	5	3	3	3	5	0	NS NS
5	6	8	8	7	10	6	7	10	8	9	MT
6	9	8	8	12	13	12	9	9	9	13	NS
7						(A)					
8											
Total	17	18	20	24	28	21	19	22	22	22	mo KT

(A) NIA mo 2022 Sep07

WE MT 2022 Sep 05

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR939~~ BAR938

Sample ID: ~~Pond 12~~ E21

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	Br Br
2	0	0	0	0	0	0	0	0	0	0	mlr m
3	4	0	0	0	0	0	0	4	0	4	mlr
4	0	4	0	4	5	5	3	0	5	1	NS NS
5	7	8	7	11	11	8	9	9	8	9	mt
6	12	8	9	9	9	10	11	12	9	10	NS
7						Ⓐ					
8											
Total	23	20	16	24	25	23	23	25	22	24	mo Kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	Br Br
2	0	0	0	0	0	0	0	0	0	0	~ ~
3	0	0	5	0	0	0	0	3	3	5	m
4	6	6	0	5	2	2	5	0	0	0	NS NS
5	7	9	7	7	8	9	8	7	8	8	mt
6	11	7	13	11	11	12	11	13	11	12	NS
7					Ⓐ						
8											
Total	24	22	25	23	21	23	24	23	22	25	mo Kt

Ⓐ NIA mo 2022Sep07

WE MT 2022Sep05

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR939~~ BAR938

Sample ID: ~~Pond 12~~ EZ1

Concentration (%v/v) 12.5

Concentration (% v/v): 25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	BR BR
2	0	0	0	0	0	0	0	0	0	0	m m
3	0	0	3	0	0	0	0	5	4	5	mlm
4	5	6	0	2	3	1	5	0	0	0	NS NS
5	9	9	9	10	8	8	8	7	9	9	mt
6	11	8	8	9	8	10	10	7	8	14	NS
7						(A)					
8											
Total	25	23	20	21	19	19	23	19	21	28	mo KH

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	BR BR
2	0	0	0	0	0	0	0	0	0	0	m m
3	0	0	3	0	0	0	0	3	0	4	mlm
4	4	3	4	5	5	3	7	0	4	0	NS NS
5	9	8	0x	9	9	8	9	9	9	10	mt
6	11	8	|	7	11	5	7	10	8	8	NS
7			|			(A)					
8			|								
Total	24	19	7x	21	25	16	23	22	21	22	mo KH

(A) N/A mo 2022 Sep07

WE MT 2022 Sep 05

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR939~~ BAR938

Sample ID: ~~Pond 12~~ E21

Concentration (%v/v) 50

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	BR BR
2	0	0	0	0	0	0	0	0	0	0	M M
3	0	0	3	0	0	0	0	3	4	5	M
4	2	3	0	5	5	2	4	1	0	0	NS NS
5	12	8	8	11	11	8	11	10	4	10	MT
6	11	11	5	8	8	11	9	11	12	8	NS
7					(B)						
8											
Total	25	22	16	24	24	21	24	25	20	23	MO KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	BR BR
2	0	0	0	0	0	0	0	0	0	0	M M
3	0	0	4	0	0	0	0	3	3	5	M
4	0	6	2	4	5	1	4	0	0	0	NS NS
5	0	14	12	10	7	12	10	11	13	12	MT
6	11	16	6	7	11	9	10	13	10	11	NS
7						(B)					
8											
Total	11	36	18	21	23	22	24	~~25~~ 27 (A)	26	28	MO KT

(A) WE MO 2022 Sep 07

(B) NIA MO 2022 Sep 07

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-5114-8366	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2837BF280B7DB027AD3EF6FF7BEDE4F5	**Editor ID:**	

Batch ID:	11-6236-9986	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	31 Aug-22 14:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	06 Sep-22 14:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-2103-4971	**Code:**	C265312	**Project:**	General Misc. Bioassays
Sample Date:	29 Aug-22 14:36	**Material:**	Water	**Source:**	Diavik
Receipt Date:	30 Aug-22 10:28	**CAS (PC):**		**Station:**	POND-12
Sample Age:	47h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1747778	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9500	5.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9500	5.00%

6d Survival Rate Detail

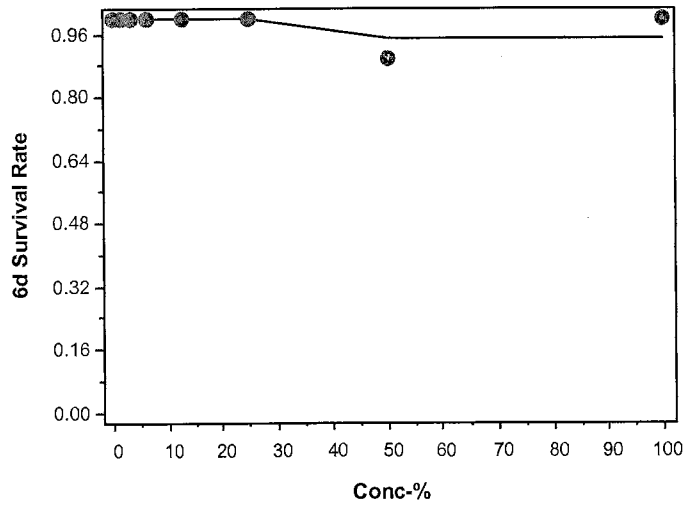
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

2022 Sep07 2022 SEP08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	00-5114-8366	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2837BF280B7DB027AD3EF6FF7BEDE4F5	**Editor ID:**	

Graphics



Analyst: MO 2022 Sep 07 QA: VT 2022 Sep 08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	21-0344-4780	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D65FC74D758A6E51BAB7394C27E8B2B4	**Editor ID:**	

Batch ID:	11-6236-9986	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Shergill
Start Date:	31 Aug-22 14:00	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	06 Sep-22 14:55	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 1h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	13-2103-4971	**Code:**	C265312	**Project:**	General Misc. Bioassays
Sample Date:	29 Aug-22 14:36	**Material:**	Water	**Source:**	Diavik
Receipt Date:	30 Aug-22 10:28	**CAS (PC):**		**Station:**	POND-12
Sample Age:	47h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1158263	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	21.6	22.6	19	24	8.22%	0.00%	22.15	0.00%
1.56		10	22.7	22	17	26	12.47%	-5.09%	22.15	0.00%
3.13		10	21.5	21	18	26	11.86%	0.46%	21.5	2.93%
6.25		10	21.1	20	17	28	17.51%	2.31%	21.1	4.74%
12.5		10	20.1	21	11	23	16.82%	6.94%	20.9	5.64%
25		10	21.7	23	17	25	11.71%	-0.46%	20.9	5.64%
50		10	19.3	20	0	26	37.21%	10.65%	20.9	5.64%
100		10	22.5	22	18	27	12.08%	-4.17%	20.9	5.64%

Reproduction Detail

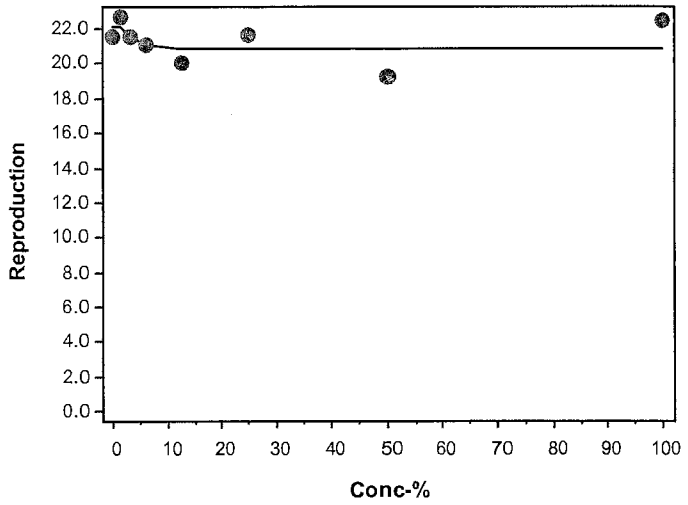
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	21	23	20	23	19	20	20	23	24	23
1.56		25	22	22	25	21	22	17	21	26	26
3.13		19	26	22	23	21	20	18	21	25	20
6.25		20	20	25	28	24	23	18	17	18	18
12.5		21	19	11	21	21	21	20	22	22	23
25		20	20	23	24	23	23	25	23	19	17
50		20	20	20	26	20	18	22	23	0	24
100		24	25	18	25	21	27	20	21	22	22

2022 Sep07 2022 Sep08

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	21-0344-4780	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	07 Sep-22 10:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	D65FC74D758A6E51BAB7394C27E8B2B4	**Editor ID:**	

Graphics



ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamon Mines Inc
Start Date: August 31, 2022
End Date: September 6, 2022
Analyst(s): N. Shergill, M. Hamad, P. Fang, M. Thompson

Job / Sample #: C265312 / BAR939
Sample ID: POND-12
Organism Lot #: AB2022Aug22

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	21	25	19	20	21	20	20	24
2	23	22	26	20	19	20	20	25
3	20	22	22	25	11	23	20	18
4	23	25	23	28	21	24	26	25
5	19	21	21	24	21	23	20	21
6	20	22	20	23	21	23	18	27
7	20	17	18	18	20	25	22	20
8	23	21	21	17	22	23	23	21
9	24	26	25	18	22	19	0	22
10	23	26	20	18	23	17	24	22
Mean	21.6	22.7	21.5	21.1	20.1	21.7	19.3	22.5
SD	1.8	2.8	2.5	3.7	3.4	2.5	7.2	2.7

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	0	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	100	90	100
SD (%)	0.0	0.0	0.0	0.0	0.0	0.0	31.6	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: 2022Sep07

Proofed by: 2022 SEP 08

ECOTOXICOLOGY

BUREAU VERITAS LABORATORIES
BBY2FCD-00149/13
Tab - Observations, Page 1 of 1

Ceriodaphnia dubia Survival and ReproductionTest

WEMH 2022 Sep 05

Client Name: Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR938~~ BAR939

Date Started August 31, 2022

Sample ID: (A) ~~E21~~ Pond 12

Date Ended: Sept 06, 2022

Organism Lot #: AB 2022 Aug 22

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	August 31, 2022	114.3	24.1	7.8	20	108.1	24.0	MHm
1	September 1, 2022	(B) ~~110~~ 115.0	25.3	N/A	20	113.2	25.2	MHM
2	September 2, 2022	113.8	25.3	N/A	20	108.3	25.3	MHm
3	September 3, 2022	113.7	25.2	N/A	20	105.9	25.0	MHm
4	September 4, 2022	113.5	24.4	N/A	20	103.6	24.6	NS
5	September 5, 2022	116.6	25.5	N/A	20	114.9	25.5	MH
6				N/A	N/A	WEMH 2022 Sep 07		
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BB42-0408

Sample Description clear & colourless Initials NS

Sample Hardness (mg/L $CaCO_3$) 160 Initials MHM

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: August 31, 2022 Pre - Aerated From: 11:40-12:00	NS, MHM
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Seeded @: 14:00	
	Bottle / Carboy #: 1 Seeding checked by: NS	
1	Date: September 1, 2022 Pre - Aerated From: 07:40-08:00	MHm, NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 13:31	
	Bottle / Carboy #: 2	
2	Date: September 2, 2022 Pre - Aerated From: 11:55-12:15	MHm / PV
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 15:00	
	Bottle / Carboy #: 3	
3	Date: September 3, 2022 Pre - Aerated From: 12:00-12:20	MHm
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 13:17	
	Bottle / Carboy #: 4	
4	Date: September 4, 2022 Pre - Aerated From: 09:21 - 09:41	NS
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:37	
	Bottle / Carboy #: 5	
5	Date: September 5, 2022 Pre - Aerated From: 09:49-10:09	MH
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 14:41	
	Bottle / Carboy #: 6	
6	Date: Sept. 6, 2022 Test take down @ 14:55	NS
7	Date: NS 2022 Sept 6	
8	Date:	

(A) WEMHM 2022 Aug 31

(B) WEMHM 2022 Sep 01

Ceriodaphnia dubia Survival and ReproductionTest

Ⓐ

Client Name: Diavik Diamond Mines Inc

Sample ID: ~~E21~~ Pond12

Job / Sample #: C265312 / ~~BAR938~~ BAR939 WE MT 2022Sep05

Analyst(s): MHamed, N.Shergill, P.Feng, M.Thompson

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	166	171	173	171	173	179		
	Final	176	182	181	181	189	192		
Temp. (°C)	Initial	24.8	24.4	24.4	24.0	24.2	24.9		
	Final	25.1	25.2	24.8	25.1	24.2	24.5		
D.O. (mg/L)	Initial	8.3	8.3	8.4	8.4	8.4	8.4		
	Final	8.0	8.0	7.9	8.1	Ⓐ ~~8.0~~ 8.0	8.1		
pH	Initial	8.2	8.3	8.3	8.4	8.3	8.3		
	Final	8.2	8.2	8.2	8.2	Ⓐ ~~8.0~~ 8.2	8.3		

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	171	175	177	180	177	182		
	Final	181	184	186	187	194	194		
Temp. (°C)	Initial	24.8	24.8	24.6	24.1	24.1	25.0		
	Final	25.1	25.1	24.9	24.9	24.6	24.9		
D.O. (mg/L)	Initial	8.3	8.4	8.2	8.4	8.4	8.4		
	Final	8.0	8.0	7.8	8.0	7.8	8.0		
pH	Initial	8.2	8.3	8.2	8.3	8.4	8.3		N/A mo
	Final	8.1	8.2	8.2	8.2	8.1	8.2		2022 Sep07

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	176	181	184	190	183	188		
	Final	186	188	188	188	194	200		
Temp. (°C)	Initial	24.8	24.4	24.6	24.0	24.0	25.0		
	Final	25.1	25.2	24.9	24.9	24.7	25.0		
D.O. (mg/L)	Initial	8.3	8.5	8.4	8.5	8.5	8.4		
	Final	8.0	8.0	7.8	8.0	7.7	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.3	8.3		
	Final	8.1	8.2	8.2	8.2	8.1	8.2		

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	190	192	178	205	196	196		
	Final	194	196	194	195	208	207		
Temp. (°C)	Initial	24.8	24.8	24.6	24.0	24.0	25.0		
	Final	25.2	25.2	24.9	24.9	24.7	25.1		
D.O. (mg/L)	Initial	8.3	8.5	8.5	8.6	8.5	8.4		
	Final	7.9	8.0	7.8	8.0	7.7	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.3	8.3		
	Final	8.1	8.2	8.2	8.1	8.1	8.2		
Analyst		MM NS	MHM PZ	M M	M NS	NS MT	MT NS		
Daily WQ Reviewed by:		M NS	MHM PZ	M M	M NS	NS MT	MT NS		

Ⓐ WE MT 2022Sep05

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik Diamond Mines Inc

Sample ID: ~~F21~~ Pond12 (A)

Job / Sample #: C265312 / ~~BAR038~~ BAR939

WE mt 2022Sep05

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	204	213	232	224	215	213		
	Final	213	213	206	208	229	225		
Temp. (°C)	Initial	24.7	24.8	24.5	24.0	24.0	24.6		
	Final	25.1	25.2	24.9	24.9	24.6	25.0		
D.O. (mg/L)	Initial	8.4	8.6	8.5	8.6	8.5	8.6		
	Final	8.0	8.0	7.7	7.9	7.8	7.9		
pH	Initial	8.1	8.1	8.1	8.2	8.3	8.2		
	Final	8.1	8.2	8.2	8.1	8.1	8.2		

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	249	241	284	282	250	245		
	Final	245	244	280	243	265	257		
Temp. (°C)	Final	24.7	24.6	24.6	24.0	24.0	24.8		
	Final	25.1	25.2	25.0	24.9	24.6	25.0		
D.O. (mg/L)	Initial	8.5	8.7	8.6	8.7	8.6	8.5		
	Final	7.9	8.0	7.7	7.9	7.8	8.0		
pH	Initial	8.0	8.0	7.9	8.1	8.2	8.1		N/A MD 2022 Sep07
	Final	8.1	8.1	8.1	8.1	8.1	8.1		

50%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	330	362	390	401	320	310		
	Final	303	301	307	302	326	320		
Temp. (°C)	Initial	24.8	24.9	24.8	24.0	24.3	25.0		
	Final	25.2	25.1	24.8	24.9	24.6	24.9		
D.O. (mg/L)	Initial	8.7	8.9	8.7	8.9	8.6	8.7		
	Final	8.0	8.0	7.8	7.9	7.7	8.1		
pH	Initial	7.7	7.6	7.6	7.7	8.0	7.9		
	Final	8.0	8.0	8.0	8.0	8.0	8.0		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	489	436	437	437	441	438		
	Final	445	445	445	445	472	450		
Temp. (°C)	Initial	24.2	25.0	25.2	24.0	24.7	25.0		
	Final	25.1	25.1	24.8	24.9	24.7	25.1		
D.O. (mg/L)	Initial	9.0	9.2	8.8	9.0	8.6	9.1		
	Final	(A) 7.9	8.0	7.8	7.9	7.8	8.0		
pH	Initial	~~7.9~~ 7.4	7.3	7.4	7.6	7.6	7.4		
	Final	7.7	7.9	7.8	7.8	7.8	7.8		
Analyst		m NS	MHM m	MHM m	MHM NS	NS mt	Mt NS		
Daily WQ Reviewed by:		m NS	mn m	MHM m	MHM NS	NS mt	Mt NS		

(A) UEMHM 2022/Sep01

ECOTOXICC Y

Ceriodaphnia dubia Sur and Reproduction Test

WEMt 2022Sep05

Client Name Diavik Diamond Mines Inc

Job / Sample #: ~~C265312 / BAR038~~ BAR939

(B) Sample ID: ~~E24~~ Pond 12

Analyst (s): ~~NSharqile~~, P.Fang, MHamer, M.Thompson

Concentration: Control

Control Water Batch: Date(s): 2022 Aug 24, 2022 Aug 30, 2022Sep02

Hardness (mg/L $CaCO_3$): 84, 92, 88

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	Br Br
3	4	0	0	0	0	0	0	0	0	0	M
4	0	5	4	5	5	4	4	3	6	4	NS NS
5	9	10	8	10	7	7	8	9	9	9	Mt Mt
6	8	8	8	8	7	9	8	11	9	10	NS
7						(A)					
8											
Total	21	23	20	23	19	20	20	23	24	23	mo Kt

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	Br Br
3	0	0	0	0	0	0	0	0	0	0	M
4	3	3	3	3	4	5	2	4	5	5	NS NS
5	11	10	9	9	8	7	6	8	10	9	Mt Mt
6	11	9	10	13	9	10	9	9	11	12	NS
7					(A)						
8											
Total	25	22	22	25	21	22	17	21	26	26	mo Kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) NIA mo 2022 Sep07

(B) WEMtm 2022 Sep09

ECOTOXIC

Ceriodaphnia dubia Sur and Reproduction Test

WE mt 2022 Sep 05

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR938~~ BAR939

Sample ID: ~~E21~~ Pond 12 WEmt2022Sep05

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	km km
3	2	0	0	0	0	0	0	0	0	0	M
4	0	7	3	4	3	3	6	3	4	0	NS NS
5	6	9	9	9	8	8	6	7	8	8	mt mt
6	11	10	10	10	10	9	6	11	13	12	NS
7						(A)					
8											
Total	19	26	22	23	21	20	18	21	25	20	mo KT

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	km km
3	0	0	0	0	0	0	0	0	0	0	M
4	4	3	6	5	3	4	2	2	2	1	NS NS
5	8	7	10	10	9	8	6	6	9	9	mt mt
6	8	10	9	13	12	11	10	9	7	8	NS
7					(A)						
8											
Total	20	20	25	28	24	23	18	17	18	18	mo KT

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) NIA mo 2022 Sep 07

ECOTOXIC Y

Ceriodaphnia dubia Su and Reproduction Test

WE mt 2022Sep05

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR938~~ BAR939

Sample ID: ~~F21~~ Pond 12

Concentration (%v/v) 12.5

Concentration (% v/v): 25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	br br
3	4	0	0	0	0	0	0	0	0	0	mtn
4	0	2	3	4	1	2	4	4	5	2	NS NS
5	10	10	5	9	10	8	9	10	9	12	mt
6	7	7	3	8	10	11	7	8	8	9	NS
7						(B)					
8											
Total	21	19	11	~~22~~ 21 (A)	21	21	20	22	22	23	mo kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

(A) WE mo 2022 Sep 07

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	br br
3	3	0	0	0	0	0	0	0	0	0	mn
4	0	3	4	5	5	5	6	2	0	0	NS NS
5	10	9	11	9	9	9	9	11	6	10	mt
6	7	8	8	10	9	9	10	10	13	7	NS
7					(B)						
8											
Total	20	20	23	24	23	23	25	23	19	17	mo kt

(B) NIA mo 2022 Sep 07

Client Name Diavik Diamond Mines Inc

Job / Sample #: C265312 / ~~BAR938~~ BAR939 WE mt 2022Sep05

Sample ID: ~~E21~~ Pond 12

Concentration (%v/v) 50

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	Br Br
3	4	0	0	0	0	0	0	0	0	4	mh
4	0	3	3	3	4	4	3	5	X	0	NS NS
5	11	10	10	12	11	8	12	11		11	mt mt
6	5	7	7	11	5	6	7	7		9	NS
7						(B)					
8											
Total	20	20	20	26	20	18	22	23	0x	24	mo kt

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	NS NS
2	0	0	0	0	0	0	0	0	0	0	Br Br
3	3	0	0	0	0	0	0	0	0	4	mh
4	0	6	2	5	3	6	3	2	5	0	NS NS
5	12	11	7	14	8	11	~~11~~ 12 (A)	10	8	10	mt mt
6	9	8	9	6	10	10	5	9	9	8	NS
7						(B)					
8											
Total	24	25	18	25	21	27	20	21	22	22	mo kt

(A) WE mt 2022 Sep 05

(B) NIA mo 2022 Sep 07

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: 2022 Aug 22

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	22-Aug	70			70		
1	23-Aug		0	0	70	0.00%	
2	24-Aug		0	0	70	0.00%	
3	25-Aug		0	0	70	0.00%	
4	26-Aug		0	0	70	0.00%	
5	27-Aug		0	0	70	0.00%	
6	28-Aug		0	0	70	0.00%	
7	29-Aug		0	0	70	0.00%	0.00%
8	30-Aug		0	0	70	0.00%	0.00%
9	31-Aug		0	0	70	0.00%	0.00%
10					70	0.00%	0.00%
11					70	0.00%	0.00%
12					70	0.00%	0.00%
13					70	0.00%	0.00%
14					70	0.00%	0.00%
15					70	0.00%	0.00%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	
Replicate 1	0	0	0	5	7	12	0	24
Replicate 2	0	0	0	5	10	14	0	29
Replicate 3	0	0	0	5	7	15	0	27
Replicate 4	0	0	0	5	8	0	9	22
Replicate 5	0	0	0	4	10	14	0	28
Replicate 6	0	0	0	6	8	0	9	23
Replicate 7	0	0	0	5	10	9	0	24
Replicate 8	0	0	0	5	12	15	0	32
Replicate 9	0	0	0	6	6	12	0	24
Replicate 10	0	0	0	5	9	11	0	25
Mean								**25.8**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments:

Reviewed by: KLOmaw 2022 SEP 08

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2022 Aug 16 PKS Batch: 2022 Aug 16 Water Batch: 2022 Aug 19

Culture Date: 2022 Aug 22 Analyst(s): MHM, NS

(B) we NS 2022 Aug 29.

Date	Aug 23	Aug 24	Aug 25	Aug 26	Aug 27	Aug 28	Aug 29	Aug 29	Aug 29
Time	06:50	06:22	06:01	05:51	11:10	09:20	09:30	16:51	21:45
Tracking/Clear	clear	clear	clear	clear	clear	clear	clear	~~clear~~ track	track
YCT (µL)	50	50	50	50	50	50	50	~~50~~ n/a	n/a
PKS (µL)	100	100	100	100	100	100	100	n/a	n/a
Test tube #	Brood size								
1	0	0	0	5	7	12	0	17 A	0
2	0	0	0	5	10	14	0	19	0
3	0	0	0	5	7	15	0	20 A	0
4	0	0	0	5	8	0	9	0	15 B
5	0	0	0	4	10	14	0	15	0
6	0	0	0	6	8	0	9	0	14 B
7	0	0	0	5	10	9	0	0	17 B
8	0	0	0	5	12	15	0	19	0
9	0	0	0	6	6	12	0	18	0
10	0	0	0	5	9	11	0	15	0
11	0	0	0	√	√	√√	0	√√	0
12	0	0	0	√	√	√√	0	√√	0
13	0	0	0	√	√√	√	0	√√ A	0
14	0	0	0	√	√√	√√	0	√√ A	0
15	0	0	0	√	√√	√√	0	0	√√ B
16	0	0	0	√	√	0	√√	0	0
17	0	0	0	√	√√	√√	0	√√	0
18	0	0	0	√	√√	√√	0	√√	0
19	0	0	0	√	√	√√	0	√√	0
20	0	0	0	√	√	√√	0	√√	0
21	0	0	0	√	√√	√√	0	√√	0
22	0	0	0	√	√√	√√	0	√√	0
23	0	0	0	√	√	√√	0	√√	0
24	0	0	0	√	√√	√√	0	√√	0
25	0	0	0	√	√√	√	0	0	√√ B
26	0	0	0	√	√	0	√√	0	0
27	0	0	0	√	√√	√√	0	√√ A	0
28	0	0	0	√	√	√√	0	√√	0
29	0	0	0	√	√√	√√	0	√√	0
30	0	0	0	√	√√	√√	0	√√	0
31	0	0	0	√	√√	√√	0	√√	0
32	0	0	0	√	√√	√√	0	√√	0
33	0	0	0	√	√√	√√	0	√√ A	0
34	0	0	0	√	√√	√√	0	√√	0
35	0	0	0	√	√√	√√	0	√√	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	MHM	MHM	MHM	MHM	MHM	NS	NS	NS	NS
Time	06:56	06:22	06:06	06:57	11:12	09:31	09:37	16:55	21:57

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.≥8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - Aug 29 D -
B - NW E -
C - F -

(B) we NS 2022 Aug 29

A = all neonates cleared for Aug 29 culture (NS 2022 Aug 29)

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB 2022 Aug 22 Analyst(s): MHM, NS

Test tube #	Brood size								
Date	Aug23	Aug24	Aug25	Aug26	Aug27	Aug28	Aug29	Aug29	Aug29
Time	06:56	06:27	06:06	05:57	11:12	09:31	09:37	16:55	21:55
36	0	0	0	✓	✓✓	✓	0	0	✓✓ B
37	0	0	0	✓	✓✓	✓	✓	0	0
38	0	0	0	✓	✓	✓✓	0	✓✓	0
39	0	0	0	✓	✓✓	✓✓	0	✓✓	0
40	0	0	0	✓	✓✓	✓	0	✓✓ A	0
41	0	0	0	✓	✓✓	✓✓	0	✓✓	0
42	0	0	0	✓	✓✓	✓✓	0	✓✓ A	0
43	0	0	0	✓	✓✓	✓✓	0	✓✓	0
44	0	0	0	✓	✓✓	✓✓	0	✓✓	0
45	0	0	0	✓	✓✓	✓✓	0	✓✓ A	0
46	0	0	0	✓	✓✓	✓✓	0	0	✓✓ B
47	0	0	0	✓	✓✓	✓✓	0	✓✓	0
48	0	0	0	✓	✓✓	✓✓	0	✓✓	0
49	0	0	0	✓	✓✓	✓✓	0	✓✓	0
50	0	0	0	✓	✓✓	✓✓	0	✓✓	0
51	0	0	0	✓	✓✓	✓✓	0	✓✓ A	0
52	0	0	0	✓	✓✓	✓✓	0	✓✓	0
53	0	0	0	✓	✓✓	✓✓	0	✓✓	0
54	0	0	0	✓	✓✓	✓✓	0	✓✓	0
55	0	0	0	✓	✓✓	✓✓	0	✓✓	0
56	0	0	0	✓	✓✓	✓✓	0	0	✓✓ B
57	0	0	0	✓	✓✓	✓✓	0	✓✓	0
58	0	0	0	✓	✓✓	✓✓	0	✓✓	0
59	0	0	0	✓	✓✓	✓✓	0	✓✓	0
60	0	0	0	✓	✓✓	✓✓	0	✓✓	0
61	0	0	0	✓	✓✓	✓✓	0	✓✓	0
62	0	0	0	✓	✓✓	✓✓	0	✓✓	0
63	0	0	0	✓	✓✓	✓✓	0	✓✓	0
64	0	0	0	✓	✓✓	✓✓	0	✓✓	0
65	0	0	0	✓	✓✓	✓✓	0	✓✓	0
66	0	0	0	✓	✓✓	✓✓	0	0	✓✓ B
67	0	0	0	✓	✓✓	✓✓	0	✓✓	0
68	0	0	0	✓	✓✓	✓✓	0	✓✓	0
69	0	0	0	✓	✓✓	✓✓	0	✓✓	0
70	0	0	0	✓	✓✓	✓✓	0	✓✓	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	MHM	MHM	MHM	MHM	MHM	NS	NS	NS	NS
Time	07:03	06:31	06:11	06:09	11:24	09:38	09:43	16:57	21:55

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

ECOTOXICOLOGY

CERIODAPHNIA DUBIA - CLEARING RECORDS

BUREAU VERITAS LABORATORIES
BBY2FCD-00242/6

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB 200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates

Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2022 Aug 16 PKS Batch: 2022 Aug 16 Water Batch: 2022 Aug 19, 24 we NS 2022 Aug 30
Culture Date: AB 2022 Aug 22 Analyst(s): NS, [illegible]

Date	Aug30	Aug30	Aug30	Aug31	Sep01	Sep01			
Time	06:46	16:55	21:55	06:54	06:28	17:38			
Tracking/Clear	Clear	track	track	clear	Clear	track			
YCT (µL)	50	=	—	50	50	n/a			
PKS (µL)	100	=	—	100	100	n/a			
Test tube #	Brood size								
1	0	0	0	15 A	0	21			
2	0	0	0	12 B	0	20			
3	0	0	0	18 B	0	19			
4	0	0	0	16 C	0	13p			
5	0	0	0	21 B	0	17			
6	0	0	0	16 C	0	16			
7	0	0	0	14	0	18			
8	0	0	0	18	0	20			
9	0	0	0	17	0	20			
10	0	0	13	0	9	0			
11	0	0	0	√√	0	√√√			
12	0	0	0	√√√ A	0	√√√			
13	0	0	0	√√√ B	0	√√√			
14	0	0	0	√√	0	√√√			
15	0	0	0	√√ B	0	√√√			
16	√√	0	0	0	√	√√			
17	0	0	0	√√ A	0	√√√			
18	0	0	0	√√	√√	0			
19	0	0	0	√√√ A	0	√√√			
20	0	0	0	√√√	0	√√			
21	0	0	0	√√ A	0	√√√			
22	0	0	0	√√ B	0	√√			
23	0	0	0	√√	0	√√√			
24	0	0	0	√√√	0	√√			
25	0	0	0	√√√ A	0	0			
26	√√	0	0	0	√√	√√			
27	√	0	0	√√ B	0	√√√			
28	0	0	0	√√	0	0√√			
29	0	0	0	√√√	0	√√√			
30	0	0	√√	0	√	√√√			
31	0	0	0	√√ A	0	√√√			
32	0	0	0	√√	0	√√			
33	0	0	0	√√ A	0	√√√			
34	0	0	0	√√	0	√√			
35	0	0	0	√√√ B	0	√√			
# Missing/Lost	0	0	0	0	0	0			
# Dead	0	0	0	0	0	0			
Analyst	MHM	[illegible]	MHM	MHM	MHM	[illegible]			
Time	06:57	16:58	21:57	07:01	06:34	17:07			

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - FA D -
B - Pondize E -
C - EZ1 F -

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB2022 Aug 22 Analyst(s): NS, pr

Test tube #	Brood size								
Date	Aug 30	Aug 30	Aug 30	Aug 31	Sep 01	Sep 01			
Time	06:57	16:58	21:57	07:01	06:34	17:47			
36	0	0	0	✓✓ A	0	✓✓✓			
37	0	0	✓	0	0	0			
38	0	0	0	✓✓ B	0	✓✓			
39	0	0	0	✓✓ C	0	✓✓✓			
40	0	0	✓✓	0	✓	0			
41	0	0	0	✓✓ A	0	✓✓✓			
42	0	0	0	✓✓	0	✓✓			
43	0	0	0	✓✓✓ C	0	✓✓✓			
44	0	0	0	✓✓✓ C	0	✓✓✓			
45	0	0	0	✓✓✓ A	0	✓✓✓			
46	0	0	0	✓✓ C	0	✓✓			
47	0	0	0	✓✓ C	0	✓✓✓			
48	0	0	0	✓✓	0	✓✓✓			
49	0	0	0	✓✓	0	✓✓			
50	0	0	✓✓	0	0	✓✓✓			
51	0	0	0	✓✓	0	✓✓			
52	0	0	0	✓✓✓ C	0	✓✓			
53	0	0	0	✓✓ C	0	✓✓✓			
54	0	0	0	✓	0	✓✓			
55	0	0	0	✓✓	0	✓✓✓			
56	0	0	0	✓✓	0	✓✓✓			
57	0	0	0	✓✓✓	0	✓✓✓			
58	0	0	0	✓✓	0	✓✓✓			
59	0	0	0	✓✓	0	✓✓✓			
60	0	0	✓	0	✓✓	0			
61	0	0	0	✓✓	0	✓✓✓			
62	0	0	0	✓✓✓ C	0	✓✓			
63	0	0	0	✓✓	0	✓✓✓			
64	0	0	0	✓✓	0	✓✓✓			
65	0	0	0	✓✓	0	✓✓✓			
66	0	0	0	✓✓	0	✓✓			
67	0	0	0	✓✓	0	✓✓✓			
68	0	0	0	✓✓	0	✓✓			
69	0	0	0	✓✓	0	✓✓✓			
70	0	0	✓✓	0	0	0			
# Missing/Lost	0	0	0	0	0	0			
# Dead	0	0	0	0	0	0			
Analyst	MHM	pr	MHM	MHM	MHM	dml			
Time	07:02	17:02	21:59	07:02	06:39	17:44			

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size			
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24
Time	10:10am	8:25am	8:15pm	8:00am
1	√	√	√√	√√ A
2	√	√	√√	√√ B

A - Rx #1
B - Client # 123

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C265312 - BAR935
Client Sample ID: POND-10
Date sample collected: 8/29/2022
Test Performed By: NM9, CT9, THR, CSH, KLY
Test Initiation Date: 8/30/2022
Test End Date: 9/5/2022
Dates when subsamples used: 8/30/2022, 9/3/2022, 8/31/2022, 9/4/2022, 9/1/2022, 9/2/2022

Chemistries prior to test:
Dissolved Oxygen(mg/L): 8.9
Temperature (°C): 24
pH(pH units): 8.4
Conductivity (µS/cm): 949

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	29.0	1.14	38.2	Linear Interpolation	Log-X	3.13-3
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.43	1.35	1.45	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.04	1.61			
Reference Toxicant Test Initiation Date:			2022/09/07					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Indigenous organisms present in sample and removed via pipette prior to test initiation on 2022/08/31, 2022/09/03

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	29
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/30/2022 9/1/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		4		9						0.0%	18	4.2
	2	0		0		0		6		6		10								
	3	0		0		0		5		3		9								
	4	0		0		0		6		8		7								
	5	0		0		0		4		9		0								
	6	0		0		0		4		11		7								
	7	0		0		0		5		6		9								
	8	0		0		0		7		8		8								
	9	0		0		0		5		7		0								
	10	0		0		0		6		7		0								
1.56	1	0		0		0		4		0		7						0.0%	14	2.4
	2	0		0		0		5		5		0								
	3	0		0		0		5		6		0								
	4	0		0		0		6		10		0								
	5	0		0		0		4		9		0								
	6	0		0		0		5		9		0								
	7	0		0		0		4		3		8								
	8	0		0		0		6		10		0								
	9	0		0		0		5		4		7								
	10	0		0		0		6		0		10								
3.13	1	0		0		0		5		0		8						0.0%	17	5.3
	2	0		0		0		6		0		12								
	3	0		0		0		5		10		13								
	4	0		0		0		5		0		8								
	5	0		0		0		5		13		0								
	6	0		0		0		4		0		9								
	7	0		0		0		5		0		10								
	8	0		0		0		5		8		12								
	9	0		0		0		4		0		9								
	10	0		0		0		4		0		12								
6.25	1	0		0		0		6		3		8						0.0%	16	2.7
	2	0		0		0		6		10		4								
	3	0		0		0		5		4		4								
	4	0		0		0		4		12		0								
	5	0		0		0		5		6		0								
	6	0		0		0		6		5		8								
	7	0		0		0		7		10		0								
	8	0		0		0		4		12		0								
	9	0		0		0		6		4		6								
	10	0		0		0		5		9		0								
12.5	1	0		0		0		5		8		0						0.0%	14	2.4
	2	0		0		0		4		8		0								
	3	0		0		0		5		7		0								
	4	0		0		0		4		6		0								
	5	0		0		0		5		6		5								
	6	0		0		0		5		8		0								
	7	0		0		0		4		3		4								
	8	0		0		0		7		10		0								
	9	0		0		0		5		10		0								
	10	0		0		0		7		9		0								
25	1	0		0		0		5		4		5						0.0%	16	3.0
	2	0		0		0		5		4		0								
	3	0		0		0		4		0		12								
	4	0		0		0		7		0		8								
	5	0		0		0		8		0		11								
	6	0		0		0		6		0		9								
	7	0		0		0		5		0		10								
	8	0		0		0		7		10		0								
	9	0		0		0		6		3		11								
	10	0		0		0		5		0		12								
50	1	0		0		0		5		0		7						0.0%	10	2.3
	2	0		0		0		4		0		4								
	3	0		0		0		5		0		4								
	4	0		0		0		2		4		3								
	5	0		0		0		0		6		4								
	6	0		0		0		5		0		7								
	7	0		0		0		4		0		2								
	8	0		0		0		3		0		6								
	9	0		0		0		0		6		8								
	10	0		0		0		3		0		6								
100	1	0		0		0		5		0		0						0.0%	6	3.2
	2	0		0		0		5		0		3								
	3	0		0		0		0		3		0								
	4	0		0		0		0		0		0								
	5	0		0		0		0		0		3								
	6	0		0		0		0		4		2								
	7	0		0		0		3		0		4								
	8	0		0		0		5		0		4								
	9	0		0		0		0		5		2								
	10	0		0		0		4		0		7								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/30	24	7.9	7.3	22/08/31	25	7.4	6.5
1.56		24	7.8	7.3		25	7.6	6.5
3.13		24	8.0	7.3		25	7.7	6.5
6.25		24	8.1	7.3		24	7.7	6.3
12.5		24	8.2	7.4		24	7.8	6.2
25		24	8.2	7.5		24	7.8	5.6
50		24	8.2	7.8		24	7.8	4.1
100		24	8.2	8.6		24	7.9	2.6
Control	22/08/31	24	7.8	7.2	22/09/01	25	8.3	6.5
1.56		24	7.8	7.2		26	8.1	6.3
3.13		24	8.0	7.2		25	8.2	6.5
6.25		24	8.1	7.2		25	8.0	6.3
12.5		24	8.1	7.2		25	8.1	6.0
25		24	8.2	7.2		25	8.2	5.7
50		24	8.2	7.3		25	8.2	4.1
100		24	8.2	7.3		24	8.3	3.2
Control	22/09/01	24	7.9	7.3	22/09/02	25	7.4	6.2
1.56		24	7.9	7.2		24	7.7	6.0
3.13		24	7.9	7.2		24	7.6	6.1
6.25		24	8.1	7.3		24	7.6	5.9
12.5		24	8.1	7.3		24	7.8	5.4
25		24	8.2	7.4		24	7.7	4.7
50		24	8.2	7.6		24	7.9	3.3
100		24	8.2	8.0		24	8.2	2.3
Control	22/09/02	24	7.9	7.2	22/09/03	26	7.7	6.0
1.56		24	7.8	7.2		26	7.8	5.9
3.13		24	8.0	7.3		26	7.8	5.9
6.25		24	8.1	7.3		26	7.9	5.8
12.5		24	8.1	7.3		25	8.0	5.4
25		24	8.2	7.4		25	8.0	4.7
50		24	8.0	7.5		25	8.2	2.8
100		24	8.2	7.7		24	8.3	2.3
Control	22/09/03	24	8.0	7.3	22/09/04	24	7.8	7.2
1.56		24	8.0	7.2		24	7.7	7.2
3.13		24	8.0	7.3		24	7.8	7.2
6.25		24	8.1	7.3		24	7.9	7.3
12.5		24	8.1	7.3		24	8.0	7.3
25		24	8.2	7.4		24	8.1	7.3
50		24	8.2	7.5		24	8.1	7.3
100		24	8.2	7.6		24	8.1	7.4
Control	22/09/04	24	7.8	7.2	22/09/05	25	8.1	4.5
1.56		24	7.7	7.2		25	7.9	4.2
3.13		24	7.8	7.2		25	7.9	4.3
6.25		24	7.9	7.3		25	7.9	4.3
12.5		24	8.0	7.3		25	8.0	3.9
25		24	8.1	7.3		24	8.1	3.0
50		24	8.1	7.3		24	7.7	5.4
100		24	8.1	7.4		24	8.2	2.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C265312 - BAR936
Client Sample ID: Pond-11
Date sample collected: 8/29/2022
Test Performed By: NM9,KLY,KMG,CSH,THR, CT9
Test Initiation Date: 8/30/2022
Test End Date: 9/6/2022
Dates when subsamples used: 8/30/2022 9/3/2022
8/31/2022 9/4/2022
9/1/2022 9/5/2022
9/2/2022

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.3
Temperature (°C): 24
pH(pH units): 8.1
Conductivity (µS/cm): 427

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	100-10
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.43	1.35	1.45	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.04	1.61			
Reference Toxicant Test Initiation Date:			2022/09/07					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13 Concentration analyzed with 9 organisms.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	29
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/30/2022 9/3/2022 8/31/2022 9/4/2022 9/1/2022 9/5/2022 9/2/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		9		0		11				0.0%	25	3.1
	2	0		0		0		5		10		0		13						
	3	0		0		0		4		12		0		12						
	4	0		0		0		4		9		0		10						
	5	0		0		0		6		8		0		9						
	6	0		0		0		5		10		0		16						
	7	0		0		0		5		8		0		11						
	8	0		0		0		5		7		0		10						
	9	0		0		0		7		7		0		13						
	10	0		0		0		4		8		0		10						
1.56	1	0		0		0		4		6		0		7				0.0%	22	3.1
	2	0		0		0		5		5		0		11						
	3	0		0		0		6		0		7		9						
	4	0		0		0		6		8		0		11						
	5	0		0		0		5		6		0		11						
	6	0		0		0		5		8		0		12						
	7	0		0		0		4		6		0		12						
	8	0		0		0		5		9		0		11						
	9	0		0		0		5		5		0		11						
	10	0		0		0		7		0		0		9						
3.13	1	0		0		0		4		5		0		11				0.0%	24	2.3
	2	0		0		0		5		8		0		14						
	3	0		0		0		5		7		0		14						
	4	0		0		0		4		8		0		12						
	5	0		0		0		3		8		0		12						
	6	0		0		0		5		7		0		13						
	7	0		0		0		4		5		0		14						
	8	0		0		0		5		8		0		12						
	9	0		0		0		5		6		0		10						
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
6.25	1	0		0		0		5		7		0		10				0.0%	24	2.8
	2	0		0		0		3		6		0		11						
	3	0		0		0		4		8		0		14						
	4	0		0		0		4		6		0		11						
	5	0		0		0		5		8		0		13						
	6	0		0		0		6		8		0		12						
	7	0		0		0		3		6		0		12						
	8	0		0		0		5		9		0		13						
	9	0		0		0		5		7		0		15						
	10	0		0		0		7		7		0		11						
12.5	1	0		0		0		5		12		0		11				0.0%	26	3.5
	2	0		0		0		6		8		0		13						
	3	0		0		0		6		7		0		9						
	4	0		0		0		3		7		0		10						
	5	0		0		0		4		9		0		19						
	6	0		0		0		4		0		12		13						
	7	0		0		0		7		0		5		12						
	8	0		0		0		7		6		0		12						
	9	0		0		0		6		6		0		12						
	10	0		0		0		6		7		0		11						
25	1	0		0		0		3		9		0		12				10.0%	22	3.7
	2	0		0		0		5		7		0		11						
	3	0		0		0		5		7		0		14						
	4	0		0		0		4		8		0		13						
	5	0		0		0		4		6		0		14						
	6	0		0		0		5		4		0		13						
	7	0		0		0		4		5		0		12						
	8	0		0		0		4		6		0		13						
	9	0		0		0		5		5		0		10						
	10	0		0		0		5		8	X	-	-	-	-	-	-			
50	1	0		0		0		5		6		0		13				10.0%	22	8.7
	2	0		0		0		5		4		8		13						
	3	0		0		0		5		0		0		12						
	4	0		0		0		5		0		9		16						
	5	0		0		0		5		5		0		13						
	6	0		0	X	-	-	-	-	-	-	-	-	-	-	-	-			
	7	0		0		0		5		6		8								
	8	0		0		0		6		0		7		14						
	9	0		0		0		4		0		7		13						
	10	0		0		0		4		7		0		13						
100	1	0		0		0		6		8		0		14				10.0%	24	10.0
	2	0		0		0		9		11		0		13						
	3	0		0		0		4		13		0		19						
	4	0		0		0		4		13		0		15						
	5	0		0		0		5		7		0		10						
	6	0		0		0		4		9		0		10						
	7	0		0		0		4		6		0		13						
	8	0		0		0		5		7		0		10						
	9	0		0		0		4		6		0		11						
	10	0		0	X	-	-	-	-	-	-	-	-	-	-	-	-			

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/30	24	7.8	7.2	22/08/31	26	7.6	6.2
1.56		24	7.8	7.2		26	7.4	6.1
3.13		24	7.8	7.3		26	7.5	6.0
6.25		24	7.9	7.3		26	7.5	5.7
12.5		24	7.9	7.4		25	7.4	5.1
25		24	8.0	7.6		25	7.5	3.8
50		24	7.9	7.8		25	7.4	2.5
100		24	7.7	8.9		24	8.0	6.4
Control	22/08/31	24	7.8	7.2	22/09/01	26	8.4	6.0
1.56		24	7.7	7.2		26	8.1	6.0
3.13		24	7.8	7.2		25	8.5	7.3
6.25		24	7.8	7.2		26	8.0	6.1
12.5		24	7.9	7.3		26	8.1	5.9
25		24	7.9	7.3		25	8.0	5.8
50		24	7.9	7.7		24	8.1	6.1
100		24	8.0	8.5		24	7.9	5.2
Control	22/09/01	24	7.8	7.2	22/09/02	26	8.3	5.8
1.56		24	7.8	7.2		26	8.1	5.8
3.13		24	7.9	7.3		26	8.0	5.8
6.25		24	7.9	7.3		26	7.9	5.8
12.5		24	7.9	7.4		25	7.8	5.7
25		24	8.0	7.6		25	7.8	5.6
50		24	8.0	8.0		25	7.8	5.5
100		24	8.0	8.8		24	8.0	5.3
Control	22/09/02	24	7.8	7.2	22/09/03	25	7.3	6.1
1.56		24	7.8	7.3		25	7.5	6.1
3.13		24	8.0	7.3		25	7.6	5.9
6.25		24	8.0	7.3		25	7.7	6.1
12.5		24	8.0	7.4		25	7.7	6.1
25		24	8.0	7.6		24	7.8	6.2
50		24	8.0	7.9		24	7.9	6.2
100		24	7.7	8.7		24	7.9	6.2
Control	22/09/03	24	8.0	7.3	22/09/04	25	8.3	4.6
1.56		24	8.0	7.3		26	8.2	4.8
3.13		24	8.0	7.3		25	7.9	4.7
6.25		24	8.0	7.4		25	7.8	4.6
12.5		24	8.1	7.4		25	7.7	4.6
25		24	8.1	7.6		25	7.8	4.5
50		24	8.1	7.9		24	7.6	4.7
100		25	7.7	8.8		24	7.9	5.5
Control	22/09/04	24	7.6	7.2	22/09/05	25	8.1	5.2
1.56		24	7.6	7.2		25	7.9	5.0
3.13		24	7.7	7.2		24	7.8	5.2
6.25		24	7.8	7.3		25	7.8	4.8
12.5		24	7.8	7.4		25	7.7	4.6
25		24	7.8	7.6		24	7.7	4.6
50		24	7.9	8.1		24	7.8	4.8
100		24	7.9	9.3		24	7.8	4.5
Control	22/09/05	24	7.8	7.1	22/09/06	25	7.6	5.8
1.56		24	7.9	7.1		25	7.6	5.8
3.13		24	7.9	7.2		25	7.7	5.8
6.25		24	8.0	7.2		24	7.7	6.0
12.5		24	8.0	7.3		25	7.7	5.8
25		24	8.0	7.5		24	7.7	5.9
50		24	8.0	7.9		24	7.8	5.7
100		24	8.0	8.9		24	7.8	6.0
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C265312 - BAR937
Client Sample ID: Pond-7
Date sample collected: 8/29/2022
Test Performed By: NM9, CT9, KMG, CSH,THR, KLY
Test Initiation Date: 8/31/2022
Test End Date: 9/6/2022
Dates when subsamples used: 8/31/2022 9/4/2022
9/1/2022 9/5/2022
9/2/2022
9/3/2022

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.0
Temperature (°C): 25
pH(pH units): 6.7
Conductivity (µS/cm): 271

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	25-3
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.43	1.35	1.45	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.43	1.13	1.81	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.04	1.61			
Reference Toxicant Test Initiation Date:			2022/09/07					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

6.25 Concentration analyzed with 9 organisms.

The associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	29
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	Fisherbrand 16 x 125 mm lime glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/31/2022 9/4/2022 9/1/2022 9/5/2022 9/2/2022 9/3/2022
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein.
The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		4		0		8		13						0.0%	26	2.4
	2	0		0		5		0		9		13								
	3	0		0		5		0		10		13								
	4	0		0		4		0		8		10								
	5	0		0		4		0		8		12								
	6	0		0		4		0		11		14								
	7	0		0		5		0		9		15								
	8	0		0		4		0		9		14								
	9	0		0		3		0		9		12								
	10	0		0		4		0		9		12								
1.56	1	0		0		4		0		7		11						0.0%	26	3.6
	2	0		0		4		0		9		13								
	3	0		0		4		0		9		13								
	4	0		0		6		0		10		11								
	5	0		0		6		0		12		14								
	6	0		0		7		0		10		13								
	7	0		0		4		0		6		11								
	8	0		0		3		0		10		14								
	9	0		0		5		0		9		15								
	10	0		0		3		0		9		10								
3.13	1	0		0		5		0		7		11						0.0%	27	2.6
	2	0		0		4		0		9		15								
	3	0		0		4		0		9		14								
	4	0		0		4		0		12		15								
	5	0		0		5		0		9		13								
	6	0		0		6		0		8		15								
	7	0		0		6		0		9		15								
	8	0		0		5		9		0		15								
	9	0		0		4		0		8		13								
	10	0		0		3		0		7		14								
6.25	1	0		0		4		0		6		12						0.0%	27	3.7
	2	0		0		6		0		8		14								
	3	0		0		5		0		9		13								
	4	0		0		5		0		10		16								
	5	0		0		3		0		5		13								
	6	0		0		6		0		10		15								
	7	0		0		5		0		9		15								
	8	N/A	N//A	N/A	N//A	N/A	N//A	N/A	N//A	N/A	N//A	N/A	N//A	N/A	N//A	N/A	N//A			
	9	0		0		4		0		10		12								
	10	0		0		7		0		10		13								
12.5	1	0		0		5		0		10		14						0.0%	30	3.1
	2	0		0		5		7		0		14								
	3	0		0		6		0		10		13								
	4	0		0		5		0		9		13								
	5	0		0		5		0		10		13								
	6	0		0		6		0		10		18								
	7	0		0		6		0		10		12								
	8	0		0		7		0		13		16								
	9	0		0		4		0		10		16								
	10	0		0		5		0		10		13								
25	1	0		0		4		0		11		13						10.0%	27	11.0
	2	0		0		7		3		12										
	3	0		0		5		0	X	-	-	-	-	-	-	-	-			
	4	0		0		6		11		0		20								
	5	0		0		4		5		2										
	6	0		0		5		0		12		17								
	7	0		0		6		0		10		19								
	8	0		0		4		0		11		15								
	9	0		0		5		0		12		15								
	10	0		0		7		0		10		19								
50	1	0		0		5		0		10		18						10.0%	29	9.0
	2	0		0		4		9		0		19								
	3	0		0		5		0		12		17								
	4	0		0		6		9		0		21								
	5	0		0		5		0		13		17								
	6	0		0		5		0		13		0	X	-	-	-	-			
	7	0		0		5		8		0		19								
	8	0		0		0		0		8		0								
	9	0		0		7		0		10		16								
	10	0		0		5		0		8		17								
100	1	0		0		5		10		0		19						0.0%	35	4.1
	2	0		0		6		9		0		16								
	3	0		0		5		7		0		21								
	4	0		0		6		11		0		21								
	5	0		0		7		9		0		17								
	6	0		0		7		11		0		18								
	7	0		0		6		3		0		20								
	8	0		0		6		15		0		21								
	9	0		0		5		0		9		18								
	10	0		0		6		0		13		21								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	22/08/31	24	7.7	7.2	22/09/01	26	7.7	6.1
1.56		24	7.8	7.2		26	7.7	6.0
3.13		24	7.9	7.2		25	7.8	6.1
6.25		24	7.9	7.3		25	7.8	6.1
12.5		24	7.8	7.3		25	7.7	6.2
25		24	7.8	7.4		25	7.8	6.1
50		24	7.6	7.5		24	7.6	6.2
100		24	7.0	7.9		24	7.1	6.1
Control	22/09/01	24	8.0	7.2	22/09/02	25	7.6	6.2
1.56		24	7.9	7.2		25	7.6	6.2
3.13		24	8.0	7.2		25	7.4	6.1
6.25		24	8.0	7.2		25	7.5	6.1
12.5		24	8.0	7.3		25	7.6	6.1
25		24	7.9	7.5		25	7.5	6.2
50		24	7.8	7.8		24	7.5	6.1
100		24	7.3	8.6		24	6.9	6.2
Control	22/09/02	24	7.7	7.2	22/09/03	26	7.7	6.1
1.56		24	7.8	7.2		26	7.6	6.2
3.13		24	8.0	7.3		26	7.7	6.2
6.25		24	8.0	7.3		26	7.7	6.1
12.5		24	8.0	7.4		26	7.7	6.1
25		24	7.9	7.6		25	7.6	6.1
50		24	7.7	7.9		25	7.5	6.1
100		24	6.6	8.6		25	7.2	6.4
Control	22/09/03	24	7.9	7.3	22/09/04	25	8.3	5.2
1.56		24	7.9	7.3		25	8.1	5.1
3.13		24	7.9	7.3		25	8.0	5.1
6.25		24	8.0	7.3		25	7.8	5.0
12.5		24	8.0	7.4		25	7.7	5.1
25		24	7.9	7.5		25	7.7	5.0
50		24	7.7	7.8		25	7.5	5.1
100		25	6.8	8.6		25	7.2	6.0
Control	22/09/04	24	7.8	7.2	22/09/05	24	8.2	4.3
1.56		24	7.7	7.2		24	8.1	4.3
3.13		24	7.7	7.2		24	8.0	4.2
6.25		24	7.8	7.3		24	7.8	3.9
12.5		24	7.8	7.3		24	7.7	4.0
25		24	7.8	7.5		24	7.5	4.0
50		24	7.6	7.8		24	7.5	4.4
100		24	6.6	8.3		24	7.0	5.5
Control	22/09/05	24	7.7	7.0	22/09/06	26	7.4	5.4
1.56		24	7.8	7.1		26	7.3	5.6
3.13		24	7.9	7.1		25	7.5	5.8
6.25		24	7.9	7.2		25	7.5	5.7
12.5		24	7.9	7.2		24	7.5	7.2
25		24	7.9	7.3		25	7.6	6.1
50		24	7.6	7.7		24	7.4	5.9
100		24	7.0	8.2		24	6.6	6.3
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Toxicity testing on samples BAR935-POND-10, BAR936-POND-11, BAR937-POND-7, BAR938-E21, and BAR939-POND-12

Collected August 29, 2022

Final Report

September 27, 2022

Submitted to: **Bureau Veritas Laboratories**
Edmonton, AB

8664 Commerce Court, Burnaby, BC V5A 4N7

TABLE OF CONTENTS

Page

Signature Page ii

Summary iii

1.0 Introduction 1

2.0 Methods 1

3.0 Results 3

4.0 QA/QC 0

5.0 References 0

List of Tables

Table 1. Summary of test conditions: 72-h *Pseudokirchneriella subcapitata* growth inhibition test. 2

Table 2. Results: *Pseudokirchneriella subcapitata* growth inhibition test. 3

Table 3. Reference toxicant results. 0

List of Appendices

APPENDIX A – *Pseudokirchneriella subcapitata* Toxicity Test Data

APPENDIX B – Chain-of-Custody Form

SIGNATURE PAGE

Report By:
Sierra Klueppel, B.Sc.
Laboratory Biologist

Reviewed By:
Gabriella Utomo, B.Sc.
Laboratory Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

SUMMARY

Sample Information and Test Type

Sample ID	BAR935-POND-10, BAR936-POND-11, BAR937-POND-7, BAR938-E21, and BAR939-POND-12
Sample collection date	August 29, 2022
Sample receipt date	August 31, 2022
Sample receipt temperature	4.8 – 7.1°C
Test types	72-h *Pseudokirchneriella subcapitata* growth inhibition

Summary of Results

Endpoint	Mean ± SD					
	Control	**BAR935-POND-10**	**BAR936-POND-11**	**BAR937-POND-7**	**BAR938-E21**	**BAR939-POND-12**
P. subcapitata Cell Yield ($x10^4$ cells/mL)	31.9 ± 2.0	30.5 ± 1.3	53.8 ± 3.6 *	50.0 ± 3.7 *	50.5 ± 3.0 *	56.8 ± 2.8 *

SD = Standard Deviation

* = Indicates cell yield was significantly greater than the control

1.0 INTRODUCTION

Nautilus Environmental Company Inc. conducted a 72-h *Pseudokirchneriella subcapitata* growth inhibition toxicity test for Bureau Veritas Laboratories on samples identified as BAR935-POND-10, BAR936-POND-11, BAR937-POND-7, BAR938-E21, and BAR939-POND-12. The samples were collected on August 29, 2022 and delivered to the Nautilus Environmental laboratory in Burnaby, BC on August 31, 2022. The samples were transported in eight 1-L plastic containers and were received at temperatures ranging between 4.8 and 7.1°C.

This report describes the results of the toxicity test. Copies of raw laboratory data sheets and statistical analyses are provided in Appendix A. The chain-of-custody form is provided in Appendix B.

2.0 METHODS

Methods for the toxicity test are summarized in Table 1. Testing was conducted according to procedures described by Environment Canada (2007). Statistical analyses were performed using CETIS (Tidepool Scientific Software, 2021).

Table 1. Summary of test conditions: 72-h *Pseudokirchneriella subcapitata* growth inhibition test.

Test species	*Pseudokirchneriella subcapitata*, strain CPCC #37
Organism source	In-house axenic culture, obtained from Canadian Phycological Culture Center, and originally isolated from Nivelta River, Norway.
Organism age	3-to 7-day old culture in logarithmic growth phase
Test type	Static
Test duration	72 hours
Test vessel	Microplate
Test volume	220 µL
Test concentrations	Full strength sample diluted to 95.2% (v/v) with nutrients, plus laboratory control
Test replicates	4 per treatment; 8 for laboratory control
Number of organisms	10,000 cells/mL
Control/dilution water	Deionized water supplemented with nutrients
Test solution renewal	None
Test temperature	24 ± 2°C
Feeding	None
Light intensity	3600 to 4400 lux
Photoperiod	24 hours light
Aeration	None
Test measurements	Test area temperature measured daily; temperature and pH measured at test initiation; pH of two control wells measured at test termination
Test protocol	Environment Canada (2007), EPS 1/RM/25
Statistical software	CETIS Version 2.1.1
Test endpoint	Algal cell growth inhibition
Test acceptability criteria for controls	>16-fold increase in number of algal cells; CV ≤ 20%; no trend when analyzed using Mann-Kendall test
Reference toxicant	Zinc (added as $ZnSO_4$)

3.0 RESULTS

There were no significant adverse effects on cell yield of *P. subcapitata*, but significant stimulations are observed for all samples except for sample BAR935-POND-10 (Table 2).

Table 2. Results: *Pseudokirchneriella subcapitata* growth inhibition test.

Sample ID	Cell Yield (x 10^4 cells/mL) (Mean ± SD)	Stimulation (%)
Control	31.9 ± 2.0	--
BAR935-POND-10	30.5 ± 1.3	--
BAR936-POND-11	53.8 ± 3.6 *	68.6
BAR937-POND-7	50.0 ± 3.7 *	56.9
BAR938-E21	50.5 ± 3.0 *	58.4
BAR939-POND-12	56.8 ± 2.8 *	78.0

SD = Standard Deviation
* = Indicates cell yield was significantly greater than the laboratory control

4.0 QA/QC

The health history of the test organisms used in the exposure was acceptable and met the requirements of the Environment Canada protocol. The test met all control acceptability criteria and water quality parameters remained within ranges specified in the protocol throughout the tests. Uncertainty associated with the test is best described by the standard deviation around the mean and/or the confidence intervals around the point estimates.

Results of the reference toxicant test conducted during the testing program are summarized in Table 3. Results for this test fell within the range for organism performance of the mean and two standard deviations, based on historical results obtained by the laboratory with this test. Thus, the sensitivity of the organisms used in the test was appropriate. The reference toxicant test was performed under the same conditions as those used for the sample.

Table 3. Reference toxicant results.

Test Species	Endpoint	Historical Mean (2 SD Range)	CV (%)	Test Date
P. subcapitata	Growth (IC50): 35.9 µg/L Zn	31.2 (24.2 – 40.2) µg/L Zn	13	September 8, 2022

SD = Standard Deviation, CV = Coefficient of Variation, IC = Inhibition Concentration

5.0 REFERENCES

Environment Canada. 2007. Biological test method: growth inhibition test using the freshwater alga. Environmental Protection Series, Report EPS 1/RM/25. Second Edition, March 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 53 pp.

Tidepool Scientific Software. 2021. CETIS comprehensive environmental toxicity information system, version 2.1.1 Tidepool Scientific Software, McKinleyville, CA.

APPENDIX A – *Pseudokirchneriella subcapitata* Toxicity Test Data

Pseudokirchneriella subcapitata Summary Sheet

Client: Bureau Veritas
Work Order No.: 221778

Start Date: Aug. 31/22
Set up by: SAK

Sample Information:

Sample ID: Various – see below
Sample Date: Aug. 29/22
Date Received: Aug. 31/22
Sample Volume: 8 × 1L

Test Organism Information:

Culture Date: Aug. 26/22
Age of culture (Day 0): 5d

Zinc Reference Toxicant Results:

Reference Toxicant ID: SC235
Stock Solution ID: 22Zn01
Date Initiated: Sept. 8/22

72-h IC50 (95% CL): 35.9 (33.5 – 38.4) µg/L Zn

72-h IC50 Reference Toxicant Mean and Range: 31.2 (24.2 – 40.2) µg/L Zn CV (%): 13

Test Results:

	Cell Yield (Mean± SD)
Negative Control	31.9 ± 2.0
BAR935-POND-10	30.5 ± 1.3
BAR936-POND-11	53.8 ± 3.6
BAR937-POND-7	50.0 ± 3.7
BAR938-E21	50.5 ± 3.0
BAR939-POND-12	56.8 ± 2.8
	±
	±
	±

Reviewed by: [illegible]

Date reviewed: Sept 14/22

72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client: Bureau Veritas

Setup by: SAH

Sample ID: BAR935 – POND-10

Test Date/Time: Aug. 31/22 @ 1430 h

Work Order No.: 221778

CER #: 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: Aug. 26/22

Age of Culture: 5d

Culture Health: Good

Culture Count: 1 195 2 220

Average: 207.5

Culture Cell Density (c1): 207.5×10^4 cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 207.5×10^4 cells/ml = 6.4 mL

Time Zero Counts: 1 20 2 20

Average: 20

No. of Cells/mL: 20×10^4 cells/mL

Initial Density: # cells/mL ÷ 220 µL x 10 µL = 9091 cells/mL

Concentration %(v/v)	Water Quality pH 0 h	Water Quality Temp (°C) 0 h	Incubator Temperature (°C) 0 h	24 h	48 h	72 h	Microplates rotated 2X per day? 0 h	24 h	48 h	72 h
Control	6.6	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
95.2	8.3	24.0	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAH	SAH	SAH	SAH	JZL	JZL	SAH	SAH	JZL	JZL

Initial control pH: Well 1: 6.6 Well 2: 6.6

Final control pH: Well 1: 6.6 Well 2: 6.6

Light intensity (lux): 4190 Date measured: Aug. 31/22

Thermometer: CER#4 Light meter: 1 pH meter/probe: 1 / 1

Sample Description: Clear, yellowish, odourless, w/ few particulates

Comments:

Reviewed: [signature] Date reviewed: Sept 14/22

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug. 31/22 @ 1430h
Work Order #: 221778
Termination Date: Sept. 3/22 @ 1430h
Sample ID: BAR435 - POND 10
Test set up by: SAL

%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					MG
	B	33					
	C	36					
	D	32					
	E	35					
	F	32					
	G	31					
	H	34					
95.8	A	32					
	B	33					
	C	30					
	D	31					
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						

Comments:

Reviewed by: [illegible]
Date Reviewed: Sept 14/22

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 221778
Sample ID: BAR935-POND-10

Start Date/Time: August 31/22@1430h
Termination Date/Time September 3/22@1430h

Initial Cell Density: 9091 cell/mL

									200000
									0.22
									0.01
Concentration %(v/v)	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		9090.909
Control	A	30				30	29.1	mean	32.0
	B	33				33	32.1	SD	2.03101
	C	36				36	35.1	CV	6.353674
	D	32				32	31.1		
	E	35				35	34.1		
	F	32				32	31.1		
	G	31				31	30.1		
	H	34				34	33.1		
95.2	A	32				32	31.1		
	B	33				33	32.1		
	C.	30				30	29.1		
	D	31				31	30.1		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		

Reviewed by: _____

Date reviewed: Sept 14/22

CETIS Summary Report

Report Date: 08 Sep-22 15:53 (p 1 of 1)
Test Code/ID: 221778a / 18-0378-9632

EC Alga Growth Inhibition Test

Nautilus Environmental

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	02-5862-6768	**Code:**	BAR935-POND-10	**Project:**	
Sample Date:	29 Aug-22 14:45	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR935-POND-10
Sample Age:	48h (5.8 °C)	**Client:**	Bureau Veritas Laboratories		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
09-5604-9994	Cell Yield	Equal Variance t Two-Sample Test	0.1252	95.2% passed cell yield	1

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	31.88	30.18	33.57	29	35	0.7181	2.031	6.37%	0.00%
95.2		4	30.5	28.45	32.55	29	32	0.6455	1.291	4.23%	4.31%

Cell Yield Detail

MD5: 708B311F7B24C45C52907283708BA798

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		31	32	29	30				

Analyst: SM QA: Sept 14/22

CETIS Analytical Report

Report Date: 08 Sep-22 15:53 (p 1 of 2)
Test Code/ID: 221778a / 18-0378-9632

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	09-5604-9994	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:53	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	708B311F7B24C45C52907283708BA798	**Editor ID:**	

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	02-5862-6768	**Code:**	BAR935-POND-10	**Project:**	
Sample Date:	29 Aug-22 14:45	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR935-POND-10
Sample Age:	48h (5.8 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C > T	95.2% passed cell yield endpoint	6.41%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		95.2	10	1.22	1.812	2.043	CDF	0.1252	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.781	2.412	0.6942	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.04167	5.04167	1	1.488	0.2505	Non-Significant Effect
Error	33.875	3.3875	10			
Total	38.9167		11			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.475	44.43	0.4903	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.987	0.8025	0.9985	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	31.88	30.18	33.57	31.33	29	35	0.7181	6.37%	0.00%
95.2		4	30.5	28.45	32.55	30.5	29	32	0.6455	4.23%	4.31%

Cell Yield Detail

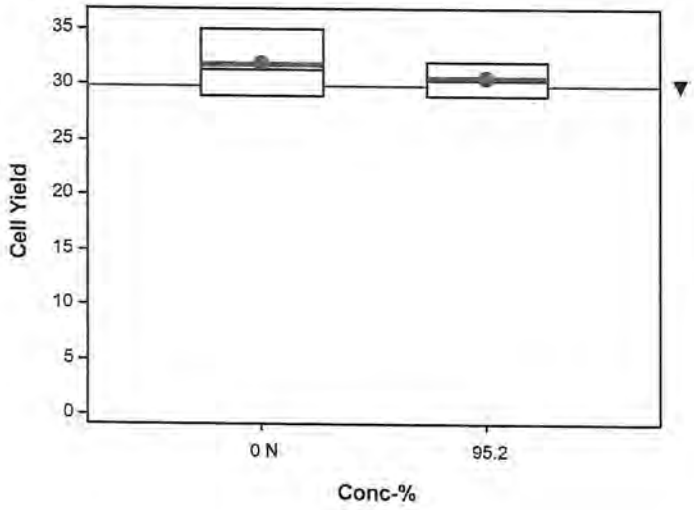
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		31	32	29	30				

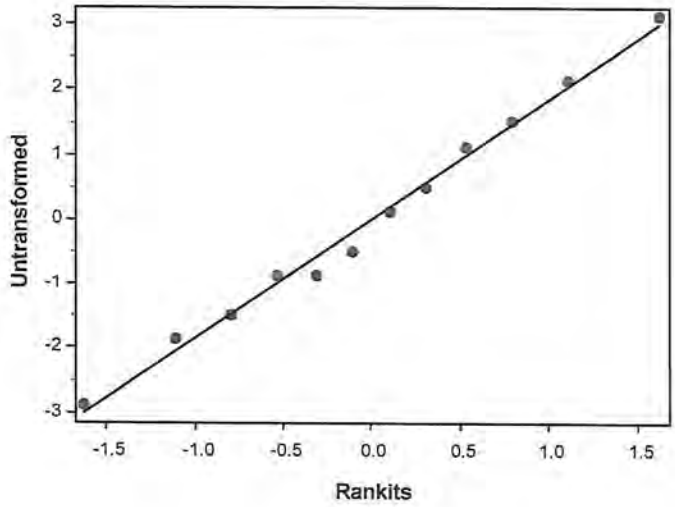
Analyst: [illegible] QA: [illegible] Sep 14/22

EC Alga Growth Inhibition Test — Nautilus Environmental

Analysis ID:	09-5604-9994	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:53	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	708B311F7B24C45C52907283708BA798	**Editor ID:**	

Graphics





72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client : Bureau Veritas **Setup by:** SAM

Sample ID: BAR936 – POND-11 **Test Date/Time:** Aug. 31/22 @ 1430h

Work Order No.: 221778 **CER #:** 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: Aug. 26/22 **Age of Culture:** 5d **Culture Health:** Good

Culture Count: 1 195 2 220 **Average:** 207.5 **Culture Cell Density (c1):** 207.5×10^4 cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 207.5×10^4 cells/ml = 6.4 mL

Time Zero Counts: 1 20 2 20 **Average:** 20

No. of Cells/mL: 20×10^4 cells/mL **Initial Density:** # cells/mL ÷ 220 µL x 10 µL = 9091 cells/mL

Concentration %(v/v)	Water Quality pH	Water Quality Temp (°C)	Incubator Temperature (°C)				Microplates rotated 2X per day?			
	0 h	0 h	0 h	24 h	48 h	72 h	0 h	24 h	48 h	72 h
Control	6.6	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
95.2	8.0	24.0	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAM	SAM	SAM	SAM	JZL	JZL	SAM	SAM	JZL	JZL

Initial control pH: Well 1: 6.6 Well 2: 6.6

Final control pH: Well 1: 6.6 Well 2: 6.6

Light intensity (lux): 4190 **Date measured:** Aug. 31/22

Thermometer: CER#4 **Light meter:** 1 **pH meter/probe:** 1 / 1

Sample Description: Clear, ~~slight~~ pale yellow, odourless, w/ no particulate

Comments:

Reviewed: [signature] **Date reviewed:** Sept 14/22

Version 1.3; Issued July 19, 2017

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug. 31/22 @ 1430h
Work Order #: 221778
Termination Date: Sept. 3/22 @ 1430h
Sample ID: BAR936-POND 11
Test set up by: SAM

%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					MG
	B	33					
	C	36					
	D	32					
	E	35					
	F	32					
	G	31					
	H	34					
95.7	A	50					
	B	54					
	C	58					
	D	57					
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						

Comments:

Reviewed by: [illegible]
Date Reviewed: Sep 7 14/22

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 221778
Sample ID: BAR936-POND-11

Start Date/Time: August 31/22@1430h
Termination Date/Time: September 3/22@1430h

Initial Cell Density: 9091 cell/mL

	200000
	0.22
	0.01
	9090.909

Concentration %(v/v)	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	30				30	29.1	mean	32.0
	B	33				33	32.1	SD	2.03101
	C	36				36	35.1	CV	6.353674
	D	32				32	31.1		
	E	35				35	34.1		
	F	32				32	31.1		
	G	31				31	30.1		
	H	34				34	33.1		
95.2	A	50				50	49.1		
	B	54				54	53.1		
	C	58				58	57.1		
	D	57				57	56.1		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		

Reviewed by: _____

Date reviewed: Sept 14/22

CETIS Summary Report

Report Date: 08 Sep-22 15:54 (p 1 of 1)
Test Code/ID: 221778b / 01-8009-0345

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	03-8739-0726	**Code:**	BAR936-POND-11	**Project:**	
Sample Date:	29 Aug-22 15:15	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR936-POND-11
Sample Age:	47h (4.8 °C)	**Client:**	Bureau Veritas Laboratories		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
06-6908-2692	Cell Yield	Equal Variance t Two-Sample Test	<1.0E-05	95.2% failed cell yield	1

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	31.88	30.18	33.57	29	35	0.7181	2.031	6.37%	0.00%
95.2		4	53.75	48.03	59.47	49	57	1.797	3.594	6.69%	-68.63%

Cell Yield Detail — MD5: 78A5E36AF0F4B5CE5A247D59EB33B445

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		49	53	57	56				

Analyst: SK QA: A Sep 14/22

CETIS Analytical Report

Report Date: 08 Sep-22 15:54 (p 1 of 2)
Test Code/ID: 221778b / 01-8009-0345

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	06-6908-2692	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:54	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	78A5E36AF0F4B5CE5A247D59EB33B445	**Editor ID:**	

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	03-8739-0726	**Code:**	BAR936-POND-11	**Project:**	
Sample Date:	29 Aug-22 15:15	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR936-POND-11
Sample Age:	47h (4.8 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C < T	95.2% failed cell yield endpoint	9.05%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		95.2*	10	13.74	1.812	2.886	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.916	2.412	0.4538	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1276.04	1276.04	1	188.7	<1.0E-05	Significant Effect
Error	67.625	6.7625	10			
Total	1343.67		11			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.131	10.88	0.1933	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9536	0.8025	0.6901	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	31.88	30.18	33.57	31.33	29	35	0.7181	6.37%	0.00%
95.2		4	53.75	48.03	59.47	54.5	49	57	1.797	6.69%	-68.63%

Cell Yield Detail

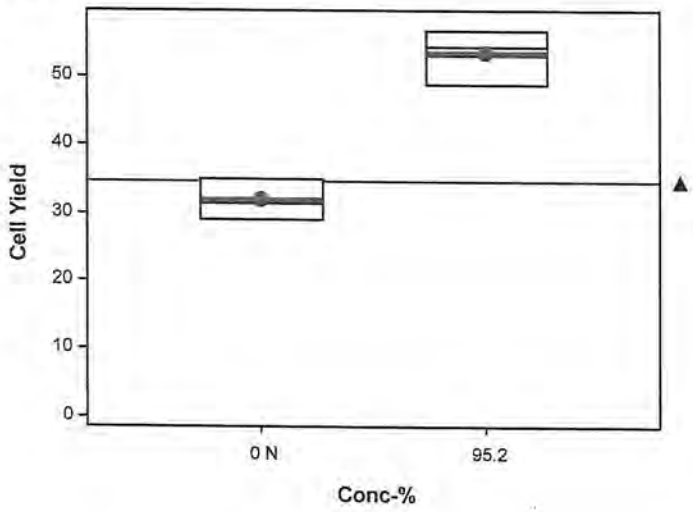
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		49	53	57	56				

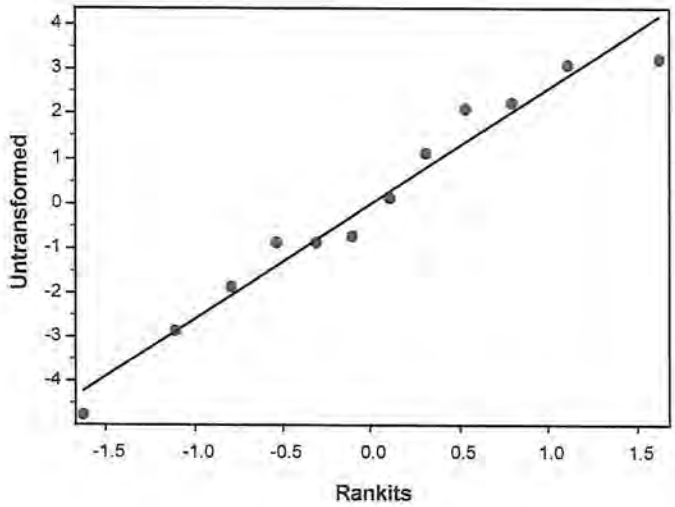
Analyst: SM QA: Sept 14/22

EC Alga Growth Inhibition Test — Nautilus Environmental

Analysis ID:	06-6908-2692	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:54	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	78A5E36AF0F4B5CE5A247D59EB33B445	**Editor ID:**	

Graphics





72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client: Bureau Veritas **Setup by:** SAK

Sample ID: BAR9357-POND-7 **Test Date/Time:** Aug. 31/22 @ 1430h

Work Order No.: 221778 **CER #:** 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: Aug. 26/22 **Age of Culture:** 5d **Culture Health:** Good

Culture Count: 1 195 2 220 **Average:** 207.5 **Culture Cell Density (c1):** 207.5×10^4 cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 207.5×10^4 cells/ml = 6.4mL

Time Zero Counts: 1 20 2 20 **Average:** 20

No. of Cells/mL: 20×10^4 cells/mL **Initial Density:** # cells/mL ÷ 220 µL x 10 µL = 9091 cells/mL

Concentration %(v/v)	Water Quality pH	Water Quality Temp (°C)	Incubator Temperature (°C)				Microplates rotated 2X per day?			
	0 h	0 h	0 h	24 h	48 h	72 h	0 h	24 h	48 h	72 h
Control	6.6	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
95.2	7.3	24.0	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAK	SAK	SAK	SAK	JZL	JZL	SAK	SAK	JZL	JZL

Initial control pH: Well 1: 6.6 Well 2: 6.6

Final control pH: Well 1: 6.6 Well 2: 6.6

Light intensity (lux): 4190 **Date measured:** Aug. 31/22

Thermometer: CER#4 **Light meter:** 1 **pH meter/probe:** 1 / 1

Sample Description: Clear, pale yellow, odourless, w/ no particulates

Comments:

Reviewed: [signature] **Date reviewed:** Sept 14/22

Version 1.3; Issued July 19, 2017

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug. 31/22 @ 1430h
Work Order #: 221778
Termination Date: Sept. 3/22 @ 1430h
Sample ID: BAR937 - POND 7
Test set up by: BRM

%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					MG
	B	33					
	C	36					
	D	32					
	E	35					
	F	32					
	G	31					
	H	34					
95.7	A	55					
	B	49					
	C	53					
	D	47					
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						

Comments:

Reviewed by: [illegible]
Date Reviewed: Sept 14/22

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 221778
Sample ID: BAR937-POND-7

Start Date/Time: August 31/22@1430h
Termination Date/Time September 3/22@1430h

Initial Cell Density: 9091 cell/mL

	200000
	0.22
	0.01
	9090.909

Concentration %(v/v)	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	30				30	29.1	mean	32.0
	B	33				33	32.1	SD	2.03101
	C	36				36	35.1	CV	6.353674
	D	32				32	31.1		
	E	35				35	34.1		
	F	32				32	31.1		
	G	31				31	30.1		
	H	34				34	33.1		
95.2	A	55				55	54.1		
	B	49				49	48.1		
	C	53				53	52.1		
	D	47				47	46.1		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		

Reviewed by: _____

Date reviewed: Sept 14/22

CETIS Summary Report

Report Date: 08 Sep-22 15:55 (p 1 of 1)
Test Code/ID: 221778c / 20-0761-7556

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	18-3900-0694	**Code:**	BAR937-POND-7	**Project:**	
Sample Date:	29 Aug-22 13:41	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR937-POND-7
Sample Age:	49h (5.7 °C)	**Client:**	Bureau Veritas Laboratories		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
14-8744-4060	Cell Yield	Equal Variance t Two-Sample Test	<1.0E-05	95.2% failed cell yield	1

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	31.88	30.18	33.57	29	35	0.7181	2.031	6.37%	0.00%
95.2		4	50	44.19	55.81	46	54	1.826	3.651	7.30%	-56.86%

Cell Yield Detail — MD5: E8133F52A5880080736C1B34C6DFE5DB

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		54	48	52	46				

Analyst: GM QA: A Sept 14/22

CETIS Analytical Report

Report Date: 08 Sep-22 15:55 (p 1 of 2)
Test Code/ID: 221778c / 20-0761-7556

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	14-8744-4060	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:55	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	E8133F52A5880080736C1B34C6DFE5DB	**Editor ID:**	

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	18-3900-0694	**Code:**	BAR937-POND-7	**Project:**	
Sample Date:	29 Aug-22 13:41	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR937-POND-7
Sample Age:	49h (5.7 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C < T	95.2% failed cell yield endpoint	9.14%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		95.2*	10	11.28	1.812	2.913	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.599	2.412	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	876.042	876.042	1	127.2	<1.0E-05	Significant Effect
Error	68.875	6.8875	10			
Total	944.917		11			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.232	10.88	0.1821	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9699	0.8025	0.9096	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	31.88	30.18	33.57	31.33	29	35	0.7181	6.37%	0.00%
95.2		4	50	44.19	55.81	50	46	54	1.826	7.30%	-56.86%

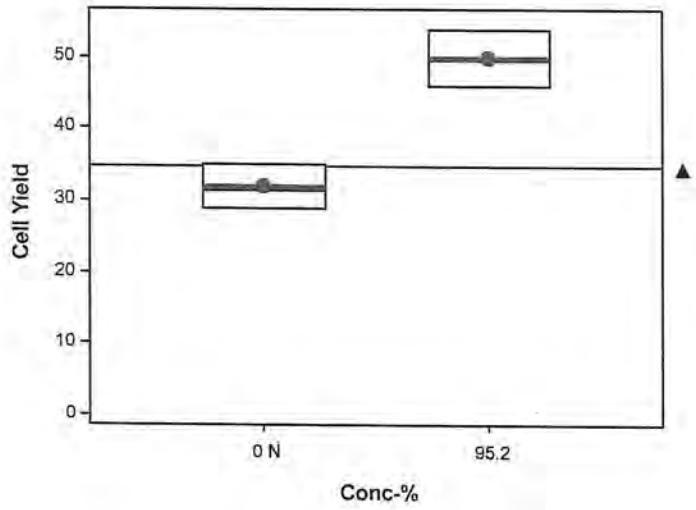
Cell Yield Detail

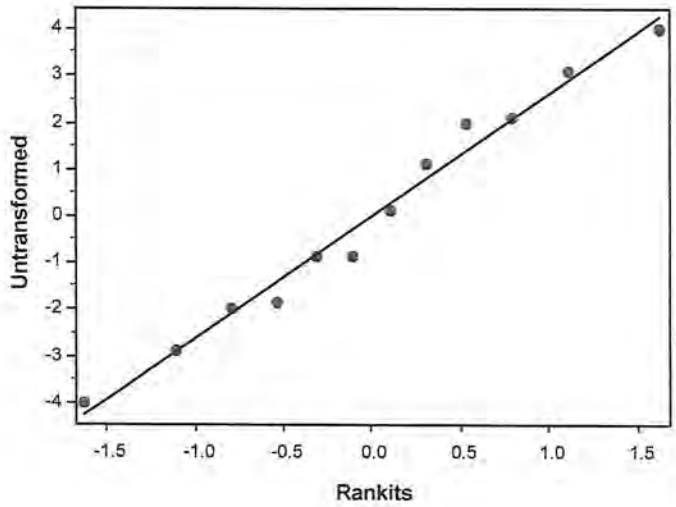
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		54	48	52	46				

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	14-8744-4060	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:55	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	E8133F52A5880080736C1B34C6DFE5DB	**Editor ID:**	

Graphics





72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client : Bureau Veritas **Setup by:** SAK

Sample ID: BAR938-E21 **Test Date/Time:** Aug. 31/22 @ 1430h

Work Order No.: 221778 **CER #:** 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: Aug. 26/22 **Age of Culture:** 5d **Culture Health:** Good

Culture Count: 1 195 2 220 **Average:** 207.5 **Culture Cell Density (c1):** 207.5×10^4 cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 207.5×10^4 cells/ml = 6.4mL

Time Zero Counts: 1 20 2 20 **Average:** 20

No. of Cells/mL: 20×10^4 cells/mL **Initial Density:** # cells/mL ÷ 220 µL x 10 µL = 9091 cells/mL

Concentration %(v/v)	Water Quality pH	Water Quality Temp (°C)	Incubator Temperature (°C)				Microplates rotated 2X per day?			
	0 h	0 h	0 h	24 h	48 h	72 h	0 h	24 h	48 h	72 h
Control	6.6	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
95.2	7.7	24.0	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAK	SAK	SAK	SAK	JZL	JZL	SAK	SAK	JZL	JZL

Initial control pH: Well 1: 6.6 Well 2: 6.6

Final control pH: Well 1: 6.6 Well 2: 6.6

Light intensity (lux): 4190 **Date measured:** Aug. 31/22

Thermometer: CER#4 **Light meter:** 1 **pH meter/probe:** 1 / 1

Sample Description: Clear, colourless, odourless, w/ no particulates

Comments:

Reviewed: [illegible] **Date reviewed:** Sept 14/22

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug. 31/22 @ 1430h
Work Order #: 221778
Termination Date: Sept. 3/22 @ 1430h
Sample ID: BHR938-E21
Test set up by: SAM

%(v/v) Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					MG
	B	33					
	C	36					
	D	32					
	E	35					
	F	32					
	G	31					
	H	34					
95.7	A	48					
	B	50					
	C	54					
	D	54					
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						

Comments:

Reviewed by: [illegible]
Date Reviewed: Sept 14/22

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 221778
Sample ID: BAR938-E21

Start Date/Time: August 31/22@1430h
Termination Date/Time: September 3/22@1430h

Initial Cell Density: 9091 cell/mL

	200000
	0.22
	0.01
	9090.909

Concentration % (v/v)	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	30				30	29.1	mean	32.0
	B	33				33	32.1	SD	2.03101
	C	36				36	35.1	CV	6.353674
	D	32				32	31.1		
	E	35				35	34.1		
	F	32				32	31.1		
	G	31				31	30.1		
	H	34				34	33.1		
95.2	A	48				48	47.1		
	B	50				50	49.1		
	C	54				54	53.1		
	D	54				54	53.1		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		

Reviewed by: _____

Date reviewed: Sept 14/22

CETIS Summary Report

Report Date: 08 Sep-22 15:56 (p 1 of 1)
Test Code/ID: 221778d / 06-3300-3485

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	08-8296-6901	**Code:**	BAR938-E21	**Project:**	
Sample Date:	29 Aug-22 14:07	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR938-E21
Sample Age:	48h (7.1 °C)	**Client:**	Bureau Veritas Laboratories		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
18-8907-6994	Cell Yield	Equal Variance t Two-Sample Test	<1.0E-05	95.2% failed cell yield	1

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	31.88	30.18	33.57	29	35	0.7181	2.031	6.37%	0.00%
95.2		4	50.5	45.73	55.27	47	53	1.5	3	5.94%	-58.43%

Cell Yield Detail — MD5: 3A8F148C25EBCF70BF39518C3D946292

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		47	49	53	53				

Analyst: SM QA: Sept 14/22

CETIS Analytical Report

Report Date: 08 Sep-22 15:56 (p 1 of 2)
Test Code/ID: 221778d / 06-3300-3485

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	18-8907-6994	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:56	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3A8F148C25EBCF70BF39518C3D946292	**Editor ID:**	

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	08-8296-6901	**Code:**	BAR938-E21	**Project:**	
Sample Date:	29 Aug-22 14:07	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR938-E21
Sample Age:	48h (7.1 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C < T	95.2% failed cell yield endpoint	8.23%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		95.2*	10	12.87	1.812	2.624	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.553	2.412	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	925.042	925.042	1	165.6	<1.0E-05	Significant Effect
Error	55.875	5.5875	10			
Total	980.917		11			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.182	10.88	0.3563	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9359	0.8025	0.4472	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	31.88	30.18	33.57	31.33	29	35	0.7181	6.37%	0.00%
95.2		4	50.5	45.73	55.27	51.67	47	53	1.5	5.94%	-58.43%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		47	49	53	53				

Analyst: SM QA: Sep 14/22

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	18-8907-6994	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:56	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	3A8F148C25EBCF70BF39518C3D946292	**Editor ID:**	

72-h Algal Growth Inhibition Toxicity Test
Water Quality Measurements

Client : Bureau Veritas **Setup by:** SAM

Sample ID: BAR939-POND-12 **Test Date/Time:** Aug. 31/22 @ 1430h

Work Order No.: 221778 **CER #:** 4

Test Species: *Pseudokirchneriella subcapitata*

Culture Date: Aug. 26/22 **Age of Culture:** 5d **Culture Health:** Good

Culture Count: 1 195 2 220 **Average:** 207.5 **Culture Cell Density (c1):** 207.5×10^4 cells/mL

v1 = 220,000 cells/ml x 60 ml / (c1) 207.5×10^4 cells/ml = 6.4mL

Time Zero Counts: 1 20 2 20 **Average:** 20

No. of Cells/mL: 20×10^4 cells/mL **Initial Density:** # cells/mL ÷ 220 µL x 10 µL = 9091 cells/mL

Concentration %(v/v)	Water Quality pH	Water Quality Temp (°C)	Incubator Temperature (°C)				Microplates rotated 2X per day?			
	0 h	0 h	0 h	24 h	48 h	72 h	0 h	24 h	48 h	72 h
Control	6.6	24.0	25.0	25.0	25.0	25.0	✓	✓	✓	✓
95.2	7.4	24.0	↓	↓	↓	↓	↓	↓	↓	↓
Initials	SAM	SAM	SAM	SAM	JZL	JZL	SAM	SAM	JZL	JZL

Initial control pH: Well 1: 6.6 Well 2: 6.6

Final control pH: Well 1: 6.6 Well 2: 6.6

Light intensity (lux): 4190 **Date measured:** Aug. 31/22

Thermometer: CER#4 **Light meter:** 1 **pH meter/probe:** 1 / 1

Sample Description: Clear, yellowish, odourless, w/ no particulates

Comments:

Reviewed: [signature] **Date reviewed:** Sept 14/22

Pseudokirchneriella subcapitata Toxicity Test Data Sheet
72-h Algal Cell Counts

Client: Bureau Veritas
Start Date/Time: Aug 31/22 @ 1430h
Work Order #: 221778
Termination Date: Sept. 3/22 @ 1430h
Sample ID: BAR939-POND-12
Test set up by: SAM

%(v/v)

Concentration	Rep	Count 1	Count 2	Count 3	Count 4	Comments	Initials
Control	A	30					MG
	B	33					
	C	36					
	D	32					
	E	36					
	F	32					
	G	31					
	H	34					
95%	A	55					
	B	56					
	C	61					
	D	59					
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						
	A						
	B						
	C						
	D						

Comments:

Reviewed by: [illegible]
Date Reviewed: Sept 14/22

Pseudokirchneriella subcapitata Algal Counts

Client: Bureau Veritas
WO#: 221778
Sample ID: BAR939-POND-12

Start Date/Time: August 31/22@1430h
Termination Date/Time September 3/22@1430h

Initial Cell Density: 9091 cell/mL

	200000
	0.22
	0.01
	9090.909

Concentration %(w/v)	Rep	Count 1 (x 10^4)	Count 2 (x 10^4)	Count 3 (x 10^4)	Count 4 (x 10^4)	Mean (x 10^4)	Cell Yield (x 10^4) cell/mL		
Control	A	30				30	29.1	mean	32.0
	B	33				33	32.1	SD	2.03101
	C	36				36	35.1	CV	6.353674
	D	32				32	31.1		
	E	35				35	34.1		
	F	32				32	31.1		
	G	31				31	30.1		
	H	34				34	33.1		
95.2	A	55				55	54.1		
	B	56				56	55.1		
	C	61				61	60.1		
	D	59				59	58.1		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		
	A					#DIV/0!	#DIV/0!		
	B					#DIV/0!	#DIV/0!		
	C					#DIV/0!	#DIV/0!		
	D					#DIV/0!	#DIV/0!		

Reviewed by: _____

Date reviewed: Sept 14/22

CETIS Summary Report

Report Date:	08 Sep-22 15:57 (p 1 of 1)
Test Code/ID:	221778e / 05-8202-6437

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	01-3330-2497	**Code:**	BAR939-POND-12	**Project:**	
Sample Date:	29 Aug-22 14:36	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR939-POND-12
Sample Age:	48h (6.3 °C)	**Client:**	Bureau Veritas Laboratories		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
20-4569-0703	Cell Yield	Equal Variance t Two-Sample Test	<1.0E-05	95.2% failed cell yield	1

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	31.88	30.18	33.57	29	35	0.7181	2.031	6.37%	0.00%
95.2		4	56.75	52.37	61.13	54	60	1.377	2.754	4.85%	-78.04%

Cell Yield Detail — MD5: AEF74558C7DF7E345D4515049F6BA937

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		54	55	60	58				

Analyst: SKV QA: 9/14/22

CETIS Analytical Report

Report Date: 08 Sep-22 15:57 (p 1 of 2)
Test Code/ID: 221778e / 05-8202-6437

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	20-4569-0703	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:57	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AEF74558C7DF7E345D4515049F6BA937	**Editor ID:**	

Batch ID:	17-4940-0351	**Test Type:**	Cell Growth	**Analyst:**	Sierra Klueppel	
Start Date:	31 Aug-22 14:30	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Deionized Water + nutrients	
Ending Date:	03 Sep-22 14:30	**Species:**	Pseudokirchneriella subcapitata	**Brine:**		
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	In-House Culture	**Age:** 5d

Sample ID:	01-3330-2497	**Code:**	BAR939-POND-12	**Project:**	
Sample Date:	29 Aug-22 14:36	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	31 Aug-22 09:55	**CAS (PC):**		**Station:**	BAR939-POND-12
Sample Age:	48h (6.3 °C)	**Client:**	Bureau Veritas Laboratories		

Data Transform	Alt Hyp	Comparison Result	PMSD
Untransformed	C < T	95.2% failed cell yield endpoint	7.91%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		95.2*	10	17.88	1.812	2.522	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.5	2.412	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1650.04	1650.04	1	319.6	<1.0E-05	Significant Effect
Error	51.625	5.1625	10			
Total	1701.67		11			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.838	10.88	0.4564	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9321	0.8025	0.4030	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	31.88	30.18	33.57	31.33	29	35	0.7181	6.37%	0.00%
95.2		4	56.75	52.37	61.13	56.5	54	60	1.377	4.85%	-78.04%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	29	32	35	31	34	31	30	33
95.2		54	55	60	58				

Sept 14/22

Analyst: SAK QA: A

EC Alga Growth Inhibition Test — **Nautilus Environmental**

Analysis ID:	20-4569-0703	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.1
Analyzed:	08 Sep-22 15:57	**Analysis:**	Parametric-Two Sample	**Status Level:**	1
Edit Date:		**MD5 Hash:**	AEF74558C7DF7E345D4515049F6BA937	**Editor ID:**	

APPENDIX B – Chain-of-Custody Form

Sent To: **Nautilus Environmental - Burnab**
8664 Commerce Court
Burnaby, BC, V5A 4N7
Tel: (604) 420-8773

CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

COC # C265312-VNAU-01-01

REPORT INFORMATION	
Company:	Bureau Veritas
Address:	9331 - 48th Street, Edmonton, Alberta, T6B 2R4
Contact Name:	Rhecie Phayouphone
Email:	Rhecie.Phayouphone@bureauveritas.com, Customersolutionswest@bureauver
Phone:	(403) 735-2283
Lab Project #:	C265312

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Pseudokirch Algal Growth 100%Screen Test	ADDITIONAL SAMPLE INFORMATION
1	BAR935-POND-10	GW	2022/08/29	14:45		8	X	(P: 01) 5.8°C
2	BAR936-POND-11	GW	2022/08/29	15:15		8	X	(P: 01) 4.8°C
3	BAR937-POND-7	GW	2022/08/29	13:41		8	X	(P: 01) 5.7°C
4	BAR938-E21	GW	2022/08/29	14:07		8	X	(P: 01) 7.1°C
5	BAR939-POND-12	GW	2022/08/29	14:36		8	X	(P: 01) 6.3°C
6								
7								
8								
9								
10								

IL 221778

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS

Please inform Bureau Veritas immediately if:
- You are not accredited for the requested test(s)
- The hold time is approaching for the requested test(s).

Please return a copy of this form with the report.

TURNAROUND TIME

☐ Rush Required

2022/09/27

Date Required

Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
1. Kyle VanThourout	2022/08/30	1330	1. Ryeon	2022/08/31	09:55
2.			2.		

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C361198

Client Project Name & Number: Closure — Sample Number: BWL098-14

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-76 — Sample Matrix : Grab Water

Description: Clear, colorless — Sample Prior to Analysis:

Sample Collected: Aug 07, 2023 02:30 PM — Sampling Method : N/A — pH: 8.1

Sample Collected By: TB — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 08, 2023 01:54 PM — Volume Received: 1L — Dissolved Oxygen: 105.0 %

Analysis Start : Aug 11, 2023 12:03 AM — Avg Temp Arrival: 12 °C — Sample Conductance: 3044 µS/cm

End : Aug 13, 2023 11:10 AM — Storage: 2-6°C — Hardness: 2200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	333	8.2	0	0	0	0	20	8.4	340	8.1
6.25	20	7.9	504	8.2	0	0	0	0	20	8.2	504	8.0
12.5	20	8.0	712	8.2	0	0	0	0	20	8.1	721	7.9
25	20	8.0	1068	8.2	0	0	0	0	20	8.1	1062	8.1
50	20	8.0	1721	8.3	0	0	0	0	20	8.0	1708	7.8
100	20	8.0	3019	8.4	0	0	0	0	19	7.8	3045	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 26.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 7.4

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C361198
Client Project Name & Number:		Closure	Sample Number:	BWL098-14

Reference chemical:	Sodium Chloride	Test Date:	Aug 01, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.81 (4.29, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Sep 06, 2023 02:44 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C361198

Client Project Name & Number: Closure — Sample Number: BWL099-13

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-42 — Sample Matrix : Grab Water

Description: Clear, colorless — Sample Prior to Analysis:

Sample Collected: Aug 07, 2023 03:00 PM — Sampling Method : N/A — pH: 7.2

Sample Collected By: TB — Site Collection: N/A — Temperature : 21 °C

Sample Received: Aug 08, 2023 01:54 PM — Volume Received: 1L — Dissolved Oxygen: 111.0 %

Analysis Start : Aug 11, 2023 12:02 PM — Avg Temp Arrival: 12 °C — Sample Conductance: 1633 µS/cm

End : Aug 13, 2023 11:16 AM — Storage: 2-6°C — Hardness: 400 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.6	331	8.2	0	0	0	0	20	7.9	349	7.8
6.25	20	7.9	424	8.2	0	0	0	0	20	8.0	425	8.0
12.5	20	7.9	523	8.2	0	0	0	0	20	7.9	522	8.0
25	20	7.8	704	8.2	0	0	0	0	20	8.0	699	8.0
50	20	7.6	1037	8.2	0	0	0	0	20	7.9	1026	8.0
100	20	7.3	1691	8.6	0	0	0	0	20	7.6	1685	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 26.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 7.4

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C361198
Client Project Name & Number:		Closure	Sample Number:	BWL099-13

Reference chemical:	Sodium Chloride	Test Date:	Aug 01, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.81 (4.29, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Sep 06, 2023 02:45 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C361198

Client Project Name & Number: Closure — Sample Number: BWL100-13

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-69 — Sample Matrix : Grab Water

Description:	Pale yellow, clear			Sample Prior to Analysis:	
Sample Collected:	Aug 07, 2023 03:30 PM	Sampling Method :	N/A	pH:	7.7
Sample Collected By:	TB	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Aug 08, 2023 01:54 PM	Volume Received:	1L	Dissolved Oxygen:	107.0 %
Analysis Start :	Aug 11, 2023 12:01 PM	Avg Temp Arrival:	12 °C	Sample Conductance:	820 µS/cm
End :	Aug 13, 2023 11:13 AM	Storage:	2-6°C	Hardness:	280 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.7	335	8.2	0	0	0	0	20	8.1	372	7.9
6.25	20	7.9	364	8.2	0	0	0	0	20	8.0	370	8.0
12.5	20	7.9	394	8.1	0	0	0	0	20	7.9	403	7.7
25	20	7.9	447	8.2	0	0	0	0	20	8.0	450	7.9
50	20	7.8	577	8.3	0	0	0	0	20	8.0	581	7.9
100	20	7.7	814	8.3	0	0	0	0	20	7.9	834	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	26.9
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	7.4
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C361198
Client Project Name & Number:		Closure	Sample Number:	BWL100-13

Reference chemical:	Sodium Chloride	Test Date:	Aug 01, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.81 (4.29, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Sep 06, 2023 02:46 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C361198

Client Project Name & Number: Closure — Sample Number: BWL101-14

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-45 — Sample Matrix : Grab Water

Description:	Yellow, clear			Sample Prior to Analysis:	
Sample Collected:	Aug 07, 2023 04:00 PM	Sampling Method :	N/A	pH:	7.9
Sample Collected By:	TB	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Aug 08, 2023 01:54 PM	Volume Received:	1L	Dissolved Oxygen:	68.0 %
Analysis Start :	Aug 11, 2023 11:23 AM	Avg Temp Arrival:	12 °C	Sample Conductance:	828 µS/cm
End :	Aug 13, 2023 10:30 AM	Storage:	2-6°C	Hardness:	400 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.5	332	8.3	0	0	0	0	20	8.3	341	8.1
6.25	20	8.2	369	8.2	0	0	0	0	20	8.3	373	7.8
12.5	20	8.0	402	8.1	0	0	0	0	20	8.1	408	7.1
25	20	7.9	471	7.7	0	0	0	0	20	8.0	474	5.1
50	20	7.8	576	7.2	0	0	0	0	20	7.9	578	1.0
100	20	7.7	846	5.4	0	0	0	0	20	8.4	833	5.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	0 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	26.9
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	7.4
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C361198
Client Project Name & Number:		Closure	Sample Number:	BWL101-14

Reference chemical:	Sodium Chloride	Test Date:	Aug 01, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.81 (4.29, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kaylie Lyons, Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Sep 06, 2023 02:47 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C361198

Client Project Name & Number: Closure — Sample Number: BWL102-13

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-46 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 07, 2023 04:30 PM — Sampling Method : N/A — pH: 7.8

Sample Collected By: TB — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 08, 2023 01:54 PM — Volume Received: 1L — Dissolved Oxygen: 108.0 %

Analysis Start : Aug 11, 2023 12:04 PM — Avg Temp Arrival: 12 °C — Sample Conductance: 437 µS/cm

End : Aug 13, 2023 11:12 AM — Storage: 2-6°C — Hardness: 220 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.7	332	8.2	0	0	0	0	20	8.0	357	7.8
6.25	20	8.2	341	8.2	0	0	0	0	20	8.0	347	8.0
12.5	20	8.1	349	8.3	0	0	0	0	20	8.0	355	8.0
25	20	8.0	362	8.3	0	0	0	0	20	8.0	367	8.0
50	20	8.0	391	8.4	0	0	0	0	20	8.0	395	7.9
100	20	8.0	438	8.6	0	0	0	0	20	8.0	449	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 26.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 7.4

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C361198
Client Project Name & Number:		Closure	Sample Number:	BWL102-13

Reference chemical:	Sodium Chloride	Test Date:	Aug 01, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.81 (4.29, 7.87) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Sep 06, 2023 02:48 PM

NAUTILUS
ENVIRONMENTAL

Toxicity Test Results

BWL098-1645-76 and BWL101-1645-45

Final Report

September 13, 2023

Submitted to: **Bureau Veritas Laboratories**
Calgary, AB

10823 27 Street SE, Calgary, AB T2Z 3V9

TABLE OF CONTENTS

Page

Signature Page iii

Summary iv

1.0 Introduction 1

2.0 Methods 2

3.0 Results 3

4.0 QA/QC 5

5.0 References 6

List of Tables

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test. 2

Table 2. BWL098-1645-76 Results: *Ceriodaphnia dubia* survival and reproduction test. 3

Table 3. BWL101-1645-45 Results: *Ceriodaphnia dubia* survival and reproduction test. 4

Table 4. Reference toxicant test results. 5

List of Appendices

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data
APPENDIX B – Chain-of-Custody Forms

SIGNATURE PAGE

Kiara O'Shea

Report By:
Kiara O'Shea, BSc
Laboratory Biologist

Jacklyn Poole

Reviewed By:
Jacklyn Poole, BSc
Laboratory and Quality Manager

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

SUMMARY

Sample and Test Type Information

Sample ID (Internal ID)	BWL098-1645-76 BWL101-1645-45
Sample collection date	August 7, 2023
Sample receipt date	August 10, 2023
Sample receipt temperature	6.1°C 5.5°C
Test types	5 – 8 day *Ceriodaphnia dubia* survival and reproduction

Summary of Results

	% v/v (95% CL)	
Endpoint	**BWL098-1645-76**	**BWL101-1645-45**
C. dubia		
Survival LC50	>100	>100
Reproduction IC25	98.4 (51.6-NA)	13.6 (3.0-15.3)

LC = Lethal Concentration, IC = Inhibition Concentration, CL = Confidence Limit, NA = Not Available

1.0 INTRODUCTION

Nautilus Environmental Company Inc. conducted toxicity tests for Bureau Veritas Canada. Samples BWL098-1645-76 and BWL101-1645-45 were collected on August 7, 2023, and delivered to the Nautilus Environmental laboratory in Calgary, AB on August 10, 2023. Each sample was transported in three 4-L plastic containers and one 750-mL plastic container and were received at a temperature of 6.1°C and 5.5°C, respectively. All testing was initiated on August 10, 2023. The samples were stored in the dark at 4 ± 2°C prior to testing. The following toxicity tests were performed on the samples:

- *Ceriodaphnia dubia* survival and reproduction

This report describes the results of these toxicity tests. Copies of raw laboratory data sheets and statistical analyses for each test species are provided in Appendix A. The chain-of-custody form is provided in Appendix B.

2.0 METHODS

Methods for the toxicity tests are summarized in Tables 1. Testing was conducted according to procedures described by the Environment Canada protocols (2007). Statistical analyses for all tests were performed using CETIS (Tidepool Scientific Software, version 2.1.4.6).

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test.

Test species	*Ceriodaphnia dubia*
Organism source	In-house culture
Organism age	<24-hour old neonates, produced within a 12-hour window
Test type	Static renewal
Test duration	5 – 8 days
Test vessel	16 x 135 mm glass test tube
Test volume	15 mL
Test solution depth	10 cm
Test concentrations	Seven concentrations, plus laboratory control
Test replicates	10 per treatment
Number of organisms	1 per replicate
Control/dilution water	20% Perrier water and 80% deionized water supplemented with vitamin B12 (2µg/L) and Na_2SeO_4 (5µg Se/L)
Test solution renewal	Daily (100% renewal)
Test temperature	25 ± 1°C
Feeding	Daily with *Pseudokirchneriella subcapitata* and YCT
Light intensity	100 to 600 lux at water surface
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test measurements	pH, conductivity, dissolved oxygen, and temperature measured daily; evaluated for survival and reproduction daily
Test protocol	Environment Canada (2007), EPS 1/RM/21
Statistical software	CETIS version 2.1.4.6
Test endpoints	Survival and reproduction
Test acceptability criteria for controls	≥80% survival; ≥15 young per surviving control producing three broods; ≥60% of controls producing three or more broods, no ephippia present
Reference toxicant	Sodium chloride (NaCl)

3.0 RESULTS

Results of the toxicity test are summarized in Table 2 for sample BWL098-1645-76. There were no adverse effects observed on survival of *C. dubia*, resulting in a LC50 >100%; however, there were adverse effects observed on the reproduction of *C. dubia*, resulting in an IC25 of 98.4% (Table 2).

Table 2. BWL098-1645-76 Results: *Ceriodaphnia dubia* survival and reproduction test.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	28.7 ± 4.6
1.56	100	28.4 ± 5.1
3.12	100	28.5 ± 5.6
6.25	90	25.5 ± 8.1
12.5	90	29.6 ± 7.3
25	100	30.7 ± 4.9
50	100	26.9 ± 8.3
100	100	21.4 ± 5.1
Test endpoint (% v/v)		
LC50	>100	--
IC25 (95% CL)	--	98.4 (51.6-NA)

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration, CL=Confidence Limit, NA = Not Available

Results of the toxicity test are summarized in Table 3 for sample BWL101-1645-45. There were no adverse effects observed on survival of *C. dubia*, resulting in a LC50 >100%; however, there were adverse effects observed on the reproduction of *C. dubia*, resulting in an IC25 of 13.6% (Table 3).

Table 3. BWL101-1645-45 Results: *Ceriodaphnia dubia* survival and reproduction test.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	90	25.4 ± 5.7
1.56	100	25.7 ± 5.8
3.12	90	21.9 ± 7.7
6.25	100	22.6 ± 5.6
12.5	90	20.1 ± 5.7
25	60	6.5 ± 3.7
50	50	3.0 ± 2.9
100	70	6.1 ± 3.2
Test endpoint (% v/v)		
LC50	>100	--
IC25 (95% CL)	--	13.6 (3.0-15.3)

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration, CL=Confidence Limit

4.0 QA/QC

The health histories of the test organisms used in the exposures were acceptable and met the requirements of the Environment Canada protocols. The tests met all control acceptability criteria and water quality parameters remained within ranges specified in the protocols throughout the tests. There were no deviations from the test methodologies. Uncertainty associated with these tests is best described by the standard deviations around the means.

Results of the reference toxicant test conducted during the testing program is summarized in Table 4. The reference toxicant test was performed under the same conditions as those used during testing. Results for this test fell within the acceptable range for organism performance of two standard deviations of the mean, based on historical results obtained by the laboratory with these tests. Thus, the sensitivity of the organisms used in these tests was appropriate.

Table 4. Reference toxicant test results.

Test Species	Endpoint (95% CL)	Historical Mean (2 SD Range)	CV (%)	Test Date
C. dubia	Survival (LC50): 1.8 (1.6-1.9) g/L NaCl	2.0 (1.7-2.4)	5.8	August 9, 2023
	Reproduction (IC50): 1.5 (1.4-1.5) g/L NaCl	1.7 (1.5-1.9)	4.7	

SD = Standard Deviation, CV = Coefficient of Variation, LC = Lethal Concentration, IC = Inhibition Concentration, CL=Confidence Limit

5.0 REFERENCES

Environment Canada. 2007. Biological test method: test of reproduction and survival using the cladoceran *Ceriodaphnia dubia*. EPS 1/RM/21, Second Edition, February 2007.

Tidepool Scientific Software. 2022. CETIS comprehensive environmental toxicity information system, version 2.1.4.6 Tidepool Scientific Software, McKinleyville, CA. 275 pp.

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAX 110 Reference 2223-3507-01

Test Log

Date	Day	Time	Technician	Chem. Cart Used	Subsample Fed (✓)	Daily Data Review	Subsample Used	
23-08-10	0	1500	NA	3	✓	CC	Day 0	✓
23-08-11	1	1130	NA	2	✓	CC	Day 1	✓
23-08-12	2	1020	AI	2	✓	Kam	Day 2	✓
23-08-13	3	0945	NA	2	✓	ML	Day 3	✓
23-08-14	4	0930	ML	2	✓	NA	Day 4	✓
23-08-15	5	1110	ZC	3	✓	NA	Day 5	✓
23-08-16	6	0930	CC	2	✓	NA	Day 6	✓
23-08-17	7	0800	KO	2	–	DM	Day 7	–
23-08-18	8							

Sample Information

Initial pH: 8.4
Initial EC (µS/cm): 3353
Initial DO (mg/L): 8.8
Initial Temp (°C): 17
Filtered with 60 µm nitex screen
(Yes) / No
Sample pre-aerated/hardness/pH adjust:
Yes / (No)
*if yes, describe procedure, rate and duration

Test Specifics

Food expiration: 08/28 Int ; 09/11 int'l

Dilution water vessel and preparation date: 8:08/07 , 4:08/06 , 1:08/09 , 9:08/10
8:08/21 ; 1:08/13

Control Validity
Day 7

Cup	Number of Young	Number of Broods
1	29	3
2	31	
3	28	
4	29	
5	34	
6	32	
7	25	
8	19	
9	26	
10	34	

Average # of Young: 29

% with ≥ 3 Broods: 100%

Control Mortality: 0%
(must be ≤20%)

Reproduction Validity Criteria: the average number of young produced in first three broods is ≥ 15, when 60% of control organsims had 3 or more broods: (Yes) / No

Reviewed By: TP Date Reviewed: AUG 22 2023

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method: CDD Client: MAX 110 Reference: 2223-3507-01

Chemistry

New Solutions

Conc. (%) / Day	CTL	1.6	3.1	6.3	13	25	50	100
pH (units) (range: 6.5-8.5)								
0	7.7	7.7	7.7	7.7	7.7	7.7	7.8	8.0
1	7.7	7.8	7.8	7.8	7.8	7.8	7.8	7.9
2	7.6	7.6	7.7	7.6	7.6	7.6	7.6	7.5
3	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9
4	8.1	8.1	8.1	8.1	8.0	8.0	7.9	7.9
5	7.5	7.6	7.7	7.7	7.7	7.8	7.7	7.7
6	7.8	7.8	7.8	7.9	7.9	7.9	7.8	7.8
7								
8								
Conductance (µS/cm)								
0	220	292	362	480	704	1100	1823	3330
1	220	293	356	473	691	1104	1858	3370
2	220	310	393	475	770	1167	1602	3310
3	226	288	353	476	705	1138	1889	3420
4	264	280	360	464	714	1081	1658	3240
5	222	299	367	487	720	941	1784	3290
6	221	270	332	455	665	1078	1807	3266
7								
8								
Dissolved Oxygen (mg/L) (40-100% saturation)								
0	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
1	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
2	6.8	6.7	6.5	6.6	6.7	6.7	6.7	6.7
3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
4	6.9	7.0	7.0	7.3	7.3	7.3	7.3	7.3
5	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
6	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
7								
8								
Temperature 24 - 26 (°C)								
0	24	24	24	24	24	24	24	24
1	24	24	24	24	24	24	24	24
2	24	24	24	24	24	24	24	24
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	26	26	26	26	26	26	26	26
6	24	24	24	24	24	24	24	24
7								
8								

Old Solutions

Conc. (%) / Day	CTL	1.6	3.1	6.3	13	25	50	100
pH (units) (range: 6.5-8.5)								
0								
1	7.6	7.6	7.6	7.7	7.7	7.7	7.8	8.0
2	7.8	7.7	7.6	7.6	7.6	7.6	7.6	7.5
3	7.7	7.6	7.6	7.6	7.6	7.6	7.5	7.5
4	7.8	7.8	7.8	7.8	7.7	7.6	7.6	7.6
5	7.7	7.6	7.6	7.6	7.6	7.5	7.5	7.5
6	7.8	7.7	7.7	7.7	7.7	7.7	7.6	7.5
7	7.5	7.5	7.5	7.5	7.5	7.5	7.4	7.4
8								
Conductance (µS/cm)								
0								
1	228	301	373	488	711	1112	1832	3350
2	287	302	356	469	678	1056	1791	3160
3	227	314	390	470	756	1131	1668	3260
4	221	258	346	455	668	1077	1762	3170
5	253	282	350	452	695	1066	1677	3170
6	214	301	374	506	944	941	1738	3250
7	224	276	332	454	650	1074	1776	3190
8								
Dissolved Oxygen (mg/L) (40-100% saturation)								
0								
1	7.0	6.9	6.9	6.8	6.8	6.7	6.8	6.8
2	6.3	6.3	6.3	6.2	6.4	6.6	6.6	6.6
3	6.5	6.5	6.4	6.4	6.3	6.3	6.5	6.5
4	5.4	5.4	5.5	5.5	5.6	5.7	5.7	5.7
5	6.0	5.7	5.6	5.5	5.6	5.7	5.7	6.0
6	4.5	4.6	4.6	4.8	5.0	5.1	5.3	5.6
7	5.2	5.2	5.1	5.0	5.2	5.2	5.1	5.1
8								
Temperature 24 - 26 (°C)								
0								
1	24	24	24	24	24	24	24	24
2	24	24	24	25	25	25	25	25
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	26	26	26	26	26	26	26	26
6	24	24	24	24	24	24	24	24
7								
8								

* 782

DO Levels (40-100% saturation)* -
2.9 to 7.3 mg/L at 24°C
2.9 to 7.2 mg/L at 25°C
2.8 to 7.1 mg/L at 26°C

*corrected for altitude

Reviewed By: TP Date Reviewed: AUG 22 2023

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAX 110 Reference 2223-3507-01

Biology

(#, young produced; 0, no young; X, dead; X#, young produced-dead; —,young produced after 3rd brood)

Brood organisms produced during an organism's 4th or subsequent brood are not included in brood counts

Day	1	2	3	4	5	6	7	8
Cup	CTL							
1	0	0	0	4	9	0	16	—
2	↓	↓	↓	5	10	↓	16	—
3	↓	↓	↓	3	11	↓	14	—
4	↓	↓	↓	6	11	↓	12	—
5	↓	↓	↓	7	10	↓	17	—
6	↓	↓	↓	6	13	↓	13	—
7	↓	↓	↓	6	10	↓	9	—
8	↓	↓	↓	4	5	↓	10	—
9	↓	↓	↓	4	8	↓	14	—
10	↓	↓	↓	5	12	↓	17	—

Day	1	2	3	4	5	6	7	8
Cup	13 %							
1	0	0	0	4	10	4	—	
2	↓	↓	↓	6	10	0	16	—
3	↓	↓	↓	5	8	↓	15	—
4	↓	↓	↓	6	10	↓	13	—
5	↓	↓	↓	5	13	↓	20	—
6	↓	↓	↓	5	10	↓	18	—
7	↓	↓	↓	3	13	↓	19	—
8	↓	↓	↓	5	9	↓	17	—
9	↓	↓	↓	5	11	X0		
10	↓	↓	↓	7	10	0	19	—

Day	1	2	3	4	5	6	7	8
Cup	1.6 %							
1	0	0	0	5	11	0	16	—
2	↓	↓	↓	3	9	↓	13	—
3	↓	↓	↓	4	11	↓	19	—
4	↓	↓	↓	9	12	↓	15	—
5	↓	↓	↓	5	8	↓	18	—
6	↓	↓	↓	3	7	↓	11	—
7	↓	↓	↓	4	8	↓	17	—
8	↓	↓	↓	4	5	↓	10	—
9	↓	↓	↓	6	11	↓	15	—
10	↓	↓	↓	5	10	↓	17	—

Day	1	2	3	4	5	6	7	8
Cup	25 %							
1	0	0	0	6	7	0	11	—
2	↓	↓	↓	7	13	↓	14	—
3	↓	↓	↓	6	10	↓	13	—
4	↓	↓	↓	5	12	↓	16	—
5	↓	↓	↓	7	13	↓	16	—
6	↓	↓	↓	6	12	↓	19	—
7	↓	↓	↓	4	9	↓	13	—
8	↓	↓	↓	5	12	↓	16	—
9	↓	↓	↓	5	11	↓	16	—
10	↓	↓	↓	4	9	↓	10	—

Day	1	2	3	4	5	6	7	8
Cup	3.1 %							
1	0	0	0	5	9	0	18	—
2	↓	↓	↓	6	9	↓	16	—
3	↓	↓	↓	5	12	↓	13	—
4	↓	↓	↓	4	11	↓	15	—
5	↓	↓	↓	5	11	↓	14	—
6	↓	↓	↓	5	7	↓	11	—
7	↓	↓	↓	5	11	↓	13	—
8	↓	↓	↓	4	0	↓	11	
9	↓	↓	↓	6	10	↓	14	—
10	↓	↓	↓	7	11	↓	17	—

Day	1	2	3	4	5	6	7	8
Cup	50 %							
1	0	0	0	6	13	0	17	—
2	↓	↓	↓	5	9	↓	12	—
3	↓	↓	↓	6	9	↓	16	—
4	↓	↓	↓	4	11	↓	16	—
5	↓	↓	↓	5	10	↓	12	—
6	↓	↓	↓	6	10	↓	13	—
7	↓	↓	↓	7	10	↓	9	—
8	↓	↓	↓	0	6	↓	0	
9	↓	↓	↓	5	6	↓	12	—
10	↓	↓	↓	6	11	↓	17	—

Day	1	2	3	4	5	6	7	8
Cup	6.3 %							
1	0	0	0	6	8	0	15	—
2	↓	↓	↓	5	11	↓	15	—
3	↓	↓	↓	6	8	↓	16	—
4	↓	↓	↓	5	6	↓	13	—
5	↓	↓	↓	4	0	X0		
6	↓	↓	↓	6	8	0	15	—
7	↓	↓	↓	4	8	↓	12	—
8	↓	↓	↓	5	8	↓	16	—
9	↓	↓	↓	6	10	X0*	8	—
10	↓	↓	↓	4	11	0	16	—

Day	1	2	3	4	5	6	7	8
Cup	100 %							
1	0	0	0	3	2	0	4	—
2	↓	↓	↓	4	7	↓	11	—
3	↓	↓	↓	4	9	↓	12	—
4	↓	↓	↓	5	5	↓	9	—
5	↓	↓	↓	4	6	↓	14	—
6	↓	↓	↓	3	7	↓	10	—
7	↓	↓	↓	4	7	↓	12	—
8	↓	↓	↓	4	10	↓	14	—
9	↓	↓	↓	5	5	↓	14	—
10	↓	↓	↓	3	0	X0	17	

Reviewed By: TP Date Reviewed: AUG 22 2023

* 0 HC

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Test Organism Information

Client: MAX 110

Culture history for adults used in the test for sample reference: 2223-3507-01

Day Used: 23-08-10

Test organisms appeared healthy before use: Yes/No

Number of young produced per brood adult within first three broods:

Brood	row/replicate	A1	A2	A3	A4	A5						
	number of young	6	2	4	3	2						
	number of young	12	10	12	8	11						
	number of young	15	14	15	17	12						
	number of young	24	19	22	24	21						

Culture(s) Used for Testing: Tuesday A

Number of Adults Alive in Culture	7 days prior: 25	day used: 24

Notes: all cups have 1 adult

Average No. of young in first 3 broods: 29
(must be ≥15)
Culture % mortality (7-days prior to testing): 4%
(must be ≤20%)
Number of young produced by each brood organism in last complete brood is ≥8: Y
Yes (Y) or No (N)

Reviewed By: TP Date Reviewed: AUG 22 2023

CETIS Summary Report

Report Date: 31 Aug-23 15:24 (p 1 of 2)
Test Code/ID: 2223-3507-01CDD / 04-0232-8274

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Batch ID:	06-6258-6667	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL098-1645-76
Sample Age:	72h (6.1 °C)	**Client:**	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
04-7406-0606	7d Survival Rate	Linear Interpolation (ICPIN)		LC10	>100	---	---	<1	1
				LC15	>100	---	---	<1	
				LC20	>100	---	---	<1	
				LC25	>100	---	---	<1	
				LC40	>100	---	---	<1	
				LC50	>100	---	---	<1	
18-6499-9461	Reproduction	Linear Interpolation (ICPIN)		IC10	57.25	3.356	69.45	1.7	1
				IC15	68.62	34.75	90.16	1.5	
				IC20	82.21	42.44	---	1.2	
				IC25	98.44	51.61	---	1	
				IC40	>100	---	---	<1	
				IC50	>100	---	---	<1	

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.6		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3.1		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.3		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
13		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	28.7	25.43	31.97	19	34	1.446	4.572	15.93%	0.00%
1.6		10	28.4	24.76	32.04	19	34	1.607	5.082	17.89%	1.05%
3.1		10	28.5	24.49	32.51	15	35	1.772	5.603	19.66%	0.70%
6.3		10	25.5	19.73	31.27	4	31	2.553	8.073	31.66%	11.15%
13		10	29.6	24.36	34.84	16	38	2.315	7.321	24.73%	-3.14%
25		10	30.7	27.16	34.24	23	37	1.564	4.945	16.11%	-6.97%
50		10	26.9	20.94	32.86	6	36	2.635	8.333	30.98%	6.27%
100		10	21.4	17.73	25.07	9	28	1.621	5.125	23.95%	25.44%

7d Survival Rate Detail

MD5: 416C9F88F0107E38496C6FF7F774D42E

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.1		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: D39BD04D05F9663F789A64F862062B71

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	29	31	28	29	34	32	25	19	26	34
1.6		32	25	34	29	31	21	29	19	32	32
3.1		32	31	30	30	30	23	29	15	30	35
6.3		29	31	30	24	4	29	24	29	24	31
13		18	32	28	29	38	33	35	31	16	36
25		24	34	29	33	36	37	26	33	32	23
50		36	26	31	31	27	29	26	6	23	34
100		9	22	25	19	24	20	23	28	24	20

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.6		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
13		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Test Code/ID: 2223-3507-01CDD / 04-0232-8274

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	04-7406-0606	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:17	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:14	**MD5 Hash:**	416C9F88F0107E38496C6FF7F774D42E	**Editor ID:**	

Batch ID:	06-6258-6667	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL098-1645-76
Sample Age:	72h (6.1 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	939697	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC10	>100	---	---	<1	---	---
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.6		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.1		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.3		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9600	4.00%
13		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9600	4.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9600	4.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9600	4.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9600	4.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.1		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

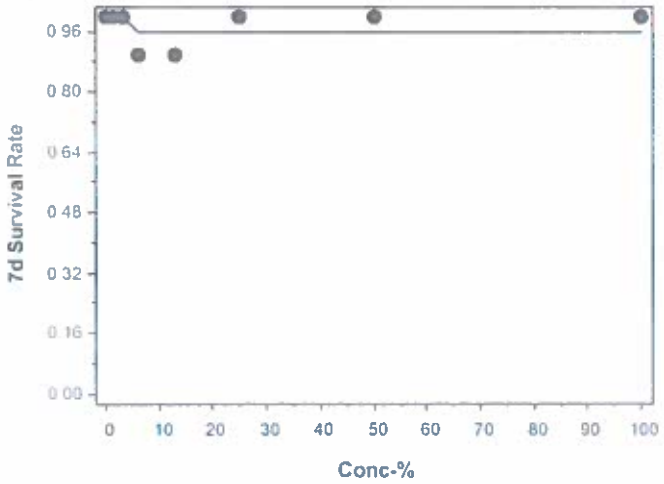
Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	04-7406-0606	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:17	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:14	**MD5 Hash:**	416C9F88F0107E38496C6FF7F774D42E	**Editor ID:**	

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.6		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
13		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



CETIS Analytical Report

Report Date: 31 Aug-23 15:23 (p 1 of 2)
Test Code/ID: 2223-3507-01CDD / 04-0232-8274

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	18-6499-9461	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:21	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:14	**MD5 Hash:**	CD2438F5517A1073B89C38F4B6767E72	**Editor ID:**	

Batch ID:	06-6258-6667	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL098-1645-76
Sample Age:	72h (6.1 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	490874	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC10	57.25	3.356	69.45	1.7	1.4	29.8
IC15	68.62	34.75	90.16	1.5	1.1	2.9
IC20	82.21	42.44	---	1.2	---	2.4
IC25	98.44	51.61	---	1	---	1.9
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	28.7	29	19	34	15.93%	0.00%	28.7	0.00%
1.6		10	28.4	29.67	19	34	17.89%	1.05%	28.54	0.56%
3.1		10	28.5	30	15	35	19.66%	0.70%	28.54	0.56%
6.3		10	25.5	29	4	31	31.66%	11.15%	28.54	0.56%
13		10	29.6	31.5	16	38	24.73%	-3.14%	28.54	0.56%
25		10	30.7	32.67	23	37	16.11%	-6.97%	28.54	0.56%
50		10	26.9	28	6	36	30.98%	6.27%	26.9	6.27%
100		10	21.4	22.5	9	28	23.95%	25.44%	21.4	25.44%

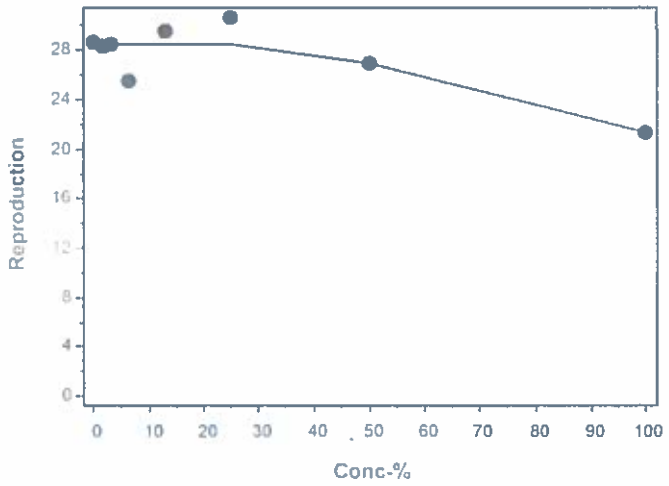
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	29	31	28	29	34	32	25	19	26	34
1.6		32	25	34	29	31	21	29	19	32	32
3.1		32	31	30	30	30	23	29	15	30	35
6.3		29	31	30	24	4	29	24	29	24	31
13		18	32	28	29	38	33	35	31	16	36
25		24	34	29	33	36	37	26	33	32	23
50		36	26	31	31	27	29	26	6	23	34
100		9	22	25	19	24	20	23	28	24	20

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	18-6499-9461	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:21	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:14	**MD5 Hash:**	CD2438F5517A1073B89C38F4B6767E72	**Editor ID:**	

Graphics



NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAX 110 Reference 2223-3507-02

Test Log

Date	Day	Time	Technician	Chem. Cart Used	Subsample Fed (✓)	Daily Data Review	Subsample Used	
23-08-10	0	1530	NA	3	✓	CC	Day 0	✓
23-08-11	1	1215	NAL	2	✓	CC	Day 1	✓
23-08-12	2	1100	AI	2	✓	Kam	Day 2	✓
23-08-13	3	1030	NA	2	✓	ML	Day 3	✓
23-08-14	4	1015	ML	9	✓	NA	Day 4	✓
23-08-15	5	1115	DM	2	✓	[illegible]	Day 5	✓
23-08-16	6	1030	CC	2	✓	NA	Day 6	✓
23-08-17	7	0930	KO	2	—	DM	Day 7	—
23-08-18	8						-	

Sample Information

Initial pH: 8.1
Initial EC (µS/cm): 837
Initial DO (mg/L): 5.8
Initial Temp (°C): 18
Filtered with 60 µm nitex screen
Yes/No
Sample pre-aerated/hardness/pH adjust:
Yes/No*
*if yes, describe procedure, rate and duration

Test Specifics

Food expiration: 08/28 InH ; 09/11 in H

Dilution water vessel and preparation date: 8:08/07 , 4:08/06 , 1:08/09 , 9:08/10 , 7:08/11 ; 1:08/13

Cup	Control Validity Day 7 Number of Young	Number of Broods
1	34	3
2	24	↓
3	23	↓
4	—	—
5	30	3
6	22	↓
7	31	↓
8	19	↓
9	30	↓
10	25	↓

Average # of Young: 26

% with ≥ 3 Broods: 90%

Control Mortality: 10%
(must be ≤20%)

Reproduction Validity Criteria: the average number of young produced in first three broods is ≥ 15, when 60% of control organsims had 3 or more broods: Yes / No

Reviewed By: TP Date Reviewed: AUG 22 2023

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method: CDD Client: MAX 110 Reference: 2223-3507-02

Chemistry

pH (units) (range: 6.5-8.5)

New Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0	7.7	7.7	7.8	7.8	7.9	7.9	8.0	8.0
1	7.8	7.8	7.8	7.8	7.9	8.0	8.1	8.3
2	7.6	7.6	7.6	7.6	7.8	8.0	8.1	8.5
3	8.0	8.0	8.0	8.1	8.1	8.2	8.2	8.3
4	8.0	8.1	8.2	8.3	8.3	8.3	8.4	8.5
5	7.2	7.2	7.3	7.4	7.5	7.7	7.8	8.0
6	7.9	7.9	8.0	8.0	8.1	8.2	8.2	8.2
7								
8								

Old Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	7.9	7.9	7.9	7.9	7.9	7.9	8.0	8.1
2	7.9	7.8	7.7	7.7	7.8	7.9	8.0	8.3
3	7.7	7.8	7.8	7.7	7.8	7.8	8.1	8.3
4	7.7	8.0	8.1	8.2	8.3	8.3	8.4	8.5
5	7.7	7.5	7.5	7.4	7.5	7.7	8.0	8.1
6	7.1	7.1	7.1	7.2	7.2	7.5	7.9	8.1
7	7.5	7.5	7.4	7.5	7.5	7.7	8.0	8.3
8								

Conductance (µS/cm)

New Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0	246	247	253	278	325	420	595	940
1	221	239	256	278	331	445	539	932
2	219	240	253	268	330	420	586	938
3	230	238	251	276	326	421	601	940
4	221	233	246	275	330	422	547	899
5	219	230	246	269	320	428	539	901
6	233	240	247	263	302	398	570	900
7								
8								

Old Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	237	240	255	277	322	414	571	901
2	236	244	257	270	328	434	540	910
3	233	243	254	268	326	416	570	913
4	225	240	250	265	330	420	570	887
5	233	236	251	277	332	415	539	903
6	220	236	247	270	314	430	536	917
7	224	238	248	265	305	397	552	885
8								

Dissolved Oxygen (mg/L) (40-100% saturation)

New Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
1	7.3	6.9	6.2	6.0	5.5	4.9	4.5	3.5
2	7.2	6.9	6.6	6.5	6.5	6.1	5.3	2.7
3	7.3	6.8	6.7	6.4	6.2	6.0	5.4	3.3
4	6.8	6.8	6.6	6.6	6.8	6.8	6.6	6.4
5	7.3	6.4	6.3	6.1	5.7	5.4	4.75	3.8
6	7.3	7.3	7.2	7.2	7.2	7.2	6.4	5.2
7								
8								

*6.4

Old Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	6.4	6.5	6.5	6.4	6.2	4.2	1.6	1.0
2	5.7	5.8	5.8	5.7	4.3	3.7	0.8	0.1
3	6.3	6.3	6.1	6.1	6.0	6.0	6.2	6.2
4	6.3	6.3	6.1	5.8	4.3	3.7	2.6	0.9
5	5.5	5.4	4.7	4.3	4.1	4.1	6.7	6.7
6	4.5	4.5	4.7	4.3	4.1	4.1	0.6	0.7
7	3.7	3.6	3.4	3.2	3.5	2.3	2.4	0.2
8								

Temperature 24 - 26 (°C)

New Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0	24	24	24	24	24	24	24	24
1	24	24	24	24	24	24	24	24
2	25	25	25	25	25	26	26	26
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7								
8								

Old Solutions

Day	CTL	1.6	3.1	6.3	13	25	50	100
0								
1	24	24	24	24	24	24	24	24
2	26	26	26	26	26	26	26	26
3	24	24	24	24	24	24	24	24
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6	24	24	24	24	24	24	24	24
7	24	24	24	24	24	24	24	24
8								

DO Levels (40-100% saturation)* -
2.9 to 7.3 mg/L at 24°C
2.9 to 7.2 mg/L at 25°C
2.8 to 7.1 mg/L at 26°C

*corrected for altitude

Reviewed By: TP Date Reviewed: AUG 22 2023

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Method CDD Client MAX 110 Reference 2223-3507-02

Biology

(#, young produced; 0, no young; X, dead; X#, young produced-dead; —,young produced after 3rd brood)

Brood organisms produced during an organism's 4th or subsequent brood are not included in brood counts

Day	1	2	3	4	5	6	7	8
Cup	CTL							
1	0	0	0	6	11	0	17	—
2				3	9		12	—
3				4	8		11	—
4				6	7		X3	—
5				4	13		13	—
6				2	7		13	—
7				5	10		16	—
8				4	0	8	7	—
9				5	9	0	16	—
10				4	9	0	12	—
	1.6 %							
1	0	0	0	5	7	0	0	
2				4	10		14	—
3				5	7		7	—
4				5	10		15	—
5				4	11		14	—
6				4	10		12	—
7				5	7		15	—
8				4	10		13	—
9				5	10		16	—
10				7	8		13	—
	3.1 %							
1	0	0	0	3	13	0	16	—
2				4	X0			
3				6	0	7	13	—
4				4	9	0	14	—
5				4	12	6	—	
6				6	0	0	12	
7				4		5	9	—
8				2		7	13	—
9				5		6	11	—
10				6	9	0	13	—
	6.3 %							
1	0	0	0	4	12	0	6	—
2				4	9	0	15	—
3				4	0	9	0	
4				5	0	5	13	—
5				6	6	0	10	—
6				5	9		13	—
7				6	9		12	—
8				5	0	5	11	—
9				2	0	0	12	
10				3	10	0	16	—

Day	1	2	3	4	5	6	7	8
	13 %							
1	0	0	0	4	6	0	10	—
2				5	9		10	—
3				3	10		11	—
4				5	9		13	—
5				4	0		9	—
6				4	X5			
7				5	9	0	8	—
8				0	5	6	0	
9				3	0	6	11	—
10				4	7	0	12	—
	25 %							
1	0	0	0	3	3	0	X0	
2				2	0	4	7	—
3				0		6	0	
4				0		4	0	
5				4		X3		
6		X0						
7		0	0	3	0	4	0	
8				2		3	X0	
9				2		3	0	
10				2		3	7	—
	50 %							
1	0	0	0	3	X4			
2		X0						
3		0	0	0	0	0	0	
4				3		3	0	
5				2		X0		
6		X0						
7		0	0	3	0	0	12	
8				0		0	X0	
9				2		3	0	
10				3		2	0	
	100 %							
1	0	0	0	2	0	2	0	
2				3		5	0	
3				2		5	0	
4				3		4	3	—
5				4	X0			
6				3	6	X0		
7		X0						
8		0	0	3	0	2	0	
9				2	0	2	0	
10				3	2	5	—	

*Cerio missing - exclude from stats

Reviewed By: TP Date Reviewed: AUG 2 2 2023

NAUTILUS ENVIRONMENTAL

Ceriodaphnia Bench Sheet

Test Organism Information

Client: MAX 110

Culture history for adults used in the test for sample reference: 2223-3507-02

Day Used: 23-08-10

Test organisms appeared healthy before use: (Yes) No

Number of young produced per brood adult within first three broods:

Brood	row/replicate	B1	B2	B3	B4	B5						
	number of young	3	5	5	4	3						
	number of young	11	9	7	7	12						
	number of young	18	13	15	16	17						
	number of young	23	19	18	20	23						

Culture(s) Used for Testing: Tuesday A

Number of Adults Alive in Culture 7 days prior: 25 day used: 24

Notes: all cups have 1 adult

Average No. of young in first 3 broods: 29
(must be ≥15)
Culture % mortality (7-days prior to testing): 4%
(must be ≤20%)
Number of young produced by each brood organism in last complete brood is ≥8: Y
Yes (Y) or No (N)

Reviewed By: TP Date Reviewed: ~~AUG 22 2023~~

CETIS Summary Report

Report Date: 31 Aug-23 15:39 (p 1 of 2)
Test Code/ID: 2223-3507-02CDD / 08-9965-3366

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Batch ID:	09-5620-6628	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL101-1645-45
Sample Age:	72h (5.5 °C)	**Client:**	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
07-7116-7482	7d Survival Rate	Linear Interpolation (ICPIN)		LC10	14.5	7.049	25	6.9	1
				LC15	16.25	8.866	30.52	6.2	
				LC20	18.21	10.15	---	5.5	
				LC25	20.38	11.56	---	4.9	
				LC40	>100	---	---	<1	
				LC50	>100	---	---	<1	
00-1053-1386	Reproduction	Linear Interpolation (ICPIN)		IC10	2.699	0.8529	10.1	37	1
				IC15	7.578	1.522	13.72	13.2	
				IC20	11.63	2.505	14.56	8.6	
				IC25	13.61	3.043	15.3	7.3	
				IC40	16.39	13.56	18.1	6.1	
				IC50	18.54	16.06	20.26	5.4	

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
1.6		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
3.1		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
6.3		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
13		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
25		10	0.6000	0.2306	0.9694	0.0000	1.0000	0.1633	0.5164	86.07%	33.33%
50		10	0.5000	0.1230	0.8770	0.0000	1.0000	0.1667	0.5270	105.41%	44.44%
100		10	0.7000	0.3544	1.0460	0.0000	1.0000	0.1528	0.4830	69.01%	22.22%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	25.4	21.29	29.51	16	34	1.815	5.739	22.59%	0.00%
1.6		10	25.7	21.54	29.86	12	31	1.838	5.813	22.62%	-1.18%
3.1		10	21.9	16.4	27.4	4	32	2.433	7.695	35.14%	13.78%
6.3		10	22.6	18.62	26.58	13	29	1.759	5.562	24.61%	11.02%
13		10	20.1	15.99	24.21	9	27	1.816	5.744	28.58%	20.87%
25		10	6.5	3.818	9.182	0	13	1.186	3.749	57.68%	74.41%
50		10	3	0.9488	5.051	0	7	0.9068	2.867	95.58%	88.19%
100		10	6.1	3.777	8.423	0	10	1.027	3.247	53.23%	75.98%

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental Calgary

7d Survival Rate Detail MD5: 477FAAFE277F01AED2E9353A76732803

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.1		1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13		1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
25		0.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000	1.0000	1.0000
50		0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000

Reproduction Detail MD5: 9AEEBB62339270FB1F99DEF9D984A841

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	34	24	23	16	30	22	31	19	30	25
1.6		12	28	19	30	29	26	27	27	31	28
3.1		32	4	26	27	22	18	18	22	22	28
6.3		22	28	13	23	22	27	27	21	14	29
13		20	24	24	27	21	9	22	11	20	23
25		6	13	6	4	7	0	7	5	5	12
50		7	0	0	6	2	0	5	0	5	5
100		4	8	7	10	4	9	0	5	4	10

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
1.6		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.1		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
13		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
25		0/1	1/1	1/1	1/1	0/1	0/1	1/1	0/1	1/1	1/1
50		0/1	0/1	1/1	1/1	0/1	0/1	1/1	0/1	1/1	1/1
100		1/1	1/1	1/1	1/1	0/1	0/1	0/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 31 Aug-23 15:34 (p 1 of 2)
Test Code/ID: 2223-3507-02CDD / 08-9965-3366

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	07-7116-7482	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:29	**MD5 Hash:**	DF2A96E2FD4A799C96E3EA8E9B564F2C	**Editor ID:**	

Batch ID:	09-5620-6628	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL101-1645-45
Sample Age:	72h (5.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1762837	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC10	14.5	7.049	25	6.9	4	14.2
LC15	16.25	8.866	30.52	6.2	3.3	11.3
LC20	18.21	10.15	---	5.5	---	9.9
LC25	20.38	11.56	---	4.9	---	8.7
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	0.9000	1.0000	0.0000	1.0000	35.14%	0.00%	9/10	0.9500	0.00%
1.6		10	1.0000	1.0000	1.0000	1.0000	0.00%	-11.11%	10/10	0.9500	0.00%
3.1		10	0.9000	1.0000	0.0000	1.0000	35.14%	0.00%	9/10	0.9500	0.00%
6.3		10	1.0000	1.0000	1.0000	1.0000	0.00%	-11.11%	10/10	0.9500	0.00%
13		10	0.9000	1.0000	0.0000	1.0000	35.14%	0.00%	9/10	0.9000	5.26%
25		10	0.6000	1.0000	0.0000	1.0000	86.07%	33.33%	6/10	0.6259	34.12%
50		10	0.5000	0.5000	0.0000	1.0000	105.41%	44.44%	5/10	0.6259	34.12%
100		9	0.7778	1.0000	0.0000	1.0000	56.69%	13.58%	7/9	0.6259	34.12%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.6		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.1		1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13		1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
25		0.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000	1.0000	1.0000
50		0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	1.0000	0.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	1.0000	1.0000	

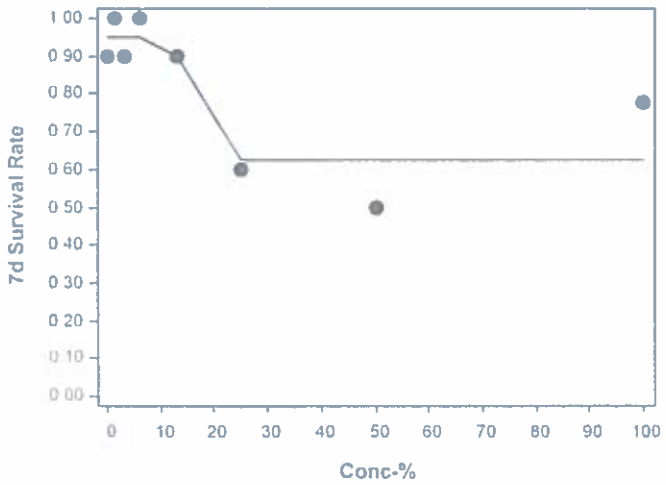
Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	07-7116-7482	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:29	**MD5 Hash:**	DF2A96E2FD4A799C96E3EA8E9B564F2C	**Editor ID:**	

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
1.6		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.1		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
13		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
25		0/1	1/1	1/1	1/1	0/1	0/1	1/1	0/1	1/1	1/1
50		0/1	0/1	1/1	1/1	0/1	0/1	1/1	0/1	1/1	1/1
100		1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1	1/1	

Graphics



CETIS Analytical Report

Report Date: 31 Aug-23 15:39 (p 1 of 2)
Test Code/ID: 2223-3507-02CDD / 08-9965-3366

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	00-1053-1386	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:37	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:29	**MD5 Hash:**	9BDB8ED891711FF1E5A7F64DAAAAF60	**Editor ID:**	

Batch ID:	09-5620-6628	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech	
Start Date:	10 Aug-23	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	MHRW	
Ending Date:	17 Aug-23	**Species:**	Ceriodaphnia dubia	**Brine:**		
Test Length:	7d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:** <24

Sample ID:	18-5967-2872	**Code:**	6ED85B28	**Project:**	
Sample Date:	07 Aug-23	**Material:**	Water Sample	**Source:**	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23	**CAS (PC):**		**Station:**	BWL101-1645-45
Sample Age:	72h (5.5 °C)	**Client:**	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	2007615	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC10	2.699	0.8529	10.1	37	9.9	117.3
IC15	7.578	1.522	13.72	13.2	7.3	65.7
IC20	11.63	2.505	14.56	8.6	6.9	39.9
IC25	13.61	3.043	15.3	7.3	6.5	32.9
IC40	16.39	13.56	18.1	6.1	5.5	7.4
IC50	18.54	16.06	20.26	5.4	4.9	6.2

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	25.4	24.5	16	34	22.59%	0.00%	25.55	0.00%
1.6		10	25.7	27.5	12	31	22.62%	-1.18%	25.55	0.00%
3.1		10	21.9	22	4	32	35.14%	13.78%	22.25	12.92%
6.3		10	22.6	22.33	13	29	24.61%	11.02%	22.25	12.92%
13		10	20.1	21.5	9	27	28.58%	20.87%	20.1	21.33%
25		10	6.5	6	0	13	57.68%	74.41%	6.5	74.56%
50		10	3	4.25	0	7	95.58%	88.19%	4.667	81.73%
100		9	6.333	7	0	10	52.96%	75.07%	4.667	81.73%

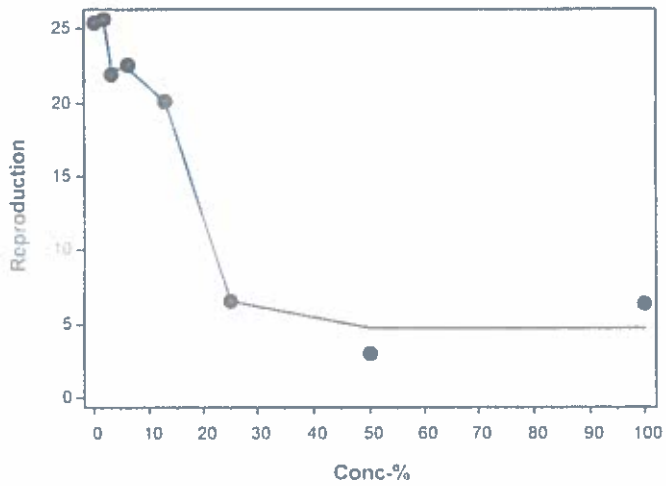
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	34	24	23	16	30	22	31	19	30	25
1.6		12	28	19	30	29	26	27	27	31	28
3.1		32	4	26	27	22	18	18	22	22	28
6.3		22	28	13	23	22	27	27	21	14	29
13		20	24	24	27	21	9	22	11	20	23
25		6	13	6	4	7	0	7	5	5	12
50		7	0	0	6	2	0	5	0	5	5
100		4	8	7	10	9	0	5	4	10	

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental Calgary**

Analysis ID:	00-1053-1386	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	31 Aug-23 15:37	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	31 Aug-23 15:29	**MD5 Hash:**	9BDB8ED891711FF1E5A7F64DAAAAF60	**Editor ID:**	

Graphics



APPENDIX B – Chain-of-Custody Forms

Sent To: Nautilus Environmental
10823 27th Street SE
Calgary , AB, T2Z 3V9
Tel: (403) 253-7121

CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

COC # C361198-CHYR-01-01

REPORT INFORMATION	
Company:	Bureau Veritas Laboratories
Address:	4000 19st N.E, Calgary, Alberta, T2E 6P8
Contact Name:	Geraldlyn Gouthro
Email:	geraldlyn.gouthro@bureauveritas.com, Customersolutionswest@bureauveritas
Phone:	(780) 577-7173
BV Labs Project #:	C361198

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Ceriodaphnia Dubia, 7 day										ADDITIONAL SAMPLE INFORMATION
1	BWL098-1645-76 -01	GRAB	2023/08/07	14:30	TB	4	X		6.1°C								(P: 13)
2	BWL101-1645-45 -02	GRAB	2023/08/07	16:00	TB	4	X		5.6°C								(P: 13)
3	2023/08/10 2223-3807																
4	12:35																
5	Jazzb																
6	JC																
7.	6x4L Ongs																
8	2x750mL bottles																
9	Yes S/Yes I																
10	Good Condition																

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS

Please inform Bureau Veritas immediately if you are not accredited for the requested test(s) or the hold time is approaching.
Please return a copy of this form with the report.

TURNAROUND TIME

☐ Rush Required

2023/09/06
Date Required

Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present			
Custody Seal Intact			
Cooling Media Present			

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present			
Custody Seal Intact			
Cooling Media Present			

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present			
Custody Seal Intact			
Cooling Media Present			

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
1. Zoella Lee Chai	2023/08/10	12:00	1.		
2.			2.		

END OF REPORT

NAUTILUS
ENVIRONMENTAL

Toxicity testing on samples BWL099-1645-42, BWL100-1645-69 and BWL102-1645-46

Samples collected August 7, 2023

Final Report

October 20, 2023

Submitted to: **Bureau Veritas Laboratories**
Calgary, AB

8664 Commerce Court, Burnaby, BC V5A 4N7

TABLE OF CONTENTS

Page

Signature Page ii

Summary iii

1.0 Introduction 1

2.0 Methods 1

3.0 Results 3

4.0 QA/QC 6

5.0 References 7

List of Tables

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test. 2

Table 2. Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL099-1645-42 3

Table 3. Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL100-1645-69 4

Table 4. Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL102-1645-46 5

Table 5. Reference toxicant test results. 6

List of Appendices

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data

APPENDIX B – Chain-of-Custody Form

SIGNATURE PAGE

Report By:	Reviewed By:
Kiyeon Lee, B.Sc.	Mimi Tran, Dipl. T.
Laboratory Biologist	Senior Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

SUMMARY

Sample Information and Test Type

Sample IDs	BWL099-1645-42, BWL100-1645-69 and BWL102-1645-46
Sample collection date	August 7, 2023
Sample receipt date	August 10, 2023
Sample receipt temperature	0.0 – 3.6°C
Test type	*Ceriodaphnia dubia* survival and reproduction

Summary of Results

Endpoint	% v/v		
	BWL099-1645-42	BWL100-1645-69	BWL102-1645-46
Survival LC50	>100	>100	>100
Reproduction IC25	>100	>100	>100
Reproduction IC50	>100	>100	>100

LC = Lethal Concentration, IC = Inhibition Concentration

1.0 INTRODUCTION

Ceriodaphnia dubia survival and reproduction toxicity tests were performed for Bureau Veritas Laboratories on samples identified as BWL099-1645-42, BWL100-1645-69 and BWL102-1645-46. The samples were collected on August 7, 2023 and delivered to the Nautilus Environmental laboratory in Burnaby, BC on August 10, 2023. Each sample was transported in one 4-L plastic container and was received at a temperature range of 0.0 – 3.6°C.

This report describes the results of the *C. dubia* toxicity tests. Copies of the data sheets and statistical analyses are provided in Appendix A. The chain-of-custody form is provided in Appendix B.

2.0 METHODS

Method for the *C. dubia* toxicity test is summarized in Table 1. Testing was conducted according to procedures described by Environment Canada (2007). Statistical analyses for the tests were performed using CETIS (Tidepool Scientific Software, 2021)

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test.

Test species	*Ceriodaphnia dubia*
Organism source	In-house culture
Organism age	<24 hour old neonates, produced within a 12 hour window
Test type	Static-renewal
Test duration	7 ± 1 day
Test vessel	20-mL glass test tube
Test volume	15 mL
Test solution depth	10 cm
Test concentrations	Seven concentrations, plus laboratory control
Test replicates	10 per treatment
Number of organisms	1 per replicate
Control/dilution water	20% Perrier water and 80% deionized water + 5 µg/L Se and 2 µg/L vitamin B12
Test solution renewal	Daily (100% renewal)
Test temperature	25 ± 1°C
Feeding	Daily with *Pseudokirchneriella subcapitata* and TCC[1] (3:1 ratio)
Light intensity	100 to 600 lux at water surface
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen, pH and conductivity measured daily; hardness and alkalinity of undiluted sample measured at test initiation; survival and reproduction recorded daily
Test protocol	Environment Canada (2007), EPS 1/RM/21
Statistical software	CETIS Version 2.1.4
Test endpoints	Survival and reproduction
Test acceptability criteria for controls	≥80% survival; ≥15 young per surviving control producing three broods; ≥60% of controls producing three or more broods; no ephippia present
Reference toxicant	Sodium chloride (NaCl)

[1] TCC = Trout chow and Cerophyll

3.0 RESULTS

Results of the toxicity tests conducted on samples BWL099-1645-42, BWL100-1645-69 and BWL102-1645-46 using *C. dubia* are provided in Tables 2 to 4. No adverse effects on survival or reproduction were observed in any of the samples, resulting in LC50 and IC25 values greater than the highest concentration tested.

Table 2. **Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL099-1645-42.**

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	15.3 ± 5.0
1.56	100	15.7 ± 5.5 *
3.12	100	16.7 ± 6.9 *
6.25	100	15.6 ± 4.9 *
12.5	100	17.7 ± 3.2 *
25	80	14.2 ± 7.5
50	100	11.8 ± 3.6
100	100	12.3 ± 4.6
Test Endpoint (% v/v)		
LC50	>100	--
IC25	--	>100
IC50	--	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration

* = The data did not fit the hormesis regression model; therefore, the reproduction was adjusted to that of the control value and analyzed using linear interpolation

Table 3. Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL100-1645-69.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	18.2 ± 3.9
1.56	100	18.0 ± 2.2
3.12	100	19.1 ± 3.1
6.25	100	16.0 ± 2.8
12.5	100	17.3 ± 4.0
25	90	15.1 ± 7.7
50	90	15.0 ± 2.9
100	100	14.6 ± 3.7
Test Endpoint (% v/v)		
LC50	>100	--
IC25	--	>100
IC50	--	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration

Table 4. Results: *Ceriodaphnia dubia* survival and reproduction test with sample BWL102-1645-46.

Concentration (% v/v)	Survival (%)	Reproduction (Mean ± SD)
Laboratory Control	100	17.0 ± 3.6
1.56	100	20.8 ± 2.5
3.12	100	19.1 ± 3.8
6.25	100	22.0 ± 3.1
12.5	100	19.2 ± 4.5
25	100	22.7 ± 5.2
50	100	22.9 ± 3.1
100	100	22.7 ± 4.1
Test Endpoint (% v/v)		
LC50	>100	--
IC25	--	>100
IC50	--	>100

SD = Standard Deviation, LC = Lethal Concentration, IC = Inhibition Concentration

4.0 QA/QC

The health history of the test organisms used in the exposure was acceptable and met the requirements of the Environment Canada protocol. The tests met all control acceptability criteria and water quality parameters remained within ranges specified in the protocol throughout the tests. Uncertainty associated with the tests is best described by the standard deviation around the mean and/or the confidence intervals around the point estimates.

Results of the reference toxicant test conducted during the testing program are summarized in Table 5. The reproduction point estimate fell outside the baseline historical range of mean ± 2 SD, but within 3 SD. This was not an indication that the organism's sensitivity was inappropriate, but rather a variation in reference toxicant results falling outside narrow warning limits as a consequence of the Coefficient of Variation (% CV) being low (9%). Exceedance of the two standard deviation range is expected to occur in 5% of cases by chance alone. The reference toxicant test was performed under the same conditions as those used for the sample.

Table 5. Reference toxicant test results.

Test Species	Endpoint	Historical Mean (2 SD Range)	CV (%)	Test Date
C. dubia	Survival (LC50): 2.0 g/L NaCl	2.0 (1.9 – 2.2) g/L NaCl	4	August 7, 2023
	Reproduction (IC50): 1.5 g/L NaCl	1.8 (1.5 – 2.2) g/L NaCl	9	

SD = Standard Deviation, CV = Coefficient of Variation, LC = Lethal Concentration, IC = Inhibition Concentration

5.0 REFERENCES

Environment Canada. 2007. Biological test method: test of reproduction and survival using the cladoceran *Ceriodaphnia dubia*. Environmental Protection Series. Report EPS 1/RM/21, Second Edition, February 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 74 pp.

Tidepool Scientific Software. 2021. CETIS comprehensive environmental toxicity information system, versions 2.1.4 Tidepool Scientific Software, McKinleyville, CA. 303 pp.

APPENDIX A – *Ceriodaphnia dubia* Toxicity Test Data

Ceriodaphnia dubia Summary Sheet

Client: Bureau Veritas
Work Order No.: 231377

Start Date/Time: Aug. 10/23 @ 1430h
Set up by: KML

Sample Information:

Sample ID: BWL099-1645-42
Sample Date: Aug. 7/23
Date Received: Aug. 10/23
Sample Volume: 1x4L

Test Validity Criteria:

1) Mean survival of first generation controls is ≥80 %
2) At least 60% of controls have produced three broods within 8 days
3) An average of ≥15 live young produced per surviving female in the control solutions during the first three broods.
4) Invalid if ephippia observed in any control solution at any time.

WQ Ranges:

T (°C) = 25 ± 1; DO (mg/L) = 3.3 to 8.4 ; pH = 6.0 to 8.5

Test Organism Information:

Broodstock No.: BB 08/07/23
Age of young (Day 0): <24-h (within 12-h)
Avg No. young in first 3 broods of previous 7 d: 18
Mortality (%) in previous 7 d: 15
Individual female # used ≥8 young on test day: # 1, 2, 5-7, 10, 14, 15, 16, 18

NaCl Reference Toxicant Results:

Reference Toxicant ID: Cd 337
Stock Solution ID: 23NaCl
Date Initiated: Aug. 7/23

7-d LC50 (95% CL): 2.0 (1.7-2.3) g/L NaCL
7-d IC50 (95% CL): ~~1.4 (1.3-1.6)~~ KML 1.5 1.7 g/L NaCL

7-d LC50 Reference Toxicant Mean and Historical Range: 2.0 (1.9-2.2) g/L NaCL CV (%): 4
7-d IC50 Reference Toxicant Mean and Historical Range: 1.8 (1.5-2.2) g/L NaCL CV (%): 9

Test Results:

	Survival	Reproduction
LC50 % (v/v) (95% CL)	>100	
IC25 % (v/v) (95% CL)		~~46.4 (19.6 - N/A)~~ KML >100
IC50 % (v/v) (95% CL)		>100

n/a = not available

Reviewed by: EMM

Date reviewed: Sept 29/23

Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas
Sample ID: BWL099-1645-42
Work Order #: 231377

Start Date & Time: Aug. 10/23 @ 1430h
Stop Date & Time: ~~Sept~~ Aug. 16/23 @ 1400h
CER #: 4
Test Species: *Ceriodaphnia dubia*

% (v/v)

Concentration: Control	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	25.0	26.0	25.0	26.0	24.5	26.0	25.0	25.0	25.0	25.0	24.0	24.5		
DO (mg/L)	8.1	6.9	7.8	6.1	8.0	5.4	7.9	7.2	7.9	6.7	7.9	6.8		
pH	8.3	7.8	8.3	7.5	8.3	7.3	8.3	7.7	8.3	7.4	7.9	7.7		
Cond. (µS/cm)	208	208		207		210		208		209		208		
Initials	AHS	AHS		GM		RZS		AHS		KMV		GM		

Concentration: 1.56	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	26.0	24.0	26.0	25.0	26.0	24.5	25.0	25.0	25.0	24.5	24.5		
DO (mg/L)	7.8	7.0	7.9	6.2	7.1	4.7	7.0	7.2	7.8	6.8	7.5	6.7		
pH	7.8	7.8	7.9	7.5	7.9	7.1	7.9	7.7	8.1	7.4	7.8	7.7		
Cond. (µS/cm)	237	235		237		236		242		242		240		
Initials	AHS	AHS		GM		RZS		AHS		AHS		GM		

Concentration: 12.5	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	26.0	24.5	26.0	25.0	26.0	24.5	25.0	25.0	25.0	24.5	24.5		
DO (mg/L)	7.8	7.0	7.9	6.1	7.1	4.7	7.0	7.1	7.8	6.5	7.6	6.5		
pH	7.8	7.8	8.0	7.4	7.8	7.3	7.9	7.8	8.0	7.4	7.8	7.7		
Cond. (µS/cm)	428	420		427		428		441		431		429		
Initials	AHS	AHS		GM		RZS		AHS		AHS		GM		

Concentration: 100	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.5	26.0	24.5	26.0	25.0	26.0	24.5	25.0	25.0	26.0	24.0	24.5		
DO (mg/L)	7.8	6.9	7.9	5.7	7.2	4.9	7.1	6.8	7.9	6.7	7.6	6.5		
pH	7.4	7.5	7.5	7.2	7.5	7.0	7.6	7.5	7.4	7.4	7.5	7.6		
Cond. (µS/cm)	1841	1844		1840		1829		1816		1846		1761		
Initials	AHS	AHS		GM		RZS		AHS		AHS		GM		

* Confirmed w/ DO 5/5 & pH 3/3

Thermometer: 1004 DO meter/probe: 1 / 1 pH meter/probe: 5 / 5 Conductivity meter/probe: 1 / 1

	Control	100%		
Hardness*	100	540		
Alkalinity*	90	60		

* mg/L as CaCO3

Analysts: AHS, GM, RZS, KYL

Reviewed by: AMM

Date reviewed: Sept 29/23

Sample Description: colorless, clear, no particulates, odorless

Comments: Broodboard Used: BB 080223 (#1, 2, 5-7, 10, 14, 15, 16, 18)

Day 5 pH taken with pH-3

Chronic Freshwater Toxicity Test
C. dubia Reproduction Data

Client: Bureau Veritas
Sample ID: BWUA645-42
Work Order: 231377

% (v/v)

Start Date & Time: Aug. 10/23 @ 1430h
Stop Date & Time: Aug. 16/23 @ 1400h
Set up by: KYL

Days	Concentration: control										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	2	2	2	/	2	/	3	/	/	3	RZ
5	7	7	4	2	6	5	7	/	4	5	GM
6	10	11	8	8	11	7	11	6	9	11	GM
7											
8											
Total	19	20	14	10	19	12	21	6	13	19	AHS

Days	Concentration: 1.56										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	2	3	2	/	/	3	2	/	/	/	RZ
5	7	7	8	/	5	6	7	4	4	6	GM
6	13	11	10	5	9	9	11	6	8	9	GM
7											
8											
Total	22	21	①8 ②14		14	18	20	10	12	15	AHS

①20 ②5

Days	Concentration: 3.12										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	4	3	2	/	/	3	3	3	4	4	RZ
5	6	4	4	/	/	7	5	8	7	8	GM
6	11	10	9	4	6	10	7	11	12	12	GM
7											
8											
Total	21	17	15	4	6	20	15	22	23	24	AHS

Days	Concentration: 6.25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	2	3	3	3	2	/	3	3	3	/	RZ
5	6	8	4	6	4	5	4	6	4	/	GM
6	11	10	8	9	10	6	11	9	9	4	GM
7											
8											
Total	19	21	15	18	16	11	18	18	16	4	AHS

Days	Concentration: 12.5										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	4	3	4	4	4	4	4	3	4	RZ
5	6	6	5	5	2	5	7	5	4	4	GM
6	11	12	8	11	6	5	10	8	10	10	GM
7											
8											
Total	20	22	16	20	12	14	21	17	17	18	AHS

Days	Concentration: 25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	/	3	5	4	2	4	X	3	4	3	RZ
5	5	6	7	4	4	5		X	6	6	GM
6	7	8	10	8	7	9			10	12	GM
7											
8											
Total	12	17	22	16	13	18	0[x]	3[x]	20	21	AHS

Days	Concentration: 50										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	4	/	4	/	4	4	/	/	4	RZ
5	2	/	4	4	4	4	/	4	5	4	GM
6	8	6	5	10	5	9	3	6	6	6	GM
7											
8											
Total	13	10	9	18	9	17	7	10	11	14	AHS

Days	Concentration: 100										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	4	/	4	/	3	4	4	4	4	4	RZ
5	/	/	6	5	4	5	/	5	2	2	GM
6	4	4	9	7	6	6	4	9	8	6	GM
7											
8											
Total	8	4	19	12	13	15	8	18	14	12	AHS

Days	Concentration:										
	A	B	C	D	E	F	G	H	I	J	Init
1											
2											
3											
4											
5											
6											
7											
8											
Total											

Notes: X = mortality.

Comments: 1. Total # Young only based on the first 3 Broods. Fourth and subsequent broods not included in total count.

2. Ephippia present in Controls (Y), (N) ?

Reviewed by: Emm

Date reviewed: Sept 29/23

CETIS Summary Report

Report Date: 22 Oct-23 13:05 (p 1 of 2)
Test Code/ID: ✓ 231377 / 10-4450-0263

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Batch ID:	00-0316-6067	Test Type:	Reproduction-Survival (7d) ✓	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:30 ✓	Protocol:	EC/EPS 1/RM/21 ✓	Diluent:	20% Perrier Water ✓
Ending Date:	16 Aug-23 14:00 ✓	Species:	Ceriodaphnia dubia ✓	Brine:	
Test Length:	6d	Taxon:	Branchiopoda	Source:	In-House Culture ✓ Age: <24h

Sample ID:	04-2727-9403	Code:	1977C42B	Project:	
Sample Date:	07 Aug-23 ~~14:25~~ 15:00 ✓	Material:	Water Sample ✓	Source:	Bureau Veritas Laboratories ✓
Receipt Date:	10 Aug-23 08:50 ✓	CAS (PC):		Station:	BWL099-1645-42 ✓
Sample Age:	72h (0 °C) ✓	Client:	Bureau Veritas Laboratories ✓		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
✓04-8489-9065	6d Survival Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
			✓	EC40	>100	---	---	<1	
			✓	EC50	>100	---	---	<1	
✓21-3306-6181	Reproduction	Linear Interpolation (ICPIN)		IC15	36.81	2.056	---	2.7	1
				IC20	47.05	10.84	---	2.1	
				IC25	>100	---	---	<1	
			✓	IC40	>100	---	---	<1	
			✓	IC50	>100	---	---	<1	

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	0.8000	0.4984	1.1020	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	15.3	11.7	18.9	6	21	1.592	5.034	32.90%	0.00%
1.56		10	15.7	11.75	19.65	5	22	1.745	5.519	35.15%	-2.61%
3.12		10	16.7	11.74	21.66	4	24	2.191	6.929	41.49%	-9.15%
6.25		10	15.6	12.11	19.09	4	21	1.543	4.881	31.29%	-1.96%
12.5		10	17.7	15.44	19.96	12	22	1.001	3.164	17.88%	-15.69%
25		10	14.2	8.87	19.53	0	22	2.356	7.451	52.47%	7.19%
50		10	11.8	9.214	14.39	7	18	1.143	3.615	30.63%	22.88%
100		10	12.3	8.978	15.62	4	19	1.469	4.644	37.76%	19.61%

CETIS Summary Report

Report Date: 22 Oct-23 13:05 (p 2 of 2)
Test Code/ID: 231377 / 10-4450-0263

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

6d Survival Rate Detail — MD5: 0F9E6D869E708D8197F530D27F5CC354

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail — MD5: CA095ED8A1F48FF48065DEB62DDA4E76

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	19	20	14	10	19	12	21	6	13	19
1.56		22	21	20	5	14	18	20	10	12	15
3.12		21	17	15	4	6	20	15	22	23	24
6.25		19	21	15	18	16	11	18	18	16	4
12.5		20	22	16	20	12	14	21	17	17	18
25		12	17	22	16	13	18	0	3	20	21
50		13	10	9	18	9	17	7	10	11	14
100		8	4	19	12	13	15	8	18	14	12

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 26 Sep-23 16:39 (p 1 of 2)
Test Code/ID: 231377 / 10-4450-0263

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	04-8489-9065	Endpoint:	6d Survival Rate	CETIS Version:	CETISv2.1.4
Analyzed:	26 Sep-23 16:38	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	26 Sep-23 16:36	MD5 Hash:	0F9E6D869E708D8197F530D27F5CC354	Editor ID:	004-311-246-8

Batch ID:	00-0316-6067	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:30	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	16 Aug-23 14:00	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	6d	Taxon:	Branchiopoda	Source:	In-House Culture Age: <24 h

Sample ID:	04-2727-9403	Code:	1977C42B	Project:	
Sample Date:	07 Aug-23 ~~14:25~~ PW 15:00	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-42 BWL099
Sample Age:	72h (0 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1213269	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	0.8000	1.0000	0.0000	1.0000	52.70%	20.00%	8/10	0.9333	6.67%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9333	6.67%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9333	6.67%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

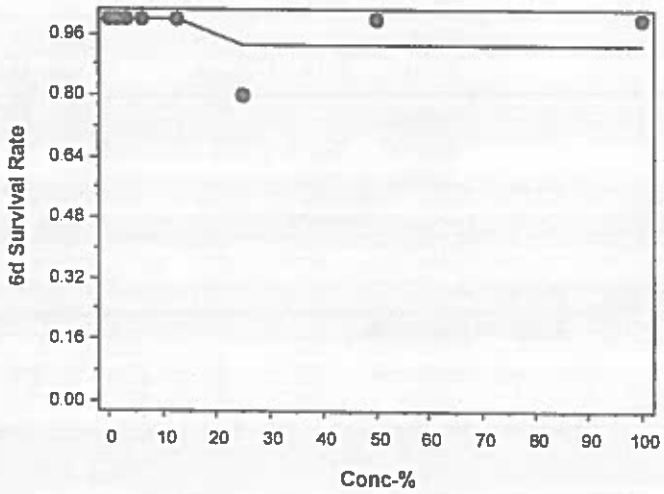
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Sept 29/23

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	04-8489-9065	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	26 Sep-23 16:38	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	26 Sep-23 16:36	**MD5 Hash:**	0F9E6D869E708D8197F530D27F5CC354	**Editor ID:**	004-311-246-8

Graphics



CETIS Analytical Report

Report Date: 26 Sep-23 16:39 (p 1 of 2)
Test Code/ID: 231377 / 10-4450-0263

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	09-6425-4837	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.4
Analyzed:	26 Sep-23 16:39	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	26 Sep-23 16:36	MD5 Hash:	CA095ED8A1F48FF48065DEB62DDA4E76	Editor ID:	004-311-246-8

Batch ID:	00-0316-6067	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:30	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	16 Aug-23 14:00	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	6d	Taxon:	Branchiopoda	Source:	In-House Culture Age: 24

Sample ID:	04-2727-9403	Code:	1977C42B	Project:	
Sample Date:	07 Aug-23 ~~14:25~~ 1500	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-42 BWL099
Sample Age:	72h (0 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1477919	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	28.75	6.143	---	3.5	---	16.3
IC20	37.35	16.72	---	2.7	---	6
IC25	48.43	19.57	---	2.1	---	5.1
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	15.3	17.75	6	21	32.90%	0.00%	16.2	0.00%
1.56		10	15.7	16.5	5	22	35.15%	-2.61%	16.2	0.00%
3.12		10	16.7	18.5	4	24	41.49%	-9.15%	16.2	0.00%
6.25		10	15.6	17.2	4	21	31.29%	-1.96%	16.2	0.00%
12.5		10	17.7	17.33	12	22	17.88%	-15.69%	16.2	0.00%
25		10	14.2	16.5	0	22	52.47%	7.19%	14.2	12.35%
50		10	11.8	10.33	7	18	30.63%	22.88%	12.05	25.62%
100		10	12.3	12.33	4	19	37.76%	19.61%	12.05	25.62%

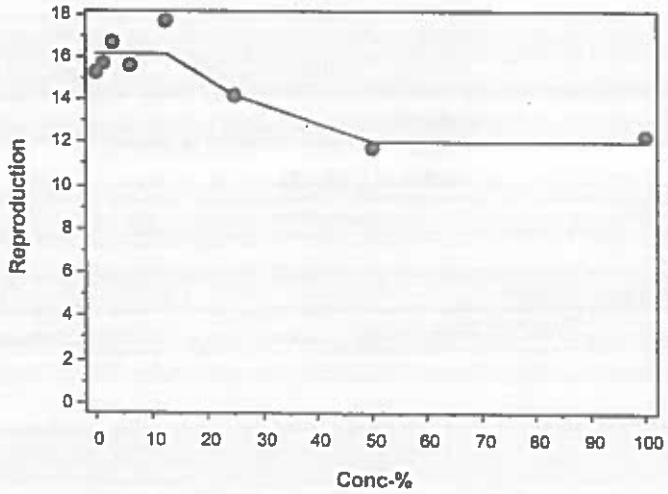
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	19	20	14	10	19	12	21	6	13	19
1.56		22	21	20	5	14	18	20	10	12	15
3.12		21	17	15	4	6	20	15	22	23	24
6.25		19	21	15	18	16	11	18	18	16	4
12.5		20	22	16	20	12	14	21	17	17	18
25		12	17	22	16	13	18	0	3	20	21
50		13	10	9	18	9	17	7	10	11	14
100		8	4	19	12	13	15	8	18	14	12

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	09-6425-4837	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	26 Sep-23 16:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	26 Sep-23 16:36	**MD5 Hash:**	CA095ED8A1F48FF48065DEB62DDA4E76	**Editor ID:**	004-311-246-8

Graphics



CETIS Analytical Report

Report Date: 27 Sep-23 08:37 (p 1 of 2)
Test Code/ID: 231377 / 10-4450-0263

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	21-3306-6181	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.4
Analyzed:	27 Sep-23 8:36	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	26 Sep-23 16:36	MD5 Hash:	CD4A303766E59AD64EFB191C53C9A8BE	Editor ID:	004-311-246-8

Batch ID:	00-0316-6067	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:30	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	16 Aug-23 14:00	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	6d	Taxon:	Branchiopoda	Source:	In-House Culture — Age: >24 h

Sample ID:	04-2727-9403	Code:	1977C42B	Project:	
Sample Date:	07 Aug-23 ~~14:25~~ 15:00	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-42 BWL099
Sample Age:	72h (0 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	635925	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	36.81	2.056	---	2.7	---	48.6
IC20	47.05	10.84	---	2.1	---	9.2
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	15.3	17.75	6	21	32.90%	0.00%	15.3	0.00%
1.56		10	15.3	17.75	6	21	32.90%	0.00%	15.3	0.00%
3.12		10	15.3	17.75	6	21	32.90%	0.00%	15.3	0.00%
6.25		10	15.3	17.75	6	21	32.90%	0.00%	15.3	0.00%
12.5		10	15.3	17.75	6	21	32.90%	0.00%	15.3	0.00%
25		10	14.2	16.5	0	22	52.47%	7.19%	14.2	7.19%
50		10	11.8	10.33	7	18	30.63%	22.88%	12.05	21.24%
100		10	12.3	12.33	4	19	37.76%	19.61%	12.05	21.24%

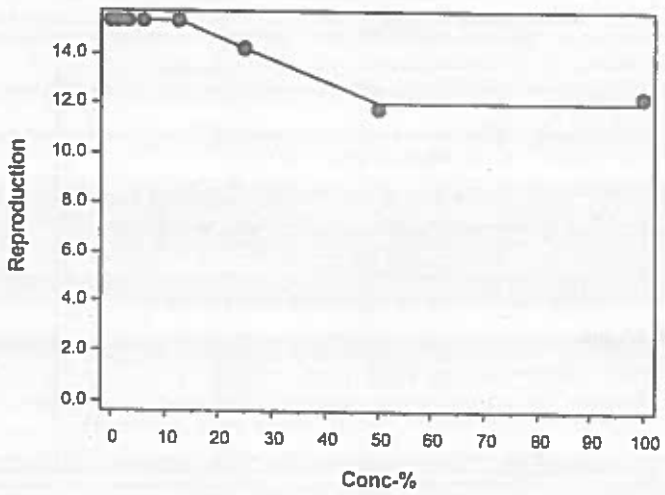
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	19	20	14	10	19	12	21	6	13	19
1.56		19	20	14	10	19	12	21	6	13	19
3.12		19	20	14	10	19	12	21	6	13	19
6.25		19	20	14	10	19	12	21	6	13	19
12.5		19	20	14	10	19	12	21	6	13	19
25		12	17	22	16	13	18	0	3	20	21
50		13	10	9	18	9	17	7	10	11	14
100		8	4	19	12	13	15	8	18	14	12

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	21-3306-6181	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	27 Sep-23 8:36	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	26 Sep-23 16:36	**MD5 Hash:**	CD4A303766E59AD64EFB191C53C9A8BE	**Editor ID:**	004-311-246-8

Graphics



Ceriodaphnia dubia Summary Sheet

Client: Bureau Veritas
Work Order No.: 2313797 ku

Start Date/Time: Aug. 10/23 @ 1500h
Set up by: RMV

Sample Information:

Sample ID: BWL100-1645-69
Sample Date: Aug. 7/23
Date Received: Aug. 10/23
Sample Volume: 1x 4L

Test Validity Criteria:

1) Mean survival of first generation controls is ≥80 %
2) At least 60% of controls have produced three broods within 8 days
3) An average of ≥15 live young produced per surviving female in the control solutions during the first three broods.
4) Invalid if ephippia observed in any control solution at any time.

WQ Ranges:

T (°C) = 25 ± 1; DO (mg/L) = 3.3 to 8.4 ; pH = 6.0 to 8.5

Test Organism Information:

Broodstock No.: BB ~~080723~~ RMV 072723
Age of young (Day 0): <24-h (within 12-h)
Avg No. young in first 3 broods of previous 7 d: 28
Mortality (%) in previous 7 d: 5
Individual female # used ≥8 young on test day: #1-6, 8-11, 14-16, 19, 20

NaCl Reference Toxicant Results:

Reference Toxicant ID: Cd 337
Stock Solution ID: 23Na01
Date Initiated: Aug. 7/23

7-d LC50 (95% CL): 2.0 (1.7-2.3) g/L NaCL
7-d IC50 (95% CL): 1.5 (1.3-1.7) g/L NaCL

7-d LC50 Reference Toxicant Mean and Historical Range: 2.0 (1.9-2.2) g/L NaCL CV (%): 4
7-d IC50 Reference Toxicant Mean and Historical Range: 1.8 (1.5-2.2) g/L NaCL CV (%): 9

Test Results:

	Survival	Reproduction
LC50 % (v/v) (95% CL)	>100	
IC25 % (v/v) (95% CL)		>100
IC50 % (v/v) (95% CL)		>100

Reviewed by: SMH

Date reviewed: Oct 3/23

Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas
Sample ID: BWL0-1645-69
Work Order #: 231379 7 kw

Start Date & Time: Aug 10/23 @ 1500h
Stop Date & Time: Aug. 17/23 @ 1430h
CER #: 4
Test Species: *Ceriodaphnia dubia*

% (v/v)

Concentration: Control	Days 0	1		2		3		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	25.0	26.0	25.0	26.0	24.5	26.0	25.0	26.0	25.0	25.0	24.0	25.0	25.5	24.0
DO (mg/L)	8.1	7.1	7.8	6.5	8.0	4.5	7.9	6.9	7.9	6.5	7.9	6.1	8.0	6.9
pH	8.3	7.8	8.3	7.6	8.3	7.4	8.3	7.8	8.3	7.5	7.9	7.6	8.2	7.7
Cond. (µS/cm)	208	208		207		210		208		209		209		207
Initials	AHS	AHS		GM		RZS		AHS		KW		AJD		KWL

Concentration: 1.56	Days 0	1		2		3		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	26.0	24.0	26.0	25.0	26.0	24.5	26.0	25.0	25.0	24.5	25.0	24.5	24.0
DO (mg/L)	7.7	7.2	7.8	6.5	7.1	4.4	7.0	6.9	7.6	6.6	7.7	6.7	7.3	6.8
pH	7.9	7.7	8.1	7.6	8.0	7.4	7.9	7.8	8.2	7.5	7.5	7.7	7.7	7.6
Cond. (µS/cm)	218	219		223		217		224		223		222		224
Initials	AHS	AHS		GM		RZS		AHS		AHS		AJD		KWL

Concentration: 12.5	Days 0	1		2		3		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	26.0	24.5	26.0	25.0	26.0	24.5	26.0	24.5	25.0	25.0	25.0	24.0	24.0
DO (mg/L)	7.8	7.2	7.9	6.5	7.2	4.3	7.1	6.8	7.7	6.4	7.7	6.7	7.3	6.7
pH	7.8	7.8	8.2	7.6	7.9	7.4	8.0	7.8	8.3	7.6	7.6	7.6	8.0	7.6
Cond. (µS/cm)	295	295		297		294		300		302		303		302
Initials	AHS	AHS		GM		RZS		AHS		AHS		AJD		KWL

Concentration: 100	Days 0	1		2		3		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.5	26.0	25.0	26.0	25.0	26.0	24.5	26.0	24.5	25.0	26.0	25.0	24.5	24.0
DO (mg/L)	7.9	7.1	7.9	6.4	7.3	4.2	7.4	6.7	7.8	6.3	7.8	6.0	7.5	6.5
pH	7.9	7.8	8.0	7.5	7.9	7.3	8.0	7.7	8.0	7.6	7.6	7.6	7.5	7.6
Cond. (µS/cm)	887	884		887		890		889		894		867		851
Initials	AHS	AHS		GM		RZS		AHS		AHS		AJD		KWL

Thermometer: ~~CG-#~~ 4 DO meter/probe: 1 / 1 pH meter/probe: 5 / 5 Conductivity meter/probe: 1 / 1

	Control	100%		
Hardness*	100	320		
Alkalinity*	40	100		

* mg/L as CaCO3

Analysts: AHS, GM, RZS, AJD, KWL
Reviewed by: SMH
Date reviewed: Oct 3/23

Sample Description: clear, colorless, odorless, no particulates

Comments: Broodboard Used: ~~BB0022S (# 1, 2, 3, 7, 10, 14, 15, 16, 18)~~ KWL BR 072723 # 1-6, 8-11, 14-16, 19, 2

Day 5 pH taken with pH-3

Chronic Freshwater Toxicity Test
C. dubia Reproduction Data

Client: Bureau Veritas
Sample ID: 1645-69
Work Order: 2313797

Start Date & Time: Aug. 10/23 @ 1500h
Stop Date & Time: Aug. 17/23 @ 1430h
Set up by: KMV

% (v/v)

Days	Concentration: Control										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	/	4	/	/	2	/	3	3	2	2	KMC
5	2	/	4	6	7	/	4	7	/	/	KMC
6	8	6	7	8	/	4	/	9	8	6	KMC
7	11	10	9	10	8	6	8	/	10	8	KMC
8											
Total	21	20	20	24	17	10	15	19	20	16	AHS

Days	Concentration: 1.56										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	2	3	4	2	2	3	4	3	2	3	KMC
5	6	7	6	5	6	7	7	6	7	6	KMC
6	8	11	10	7	8	4	9	9	8	10	KMC
7	10	/	/	/	/	/	/	/	/	/	KMC
8											
Total	16	21	20	14	16	19	20	18	17	19	AHS

Days	Concentration: 3.12										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	4	/	4	3	3	4	2	/	5	3	KMC
5	/	6	6	8	7	/	7	6	6	5	KMC
6	6	8	7	6	8	8	9	7	8	6	KMC
7	10	11	/	/	/	9	/	9	/	/	KMC
8											
Total	20	25	17	17	18	21	18	22	19	14	AHS

Days	Concentration: 6.25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	3	2	4	3	2	4	2	/	4	3	KMC
5	6	8	7	6	7	7	6	/	7	6	KMC
6	7	6	6	7	10	8	6	4	8	5	KMC
7	/	/	/	/	/	/	/	6	/	/	KMC
8											
Total	16	16	17	16	19	19	14	10	19	14	AHS

Days	Concentration: 12.5										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	4	3	/	2	3	/	4	3	4	3	KMC
5	7	6	/	6	6	/	/	6	7	9	KMC
6	10	9	4	/	7	4	8	8	9	10	KMC
7	/	/	8	8	/	6	9	/	/	/	KMC
8											
Total	22 ~~25~~ ~~21~~	18	12	16	16	10	21	17	20	22	AHS

Days	Concentration: 25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	2	4	3	/	3	3	3	/	2	2	KMC
5	7	8	6	/	/	4	4	6	X	6	KMC
6	10	8	10	/	8	10	/	8	↓	8	KMC
7	/	/	/	/	10	/	9	7		/	KMC
8											
Total	19	20	19	0	21	17	16	21	2X	16	AHS

Days	Concentration: 50										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	3	2	3	2	3	2	4	3	3	2	KMC
5	/	6	5X	6	4	5	6	5	6	4	KMC
6	5	6	↓	8	10	7	9	8	/	9	KMC
7	6	/		/	/	/	/	/	8	/	KMC
8											
Total	14	14	8X	16	17	14	19	16	17	15	AHS

Days	Concentration: 100										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	KMC
4	3	4	4	2	3	4	2	/	3	4	KMC
5	5	6	6	5	6	5	2	/	4	2	KMC
6	11	10	8	9	7	2	6	6	7	6	KMC
7	/	/	/	/	/	/	/	4	/	/	KMC
8											
Total	19	20	18	16	16	11	10	10	14	12	AHS

Days	Concentration:										
	A	B	C	D	E	F	G	H	I	J	Init
1											
2											
3											
4											
5											
6											
7											
8											
Total											

Notes: X = mortality.

Comments: 1. Total # Young only based on the first 3 Broods. Fourth and subsequent broods not included in total count.

2. Ephippia present in Controls (Y) (N)

Reviewed by: SMH

Date reviewed: Oct 3/23

CETIS Summary Report

Report Date: 04 Oct-23 10:50 (p 1 of 2)
Test Code/ID: 231378 / 14-9930-0236

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Batch ID:	15-1925-5674	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 15:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	17 Aug-23 14:30	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	In-House Culture Age: <24 h

Sample ID:	15-8344-1009	Code:	5E616471	Project:	
Sample Date:	07 Aug-23 ~~46:00~~ 15:30	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-69
Sample Age:	71h	Client:	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
09-9547-1602	7d Survival Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
			✓	EC25	>100	---	---	<1	
			✓	EC40	>100	---	---	<1	
			✓	EC50	>100	---	---	<1	
02-0628-3841	Reproduction	Linear Interpolation (ICPIN)	✓	IC15	19.45	4.812	---	5.1	1
			✓	IC20	77.62	13.73	---	1.3	
			✓	IC25	>100	---	---	<1	
			✓	IC40	>100	---	---	<1	
			✓	IC50	>100	---	---	<1	

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
50		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	18.2	15.42	20.98	10	24	1.227	3.882	21.33%	0.00%
1.56		10	18	16.42	19.58	14	21	0.6992	2.211	12.28%	1.10%
3.12		10	19.1	16.9	21.3	14	25	0.9713	3.071	16.08%	-4.95%
6.25		10	16	13.98	18.02	10	19	0.8944	2.828	17.68%	12.09%
12.5		10	17.3	14.46	20.14	10	22	1.257	3.974	22.97%	4.95%
25		10	15.1	9.616	20.58	0	21	2.424	7.666	50.77%	17.03%
50		10	15	12.89	17.11	8	19	0.9309	2.944	19.63%	17.58%
100		10	14.6	11.92	17.28	10	20	1.185	3.748	25.67%	19.78%

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

7d Survival Rate Detail

MD5: 8BB026CD4A28AF62ADE1944203B634E5

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
50		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: 1606543679F9142130FE6AD5886D3D4A

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	21	20	20	24	17	10	15	19	20	16
1.56		16	21	20	14	16	19	20	18	17	19
3.12		20	25	17	17	18	21	18	22	19	14
6.25		16	16	17	16	19	19	14	10	19	14
12.5		21	18	12	16	16	10	21	17	20	22
25		19	20	19	0	21	17	16	21	2	16
50		14	14	8	16	17	14	19	16	17	15
100		19	20	18	16	16	11	10	10	14	12

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
50		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 04 Oct-23 10:51 (p 1 of 2)
Test Code/ID: 231378 / 14-9930-0236

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	09-9547-1602	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.4
Analyzed:	04 Oct-23 10:49	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Oct-23 10:47	MD5 Hash:	8BB026CD4A28AF62ADE1944203B634E5	Editor ID:	004-311-246-8

Batch ID:	15-1925-5674	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee	
Start Date:	10 Aug-23 15:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water	
Ending Date:	17 Aug-23 14:30	Species:	Ceriodaphnia dubia	Brine:		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	In-House Culture	Age: <24 h

Sample ID:	15-8344-1009	Code:	5E616471	Project:	
Sample Date:	07 Aug-23 ~~15:00~~ 15:30	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-69
Sample Age:	71h	Client:	Bureau Veritas Laboratories		BWL 100-

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	593302	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	—	—	<1	—	—
EC20	>100	—	—	<1	—	—
EC25	>100	—	—	<1	—	—
EC40	>100	—	—	<1	—	—
EC50	>100	—	—	<1	—	—

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9333	6.67%
50		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9333	6.67%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9333	6.67%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
50		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

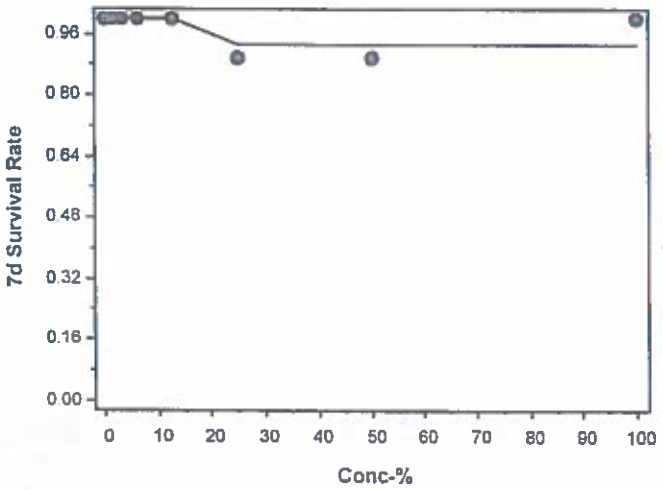
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
50		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Analyst: KW QA: SMH Oct 5/23

Analysis ID:	09-9547-1602	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.4
Analyzed:	04 Oct-23 10:49	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Oct-23 10:47	MD5 Hash:	8BB026CD4A28AF62ADE1944203B634E5	Editor ID:	004-311-246-8

Graphics



CETIS Analytical Report

Report Date: 04 Oct-23 10:51 (p 1 of 2)
Test Code/ID: 231378/14-9930-0236

Ceriodaphnia 7-d Survival and Reproduction Test

Nautilus Environmental

Analysis ID:	02-0628-3841	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.4
Analyzed:	04 Oct-23 10:50	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Oct-23 10:47	MD5 Hash:	1606543679F9142130FE6AD5886D3D4A	Editor ID:	004-311-246-8

Batch ID:	15-1925-5674	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee		
Start Date:	10 Aug-23 15:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water		
Ending Date:	17 Aug-23 14:30	Species:	Ceriodaphnia dubia	Brine:			
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	In-House Culture	Age:	<24h

Sample ID:	15-8344-1009	Code:	5E616471	Project:	
Sample Date:	07 Aug-23 ~~10:00~~ 15:20	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-69
Sample Age:	71h	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1622803	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	19.45	4.812	—	5.1	—	20.8
IC20	77.62	13.73	—	1.3	—	7.3
IC25	>100	—	—	<1	—	—
IC40	>100	—	—	<1	—	—
IC50	>100	—	—	<1	—	—

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	18.2	19.75	10	24	21.33%	0.00%	18.43	0.00%
1.56		10	18	18.67	14	21	12.28%	1.10%	18.43	0.00%
3.12		10	19.1	18.33	14	25	16.08%	-4.95%	18.43	0.00%
6.25		10	16	16	10	19	17.68%	12.09%	16.65	9.66%
12.5		10	17.3	17.5	10	22	22.97%	4.95%	16.65	9.66%
25		10	15.1	18.33	0	21	50.77%	17.03%	15.1	18.07%
50		10	15	15.67	8	19	19.63%	17.58%	15	18.61%
100		10	14.6	15.33	10	20	25.67%	19.78%	14.6	20.78%

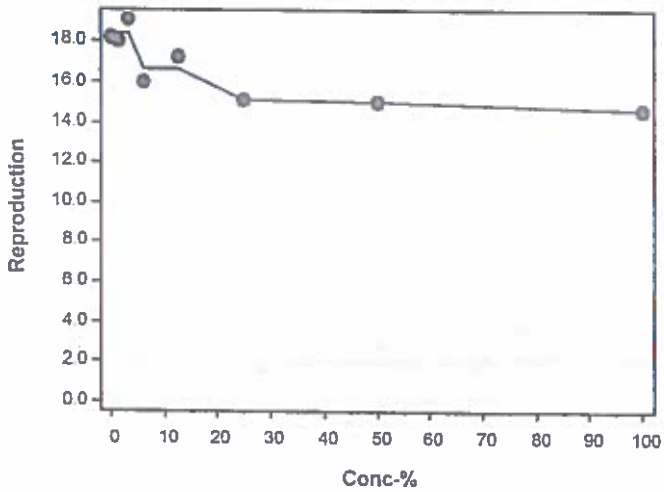
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	21	20	20	24	17	10	15	19	20	16
1.56		16	21	20	14	16	19	20	18	17	19
3.12		20	25	17	17	18	21	18	22	19	14
6.25		16	16	17	16	19	19	14	10	19	14
12.5		21	18	12	16	16	10	21	17	20	22
25		19	20	19	0	21	17	16	21	2	16
50		14	14	8	16	17	14	19	16	17	15
100		19	20	18	16	16	11	10	10	14	12

Oct 5/23

Analysis ID:	02-0628-3841	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	04 Oct-23 10:50	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	04 Oct-23 10:47	**MD5 Hash:**	1606543679F9142130FE6AD5886D3D4A	**Editor ID:**	004-311-246-8

Graphics



Ceriodaphnia dubia Summary Sheet

Client: Bureau Veritas
Work Order No.: 2313787 KM

Start Date/Time: Aug. 10/23 @ 1400h
Set up by: KML

Sample Information:

Sample ID: BVL102-1645-46
Sample Date: Aug. 7/23
Date Received: Aug. 8 10/23
Sample Volume: 1x4L

Test Validity Criteria:

1) Mean survival of first generation controls is ≥80 %
2) At least 60% of controls have produced three broods within 8 days
3) An average of ≥15 live young produced per surviving female in the control solutions during the first three broods.
4) Invalid if ephippia observed in any control solution at any time.

WQ Ranges:

T (°C) = 25 ± 1; DO (mg/L) = 3.3 to 8.4 ; pH = 6.0 to 8.5

Test Organism Information:

Broodstock No.: BB 080223A
Age of young (Day 0): <24-h (within 12-h)
Avg No. young in first 3 broods of previous 7 d: 23
Mortality (%) in previous 7 d: 0
Individual female # used ≥8 young on test day: ~~#1, 2, 5, 7, 10, 14, 15, 16, 18~~ KML #1, 3, 7-15, 17, 19, 20

NaCl Reference Toxicant Results:

Reference Toxicant ID: Cd 337
Stock Solution ID: 23Na01
Date Initiated: Aug. 7/23

7-d LC50 (95% CL): 2.0 (1.7 - 2.3) g/L NaCL
7-d IC50 (95% CL): ~~1.4~~ 1.5 (1.3 - ~~1.6~~ 1.7) g/L NaCL

7-d LC50 Reference Toxicant Mean and Historical Range: 2.0 (1.9 - 2.2) g/L NaCL CV (%): 4
7-d IC50 Reference Toxicant Mean and Historical Range: 1.8 (1.5 - 2.2) g/L NaCL CV (%): 9

Test Results:

	Survival	Reproduction
LC50 % (v/v) (95% CL)	>100	
IC25 % (v/v) (95% CL)		>100
IC50 % (v/v) (95% CL)		>100

Reviewed by: SMH

Date reviewed: Oct 3/23

Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas
Sample ID: BWL102-1645-46
Work Order #: 2313787 (RW)

Start Date & Time: Aug. 10/23 @ 1400h
Stop Date & Time: Aug. 16/23 @ 1330h
CER #: 4
Test Species: *Ceriodaphnia dubia*

% (v/v)

Concentration: Control	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	25.0	26.0	25.0	26.0	24.5	26.0	25.0	25.0	25.0	25.0	24.0	24.0		
DO (mg/L)	8.1	7.0	7.8	5.0	8.0	4.8	7.9	7.1	7.9	6.6	7.9	5.5		
pH	8.3	7.8	8.3	7.5	8.3	7.1	8.3	7.7	8.3	7.3	7.9	7.5		
Cond. (µS/cm)	208	208		207		210		208		209		211		
Initials	AHS	AHS		GM		RZS		AHS		KWL		KWL		

Concentration: 1.56	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.0	26.0	24.0	26.0	25.0	26.0	24.5	25.0	25.0	25.0	24.5	24.5		
DO (mg/L)	7.7	7.0	7.6	5.0	7.2	2.5	7.0	7.1	7.8	6.7	7.6	5.4		
pH	7.8	7.8	7.9	7.5	7.9	7.1	7.9	7.7	8.2	7.3	7.7	7.6		
Cond. (µS/cm)	215	212		216		215		216		216		214		
Initials	AHS	AHS		GM		RZS		AHS		AHS		KWL		

Concentration: 12.5	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.5	26.0	24.0	26.0	25.0	26.0	24.5	25.0	24.5	25.0	24.5	24.5		
DO (mg/L)	7.8	7.0	7.8	5.3	7.3	2.5	7.0	6.8	7.8	6.5	7.7	5.3		
pH	8.0	7.9	8.1	7.5	8.0	7.2	8.0	7.8	8.3	7.4	7.8	7.6		
Cond. (µS/cm)	241	241		243		248		246		244		241		
Initials	AHS	AHS		GM		RZS		AHS		AHS		KWL		

Concentration: 100	Days 0	1		2		3 *		4		5		6		7
	init.	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)	24.5	26.0	24.5	26.0	25.0	26.0	24.5	25.0	24.5	25.0	24.5	24.5		
DO (mg/L)	7.9	7.0	7.9	5.5	7.4	3.6	7.1	6.1	7.8	6.1	7.8	5.3		
pH	8.2	8.1	8.2	7.8	8.2	7.6	8.3	8.0	8.2	7.5	8.0	7.5		
Cond. (µS/cm)	476	477		477		472		468		477		456		
Initials	AHS	AHS		GM		RZS		AHS		AHS		KWL		

* Confirmed w/ DO 5/5 & pH 3/3

Thermometer: CER#4 DO meter/probe: 1 / 1 pH meter/probe: 5 / 5 Conductivity meter/probe: 1 / 1

	Control	100%		
Hardness*	100	200		
Alkalinity*	90	140		

* mg/L as CaCO3

Analysts: AHS, GM, RZS, KWL

Reviewed by: SMH

Date reviewed: Oct 3/23

Sample Description: very pale yellow, no particulates, clear, odorless

Comments: Broodboard Used: BZ080323A (~~#1, 2, 5-7, 10, 14, 15, 16, 18~~) #1, 3, 7-15, 17, 19, 20 (RW)

Day 5 pH taken with pH-3

Chronic Freshwater Toxicity Test
C. dubia Reproduction Data

Client: Bureau Veritas
Sample ID: BWLR-1645-46
Work Order: 2313787 KYC

·/. (v/v)

Start Date & Time: Aug 10/23 @ 1400h
Stop Date & Time: ~~Sept~~ Aug 16/23 @ 1330h
Set up by: KYC

Days	Concentration: control										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	2	2	/	2	3	3	2	2	2	RZ
5	5	4	6	2	5	6	6	4	5	7	GM
6	11	7	5	9	13	12	12	11	10	9	GM
7											
8											
Total	19	13	13	11	20	21	21	17	17	18	AHS

Days	Concentration: 1.56										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	2	/	/	/	/	/	2	/	3	RZ
5	8	8	7	6	7	8	8	7	7	8	GM
6	13	12	12	14	12	9	10	13	16	13	GM
7											
8											
Total	24	22	19	20	19	17	18	22	23	24	AHS

Days	Concentration: 3.12										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	/	/	/	2	2	/	/	/	/	RZ
5	7	7	7	7	5	6	7	2	7	9	GM
6	11	16	11	14	12	13	11	8	10	14	GM
7											
8											
Total	21	23	18	21	19	21	18	10	17	23	AHS

Days	Concentration: 6.25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	4	2	3	3	/	/	4	4	3	3	RZ
5	8	9	7	7	5	5	8	7	7	6	GM
6	13	12	15	12	12	12	10	13	15	11	GM
7											
8											
Total	25	23	25	22	17	17	22	24	25	20	AHS

Days	Concentration: 12.5										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	2	2	/	2	3	/	/	/	5	/	RZ
5	7	8	7	7	7	2	4	8	6	5	GM
6	13	12	10	10	16	10	11	14	12	9	GM
7											
8											
Total	22	22	17	19	26	12	15	22	23	14	AHS

Days	Concentration: 25										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	5	4	5	4	4	/	5	4	2	2	RZ
5	9	6	8	5	/	8	6	8	7	7	GM
6	13	14	17	14	6	14	12	11	15	12	GM
7											
8											
Total	27	24	30	23	10	22	23	23	24	21	AHS

Days	Concentration: 50										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	3	4	3	4	4	4	4	/	4	/	RZ
5	7	8	7	10	7	5	9	7	7	7	GM
6	10	12	14	13	14	16	11	10	13	12	GM
7											
8											
Total	20	24	24	27	25	25	24	17	24	19	AHS

Days	Concentration: 100										
	A	B	C	D	E	F	G	H	I	J	Init
1	/	/	/	/	/	/	/	/	/	/	GM
2	/	/	/	/	/	/	/	/	/	/	GM
3	/	/	/	/	/	/	/	/	/	/	RZ
4	5	5	4	/	3	4	4	4	4	4	RZ
5	11	10	8	5	7	8	7	8	7	8	GM
6	11	11	7	8	14	11	12	14	12	11	GM
7											
8											
Total	27	26	19	13	24	23	23	26	23	23	AHS

Days	Concentration:										
	A	B	C	D	E	F	G	H	I	J	Init
1											
2											
3											
4											
5											
6											
7											
8											
Total											

Notes: X = mortality.

Comments: 1. Total # Young only based on the first 3 Broods. Fourth and subsequent broods not included in total count.

2. Ephippia present in Controls (Y), (N)

Reviewed by: SMH

Date reviewed: Oct 3/23

CETIS Summary Report

Report Date: 01 Oct-23 13:46 (p 1 of 2)
Test Code/ID: 231378 07-9481-3047

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Batch ID:	20-3396-6457	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee		
Start Date:	10 Aug-23 14:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water		
Ending Date:	16 Aug-23 13:30	Species:	Ceriodaphnia dubia	Brine:			
Test Length:	5d 23h	Taxon:	Branchiopoda	Source:	In-House Culture	Age:	<24h

Sample ID:	09-8260-2703	Code:	3A9153CF	Project:	
Sample Date:	07 Aug-23 ~~17:45~~ 1600	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-46
Sample Age:	69h (1.8 °C)	Client:	Bureau Veritas Laboratories		BWL102-

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
18-8995-8528	6d Survival Rate	Linear Interpolation (ICPIN)	✓	EC15	>100	---	---	<1	1
			✓	EC20	>100	---	---	<1	
			✓	EC25	>100	---	---	<1	
			✓	EC40	>100	---	---	<1	
			✓	EC50	>100	---	---	<1	
11-2454-9265	Reproduction	Linear Interpolation (ICPIN)	✓	IC15	>100	---	---	<1	1
			✓	IC20	>100	---	---	<1	
			✓	IC25	>100	---	---	<1	
			✓	IC40	>100	---	---	<1	
			✓	IC50	>100	---	---	<1	

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	17	14.45	19.55	11	21	1.125	3.559	20.94%	0.00%
1.56		10	20.8	18.99	22.61	17	24	0.8	2.53	12.16%	-22.35%
3.12		10	19.1	16.37	21.83	10	23	1.206	3.814	19.97%	-12.35%
6.25		10	22	19.79	24.21	17	25	0.9775	3.091	14.05%	-29.41%
12.5		10	19.2	15.95	22.45	12	26	1.436	4.541	23.65%	-12.94%
25		10	22.7	19.01	26.39	10	30	1.633	5.165	22.75%	-33.53%
50		10	22.9	20.65	25.15	17	27	0.9939	3.143	13.72%	-34.71%
100		10	22.7	19.78	25.62	13	27	1.291	4.084	17.99%	-33.53%

Oct 3/23

CETIS Summary Report

Report Date: 01 Oct-23 13:46 (p 2 of 2)
Test Code/ID: 231378 / 07-9481-3047

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

6d Survival Rate Detail — MD5: 93C23A39F6F8137E5E1F37E9E2BE04F6

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail — MD5: 9FB3D6D38D88A43309DE21B95A46A461

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	19	13	13	11	20	21	21	17	17	18
1.56		24	22	19	20	19	17	18	22	23	24
3.12		21	23	18	21	19	21	18	10	17	23
6.25		25	23	25	22	17	17	22	24	25	20
12.5		22	22	17	19	26	12	15	22	23	14
25		27	24	30	23	10	22	23	23	24	21
50		20	24	24	27	25	25	24	17	24	19
100		27	26	19	13	24	23	23	26	23	23

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Oct 3/23

CETIS Analytical Report

Report Date: 01 Oct-23 13:47 (p 1 of 2)
Test Code/ID: 231378 / 07-9481-3047

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	18-8995-8528	Endpoint:	6d Survival Rate	CETIS Version:	CETISv2.1.4
Analyzed:	01 Oct-23 13:44	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	01 Oct-23 13:43	MD5 Hash:	93C23A39F6F8137E5E1F37E9E2BE04F6	Editor ID:	004-311-246-8

Batch ID:	20-3396-6457	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	16 Aug-23 13:30	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	5d 23h	Taxon:	Branchiopoda	Source:	In-House Culture Age: <24 h

Sample ID:	09-8260-2703	Code:	3A9153CF	Project:	
Sample Date:	07 Aug-23 ~~17:15~~ 16:00	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-46 BWL102-
Sample Age:	69h (1.8 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1023665	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.12		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.12		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

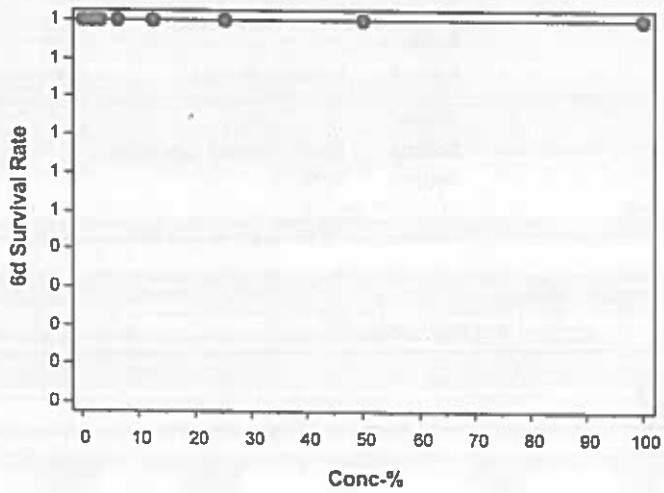
6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1.56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.12		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **Nautilus Environmental**

Analysis ID:	18-8995-8528	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.4
Analyzed:	01 Oct-23 13:44	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	01 Oct-23 13:43	**MD5 Hash:**	93C23A39F6F8137E5E1F37E9E2BE04F6	**Editor ID:**	004-311-246-8

Graphics



CETIS Analytical Report

Report Date: 01 Oct-23 13:47 (p 1 of 2)
Test Code/ID: 231378 07-9481-3047

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	11-2454-9265	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.4
Analyzed:	01 Oct-23 13:45	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	01 Oct-23 13:43	MD5 Hash:	9FB3D6D38D88A43309DE21B95A46A461	Editor ID:	004-311-246-8

Batch ID:	20-3396-6457	Test Type:	Reproduction-Survival (7d)	Analyst:	Kiyeon Lee
Start Date:	10 Aug-23 14:00	Protocol:	EC/EPS 1/RM/21	Diluent:	20% Perrier Water
Ending Date:	16 Aug-23 13:30	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	5d 23h	Taxon:	Branchiopoda	Source:	In-House Culture Age: <24

Sample ID:	09-8260-2703	Code:	3A9153CF	Project:	
Sample Date:	07 Aug-23 ~~17:15~~ 1600	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	10 Aug-23 08:50	CAS (PC):		Station:	1645-46 BWL102 -
Sample Age:	69h (1.8 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	376178	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	17	17.33	11	21	20.94%	0.00%	20.8	0.00%
1.56		10	20.8	21.33	17	24	12.16%	-22.35%	20.8	0.00%
3.12		10	19.1	20.5	10	23	19.97%	-12.35%	20.8	0.00%
6.25		10	22	22.33	17	25	14.05%	-29.41%	20.8	0.00%
12.5		10	19.2	21.25	12	26	23.65%	-12.94%	20.8	0.00%
25		10	22.7	23	10	30	22.75%	-33.53%	20.8	0.00%
50		10	22.9	24	17	27	13.72%	-34.71%	20.8	0.00%
100		10	22.7	23	13	27	17.99%	-33.53%	20.8	0.00%

Reproduction Detail

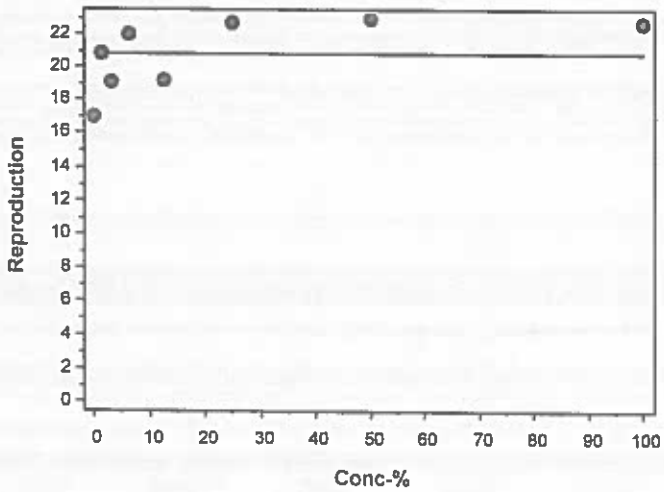
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	19	13	13	11	20	21	21	17	17	18
1.56		24	22	19	20	19	17	18	22	23	24
3.12		21	23	18	21	19	21	18	10	17	23
6.25		25	23	25	22	17	17	22	24	25	20
12.5		22	22	17	19	26	12	15	22	23	14
25		27	24	30	23	10	22	23	23	24	21
50		20	24	24	27	25	25	24	17	24	19
100		27	26	19	13	24	23	23	26	23	23

Oct 3/23

Ceriodaphnia 7-d Survival and Reproduction Test — Nautilus Environmental

Analysis ID:	11-2454-9265	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.4
Analyzed:	01 Oct-23 13:45	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	01 Oct-23 13:43	**MD5 Hash:**	9FB3D6D38D88A43309DE21B95A46A461	**Editor ID:**	004-311-246-8

Graphics



Oct 3/23

Analyst: [illegible] QA: SMH

APPENDIX B – Chain-of-Custody Form

Sent To: Nautilus Environmenta2
B664 Commerce Court
Burnaby, BC, V5A 4N7
Tel: (604) 420-8773

CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

COC # C361198-ENAU-01-01

REPORT INFORMATION	
Company:	Bureau Veritas Laboratories
Address:	4000 19st N.E, Calgary, Alberta, T2E 6P8
Contact Name:	Geraldlyn Gouthro
Email:	geraldlyn.gouthro@bureauveritas.com, Customersolutionswest@bureauveritas
Phone:	(780) 577-7173
BV Labs Project #:	C361198

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Ceriodaphnia Dubia, 7 day										ADDITIONAL SAMPLE INFORMATION
1	BWL099-1645-42	GRAB	2023/08/07	15:00	TB	3	X							0.0 – 2.2°C			(P: 14) ~~0.6 – 2.4°C 1x4L~~ 1x4L
2	BWL100-1645-69	GRAB	2023/08/07	15:30	TB	3	X										(P: 14) 0.6 – 2.4 °C 1x4L
3	BWL102-1645-46	GRAB	2023/08/07	~~16:30~~ 1600	TB	3	X										(P: 14) 1.8 – 3.6 °C 1x4L
4																	
5							2										
6							3										
7							1										
8							3										
9							2										
10																	

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS

Please inform Bureau Veritas immediately if you are not accredited for the requested test(s) or the hold time is approaching.
Please return a copy of this form with the report.

TURNAROUND TIME

☐ Rush Required

2023/09/06
Date Required

Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
1.			1. Tyrone Hamilton	2023/08/10	08 50
2.			2.		

END OF REPORT

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C367471

Client Project Name & Number: Closure — Sample Number: BXV064-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-74 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 28, 2023 01:50 PM — Sampling Method : N/A — pH: 7.3

Sample Collected By: BGJ — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 29, 2023 01:51 PM — Volume Received: 1 L — Dissolved Oxygen: 100.0 %

Analysis Start : Aug 31, 2023 09:41 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 437 µS/cm

End : Sep 02, 2023 10:03 AM — Storage: 2-6°C — Hardness: 180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	354	8.1	0	0	0	0	20	8.1	356	8.3
6.25	20	8.0	362	8.1	0	0	0	0	20	8.1	366	8.1
12.5	20	7.8	368	8.2	0	0	0	0	20	8.1	374	8.2
25	20	7.6	381	8.2	0	0	0	0	20	8.1	380	8.1
50	20	7.3	407	8.3	0	0	0	0	20	8.0	405	8.1
100	20	7.0	455	8.2	0	0	0	0	20	8.0	453	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 0 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 25.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C367471
Client Project Name & Number:		Closure	Sample Number:	BXV064-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 30, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.89 (4.42, 7.85) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kaylie Lyons, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2023 11:38 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C367471

Client Project Name & Number: Closure — Sample Number: BXV065-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-67 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 28, 2023 02:20 PM — Sampling Method : N/A — pH: 7.4

Sample Collected By: BGJ — Site Collection: N/A — Temperature : 20 °C

Sample Received: Aug 29, 2023 01:51 PM — Volume Received: 1L — Dissolved Oxygen: 108.0 %

Analysis Start : Aug 31, 2023 09:55 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 833 µS/cm

End : Sep 02, 2023 10:08 AM — Storage: 2-6°C — Hardness: 300 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	353	8.2	0	0	0	0	20	8.1	354	8.3
6.25	20	8.2	393	8.1	0	0	0	0	20	8.1	395	8.2
12.5	20	8.0	420	8.1	0	0	0	0	20	8.1	418	8.1
25	20	7.9	475	8.2	0	0	0	0	20	8.1	467	8.2
50	21	7.7	615	8.4	0	0	0	0	20	8.0	601	8.2
100	21	7.3	878	9.1	0	0	0	0	20	8.0	844	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.6

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C367471
Client Project Name & Number:		Closure	Sample Number:	BXV065-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 30, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.89 (4.42, 7.85) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kaylie Lyons, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2023 11:40 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C367471

Client Project Name & Number: Closure — Sample Number: BXV066-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-87 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: Aug 28, 2023 03:35 PM — Sampling Method : N/A — pH: 8.4

Sample Collected By: BGJ — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 29, 2023 01:51 PM — Volume Received: 1L — Dissolved Oxygen: 115.0 %

Analysis Start : Aug 31, 2023 09:58 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 255 µS/cm

End : Sep 02, 2023 10:06 AM — Storage: 2-6°C — Hardness: 120 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	354	8.1	0	0	0	0	20	8.2	354	8.3
6.25	20	8.0	352	8.1	0	0	0	0	20	8.1	355	8.2
12.5	20	8.0	346	8.2	0	0	0	0	19	8.0	350	8.2
25	20	7.9	336	8.4	0	0	0	0	20	8.1	335	8.2
50	20	8.0	314	8.6	0	0	0	0	20	8.0	315	8.2
100	21	8.0	266	9.5	0	0	0	0	20	7.8	268	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 25.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C367471
Client Project Name & Number:		Closure	Sample Number:	BXV066-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 30, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.89 (4.42, 7.85) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kaylie Lyons, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2023 11:42 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C367471

Client Project Name & Number: Closure — Sample Number: BXV069-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-68 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Aug 29, 2023 06:35 AM — Sampling Method : N/A — pH: 7.2

Sample Collected By: BGJ — Site Collection: N/A — Temperature : 19 °C

Sample Received: Aug 29, 2023 01:51 PM — Volume Received: 1L — Dissolved Oxygen: 99.0 %

Analysis Start : Aug 31, 2023 09:42 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 506 µS/cm

End : Sep 02, 2023 10:05 AM — Storage: 2-6°C — Hardness: 240 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.9	355	8.2	0	0	0	0	20	8.1	355	8.3
6.25	20	7.9	370	8.1	0	0	0	0	20	8.1	376	8.2
12.5	20	7.9	377	8.1	0	0	0	0	20	8.1	380	8.2
25	20	7.7	399	8.2	0	0	0	0	20	8.0	401	8.1
50	20	7.5	430	8.2	0	0	0	0	20	8.0	428	8.2
100	20	6.9	520	8.3	0	0	0	0	20	7.6	520	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 0 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 25.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C367471
Client Project Name & Number:		Closure	Sample Number:	BXV069-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 30, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.89 (4.42, 7.85) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kaylie Lyons, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2023 11:45 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C367471

Client Project Name & Number: Closure — Sample Number: BXV070-01

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-44 — Sample Matrix : Grab Water

Description:	Pale yellow, clear			Sample Prior to Analysis:	
Sample Collected:	Aug 29, 2023 05:55 AM	Sampling Method :	N/A	pH:	7.4
Sample Collected By:	BGJ	Site Collection: N/A		Temperature :	19 °C
Sample Received:	Aug 29, 2023 01:51 PM	Volume Received:	1L	Dissolved Oxygen:	107.0 %
Analysis Start :	Aug 31, 2023 10:01 AM	Avg Temp Arrival:	7 °C	Sample Conductance:	222 µS/cm
End :	Sep 02, 2023 10:11 AM	Storage:	2-6°C	Hardness:	100 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.7	353	8.1	0	0	0	0	20	8.1	354	8.3
6.25	20	7.9	350	8.1	0	0	0	0	20	8.1	351	8.2
12.5	20	7.9	343	8.2	0	0	0	0	20	8.1	346	8.1
25	20	7.8	328	8.2	0	0	0	0	20	8.0	329	8.2
50	20	7.7	302	8.4	0	0	0	0	20	8.0	303	8.1
100	20	7.1	233	9.0	0	0	0	0	20	7.6	235	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	0 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	27.6
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	0
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C367471
Client Project Name & Number:		Closure	Sample Number:	BXV070-01

Reference chemical:	Sodium Chloride	Test Date:	Aug 30, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	5.89 (4.42, 7.85) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kaylie Lyons, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 09, 2023 11:47 AM

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV064
Client Sample ID: 1645-74
Date sample collected: 8/28/2023
Test Performed By: CSH, NM9, KLY, KMG, THR, SVC
Test Initiation Date: 8/31/2023
Test End Date: 9/7/2023
Dates when subsamples used: 8/31/2023, 9/1/2023, 9/2/2023, 9/3/2023, 9/4/2023, 9/5/2023, 9/6/2023

Chemistries prior to test:
Dissolved Oxygen(mg/L): 8.1
Temperature (°C): 24
pH(pH units): 6.9
Conductivity (µS/cm): 484

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	3.13-3
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

12.5% Concentration analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/31/2023 9/5/2023 9/1/2023 9/2/2023 9/4/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		12		0		12				10.0%	25	8.4
	2	0		0		0		5		10		15								
	3	0		0		0		4		9		17								
	4	0		0		0		5		11		17								
	5	0		0		0		3		6		0		17						
	6	0		0		0		3		10		0		16						
	7	0		0		0		6		8		0		0	X					
	8	0		0		0		0		0		7		0						
	9	0		0		0		6		6		0		9						
	10	0		0		5		0		9		16								
1.56	1	0		0		0		7		7		0		16				0.0%	29	3.9
	2	0		0		0		5		9		17								
	3	0		0		0		5		4		19								
	4	0		0		0		6		10		15								
	5	0		0		0		2		13		0		16						
	6	0		0		0		3		7		0		18						
	7	0		0		0		4		15		0		18						
	8	0		0		0		8		6		0		14						
	9	0		0		0		4		6		0		16						
	10	0		0		0		0		5		17		0						
3.13	1	0		0		0		7		12		0		15				20.0%	27	10.2
	2	0		0		0		6		13		14								
	3	0		0	X															
	4	0		0		0		3		6		16								
	5	0		0		0		3		11		0		17	X					
	6	0		0		0		6		10		0		19						
	7	0		0		0		3		7		0		16						
	8	0		0		0		6		9		0		16						
	9	0		0		0		4		10		0		18						
	10	0		0		0		5		8		12								
6.25	1	0		0		0		6		11		0		18				0.0%	28	10.3
	2	0		0		0		9		14		10		0						
	3	0		0		0		7		15		19								
	4	0		0		0		5		12		10								
	5	0		0		0		2		0		0		3						
	6	0		0		0		5		10		0		21						
	7	0		0		0		4		11		0		15						
	8	0		0		0		5		9		0		14						
	9	0		0		0		7		10		0		0						
	10	0		0		0		5		11		12								
12.5	1	0		0		0		5		10		0		18				0.0%	34	2.0
	2	0		0		0		6		12		18								
	3	0		0		0		5		9		20								
	4	0		0		0		6		12		0		16						
	5	0		0		0		6		9		0		21						
	6	0		0		0		5		12		0		19						
	7	0		0		0		6		13		0		16						
	8	0		0		0		8		8		0		15						
	9	0		0		0		4		9		0		18						
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
25	1	0		0		0		6		10		0		19				10.0%	29	6.1
	2	0		0		0		5		14		14								
	3	0		0		0		4		11		16								
	4	0		0		0		4		8		0		17						
	5	0		0		0		6		4		4								
	6	0		0		0		3		7		0		20						
	7	0		0		0		4		14		0		6						
	8	0		0		0		7		6		0		17						
	9	0		0		0		5		12		0		16						
	10	0		0		0		0		13		13		0	X					
50	1	0		0		0		6		13		0		16				10.0%	26	9.4
	2	0		0		0		7		11		12								
	3	0		0		0		5		9		14								
	4	0		0		0		4		8		0		16						
	5	0		0		0		6		6		0		17						
	6	0		0		0		4		0		12		11						
	7	0		0		0		6		8		0		13						
	8	0		0		0	X													
	9	0		0		0		6		8		0		12						
	10	0		0		0		7		11		10								
100	1	0		0		0		5		9		0		13				0.0%	26	5.1
	2	0		0		0		8		10		17								
	3	0		0		0		6		7		15								
	4	0		0		0		6		7		0		13						
	5	0		0		0		4		0		8		10						
	6	0		0		0		6		8		0		12						
	7	0		0		0		4		9		0		16						
	8	0		0		0		6		5		4								
	9	0		0		0		6		11		8								
	10	0		0		0		5		10		12								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/08/31	25	8.0	7.1	23/09/01	26	7.4	6.2
1.56		25	7.9	7.1		26	7.2	6.1
3.13		25	7.7	7.2		26	7.1	6.2
6.25		25	7.6	7.2		26	7.1	6.2
12.5		24	7.5	7.3		26	7.1	6.2
25		24	7.2	7.4		26	7.2	6.3
50		24	7.0	7.6		26	7.2	6.3
100		24	6.7	8.1		26	7.1	6.3
Control	23/09/01	24	8.1	7.3	23/09/02	25	7.8	6.2
1.56		25	7.7	7.4		25	7.5	6.0
3.13		25	7.6	7.4		25	7.3	6.1
6.25		25	7.5	7.5		25	7.2	6.1
12.5		24	7.3	7.5		25	7.2	6.1
25		24	7.2	7.6		25	7.2	6.1
50		24	7.0	7.7		25	7.5	6.1
100		24	6.8	7.9		25	7.3	6.1
Control	23/09/02	24	8.2	7.3	23/09/03	25	7.7	6.1
1.56		25	8.0	7.3		25	7.5	5.8
3.13		25	7.9	7.4		25	7.4	5.8
6.25		25	7.7	7.4		25	7.3	5.7
12.5		25	7.5	7.5		25	7.2	5.7
25		24	7.3	7.5		25	7.3	5.8
50		24	7.0	7.7		25	7.3	5.9
100		24	6.8	8.0		24	7.3	5.8
Control	23/09/03	24	8.1	7.2	23/09/04	25	7.7	6.4
1.56		25	8.1	7.1		25	7.4	5.9
3.13		25	7.9	7.1		25	7.3	5.9
6.25		25	7.8	7.2		25	7.2	5.7
12.5		25	7.6	7.2		25	7.1	5.7
25		25	7.3	7.3		25	7.2	5.8
50		25	7.1	7.4		25	7.1	5.7
100		25	6.8	7.5		25	7.2	5.7
Control	23/09/04	24	8.0	7.5	23/09/05	24	7.5	5.7
1.56		25	7.8	7.5		25	7.4	5.6
3.13		25	7.7	7.5		24	7.3	5.7
6.25		25	7.6	7.6		25	7.3	5.7
12.5		25	7.4	7.7		25	7.2	5.8
25		24	7.3	7.8		24	7.3	5.8
50		24	7.0	7.9		25	7.3	5.8
100		24	6.8	8.2		24	7.4	6.5
Control	23/09/05	25	8.6	7.0	23/09/06	26	7.4	5.7
1.56		25	8.3	7.1		26	7.4	5.3
3.13		25	8.1	7.2		26	7.4	5.7
6.25		25	7.9	7.3		26	7.3	5.5
12.5		25	7.7	7.3		26	7.4	5.6
25		25	7.4	7.4		26	7.4	5.6
50		24	7.2	7.6		26	7.4	5.6
100		24	6.9	8.0		25	7.4	5.4
Control	23/09/06	25	8.0	7.1	23/09/07	26	7.3	2.1
1.56		25	7.9	7.1		26	7.2	1.7
3.13		25	7.8	7.0		26	7.1	1.6
6.25		25	7.7	7.1		26	7.1	1.2
12.5		25	7.5	7.1		26	7.1	1.7
25		25	7.3	7.2		26	7.1	1.5
50		25	7.1	7.4		26	7.2	1.5
100		25	6.9	7.6		26	7.4	4.1
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV065
Client Sample ID: 1645-67
Date sample collected: 8/28/2023
Test Performed By: CSH, KLY, KMG, NM9, SVC, THR
Test Initiation Date: 8/31/2023
Test End Date: 9/7/2023
Dates when subsamples used: 8/31/2023, 9/1/2023, 9/2/2023, 9/3/2023, 9/4/2023, 9/5/2023, 9/6/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.9 **Temperature (°C):** 24
pH(pH units): 6.8 **Conductivity (µS/cm):** 929

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	3.13-9
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13% and 6.25% Concentrations analyzed with 9 organisms each.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/31/2023 9/4/2023 9/1/2023 9/5/2023 9/2/2023 9/6/2023 9/3/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		15		0		15				0.0%	31	6.3
	2	0		0		0		4		16		0		17						
	3	0		0		0		2		8		0		9						
	4	0		0		0		6		11		0		10						
	5	0		0		0		6		15		0		16						
	6	0		0		0		6		13		0		19						
	7	0		0		0		3		10		0		14						
	8	0		0		0		3		10		0		11						
	9	0		0		0		6		13		0		12						
	10	0		0		0		5		11		14								
1.56	1	0		0		0		5		11		0		15				0.0%	31	3.7
	2	0		0		0		4		10		0		14						
	3	0		0		0		5		10		0		16						
	4	0		0		0		5		8		0		14						
	5	0		0		0		6		13		0		16						
	6	0		0		0		5		12		0		16						
	7	0		0		0		6		10		0		9						
	8	0		0		0		5		12		0		12						
	9	0		0		0		6		13		0		14						
	10	0		0		0		8		12		0		17						
3.13	1	0		0		0		4		12		0		20				0.0%	30	7.4
	2	0		0		0		4		15		0		20						
	3	0		0		0		3		12		0		15						
	4	0		0		0		4		10		0		14						
	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	6	0		0		0		4		12		0		12						
	7	0		0		0		6		14		0		10						
	8	0		0		0		6		13		0		10						
	9	0		0		0		3		10		0		0						
	10	0		0		0		6		12		17								
6.25	1	0		0		0		6		10		0		14				0.0%	29	2.3
	2	0		0		0		4		9		0		15						
	3	0		0		0		3		10		0		13						
	4	0		0		0		5		12		0		12						
	5	0		0		0		6		9		0		13						
	6	0		0		0		7		10		0		14						
	7	0		0		0		7		11		0		15						
	8	0		0		0		7		12		13								
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		4		11		0		12						
12.5	1	0		0		0		6		12		0		15				0.0%	28	3.2
	2	0		0		0		5		5		0		16						
	3	0		0		0		4		12		0		15						
	4	0		0		0		7		13		0		8						
	5	0		0		0		6		13		0		12						
	6	0		0		0		6		9		0		12						
	7	0		0		0		4		8		0		11						
	8	0		0		0		5		10		0		12						
	9	0		0		0		7		9		16								
	10	0		0		0		5		8		13								
25	1	0		0		0		6		11		0		12				0.0%	30	4.2
	2	0		0		0		5		11		0		13						
	3	0		0		4		3		9		0		14						
	4	0		0		0		6		10		0		12						
	5	0		0		0		5		8		0		15						
	6	0		0		0		5		12		0		13						
	7	0		0		0		3		8		0		14						
	8	0		0		0		5		13		16								
	9	0		0		0		4		11		0		12						
	10	0		0		0		5		14		21								
50	1	0		0		0		3		9		0		12				10.0%	27	3.9
	2	0		0		0		5		10		0		12						
	3	0		0		0		3		9		0		16						
	4	0		0		0		6		13		0		12						
	5	0		0		0		4		13		0		14						
	6	0		0		0		7		10		0		12						
	7	0		0		0		5		9		0		14						
	8	0		0		0		5		13		0		7						
	9	0		0		0		4		12		9								
	10	0		0		0		0		6		12		0	X					
100	1	0		0		0		4		10		0		17				0.0%	32	2.8
	2	0		0		0		4		13		0		16						
	3	0		0		0		3		12		0		14						
	4	0		0		0		8		13		0		16						
	5	0		0		0		4		14		0		16						
	6	0		0		0		6		15		0		14						
	7	0		0		0		6		9		0		15						
	8	0		0		0		3		14		0		15						
	9	0		0		0		4		14		14								
	10	0		0		0		6		9		0		13						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/08/31	24	7.9	7.1	23/09/01	25	7.6	6.3
1.56		25	7.8	7.0		26	7.4	6.2
3.13		25	7.6	7.1		25	7.3	6.2
6.25		25	7.5	7.2		26	7.3	6.3
12.5		24	7.4	7.3		26	7.2	6.4
25		24	7.2	7.4		25	7.1	6.4
50		24	7.1	7.7		25	7.1	6.5
100		24	6.8	8.6		25	7.2	6.4
Control	23/09/01	24	8.1	7.5	23/09/02	25	7.8	6.3
1.56		25	7.9	7.4		25	7.5	6.2
3.13		25	7.7	7.4		25	7.4	6.3
6.25		25	7.6	7.5		25	7.2	6.3
12.5		24	7.5	7.5		25	7.4	6.3
25		24	7.3	7.6		25	7.3	6.3
50		24	7.1	7.8		25	7.4	6.3
100		24	6.9	8.2		24	7.3	6.3
Control	23/09/02	24	8.1	7.4	23/09/03	25	7.9	6.2
1.56		25	8.0	7.3		25	7.7	6.0
3.13		25	7.9	7.4		25	7.6	6.0
6.25		25	7.7	7.4		26	7.5	6.0
12.5		24	7.6	7.5		25	7.4	6.1
25		24	7.4	7.6		25	7.3	6.2
50		24	7.1	7.9		25	7.4	6.3
100		24	6.9	8.5		24	7.3	6.3
Control	23/09/03	24	8.1	7.0	23/09/04	25	7.6	6.2
1.56		25	8.0	7.0		25	7.4	6.1
3.13		25	7.9	7.1		25	7.3	6.1
6.25		25	7.8	7.2		25	7.2	6.2
12.5		25	7.6	7.2		25	7.2	6.3
25		25	7.4	7.3		25	7.2	6.3
50		25	7.1	7.5		24	7.2	6.3
100		25	6.8	7.9		24	7.2	6.1
Control	23/09/04	25	8.1	7.3	23/09/05	25	7.7	6.2
1.56		25	7.9	7.4		25	7.5	6.0
3.13		25	7.8	7.4		25	7.4	6.2
6.25		25	7.7	7.5		25	7.3	6.1
12.5		25	7.5	7.6		25	7.3	6.1
25		24	7.4	7.7		25	7.3	6.1
50		24	7.2	7.9		24	7.3	6.2
100		24	6.9	8.5		24	7.4	6.2
Control	23/09/05	25	8.1	7.0	23/09/06	26	7.3	5.7
1.56		25	8.0	7.1		26	7.3	5.6
3.13		25	7.9	7.1		26	7.3	5.8
6.25		25	7.8	7.2		26	7.3	5.9
12.5		25	7.7	7.3		26	7.4	5.8
25		24	7.5	7.4		25	7.3	5.9
50		24	7.3	7.7		25	7.4	5.7
100		24	7.0	8.3		25	7.4	5.6
Control	23/09/06	25	7.8	7.0	23/09/07	25	7.2	1.9
1.56		25	7.7	7.0		26	7.1	1.4
3.13		25	7.7	7.2		26	7.1	1.6
6.25		25	7.6	7.2		26	7.2	1.3
12.5		25	7.6	7.2		26	7.1	1.4
25		25	7.5	7.3		26	7.0	1.5
50		25	7.3	7.7		26	7.1	1.6
100		25	7.1	8.2		26	7.3	3.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV066
Client Sample ID: 1645-87
Date sample collected: 8/28/2023
Test Performed By: CSH, THR, KMG, KLY, NM9, SVC
Test Initiation Date: 8/31/2023
Test End Date: 9/7/2023
Dates when subsamples used: 8/31/2023, 9/1/2023, 9/2/2023, 9/3/2023, 9/4/2023, 9/5/2023, 9/6/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.1 **Temperature (°C):** 25
pH(pH units): 7.7 **Conductivity (µS/cm):** 288

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	N/A	N/A	Linear Interpolation	Log-x	N/A
	7 day Reproduction Result	IC25	>100	N/A	N/A	Linear Interpolation	Log-x	12.5-10
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

'After' renewal temperature for the 12.5% concentration on Day 6 was 27°C, which is higher than the compliance requirement for Ceriodaphnia testing.
However, while these were instantaneous values, the overall average temperatures during testing meets the requirements of 24-26°C. All other test quality indicators met requirements.
3.13% and 12.5% Concentrations analyzed with 9 organisms each.
Indigenous organisms removed via pipette 2023/09/05.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/31/2023 9/4/2023 9/1/2023 9/5/2023 9/2/2023 9/6/2023 9/3/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		3		12		0		17				0.0%	32	6.2
	2	0		0		0		4		11		0		20						
	3	0		0		0		4		12		0		0						
	4	0		0		0		4		9		0		15						
	5	0		0		0		7		12		0		16						
	6	0		0		0		7		13		0		16						
	7	0		0		0		4		9		0		16						
	8	0		0		0		5		14		0		17						
	9	0		0		0		6		10		16								
	10	0		0		0		5		13		18								
1.56	1	0		0		0		4		14		0		12				0.0%	32	4.3
	2	0		0		0		7		12		0		13						
	3	0		0		0		6		9		0		15						
	4	0		0		0		7		11		0		10						
	5	0		0		0		4		13		16		0						
	6	0		0		0		5		14		0		10						
	7	0		0		0		4		8		0		12						
	8	0		0		0		6		15		0		14						
	9	0		0		0		5		8		24								
	10	0		0		0		8		12		18								
3.13	1	0		0		0		4		13		0		15				0.0%	32	5.6
	2	0		0		0		5		11		0		17						
	3	0		0		0		7		12		0		16						
	4	0		0		0		4		13		0		16						
	5	0		0		0		5		11		0		14						
	6	0		0		0		2		8		0		8						
	7	0		0		0		6		10		21								
	8	0		0		0		5		11		19								
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		5		8		21								
6.25	1	0		0		0		4		10		0		10				0.0%	28	4.3
	2	0		0		0		6		11		0		12						
	3	0		0		0		5		8		0		10						
	4	0		0		0		5		9		0		12						
	5	0		0		0		3		12		13								
	6	0		0		0		4		10		0		14						
	7	0		0		0		7		11		0		15						
	8	0		0		0		3		14		18								
	9	0		0		0		7		11		13								
	10	0		0		0		5		12		5								
12.5	1	0		0		0		6		11		0		11				11.1%	26	10.5
	2	0		0		0		5		0		4		12						
	3	0		0		0		6		9		0		14						
	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	5	0		0		0		3		11		0		12						
	6	0		0		0		3		15		0		11						
	7	0		0		0		5		16		0		14						
	8	0		0		0		7		14		13								
	9	0		0		0		5		13		0		12						
	10	0		0	X															
25	1	0		0		0		5		16		0		15				10.0%	28	5.2
	2	0		0		0		7		12		0		12						
	3	0		0		0		4		9		0		13						
	4	0		0		0		5		8		0		10						
	5	0		0		0		5		16		0		8						
	6	0		0		0		6		11		0		14	X					
	7	0		0		0		4		13		0		0						
	8	0		0		0		6		12		13								
	9	0		0		0		6		6		16								
	10	0		0		0		7		10		12								
50	1	0		0		0		5		12		0		12	X			10.0%	27	4.4
	2	0		0		0		4		7		0		11						
	3	0		0		0		5		10		0		6						
	4	0		0		0		4		8		0		9						
	5	0		0		0		5		12		0		12						
	6	0		0		0		5		9		0		13						
	7	0		0		0		6		11		0		9						
	8	0		0		0		6		10		17								
	9	0		0		0		5		8		14								
	10	0		0		0		6		13		14								
100	1	0		0		0		6		5		0		14				0.0%	29	3.5
	2	0		0		0		6		8		0		16						
	3	0		0		0		6		9		0		15						
	4	0		0		0		6		10		0		13						
	5	0		0		0		5		14		0		14						
	6	0		0		0		6		10		0		16						
	7	0		0		0		4		6		0		14						
	8	0		0		0		5		10		18								
	9	0		0		0		7		9		8								
	10	0		0		0		5		11		12								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/08/31	25	7.9	7.0	23/09/01	25	7.4	6.4
1.56		25	7.7	7.1		25	7.2	6.4
3.13		25	7.5	7.1		25	7.2	6.4
6.25		24	7.5	7.2		25	7.2	6.4
12.5		24	7.5	7.3		25	7.3	6.7
25		24	7.5	7.4		25	7.2	6.5
50		24	7.5	7.8		25	7.2	6.6
100		24	7.6	8.8		25	7.1	6.5
Control	23/09/01	24	8.0	7.3	23/09/02	25	7.6	6.4
1.56		25	7.8	7.4		25	7.3	6.1
3.13		25	7.7	7.4		25	7.4	6.4
6.25		25	7.6	7.5		25	7.2	6.2
12.5		24	7.6	7.5		25	7.3	6.2
25		24	7.6	7.7		25	7.2	6.1
50		24	7.5	8.0		24	7.1	6.0
100		24	7.5	8.6		24	7.0	5.8
Control	23/09/02	24	8.1	7.4	23/09/03	25	7.7	6.5
1.56		25	8.0	7.4		25	7.5	6.3
3.13		24	7.9	7.4		25	7.5	6.3
6.25		24	7.8	7.5		25	7.3	6.2
12.5		24	7.8	7.6		25	7.3	6.3
25		24	7.7	7.7		25	7.2	6.3
50		24	7.7	8.0		25	7.2	6.4
100		24	7.6	8.7		24	7.1	6.3
Control	23/09/03	24	8.1	7.1	23/09/04	25	7.7	6.3
1.56		25	7.9	7.1		25	7.4	6.1
3.13		25	7.9	7.2		24	7.3	6.2
6.25		25	7.7	7.3		25	7.2	6.1
12.5		25	7.7	7.3		25	7.3	6.1
25		24	7.6	7.4		25	7.1	6.1
50		25	7.6	7.6		24	7.1	6.1
100		25	7.5	8.0		24	7.0	6.0
Control	23/09/04	25	8.1	7.3	23/09/05	24	7.6	6.1
1.56		25	7.9	7.4		25	7.4	5.9
3.13		25	7.7	7.5		24	7.3	6.0
6.25		25	7.7	7.5		25	7.3	5.9
12.5		24	7.6	7.6		25	7.2	6.0
25		24	7.6	7.7		24	7.2	5.9
50		24	7.6	7.9		24	7.2	5.8
100		24	7.5	8.3		24	7.1	5.7
Control	23/09/05	25	8.0	7.0	23/09/06	26	7.4	6.2
1.56		25	8.0	7.1		26	7.3	5.8
3.13		25	7.9	7.2		26	7.4	5.8
6.25		25	7.8	7.3		26	7.3	5.7
12.5		25	7.8	7.3		27	7.3	6.2
25		24	7.8	7.5		26	7.3	5.9
50		24	7.7	7.8		26	7.2	5.9
100		24	7.7	8.5		26	7.2	5.8
Control	23/09/06	25	7.9	7.1	23/09/07	25	7.4	2.0
1.56		25	7.9	7.1		26	7.1	1.9
3.13		25	7.7	7.1		26	7.0	1.6
6.25		25	7.8	7.2		26	7.0	1.5
12.5		25	7.8	7.3		25	7.0	1.8
25		25	7.7	7.4		25	6.9	1.7
50		25	7.7	7.6		25	6.9	1.6
100		25	7.7	8.3		25	7.1	3.8
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV067
Client Sample ID: 1645-47
Date sample collected: 8/28/2023
Test Performed By: CSH, THR, NM9, KMG, KLY, SVC
Test Initiation Date: 8/31/2023
Test End Date: 9/7/2023
Dates when subsamples used: 8/31/2023, 9/1/2023, 9/2/2023, 9/3/2023, 9/4/2023, 9/5/2023, 9/6/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.1 **Temperature (°C):** 25
pH(pH units): 7.0 **Conductivity (µS/cm):** 383

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control Concentration analyzed with 9 organisms.

Data was corrected for hormesis calculations of IC25 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	8/31/2023 9/4/2023 9/1/2023 9/5/2023 9/2/2023 9/6/2023 9/3/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		8		12		0		9				0.0%	27	5.6
	2	0		0		0		3		7		0		13						
	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	4	0		0		0		4		17		0		15						
	5	0		0		0		6		10		0		0						
	6	0		0		0		5		12		0		13						
	7	0		0		0		6		11		0		12						
	8	0		0		0		2		8		0		13						
	9	0		0		0		6		9		0		11						
	10	0		0		0		6		9		0		12						
1.56	1	0		0		0		3		11		0		16				10.0%	29	4.8
	2	0		0		0		6		13		0		15						
	3	0		0		0		2		15		0		16	X					
	4	0		0		0		4		0		0		15						
	5	0		0		0		6		12		0		12						
	6	0		0		0		4		11		0		14						
	7	0		0		0		5		9		0		10						
	8	0		0		0		7		10		0		17						
	9	0		0		0		6		5		0		15						
	10	0		0		0		6		9		0		16						
3.13	1	0		0		0		3		12		0		12				0.0%	28	6.9
	2	0		0		0		4		10		0		15						
	3	0		0		0		3		11		0		16						
	4	0		0		0		6		13		0		17						
	5	0		0		0		5		10		0		15						
	6	0		0		0		5		10		0		16						
	7	0		0		0		4		4		0		2						
	8	0		0		0		6		10		0		12						
	9	0		0		0		5		10		0		16						
	10	0		0		0		7		8		0		16						
6.25	1	0		0		0		5		14		0		13				10.0%	30	5.7
	2	0		0		0		3		5		0		9						
	3	0		0		0		7		10		0		17						
	4	0		0		0		6		12		0		16						
	5	0		0		0		7		11		0		16						
	6	0		0		0		6		6		0		18						
	7	0		0		0		6		11		0		17						
	8	0		0		0		4		10		0		14						
	9	0		0		0		5		8		0		10	X					
	10	0		0		0		8		9		0		14						
12.5	1	0		0		0		5		12		0		10				10.0%	24	5.2
	2	0		0		0		0		5		7		0	X					
	3	0		0		0		3		6		0		12						
	4	0		0		0		6		13		0		10						
	5	0		0		0		6		11		0		10						
	6	0		0		0		6		12		0		12						
	7	0		0		0		6		4		0		13						
	8	0		0		0		8		8		0		10						
	9	0		0		0		6		10		0		10						
	10	0		0		0		5		7		0		11						
25	1	0		0		0		6		14		0		12				20.0%	20	12.9
	2	0		0		0		4		6		0		11						
	3	0		0		0		8		13		0		14						
	4	0		0		0		6		0		0		0						
	5	0		0		0		8		9		0		8						
	6	0		0		0		6		11		0		15						
	7	0		0		0		4		0	X									
	8	0		0		0		8		11		0		11						
	9	0		0		0		5		7		0		7						
	10	0		0		0	X													
50	1	0		0		0		5		17		0		11				0.0%	25	4.6
	2	0		0		0		4		8		0		12						
	3	0		0		0		6		11		0		10						
	4	0		0		0		7		11		0		7						
	5	0		0		0		7		6		0		10						
	6	0		0		0		5		9		0		7						
	7	0		0		0		5		6		0		9						
	8	0		0		0		6		10		0		10						
	9	0		0		0		3		6		0		11						
	10	0		0		0		8		11		0		13						
100	1	0		0		0		6		9		0		15				10.0%	21	9.5
	2	0		0		0		5		7		0		7						
	3	0		0		0		6		12		0		16						
	4	0		0		0		5		10		0		15						
	5	0		0		0		6		0		0		0						
	6	0		0		0		5		8		0		12						
	7	0		0		0		4		11		0		4						
	8	0		0		0		3		10		0		2						
	9	0		0		0		5		6		0		10						
	10	0		0		0		4		3	X									

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/08/31	25	7.7	7.1	23/09/01	25	7.9	7.2
1.56		24	7.6	7.1		25	7.7	7.2
3.13		24	7.5	7.1		25	7.5	7.1
6.25		24	7.4	7.2		25	7.4	7.1
12.5		24	7.4	7.3		25	7.3	7.1
25		24	7.3	7.5		25	7.5	7.3
50		24	7.2	7.9		25	7.2	7.1
100		25	6.9	8.7		25	7.3	7.6
Control	23/09/01	25	8.0	7.3	23/09/02	25	7.9	6.8
1.56		25	7.9	7.4		25	7.7	6.7
3.13		25	7.8	7.4		25	7.5	6.8
6.25		25	7.7	7.5		25	7.5	6.7
12.5		25	7.6	7.5		25	7.3	6.6
25		24	7.5	7.7		25	7.4	6.7
50		24	7.3	7.9		25	7.2	6.6
100		24	7.0	8.4		24	7.2	7.0
Control	23/09/02	25	8.1	7.3	23/09/03	25	7.9	6.7
1.56		25	8.0	7.3		25	7.9	6.7
3.13		25	7.8	7.4		25	7.7	6.7
6.25		25	7.7	7.4		25	7.3	6.5
12.5		24	7.6	7.5		25	7.4	6.3
25		24	7.6	7.7		25	7.4	6.6
50		24	7.4	7.9		25	7.3	6.7
100		24	7.1	8.5		24	7.2	6.9
Control	23/09/03	24	8.0	7.1	23/09/04	25	7.9	6.8
1.56		25	8.0	7.1		25	7.8	6.7
3.13		25	7.8	7.2		24	7.6	6.7
6.25		25	7.7	7.2		25	7.5	6.6
12.5		25	7.6	7.3		25	7.4	6.7
25		24	7.5	7.4		25	7.3	6.7
50		24	7.3	7.5		24	7.1	6.8
100		25	7.0	8.0		24	7.0	6.9
Control	23/09/04	25	8.0	7.3	23/09/05	24	7.9	6.1
1.56		25	8.0	7.3		25	7.5	5.9
3.13		25	7.8	7.4		24	7.4	5.8
6.25		25	7.8	7.4		25	7.3	5.7
12.5		25	7.6	7.6		25	7.2	5.6
25		24	7.5	7.7		25	7.1	5.7
50		24	7.3	7.9		24	7.0	5.6
100		24	7.0	8.4		24	6.9	5.8
Control	23/09/05	25	8.1	7.0	23/09/06	26	7.4	5.6
1.56		25	8.0	7.1		26	7.3	5.6
3.13		25	8.0	7.2		26	7.2	5.2
6.25		25	7.9	7.2		25	7.2	5.0
12.5		25	7.7	7.3		25	7.3	5.2
25		24	7.6	7.5		25	7.3	5.4
50		24	7.4	7.7		25	7.1	5.2
100		24	7.1	8.3		25	7.0	5.3
Control	23/09/06	25	8.0	7.0	23/09/07	26	7.1	2.1
1.56		25	7.9	7.1		26	7.1	1.5
3.13		25	7.8	7.1		26	7.0	1.4
6.25		25	7.7	7.2		26	6.9	1.4
12.5		25	7.6	7.2		26	6.9	1.4
25		25	7.6	7.3		26	7.0	1.9
50		25	7.4	7.5		26	6.9	1.7
100		25	7.1	8.1		26	6.9	4.2
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV069
Client Sample ID: 1645-68
Date sample collected: 8/29/2023
Test Performed By: NM9, CSH, KLY, KMG, THR
Test Initiation Date: 9/1/2023
Test End Date: 9/7/2023
Dates when subsamples used: 9/1/2023 9/5/2023
9/2/2023 9/6/2023
9/3/2023
9/4/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.0
Temperature (°C): 25
pH(pH units): 6.6
Conductivity (µS/cm): 576

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	N/A	N/A	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	40.7	26.3	65.9	NLR: 4P Log-Logistic+Hormesis	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

1.56% concentration analyzed with 9 organisms. 100% concentration analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/1/2023 9/5/2023 9/2/2023 9/6/2023 9/3/2023 9/4/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		4		0		14		0						10.0%	23	7.2
	2	0		0		5		13		0		16								
	3	0		0		6		8		0		15								
	4	0		0		4		8		0		14								
	5	0		0		5		0		0		9								
	6	0		0		5		0		11		8								
	7	0		0		5		0		10		0	X							
	8	0		0		6		0		10		0								
	9	0		0		3		14		0		15								
	10	0		0		5		7		0		10								
1.56	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	27	5.7
	2	0		0		7		13		0		17								
	3	0		0		3		0		8		13								
	4	0		0		8		0		0		10								
	5	0		0		8		5		0		17								
	6	0		0		4		0		14		5								
	7	0		0		5		0		12		11								
	8	0		0		7		10		0		14								
	9	0		0		6		7		0		11								
	10	0		0		4		10		0		18								
3.13	1	0		0		3		2		12								0.0%	26	4.4
	2	0		0		3		15		0		8								
	3	0		0		6		10		0		14								
	4	0		0		4		0		13		13								
	5	0		0		4		14		0		6								
	6	0		0		5		7		0		14								
	7	0		0		6		0		12		10								
	8	0		0		6		0		12		10								
	9	0		0		6		13		0		0								
	10	0		0		7		0		9		12								
6.25	1	0		0		4		0		12		5						0.0%	28	3.8
	2	0		0		6		12		0		16								
	3	0		0		3		11		0		14								
	4	0		0		4		6		0		14								
	5	0		0		4		5		0		16								
	6	0		0		4		0		11		14								
	7	0		0		6		0		12		13								
	8	0		0		7		0		12		12								
	9	0		0		6		10		0		14								
	10	0		0		4		8		0		16								
12.5	1	0		0		5		0		12		0	X					40.0%	23	9.4
	2	0		0		5		13		0		17	X							
	3	0		0		0		2		0		2	X							
	4	0		0		6		0		12		12								
	5	0		0		3		11		0		9								
	6	0		0		4		10		0		13								
	7	0		0		7		0		12		8	X							
	8	0		0		2		7		0		7								
	9	0		0		5		11		0		15								
	10	0		0		5		2		8										
25	1	0		0		7		5		0		6						20.0%	20	6.8
	2	0		0		4		6		0		13								
	3	0		0		4		9		0		18								
	4	0		0		5		0		14		7								
	5	0		0		7		4		0		5								
	6	0		0		6		5		0		9								
	7	0		0		7		0		12		0								
	8	0		0		6		0		13		0								
	9	0		0		8		0		10		0	X							
	10	0		0		5	X													
50	1	0		0		4		0		12		0						0.0%	15	3.5
	2	0		0		5		10		0		8								
	3	0		0		6		7		0		0								
	4	0		0		4		0		10		0								
	5	0		0		5		7		0		0								
	6	0		0		6		5		2										
	7	0		0		7		5		0		0								
	8	0		0		3		8		7										
	9	0		0		5		8		0		0								
	10	0		0		4		4		9										
100	1	0		0		4		0		4		9						11.1%	15	6.2
	2	0		0		6		0		4		0								
	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	4	0		0		3		0		0		8								
	5	0		0		5		5		0		7								
	6	0		0		2		0		7		9								
	7	0		0		4		0		7		10								
	8	0		0		7		4		0		10								
	9	0		0		5		0		0		12								
	10	0		0		2		0		0	X									

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/01	24	7.6	7.5	23/09/02	25	7.6	6.3
1.56		24	7.6	7.5		25	7.3	6.3
3.13		24	7.5	7.5		25	7.3	6.3
6.25		24	7.5	7.6		25	7.3	6.4
12.5		24	7.4	7.6		25	7.2	6.5
25		24	7.3	7.6		25	7.1	6.3
50		24	7.0	7.7		24	7.1	6.5
100		24	6.6	7.8		24	6.9	6.4
Control	23/09/02	25	8.1	7.3	23/09/03	24	7.5	6.2
1.56		25	8.0	7.3		24	7.3	6.2
3.13		25	7.9	7.4		24	7.3	6.4
6.25		25	7.8	7.4		24	7.3	6.2
12.5		25	7.6	7.5		24	7.2	6.2
25		24	7.4	7.6		24	7.3	6.5
50		24	7.1	7.8		24	7.2	6.5
100		24	6.7	8.3		24	7.0	6.3
Control	23/09/03	24	8.0	7.1	23/09/04	25	7.6	6.1
1.56		25	7.9	7.1		26	7.6	6.0
3.13		25	7.7	7.2		25	7.4	6.1
6.25		25	7.7	7.2		25	7.4	6.1
12.5		25	7.6	7.3		25	7.2	6.1
25		24	7.4	7.4		25	7.3	6.3
50		25	7.1	7.4		24	7.1	6.5
100		25	6.7	7.7		24	6.9	6.3
Control	23/09/04	25	8.0	7.2	23/09/05	26	7.5	5.8
1.56		25	7.9	7.3		26	7.3	5.7
3.13		25	7.7	7.4		26	7.2	5.7
6.25		25	7.6	7.6		26	7.2	5.7
12.5		24	7.5	7.6		26	7.2	5.8
25		24	7.3	7.7		26	7.1	5.8
50		24	7.1	7.9		25	7.0	5.8
100		24	6.6	8.3		25	6.8	5.6
Control	23/09/05	25	8.0	7.1	23/09/06	26	7.4	5.4
1.56		25	7.9	7.1		26	7.2	5.3
3.13		25	7.9	7.2		26	7.2	5.1
6.25		25	7.8	7.2		26	7.2	5.4
12.5		24	7.6	7.5		26	7.2	5.4
25		24	7.5	7.5		26	7.2	5.4
50		24	7.2	7.6		25	7.1	5.5
100		24	6.8	8.1		25	7.0	5.6
Control	23/09/06	25	8.0	7.2	23/09/07	25	7.2	2.4
1.56		25	7.9	7.2		26	7.1	2.1
3.13		25	7.8	7.2		26	7.2	1.7
6.25		25	7.8	7.2		25	7.1	2.0
12.5		25	7.6	7.3		26	7.1	1.8
25		25	7.5	7.3		25	7.0	1.8
50		25	7.3	7.5		26	7.0	1.7
100		24	6.9	8.0		25	6.9	3.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C367471-BXV070
Client Sample ID: 1645-44
Date sample collected: 8/29/2023
Test Performed By: NM9, CSH, KLY, KMG
Test Initiation Date: 9/1/2023
Test End Date: 9/7/2023
Dates when subsamples used: 9/1/2023 9/5/2023
9/2/2023 9/6/2023
9/3/2023
9/4/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 8.4
Temperature (°C): 25
pH(pH units): 6.6
Conductivity (µS/cm): 254

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.32	1.16	1.51	Untrimmed Spearman-Karber	Log-X	n/a
	7 day Reproduction Result	IC50	1.15	0.87	1.29	Linear Interpolation	Log-X	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.45	1.14	1.83	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/08/18					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13% concentration analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	1.7
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	26
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/1/2023 9/5/2023 9/2/2023 9/6/2023 9/3/2023 9/4/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		6		12		0		18						10.0%	28	8.1
	2	0		0		7		0		12		21								
	3	0		0		3		11		0		14								
	4	0		0		5		0		0		21								
	5	0		0		3		0		9		15								
	6	0		0		5		13		0	X									
	7	0		0		6		0		4		4								
	8	0		0		5		0		10		14								
	9	0		0		6		0		13		18								
	10	0		0		3		4		0		20								
1.56	1	0		0		4		0	X									10.0%	28	10.5
	2	0		0		6		0		7		11								
	3	0		0		5		0		10		21								
	4	0		0		3		13		0		24								
	5	0		0		4		15		0		15								
	6	0		0		6		10		0		16								
	7	0		0		5		0		6		16								
	8	0		0		5		0		4		10								
	9	0		0		7		0		8		9								
	10	0		0		7		0		10		18								
3.13	1	0		0		8		10		0	X							33.3%	24	9.5
	2	0		0		4		0		11		18								
	3	0		0		3		0		9		19								
	4	0		0		6		5		0		18								
	5	0		0		6		11		0		17								
	6	0		0		7		0		5		10								
	7	0		0		5		0		11	X									
	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	9	0		0		7		5		0		18								
	10	0		0		4		0		2	X									
6.25	1	0		0		6		11		0		7						0.0%	28	5.8
	2	0		0		8		0		6		21								
	3	0		0		5		0		9		12								
	4	0		0		5		5		9		16								
	5	0		0		4		10		0		17								
	6	0		0		5		7		0		10								
	7	0		0		3		0		0		20								
	8	0		0		4		0		5		12								
	9	0		0		3		0		10		16								
	10	0		0		4		11		0		21								
12.5	1	0		0		6		13		0	X							20.0%	27	8.5
	2	0		0		8		0		6		10								
	3	0		0		6		0		10		21								
	4	0		0		4		0		6		15								
	5	0		0		5		12		0		20								
	6	0		0		5		10		0		9								
	7	0		0		4		6		0		0	X							
	8	0		0		5		0		5		14								
	9	0		0		6		0		8		20								
	10	0		0		3		0		10		18								
25	1	0		0		7		10		0		0	X					10.0%	27	11.5
	2	0		0		5		0		0		0								
	3	0		0		4		0		9		9								
	4	0		0		5		0		13		18								
	5	0		0		3		8		0		18								
	6	0		0		5		6		0		17								
	7	0		0		5		9		0		7								
	8	0		0		8		8		12		16								
	9	0		0		6		0		11		8								
	10	0		0		6		0		13		21								
50	1	0		0		5		11		0		10						40.0%	18	11.0
	2	0		0		6		0		9		0								
	3	0		0		3		0		12	X									
	4	0		0		4		0		10		19								
	5	0		0		5		6		0		0	X							
	6	0		0		7		0		10		7								
	7	0		0		6		0		5		7								
	8	0		0		4		0		0	X									
	9	0		0		0	X													
	10	0		0		5		10		0		16								
100	1	0		0		5		12		0		22						0.0%	37	2.4
	2	0		0		4		0		12		24								
	3	0		0		6		13		0		18								
	4	0		0		4		12		0		21								
	5	0		0		5		16		0		18								
	6	0		0		6		12		0		21								
	7	0		0		6		0		12		17								
	8	0		0		5		0		11		17								
	9	0		0		6		8		0		20								
	10	0		0		4		11		0		24								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/01	24	8.1	7.3	23/09/02	26	7.5	6.3
1.56		25	7.9	7.4		26	7.4	6.3
3.13		25	7.8	7.4		26	7.3	6.4
6.25		25	7.7	7.5		26	7.2	6.4
12.5		24	7.6	7.5		25	7.3	6.4
25		24	7.5	7.6		25	7.2	6.5
50		24	7.3	7.8		25	7.1	6.4
100		24	6.7	8.2		25	6.8	6.5
Control	23/09/02	25	8.2	7.3	23/09/03	24	7.5	6.1
1.56		25	8.1	7.3		24	7.4	5.9
3.13		25	8.0	7.3		24	7.3	6.1
6.25		25	7.8	7.4		24	7.3	6.1
12.5		25	7.7	7.5		24	7.2	6.1
25		24	7.5	7.2		24	7.1	6.2
50		24	7.4	7.8		24	7.0	6.2
100		24	6.9	8.6		24	6.7	6.1
Control	23/09/03	25	8.1	7.1	23/09/04	26	7.6	6.2
1.56		25	7.9	7.1		26	7.4	6.4
3.13		25	7.8	7.1		26	7.3	6.4
6.25		25	7.8	7.2		26	7.2	6.3
12.5		25	7.7	7.3		26	7.2	6.5
25		25	7.5	7.3		25	7.1	6.5
50		25	7.3	7.5		26	7.0	6.5
100		25	6.8	7.8		25	6.7	6.5
Control	23/09/04	24	8.0	7.3	23/09/05	25	7.2	5.6
1.56		25	7.9	7.4		26	7.3	5.6
3.13		25	7.8	7.5		25	7.3	5.6
6.25		25	7.7	7.5		25	7.1	5.5
12.5		24	7.6	7.6		25	7.2	5.7
25		24	7.5	7.7		25	7.1	5.6
50		24	7.3	7.9		26	7.1	5.8
100		24	6.9	8.5		25	6.8	5.9
Control	23/09/05	25	8.1	7.1	23/09/06	26	7.2	3.3
1.56		25	8.0	7.1		26	7.1	2.3
3.13		25	7.9	7.2		26	7.0	2.1
6.25		24	7.8	7.3		26	7.0	2.5
12.5		24	7.7	7.4		26	7.0	2.0
25		24	7.6	7.5		26	6.9	2.0
50		24	7.4	7.8		26	6.9	1.9
100		24	6.8	8.5		26	6.9	3.8
Control	23/09/06	25	7.9	7.1	23/09/07	25	7.7	5.4
1.56		25	7.8	7.2		25	7.7	5.5
3.13		25	7.7	7.2		25	7.6	5.4
6.25		25	7.7	7.3		25	7.4	5.2
12.5		25	7.6	7.3		25	7.4	5.5
25		25	7.5	7.4		25	7.3	5.3
50		25	7.3	7.6		25	7.3	5.4
100		24	6.9	8.2		25	6.8	4.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-68 AND 1645-44

SAMPLING DATE:

AUGUST 29, 2023

Prepared for:

Diavik Diamond Mines Inc.
P.O. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C367471
September 2023

Summary of Test Results for Samples from
Diavik Diamond Mines Ltd.
Sample Date: August 29, 2023
Job C367471

Sample: 1645-68

Test		IC25 or LC25 (%v/v)
Lemna minor:	Frond Increase	7.7 (5.2, 11.1)
	Dry Weight	11.5 (6.1, 20.3)
P. subcapitata:	Cell Yield	>90.9 (N/A, N/A)

N/A = Not available
95% confidence limits in parentheses

Sample: 1645-44

Test		IC25 or LC25 (%v/v)
Lemna minor:	Frond Increase	14.5 (8.7, 22.2)
	Dry Weight	>97 (<1.5, >97)
P. subcapitata:	Cell Yield	>90.9 (N/A, N/A)

N/A = Not available
95% confidence limits in parentheses

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The hardness, conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Lemna minor Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	2 samples
Sample Information	
Sample ID(s)	1645-68 and 1645-44
Sample collection date (y/m/d)	2023/Aug/29
Date (y/m/d)/time of sample receipt at lab	2023/Aug/29 @ 13:51
Test Organisms	
Species	*Lemna minor* (Landolt clone 7730)
Source	Axenic in-house culture started from organisms obtained from Canadian Phycological Culture Centre, CPCC #492
Growth medium used for culturing	Hoagland's E+ Medium
Age of culture at start of test	9 days
Appearance/Any unusual treatment of culture	Good. No unusual appearance or treatment of culture prior to use in test
Culture health monitoring	Mean number of fronds in health monitoring vessels (38) displayed a ≥8-fold increase by the end of 7 days in APHA medium. See "Plant Subculture and Acclimation for Tests" data sheet.
Acclimation time and test medium	Plants were acclimated to APHA medium 18-24 hours prior to testing
Test Conditions & Facilities	
Test method	EPS 1/RM/37 Second Edition - January 2007 BBY2SOP-00053 Lemna minor 7 Day Growth Inhibition Test
Test type	Static
Date test started (y/m/d)	2023/Aug/31
Date test completed (y/m/d)	2023/Sep/7
Test vessels	200 mL transparent polypropylene cups with plastic lids
Persons performing test	N. Shergill, N. Blassnitz, P. Howes, M. Hamad, S. Reddy
Test location	Temperature and photoperiod controlled room, under same conditions as culture vessels
Light intensity, quality & photoperiod	24 hour full spectrum fluorescent light: 65-89 µmol/(m^2s)
Rate and duration of preaeration	~100 bubbles/minute for 20 minutes
Procedure for pH adjustment	No pH adjustment of the samples
Procedure for filtration	The samples were not filtered
Control/dilution water (Test medium)	APHA medium
Chemicals added to control/dilution water	APHA Nutrient stocks A, B, and C, as described in method at 10ml/L Test medium prepared using Milli-Q water (ASTM type 1)

Type and quantity of chemicals added to test sample prior to testing (i.e., nutrient spiking)	APHA Nutrient stocks A, B, and C, as described in method at 10 ml/L
Number and concentration of test solutions	7 (97, 48.5, 24.2, 12.1, 6.0, 3.0, 1.5% v/v) plus one control
Volume and depth of solution in test vessels	150 mL & ≥4 cm
Number of replicates per concentration	4 (plus 1 for measurements)
Number of fronds/plant and Number of plants/test vessel	3 fronds per plant; 2 plants per test vessel
Sample pH before and after addition of APHA stocks A, B, and C	See "Test Data and Observations" sheet
Temperature of test solutions and control during the test	See "Test Data and Observations" sheet
pH of test solutions and control at test initiation and completion	See "Test Data and Observations" sheet
Test observation frequency	Plants were observed daily for growth, necrosis, chlorosis, algal growth, and any abnormalities
Test observations	**1645-68:** Plant growth appeared healthy in the Control and 1.5% up to the 6.0% v/v concentrations. Plant growth appeared dark green and light green in the Control and 1.5% up to the 97% v/v concentrations. Green algae was observed in the 1.5% up to the 97% v/v concentrations. Chlorosis was observed in 12.1% up to the 97% v/v concentrations. There were visible air bubbles in the 48.5% and 97% v/v concentrations at test completion. **1645-44:** Plant growth appeared healthy in the Control and 1.5% up to the 6.0% v/v concentrations. Plant growth appeared dark green and light green in the Control and 1.5% up to the 48.5% v/v concentrations. Plant growth appeared dark green in the 97% v/v concentration. Green algae was observed in the 1.5% up to the 48.5% v/v concentrations. Necrosis was observed in 12.1% up to the 97% v/v concentrations.
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.

Results	Results contained in this report refer only to the testing of samples as submitted.
Frond increase endpoint statistics	
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-68:** CETIS v2.1.2.3: Nonlinear Regression; 3P Log-Logistic model **1645-44:** CETIS v2.1.2.3: Nonlinear Regression; 3P Log-Logistic model
Weighting techniques applied?	**1645-68:** Normal **1645-44:** Normal
Residuals Analysis	**1645-68:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene's test results) **1645-44:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene's test results)
Frond increase in controls and in each treatment (mean ± SD)	See "Frond Increase" data sheet
Significant stimulation in sample	**1645-68:** No. See Dunnett Multiple Comparison Test in CETIS **1645-44:** No. See Dunnett Multiple Comparison Test in CETIS
Percent stimulation for frond increase in the test solutions	See "Frond Increase" spreadsheet
Any outliers and justification for their removal	**1645-68:** None **1645-44:** None
Dry weight endpoint statistics	
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-68:** CETIS v2.1.2.3: Nonlinear Regression; 3P Log-Logistic model **1645-44:** CETIS v2.1.2.3: Nonlinear Regression; 3P Log-Logistic model
Weighting techniques applied?	**1645-68:** Normal **1645-44:** Normal
Residuals Analysis	**1645-68:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene's test results) **1645-44:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene's test results)
Dry weights (mean ± SD)	See "Dry Weights" data sheet
Significant stimulation in sample	**1645-68:** No. See Dunnett Multiple Comparison Test in CETIS **1645-44:** No. See Dunnett Multiple Comparison Test in CETIS
Percent stimulation for dry weight in the test solutions	See "Dry Weights" data sheet
Any outliers and justification for their removal	**1645-68:** None **1645-44** None

Quality Assurance	
Test validity criteria • Average number of fronds in the control are ≥48 fronds • A minimum of an 8-fold frond increase	• Average number of fronds in Controls: **1645-68:** 82.0 **1645-44:** 110.8 • Amount of Frond Increase: **1645-68:** 13.7 fold **1645-44:** 18.5 fold
Reference Toxicant test: IC25 (95% CL) (µg Ni/L) for frond increase	10.2 (5.8, 16.3)
Reference toxicant test historic mean IC25 & 2SD range (µg Ni/L) for frond increase	11.3; 2SD range: (4.3, 30.1)
Invalid Reference toxicant test?	No
Date of Reference toxicant test and test duration	2023/Sep/08
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Test Code/ID: LM-4388-1323 / 10-3487-8238

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	06-1083-9658	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	300676167EF06A4F376E633AA5594A99	**Editor ID:**	002-543-972-3

Batch ID:	08-4151-5612	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:10	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 11:55	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 22h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2914-3510	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	1.5	3	2.121	66.7	9.653	12.70%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		1.5	6	1.531	2.814	9.653	CDF	0.5020	Non-Significant Effect
		3*	6	3.28	2.814	9.653	CDF	0.0176	Significant Effect
		6*	6	5.685	2.814	9.653	CDF	4.9E-05	Significant Effect
		12.1*	6	6.414	2.814	9.653	CDF	<1.0E-05	Significant Effect
		24.2*	6	8.09	2.814	9.653	CDF	<1.0E-05	Significant Effect
		48.5*	6	9.985	2.814	9.653	CDF	<1.0E-05	Significant Effect
		97*	6	9.985	2.814	9.653	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.05	2.938	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4641.72	663.103	7	28.18	<1.0E-05	Significant Effect
Error	564.75	23.5312	24			
Total	5206.47		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.852	18.48	0.4445	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9841	0.9081	0.9053	Normal Distribution

Frond Increase Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	76	69.5	82.5	74.5	73	82	2.041	5.37%	0.00%
1.5		4	70.75	57.93	83.57	71	62	79	4.029	11.39%	6.91%
3		4	64.75	55.81	73.69	64	59	72	2.81	8.68%	14.80%
6		4	56.5	48.13	64.87	58	49	61	2.63	9.31%	25.66%
12.1		4	54	46.31	61.69	52.5	50	61	2.415	8.95%	28.95%
24.2		4	48.25	43.16	53.34	49.33	45	51	1.601	6.64%	36.51%
48.5		4	41.75	36.49	47.01	43.33	37	44	1.652	7.91%	45.07%
97		4	41.75	39.03	44.47	41.5	40	44	0.8539	4.09%	45.07%

2023 Sep 25 Analyst: NS QA: MH 2023 Sep 26

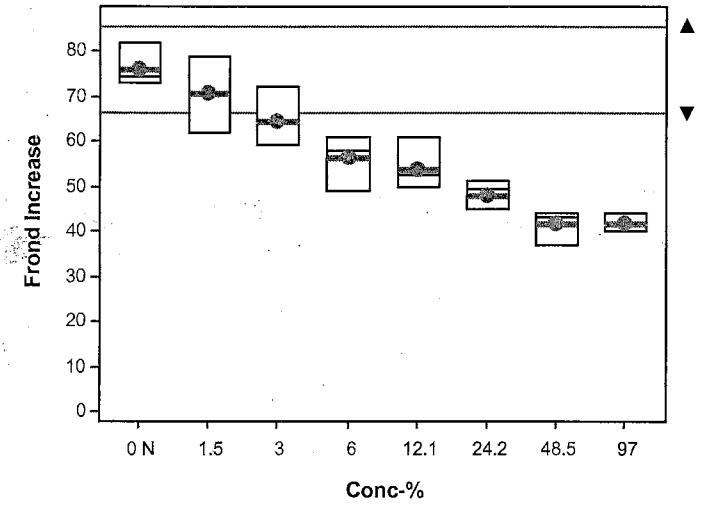
Lemna Growth Inhibition Test — **Bureau Veritas**

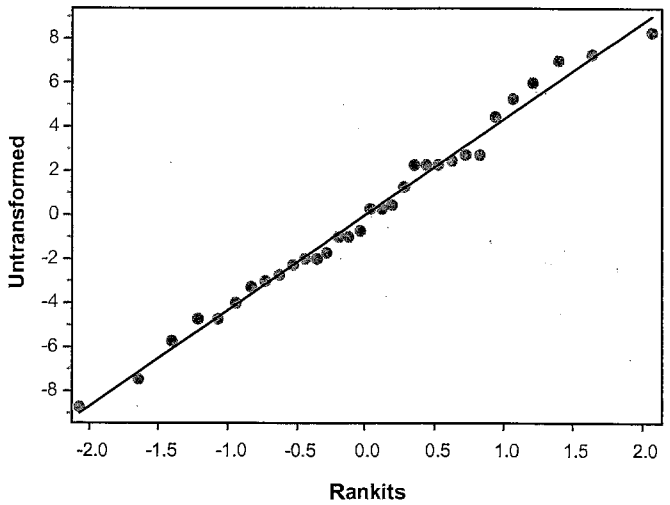
Analysis ID:	06-1083-9658	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	300676167EF06A4F376E633AA5594A99	**Editor ID:**	002-543-972-3

Frond Increase Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	74	75	82	73
1.5		79	66	76	62
3		66	72	59	62
6		61	49	59	57
12.1		61	53	52	50
24.2		46	51	45	51
48.5		37	42	44	44
97		41	40	44	42

Graphics





2023 Sep 25 2023 Sep 26

Analyst: NSU QA: MH

CETIS Analytical Report

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	02-5074-4639	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	300676167EF06A4F376E633AA5594A99	**Editor ID:**	002-543-972-3

Batch ID:	08-4151-5612	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:10	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 11:55	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 22h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2914-3510	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Log-Logistic: μ=α/[1+[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
7	-51.42	109.7	113.2	0.8417	6.69%	77.27	Yes	1.754	0.1606	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	0.1239	0.0009147	0.5689	807.2	175.8	109323.1
IC10	0.6606	0.1979	1.528	151.4	65.5	505.3
IC15	1.862	0.8959	3.375	53.7	29.6	111.6
IC20	4.063	2.412	6.419	24.6	15.6	41.5
IC25	7.74	5.208	11.14	12.9	9	19.2
IC40	36.57	26.65	49.75	2.7	2	3.8
IC50	90.69	58.29	141.1	1.1	0.7	1.7

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	77.27	2.527	72.1	82.44	30.58	<1.0E-05	Significant Parameter
γ	0.4464	0.06195	0.3197	0.5731	7.206	<1.0E-05	Significant Parameter
δ	90.69	22.39	44.9	136.5	4.051	0.0003	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	107400	35790	3	1346	<1.0E-05	Significant Effect
Lack of Fit	206.4	41.28	5	1.754	0.1606	Non-Significant Lack-of-Fit
Pure Error	564.8	23.53	24			
Residual	771.2	26.59	29			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	2.487	2.938	0.2909	No Outliers Detected
Variance	Bartlett Equality of Variance Test	6.852	18.48	0.4445	Equal Variances
	Mod Levene Equality of Variance	1.463	3.496	0.2273	Equal Variances
Distribution	Anderson-Darling A2 Test	0.4064	3.878	0.3549	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9737	0.9081	0.6060	Normal Distribution

Analyst: NSU 2023 Sep 25 QA: MH 2023 Sep 26

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	02-5074-4639	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	300676167EF06A4F376E633AA5594A99	**Editor ID:**	002-543-972-3

Frond Increase Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	76	74.5	73	82	2.041	4.082	5.37%	0.00%
1.5		4	70.75	71	62	79	4.029	8.057	11.39%	6.91%
3		4	64.75	64	59	72	2.81	5.62	8.68%	14.80%
6		4	56.5	58	49	61	2.63	5.26	9.31%	25.66%
12.1		4	54	52.5	50	61	2.415	4.83	8.95%	28.95%
24.2		4	48.25	49.33	45	51	1.601	3.202	6.64%	36.51%
48.5		4	41.75	43.33	37	44	1.652	3.304	7.91%	45.07%
97		4	41.75	41.5	40	44	0.8539	1.708	4.09%	45.07%

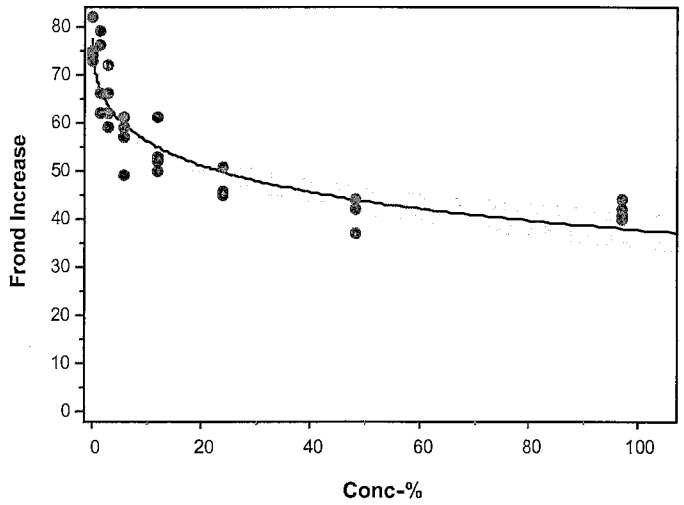
Frond Increase Detail

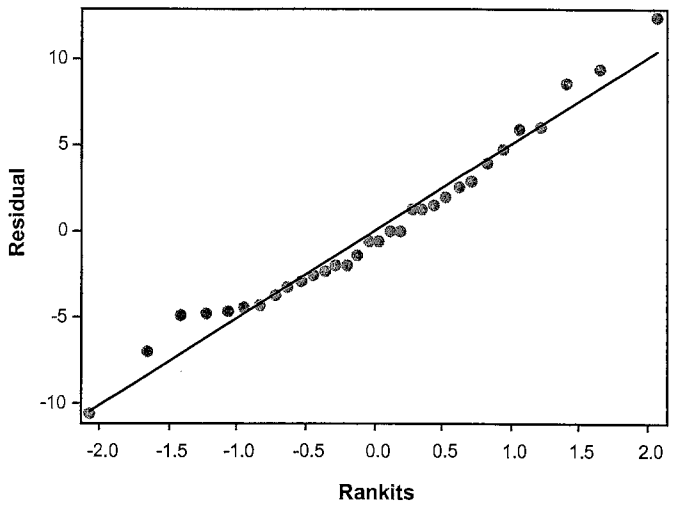
Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	74	75	82	73
1.5		79	66	76	62
3		66	72	59	62
6		61	49	59	57
12.1		61	53	52	50
24.2		46	51	45	51
48.5		37	42	44	44
97		41	40	44	42

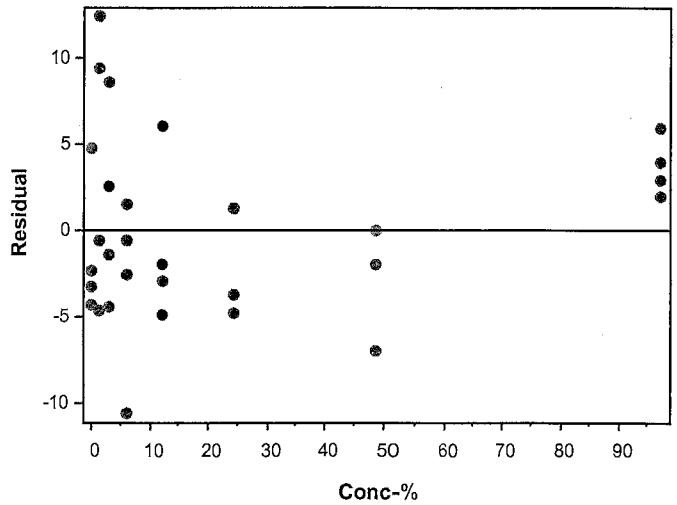
Lemna Growth Inhibition Test — **Bureau Veritas**

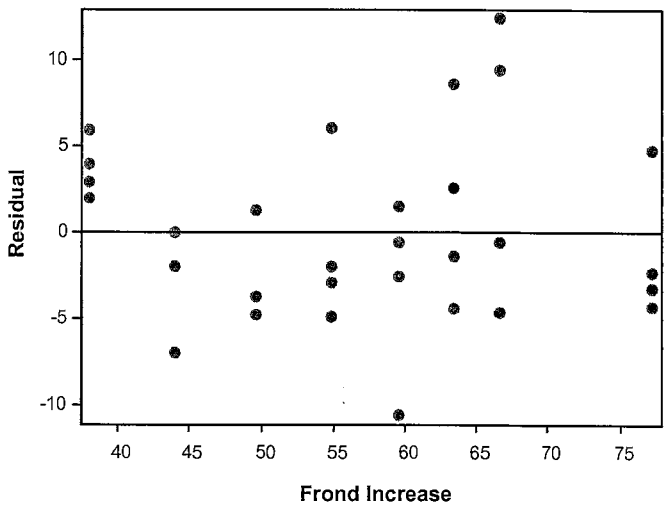
Analysis ID:	02-5074-4639	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	300676167EF06A4F376E633AA5594A99	**Editor ID:**	002-543-972-3

Graphics Model: 3P Log-Logistic: μ=α/[1+[x/δ]^γ] Distribution: Normal [ω=1]









Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	09-1442-7019	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	BDF17AABC1CEE7810E26A312DC014A4	**Editor ID:**	002-543-972-3

Batch ID:	08-4151-5612	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:10	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 11:55	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 22h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2914-3510	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	3	6	4.243	33.3	1.166	15.79%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		1.5	6	2.378	2.814	1.166	CDF	0.1227	Non-Significant Effect
		3	6	2.583	2.814	1.166	CDF	0.0813	Non-Significant Effect
		6*	6	4.865	2.814	1.166	CDF	0.0004	Significant Effect
		12.1*	6	3.718	2.814	1.166	CDF	0.0062	Significant Effect
		24.2*	6	5.577	2.814	1.166	CDF	6.4E-05	Significant Effect
		48.5*	6	6.754	2.814	1.166	CDF	<1.0E-05	Significant Effect
		97*	6	6.223	2.814	1.166	CDF	1.5E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.12	2.938	0.9202	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	25.0317	3.57596	7	10.42	<1.0E-05	Significant Effect
Error	8.23565	0.343152	24			
Total	33.2674		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.515	18.48	0.7189	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9768	0.9081	0.7018	Normal Distribution

Total Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	7.383	6.491	8.274	7.135	7.04	8.22	0.2801	7.59%	0.00%
1.5		4	6.398	5.516	7.279	6.415	5.71	7.05	0.277	8.66%	13.34%
3		4	6.312	4.903	7.722	6.4	5.22	7.23	0.443	14.04%	14.49%
6		4	5.368	4.186	6.549	5.475	4.46	6.06	0.3713	13.83%	27.29%
12.1		4	5.842	5.406	6.279	5.76	5.61	6.24	0.1372	4.70%	20.86%
24.2		4	5.072	4.397	5.748	5.095	4.63	5.47	0.2123	8.37%	31.29%
48.5		4	4.585	3.633	5.537	4.515	3.93	5.38	0.2991	13.05%	37.89%
97		4	4.805	4.14	5.47	4.895	4.22	5.21	0.2089	8.70%	34.91%

2023 Sep 26

2023 Sep 25

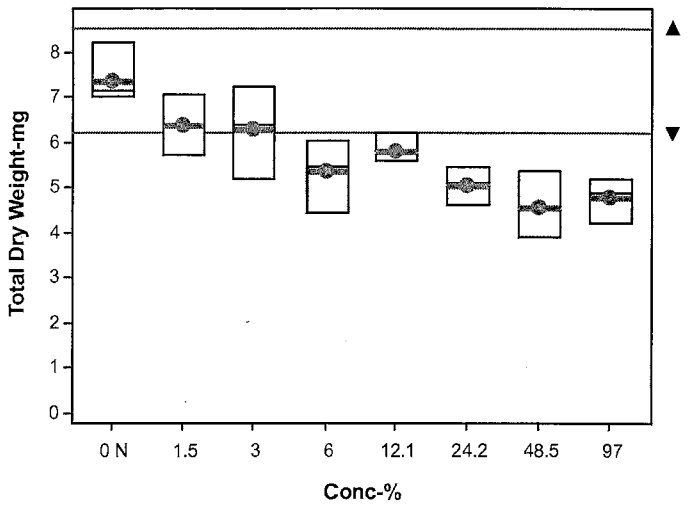
Lemna Growth Inhibition Test — **Bureau Veritas**

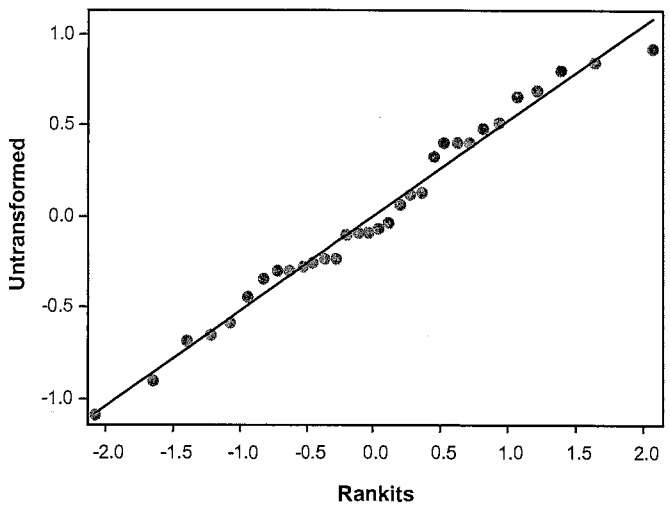
Analysis ID:	09-1442-7019	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	BDF17AABC1CEE7810E26A312DC014A4	**Editor ID:**	002-543-972-3

Total Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	7.04	7.12	8.22	7.15
1.5		7.05	6.52	6.31	5.71
3		6.79	7.23	5.22	6.01
6		6.06	4.46	5.88	5.07
12.1		6.24	5.75	5.77	5.61
24.2		4.79	5.47	4.63	5.4
48.5		3.93	4.48	5.38	4.55
97		4.87	4.22	5.21	4.92

Graphics





2023 Sept 25 Analyst: NJ QA: MH 2023 Sep 26

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	20-3740-0456	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	BDF17AABC1CEE7810E26A312DC014A4	**Editor ID:**	002-543-972-3

Batch ID:	08-4151-5612	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:10	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 11:55	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 22h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2914-3510	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Log-Logistic: μ=α/[1+[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
5	17.33	-27.8	-24.26	0.6628	8.25%	7.414	Yes	1.317	0.2904	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	0.02725	---	0.4118	3669.8	242.8	---
IC10	0.3143	0.021	1.568	318.1	63.8	4762.4
IC15	1.429	0.3321	4.33	70	23.1	301.1
IC20	4.467	1.802	9.724	22.4	10.3	55.5
IC25	11.45	6.13	20.26	8.7	4.9	16.3
IC40	110.7	44.02	264.9	0.9	0.4	2.3
IC50	417.3	101.3	1719	0.2	0.1	1

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	7.414	0.299	6.803	8.026	24.8	<1.0E-05	Significant Parameter
γ	0.3056	0.07193	0.1584	0.4527	4.248	0.0002	Significant Parameter
δ	417.3	285.4	-166.4	1001	1.462	0.1545	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	1070	356.7	3	985.5	<1.0E-05	Significant Effect
Lack of Fit	2.259	0.4519	5	1.317	0.2904	Non-Significant Lack-of-Fit
Pure Error	8.236	0.3432	24			
Residual	10.49	0.3619	29			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	2.34	2.938	0.4733	No Outliers Detected
Variance	Bartlett Equality of Variance Test	4.515	18.48	0.7189	Equal Variances
	Mod Levene Equality of Variance	1.063	3.496	0.4162	Equal Variances
Distribution	Anderson-Darling A2 Test	0.2546	3.878	0.7557	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9843	0.9081	0.9094	Normal Distribution

2023 Sept 25 2023 Sep 26

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	20-3740-0456	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	BDF17AABC1CEE7810E26A312DC014A4	**Editor ID:**	002-543-972-3

Total Dry Weight-mg Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	7.383	7.135	7.04	8.22	0.2801	0.5603	7.59%	0.00%
1.5		4	6.398	6.415	5.71	7.05	0.277	0.5541	8.66%	13.34%
3		4	6.312	6.4	5.22	7.23	0.443	0.886	14.04%	14.49%
6		4	5.368	5.475	4.46	6.06	0.3713	0.7426	13.83%	27.29%
12.1		4	5.842	5.76	5.61	6.24	0.1372	0.2744	4.70%	20.86%
24.2		4	5.072	5.095	4.63	5.47	0.2123	0.4246	8.37%	31.29%
48.5		4	4.585	4.515	3.93	5.38	0.2991	0.5981	13.05%	37.89%
97		4	4.805	4.895	4.22	5.21	0.2089	0.4178	8.70%	34.91%

Total Dry Weight-mg Detail

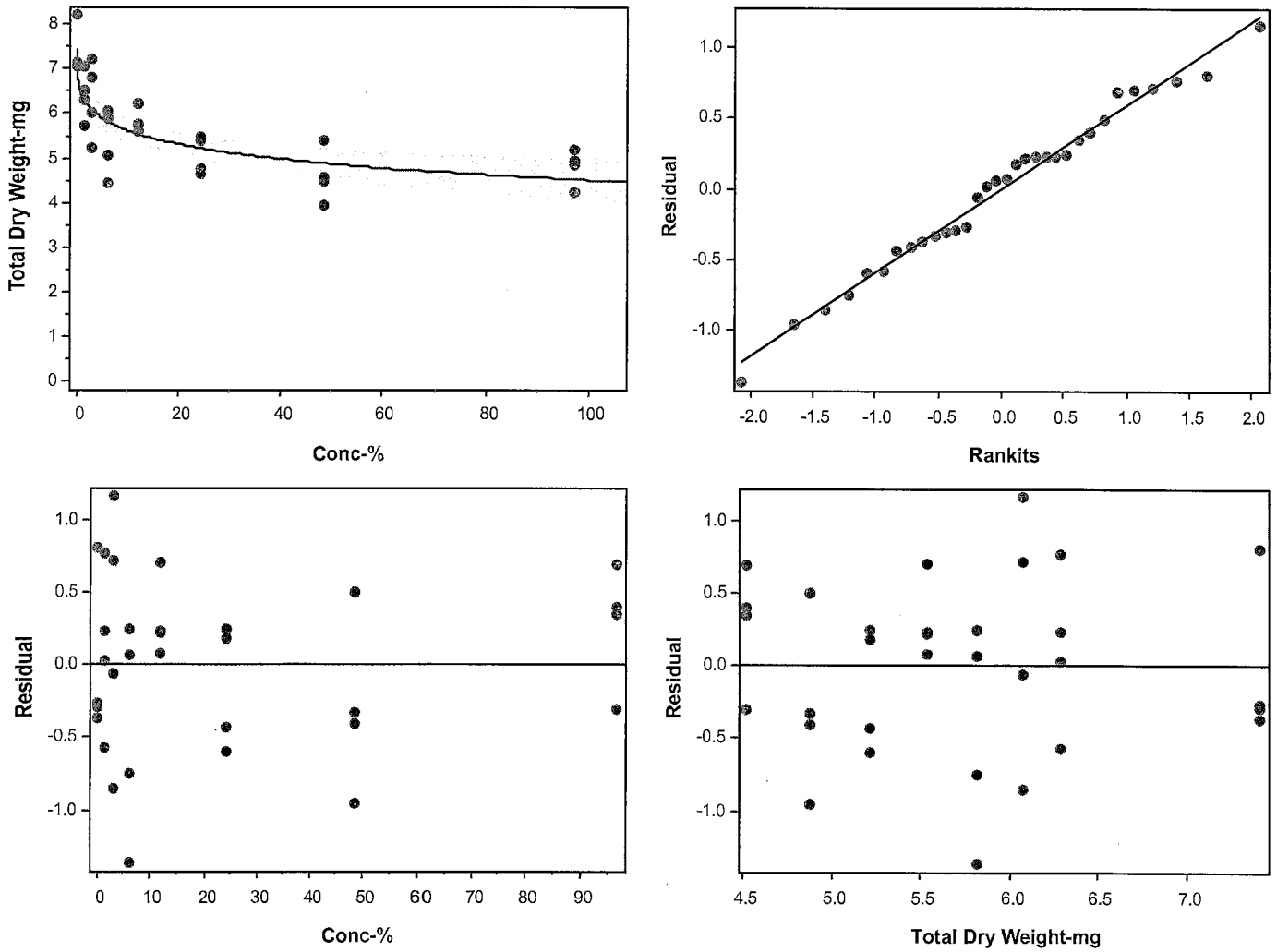
Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	7.04	7.12	8.22	7.15
1.5		7.05	6.52	6.31	5.71
3		6.79	7.23	5.22	6.01
6		6.06	4.46	5.88	5.07
12.1		6.24	5.75	5.77	5.61
24.2		4.79	5.47	4.63	5.4
48.5		3.93	4.48	5.38	4.55
97		4.87	4.22	5.21	4.92

2023 Sept 25 Analyst: NSU QA: MH 2023 Sep 26

Lemna Growth Inhibition Test **Bureau Veritas**

Analysis ID:	20-3740-0456	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:15	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:14	**MD5 Hash:**	BDF17AABC1CEE7810E26A312DC014A4	**Editor ID:**	002-543-972-3

Graphics Model: 3P Log-Logistic: μ=α/[1+[x/δ]^γ] Distribution: Normal [ω=1]



2023 Sept 25 2023 Sep 26

Analyst: NSU QA: MA

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV069

Sample ID: 1645-68

Start Date: August 31, 2023

Analyst(s): N. Shergill, P. Fang

End Date: September 7, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	80	74	76.0	4.1	--
B	6	81	75			
C	6	88	82			
D	6	79	73			
1.5%-A	6	85	79	70.8	8.1	N/S
B	6	72	66			
C	6	82	76			
D	6	68	62			
3.0%-A	6	72	66	64.8	5.6	N/S
B	6	78	72			
C	6	65	59			
D	6	68	62			
6.0%-A	6	67	61	56.5	5.3	N/S
B	6	55	49			
C	6	65	59			
D	6	63	57			
12.1%-A	6	67	61	54.0	4.8	N/S
B	6	59	53			
C	6	58	52			
D	6	56	50			
24.2%-A	6	52	46	48.3	3.2	N/S
B	6	57	51			
C	6	51	45			
D	6	57	51			
48.5%-A	6	43	37	41.8	3.3	N/S
B	6	48	42			
C	6	50	44			
D	6	50	44			
97%-A	6	47	41	41.8	1.7	N/S
B	6	46	40			
C	6	50	44			
D	6	48	42			
Analyst	NSC	PH				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	82.0
Control Frond Increase	13.7
Validity Criteria Met?	Yes

Data Reviewed by: Shergill 2023 Sept. 26

ECOTOXICOLOGY

Lemna minor Growth Inhibition Test Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV069

Sample ID: 1645-68

Oven Temp (°C): 60

Balance ID: BBY2-0260

Drying Time (h): >24

Analyst(s): S. Reddy, P. Howes

Reviewed by: NStorgell 2023 Sept 26

Boat #	Conc. & Replicate	Final # of Fronds	Boat Wt. (g)	Boat & Frond Dry Weight (g)	Dry Weight per Rep. (mg)	Mean Dry Weight per Conc (mg)	SD	% Stimulation
947	Control-A	80	0.80824	0.81528	7.04	7.38	0.56	--
948	B	81	0.78009	0.78721	7.12			
949	C	88	0.80098	0.80920	8.22			
950	D	79	0.80484	0.81199	7.15			
951	1.5%-A	85	0.80536	0.81241	7.05	6.40	0.55	N/S
952	B	72	0.81373	0.82025	6.52			
953	C	82	0.80813	0.81444	6.31			
954	D	68	0.80616	0.81187	5.71			
955	3.0%-A	72	0.79367	0.80046	6.79	6.31	0.89	N/S
956	B	78	0.80053	0.80776	7.23			
957	C	65	0.79872	0.80394	5.22			
958	D	68	0.78816	0.79417	6.01			
959	6.0%-A	67	0.79761	0.80367	6.06	5.37	0.74	N/S
960	B	55	0.78281	0.78727	4.46			
961	C	65	0.83358	0.83946	5.88			
962	D	63	0.78902	0.79409	5.07			
963	12.1%-A	67	0.77862	0.78486	6.24	5.84	0.27	N/S
964	B	59	0.78756	0.79331	5.75			
965	C	58	0.79682	0.80259	5.77			
966	D	56	0.82337	0.82898	5.61			
967	24.2%-A	52	0.80500	0.80979	4.79	5.07	0.42	N/S
968	B	57	0.78689	0.79236	5.47			
969	C	51	0.80258	0.80721	4.63			
970	D	57	0.79720	0.80260	5.40			
971	48.5%-A	43	0.79732	0.80125	3.93	4.59	0.60	N/S
972	B	48	0.78039	0.78487	4.48			
973	C	50	0.78096	0.78634	5.38			
974	D	50	0.79836	0.80291	4.55			
975	97%-A	47	0.79373	0.79860	4.87	4.80	0.42	N/S
976	B	46	0.78952	0.79374	4.22			
977	C	50	0.80422	0.80943	5.21			
978	D	48	0.83000	0.83492	4.92			
979	QA/QC	N/A	0.82591	0.82611	0.20	-	-	-
980	QA/QC	N/A	0.78993	0.79018	0.25	-	-	
947	0-A	80	0.80815	0.81520	7.05	-	-	
Analyst		PH	SR	SR				
Weighing Date		--	2023 Sept 01	2023 Sept 12				

N/S - No growth stimulation (dry weight) compared to the Control

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6
Tab: Frond Counts, Page 1 of 1

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV069

Sample ID: 1645-68

Start Date: August 31, 2023

Analyst(s): NSherquee, P. Hawes

End Date: September 7, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	80	--	--	--	--
B	6	81	--			
C	6	88	--			
D	6	79	--			
1.5%-A	6	85	--	--	--	N/S
B	6	72	--			
C	6	82	--			
D	6	68	--			
3.0%-A	6	72	--	--	--	N/S
B	6	78	--			
C	6	65	--			
D	6	68	--			
6.0%-A	6	61	--	--	--	N/S
B	6	55	--			
C	6	65	--			
D	6	63	--			
12.1%-A	6	67	--	--	--	N/S
B	6	59	--			
C	6	58	--			
D	6	56	--			
24.2%-A	6	52	--	--	--	N/S
B	6	57	--			
C	6	51	--			
D	6	57	--			
48.5%-A	6	43	--	--	--	N/S
B	6	48	--			
C	6	50	--			
D	6	50	--			
97%-A	6	47	--	--	--	N/S
B	6	46	--			
C	6	50	--			
D	6	48	--			
Analyst	NSC	PH				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	#DIV/0!
Control Frond Increase	#DIV/0!
Validity Criteria Met?	#DIV/0!

Data Reviewed by: N/A

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: August 31, 2023

Sample ID: 1645-68

End Date: September 7, 2023

Sample Date: August 29, 2023

Job# / Sample # C367471 / BXV069

Analyst(s): N. Shergill, NBlassnik, MHamacy, P. Hawes

Organism Lot #: CP230822

pH of raw sample	pH after addition of APHA stocks A, B, & C	Pre-aeration time	pH after aeration
6.9	7.1	20min	7.2

media: 2023Aug30A

APHA Stocks Prep Date: 2022 Oct 27 + 2022 Nov01

Instrument IDs: BBU2-0509

Thermometer ID: BBU2-0509

Plant Shelf #: 1

Test Volume (mL): 150

Sample Description: pale yellow & clear

Concentration (%)	Temperature Monitoring								pH Monitoring	
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 0	Day 7
Control	24	25	25	25	26	26	26	26	8.2	8.3
1.5	24	25	25	26	26	26	26	27	8.0	10.0
3.0										
6.0										
12.1	24	25	25	26	26	26	26	26	7.9	10.1
24.2										
48.5										
97	24	25	25	26	26	26	25	26	7.3	10.2
Analyst	NSC	NB	MHm	NSC	NSC	NSC	NSC	PH	NSC	PH
Date	2023 Aug31	2023 Sept01	2023 Sept02	2023 Sept03	2023 Sept04	2023 Sept05	2023 Sept06	2023 Sept7	2023 Aug31	2023 Sept7

Observations during the Test

Day 0 (Test Initiation)

Date: August 31, 2023

Analyst: NShergill

# of Plants per Test Vessel: 2

# of Fronds per Plant 3

Plant Observations: DG + H

Test Seeded @: 14:10

Other comments: n/a

Day 1

Date: September 1, 2023

Analyst: NBlassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H

Other Comments: DG

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: August 31, 2023

Job# / Sample # C367471 / BXV069

Day 2

Date: September 2, 2023 Analyst: MHamar

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H

Other Comments: N/A

Day 3

Date: September 3, 2023 Analyst: NSheargill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	H,A DG,LG

Other Comments: n/a

Day 4

Date: September 4, 2023 Analyst: NSheargill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG

Other Comments: n/a

Day 5

Date: September 5, 2023 Analyst: NSheargill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG

Other Comments: n/a

Day 6

Date: September 6, 2023 Analyst: NSheargill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG

Other Comments:

Day 7

Date: September 7, 2023 Analyst: P. Hawes

Test End Time: 11:55

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5% (A)	97% (A)
DG,LG,H	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,A,C	DG,LG,A,C	DG,LG,A,C	DG,LG,A,C

Other Comments: (A) bubbles on the surface of the 48.5 + 97% v/v concentrations

Legend:

DG = Dark Green	**C** = Chlorosis	**A** = Green Algae	**CD** = Colony destroyed
LG = Light Green	**N** = Necrosis	T = Transparent	**RD** = Roots destroyed
H = Healthy, Normal	**G** = Gibbosity	**S** = small fronds	

Other :

ECOTOXICOLOGY

Randomization Chart

Client Name: Diavik Diamond Mines

Test Date: 31-Aug

Sample Name: 1645-68

Shelf #: 1

Position Map

Back Wall							
5	10	15	20	25	30	35	40
4	9	14	19	24	29	34	39
3	8	13	18	23	28	33	38
2	7	12	17	22	27	32	37
1	6	11	16	21	26	31	36

Front of Counter

Position #	Treatment	Replicate	Colour
13		A	
38		B	
7	Control	C	Red
5		D	
26		Measure	
27		A	
33		B	
24	1.5%	C	Orange
16		D	
11		Measure	
31		A	
22		B	
4	3.0%	C	Yellow
32		D	
35		Measure	
1		A	
40		B	
14	6.0%	C	Fl. Green
2		D	
34		Meas.	
19		A	
29		B	
17	12.1%	C	Teal
8		D	
10		Measure	
18		A	
36		B	
39	24.2%	C	Blue
21		D	
9		Measure	
37		A	
12		B	
15	48.5%	C	Purple
30		D	
3		Measure	
20		A	
6		B	
23	97%	C	Pink
25		D	
28		Measure	

CETIS Analytical Report

Test Code/ID: LM-4388-1423 / 16-6337-1133

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	05-8495-2957	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	06E27D1AAD1B898AAE18BD2FE63681E3	**Editor ID:**	002-543-972-3

Batch ID:	06-7804-3595	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:21	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 16:51	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	7d 2h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	16-2610-8296	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	6	12.1	8.521	16.7	23.11	22.06%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		1.5	6	0.09134	2.814	23.11	CDF	1.0000	Non-Significant Effect
		3	6	2.04	2.814	23.11	CDF	0.2291	Non-Significant Effect
		6	6	2.253	2.814	23.11	CDF	0.1558	Non-Significant Effect
		12.1*	6	3.653	2.814	23.11	CDF	0.0073	Significant Effect
		24.2*	6	3.349	2.814	23.11	CDF	0.0150	Significant Effect
		48.5*	6	4.871	2.814	23.11	CDF	0.0004	Significant Effect
		97*	6	8.098	2.814	23.11	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.349	2.938	0.4602	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	13207.5	1886.79	7	13.99	<1.0E-05	Significant Effect
Error	3236.5	134.854	24			
Total	16444		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.645	18.48	0.8196	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9593	0.9081	0.2625	Normal Distribution

Frond Increase Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	104.8	88.77	120.7	106	92	115	5.023	9.59%	0.00%
1.5		4	104	85.31	122.7	102.5	92	119	5.874	11.30%	0.72%
3		4	88	61.63	114.4	93	64	102	8.287	18.83%	15.99%
6		4	86.25	70.27	102.2	85.5	75	99	5.023	11.65%	17.66%
12.1		4	74.75	60.86	88.64	72	68	87	4.366	11.68%	28.64%
24.2		4	77.25	52.45	102.1	82.5	55	89	7.793	20.18%	26.25%
48.5		4	64.75	48.09	81.41	61	57	80	5.234	16.17%	38.19%
97		4	38.25	28.76	47.74	36	34	47	2.983	15.60%	63.48%

2023 Sep 25 Analyst: NS

2023 Sep 26 QA: MH

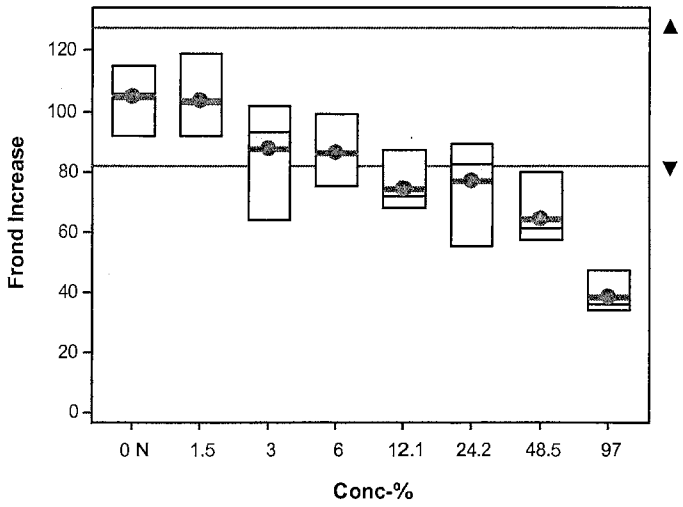
Lemna Growth Inhibition Test — **Bureau Veritas**

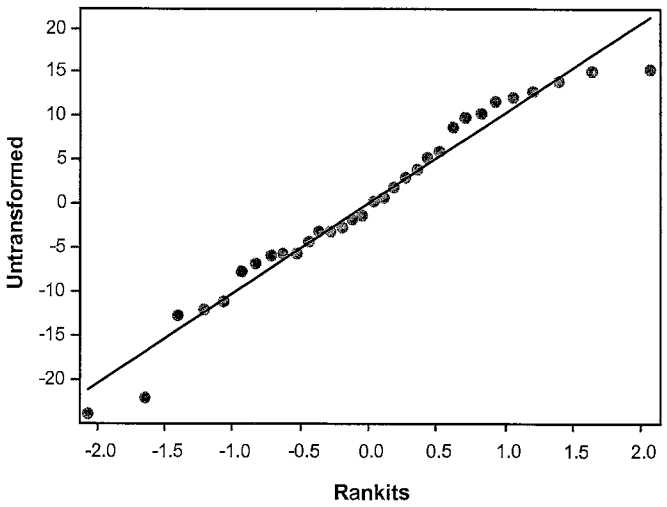
Analysis ID:	05-8495-2957	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	06E27D1AAD1B898AAE18BD2FE63681E3	**Editor ID:**	002-543-972-3

Frond Increase Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	110	115	102	92
1.5		107	92	98	119
3		92	64	94	102
6		99	83	75	88
12.1		68	69	87	75
24.2		87	89	78	55
48.5		63	80	57	59
97		37	35	34	47

Graphics





2023 Sept 25 2023 Sep 26
Analyst: NSC QA: MH

CETIS Analytical Report

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-7874-8832	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	06E27D1AAD1B898AAE18BD2FE63681E3	**Editor ID:**	002-543-972-3

Batch ID:	06-7804-3595	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:21	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 16:51	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	7d 2h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	16-2610-8296	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Log-Logistic: μ=α/[1+[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
5	-78.76	164.4	167.9	0.7232	10.55%	104.2	Yes	1.516	0.2221	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	1.108	---	3.758	90.3	26.6	---
IC10	3.137	0.875	6.471	31.9	15.5	114.3
IC15	5.974	2.645	10.61	16.7	9.4	37.8
IC20	9.703	5.198	15.85	10.3	6.3	19.2
IC25	14.48	8.737	22.2	6.9	4.5	11.4
IC40	38.03	26.21	54.13	2.6	1.8	3.8
IC50	66.89	43.08	103.8	1.5	1	2.3

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	104.2	5.372	93.18	115.1	19.39	<1.0E-05	Significant Parameter
γ	0.7181	0.1629	0.385	1.051	4.409	0.0001	Significant Parameter
δ	66.89	16.48	33.18	100.6	4.059	0.0003	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	215700	71900	3	489.6	<1.0E-05	Significant Effect
Lack of Fit	1022	204.5	5	1.516	0.2221	Non-Significant Lack-of-Fit
Pure Error	3236	134.9	24			
Residual	4259	146.9	29			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	2.563	2.938	0.2223	No Outliers Detected
Variance	Bartlett Equality of Variance Test	3.645	18.48	0.8196	Equal Variances
	Mod Levene Equality of Variance	0.3126	3.496	0.9411	Equal Variances
Distribution	Anderson-Darling A2 Test	0.2459	3.878	0.7846	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9775	0.9081	0.7243	Normal Distribution

2023 Sep 25 2023 Sep 26

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-7874-8832	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	06E27D1AAD1B898AAE18BD2FE63681E3	**Editor ID:**	002-543-972-3

Frond Increase Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	104.8	106	92	115	5.023	10.05	9.59%	0.00%
1.5		4	104	102.5	92	119	5.874	11.75	11.30%	0.72%
3		4	88	93	64	102	8.287	16.57	18.83%	15.99%
6		4	86.25	85.5	75	99	5.023	10.05	11.65%	17.66%
12.1		4	74.75	72	68	87	4.366	8.732	11.68%	28.64%
24.2		4	77.25	82.5	55	89	7.793	15.59	20.18%	26.25%
48.5		4	64.75	61	57	80	5.234	10.47	16.17%	38.19%
97		4	38.25	36	34	47	2.983	5.965	15.60%	63.48%

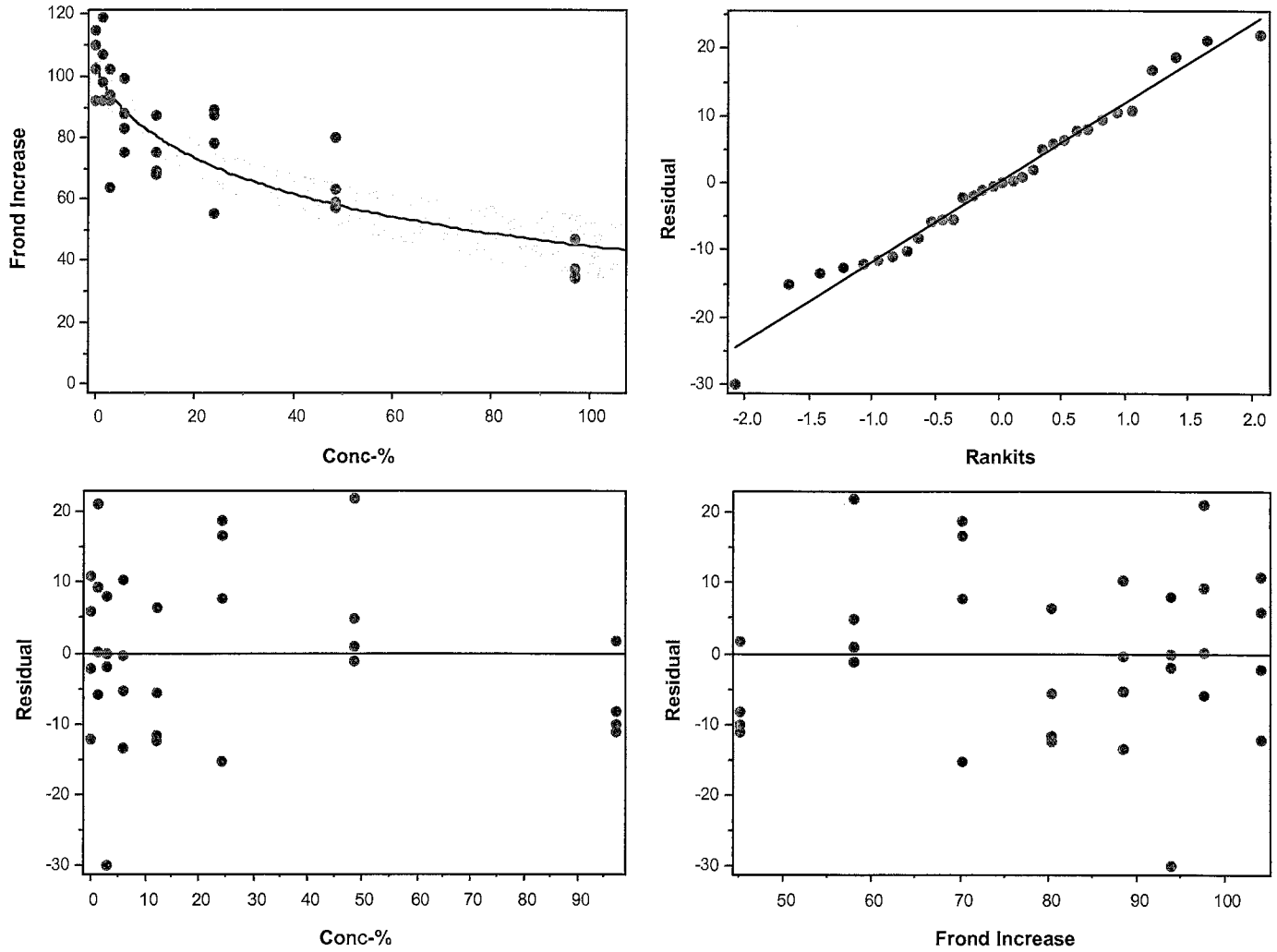
Frond Increase Detail

Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	110	115	102	92
1.5		107	92	98	119
3		92	64	94	102
6		99	83	75	88
12.1		68	69	87	75
24.2		87	89	78	55
48.5		63	80	57	59
97		37	35	34	47

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-7874-8832	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	06E27D1AAD1B898AAE18BD2FE63681E3	**Editor ID:**	002-543-972-3

Graphics Model: 3P Log-Logistic: μ=α/[1+[x/δ]^γ] Distribution: Normal [ω=1]



Analyst: NW 2023 Sep 25 QA: MH 2023 Sep 26

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	07-7037-4230	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	AB2895E3EE791C58BA2CE131A5062B22	**Editor ID:**	002-543-972-3

Batch ID:	06-7804-3595	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:21	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 16:51	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	7d 2h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	16-2610-8296	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	97	>97	---	1	3.088	31.56%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		1.5	6	0.06379	2.814	3.088	CDF	1.0000	Non-Significant Effect
		3	6	1.583	2.814	3.088	CDF	0.4676	Non-Significant Effect
		6	6	1.743	2.814	3.088	CDF	0.3716	Non-Significant Effect
		12.1	6	2.47	2.814	3.088	CDF	0.1024	Non-Significant Effect
		24.2	6	2.415	2.814	3.088	CDF	0.1141	Non-Significant Effect
		48.5	6	1.283	2.814	3.088	CDF	0.6724	Non-Significant Effect
		97	6	1.36	2.814	3.088	CDF	0.6184	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.389	2.938	0.4035	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	30.9339	4.41913	7	1.835	0.1264	Non-Significant Effect
Error	57.7947	2.40811	24			
Total	88.7286		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	2.786	18.48	0.9041	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.968	0.9081	0.4472	Normal Distribution

Total Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	9.785	7.743	11.83	9.43	8.73	11.55	0.6417	13.12%	0.00%
1.5		4	9.855	7.531	12.18	9.485	8.7	11.75	0.7303	14.82%	-0.72%
3		4	8.048	5.718	10.38	8.27	6.06	9.59	0.732	18.19%	17.76%
6		4	7.872	5.862	9.883	7.445	6.89	9.71	0.6319	16.05%	19.55%
12.1		4	7.075	5.545	8.605	6.93	6.06	8.38	0.4809	13.59%	27.70%
24.2		4	7.135	4.568	9.702	7.54	4.94	8.52	0.8067	22.61%	27.08%
48.5		4	8.378	4.519	12.24	7.875	6.12	11.64	1.212	28.94%	14.38%
97		4	8.293	5.86	10.72	7.97	6.8	10.43	0.7643	18.43%	15.25%

2023 Sep 25 2023 Sep 26

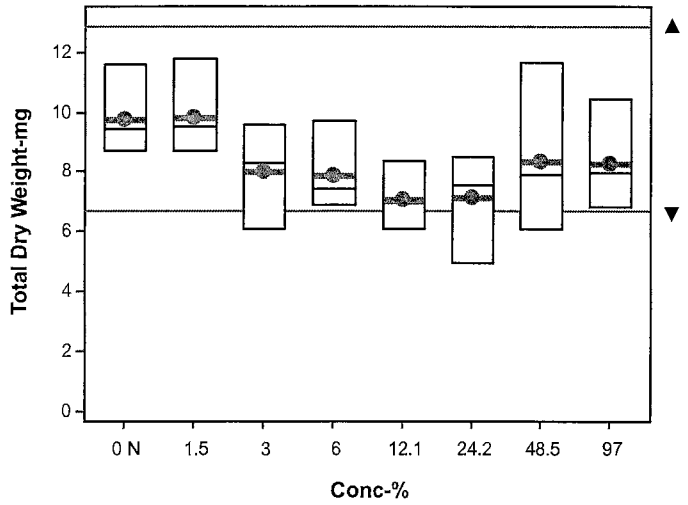
Lemna Growth Inhibition Test — **Bureau Veritas**

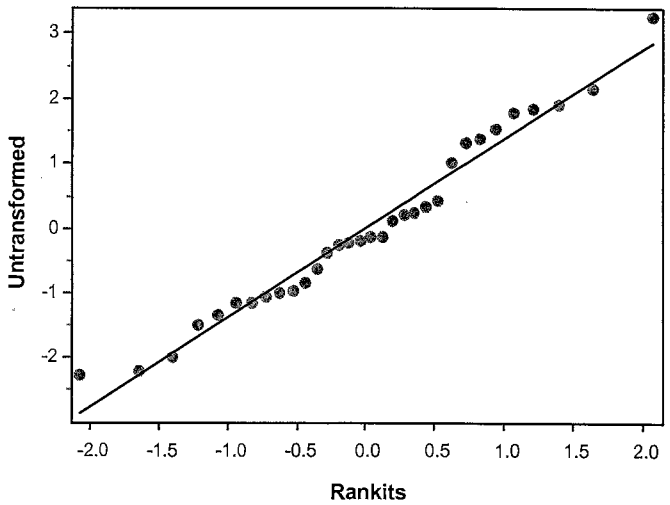
Analysis ID:	07-7037-4230	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	AB2895E3EE791C58BA2CE131A5062B22	**Editor ID:**	002-543-972-3

Total Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	8.95	11.55	9.91	8.73
1.5		10.26	8.7	8.71	11.75
3		8.29	6.06	8.25	9.59
6		9.71	7.65	6.89	7.24
12.1		6.93	6.06	8.38	6.93
24.2		8.52	8.15	6.93	4.94
48.5		7.04	11.64	8.71	6.12
97		7.92	6.8	8.02	10.43

Graphics





Analyst: 2023 Sep 25 NSU QA: 2023 Sep 26 MH

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	19-2855-3078	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	AB2895E3EE791C58BA2CE131A5062B22	**Editor ID:**	002-543-972-3

Batch ID:	06-7804-3595	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	31 Aug-23 14:21	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	07 Sep-23 16:51	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	7d 2h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	16-2610-8296	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	56h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Log-Logistic: μ=α/[1+[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
49	-14.39	35.63	39.17	0.0820	16.85%	9.836	Yes	1.528	0.2185	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	0.000323	---	130.2	309625.3	0.8	---
IC10	0.08806	---	440	1135.6	0.2	---
IC15	2.836	0.001195	233.4	35.3	0.4	83680.1
IC20	38.73	0.362	1138	2.6	0.1	276.2
IC25	335.6	0.0004802	26230O	0.3	0	208236.1
IC40	60970	---	---	0	---	---
IC50	1279000	---	---	0	---	---

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	9.836	0.8102	8.179	11.49	12.14	<1.0E-05	Significant Parameter
γ	0.1332	0.1642	-0.2026	0.4691	0.8113	0.4238	Non-Significant Parameter
δ	1279000	17010O00	-33510000	36060000	0.07518	0.9406	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	2220	739.9	3	281.6	<1.0E-05	Significant Effect
Lack of Fit	18.4	3.68	5	1.528	0.2185	Non-Significant Lack-of-Fit
Pure Error	57.79	2.408	24			
Residual	76.19	2.627	29			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	2.436	2.938	0.3458	No Outliers Detected
Variance	Bartlett Equality of Variance Test	2.786	18.48	0.9041	Equal Variances
	Mod Levene Equality of Variance	0.5303	3.496	0.8029	Equal Variances
Distribution	Anderson-Darling A2 Test	0.4998	3.878	0.2128	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9654	0.9081	0.3840	Normal Distribution

2023 Sep 26

2023 Sept 25

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	19-2855-3078	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	AB2895E3EE791C58BA2CE131A5062B22	**Editor ID:**	002-543-972-3

Total Dry Weight-mg Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	9.785	9.43	8.73	11.55	0.6417	1.283	13.12%	0.00%
1.5		4	9.855	9.485	8.7	11.75	0.7303	1.461	14.82%	-0.72%
3		4	8.048	8.27	6.06	9.59	0.732	1.464	18.19%	17.76%
6		4	7.872	7.445	6.89	9.71	0.6319	1.264	16.05%	19.55%
12.1		4	7.075	6.93	6.06	8.38	0.4809	0.9618	13.59%	27.70%
24.2		4	7.135	7.54	4.94	8.52	0.8067	1.613	22.61%	27.08%
48.5		4	8.378	7.875	6.12	11.64	1.212	2.425	28.94%	14.38%
97		4	8.293	7.97	6.8	10.43	0.7643	1.529	18.43%	15.25%

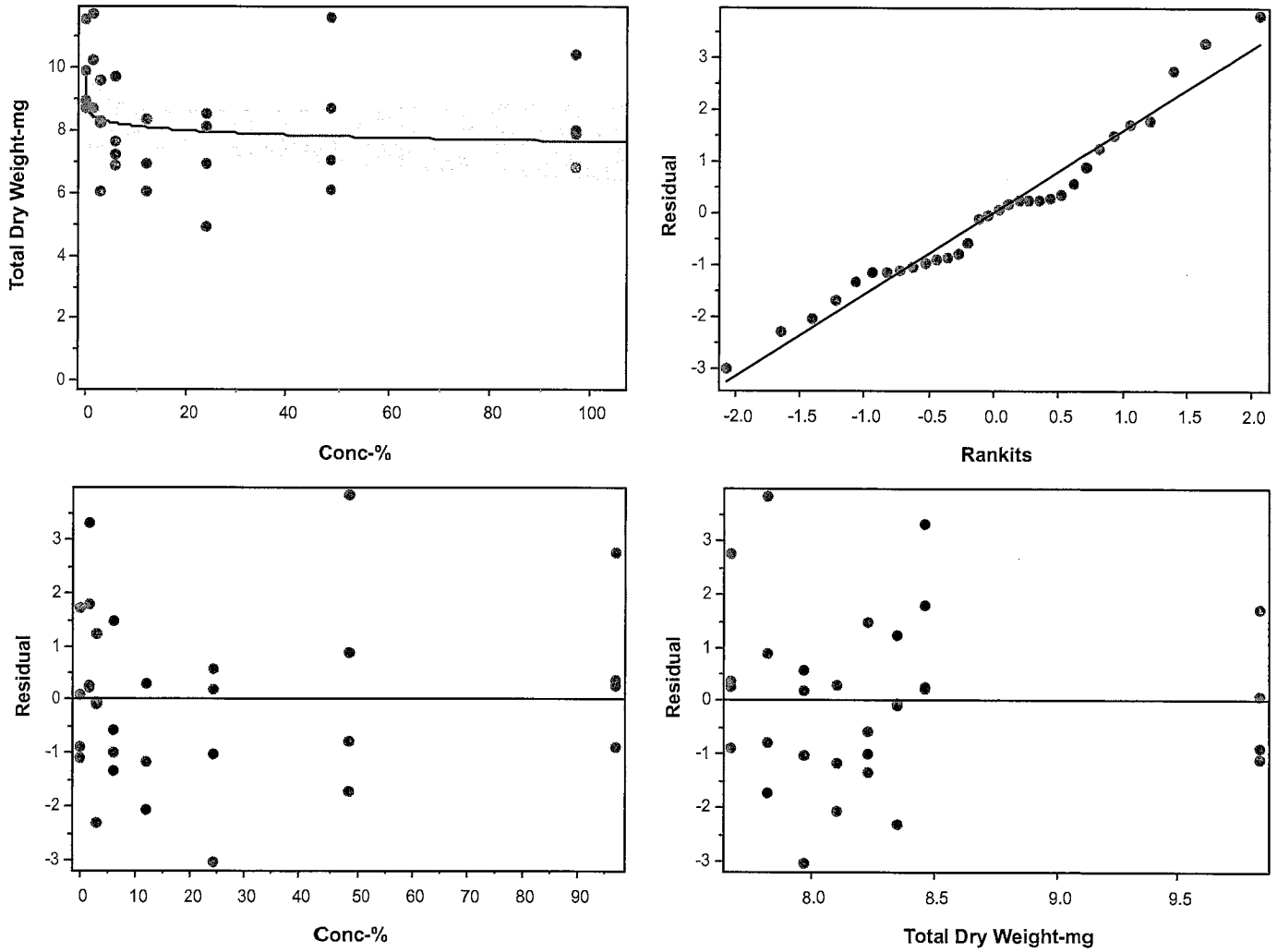
Total Dry Weight-mg Detail

Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	8.95	11.55	9.91	8.73
1.5		10.26	8.7	8.71	11.75
3		8.29	6.06	8.25	9.59
6		9.71	7.65	6.89	7.24
12.1		6.93	6.06	8.38	6.93
24.2		8.52	8.15	6.93	4.94
48.5		7.04	11.64	8.71	6.12
97		7.92	6.8	8.02	10.43

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	19-2855-3078	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 17:23	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	25 Sep-23 17:22	**MD5 Hash:**	AB2895E3EE791C58BA2CE131A5062B22	**Editor ID:**	002-543-972-3

Graphics Model: 3P Log-Logistic: μ=α/[1+[x/δ]^γ] Distribution: Normal [ω=1]



2023 Sept 25 Analyst: NSV QA: MT 2023 Sep 26

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV070

Sample ID: 1645-44

Start Date: August 31, 2023

Analyst(s): N. Shergill, P. Fang

End Date: September 7, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	116	110	104.8	10.0	--
B	6	121	115			
C	6	108	102			
D	6	98	92			
1.5%-A	6	113	107	104.0	11.7	N/S
B	6	98	92			
C	6	104	98			
D	6	125	119			
3.0%-A	6	98	92	88.0	16.6	N/S
B	6	70	64			
C	6	100	94			
D	6	108	102			
6.0%-A	6	105	99	86.3	10.0	N/S
B	6	89	83			
C	6	81	75			
D	6	94	88			
12.1%-A	6	74	68	74.8	8.7	N/S
B	6	75	69			
C	6	93	87			
D	6	81	75			
24.2%-A	6	93	87	77.3	15.6	N/S
B	6	95	89			
C	6	84	78			
D	6	61	55			
48.5%-A	6	69	63	64.8	10.5	N/S
B	6	86	80			
C	6	63	57			
D	6	65	59			
97%-A	6	43	37	38.3	6.0	N/S
B	6	41	35			
C	6	40	34			
D	6	53	47			
Analyst	NSC	PH				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	110.8
Control Frond Increase	18.5
Validity Criteria Met?	Yes

Data Reviewed by: NShergill 2023 Sept 26

ECOTOXICOLOGY

Lemna minor Growth Inhibition Test Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV070

Sample ID: 1645-44

Oven Temp (°C): 60

Balance ID: BBY2-0260

Drying Time (h): >24

Analyst(s): S. Reddy, P. Howes

Reviewed by: N Shergill 2023 Sept 26

Boat #	Conc. & Replicate	Final # of Fronds	Boat Wt. (g)	Boat & Frond Dry Weight (g)	Dry Weight per Rep. (mg)	Mean Dry Weight per Conc (mg)	SD	% Stimulation
981	Control-A	116	0.79888	0.80783	8.95	9.78	1.28	--
982	B	121	0.77253	0.78408	11.55			
983	C	108	0.80395	0.81386	9.91			
984	D	98	0.79427	0.80300	8.73			
985	1.5%-A	113	0.82868	0.83894	10.26	9.85	1.46	0.72
986	B	98	0.83059	0.83929	8.70			
987	C	104	0.81414	0.82285	8.71			
988	D	125	0.80156	0.81331	11.75			
989	3.0%-A	98	0.78131	0.78960	8.29	8.05	1.46	N/S
990	B	70	0.81909	0.82515	6.06			
991	C	100	0.82823	0.83648	8.25			
992	D	108	0.78738	0.79697	9.59			
993	6.0%-A	105	0.80255	0.81226	9.71	7.87	1.26	N/S
994	B	89	0.80821	0.81586	7.65			
995	C	81	0.82780	0.83469	6.89			
996	D	94	0.77016	0.77740	7.24			
997	12.1%-A	74	0.83257	0.83950	6.93	7.08	0.96	N/S
998	B	75	0.81612	0.82218	6.06			
999	C	93	0.83367	0.84205	8.38			
1000	D	81	0.80990	0.81683	6.93			
1001	24.2%-A	93	0.81420	0.82272	8.52	7.14	1.61	N/S
1002	B	95	0.81095	0.81910	8.15			
1003	C	84	0.82317	0.83010	6.93			
1004	D	61	0.81676	0.82170	4.94			
1005	48.5%-A	69	0.76957	0.77661	7.04	8.38	2.42	N/S
1006	B	86	0.77864	0.79028	11.64			
1007	C	63	0.78532	0.79403	8.71			
1008	D	65	0.80987	0.81599	6.12			
1009	97%-A	43	0.82444	0.83236	7.92	8.29	1.53	N/S
1010	B	41	0.78787	0.79467	6.80			
1011	C	40	0.83071	0.83873	8.02			
1012	D	53	0.81602	0.82645	10.43			
1013	QA/QC	N/A	0.80000	0.80018	0.18	-	-	-
1014	QA/QC	N/A	0.76131	0.76151	0.20	-	-	
981	0-A	116	0.79884	0.80779	8.95	-	-	
Analyst		PH	SR	SR				
Weighing Date		--	2023 Sept 01	2023 Sept 20				

N/S - No growth stimulation (dry weight) compared to the Control

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C367471 / BXV070

Sample ID: 1645-44

Start Date: August 31, 2023

Analyst(s): NSheargill, P. Hewes

End Date: September 7, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	116	--	--	--	--
B	6	121	--			
C	6	108	--			
D	6	98	--			
1.5%-A	6	113	--	--	--	N/S
B	6	98	--			
C	6	104	--			
D	6	125	--			
3.0%-A	6	98	--	--	--	N/S
B	6	70	--			
C	6	100	--			
D	6	108	--			
6.0%-A	6	105	--	--	--	N/S
B	6	89	--			
C	6	81	--			
D	6	94	--			
12.1%-A	6	74	--	--	--	N/S
B	6	75	--			
C	6	93	--			
D	6	81	--			
24.2%-A	6	93	--	--	--	N/S
B	6	95	--			
C	6	89	--			
D	6	61	--			
48.5%-A	6	69	--	--	--	N/S
B	6	86	--			
C	6	63	--			
D	6	65	--			
97%-A	6	43	--	--	--	N/S
B	6	41	--			
C	6	40	--			
D	6	53	--			
Analyst	NSU	PH				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	#DIV/0!
Control Frond Increase	#DIV/0!
Validity Criteria Met?	#DIV/0!

Data Reviewed by: N/A

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: August 31, 2023

Sample ID: 1645-44

End Date: September 7, 2023

Sample Date: August 29, 2023

Job# / Sample # C367471 / BXV070

Analyst(s): N. Shergill, NBlossnith, LMHamad, P.Hewes

Organism Lot #: CP230822

pH of raw sample	pH after addition of APHA stocks A, B, & C	Pre-aeration time	pH after aeration
7.2	7.3	20min	7.2

APHA Stocks Prep Date: media: 2023 Aug 30 2022 Oct 27 & 2022 Nov 01

Instrument IDs: BBY2-0509

Thermometer ID: BBY2-0509

Plant Shelf #: 2

Test Volume (mL): 150

Sample Description: clear & colourless

Concentration (%)	Temperature Monitoring								pH Monitoring	
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 0	Day 7
Control	24	26	26	26	26	26	25	27	8.2	8.4
1.5	24	26	26	26	26	26	26	28	8.0	9.5
3.0										
6.0										
12.1	24	26	26	26	26	26	26	27	7.9	10.1
24.2										
48.5										
97	25	26	26	27	27	27	26	27	7.3	8.0
Analyst	NSC	LD	MHM	NSC	NSC	NSC	NSC	PH	NSC	PH
Date	2023 Aug 31	2023 Sep 01	2023 Sep 02	2023 Sep 03	2023 Sep 04	2023 Sep 05	2023 Sep 06	2023 Sept 7	2023 Aug 31	2023 Sept 7

Observations during the Test

Day 0 (Test Initiation)

Date: August 31, 2023

Analyst: NShergill

# of Plants per Test Vessel: 2

# of Fronds per Plant 3

Plant Observations: DG + H

Test Seeded @: 14:21

Other comments: nil

Day 1

Date: September 1, 2023

Analyst: NBlossnith

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H

Other Comments: DG

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: August 31, 2023

Job# / Sample # C367471 / BXV070

Day 2

Date: September 2, 2023 Analyst: Mitchell

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H

Other Comments: N/A

Day 3

Date: September 3, 2023 Analyst: NSheargill

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H

Other Comments: n/a

Day 4

Date: September 4, 2023 Analyst: NSheargill

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	H,A DG,LG	H DG,LG

Other Comments: n/a

Day 5

Date: September 5, 2023 Analyst: NSheargile

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,LG,H	A DG,LG,H	A DG,LG,H	A DG,LG,H	A DG,LG,H	A DG,LG,H	A DG,LG,H	DG,LG,H

Other Comments: No Algae NSC 2023 Sept 05

Day 6

Date: September 6, 2023 Analyst: NSheargile

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	DG,LG,H

Other Comments: n/a

Day 7

Date: September 7, 2023 Analyst: P. Howes

Test End Time: 16:51

Observations:	Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
	DG,LG,H	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,A,N	DG,LG,A,N	DG,LG,A,N	DG,H,N

Other Comments: n/a

pH up 2023Sept7

Legend:

DG = Dark Green	**C** = Chlorosis	**A** = Green Algae	**CD** = Colony destroyed
LG = Light Green	**N** = Necrosis	**T** = Transparent	**RD** = Roots destroyed
H = Healthy, Normal	**G** = Gibbosity	**S** = small fronds	

Other :

ECOTOXICOLOGY

Randomization Chart

Client Name: Diavik Diamond Mines

Test Date: 31-Aug

Sample Name: 1645-44

Shelf #: 2

Position Map

Back Wall							
5	10	15	20	25	30	35	40
4	9	14	19	24	29	34	39
3	8	13	18	23	28	33	38
2	7	12	17	22	27	32	37
1	6	11	16	21	26	31	36

Front of Counter

Position #	Treatment	Replicate	Colour
8		A	
10		B	
31	Control	C	Red
16		D	
24		Measure	
13		A	
33		B	
18	1.5%	C	Orange
1		D	
11		Measure	
9		A	
22		B	
32	3.0%	C	Yellow
17		D	
4		Measure	
5		A	
30		B	
35	6.0%	C	Fl. Green
25		D	
21		Meas.	
12		A	
40		B	
20	12.1%	C	Teal
26		D	
39		Measure	
29		A	
34		B	
19	24.2%	C	Blue
23		D	
36		Measure	
7		A	
15		B	
2	48.5%	C	Purple
6		D	
37		Measure	
28		A	
38		B	
3	97%	C	Pink
27		D	
14		Measure	

Stock Culture Information

Parent Culture ID: CP230815 Culture flask #'s: 1-8

Appearance of culture and media prior to subculturing:

- [x] Plants appear dark green and healthy. Media appears light yellow and clear.
- [ ] Other: _____

Analyst: P. Hawes

Test Subculture and Health Monitoring (7 - 10 days prior to testing)

Date of Transfer: 2023 Aug 22 New Subculture ID: CP230822

# of Flasks Prepared: 5 Flask Volume: ~500ml

# of Plants/Flask: 10 Shelf Location: 3

Hoagland's Batch: 2023 Aug 16 Analyst: P. Hawes

Health Monitoring Cups

Date prepared: 2023 Aug 22 Test Medium: APHA 2023 Aug 16

replicates: 3 Shelf #: 3

Fronds seeded/rep: 3 Analyst: P. Hawes

Day 7 Counts

Rep A	Rep B	Rep C	Mean	Date	Analyst
40	38	35	38	2023 Aug 29	N Sherguo

(Health cup validity: Mean of ≥24 fronds on day 7, when 3 fronds/rep are seeded on day 0)

APHA Acclimation (18-24 hrs prior to testing) for (date): 2023Aug31 **setup**

Date & Time of Transfer: 2023Aug30@1600 Subculture ID: CP230822 Shelf Location: 1

Appearance of plants and Hoagland's E+ media prior to transfer to APHA media:

- [x] Plants appear dark green and healthy. Media appears light yellow and clear.
- [ ] Other: _____

Number of crystallization dishes prepared (2) using # of subculture flasks (large: 4 small: 4)

APHA Batch: 2023 Aug 22 Analyst: N Sherguo

APHA Acclimation (18-24 hrs prior to testing) for (date): _____ **setup**

Date & Time of Transfer: _____ Subculture ID: _____ Shelf Location: _____

Appearance of plants and Hoagland's E+ media prior to transfer to APHA media:

- [ ] Plants appear dark green and healthy. Media appears light yellow and clear.
- [ ] Other: _____

Number of crystallization dishes prepared (_____) using # of subculture flasks (large: _____ small: _____)

APHA Batch: Analyst:

Modified APHA Medium Preparation Sheet *(Lemna minor)*

APHA Medium is the test medium recommended for testing samples of effluent, leachate, or receiving water, using *L. minor.*

To prepare 1L of APHA test medium, the following are added to 970 mL of Type 1 deionized water. The medium is aerated vigorously for at least 2 hours. If larger volume (>4 L) of media is prepared, overnight aeration of the medium is recommended to stabilize the pH of the medium. Immediately before testing, the pH of the test medium is adjusted to 8.3+/-0.1 using 1N NaOH or 1N HCl).

Volume Prepared (L):	20
Date of Preparation:	2023Aug30A
Date of Use:	2023 Aug 31
Analyst:	NSherque

Stock Solution	Date of Preparation	Nominal Amount (mL)	Actual Amount (mL)	Graduated Cylinder (A) or Pipette (B)
Stock Solution A	2023 Oct 27	200	200	A
Stock Solution B	2023 Oct 27	200	200	A
Stock Solution C	2023 Nov 01	200	200	A

Pipette ID: nla

Volume of media prepared	Theoretical aeration time	Actual aeration time
1-4 L	At least 2 hours	nla
>4 L	Overnight	>12hrs

Initial pH	8.2	[8.3+/-0.1]
Final pH	nla	

pH Meter ID: 8842-0509

Normality of NaOH:		[0.5 N]
Volume of NaOH:	nla	
Normality of HCl:		[0.5 N]
Volume of HCl:		

ECOTOXICOLOGY
LABORATORY LIGHT LEVELS

Lab Location: Room #109

Light Meter ID: BB42-0459

Light Fixture Correction Factor: Actual Levels X n/a = Corrected Levels
Mercury - (reading x **1.05**) Fluorescent - (reading x **0.91**) Daylight - (reading x **0.95**)

Test Method: Lemna Minor 7 Day Growth Inhibition Test

Required Light Levels and Units: 65-89 µmol/m²s

Date: 2023 Aug 31 Analyst: NShergill

Site of Measurement	Actual Levels	Corrected Levels
Shelf #1: Left front	80	
Left back	87	
middle front	77	
middle back	82	
Right front	68	
Right back	79	
Shelf #2: Left front	88	
Left back	74	
Middle front	73	
Middle back	89	
Right front	65	
Right back	65	
Shelf #3 Left front	66	
Left back	80	
Middle front	73	
Middle back	86	
Right front	68	
Right back	89	

NSC 2023 Aug 31

WOE NSC 2023 Aug 31

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Effluent Sample	
Name of Sample(s)	1645-68 and 1645-44
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2023/Aug/29
Date (y/m/d) of sample receipt at lab	2023/Aug/29 @ 13:51
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 11:38
Initial cell density of inoculum	9909 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test(s) started	**1645-68**: 2023/Sep/01 @ 11:49 **1645-44**: 2023/Sep/01 @ 11:52
Date & time test(s) ended	**1645-68**: 2023/Sep/04 @ 10:50 **1645-44**: 2023/Sep/04 @ 12:15
Persons performing test(s)	P. Fang, N. Shergill
Mean test temperature	25 °C
Procedure/rate/duration of aeration of sample before test(s)	No aeration
pH adjustment	No pH adjustment
pH of aqueous sample(s) before preparation and use in toxicity	See “Data Summary” data sheet

test	
pH of sample(s) before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 μm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	$NaHCO_3$, $CaSO_4$, $MgSO_4$, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3695-3977 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2023/Sept/04
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**1645-68**: Yes, significant stimulation was observed in the 5.682% up to the 45.455% v/v concentrations. See Bonferroni Adj t Test in CETIS. **1645-44**: Yes, significant stimulation was observed in the 2.841% up to the 90.91% v/v concentrations. See Bonferroni Adj t Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-68**: CETIS v2.1.2.3 – Linear Interpolation (ICPIN) **1645-44**: CETIS v2.1.2.3 – Linear Interpolation (ICPIN)
Weighting techniques applied?	**1645-68**: N/A **1645-44**: N/A
Residuals Analysis	**1645-68**: N/A **1645-44**: N/A
Outliers?	**1645-68**: None **1645-44**: None

QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV: **1645-68:** 14% **1645-44:** 10% • Trend in the controls? **1645-68:** No **1645-44:** No • Algal cells increased by: **1645-68:** 35.0 **1645-44:** 31.6
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.0497; 2SD: (0.0385, 0.0662) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0413; 2SD: (0.0293, 0.0583)
Invalid Ref tox test?	No
Date of ref tox test (y/m/d)	2023/Sep/01
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Report Date: 05 Sep-23 13:17 (p 1 of 2)
Test Code/ID: SL-4388-2423 / 14-0545-4508

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	13-0336-3597	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	05 Sep-23 13:17	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CEAFBB3310264B81091B838A75E575CF	**Editor ID:**	

Batch ID:	12-2759-8525	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	01 Sep-23 11:49	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	04 Sep-23 ~~12:15~~ 10:50 (A)	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2884-5698	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	77h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	2.841	5.682	4.018	35.2	14.64	41.84%

Bonferroni Adj t Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42	9	0.8682	2.98	14.64	CDF	1.0000	Non-Significant Effect
		2.841	9	1.723	2.98	14.64	CDF	0.6974	Non-Significant Effect
		5.682*	9	3.089	2.98	14.64	CDF	0.0389	Significant Effect
		11.364*	9	3.062	2.98	14.64	CDF	0.0414	Significant Effect
		22.728*	9	3.625	2.98	14.64	CDF	0.0111	Significant Effect
		45.455*	9	3.781	2.98	14.64	CDF	0.0077	Significant Effect
		90.91	9	2.967	2.98	14.64	CDF	0.0514	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.351	2.893	0.3994	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	0.7195	0.05	0.7195	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1527.83	218.261	7	4.142	0.0052	Significant Effect
Error	1106.66	52.6981	21			
Total	2634.49		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.364	18.48	0.4980	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.976	0.9004	0.7299	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	35	30.94	39.06	34.72	28.15	43.75	1.717	13.88%	0.00%
1.42		3	39.27	26.14	52.39	37.9	34.8	45.1	3.051	13.46%	-12.19%
2.841		3	43.47	31.22	55.71	40.9	40.35	49.15	2.846	11.34%	-24.19%
5.682		3	50.18	41.67	58.7	50.3	46.7	53.55	1.978	6.83%	-43.38%
11.364		3	50.05	34.31	65.79	51.7	43.05	55.4	3.659	12.66%	-43.00%
22.728		3	52.82	29.85	75.78	48.3	46.7	63.45	5.337	17.50%	-50.90%
45.455		3	53.58	18.69	88.47	55.2	38.8	66.75	8.109	26.21%	-53.10%
90.91		3	49.58	26.83	72.34	46.85	42.1	59.8	5.289	18.48%	-41.67%

(A) WE MT 2023 Sep 26

2023 Sep 26

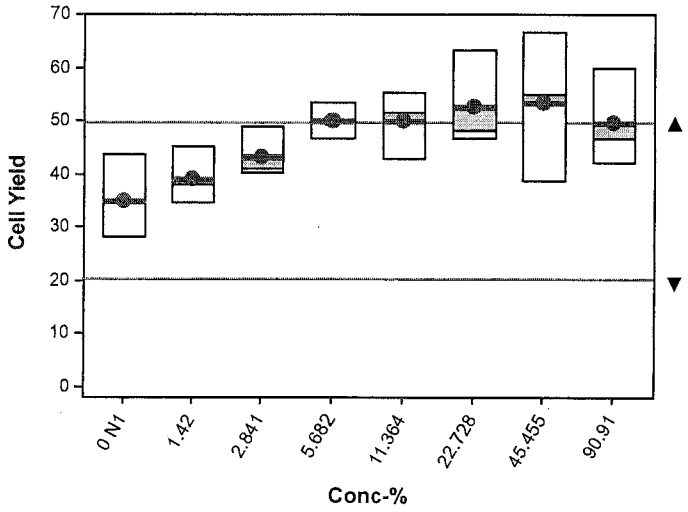
Alga Growth Inhibition Test — **Bureau Veritas**

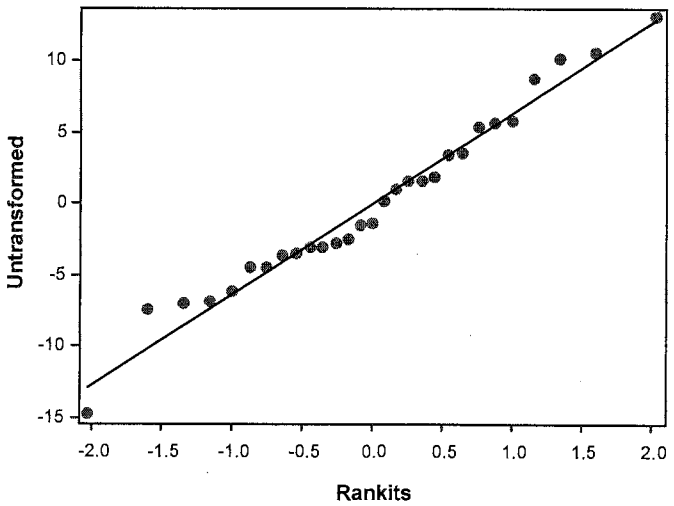
Analysis ID:	13-0336-3597	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	05 Sep-23 13:17	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CEAFBB3310264B81091B838A75E575CF	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	28.15	36.85	31.9	38.5	33.45	43.75	36	31.4
1.42		45.1	37.9	34.8					
2.841		49.15	40.9	40.35					
5.682		50.3	46.7	53.55					
11.364		55.4	51.7	43.05					
22.728		63.45	48.3	46.7					
45.455		66.75	55.2	38.8					
90.91		46.85	59.8	42.1					

Graphics





Analyst: dmd 2023 Sep 5 QA: MH 2023 Sep 26

CETIS Analytical Report

Test Code/ID: SL-4388-2423 / 14-0545-4508

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-4832-8307	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	05 Sep-23 13:17	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CEAFBB3310264B81091B838A75E575CF	**Editor ID:**	

Batch ID:	12-2759-8525	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	01 Sep-23 11:49	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	04 Sep-23 ~~12:15~~	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h (A) 10:50	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	18-2884-5698	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 06:35	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-68
Sample Age:	77h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1327644	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>90.91	---	---	<1.1	---	---
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	35	34.72	28.15	43.75	13.88%	0.00%	46.74	0.00%
1.42		3	39.27	37.9	34.8	45.1	13.46%	-12.19%	46.74	0.00%
2.841		3	43.47	40.9	40.35	49.15	11.34%	-24.19%	46.74	0.00%
5.682		3	50.18	50.3	46.7	53.55	6.83%	-43.38%	46.74	0.00%
11.364		3	50.05	51.7	43.05	55.4	12.66%	-43.00%	46.74	0.00%
22.728		3	52.82	48.3	46.7	63.45	17.50%	-50.90%	46.74	0.00%
45.455		3	53.58	55.2	38.8	66.75	26.21%	-53.10%	46.74	0.00%
90.91		3	49.58	46.85	42.1	59.8	18.48%	-41.67%	46.74	0.00%

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	28.15	36.85	31.9	38.5	33.45	43.75	36	31.4
1.42		45.1	37.9	34.8					
2.841		49.15	40.9	40.35					
5.682		50.3	46.7	53.55					
11.364		55.4	51.7	43.05					
22.728		63.45	48.3	46.7					
45.455		66.75	55.2	38.8					
90.91		46.85	59.8	42.1					

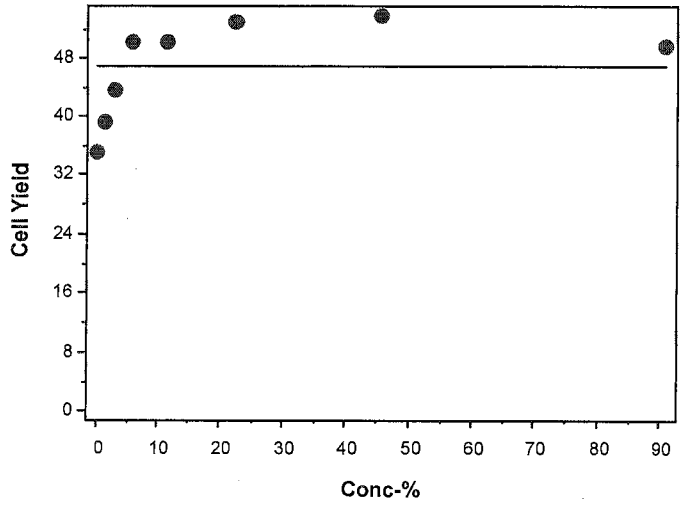
(A) WE mt 2023 Sep 26

Analyst: [illegible] 2023 Sep 26 QA: mt

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-4832-8307	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	05 Sep-23 13:17	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CEAFBB3310264B81091B838A75E575CF	**Editor ID:**	

Graphics



Analyst: 2023 Sep 05 QA: MT 2023 Sep 26

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-68
Date Sampled: 2023 Aug 29
Job / Sample #: C367471 BXV069
Date & Time Started: 2023 Sept 01 @ 11:49
Date & Time Ended: 2023 Sept 04 @ 10:50
Analyst(s): N. Shergill
Instrument ID: BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	33.4	24.9	28.15	35.00	4.86	14
Lab Control	D3	38.4	37.3	36.85			
Lab Control	D4	33.1	32.7	31.90			
Lab Control	D5	32.9	46.1	38.50			
Lab Control	D8	37.2	31.7	33.45			
Lab Control	D9	46.2	43.3	43.75			
Lab Control	D10	42.9	31.1	36.00			
Lab Control	D11	26.0	38.8	31.40			
1.420	C8	43.3	48.9	45.10	39.27	5.28	13
1.420	E8	36.1	41.7	37.90			
1.420	F8	28.7	42.9	34.80			
2.841	C7	51.7	48.6	49.15	43.47	4.93	11
2.841	E7	38.5	45.3	40.90			
2.841	F7	42.0	40.7	40.35			
5.682	C6	44.3	58.3	50.30	50.18	3.43	7
5.682	E6	50.2	45.2	46.70			
5.682	F6	53.5	55.6	53.55			
11.364	C5	54.8	58.0	55.40	50.05	6.34	13
11.364	E5	64.5	40.9	51.70			
11.364	F5	41.2	46.9	43.05			
22.728	C4	61.7	67.2	63.45	52.82	9.24	18
22.728	E4	48.9	49.7	48.30			
22.728	F4	42.4	53.0	46.70			
45.455	C3	62.5	73.0	66.75	53.58	14.04	26
45.455	E3	47.8	64.6	55.20			
45.455	F3	32.4	47.2	38.80			
90.91	C2	48.5	47.2	46.85	49.58	9.16	18
90.91	E2	64.4	57.2	59.80			
90.91	F2	34.6	51.6	42.10			

proofed: NSC 2023Sept 25

Client Name: Diavik

Job / Sample #: C367471 BXV069

Date Sampled: 2023 Aug 29

Sample ID: 1645-68

Date Received: 2023 Aug 29

Culture Date: 2023 Aug 29 @

Date & Time Started: 2023 Sept 01 @ 11:48

Culture Description: Green

Date & Time Ended: 2023 Sept 04 @ 10:50

Light Intensity at Surface (lux): 3695 - 3977

Analyst(s): D. Fang, N. Shergill

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0526, BBY2-0405, BBY2-0128

Reagent Water Preparation:

Date of reconstituted water prep: 2023 Aug 31

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: D

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 26

Sample Water Quality

Initial pH: 6.9 Initial Temp (°C): 25.2 Sample Description: Clear, pale yellow

Initial Filtered pH (well B2): 7.4

Final Filtered pH (well B2): 7.8

Control Water Quality

Initial Filtered pH (well D6): 7.6

Final Filtered pH (well D7): 7.3

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 21.8 (*10^4 cells/mL)

Time of inoculum prep: 11:38

Therefore, (**Xi**) 2180 cells were initially put into each test well and the initial cell density was (**Xd**) 9909 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 21.8 x 10^4) * 0.02] = 2180 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2180) * (4.5455)] = 9909 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2023 Sep 02	Y	Y	Y	D
2023 Sept 03	Y	Y	Y	NSC
2023 Sept 04	Y	Y		NSC

CETIS Analytical Report

Test Code/ID: SL-4388-1323 / 18-6460-1151

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	07-6682-7297	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	26 Sep-23 15:43	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2F6C73E48DBC5DA8A18AD566696C5E3	**Editor ID:**	

Batch ID:	12-0583-1835	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	01 Sep-23 11:52	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	04 Sep-23 12:15	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	07-5160-7531	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	1.42	2.841	2.009	70.4	10.93	34.58%

Bonferroni Adj t Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42	9	2.495	2.98	10.93	CDF	0.1470	Non-Significant Effect
		2.841*	9	3.872	2.98	10.93	CDF	0.0062	Significant Effect
		5.682*	9	5.084	2.98	10.93	CDF	0.0003	Significant Effect
		11.364*	9	4.512	2.98	10.93	CDF	0.0013	Significant Effect
		22.728*	9	4.807	2.98	10.93	CDF	0.0007	Significant Effect
		45.455*	9	7.374	2.98	10.93	CDF	<1.0E-05	Significant Effect
		90.91*	9	9.659	2.98	10.93	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.56	2.893	0.1930	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	0.2751	0.05	0.2751	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3649.24	521.321	7	17.75	<1.0E-05	Significant Effect
Error	616.752	29.3692	21			
Total	4266		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	12.04	18.48	0.0991	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.962	0.9004	0.3670	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	31.61	28.9	34.33	31.9	26.25	36.55	1.148	10.27%	0.00%
1.42		3	40.77	19.71	61.82	45.1	31	46.2	4.894	20.79%	-28.96%
2.841		3	45.82	36.53	55.1	46.75	41.7	49	2.158	8.16%	-44.93%
5.682		3	50.27	20.76	79.77	50.55	38.25	62	6.857	23.63%	-59.01%
11.364		3	48.17	44.25	52.08	48.15	46.6	49.75	0.9094	3.27%	-52.37%
22.728		3	49.25	37.08	61.42	48.7	44.65	54.4	2.828	9.95%	-55.79%
45.455		3	58.67	49.86	67.47	58.25	55.35	62.4	2.046	6.04%	-85.58%
90.91		3	67.05	61.2	72.9	66.85	64.8	69.5	1.36	3.51%	-112.10%

2023 Sept 26 Analyst: NC QA: MH 2023 Sep 26

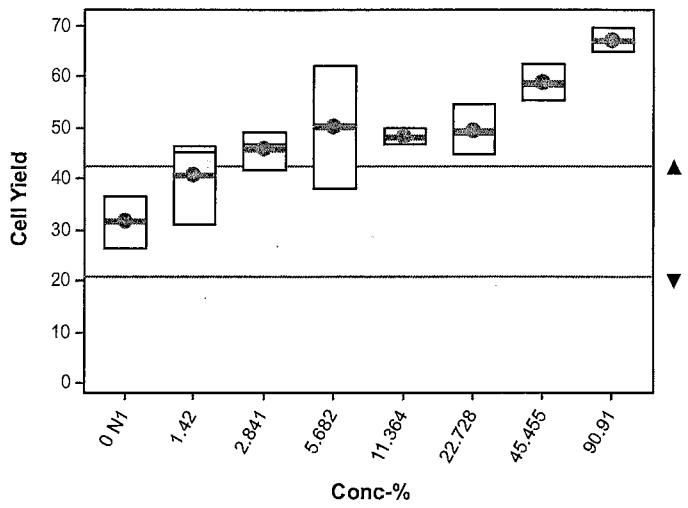
Alga Growth Inhibition Test — **Bureau Veritas**

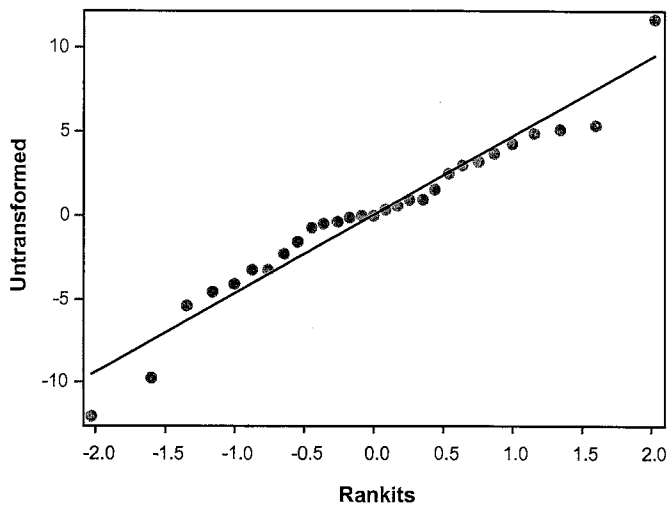
Analysis ID:	07-6682-7297	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	26 Sep-23 15:43	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2F6C73E48DBC5DA8A18AD566696C5E3	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	26.25	28.4	36.55	32.2	30.85	32.5	34.55	31.6
1.42		45.1	31	46.2					
2.841		49	46.75	41.7					
5.682		50.55	62	38.25					
11.364		49.75	48.15	46.6					
22.728		48.7	44.65	54.4					
45.455		55.35	62.4	58.25					
90.91		64.8	69.5	66.85					

Graphics





2023 Sept 26 Analyst: NK QA: MH 2023 SEP 26

CETIS Analytical Report

Test Code/ID: SL-4388-1323 / 18-6460-1151

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	17-9145-0774	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	26 Sep-23 15:44	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2F6C73E48DBC5DA8A18AD566696C5E3	**Editor ID:**	

Batch ID:	12-0583-1835	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	01 Sep-23 11:52	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	04 Sep-23 12:15	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	72h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	07-5160-7531	**Code:**	C367471	**Project:**	2-11-0691
Sample Date:	29 Aug-23 05:55	**Material:**	Water	**Source:**	Diavik
Receipt Date:	29 Aug-23 13:51	**CAS (PC):**		**Station:**	1645-44
Sample Age:	78h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	534148	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>90.91	---	---	<1.1	---	---
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N1	8	31.61	31.9	26.25	36.55	10.27%	0.00%	48.95	0.00%
1.42		3	40.77	45.1	31	46.2	20.79%	-28.96%	48.95	0.00%
2.841		3	45.82	46.75	41.7	49	8.16%	-44.93%	48.95	0.00%
5.682		3	50.27	50.55	38.25	62	23.63%	-59.01%	48.95	0.00%
11.364		3	48.17	48.15	46.6	49.75	3.27%	-52.37%	48.95	0.00%
22.728		3	49.25	48.7	44.65	54.4	9.95%	-55.79%	48.95	0.00%
45.455		3	58.67	58.25	55.35	62.4	6.04%	-85.58%	48.95	0.00%
90.91		3	67.05	66.85	64.8	69.5	3.51%	-112.10%	48.95	0.00%

Cell Yield Detail

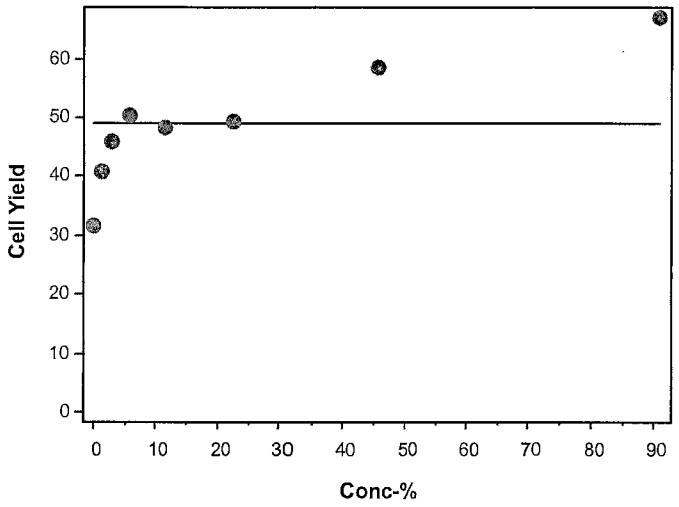
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	26.25	28.4	36.55	32.2	30.85	32.5	34.55	31.6
1.42		45.1	31	46.2					
2.841		49	46.75	41.7					
5.682		50.55	62	38.25					
11.364		49.75	48.15	46.6					
22.728		48.7	44.65	54.4					
45.455		55.35	62.4	58.25					
90.91		64.8	69.5	66.85					

2023 Sept 26 Analyst: NSC QA: MH 2023 Sep 26

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	17-9145-0774	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	26 Sep-23 15:44	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	2F6C73E48DBC5DA8A18AD566696C5E3	**Editor ID:**	

Graphics



2023 Sept 26 Analyst: NSC QA: MH 2023 Sep 26

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik
Sample ID: 1645-44
Date Sampled: 2023 Aug 29
Job / Sample #: C367471 / BXV070
Date & Time Started: 2023 Sept 01 @ 11:52
Date & Time Ended: 2023 Sept 04 @ 12:15
Analyst(s): N. Shergill
Instrument ID: BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	33.0	21.5	26.25	31.61	3.25	10
Lab Control	D3	29.4	29.4	28.40			
Lab Control	D4	41.8	33.3	36.55			
Lab Control	D5	21.3	45.1	32.20			
Lab Control	D8	35.1	28.6	30.85			
Lab Control	D9	36.3	30.7	32.50			
Lab Control	D10	42.7	28.4	34.55			
Lab Control	D11	37.0	28.2	31.60			
1.420	C8	46.2	46.0	45.10	40.77	8.48	21
1.420	E8	26.0	38.0	31.00			
1.420	F8	42.1	52.3	46.20			
2.841	C7	55.3	44.7	49.00	45.82	3.74	8
2.841	E7	48.6	46.9	46.75			
2.841	F7	39.5	45.9	41.70			
5.682	C6	42.9	60.2	50.55	50.27	11.88	24
5.682	E6	61.3	64.7	62.00			
5.682	F6	44.4	34.1	38.25			
11.364	C5	50.1	51.4	49.75	48.17	1.58	3
11.364	E5	42.1	56.2	48.15			
11.364	F5	56.8	38.4	46.60			
22.728	C4	47.8	51.6	48.70	49.25	4.90	10
22.728	E4	45.6	45.7	44.65			
22.728	F4	50.8	60.0	54.40			
45.455	C3	61.2	51.5	55.35	58.67	3.54	6
45.455	E3*	-	63.4	62.40			
45.455	F3	54.6	63.9	58.25			
90.91	C2	62.9	68.7	64.80	67.05	2.36	4
90.91	E2	59.4	81.6	69.50			
90.91	F2	84.7	51.0	66.85			

* Due to analyst error, only one count was done for well E3.

Proofed NSC 2023 Sept26

Client Name: Diavik

Job / Sample #: C367471 / BXV070

Date Sampled: 2023 Aug 29

Sample ID: 1645-~~64~~ 44 (B)

Date Received: 2023 Aug 29

Culture Date: 2023 Aug 29 (A)

Date & Time Started: 2023 Sept 01 @ 11:52

Culture Description: Green

Date & Time Ended: 2023 Sept 04 @ 12:15

Light Intensity at Surface (lux): 3695 - 3977

Analyst(s): P. Fang, NSurgill

Instrument ID(s): BBY2-0006, BBY2-0290, BBY2-0526, BBY2-0405, BBY2-0128

Reagent Water Preparation:

Date of reconstituted water prep: 2023 Aug 31

Hardness (~20 mg/L $CaCO_3$): 19

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: DL

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 26

Sample Water Quality

Initial pH: 7.1 Initial Temp (°C): 24.8 Sample Description: Clear, ~~pale yellow~~ colourless (A)

Initial Filtered pH (well B2): 7.5

Final Filtered pH (well B2): 8.3

Control Water Quality

Initial Filtered pH (well D6): 7.6

Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 21.8 (*10^4 cells/mL)

Time of inoculum prep: 11:38

Therefore, (**Xi**) 2180 cells were initially put into each test well and the initial cell density was (**Xd**) 9909 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 21.8 x 10^4) * 0.02] = 2180 cells

To calculate the initial cell density:

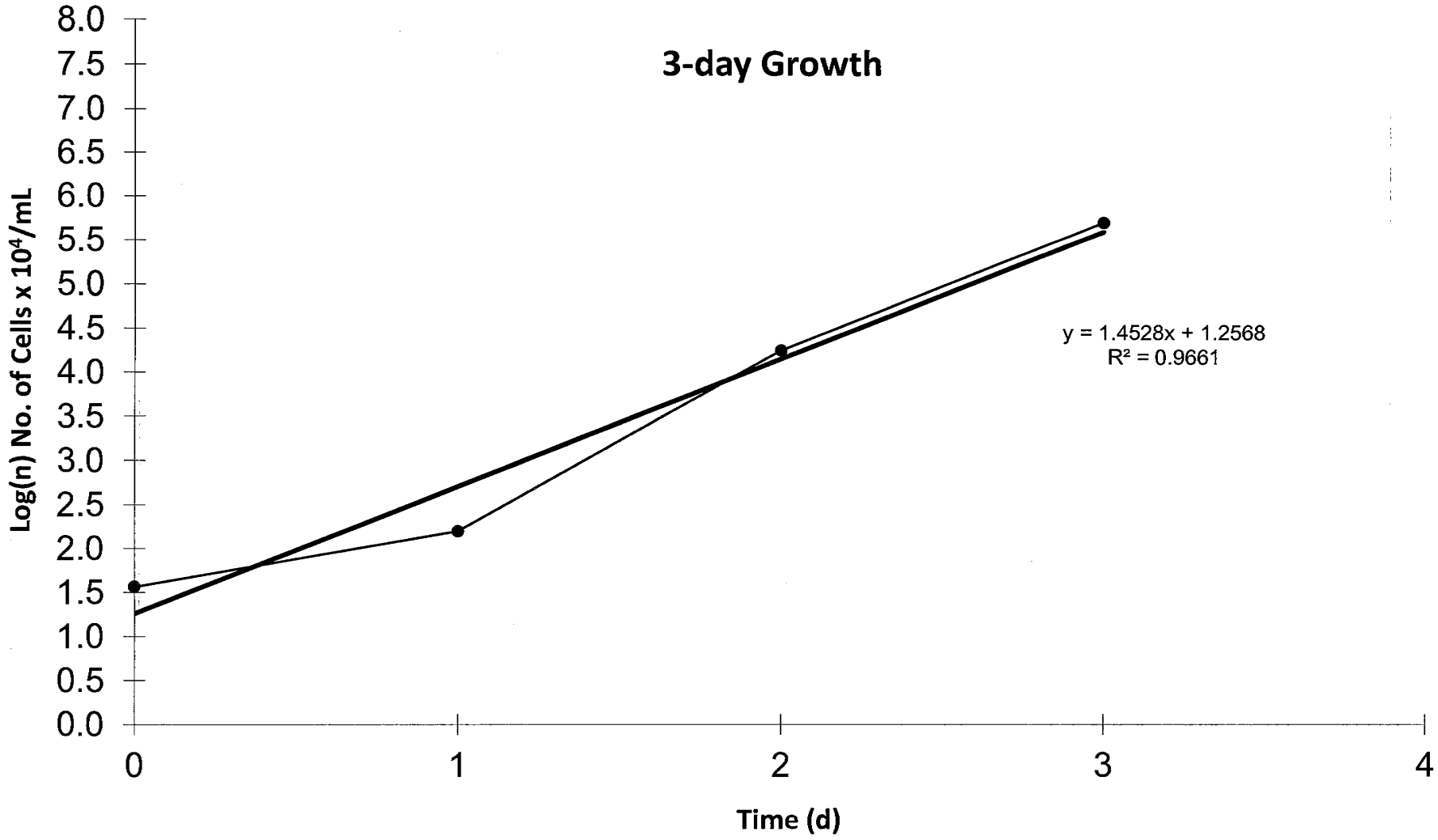
Xd = [(Xi) * (1000/220)] = [(2180) * (4.5455)] = 9909 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2023 Sep 02	Y	Y	Y	DL
2023 Sept 03	Y	Y	Y	NSC
2023 Sept 04	Y	Y		NSC

(A) Wrote on wrong page. DL 2023 Sep 01
(B) WE DL 2023 Sep 01.

***Pseudokirchneriella subcapitata* Growth Curve using CP230104; Date: 2023/Jul/25**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C372978

Client Project Name & Number: Closure — Sample Number: BZB159-14

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-76-4 — Sample Matrix : Grab Water

Description: Clear, colourless — Sample Prior to Analysis:

Sample Collected: N/A — Sampling Method : N/A — pH: 8.0

Sample Collected By: AD — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 14, 2023 02:20 PM — Volume Received: 1 L — Dissolved Oxygen: 122.0 %

Analysis Start : Sep 15, 2023 02:03 PM — Avg Temp Arrival: 8 °C — Sample Conductance: 1948 µS/cm

End : Sep 17, 2023 01:10 PM — Storage: 2-6°C — Hardness: 1000 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	291	8.3	0	0	0	0	20	8.5	296	8.4
6.25	20	8.2	450	8.4	0	0	0	0	20	8.4	418	8.3
12.5	20	8.2	569	8.5	0	0	0	0	20	8.3	578	8.3
25	20	8.1	828	8.6	0	0	0	0	20	8.3	833	8.2
50	20	8.0	1250	8.8	0	0	0	0	20	8.2	1279	8.4
100	19	7.8	2106	9.3	0	0	0	0	20	8.1	2160	8.4

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 29.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C372978
Client Project Name & Number:		Closure	Sample Number:	BZB159-14

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan, Natasha Lloyd, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 20, 2023 10:08 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C372978

Client Project Name & Number: Closure — Sample Number: BZB160-15

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-67 — Sample Matrix : Grab Water

Description: Yellow, clear — Sample Prior to Analysis:

Sample Collected: N/A — Sampling Method : N/A — pH: 7.4

Sample Collected By: AD — Site Collection: N/A — Temperature : 18 °C

Sample Received: Sep 14, 2023 02:20 PM — Volume Received: 1L — Dissolved Oxygen: 128.0 %

Analysis Start : Sep 16, 2023 10:44 AM — Avg Temp Arrival: 8 °C — Sample Conductance: 1382 µS/cm

End : Sep 18, 2023 11:20 AM — Storage: 2-6°C — Hardness: 380 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.4	289	8.1	0	0	0	0	20	7.8	291	7.7
6.25	20	8.3	370	8.4	0	0	0	0	20	8.0	363	7.7
12.5	20	8.2	485	8.3	0	0	0	0	20	8.0	490	7.7
25	20	8.1	612	8.7	0	0	0	0	20	8.0	612	7.7
50	20	7.9	893	9.0	0	0	0	0	20	7.9	885	7.7
100	20	7.4	1433	9.7	0	0	0	0	20	7.8	1467	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 25.2

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C372978
Client Project Name & Number:		Closure	Sample Number:	BZB160-15

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Natasha Lloyd, Svetlana Sofrenovic, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Sep 20, 2023 10:12 AM

www.bvlabs.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-76-4 AND 1645-67

SAMPLING DATE:

SEPTEMBER 13, 2023

Prepared for:

Diavik Diamond Mines Inc.
PO. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C372978
October 2023

Summary of Test Results for Samples from
Diavik Diamond Mines Ltd.
Sample Date: September 13, 2023
Job C372978

Sample: 1645-76-4

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	31.8 (20.5, 45.3)
	Reproduction	3.3 (2.2, 4.6)	-

N/A = Not available
95% confidence limits in parentheses

Sample: 1645-67

Test		IC25 or LC25 (%v/v)	IC50 or LC50 (%v/v)
Ceriodaphnia dubia:	Survival	-	>100 (N/A, N/A)
	Reproduction	>100 (N/A, N/A)	-

N/A = Not available
95% confidence limits in parentheses

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The hardness, conductivity, dissolved oxygen, and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Ceriodaphnia dubia Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	2 samples, each collected in 3 separate containers
Test Type	Static-renewal
Effluent Sample	
Sample name	1645-76-4 and 1645-67
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2023/Sep/13
Date (y/m/d)/time of sample receipt at lab	2021/Sep/14 @ 14:20
Test Organisms	
Species	*Ceriodaphnia dubia*
Source	In-house culture started from organisms obtained from Aquatic Biosystems Inc., Fort Collins, Colorado
Age at start of test	<24 hours old; within 12 hours of each other
Unusual appearance, behaviour or treatment of test organisms, before use in test	None
Mean percent mortality of brood in 7d preceding test	The mean percent mortality was 2.90%. See "*Ceriodaphnia* Culture Health - Mortality Records" sheet
Mean number of surviving young produced per adult in culture during 7d preceding test	The mean number of surviving young was 27.7. See "*Ceriodaphnia* Culture Health – Mortality and Mean Neonates"
Number of young produced in the 3rd or subsequent brood	See "*Ceriodaphnia dubia* - Clearing Records"
Ephippia in the culture	No Ephippia present
Test Conditions & Facilities	
Test method	BBY2 SOP-00001 *Ceriodaphnia dubia* Chronic Survival and Reproduction Test EPS 1/RM/21, 2nd Ed., February 2007
Dates or days when subsamples used	See "Initial Measurements and Observations" sheet
Date test started (y/m/d)	2023/Sep/15
Date (y/m/d) of test completion	2023/Sep/21
Test vessels	20 mL glass culture tubes
Persons performing test	P. Fang, N. Blassnitz, M. Hamad, M. Mazziotti, N. Shergill, M. Thompson
Rate of preaeration	Minimal and controlled (100 bubbles/min)
Duration of preaeration	See "Initial Measurements and Observations" sheet
Rate/duration of aeration during test	No aeration

Procedure for pH adjustment	No pH adjustment of samples
Procedure for filtration	No filtration of samples
Source of control/dilution water & quantity of chemicals added	RODI water hardened to 80-88 mg/L $CaCO_3$ with 20% Perrier water, Vitamin B_{12} & Selenium
Number and concentration of test solutions	100% plus control
Volume and depth of solution in test vessels	15 mL & 9 cm
Number of replicates per conc.	10
Number of organisms per test vessel	1
DO & pH of sample just before its use	See “Initial Measurements and Observations”
Temperature, DO, & pH of test solutions and controls	See daily water quality on “Observation and Measurements”
Test solution renewal intervals	See “Initial Measurements and Observations”
Test observations and/or deviations from test method and standard practices	Although every effort is made to adhere to must conditions outlined in the reference method, it is important to note deviations do not automatically invalidate the test. Deviations are assessed for their impact on the test result and are qualified appropriately. **1645-67**: Due to Analyst error, the final dissolved oxygen and pH of the 1.56% v/v concentration was not recorded on day 6 of the test. The reference method states that the temperature, pH, and dissolved oxygen must be measured at the end of each 24-h exposure. In this instance, the missed measurements do not impact the test result, and all other culture and quality indicators met method criteria. There was nothing else unusual about the tests, no other deviations from the test method, and no other problems with the tests.
Outliers?	**1645-76-4**: None **1645-67**: Yes, replicate 5 of the 100% v/v concentration was determined to be an outlier for reproduction; however, it was not removed from the statistical analysis.

QA	
Did the test pass the test validity criteria of: •Mean mortality of the control adults is ≤20% •Average of ≥15 neonates/surviving adult in the controls •3 broods produced by ≥60% of control organisms by the end of the 8th day.	Did Lab controls meet validity criteria? Yes •Mean mortality in Lab controls: **1645-76-4**: 0% **1645-67**: 0% •Average live young produced/surviving adult: **1645-76-4**: 23.0 **1645-67**: 22.6 •Percent of Lab control organisms producing 3 broods: **1645-76-4**: 90% **1645-67**: 100%
Reference toxicant test LC50 (95% CL) (mg NaCl/L) for survival	1757 (1470, 2100)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for survival	1716 2SD (1490, 1980)
Reference toxicant test IC50 (95% CL) (mg NaCl/L) for reproduction	1376 (1292, 1475)
Reference toxicant test historic mean & 2SD range (mg NaCl/L) for reproduction	1460 2SD (1200, 1770)
Invalid Reference toxicant test?	No
Date of reference toxicant test (y/m/d) and duration	2023/Sep/13 6 days
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-2895-6409	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:36	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	E929F3FF9E2635FD1D9A5D1EEA008C62	**Editor ID:**	

Batch ID:	09-7322-2506	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Blassnitz
Start Date:	15 Sep-23 13:38	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	21 Sep-23 14:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	20-9264-7074	**Code:**	C372978	**Project:**	General Misc. Bioassays
Sample Date:	13 Sep-23 16:20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	14 Sep-23 14:20	**CAS (PC):**		**Station:**	1645-76-4
Sample Age:	45h	**Client:**	Diavik Diamond Mines Inc		

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	PMSD	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Control Threshold	0.026267	5.23%	Yes	Yes	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Cov	R2	F Stat	P-Value	Decision(α:5%)
13	-6.56	25.12	19.36	1.502368	0.2627349	-1.75431	0.8512			Indeterminate

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC5	11.75	2.819	18.86	8.5	5.3	35.5
LC10	14.64	4.516	22.14	6.8	4.5	22.1
LC15	16.98	6.174	24.79	5.9	4	16.2
LC20	19.11	7.882	27.24	5.2	3.7	12.7
LC25	21.14	9.677	29.66	4.7	3.4	10.3
LC40	27.28	15.76	37.87	3.7	2.6	6.3
LC50	31.8	20.45	45.33	3.1	2.2	4.9

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	Test Stat	P-Value	Decision(α:5%)
Threshold	0.02627	0.02599	-0.02467	0.0772	1.011	0.3121	Non-Significant Parameter
Slope	3.806	1.07	1.709	5.904	3.557	0.0004	Significant Parameter
Intercept	-5.718	1.662	-8.976	-2.46	-3.44	0.0006	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	295	147.5	2	198.8	1.7E-05	Significant Effect
Residual	3.71	0.7419	5			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	3.92	11.07	0.5610	Non-Significant Heterogeneity
	Pearson Chi-Sq GOF Test	3.71	11.07	0.5919	Non-Significant Heterogeneity
Outlier	Grubbs Extreme Value Test	2.004	2.127	0.1188	No Outliers Detected
Distribution	Anderson-Darling A2 Test	0.6361	2.492	0.0978	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8398	0.6805	0.0749	Normal Distribution

2023 OCT 11 dm 2023 OCT 13

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	02-2895-6409	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:36	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	E929F3FF9E2635FD1D9A5D1EEA008C62	**Editor ID:**	

6d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**ΣA/ΣB**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%	10/10
1.56		10	0.9000	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%	9/10
3.13		10	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%	10/10
6.25		10	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%	10/10
12.5		10	0.9000	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%	9/10
25		10	0.6000	1.0000	0.0000	1.0000	0.1633	0.5164	86.07%	40.00%	6/10
50		10	0.3000	0.0000	0.0000	1.0000	0.1528	0.4830	161.02%	70.00%	3/10
100		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/10

6d Survival Rate Detail

Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**	**Rep 5**	**Rep 6**	**Rep 7**	**Rep 8**	**Rep 9**	**Rep 10**
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000
25		0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000
50		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000
100		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

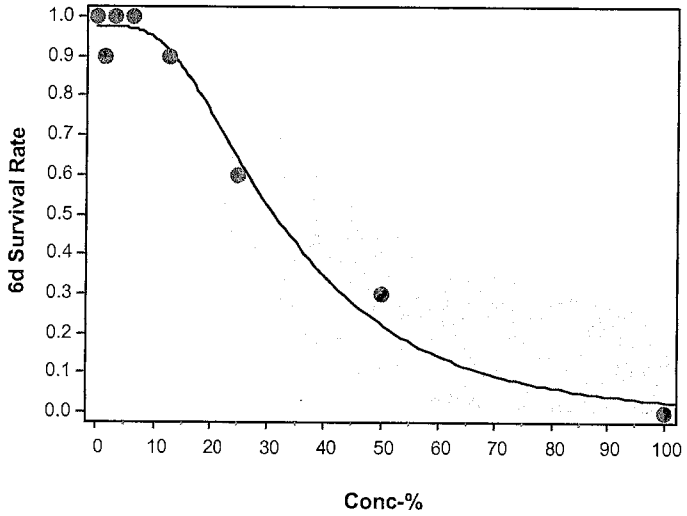
2023 OCT 11 dm 2023 OCT 13

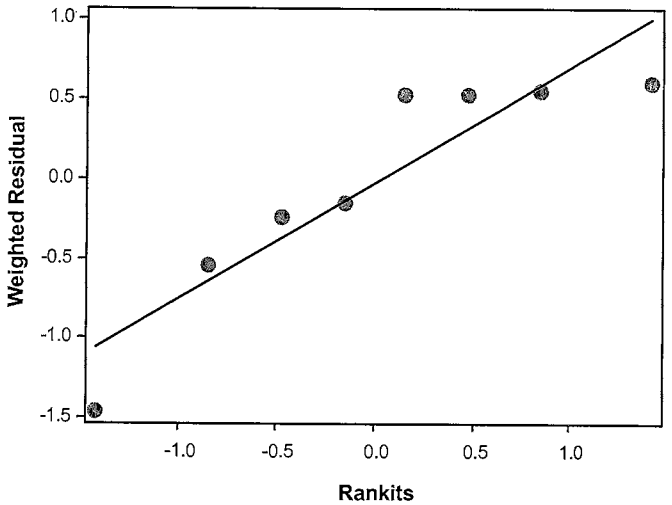
Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

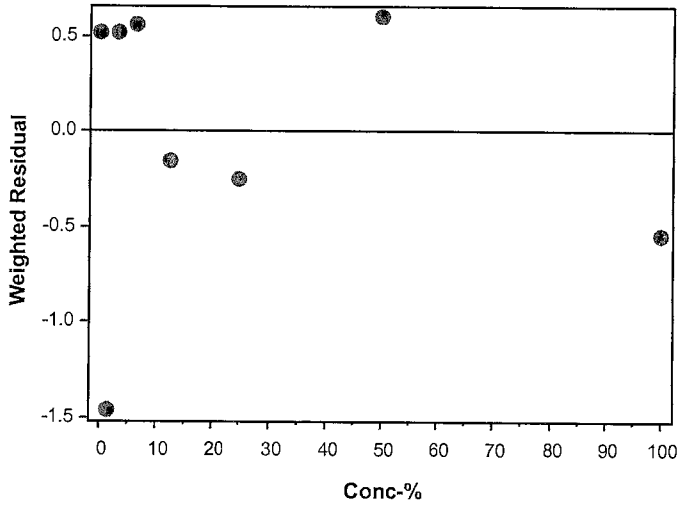
Analysis ID:	02-2895-6409	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:36	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	E929F3FF9E2635FD1D9A5D1EEA008C62	**Editor ID:**	

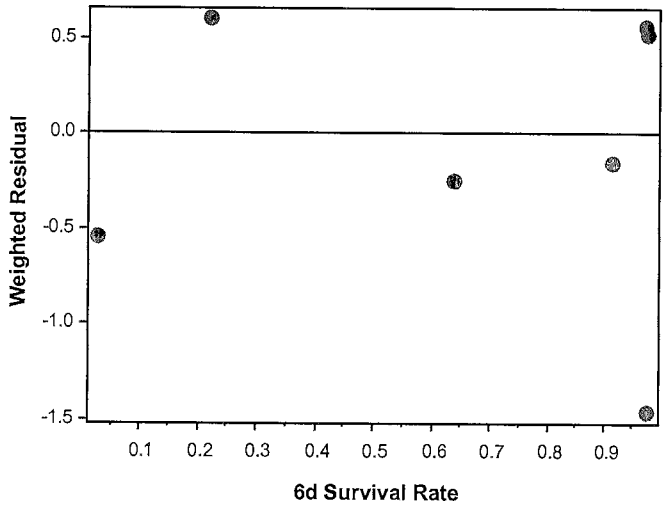
Graphics

Log-Normal: inv Φ[π]=α+β·log[x]









Analyst: MH 2023 Oct 11 QA: dmj 2023 Oct 13

CETIS Analytical Report

Report Date:	11 Oct-23 17:38 (p 1 of 3)
Test Code/ID:	CD-4388-1523 / 07-8275-3735

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	18-8850-2135	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:37	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	C000538BD515157019913F74CEB6E8A1	**Editor ID:**	

Batch ID:	09-7322-2506	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Blassnitz
Start Date:	15 Sep-23 13:38	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	21 Sep-23 14:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	20-9264-7074	**Code:**	C372978	**Project:**	General Misc. Bioassays
Sample Date:	13 Sep-23 16:20	**Material:**	Water	**Source:**	Diavik
Receipt Date:	14 Sep-23 14:20	**CAS (PC):**		**Station:**	1645-76-4
Sample Age:	45h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
4P Log-Logistic+Hormesis: μ=α[1+ε·x]/[1+[2ε·δ+1]·[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
10	-108.7	226	235	0.7918	10.59%	22.97	Yes	3.355	0.0142	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	0.5048	---	1.403	198.1	71.3	---
IC10	1.076	0.2644	2.042	93	49	378.3
IC15	1.719	0.8079	2.811	58.2	35.6	123.8
IC20	2.448	1.438	3.665	40.9	27.3	69.6
IC25	3.278	2.172	4.614	30.5	21.7	46
IC40	6.633	5.052	8.593	15.1	11.6	19.8
IC50	10.03	7.634	13.19	10	7.6	13.1

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	22.97	1.222	20.54	25.4	18.8	<1.0E-05	Significant Parameter
γ	0.9882	0.2464	0.4974	1.479	4.01	0.0001	Significant Parameter
δ	10.03	1.817	6.413	13.65	5.521	<1.0E-05	Significant Parameter
ε	0.001	0.01203	-0.02296	0.02496	0.08311	0.9340	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	15820	3955	4	251.2	<1.0E-05	Significant Effect
Lack of Fit	188	47	4	3.355	0.0142	Non-Significant Lack-of-Fit
Pure Error	1009	14.01	72			
Residual	1197	15.74	76			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	3.244	3.306	0.0643	No Outliers Detected
Variance	Mod Levene Equality of Variance	2.256	2.898	0.0392	Equal Variances
Distribution	Anderson-Darling A2 Test	0.691	3.878	0.0712	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9686	0.9579	0.0465	Normal Distribution

2023 OCT 11 MT

2023 OCT 13

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	18-8850-2135	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:37	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	C000538BD515157019913F74CEB6E8A1	**Editor ID:**	

Reproduction Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	10	23	23	12	29	1.535	4.853	21.10%	0.00%
1.56		10	20	22	7	25	1.726	5.457	27.28%	13.04%
3.13		10	18.3	18.5	12	25	1.484	4.692	25.64%	20.43%
6.25		10	12.8	13	4	19	1.348	4.264	33.31%	44.35%
12.5		10	11.6	13	3	15	1.087	3.438	29.64%	49.57%
25		10	5.6	5.5	3	9	0.636	2.011	35.91%	75.65%
50		10	2.7	3	0	5	0.5175	1.636	60.61%	88.26%
100		10	0	0	0	0	0	0	---	100.00%

Reproduction Detail

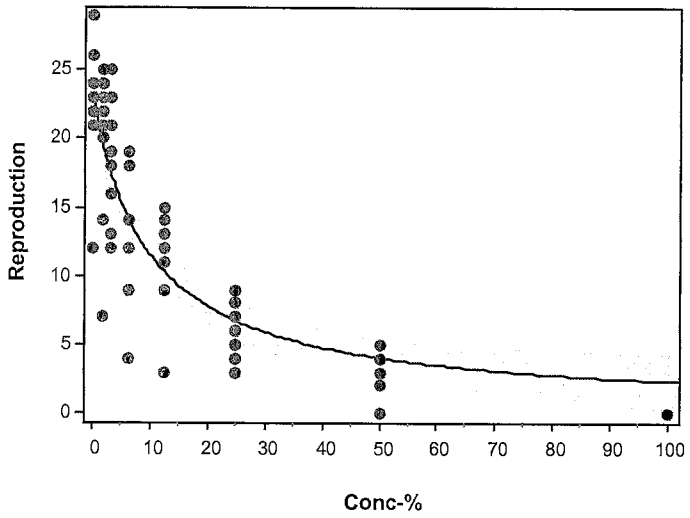
Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**	**Rep 5**	**Rep 6**	**Rep 7**	**Rep 8**	**Rep 9**	**Rep 10**
0	N	23	23	29	29	24	12	21	22	21	26
1.56		25	22	20	24	22	14	7	23	22	21
3.13		21	13	16	25	23	13	23	18	19	12
6.25		14	4	14	19	9	12	12	14	12	18
12.5		13	13	15	14	11	13	13	12	9	3
25		8	7	3	4	3	5	6	6	5	9
50		4	5	4	0	0	3	3	3	2	3
100		0	0	0	0	0	0	0	0	0	0

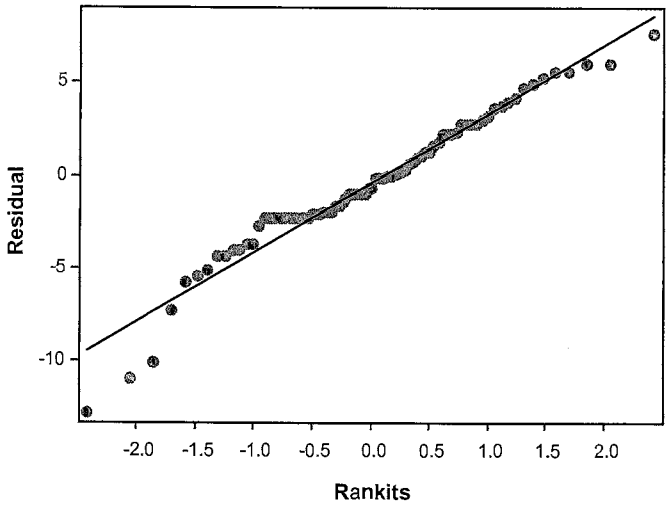
2023 Oct 11 Analyst: MT QA: 2023 Oct 13

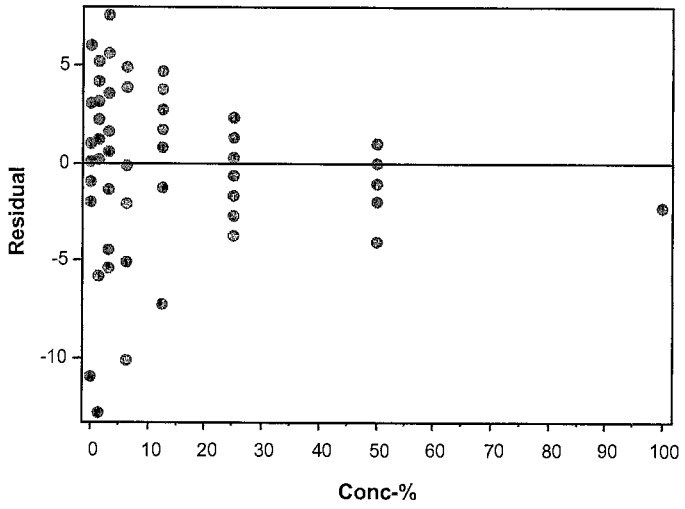
Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

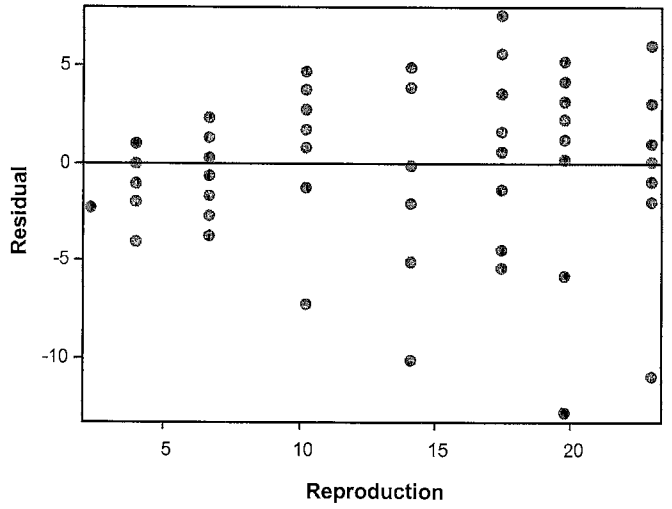
Analysis ID:	18-8850-2135	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	11 Oct-23 17:37	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	C000538BD515157019913F74CEB6E8A1	**Editor ID:**	

Graphics Model: 4P Log-Logistic+Hormesis: μ=α[1+ε·x]/[1+[2ε·δ+1]·[x/δ]^γ] Distribution: Normal [ω=1]









2023 OCT 11 Analyst: MT QA: dm 2023 OCT 13

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: September 15, 2023
End Date: September 21, 2023
Analyst(s): N. Blassnitz, M. Hamad, M. Mazziotti, P. Fang

Job / Sample #: C372978 / BZB159
Sample ID: 1645-76-4
Organism Lot #: AB 2023 Sept 04

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	23	25	21	14	13	8	4	0
2	23	22	13	4	13	7	5	0
3	29	20	16	14	15	3	4	0
4	29	24	25	19	14	4	0	0
5	24	22	23	9	11	3	0	0
6	12	14	13	12	13	5	3	0
7	21	7	23	12	13	6	3	0
8	22	23	18	14	12	6	3	0
9	21	22	19	12	9	5	2	0
10	26	21	12	18	3	9	3	0
Mean	23.0	20.0	18.3	12.8	11.6	5.6	2.7	0.0
SD	4.9	5.5	4.7	4.3	3.4	2.0	1.6	0.0

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	0	0	0
2	1	1	1	1	1	1	0	0
3	1	1	1	1	1	0	0	0
4	1	1	1	1	1	1	0	0
5	1	1	1	1	1	0	0	0
6	1	1	1	1	1	1	0	0
7	1	0	1	1	1	1	1	0
8	1	1	1	1	1	1	1	0
9	1	1	1	1	1	0	1	0
10	1	1	1	1	0	1	0	0
Mean (%)	100	90	100	100	90	60	30	0
SD (%)	0.0	31.6	0.0	0.0	31.6	51.6	48.3	0.0

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: S. Reddy 10/13/23 LE

Proofed by: [illegible] 2023 OCT 11

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik

Job / Sample #: C372978 / BZB159

Date Started September 15, 2023

Sample ID: 1645-76-4

Date Ended: Sept 21, 2023

Organism Lot #: AB 2023 Sept 04

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 15, 2023	130.0	25.3	7.7	20	122.8	24.8	DL / NB
1	September 16, 2023	117.2	25.3	N/A	20	106.7	24.9	DL
2	September 17, 2023	116.8	25.6	N/A	20	111.6	25.3	NC
3	September 18, 2023	126.0	25.1	N/A	20	117.7	25.0	NB
4	September 19, 2023	120.0	25.0	N/A	20	113.8	25.3	mltm / DL
5	September 20, 2023	124.0	25.5	N/A	20	123.2	25.6	mltm
6				N/A	(B)			
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute Instrument ID's: BBY2-0408

Sample Description clear and colorless Initials NB

Sample Hardness (mg/L $CaCO_3$) 1190 Initials MT

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day		Analyst Initials
0	Date: September 15, 2023 Pre - Aerated From: 11:22 - 11:42	DL / mltm
	Feeding volume PKS (µL): 75 YCT (µL): 50 Test Seeded @: 13:38	
	Bottle / Carboy #: 1 Seeding checked by: mltm	
1	Date: September 16, 2023 Pre - Aerated From: 08:09 - 08:29	DL mltm
	Feeding volume PKS (µL): 75 YCT (µL): 50 Test Water Change @: (A)	
	Bottle / Carboy #: 1	
2	Date: September 17, 2023 Pre - Aerated From: 09:10 - 09:30	NC / MM
	Feeding volume PKS (µL): 75 YCT (µL): 50 Test Water Change @: 13:24	
	Bottle / Carboy #: ~~1~~ 2 (D)	
3	Date: September 18, 2023 WE NB 2023 Sept 18 Pre - Aerated From: 08:15 - 08:35	NB
	Feeding volume PKS (µL): ~~75~~ 100 YCT (µL): 50 Test Water Change @: 13:32	
	Bottle / Carboy #: ~~1~~ 2 (D)	
4	Date: September 19, 2023 Pre - Aerated From: 08:58 - 09:18	m / DL
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 12:20	
	Bottle / Carboy #: ~~1~~ 3 (C)	
5	Date: September 20, 2023 Pre - Aerated From: 07:54 - 07:54	m
	Feeding volume PKS (µL): 100 YCT (µL): 50 Test Water Change @: 12:06	
	Bottle / Carboy #: ~~1~~ 3 (C)	
6	Date: September 21, 2023	DL
	Test ended @ 14:00	
7	Date:	
	(B)	
8	Date:	

(A) Test water change time not recorded. MT 2023 OCT 11

(D) WE MM 2023 OCT 13 OK

(B) N/A MT 2023 OCT 11

(C) WE MM 2023 OCT 13

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik

Sample ID: 1645-76-4 Job / Sample #: C372978 / BZB159

Analyst(s): NBlussa.b, MHamad, M. Nazzioli, P. Fang

Control Water Batch: Date(s): 2023 Sept 13, 2023 Sept 16

Hardness (mg/L CaCO3): 80 88

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	172	173	173	173	171	172		
	Final	184	181	186	189	183	196		
Temp. (°C)	Initial	24.0	24.2	24.3	24.3	24.3	24.6		
	Final	25.0	24.5	24.3	25.0	25.3	24.3		
D.O. (mg/L)	Initial	8.4	8.4	8.4	8.4	8.4	8.4		
	Final	7.9	8.2	8.2	7.5	7.8	8.0		
pH	Initial	8.2	8.2	8.3	8.2	8.2	8.2		
	Final	8.1	8.2	8.2	8.1	8.1	8.2		

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	221	231	236	239	235	260		
	Final	232	241	250	255	248	270		
Temp. (°C)	Initial	24.0	24.2	24.3	23.8	24.2	24.6		
	Final	24.9	24.5	24.3	24.9	25.2	24.4		
D.O. (mg/L)	Initial	8.4	8.4	8.3	8.5	8.4	8.4		
	Final	7.9	8.2	8.1	7.4	7.7	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.2	8.2		
	Final	8.1	8.2	8.3	8.0	8.1	8.2		

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	263	267	279	276	274	280		N/A MH
	Final	273	280	290	287	291	291		2023
Temp. (°C)	Initial	24.1	24.2	24.4	24.0	24.2	24.6		OCT
	Final	25.4	24.3	24.2	25.0	25.0	24.5		11
D.O. (mg/L)	Initial	8.4	8.4	8.4	8.5	8.4	8.4		
	Final	7.8	8.2	8.0	7.4	7.7	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.2	8.2		
	Final	8.1	8.2	8.2	8.1	8.1	8.2		

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	368	360	369	370	365	363		
	Final	374	372	379	379	376	373		
Temp. (°C)	Initial	24.1	24.2	24.3	24.0	24.0	24.6		
	Final	25.1	24.3	24.3	24.9	25.0	24.4		
D.O. (mg/L)	Initial	8.5	8.4	8.4	8.5	8.4	8.4		
	Final	7.8	8.2	8.0	7.6	7.9	8.1		
pH	Initial	8.2	8.2	8.2	8.3	8.2	8.2		
	Final	8.1	8.2	8.3	8.1	8.2	8.2		
Analyst		NB m	MHm MM	MM MM	MM m	PL mm	m P.		
Daily WQ Reviewed by:		NB ~	MHm MM	MM MM	MM ~	PL m	~ PL		

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik

Sample ID: 1645-76-4

Job / Sample #: C372978 / BZB159

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	512	523	560	554	525	549		
	Final	514	544	563	570	535	560		
Temp. (°C)	Initial	24.1	24.1	24.1	23.6	24.1	24.4		
	Final	25.0	24.2	24.3	24.9	24.8	24.5		
D.O. (mg/L)	Initial	8.5	8.4	8.5	8.6	8.4	8.6		
	Final	7.9	8.3	8.1	7.7	8.0	8.2		
pH	Initial	8.1	8.1	8.2	8.2	8.1	8.2		
	Final	8.1	8.2	8.3	8.1	8.2	8.2		

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	869	882	929	907	907	907		
	Final	870	898	928	916	917	916		
Temp. (°C)	Initial	24.1	24.1	24.2	23.6	24.1	24.5		
	Final	25.0	24.4	24.3	24.9	25.0	24.4		
D.O. (mg/L)	Initial	8.6	8.4	8.5	8.7	8.5	8.7		
	Final	7.4	8.3	8.2	7.8	8.1	8.2		
pH	Initial	8.1	8.1	8.1	8.2	8.1	8.1		
	Final	8.1	8.2	8.2	8.1	8.2	8.2		

50%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1526	1475	1608	1585	1564	1589		N/A mt
	Final	1517	1571	1583	1592	1585	1597		2023
Temp. (°C)	Initial	24.2	24.2	24.2	24.2	24.0	24.3		Oct
	Final	24.9	24.3	24.3	24.8	24.9	24.3		11
D.O. (mg/L)	Initial	8.8	8.5	8.7	8.7	8.6	9.0		
	Final	8.0	8.3	8.2	7.8	8.1	8.2		
pH	Initial	8.0	8.0	8.0	8.0	8.0	8.0		
	Final	8.1	8.1	8.2	8.1	8.1	8.1		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	2756	2757	2821	2780	2766	2784		
	Final	2736	2780	2765	2765	2764	2742		
Temp. (°C)	Initial	24.5	24.6	24.6	24.7	24.2	25.0		
	Final	25.0	24.3	24.3	24.6	24.8	24.2		
D.O. (mg/L)	Initial	9.6	8.6	9.0	9.3	8.9	9.4		
	Final	8.1	8.3	8.2	8.1	8.4	8.1		
pH	Initial	7.8	7.8	7.9	7.8	7.8	7.8		
	Final	8.0	8.1	8.1	8.0	8.0	8.1		
Analyst		LB	MHM MM	MM MM	MM	DL	MHM DL		
Daily WQ Reviewed by:		LB	MHM MM	MM MM	MM	DL	MHM DL		

Client Name: Diavik

Job / Sample #: C372978 / BZB159

Sample ID: 1645-76-4

Analyst (s): MHamad, M. Mazziotti, N. Blassnik, P. Fang

Concentration: Control

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm MHm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	3	0	0	0	0	0	0	NB NB
4	5	5	5	0	4	4	5	5	4	5	m m
5	6	7	10	8	8	8	6	5	8	9	MHm MHm
6	12	11	14	18	12	0	10	12	9	12	R
7											
8											
Total	23	23	29	29	24	12	21	22	21	26	MH SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm Mm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	5	5	4	5	4	5	5	4	5	Mm m
5	9	8	8	9	9	9	Op	7	8	8	m
6	10	9	7	11	8	1	2X ~~0~~	11	10	8	R
7	NIA	mt	2023	Oct	11						
8											
Total	25	22	20	24	22	14	7x	23	22	21	MH SR

(R) WE R 2023 Sept 21

Client Name Diavik

Job / Sample #: C372978 / BZB159

Sample ID: 1645-76-4

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	mtm mtm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	5	6	6	5	4	5	6	4	4	4	mtm mtm
5	8	7	10	9	6	8	6	6	8	5	[illegible]
6	8	0	0	11	13	0	11	8	7	3*	[illegible]
7											
8											
Total	21	13	16	25	23	13	23	18	19	12	MT SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	mtm m
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	4	4	4	2	4	6	4	3	6	mtm [illegible]
5	6	0	8	7	7	8	6	8	9	7	[illegible]
6	2	0	2	8	0	0	0	2	0	5	[illegible]
7	N/A mt 2023 04 11										
8											
Total	14	4	14	19	9	12	12	14	12	18	MT SR

Client Name Diavik

Job / Sample #: C372978 / BZB159

Sample ID: 1645-76-4

Concentration (%v/v) 12.5

Concentration (% v/v): 25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm MHm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	5	6	5	5	6	5	4	3	3	MHm MHm
5	7	8	9	9	6	7	8	8	5	0p	m m
6	0	0	0	0	0	0	0	0	1	0x	R
7											
8									9		
Total	13	13	15	14	11	13	13	12	~~8~~ (A)	3x	MH SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm MHm
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	5	3	4	3	5	0	6	5	4	m m
5	2	2	0	0	0	0	6	0	0	5	m m
6	0x	0p	0x	0sp	0x	0s	0sp	0s	0x	0s	R
7	|		|		|				|		
8	|		|		|				|		
Total	8x	7p	3x	4sp	3x	5s	6sp	6s	(A) ~~0x~~ 5x	9s	MH SR

(A) calculation error. MH 2023 Oct 11

Client Name: Diavik

Job / Sample #: C372978 / BZB159

Sample ID: 1645-76-4

Concentration (%v/v): 50

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHN MK
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	4	5	4	0	0	3	3	3	2	3	M
5	0	0	0	0	0	0	0	0	0	0p	MHN MK
6	0x	0x	0x	0x	0x	0x	0sp	0sp	0sp	0x	PL
7								(A)			(A)
8											
Total	4x	5x	4x	0x	0x	3x	3sp	3sp	2sp	3x	MT SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHN MK
2	0	0	0	0	0	0	0	0	0	0	MM MM
3	0p	0p	0x	0p	0p	0x	0p	0p	0p	0p	NB NB
4	0p	0p		0x	0p		0x	0x	0p	0x	M
5	0x	0x			0x				0p		
6									0x		PL
7											(A)
8											
Total	0x	0x	0x	0x	0x	0x	0x	0x	0x	0x	MT SR

(A) NIA MT 2023 OCT 11

CETIS Analytical Report

Test Code/ID: CD-4388-1623 / 13-1570-9553

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	16-6943-6174	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	12 Oct-23 8:13	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4361C64FA07FB8FC4FAAB2E8280F1BEB	**Editor ID:**	

Batch ID:	20-3659-1632	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Blassnitz
Start Date:	15 Sep-23 13:07	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	21 Sep-23 12:17	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 23h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-9786-7337	**Code:**	C372978	**Project:**	General Misc. Bioassays
Sample Date:	13 Sep-23 14:40	**Material:**	Water	**Source:**	Diavik
Receipt Date:	14 Sep-23 14:20	**CAS (PC):**		**Station:**	1645-67
Sample Age:	46h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	120177	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	>100	---	---	<1	---	---
LC20	>100	---	---	<1	---	---
LC25	>100	---	---	<1	---	---
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
1.56		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3.13		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9000	10.00%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3.13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

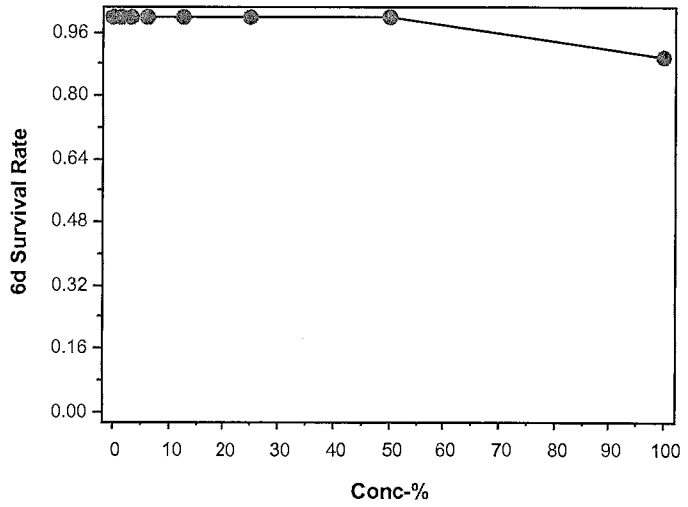
2023 Oct 12 Analyst: MA

2023 Oct 13 QA:

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	16-6943-6174	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv2.1.2
Analyzed:	12 Oct-23 8:13	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	4361C64FA07FB8FC4FAAB2E8280F1BEB	**Editor ID:**	

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	16-9511-2192	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	12 Oct-23 8:13	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	0A5BC33DD6247C2478346D23075B34BA	**Editor ID:**	

Batch ID:	20-3659-1632	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	N. Blassnitz
Start Date:	15 Sep-23 13:07	**Protocol:**	EC/EPS 1/RM/21	**Diluent:**	Dilute Perrier Water
Ending Date:	21 Sep-23 12:17	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	5d 23h	**Taxon:**	Branchiopoda	**Source:**	Aquatic Research Organis **Age:**

Sample ID:	17-9786-7337	**Code:**	C372978	**Project:**	General Misc. Bioassays
Sample Date:	13 Sep-23 14:40	**Material:**	Water	**Source:**	Diavik
Receipt Date:	14 Sep-23 14:20	**CAS (PC):**		**Station:**	1645-67
Sample Age:	46h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	684363	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	N	10	22.6	22	18	26	11.08%	0.00%	23.1	0.00%
1.56		10	22.1	23.33	13	27	18.89%	2.21%	23.1	0.00%
3.13		10	24.2	24	17	31	15.68%	-7.08%	23.1	0.00%
6.25		10	23.5	25.5	11	27	21.44%	-3.98%	23.1	0.00%
12.5		10	20.9	23	13	28	30.55%	7.52%	22.5	2.60%
25		10	22.6	24.5	14	26	19.14%	0.00%	22.5	2.60%
50		10	22	23	13	31	31.93%	2.65%	22.5	2.60%
100		10	24.5	25.33	0	32	38.25%	-8.41%	22.5	2.60%

Reproduction Detail

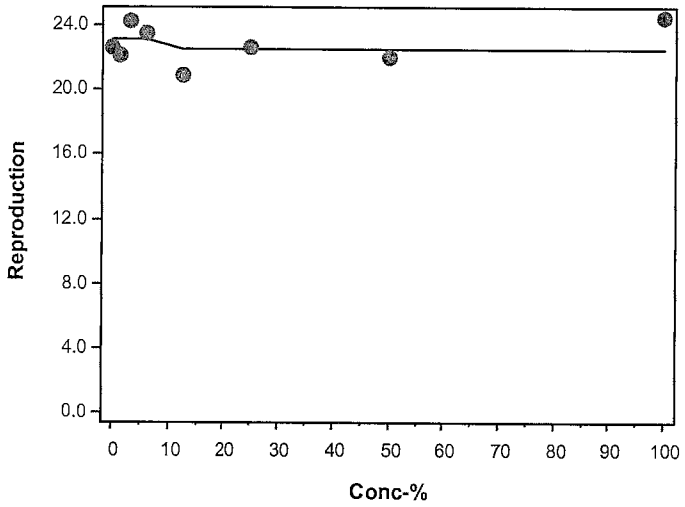
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	22	23	22	18	21	21	22	26	26	25
1.56		24	25	21	24	18	22	13	21	27	26
3.13		17	25	24	24	23	23	22	31	29	24
6.25		27	21	26	25	11	20	25	26	27	27
12.5		27	13	27	26	14	15	13	23	23	28
25		14	26	25	17	19	26	24	24	25	26
50		29	26	22	24	13	16	15	14	30	31
100		25	21	24	29	0	26	25	31	32	32

2023 OCT12 — dmi 2023 OCT13

Ceriodaphnia 7-d Survival and Reproduction Test — **Bureau Veritas**

Analysis ID:	16-9511-2192	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv2.1.2
Analyzed:	12 Oct-23 8:13	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	0A5BC33DD6247C2478346D23075B34BA	**Editor ID:**	

Graphics



2023 Oct12 2023 oct13 dml

ECOTOXICOLOGY

Ceriodaphnia dubia Survival and Reproduction Test

Client Name: Diavik Diamond Mines Inc.
Start Date: September 15, 2023
End Date: September 21, 2023
Analyst(s): M. Hamad, N. Shergill, N. Blassnitz, P. Fang

Job / Sample #: C372978 / BZB160
Sample ID: 1645-67
Organism Lot #: AB 2023 Sept 04

Reproduction								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	22	24	17	27	27	14	29	25
2	23	25	25	21	13	26	26	21
3	22	21	24	26	27	25	22	24
4	18	24	24	25	26	17	24	29
5	21	18	23	11	14	19	13	0
6	21	22	23	20	15	26	16	26
7	22	13	22	25	13	24	15	25
8	26	21	31	26	23	24	14	31
9	26	27	29	27	23	25	30	32
10	25	26	24	27	28	26	31	32
Mean	22.6	22.1	24.2	23.5	20.9	22.6	22.0	24.5
SD	2.5	4.2	3.8	5.0	6.4	4.3	7.0	9.4

Survival								
Rep	Concentration (% v/v)							
	Control	1.56	3.13	6.25	12.5	25	50	100
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	0
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
Mean (%)	100	100	100	100	100	100	100	90
SD (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.6

Enter "1" for surviving adult, enter "0" for dead adult. If adult is removed or missing, enter "R" or "M"

Entered by: S. Reddy 10/13/23

Proofed by: [illegible] 2023 Oct 12

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik

Job / Sample #: C372978 / BZB160

Date Started September 15, 2023

Sample ID: 1645-67

Date Ended: 2023 Sep 21

Organism Lot #: AB2023 Sept 04

Before Use Measurements After Temperature Adjustment Deviations - See BLNC ☐ Worksheet Created: ☐

Day	Date	Initial DO (% Sat)	Initial Temp (°C)	Initial pH	Aeration* (min)	Post Aeration DO (% Sat)	Post Aeration Temp (°C)	Analyst
0	September 15, 2023	122.3	24.9	7.2	20	116.1	24.1	DL/NB
1	September 16, 2023	108.3	25.3	N/A	20	105.3	25.0	DL
2	September 17, 2023	114.7	25.6	N/A	20	112.2	25.4	NSC
3	September 18, 2023	123.5	25.2	N/A	20	117.9	25.1	NB
4	September 19, 2023	113.1	25.0	N/A	20	110.5	25.2	DL/mHm
5	September 20, 2023	124.1	25.5	N/A	20	120.6	25.6	mHm
6				N/A	(C)			
7				N/A				

* Rate of aeration must be ≤ 100 bubbles/minute

Instrument ID's: BBY2-04-08

Sample Description very pale yellow Initials NB

Sample Hardness (mg/L $CaCO_3$) 480 Initials MH

Observations during the Test (e.g. aeration duration, behaviour of test organisms, bag effluent taken from etc.)

Day				Analyst Initials
0	Date: September 15, 2023	Pre - Aerated From: 11:22 - 11:42		DL/NB
	Feeding volume PKS (µL): 75	YCT (µL): 50	Test Seeded @: 13:07	
	Bottle / Carboy #: 1		Seeding checked by: mHm	
1	Date: September 16, 2023	Pre - Aerated From: 08:09 - 08:29		DL/m
	Feeding volume PKS (µL): 100	YCT (µL): 50	Test Water Change @: 13:50	
	Bottle / Carboy #: 1			
2	Date: September 17, 2023	Pre - Aerated From: 09:10 - 09:30		NSC
	Feeding volume PKS (µL): 75	YCT (µL): 50	Test Water Change @: 12:46	
	Bottle / Carboy #: 12 (A)			
3	Date: September 18, 2023	Pre - Aerated From: 08:15 - 08:35		NB
	Feeding volume PKS (µL): ~~75~~ (A) 100	YCT (µL): 50	Test Water Change @: 13:13	
	Bottle / Carboy #: 12 (D)			
4	Date: September 19, 2023	Pre - Aerated From: 08:58 - 09:18		DL
	Feeding volume PKS (µL): 100	YCT (µL): 50	Test Water Change @: 11:19	
	Bottle / Carboy #: 3 (D)		(B)	
5	Date: September 20, 2023	Pre - Aerated From: 07:34 - ~~08:50~~ 07:54		mHm
	Feeding volume PKS (µL): 100	YCT (µL): 50	Test Water Change @: 11:10	
	Bottle / Carboy #: 3			
6	Date: September 21, 2023	Test end @ 12:17		m
7	Date:			
		(C)		
8	Date:			

(C) NIA MH 2023 OCT 11

(D) WE MHM 2023 04-13

(A) WE NB 2023 Sept 18

(B) WE MHM 2023 Sep 20

(D) WE DML 2023 OCT 13 DML

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik

Sample ID: 1645-67 Job / Sample #: C372978 / BZB160

Analyst(s): NBlossom, MHamael, M. Nazziotti, P. Fang

Control Water Batch: Date(s): 2023 Sept 13, 2023 Sept 16

Hardness (mg/L CaCO3): 80 88

Control	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	172	173	173	173	177	172		
	Final	186	181	181	188	191	183		
Temp. (°C)	Initial	24.0	24.1	24.3	24.3	24.0	24.6		
	Final	24.7	24.0	24.5 (A)	24.2	24.5	24.4		
D.O. (mg/L)	Initial	8.4	8.4	8.4	8.4	8.4	8.4		
	Final	7.6	8.3	8.0	7.7	7.7	8.2		
pH	Initial	8.2	8.2	8.3	8.2	8.2	8.2		
	Final	8.0	8.2	8.2	8.1	8.1	8.2		

1.56%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	194	200	216	208	211	219		
	Final	206	225	228	221	224	230		
Temp. (°C)	Initial	24.0	24.1	23.9	24.3	24.0	24.4		
	Final	25.2	24.0	24.5	24.1	24.8	24.7		
D.O. (mg/L)	Initial	8.4	8.4	8.4	8.4	8.5	8.4		
	Final	7.4	8.1	7.8	7.6	7.6	(B)		
pH	Initial	8.2	8.2	8.3	8.3	8.2	8.2		
	Final	8.0	8.2	8.2	8.1	8.1	(A)		N/A mt 2023 OCT 11

3.13%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	228	225	234	229	233	227		
	Final	240	235	247	241	245	241		
Temp. (°C)	Initial	24.0	24.1	24.0	24.3	24.1	24.6		
	Final	25.1	23.8	24.4	24.1	24.9	24.4		
D.O. (mg/L)	Initial	8.4	8.4	8.4	8.4	8.5	8.4		
	Final	7.3	8.1	7.7	7.4	7.5	8.1		
pH	Initial	8.2	8.2	8.2	8.3	8.2	8.2		
	Final	8.0	8.2	8.2	8.0	8.1	8.2		

6.25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	288	281	289	285	286	286		
	Final	299	292	304	296	296	298		
Temp. (°C)	Initial	24.0	24.0	24.2	24.3	24.1	24.7		
	Final	25.0	23.8	24.4	24.2	24.9	24.7		
D.O. (mg/L)	Initial	8.4	8.5	8.4	8.4	8.5	8.4		
	Final	7.3	8.1	7.7	7.5	7.5	8.0		
pH	Initial	8.2	8.2	8.2	8.3	8.2	8.2		
	Final	8.0	8.2	8.2	8.1	8.1	8.2		
Analyst		NB m	MHm MM	MM MM	MM m	m m	m m		
Daily WQ Reviewed by:		NB m	MHm MM	MM MM	MM m	m m	m m		

(A) WE MM 2023 Sept 17

(B) Final D.O. and pH not recorded. mt 2023 OCT 11

Ceriodaphnia dubia Survival and ReproductionTest

Client Name: Diavik

Sample ID: 1645-67

Job / Sample #: C372978 / BZB160

12.5%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	382	379	409	402	393	413		
	Final	389	390	424	412	412	429		
Temp. (°C)	Initial	24.0	24.0	24.3	24.0	24.2	24.4		
	Final	25.0	23.6	24.2	24.2	24.9	24.8		
D.O. (mg/L)	Initial	8.5	8.5	8.4	8.5	8.5	8.5		
	Final	7.3	8.2	7.8	7.4	7.5	8.0		
pH	Initial	8.1	8.1	8.1	8.2	8.1	8.1		
	Final	8.0	8.2	8.2	8.0	8.1	8.2		

25%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	574	621	616	595	603	608		
	Final	582	639	637	603	618	628		
Temp. (°C)	Initial	24.0	24.0	24.3	24.1	24.0	24.5		
	Final	25.2	23.7	24.2	24.3	25.0	24.9		
D.O. (mg/L)	Initial	8.6	8.6	8.5	8.6	8.6	8.6		
	Final	7.3	8.2	7.8	7.4	7.5	8.0		
pH	Initial	8.0	8.0	8.0	8.1	8.0	8.1		
	Final	7.9	8.1	8.1	8.0	8.0	8.1		

50%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	976	1008	1015	987	983	1000		N/A
	Final	988	1009	1038	1009	1023	1024		mt
Temp. (°C)	Initial	24.0	24.0	24.5	24.4	24.1	24.7		2023
	Final	25.1	23.6	24.2	24.4	25.0	24.7		Oct
D.O. (mg/L)	Initial	8.7	8.6	8.6	8.7	8.6	8.8		11
	Final	7.2	8.1	7.8	7.5	7.5	8.0		
pH	Initial	7.8	7.9	7.8	7.9	7.8	7.9		
	Final	7.8	8.1	8.0	8.0	8.0	8.1		

100%	Day	1	2	3	4	5	6	7	8
Conductivity (µs/cm)	Initial	1741	1731	1759	1759	1769	1766		
	Final	1736	1747	1792	1769	1778	1796		
Temp. (°C)	Initial	24.0	24.5	24.8	24.5	24.6	25.0		
	Final	25.0	23.7	24.2	24.6	25.0	24.9		
D.O. (mg/L)	Initial	9.2	8.6	(A) 9.0	9.2	9.0	9.2		
	Final	7.2	8.1	7.7	7.4	7.5	8.0		
pH	Initial	7.4	7.6	7.3	7.5	7.4	7.4		
	Final	7.7	8.0	7.9	7.8	7.8	8.0		
Analyst		NB m	MHm MM	MM MM	MM bz	bz MHm	m m		
Daily WQ Reviewed by:		NB	MHm MM	MM MM	MM bz	bz mm	m z		

(A) WE MM 2023 Sept 17

Client Name: Diavik

Job / Sample #: C372978 / BZB160

Sample ID: 1645-67

Analyst (s): MHamad, NSinergil, NBlassnitz, P Fang

Concentration: Control

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm MHm
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	6	6	3	6	4	6	6	6	5	Dr Dr
5	7	8	8	5	7	7	5	8	8	7	MHm MHm
6	9	9	8	10	8	10	11	12	12	13	m
7											
8											
Total	22	23	22	18	21	21	22	26	26	25	MH SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 1.56

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHm MHm
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	4	0	0	NB NB
4	5	5	4	4	2	5	6	6	6	5	Dr Dr
5	8	7	7	9	6	8	7	11	10	8	m m
6	11	13	10	11	10	9	0	13	11	13	m
7			N/A	MI	2023	Oct	11				
8											
Total	24	25	21	24	18	22	13	(A) ~~30~~ 21	27	26	MH SR

(A) calculation error. MH 2023 Oct 11

Client Name: Diavik

Job / Sample #: C372978 / BZB160

Sample ID: 1645-67

Concentration (%v/v): 3.13

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHM MHM
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	3	7	6	6	4	5	4	6	6	6	DR DR
5	6	10	8	8	9	9	8	11	8	9	MHM MM
6	8	8	10	10	10	9	10	14	15	9	MM MM
7											
8											
Total	17	25	24	24	23	23	22	31	29	24	MT SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Concentration (% v/v): 6.25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MM M
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	7	5	6	5	2	3	4	6	6	6	DR DR
5	8	6	9	8	9	8	9	8	7	9	MM M
6	12	10	11	12	0	9	12	12	14	12	M M
7		NIA MT 2023 OCT 11									
8											
Total	27	21	26	25	11	20	25	26	27	27	MT SR

ECOTOXICO Y

Ceriodaphnia dubia Su. and Reproduction Test

Client Name Diavik

Job / Sample #: C372978 / BZB160

Sample ID: 1645-67

Concentration (%v/v) 12.5

Concentration (% v/v): 25

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHM MHM
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	6	6	6	6	6	6	6	3	5	5	PR PR
5	9	7	9	8	8	9	7	10	9	9	MHM MM
6	12	0	12	12	0	0	0	10	9	14	MHM M
7											
8											
Total	27	13	27	26	14	15	13	23	23	28	MH SR

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	M M
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	5	7	6	5	3	5	6	4	4	7	PR PR
5	9	9	7	9	8	9	10	9	9	8	M M
6	0	10	12	3	8	12	8	11	12	11	BMY M
7	NIP MH 2023 OCT 12										
8											
Total	14	26	25	17	19	26	24	24	25	26	MH SR

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Client Name Diavik

Job / Sample #: C372978 / BZB160

Sample ID: 1645-67

Concentration (%v/v) 50

Concentration (% v/v): 100

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	MHM MHM
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0	0	0	0	0	0	NB NB
4	7	7	5	5	5	7	5	5	6	6	RR RR
5	12	8	9	8	8	9	10	9	10	11	MHM
6	10	11	8	11	0	0	0	0	14	14	MHM
7											
8											
Total	29	26	22	24	13	16	15	14	30	31	MH SR

Day	Reproduction (# Live neonates) 1	2	3	4	5	6	7	8	9	10	Analyst
1	0	0	0	0	0	0	0	0	0	0	M M
2	0	0	0	0	0	0	0	0	0	0	NSC NSC
3	0	0	0	0	0x	0	0	0	0	0	NB NB
4	7	5	5	6	|	6	7	6	8	7	RR RR
5	8	8	9	10	|	9	10	13	9	12	M M
6	10	8	10	13	|	11	8	12	15	13	M M
7					|						
8					|						
Total	25	21	24	29	0x	26	25	31	32	32	MH SR

NM ~~MH~~ 2023 Oct 12

X = dead adult
M = missing/lost adult
P = pale adult
S = small adult
(#) immobilised neonates
* dead neonates present

Ceriodaphnia dubia, Culture Health Mortality and Mean Neonates

Culture Date: AB 2023 Sept 04

% MORTALITY

Day	Date	Started	Deaths	Removed or Lost	Total Number	% Daily Mortality	% Mortality in Previous 7 Days
0	04-Sep	70			70		
1	05-Sep		0	0	70	0.00%	
2	06-Sep		0	1	69	0.00%	
3	07-Sep		0	0	69	0.00%	
4	08-Sep		0	0	69	0.00%	
5	09-Sep		1	0	68	1.45%	
6	10-Sep		0	0	68	0.00%	
7	11-Sep		0	0	68	0.00%	1.43%
8	12-Sep		0	0	68	0.00%	1.43%
9	13-Sep		0	0	68	0.00%	1.45%
10	14-Sep		1	1	66	1.47%	2.90%
11	15-Sep		0	0	66	0.00%	2.90%
12					66	0.00%	1.47%
13					66	0.00%	1.47%
14					66	0.00%	1.47%
15					66	0.00%	1.47%

MEAN NEONATES

Day	1	2	3	4	5	6	7	Total
Date	05-Sep	06-Sep	07-Sep	08-Sep	09-Sep	10-Sep	11-Sep	
Replicate 1	0	0	2 [A]	0	12	17	14*	31
Replicate 2	0	0	2 [A]	0	10	18	18*	30
Replicate 3	0	0	2 [A]	9	0	17	19*	28
Replicate 4	0	0	2 [A]	0	8	18	17*	28
Replicate 5	0	0	2 [A]	2	10	16*	22*	14
Replicate 6	0	0	2 [A]	0	12	17	20*	31
Replicate 7	0	0	2 [A]	1	10	18	18*	31
Replicate 8	0	0	2 [A]	0	12	17	21*	31
Replicate 9	0	0	2 [A]	0	7	15	9*	24
Replicate 10	0	0	2 [A]	0	10	17	22*	29
Mean								**27.7**

* 4th brood (not included in the mean neonate calculation)

Health Criteria

An average of at least 15 young per adult must be produced in the first 3 broods (Environment Canada).
An average of at least 20 young per adult must be produced in the first 3 broods (US EPA).

Comments: [A] Actual number of neonates not recorded (only single check marks); a single check mark indicates at least 2 neonates were present

Reviewed by: 2023 Oct 06

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB2007 07

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood)
Check twice (√√) if ≥8 neonates
Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2023 Aug 25 PKS Batch: 2023 Aug 16, 2023 Aug 25 Water Batch: 2023 Aug 30, 2023 Sep 05

Culture Date: AB2023 Sept 04 Analyst(s): NB, R, MM, NSC

Date	Sep 05	Sep 06	Sept 07	Sept 08	Sept 09	Sept 10	Sept 11	Sept 12	Sept 12
Time	08:30	10:28	10:11	08:01	08:30	07:52	10:51	09:01	1547
Tracking/Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	track
YCT (µL)	50	50	50	50	50	50	50	50	—
PKS (µL)	150	75	75	75	75	75	75	75	—
Test tube #	Brood size								
1	0	0	√	0	12	17	14 A	16	0
2	0	0	√	0	10	18	18 A	0	16
3	0	0	√	9	0	17	19 A	19	0
4	0	0	√	0	8	18	17 A	0	13
5	0	0	√	2	10	16	22	0	15
6	0	0	√	0	12	17	20 A	0	12
7	0	0	√	1	10	18	18 A	0	18
8	0	0	√	0	12	17	21 A	0	20
9	0	0	√	0	7	15	9 A	0	16
10	0	0	√	0	10	17	22 A	17	0
11	0	0	√	√√	√	√√	√√	√√	0
12	0	0	√	0	√√	√√	√√	0	√√
13	0	0	√	0	√√	√	√√	0	√√
14	0	0	√	0	√√	√√	√√	0	√√
15	0	0	√	0	√√	√√	√√ A	0	√√
16	0	0	√	0	√√	√√	√√	0	√√
17	0	0	√	0	√√	√√	√√	0	√√
18	0	0	√	0	√√	√√	√√	0	√√
19	0	0	√	0	√√	√√	√√	0	√√
20	0	0	√	0	√√	√√	√√	√√	0
21	0	0	√	0	√√	√√	√√	0	√√
22	0	0	√	1	√√	√√	√√	0	√√
23	0	0	√	0	√√	√√	√√	0	√√
24	0	0	√	0	√√	√√	√√	0	√√
25	0	0	√	√√	0	√√	√√	0	√√
26	0	0	√	0	√√	√√	√√	0	√√
27	0	0	√	0	√√	√√	√√	0	√√
28	0	0	√	0	√√	√√	√√	0	√√
29	0	0	√	0	√√	√√	√√	0	√√
30	0	0	√	0	√√	√√	√√	0	√√
31	0	0	√	0	√√	√	√	0	0
32	0	0	√	0	√√	√√	√√	0	√√
33	0	0	√	0	√√	√	√√	√√	0
34	0	0	√	0	√√	√√	√√	0	√√
35	0	0	√	√√	0	√√	√√	√√	0
# Missing/Lost	0	0	0	0	0	0	0	0	0
# Dead	0	0	0	0	0	0	0	0	0
Analyst	MM	R	SC	NB	R	MM	MM	NSC	NSC
Time	08:35	10:32	10:20	08:09	08:37	08:00	10:58	09:11	1550

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - AB2023 Sept 11	D -
B -	E -
C -	F -

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: A32000707

Culture Date: A32023 Sept 04 Analyst(s): NB, PR, MM, NSC

Test tube #	Brood size								
Date	Sep 05	Sep 06	Sept 07	Sept 08	Sept 09	Sept 10	Sept 11	Sept 12	Sept 12
Time	08:35	10:32	10:21	08:09	08:37	08:00	10:58	09:11	1550
36	0	0	√	0	√√	√√	√√	0	√√
37	0	0	√	0	√√	√√	√√	0	√√
38	0	0	√	0	√√	√√	√√	0	√√
39	0	0	√	0	√√	√√	√√	0	√√
40	0	0	√	0	√√	√√	√√	√√	0
41	0	0	√	0	√√	√√	√√	0	√√
42	0	0	√	0	√√	√√	√√	0	√√
43	0	0	Ⓐ ~~5~~ √	√√	0	√√	√√	√√	0
44	0	0	√	0	√	√√	√√	0	√√
45	0	0	Ⓐ ~~6~~ √	0	√√	√√	√√	0	√√
46	0	0	Ⓐ ~~7~~ √	0	√√	√√	√√	0	√√
47	0	0	√	0	√√	√√	√√	0	√√
48	0	0	√	0	√	√√	√√	0	√√
49	0	0	√	0	√√	√√	√√	0	√√
50	0	0	√	0	√√	√√	√√	√√	0
51	0	0	√	0	√√	√√	√√	√√	0
52	0	0	√	0	√	√√	√	0	√√
53	0	0	√	0	√√	√√	√√	0	√√
54	0	0	√	0	√√	√√	√√	0	√√
55	0	om							
56	0	0	√	0	ox				
57	0	0	√	0	√√	√√	√√	0	√√
58	0	0	√	0	√√	√√	√√	0	√√
59	0	0	√	0	√√	√√	0	0	0
60	0	0	√	0	√√	√√	√√	0	√√
61	0	0	√	0	√√	√√	√√	√√	0
62	0	0	√	0	√√	√√	√√	0	√√
63	0	0	√	0	√√	√√	√√	√√	0
64	0	0	√	0	√√	√√	√√	0	√√
65	0	0	√	√√	0	√√	√√	0	0
66	0	0	√	0	√√	√√	√√	0	√√
67	0	0	√	0	√√	√√	√√	0	√√
68	0	0	√	0	√√	√√	√√	0	√√
69	0	0	√	0	√√	√√	√√	0	√√
70	0	0	√	0	√√	√√	√√	√√	0
# Missing/Lost	0	1	0	0	0	0	0	0	0
# Dead	0	0	0	0	1	0	0	0	0
Analyst	MM	PR	SL	NB	PR	MM	MM	NSC	NSC
Time	08:39	10:37	10:29	08:14	08:52	08:05	11:04	09:16	1552

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Ⓐ SL WE 2023 Sept 7

Example:

Test tube #	Brood size				
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24	A - Rx #1
Time	10:10am	8:25am	8:15pm	8:00am	B - Client # 123
1	√	√	√√	√√ A	
2	√	√	√√	√√ B	

Clearing Records for Neonates Produced by Each Organism Used in a Test

for parent culture: AB200707

Check once (√) if 2-7 neonates present (1 neonate ≠ a brood) Check twice (√√) if ≥8 neonates Check thrice (√√√) if ≥16 neonates
Test Tubes #1-10: Record actual number of neonates present

YCT Batch: 2023 Sept08 PKS Batch: 2023 Aug25 Water Batch: 2023 Sept05

Culture Date: AB 2023 Sept04 Analyst(s): NSC, MHM, DL, NB

Date	Sept12	Sep13	Sept 13	Sep13	Sep14	Sept14	Sept14	Sept15	
Time	21:19	07:20	15:57	22:24	08:00	17:58	21:40	07:57	
Tracking/Clear	track	clear	track	track	clear	track	track	clear	
YCT (µL)	—	50	-	n/a	50	-	-	50	
PKS (µL)	—	75	-	n/a	75	-	-	75	
Test tube #	Brood size							Ⓐ	
1	0	0	6	0	0	0	0	B 16 A	
2	0	0	0	A 22	0	0	0	B 17 A	
3	0	0	0	A 23	0	0	0	B 20 A	
4	0	0	0	A 26	0	0	0	B 22 A	
5	0	0	0	A 22	0	0	0	B 22 A	
6	0	0	0	7	0	0	0	0	
7	0	0	0	A 24	0	0	0	B 16 A	
8	0	0	0	A 23	0	0	0	B 21 A	
9	0	0	0	A 26	0	0	0	B 19 A	
10	0	0	13	0	0	0	0	B 22 A	
11	0	0	0	A √√√	0	0	0	√√	
12	0	0	0	√√√	0	0	0	B √√ A	
13	0	0	0	A √√√	0	0	0	0	
14	0	0	0	0	√√	0	0	0	
15	0	0	0	√√	0	0	0	√√ C	
16	0	0	0	0	√√	0	0	0	
17	0	0	0	0	√√	0	0	0	
18	0	0	0	A √√√	0	0	0	√√ C	
19	0	0	0	√√√	0	0	0	√√ C	
20	0	0	√√	0	0	0	0	√√ C	
21	0	0	0	√√	0	0	0	√√ C	
22	0	0	0	√√	0	0	0	√√	
23	0	0	0	√√	0	0	0	0	
24	0	0	0	√√√	0	0	0	√√ C	
25	0	0	0	√√	0	0	0	√√ C	
26	0	0	0	0	√√	0	0	0	
27	0	0	0	0	√√	0	0	√√	
28	0	0	0	0	√√	0	0	0	
29	0	0	0	√	0	0	0	√√	
30	0	0	0	√√	0	0	0	√√	
31	√√	0	0	0	√√	0	0	0	
32	0	0	0	√√	0	0	0	0	
33	0	0	0	√√	0	0	0	√√ C	
34	0	0	0	√√	0	0	0	√√ C	
35	0	√	0	√√	0	0	0	√√ C	
# Missing/Lost	0	0	0	0	0	0	0	0	
# Dead	0	0	0	0	0	0	0	0	
Analyst	NSC	MHM	DL	dm	MHM	DL	DL	NB	
Time	21:25	07:25	16:00	2227	08:05	18:00	21:41	07:57	

*** See next page for Environment Canada and US EPA requirements.***

On test day, select appropriate neonates (i.e.>8 neonates in a brood) and indicate in the brood size box which test they will be used for by placing a letter according to this legend:

A - NW	D - 67
B - 30A	E -
C - 76	F -

Ⓐ NE NB 2023 Sep15

Clearing Records for Neonates Produced by Each Organism Used in a Test
for parent culture: AB200707

Culture Date: AB200338ptcd

Analyst(s): NSC, DR, NB

Test tube #	Brood size								
Date	Sept 12	Sep 13	Sept 13	Sep 13	Sep 14	Sept 14	Sept 14	Sept 15	
Time	21:25	07:25	16:00	22:27	08:05	18:00	21:41	07:57	
36	0	0	0	√√	0	0	0	√√ D	
37	0	0	0	√√	0	0	0	√√ D	
38	0	0	0	√√√	0	0	0	√√ D	
39	0	0	0	√√	0	0	0	√√ D	
40		0	0	√√	0	0	0	√√ D	
41	0	0	0	√√√	0	0	0	√√ D	
42	0	0	0	√√√	0	0m			
43	0	0	√√	0	0	0	0	√√ D	
44	0	0	0	√√	0	0	0	√√ D	
45	0	0	0	√√√	0	0	0	√√ D	
46	0	0	0	√√	0	0	0	√√ D	
47	0	0	0	√√√	0	0	0	√√	
48	0	0	0	√√	0	0	0	√√	
49	0	0	0	√√√	0	0	0	√√	
50	0	0	√√	0	0	0	0	√√	
51	0	0	√√	0	0	0	0	√√	
52	0	0	0	√√√	0	0	0	√	
53	0	0	0	0	√√√	0	0	√√	
54	0	0	0	√√	0	0	0	√√	
55	—	—							
56	—	—							
57	0	0	0	√√	0	0	0	√√	
58	0	0	0	√√	0	0	0	√√	
59	0	0	0	0	0	0 ×			
60	0	0	0	√√	0	0	0	√√	
61	0	0	0	√√	0	0	0	√√	
62	0	0	0	√√	0	0	0	√√	
63	0	0	0	√√√	0	0	0	√√	
64	0	0	0	√√	0	0	0	√√	
65	2	0	0	√√	0	0	0	√√	
66	0	0	0	0	√√√	0	0	√√	
67	0	0	0	√√	0	0	0	√√	
68	0	0	0	√√	0	0	0	0	
69	0	0	0	0	0	0	0	0	
70	0	0	√√	0	0	0	0	√√	
# Missing/Lost	0	0	0	0	0	1	0	0	
# Dead	0	0	0	0	0	1	0	0	
Analyst	NSC	MMM	DR	dm	MM	DR	DR	NB	
Time	21:27	07:31	16:03	22:28	08:06	18:02	21:42	08:03	

Environment Canada: At least 8 young must be produced by each brood organism in their third or subsequent broods, and in the brood to be used in a test.
Neonates used in tests must be < 24 hours old and within 12 hours of each other.

US EPA : Neonates used in tests must be < 24 hours old and within 8 hours of each other.
Neonates used in tests must be taken from adults that have had at least 8 or more young in the brood to be used in a test, and in their third or subsequent broods.

Example:

Test tube #	Brood size				
Date	2008Jan22	2008Jan23	2008Jan23	2008Jan24	A - Rx #1
Time	10:10am	8:25am	8:15pm	8:00am	B - Client # 123
1	√	√	√√	√√ A	
2	√	√	√√	√√ B	

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C374518

Client Project Name & Number: Closure

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-68 Sample Matrix : Grab Water

Description: Yellow, clear Sample Number: BZL733-15

Sample Collected: Sep 18, 2023 02:15 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: ADD Volume Received: 40 L Avg Temp Arrival: 8 °C Storage: 2-6°C

Sample Received: Sep 19, 2023 02:58 PM pH: 7.3 Dissolved Oxygen: 110.0 %

Analysis Start : Sep 22, 2023 10:00 AM Temperature : 14 °C Sample Conductance: 434 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	15	7.2	275	9.1	0	0	0	0	0	0	0	0
6.25	15	7.4	285	9.1	0	0	0	0	0	0	0	0
12.5	14	7.6	294	9.1	0	0	0	0	0	0	0	0
25	14	7.6	315	9.2	0	0	0	0	0	0	0	0
50	14	7.5	350	9.2	0	0	0	0	0	0	0	0
100	14	7.3	432	9.3	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.4	280	9.1	0	0	0	0
6.25	0	0	0	0	14	7.2	287	8.3	0	0	0	0
12.5	0	0	0	0	14	7.7	301	8.9	0	0	0	0
25	0	0	0	0	14	7.5	322	8.9	0	0	0	0
50	0	0	0	0	14	7.4	358	9.0	0	0	0	0
100	0	0	0	0	14	6.9	447	8.2	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 60 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/min/L

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.3 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.6 ± 0.2 g Length (Mean) +- SD : 4.18 ± 0.33 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.4 – 0.9 g Length (Range) : 3.80 – 4.90 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: Sep 18, 2023

Test Endpoint 96 hrs LC50 (95% confidence interval) : 8.47 (<7.59, 9.42)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 9.04 (8.16, 10.0) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C374518

Client Project Name & Number: Closure

Sample Number: BZL733-15

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Sep 28, 2023 02:58 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C374518

Client Project Name & Number: Closure

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-44 Sample Matrix : Grab Water

Description: Yellow, clear Sample Number: BZL734-15

Sample Collected: Sep 18, 2023 03:05 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: ADD Volume Received: 40 L Avg Temp Arrival: 8 °C Storage: 2-6°C

Sample Received: Sep 19, 2023 02:58 PM pH: 6.9 Dissolved Oxygen: 107.0 %

Analysis Start : Sep 22, 2023 10:00 AM Temperature : 14 °C Sample Conductance: 235 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.8	267	9.2	0	0	0	0	0	0	0	0
6.25	14	7.7	272	9.2	0	0	0	0	0	0	0	0
12.5	14	7.7	269	9.2	0	0	0	0	0	0	0	0
25	14	7.7	265	9.2	0	0	0	0	0	0	0	0
50	14	7.6	256	9.3	0	0	0	0	0	0	0	0
100	14	7.3	237	9.3	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.7	280	8.9	0	0	0	0
6.25	0	0	0	0	14	7.3	278	8.4	0	0	0	0
12.5	0	0	0	0	14	7.2	275	8.1	0	0	0	0
25	0	0	0	0	14	7.7	271	8.6	0	0	0	0
50	0	0	0	0	14	7.4	261	8.7	0	0	0	0
100	0	0	0	0	14	7.1	247	9.1	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 60 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/min/L

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.3 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.86 ± 0.44 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.4 – 0.9 g Length (Range) : 3.00 – 4.70 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: Sep 18, 2023

Test Endpoint 96 hrs LC50 (95% confidence interval) : 8.47 (<7.59, 9.42)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 9.04 (8.16, 10.0) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C374518

Client Project Name & Number: Closure

Sample Number: BZL734-15

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Sep 28, 2023 03:01 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C374518

Client Project Name & Number: Closure — Sample Number: BZL730-04

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-45 — Sample Matrix : Grab Water

Description:	PALE YELLOW CLEAR			Sample Prior to Analysis:	
Sample Collected:	Sep 18, 2023 11:50 AM	Sampling Method :	N/A	pH:	8.3
Sample Collected By:	ADD	Site Collection: N/A		Temperature :	18 °C
Sample Received:	Sep 19, 2023 02:58 PM	Volume Received:	1 L	Dissolved Oxygen:	112.0 %
Analysis Start :	Sep 20, 2023 01:26 PM	Avg Temp Arrival:	8 °C	Sample Conductance:	629 µS/cm
End :	Sep 22, 2023 01:06 PM	Storage:	2-6°C	Hardness:	360 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	8.4	274	8.2	0	0	0	0	20	8.4	278	8.3
6.25	21	8.4	300	8.3	0	0	0	0	20	8.5	307	8.4
12.5	21	8.4	318	8.1	0	0	0	0	20	8.5	320	8.4
25	21	8.4	370	8.5	0	0	0	0	20	8.5	379	8.1
50	20	8.4	476	8.7	0	0	0	0	20	8.6	475	8.1
100	20	8.3	668	9.1	0	0	0	0	20	8.8	670	7.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	27.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	1.6
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C374518
Client Project Name & Number:		Closure	Sample Number:	BZL730-04

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan

Verified By : Natasha Lloyd, Team Lead Date: Oct 24, 2023 12:28 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C374518

Client Project Name & Number: Closure — Sample Number: BZL731-04

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-46 — Sample Matrix : Grab Water

Description:	PALE YELLOW CLEAR			Sample Prior to Analysis:	
Sample Collected:	Sep 18, 2023 01:30 PM	Sampling Method :	N/A	pH:	8.2
Sample Collected By:	ADD	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Sep 19, 2023 02:58 PM	Volume Received:	1 L	Dissolved Oxygen:	116.0 %
Analysis Start :	Sep 20, 2023 01:28 PM	Avg Temp Arrival:	8 °C	Sample Conductance:	340 µS/cm
End :	Sep 22, 2023 01:03 PM	Storage:	2-6°C	Hardness:	180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	8.4	275	8.2	0	0	0	0	20	8.4	288	8.1
6.25	21	8.3	281	8.2	0	0	0	0	20	8.4	287	8.2
12.5	21	8.3	285	8.3	0	0	0	0	20	8.4	300	8.1
25	21	8.3	293	8.3	0	0	0	0	20	8.4	307	8.2
50	21	8.3	313	8.5	0	0	0	0	20	8.4	322	8.2
100	20	8.2	346	8.8	0	0	0	0	20	8.4	356	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	28.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.3
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C374518
Client Project Name & Number:		Closure	Sample Number:	BZL731-04

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan

Verified By : Natasha Lloyd, Team Lead Date: Oct 24, 2023 12:30 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C374518

Client Project Name & Number: Closure — Sample Number: BZL732-04

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-69 — Sample Matrix : Grab Water

Description:	PALE YELLOW CLEAR			Sample Prior to Analysis:	
Sample Collected:	Sep 18, 2023 01:50 PM	Sampling Method :	N/A	pH:	8.1
Sample Collected By:	ADD	Site Collection: N/A		Temperature :	18 °C
Sample Received:	Sep 19, 2023 02:58 PM	Volume Received:	1 L	Dissolved Oxygen:	114.0 %
Analysis Start :	Sep 20, 2023 01:31 PM	Avg Temp Arrival:	8 °C	Sample Conductance:	851 µS/cm
End :	Sep 22, 2023 01:04 PM	Storage:	2-6°C	Hardness:	600 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	8.3	276	8.2	0	0	0	0	20	8.3	285	7.8
6.25	21	8.3	331	8.2	0	0	0	0	19	8.2	343	7.3
12.5	21	8.3	359	8.2	0	0	0	0	20	8.4	362	8.1
25	21	8.2	442	8.4	0	0	0	0	20	8.4	441	8.2
50	20	8.2	603	8.5	0	0	0	0	19	8.2	648	7.7
100	20	8.0	901	9.0	0	0	0	0	20	8.3	949	7.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	28.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.3
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C374518
Client Project Name & Number:		Closure	Sample Number:	BZL732-04

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan

Verified By : Natasha Lloyd, Team Lead Date: Oct 24, 2023 12:33 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C374518

Client Project Name & Number: Closure — Sample Number: BZL733-04

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-68 — Sample Matrix : Grab Water

Description: PALE YELLOW CLEAR — Sample Prior to Analysis:

Sample Collected: Sep 18, 2023 02:15 PM — Sampling Method : N/A — pH: 7.6

Sample Collected By: ADD — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 19, 2023 02:58 PM — Volume Received: 1 L — Dissolved Oxygen: 118.0 %

Analysis Start : Sep 20, 2023 01:30 PM — Avg Temp Arrival: 8 °C — Sample Conductance: 410 µS/cm

End : Sep 22, 2023 01:02 PM — Storage: 2-6°C — Hardness: 160 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	8.5	274	8.2	0	0	0	0	20	8.4	278	8.1
6.25	21	8.4	284	8.3	0	0	0	0	20	8.3	292	7.9
12.5	21	8.3	297	8.3	0	0	0	0	20	8.2	303	7.9
25	21	8.3	309	8.4	0	0	0	0	20	8.2	309	8.1
50	21	8.2	351	8.6	0	0	0	0	20	8.1	360	7.9
100	20	7.8	423	9.4	0	0	0	0	20	7.9	432	8.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 28.3

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.3

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C374518
Client Project Name & Number:		Closure	Sample Number:	BZL733-04

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan

Verified By : Natasha Lloyd, Team Lead Date: Oct 24, 2023 12:36 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C374518

Client Project Name & Number: Closure — Sample Number: BZL734-04

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-44 — Sample Matrix : Grab Water

Description:	PALE YELLOW CLEAR			Sample Prior to Analysis:	
Sample Collected:	Sep 18, 2023 03:05 PM	Sampling Method :	N/A	pH:	7.2
Sample Collected By:	ADD	Site Collection: N/A		Temperature :	20 °C
Sample Received:	Sep 19, 2023 02:58 PM	Volume Received:	1 L	Dissolved Oxygen:	117.0 %
Analysis Start :	Sep 20, 2023 01:31 PM	Avg Temp Arrival:	8 °C	Sample Conductance:	223 µS/cm
End :	Sep 22, 2023 01:00 PM	Storage:	2-6°C	Hardness:	80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	8.4	273	8.2	0	0	0	0	20	8.3	279	8.0
6.25	21	8.4	272	8.3	0	0	0	0	20	8.3	277	8.2
12.5	21	8.4	269	8.2	0	0	0	0	20	8.3	274	8.1
25	21	8.3	264	8.3	0	0	0	0	20	8.2	269	8.1
50	21	8.2	253	8.3	0	0	0	0	20	8.1	258	8.1
100	20	7.7	227	8.6	0	0	0	0	20	7.6	236	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	28.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.3
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C374518
Client Project Name & Number:		Closure	Sample Number:	BZL734-04

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan

Verified By : Natasha Lloyd, Team Lead Date: Oct 24, 2023 12:40 PM

www.bvna.com

BUREAU VERITAS
4606 Canada Way
Burnaby, BC V5G 1K5

Office 604 734 7276
Toll Free 800 665 8566
Fax 604 731 2386

SUBLETHAL TOXICITY TESTS ON: 1645-44 AND 1645-68

SAMPLING DATE:

SEPTEMBER 19, 2023

Prepared for:

Diavik Diamond Mines Inc.
P.O. Box 2498
300-5201 – 50th Ave.
Yellowknife, NT
Canada X1A 2P8

Prepared by:

Ecotoxicology Group
Bureau Veritas

Job No.: C374518
October 2023

Summary of Test Results for Samples from
Diavik Diamond Mines Ltd.
Sample Date: September 19, 2023
Job C374518

Sample: 1645-44

Test		IC25 or LC25 (%v/v)
Lemna minor:	Frond Increase	>97 (N/A, N/A)
	Dry Weight	>97 (N/A, N/A)
P. subcapitata:	Cell Yield	>90.9 (N/A, N/A)

N/A = Not available
95% confidence limits in parentheses

Sample: 1645-68

Test		IC25 or LC25 (%v/v)
Lemna minor:	Frond Increase	22.7 (14.2, 37.4)
	Dry Weight	15.4 (9.6, 23.5)
P. subcapitata:	Cell Yield	>90.9 (N/A, N/A)

N/A = Not available
95% confidence limits in parentheses

The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The hardness, conductivity, dissolved oxygen, and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without written approval of the laboratory.

Lemna minor Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	2 samples
Sample Information	
Sample ID(s)	1645-44 and 1645-68
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2023/Sep/19
Date (y/m/d)/time of sample receipt at lab	2023/Sep/19 @ 14:58
Test Organisms	
Species	*Lemna minor* (Landolt clone 7730)
Source	Axenic in-house culture started from organisms obtained from Canadian Phycological Culture Centre, CPCC #492
Growth medium used for culturing	Hoagland's E+ Medium
Age of culture at start of test	9 days
Appearance/Any unusual treatment of culture	Good. No unusual appearance or treatment of culture prior to use in test
Culture health monitoring	Mean number of fronds in health monitoring vessels (47) displayed a ≥8-fold increase by the end of 7 days in APHA medium. See "Plant Subculture and Acclimation for Tests" data sheet.
Acclimation time and test medium	Plants were acclimated to APHA medium 18-24 hours prior to testing
Test Conditions & Facilities	
Test method	EPS 1/RM/37 Second Edition - January 2007 BBY2SOP-00053 Lemna minor 7 Day Growth Inhibition Test
Test type	Static
Date test started (y/m/d)	2023/Sep/21
Date test completed (y/m/d)	2023/Sep/28
Test vessels	200 mL transparent polypropylene cups with plastic lids
Persons performing test	N. Shergill, N. Blassnitz, M. Hamad, S. Reddy
Test location	Temperature and photoperiod controlled room, under same conditions as culture vessels
Light intensity, quality & photoperiod	24 hour full spectrum fluorescent light: 65-77 µmol/(m^2s)
Rate and duration of preaeration	~100 bubbles/minute for 20 minutes
Procedure for pH adjustment	No pH adjustment of the samples
Procedure for filtration	The samples were not filtered
Control/dilution water (Test medium)	APHA medium
Chemicals added to control/dilution water	APHA Nutrient stocks A, B, and C, as described in method at 10ml/L

	Test medium prepared using Milli-Q water (ASTM type 1)
Type and quantity of chemicals added to test sample prior to testing (i.e., nutrient spiking)	APHA Nutrient stocks A, B, and C, as described in method at 10 ml/L
Number and concentration of test solutions	7 (97, 48.5, 24.2, 12.1, 6.0, 3.0, 1.5% v/v) plus one control
Volume and depth of solution in test vessels	150 mL & ≥4 cm
Number of replicates per concentration	4 (plus 1 for measurements)
Number of fronds/plant and Number of plants/test vessel	3 fronds per plant; 2 plants per test vessel
Sample pH before and after addition of APHA stocks A, B, and C	See "Test Data and Observations" sheet
Temperature of test solutions and control during the test	See "Test Data and Observations" sheet
pH of test solutions and control at test initiation and completion	See "Test Data and Observations" sheet
Test observation frequency	Plants were observed daily for growth, necrosis, chlorosis, algal growth, and any abnormalities
Test observations	**1645-44:** Plant growth appeared healthy and dark green and light green in the Control and 1.5% up to the 97% v/v concentrations. Green algae was observed in the 1.5% up to the 97% v/v concentrations. **1645-68:** Plant growth appeared healthy and dark green and light green in the Control and 1.5% up to the 48.5% v/v concentrations. Green algae was observed in the 1.5% up to the 97% v/v concentrations. Chlorosis was observed in the 97% v/v concentration.
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Frond increase endpoint statistics	
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-44:** CETIS v2.1.2.3: Linear Interpolation Data did not lend themselves to regression analysis; defaulted to linear interpolation Data was corrected for hormesis as Linear Interpolation (ICPIN) does not take into account the effect of hormesis Corrected data was used to calculate the IC25 **1645-68:** CETIS v2.1.2.3: Nonlinear Regression; 4P Log-Logistic+Hormesis model
Weighting techniques applied?	**1645-44:** N/A **1645-68:** Normal
Residuals Analysis	**1645-44:** N/A **1645-68:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene's test results).
Frond increase in controls and in	See "Frond Increase" data sheet

each treatment (mean ± SD)	
Significant stimulation in sample	**1645-44:** Yes, significant stimulation was observed in the 1.5% and 3.0% v/v concentrations. See Dunnett Multiple Comparison Test in CETIS. **1645-68:** No. See Dunnett Multiple Comparison Test in CETIS.
Percent stimulation for frond increase in the test solutions	See “Frond Increase” spreadsheet
Any outliers and justification for their removal	**1645-44:** None **1645-68:** None
Dry weight endpoint statistics	
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-44:** CETIS v2.1.2.3: Linear Interpolation (ICPIN) **1645-68:** CETIS v2.1.2.3: Nonlinear Regression; 3P Log-Logistic model
Weighting techniques applied?	**1645-44:** N/A **1645-68:** Normal
Residuals Analysis	**1645-44:** N/A **1645-68:** Assumptions of Normality and Homogeneity met (see Shapiro Wilks and Mod Levene’s test results).
Dry weights (mean ± SD)	See "Dry Weights” data sheet
Significant stimulation in sample	**1645-44:** No. See Dunnett Multiple Comparison Test in CETIS. **1645-68:** No. See Dunnett Multiple Comparison Test in CETIS.
Percent stimulation for dry weight in the test solutions	See "Dry Weights” data sheet
Any outliers and justification for their removal	**1645-44:** None **1645-68** None

Quality Assurance	
Test validity criteria • Average number of fronds in the control are ≥48 fronds • A minimum of an 8-fold frond increase	• Average number of fronds in Controls: **1645-44:** 50.8 **1645-68:** 61.8 • Amount of Frond Increase: **1645-44:** 8.5 fold **1645-68:** 10.3 fold
Reference Toxicant test: IC25 (95% CL) (µg Ni/L) for frond increase	10.2 (5.8, 16.3)
Reference toxicant test historic mean IC25 & 2SD range (µg Ni/L) for frond increase	11.3; 2SD range: (4.3, 30.1)
Invalid Reference toxicant test?	No
Date of Reference toxicant test and test duration	2023/Sep/08
Conditions of reference toxicant test	Same as test conditions

CETIS Analytical Report

Report Date: 23 Oct-23 16:14 (p 1 of 4)
Test Code/ID: LM-4388-1523 / 06-4933-3741

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	02-8335-2163	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:13	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	2418934629939BA2795C962F01B40AC8	**Editor ID:**	003-579-751-6

Batch ID:	12-2290-4949	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:18	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 08:40	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	06-4318-5688	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	<1.5	1.5	---	>66.7	11.29	25.23%

Dunnett Multiple Comparison Test

Control vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5*	6	4.673	2.814	11.29	CDF	0.0006	Significant Effect
	3*	6	3.489	2.814	11.29	CDF	0.0108	Significant Effect
	6	6	1.745	2.814	11.29	CDF	0.3707	Non-Significant Effect
	12.1	6	2.243	2.814	11.29	CDF	0.1587	Non-Significant Effect
	24.2	6	1.184	2.814	11.29	CDF	0.7401	Non-Significant Effect
	48.5	6	0.06231	2.814	11.29	CDF	1.0000	Non-Significant Effect
	97	6	2.118	2.814	11.29	CDF	0.1994	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.103	2.938	0.9643	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2088.47	298.353	7	9.266	1.5E-05	Significant Effect
Error	772.75	32.1979	24			
Total	2861.22		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	7.01	18.48	0.4278	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.979	0.9081	0.7710	Normal Distribution

Frond Increase Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	44.75	35.08	54.42	46.67	39	50	3.038	13.58%	0.00%
1.5		4	63.5	49.48	77.52	64	53	73	4.406	13.88%	-41.90%
3		4	58.75	50.19	67.31	59	52	65	2.689	9.15%	-31.28%
6		4	51.75	45.89	57.61	52	47	56	1.843	7.12%	-15.64%
12.1		4	53.75	50.47	57.03	54	51	56	1.031	3.84%	-20.11%
24.2		4	49.5	37.42	61.58	50.5	40	57	3.797	15.34%	-10.61%
48.5		4	44.5	36.13	52.87	46	37	49	2.63	11.82%	0.56%
97		4	36.25	30.99	41.51	36	33	40	1.652	9.11%	18.99%

2023 Oct23 2023Oct24

Analyst: MH QA: PH

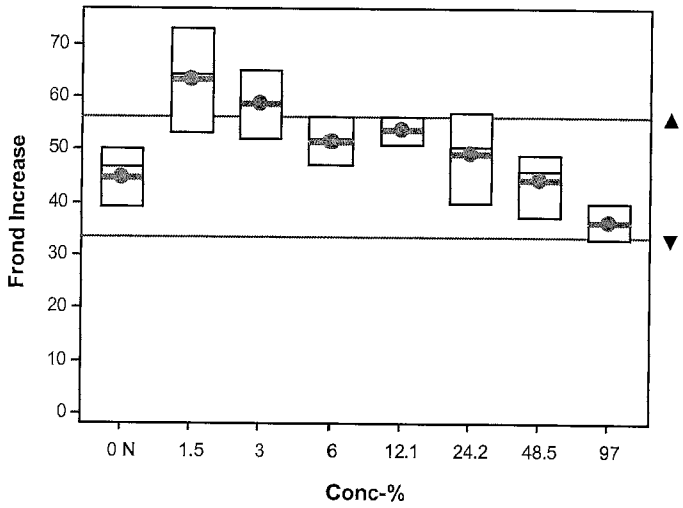
Lemna Growth Inhibition Test — **Bureau Veritas**

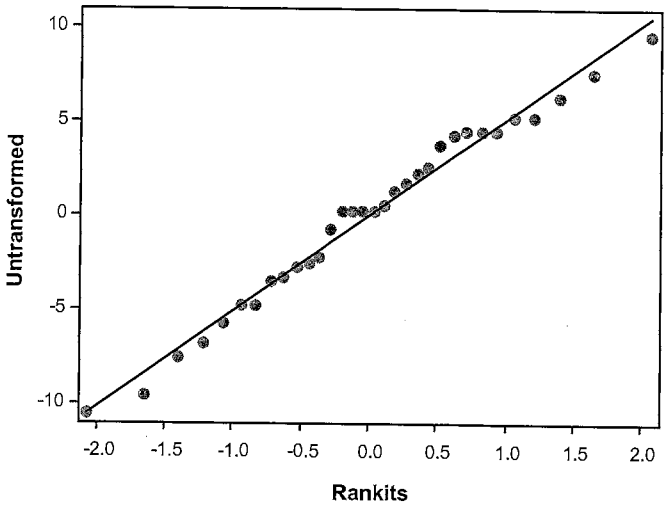
Analysis ID:	02-8335-2163	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:13	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	2418934629939BA2795C962F01B40AC8	**Editor ID:**	003-579-751-6

Frond Increase Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	40	50	39	50
1.5		60	73	68	53
3		65	52	58	60
6		56	52	47	52
12.1		54	51	54	56
24.2		57	40	54	47
48.5		49	45	47	37
97		38	40	34	33

Graphics





2023 Oct23 2023Oct24

Analyst: MT QA: PH

CETIS Analytical Report

Report Date: 23 Oct-23 16:24 (p 1 of 2)
Test Code/ID: LM-4388-1523 / 06-4933-3741

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-3419-6395	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:24	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	2418934629939BA2795C962F01B40AC8	**Editor ID:**	003-579-751-6

Batch ID:	12-2290-4949	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:18	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 08:40	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	06-4318-5688	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	43394	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	32.84	6.575	64.52	3	1.5	15.2
IC20	48.28	4.832	73.87	2.1	1.4	20.7
IC25	61.16	22.5	86.17	1.6	1.2	4.4
IC40	>97	---	---	<1	---	---
IC50	>97	---	---	<1	---	---

Data not corrected for hormesis.
Data not used to calculate IC25.
MT 2023 Oct 23

Frond Increase Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	44.75	46.67	39	50	13.58%	0.00%	55.67	0.00%
1.5		4	63.5	64	53	73	13.88%	-41.90%	55.67	0.00%
3		4	58.75	59	52	65	9.15%	-31.28%	55.67	0.00%
6		4	51.75	52	47	56	7.12%	-15.64%	52.75	5.25%
12.1		4	53.75	54	51	56	3.84%	-20.11%	52.75	5.25%
24.2		4	49.5	50.5	40	57	15.34%	-10.61%	49.5	11.08%
48.5		4	44.5	46	37	49	11.82%	0.56%	44.5	20.06%
97		4	36.25	36	33	40	9.11%	18.99%	36.25	34.88%

Frond Increase Detail

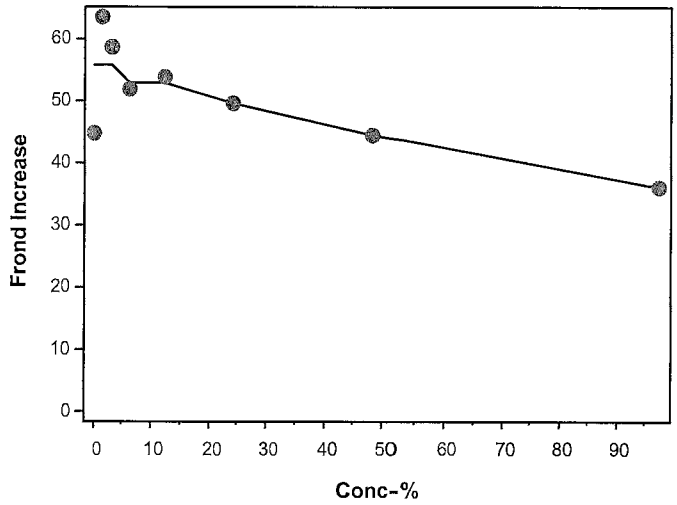
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	40	50	39	50
1.5		60	73	68	53
3		65	52	58	60
6		56	52	47	52
12.1		54	51	54	56
24.2		57	40	54	47
48.5		49	45	47	37
97		38	40	34	33

2023 Oct 23 20230ct24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	15-3419-6395	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:24	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	2418934629939BA2795C962F01B40AC8	**Editor ID:**	003-579-751-6

Graphics



2023 OCT23 20230ct24

CETIS Analytical Report

Report Date: 23 Oct-23 16:26 (p 1 of 2)
Test Code/ID: LM-4388-1523 / 06-4933-3741

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	02-0150-6162	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	D1813556E34CC0E21DC9EA7D8845E37E	**Editor ID:**	003-579-751-6

Batch ID:	12-2290-4949	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:18	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 08:40	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	06-4318-5688	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1161447	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	83.52	5.714	---	1.2	---	17.5
IC20	>97	---	---	<1	---	---
IC25	>97	---	---	<1	---	---
IC40	>97	---	---	<1	---	---
IC50	>97	---	---	<1	---	---

Data corrected for hormesis.
Data used to calculate IC25.
MT 2023 Oct 23

Frond Increase Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
1.5		4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
3		4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
6		4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
12.1		4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
24.2		4	44.75	46.67	39	50	13.58%	0.00%	44.75	0.00%
48.5		4	44.5	46	37	49	11.82%	0.56%	44.5	0.56%
97		4	36.25	36	33	40	9.11%	18.99%	36.25	18.99%

Frond Increase Detail

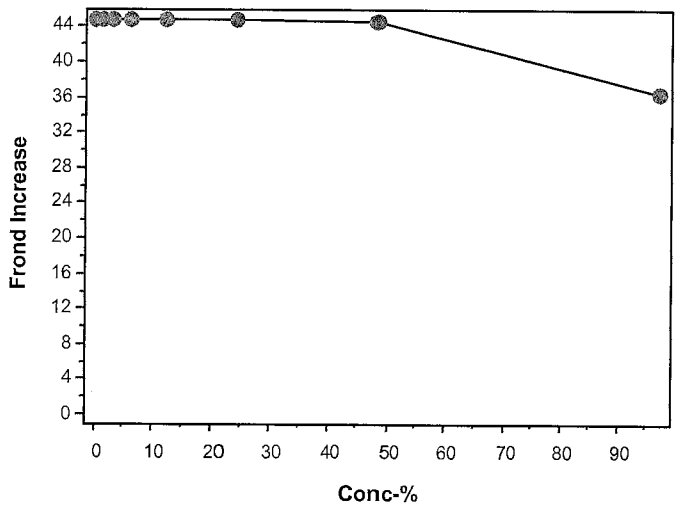
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	40	50	39	50
1.5		40	50	39	50
3		40	50	39	50
6		40	50	39	50
12.1		40	50	39	50
24.2		40	50	39	50
48.5		49	45	47	37
97		38	40	34	33

2023 Oct 23 20230ct24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	02-0150-6162	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:25	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	D1813556E34CC0E21DC9EA7D8845E37E	**Editor ID:**	003-579-751-6

Graphics



2023 Oct 23 2023 Oct 24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	09-9765-3873	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:13	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	863B9F7D35F7FE8FDAFF34B1B93EB268	**Editor ID:**	003-579-751-6

Batch ID:	12-2290-4949	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:18	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 08:40	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	06-4318-5688	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	97	>97	---	1	1.134	21.30%

Dunnett Multiple Comparison Test

Control vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5	6	1.836	2.814	1.134	CDF	0.3216	Non-Significant Effect
	3	6	2.326	2.814	1.134	CDF	0.1356	Non-Significant Effect
	6	6	0.8312	2.814	1.134	CDF	0.9311	Non-Significant Effect
	12.1	6	1.321	2.814	1.134	CDF	0.6455	Non-Significant Effect
	24.2	6	1.681	2.814	1.134	CDF	0.4074	Non-Significant Effect
	48.5	6	0.459	2.814	1.134	CDF	0.9971	Non-Significant Effect
	97	6	0.8436	2.814	1.134	CDF	0.9265	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.745	2.938	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.0197	0.7171	7	2.207	0.0701	Non-Significant Effect
Error	7.79652	0.324855	24			
Total	12.8162		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.769	18.48	0.6882	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9653	0.9081	0.3805	Normal Distribution

Total Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	5.325	4.139	6.511	5.285	4.53	6.2	0.3727	14.00%	0.00%
1.5		4	6.065	4.93	7.2	6.145	5.23	6.74	0.3567	11.76%	-13.90%
3		4	6.263	5.642	6.883	6.225	5.92	6.68	0.1951	6.23%	-17.61%
6		4	5.66	5.307	6.013	5.66	5.39	5.93	0.1109	3.92%	-6.29%
12.1		4	5.857	5.007	6.708	5.845	5.22	6.52	0.2672	9.12%	-10.00%
24.2		4	6.003	4.85	7.155	6	5.17	6.84	0.3622	12.07%	-12.72%
48.5		4	5.51	4.617	6.403	5.55	4.79	6.15	0.2805	10.18%	-3.47%
97		4	4.985	4.26	5.71	5.035	4.41	5.46	0.2278	9.14%	6.38%

2023 20230824
Oct 23

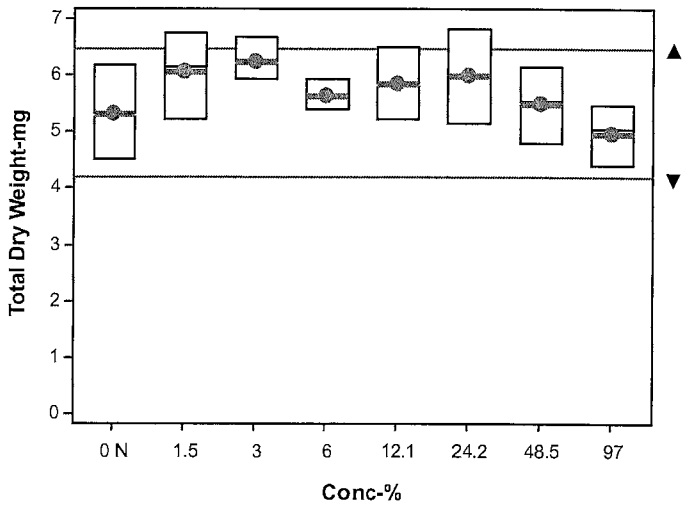
Lemna Growth Inhibition Test — **Bureau Veritas**

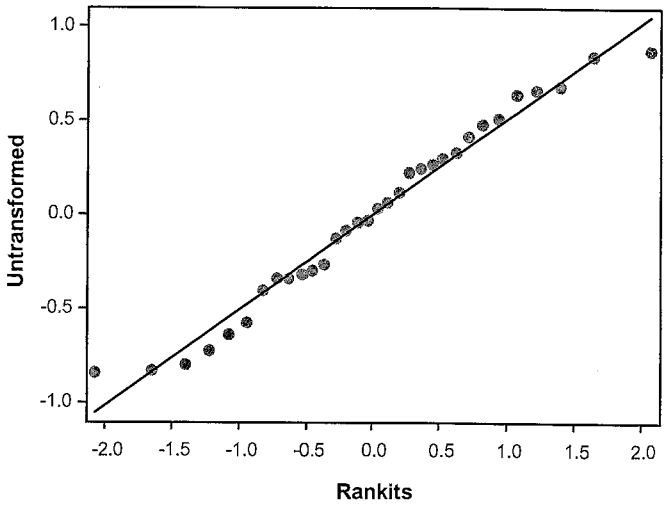
Analysis ID:	09-9765-3873	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:13	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	863B9F7D35F7FE8FDAFF34B1B93EB268	**Editor ID:**	003-579-751-6

Total Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	4.53	5.65	4.92	6.2
1.5		5.23	6.57	6.74	5.72
3		6.68	5.92	5.94	6.51
6		5.63	5.69	5.39	5.93
12.1		5.22	5.92	5.77	6.52
24.2		6.84	5.17	6.3	5.7
48.5		6.15	5.47	5.63	4.79
97		4.86	5.21	5.46	4.41

Graphics





2023 20230024
Oct23

CETIS Analytical Report

Test Code/ID: LM-4388-1523 / 06-4933-3741

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	11-8657-8601	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:14	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	863B9F7D35F7FE8FDAFF34B1B93EB268	**Editor ID:**	003-579-751-6

Batch ID:	12-2290-4949	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:18	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 08:40	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 20h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	06-4318-5688	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	55h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	790818	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	94.91	17.22	---	1.1	---	5.8
IC20	>97	---	---	<1	---	---
IC25	>97	---	---	<1	---	---
IC40	>97	---	---	<1	---	---
IC50	>97	---	---	<1	---	---

Total Dry Weight-mg Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	5.325	5.285	4.53	6.2	14.00%	0.00%	5.884	0.00%
1.5		4	6.065	6.145	5.23	6.74	11.76%	-13.90%	5.884	0.00%
3		4	6.263	6.225	5.92	6.68	6.23%	-17.61%	5.884	0.00%
6		4	5.66	5.66	5.39	5.93	3.92%	-6.29%	5.84	0.75%
12.1		4	5.857	5.845	5.22	6.52	9.12%	-10.00%	5.84	0.75%
24.2		4	6.003	6	5.17	6.84	12.07%	-12.72%	5.84	0.75%
48.5		4	5.51	5.55	4.79	6.15	10.18%	-3.47%	5.51	6.36%
97		4	4.985	5.035	4.41	5.46	9.14%	6.38%	4.985	15.28%

Total Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	4.53	5.65	4.92	6.2
1.5		5.23	6.57	6.74	5.72
3		6.68	5.92	5.94	6.51
6		5.63	5.69	5.39	5.93
12.1		5.22	5.92	5.77	6.52
24.2		6.84	5.17	6.3	5.7
48.5		6.15	5.47	5.63	4.79
97		4.86	5.21	5.46	4.41

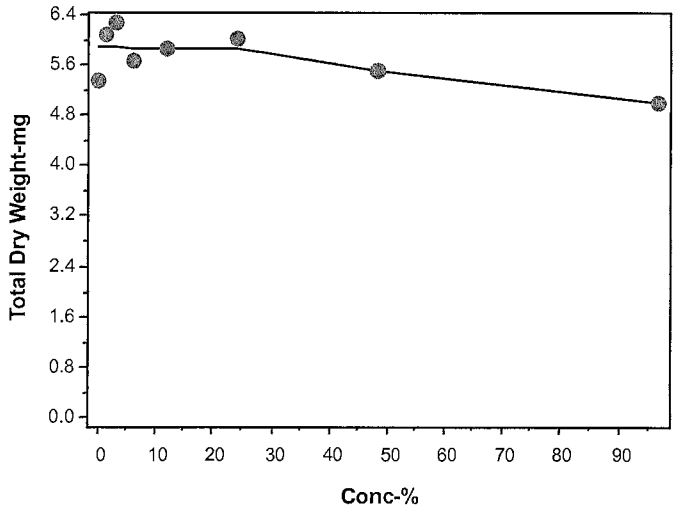
2023 Oct23 20230ct24

Analyst: MH QA: PH

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	11-8657-8601	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:14	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	23 Oct-23 16:13	**MD5 Hash:**	863B9F7D35F7FE8FDAFF34B1B93EB268	**Editor ID:**	003-579-751-6

Graphics



2023 Oct23 20230ct24

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL736

Sample ID: 1645-44

Start Date: September 21, 2023

Analyst(s): N. Shergill

End Date: September 28, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	46	40	44.8	6.1	--
B	6	56	50			
C	6	45	39			
D	6	56	50			
1.5%-A	6	66	60	63.5	8.8	41.90
B	6	79	73			
C	6	74	68			
D	6	59	53			
3.0%-A	6	71	65	58.8	5.4	31.28
B	6	58	52			
C	6	64	58			
D	6	66	60			
6.0%-A	6	62	56	51.8	3.7	15.64
B	6	58	52			
C	6	53	47			
D	6	58	52			
12.1%-A	6	60	54	53.8	2.1	20.11
B	6	57	51			
C	6	60	54			
D	6	62	56			
24.2%-A	6	63	57	49.5	7.6	10.61
B	6	46	40			
C	6	60	54			
D	6	53	47			
48.5%-A	6	55	49	44.5	5.3	N/S
B	6	51	45			
C	6	53	47			
D	6	43	37			
97%-A	6	44	38	36.3	3.3	N/S
B	6	46	40			
C	6	40	34			
D	6	39	33			
Analyst	NSC	NSC				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	50.8
Control Frond Increase	8.5
Validity Criteria Met?	Yes

Data Reviewed by: 2023 Oct 23

ECOTOXICOLOGY

Lemna minor Growth Inhibition Test Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL736

Sample ID: 1645-44

Oven Temp (°C): 60

Balance ID: BBY2-0260

Drying Time (h): >24

Analyst(s): N. Shergill, S. Reddy

Reviewed by: [illegible] 2023 Oct 23

Boat #	Conc. & Replicate	Final # of Fronds	Boat Wt. (g)	Boat & Frond Dry Weight (g)	Dry Weight per Rep. (mg)	Mean Dry Weight per Conc (mg)	SD	% Stimulation
475	Control-A	46	0.77659	0.78112	4.53	5.33	0.75	--
476	B	56	0.79274	0.79839	5.65			
477	C	45	0.77500	0.77992	4.92			
478	D	56	0.82060	0.82680	6.20			
479	1.5%-A	66	0.81677	0.82200	5.23	6.06	0.71	13.90
480	B	79	0.84514	0.85171	6.57			
481	C	74	0.78039	0.78713	6.74			
482	D	59	0.79597	0.80169	5.72			
483	3.0%-A	71	0.82942	0.83610	6.68	6.26	0.39	17.61
484	B	58	0.81764	0.82356	5.92			
485	C	64	0.81699	0.82293	5.94			
486	D	66	0.82427	0.83078	6.51			
487	6.0%-A	62	0.81990	0.82553	5.63	5.66	0.22	6.29
488	B	58	0.82352	0.82921	5.69			
489	C	53	0.82349	0.82888	5.39			
490	D	58	0.79085	0.79678	5.93			
491	12.1%-A	60	0.80851	0.81373	5.22	5.86	0.53	10.00
492	B	57	0.77989	0.78581	5.92			
493	C	60	0.77258	0.77835	5.77			
494	D	62	0.81457	0.82109	6.52			
495	24.2%-A	63	0.81830	0.82514	6.84	6.00	0.72	12.72
496	B	46	0.82064	0.82581	5.17			
497	C	60	0.81968	0.82598	6.30			
498	D	53	0.82125	0.82695	5.70			
499	48.5%-A	55	0.80629	0.81244	6.15	5.51	0.56	3.47
500	B	51	0.79657	0.80204	5.47			
501	C	53	0.80522	0.81085	5.63			
502	D	43	0.80748	0.81227	4.79			
503	97%-A	44	0.82975	0.83461	4.86	4.98	0.46	N/S
504	B	46	0.81737	0.82258	5.21			
505	C	40	0.80467	0.81013	5.46			
506	D	39	0.80137	0.80578	4.41			
507	QA/QC	N/A	0.81860	0.81867	0.07	-	-	-
508	QA/QC	N/A	0.79910	0.79916	0.06	-	-	
475	0-A	46	0.77652	0.78112	4.60	-	-	
Analyst		NSC	SR	SR				
Weighing Date		--	2023 Sept 22	2023 Sept 29				

N/S - No growth stimulation (dry weight) compared to the Control

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6
Tab: Frond Counts, Page 1 of 1

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL736

Sample ID: 1645-44

Start Date: September 21, 2023

Analyst(s): N. Sheugue

End Date: September 28, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	46	--	--	--	--
B	6	56	--			
C	6	45	--			
D	6	56	--			
1.5%-A	6	66	--	--	--	N/S
B	6	79	--			
C	6	74	--			
D	6	59	--			
3.0%-A	6	71	--	--	--	N/S
B	6	58	--			
C	6	64	--			
D	6	66	--			
6.0%-A	6	62	--	--	--	N/S
B	6	58	--			
C	6	53	--			
D	6	58	--			
12.1%-A	6	60	--	--	--	N/S
B	6	57	--			
C	6	60	--			
D	6	67	--			
24.2%-A	6	63	--	--	--	N/S
B	6	46	--			
C	6	60	--			
D	6	53	--			
48.5%-A	6	55	--	--	--	N/S
B	6	51	--			
C	6	53	--			
D	6	43	--			
97%-A	6	44	--	--	--	N/S
B	6	46	--			
C	6	40	--			
D	6	39	--			
Analyst	NSU	NSU				

N/S - No growth stimulation (frond increase) compared to the Control

H

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	#DIV/0!
Control Frond Increase	#DIV/0!
Validity Criteria Met?	#DIV/0!

Data Reviewed by: N/A

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: September 21, 2023

Sample ID: 1645-44

End Date: September 28, 2023

Sample Date: September 19, 2023

Job# / Sample # C374518 /BZL736

Analyst(s): NShergill, NBlassnik, MHaman

Organism Lot #: CP230912

pH of raw sample	pH after addition of APHA stocks A, B, & C	Pre-aeration time	pH after aeration
7.4	7.9	20min	7.9

media: 2023 Sept 13

APHA Stocks Prep Date: 2023 Aug 29

Instrument IDs: BBH2-0408

Thermometer ID: BBH2-0408

Plant Shelf #: 2

Test Volume (mL): 150

Sample Description: clear & colourless

Concentration (%)	Temperature Monitoring								pH Monitoring	
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 0	Day 7
Control	24	25	25	26	26	26	26	26	8.3	8.4
1.5	24	26	26	26	26	26	26	26	8.3	9.9
3.0										
6.0										
12.1	24	27	27	26	26	26	26	26	8.3	9.6
24.2										
48.5										
97	24	27	27	26	26	26	26	26	8.0	10.1
Analyst	NSC	NB	MHM	NSC	NB	NB	NSC	NSC	NSC	NSC
Date	2023 Sept 21	2023 Sept 22	2023 Sep 23	2023 Sept 24	2023 Sept 25	2023 Sept 26	2023 Sept 27	2023 Sept 28	2023 Sept 21	2023 Sept 28

Observations during the Test

Day 0 (Test Initiation)

Date: September 21, 2023

Analyst: NShergill

# of Plants per Test Vessel: 2

# of Fronds per Plant 3

Plant Observations: DG + H

Test Seeded @: 12:18

Other comments: n/a

Day 1

Date: September 22, 2023

Analyst: NBlassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H

Other Comments: n/a

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: September 21, 2023

Job# / Sample # C374518 /BZL736

Day 2

Date: September 23, 2023

Analyst: M Hamel

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H

Other Comments: N/A

Day 3

Date: September 24, 2023

Analyst: N Shergill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H	A,H DG,LG

Other Comments: n/a

Day 4

Date: September 25, 2023

Analyst: N.Blassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	DG,LG,H	DG,LG,H	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A

Other Comments: n/a

Day 5

Date: September 26, 2023

Analyst: N.Blassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A	DG,LG,H,A

Other Comments: n/a

Day 6

Date: September 27, 2023

Analyst: N Shergill

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG

Other Comments: n/a

Day 7

Date: September 28, 2023

Analyst: N Shergill

Test End Time: 08:40

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,LG,H	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG	H,A DG,LG

Other Comments: n/a

Legend:

DG = Dark Green
LG = Light Green
H = Healthy, Normal
C = Chlorosis
N = Necrosis
G = Gibbosity
A = Green Algae
T = Transparent
S = small fronds
CD = Colony destroyed
RD = Roots destroyed

Other :

ECOTOXICOLOGY

Randomization Chart

Client Name: Diavik Diamond Mines

Test Date: 21-Sep

Sample Name: 1645-44

Shelf #: 2

Back Wall

Position Map

5	10	15	20	25	30	35	40
4	9	14	19	24	29	34	39
3	8	13	18	23	28	33	38
2	7	12	17	22	27	32	37
1	6	11	16	21	26	31	36

Front of Counter

Position #	Treatment	Replicate	Colour
20		A	
17		B	
26	Control	C	Red
1		D	
8		Measure	
35		A	
24		B	
6	1.5%	C	Orange
28		D	
2		Measure	
14		A	
16		B	
27	3.0%	C	Yellow
3		D	
40		Measure	
33		A	
38		B	
23	6.0%	C	Fl. Green
4		D	
37		Meas.	
39		A	
32		B	
9	12.1%	C	Teal
10		D	
25		Measure	
30		A	
12		B	
29	24.2%	C	Blue
21		D	
5		Measure	
22		A	
31		B	
18	48.5%	C	Purple
11		D	
36		Measure	
15		A	
7		B	
19	97%	C	Pink
34		D	
13		Measure	

CETIS Analytical Report

Report Date: 23 Oct-23 16:16 (p 1 of 4)
Test Code/ID: LM-4388-1623 / 10-9186-5648

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	00-4536-3555	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	42D103479B1CF2915E7C24FD8B919953	**Editor ID:**	003-579-751-6

Batch ID:	13-4148-0058	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:40	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 09:39	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	09-2995-3558	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	57h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	12.1	24.2	17.11	8.3	11.95	21.44%

Dunnett Multiple Comparison Test

Control vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5	6	0.2354	2.814	11.95	CDF	1.0000	Non-Significant Effect
	3	6	0.5297	2.814	11.95	CDF	0.9932	Non-Significant Effect
	6	6	0.3531	2.814	11.95	CDF	0.9994	Non-Significant Effect
	12.1	6	2.295	2.814	11.95	CDF	0.1438	Non-Significant Effect
	24.2*	6	4.591	2.814	11.95	CDF	0.0007	Significant Effect
	48.5*	6	4.061	2.814	11.95	CDF	0.0027	Significant Effect
	97*	6	4.532	2.814	11.95	CDF	0.0008	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.129	2.938	0.8971	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2260.88	322.982	7	8.951	2.1E-05	Significant Effect
Error	866	36.0833	24			
Total	3126.88		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.47	18.48	0.7243	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9874	0.9081	0.9638	Normal Distribution

Frond Increase Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	55.75	44.55	66.95	55	48	65	3.521	12.63%	0.00%
1.5		4	56.75	41.3	72.2	56.5	46	68	4.854	17.11%	-1.79%
3		4	53.5	45.54	61.46	53	48	60	2.5	9.35%	4.04%
6		4	54.25	46.97	61.53	54.5	49	59	2.287	8.43%	2.69%
12.1		4	46	37.48	54.52	45.5	40	53	2.677	11.64%	17.49%
24.2		4	36.25	30.24	42.26	36	32	41	1.887	10.41%	34.98%
48.5		4	38.5	32.91	44.09	38.5	35	42	1.756	9.12%	30.94%
97		4	36.5	25.99	47.01	37	29	43	3.304	18.10%	34.53%

2023 20230ct24
Oct23

Analyst: MT QA: PH

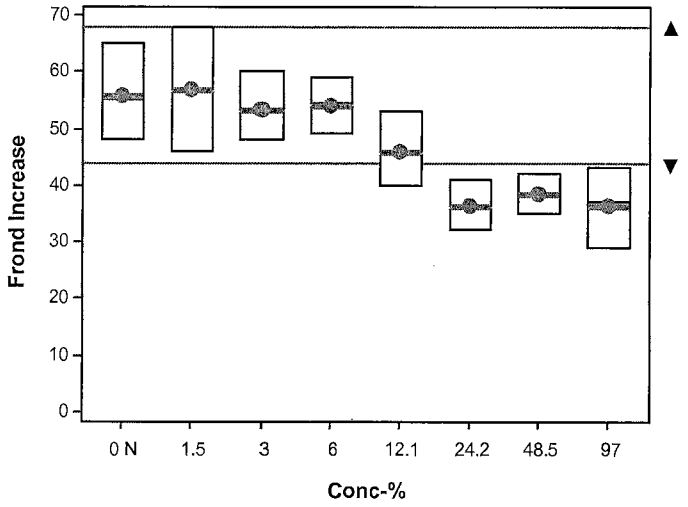
Lemna Growth Inhibition Test — **Bureau Veritas**

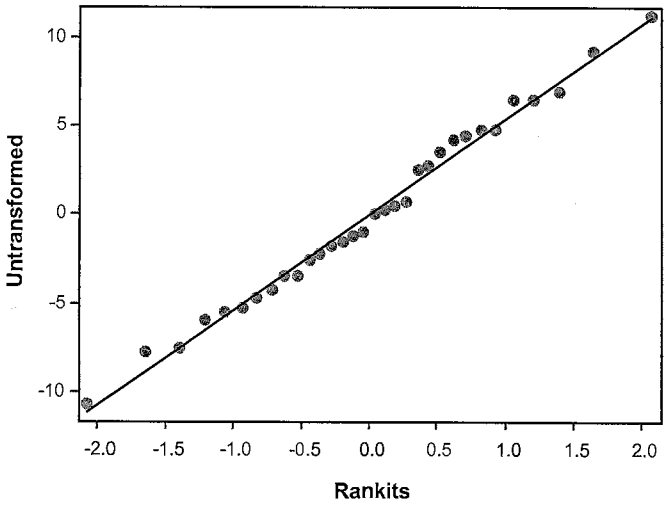
Analysis ID:	00-4536-3555	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	42D103479B1CF2915E7C24FD8B919953	**Editor ID:**	003-579-751-6

Frond Increase Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	65	48	54	56
1.5		68	61	52	46
3		54	60	48	52
6		59	49	57	52
12.1		40	45	46	53
24.2		37	41	32	35
48.5		41	35	36	42
97		33	29	43	41

Graphics





2023 OCT23 2023Oct24

CETIS Analytical Report

Report Date:	23 Oct-23 16:17 (p 1 of 6)
Test Code/ID:	LM-4388-1623 / 10-9186-5648

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-7773-3898	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	42D103479B1CF2915E7C24FD8B919953	**Editor ID:**	003-579-751-6

Batch ID:	13-4148-0058	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:40	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 09:39	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	09-2995-3558	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	57h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
4P Log-Logistic+Hormesis: $\mu=\alpha[1+\varepsilon\cdot x]/[1+[2\varepsilon\cdot\delta+1]\cdot[x/\delta]^{\wedge}\gamma]$	Normal [ω=1]	Off [$\mu^*=\mu$]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
31	-56.56	122.6	127	0.6236	11.23%	56.11	Yes	1.366	0.2753	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	3.776	1.265	6.992	26.5	14.3	79
IC10	6.162	2.832	11.67	16.2	8.6	35.3
IC15	9.518	5.034	17.61	10.5	5.7	19.9
IC20	14.57	8.682	25	6.9	4	11.5
IC25	22.65	14.23	37.36	4.4	2.7	7
IC40	108.5	41.89	---	0.9	---	2.4

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	56.11	3.075	49.81	62.41	18.25	<1.0E-05	Significant Parameter
γ	1.128	0.0372	1.052	1.205	30.33	<1.0E-05	Significant Parameter
δ	423.3	357.2	-308.4	1155	1.185	0.2460	Non-Significant Parameter
ε	0.3255	0.8189	-1.352	2.003	0.3975	0.6940	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	73320	18330	4	482.8	<1.0E-05	Significant Effect
Lack of Fit	197.1	49.27	4	1.366	0.2753	Non-Significant Lack-of-Fit
Pure Error	866	36.08	24			
Residual	1063	37.97	28			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	1.945	2.938	1.0000	No Outliers Detected
Variance	Bartlett Equality of Variance Test	4.47	18.48	0.7243	Equal Variances
	Mod Levene Equality of Variance	1.318	3.496	0.2847	Equal Variances
Distribution	Anderson-Darling A2 Test	0.4167	3.878	0.3358	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9685	0.9081	0.4586	Normal Distribution

2023 2023Oct24
Oct 23

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-7773-3898	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	42D103479B1CF2915E7C24FD8B919953	**Editor ID:**	003-579-751-6

Frond Increase Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	55.75	55	48	65	3.521	7.042	12.63%	0.00%
1.5		4	56.75	56.5	46	68	4.854	9.708	17.11%	-1.79%
3		4	53.5	53	48	60	2.5	5	9.35%	4.04%
6		4	54.25	54.5	49	59	2.287	4.573	8.43%	2.69%
12.1		4	46	45.5	40	53	2.677	5.354	11.64%	17.49%
24.2		4	36.25	36	32	41	1.887	3.775	10.41%	34.98%
48.5		4	38.5	38.5	35	42	1.756	3.512	9.12%	30.94%
97		4	36.5	37	29	43	3.304	6.608	18.10%	34.53%

Frond Increase Detail

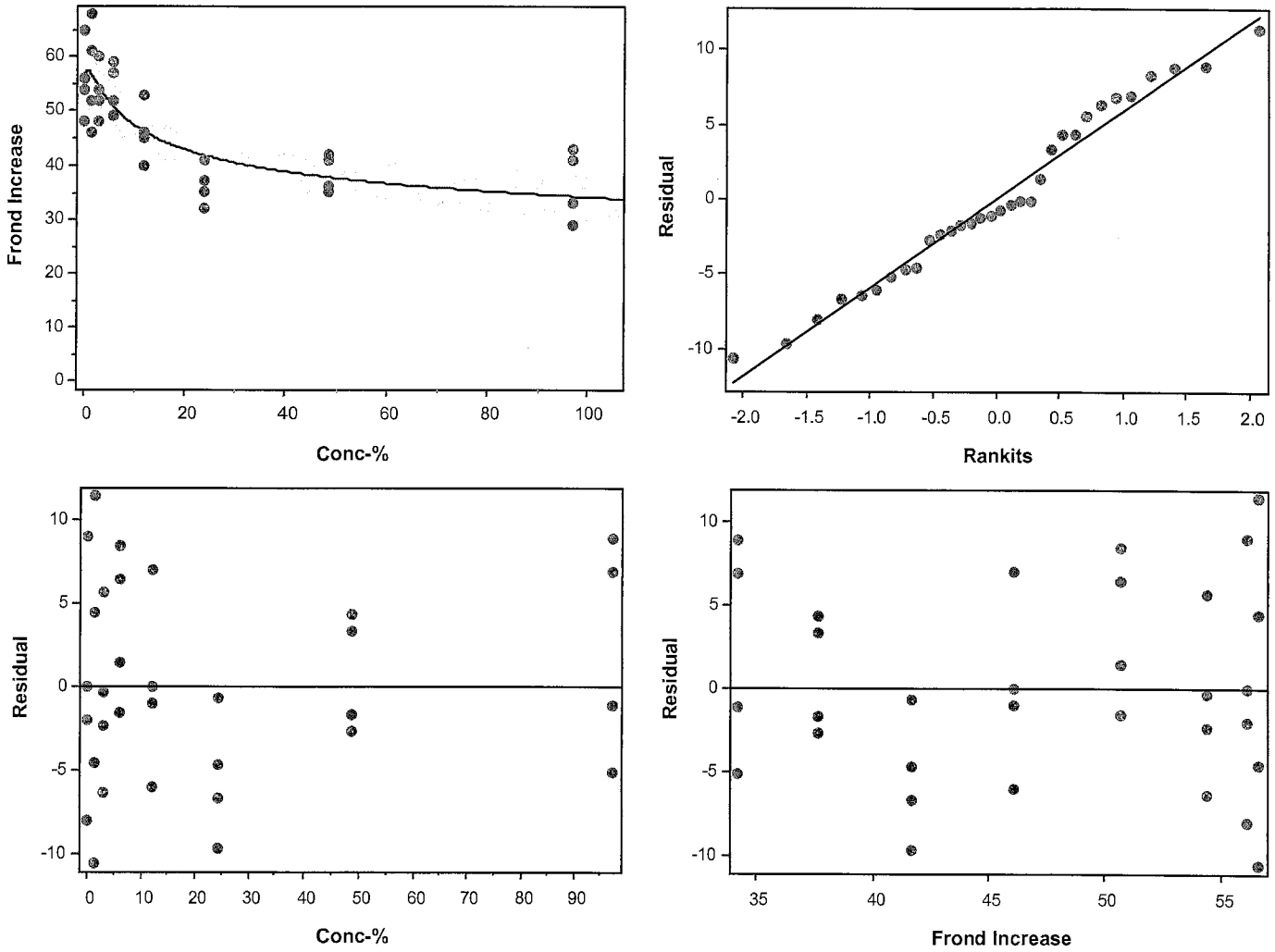
Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	65	48	54	56
1.5		68	61	52	46
3		54	60	48	52
6		59	49	57	52
12.1		40	45	46	53
24.2		37	41	32	35
48.5		41	35	36	42
97		33	29	43	41

2023 20230ct24
Oct23

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-7773-3898	**Endpoint:**	Frond Increase	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	42D103479B1CF2915E7C24FD8B919953	**Editor ID:**	003-579-751-6

Graphics Model: 4P Log-Logistic+Hormesis: μ=α[1+ε·x]/[1+[2ε·δ+1]·[x/δ]^γ] Distribution: Normal [ω=1]



2023 Oct23 20240ct24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	18-7177-0269	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	3E32F00A2E37AB9C2CB8CFFC06520030	**Editor ID:**	003-579-751-6

Batch ID:	13-4148-0058	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:40	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 09:39	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	09-2995-3558	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	57h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	6	12.1	8.521	16.7	1.231	17.26%

Dunnett Multiple Comparison Test

Control vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control	1.5	6	0.6116	2.814	1.231	CDF	0.9848	Non-Significant Effect
	3	6	1.938	2.814	1.231	CDF	0.2726	Non-Significant Effect
	6	6	1.801	2.814	1.231	CDF	0.3401	Non-Significant Effect
	12.1*	6	3.258	2.814	1.231	CDF	0.0185	Significant Effect
	24.2*	6	5.893	2.814	1.231	CDF	3.0E-05	Significant Effect
	48.5*	6	6.551	2.814	1.231	CDF	<1.0E-05	Significant Effect
	97*	6	6.151	2.814	1.231	CDF	1.7E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	2.09	2.938	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	36.4479	5.20684	7	13.61	<1.0E-05	Significant Effect
Error	9.1815	0.382562	24			
Total	45.6294		31			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.713	18.48	0.4594	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9779	0.9081	0.7377	Normal Distribution

Total Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	7.13	5.851	8.409	6.86	6.54	8.26	0.402	11.28%	0.00%
1.5		4	6.862	5.513	8.212	6.745	5.96	8	0.4241	12.36%	3.75%
3		4	6.283	5.636	6.929	6.325	5.76	6.72	0.203	6.46%	11.89%
6		4	6.342	4.872	7.813	6.43	5.33	7.18	0.462	14.57%	11.04%
12.1		4	5.705	5.233	6.177	5.64	5.44	6.1	0.1482	5.19%	19.99%
24.2		4	4.553	3.824	5.281	4.57	4.05	5.02	0.2289	10.05%	36.15%
48.5		4	4.265	3.719	4.811	4.36	3.78	4.56	0.1715	8.04%	40.18%
97		4	4.44	3.627	5.253	4.625	3.69	4.82	0.2556	11.51%	37.73%

2023 Oct 23 20230ct24

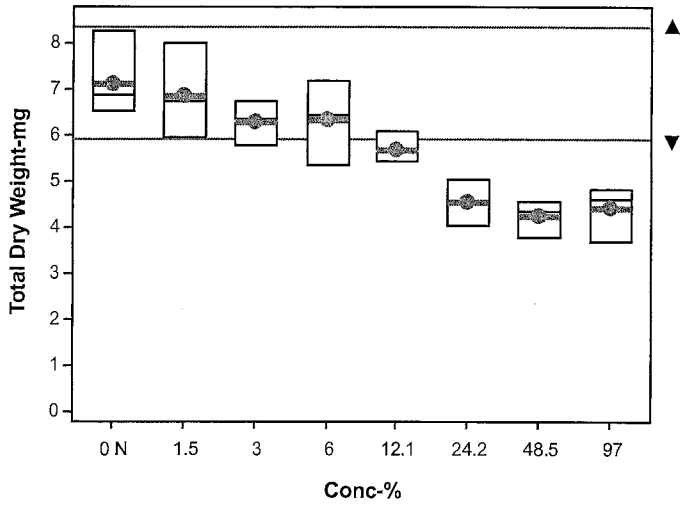
Lemna Growth Inhibition Test — **Bureau Veritas**

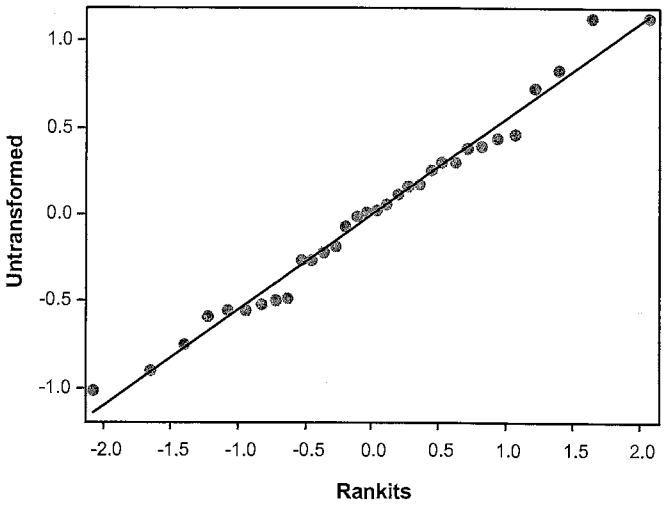
Analysis ID:	18-7177-0269	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	3E32F00A2E37AB9C2CB8CFFC06520030	**Editor ID:**	003-579-751-6

Total Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	8.26	7.15	6.54	6.57
1.5		8	6.85	6.64	5.96
3		6.21	6.72	6.44	5.76
6		7.18	5.79	7.07	5.33
12.1		6.1	5.52	5.76	5.44
24.2		4.85	5.02	4.05	4.29
48.5		4.28	3.78	4.56	4.44
97		4.56	3.69	4.82	4.69

Graphics





2023 Oct 23 20230ct24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	11-4486-2677	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	3E32F00A2E37AB9C2CB8CFFC06520030	**Editor ID:**	003-579-751-6

Batch ID:	13-4148-0058	**Test Type:**	Lemna Growth	**Analyst:**	N. Shergill
Start Date:	21 Sep-23 12:40	**Protocol:**	EC/EPS 1/RM/37	**Diluent:**	APHA Media
Ending Date:	28 Sep-23 09:39	**Species:**	Lemna minor	**Brine:**	Not Applicable
Test Length:	6d 21h	**Taxon:**	Tracheophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	09-2995-3558	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	57h	**Client:**	Diavik Diamond Mines Inc		

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Log-Logistic: μ=α/[1+[x/δ]^γ]	Normal [ω=1]	Off [μ*=μ]	None	None

Regression Summary

Iters	LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision(α:1%)
9	14.34	-21.83	-18.29	0.7037	8.90%	7.284	Yes	1.813	0.1484	Non-Significant Lack-of-Fit

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC5	0.3912	---	1.857	255.6	53.8	---
IC10	1.73	0.433	4.176	57.8	23.9	230.9
IC15	4.342	1.872	8.296	23	12.1	53.4
IC20	8.683	4.742	14.47	11.5	6.9	21.1
IC25	15.39	9.6	23.46	6.5	4.3	10.4
IC40	61.1	37.71	96.83	1.6	1	2.7
IC50	136.9	69.01	271.6	0.7	0.4	1.4

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
α	7.284	0.317	6.636	7.933	22.98	<1.0E-05	Significant Parameter
γ	0.5027	0.1075	0.2828	0.7226	4.675	6.3E-05	Significant Parameter
δ	136.9	46.24	42.32	231.5	2.961	0.0061	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:1%)
Model	1072	357.2	3	819.1	<1.0E-05	Significant Effect
Lack of Fit	3.467	0.6934	5	1.813	0.1484	Non-Significant Lack-of-Fit
Pure Error	9.181	0.3826	24			
Residual	12.65	0.4362	29			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:1%)
Outlier	Grubbs Extreme Value Test	2.189	2.938	0.7520	No Outliers Detected
Variance	Bartlett Equality of Variance Test	6.713	18.48	0.4594	Equal Variances
	Mod Levene Equality of Variance	1.276	3.496	0.3036	Equal Variances
Distribution	Anderson-Darling A2 Test	0.5607	3.878	0.1509	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9579	0.9081	0.2406	Normal Distribution

2023 OCT 23 20230ct24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	11-4486-2677	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	3E32F00A2E37AB9C2CB8CFFC06520030	**Editor ID:**	003-579-751-6

Total Dry Weight-mg Summary

			Calculated Variate							
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	4	7.13	6.86	6.54	8.26	0.402	0.8039	11.28%	0.00%
1.5		4	6.862	6.745	5.96	8	0.4241	0.8481	12.36%	3.75%
3		4	6.283	6.325	5.76	6.72	0.203	0.406	6.46%	11.89%
6		4	6.342	6.43	5.33	7.18	0.462	0.924	14.57%	11.04%
12.1		4	5.705	5.64	5.44	6.1	0.1482	0.2964	5.19%	19.99%
24.2		4	4.553	4.57	4.05	5.02	0.2289	0.4577	10.05%	36.15%
48.5		4	4.265	4.36	3.78	4.56	0.1715	0.3431	8.04%	40.18%
97		4	4.44	4.625	3.69	4.82	0.2556	0.5111	11.51%	37.73%

Total Dry Weight-mg Detail

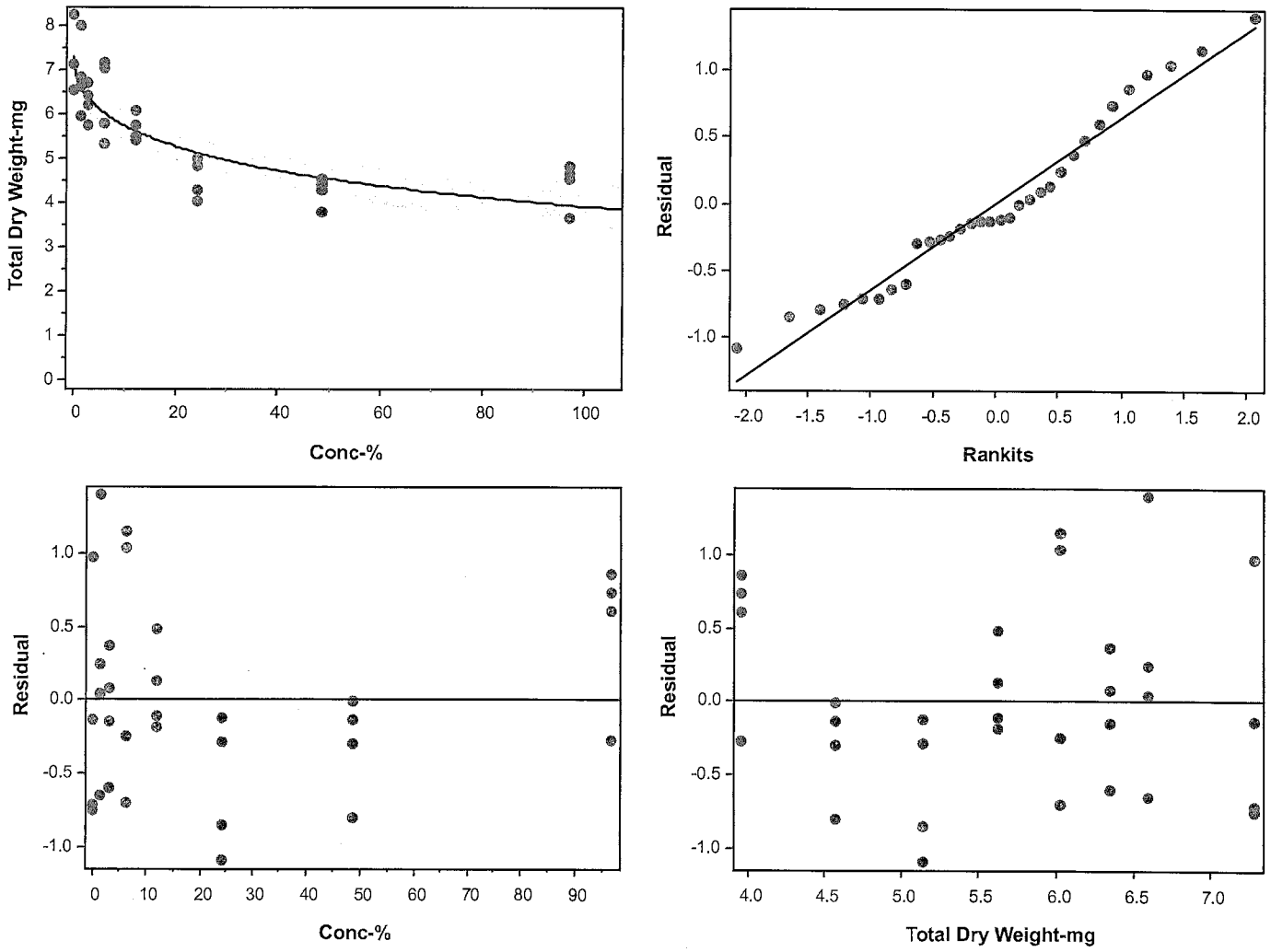
Conc-%	**Code**	**Rep 1**	**Rep 2**	**Rep 3**	**Rep 4**
0	N	8.26	7.15	6.54	6.57
1.5		8	6.85	6.64	5.96
3		6.21	6.72	6.44	5.76
6		7.18	5.79	7.07	5.33
12.1		6.1	5.52	5.76	5.44
24.2		4.85	5.02	4.05	4.29
48.5		4.28	3.78	4.56	4.44
97		4.56	3.69	4.82	4.69

2023 Oct 23 2023 Oct 24

Lemna Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	11-4486-2677	**Endpoint:**	Total Dry Weight-mg	**CETIS Version:**	CETISv2.1.2
Analyzed:	23 Oct-23 16:16	**Analysis:**	Nonlinear Regression (NLR)	**Status Level:**	1
Edit Date:	23 Oct-23 16:15	**MD5 Hash:**	3E32F00A2E37AB9C2CB8CFFC06520030	**Editor ID:**	003-579-751-6

Graphics Model: 3P Log-Logistic: μ=α/[1+[x/δ]^γ] Distribution: Normal [ω=1]



2023 20230ct24
OCT23

Analyst: MT QA: PH

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL735

Sample ID: 1645-68

Start Date: September 21, 2023

Analyst(s): N. Shergill

End Date: September 28, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	71	65	55.8	7.0	--
B	6	54	48			
C	6	60	54			
D	6	62	56			
1.5%-A	6	74	68	56.8	9.7	1.79
B	6	67	61			
C	6	58	52			
D	6	52	46			
3.0%-A	6	60	54	53.5	5.0	N/S
B	6	66	60			
C	6	54	48			
D	6	58	52			
6.0%-A	6	65	59	54.3	4.6	N/S
B	6	55	49			
C	6	63	57			
D	6	58	52			
12.1%-A	6	46	40	46.0	5.4	N/S
B	6	51	45			
C	6	52	46			
D	6	59	53			
24.2%-A	6	43	37	36.3	3.8	N/S
B	6	47	41			
C	6	38	32			
D	6	41	35			
48.5%-A	6	47	41	38.5	3.5	N/S
B	6	41	35			
C	6	42	36			
D	6	48	42			
97%-A	6	39	33	36.5	6.6	N/S
B	6	35	29			
C	6	49	43			
D	6	47	41			
Analyst	NSC	NSC				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	61.8
Control Frond Increase	10.3
Validity Criteria Met?	Yes

Data Reviewed by: [illegible] 2023 Oct 23

ECOTOXICOLOGY

Lemna minor Growth Inhibition Test Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL735

Sample ID: 1645-68

Oven Temp (°C): 60

Balance ID: BBY2-0260

Drying Time (h): >24

Analyst(s): N. Shergill, S. Reddy

Reviewed by: [illegible] 2023 Oct 23

Boat #	Conc. & Replicate	Final # of Fronds	Boat Wt. (g)	Boat & Frond Dry Weight (g)	Dry Weight per Rep. (mg)	Mean Dry Weight per Conc (mg)	SD	% Stimulation
509	Control-A	71	0.76921	0.77747	8.26	7.13	0.80	--
510	B	54	0.84592	0.85307	7.15			
511	C	60	0.79791	0.80445	6.54			
512	D	62	0.80070	0.80727	6.57			
513	1.5%-A	74	0.79886	0.80686	8.00	6.86	0.85	N/S
514	B	67	0.76421	0.77106	6.85			
515	C	58	0.76856	0.77520	6.64			
516	D	52	0.78400	0.78996	5.96			
517	3.0%-A	60	0.77803	0.78424	6.21	6.28	0.41	N/S
518	B	66	0.78948	0.79620	6.72			
519	C	54	0.83260	0.83904	6.44			
520	D	58	0.83992	0.84568	5.76			
521	6.0%-A	65	0.78881	0.79599	7.18	6.34	0.92	N/S
522	B	55	0.77954	0.78533	5.79			
523	C	63	0.78143	0.78850	7.07			
524	D	58	0.77493	0.78026	5.33			
525	12.1%-A	46	0.82704	0.83314	6.10	5.70	0.30	N/S
526	B	51	0.83047	0.83599	5.52			
527	C	52	0.83495	0.84071	5.76			
528	D	59	0.81594	0.82138	5.44			
529	24.2%-A	43	0.82475	0.82960	4.85	4.55	0.46	N/S
530	B	47	0.82934	0.83436	5.02			
531	C	38	0.77947	0.78352	4.05			
532	D	41	0.78262	0.78691	4.29			
533	48.5%-A	47	0.78171	0.78599	4.28	4.26	0.34	N/S
534	B	41	0.81931	0.82309	3.78			
535	C	42	0.79834	0.80290	4.56			
536	D	48	0.80003	0.80447	4.44			
537	97%-A	39	0.80978	0.81434	4.56	4.44	0.51	N/S
538	B	35	0.82309	0.82678	3.69			
539	C	49	0.81989	0.82471	4.82			
540	D	47	0.82617	0.83086	4.69			
541	QA/QC	N/A	0.76776	0.76788	0.12	-	-	-
542	QA/QC	N/A	0.76631	0.76646	0.15	-	-	
509	0-A	71	0.76918	0.77757	8.39	-	-	
Analyst		NSC	SR	SR				
Weighing Date		--	2023 Sept 22	2023 Sept 29				

N/S - No growth stimulation (dry weight) compared to the Control

ECOTOXICOLOGY

BUREAU VERITAS
BBY2FCD-00330/6
Tab: Frond Counts, Page 1 of 1

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Job# / Sample #: C374518 / BZL735

Sample ID: 1645-68

Start Date: September 21, 2023

Analyst(s): NSnergue

End Date: September 28, 2023

Conc. & Replicate	Initial Number of Fronds	Final Number of Fronds	Frond Increase	Mean Increase in # Fronds per Conc'n	SD	% Stimulation
Control-A	6	71	--	--	--	--
B	6	54	--			
C	6	60	--			
D	6	62	--			
1.5%-A	6	74	--	--	--	N/S
B	6	67	--			
C	6	58	--			
D	6	52	--			
3.0%-A	6	60	--	--	--	N/S
B	6	66	--			
C	6	54	--			
D	6	58	--			
6.0%-A	6	65	--	--	--	N/S
B	6	55	--			
C	6	63	--			
D	6	58	--			
12.1%-A	6	46	--	--	--	N/S
B	6	51	--			
C	6	52	--			
D	6	59	--			
24.2%-A	6	43	--	--	--	N/S
B	6	47	--			
C	6	38	--			
D	6	41	--			
48.5%-A	6	47	--	--	--	N/S
B	6	41	--			
C	6	42	--			
D	6	48	--			
97%-A	6	39	--	--	--	N/S
B	6	35	--			
C	6	49	--			
D	6	47	--			
Analyst	NSC	NSC				

N/S - No growth stimulation (frond increase) compared to the Control

Control Validity Criteria: Mean final # of fronds in Controls on day 7 must be ≥8 times initial # of fronds

Mean Final # of Fronds on Day 7	#DIV/0!
Control Frond Increase	#DIV/0!
Validity Criteria Met?	#DIV/0!

Data Reviewed by: N/A

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: September 21, 2023

Sample ID: 1645-68

End Date: September 28, 2023

Sample Date: September 19, 2023

Job# / Sample # C374518 / BZL735

Analyst(s): N.Sherguel, NBlassnik, MHamad

Organism Lot #: CP230912

pH of raw sample	pH after addition of APHA stocks A, B, & C	Pre-aeration time	pH after aeration
7.6	7.8	20min	7.8

media: 2023 Sept ~~15~~ 20 (A)

APHA Stocks Prep Date: 2023 Aug 29

Instrument IDs: BBY2-0408

Thermometer ID: BBY2-0408

Plant Shelf #: 3

Test Volume (mL): 150

Sample Description: Clear & Colourless

Concentration (%)	Temperature Monitoring								pH Monitoring	
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 0	Day 7
Control	24	26	26	25	26	26	25	26	8.2	8.3
1.5	24	26	26	25	26	26	25	26	8.3	9.7
3.0										
6.0										(B)
12.1	23	26	26	25	26	26	26	26	8.3	9.1 10.5
24.2										
48.5										
97	23	26	26	25	26	26	26	26	7.9	10.4
Analyst	NSC (R)	NB	MHM	NSC	NB	NB	NSC	NSC	NSC	NSC
Date	2023 Sept 21	2023 Sept 22	2023 Sept 23	2023 Sept 24	2023 Sept 25	2023 Sept 26	2023 Sept 27	2023 Sept 28	2023 Sept 21	2023 Sept 28

Observations during the Test

Day 0 (Test Initiation)

Date: September 21, 2023

Analyst: NSherguel

# of Plants per Test Vessel: 2

# of Fronds per Plant 3

Plant Observations: DG + H

Test Seeded @: 12:40

Other comments: n/a

Day 1

Date: September 22, 2023

Analyst: NBlassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H	DG,H

Other Comments: measure reps for 1.5 and 97%. had one plant on the side of the cup, not on the surface of the solution

(R) WE NSC 2023 Sept 21

(B) LE WE NSC 2023 Oct 24, Cross-out not dated on Sept 25, 2023.

Lemna minor Growth InhibitionTest Data

Client Name: Diavik Diamond Mines

Start Date: September 21, 2023

Job# / Sample # C374518 / BZL735

Day 2

Date: September 23, 2023 Analyst: MHamen

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H	DG, H

Other Comments: N/A

Day 3

Date: September 24, 2023 Analyst: NShergee

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	H, A DG, LG

Other Comments: n/a

Day 4

Date: September 25, 2023 Analyst: NBlassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H	DG, LG, H, A	DG, LG, H, A

Other Comments: n/a

Day 5

Date: September 26, 2023 Analyst: NBlassnik

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, LG, H, A	DG, LG, H, A	DG, LG, H, A	DG, LG, H, A	DG, LG, H, A	DG, LG, H, A	DG, LG, H, A	DG, LG, H, A

Other Comments: WE NB 2023 Sept 26

Day 6

Date: September 27, 2023 Analyst: NShergee

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
H DG, LG	LG H, A, DG	H, A DG, LG	H, A DG, LG	H, A DG, LG	H, A DG, LG	H, A DG, LG	C, A

Other Comments: n/a

Day 7

Date: September 28, 2023 Analyst: NShergee

Test End Time: 09:39

Observations:

Control	1.5%	3.0%	6.0%	12.1%	24.2%	48.5%	97%
DG, LG, H	H, A LG, DG	H, A DG, LG	H, A DG, LG	H, A DG, LG	H, A DG, LG	H, A DG, LG	C, A

Other Comments: n/a

Legend:

DG = Dark Green
LG = Light Green
H = Healthy, Normal
C = Chlorosis
N = Necrosis
G = Gibbosity
A = Green Algae
T = Transparent
S = small fronds
CD = Colony destroyed
RD = Roots destroyed

Other :

ECOTOXICOLOGY

Randomization Chart

Client Name: Diavik Diamond Mines

Test Date: 21-Sep

Sample Name: 1645-68

Shelf #: 3

Back Wall

Position Map

5	10	15	20	25	30	35	40
4	9	14	19	24	29	34	39
3	8	13	18	23	28	33	38
2	7	12	17	22	27	32	37
1	6	11	16	21	26	31	36

Front of Counter

Position #	Treatment	Replicate	Colour
11		A	
39		B	
25	Control	C	Red
28		D	
30		Measure	
38		A	
8		B	
24	1.5%	C	Orange
40		D	
27		Measure	
19		A	
7		B	
3	3.0%	C	Yellow
37		D	
14		Measure	
23		A	
35		B	
21	6.0%	C	Fl. Green
13		D	
12		Meas.	
16		A	
32		B	
2	12.1%	C	Teal
9		D	
29		Measure	
18		A	
34		B	
5	24.2%	C	Blue
17		D	
10		Measure	
15		A	
20		B	
4	48.5%	C	Purple
31		D	
22		Measure	
33		A	
36		B	
6	97%	C	Pink
1		D	
26		Measure	

Stock Culture Information

Parent Culture ID: CP230905 Culture flask #'s: 1-~~8~~ 10 (A)

Appearance of culture and media prior to subculturing:

- [x] Plants appear dark green and healthy. Media appears light yellow and clear.
- [ ] Other: (A) NSc 2023 Sept 12

Analyst: NShergill

Test Subculture and Health Monitoring (7 - 10 days prior to testing)

Date of Transfer: 2023 Sept 12 New Subculture ID: CP230912

# of Flasks Prepared: 8 Flask Volume: ≅ 200ml

# of Plants/Flask: 10 Shelf Location: 1

Hoagland's Batch: 2023 Aug 28 Analyst: NShergill

Health Monitoring Cups

Date prepared: 2023 Sept 12 Test Medium: 2023 Sept 06

replicates: 3 Shelf #: 1

Fronds seeded/rep: 3 Analyst: NShergill

Day 7 Counts

Rep A	Rep B	Rep C	Mean	Date	Analyst
42	44	55	47	2023 Sept 19	NShergill

(Health cup validity: Mean of ≥24 fronds on day 7, when 3 fronds/rep are seeded on day 0)

APHA Acclimation (18-24 hrs prior to testing) for (date): 2023 Sept 21 **setup**

Date & Time of Transfer: 2023 Sept 20 @ 16:01 Subculture ID: CP230912 Shelf Location: 1

Appearance of plants and Hoagland's E+ media prior to transfer to APHA media:

- [x] Plants appear dark green and healthy. Media appears light yellow and clear.
- [ ] Other:

Number of crystallization dishes prepared (1) using # of subculture flasks (large: 2 small: 2)

APHA Batch: 2023 Sept 13 Analyst: NShergill

~~Cancelled NSc 2023 Sept 21~~

~~**APHA Acclimation (18-24 hrs prior to testing) for (date):** 2023 Sept 22 **setup**~~

~~Date & Time of Transfer: 2023 Sept 21 @ Subculture ID: CP230912 Shelf Location: 1~~

~~Appearance of plants and Hoagland's E+ media prior to transfer to APHA media:~~

- [x] ~~Plants appear dark green and healthy. Media appears light yellow and clear.~~
- [ ] ~~Other:~~

~~Number of crystallization dishes prepared (____) using # of subculture flasks (large: ____ small: ____)~~

~~APHA Batch: Analyst:~~

Modified APHA Medium Preparation Sheet *(Lemna minor)*

APHA Medium is the test medium recommended for testing samples of effluent, leachate, or receiving water, using *L. minor.*

To prepare 1L of APHA test medium, the following are added to 970 mL of Type 1 deionized water. The medium is aerated vigorously for at least 2 hours. If larger volume (>4 L) of media is prepared, overnight aeration of the medium is recommended to stabilize the pH of the medium. Immediately before testing, the pH of the test medium is adjusted to 8.3+/-0.1 using 1N NaOH or 1N HCl).

Volume Prepared (L):	20
Date of Preparation:	2023 Sept 20
Date of Use:	2023 Sept 21
Analyst:	NSherrill

Stock Solution	Date of Preparation	Nominal Amount (mL)	Actual Amount (mL)	Graduated Cylinder (A) or Pipette (B)
Stock Solution A	2023 Aug 29	200	200	A
Stock Solution B	2023 Aug 29	200	200	A
Stock Solution C	2023 Aug 29	200	200	A

Pipette ID: n/a

Volume of media prepared	Theoretical aeration time	Actual aeration time
1-4 L	At least 2 hours	n/a
>4 L	Overnight	>12hrs

Initial pH	8.2 (*)	[8.3+/-0.1]
Final pH	n/a	

pH Meter ID: BBY2-0408

(*) WE NSC 2023 Sept 21

Normality of NaOH:	n/a	[0.5 N]
Volume of NaOH:		
Normality of HCl:		[0.5 N]
Volume of HCl:		

ECOTOXICOLOGY
LABORATORY LIGHT LEVELS

Lab Location: Room #109

Light Meter ID: BB42-0459

Light Fixture Correction Factor: Actual Levels X n/a = Corrected Levels
Mercury - (reading x **1.05**) Fluorescent - (reading x **0.91**) Daylight - (reading x **0.95**)

Test Method: Lemna minor 7 Day Growth Inhibition Test

Required Light Levels and Units: 65-85 µmol/m²s

Date: 2023 Sept 21 Analyst: NShargue

Site of Measurement	Actual Levels	Corrected Levels
Shelf # 2 Left front	74	
Left back	72	
middle front	77	
middle back	65	
(A) ~~Left~~ Right front	70	
Right back	65	
Shelf # 3 Left front	74	
Left back	68	
middle front	73	
middle back	66	
Right front	73	
Right back	65	

NSC 2023 Sept 21

2023 Sept 21

(A) LE WE (Did not initial on Sept 21, 2023)
2023 OCT 24 NSC

Pseudokirchneriella subcapitata Test Data Summary

Client Name/Location	Diavik Diamond Mines Inc. / Yellowknife, NT
Testing Lab/Location	Bureau Veritas / Burnaby, BC
Collection Approach	2 samples
Effluent Sample	
Name of Sample(s)	1645-44 and 1645-68
Information on labelling/coding	See Chain of Custody form
Sample collection date (y/m/d)	2023/Sep/19
Date (y/m/d) of sample receipt at lab	2023/Sep/19 @ 14:58
Test Organisms	
Species	*Pseudokirchneriella subcapitata*
Strain number and origin of culture	Strain CPCC #37 was obtained from the Canadian Phycological Culture Centre
Age of culture used to provide inoculum, at start of test	3 days old
Culture in logarithmic growth phase?	See attached growth curve
Inoculum prepared less than 2-3 hrs before microplate incubation?	Yes, at 11:33
Initial cell density of inoculum	10,227 cells/mL
Appearance, behaviour, or treatment of known-age culture before use	See “Data Summary” data sheet
Test Conditions & Facilities	
Test method	EPS 1/RM/25, 2nd Edition, March 2007 BBY2SOP-00006 - *Pseudokirchneriella subcapitata* 72H Growth Inhibition Test
Date & time test(s) started	**1645-44**: 2023/Sep/22 @ 12:03 **1645-68**: 2023/Sep/22 @ 12:01
Date & time test(s) ended	2023/Sep/25 @ 13:00
Persons performing test(s)	P. Fang, N. Shergill, D. Lai
Mean test temperature	25 °C
Procedure/rate/duration of aeration of sample before test(s)	No aeration
pH adjustment	No pH adjustment
pH of aqueous sample(s) before preparation and use in toxicity	See “Data Summary” data sheet

test	
pH of sample(s) before any dilution at start of test	See “Data Summary” data sheet
pH from two controls at start & end of test	See “Data Summary” data sheet
Procedure for sample filtration	10 mL subsample was filtered through a preconditioned 0.45 µm pore diameter filter
Type & source of control/dilution water	Reconstituted water
Type & quantity of chemicals added to control/dilution H_2O	$NaHCO_3$, $CaSO_4$, $MgSO_4$, and KCl in the ratio of 1.6:0.8:1.0:0.07
# and conc. of test solutions	See Cell Counts sheet
# of replicates per conc.	See Cell Counts sheet
Absorbance not used	Cell counts done by Nexcelom Cellometer® Auto X4HM cell counter
Culture/test incubators & apparatus	Conviron Environmental Chamber – Costar Microplate- w/96 u-shaped wells
Microplate final volume	220 µl / well (200 µl sample, 10 µl enrichment media, and 10 µl algal inoculum)
Light intensity & quality	Full spectrum fluorescent lights, 3849-4350 lux
Composition of growth medium	As per Table 1 in EPS 1/RM/25
Test observations and/or deviations from test method and standard practices	There was nothing unusual about the tests, no deviations from the test method, and no problems with the tests.
Results	Results contained in this report refer only to the testing of samples as submitted.
Date cells counted (y/m/d)	2023/Sept/25
Cell counts in each replicate	See Cell Counts sheet
Any findings of growth stimulation at any concentration?	**1645-44**: Yes, significant stimulation was observed in the 1.42% up to the 90.91% v/v concentrations. See Bonferroni Adj t Test in CETIS. **1645-68**: Yes, significant stimulation was observed in the 2.841% and 11.364% up to the 45.455% v/v concentrations. See Bonferroni Adj t Test in CETIS.
Name and citation of program(s) and methods used for calculating statistical endpoint(s)	**1645-44**: CETIS v2.1.2.3 – Linear Interpolation (ICPIN) **1645-68**: CETIS v2.1.2.3 – Linear Interpolation (ICPIN)
Weighting techniques applied?	**1645-44**: N/A **1645-68**: N/A
Residuals Analysis	**1645-44**: N/A **1645-68**: N/A
Outliers?	**1645-44**: None **1645-68**: None

QA	
Did the test pass the test validity criteria: • Homogeneity in the control (CV is ≤20%) • No trend or gradient in the control • Increase by a factor of >16 in the control	Yes, • % CV: **1645-44:** 16% **1645-68:** 20% • Trend in the controls? **1645-44:** No **1645-68:** No • Algal cells increased by: **1645-44:** 28.83 **1645-68:** 35.26
Ref tox test IC50 (95% CL) (mg Zn/L) and duration of test	0.0398; 2SD: (0.0338, 0.0475) duration was ~72 hrs
Ref tox test historic mean & 2SD range (mg Zn/L)	0.0428; 2SD: (0.0328, 0.0558)
Invalid Ref tox test?	No
Date of ref tox test (y/m/d)	2023/Sep/22
Conditions of ref tox test	Same as test conditions

CETIS Analytical Report

Report Date: 25 Sep-23 18:20 (p 1 of 2)
Test Code/ID: SL-4388-1523 / 06-2011-9172

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	01-3837-5830	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:20	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CB780A38A8015438A1564EBD4C95D164	**Editor ID:**	

Batch ID:	15-7633-6427	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	22 Sep-23 12:03	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-23 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	73h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	13-3219-1886	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	79h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	<1.42	1.42	---	>70.4	10.63	36.87%

Bonferroni Adj t Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42*	9	3.061	2.98	10.63	CDF	0.0415	Significant Effect
		2.841*	9	3.869	2.98	10.63	CDF	0.0062	Significant Effect
		5.682*	9	3.799	2.98	10.63	CDF	0.0073	Significant Effect
		11.364*	9	6.336	2.98	10.63	CDF	1.9E-05	Significant Effect
		22.728*	9	7.336	2.98	10.63	CDF	<1.0E-05	Significant Effect
		45.455*	9	8.677	2.98	10.63	CDF	<1.0E-05	Significant Effect
		90.91*	9	9.051	2.98	10.63	CDF	<1.0E-05	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.848	2.893	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4059.27	579.896	7	20.89	<1.0E-05	Significant Effect
Error	582.993	27.7616	21			
Total	4642.26		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	2.033	18.48	0.9580	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9698	0.9004	0.5539	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	28.83	24.87	32.79	28.35	20.4	35.7	1.676	16.44%	0.00%
1.42		3	39.75	31.42	48.08	39.95	36.3	43	1.937	8.44%	-37.87%
2.841		3	42.63	29.02	56.25	42.95	37	47.95	3.165	12.86%	-47.87%
5.682		3	42.38	24.14	60.63	43.9	34.4	48.85	4.24	17.33%	-47.00%
11.364		3	51.43	42.87	60	50.1	48.85	55.35	1.991	6.71%	-78.39%
22.728		3	55	39.11	70.89	55.9	48.2	60.9	3.694	11.63%	-90.77%
45.455		3	59.78	43.28	76.28	56.75	55.2	67.4	3.835	11.11%	-107.36%
90.91		3	61.12	49.81	72.42	61.25	56.5	65.6	2.628	7.45%	-111.98%

2023 Oct 23

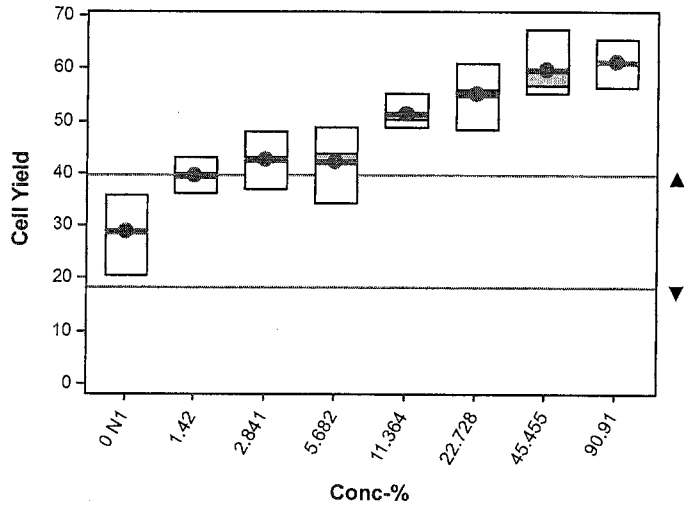
Alga Growth Inhibition Test — **Bureau Veritas**

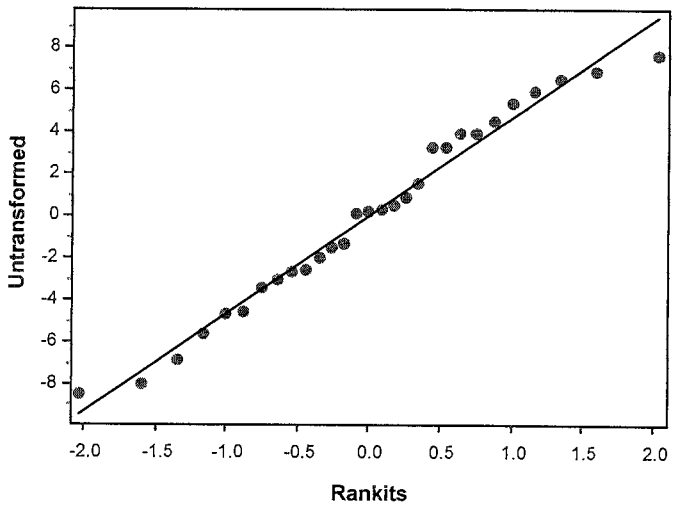
Analysis ID:	01-3837-5830	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:20	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CB780A38A8015438A1564EBD4C95D164	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	20.4	27.35	35.7	32.7	29.35	26.2	32.1	26.85
1.42		43	36.3	39.95					
2.841		42.95	47.95	37					
5.682		43.9	48.85	34.4					
11.364		48.85	55.35	50.1					
22.728		60.9	55.9	48.2					
45.455		56.75	55.2	67.4					
90.91		65.6	61.25	56.5					

Graphics





Analyst: [illegible] 2023 Oct 23 QA: MA

CETIS Analytical Report

Report Date: 25 Sep-23 18:20 (p 1 of 2)
Test Code/ID: SL-4388-1523 / 06-2011-9172

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	04-7788-7989	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:20	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CB780A38A8015438A1564EBD4C95D164	**Editor ID:**	

Batch ID:	15-7633-6427	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	22 Sep-23 12:03	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-23 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	73h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	13-3219-1886	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 05:00	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-44
Sample Age:	79h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1813389	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>90.91	---	---	<1.1	---	---
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	28.83	28.35	20.4	35.7	16.44%	0.00%	47.62	0.00%
1.42		3	39.75	39.95	36.3	43	8.44%	-37.87%	47.62	0.00%
2.841		3	42.63	42.95	37	47.95	12.86%	-47.87%	47.62	0.00%
5.682		3	42.38	43.9	34.4	48.85	17.33%	-47.00%	47.62	0.00%
11.364		3	51.43	50.1	48.85	55.35	6.71%	-78.39%	47.62	0.00%
22.728		3	55	55.9	48.2	60.9	11.63%	-90.77%	47.62	0.00%
45.455		3	59.78	56.75	55.2	67.4	11.11%	-107.36%	47.62	0.00%
90.91		3	61.12	61.25	56.5	65.6	7.45%	-111.98%	47.62	0.00%

Cell Yield Detail

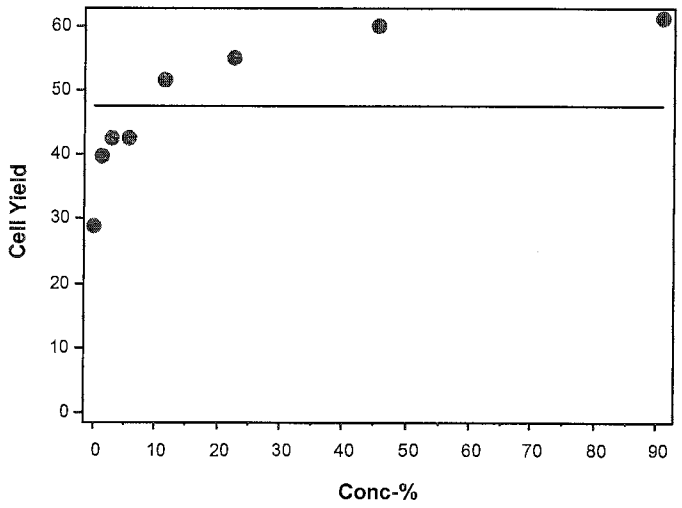
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	20.4	27.35	35.7	32.7	29.35	26.2	32.1	26.85
1.42		43	36.3	39.95					
2.841		42.95	47.95	37					
5.682		43.9	48.85	34.4					
11.364		48.85	55.35	50.1					
22.728		60.9	55.9	48.2					
45.455		56.75	55.2	67.4					
90.91		65.6	61.25	56.5					

Analyst: 2023 Oct 23 QA: MH

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	04-7788-7989	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:20	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	CB780A38A8015438A1564EBD4C95D164	**Editor ID:**	

Graphics



Analyst: Sep 2023 QA: MH 2023 Oct 23.

Environment Canada PKS Test Data Sheets
Cell Counts

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-44
Date Sampled: 2023 Sept 19
Job / Sample #: C374518 / BZL736
Date & Time Started: 2023 Sept 22 @ 12:03
Date & Time Ended: 2023 Sept 25 @ 13:00
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	22.5	20.3	20.40	28.83	4.74	16
Lab Control	D3	36.3	20.4	27.35			
Lab Control	D4	37.1	36.3	35.70			
Lab Control	D5	34.0	33.4	32.70			
Lab Control	D8	29.6	31.1	29.35			
Lab Control	D9	30.5	23.9	26.20			
Lab Control	D10	33.1	33.1	32.10			
Lab Control	D11	35.1	20.6	26.85			
1.420	C8	38.3	49.7	43.00	39.75	3.35	8
1.420	E8	37.4	37.2	36.30			
1.420	F8	33.0	48.9	39.95			
2.841	C7	41.8	46.1	42.95	42.63	5.48	13
2.841	E7	50.7	47.2	47.95			
2.841	F7	43.6	32.4	37.00			
5.682	C6	44.7	45.1	43.90	42.38	7.34	17
5.682	E6	48.1	51.6	48.85			
5.682	F6	37.1	33.7	34.40			
11.364	C5	44.5	55.2	48.85	51.43	3.45	7
11.364	E5	60.4	52.3	55.35			
11.364	F5	55.6	46.6	50.10			
22.728	C4	66.6	57.2	60.90	55.00	6.40	12
22.728	E4	74.1	39.7	55.90			
22.728	F4	53.8	44.6	48.20			
45.455	C3	53.1	62.4	56.75	59.78	6.64	11
45.455	E3	55.9	56.5	55.20			
45.455	F3	75.3	61.5	67.40			
90.91	C2	75.2	58.0	65.60	61.12	4.55	7
90.91	E2	57.1	67.4	61.25			
90.91	F2	47.0	68.0	56.50			

Proofed: MH 2023 Oct 23

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C374518 / BZL736

Date Sampled: 2023 Sept 19

Sample ID: 1645-44

Date Received: 2023 Sept 19

Culture Date: 2023 Sept 19 D

Date & Time Started: 2023 Sept 22 @ 12:03

Culture Description: green

Date & Time Ended: 2023 Sept 25 @ 1300

Light Intensity at Surface (lux): 3849-4350

Analyst(s): P. Fong, NShorgill D.Lai

Instrument ID(s): BBY2-0006, BBY2-0526, BBY2-0405, BBY2-0290, BBY2-0128, BBY2-0111, BBY2-0077

Reagent Water Preparation:

Date of reconstituted water prep: 2023 Sept 20

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: R

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.1 Initial Temp (°C): 25.2 Sample Description: clear, pale yellow

Initial Filtered pH (well B2): 7.7

Final Filtered pH (well B2): 7.9

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.7.

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.5 (*10^4 cells/mL)

Time of inoculum prep: 11:33

Therefore, (**Xi**) 2250 cells were initially put into each test well and the initial cell density was (**Xd**) 10227 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.5×10^4) * 0.02] = 2250 cells

To calculate the initial cell density:

Xd = [(Xi) * (1000/220)] = [(2250) * (4.5455)] = 10227 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2023 Sept 23	Y	Y	Y	R
2023 Sept 24	Y	Y	Y	NSC
2023 Sep 25	Y	Y		dmc

CETIS Analytical Report

Report Date:	25 Sep-23 18:18 (p 1 of 2)
Test Code/ID:	SL-4388-1423 / 09-0905-7529

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	07-5301-4778	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:18	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	A65B403D89469228606BC678B31E5F6C	**Editor ID:**	

Batch ID:	19-3693-7330	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	22 Sep-23 12:01	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-23 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	73h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	00-6482-5576	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	80h	**Client:**	Diavik Diamond Mines Inc		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C <> T	1.42	2.841	2.009	70.4	14.48	41.06%

Bonferroni Adj t Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Control 1		1.42	9	2.172	2.98	14.48	CDF	0.2900	Non-Significant Effect
		2.841*	9	3.318	2.98	14.48	CDF	0.0229	Significant Effect
		5.682	9	2.608	2.98	14.48	CDF	0.1150	Non-Significant Effect
		11.364*	9	4.316	2.98	14.48	CDF	0.0021	Significant Effect
		22.728*	9	4.78	2.98	14.48	CDF	0.0007	Significant Effect
		45.455*	9	4.917	2.98	14.48	CDF	0.0005	Significant Effect
		90.91	9	1.246	2.98	14.48	CDF	1.0000	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Outlier	Grubbs Extreme Value Test	1.901	2.893	1.0000	No Outliers Detected
Control Trend	Mann-Kendall Trend Test	1	0.05	1.0000	Non-Significant Control Trend

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2357.74	336.82	7	6.54	0.0004	Significant Effect
Error	1081.47	51.4985	21			
Total	3439.21		28			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.284	18.48	0.8575	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9554	0.9004	0.2513	Normal Distribution

Cell Yield Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N1	8	35.26	29.34	41.18	35.7	26.45	43.7	2.505	20.09%	0.00%
1.42		3	45.82	33.06	58.57	48.45	39.9	49.1	2.964	11.21%	-29.93%
2.841		3	51.38	39.72	63.05	51.9	46.45	55.8	2.711	9.14%	-45.72%
5.682		3	47.93	37.9	57.97	49.25	43.4	51.15	2.332	8.43%	-35.93%
11.364		3	56.23	27.52	84.95	55.7	44.95	68.05	6.674	20.56%	-59.47%
22.728		3	58.48	44.94	72.03	59.35	52.65	63.45	3.148	9.32%	-65.85%
45.455		3	59.15	35.16	83.14	53.8	53.35	70.3	5.577	16.33%	-67.74%
90.91		3	41.32	24.89	57.75	44.65	33.7	45.6	3.818	16.01%	-17.17%

Analyst: dm 2023 Sep25 QA: MH 2023 Oct 23

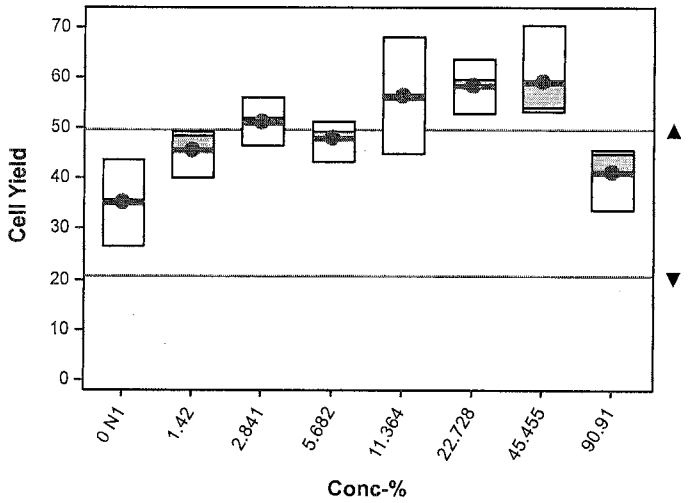
Alga Growth Inhibition Test — **Bureau Veritas**

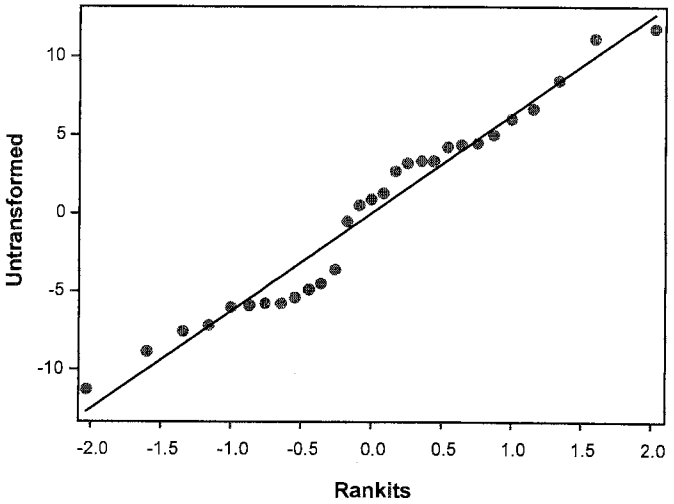
Analysis ID:	07-5301-4778	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:18	**Analysis:**	Parametric-Multiple Comparison	**Status Level:**	1
Edit Date:		**MD5 Hash:**	A65B403D89469228606BC678B31E5F6C	**Editor ID:**	

Cell Yield Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	28.1	39.75	41.3	43.7	41.95	26.45	29.2	31.65
1.42		39.9	49.1	48.45					
2.841		55.8	46.45	51.9					
5.682		49.25	51.15	43.4					
11.364		44.95	68.05	55.7					
22.728		52.65	63.45	59.35					
45.455		53.35	70.3	53.8					
90.91		33.7	44.65	45.6					

Graphics





Analyst: 2023 SEP 25 QA: MT 2023 OCT 23

CETIS Analytical Report

Report Date:	25 Sep-23 18:18 (p 1 of 2)
Test Code/ID:	SL-4388-1423 / 09-0905-7529

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	16-9052-8970	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:18	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	A65B403D89469228606BC678B31E5F6C	**Editor ID:**	

Batch ID:	19-3693-7330	**Test Type:**	Cell Growth	**Analyst:**	P. Fang
Start Date:	22 Sep-23 12:01	**Protocol:**	EC/EPS 1/RM/25	**Diluent:**	Algal Culture Media
Ending Date:	25 Sep-23 13:00	**Species:**	Pseudokirchneriella subcapitata	**Brine:**	Not Applicable
Test Length:	73h	**Taxon:**	Chlorophyta	**Source:**	Canadian Phycological Cult **Age:**

Sample ID:	00-6482-5576	**Code:**	C374518	**Project:**	2-11-0691
Sample Date:	19 Sep-23 04:05	**Material:**	Water	**Source:**	Diavik
Receipt Date:	19 Sep-23 14:58	**CAS (PC):**		**Station:**	1645-68
Sample Age:	80h	**Client:**	Diavik Diamond Mines Inc		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1059814	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	80.12	44.02	---	1.2	---	2.3
IC20	>90.91	---	---	<1.1	---	---
IC25	>90.91	---	---	<1.1	---	---
IC40	>90.91	---	---	<1.1	---	---
IC50	>90.91	---	---	<1.1	---	---

Cell Yield Summary

			Calculated Variate						Isotonic Variate	
onc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N1	8	35.26	35.7	26.45	43.7	20.09%	0.00%	50.61	0.00%
1.42		3	45.82	48.45	39.9	49.1	11.21%	-29.93%	50.61	0.00%
2.841		3	51.38	51.9	46.45	55.8	9.14%	-45.72%	50.61	0.00%
5.682		3	47.93	49.25	43.4	51.15	8.43%	-35.93%	50.61	0.00%
11.364		3	56.23	55.7	44.95	68.05	20.56%	-59.47%	50.61	0.00%
22.728		3	58.48	59.35	52.65	63.45	9.32%	-65.85%	50.61	0.00%
45.455		3	59.15	53.8	53.35	70.3	16.33%	-67.74%	50.61	0.00%
90.91		3	41.32	44.65	33.7	45.6	16.01%	-17.17%	41.32	18.36%

Cell Yield Detail

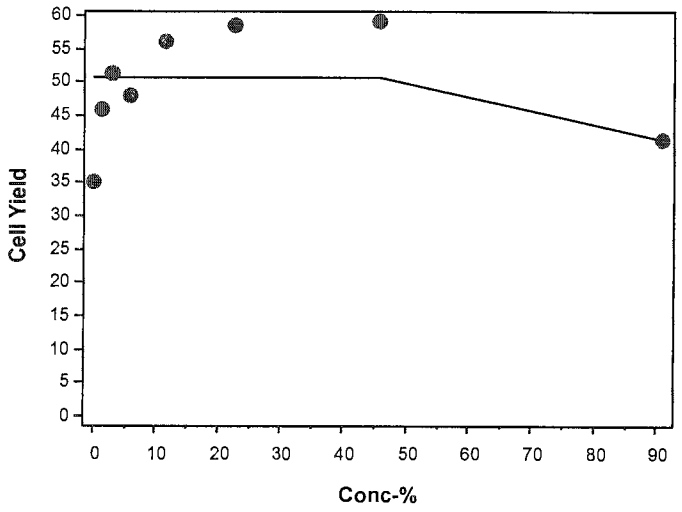
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N1	28.1	39.75	41.3	43.7	41.95	26.45	29.2	31.65
1.42		39.9	49.1	48.45					
2.841		55.8	46.45	51.9					
5.682		49.25	51.15	43.4					
11.364		44.95	68.05	55.7					
22.728		52.65	63.45	59.35					
45.455		53.35	70.3	53.8					
90.91		33.7	44.65	45.6					

Analyst: dmb 2023 Sep25 QA: 2023 Oct23 MH

Alga Growth Inhibition Test — **Bureau Veritas**

Analysis ID:	16-9052-8970	**Endpoint:**	Cell Yield	**CETIS Version:**	CETISv2.1.2
Analyzed:	25 Sep-23 18:18	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:		**MD5 Hash:**	A65B403D89469228606BC678B31E5F6C	**Editor ID:**	

Graphics



Analyst: dmb 2023 SEP25 QA: MH 2023 OCT23

Client Name: Diavik Diamond Mines Inc.
Sample ID: 1645-68
Date Sampled: 2023 Sept 19
Job / Sample #: C374518 / BZL735
Date & Time Started: 2023 Sept 22 @ 12:01
Date & Time Ended: 2023 Sept 25 @ 13:00
Analyst(s): D. Lai
Instrument ID: BBY2-0290, BBY2-0006

Conc. (% v/v)	Well	Counts (*10^4 Cells/mL)		Cell Yield (*10^4 Cells/mL)	Mean Cell Yield (*10^4 Cells/mL)	Standard Deviation	%CV
		1	2				
Lab Control	D2	33.0	25.2	28.10	35.26	7.08	20
Lab Control	D3	44.5	37.0	39.75			
Lab Control	D4	41.2	43.4	41.30			
Lab Control	D5	48.4	41.0	43.70			
Lab Control	D8	45.7	40.2	41.95			
Lab Control	D9	25.1	29.8	26.45			
Lab Control	D10	33.0	27.4	29.20			
Lab Control	D11	31.3	34.0	31.65			
1.420	C8	29.9	51.9	39.90	45.82	5.13	11
1.420	E8	56.2	44.0	49.10			
1.420	F8	46.5	52.4	48.45			
2.841	C7	63.4	50.2	55.80	51.38	4.70	9
2.841	E7	45.0	49.9	46.45			
2.841	F7	51.0	54.8	51.90			
5.682	C6	54.9	45.6	49.25	47.93	4.04	8
5.682	E6	53.4	50.9	51.15			
5.682	F6	45.7	43.1	43.40			
11.364	C5	36.9	55.0	44.95	56.23	11.56	21
11.364	E5	58.6	79.5	68.05			
11.364	F5	58.5	54.9	55.70			
22.728	C4	42.2	65.1	52.65	58.48	5.45	9
22.728	E4	66.0	62.9	63.45			
22.728	F4	51.1	69.6	59.35			
45.455	C3	53.3	55.4	53.35	59.15	9.66	16
45.455	E3	71.6	71.0	70.30			
45.455	F3	57.6	52.0	53.80			
90.91	C2	34.5	34.9	33.70	41.32	6.61	16
90.91	E2	45.1	46.2	44.65			
90.91	F2	59.8	33.4	45.60			

Proofed: MT 2023 Oct 23

Client Name: Diavik Diamond Mines Inc.

Job / Sample #: C374518 / BZL735

Date Sampled: 2023 Sept 19

Sample ID: 1645-68

Date Received: 2023 Sept 19

Culture Date: 2023 Sept 19 A

Date & Time Started: 2023 Sept 22 @ 12:01

Culture Description: Green

Date & Time Ended: 2023 Sept 25 @ 1300

Light Intensity at Surface (lux): 3849 - 4350

Analyst(s): P. Fang, NShergill D.Lau

Instrument ID(s): BBY2-0006, BBY2-0526, BBY2-0405, BBY2-0290, BBY2-0128, BBY2-0111, BBY2-0077

Reagent Water Preparation:

Date of reconstituted water prep: 2023 Sept 20

Hardness (~20 mg/L $CaCO_3$): 20

Volume prepared: 150 mL reconstituted water to 1L DI water

Analyst: R

Temperature (°C):

Day 0: 25 Day 1: 25 Day 2: 25 Day 3: 25

Sample Water Quality

Initial pH: 7.3 Initial Temp (°C): 25.3 Sample Description: Clear. pale yellow

Initial Filtered pH (well B2): 7.8

Final Filtered pH (well B2): 8.2

Control Water Quality

Initial Filtered pH (well D6): 7.7

Final Filtered pH (well D7): 7.7

Determination of Initial Cell Concentration of Inoculum:

Prepared inoculum final concentration (**X**): 22.5 (*10^4 cells/mL)

Time of inoculum prep: 11:33

Therefore, (**Xi**) 2250 cells were initially put into each test well and the initial cell density was (**Xd**) 10227 cells/mL.

To calculate # cells initially put into each test well:

Xi = [(0.5 * X) * 0.02] = [(0.5 * 22.5×10^4) * 0.02] = 2250 cells

To calculate the initial cell density:

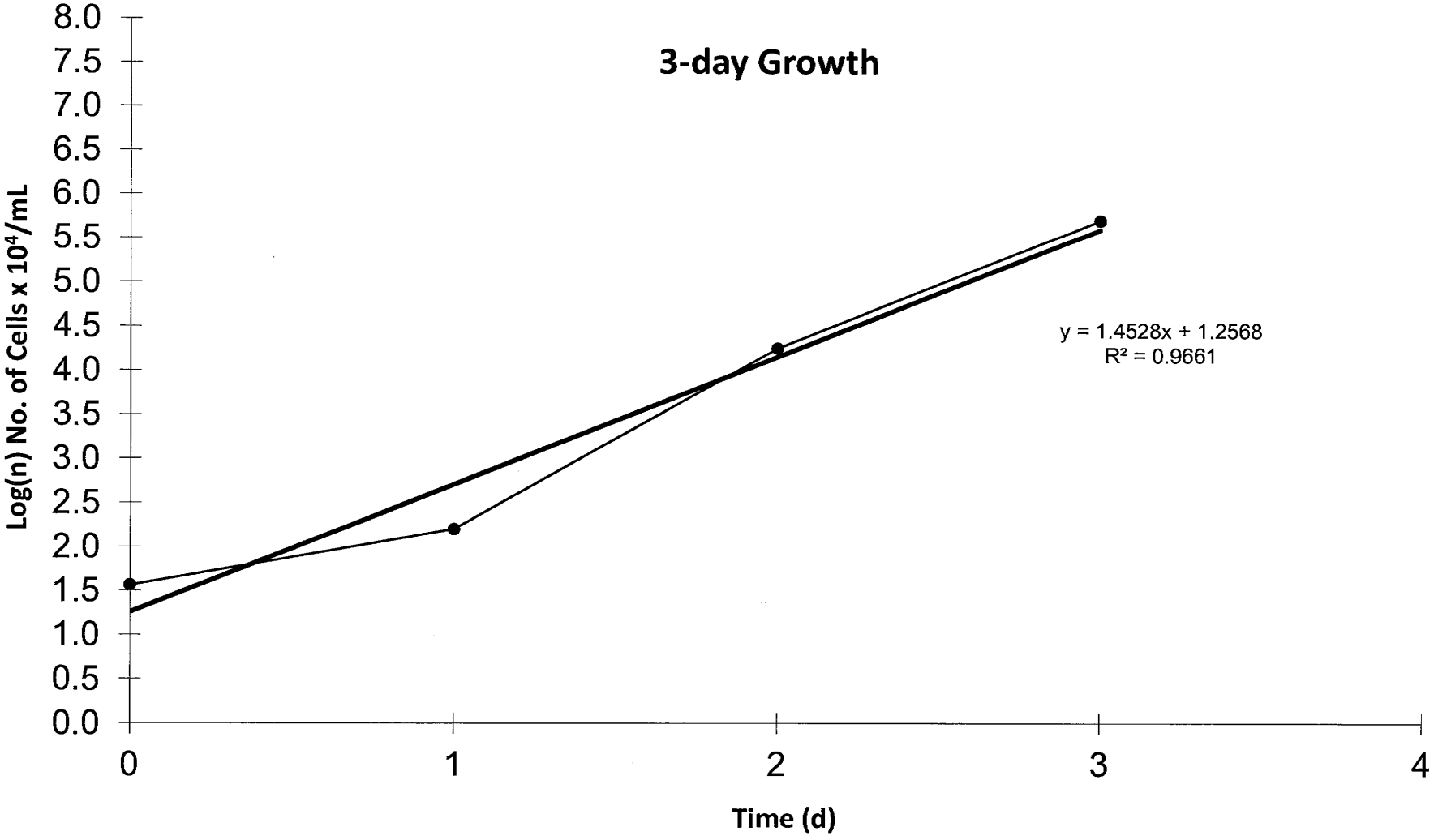
Xd = [(Xi) * (1000/220)] = [(2250) * (4.5455)] = 10227 cells/mL

Observations during Test (Y/N):

Date	Algal Growth	Condensation	Rotated Plates	Analyst
2023 Sept 23	Y	Y	Y	R
(A) ~~2023~~ 2023 Sept 24	Y	Y	Y	NS
2023 Sep 25	Y	Y		dm

(A) WE NS 2023 Sept 24

***Pseudokirchneriella subcapitata* Growth Curve using CP230104; Date: 2023/Jul/25**
EC~4000lux, 24°C, 0.5ml culture to 50 mL nutrient medium



NAUTILUS
ENVIRONMENTAL

Toxicity testing on samples BZL735-1645-68 and BZL736-1645-44

Collected September 19, 2023

Final Report

December 13, 2023

Submitted to: **Bureau Veritas Laboratories**
Edmonton, AB

8664 Commerce Court, Burnaby, BC V5A 4N7

TABLE OF CONTENTS

Page

Signature Page ii

Summary iii

1.0 Introduction 1

2.0 Methods 1

3.0 Results 3

4.0 QA/QC 4

5.0 References 5

List of Tables

Table 1. Summary of test conditions: 7-d rainbow trout (*Oncorhynchus mykiss*) embryo viability test 2

Table 2. Results: rainbow trout (*Oncorhynchus mykiss*) embryo viability test 3

Table 3. Reference toxicant test results. 4

List of Appendices

APPENDIX A – *Oncorhynchus mykiss* Toxicity Test Data

APPENDIX B – Chain-of-Custody Form

SIGNATURE PAGE

Report By:	Reviewed By:
Matteo Larosa, B.Sc.	Jacky Law, B.Sc.
Laboratory Biologist	Senior Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

SUMMARY

Sample Information and Test Type

Sample ID	BZL735-1645-68 BZL736-1645-44
Sample collection date	September 19, 2023
Sample receipt date	September 20, 2023
Sample receipt temperature	0.5 – 2.5°C
Test type	7-d rainbow trout (*Oncorhynchus mykiss*) embryo viability

Summary of Results

Endpoint	% v/v	
	BZL735-1645-68	BZL736-1645-44
Oncorhynchus mykiss		
Embryo viability EC25	>100	>100
Embryo viability EC50	>100	>100

EC = Effective Concentration

1.0 INTRODUCTION

Nautilus Environmental Company Inc. conducted a 7-d rainbow trout (*Oncorhynchus mykiss*) embryo viability toxicity test for Bureau Veritas Laboratories on two samples identified as BZL735-1645-68 and BZL736-1645-44. The samples were collected on September 19, 2023, and delivered to the Nautilus Environmental laboratory in Burnaby, BC on September 20, 2023. The samples were each transported in eight and ten 10-L plastic containers and received at temperatures ranging from 0.5 – 2.5°C. The samples were stored in the dark at 4 ± 2°C prior to testing.

Testing was initiated on September 20, 2023. This report describes the results of the toxicity tests. Copies of raw laboratory data sheets and statistical analysis are provided in Appendix A. The chain-of-custody form is provided in Appendix B.

2.0 METHODS

The methods for the 7-d rainbow trout embryo viability toxicity test are summarized in Table 1, and followed procedures described by Environment Canada (1998) and modified by Canaria *et al.* (1999). Statistical analyses were performed using CETIS (Tidepool Scientific Software, 2021).

Table 1. Summary of test conditions: 7-d rainbow trout (*Oncorhynchus mykiss*) embryo viability test.

Test species	*Oncorhynchus mykiss*
Organism source	Trout Lodge, Sumner, WA
Organism age	<30 minutes post fertilization, <24 hour old gametes
Test type	Static-renewal
Test duration	7 days
Test vessel	2-L plastic container
Test volume	2 L
Test solution depth	17 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	4 per treatment
Number of organisms	30 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tap water
Test solution renewal	Daily (80% renewal)
Test temperature	14 ± 1°C
Feeding	None
Light intensity	Dark
Photoperiod	24 hours dark
Aeration	Continuous gentle aeration
Test measurements	Temperature, dissolved oxygen, pH and conductivity measured daily; hardness and alkalinity of undiluted sample measured at test initiation; survival checked daily
Test protocol	Environment Canada (1998), EPS 1/RM/28; Canaria *et al.* (1999)
Statistical software	CETIS Version 2.1.4
Test endpoints	Embryo viability
Test acceptability criteria for controls	Embryo viability ≥70%
Reference toxicant	Sodium dodecyl sulphate (SDS)

3.0 RESULTS

Results of the rainbow trout embryo viability toxicity test conducted on samples BZL735-1645-68 and BZL736-1645-44 are summarized in Table 2. There were no adverse effects observed, resulting in an EC25 value of >100%.

Table 2. Results: rainbow trout (*Oncorhynchus mykiss*) embryo viability test.

Concentration (% v/v)	Embryo Viability (%) (Mean ± SD)	
	BZL735-1645-68	BZL736-1645-44
Laboratory Control	71.4 ± 14.3	70.8 ± 11.7
6.25	65.8 ± 8.8	66.7 ± 6.1
12.5	72.5 ± 10.0	69.2 ± 7.4
25	67.5 ± 5.7	73.3 ± 11.9
50	75.0 ± 10.4	80.8 ± 15.0
100	65.8 ± 17.3	76.4 ± 7.2
Test Endpoint (% v/v)		
EC25	>100	>100
EC50	>100	>100

SD = Standard Deviation, EC = Effective Concentration

4.0 QA/QC

The health history of the test organisms used in the exposure was acceptable and met the requirements of the Environment Canada protocol. The test met all control acceptability criteria and water quality parameters remained within ranges specified in the protocol throughout the test. Uncertainty associated with this test is best described by the standard deviation around the means and/or confidence limits around the point estimates.

The eggs were exposed using a blocked design (eggs from each of the four female fish were distributed separately in each of replicates A to D) rather than being pooled prior to distribution, as specified in the test method. This modification was used because the egg quality can vary between females, and blocking provides the opportunity to exclude effects of poor-quality eggs from one particular female fish. There were no other deviations from the test methodology.

Results of the reference toxicant test conducted during the testing program are summarized in Table 3. Results for this test fell within the acceptable range for organism performance of mean and two standard deviations, based on historical results obtained by the laboratory with this test. Thus, the sensitivity of the organisms used in this test was appropriate. The reference toxicant was performed under the same conditions as those used for the sample.

Table 3. Reference toxicant test results.

Test Species	Endpoint	Historical Mean (2 SD Range)	CV (%)	Test Date
O. mykiss	Viability (EC50): 3.3 mg/L SDS	4.0 (2.2 – 7.2) mg/L SDS	30	September 20, 2023

SD = Standard Deviation, CV = Coefficient of Variation, EC = Effective Concentration

5.0 REFERENCES

Canaria, E.C., J.R. Elphick and H.C. Bailey. 1999. A simplified procedure for conducting small-scale short-term embryo toxicity tests with salmonids. *Environ. Toxicol.* 14:301-307.

Environment Canada. 1998. Biological test method: toxicity tests using early life stages of salmonid fish (rainbow trout). Environmental Protection Series EPS 1/RM/28. Second Edition, July 1998. Environment Canada, Method Development and Application Section, Environmental Technology Centre, Ottawa, ON. 102 pp.

Tidepool Scientific Software. 2021. CETIS comprehensive environmental toxicity information system, version 2.1.4 Tidepool Scientific Software, McKinleyville, CA. 303 pp.

APPENDIX A – *Oncorhynchus mykiss* Toxicity Test Data

Rainbow Trout Early Life Stage Summary Sheet

Client: Bureau Veritas Laboratories Start Date/Time: Sept.20,2023/1735h

Work Order No.: 231636 Test Species: *Oncorhynchus mykiss*

Sample Information:

Sample ID: BZL735-1645-68
Sample Date: Sept.19,2023
Date Received: Sept.20,2023
Sample Volume: 8x10L

Dilution Water:

Type: Dechlorinated Tap Water
Hardness (mg/L $CaCO_3$): 5
Alkalinity (mg/L $CaCO_3$): 21

Test Organism Information:

Batch No.: 092023
Source: Trout Lodge, Sumner, WA
Loading Density: 0.85g/L

Number of male broodstock used: 3
Number of female broodstock used: 4
Sperm motility check: Verification of sperm motility using a compound microscope

SDS Reference Toxicant Results:

Reference Toxicant ID: RTE97(TL)
Stock Solution ID: 23S03
Date Initiated: Sept.20,2023
7-d EC50 (95% CL): 3.3 (3.1-3.5) mg/L SDS

Reference Toxicant Mean and Range: 4.0(2.2-7.2) mg/L SDS
Reference Toxicant CV (%): 30

Test Results:

	Sample ID		
	BZL735-1645-68		
EC25 % (v/v) (95% CL)	>100		
EC50 % (v/v) (95% CL)	>100		

Reviewed by: JW Date reviewed: 07 Dec 23

Embryo Toxicity Test
Daily Mortality

Client: Bureau Veritas Laboratories
Sample ID: BZL735-1645-68
Work Order #: 231636
Test Species: *Oncorhynchus mykiss*

CER #: 3
Start Date & Time: Sept. 20, 2023/1735h
Stop Date & Time: Sept. 27, 2023/1400h

Concentration %(v/v)	Rep	Day of Test - No. of Mortalities							Total Dead Eggs	Total Undeveloped	Total No. Embryo	Total Exposed
		1	2	3	4	5	6	7				
Control	1	0	0	0	0	0	0	0	0	13	17	30
	2								0	6	24	30
	3								0	4	26	30
	4								0	11	18	29
6.25	1							1	1	13	16	30
	2							0	0	10	20	30
	3							0	0	8	22	30
	4							4	4	5	21	30
12.5	1							0	0	5	25	30
	2								0	9	21	30
	3								0	12	18	30
	4								0	7	23	30
25	1								0	10	20	30
	2								0	8	22	30
	3								0	9	21	30
	4								0	12	18	30
50	1								0	9	21	30
	2								0	4	26	30
	3								0	6	24	30
	4								0	11	19	30
100	1		1						1	7	22	30
	2		0				1		1	13	16	30
	3						0		0	4	26	30
	4						0		0	15	15	30
	1											
	2											
	3											
	4											
	1											
	2											
	3											
	4											
Techn. Initials		ML	ML	BMC	T.C.	ML	ML	ML	ML	ML	ML	ML

Comments:

Reviewed by: JN

Date reviewed: 07 Dec 23

7-d Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas Laboratories
Sample ID: BZL735-1645-68
Work Order #: 231636
Test Species: *Oncorhynchus mykiss*

CER #: 3
Start Date & Time: Sept. 20, 2023/1735h
Stop Date & Time: Sept. 27, 2023/1400h
Aeration rate adjusted to 6.5±1 mL/min/L ? (Y/N) Y

% (V/V) Concentration control	Days													
	0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	14.0	13.0	14.0	13.0	13.5	13.0	14.0	13.0	13.5	13.0	14.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.4	10.3	10.5	10.3	10.4	10.3	10.4	10.3	10.4	10.2	10.2	10.4
pH	7.3	7.3	7.3	7.3	7.3	7.2	7.3	7.3	7.3	7.2	7.3	7.2	7.2	7.0
Cond. (µS/cm)	51	53		51		52		54		51		53		52
Initials	ML	ML		ML		IMC		T.C		ML		ML		PYK

Concentration 6.25	Days													
	0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.3	10.5	10.3	10.3	10.3	10.3	10.3	10.4	10.3	10.3	10.4
pH	7.3	7.3	7.3	7.3	7.3	7.3	7.4	7.3	7.4	7.2	7.3	7.2	7.2	7.1
Cond. (µS/cm)	88	91		86		88		87		86		88		88
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Concentration 25	Days													
	0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.3	10.5	10.4	10.3	10.2	10.3	10.3	10.4	10.3	10.2	10.4
pH	7.3	7.3	7.3	7.2	7.2	7.3	7.3	7.3	7.3	7.2	7.2	7.2	7.2	7.1
Cond. (µS/cm)	201	200		197		197		198		198		199		200
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Concentration 100	Days													
	0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	13.5	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.3	10.5	10.4	10.3	10.3	10.4	10.3	10.4	10.2	10.3	10.4
pH	7.3	7.3	7.2	7.2	7.2	7.2	7.3	7.3	7.3	7.2	7.2	7.2	7.2	7.2
Cond. (µS/cm)	588	589		591		587		593		592		594		597
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Thermometer: CERH3 DO meter/probe: MP-2 / D-2 pH meter/probe: MP-2 / P-2 Conductivity meter/probe: MP-2 / C-2

	Control	1645-68		
Hardness*	5	200		
Alkalinity*	21	30		

* mg/L as CaCO3

Analysts: ML, IMC, TC, PYK

Reviewed by: JW

Date reviewed: 07 Dec 23

Sample Description: clear, yellow tinted, odourless liquid w/o particulates

Comments:

CETIS Summary Report

Report Date: 04 Dec-23 17:58 (p 1 of 1)
Test Code/ID: 231636a / 11-1613-6935

Salmonid Embryo Survival and Development Test — Nautilus Environmental

Batch ID:	07-2449-9794	Test Type:	Development	Analyst:	Matteo Larosa
Start Date:	20 Sep-23 17:35	Protocol:	EC/EPS 1/RM/28	Diluent:	Dechlorinated Tap Water
Ending Date:	27 Sep-23 14:00	Species:	Oncorhynchus mykiss	Brine:	
Test Length:	6d 20h	Taxon:	Actinopterygii	Source:	Trout Lodge Fish Farm Age:

Sample ID:	12-8477-7477	Code:	4C942605	Project:	
Sample Date:	19 Sep-23 04:05	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	20 Sep-23 10:16	CAS (PC):		Station:	BZL735-1645-68
Sample Age:	38h (0.5 °C)	Client:	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
03-1418-5276	Proportion Normal	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LC	4	0.7135	0.4864	0.9406	0.5667	0.8667	0.0714	0.1427	20.00%	0.00%
6.25		4	0.6583	0.5188	0.7978	0.5333	0.7333	0.0438	0.0877	13.32%	7.73%
12.5		4	0.7250	0.5666	0.8834	0.6000	0.8333	0.0498	0.0995	13.73%	-1.61%
25		4	0.6750	0.5844	0.7656	0.6000	0.7333	0.0285	0.0569	8.43%	5.40%
50		4	0.7500	0.5851	0.9149	0.6333	0.8667	0.0518	0.1036	13.82%	-5.11%
100		4	0.6583	0.3832	0.9335	0.5000	0.8667	0.0865	0.1729	26.27%	7.73%

Proportion Normal Detail — MD5: C12912A5F1A280421D92E9E2FC16FAC0

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	0.5667	0.8000	0.8667	0.6207
6.25		0.5333	0.6667	0.7333	0.7000
12.5		0.8333	0.7000	0.6000	0.7667
25		0.6667	0.7333	0.7000	0.6000
50		0.7000	0.8667	0.8000	0.6333
100		0.7333	0.5333	0.8667	0.5000

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	17/30	24/30	26/30	18/29
6.25		16/30	20/30	22/30	21/30
12.5		25/30	21/30	18/30	23/30
25		20/30	22/30	21/30	18/30
50		21/30	26/30	24/30	19/30
100		22/30	16/30	26/30	15/30

CETIS Analytical Report

Report Date: 04 Dec-23 17:58 (p 1 of 2)
Test Code/ID: 231636a / 11-1613-6935

Salmonid Embryo Survival and Development Test — Nautilus Environmental

Analysis ID:	03-1418-5276	Endpoint:	Proportion Normal	CETIS Version:	CETISv2.1.4
Analyzed:	04 Dec-23 17:58	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Dec-23 17:56	MD5 Hash:	C12912A5F1A280421D92E9E2FC16FAC0	Editor ID:	007-585-424-0

Batch ID:	07-2449-9794	Test Type:	Development	Analyst:	Matteo Larosa
Start Date:	20 Sep-23 17:35	Protocol:	EC/EPS 1/RM/28	Diluent:	Dechlorinated Tap Water
Ending Date:	27 Sep-23 14:00	Species:	Oncorhynchus mykiss	Brine:	
Test Length:	6d 20h	Taxon:	Actinopterygii	Source:	Trout Lodge Fish Farm Age:

Sample ID:	12-8477-7477	Code:	4C942605	Project:	
Sample Date:	19 Sep-23 04:05	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	20 Sep-23 10:16	CAS (PC):		Station:	BZL735-1645-68
Sample Age:	38h (0.5 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	872189	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

Proportion Normal Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	LC	4	0.7135	0.7103	0.5667	0.8667	20.00%	0.00%	85/119	0.7143	0.00%
6.25		4	0.6583	0.6833	0.5333	0.7333	13.32%	7.73%	79/120	0.7021	1.71%
12.5		4	0.7250	0.7333	0.6000	0.8333	13.73%	-1.61%	87/120	0.7021	1.71%
25		4	0.6750	0.6833	0.6000	0.7333	8.43%	5.40%	81/120	0.7021	1.71%
50		4	0.7500	0.7500	0.6333	0.8667	13.82%	-5.11%	90/120	0.7021	1.71%
100		4	0.6583	0.6333	0.5000	0.8667	26.27%	7.73%	79/120	0.6583	7.84%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	0.5667	0.8000	0.8667	0.6207
6.25		0.5333	0.6667	0.7333	0.7000
12.5		0.8333	0.7000	0.6000	0.7667
25		0.6667	0.7333	0.7000	0.6000
50		0.7000	0.8667	0.8000	0.6333
100		0.7333	0.5333	0.8667	0.5000

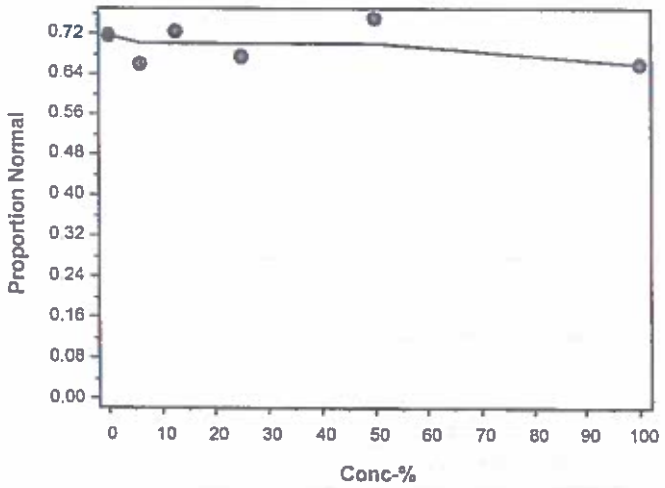
Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	17/30	24/30	26/30	18/29
6.25		16/30	20/30	22/30	21/30
12.5		25/30	21/30	18/30	23/30
25		20/30	22/30	21/30	18/30
50		21/30	26/30	24/30	19/30
100		22/30	16/30	26/30	15/30

Salmonid Embryo Survival and Development Test — **Nautilus Environmental**

Analysis ID:	03-1418-5276	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv2.1.4
Analyzed:	04 Dec-23 17:58	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	04 Dec-23 17:56	**MD5 Hash:**	C12912A5F1A280421D92E9E2FC16FAC0	**Editor ID:**	007-585-424-0

Graphics



Rainbow Trout Early Life Stage Summary Sheet

Client: Bureau Veritas Laboratories

Start Date/Time: Sept. 20, 2023/1735h

Work Order No.: 231636

Test Species: *Oncorhynchus mykiss*

Sample Information:

Sample ID: BZL736-1645-44
Sample Date: Sept. 19, 2023
Date Received: Sept. 20, 2023
Sample Volume: 10x10L

Dilution Water:

Type: Dechlorinated Tap Water
Hardness (mg/L $CaCO_3$): 5
Alkalinity (mg/L $CaCO_3$): 21

Test Organism Information:

Batch No.: 092023
Source: Trout Lodge, Sumner, WA
Loading Density: 0.85g/L

Number of male broodstock used: 3
Number of female broodstock used: 4
Sperm motility check: Verification of sperm motility using a compound microscope

SDS Reference Toxicant Results:

Reference Toxicant ID: RTE97(TL)
Stock Solution ID: 23S03
Date Initiated: Sept. 20, 2023
7-d EC50 (95% CL): 3.3 (3.1-3.5) mg/L SDS

Reference Toxicant Mean and Range: 4.0 (2.2-7.2) mg/L SDS
Reference Toxicant CV (%): 30

Test Results:

	Sample ID		
	BZL736-1645-44		
EC25 % (v/v) (95% CL)	>100		
EC50 % (v/v) (95% CL)	>100		

Reviewed by: JW

Date reviewed: 07 Dec 23

Embryo Toxicity Test
Daily Mortality

Client: Bureau Veritas Laboratories
Sample ID: BZL736-1645-44
Work Order #: 231636
Test Species: *Oncorhynchus mykiss*

CER #: 3
Start Date & Time: Sept. 20, 2023/1735h
Stop Date & Time: Sept. 27, 2023/1400h

Concentration % (V/V)	Rep	Day of Test - No. of Mortalities							Total Dead Eggs	Total Undeveloped	Total No. Embryo	Total Exposed
		1	2	3	4	5	6	7				
Control	1	0	0	0	0	0	0	0	0	10	20	30
	2	↓	↓	↓	↓	↓	↓	↓	0	5	25	30
	3	↓	↓	↓	↓	↓	↓	↓	0	7	23	30
	4	↓	↓	↓	↓	↓	↓	↓	0	13	17	30
6.25	1	↓	↓	↓	↓	↓	↓	↓	0	8	22	30
	2	↓	↓	↓	↓	↓	↓	↓	0	11	19	30
	3	↓	↓	↓	↓	↓	↓	↓	0	12	18	30
	4	↓	↓	↓	↓	↓	↓	↓	0	9	21	30
12.5	1	↓	↓	↓	↓	↓	↓	↓	0	10	20	30
	2	↓	↓	↓	↓	↓	↓	↓	0	7	23	30
	3	↓	↓	↓	↓	↓	↓	↓	0	8	22	30
	4	↓	↓	↓	↓	↓	↓	↓	0	12	18	30
25	1	↓	↓	↓	↓	↓	↓	↓	0	6	24	30
	2	↓	↓	↓	↓	↓	↓	↓	0	8	22	30
	3	↓	↓	↓	↓	↓	↓	↓	0	5	25	30
	4	↓	↓	↓	↓	↓	↓	↓	1	12	17	30
50	1	↓	↓	↓	↓	↓	0	↓	0	2	28	30
	2	↓	↓	↓	↓	↓	↓	↓	0	6	24	30
	3	↓	↓	↓	↓	↓	↓	↓	0	3	27	30
	4	↓	↓	↓	↓	↓	↓	↓	0	12	18	30
100	1	↓	↓	↓	↓	↓	1	↓	1	5	24	30
	2	↓	↓	↓	↓	↓	0	↓	0	6	24	30
	3	↓	↓	↓	↓	↓	0	↓	0	10	19	29
	4	↓	↓	↓	↓	↓	0	↓	0	6	24	30
	1											
	2											
	3											
	4											
	1											
	2											
	3											
	4											
Techn. Initials		ML	ML	TMC	TC	ML	ML	ML	ML	ML	ML	ML

Comments:

Reviewed by: JW

Date reviewed: 07 Dec 23

7-d Chronic Freshwater Toxicity Test
Initial and Final Water Quality Measurements

Client: Bureau Veritas Laboratories
Sample ID: BZL736-1645-44
Work Order #: 231636
Test Species: *Oncorhynchus mykiss*

CER #: 3
Start Date & Time: Sept. 20, 2023/1735h
Stop Date & Time: Sept. 27, 2023/1400h
Aeration rate adjusted to 6.5±1 mL/min/L ? (Y/N) Y

% (v/v) Concentration: Control	Days 0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	14.0	13.0	14.0	13.0	13.5	13.0	14.0	13.0	13.5	13.0	14.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.3	10.5	10.3	10.4	10.3	10.3	10.3	10.3	10.2	10.3	10.4
pH	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.3	7.3	7.2	7.3	7.2	7.3	7.4
Cond. (µS/cm)	51	53		51		52		54		51		53		53
Initials	ML	ML		ML		IMC		T.C		ML		ML		PYK

Concentration: 6.25	Days 0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	13.5	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.4	10.5	10.4	10.4	10.2	10.4	10.3	10.4	10.2	10.3	10.4
pH	7.3	7.3	7.3	7.3	7.3	7.2	7.3	7.2	7.3	7.2	7.3	7.2	7.2	7.4
Cond. (µS/cm)	70	69		70		70		73 TC 69		70		69		70
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Concentration: 25	Days 0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	14.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.4	10.4	10.5	10.4	10.4	10.4	10.4	10.3	10.4	10.2	10.4	10.4
pH	7.3	7.3	7.3	7.2	7.2	7.2	7.3	7.2	7.3	7.2	7.3	7.2	7.2	7.3
Cond. (µS/cm)	123	124		124		125		124		124		125		126
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Concentration: 100	Days 0	1		2		3		4		5		6		7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	final
Temperature (°C)	14.0	13.5	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0	13.0	13.0	13.0
DO (mg/L)	10.3	10.3	10.5	10.4	10.5	10.4	10.5	10.4	10.4	10.3	10.4	10.2	10.3	10.4
pH	7.2	7.2	7.1	7.1	7.1	7.2	7.2	7.2	7.3	7.1	7.2	7.1	7.2	7.2
Cond. (µS/cm)	317	318		320		318		320		319		320		321
Initials	ML	ML		ML		IMC		T.C.		ML		ML		PYK

Thermometer: CERH3 DO meter/probe: MP-2 / D-2 pH meter/probe: MP-2 / P-2 Conductivity meter/probe: MP-2 / C-2

	Control	1645-44		
Hardness*	5	110		
Alkalinity*	21	18		

* mg/L as CaCO3

Analysts: ML, IMC, TC, PYK

Reviewed by: JW

Date reviewed: 07 Dec 23

Sample Description: Clear, colourless, odourless liquid w/o particulates

Comments:

Version 1.3 Issued July 29, 2022

Nautilus Environmental Company Inc.

CETIS Summary Report

Report Date: 04 Dec-23 18:09 (p 1 of 1)
Test Code/ID: 231636b / 20-8539-2439

Salmonid Embryo Survival and Development Test — Nautilus Environmental

Batch ID:	05-4519-9975	Test Type:	Development	Analyst:	Matteo Larosa
Start Date:	20 Sep-23 17:35	Protocol:	EC/EPS 1/RM/28	Diluent:	Dechlorinated Tap Water
Ending Date:	27 Sep-23 14:00	Species:	Oncorhynchus mykiss	Brine:	
Test Length:	6d 20h	Taxon:	Actinopterygii	Source:	Trout Lodge Fish Farm Age:

Sample ID:	18-1871-2293	Code:	6C6758E5	Project:	
Sample Date:	19 Sep-23 05:00	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	20 Sep-23 10:16	CAS (PC):		Station:	BZL736-1645-44
Sample Age:	37h (0.5 °C)	Client:	Bureau Veritas Laboratories		

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
11-9770-0474	Proportion Normal	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LC	4	0.7083	0.5227	0.8940	0.5667	0.8333	0.0583	0.1167	16.47%	0.00%
6.25		4	0.6667	0.5698	0.7635	0.6000	0.7333	0.0304	0.0609	9.13%	5.88%
12.5		4	0.6917	0.5741	0.8093	0.6000	0.7667	0.0370	0.0739	10.69%	2.35%
25		4	0.7333	0.5446	0.9221	0.5667	0.8333	0.0593	0.1186	16.18%	-3.53%
50		4	0.8083	0.5696	1.0470	0.6000	0.9333	0.0750	0.1500	18.56%	-14.12%
100		4	0.7638	0.6486	0.8790	0.6552	0.8000	0.0362	0.0724	9.48%	-7.83%

Proportion Normal Detail

MD5: 7B5A00E60C8B312FB721982076E155A9

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	0.6667	0.8333	0.7667	0.5667
6.25		0.7333	0.6333	0.6000	0.7000
12.5		0.6667	0.7667	0.7333	0.6000
25		0.8000	0.7333	0.8333	0.5667
50		0.9333	0.8000	0.9000	0.6000
100		0.8000	0.8000	0.6552	0.8000

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	20/30	25/30	23/30	17/30
6.25		22/30	19/30	18/30	21/30
12.5		20/30	23/30	22/30	18/30
25		24/30	22/30	25/30	17/30
50		28/30	24/30	27/30	18/30
100		24/30	24/30	19/29	24/30

CETIS Analytical Report

Report Date: 04 Dec-23 18:09 (p 1 of 2)
Test Code/ID: 231636b / 20-8539-2439

Salmonid Embryo Survival and Development Test — Nautilus Environmental

Analysis ID:	11-9770-0474	Endpoint:	Proportion Normal	CETIS Version:	CETISv2.1.4
Analyzed:	04 Dec-23 18:09	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Dec-23 18:07	MD5 Hash:	7B5A00E60C8B312FB721982076E155A9	Editor ID:	007-585-424-0

Batch ID:	05-4519-9975	Test Type:	Development	Analyst:	Matteo Larosa
Start Date:	20 Sep-23 17:35	Protocol:	EC/EPS 1/RM/28	Diluent:	Dechlorinated Tap Water
Ending Date:	27 Sep-23 14:00	Species:	Oncorhynchus mykiss	Brine:	
Test Length:	6d 20h	Taxon:	Actinopterygii	Source:	Trout Lodge Fish Farm Age:

Sample ID:	18-1871-2293	Code:	6C6758E5	Project:	
Sample Date:	19 Sep-23 05:00	Material:	Water Sample	Source:	Bureau Veritas Laboratories
Receipt Date:	20 Sep-23 10:16	CAS (PC):		Station:	BZL736-1645-44
Sample Age:	37h (0.5 °C)	Client:	Bureau Veritas Laboratories		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	835800	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

Proportion Normal Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	LC	4	0.7083	0.7167	0.5667	0.8333	16.47%	0.00%	85/120	0.7288	0.00%
6.25		4	0.6667	0.6667	0.6000	0.7333	9.13%	5.88%	80/120	0.7288	0.00%
12.5		4	0.6917	0.7000	0.6000	0.7667	10.69%	2.35%	83/120	0.7288	0.00%
25		4	0.7333	0.7667	0.5667	0.8333	16.18%	-3.53%	88/120	0.7288	0.00%
50		4	0.8083	0.8500	0.6000	0.9333	18.56%	-14.12%	97/120	0.7288	0.00%
100		4	0.7638	0.8000	0.6552	0.8000	9.48%	-7.83%	91/119	0.7288	0.00%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	0.6667	0.8333	0.7667	0.5667
6.25		0.7333	0.6333	0.6000	0.7000
12.5		0.6667	0.7667	0.7333	0.6000
25		0.8000	0.7333	0.8333	0.5667
50		0.9333	0.8000	0.9000	0.6000
100		0.8000	0.8000	0.6552	0.8000

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LC	20/30	25/30	23/30	17/30
6.25		22/30	19/30	18/30	21/30
12.5		20/30	23/30	22/30	18/30
25		24/30	22/30	25/30	17/30
50		28/30	24/30	27/30	18/30
100		24/30	24/30	19/29	24/30

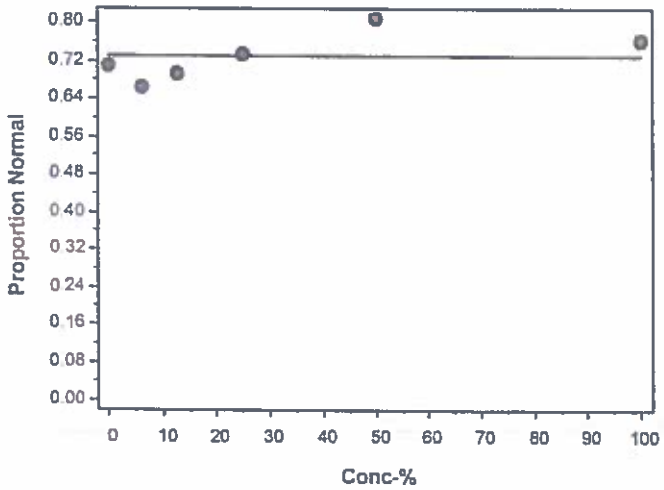
JW

Salmonid Embryo Survival and Development Test

Nautilus Environmental

Analysis ID:	11-9770-0474	Endpoint:	Proportion Normal	CETIS Version:	CETISv2.1.4
Analyzed:	04 Dec-23 18:09	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	04 Dec-23 18:07	MD5 Hash:	7B5A00E60C8B312FB721982076E155A9	Editor ID:	007-585-424-0

Graphics



APPENDIX B – Chain-of-Custody Form

Sent To: Nautilus Environmental
8664 Commerce Court
Burnaby, BC, V5A 4N7
Tel: (604) 420-8773

CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

COC # C374518-ENAU-01-01

REPORT INFORMATION

Company:	Bureau Veritas Laboratories
Address:	4326 76 Avenue NW, Edmonton, Alberta, T6B 2R4
Contact Name:	Geraldlyn Gouthro
Email:	geraldlyn.gouthro@bureauveritas.com, Customersolutionswest@bureauveritas
Phone:	(780) 577-7173
BV Labs Project #:	C374518

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	7-d Rainbow Trout Early Life Stage										ADDITIONAL SAMPLE INFORMATION
1	BZL735-1645-68	GW	2023/09/19	04:05	TH	~~10~~ 8	X										(P: 01)
2	BZL736-1645-44	GW	2023/09/19	05:00		10	X										(P: 01)
3																	
4																	
5							6										
6							3										
7							6										
8							1										
9							3										
10							2										

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS

Please inform Bureau Veritas immediately if you are not accredited for the requested test(s) or the hold time is approaching.
Please return a copy of this form with the report.

TURNAROUND TIME

☐ Rush Required

2023/09/26

Date Required

Please inform us if rush charges will be incurred.

COOLER ID:

	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:

	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:

	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
1. Kyle VanTbourmout	2023/09/19	1800	1. Tyler Nauntan	Sept. 20/23	10:16
2.			2.		

0.5-2.5°C

END OF REPORT

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C375348-BZR860
Client Sample ID: 1645-46
Date sample collected: 9/20/2023
Test Performed By: NM9,THR,CSH,KMG,SVC
Test Initiation Date: 9/22/2023
Test End Date: 9/28/2023
Dates when subsamples used: 9/22/2023 9/26/2023
9/23/2023 9/27/2023
9/24/2023
9/25/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.1
Temperature (°C): 25
pH(pH units): 7.6
Conductivity (µS/cm): 426

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log-x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear Interpolation	Log-x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13 Concentration analyzed with 9 organisms.

Daphnia present in sample and removed via pipette prior to water change 2023/09/22, 2023/09/24, and 2023/09/26.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	33
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/22/2023 9/26/2023 9/23/2023 9/27/2023 9/24/2023 9/25/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		14		14						10.0%	29	10.6
	2	0		0		0		4	x											
	3	0		0		0		7		11		10								
	4	0		0		0		8		16		11								
	5	0		0		0		5		17		17								
	6	0		0		0		10		14		12								
	7	0		0		0		6		15		14								
	8	0		0		0		7		11		0								
	9	0		0		0		6		12		14								
	10	0		0		0		7		14		12								
1.56	1	0		0		0		6		16		15						0.0%	28	6.1
	2	0		0		0		4		9		13								
	3	0		0		0		6		11		14								
	4	0		0		0		4		16		14								
	5	0		0		0		8		12		13								
	6	0		0		0		5		10		12								
	7	0		0		0		8		10		0								
	8	0		0		0		6		13		10								
	9	0		0		0		7		12		0								
	10	0		0		0		5		14		11								
3.13	1	0		0		0		3		15		0						0.0%	25	7.1
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	3	0		0		0		6		11		14								
	4	0		0		0		5		14		13								
	5	0		0		0		6		12		13								
	6	0		0		0		8		11		12								
	7	0		0		0		6		12		0								
	8	0		0		0		5		14		0								
	9	0		0		0		6		10		0								
	10	0		0		0		9		13		9								
6.25	1	0		0		0		4		16		0						0.0%	25	6.8
	2	0		0		0		6		12		0								
	3	0		0		0		7		14		10								
	4	0		0		0		6		10		15								
	5	0		0		0		8		12		15								
	6	0		0		0		5		9		13								
	7	0		0		0		5		12		0								
	8	0		0		0		4		14		0								
	9	0		0		0		7		15		0								
	10	0		0		0		5		12		15								
12.5	1	0		0		0		6		16		0						10.0%	25	10.5
	2	0		0		0		4		11		0								
	3	0		0		0		5		14		13								
	4	0		0		0		7		17		14								
	5	0		0		0		8		13		14								
	6	0		0		0		7		10		12								
	7	0		0		0		5		13		0								
	8	0		0		0		4		0	x									
	9	0		0		0		5		12		10								
	10	0		0		0		4		17		12								
25	1	0		0		0		6		16		15						0.0%	26	8.7
	2	0		0		0		5		18		0								
	3	0		0		0		4		12		0								
	4	0		0		0		6		14		17								
	5	0		0		0		7		12		12								
	6	0		0		0		5		13		14								
	7	0		0		0		3		10		0								
	8	0		0		0		6		15		8								
	9	0		0		0		8		16		0								
	10	0		0		0		7		10		0								
50	1	0		0		0		7		16		0						0.0%	26	10.6
	2	0		0		0		8		15		0								
	3	0		0		0		6		14		12								
	4	0		0		0		6		18		18								
	5	0		0		0		5		12		10								
	6	0		0		0		9		14		12								
	7	0		0		0		7		12		0								
	8	0		0		0		9		16		0								
	9	0		0		0		0		3		0								
	10	0		0		0		8		11		14								
100	1	0		0		0		6		14		15						0.0%	27	7.6
	2	0		0		0		5		17		0								
	3	0		0		0		5		16		12								
	4	0		0		0		8		14		10								
	5	0		0		0		6		11		13								
	6	0		0		0		9		12		13								
	7	0		0		0		5		10		0								
	8	0		0		0		2		13		14								
	9	0		0		0		6		10		12								
	10	0		0		0		4		10		0								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/22	24	8.4	7.7	23/09/23	25	7.8	5.8
1.56		24	8.3	7.6		25	7.6	5.5
3.13		24	8.1	7.6		25	7.7	6.1
6.25		24	8.1	7.7		25	7.5	5.7
12.5		24	7.9	7.8		25	7.4	5.9
25		24	7.8	7.9		25	7.3	5.7
50		24	7.6	8.3		25	7.5	5.7
100		25	7.7	8.8		25	7.5	5.5
Control	23/09/23	24	8.4	7.6	23/09/24	24	7.9	6.1
1.56		25	8.3	7.5		25	7.9	6.3
3.13		25	8.1	7.6		25	7.8	6.0
6.25		25	8.0	7.5		25	7.7	6.0
12.5		25	7.9	7.6		25	7.7	6.0
25		25	7.8	7.7		25	7.6	6.0
50		25	7.6	7.9		25	7.6	6.2
100		25	7.5	8.5		25	7.7	5.8
Control	23/09/24	25	8.2	7.3	23/09/25	24	7.8	6.1
1.56		25	8.1	7.3		25	7.6	5.7
3.13		25	8.0	7.3		24	7.6	6.1
6.25		25	7.9	7.3		25	7.4	5.8
12.5		25	7.9	7.4		25	7.5	5.9
25		25	7.6	7.4		25	7.3	5.7
50		25	7.5	7.6		25	7.4	5.7
100		25	7.4	8.2		25	7.5	5.4
Control	23/09/25	25	7.5	7.2	23/09/26	24	7.7	6.3
1.56		25	7.7	7.2		24	7.7	5.9
3.13		25	7.6	7.2		24	7.6	6.3
6.25		25	7.6	7.3		24	7.5	6.0
12.5		25	7.5	7.3		24	7.4	6.0
25		25	7.4	7.4		25	7.4	6.0
50		25	7.3	7.8		25	7.5	6.0
100		25	7.2	8.4		24	7.5	5.7
Control	23/09/26	25	8.2	7.1	23/09/27	26	7.4	6.2
1.56		25	8.1	7.1		26	7.2	5.7
3.13		25	8.0	7.1		26	7.1	6.0
6.25		25	8.0	7.2		26	7.1	5.9
12.5		25	7.9	7.2		26	7.1	5.8
25		25	7.7	7.4		25	7.2	5.8
50		25	7.6	7.5		25	7.2	5.7
100		25	7.4	8.2		25	7.3	5.7
Control	23/09/27	24	8.1	7.2	23/09/28	25	7.8	5.9
1.56		25	7.9	7.2		25	7.5	5.7
3.13		25	7.8	7.2		25	7.4	5.7
6.25		25	7.7	7.3		26	7.3	5.5
12.5		24	7.6	7.3		25	7.3	5.6
25		24	7.5	7.5		25	7.3	5.4
50		24	7.3	7.7		25	7.4	5.3
100		24	7.2	8.2		25	7.4	5.1
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C375348-BZR861
Client Sample ID: 1645-44
Date sample collected: 9/20/2023
Test Performed By: NM9,THR,CSH,KMG,SVC
Test Initiation Date: 9/22/2023
Test End Date: 9/28/2023
Dates when subsamples used: 9/22/2023 9/26/2023
9/23/2023 9/27/2023
9/24/2023
9/25/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.2
Temperature (°C): 24
pH(pH units): 6.9
Conductivity (µS/cm): 280

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	45.0	33.8	n/a	Linear Interpolation	Log-x	3.13-3
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log-x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear Interpolation	Log-x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Data was corrected for hormesis calculations of IC25 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	33
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/22/2023 9/26/2023 9/23/2023 9/27/2023 9/24/2023 9/25/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		8		14		17						0.0%	41	2.1
	2	0		0		0		5		12		23								
	3	0		0		0		8		14		17								
	4	0		0		0		6		14		21								
	5	0		0		0		7		16		19								
	6	0		0		0		8		15		21								
	7	0		0		0		6		17		16								
	8	0		0		0		9		12		23								
	9	0		0		0		7		14		21								
	10	0		0		0		8		16		20								
1.56	1	0		0		0		9		14		24						0.0%	42	4.7
	2	0		0		0		7		17		21								
	3	0		0		0		10		16		20								
	4	0		0		0		10		14		21								
	5	0		0		0		8		16		16								
	6	0		0		0		5		17		19								
	7	0		0		0		3		16		19								
	8	0		0		0		8		18		16								
	9	0		0		0		9		17		17								
	10	0		0		0		7		12		12								
3.13	1	0		0		0		7		14		16						10.0%	31	10.5
	2	0		0		0		6		12		13								
	3	0		0		0		6		0	x									
	4	0		0		0		4		13		20								
	5	0		0		0		7		14		17								
	6	0		0		0		6		15		21								
	7	0		0		0		7		16		0								
	8	0		0		0		5		14		16								
	9	0		0		0		7		12		18								
	10	0		0		0		6		13		8								
6.25	1	0		0		0		6		10		0						0.0%	35	9.0
	2	0		0		0		5		13		21								
	3	0		0		0		8		15		22								
	4	0		0		0		7		10		17								
	5	0		0		0		4		12		21								
	6	0		0		0		7		16		21								
	7	0		0		0		8		15		0								
	8	0		0		0		8		15		16								
	9	0		0		0		5		12		16								
	10	0		0		0		8		11		19								
12.5	1	0		0		0		8		11		21						0.0%	36	3.5
	2	0		0		0		4		12		16								
	3	0		0		0		6		10		15								
	4	0		0		0		5		14		21								
	5	0		0		0		6		10		15								
	6	0		0		0		8		11		20								
	7	0		0		0		6		12		19								
	8	0		0		0		8		10		18								
	9	0		0		0		7		13		15								
	10	0		0		0		9		14		15								
25	1	0		0		0		7		16		17						0.0%	38	3.9
	2	0		0		0		8		15		23								
	3	0		0		0		7		10		20								
	4	0		0		0		6		11		17								
	5	0		0		0		7		14		20								
	6	0		0		0		5		15		17								
	7	0		0		0		6		10		17								
	8	0		0		0		9		11		16								
	9	0		0		0		7		13		15								
	10	0		0		0		8		16		15								
50	1	0		0		0		6		10		16						10.0%	29	6.4
	2	0		0		0		5		8		17								
	3	0		0		0		5		9		12								
	4	0		0		0		6		9		16								
	5	0		0		0		7		10		14								
	6	0		0		0		9		8		18								
	7	0		0		0		4		9		0	x							
	8	0		0		0		5		7		14								
	9	0		0		0		7		9		19								
	10	0		0		0		9		7		11								
100	1	0		0		0		7		9		20						0.0%	32	4.3
	2	0		0		0		4		7		14								
	3	0		0		0		4		11		18								
	4	0		0		0		3		9		14								
	5	0		0		0		7		10		18								
	6	0		0		0		6		8		14								
	7	0		0		0		4		10		18								
	8	0		0		0		5		11		19								
	9	0		0		0		7		9		21								
	10	0		0		0		5		13		16								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/22	25	8.1	7.4	23/09/23	26	8.2	7.0
1.56		25	8.0	7.3		26	7.9	6.5
3.13		25	7.9	7.4		26	7.9	6.9
6.25		24	7.8	7.5		25	7.8	6.9
12.5		24	7.7	7.6		26	7.6	6.8
25		24	7.6	7.8		25	7.8	7.1
50		24	7.4	7.9		25	7.4	7.0
100		24	6.8	8.9		25	7.1	6.8
Control	23/09/23	25	8.2	7.2	23/09/24	24	8.0	6.2
1.56		25	8.2	7.2		25	7.8	5.8
3.13		25	8.1	7.3		24	7.8	6.0
6.25		25	8.0	7.3		25	7.7	6.0
12.5		25	7.9	7.4		25	7.7	5.9
25		25	7.7	7.5		24	7.5	6.0
50		25	7.4	7.6		25	7.3	5.9
100		25	6.8	8.1		24	6.9	5.9
Control	23/09/24	25	8.1	7.2	23/09/25	25	7.8	6.2
1.56		25	8.0	7.2		25	7.6	5.9
3.13		25	7.9	7.2		25	7.5	6.0
6.25		25	7.9	7.1		25	7.4	6.0
12.5		25	7.7	7.1		25	7.3	6.1
25		25	7.6	7.3		24	7.2	6.2
50		25	7.3	7.5		25	7.1	6.0
100		25	6.7	8.2		24	6.7	5.9
Control	23/09/25	25	7.6	7.3	23/09/26	25	7.6	6.0
1.56		25	7.5	7.2		25	7.5	5.9
3.13		25	7.5	7.2		25	7.4	5.9
6.25		25	7.4	7.3		25	7.3	5.9
12.5		25	7.4	7.4		25	7.2	5.8
25		25	7.3	7.5		25	7.1	5.8
50		25	7.1	7.7		25	7.1	5.8
100		25	6.7	8.2		25	6.6	5.7
Control	23/09/26	25	8.2	7.1	23/09/27	26	7.5	6.0
1.56		25	8.1	7.0		26	7.1	5.7
3.13		25	8.1	7.1		26	7.1	5.8
6.25		25	7.9	7.2		26	7.1	5.8
12.5		25	7.6	7.3		26	7.0	5.7
25		25	7.6	7.5		26	7.0	5.9
50		25	7.2	7.8		26	6.9	5.9
100		25	6.7	8.7		26	6.5	5.8
Control	23/09/27	24	8.0	7.2	23/09/28	26	7.1	5.8
1.56		25	8.0	7.2		26	7.0	5.7
3.13		24	7.8	7.2		26	7.3	6.2
6.25		24	7.7	7.3		26	7.0	5.9
12.5		24	7.6	7.4		26	7.1	5.4
25		24	7.4	7.5		24	7.5	5.8
50		24	7.2	7.7		25	6.8	5.8
100		24	6.7	8.2		25	6.7	5.6
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C375348-BZR862
Client Sample ID: 1645-68
Date sample collected: 9/20/2023
Test Performed By: NM9,THR,CSH,KMG,SVC
Test Initiation Date: 9/22/2023
Test End Date: 9/28/2023
Dates when subsamples used: 9/22/2023 9/26/2023
9/23/2023 9/27/2023
9/24/2023
9/25/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.7
Temperature (°C): 24
pH(pH units): 7.3
Conductivity (µS/cm): 454

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	24.4	15.2	n/a	Linear Interpolation	Log-x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log-x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear Interpolation	Log-x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

6.25% Concentration analyzed with 9 organisms.

Data was corrected for hormesis calculations of IC25 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	33
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/22/2023 9/26/2023 9/23/2023 9/27/2023 9/24/2023 9/25/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		14		20						0.0%	29	7.5
	2	0		0		0		8		9		16								
	3	0		0		0		6		11		16								
	4	0		0		0		8		10		0								
	5	0		0		0		7		11		0								
	6	0		0		0		8		10		12								
	7	0		0		0		8		12		14								
	8	0		0		0		4		10		14								
	9	0		0		0		6		9		14								
	10	0		0		0		6		15		0								
1.56	1	0		0		0		7		12		15						0.0%	29	5.3
	2	0		0		0		6		11		15								
	3	0		0		0		5		14		0								
	4	0		0		0		6		13		15								
	5	0		0		0		7		15		0								
	6	0		0		0		8		9		12								
	7	0		0		0		6		9		17								
	8	0		0		0		8		16		10								
	9	0		0		0		6		10		10								
	10	0		0		0		5		11		12								
3.13	1	0		0		0		4		12		14						0.0%	29	8.0
	2	0		0		0		7		16		16								
	3	0		0		0		9		15		0								
	4	0		0		0		5		13		0								
	5	0		0		0		8		14		0								
	6	0		0		0		7		15		15								
	7	0		0		0		8		16		15								
	8	0		0		0		5		17		11								
	9	0		0		0		5		15		7								
	10	0		0		0		6		13		0								
6.25	1	0		0		0		7		10		12						0.0%	28	7.8
	2	0		0		0		7		18		12								
	3	0		0		0		9		13		0								
	4	0		0		0		5		13		0								
	5	0		0		0		6		11		0								
	6	0		0		0		7		15		12								
	7	0		0		0		6		18		14								
	8	0		0		0		7		12		13								
	9	0		0		0		5		11		12								
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
12.5	1	0		0		0		5		13		15						0.0%	28	7.6
	2	0		0		0		6		11		16								
	3	0		0		0		7		16		15								
	4	0		0		0		5		10		0								
	5	0		0		0		4		8		10								
	6	0		0		0		7		14		12								
	7	0		0		0		5		12		10								
	8	0		0		0		8		10		12								
	9	0		0		0		6		13		15								
	10	0		0		0		5		13		0								
25	1	0		0		0		5		9		0						0.0%	21	6.9
	2	0		0		0		6		11		9								
	3	0		0		0		8		15		0								
	4	0		0		0		6		11		0								
	5	0		0		0		6		9		0								
	6	0		0		0		7		6		0								
	7	0		0		0		6		8		12								
	8	0		0		0		6		11		12								
	9	0		0		0		6		16		10								
	10	0		0		0		6		10		0								
50	1	0		0		0		8		13		0						0.0%	19	3.4
	2	0		0		0		11		12		0								
	3	0		0		0		7		13		0								
	4	0		0		0		6		12		0								
	5	0		0		0		5		9		0								
	6	0		0		0		6		8		0								
	7	0		0		0		5		8		11								
	8	0		0		0		7		13		0								
	9	0		0		0		6		11		0								
	10	0		0		0		7		13		0								
100	1	0		0		0		8		12		12						0.0%	22	7.2
	2	0		0		0		7		6		13								
	3	0		0		0		8		10		0								
	4	0		0		0		4		8		0								
	5	0		0		0		8		13		0								
	6	0		0		0		6		15		0								
	7	0		0		0		9		10		11								
	8	0		0		0		6		11		12								
	9	0		0		0		3		12		8								
	10	0		0		0		3		8		0								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/22	25	8.0	7.4	23/09/23	26	7.8	6.1
1.56		25	7.9	7.3		26	8.0	6.2
3.13		25	7.9	7.4		26	7.8	6.3
6.25		24	7.8	7.4		26	7.7	6.2
12.5		24	7.8	7.6		26	7.6	6.3
25		24	7.7	7.8		25	7.6	6.5
50		24	7.5	8.1		25	7.4	6.5
100		24	7.4	9.3		25	7.2	6.6
Control	23/09/23	25	8.1	7.3	23/09/24	25	8.0	6.0
1.56		25	8.0	7.3		25	7.9	6.3
3.13		25	8.0	7.3		25	7.7	6.1
6.25		25	7.9	7.3		25	7.6	6.0
12.5		25	7.8	7.4		25	7.7	6.5
25		25	7.7	7.6		25	7.5	6.3
50		25	7.5	7.7		25	7.5	6.6
100		25	7.1	8.5		25	7.2	6.7
Control	23/09/24	25	8.1	7.1	23/09/25	25	7.5	5.6
1.56		25	8.0	7.2		25	7.5	5.7
3.13		25	7.9	7.2		25	7.4	5.7
6.25		25	7.9	7.2		25	7.3	5.5
12.5		25	7.7	6.8		25	7.2	5.7
25		25	7.7	7.3		25	7.2	5.7
50		25	7.5	7.7		25	7.1	6.2
100		25	7.1	8.4		25	6.9	6.3
Control	23/09/25	25	7.8	7.2	23/09/26	26	7.6	6.3
1.56		25	7.7	7.2		26	7.5	6.6
3.13		25	7.7	7.2		26	7.3	6.4
6.25		25	7.7	7.3		26	7.3	6.4
12.5		25	7.6	7.4		26	7.4	6.9
25		25	7.6	7.5		25	7.3	6.6
50		25	7.4	7.7		25	7.3	7.0
100		25	7.0	8.2		25	7.1	7.0
Control	23/09/26	25	7.6	7.2	23/09/27	24	7.5	5.9
1.56		25	7.6	7.1		24	7.6	6.3
3.13		25	7.6	7.2		24	7.5	6.2
6.25		25	7.6	7.2		24	7.4	6.1
12.5		25	7.6	7.3		24	7.4	6.5
25		25	7.5	7.5		24	7.4	6.3
50		24	7.3	7.7		25	7.3	6.5
100		25	6.9	8.6		25	7.1	6.7
Control	23/09/27	24	8.0	7.2	23/09/28	25	7.5	6.2
1.56		24	7.9	7.2		25	7.6	6.7
3.13		24	7.9	7.2		25	7.5	6.4
6.25		24	7.8	7.3		25	7.4	6.3
12.5		24	7.7	7.4		25	7.5	7.0
25		24	7.6	7.5		25	7.4	6.7
50		24	7.4	7.7		25	7.4	6.7
100		24	7.1	8.5		25	7.2	6.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C375348-BZR863
Client Sample ID: 1645-69
Date sample collected: 9/20/2023
Test Performed By: NM9,THR,CSH,KMG,SVC
Test Initiation Date: 9/22/2023
Test End Date: 9/28/2023
Dates when subsamples used: 9/22/2023 9/26/2023
9/23/2023 9/27/2023
9/24/2023
9/25/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.4
Temperature (°C): 24
pH(pH units): 7.8
Conductivity (µS/cm): 995

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log-x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear Interpolation	Log-x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

12.5% and 25% Concentrations analyzed with 9 organisms each.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	33
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/22/2023 9/26/2023 9/23/2023 9/27/2023 9/24/2023 9/25/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		13		14						0.0%	29	4.3
	2	0		0		0		6		14		10								
	3	0		0		0		9		9		10								
	4	0		0		0		7		17		12								
	5	0		0		0		7		0		13								
	6	0		0		0		6		9		14								
	7	0		0		0		5		13		9								
	8	0		0		0		9		13		8								
	9	0		0		0		6		14		7								
	10	0		0		0		6		12		9								
1.56	1	0		0		0		8		14		13						0.0%	30	5.5
	2	0		0		0		4		8		9								
	3	0		0		0		10		14		12								
	4	0		0		0		5		15		14								
	5	0		0		0		7		10		10								
	6	0		0		0		6		15		16								
	7	0		0		0		6		11		14								
	8	0		0		0		4		14		9								
	9	0		0		0		5		8		10								
	10	0		0		0		5		13		12								
3.13	1	0		0		0		8		10		8						0.0%	23	3.4
	2	0		0		0		7		10		2								
	3	0		0		0		4		8		10								
	4	0		0		0		5		14		9								
	5	0		0		0		5		8		7								
	6	0		0		0		4		8		10								
	7	0		0		0		7		9		12								
	8	0		0		0		7		16		0								
	9	0		0		0		4		11		4								
	10	0		0		0		6		12		6								
6.25	1	0		0		0		5		7		4						0.0%	23	7.3
	2	0		0		0		4		12		5								
	3	0		0		0		4		0		6								
	4	0		0		0		6		17		9								
	5	0		0		0		4		13		14								
	6	0		0		0		6		13		12								
	7	0		0		0		8		9		8								
	8	0		0		0		4		11		9								
	9	0		0		0		4		10		2								
	10	0		0		0		6		13		4								
12.5	1	0		0		0		8		13		10						0.0%	24	4.1
	2	0		0		0		6		9		3								
	3	0		0		0		8		10		7								
	4	0		0		0		7		14		6								
	5	0		0		0		3		11		7								
	6	0		0		0		4		10		10								
	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	8	0		0		0		7		12		4								
	9	0		0		0		5		13		8								
	10	0		0		0		5		12		2								
25	1	0		0		0		7		13		4						0.0%	24	2.4
	2	0		0		0		6		9		6								
	3	0		0		0		5		9		7								
	4	0		0		0		5		16		4								
	5	0		0		0		6		16		6								
	6	0		0		0		7		10		7								
	7	0		0		0		8		11		8								
	8	0		0		0		9		11		4								
	9	0		0		0		7		16		3								
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
50	1	0		0		0		4		15		4						0.0%	24	3.1
	2	0		0		0		5		19		5								
	3	0		0		0		4		13		11								
	4	0		0		0		5		11		8								
	5	0		0		0		6		8		9								
	6	0		0		0		5		9		6								
	7	0		0		0		7		7		12								
	8	0		0		0		4		8		11								
	9	0		0		0		4		13		3								
	10	0		0		0		6		9		6								
100	1	0		0		0		7		7		4						0.0%	25	5.0
	2	0		0		0		6		12		0								
	3	0		0		0		7		6		13								
	4	0		0		0		4		12		15								
	5	0		0		0		6		13		12								
	6	0		0		0		6		8		10								
	7	0		0		0		5		8		14								
	8	0		0		0		6		12		9								
	9	0		0		0		4		11		10								
	10	0		0		0		3		8		7								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/22	25	8.1	7.3	23/09/23	26	7.7	5.6
1.56		25	8.0	7.3		26	7.6	5.6
3.13		25	7.9	7.4		25	7.5	5.4
6.25		25	7.8	7.5		26	7.4	5.5
12.5		24	7.8	7.5		26	7.4	5.8
25		24	7.7	7.8		25	7.4	5.7
50		24	7.6	8.1		25	7.5	5.8
100		24	7.6	9.2		25	7.5	5.6
Control	23/09/23	25	8.2	7.3	23/09/24	25	8.2	6.9
1.56		25	8.1	7.3		25	8.0	6.6
3.13		25	8.0	7.3		25	8.0	6.9
6.25		25	7.9	7.3		25	7.8	6.7
12.5		25	7.8	7.3		25	7.9	7.1
25		25	7.8	7.4		25	7.8	6.8
50		25	7.7	7.5		25	7.9	7.2
100		25	7.6	8.0		25	7.8	6.9
Control	23/09/24	25	8.1	7.1	23/09/25	25	7.6	5.7
1.56		25	8.1	7.2		25	7.7	6.0
3.13		25	7.9	7.0		25	7.6	6.2
6.25		25	7.8	7.1		25	7.5	6.3
12.5		25	7.8	7.1		25	7.5	6.3
25		25	7.7	7.3		25	7.5	6.4
50		25	7.6	7.6		25	7.7	6.7
100		25	7.5	8.0		25	7.6	6.8
Control	23/09/25	25	7.6	7.3	23/09/26	24	7.2	5.8
1.56		25	7.6	7.3		25	7.1	5.9
3.13		25	7.6	7.3		24	7.1	6.0
6.25		25	7.5	7.3		24	7.3	6.2
12.5		25	7.5	7.4		24	7.4	6.1
25		25	7.5	7.4		24	7.4	5.9
50		25	7.5	7.7		24	7.4	6.1
100		25	7.4	8.1		24	7.6	6.3
Control	23/09/26	24	8.0	7.2	23/09/27	26	7.2	5.7
1.56		24	7.9	7.2		26	7.1	6.0
3.13		24	7.9	7.2		26	7.1	5.8
6.25		24	7.9	7.2		26	7.1	5.8
12.5		24	7.8	7.3		26	7.2	6.1
25		24	7.7	7.4		26	7.1	6.1
50		24	7.7	7.7		26	7.3	6.2
100		25	7.5	8.3		25	7.3	6.3
Control	23/09/27	24	8.0	7.2	23/09/28	26	7.2	5.8
1.56		24	7.9	7.2		26	7.2	5.6
3.13		24	7.9	7.3		26	7.1	5.5
6.25		24	7.7	7.3		26	7.1	5.6
12.5		24	7.7	7.3		26	7.2	5.8
25		24	7.6	7.5		25	7.0	5.2
50		24	7.5	7.7		25	7.2	5.1
100		24	7.5	8.3		25	7.4	5.8
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C375348-BZR864
Client Sample ID: 1645-45
Date sample collected: 9/20/2023
Test Performed By: NM9,THR,CSH,KMG,SVC
Test Initiation Date: 9/22/2023
Test End Date: 9/28/2023
Dates when subsamples used: 9/22/2023 9/26/2023
9/23/2023 9/27/2023
9/24/2023
9/25/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 7.8
Temperature (°C): 24
pH(pH units): 7.9
Conductivity (µS/cm): 690

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation	Log-x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log-x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear Interpolation	Log-x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Daphnia present in sample and removed via pipette prior to water changes 2023/09/22, 2023/09/23, 2023/09/24, and 2023/09/27.

50% concentration analyzed with 9 organisms.

The sample was aerated unnecessarily prior to water change 2023/09/23. This is a deviation from the requirements specified in the reference method in which aeration is specified as a requirement only when the Dissolved Oxygen is outside 40% to 100% saturation.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	0
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	33
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/23/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		12		12						0.0%	29	5.6
	2	0		0		0		7		13		14								
	3	0		0		0		7		11		12								
	4	0		0		0		5		9		11								
	5	0		0		0		5		10		15								
	6	0		0		0		7		11		10								
	7	0		0		0		4		12		11								
	8	0		0		0		6		13		16								
	9	0		0		0		4		12		0								
	10	0		0		0		7		14		13								
1.56	1	0		0		0		3		14		0						0.0%	27	5.7
	2	0		0		0		5		13		10								
	3	0		0		0		6		14		13								
	4	0		0		0		3		7		9								
	5	0		0		0		8		8		18								
	6	0		0		0		5		11		15								
	7	0		0		0		3		10		12								
	8	0		0		0		7		11		9								
	9	0		0		0		8		12		12								
	10	0		0		0		7		10		9								
3.13	1	0		0		0		7		12		0						0.0%	30	4.3
	2	0		0		0		8		12		12								
	3	0		0		0		8		10		16								
	4	0		0		0		9		13		12								
	5	0		0		0		7		10		14								
	6	0		0		0		8		7		16								
	7	0		0		0		10		9		10								
	8	0		0		0		5		9		14								
	9	0		0		0		8		11		12								
	10	0		0		0		4		12		12								
6.25	1	0		0		0		7		12		0						10.0%	26	11.2
	2	0		0		0		5		12		0								
	3	0		0		0		8		12		16								
	4	0		0		0		8		12		15								
	5	0		0		0		0		10		13								
	6	0		0		0		8		11		12								
	7	0		0		0		5		12		13								
	8	0		0		0		9		12		13								
	9	0		0		0		0	x											
	10	0		0		0		6		11		15								
12.5	1	0		0		0		5		9		0						0.0%	25	10.5
	2	0		0		0		3		10		0								
	3	0		0		0		8		15		14								
	4	0		0		0		8		12		14								
	5	0		0		0		0		7		14								
	6	0		0		0		7		12		12								
	7	0		0		0		6		10		13								
	8	0		0		0		6		12		15								
	9	0		0		0		0		6		0								
	10	0		0		0		6		9		13								
25	1	0		0		0		4		11		12						0.0%	29	5.5
	2	0		0		0		6		11		0								
	3	0		0		0		6		10		16								
	4	0		0		0		6		12		15								
	5	0		0		0		7		12		15								
	6	0		0		0		4		12		12								
	7	0		0		0		8		11		15								
	8	0		0		0		5		12		12								
	9	0		0		0		5		12		12								
	10	0		0		0		0		10		12								
50	1	0		0		0		0	x									11.1%	25	13.1
	2	0		0		0		9		13		12								
	3	0		0		0		5		13		16								
	4	0		0		0		9		13		12								
	5	0		0		0		0		12		16								
	6	0		0		0		8		11		12								
	7	0		0		0		7		12		12								
	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	9	0		0		0		5		0		0								
	10	0		0		0		8		9		12								
100	1	0		0		0		9		11		14						10.0%	27	7.3
	2	0		0		0		8		13		13								
	3	0		0		0		9		11		15								
	4	0		0		0		0		11		15								
	5	0		0		0		0		9		14								
	6	0		0		0		0		12		16								
	7	0		0		0		0		12		12								
	8	0		0		0		7		9		13								
	9	0		0		0		6		11		12								
	10	0		0		0		0		10		0	x							

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/22	25	8.2	7.3	23/09/23	26	8.0	6.5
1.56		25	8.1	7.3		26	7.8	6.4
3.13		25	8.0	7.3		26	7.7	6.2
6.25		25	7.9	7.3		26	7.8	6.1
12.5		24	7.8	7.4		26	7.8	6.4
25		24	7.8	7.4		25	7.8	6.3
50		24	7.7	7.6		25	7.9	6.2
100		24	7.7	7.8		25	8.0	5.7
Control	23/09/23	25	8.2	7.2	23/09/24	24	8.2	6.9
1.56		25	8.2	7.1		25	8.1	6.8
3.13		25	8.1	7.2		25	7.9	6.6
6.25		25	8.0	7.3		25	7.9	6.5
12.5		25	8.0	7.2		25	7.9	6.3
25		25	7.9	7.2		25	8.0	6.5
50		25	7.8	7.0		25	8.0	6.4
100		25	7.7	6.3		25	8.2	6.5
Control	23/09/24	24	8.3	7.3	23/09/25	25	7.4	5.2
1.56		24	8.2	7.4		25	7.6	5.6
3.13		24	8.1	7.3		25	7.5	5.5
6.25		24	8.0	7.3		25	7.5	5.6
12.5		24	8.0	7.3		25	7.3	5.0
25		24	8.0	7.2		25	7.5	5.5
50		24	7.9	7.1		25	7.8	5.2
100		24	7.9	6.9		25	8.0	5.4
Control	23/09/25	25	7.8	7.3	23/09/26	26	7.6	6.0
1.56		25	7.8	7.2		26	7.6	5.9
3.13		25	7.8	7.2		26	7.4	6.0
6.25		25	7.8	7.2		26	7.3	6.0
12.5		25	7.7	7.2		26	7.4	6.0
25		25	7.6	7.2		25	7.5	5.8
50		25	7.6	7.1		25	7.6	5.8
100		25	7.6	6.7		25	7.9	5.7
Control	23/09/26	24	8.1	7.1	23/09/27	24	7.5	5.5
1.56		25	8.0	7.1		24	7.4	5.5
3.13		24	7.9	7.1		25	7.3	5.5
6.25		24	7.7	7.1		25	7.2	5.3
12.5		24	7.6	7.1		24	7.3	5.4
25		24	7.6	7.1		24	7.4	5.5
50		24	7.6	7.0		25	7.5	5.3
100		24	7.6	6.8		24	7.8	5.1
Control	23/09/27	24	8.1	7.3	23/09/28	25	7.3	5.5
1.56		25	8.0	7.3		25	7.3	5.5
3.13		25	7.9	7.3		25	7.3	5.1
6.25		25	7.8	7.3		25	7.3	5.5
12.5		24	7.7	7.3		25	7.2	4.2
25		24	7.7	7.2		25	7.3	4.8
50		24	7.6	7.1		25	7.6	4.5
100		25	7.6	6.8		25	7.8	4.5
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C376897

Client Project Name & Number: Closure — Sample Number: CAC897-03

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-47 — Sample Matrix : Grab Water

Description:	Clear, colourless			Sample Prior to Analysis:	
Sample Collected:	Jun 25, 2023 03:25 PM	Sampling Method :	N/A	pH:	7.7
Sample Collected By:	N/A	Site Collection: N/A		Temperature :	18 °C
Sample Received:	Sep 26, 2023 01:57 PM	Volume Received:	1 L	Dissolved Oxygen:	124.0 %
Analysis Start :	Sep 27, 2023 12:22 PM	Avg Temp Arrival:	5 °C	Sample Conductance:	409 µS/cm
End :	Sep 29, 2023 11:25 AM	Storage:	2-6°C	Hardness:	200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	304	8.1	0	0	0	0	20	7.9	317	6.8
6.25	20	7.9	313	8.2	0	0	0	0	20	8.0	316	7.9
12.5	20	8.0	319	8.2	0	0	0	0	20	7.9	325	7.6
25	20	8.0	334	8.4	0	0	0	0	20	7.9	340	7.6
50	20	7.9	360	8.7	0	0	0	0	20	7.8	369	7.6
100	20	7.5	423	9.5	0	0	0	0	20	7.5	443	7.1

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	22.9
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.4
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C376897
Client Project Name & Number:		Closure	Sample Number:	CAC897-03

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Natasha Lloyd, Svetlana Sofrenovic, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Oct 07, 2023 02:56 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C376897

Client Project Name & Number: Closure — Sample Number: CAC899-03

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-87 — Sample Matrix : Grab Water

Description: Pale yellow, clear — Sample Prior to Analysis:

Sample Collected: Jun 25, 2023 04:00 PM — Sampling Method : N/A — pH: 7.6

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 26, 2023 01:57 PM — Volume Received: 1 L — Dissolved Oxygen: 121.0 %

Analysis Start : Sep 27, 2023 12:25 PM — Avg Temp Arrival: 5 °C — Sample Conductance: 249 µS/cm

End : Sep 29, 2023 11:25 AM — Storage: 2-6°C — Hardness: 120 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	303	8.1	0	0	0	0	20	8.0	300	7.8
6.25	20	8.1	301	8.2	0	0	0	0	20	8.0	304	7.9
12.5	20	8.1	298	8.2	0	0	0	0	20	8.0	306	8.0
25	20	8.1	292	8.2	0	0	0	0	20	8.0	295	8.0
50	20	7.9	278	8.4	0	0	0	0	20	7.8	282	8.0
100	20	7.5	256	9.1	0	0	0	0	20	7.6	263	7.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 22.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.4

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C376897
Client Project Name & Number:		Closure	Sample Number:	CAC899-03

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Natasha Lloyd, Svetlana Sofrenovic, Tami Horvath

Verified By : Cara Shurgot, Analyst 2 Date: Oct 07, 2023 02:58 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C376897

Client Project Name & Number: Closure — Sample Number: CAC896-03

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-42 — Sample Matrix : Grab Water

Description: Clear, coloulress — Sample Prior to Analysis:

Sample Collected: Sep 25, 2023 02:30 PM — Sampling Method : N/A — pH: 7.3

Sample Collected By: N/A — Site Collection: N/A — Temperature : 19 °C

Sample Received: Sep 26, 2023 01:57 PM — Volume Received: 1 L — Dissolved Oxygen: 130.0 %

Analysis Start : Sep 27, 2023 12:18 PM — Avg Temp Arrival: 5 °C — Sample Conductance: 1485 µS/cm

End : Sep 29, 2023 11:25 AM — Storage: 2-6°C — Hardness: 380 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	304	8.1	0	0	0	0	20	7.8	307	7.5
6.25	20	8.1	379	8.2	0	0	0	0	19	7.7	388	6.9
12.5	20	8.0	456	8.2	0	0	0	0	20	7.8	459	7.3
25	20	7.9	620	8.4	0	0	0	0	20	7.9	616	7.9
50	20	7.7	901	8.7	0	0	0	0	20	7.8	896	8.0
100	20	7.4	1514	9.5	0	0	0	0	20	7.7	1517	8.0

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/min/L

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 22.9

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 3.4

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C376897
Client Project Name & Number:		Closure	Sample Number:	CAC896-03

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Svetlana Sofrenovic, Tami Horvath

Verified By : Natasha Lloyd, Team Lead Date: Oct 10, 2023 10:22 AM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C376897

Client Project Name & Number: Closure — Sample Number: CAC898-03

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : 1645-74 — Sample Matrix : Grab Water

Description:	Yellow, clear			Sample Prior to Analysis:	
Sample Collected:	Sep 25, 2023 01:50 PM	Sampling Method :	N/A	pH:	7.4
Sample Collected By:	N/A	Site Collection: N/A		Temperature :	18 °C
Sample Received:	Sep 26, 2023 01:57 PM	Volume Received:	1 L	Dissolved Oxygen:	108.0 %
Analysis Start :	Sep 27, 2023 12:33 PM	Avg Temp Arrival:	5 °C	Sample Conductance:	477 µS/cm
End :	Sep 29, 2023 11:45 AM	Storage:	2-6°C	Hardness:	200 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.0	303	8.2	0	0	0	0	20	7.8	305	7.7
6.25	20	8.0	316	8.2	0	0	0	0	20	7.9	317	7.8
12.5	20	7.9	327	8.2	0	0	0	0	20	7.9	328	8.0
25	20	7.8	352	8.3	0	0	0	0	20	7.9	357	7.8
50	20	7.7	403	8.4	0	0	0	0	20	7.9	405	7.6
100	19	7.5	494	8.9	0	0	0	0	20	7.8	512	7.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	22.9
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.4
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C376897
Client Project Name & Number:		Closure	Sample Number:	CAC898-03

Reference chemical:	Sodium Chloride	Test Date:	Sep 13, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.95 (4.43, 8.00) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Rayane Gama Santos, Svetlana Sofrenovic

Verified By : Natasha Lloyd, Team Lead Date: Oct 10, 2023 10:24 AM

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C376897-CAC896
Client Sample ID: 1645-42
Date sample collected: 9/25/2023
Test Performed By: NM9,THR,SVC,CSH,KMG
Test Initiation Date: 9/27/2023
Test End Date: 10/4/2023
Dates when subsamples used: 9/27/2023 10/1/2023
9/28/2023 10/2/2023
9/29/2023 10/3/2023
9/30/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 10.4
Temperature (°C): 24
pH(pH units): 7.7
Conductivity (µS/cm): 1631

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear nterpolation	Log x	n/a
	7 day Reproduction Result	IC25	73.5	5.17	n/a	Linear nterpolation	Log x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear nterpolation	Log x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13 Concentration analyzed with 9 organisms.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	8.5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	47
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/27/2023 10/1/2023 9/28/2023 10/2/2023 9/29/2023 10/3/2023 9/30/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		3		9		0		21				0.0%	28	4.4
	2	0		0		0		4		10		0		18						
	3	0		0		0		0		9		12		6						
	4	0		0		0		0		7		0		16						
	5	0		0		0		5		9		0		17						
	6	0		0		0		3		11		10								
	7	0		0		0		7		12		0		16						
	8	0		0		0		2		8		0		18						
	9	0		0		0		3		7		12								
	10	0		0		0		3		10		0		16						
1.56	1	0		0		0		5		16		10		0				20.0%	24	8.8
	2	0		0		0		4		10		14								
	3	0		0		0		2		13		0		16						
	4	0		0		0		3	x											
	5	0		0		0		4		13		0		15						
	6	0		0		0		3		7		0		16						
	7	0		0		0		2		10		0		14						
	8	0		0		0		3		8		0		17						
	9	0		0		0		2		13		6								
	10	0		0		0		3		14		0	x							
3.13	1	0		0		0		4		8		0		18				0.0%	28	3.7
	2	0		0		0		0		8		0		17						
	3	0		0		0		4		11		0		15						
	4	0		0		0		3		13		0		17						
	5	0		0		0		5		2		0		13						
	6	0		0		0		5		6		0		18						
	7	0		0		0		5		7		0		16						
	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	9	0		0		0		4		8		0		18						
	10	0		0		0		5		6		0		16						
6.25	1	0		0		0		3		10		9						20.0%	19	12.2
	2	0		0		0		3		9		0		21						
	3	0		0		0		5		9		0		18						
	4	0		0		0		5		4		0		3						
	5	0		0		0		5		3		0		15						
	6	0		0		0		4		7		0		16						
	7	0		0		0		3		8		0		0						
	8	0		0		0	x													
	9	0		0		0	x													
	10	0		0		0		5		4		0		17						
12.5	1	0		0		0		5		8		0		19				0.0%	28	8.3
	2	0		0		0		5		10		0		20						
	3	0		0		0		4		7		0		12						
	4	0		0		0		3		10		13								
	5	0		0		0		3		8		0		0						
	6	0		0		0		5		6		0		23						
	7	0		0		0		4		8		12								
	8	0		0		0		4		11		0		15						
	9	0		0		0		0		12		15		14						
	10	0		0		0		3		8		0		13						
25	1	0		0		0		6		12		12						0.0%	24	7.4
	2	0		0		0		5		9		0		16						
	3	0		0		0		6		8		0		0						
	4	0		0		0		5		10		0		14						
	5	0		0		0		3		8		0		18						
	6	0		0		0		6		9		0		17						
	7	0		0		0		5		4		12								
	8	0		0		0		3		8		0		0						
	9	0		0		0		6		9		12								
	10	0		0		0		2		4		14								
50	1	0		0		0		4		11		12						10.0%	22	8.4
	2	0		0		0		3		8		13								
	3	0		0		0		9		10		7								
	4	0		0		0		3		12		0		7						
	5	0		0		0		4		10		0		13						
	6	0		0		0		6		4		0		19						
	7	0		0		0		5		6		7								
	8	0		0	x															
	9	0		0		0		3		2		0		20						
	10	0		0		0		4		4		0		17						
100	1	0		0		0		5		8		0		11				10.0%	21	8.6
	2	0		0		0		5		7		13								
	3	0		0		0		6		4		10								
	4	0		0		0		5		12		0		7						
	5	0		0		0		6		9		0		6						
	6	0		0		0		3		10		0		11						
	7	0		0		0		7		12		12								
	8	0		0		0		4		13		0		7						
	9	0		0		0		4		4		4								
	10	0		0	x															

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/27	25	8.1	7.4	23/09/28	25	7.5	6.1
1.56		25	8.0	7.4		25	7.5	5.9
3.13		25	7.9	7.5		25	7.5	5.9
6.25		25	7.9	7.6		25	7.4	6.0
12.5		25	7.8	7.6		25	7.3	5.8
25		24	7.7	7.9		25	7.1	6.0
50		24	7.5	8.5		25	7.2	6.0
100		24	7.2	10.1		24	7.2	6.1
Control	23/09/28	24	7.8	7.4	23/09/29	24	7.3	4.3
1.56		25	7.7	7.3		24	7.3	4.1
3.13		25	7.7	7.4		24	7.2	4.0
6.25		25	7.6	7.5		24	7.3	3.9
12.5		24	7.6	7.6		24	7.3	4.1
25		24	7.4	7.8		24	7.3	4.2
50		24	7.2	8.1		24	7.2	4.4
100		24	6.9	9.4		24	7.2	5.5
Control	23/09/29	25	7.8	7.2	23/09/30	25	7.4	4.9
1.56		25	7.9	7.3		25	7.3	4.8
3.13		25	7.9	7.3		25	7.3	4.8
6.25		25	7.8	7.3		25	7.3	4.9
12.5		25	7.7	7.4		26	7.2	5.0
25		24	7.5	7.5		25	7.2	5.1
50		24	7.3	8.0		25	7.2	5.5
100		24	7.0	9.0		25	7.2	6.0
Control	23/09/30	25	7.8	7.3	23/10/01	24	7.7	6.8
1.56		25	7.7	7.3		25	7.7	6.7
3.13		25	7.7	7.3		24	7.6	6.6
6.25		25	7.6	7.4		25	7.6	6.8
12.5		25	7.5	7.4		25	7.5	6.6
25		25	7.4	7.6		24	7.5	6.7
50		25	7.2	7.9		25	7.3	6.6
100		25	6.9	8.9		24	7.3	6.4
Control	23/10/01	25	8.4	7.6	23/10/02	24	7.7	6.0
1.56		25	7.9	7.5		24	7.5	6.1
3.13		25	7.8	7.5		24	7.3	5.9
6.25		25	7.7	7.6		24	7.3	6.1
12.5		25	7.6	7.7		24	7.3	6.2
25		25	7.5	7.9		24	7.3	6.1
50		25	7.2	8.0		24	7.2	6.1
100		25	6.9	9.2		24	7.2	6.1
Control	23/10/02	25	7.8	7.4	23/10/03	26	7.2	5.0
1.56		25	7.7	7.4		26	7.3	5.0
3.13		25	7.7	7.4		25	7.2	4.8
6.25		25	7.6	7.4		25	7.1	4.9
12.5		25	7.5	7.5		25	7.1	4.8
25		25	7.3	7.4		25	7.1	5.1
50		24	7.1	7.9		25	7.0	5.1
100		24	6.8	9.3		24	7.0	4.7
Control	23/10/03	24	7.7	7.2	23/10/04	25	7.4	5.8
1.56		24	7.7	7.3		26	7.4	5.7
3.13		24	7.7	7.3		26	7.3	5.6
6.25		24	7.7	7.5		26	7.3	5.8
12.5		24	7.6	7.7		25	7.3	5.7
25		24	7.5	7.8		26	7.3	5.8
50		24	7.2	8.5		26	7.3	5.7
100		24	7.0	9.4		25	7.3	5.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C376897-CAC897
Client Sample ID: 1645-47
Date sample collected: 9/25/2023
Test Performed By: NM9,THR,CSH,KMG SVC
Test Initiation Date: 9/27/2023
Test End Date: 10/4/2023
Dates when subsamples used: 9/27/2023 10/1/2023
9/28/2023 10/2/2023
9/29/2023 10/3/2023
9/30/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 10.5
Temperature (°C): 25
pH(pH units): 8.0
Conductivity (µS/cm): 487

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear nterpolation	Log x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear nterpolation	Log x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear nterpolation	Log x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

1.56% snd 25% Concentration analyzed with 9 organisms.

50% Concentration analyzed with 8 organisms.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	8.5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	47
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/27/2023 10/1/2023 9/28/2023 10/2/2023 9/29/2023 10/3/2023 9/30/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		9		13						10.0%	25	8.1
	2	0		0		0		6		7		14								
	3	0		0		0		3		8		0		11						
	4	0		0		0		4	x											
	5	0		0		0		0		8		5		15						
	6	0		0		0		4		10		0		17						
	7	0		0		0		3		6		0		18						
	8	0		0		0		4		5		0		16						
	9	0		0		0		0		4		10		20						
	10	0		0		0		5		6		13								
1.56	1	0		0		0		3		0	x							11.1%	22	9.7
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	3	0		0		0		6		5		10								
	4	0		0		0		3		10		10								
	5	0		0		0		3		7		10								
	6	0		0		0		5		8		18								
	7	0		0		0		4		9		0		18						
	8	0		0		0		0		7		10		16						
	9	0		0		0		3		10		12								
	10	0		0		0		2		3		7								
3.13	1	0		0		0		6		13		14						10.0%	24	10.3
	2	0		0		0		0		8		11		15						
	3	0		0	x															
	4	0		0		0		3		5		13								
	5	0		0		0		2		10		0		18						
	6	0		0		0		4		4		9								
	7	0		0		0		2		12		0		19						
	8	0		0		0		4		7		0		13						
	9	0		0		0		3		7		0		18						
	10	0		0		0		3		10		10								
6.25	1	0		0		0		5		7		14						0.0%	29	6.2
	2	0		0		0		4		5		0		18						
	3	0		0		0		5		9		0		12						
	4	0		0		0		5		12		14								
	5	0		0		0		0		9		16		16						
	6	0		0		0		0		5		13		20						
	7	0		0		0		4		9		0		14						
	8	0		0		0		5		6		0		13						
	9	0		0		0		4		7		0		16						
	10	0		0		0		0		9		12		0						
12.5	1	0		0		0		4		12		18						0.0%	30	3.5
	2	0		0		0		2		9		12								
	3	0		0		0		5		12		0		14						
	4	0		0		0		2		11		18								
	5	0		0		0		3		10		15								
	6	0		0		0		5		8		18								
	7	0		0		0		3		8		0		19						
	8	0		0		0		5		11		0		20						
	9	0		0		0		4		9		0		16						
	10	0		0		0		4		8		0		17						
25	1	0		0		0		3		12		12						22.2%	24	11.2
	2	0		0		0		5		9		19								
	3	0		0		0		5		9		0		19						
	4	0		0		0		5		9		13								
	5	0		0		0		4		4	x									
	6	0		0		0		4		7		16								
	7	0		0		0		3		12		0		17						
	8	0		0		0		4		5		0		18						
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		2	x											
50	1	0		0		0		4		11		16						0.0%	34	5.9
	2	0		0		0		4		9		18								
	3	0		0		0		5		11		18								
	4	0		0		0		0		5		10		17						
	5	0		0		0		6		10		11								
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		0		12		17		18						
	8	0		0		0		3		9		0		21						
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		6		9		0		20						
100	1	0		0		0		3		9		14						20.0%	21	14.1
	2	0		0		0		4		10		16								
	3	0		0		0		2		11		18								
	4	0		0	x															
	5	0		0		0		5		7		13		19						
	6	0		0		0		0		0		9		0						
	7	0		0		0		5		6		12								
	8	0		0		0		4		7		0		16						
	9	0		0		0		3		7		10								
	10	0		0	x															

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/27	25	8.0	7.4	23/09/28	25	7.4	5.8
1.56		25	7.9	7.4		25	7.3	5.8
3.13		25	7.9	7.4		25	7.4	5.8
6.25		25	7.9	7.5		26	7.4	5.8
12.5		25	7.8	7.6		26	7.3	5.7
25		25	7.8	7.8		26	7.0	5.7
50		24	7.7	8.2		24	7.2	5.7
100		24	7.5	9.1		24	7.0	5.5
Control	23/09/28	24	7.7	7.4	23/09/29	26	7.2	4.4
1.56		24	7.7	7.4		26	7.3	4.4
3.13		25	7.7	7.4		26	7.2	4.3
6.25		24	7.7	7.5		25	7.2	4.4
12.5		24	7.6	7.6		26	7.2	4.5
25		24	7.5	7.7		25	7.2	4.6
50		24	7.4	7.9		25	7.3	4.7
100		24	7.1	9.1		25	7.2	5.0
Control	23/09/29	24	7.7	7.2	23/09/30	25	7.5	5.6
1.56		25	7.9	7.2		25	7.5	5.5
3.13		25	7.8	7.3		25	7.4	5.4
6.25		25	7.9	7.3		25	7.3	5.4
12.5		25	7.8	7.4		25	7.4	5.3
25		24	7.7	7.6		25	7.3	5.1
50		24	7.5	8.0		25	7.2	5.2
100		24	7.2	8.9		25	7.1	5.9
Control	23/09/30	24	7.8	7.3	23/10/01	25	8.0	6.0
1.56		25	7.8	7.3		25	7.5	6.1
3.13		25	7.7	7.3		25	7.5	6.0
6.25		25	7.7	7.4		26	7.4	6.0
12.5		25	7.7	7.4		25	7.4	6.1
25		25	7.6	7.5		25	7.3	6.0
50		25	7.4	7.7		25	7.2	6.1
100		25	7.1	8.5		25	7.1	5.8
Control	23/10/01	25	7.8	7.3	23/10/02	25	7.1	5.1
1.56		25	7.7	7.4		26	7.2	5.4
3.13		25	7.7	7.4		25	7.1	5.1
6.25		25	7.6	7.5		26	7.1	5.6
12.5		25	7.6	7.5		25	7.1	5.5
25		25	7.5	7.6		25	7.0	5.3
50		25	7.3	8.0		25	6.9	5.5
100		25	7.0	8.7		25	6.9	5.7
Control	23/10/02	25	7.7	7.2	23/10/03	24	7.3	5.8
1.56		25	7.7	7.2		24	7.4	6.0
3.13		25	7.7	7.2		24	7.3	5.5
6.25		25	7.6	7.2		24	7.4	5.7
12.5		25	7.6	7.4		24	7.2	5.9
25		24	7.5	7.5		24	7.4	5.8
50		25	7.3	7.9		24	7.2	5.9
100		25	7.0	8.9		24	7.0	5.8
Control	23/10/03	25	7.7	7.2	23/10/04	25	7.4	5.8
1.56		25	7.7	7.2		25	7.5	5.9
3.13		25	7.7	7.3		25	7.4	5.7
6.25		25	7.6	7.3		25	7.3	5.8
12.5		25	7.6	7.4		25	7.3	5.5
25		25	7.5	7.6		25	7.5	5.7
50		25	7.3	7.9		25	7.2	5.7
100		25	7.0	8.9		25	7.2	5.9
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C376897-CAV898
Client Sample ID: 1645-74
Date sample collected: 9/25/2023
Test Performed By: NM9,SVC,THR,CSH,KMG
Test Initiation Date: 9/27/2023
Test End Date: 10/4/2023
Dates when subsamples used: 9/27/2023 10/1/2023
9/28/2023 10/2/2023
9/29/2023 10/3/2023
9/30/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 24
pH(pH units): 7.9
Conductivity (µS/cm): 557

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear nterpolation	Log x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear nterpolation	Log x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear nterpolation	Log x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

1.56%, 6.25%, 50% Concentration analyzed with 9 organisms each.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	8.5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	47
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/27/2023 10/1/2023 9/28/2023 10/2/2023 9/29/2023 10/3/2023 9/30/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		9		17						0.0%	28	5.5
	2	0		0		0		3		12		0		18						
	3	0		0		0		6		8		0		15						
	4	0		0		0		5		8		0		13						
	5	0		0		0		6		11		0		14						
	6	0		0		0		0		8		11		10						
	7	0		0		0		4		10		0		0						
	8	0		0		0		4		6		0		18						
	9	0		0		0		5		10		0		14						
	10	0		0		0		5		10		0		16						
1.56	1	0		0		0		5		8		13						11.1%	23	10.9
	2	0		0		0		4		7		11								
	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	4	0		0		0		3		2		0		6						
	5	0		0		0	X													
	6	0		0		0		5		6		0		19						
	7	0		0		0		4		8		0		14						
	8	0		0		0		4		10		0		20						
	9	0		0		0		3		12		0		17						
	10	0		0		0		5		4		0		16						
3.13	1	0		0		0		5		12		0		14				0.0%	26	6.1
	2	0		0		0		3		8		0		7						
	3	0		0		0		4		9		10								
	4	0		0		0		0		7		11		13						
	5	0		0		0		6		6		0		22						
	6	0		0		0		4		8		0		16						
	7	0		0		0		4		9		0		3						
	8	0		0		0		5		4		0		14						
	9	0		0		0		7		3		0		17						
	10	0		0		0		6		9		0		17						
6.25	1	0		0		0		4		8		9						22.2%	23	12.1
	2	0		0		0		6		6		11								
	3	0		0		0		3		3		0		23						
	4	0		0		0		0		8		15		22						
	5	0		0		0		4		4		14								
	6	0		0	X															
	7	0		0		0		5		4		0		18						
	8	0		0		0		3		8		0		17						
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		4		10		0	X							
12.5	1	0		0		0		6		15		12						10.0%	28	4.0
	2	0		0		0		4		10		16								
	3	0		0		0		4		9		14								
	4	0		0		0		3		8		0		21						
	5	0		0		0		6		7		16								
	6	0		0		0		5		9		0		17						
	7	0		0		0		4		7		0		18						
	8	0		0		0		4		6		0		12	X					
	9	0		0		0		3		4		0		16						
	10	0		0		0		2		8		13								
25	1	0		0		0		5		12		16						0.0%	30	8.4
	2	0		0		0		4		10		14								
	3	0		0		0		0		9		18		14						
	4	0		0		0		0		6		17		18						
	5	0		0		0		0		10		12		17						
	6	0		0		0		6		9		6								
	7	0		0		0		3		9		15								
	8	0		0		0		5		12		0		0						
	9	0		0		0		4		5		0		15						
	10	0		0		0		4		10		0		19						
50	1	0		0		0		6		8		10						11.1%	25	6.6
	2	0		0		0		7		6		16								
	3	0		0		0		6		6		14								
	4	0		0		0		2		8		10								
	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	6	0		0		0		5		7		15								
	7	0		0		0		8		8		11								
	8	0		0		0		4		9		10								
	9	0		0		0		6		5		0	X							
	10	0		0		0		6		10		0		19						
100	1	0		0		0		5		8		17						0.0%	29	4.2
	2	0		0		0		6		7		11								
	3	0		0		0		4		9		15								
	4	0		0		0		7		8		11								
	5	0		0		0		5		0		5		11						
	6	0		0		0		6		10		16								
	7	0		0		0		8		12		15								
	8	0		0		0		3		9		16								
	9	0		0		0		5		6		20								
	10	0		0		0		4		13		15								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/27	26	7.7	6.6	23/09/28	26	7.5	6.6
1.56		26	7.8	7.2		26	7.7	6.8
3.13		26	7.8	7.4		26	7.5	6.6
6.25		26	7.7	7.4		26	7.6	6.5
12.5		25	7.7	7.5		26	7.4	6.3
25		26	7.7	7.6		25	7.5	6.3
50		25	7.5	8.0		25	7.4	6.1
100		25	7.4	8.8		25	7.5	6.9
Control	23/09/28	24	7.8	7.3	23/09/29	26	7.4	4.2
1.56		25	7.7	7.3		26	7.3	4.1
3.13		25	7.7	7.4		26	7.2	3.9
6.25		25	7.6	7.4		26	7.1	4.2
12.5		24	7.6	7.5		26	7.1	4.1
25		24	7.5	7.6		26	7.1	3.9
50		24	7.3	7.7		26	7.2	4.0
100		24	7.1	8.3		26	7.4	5.1
Control	23/09/29	25	7.7	7.2	23/09/30	25	7.7	6.1
1.56		25	7.9	7.2		25	7.5	6.0
3.13		25	8.0	7.3		25	7.4	6.0
6.25		25	7.7	7.3		25	7.4	6.1
12.5		25	7.7	7.4		25	7.3	6.0
25		25	7.7	7.5		25	7.5	6.1
50		25	7.4	7.7		25	7.3	5.6
100		24	7.2	8.3		25	7.5	5.8
Control	23/09/30	24	7.4	7.4	23/10/01	24	7.2	5.7
1.56		24	7.4	7.3		25	7.1	5.7
3.13		24	7.3	7.4		24	7.1	5.6
6.25		24	7.3	7.4		24	7.1	5.6
12.5		24	7.3	7.4		24	7.0	5.5
25		24	7.2	7.4		24	7.2	5.6
50		25	7.1	7.5		25	7.2	5.5
100		26	7.0	7.6		24	7.4	5.9
Control	23/10/01	24	7.8	7.3	23/10/02	24	7.4	5.7
1.56		25	7.8	7.4		25	7.4	5.8
3.13		25	7.7	7.4		24	7.4	5.7
6.25		25	7.7	7.4		25	7.3	5.7
12.5		25	7.5	7.4		25	7.2	5.4
25		25	7.4	7.5		24	7.2	5.4
50		25	7.2	7.6		24	7.3	5.5
100		25	7.0	8.0		24	7.4	5.6
Control	23/10/02	25	7.7	7.2	23/10/03	25	7.3	5.2
1.56		25	7.7	7.2		26	7.4	5.2
3.13		25	7.7	7.2		25	7.3	5.1
6.25		25	7.6	7.3		25	7.2	5.1
12.5		25	7.5	7.3		25	7.1	5.0
25		25	7.3	7.4		25	7.2	5.1
50		24	7.2	7.5		25	7.2	5.2
100		25	7.0	7.9		24	7.3	5.2
Control	23/10/03	25	7.9	7.2	23/10/04	26	7.3	5.2
1.56		25	7.7	7.2		26	7.1	4.0
3.13		25	7.7	7.3		26	7.2	5.1
6.25		25	7.7	7.3		26	7.2	5.1
12.5		25	7.6	7.3		26	7.2	4.9
25		25	7.4	7.5		26	7.2	4.9
50		25	7.3	7.7		26	7.1	3.7
100		25	7.1	8.2		25	7.2	3.7
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C376897-CAC899
Client Sample ID: 1645-87
Date sample collected: 9/25/2023
Test Performed By: NM9,SVC,CSH,THR,KMG
Test Initiation Date: 9/27/2023
Test End Date: 10/4/2023
Dates when subsamples used: 9/27/2023 10/1/2023
9/28/2023 10/2/2023
9/29/2023 10/3/2023
9/30/2023

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.9
Temperature (°C): 25
pH(pH units): 8.0
Conductivity (µS/cm): 282

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear nterpolation	Log x	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear nterpolation	Log x	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.52	1.33	1.73	Untrimed Spearman Karber	Log x	n/a
	7 day Reproduction Result	IC50	1.32	1.22	1.38	Linear nterpolation	Log x	n/a
Control Chart Data (g/L)	7 day Survival Result	LC50	1.46	1.18	1.80	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.29	1.10	1.51			
Reference Toxicant Test Initiation Date:			2023/09/22					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

3.13%, 6.25%, 12.5% Concentration analyzed with 9 organisms each.

1.56% and 25% Concentration analyzed with 8 organisms each.

Indigenous organisms present.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	8.5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	47
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	9/27/2023 10/1/2023 9/28/2023 10/2/2023 9/29/2023 10/3/2023 9/30/2023
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		3		10		6						10.0%	21	9.1
	2	0		0	X															
	3	0		0		0		3		10		3								
	4	0		0		0		5		11		10								
	5	0		0		0		4		5		7								
	6	0		0		0		2		10		9								
	7	0		0		0		0		8		13		10						
	8	0		0		0		2		11		0		11						
	9	0		0		0		0		5		7		15						
	10	0		0		0		4		10		0		16						
1.56	1	0		0		0		4		8		2						12.5%	24	6.4
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	3	0		0		0		2		0		8		16						
	4	0		0		0		6		12		0		13						
	5	0		0		0		5		10		7								
	6	0		0		0		7		9		0		0	X					
	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	8	0		0		0		6		7		14								
	9	0		0		0		0		7		7		17						
	10	0		0		0		4		8		9								
3.13	1	0		0		0		6		10		0		16				11.1%	22	10.3
	2	0		0		0		4		8		0		20						
	3	0		0	X															
	4	0		0		0		6		12		0		0						
	5	0		0		0		3		13		6								
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		6		5		0		14						
	8	0		0		0		3		7		10								
	9	0		0		0		0		6		12		13						
	10	0		0		0		4		7		3								
6.25	1	0		0		0		2		3		13						11.1%	18	9.6
	2	0		0	X															
	3	0		0		0		2		5		4								
	4	0		0		0		5		9		0		17						
	5	0		0		0		3		6		6								
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		4		6		9								
	8	0		0		0		0		10		3		10						
	9	0		0		0		3		12		0		16						
	10	0		0		0		0		6		6		6						
12.5	1	0		0		0		7		8		0		0				0.0%	19	6.5
	2	0		0		0		4		10		6								
	3	0		0		0		4		7		0		21						
	4	0		0		0		3		10		0		0						
	5	0		0		0		7		7		0		0						
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		6		6		6								
	8	0		0		0		5		11		7								
	9	0		0		0		6		6		0		13						
	10	0		0		0		3		6		4								
25	1	0		0		0		4		0		3		14				0.0%	21	5.1
	2	0		0		0		2		11		0		0						
	3	0		0		0		0		5		7		14						
	4	0		0		0		7		12		0		0						
	5	0		0		0		4		8		0		15						
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	8	0		0		0		6		11		6								
	9	0		0		0		0		9		9		4						
	10	0		0		0		3		9		2								
50	1	0		0		0		3		2		0		4				10.0%	16	7.5
	2	0		0		0		2		7		3								
	3	0		0		0		5		11		6								
	4	0		0		0		6		12		7								
	5	0		0		0		6		11		4								
	6	0		0	X															
	7	0		0		0		0		11		3		0						
	8	0		0		0		4		9		9								
	9	0		0		0		2		8		4								
	10	0		0		0		4		8		6								
100	1	0		0		0		3		10		0		0				0.0%	21	6.6
	2	0		0		0		4		12		2								
	3	0		0		0		8		13		0		0						
	4	0		0		0		7		4		0		0						
	5	0		0		0		6		7		4								
	6	0		0		0		7		8		6								
	7	0		0		0		5		8		6								
	8	0		0		0		7		13		8								
	9	0		0		0		0		0		10		16						
	10	0		0		0		6		11		0		15						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	23/09/27	25	7.8	7.4	23/09/28	26	7.5	5.8
1.56		25	7.8	7.4		26	7.4	6.0
3.13		25	7.8	7.4		26	7.4	6.0
6.25		25	7.8	7.5		25	7.4	6.0
12.5		25	7.8	7.4		25	7.4	6.0
25		25	7.7	7.7		25	7.1	6.0
50		25	7.6	8.2		24	7.1	5.9
100		25	7.5	9.2		24	7.2	6.3
Control	23/09/28	24	7.6	7.4	23/09/29	26	7.3	4.3
1.56		25	7.6	7.4		26	7.2	4.0
3.13		25	7.6	7.4		26	7.2	4.0
6.25		24	7.6	7.5		26	7.2	3.9
12.5		24	7.6	7.6		26	7.0	4.1
25		24	7.5	7.7		26	7.0	4.4
50		24	7.3	8.0		25	7.0	4.2
100		24	7.1	9.0		25	6.9	5.1
Control	23/09/29	25	7.8	7.2	23/09/30	25	7.7	5.9
1.56		25	7.9	7.2		25	7.6	5.9
3.13		25	7.8	7.3		25	7.5	5.9
6.25		25	8.0	7.3		25	7.5	5.8
12.5		25	7.8	7.4		25	7.3	5.8
25		25	7.7	7.5		25	7.4	5.8
50		24	7.5	7.8		25	7.2	5.9
100		24	7.2	8.5		25	7.0	5.8
Control	23/09/30	24	7.4	7.4	23/10/01	24	7.7	6.0
1.56		24	7.4	7.3		24	7.6	5.9
3.13		24	7.4	7.3		24	7.4	5.9
6.25		24	7.4	7.4		24	7.4	5.7
12.5		25	7.4	7.4		24	7.3	5.8
25		25	7.3	7.5		24	7.3	5.7
50		25	7.3	7.7		24	7.2	5.7
100		26	7.1	8.4		24	7.1	5.8
Control	23/10/01	24	7.8	7.4	23/10/02	25	7.2	5.2
1.56		24	7.7	7.4		26	7.3	5.3
3.13		24	7.7	7.4		25	7.2	5.3
6.25		24	7.7	7.5		26	7.2	5.3
12.5		24	7.6	7.5		25	7.1	5.2
25		25	7.5	7.6		25	7.0	5.2
50		25	7.4	7.9		25	6.9	5.2
100		25	7.1	8.7		25	6.8	5.2
Control	23/10/02	25	7.7	7.1	23/10/03	25	7.0	5.1
1.56		25	7.7	7.1		25	7.1	5.0
3.13		25	7.7	7.3		25	7.1	5.1
6.25		25	7.6	7.3		25	7.2	5.1
12.5		25	7.5	7.4		25	7.0	5.0
25		25	7.4	7.4		25	7.0	4.9
50		25	7.3	7.6		25	6.9	5.0
100		25	7.0	8.5		24	6.8	5.0
Control	23/10/03	25	7.8	7.2	23/10/04	26	7.2	4.1
1.56		25	7.7	7.2		26	7.1	4.0
3.13		25	7.8	7.3		26	7.1	4.3
6.25		25	7.7	7.3		26	7.1	4.4
12.5		25	7.7	7.4		26	7.1	4.2
25		25	7.5	7.5		26	7.0	3.9
50		25	7.4	7.9		26	7.0	4.5
100		25	7.0	8.6		26	6.9	4.6
Control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.56		N/A	N/A	N/A		N/A	N/A	N/A
3.13		N/A	N/A	N/A		N/A	N/A	N/A
6.25		N/A	N/A	N/A		N/A	N/A	N/A
12.5		N/A	N/A	N/A		N/A	N/A	N/A
25		N/A	N/A	N/A		N/A	N/A	N/A
50		N/A	N/A	N/A		N/A	N/A	N/A
100		N/A	N/A	N/A		N/A	N/A	N/A

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG637-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-4 — Sample Matrix : Grab Water

Description: Pale yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 04:10 PM — Sampling Method : N/A — pH: 6.6

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 132.0 %

Analysis Start : May 29, 2024 11:55 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 70 µS/cm

End : May 31, 2024 10:55 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.3	0	0	0	0	19	8.1	406	7.0
0	20	8.3	384	8.1	0	0	0	0	20	8.3	390	7.7
0	20	8.3	385	8.3	0	0	0	0	20	8.3	395	7.6
100	22	7.0	71	8.7	0	0	0	0	20	7.6	87	7.4
100	22	6.8	69	8.8	0	0	0	0	20	7.4	85	7.5
100	22	6.7	69	8.7	0	0	0	0	19	7.3	79	7.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG637-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:52 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG638-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-5 — Sample Matrix : Grab Water

Description: pale yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 04:40 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 126.0 %

Analysis Start : May 29, 2024 11:58 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 68 µS/cm

End : May 31, 2024 10:59 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	382	8.3	0	0	0	0	20	8.3	389	7.9
0	20	8.3	385	8.3	0	0	0	0	20	8.3	389	7.9
0	20	8.3	385	8.3	0	0	0	0	20	8.3	393	7.8
100	22	7.1	54	8.4	0	0	0	0	20	7.6	85	7.8
100	22	7.0	66	8.4	0	0	0	0	20	7.3	75	7.3
100	22	6.9	58	8.4	0	0	0	0	20	7.1	82	6.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG638-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:56 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG639-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-6 — Sample Matrix : Grab Water

Description: Yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 05:15 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 125.0 %

Analysis Start : May 29, 2024 12:03 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 68 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.3	0	0	0	0	19	8.4	394	7.4
0	20	8.3	385	8.1	0	0	0	0	20	8.6	390	8.0
0	20	8.3	385	8.3	0	0	0	0	20	8.4	398	7.8
100	22	7.2	69	8.8	0	0	0	0	20	8.0	91	7.3
100	22	7.0	66	9.0	0	0	0	0	20	7.6	84	7.6
100	22	6.8	55	9.0	0	0	0	0	20	7.4	76	7.4

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 22.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG639-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:59 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG640-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-4 — Sample Matrix : Grab Water

Description: Pale Yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 02:25 PM — Sampling Method : N/A — pH: 7.0

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 126.0 %

Analysis Start : May 29, 2024 12:06 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 151 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.2	0	0	0	0	20	8.2	390	7.5
0	20	8.2	385	8.2	0	0	0	0	20	8.4	389	7.8
0	20	8.3	386	8.2	0	0	0	0	20	8.4	389	8.0
100	22	7.5	150	8.6	0	0	0	0	20	7.9	161	7.9
100	22	7.1	149	8.6	0	0	0	0	20	7.5	155	7.4
100	22	7.1	149	8.7	0	0	0	0	20	7.4	156	7.3

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG640-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:01 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG641-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-5 — Sample Matrix : Grab Water

Description: Pale Yellow Clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 02:48 PM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 130.0 %

Analysis Start : May 29, 2024 12:11 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 166 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	383	8.3	0	0	0	0	20	8.2	390	7.4
0	20	8.4	385	8.3	0	0	0	0	20	8.4	390	7.8
0	20	8.3	385	8.3	0	0	0	0	20	8.3	390	8.0
100	22	7.5	166	8.9	0	0	0	0	20	7.8	179	7.9
100	22	7.3	165	9.0	0	0	0	0	20	7.6	171	7.6
100	22	7.2	166	9.1	0	0	0	0	20	7.4	175	6.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG641-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:03 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG642-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-6 — Sample Matrix : Grab Water

Description: Yellow Clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 03:25 PM — Sampling Method : N/A — pH: 6.8

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 129.0 %

Analysis Start : May 29, 2024 12:13 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 173 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	384	8.3	0	0	0	0	20	8.3	385	7.8
0	20	8.2	385	8.2	0	0	0	0	20	8.3	397	7.6
0	20	8.3	380	8.2	0	0	0	0	20	8.3	389	7.7
100	21	7.5	176	9.0	0	0	0	0	20	7.8	187	7.9
100	22	7.3	174	9.1	0	0	0	0	20	7.5	181	7.3
100	21	7.2	175	9.1	0	0	0	0	20	7.6	181	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG642-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:05 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-4 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG637-02

Sample Collected: May 27, 2024 04:10 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.4 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 68 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	392	9.0	0	0	0	0	0	0	0	0
100	15	7.0	68	8.9	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.9	398	9.1	0	0	0	0
100	0	0	0	0	15	7.0	75	9.2	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.90 ± 0.21 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.50 – 4.20 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG637-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:53 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-5 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG638-02

Sample Collected: May 27, 2024 04:40 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.5 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 16 °C Sample Conductance: 65 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.6	388	9.0	0	0	0	0	0	0	0	0
100	15	7.0	65	8.7	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	397	9.2	0	0	0	0
100	0	0	0	0	14	7.0	72	9.2	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.4 ± 0.1 g Length (Mean) +- SD : 3.91 ± 0.30 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.50 – 4.50 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG638-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:54 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-6 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG639-02

Sample Collected: May 27, 2024 05:15 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.6 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 66 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	387	9.0	0	0	0	0	0	0	0	0
100	15	6.9	66	9.3	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.8	395	8.8	0	0	0	0
100	0	0	0	0	14	6.8	74	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.85 ± 0.20 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.4 – 0.7 g Length (Range) : 3.50 – 4.20 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG639-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:55 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-4 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG640-02

Sample Collected: May 27, 2024 02:25 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.9 Dissolved Oxygen: 105.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 14 °C Sample Conductance: 132 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.9	391	9.0	0	0	0	0	0	0	0	0
100	14	7.3	149	9.2	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	389	9.3	0	0	0	0
100	0	0	0	0	14	7.2	154	9.3	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.82 ± 0.24 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.40 – 4.10 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG640-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:56 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-5 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG641-02

Sample Collected: May 27, 2024 02:48 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.9 Dissolved Oxygen: 110.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 163 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.8	391	9.0	0	0	0	0	0	0	0	0
100	14	7.3	163	9.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	398	9.3	0	0	0	0
100	0	0	0	0	14	7.1	169	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.4 ± 0.1 g Length (Mean) +- SD : 3.71 ± 0.24 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.40 – 4.00 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG641-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:56 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-6 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG642-02

Sample Collected: May 27, 2024 03:25 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.8 Dissolved Oxygen: 111.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 170 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	391	9.0	0	0	0	0	0	0	0	0
100	15	7.2	171	9.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	397	9.2	0	0	0	0
100	0	0	0	0	14	7.2	175	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.79 ± 0.29 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.20 – 4.10 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG642-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:57 AM

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG637
Client Sample ID: 1645-44-4
Date sample collected: 5/27/2024
Test Performed By: NM9, THR, SVC, CSH, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 25
pH(pH units): 6.7
Conductivity (µS/cm): 69

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		0		8		0				10.0%	26	8.4
	2	0		0		0		5		0		13		18						
	3	0		0		0		5		0		11		14						
	4	0		0		0		6		0		12		6						
	5	0		0		0		6		0		11		8						
	6	0		0		0		6		0		7		19						
	7	0		0		0		7		0		11		19						
	8	0		0		0		5		0		8		0						
	9	0		0		0		3		0		9		14						
	10	0		0		0		7		11		0	X							
1.56	1	0		0		0		5		0		7		0				0.0%	31	7.4
	2	0		0		0		7		0		10		21						
	3	0		0		0		3		0		10		19						
	4	0		0		0		5		0		10		18						
	5	0		0		0		6		13		0		16						
	6	0		0		0		5		0		10		14						
	7	0		0		0		5		0		12		19						
	8	0		0		0		5		12		0		18						
	9	0		0		0		4		0		9		17						
	10	0		0		0		6		11		0		10						
3.13	1	0		0		0		4		0		12		11				0.0%	27	5.2
	2	0		0		0		7		0		12		6						
	3	0		0		0		4		0		11		17						
	4	0		0		0		7		8		0		12						
	5	0		0		0		7		4		0		6						
	6	0		0		0		6		0		7		12						
	7	0		0		0		4		0		8		18						
	8	0		0		0		7		13		0		10						
	9	0		0		0		4		12		0		19						
	10	0		0		0		5		5		0		12						
6.25	1	0		0		0		5		0		9		6				0.0%	30	5.6
	2	0		0		0		5		0		12		23						
	3	0		0		0		6		0		8		21						
	4	0		0		0		4		0		11		12						
	5	0		0		0		6		8		0		16						
	6	0		0		0		5		0		9		14						
	7	0		0		0		6		0		11		17						
	8	0		0		0		6		10		0		14						
	9	0		0		0		4		10		0		12						
	10	0		0		0		5		11		0		17						
12.5	1	0		0		0		7		0		10		13				0.0%	28	4.9
	2	0		0		0		7		0		10		14						
	3	0		0		0		6		0		11		16						
	4	0		0		0		6		12		0		18						
	5	0		0		0		5		0		0		16						
	6	0		0		0		4		0		7		10						
	7	0		0		0		5		0		9		11						
	8	0		0		0		3		9		0		15						
	9	0		0		0		8		9		0		14						
	10	0		0		0		8		9		0		12						
25	1	0		0		0		7		0		10		11				0.0%	32	3.2
	2	0		0		0		6		0		11		16						
	3	0		0		0		6		7		0		21						
	4	0		0		0		5		0		10		16						
	5	0		0		0		6		0		9		18						
	6	0		0		0		5		0		9		14						
	7	0		0		0		6		0		8		19						
	8	0		0		0		6		0		8		14						
	9	0		0		0		7		9		0		15						
	10	0		0		0		6		13		0		19						
50	1	0		0		0		6		8		0		16				10.0%	27	5.8
	2	0		0		0		7		9		0		15						
	3	0		0		0		7		6		0		20						
	4	0		0		0		4		7		0		21						
	5	0		0		0		6		9		4								
	6	0		0		0		6		0		8		14						
	7	0		0		0		4		0		8		12						
	8	0		0		0		7		11		0		10						
	9	0		0		0		4		9		0		13						
	10	0		0		0		5		10		0		0	X					
100	1	0		0		0		4		10		0		11				10.0%	25	6.5
	2	0		0		0		3		0		12		16						
	3	0		0		0		3		8		0		17						
	4	0		0		0		4		5		0	X							
	5	0		0		0		3		0		6		17						
	6	0		0		0		7		0		7		14						
	7	0		0		0		2		0		8		19						
	8	0		0		0		5		8		0		8						
	9	0		0		0		6		6		0		10						
	10	0		0		0		7		9		0		14						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.5	7.2	24/05/30	25	8.1	6.7
1.56		25	8.3	7.3		25	8.1	6.8
3.13		25	8.4	7.4		25	8.1	6.7
6.25		25	8.3	7.4		25	8.1	6.9
12.5		24	8.2	7.5		25	8.1	7.0
25		24	8.1	7.7		24	8.0	6.9
50		24	7.8	8.1		25	7.8	7.0
100		24	7.0	8.9		24	7.3	7.1
Control	24/05/30	25	8.0	7.0	24/05/31	24	8.1	6.1
1.56		25	8.1	7.1		25	8.0	6.0
3.13		25	8.1	7.1		24	7.9	5.8
6.25		25	8.1	7.1		24	7.8	5.7
12.5		25	8.0	7.2		24	7.8	5.8
25		24	7.9	7.4		24	7.8	5.8
50		24	7.7	7.6		24	7.7	5.8
100		24	7.0	8.3		24	7.3	6.1
Control	24/05/31	24	8.3	6.9	24/06/01	24	8.0	6.4
1.56		25	8.2	7.0		25	8.1	6.0
3.13		24	8.1	7.1		24	7.9	6.1
6.25		24	8.1	7.1		25	8.0	5.9
12.5		25	8.0	7.2		25	8.0	6.0
25		24	7.9	7.4		24	7.9	6.2
50		24	7.7	7.7		24	7.8	6.2
100		24	7.3	8.3		24	7.5	6.5
Control	24/06/01	24	8.2	7.2	24/06/02	24	8.2	6.6
1.56		24	8.1	7.2		24	8.2	6.9
3.13		24	8.2	7.2		24	8.2	6.8
6.25		24	8.1	7.2		24	8.1	7.1
12.5		24	8.2	7.4		24	8.1	6.6
25		24	8.0	7.4		24	7.9	6.6
50		24	7.8	7.7		24	7.7	6.6
100		24	7.2	8.4		24	7.4	6.9
Control	24/06/02	25	8.3	7.0	24/06/03	24	7.8	5.6
1.56		25	8.3	7.0		24	7.8	5.5
3.13		25	8.2	7.1		24	7.8	5.4
6.25		25	8.2	7.1		25	7.8	5.3
12.5		25	8.1	7.2		25	7.7	5.4
25		24	8.0	7.3		25	7.7	5.5
50		24	7.7	7.6		25	7.6	5.6
100		24	6.8	8.4		25	7.2	6.1
Control	24/06/03	25	8.2	6.7	24/06/04	25	7.5	3.6
1.56		25	8.1	6.8		25	7.5	3.7
3.13		25	8.2	6.8		24	7.5	3.7
6.25		25	8.1	6.8		25	7.5	3.8
12.5		25	8.1	6.9		25	7.4	3.9
25		24	8.0	7.1		24	7.4	4.0
50		24	7.7	7.3		25	7.4	4.3
100		24	7.2	7.8		24	7.0	5.4
Control	24/06/04	24	8.1	7.1	24/06/05	24	8.0	6.8
1.56		24	8.1	7.1		24	7.9	6.4
3.13		24	8.1	7.1		24	8.0	6.7
6.25		24	8.1	7.2		24	8.1	6.7
12.5		24	7.8	7.2		24	7.9	6.9
25		24	7.9	7.3		24	7.9	6.6
50		24	7.7	7.5		24	7.7	6.4
100		24	7.0	8.2		24	7.2	6.4
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG638
Client Sample ID: 1645-44-5
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.7
Temperature (°C): 25
pH(pH units): 6.7
Conductivity (µS/cm): 66

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		3		10						0.0%	29	7.9
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	3	0		0		0		7		12		0		11						
	4	0		0		0		8		0		10		7						
	5	0		0		0		6		14		0		20						
	6	0		0		0		5		9		0		21						
	7	0		0		0		4		0		10		11						
	8	0		0		0		5		4		10								
	9	0		0		0		4		10		0		19						
	10	0		0		0		7		14		0		18						
1.56	1	0		0		0		7		6		10						0.0%	30	6.3
	2	0		0		0		5		3		15								
	3	0		0		0		4		15		0		18						
	4	0		0		0		4		9		0		16						
	5	0		0		0		4		13		0		14						
	6	0		0		0		8		14		0		15						
	7	0		0		0		5		8		10								
	8	0		0		0		8		11		0		20						
	9	0		0		0		5		6		0		14						
	10	0		0		0		6		10		0		13						
3.13	1	0		0		0		4		0		12		18				10.0%	30	9.1
	2	0		0		0		5		0		13		23						
	3	0		0		0		5		6		0	X							
	4	0		0		0		4		7		0		15						
	5	0		0		0		5		0		11		19						
	6	0		0		0		3		0		8		14						
	7	0		0		0		6		15		0		21						
	8	0		0		0		4		4		0		17						
	9	0		0		0		5		7		0		16						
	10	0		0		0		6		4		0		22						
6.25	1	0		0		0		3		0		12		19				0.0%	31	5.0
	2	0		0		0		5		0		9		17						
	3	0		0		0		5		8		0		19						
	4	0		0		0		5		15		0		14						
	5	0		0		0		3		4		0		17						
	6	0		0		0		8		0		12		16						
	7	0		0		0		8		0		13		15						
	8	0		0		0		7		7		0		21						
	9	0		0		0		5		9		0		12						
	10	0		0		0		4		4		0		15						
12.5	1	0		0		0		0		0		9		11				0.0%	24	7.0
	2	0		0		0		3		0		14		15						
	3	0		0		0		3		8		0		0						
	4	0		0		0		5		5		0		14						
	5	0		0		0		4		4		0		20						
	6	0		0		0		5		8		0		17						
	7	0		0		0		5		9		0		14						
	8	0		0		0		6		7		0		11						
	9	0		0		0		6		8		0		17						
	10	0		0		0		4		5		6								
25	1	0		0		0		3		0		10		18				10.0%	27	5.8
	2	0		0		0		0		12		0	X							
	3	0		0		0		6		6		0		17						
	4	0		0		0		3		11		0		13						
	5	0		0		0		7		5		0		15						
	6	0		0		0		5		8		0		15						
	7	0		0		0		5		9		0		17						
	8	0		0		0		5		4		0		17						
	9	0		0		0		6		8		0		14						
	10	0		0		0		7		10		0		16						
50	1	0		0		0		6		7		14						0.0%	29	5.4
	2	0		0		0		4		0		4		17						
	3	0		0		0		5		3		0		15						
	4	0		0		0		5		5		0		16						
	5	0		0		0		7		0		0		16						
	6	0		0		0		5		0		13		17						
	7	0		0		0		5		0		9		12						
	8	0		0		0		4		14		0		20						
	9	0		0		0		4		12		0		13						
	10	0		0		0		6		13		0		16						
100	1	0		0		0		4		4		0		22				0.0%	28	5.5
	2	0		0		0		3		0		7		15						
	3	0		0		0		6		5		0		19						
	4	0		0		0		5		7		0		17						
	5	0		0		0		2		3		10								
	6	0		0		0		5		11		0		19						
	7	0		0		0		4		8		0		14						
	8	0		0		0		5		6		0		22						
	9	0		0		0		4		9		0		16						
	10	0		0		0		7		11		0		13						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.1	24/05/30	24	8.1	6.7
1.56		25	8.2	7.1		24	8.1	6.6
3.13		25	8.2	7.1		24	8.0	6.7
6.25		25	8.2	7.2		24	8.1	6.6
12.5		24	8.1	7.4		24	7.8	6.7
25		24	8.0	7.6		24	7.9	6.8
50		24	7.8	8.2		24	7.8	6.8
100		24	7.0	9.5		24	7.2	7.2
Control	24/05/30	24	8.1	7.1	24/05/31	24	7.9	6.0
1.56		24	8.2	7.0		25	7.8	5.9
3.13		24	8.2	7.1		24	7.7	5.8
6.25		24	8.2	7.1		25	7.8	5.8
12.5		24	8.2	7.2		24	7.8	6.0
25		24	8.1	7.2		24	7.8	6.0
50		24	7.9	7.4		24	7.6	6.0
100		24	7.2	8.3		24	7.4	6.0
Control	24/05/31	25	8.0	7.2	24/06/01	25	8.1	6.5
1.56		25	8.1	7.1		25	8.1	6.7
3.13		25	8.1	7.2		25	8.1	6.6
6.25		25	8.1	7.2		25	8.1	6.3
12.5		25	8.0	7.2		25	8.0	6.5
25		25	7.9	7.4		25	8.1	6.5
50		24	7.7	7.7		25	7.8	6.5
100		24	7.3	8.4		24	7.6	6.7
Control	24/06/01	25	8.1	7.1	24/06/02	24	7.9	6.1
1.56		25	8.2	7.1		24	7.9	6.1
3.13		25	8.1	7.1		24	7.8	6.0
6.25		25	8.1	7.1		24	7.9	6.1
12.5		25	8.1	7.2		24	7.8	6.2
25		25	8.0	7.3		24	7.8	6.2
50		25	7.8	7.6		24	7.6	6.0
100		25	7.1	8.4		24	7.4	6.3
Control	24/06/02	25	8.2	6.9	24/06/03	24	7.7	5.7
1.56		25	8.2	6.9		25	7.9	5.9
3.13		25	8.2	6.9		24	7.8	5.8
6.25		25	8.1	7.0		25	7.9	5.8
12.5		25	8.1	7.1		25	7.9	5.9
25		24	8.0	7.2		25	7.8	6.2
50		24	7.7	7.5		25	7.6	6.2
100		24	6.8	8.2		25	7.2	6.6
Control	24/06/03	25	8.1	7.0	24/06/04	25	7.5	4.7
1.56		25	8.2	6.9		25	7.5	4.6
3.13		25	8.1	6.9		25	7.6	4.6
6.25		25	8.1	6.9		25	7.5	4.6
12.5		25	8.1	7.0		25	7.6	4.7
25		24	7.9	7.1		25	7.6	4.8
50		24	7.8	7.3		25	7.5	5.0
100		24	7.3	7.8		24	7.2	6.1
Control	24/06/04	24	8.1	7.2	24/06/05	24	7.8	6.4
1.56		24	8.1	7.1		25	8.0	6.5
3.13		24	8.1	7.1		25	7.9	6.3
6.25		24	8.1	7.1		25	7.9	6.5
12.5		24	8.1	7.3		25	7.9	6.3
25		24	8.0	7.3		25	7.9	6.5
50		24	7.9	7.6		25	7.6	6.4
100		24	7.0	8.4		25	7.3	6.4
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG639
Client Sample ID: 1645-44-6
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 10.0
Temperature (°C): 24
pH(pH units): 6.7
Conductivity (µS/cm): 66

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration and 6.25% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	31	3.3
	2	0		0		0		6		11		12								
	3	0		0		0		6		6		0		20						
	4	0		0		0		7		10		0		18						
	5	0		0		0		7		9		0		14						
	6	0		0		0		8		12		0		17						
	7	0		0		0		9		11		0		14						
	8	0		0		0		6		10		0		12						
	9	0		0		0		5		10		0		14						
	10	0		0		0		8		11		0		9						
1.56	1	0		0		0		7		11		0		14				0.0%	33	4.5
	2	0		0		0		6		13		0		18						
	3	0		0		0		8		0		9		15						
	4	0		0		0		7		9		0		16						
	5	0		0		0		5		11		0		22						
	6	0		0		0		7		9		0		15						
	7	0		0		0		8		12		0		10						
	8	0		0		0		4		5		0		14						
	9	0		0		0		3		8		0		21						
	10	0		0		0		6		14		0		18						
3.13	1	0		0		0		5		11		0		13				0.0%	31	2.7
	2	0		0		0		4		11		0		17						
	3	0		0		0		6		8		0		22						
	4	0		0		0		5		12		0		15						
	5	0		0		0		6		12		0		16						
	6	0		0		0		8		10		0		14						
	7	0		0		0		9		10		0		8						
	8	0		0		0		5		11		0		12						
	9	0		0		0		8		10		0		13						
	10	0		0		0		4		12		0		16						
6.25	1	0		0		0		6		7		0		15				0.0%	33	5.3
	2	0		0		0		7		9		0		19						
	3	0		0		0		5		0		0		21						
	4	0		0		0		8		9		0		9						
	5	0		0		0		6		13		0		20						
	6	0		0		0		9		14		0		16						
	7	0		0		0		6		10		0		14						
	8	0		0		0		8		13		0		16						
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		5		12		0		17						
12.5	1	0		0		0		7		12		0		16				0.0%	31	5.4
	2	0		0		0		5		9		0		12						
	3	0		0		0		4		9		0		9						
	4	0		0		0		7		14		0		17						
	5	0		0		0		8		8		0		13						
	6	0		0		0		6		9		0		14						
	7	0		0		0		5		12		0		17						
	8	0		0		0		4		11		0		16						
	9	0		0		0		8		10		0		20						
	10	0		0		0		6		10		0		10						
25	1	0		0		0		5		8		0		16				0.0%	29	5.8
	2	0		0		0		6		10		0		15						
	3	0		0		0		5		10		0		18						
	4	0		0		0		4		9		0		17						
	5	0		0		0		7		12		0		4						
	6	0		0		0		4		6		0		10						
	7	0		0		0		8		8		0		13						
	8	0		0		0		5		5		0		14						
	9	0		0		0		4		10		0		25						
	10	0		0		0		6		10		0		19						
50	1	0		0		0		6		10		0		7				0.0%	32	8.1
	2	0		0		0		7		11		0		19						
	3	0		0		0		7		8		0		23						
	4	0		0		0		5		9		0		18						
	5	0		0		0		8		14		0		21						
	6	0		0		0		5		8		0		19						
	7	0		0		0		3		6		0		14						
	8	0		0		0		3		8		0		12						
	9	0		0		0		6		12		0		10						
	10	0		0		0		8		12		0		24						
100	1	0		0		0		5		8		0		14				10.0%	25	10.8
	2	0		0		0		4		14		0		18						
	3	0		0		0		5		14		0		13						
	4	0	X																	
	5	0		0		0		7		12		0		13						
	6	0		0		0		3		7		0		19						
	7	0		0		0		3		0		0		10						
	8	0		0		0		5		7		0		16						
	9	0		0		0		3		10		0		13						
	10	0		0		0		4		12		0		14						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.2	24/05/30	25	7.8	6.4
1.56		25	8.2	7.2		25	7.9	6.4
3.13		25	8.2	7.2		25	8.0	6.5
6.25		25	8.2	7.3		25	8.0	6.5
12.5		25	8.2	7.4		26	7.9	6.5
25		24	8.1	7.7		25	7.9	6.6
50		24	7.9	8.2		25	7.8	6.6
100		24	7.1	9.1		25	7.4	6.6
Control	24/05/30	24	8.1	7.2	24/05/31	25	7.7	5.8
1.56		24	8.1	7.1		25	7.8	5.7
3.13		25	8.1	7.1		25	7.8	5.9
6.25		24	8.3	7.2		25	7.8	5.8
12.5		24	8.1	7.3		25	7.7	6.0
25		24	8.0	7.4		24	7.6	5.9
50		24	7.8	7.7		25	7.8	6.0
100		24	7.2	8.4		24	6.9	5.9
Control	24/05/31	25	8.1	7.0	24/06/01	25	7.8	5.6
1.56		25	8.1	7.1		25	8.0	5.5
3.13		25	8.1	7.1		25	8.0	5.6
6.25		25	8.1	7.2		25	7.9	5.6
12.5		25	8.0	7.2		25	7.9	5.7
25		25	8.0	7.4		25	7.9	5.7
50		25	7.8	7.5		25	7.8	6.0
100		25	7.0	8.3		24	7.4	6.1
Control	24/06/01	25	8.1	7.2	24/06/02	24	8.4	6.8
1.56		25	8.2	7.1		24	8.2	6.7
3.13		25	8.3	7.1		24	8.2	6.8
6.25		25	8.2	7.2		24	8.2	6.8
12.5		25	8.2	7.2		24	8.1	6.9
25		25	8.1	7.3		24	8.0	7.0
50		25	8.0	7.5		24	7.9	7.0
100		25	7.5	8.0		24	7.3	6.8
Control	24/06/02	25	8.2	6.9	24/06/03	24	8.1	5.9
1.56		25	8.2	6.9		24	7.9	5.7
3.13		25	8.2	6.9		24	8.0	5.9
6.25		25	8.3	7.0		24	7.9	5.8
12.5		25	8.1	7.1		24	7.9	5.9
25		24	8.1	7.2		24	7.9	6.0
50		24	7.8	7.4		24	7.7	6.1
100		24	7.1	8.0		24	7.3	6.3
Control	24/06/03	24	8.1	6.8	24/06/04	24	7.8	5.0
1.56		24	8.2	6.8		24	7.6	5.0
3.13		25	8.2	6.8		24	7.7	4.5
6.25		24	8.1	6.9		24	7.6	4.7
12.5		24	8.1	7.0		24	7.5	4.8
25		24	8.0	7.1		24	7.5	5.1
50		24	7.8	7.4		24	7.5	5.1
100		24	7.3	8.0		24	6.9	6.0
Control	24/06/04	24	8.1	7.2	24/06/05	25	7.7	5.5
1.56		24	8.1	7.2		25	7.6	5.7
3.13		24	8.1	7.2		25	7.7	5.8
6.25		24	8.0	7.2		25	7.7	5.3
12.5		24	8.0	7.2		25	7.6	5.4
25		24	7.9	7.3		25	7.6	5.4
50		24	7.8	7.5		25	7.4	5.5
100		24	7.1	8.2		25	6.9	5.7
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG640
Client Sample ID: 1645-68-4
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.1
Temperature (°C): 25
pH(pH units): 7.1
Conductivity (µS/cm): 147

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	N/A	N/A	Linear Interpolation (ICPIN)	Log-X	N/A
	7 day Reproduction Result	IC25	>100	N/A	N/A	Linear Interpolation (ICPIN)	Log-X	N/A
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration and 25% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		0		0		12				0.0%	26	6.6
	2	0		0		0		4		5		0		18						
	3	0		0		0		7		8		0		0						
	4	0		0		0		3		10		0		9						
	5	0		0		0		8		13		0		13						
	6	0		0		0		7		15		0		7						
	7	0		0		0		8		0		12		13						
	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	9	0		0		0		5		14		0		7						
	10	0		0		0		6		12		0		13						
1.56	1	0		0		0		5		0		11		0				20.0%	23	7.0
	2	0		0		0		4		0		10		15	X					
	3	0		0		0		5		8		0	X							
	4	0		0		0		7		10		0		14						
	5	0		0		0		8		12		0		5						
	6	0		0		0		6		0		6		15						
	7	0		0		0		5		4		0		16						
	8	0		0		0		7		0		6		3						
	9	0		0		0		4		8		0		7						
	10	0		0		0		6		7		0		20						
3.13	1	0		0		0		7		5		0		8				10.0%	23	6.5
	2	0		0		0		8		0		12		0						
	3	0		0		0		5		7		0		13						
	4	0		0		0		6		12		0		11						
	5	0		0		0		7		8		0		15						
	6	0		0		0		6		4		7								
	7	0		0		0		8		10		11								
	8	0		0		0		5		4		0	X							
	9	0		0		0		9		15		0		0						
	10	0		0		0		7		4		0		13						
6.25	1	0		0		0		5		10		0		13				0.0%	28	5.7
	2	0		0		0		4		5		13								
	3	0		0		0		7		8		0		8						
	4	0		0		0		5		7		0		16						
	5	0		0		0		9		11		0		19						
	6	0		0		0		5		9		0		10						
	7	0		0		0		4		2		0		17						
	8	0		0		0		6		10		11								
	9	0		0		0		7		13		0		16						
	10	0		0		0		8		9		0		14						
12.5	1	0		0		0		5		2		0		14				0.0%	23	4.9
	2	0		0		0		7		4		0		15						
	3	0		0		0		9		0		0		10						
	4	0		0		0		10		0		0		6						
	5	0		0		0		8		4		0		16						
	6	0		0		0		5		5		0		19						
	7	0		0		0		6		7		12								
	8	0		0		0		5		0		0		19						
	9	0		0		0		3		5		0		8						
	10	0		0		0		7		9		0		12						
25	1	0		0		0		4		0		0		14				0.0%	27	6.2
	2	0		0		0		5		6		0		16						
	3	0		0		0		3		12		0		16						
	4	0		0		0		7		14		0		18						
	5	0		0		0		5		5		0		16						
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		4		0		9		14						
	8	0		0		0		8		7		0		8						
	9	0		0		0		4		6		0		11						
	10	0		0		0		3		13		0		14						
50	1	0		0		0		6		4		12						0.0%	32	6.1
	2	0		0		0		8		0		12		13						
	3	0		0		0		3		15		0		20						
	4	0		0		0		2		17		0		21						
	5	0		0		0		8		0		12		15						
	6	0		0		0		4		0		11		14						
	7	0		0		0		3		0		9		12						
	8	0		0		0		7		14		0		18						
	9	0		0		0		5		9		0		18						
	10	0		0		0		7		13		0		12						
100	1	0		0		0		5		0		13		15				0.0%	31	5.9
	2	0		0		0		8		0		4		18						
	3	0		0		0		7		16		0		22						
	4	0		0		0		6		12		0		16						
	5	0		0		0		5		0		6		17						
	6	0		0		0		3		0		10		10						
	7	0		0		0		4		0		10		14						
	8	0		0		0		5		10		0		19						
	9	0		0		0		6		7		0		14						
	10	0		0		0		8		8		0		16						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.1	24/05/30	25	8.1	6.8
1.56		24	8.2	7.1		25	8.2	6.8
3.13		24	8.2	7.3		25	8.0	6.6
6.25		24	8.2	7.3		25	8.1	6.8
12.5		24	8.1	7.5		25	8.1	6.7
25		24	8.1	7.6		25	8.0	7.0
50		24	7.8	8.0		24	7.8	6.9
100		25	7.1	8.8		24	7.4	6.9
Control	24/05/30	24	7.8	7.1	24/05/31	24	8.3	6.3
1.56		24	8.2	7.1		24	8.1	6.3
3.13		24	8.0	7.1		24	8.0	6.2
6.25		24	8.1	7.2		24	8.0	6.2
12.5		24	8.1	7.2		24	8.0	6.2
25		24	7.9	7.3		24	7.9	6.2
50		24	7.8	7.6		24	7.6	6.2
100		24	7.2	8.0		24	7.5	6.2
Control	24/05/31	25	8.1	7.2	24/06/01	25	7.8	5.7
1.56		25	8.1	7.1		25	7.9	5.6
3.13		25	8.1	7.1		25	7.8	5.4
6.25		25	8.1	7.2		25	7.9	5.6
12.5		25	8.1	7.3		25	7.9	5.6
25		25	8.0	7.4		24	7.9	5.8
50		25	7.8	7.6		24	7.7	5.9
100		25	7.3	8.1		24	7.4	6.0
Control	24/06/01	25	8.2	7.2	24/06/02	24	8.1	6.4
1.56		25	8.2	7.2		24	8.0	6.4
3.13		25	8.2	7.2		24	8.0	6.2
6.25		25	8.2	7.2		24	7.9	6.1
12.5		25	8.2	7.3		24	7.9	6.2
25		25	8.1	7.3		24	7.8	6.1
50		25	7.9	7.6		24	7.7	6.3
100		24	7.5	8.1		24	7.3	6.3
Control	24/06/02	24	8.1	7.0	24/06/03	24	8.1	6.6
1.56		25	8.2	6.9		24	8.1	6.4
3.13		25	8.2	6.9		24	7.9	6.2
6.25		25	8.2	7.0		24	8.0	6.4
12.5		25	8.1	7.0		25	7.9	6.4
25		24	8.0	7.3		24	7.9	6.4
50		24	7.7	7.4		24	7.8	6.5
100		24	7.1	8.2		25	7.5	6.8
Control	24/06/03	25	8.1	6.9	24/06/04	25	7.5	4.2
1.56		25	8.1	6.9		25	7.5	4.2
3.13		25	8.1	6.9		25	7.5	4.1
6.25		24	8.1	7.0		25	7.6	4.3
12.5		24	8.1	7.0		25	7.5	4.4
25		24	8.0	7.1		25	7.4	4.5
50		24	7.8	7.3		25	7.4	4.9
100		24	7.4	7.8		24	7.1	5.9
Control	24/06/04	24	7.8	7.1	24/06/05	24	7.5	4.6
1.56		24	7.9	7.0		24	7.5	4.4
3.13		24	7.8	7.0		24	7.5	4.5
6.25		24	7.8	7.1		24	7.6	4.7
12.5		24	7.8	7.1		24	7.5	4.9
25		24	7.7	7.3		24	7.5	4.8
50		24	7.5	7.5		25	7.4	5.4
100		24	7.2	8.1		25	7.1	6.3
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG641
Client Sample ID: 1645-68-5
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 25
pH(pH units): 7.0
Conductivity (µS/cm): 163

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

12.5% concentration and 100% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		4		9		0		0				0.0%	24	7.7
	2	0		0		0		5		6		0		6						
	3	0		0		0		5		10		0		0						
	4	0		0		0		6		11		0		18						
	5	0		0		0		5		13		0		9						
	6	0		0		0		5		8		0		7						
	7	0		0		0		7		5		0		21						
	8	0		0		0		4		9		0		13						
	9	0		0		0		3		7		0		17						
	10	0		0		0		3		10		0		18						
1.56	1	0		0		0		6		12		0		21				0.0%	31	5.3
	2	0		0		0		5		10		0		17						
	3	0		0		0		6		12		0		18						
	4	0		0		0		7		10		0		10						
	5	0		0		0		4		12		0		12						
	6	0		0		0		4		11		0		15						
	7	0		0		0		6		8		0		14						
	8	0		0		0		7		11		0		8						
	9	0		0		0		8		10		0		19						
	10	0		0		0		7		11		0		5						
3.13	1	0		0		0		7		10		0		0				0.0%	24	5.3
	2	0		0		0		5		9		0		4						
	3	0		0		0		4		12		0		10						
	4	0		0		0		5		12		0		12						
	5	0		0		0		4		12		0		5						
	6	0		0		0		5		9		0		12						
	7	0		0		0		4		6		0		11						
	8	0		0		0		5		7		0		8						
	9	0		0		0		6		10		0		12						
	10	0		0		0		7		12		0		14						
6.25	1	0		0		0		5		9		0		6				0.0%	25	8.4
	2	0		0		0		6		10		0		16						
	3	0		0		0		6		11		0		13						
	4	0		0		0		5		11		0		17						
	5	0		0		0		7		4		0		14						
	6	0		0		0		5		10		0		19						
	7	0		0		0		4		7		0		4						
	8	0		0		0		6		10		0		12						
	9	0		0		0		6		10		0		3						
	10	0		0		0		0		9		0		0						
12.5	1	0		0		0		7		8		0		7				22.2%	25	8.2
	2	0		0		0		5		12		0		12						
	3	0		0		0		3		10		0		16						
	4	0		0		0		8		6		0	X							
	5	0		0		0		5		10		0		17						
	6	0		0		0		6		10		0		18						
	7	0		0		0		4		8		0	X							
	8	0		0		0		6		11		0		14						
	9	0		0		0		5		11		0		3						
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
25	1	0		0		0		5		10		0		16				10.0%	27	7.1
	2	0		0		0		6		7		0		5						
	3	0		0		0		5		10		0		11						
	4	0		0		0		5		7		0		16						
	5	0		0		0		0		0		14		0	X					
	6	0		0		0		6		0		9		14						
	7	0		0		0		6		7		0		8						
	8	0		0		0		6		9		0		21						
	9	0		0		0		5		11		0		19						
	10	0		0		0		6		8		0		14						
50	1	0		0		0		5		11		0		13				0.0%	29	4.3
	2	0		0		0		8		11		0		15						
	3	0		0		0		7		6		0		13						
	4	0		0		0		5		10		0		11						
	5	0		0		0		5		10		0		14						
	6	0		0		0		4		7		0		9						
	7	0		0		0		5		9		0		13						
	8	0		0		0		6		12		0		15						
	9	0		0		0		5		9		0		18						
	10	0		0		0		4		10		0		19						
100	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	29	5.7
	2	0		0		0		5		7		0		12						
	3	0		0		0		5		7		0		20						
	4	0		0		0		6		9		0		24						
	5	0		0		0		5		0		6		11						
	6	0		0		0		4		9		0		18						
	7	0		0		0		5		9		0		12						
	8	0		0		0		7		4		0		16						
	9	0		0		0		4		8		0		14						
	10	0		0		0		6		12		0		18						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	7.9	7.3	24/05/30	25	7.8	6.3
1.56		25	7.9	7.3		25	8.0	6.3
3.13		25	8.0	7.4		25	7.9	6.2
6.25		25	7.9	7.4		25	7.9	6.2
12.5		25	7.8	7.5		25	7.9	6.5
25		25	7.8	7.7		24	7.8	6.5
50		24	7.7	8.2		24	7.7	6.6
100		24	7.4	9.2		24	7.4	6.8
Control	24/05/30	24	8.1	7.1	24/05/31	25	7.7	5.4
1.56		25	8.1	7.1		25	7.7	5.4
3.13		24	8.1	7.1		25	7.6	5.2
6.25		24	8.1	7.2		25	7.7	5.4
12.5		24	7.9	7.2		25	7.7	5.4
25		24	7.9	7.3		25	7.7	5.4
50		24	7.8	7.5		25	7.6	5.6
100		24	7.4	7.9		24	7.3	5.6
Control	24/05/31	24	8.2	7.0	24/06/01	25	8.0	5.5
1.56		24	8.2	7.0		25	7.9	5.6
3.13		25	8.1	7.1		25	8.0	5.8
6.25		25	8.1	7.1		25	7.9	5.5
12.5		25	8.1	7.2		25	7.9	5.7
25		25	8.1	7.3		24	7.8	5.5
50		24	7.8	7.6		25	7.7	5.9
100		24	7.3	8.4		24	7.5	6.3
Control	24/06/01	25	8.2	7.1	24/06/02	24	8.0	6.4
1.56		25	8.3	7.1		24	8.2	6.7
3.13		25	8.3	7.2		24	8.1	6.7
6.25		25	8.2	7.1		25	8.0	6.4
12.5		25	8.2	7.2		25	7.9	6.6
25		25	8.1	7.3		24	7.9	6.6
50		25	7.9	7.5		25	7.9	6.8
100		25	7.4	8.0		25	7.6	6.9
Control	24/06/02	24	8.2	6.9	24/06/03	24	8.0	5.5
1.56		25	8.2	6.9		24	7.9	5.4
3.13		25	8.2	7.0		24	7.9	5.4
6.25		25	8.2	7.0		25	7.8	5.4
12.5		24	8.1	7.1		25	7.8	5.5
25		24	8.1	7.2		25	7.8	5.6
50		24	7.8	7.5		25	7.6	5.8
100		24	7.2	8.1		25	7.4	6.2
Control	24/06/03	25	8.1	6.8	24/06/04	24	7.7	4.3
1.56		25	8.1	6.8		24	7.5	4.1
3.13		25	8.2	6.8		24	7.5	4.0
6.25		25	8.1	6.8		24	7.7	4.0
12.5		25	8.1	6.9		24	7.5	4.5
25		25	8.0	7.0		24	7.5	4.1
50		24	7.8	7.3		24	7.4	4.8
100		24	7.3	7.9		24	7.1	5.2
Control	24/06/04	24	7.8	7.0	24/06/05	24	7.6	4.5
1.56		25	7.8	7.0		24	7.5	4.1
3.13		25	7.9	6.9		24	7.5	4.2
6.25		25	7.8	7.1		24	7.6	4.1
12.5		24	7.8	7.1		24	7.5	3.9
25		24	7.7	7.2		24	7.5	4.1
50		24	7.5	7.5		24	7.3	4.5
100		24	7.2	8.2		24	7.1	6.0
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG642
Client Sample ID: 1645-68-6
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC
Test Initiation Date: 5/29/2024
Test End Date: 6/4/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 24
pH(pH units): 7.1
Conductivity (µS/cm): 172

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	<1.56	<1.56	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

As per EPS 1/RM/46, confidence intervals on an EC50 or ICp represent upper and lower concentrations, within which the true endpoint is thought to lie, for a stated level of probability. The 95% confidence limits represent a statement that there is a 19 out of 20 chance that the true endpoint falls within those specified limits.

For the results contained herein, the upper and lower 95% confidence limits exceeded the range of test concentrations (0-100%(v/v)), therefore the IC25 estimate should be deemed inconclusive.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		4		10						0.0%	18	7.3
	2	0		0		0		4		5		0								
	3	0		0		0		6		8		0								
	4	0		0		0		9		7		12								
	5	0		0		0		4		5		8								
	6	0		0		0		3		0		9								
	7	0		0		0		5		4		9								
	8	0		0		0		4		8		0								
	9	0		0		0		7		9		8								
	10	0		0		0		7		14		10								
1.56	1	0		0		0		6		2		9						0.0%	13	5.3
	2	0		0		0		8		10		0								
	3	0		0		0		2		4		0								
	4	0		0		0		5		7		0								
	5	0		0		0		7		5		0								
	6	0		0		0		5		0		10								
	7	0		0		0		3		0		0								
	8	0		0		0		6		3		10								
	9	0		0		0		2		0		12								
	10	0		0		0		4		3		11								
3.13	1	0		0		0		4		0		7						10.0%	11	5.9
	2	0		0		0	X													
	3	0		0		0		2		0		10								
	4	0		0		0		2		0		0								
	5	0		0		0		3		4		11								
	6	0		0		0		5		5		0								
	7	0		0		0		7		0		10								
	8	0		0		0		4		9		0								
	9	0		0		0		6		0		9								
	10	0		0		0		7		3		0								
6.25	1	0		0		0		7		0		9						10.0%	11	6.1
	2	0		0		0	X													
	3	0		0		0		6		0		11								
	4	0		0		0		5		0		9								
	5	0		0		0		7		3		0								
	6	0		0		0		8		0		6								
	7	0		0		0		4		0		0								
	8	0		0		0		7		7		0								
	9	0		0		0		6		4		5								
	10	0		0		0		3		0		0								
12.5	1	0		0		0		5		0		0						0.0%	12	5.2
	2	0		0		0		4		0		0								
	3	0		0		0		6		5		0								
	4	0		0		0		5		7		0								
	5	0		0		0		4		0		10								
	6	0		0		0		7		0		10								
	7	0		0		0		5		0		9								
	8	0		0		0		4		4		0								
	9	0		0		0		6		8		7								
	10	0		0		0		8		3		0								
25	1	0		0		0		9		5		0						10.0%	14	7.6
	2	0		0		0		5		0		0								
	3	0		0		0		3		4		11								
	4	0		0	X															
	5	0		0		0		4		9		9								
	6	0		0		0		5		7		12								
	7	0		0		0		7		4		7								
	8	0		0		0		5		3		0								
	9	0		0		0		2		5		8								
	10	0		0		0		4		0		12								
50	1	0		0		0		7		4		0						0.0%	14	7.5
	2	0		0		0		5		8		0								
	3	0		0		0		4		7		13								
	4	0		0		0		2		0		0								
	5	0		0		0		7		0		0								
	6	0		0		0		6		5		13								
	7	0		0		0		6		2		8								
	8	0		0		0		5		0		0								
	9	0		0		0		3		0		11								
	10	0		0		0		5		6		8								
100	1	0		0		0		8		14		0						0.0%	14	3.8
	2	0		0		0		5		8		0								
	3	0		0		0		7		0		7								
	4	0		0		0		6		0		11								
	5	0		0		0		4		0		10								
	6	0		0		0		4		0		7								
	7	0		0		0		7		6		0								
	8	0		0		0		3		0		8								
	9	0		0		0		3		5		0								
	10	0		0		0		6		0		9								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.1	7.3	24/05/30	25	8.2	6.9
1.56		25	8.0	7.4		25	7.9	6.7
3.13		25	8.0	7.5		25	7.9	6.7
6.25		25	7.9	7.5		25	8.0	6.6
12.5		25	7.9	7.6		25	7.9	6.6
25		25	7.8	7.7		25	7.7	6.6
50		24	7.7	8.2		25	7.6	6.6
100		24	7.5	9.2		24	7.4	7.0
Control	24/05/30	24	8.1	7.1	24/05/31	25	7.7	6.0
1.56		24	8.1	7.1		25	7.7	5.8
3.13		24	8.1	7.1		25	7.8	5.8
6.25		24	8.1	7.2		25	7.7	5.8
12.5		24	8.0	7.2		25	7.7	5.7
25		24	7.9	7.5		24	7.6	5.9
50		24	7.7	7.8		24	7.7	5.8
100		24	7.4	8.4		24	7.4	6.2
Control	24/05/31	25	8.1	7.2	24/06/01	25	7.8	6.1
1.56		25	8.2	7.1		25	7.9	5.9
3.13		25	8.2	7.2		25	7.9	6.1
6.25		25	8.2	7.2		25	8.1	6.3
12.5		25	8.1	7.3		25	8.1	6.4
25		25	8.0	7.4		25	7.9	6.5
50		25	7.8	7.6		25	7.8	6.5
100		24	7.4	8.5		25	7.6	6.6
Control	24/06/01	25	8.2	7.1	24/06/02	25	8.1	6.6
1.56		25	8.3	7.2		25	7.9	6.1
3.13		25	8.2	7.1		25	8.0	5.9
6.25		25	8.2	7.1		25	8.0	5.9
12.5		25	8.2	7.2		25	7.9	6.0
25		25	8.1	7.3		25	7.9	6.3
50		25	7.9	7.6		25	7.8	6.7
100		24	7.5	8.2		24	7.4	6.3
Control	24/06/02	25	8.2	6.9	24/06/03	24	7.7	5.7
1.56		25	8.2	6.9		25	7.8	5.5
3.13		25	8.2	6.9		25	7.8	5.5
6.25		25	8.2	7.0		25	7.7	5.2
12.5		25	8.1	7.0		25	7.8	5.5
25		24	8.0	7.2		25	7.7	5.7
50		24	7.8	7.4		25	7.7	5.9
100		24	7.3	8.3		24	7.5	6.2
Control	24/06/03	24	7.8	6.8	24/06/04	24	7.6	4.8
1.56		25	7.9	6.8		25	7.6	4.6
3.13		25	7.9	6.8		25	7.6	4.6
6.25		25	7.9	6.9		25	7.6	4.6
12.5		24	7.9	6.9		25	7.5	4.9
25		24	7.8	7.1		25	7.6	4.9
50		24	7.6	7.3		25	7.4	5.2
100		24	7.4	7.9		25	7.1	5.2
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG637-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-4 — Sample Matrix : Grab Water

Description: Pale yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 04:10 PM — Sampling Method : N/A — pH: 6.6

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 132.0 %

Analysis Start : May 29, 2024 11:55 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 70 µS/cm

End : May 31, 2024 10:55 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.3	0	0	0	0	19	8.1	406	7.0
0	20	8.3	384	8.1	0	0	0	0	20	8.3	390	7.7
0	20	8.3	385	8.3	0	0	0	0	20	8.3	395	7.6
100	22	7.0	71	8.7	0	0	0	0	20	7.6	87	7.4
100	22	6.8	69	8.8	0	0	0	0	20	7.4	85	7.5
100	22	6.7	69	8.7	0	0	0	0	19	7.3	79	7.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG637-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:52 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG638-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-5 — Sample Matrix : Grab Water

Description: pale yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 04:40 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 126.0 %

Analysis Start : May 29, 2024 11:58 AM — Avg Temp Arrival: 7 °C — Sample Conductance: 68 µS/cm

End : May 31, 2024 10:59 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	382	8.3	0	0	0	0	20	8.3	389	7.9
0	20	8.3	385	8.3	0	0	0	0	20	8.3	389	7.9
0	20	8.3	385	8.3	0	0	0	0	20	8.3	393	7.8
100	22	7.1	54	8.4	0	0	0	0	20	7.6	85	7.8
100	22	7.0	66	8.4	0	0	0	0	20	7.3	75	7.3
100	22	6.9	58	8.4	0	0	0	0	20	7.1	82	6.9

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG638-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:56 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG639-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-44-6 — Sample Matrix : Grab Water

Description: Yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 05:15 PM — Sampling Method : N/A — pH: 6.7

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 125.0 %

Analysis Start : May 29, 2024 12:03 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 68 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 25 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.3	0	0	0	0	19	8.4	394	7.4
0	20	8.3	385	8.1	0	0	0	0	20	8.6	390	8.0
0	20	8.3	385	8.3	0	0	0	0	20	8.4	398	7.8
100	22	7.2	69	8.8	0	0	0	0	20	8.0	91	7.3
100	22	7.0	66	9.0	0	0	0	0	20	7.6	84	7.6
100	22	6.8	55	9.0	0	0	0	0	20	7.4	76	7.4

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 22.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 0

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG639-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 10:59 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG640-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-4 — Sample Matrix : Grab Water

Description: Pale Yellow clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 02:25 PM — Sampling Method : N/A — pH: 7.0

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 126.0 %

Analysis Start : May 29, 2024 12:06 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 151 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	383	8.2	0	0	0	0	20	8.2	390	7.5
0	20	8.2	385	8.2	0	0	0	0	20	8.4	389	7.8
0	20	8.3	386	8.2	0	0	0	0	20	8.4	389	8.0
100	22	7.5	150	8.6	0	0	0	0	20	7.9	161	7.9
100	22	7.1	149	8.6	0	0	0	0	20	7.5	155	7.4
100	22	7.1	149	8.7	0	0	0	0	20	7.4	156	7.3

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG640-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:01 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG641-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-5 — Sample Matrix : Grab Water

Description: Pale Yellow Clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 02:48 PM — Sampling Method : N/A — pH: 7.2

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 130.0 %

Analysis Start : May 29, 2024 12:11 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 166 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 60 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.2	383	8.3	0	0	0	0	20	8.2	390	7.4
0	20	8.4	385	8.3	0	0	0	0	20	8.4	390	7.8
0	20	8.3	385	8.3	0	0	0	0	20	8.3	390	8.0
100	22	7.5	166	8.9	0	0	0	0	20	7.8	179	7.9
100	22	7.3	165	9.0	0	0	0	0	20	7.6	171	7.6
100	22	7.2	166	9.1	0	0	0	0	20	7.4	175	6.8

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG641-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:03 AM

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE — Job Number: C438179

Client Project Name & Number: Closure — Sample Number: COG642-03

Test Result:

48 hrs Mortality % 0 Statistical Method:

Mean percent mortality: Sample 0 Control 0

Sample Name : 1645-68-6 — Sample Matrix : Grab Water

Description: Yellow Clear — Sample Prior to Analysis:

Sample Collected: May 27, 2024 03:25 PM — Sampling Method : N/A — pH: 6.8

Sample Collected By: JB — Site Collection: N/A — Temperature : 22 °C

Sample Received: May 28, 2024 03:59 PM — Volume Received: 1 L — Dissolved Oxygen: 129.0 %

Analysis Start : May 29, 2024 12:13 PM — Avg Temp Arrival: 7 °C — Sample Conductance: 173 µS/cm

End : May 31, 2024 11:20 AM — Storage: 2-6°C — Hardness: 80 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.3	384	8.3	0	0	0	0	20	8.3	385	7.8
0	20	8.2	385	8.2	0	0	0	0	20	8.3	397	7.6
0	20	8.3	380	8.2	0	0	0	0	20	8.3	389	7.7
100	21	7.5	176	9.0	0	0	0	0	20	7.8	187	7.9
100	22	7.3	174	9.1	0	0	0	0	20	7.5	181	7.3
100	21	7.2	175	9.1	0	0	0	0	20	7.6	181	7.7

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
100	0	0	0	0
100	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ — Other parameters available on request.

Test Conditions — Test concentration : 0,0,0,100,100,100 (% vol/vol)

Organisms per Vessel : 10 — Pre-aeration Time : 30 min — Rate of Pre-aeration : 25-50 mL/(min*L)

Total # of Organisms Used : 60 — Test Temperature : 20 ± 2 °C — Test Hardness Adjusted : No

Test Volume : 150 mL — Vessel Volume : 200 mL — Test pH Adjusted: No

Loading Density : 15.0 mL/Daphnia — Photoperiod : 16:8 (light: dark)

Test Organism : *Daphnia magna* — Source : In House Culture

Age at Test Initiation : <24 hrs — Average Brood Size : 27.0

Culture Photoperiod : 16:8 (light: dark) — % Mortality within 7 days : 1.7

Culture Temperature : 20 ± 2 °C — Time To First Brood : 8 Days

Culture Diet: Culture is fed algae: 800-1800uL; YCT: 200-800uL Daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* SINGLE CONCENTRATION-100%

Client :	4388	DIAVIK DIAMOND MINES INC., YELLOWKNIFE	Job Number:	C438179
Client Project Name & Number:		Closure	Sample Number:	COG642-03

Reference chemical:	Sodium Chloride	Test Date:	May 27, 2024
Test Endpoint 48 hrs LC50 (95% confidence interval) :	5.70 (5.02, 6.47)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	6.28 (4.96, 7.97) g/L	Concentration : 0,1.71,2.56,3.82,5.7,8.5 g/L	

Test Method	EPS 1/RM/14
Method Deviations:	None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Maninder Brar, Svetlana Sofrenovic, Tami Horvath

Verified By : Tami Horvath, Analyst 1 Date: Jun 04, 2024 11:05 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-4 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG637-02

Sample Collected: May 27, 2024 04:10 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.4 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 68 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	392	9.0	0	0	0	0	0	0	0	0
100	15	7.0	68	8.9	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.9	398	9.1	0	0	0	0
100	0	0	0	0	15	7.0	75	9.2	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.90 ± 0.21 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.50 – 4.20 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG637-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:53 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-5 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG638-02

Sample Collected: May 27, 2024 04:40 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.5 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 16 °C Sample Conductance: 65 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.6	388	9.0	0	0	0	0	0	0	0	0
100	15	7.0	65	8.7	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	397	9.2	0	0	0	0
100	0	0	0	0	14	7.0	72	9.2	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.4 ± 0.1 g Length (Mean) +- SD : 3.91 ± 0.30 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.50 – 4.50 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG638-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:54 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-44-6 Sample Matrix : Grab Water

Description: yellow, clear Sample Number: COG639-02

Sample Collected: May 27, 2024 05:15 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.6 Dissolved Oxygen: 109.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 66 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	387	9.0	0	0	0	0	0	0	0	0
100	15	6.9	66	9.3	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.8	395	8.8	0	0	0	0
100	0	0	0	0	14	6.8	74	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.85 ± 0.20 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.4 – 0.7 g Length (Range) : 3.50 – 4.20 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG639-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:55 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-4 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG640-02

Sample Collected: May 27, 2024 02:25 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.9 Dissolved Oxygen: 105.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 14 °C Sample Conductance: 132 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.9	391	9.0	0	0	0	0	0	0	0	0
100	14	7.3	149	9.2	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	389	9.3	0	0	0	0
100	0	0	0	0	14	7.2	154	9.3	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.82 ± 0.24 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.40 – 4.10 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG640-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:56 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-5 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG641-02

Sample Collected: May 27, 2024 02:48 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.9 Dissolved Oxygen: 110.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 163 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.8	391	9.0	0	0	0	0	0	0	0	0
100	14	7.3	163	9.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	398	9.3	0	0	0	0
100	0	0	0	0	14	7.1	169	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.4 ± 0.1 g Length (Mean) +- SD : 3.71 ± 0.24 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.40 – 4.00 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG641-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:56 AM

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE Job Number: C438179

Client Project Name & Number: Closure

Test Result:

96 hrs Mortality % 0 Statistical Method: Visual

Sample Name : 1645-68-6 Sample Matrix : Grab Water

Description: pale yellow, clear Sample Number: COG642-02

Sample Collected: May 27, 2024 03:25 PM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JB Volume Received: 20 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: May 28, 2024 03:59 PM pH: 6.8 Dissolved Oxygen: 111.0 %

Analysis Start : May 29, 2024 01:35 PM Temperature : 15 °C Sample Conductance: 170 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	391	9.0	0	0	0	0	0	0	0	0
100	15	7.2	171	9.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	397	9.2	0	0	0	0
100	0	0	0	0	14	7.2	175	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 20 Pre-aeration Time : 120 min. Rate of Aeration 6.5±1 mL/(min*L)

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.2 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.79 ± 0.29 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.3 – 0.6 g Length (Range) : 3.20 – 4.10 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: May 19, 2024

Test Endpoint 96 hrs LC50 (95% confidence interval) : 10.6 (10.1, 11.2)mg/L Statistical Method : Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) : 8.02 (4.82, 13.3) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

Test Method EPS 1/RM/13

Method Deviations : None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

Client : 4388 DIAVIK DIAMOND MINES INC., YELLOWKNIFE

Job Number: C438179

Client Project Name & Number: Closure

Sample Number: COG642-02

Analyst : Cara Shurgot, Joey Pilgrim, Tami Horvath

Verified By : Natasha Lloyd, Team Lead

Date: Jun 07, 2024 10:57 AM

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG637
Client Sample ID: 1645-44-4
Date sample collected: 5/27/2024
Test Performed By: NM9, THR, SVC, CSH, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 25
pH(pH units): 6.7
Conductivity (µS/cm): 69

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		7		0		8		0				10.0%	26	8.4
	2	0		0		0		5		0		13		18						
	3	0		0		0		5		0		11		14						
	4	0		0		0		6		0		12		6						
	5	0		0		0		6		0		11		8						
	6	0		0		0		6		0		7		19						
	7	0		0		0		7		0		11		19						
	8	0		0		0		5		0		8		0						
	9	0		0		0		3		0		9		14						
	10	0		0		0		7		11		0	X							
1.56	1	0		0		0		5		0		7		0				0.0%	31	7.4
	2	0		0		0		7		0		10		21						
	3	0		0		0		3		0		10		19						
	4	0		0		0		5		0		10		18						
	5	0		0		0		6		13		0		16						
	6	0		0		0		5		0		10		14						
	7	0		0		0		5		0		12		19						
	8	0		0		0		5		12		0		18						
	9	0		0		0		4		0		9		17						
	10	0		0		0		6		11		0		10						
3.13	1	0		0		0		4		0		12		11				0.0%	27	5.2
	2	0		0		0		7		0		12		6						
	3	0		0		0		4		0		11		17						
	4	0		0		0		7		8		0		12						
	5	0		0		0		7		4		0		6						
	6	0		0		0		6		0		7		12						
	7	0		0		0		4		0		8		18						
	8	0		0		0		7		13		0		10						
	9	0		0		0		4		12		0		19						
	10	0		0		0		5		5		0		12						
6.25	1	0		0		0		5		0		9		6				0.0%	30	5.6
	2	0		0		0		5		0		12		23						
	3	0		0		0		6		0		8		21						
	4	0		0		0		4		0		11		12						
	5	0		0		0		6		8		0		16						
	6	0		0		0		5		0		9		14						
	7	0		0		0		6		0		11		17						
	8	0		0		0		6		10		0		14						
	9	0		0		0		4		10		0		12						
	10	0		0		0		5		11		0		17						
12.5	1	0		0		0		7		0		10		13				0.0%	28	4.9
	2	0		0		0		7		0		10		14						
	3	0		0		0		6		0		11		16						
	4	0		0		0		6		12		0		18						
	5	0		0		0		5		0		0		16						
	6	0		0		0		4		0		7		10						
	7	0		0		0		5		0		9		11						
	8	0		0		0		3		9		0		15						
	9	0		0		0		8		9		0		14						
	10	0		0		0		8		9		0		12						
25	1	0		0		0		7		0		10		11				0.0%	32	3.2
	2	0		0		0		6		0		11		16						
	3	0		0		0		6		7		0		21						
	4	0		0		0		5		0		10		16						
	5	0		0		0		6		0		9		18						
	6	0		0		0		5		0		9		14						
	7	0		0		0		6		0		8		19						
	8	0		0		0		6		0		8		14						
	9	0		0		0		7		9		0		15						
	10	0		0		0		6		13		0		19						
50	1	0		0		0		6		8		0		16				10.0%	27	5.8
	2	0		0		0		7		9		0		15						
	3	0		0		0		7		6		0		20						
	4	0		0		0		4		7		0		21						
	5	0		0		0		6		9		4								
	6	0		0		0		6		0		8		14						
	7	0		0		0		4		0		8		12						
	8	0		0		0		7		11		0		10						
	9	0		0		0		4		9		0		13						
	10	0		0		0		5		10		0		0	X					
100	1	0		0		0		4		10		0		11				10.0%	25	6.5
	2	0		0		0		3		0		12		16						
	3	0		0		0		3		8		0		17						
	4	0		0		0		4		5		0	X							
	5	0		0		0		3		0		6		17						
	6	0		0		0		7		0		7		14						
	7	0		0		0		2		0		8		19						
	8	0		0		0		5		8		0		8						
	9	0		0		0		6		6		0		10						
	10	0		0		0		7		9		0		14						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.5	7.2	24/05/30	25	8.1	6.7
1.56		25	8.3	7.3		25	8.1	6.8
3.13		25	8.4	7.4		25	8.1	6.7
6.25		25	8.3	7.4		25	8.1	6.9
12.5		24	8.2	7.5		25	8.1	7.0
25		24	8.1	7.7		24	8.0	6.9
50		24	7.8	8.1		25	7.8	7.0
100		24	7.0	8.9		24	7.3	7.1
Control	24/05/30	25	8.0	7.0	24/05/31	24	8.1	6.1
1.56		25	8.1	7.1		25	8.0	6.0
3.13		25	8.1	7.1		24	7.9	5.8
6.25		25	8.1	7.1		24	7.8	5.7
12.5		25	8.0	7.2		24	7.8	5.8
25		24	7.9	7.4		24	7.8	5.8
50		24	7.7	7.6		24	7.7	5.8
100		24	7.0	8.3		24	7.3	6.1
Control	24/05/31	24	8.3	6.9	24/06/01	24	8.0	6.4
1.56		25	8.2	7.0		25	8.1	6.0
3.13		24	8.1	7.1		24	7.9	6.1
6.25		24	8.1	7.1		25	8.0	5.9
12.5		25	8.0	7.2		25	8.0	6.0
25		24	7.9	7.4		24	7.9	6.2
50		24	7.7	7.7		24	7.8	6.2
100		24	7.3	8.3		24	7.5	6.5
Control	24/06/01	24	8.2	7.2	24/06/02	24	8.2	6.6
1.56		24	8.1	7.2		24	8.2	6.9
3.13		24	8.2	7.2		24	8.2	6.8
6.25		24	8.1	7.2		24	8.1	7.1
12.5		24	8.2	7.4		24	8.1	6.6
25		24	8.0	7.4		24	7.9	6.6
50		24	7.8	7.7		24	7.7	6.6
100		24	7.2	8.4		24	7.4	6.9
Control	24/06/02	25	8.3	7.0	24/06/03	24	7.8	5.6
1.56		25	8.3	7.0		24	7.8	5.5
3.13		25	8.2	7.1		24	7.8	5.4
6.25		25	8.2	7.1		25	7.8	5.3
12.5		25	8.1	7.2		25	7.7	5.4
25		24	8.0	7.3		25	7.7	5.5
50		24	7.7	7.6		25	7.6	5.6
100		24	6.8	8.4		25	7.2	6.1
Control	24/06/03	25	8.2	6.7	24/06/04	25	7.5	3.6
1.56		25	8.1	6.8		25	7.5	3.7
3.13		25	8.2	6.8		24	7.5	3.7
6.25		25	8.1	6.8		25	7.5	3.8
12.5		25	8.1	6.9		25	7.4	3.9
25		24	8.0	7.1		24	7.4	4.0
50		24	7.7	7.3		25	7.4	4.3
100		24	7.2	7.8		24	7.0	5.4
Control	24/06/04	24	8.1	7.1	24/06/05	24	8.0	6.8
1.56		24	8.1	7.1		24	7.9	6.4
3.13		24	8.1	7.1		24	8.0	6.7
6.25		24	8.1	7.2		24	8.1	6.7
12.5		24	7.8	7.2		24	7.9	6.9
25		24	7.9	7.3		24	7.9	6.6
50		24	7.7	7.5		24	7.7	6.4
100		24	7.0	8.2		24	7.2	6.4
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG638
Client Sample ID: 1645-44-5
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.7
Temperature (°C): 25
pH(pH units): 6.7
Conductivity (µS/cm): 66

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		3		10						0.0%	29	7.9
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	3	0		0		0		7		12		0		11						
	4	0		0		0		8		0		10		7						
	5	0		0		0		6		14		0		20						
	6	0		0		0		5		9		0		21						
	7	0		0		0		4		0		10		11						
	8	0		0		0		5		4		10								
	9	0		0		0		4		10		0		19						
	10	0		0		0		7		14		0		18						
1.56	1	0		0		0		7		6		10						0.0%	30	6.3
	2	0		0		0		5		3		15								
	3	0		0		0		4		15		0		18						
	4	0		0		0		4		9		0		16						
	5	0		0		0		4		13		0		14						
	6	0		0		0		8		14		0		15						
	7	0		0		0		5		8		10								
	8	0		0		0		8		11		0		20						
	9	0		0		0		5		6		0		14						
	10	0		0		0		6		10		0		13						
3.13	1	0		0		0		4		0		12		18				10.0%	30	9.1
	2	0		0		0		5		0		13		23						
	3	0		0		0		5		6		0	X							
	4	0		0		0		4		7		0		15						
	5	0		0		0		5		0		11		19						
	6	0		0		0		3		0		8		14						
	7	0		0		0		6		15		0		21						
	8	0		0		0		4		4		0		17						
	9	0		0		0		5		7		0		16						
	10	0		0		0		6		4		0		22						
6.25	1	0		0		0		3		0		12		19				0.0%	31	5.0
	2	0		0		0		5		0		9		17						
	3	0		0		0		5		8		0		19						
	4	0		0		0		5		15		0		14						
	5	0		0		0		3		4		0		17						
	6	0		0		0		8		0		12		16						
	7	0		0		0		8		0		13		15						
	8	0		0		0		7		7		0		21						
	9	0		0		0		5		9		0		12						
	10	0		0		0		4		4		0		15						
12.5	1	0		0		0		0		0		9		11				0.0%	24	7.0
	2	0		0		0		3		0		14		15						
	3	0		0		0		3		8		0		0						
	4	0		0		0		5		5		0		14						
	5	0		0		0		4		4		0		20						
	6	0		0		0		5		8		0		17						
	7	0		0		0		5		9		0		14						
	8	0		0		0		6		7		0		11						
	9	0		0		0		6		8		0		17						
	10	0		0		0		4		5		6								
25	1	0		0		0		3		0		10		18				10.0%	27	5.8
	2	0		0		0		0		12		0	X							
	3	0		0		0		6		6		0		17						
	4	0		0		0		3		11		0		13						
	5	0		0		0		7		5		0		15						
	6	0		0		0		5		8		0		15						
	7	0		0		0		5		9		0		17						
	8	0		0		0		5		4		0		17						
	9	0		0		0		6		8		0		14						
	10	0		0		0		7		10		0		16						
50	1	0		0		0		6		7		14						0.0%	29	5.4
	2	0		0		0		4		0		4		17						
	3	0		0		0		5		3		0		15						
	4	0		0		0		5		5		0		16						
	5	0		0		0		7		0		0		16						
	6	0		0		0		5		0		13		17						
	7	0		0		0		5		0		9		12						
	8	0		0		0		4		14		0		20						
	9	0		0		0		4		12		0		13						
	10	0		0		0		6		13		0		16						
100	1	0		0		0		4		4		0		22				0.0%	28	5.5
	2	0		0		0		3		0		7		15						
	3	0		0		0		6		5		0		19						
	4	0		0		0		5		7		0		17						
	5	0		0		0		2		3		10								
	6	0		0		0		5		11		0		19						
	7	0		0		0		4		8		0		14						
	8	0		0		0		5		6		0		22						
	9	0		0		0		4		9		0		16						
	10	0		0		0		7		11		0		13						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.1	24/05/30	24	8.1	6.7
1.56		25	8.2	7.1		24	8.1	6.6
3.13		25	8.2	7.1		24	8.0	6.7
6.25		25	8.2	7.2		24	8.1	6.6
12.5		24	8.1	7.4		24	7.8	6.7
25		24	8.0	7.6		24	7.9	6.8
50		24	7.8	8.2		24	7.8	6.8
100		24	7.0	9.5		24	7.2	7.2
Control	24/05/30	24	8.1	7.1	24/05/31	24	7.9	6.0
1.56		24	8.2	7.0		25	7.8	5.9
3.13		24	8.2	7.1		24	7.7	5.8
6.25		24	8.2	7.1		25	7.8	5.8
12.5		24	8.2	7.2		24	7.8	6.0
25		24	8.1	7.2		24	7.8	6.0
50		24	7.9	7.4		24	7.6	6.0
100		24	7.2	8.3		24	7.4	6.0
Control	24/05/31	25	8.0	7.2	24/06/01	25	8.1	6.5
1.56		25	8.1	7.1		25	8.1	6.7
3.13		25	8.1	7.2		25	8.1	6.6
6.25		25	8.1	7.2		25	8.1	6.3
12.5		25	8.0	7.2		25	8.0	6.5
25		25	7.9	7.4		25	8.1	6.5
50		24	7.7	7.7		25	7.8	6.5
100		24	7.3	8.4		24	7.6	6.7
Control	24/06/01	25	8.1	7.1	24/06/02	24	7.9	6.1
1.56		25	8.2	7.1		24	7.9	6.1
3.13		25	8.1	7.1		24	7.8	6.0
6.25		25	8.1	7.1		24	7.9	6.1
12.5		25	8.1	7.2		24	7.8	6.2
25		25	8.0	7.3		24	7.8	6.2
50		25	7.8	7.6		24	7.6	6.0
100		25	7.1	8.4		24	7.4	6.3
Control	24/06/02	25	8.2	6.9	24/06/03	24	7.7	5.7
1.56		25	8.2	6.9		25	7.9	5.9
3.13		25	8.2	6.9		24	7.8	5.8
6.25		25	8.1	7.0		25	7.9	5.8
12.5		25	8.1	7.1		25	7.9	5.9
25		24	8.0	7.2		25	7.8	6.2
50		24	7.7	7.5		25	7.6	6.2
100		24	6.8	8.2		25	7.2	6.6
Control	24/06/03	25	8.1	7.0	24/06/04	25	7.5	4.7
1.56		25	8.2	6.9		25	7.5	4.6
3.13		25	8.1	6.9		25	7.6	4.6
6.25		25	8.1	6.9		25	7.5	4.6
12.5		25	8.1	7.0		25	7.6	4.7
25		24	7.9	7.1		25	7.6	4.8
50		24	7.8	7.3		25	7.5	5.0
100		24	7.3	7.8		24	7.2	6.1
Control	24/06/04	24	8.1	7.2	24/06/05	24	7.8	6.4
1.56		24	8.1	7.1		25	8.0	6.5
3.13		24	8.1	7.1		25	7.9	6.3
6.25		24	8.1	7.1		25	7.9	6.5
12.5		24	8.1	7.3		25	7.9	6.3
25		24	8.0	7.3		25	7.9	6.5
50		24	7.9	7.6		25	7.6	6.4
100		24	7.0	8.4		25	7.3	6.4
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG639
Client Sample ID: 1645-44-6
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 10.0
Temperature (°C): 24
pH(pH units): 6.7
Conductivity (µS/cm): 66

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration and 6.25% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	31	3.3
	2	0		0		0		6		11		12								
	3	0		0		0		6		6		0		20						
	4	0		0		0		7		10		0		18						
	5	0		0		0		7		9		0		14						
	6	0		0		0		8		12		0		17						
	7	0		0		0		9		11		0		14						
	8	0		0		0		6		10		0		12						
	9	0		0		0		5		10		0		14						
	10	0		0		0		8		11		0		9						
1.56	1	0		0		0		7		11		0		14				0.0%	33	4.5
	2	0		0		0		6		13		0		18						
	3	0		0		0		8		0		9		15						
	4	0		0		0		7		9		0		16						
	5	0		0		0		5		11		0		22						
	6	0		0		0		7		9		0		15						
	7	0		0		0		8		12		0		10						
	8	0		0		0		4		5		0		14						
	9	0		0		0		3		8		0		21						
	10	0		0		0		6		14		0		18						
3.13	1	0		0		0		5		11		0		13				0.0%	31	2.7
	2	0		0		0		4		11		0		17						
	3	0		0		0		6		8		0		22						
	4	0		0		0		5		12		0		15						
	5	0		0		0		6		12		0		16						
	6	0		0		0		8		10		0		14						
	7	0		0		0		9		10		0		8						
	8	0		0		0		5		11		0		12						
	9	0		0		0		8		10		0		13						
	10	0		0		0		4		12		0		16						
6.25	1	0		0		0		6		7		0		15				0.0%	33	5.3
	2	0		0		0		7		9		0		19						
	3	0		0		0		5		0		0		21						
	4	0		0		0		8		9		0		9						
	5	0		0		0		6		13		0		20						
	6	0		0		0		9		14		0		16						
	7	0		0		0		6		10		0		14						
	8	0		0		0		8		13		0		16						
	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	10	0		0		0		5		12		0		17						
12.5	1	0		0		0		7		12		0		16				0.0%	31	5.4
	2	0		0		0		5		9		0		12						
	3	0		0		0		4		9		0		9						
	4	0		0		0		7		14		0		17						
	5	0		0		0		8		8		0		13						
	6	0		0		0		6		9		0		14						
	7	0		0		0		5		12		0		17						
	8	0		0		0		4		11		0		16						
	9	0		0		0		8		10		0		20						
	10	0		0		0		6		10		0		10						
25	1	0		0		0		5		8		0		16				0.0%	29	5.8
	2	0		0		0		6		10		0		15						
	3	0		0		0		5		10		0		18						
	4	0		0		0		4		9		0		17						
	5	0		0		0		7		12		0		4						
	6	0		0		0		4		6		0		10						
	7	0		0		0		8		8		0		13						
	8	0		0		0		5		5		0		14						
	9	0		0		0		4		10		0		25						
	10	0		0		0		6		10		0		19						
50	1	0		0		0		6		10		0		7				0.0%	32	8.1
	2	0		0		0		7		11		0		19						
	3	0		0		0		7		8		0		23						
	4	0		0		0		5		9		0		18						
	5	0		0		0		8		14		0		21						
	6	0		0		0		5		8		0		19						
	7	0		0		0		3		6		0		14						
	8	0		0		0		3		8		0		12						
	9	0		0		0		6		12		0		10						
	10	0		0		0		8		12		0		24						
100	1	0		0		0		5		8		0		14				10.0%	25	10.8
	2	0		0		0		4		14		0		18						
	3	0		0		0		5		14		0		13						
	4	0	X																	
	5	0		0		0		7		12		0		13						
	6	0		0		0		3		7		0		19						
	7	0		0		0		3		0		0		10						
	8	0		0		0		5		7		0		16						
	9	0		0		0		3		10		0		13						
	10	0		0		0		4		12		0		14						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.2	24/05/30	25	7.8	6.4
1.56		25	8.2	7.2		25	7.9	6.4
3.13		25	8.2	7.2		25	8.0	6.5
6.25		25	8.2	7.3		25	8.0	6.5
12.5		25	8.2	7.4		26	7.9	6.5
25		24	8.1	7.7		25	7.9	6.6
50		24	7.9	8.2		25	7.8	6.6
100		24	7.1	9.1		25	7.4	6.6
Control	24/05/30	24	8.1	7.2	24/05/31	25	7.7	5.8
1.56		24	8.1	7.1		25	7.8	5.7
3.13		25	8.1	7.1		25	7.8	5.9
6.25		24	8.3	7.2		25	7.8	5.8
12.5		24	8.1	7.3		25	7.7	6.0
25		24	8.0	7.4		24	7.6	5.9
50		24	7.8	7.7		25	7.8	6.0
100		24	7.2	8.4		24	6.9	5.9
Control	24/05/31	25	8.1	7.0	24/06/01	25	7.8	5.6
1.56		25	8.1	7.1		25	8.0	5.5
3.13		25	8.1	7.1		25	8.0	5.6
6.25		25	8.1	7.2		25	7.9	5.6
12.5		25	8.0	7.2		25	7.9	5.7
25		25	8.0	7.4		25	7.9	5.7
50		25	7.8	7.5		25	7.8	6.0
100		25	7.0	8.3		24	7.4	6.1
Control	24/06/01	25	8.1	7.2	24/06/02	24	8.4	6.8
1.56		25	8.2	7.1		24	8.2	6.7
3.13		25	8.3	7.1		24	8.2	6.8
6.25		25	8.2	7.2		24	8.2	6.8
12.5		25	8.2	7.2		24	8.1	6.9
25		25	8.1	7.3		24	8.0	7.0
50		25	8.0	7.5		24	7.9	7.0
100		25	7.5	8.0		24	7.3	6.8
Control	24/06/02	25	8.2	6.9	24/06/03	24	8.1	5.9
1.56		25	8.2	6.9		24	7.9	5.7
3.13		25	8.2	6.9		24	8.0	5.9
6.25		25	8.3	7.0		24	7.9	5.8
12.5		25	8.1	7.1		24	7.9	5.9
25		24	8.1	7.2		24	7.9	6.0
50		24	7.8	7.4		24	7.7	6.1
100		24	7.1	8.0		24	7.3	6.3
Control	24/06/03	24	8.1	6.8	24/06/04	24	7.8	5.0
1.56		24	8.2	6.8		24	7.6	5.0
3.13		25	8.2	6.8		24	7.7	4.5
6.25		24	8.1	6.9		24	7.6	4.7
12.5		24	8.1	7.0		24	7.5	4.8
25		24	8.0	7.1		24	7.5	5.1
50		24	7.8	7.4		24	7.5	5.1
100		24	7.3	8.0		24	6.9	6.0
Control	24/06/04	24	8.1	7.2	24/06/05	25	7.7	5.5
1.56		24	8.1	7.2		25	7.6	5.7
3.13		24	8.1	7.2		25	7.7	5.8
6.25		24	8.0	7.2		25	7.7	5.3
12.5		24	8.0	7.2		25	7.6	5.4
25		24	7.9	7.3		25	7.6	5.4
50		24	7.8	7.5		25	7.4	5.5
100		24	7.1	8.2		25	6.9	5.7
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG640
Client Sample ID: 1645-68-4
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.1
Temperature (°C): 25
pH(pH units): 7.1
Conductivity (µS/cm): 147

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	N/A	N/A	Linear Interpolation (ICPIN)	Log-X	N/A
	7 day Reproduction Result	IC25	>100	N/A	N/A	Linear Interpolation (ICPIN)	Log-X	N/A
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

Control concentration and 25% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		6		0		0		12				0.0%	26	6.6
	2	0		0		0		4		5		0		18						
	3	0		0		0		7		8		0		0						
	4	0		0		0		3		10		0		9						
	5	0		0		0		8		13		0		13						
	6	0		0		0		7		15		0		7						
	7	0		0		0		8		0		12		13						
	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	9	0		0		0		5		14		0		7						
	10	0		0		0		6		12		0		13						
1.56	1	0		0		0		5		0		11		0				20.0%	23	7.0
	2	0		0		0		4		0		10		15	X					
	3	0		0		0		5		8		0	X							
	4	0		0		0		7		10		0		14						
	5	0		0		0		8		12		0		5						
	6	0		0		0		6		0		6		15						
	7	0		0		0		5		4		0		16						
	8	0		0		0		7		0		6		3						
	9	0		0		0		4		8		0		7						
	10	0		0		0		6		7		0		20						
3.13	1	0		0		0		7		5		0		8				10.0%	23	6.5
	2	0		0		0		8		0		12		0						
	3	0		0		0		5		7		0		13						
	4	0		0		0		6		12		0		11						
	5	0		0		0		7		8		0		15						
	6	0		0		0		6		4		7								
	7	0		0		0		8		10		11								
	8	0		0		0		5		4		0	X							
	9	0		0		0		9		15		0		0						
	10	0		0		0		7		4		0		13						
6.25	1	0		0		0		5		10		0		13				0.0%	28	5.7
	2	0		0		0		4		5		13								
	3	0		0		0		7		8		0		8						
	4	0		0		0		5		7		0		16						
	5	0		0		0		9		11		0		19						
	6	0		0		0		5		9		0		10						
	7	0		0		0		4		2		0		17						
	8	0		0		0		6		10		11								
	9	0		0		0		7		13		0		16						
	10	0		0		0		8		9		0		14						
12.5	1	0		0		0		5		2		0		14				0.0%	23	4.9
	2	0		0		0		7		4		0		15						
	3	0		0		0		9		0		0		10						
	4	0		0		0		10		0		0		6						
	5	0		0		0		8		4		0		16						
	6	0		0		0		5		5		0		19						
	7	0		0		0		6		7		12								
	8	0		0		0		5		0		0		19						
	9	0		0		0		3		5		0		8						
	10	0		0		0		7		9		0		12						
25	1	0		0		0		4		0		0		14				0.0%	27	6.2
	2	0		0		0		5		6		0		16						
	3	0		0		0		3		12		0		16						
	4	0		0		0		7		14		0		18						
	5	0		0		0		5		5		0		16						
	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	7	0		0		0		4		0		9		14						
	8	0		0		0		8		7		0		8						
	9	0		0		0		4		6		0		11						
	10	0		0		0		3		13		0		14						
50	1	0		0		0		6		4		12						0.0%	32	6.1
	2	0		0		0		8		0		12		13						
	3	0		0		0		3		15		0		20						
	4	0		0		0		2		17		0		21						
	5	0		0		0		8		0		12		15						
	6	0		0		0		4		0		11		14						
	7	0		0		0		3		0		9		12						
	8	0		0		0		7		14		0		18						
	9	0		0		0		5		9		0		18						
	10	0		0		0		7		13		0		12						
100	1	0		0		0		5		0		13		15				0.0%	31	5.9
	2	0		0		0		8		0		4		18						
	3	0		0		0		7		16		0		22						
	4	0		0		0		6		12		0		16						
	5	0		0		0		5		0		6		17						
	6	0		0		0		3		0		10		10						
	7	0		0		0		4		0		10		14						
	8	0		0		0		5		10		0		19						
	9	0		0		0		6		7		0		14						
	10	0		0		0		8		8		0		16						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.2	7.1	24/05/30	25	8.1	6.8
1.56		24	8.2	7.1		25	8.2	6.8
3.13		24	8.2	7.3		25	8.0	6.6
6.25		24	8.2	7.3		25	8.1	6.8
12.5		24	8.1	7.5		25	8.1	6.7
25		24	8.1	7.6		25	8.0	7.0
50		24	7.8	8.0		24	7.8	6.9
100		25	7.1	8.8		24	7.4	6.9
Control	24/05/30	24	7.8	7.1	24/05/31	24	8.3	6.3
1.56		24	8.2	7.1		24	8.1	6.3
3.13		24	8.0	7.1		24	8.0	6.2
6.25		24	8.1	7.2		24	8.0	6.2
12.5		24	8.1	7.2		24	8.0	6.2
25		24	7.9	7.3		24	7.9	6.2
50		24	7.8	7.6		24	7.6	6.2
100		24	7.2	8.0		24	7.5	6.2
Control	24/05/31	25	8.1	7.2	24/06/01	25	7.8	5.7
1.56		25	8.1	7.1		25	7.9	5.6
3.13		25	8.1	7.1		25	7.8	5.4
6.25		25	8.1	7.2		25	7.9	5.6
12.5		25	8.1	7.3		25	7.9	5.6
25		25	8.0	7.4		24	7.9	5.8
50		25	7.8	7.6		24	7.7	5.9
100		25	7.3	8.1		24	7.4	6.0
Control	24/06/01	25	8.2	7.2	24/06/02	24	8.1	6.4
1.56		25	8.2	7.2		24	8.0	6.4
3.13		25	8.2	7.2		24	8.0	6.2
6.25		25	8.2	7.2		24	7.9	6.1
12.5		25	8.2	7.3		24	7.9	6.2
25		25	8.1	7.3		24	7.8	6.1
50		25	7.9	7.6		24	7.7	6.3
100		24	7.5	8.1		24	7.3	6.3
Control	24/06/02	24	8.1	7.0	24/06/03	24	8.1	6.6
1.56		25	8.2	6.9		24	8.1	6.4
3.13		25	8.2	6.9		24	7.9	6.2
6.25		25	8.2	7.0		24	8.0	6.4
12.5		25	8.1	7.0		25	7.9	6.4
25		24	8.0	7.3		24	7.9	6.4
50		24	7.7	7.4		24	7.8	6.5
100		24	7.1	8.2		25	7.5	6.8
Control	24/06/03	25	8.1	6.9	24/06/04	25	7.5	4.2
1.56		25	8.1	6.9		25	7.5	4.2
3.13		25	8.1	6.9		25	7.5	4.1
6.25		24	8.1	7.0		25	7.6	4.3
12.5		24	8.1	7.0		25	7.5	4.4
25		24	8.0	7.1		25	7.4	4.5
50		24	7.8	7.3		25	7.4	4.9
100		24	7.4	7.8		24	7.1	5.9
Control	24/06/04	24	7.8	7.1	24/06/05	24	7.5	4.6
1.56		24	7.9	7.0		24	7.5	4.4
3.13		24	7.8	7.0		24	7.5	4.5
6.25		24	7.8	7.1		24	7.6	4.7
12.5		24	7.8	7.1		24	7.5	4.9
25		24	7.7	7.3		24	7.5	4.8
50		24	7.5	7.5		25	7.4	5.4
100		24	7.2	8.1		25	7.1	6.3
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG641
Client Sample ID: 1645-68-5
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC, KMG
Test Initiation Date: 5/29/2024
Test End Date: 6/5/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024 6/4/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 25
pH(pH units): 7.0
Conductivity (µS/cm): 163

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

12.5% concentration and 100% concentration both analyzed with 9 organisms.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/4/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		4		9		0		0				0.0%	24	7.7
	2	0		0		0		5		6		0		6						
	3	0		0		0		5		10		0		0						
	4	0		0		0		6		11		0		18						
	5	0		0		0		5		13		0		9						
	6	0		0		0		5		8		0		7						
	7	0		0		0		7		5		0		21						
	8	0		0		0		4		9		0		13						
	9	0		0		0		3		7		0		17						
	10	0		0		0		3		10		0		18						
1.56	1	0		0		0		6		12		0		21				0.0%	31	5.3
	2	0		0		0		5		10		0		17						
	3	0		0		0		6		12		0		18						
	4	0		0		0		7		10		0		10						
	5	0		0		0		4		12		0		12						
	6	0		0		0		4		11		0		15						
	7	0		0		0		6		8		0		14						
	8	0		0		0		7		11		0		8						
	9	0		0		0		8		10		0		19						
	10	0		0		0		7		11		0		5						
3.13	1	0		0		0		7		10		0		0				0.0%	24	5.3
	2	0		0		0		5		9		0		4						
	3	0		0		0		4		12		0		10						
	4	0		0		0		5		12		0		12						
	5	0		0		0		4		12		0		5						
	6	0		0		0		5		9		0		12						
	7	0		0		0		4		6		0		11						
	8	0		0		0		5		7		0		8						
	9	0		0		0		6		10		0		12						
	10	0		0		0		7		12		0		14						
6.25	1	0		0		0		5		9		0		6				0.0%	25	8.4
	2	0		0		0		6		10		0		16						
	3	0		0		0		6		11		0		13						
	4	0		0		0		5		11		0		17						
	5	0		0		0		7		4		0		14						
	6	0		0		0		5		10		0		19						
	7	0		0		0		4		7		0		4						
	8	0		0		0		6		10		0		12						
	9	0		0		0		6		10		0		3						
	10	0		0		0		0		9		0		0						
12.5	1	0		0		0		7		8		0		7				22.2%	25	8.2
	2	0		0		0		5		12		0		12						
	3	0		0		0		3		10		0		16						
	4	0		0		0		8		6		0	X							
	5	0		0		0		5		10		0		17						
	6	0		0		0		6		10		0		18						
	7	0		0		0		4		8		0	X							
	8	0		0		0		6		11		0		14						
	9	0		0		0		5		11		0		3						
	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
25	1	0		0		0		5		10		0		16				10.0%	27	7.1
	2	0		0		0		6		7		0		5						
	3	0		0		0		5		10		0		11						
	4	0		0		0		5		7		0		16						
	5	0		0		0		0		0		14		0	X					
	6	0		0		0		6		0		9		14						
	7	0		0		0		6		7		0		8						
	8	0		0		0		6		9		0		21						
	9	0		0		0		5		11		0		19						
	10	0		0		0		6		8		0		14						
50	1	0		0		0		5		11		0		13				0.0%	29	4.3
	2	0		0		0		8		11		0		15						
	3	0		0		0		7		6		0		13						
	4	0		0		0		5		10		0		11						
	5	0		0		0		5		10		0		14						
	6	0		0		0		4		7		0		9						
	7	0		0		0		5		9		0		13						
	8	0		0		0		6		12		0		15						
	9	0		0		0		5		9		0		18						
	10	0		0		0		4		10		0		19						
100	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	29	5.7
	2	0		0		0		5		7		0		12						
	3	0		0		0		5		7		0		20						
	4	0		0		0		6		9		0		24						
	5	0		0		0		5		0		6		11						
	6	0		0		0		4		9		0		18						
	7	0		0		0		5		9		0		12						
	8	0		0		0		7		4		0		16						
	9	0		0		0		4		8		0		14						
	10	0		0		0		6		12		0		18						

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	7.9	7.3	24/05/30	25	7.8	6.3
1.56		25	7.9	7.3		25	8.0	6.3
3.13		25	8.0	7.4		25	7.9	6.2
6.25		25	7.9	7.4		25	7.9	6.2
12.5		25	7.8	7.5		25	7.9	6.5
25		25	7.8	7.7		24	7.8	6.5
50		24	7.7	8.2		24	7.7	6.6
100		24	7.4	9.2		24	7.4	6.8
Control	24/05/30	24	8.1	7.1	24/05/31	25	7.7	5.4
1.56		25	8.1	7.1		25	7.7	5.4
3.13		24	8.1	7.1		25	7.6	5.2
6.25		24	8.1	7.2		25	7.7	5.4
12.5		24	7.9	7.2		25	7.7	5.4
25		24	7.9	7.3		25	7.7	5.4
50		24	7.8	7.5		25	7.6	5.6
100		24	7.4	7.9		24	7.3	5.6
Control	24/05/31	24	8.2	7.0	24/06/01	25	8.0	5.5
1.56		24	8.2	7.0		25	7.9	5.6
3.13		25	8.1	7.1		25	8.0	5.8
6.25		25	8.1	7.1		25	7.9	5.5
12.5		25	8.1	7.2		25	7.9	5.7
25		25	8.1	7.3		24	7.8	5.5
50		24	7.8	7.6		25	7.7	5.9
100		24	7.3	8.4		24	7.5	6.3
Control	24/06/01	25	8.2	7.1	24/06/02	24	8.0	6.4
1.56		25	8.3	7.1		24	8.2	6.7
3.13		25	8.3	7.2		24	8.1	6.7
6.25		25	8.2	7.1		25	8.0	6.4
12.5		25	8.2	7.2		25	7.9	6.6
25		25	8.1	7.3		24	7.9	6.6
50		25	7.9	7.5		25	7.9	6.8
100		25	7.4	8.0		25	7.6	6.9
Control	24/06/02	24	8.2	6.9	24/06/03	24	8.0	5.5
1.56		25	8.2	6.9		24	7.9	5.4
3.13		25	8.2	7.0		24	7.9	5.4
6.25		25	8.2	7.0		25	7.8	5.4
12.5		24	8.1	7.1		25	7.8	5.5
25		24	8.1	7.2		25	7.8	5.6
50		24	7.8	7.5		25	7.6	5.8
100		24	7.2	8.1		25	7.4	6.2
Control	24/06/03	25	8.1	6.8	24/06/04	24	7.7	4.3
1.56		25	8.1	6.8		24	7.5	4.1
3.13		25	8.2	6.8		24	7.5	4.0
6.25		25	8.1	6.8		24	7.7	4.0
12.5		25	8.1	6.9		24	7.5	4.5
25		25	8.0	7.0		24	7.5	4.1
50		24	7.8	7.3		24	7.4	4.8
100		24	7.3	7.9		24	7.1	5.2
Control	24/06/04	24	7.8	7.0	24/06/05	24	7.6	4.5
1.56		25	7.8	7.0		24	7.5	4.1
3.13		25	7.9	6.9		24	7.5	4.2
6.25		25	7.8	7.1		24	7.6	4.1
12.5		24	7.8	7.1		24	7.5	3.9
25		24	7.7	7.2		24	7.5	4.1
50		24	7.5	7.5		24	7.3	4.5
100		24	7.2	8.2		24	7.1	6.0
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

Ceriodaphnia dubia 7 Day Bioassay Report

Test Details

Job and Sample ID: C438179-COG642
Client Sample ID: 1645-68-6
Date sample collected: 5/27/2024
Test Performed By: NM9, CSH, THR, SVC
Test Initiation Date: 5/29/2024
Test End Date: 6/4/2024
Dates when subsamples used: 5/29/2024 6/2/2024
5/30/2024 6/3/2024
5/31/2024
6/1/2024

Chemistries prior to test: **Dissolved Oxygen(mg/L):** 9.5
Temperature (°C): 24
pH(pH units): 7.1
Conductivity (µS/cm): 172

Test Results			Endpoint	95% LCL	95% UCL	Method	Data Transforms	Outliers* (concentration-replicate)
Sample Test Results (% vol/vol)	7 day Survival Result	LC50	>100	n/a	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
	7 day Reproduction Result	IC25	<1.56	<1.56	n/a	Linear Interpolation (ICPIN)	Log-X	n/a
Reference Toxicant Test Results (g/L)	7 day Survival Result	LC50	1.35	1.20	1.51	Untrimmed Spearman-Karber	Log-X	N/A
	7 day Reproduction Result	IC50	1.15	0.82	1.33	Linear Interpolation (ICPIN)	Log-X	N/A
Control Chart Data (g/L)	7 day Survival Result	LC50	1.48	1.15	1.90	Levey-Jennings	n/a	n/a
	7 day Reproduction Result	IC50	1.25	1.03	1.52			
Reference Toxicant Test Initiation Date:			2024/05/28					

* If outliers were removed, description in comments.

Test Validity Criteria

Mean mortality of the control adults ≤20%:	PASS
Average of ≥15 neonates/surviving adult in the control:	PASS
3 broods produced by ≥60% of control organisms by the end of the 8th day:	PASS
Valid Reference Toxicant test:	PASS

Comments

As per EPS 1/RM/46, confidence intervals on an EC50 or ICp represent upper and lower concentrations, within which the true endpoint is thought to lie, for a stated level of probability. The 95% confidence limits represent a statement that there is a 19 out of 20 chance that the true endpoint falls within those specified limits.

For the results contained herein, the upper and lower 95% confidence limits exceeded the range of test concentrations (0-100%(v/v)), therefore the IC25 estimate should be deemed inconclusive.

Associated reference toxicant data was corrected for hormesis calculations of IC50 as Linear Interpolation (ICPIN) does not take into account the effect of hormesis.

Test Organisms

Species:	*Ceriodaphnia dubia*
Source of test organisms:	Aquatic Research Organisms. Hampton, NH
Age of organisms at test initiation:	≤ 24 hours, within 12 hours
Unusual Appearance, behaviour or treatment prior to use in test :	None
Mean % mortality of brood organisms during 7-day period proceding test:	5
Number of neonates produced by each organism in its third or subsequent brood:	≥8 neonates
Mean number of neonates per adult during first 3 broods in 7 days preceding test:	31
Observations of ephippia:	None

All test organisms used to initiate this test were taken from a series of individual cultures, that originated from the same mass culture.
The 4th brood or subsequent broods produced during the test are not included in the final statistical analysis.

Test Facilities and Apparatus

Test vessels used:	16 x 125 mm borosilicate glass test tubes

Control/Dilution Water

Consists of:	16 L RODI from in-house system, to which the following are added:
	4 L Perrier Brand carbonated spring water
	1 mL cyanocobalamin (Vitamin B-12)
	1 mL Sodium Selenate Decahydrate

Test Method

Reference method used for testing:	Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, EPS 1/RM/21 Second Edition - February 2007
Did the following occur during sample preparations:	
Filtered:	No
Adjusted for hardness:	No
Adjusted for pH:	No
Frequency of observations:	24 ± 2 hours
Frequency of water quality measurements:	Daily
Design and description of any specialized procedure:	N/A
Program used for statistical calculations:	Comprehensive Environmental Toxicity Information System (CETIS). Tidepool Scientific Software. Version 2.1.2.3
Reference method used for statistical calculations:	Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environment Canada, EPS 1/RM/46 - March 2005, Amendments: June 2007.

Test Conditions and Procedures

Number of test solutions:	80
Number of test concentrations:	7 and a negative control
Concentrations tested (%):	1.56 3.13 6.25 12.5 25 50 100
Units of tested concentrations:	% vol/vol
Number of replicates:	10
Volume of test solutions:	≥ 15 mL
Depth of test solutions:	≥ 5 cm
Individuals per test vessel:	1
Was pre-aeration performed:	Yes
Procedure:	Oil-free compressed air is dispensed through airline tubing and a disposable pipette
Rate:	≤ 100 bubbles / minute
Duration:	20 minutes
Dates where pre-aeration occurred:	5/29/2024 6/2/2024 5/30/2024 6/3/2024 5/31/2024 6/1/2024
Aeration during testing:	None

Refer to comments section for any deviations.
The reference toxicity test was performed under the same experimental conditions as those used with the test sample.
Refer to comments section for any deviations regarding reference toxicity testing.
The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Ceriodaphnia dubia Survival and Reproduction Observations

Note: Mortalities are indicated by an "X" in the column and row of the concentration, replicate and day of occurance. If organism was not used for testing, this will be indicated by "N/A" in mortality and neonate columns for the replicate.

Legend: R= Reproduction (neonates), M= mortality

Conc. (%vol/vol)	Replicate number	Day of Testing																Cumulative Mean % Mortality	Cumulative Mean Reproduction	SD of mean reproduction
		1		2		3		4		5		6		7		8				
		R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M			
Control	1	0		0		0		5		4		10						0.0%	18	7.3
	2	0		0		0		4		5		0								
	3	0		0		0		6		8		0								
	4	0		0		0		9		7		12								
	5	0		0		0		4		5		8								
	6	0		0		0		3		0		9								
	7	0		0		0		5		4		9								
	8	0		0		0		4		8		0								
	9	0		0		0		7		9		8								
	10	0		0		0		7		14		10								
1.56	1	0		0		0		6		2		9						0.0%	13	5.3
	2	0		0		0		8		10		0								
	3	0		0		0		2		4		0								
	4	0		0		0		5		7		0								
	5	0		0		0		7		5		0								
	6	0		0		0		5		0		10								
	7	0		0		0		3		0		0								
	8	0		0		0		6		3		10								
	9	0		0		0		2		0		12								
	10	0		0		0		4		3		11								
3.13	1	0		0		0		4		0		7						10.0%	11	5.9
	2	0		0		0	X													
	3	0		0		0		2		0		10								
	4	0		0		0		2		0		0								
	5	0		0		0		3		4		11								
	6	0		0		0		5		5		0								
	7	0		0		0		7		0		10								
	8	0		0		0		4		9		0								
	9	0		0		0		6		0		9								
	10	0		0		0		7		3		0								
6.25	1	0		0		0		7		0		9						10.0%	11	6.1
	2	0		0		0	X													
	3	0		0		0		6		0		11								
	4	0		0		0		5		0		9								
	5	0		0		0		7		3		0								
	6	0		0		0		8		0		6								
	7	0		0		0		4		0		0								
	8	0		0		0		7		7		0								
	9	0		0		0		6		4		5								
	10	0		0		0		3		0		0								
12.5	1	0		0		0		5		0		0						0.0%	12	5.2
	2	0		0		0		4		0		0								
	3	0		0		0		6		5		0								
	4	0		0		0		5		7		0								
	5	0		0		0		4		0		10								
	6	0		0		0		7		0		10								
	7	0		0		0		5		0		9								
	8	0		0		0		4		4		0								
	9	0		0		0		6		8		7								
	10	0		0		0		8		3		0								
25	1	0		0		0		9		5		0						10.0%	14	7.6
	2	0		0		0		5		0		0								
	3	0		0		0		3		4		11								
	4	0		0	X															
	5	0		0		0		4		9		9								
	6	0		0		0		5		7		12								
	7	0		0		0		7		4		7								
	8	0		0		0		5		3		0								
	9	0		0		0		2		5		8								
	10	0		0		0		4		0		12								
50	1	0		0		0		7		4		0						0.0%	14	7.5
	2	0		0		0		5		8		0								
	3	0		0		0		4		7		13								
	4	0		0		0		2		0		0								
	5	0		0		0		7		0		0								
	6	0		0		0		6		5		13								
	7	0		0		0		6		2		8								
	8	0		0		0		5		0		0								
	9	0		0		0		3		0		11								
	10	0		0		0		5		6		8								
100	1	0		0		0		8		14		0						0.0%	14	3.8
	2	0		0		0		5		8		0								
	3	0		0		0		7		0		7								
	4	0		0		0		6		0		11								
	5	0		0		0		4		0		10								
	6	0		0		0		4		0		7								
	7	0		0		0		7		6		0								
	8	0		0		0		3		0		8								
	9	0		0		0		3		5		0								
	10	0		0		0		6		0		9								

Average Values for Chemical Data of Test Concentrations

Test Concentration (% vol/vol)	Before Effluent Renewal				After Effluent Renewal			
	Date	Temperature (°C)	pH	DO (mg/L)	Date	Temperature (°C)	pH	DO (mg/L)
Control	24/05/29	25	8.1	7.3	24/05/30	25	8.2	6.9
1.56		25	8.0	7.4		25	7.9	6.7
3.13		25	8.0	7.5		25	7.9	6.7
6.25		25	7.9	7.5		25	8.0	6.6
12.5		25	7.9	7.6		25	7.9	6.6
25		25	7.8	7.7		25	7.7	6.6
50		24	7.7	8.2		25	7.6	6.6
100		24	7.5	9.2		24	7.4	7.0
Control	24/05/30	24	8.1	7.1	24/05/31	25	7.7	6.0
1.56		24	8.1	7.1		25	7.7	5.8
3.13		24	8.1	7.1		25	7.8	5.8
6.25		24	8.1	7.2		25	7.7	5.8
12.5		24	8.0	7.2		25	7.7	5.7
25		24	7.9	7.5		24	7.6	5.9
50		24	7.7	7.8		24	7.7	5.8
100		24	7.4	8.4		24	7.4	6.2
Control	24/05/31	25	8.1	7.2	24/06/01	25	7.8	6.1
1.56		25	8.2	7.1		25	7.9	5.9
3.13		25	8.2	7.2		25	7.9	6.1
6.25		25	8.2	7.2		25	8.1	6.3
12.5		25	8.1	7.3		25	8.1	6.4
25		25	8.0	7.4		25	7.9	6.5
50		25	7.8	7.6		25	7.8	6.5
100		24	7.4	8.5		25	7.6	6.6
Control	24/06/01	25	8.2	7.1	24/06/02	25	8.1	6.6
1.56		25	8.3	7.2		25	7.9	6.1
3.13		25	8.2	7.1		25	8.0	5.9
6.25		25	8.2	7.1		25	8.0	5.9
12.5		25	8.2	7.2		25	7.9	6.0
25		25	8.1	7.3		25	7.9	6.3
50		25	7.9	7.6		25	7.8	6.7
100		24	7.5	8.2		24	7.4	6.3
Control	24/06/02	25	8.2	6.9	24/06/03	24	7.7	5.7
1.56		25	8.2	6.9		25	7.8	5.5
3.13		25	8.2	6.9		25	7.8	5.5
6.25		25	8.2	7.0		25	7.7	5.2
12.5		25	8.1	7.0		25	7.8	5.5
25		24	8.0	7.2		25	7.7	5.7
50		24	7.8	7.4		25	7.7	5.9
100		24	7.3	8.3		24	7.5	6.2
Control	24/06/03	24	7.8	6.8	24/06/04	24	7.6	4.8
1.56		25	7.9	6.8		25	7.6	4.6
3.13		25	7.9	6.8		25	7.6	4.6
6.25		25	7.9	6.9		25	7.6	4.6
12.5		24	7.9	6.9		25	7.5	4.9
25		24	7.8	7.1		25	7.6	4.9
50		24	7.6	7.3		25	7.4	5.2
100		24	7.4	7.9		25	7.1	5.2
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a
Control	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1.56		n/a	n/a	n/a		n/a	n/a	n/a
3.13		n/a	n/a	n/a		n/a	n/a	n/a
6.25		n/a	n/a	n/a		n/a	n/a	n/a
12.5		n/a	n/a	n/a		n/a	n/a	n/a
25		n/a	n/a	n/a		n/a	n/a	n/a
50		n/a	n/a	n/a		n/a	n/a	n/a
100		n/a	n/a	n/a		n/a	n/a	n/a

END OF REPORT

RioTinto | Diavik

Pond Sediment Results

Compiled results of analyses performed on sediment samples collected on June 20, 2022 at the 11 Surveillance Network Program stations in the Drainage Collection and Control network.

RESULTS OF CHEMICAL ANALYSES OF POND SEDIMENTS

		Station ID												
	Units	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 7	Pond 10	Pond 10 Du	Pond 11	Pond 11 Du	Pond12	Pond 13	Sump E21
Sampling Date		6/17/2022	6/19/2022	6/19/2022	6/19/2022	6/17/2022	6/17/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/17/2022	6/17/2022	6/17/2022
Physical Properties														
Moisture	%	35	39	46	32	76	16	49	47	70	71	16	26	69
Saturation %	%	65	47	97	60	99	49	81	90	150	170	28	83	350
Volatiles														
Xylenes (Total)	mg/kg	<0.057	<0.057	<0.12	<0.057	<0.14	<0.057	<0.12	<0.057	<0.14	<0.14	<0.057	<0.057	<0.14
VH C6-C10	mg/kg	15	<8.6	<19	<8.6	<47	<8.6	<18	14	<33	<37	<8.6	<8.6	<32
VPH (VH6 to 10 - BTEX)	mg/kg	15	<8.6	<19	<8.6	<47	<8.6	<18	14	<33	<37	<8.6	<8.6	<32
Field Preserved Volatiles														
Methyl-tert-butylether (MTBE	mg/kg	<0.040	<0.040	<0.088	<0.040	<0.040	<0.040	<0.084	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Benzene	mg/kg	<0.0050	<0.0050	<0.011	<0.0050	<0.027	<0.0050	<0.011	<0.0050	<0.019	<0.022	<0.0050	<0.0050	<0.018
Toluene	mg/kg	<0.050	<0.050	<0.11	<0.050	<0.27	<0.050	<0.11	<0.050	<0.19	<0.22	<0.050	<0.050	<0.18
Ethylbenzene	mg/kg	<0.010	<0.010	<0.022	<0.010	<0.055	<0.010	<0.021	<0.010	<0.038	<0.044	<0.010	<0.010	<0.037
m & p-Xylene	mg/kg	<0.040	<0.040	<0.088	<0.040	<0.10	<0.040	<0.084	<0.040	<0.10	<0.10	<0.040	<0.040	<0.10
o-Xylene	mg/kg	<0.040	<0.040	<0.088	<0.040	<0.10	<0.040	<0.084	<0.040	<0.10	<0.10	<0.040	<0.040	<0.10
Styrene	mg/kg	<0.030	<0.030	<0.066	<0.030	<0.10	<0.030	<0.063	<0.030	<0.050	<0.050	<0.030	<0.030	<0.050
Volatile Surrogate Recovery (%)														
1,4-Difluorobenzene (sur.)	%	90	97	98	100	98	88	99	93	98	99	94	95	98
4-Bromofluorobenzene (sur.)	%	102	98	101	101	98	89	99	101	104	100	99	101	100
D10-o-Xylene (sur.)	%	107	106	109	110	117	93	113	104	116	113	106	99	112
D4-1,2-Dichloroethane (sur.)	%	129	104	102	102	105	95	103	112	109	101	115	109	100
Calculated Hydrocarbon Parameters														
Total Extractables C11 to C60	mg/kg	480	380	260	130	2900	190	3800	4200	1400	1300	<71	200	840
Ext. Pet. Hydrocarbon														
Total Extractables C11 to C22	mg/kg	120	87	75	<50	730	<50	1100	1200	320	350	<50	<50	230
Total Extractables C23 to C60	mg/kg	360	300	180	130	2100	190	2600	3000	1000	920	<50	200	610
Surrogate Recovery (%)														
O-TERPHENYL (sur.)	%	115	117	121	120	126	101	124	118	113	110	129	119	116
Ext. Pet. Hydrocarbon														
F2 (C10-C16 Hydrocarbons)	mg/kg	17	16	15	<10	140	<10	140	190	40	36	<10	<10	<32
F3 (C16-C34 Hydrocarbons)	mg/kg	390	280	180	120	2400	160	3100	3500	1000	920	<50	150	620
F4 (C34-C50 Hydrocarbons)	mg/kg	65	68	<50	<50	330	<50	430	470	220	200	<50	51	<160
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Surrogate Recovery (%)														
O-TERPHENYL (sur.)	%	115	117	121	120	126	101	124	118	113	110	129	119	116
Polycyclic Aromatics														
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.024	<0.0050	<0.0050	0.011	<0.017	<0.016	<0.0050	<0.0050	<0.014
B[a]P TPE Total Potency Equiv	mg/kg	<0.0071	<0.0071	<0.0071	<0.0071	0.049	<0.0071	0.089	0.093	<0.024	<0.022	<0.0071	<0.0071	<0.020
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
Acridine	mg/kg	<0.010	0.011	<0.010	<0.010	<0.038	<0.010	<0.010	<0.010	<0.033	<0.031	<0.010	<0.010	<0.028
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.015	<0.0040	<0.0040	<0.0040	<0.013	<0.012	<0.0040	<0.0040	<0.011
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	0.0097	<0.0050	0.024	<0.0050	0.045	0.047	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	0.012	0.012	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.034	<0.0050	0.082	0.085	<0.017	<0.016	<0.0050	<0.0050	<0.014
Benzo(e)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	0.01	<0.017	<0.016	<0.0050	<0.0050	<0.014
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	0.0069	0.015	<0.017	<0.016	<0.0050	<0.0050	<0.014
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
Fluoranthene	mg/kg	<0.0050	<0.0050	0.017	<0.0050	0.038	<0.0050	0.017	0.026	<0.017	<0.016	<0.0050	<0.0050	<0.014
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.03	<0.0050	<0.0050	0.018	<0.017	<0.016	<0.0050	<0.0050	<0.014
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.019	<0.0050	<0.0050	<0.0050	<0.017	<0.016	<0.0050	<0.0050	<0.014
1-Methylnaphthalene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.061	<0.0050	0.015	0.025	<0.017	<0.016	<0.0050	<0.0050	<0.014
2-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.012	<0.0050	0.1	<0.0050	0.02	0.036	<0.017	<0.016	<0.0050	<0.0050	<0.014
Naphthalene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.053	<0.0050	0.017	0.027	<0.017	<0.016	<0.0050	<0.0050	<0.014
Phenanthrene	mg/kg	<0.0050	<0.0050	0.026	<0.0050	0.11	<0.0050	0.023	0.045	<0.017	<0.016	<0.0050	<0.0050	<0.014
Perylene	mg/kg	0.0088	<0.0050	0.08	<0.0050	0.099	<0.0050	0.033	0.054	<0.017	<0.016	<0.0050	<0.0050	<0.014
Pyrene	mg/kg	0.011	<0.0050	0.022	<0.0050	0.051	<0.0050	0.036	0.042	<0.017	<0.016	<0.0050	<0.0050	<0.014
Quinoline	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.038	<0.010	<0.010	<0.010	<0.033	<0.031	<0.010	<0.010	<0.028
Polycyclic Aromoatics Surrogate Recovery (%)														
D10-ANTHRACENE (sur.)	%	95	95	94	94	93	89	87	93	102	94	83	92	97
D8-ACENAPHTHYLENE (sur.)	%	94	93	91	91	88	88	83	91	98	93	80	91	93
D8-NAPHTHALENE (sur.)	%	91	90	91	89	94	85	80	88	93	89	81	88	93
TERPHENYL-D14 (sur.)	%	99	99	99	99	100	97	91	99	103	97	88	97	101
Misc. Organics														
Oil and grease	mg/kg	140	570	150	370	3000	260	230	2200	2300	1700	<50	65	1300
Elements														
Total Aluminum (Al)	mg/kg	13000	7600	14000	11000	19000	6500	19000	19000	15000	14000	5300	8900	10000
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Arsenic (As)	mg/kg	3.1	4.7	9.8	2.9	5.1	3.1	5	5	6.9	6	1.6	1.5	6.6
Total Barium (Ba)	mg/kg	140	61	250	80	760	43	550	470	170	160	42	49	110
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.62	<0.40	0.8	<0.40	0.67	0.66	0.51	0.51	<0.40	<0.40	<0.40
Total Boron (B)	mg/kg	7.2	4.6	8.8	4.7	15	2.9	14	13	9.8	11	2.9	3.2	6.1
Total Cadmium (Cd)	mg/kg	0.17	0.41	0.35	0.33	0.28	0.056	0.26	0.24	0.22	0.22	<0.050	0.14	0.26
Total Chromium (Cr)	mg/kg	67	110	92	53	250	70	210	180	74	73	21	270	51
Total Cobalt (Co)	mg/kg	16	15	20	21	44	5.4	35	31	16	15	4.3	12	9
Total Copper (Cu)	mg/kg	22	30	32	39	32	10	33	34	33	33	6.6	23	40
Total Iron (Fe)	mg/kg	24000	13000	23000	20000	41000	11000	41000	39000	29000	26000	8400	17000	15000
Total Lead (Pb)	mg/kg	8.6	3.7	7.6	8.6	11	3.3	12	14	13	13	2	6.2	7.4
Total Manganese (Mn)	mg/kg	430	170	440	530	700	140	660	590	430	390	96	270	170
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.06
Total Molybdenum (Mo)	mg/kg	6.4	3.1	8.4	10	17	1.8	26	24	9.2	9.1	<0.40	7.1	5.5
Total Nickel (Ni)	mg/kg	110	120	190	80	640	38	480	410	130	130	18	150	63
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.55	<0.50	0.78	<0.50	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Thallium (Tl)	mg/kg	0.4	0.15	0.23	0.38	0.46	0.16	0.51	0.53	0.36	0.34	<0.10	0.34	0.28
Total Tin (Sn)	mg/kg	1.4	<1.0	<1.0	<1.0	1.6	<1.0	1.7	1.9	1.3	1.3	<1.0	<1.0	<1.0
Total Uranium (U)	mg/kg	7.1	7.7	15	24	10	3.6	8.5	9.9	17	17	1.7	10	13
Total Vanadium (V)	mg/kg	33	23	45	29	72	16	62	57	38	37	16	21	38
Total Zinc (Zn)	mg/kg	100	120	64	89	96	28	110	110	97	94	21	55	64
Soluble (Hot water) Boron (B)	mg/kg	0.74	0.46	0.64	0.43	0.78	0.18	1.1	1.3	0.78	0.86	0.12	0.65	0.96
Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	<0.080	<0.080	<0.33	<0.080	<0.080	<0.080	<0.27	<0.27	<0.080	<0.080	<0.25
Calculated Parameters														
Calculated Calcium (Ca)	mg/kg	59	13	69	26	68	10	64	65	110	76	29	5.9	35
Calculated Magnesium (Mg)	mg/kg	26	9.3	90	46	84	7.7	110	100	86	59	19	2.3	29
Calculated Sodium (Na)	mg/kg	91	14	120	94	77	11	83	84	50	54	22	28	61
Calculated Potassium (K)	mg/kg	63	20	110	96	100	8.2	78	81	65	60	8.4	17	51
Soluble Parameters														
Soluble Calcium (Ca)	mg/L	91	28	72	44	68	21	79	73	74	45	100	7.1	9.8
Soluble Sodium (Na)	mg/L	140	31	130	160	78	23	100	94	33	32	79	34	17
Soluble Potassium (K)	mg/L	98	43	110	160	100	17	96	90	43	35	30	20	14

RioTinto | Diavik

Pond Sediment Lab Results

Detailed laboratory result files for the sediment samples collected on June 20, 2022 at the 11 Surveillance Network Program stations in the Drainage Collection and Control network.

Your P.O. #: 3104707597
Your Project #: Closure
Your C.O.C. #: 50164

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2022/07/20
Report #: R3202639
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C245456
Received: 2022/06/27, 17:00

Sample Matrix: Sediment
Samples Received: 13

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	11	2022/07/11	2022/07/11	AB SOP-00034 / AB SOP-00042	EPA 6010d R5 m
Boron (Hot Water Soluble) (1)	1	2022/07/11	2022/07/16	AB SOP-00034 / AB SOP-00042	EPA 6010d R5 m
Boron (Hot Water Soluble) (1)	1	2022/07/13	2022/07/13	AB SOP-00034 / AB SOP-00042	EPA 6010d R5 m
Hexavalent Chromium (1, 2)	13	2022/07/07	2022/07/07	AB SOP-00063	SM 23 3500-Cr B m
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	13	2022/06/30	2022/07/03	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	4	2022/07/09	2022/07/09	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	8	2022/07/09	2022/07/10	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	1	2022/07/12	2022/07/12	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Moisture (1)	13	N/A	2022/07/02	AB SOP-00002	CCME PHC-CWS m
Oil and Grease by IR (1)	13	2022/07/04	2022/07/06	CAL SOP-00096	EPA 3540C R3 m
Benzo[a]pyrene Equivalency (1)	1	N/A	2022/07/02		Auto Calc
Benzo[a]pyrene Equivalency (1)	12	N/A	2022/07/03		Auto Calc
PAH in Soil by GC/MS (1)	13	2022/07/02	2022/07/02	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
Soluble Ions (1)	12	2022/07/10	2022/07/11	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Soluble Ions (1)	1	2022/07/12	2022/07/12	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Soluble Paste (1)	12	2022/07/10	2022/07/10	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Paste (1)	1	2022/07/12	2022/07/12	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	13	N/A	2022/07/02		Auto Calc
Total Extractable HC Calculation C11-C60 (1)	13	2022/06/28	2022/07/03		Auto Calc
Hydrocarbons (C11-C60) in Soil by GC/FID (1)	13	2022/06/30	2022/07/03	AB SOP-00036 AB SOP-00040	CCME PHC-CWS m
Volatile HC-BTEX (1, 4)	13	2022/06/28	2022/07/13		Auto Calc
BTEX/MTBE/Styrene/VPH in Soil GC/MS/FID (1)	13	N/A	2022/07/12	CAL SOP-00240	BC MELP VH 2014

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Your P.O. #: 3104707597
Your Project #: Closure
Your C.O.C. #: 50164

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2022/07/20
Report #: R3202639
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C245456
Received: 2022/06/27, 17:00

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(3) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(4) VPH = VH - (Benzene + Toluene + Ethylbenzene + m & p-Xylene + o-Xylene + Styrene)

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Your P.O. #: 3104707597
Your Project #: Closure
Your C.O.C. #: 50164

Attention: DDMI Environment

DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE, NT
CANADA X1A 2P8

Report Date: 2022/07/20
Report #: R3202639
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C245456
Received: 2022/06/27, 17:00

Encryption Key

Rhecie Phayouphone
Key Account Specialist
20 Jul 2022 16:11:01

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Rhecie Phayouphone, Key Account Specialist
Email: Rhecie.Phayouphone@bureauveritas.com
Phone# (403)735-2283
==========
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

RESULTS OF CHEMICAL ANALYSES OF SEDIMENT

Bureau Veritas ID		AVZ301		AVZ302		AVZ303		AVZ304		
Sampling Date		2022/06/17		2022/06/19		2022/06/19		2022/06/19		
COC Number		50164		50164		50164		50164		
	UNITS	**Pond 1**	**RDL**	**Pond 2**	**RDL**	**Pond 3**	**RDL**	**Pond 4**	**RDL**	**QC Batch**
Calculated Parameters										
Calculated Calcium (Ca)	mg/kg	59	0.97	13	0.71	69	1.5	26	0.90	A629326
Calculated Magnesium (Mg)	mg/kg	26	0.65	9.3	0.47	90	0.97	46	0.60	A629326
Calculated Sodium (Na)	mg/kg	91	1.6	14	1.2	120	2.4	94	1.5	A629326
Calculated Potassium (K)	mg/kg	63	0.84	20	0.62	110	1.3	96	0.78	A629326
Elements										
Soluble (Hot water) Boron (B)	mg/kg	0.74	0.10	0.46 (1)	0.30	0.64	0.10	0.43	0.10	A639272
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	<0.080	0.080	<0.080	0.080	<0.080	0.080	A636489
Misc. Organics										
Oil and grease	mg/kg	140	50	570	50	150	50	370	50	A631726
Soluble Parameters										
Soluble Calcium (Ca)	mg/L	91	1.5	28	1.5	72	1.5	44	1.5	A639721
Soluble Sodium (Na)	mg/L	140	2.5	31	2.5	130	2.5	160	2.5	A639721
Soluble Potassium (K)	mg/L	98	1.3	43	1.3	110	1.3	160	1.3	A639721
Saturation %	%	65	N/A	47	N/A	97	N/A	60	N/A	A637007

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

RESULTS OF CHEMICAL ANALYSES OF SEDIMENT

Bureau Veritas ID		AVZ305			AVZ306		AVZ307		AVZ308		
Sampling Date		2022/06/17			2022/06/17		2022/06/20		2022/06/20		
COC Number		50164			50164		50164		50164		
	UNITS	**Pond 5**	**RDL**	**QC Batch**	**Pond 7**	**RDL**	**Pond 10**	**RDL**	**Pond 10 Dup**	**RDL**	**QC Batch**
Calculated Parameters											
Calculated Calcium (Ca)	mg/kg	68	1.5	A629326	10	0.74	64	1.2	65	1.3	A629326
Calculated Magnesium (Mg)	mg/kg	84	0.99	A629326	7.7	0.49	110	0.81	100	0.90	A629326
Calculated Sodium (Na)	mg/kg	77	2.5	A629326	11	1.2	83	2.0	84	2.2	A629326
Calculated Potassium (K)	mg/kg	100	1.3	A629326	8.2	0.64	78	1.1	81	1.2	A629326
Elements											
Soluble (Hot water) Boron (B)	mg/kg	0.78	0.10	A642758	0.18	0.10	1.1	0.10	1.3	0.10	A639272
Hex. Chromium (Cr 6+)	mg/kg	<0.33 (1)	0.33	A636489	<0.080	0.080	<0.080	0.080	<0.080	0.080	A636489
Misc. Organics											
Oil and grease	mg/kg	3000 (1)	210	A631726	260	50	230	50	2200	50	A631726
Soluble Parameters											
Soluble Calcium (Ca)	mg/L	68	1.5	A641128	21	1.5	79	1.5	73	1.5	A639721
Soluble Sodium (Na)	mg/L	78	2.5	A641128	23	2.5	100	2.5	94	2.5	A639721
Soluble Potassium (K)	mg/L	100	1.3	A641128	17	1.3	96	1.3	90	1.3	A639721
Saturation %	%	99	N/A	A639570	49	N/A	81	N/A	90	N/A	A637007

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to high moisture content, samples contain => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

RESULTS OF CHEMICAL ANALYSES OF SEDIMENT

Bureau Veritas ID		AVZ309			AVZ310			AVZ311		AVZ312		
Sampling Date		2022/06/20			2022/06/20			2022/06/17		2022/06/17		
COC Number		50164			50164			50164		50164		
	UNITS	**Pond 11**	**RDL**	**QC Batch**	**Pond 11 Dup**	**RDL**	**QC Batch**	**Pond12**	**RDL**	**Pond 13**	**RDL**	**QC Batch**
Calculated Parameters												
Calculated Calcium (Ca)	mg/kg	110	2.3	A629326	76	2.5	A629326	29	0.42	5.9	1.2	A629326
Calculated Magnesium (Mg)	mg/kg	86	1.5	A629326	59	1.7	A629326	19	0.28	2.3	0.83	A629326
Calculated Sodium (Na)	mg/kg	50	3.8	A629326	54	4.2	A629326	22	0.70	28	2.1	A629326
Calculated Potassium (K)	mg/kg	65	2.0	A629326	60	2.2	A629326	8.4	0.37	17	1.1	A629326
Elements												
Soluble (Hot water) Boron (B)	mg/kg	0.78	0.10	A639272	0.86	0.10	A645174	0.12	0.10	0.65 (1)	0.30	A639272
Hex. Chromium (Cr 6+)	mg/kg	<0.27 (2)	0.27	A636489	<0.27 (2)	0.27	A636489	<0.080	0.080	<0.080	0.080	A636489
Misc. Organics												
Oil and grease	mg/kg	2300 (2)	170	A631726	1700 (2)	170	A631726	<50	50	65	50	A631726
Soluble Parameters												
Soluble Calcium (Ca)	mg/L	74	1.5	A639721	45	1.5	A639721	100	1.5	7.1	1.5	A639721
Soluble Sodium (Na)	mg/L	33	2.5	A639721	32	2.5	A639721	79	2.5	34	2.5	A639721
Soluble Potassium (K)	mg/L	43	1.3	A639721	35	1.3	A639721	30	1.3	20	1.3	A639721
Saturation %	%	150	N/A	A637007	170	N/A	A637007	28	N/A	83	N/A	A637007

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

RESULTS OF CHEMICAL ANALYSES OF SEDIMENT

Bureau Veritas ID		AVZ313		
Sampling Date		2022/06/17		
COC Number		50164		
	UNITS	**Sump E21**	**RDL**	**QC Batch**
Calculated Parameters				
Calculated Calcium (Ca)	mg/kg	35	5.3	A629326
Calculated Magnesium (Mg)	mg/kg	29	3.5	A629326
Calculated Sodium (Na)	mg/kg	61	8.8	A629326
Calculated Potassium (K)	mg/kg	51	4.6	A629326
Elements				
Soluble (Hot water) Boron (B)	mg/kg	0.96	0.10	A639272
Hex. Chromium (Cr 6+)	mg/kg	<0.25 (1)	0.25	A636489
Misc. Organics				
Oil and grease	mg/kg	1300 (1)	160	A631726
Soluble Parameters				
Soluble Calcium (Ca)	mg/L	9.8	1.5	A639721
Soluble Sodium (Na)	mg/L	17	2.5	A639721
Soluble Potassium (K)	mg/L	14	1.3	A639721
Saturation %	%	350 (2)	N/A	A637007

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to high moisture content, samples contain => 50% moisture.
(2) Less than recommended weight used for analysis due to limited sample.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		AVZ301	AVZ302	AVZ303	AVZ304		AVZ305		AVZ306		
Sampling Date		2022/06/17	2022/06/19	2022/06/19	2022/06/19		2022/06/17		2022/06/17		
COC Number		50164	50164	50164	50164		50164		50164		
	UNITS	**Pond 1**	**Pond 2**	**Pond 3**	**Pond 4**	**RDL**	**Pond 5**	**RDL**	**Pond 7**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	17	16	15	<10	10	140 (1)	41	<10	10	A650654
F3 (C16-C34 Hydrocarbons)	mg/kg	390	280	180	120	50	2400 (1)	200	160	50	A650654
F4 (C34-C50 Hydrocarbons)	mg/kg	65	68	<50	<50	50	330 (1)	200	<50	50	A650654
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		Yes		Yes		A650654
Surrogate Recovery (%)											
O-TERPHENYL (sur.)	%	115	117	121	120		126		101		A650654

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas ID		AVZ307	AVZ308		AVZ309	AVZ310		AVZ311	AVZ312		
Sampling Date		2022/06/20	2022/06/20		2022/06/20	2022/06/20		2022/06/17	2022/06/17		
COC Number		50164	50164		50164	50164		50164	50164		
	UNITS	**Pond 10**	**Pond 10 Dup**	**RDL**	**Pond 11**	**Pond 11 Dup**	**RDL**	**Pond12**	**Pond 13**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	140	190	10	40 (1)	36 (1)	34	<10	<10	10	A650654
F3 (C16-C34 Hydrocarbons)	mg/kg	3100	3500	50	1000 (1)	920 (1)	170	<50	150	50	A650654
F4 (C34-C50 Hydrocarbons)	mg/kg	430	470	50	220 (1)	200 (1)	170	<50	51	50	A650654
Reached Baseline at C50	mg/kg	Yes	Yes		Yes	Yes		Yes	Yes		A650654
Surrogate Recovery (%)											
O-TERPHENYL (sur.)	%	124	118		113	110		129	119		A650654

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		AVZ313		
Sampling Date		2022/06/17		
COC Number		50164		
	UNITS	**Sump E21**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<32 (1)	32	A650654
F3 (C16-C34 Hydrocarbons)	mg/kg	620 (1)	160	A650654
F4 (C34-C50 Hydrocarbons)	mg/kg	<160 (1)	160	A650654
Reached Baseline at C50	mg/kg	Yes		A650654
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	116		A650654

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

PHYSICAL TESTING (SEDIMENT)

Bureau Veritas ID		AVZ301		AVZ302	AVZ303		AVZ304	AVZ305		
Sampling Date		2022/06/17		2022/06/19	2022/06/19		2022/06/19	2022/06/17		
COC Number		50164		50164	50164		50164	50164		
	UNITS	**Pond 1**	**QC Batch**	**Pond 2**	**Pond 3**	**QC Batch**	**Pond 4**	**Pond 5**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	35	A629815	39	46	A629807	32	76	0.30	A629815
RDL = Reportable Detection Limit										

Bureau Veritas ID		AVZ306	AVZ307	AVZ308	AVZ309	AVZ310	AVZ311	AVZ312		
Sampling Date		2022/06/17	2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/17	2022/06/17		
COC Number		50164	50164	50164	50164	50164	50164	50164		
	UNITS	**Pond 7**	**Pond 10**	**Pond 10 Dup**	**Pond 11**	**Pond 11 Dup**	**Pond12**	**Pond 13**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	16	49	47	70	71	16	26	0.30	A629815
RDL = Reportable Detection Limit										

Bureau Veritas ID		AVZ313		
Sampling Date		2022/06/17		
COC Number		50164		
	UNITS	**Sump E21**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	69	0.30	A629815
RDL = Reportable Detection Limit				

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

SEMIVOLATILE ORGANICS BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ301	AVZ302	AVZ303	AVZ304		AVZ305		
Sampling Date		2022/06/17	2022/06/19	2022/06/19	2022/06/19		2022/06/17		
COC Number		50164	50164	50164	50164		50164		
	UNITS	**Pond 1**	**Pond 2**	**Pond 3**	**Pond 4**	**RDL**	**Pond 5**	**RDL**	**QC Batch**
Polycyclic Aromatics									
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.024 (1)	0.019	A629806
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	0.049	0.027	A626188
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Acridine	mg/kg	<0.010	0.011	<0.010	<0.010	0.010	<0.038 (1)	0.038	A629806
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	<0.015 (1)	0.015	A629806
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	0.0097	<0.0050	0.0050	0.024 (1)	0.019	A629806
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.034 (1)	0.019	A629806
Benzo(e)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
Fluoranthene	mg/kg	<0.0050	<0.0050	0.017	<0.0050	0.0050	0.038 (1)	0.019	A629806
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.030 (1)	0.019	A629806
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.019 (1)	0.019	A629806
1-Methylnaphthalene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.061 (1)	0.019	A629806
2-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.012	<0.0050	0.0050	0.10 (1)	0.019	A629806
Naphthalene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.053 (1)	0.019	A629806
Phenanthrene	mg/kg	<0.0050	<0.0050	0.026	<0.0050	0.0050	0.11 (1)	0.019	A629806
Perylene	mg/kg	0.0088	<0.0050	0.080	<0.0050	0.0050	0.099 (1)	0.019	A629806
Pyrene	mg/kg	0.011	<0.0050	0.022	<0.0050	0.0050	0.051 (1)	0.019	A629806
Quinoline	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.038 (1)	0.038	A629806
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	95	95	94	94		93		A629806
D8-ACENAPHTHYLENE (sur.)	%	94	93	91	91		88		A629806
D8-NAPHTHALENE (sur.)	%	91	90	91	89		94		A629806
TERPHENYL-D14 (sur.)	%	99	99	99	99		100		A629806

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

SEMIVOLATILE ORGANICS BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ306	AVZ307	AVZ308		AVZ309		AVZ310		
Sampling Date		2022/06/17	2022/06/20	2022/06/20		2022/06/20		2022/06/20		
COC Number		50164	50164	50164		50164		50164		
	UNITS	**Pond 7**	**Pond 10**	**Pond 10 Dup**	**RDL**	**Pond 11**	**RDL**	**Pond 11 Dup**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Acenaphthene	mg/kg	<0.0050	<0.0050	0.011	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	0.089	0.093	0.0071	<0.024	0.024	<0.022	0.022	A626188
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	<0.033 (1)	0.033	<0.031 (1)	0.031	A629806
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	<0.013 (1)	0.013	<0.012 (1)	0.012	A629806
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(b&j)fluoranthene	mg/kg	<0.0050	0.045	0.047	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(g,h,i)perylene	mg/kg	<0.0050	0.012	0.012	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(a)pyrene	mg/kg	<0.0050	0.082	0.085	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Benzo(e)pyrene	mg/kg	<0.0050	<0.0050	0.010	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Chrysene	mg/kg	<0.0050	0.0069	0.015	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Fluoranthene	mg/kg	<0.0050	0.017	0.026	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Fluorene	mg/kg	<0.0050	<0.0050	0.018	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
1-Methylnaphthalene	mg/kg	<0.0050	0.015	0.025	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
2-Methylnaphthalene	mg/kg	<0.0050	0.020	0.036	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Naphthalene	mg/kg	<0.0050	0.017	0.027	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Phenanthrene	mg/kg	<0.0050	0.023	0.045	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Perylene	mg/kg	<0.0050	0.033	0.054	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Pyrene	mg/kg	<0.0050	0.036	0.042	0.0050	<0.017 (1)	0.017	<0.016 (1)	0.016	A629806
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	<0.033 (1)	0.033	<0.031 (1)	0.031	A629806
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	89	87	93		102		94		A629806
D8-ACENAPHTHYLENE (sur.)	%	88	83	91		98		93		A629806
D8-NAPHTHALENE (sur.)	%	85	80	88		93		89		A629806
TERPHENYL-D14 (sur.)	%	97	91	99		103		97		A629806

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

SEMIVOLATILE ORGANICS BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ311	AVZ312		AVZ313		
Sampling Date		2022/06/17	2022/06/17		2022/06/17		
COC Number		50164	50164		50164		
	UNITS	**Pond12**	**Pond 13**	**RDL**	**Sump E21**	**RDL**	**QC Batch**
Polycyclic Aromatics							
Acenaphthene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	0.0071	<0.020	0.020	A626188
Acenaphthylene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Acridine	mg/kg	<0.010	<0.010	0.010	<0.028 (1)	0.028	A629806
Anthracene	mg/kg	<0.0040	<0.0040	0.0040	<0.011 (1)	0.011	A629806
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Benzo(e)pyrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Chrysene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Fluoranthene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Fluorene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
1-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
2-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Naphthalene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Phenanthrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Perylene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Pyrene	mg/kg	<0.0050	<0.0050	0.0050	<0.014 (1)	0.014	A629806
Quinoline	mg/kg	<0.010	<0.010	0.010	<0.028 (1)	0.028	A629806
Surrogate Recovery (%)							
D10-ANTHRACENE (sur.)	%	83	92		97		A629806
D8-ACENAPHTHYLENE (sur.)	%	80	91		93		A629806
D8-NAPHTHALENE (sur.)	%	81	88		93		A629806
TERPHENYL-D14 (sur.)	%	88	97		101		A629806

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		AVZ301	AVZ302	AVZ303	AVZ304		AVZ305		
Sampling Date		2022/06/17	2022/06/19	2022/06/19	2022/06/19		2022/06/17		
COC Number		50164	50164	50164	50164		50164		
	UNITS	**Pond 1**	**Pond 2**	**Pond 3**	**Pond 4**	**QC Batch**	**Pond 5**	**RDL**	**QC Batch**
Elements									
Total Aluminum (Al)	mg/kg	13000	7600	14000	11000	A638453	19000	100	A640934
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	<0.50	A638453	<0.50	0.50	A640934
Total Arsenic (As)	mg/kg	3.1	4.7	9.8	2.9	A638453	5.1	1.0	A640934
Total Barium (Ba)	mg/kg	140	61	250	80	A638453	760	1.0	A640934
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.62	<0.40	A638453	0.80	0.40	A640934
Total Boron (B)	mg/kg	7.2	4.6	8.8	4.7	A638453	15	0.80	A640934
Total Cadmium (Cd)	mg/kg	0.17	0.41	0.35	0.33	A638453	0.28	0.050	A640934
Total Chromium (Cr)	mg/kg	67	110	92	53	A638453	250	1.0	A640934
Total Cobalt (Co)	mg/kg	16	15	20	21	A638453	44	0.50	A640934
Total Copper (Cu)	mg/kg	22	30	32	39	A638453	32	1.0	A640934
Total Iron (Fe)	mg/kg	24000	13000	23000	20000	A638453	41000	100	A640934
Total Lead (Pb)	mg/kg	8.6	3.7	7.6	8.6	A638453	11	0.50	A640934
Total Manganese (Mn)	mg/kg	430	170	440	530	A638453	700	1.0	A640934
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	A638453	<0.050	0.050	A640934
Total Molybdenum (Mo)	mg/kg	6.4	3.1	8.4	10	A638453	17	0.40	A640934
Total Nickel (Ni)	mg/kg	110	120	190	80	A638453	640	1.0	A640934
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.55	<0.50	A638453	0.78	0.50	A640934
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	A638453	<0.20	0.20	A640934
Total Thallium (Tl)	mg/kg	0.40	0.15	0.23	0.38	A638453	0.46	0.10	A640934
Total Tin (Sn)	mg/kg	1.4	<1.0	<1.0	<1.0	A638453	1.6	1.0	A640934
Total Uranium (U)	mg/kg	7.1	7.7	15	24	A638453	10	0.20	A640934
Total Vanadium (V)	mg/kg	33	23	45	29	A638453	72	1.0	A640934
Total Zinc (Zn)	mg/kg	100	120	64	89	A638453	96	10	A640934
RDL = Reportable Detection Limit									

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		AVZ306	AVZ307	AVZ308	AVZ309	AVZ310	AVZ311	AVZ312		
Sampling Date		2022/06/17	2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/17	2022/06/17		
COC Number		50164	50164	50164	50164	50164	50164	50164		
	UNITS	Pond 7	Pond 10	Pond 10 Dup	Pond 11	Pond 11 Dup	Pond12	Pond 13	RDL	QC Batch
Elements										
Total Aluminum (Al)	mg/kg	6500	19000	19000	15000	14000	5300	8900	100	A638453
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A638453
Total Arsenic (As)	mg/kg	3.1	5.0	5.0	6.9	6.0	1.6	1.5	1.0	A638453
Total Barium (Ba)	mg/kg	43	550	470	170	160	42	49	1.0	A638453
Total Beryllium (Be)	mg/kg	<0.40	0.67	0.66	0.51	0.51	<0.40	<0.40	0.40	A638453
Total Boron (B)	mg/kg	2.9	14	13	9.8	11	2.9	3.2	0.80	A638453
Total Cadmium (Cd)	mg/kg	0.056	0.26	0.24	0.22	0.22	<0.050	0.14	0.050	A638453
Total Chromium (Cr)	mg/kg	70	210	180	74	73	21	270	1.0	A638453
Total Cobalt (Co)	mg/kg	5.4	35	31	16	15	4.3	12	0.50	A638453
Total Copper (Cu)	mg/kg	10	33	34	33	33	6.6	23	1.0	A638453
Total Iron (Fe)	mg/kg	11000	41000	39000	29000	26000	8400	17000	100	A638453
Total Lead (Pb)	mg/kg	3.3	12	14	13	13	2.0	6.2	0.50	A638453
Total Manganese (Mn)	mg/kg	140	660	590	430	390	96	270	1.0	A638453
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	A638453
Total Molybdenum (Mo)	mg/kg	1.8	26	24	9.2	9.1	<0.40	7.1	0.40	A638453
Total Nickel (Ni)	mg/kg	38	480	410	130	130	18	150	1.0	A638453
Total Selenium (Se)	mg/kg	<0.50	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A638453
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	A638453
Total Thallium (Tl)	mg/kg	0.16	0.51	0.53	0.36	0.34	<0.10	0.34	0.10	A638453
Total Tin (Sn)	mg/kg	<1.0	1.7	1.9	1.3	1.3	<1.0	<1.0	1.0	A638453
Total Uranium (U)	mg/kg	3.6	8.5	9.9	17	17	1.7	10	0.20	A638453
Total Vanadium (V)	mg/kg	16	62	57	38	37	16	21	1.0	A638453
Total Zinc (Zn)	mg/kg	28	110	110	97	94	21	55	10	A638453
RDL = Reportable Detection Limit										

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		AVZ313		
Sampling Date		2022/06/17		
COC Number		50164		
	UNITS	**Sump E21**	**RDL**	**QC Batch**
Elements				
Total Aluminum (Al)	mg/kg	10000	100	A638453
Total Antimony (Sb)	mg/kg	<0.50	0.50	A638453
Total Arsenic (As)	mg/kg	6.6	1.0	A638453
Total Barium (Ba)	mg/kg	110	1.0	A638453
Total Beryllium (Be)	mg/kg	<0.40	0.40	A638453
Total Boron (B)	mg/kg	6.1	0.80	A638453
Total Cadmium (Cd)	mg/kg	0.26	0.050	A638453
Total Chromium (Cr)	mg/kg	51	1.0	A638453
Total Cobalt (Co)	mg/kg	9.0	0.50	A638453
Total Copper (Cu)	mg/kg	40	1.0	A638453
Total Iron (Fe)	mg/kg	15000	100	A638453
Total Lead (Pb)	mg/kg	7.4	0.50	A638453
Total Manganese (Mn)	mg/kg	170	1.0	A638453
Total Mercury (Hg)	mg/kg	0.060	0.050	A638453
Total Molybdenum (Mo)	mg/kg	5.5	0.40	A638453
Total Nickel (Ni)	mg/kg	63	1.0	A638453
Total Selenium (Se)	mg/kg	<0.50	0.50	A638453
Total Silver (Ag)	mg/kg	<0.20	0.20	A638453
Total Thallium (Tl)	mg/kg	0.28	0.10	A638453
Total Tin (Sn)	mg/kg	<1.0	1.0	A638453
Total Uranium (U)	mg/kg	13	0.20	A638453
Total Vanadium (V)	mg/kg	38	1.0	A638453
Total Zinc (Zn)	mg/kg	64	10	A638453
RDL = Reportable Detection Limit				

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

BTEX BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ301	AVZ302		AVZ303		AVZ304		AVZ305		
Sampling Date		2022/06/17	2022/06/19		2022/06/19		2022/06/19		2022/06/17		
COC Number		50164	50164		50164		50164		50164		
	UNITS	**Pond 1**	**Pond 2**	**RDL**	**Pond 3**	**RDL**	**Pond 4**	**RDL**	**Pond 5**	**RDL**	**QC Batch**
Volatiles											
Xylenes (Total)	mg/kg	<0.057	<0.057	0.057	<0.12	0.12	<0.057	0.057	<0.14	0.14	A629538
VH C6-C10	mg/kg	15	<8.6	8.6	<19	19	<8.6	8.6	<47	47	A629538
VPH (VH6 to 10 - BTEX)	mg/kg	15	<8.6	8.6	<19	19	<8.6	8.6	<47	47	A629538
Field Preserved Volatiles											
Methyl-tert-butylether (MTBE)	mg/kg	<0.040	<0.040	0.040	<0.088 (1)	0.088	<0.040	0.040	<0.040 (2)	0.040	A631858
Benzene	mg/kg	<0.0050	<0.0050	0.0050	<0.011 (1)	0.011	<0.0050	0.0050	<0.027 (1)	0.027	A631858
Toluene	mg/kg	<0.050	<0.050	0.050	<0.11 (1)	0.11	<0.050	0.050	<0.27 (1)	0.27	A631858
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	<0.022 (1)	0.022	<0.010	0.010	<0.055 (1)	0.055	A631858
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	<0.088 (1)	0.088	<0.040	0.040	<0.10 (2)	0.10	A631858
o-Xylene	mg/kg	<0.040	<0.040	0.040	<0.088 (1)	0.088	<0.040	0.040	<0.10 (2)	0.10	A631858
Styrene	mg/kg	<0.030	<0.030	0.030	<0.066 (1)	0.066	<0.030	0.030	<0.10 (2)	0.10	A631858
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	90	97		98		100		98		A631858
4-Bromofluorobenzene (sur.)	%	102	98		101		101		98		A631858
D10-o-Xylene (sur.)	%	107	106		109		110		117		A631858
D4-1,2-Dichloroethane (sur.)	%	129	104		102		102		105		A631858

RDL = Reportable Detection Limit
(1) Detection limits raised based on sample weight used for analysis.
(2) Detection limits raised based on MDL and sample weight used for analysis.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

BTEX BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ306		AVZ307		AVZ308		AVZ309		
Sampling Date		2022/06/17		2022/06/20		2022/06/20		2022/06/20		
COC Number		50164		50164		50164		50164		
	UNITS	**Pond 7**	**RDL**	**Pond 10**	**RDL**	**Pond 10 Dup**	**RDL**	**Pond 11**	**RDL**	**QC Batch**
Volatiles										
Xylenes (Total)	mg/kg	<0.057	0.057	<0.12	0.12	<0.057	0.057	<0.14	0.14	A629538
VH C6-C10	mg/kg	<8.6	8.6	<18	18	14	8.6	<33	33	A629538
VPH (VH6 to 10 - BTEX)	mg/kg	<8.6	8.6	<18	18	14	8.6	<33	33	A629538
Field Preserved Volatiles										
Methyl-tert-butylether (MTBE)	mg/kg	<0.040	0.040	<0.084 (1)	0.084	<0.040	0.040	<0.040 (2)	0.040	A631858
Benzene	mg/kg	<0.0050	0.0050	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	A631858
Toluene	mg/kg	<0.050	0.050	<0.11 (1)	0.11	<0.050	0.050	<0.19 (1)	0.19	A631858
Ethylbenzene	mg/kg	<0.010	0.010	<0.021 (1)	0.021	<0.010	0.010	<0.038 (1)	0.038	A631858
m & p-Xylene	mg/kg	<0.040	0.040	<0.084 (1)	0.084	<0.040	0.040	<0.10 (2)	0.10	A631858
o-Xylene	mg/kg	<0.040	0.040	<0.084 (1)	0.084	<0.040	0.040	<0.10 (2)	0.10	A631858
Styrene	mg/kg	<0.030	0.030	<0.063 (1)	0.063	<0.030	0.030	<0.050 (2)	0.050	A631858
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	88		99		93		98		A631858
4-Bromofluorobenzene (sur.)	%	89		99		101		104		A631858
D10-o-Xylene (sur.)	%	93		113		104		116		A631858
D4-1,2-Dichloroethane (sur.)	%	95		103		112		109		A631858

RDL = Reportable Detection Limit
(1) Detection limits raised based on sample weight used for analysis.
(2) Detection limits raised based on MDL and sample weight used for analysis.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

BTEX BY GC-MS (SEDIMENT)

Bureau Veritas ID		AVZ310		AVZ311	AVZ312		AVZ313		
Sampling Date		2022/06/20		2022/06/17	2022/06/17		2022/06/17		
COC Number		50164		50164	50164		50164		
	UNITS	**Pond 11 Dup**	**RDL**	**Pond12**	**Pond 13**	**RDL**	**Sump E21**	**RDL**	**QC Batch**
Volatiles									
Xylenes (Total)	mg/kg	<0.14	0.14	<0.057	<0.057	0.057	<0.14	0.14	A629538
VH C6-C10	mg/kg	<37	37	<8.6	<8.6	8.6	<32	32	A629538
VPH (VH6 to 10 - BTEX)	mg/kg	<37	37	<8.6	<8.6	8.6	<32	32	A629538
Field Preserved Volatiles									
Methyl-tert-butylether (MTBE)	mg/kg	<0.040 (1)	0.040	<0.040	<0.040	0.040	<0.040 (1)	0.040	A631858
Benzene	mg/kg	<0.022 (2)	0.022	<0.0050	<0.0050	0.0050	<0.018 (2)	0.018	A631858
Toluene	mg/kg	<0.22 (2)	0.22	<0.050	<0.050	0.050	<0.18 (2)	0.18	A631858
Ethylbenzene	mg/kg	<0.044 (2)	0.044	<0.010	<0.010	0.010	<0.037 (2)	0.037	A631858
m & p-Xylene	mg/kg	<0.10 (1)	0.10	<0.040	<0.040	0.040	<0.10 (1)	0.10	A631858
o-Xylene	mg/kg	<0.10 (1)	0.10	<0.040	<0.040	0.040	<0.10 (1)	0.10	A631858
Styrene	mg/kg	<0.050 (1)	0.050	<0.030	<0.030	0.030	<0.050 (1)	0.050	A631858
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	99		94	95		98		A631858
4-Bromofluorobenzene (sur.)	%	100		99	101		100		A631858
D10-o-Xylene (sur.)	%	113		106	99		112		A631858
D4-1,2-Dichloroethane (sur.)	%	101		115	109		100		A631858

RDL = Reportable Detection Limit
(1) Detection limits raised based on MDL and sample weight used for analysis.
(2) Detection limits raised based on sample weight used for analysis.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

EXTRACTABLE HYDROCARBONS BY GC-FID (SEDIMENT)

Bureau Veritas ID		AVZ301	AVZ302	AVZ303	AVZ304		AVZ305		AVZ306		
Sampling Date		2022/06/17	2022/06/19	2022/06/19	2022/06/19		2022/06/17		2022/06/17		
COC Number		50164	50164	50164	50164		50164		50164		
	UNITS	**Pond 1**	**Pond 2**	**Pond 3**	**Pond 4**	**RDL**	**Pond 5**	**RDL**	**Pond 7**	**RDL**	**QC Batch**
Calculated Parameters											
Total Extractables C11 to C60	mg/kg	480	380	260	130	71	2900	290	190	71	A629537
Ext. Pet. Hydrocarbon											
Total Extractables C11 to C22	mg/kg	120	87	75	<50	50	730 (1)	200	<50	50	A629804
Total Extractables C23 to C60	mg/kg	360	300	180	130	50	2100 (1)	200	190	50	A629804
Surrogate Recovery (%)											
O-TERPHENYL (sur.)	%	115	117	121	120		126		101		A629804

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas ID		AVZ307	AVZ308		AVZ309	AVZ310		AVZ311	AVZ312		
Sampling Date		2022/06/20	2022/06/20		2022/06/20	2022/06/20		2022/06/17	2022/06/17		
COC Number		50164	50164		50164	50164		50164	50164		
	UNITS	**Pond 10**	**Pond 10 Dup**	**RDL**	**Pond 11**	**Pond 11 Dup**	**RDL**	**Pond12**	**Pond 13**	**RDL**	**QC Batch**
Calculated Parameters											
Total Extractables C11 to C60	mg/kg	3800	4200	71	1400	1300	240	<71	200	71	A629537
Ext. Pet. Hydrocarbon											
Total Extractables C11 to C22	mg/kg	1100	1200	50	320 (1)	350 (1)	170	<50	<50	50	A629804
Total Extractables C23 to C60	mg/kg	2600	3000	50	1000 (1)	920 (1)	170	<50	200	50	A629804
Surrogate Recovery (%)											
O-TERPHENYL (sur.)	%	124	118		113	110		129	119		A629804

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

EXTRACTABLE HYDROCARBONS BY GC-FID (SEDIMENT)

Bureau Veritas ID		AVZ313		
Sampling Date		2022/06/17		
COC Number		50164		
	UNITS	**Sump E21**	**RDL**	**QC Batch**
Calculated Parameters				
Total Extractables C11 to C60	mg/kg	840	230	A629537
Ext. Pet. Hydrocarbon				
Total Extractables C11 to C22	mg/kg	230 (1)	160	A629804
Total Extractables C23 to C60	mg/kg	610 (1)	160	A629804
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	116		A629804

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C
Package 2	4.0°C

Version #2: Additional F2-F4 results included in thie report as per client request 2022/07/20.

Sample AVZ301 [Pond 1] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ302 [Pond 2] : Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ303 [Pond 3] : Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ304 [Pond 4] : Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ305 [Pond 5] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ306 [Pond 7] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ311 [Pond12] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ312 [Pond 13] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Sample AVZ313 [Sump E21] : Sample was analyzed past method specified hold time for PAH in Soil by GC/MS. Sample was analyzed past method specified hold time for Oil and Grease by IR.

Results relate only to the items tested.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

QUALITY ASSURANCE REPORT

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A629804	O-TERPHENYL (sur.)	2022/07/03	113	60 - 140	107	60 - 140	122	%				
A629806	D10-ANTHRACENE (sur.)	2022/07/02	96	50 - 130	103	50 - 130	108	%				
A629806	D8-ACENAPHTHYLENE (sur.)	2022/07/02	93	50 - 130	100	50 - 130	104	%				
A629806	D8-NAPHTHALENE (sur.)	2022/07/02	93	50 - 130	98	50 - 130	100	%				
A629806	TERPHENYL-D14 (sur.)	2022/07/02	100	50 - 130	105	50 - 130	108	%				
A631858	1,4-Difluorobenzene (sur.)	2022/07/12	99	60 - 140	92	60 - 140	95	%				
A631858	4-Bromofluorobenzene (sur.)	2022/07/12	99	60 - 140	103	60 - 140	102	%				
A631858	D10-o-Xylene (sur.)	2022/07/12	111	60 - 140	100	60 - 140	106	%				
A631858	D4-1,2-Dichloroethane (sur.)	2022/07/12	104	60 - 140	128	60 - 140	118	%				
A650654	O-TERPHENYL (sur.)	2022/07/03	113	60 - 140	107	60 - 140	122	%				
A629804	Total Extractables C11 to C22	2022/07/03	114	60 - 140	107	60 - 140	<50	mg/kg	NC	40		
A629804	Total Extractables C23 to C60	2022/07/03	113	60 - 140	107	60 - 140	<50	mg/kg	NC	40		
A629806	1-Methylnaphthalene	2022/07/02	77	50 - 130	86	50 - 130	<0.0050	mg/kg	NC	50		
A629806	2-Methylnaphthalene	2022/07/02	99	50 - 130	109	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Acenaphthene	2022/07/02	93	50 - 130	102	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Acenaphthylene	2022/07/02	94	50 - 130	100	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Acridine	2022/07/02	66	50 - 130	74	50 - 130	<0.010	mg/kg	NC	50		
A629806	Anthracene	2022/07/02	92	50 - 130	100	50 - 130	<0.0040	mg/kg	NC	50		
A629806	Benzo(a)anthracene	2022/07/02	95	50 - 130	114	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(a)pyrene	2022/07/02	93	50 - 130	102	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(b&j)fluoranthene	2022/07/02	92	50 - 130	109	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(c)phenanthrene	2022/07/02	96	50 - 130	109	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(e)pyrene	2022/07/02	83	50 - 130	95	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(g,h,i)perylene	2022/07/02	99	50 - 130	112	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Benzo(k)fluoranthene	2022/07/02	96	50 - 130	109	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Chrysene	2022/07/02	92	50 - 130	106	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Dibenz(a,h)anthracene	2022/07/02	107	50 - 130	122	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Fluoranthene	2022/07/02	101	50 - 130	105	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Fluorene	2022/07/02	97	50 - 130	107	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Indeno(1,2,3-cd)pyrene	2022/07/02	99	50 - 130	113	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Naphthalene	2022/07/02	91	50 - 130	99	50 - 130	<0.0050	mg/kg	NC	50		

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A629806	Perylene	2022/07/02	94	50 - 130	99	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Phenanthrene	2022/07/02	92	50 - 130	101	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Pyrene	2022/07/02	100	50 - 130	107	50 - 130	<0.0050	mg/kg	NC	50		
A629806	Quinoline	2022/07/02	92	50 - 130	91	50 - 130	<0.010	mg/kg	NC	50		
A629807	Moisture	2022/07/02					<0.30	%	0.75	20		
A629815	Moisture	2022/07/02					<0.30	%	6.8	20		
A631726	Oil and grease	2022/07/06	95	30 - 130	97	70 - 130	<50	mg/kg	NC	40	72	50 - 130
A631858	Benzene	2022/07/12	98	50 - 140	91	60 - 130	<0.0050	mg/kg	NC	50		
A631858	Ethylbenzene	2022/07/12	96	50 - 140	84	60 - 130	<0.010	mg/kg	NC	50		
A631858	m & p-Xylene	2022/07/12	93	50 - 140	82	60 - 130	<0.040	mg/kg	NC	50		
A631858	Methyl-tert-butylether (MTBE)	2022/07/12	93	50 - 140	91	60 - 130	<0.040	mg/kg	NC	50		
A631858	o-Xylene	2022/07/12	89	50 - 140	84	60 - 130	<0.040	mg/kg	NC	50		
A631858	Styrene	2022/07/12	94	50 - 140	91	60 - 130	<0.030	mg/kg	NC	50		
A631858	Toluene	2022/07/12	96	50 - 140	87	60 - 130	<0.050	mg/kg	NC	50		
A636489	Hex. Chromium (Cr 6+)	2022/07/07	103	75 - 125	103	80 - 120	<0.080	mg/kg	NC	35		
A637007	Saturation %	2022/07/10							5.5	12	100	75 - 125
A638453	Total Aluminum (Al)	2022/07/10	NC	75 - 125	114	80 - 120	<100	mg/kg			93	74 - 126
A638453	Total Antimony (Sb)	2022/07/10	103	75 - 125	100	80 - 120	<0.50	mg/kg	1.8	30	103	15 - 182
A638453	Total Arsenic (As)	2022/07/10	107	75 - 125	102	80 - 120	<1.0	mg/kg	1.5	30	102	53 - 147
A638453	Total Barium (Ba)	2022/07/10	NC	75 - 125	100	80 - 120	<1.0	mg/kg	0.26	35	101	80 - 119
A638453	Total Beryllium (Be)	2022/07/10	112	75 - 125	102	80 - 120	<0.40	mg/kg	NC	30		
A638453	Total Boron (B)	2022/07/10	96	75 - 125	95	80 - 120	<0.80	mg/kg			91	70 - 130
A638453	Total Cadmium (Cd)	2022/07/10	111	75 - 125	101	80 - 120	<0.050	mg/kg	2.0	30	103	72 - 128
A638453	Total Chromium (Cr)	2022/07/10	146 (1)	75 - 125	103	80 - 120	<1.0	mg/kg	2.1	30	103	59 - 141
A638453	Total Cobalt (Co)	2022/07/10	107	75 - 125	103	80 - 120	<0.50	mg/kg	1.9	30	97	58 - 142
A638453	Total Copper (Cu)	2022/07/10	107	75 - 125	102	80 - 120	<1.0	mg/kg	3.6	30	99	83 - 117
A638453	Total Iron (Fe)	2022/07/10	NC	75 - 125	113	80 - 120	<100	mg/kg			109	78 - 122
A638453	Total Lead (Pb)	2022/07/10	103	75 - 125	96	80 - 120	<0.50	mg/kg	1.6	35	107	79 - 121
A638453	Total Manganese (Mn)	2022/07/10	NC	75 - 125	103	80 - 120	<1.0	mg/kg			104	76 - 124
A638453	Total Mercury (Hg)	2022/07/10	101	75 - 125	103	80 - 120	<0.050	mg/kg	NC	35		
A638453	Total Molybdenum (Mo)	2022/07/10	112	75 - 125	101	80 - 120	<0.40	mg/kg	0.42	35	106	67 - 133

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A638453	Total Nickel (Ni)	2022/07/10	110	75 - 125	101	80 - 120	<1.0	mg/kg	1.6	30	103	79 - 121
A638453	Total Selenium (Se)	2022/07/10	111	75 - 125	107	80 - 120	<0.50	mg/kg	NC	30		
A638453	Total Silver (Ag)	2022/07/10	109	75 - 125	98	80 - 120	<0.20	mg/kg	NC	35	95	47 - 153
A638453	Total Thallium (Tl)	2022/07/10	103	75 - 125	97	80 - 120	<0.10	mg/kg	6.4	30		
A638453	Total Tin (Sn)	2022/07/10	113	75 - 125	102	80 - 120	<1.0	mg/kg	NC	35	101	67 - 133
A638453	Total Uranium (U)	2022/07/10	99	75 - 125	98	80 - 120	<0.20	mg/kg	6.3	30	91	77 - 123
A638453	Total Vanadium (V)	2022/07/10	174 (1)	75 - 125	103	80 - 120	<1.0	mg/kg	2.4	30	104	79 - 121
A638453	Total Zinc (Zn)	2022/07/10	NC	75 - 125	104	80 - 120	<10	mg/kg	22	30	107	79 - 121
A639272	Soluble (Hot water) Boron (B)	2022/07/11	99	75 - 125	95	80 - 120	<0.10	mg/kg	NC	35		
A639570	Saturation %	2022/07/12							8.9	12	99	75 - 125
A639721	Soluble Calcium (Ca)	2022/07/11	99	75 - 125	101	80 - 120	<1.5	mg/L	6.0	30	108	75 - 125
A639721	Soluble Potassium (K)	2022/07/11	95	75 - 125	96	80 - 120	<1.3	mg/L	8.7	30	89	75 - 125
A639721	Soluble Sodium (Na)	2022/07/11	95	75 - 125	97	80 - 120	<2.5	mg/L	3.3	30	101	75 - 125
A640934	Total Aluminum (Al)	2022/07/12	NC	75 - 125	107	80 - 120	<100	mg/kg			90	74 - 126
A640934	Total Antimony (Sb)	2022/07/12	97	75 - 125	98	80 - 120	<0.50	mg/kg	3.2	30	114	15 - 182
A640934	Total Arsenic (As)	2022/07/12	109	75 - 125	94	80 - 120	<1.0	mg/kg	1.5	30	110	53 - 147
A640934	Total Barium (Ba)	2022/07/12	NC	75 - 125	97	80 - 120	<1.0	mg/kg	4.7	35	102	80 - 119
A640934	Total Beryllium (Be)	2022/07/12	110	75 - 125	94	80 - 120	<0.40	mg/kg	5.2	30		
A640934	Total Boron (B)	2022/07/12	112	75 - 125	95	80 - 120	<0.80	mg/kg			126	70 - 130
A640934	Total Cadmium (Cd)	2022/07/12	114	75 - 125	99	80 - 120	<0.050	mg/kg	1.1	30	105	72 - 128
A640934	Total Chromium (Cr)	2022/07/12	120	75 - 125	96	80 - 120	<1.0	mg/kg	1.8	30	102	59 - 141
A640934	Total Cobalt (Co)	2022/07/12	114	75 - 125	96	80 - 120	<0.50	mg/kg	7.0	30	102	58 - 142
A640934	Total Copper (Cu)	2022/07/12	116	75 - 125	98	80 - 120	<1.0	mg/kg	0.17	30	107	83 - 117
A640934	Total Iron (Fe)	2022/07/12	NC	75 - 125	103	80 - 120	<100	mg/kg			107	78 - 122
A640934	Total Lead (Pb)	2022/07/12	111	75 - 125	99	80 - 120	<0.50	mg/kg	0.44	35	115	79 - 121
A640934	Total Manganese (Mn)	2022/07/12	NC	75 - 125	95	80 - 120	<1.0	mg/kg			104	76 - 124
A640934	Total Mercury (Hg)	2022/07/12	104	75 - 125	101	80 - 120	<0.050	mg/kg	6.0	35		
A640934	Total Molybdenum (Mo)	2022/07/12	114	75 - 125	100	80 - 120	<0.40	mg/kg	0.69	35	114	67 - 133
A640934	Total Nickel (Ni)	2022/07/12	118	75 - 125	94	80 - 120	<1.0	mg/kg	1.2	30	106	79 - 121
A640934	Total Selenium (Se)	2022/07/12	114	75 - 125	101	80 - 120	<0.50	mg/kg	1.6	30		
A640934	Total Silver (Ag)	2022/07/12	112	75 - 125	98	80 - 120	<0.20	mg/kg	NC	35	112	47 - 153

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C245456
Report Date: 2022/07/20

QUALITY ASSURANCE REPORT(CONT'D)

DIAVIK DIAMOND MINES INC.
Client Project #: Closure
Your P.O. #: 3104707597
Sampler Initials: JH

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A640934	Total Thallium (Tl)	2022/07/12	108	75 - 125	100	80 - 120	<0.10	mg/kg	4.5	30		
A640934	Total Tin (Sn)	2022/07/12	114	75 - 125	99	80 - 120	<1.0	mg/kg	NC	35	107	67 - 133
A640934	Total Uranium (U)	2022/07/12	101	75 - 125	96	80 - 120	<0.20	mg/kg	0.098	30	97	77 - 123
A640934	Total Vanadium (V)	2022/07/12	129 (1)	75 - 125	95	80 - 120	<1.0	mg/kg	1.4	30	106	79 - 121
A640934	Total Zinc (Zn)	2022/07/12	NC	75 - 125	98	80 - 120	<10	mg/kg	1.9	30	109	79 - 121
A641128	Soluble Calcium (Ca)	2022/07/12	96	75 - 125	97	80 - 120	<1.5	mg/L	4.6	30	90	75 - 125
A641128	Soluble Potassium (K)	2022/07/12	97	75 - 125	97	80 - 120	<1.3	mg/L	9.0	30	97	75 - 125
A641128	Soluble Sodium (Na)	2022/07/12	99	75 - 125	100	80 - 120	<2.5	mg/L	13	30	91	75 - 125
A642758	Soluble (Hot water) Boron (B)	2022/07/13	101	75 - 125	97	80 - 120	<0.10	mg/kg	22	35		
A645174	Soluble (Hot water) Boron (B)	2022/07/16	103	75 - 125	102	80 - 120	<0.10	mg/kg	13	35		
A650654	F2 (C10-C16 Hydrocarbons)	2022/07/03	107	60 - 140	101	60 - 140	<10	mg/kg	NC	40		
A650654	F3 (C16-C34 Hydrocarbons)	2022/07/03	115	60 - 140	109	60 - 140	<50	mg/kg	NC	40		
A650654	F4 (C34-C50 Hydrocarbons)	2022/07/03	111	60 - 140	105	60 - 140	<50	mg/kg	NC	40		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics

Luba Shymushovska, B.Sc., QP, Senior Analyst, Organics

Maria Magdalena Florescu, Ph.D., P.Chem., QP, Inorganics Manager

Sandy Yuan, M.Sc., QP, Scientific Specialist

Sze Yeung Fock, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by:

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Custody Tracking Form

748 + 744

W50164

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: Pond 1
Last Sample: Sump E21
Sample Count: 13

Relinquished By				Received By			
Print: Jordan Hordal	Sign: Digitally signed by Jordan Hordal Date: 2022.06.23 13:17:33 -06'00'	Date	YYYY/MM/DD	Manjinder Randhawa	MRN	Date	2022 06 27
		Time (24 HR)	HH:MM			Time (24 HR)	17:00
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print): Jordan Hordal

# of Coolers/Pkgs: N 2

Rush ☐ Immediate Test ☐ Food Residue ☐

Micro ☐ Food Chemistry ☐

*** LABORATORY USE ONLY ***

Received At: MED2

Labeled By:

Verified By:

Lab Comments: C24 5456

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
Y	Y	Y	3	2	4
Y	Y	Y	4	5	3

Drinking Water Metals Preservation Check Done (Circle) **YES** **NO**

COR FCD-00383/3

Page 1 of 1

eCOC: W50164

Project Information:	C245456
Job Received:	2022/06/27 17:00
Expected TAT:	Standard TAT
Expected Arrival:	2022/06/24 17:00
Submitted By:	Brett Potter
Submitted To:	Edmonton ENV: 9331 48th St

Invoice Information

Attn: ACCOUNTS PAYABLE
DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE , NT , X1A 2P8
Email to:
invoices@riotinto.com

Report Information

Attn: DDMI Environment
DIAVIK DIAMOND MINES INC.
P.O. BOX 2498
300-5201 - 50th AVE.
YELLOWKNIFE , NT , X1A 2P8
Email to:
ddmi.environment@riotinto.com

Project Information

Quote #:	C10475, B50917
PO/AFE#:	3104707597
Project #:	Closure
Site Location:	

Analytical Summary

A: Standard TAT

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	BTEX F1-F4 - Soils	CCME Regulated Metals - Soils	Benzo[a]pyrene Equivalency	Hydrocarbons (C11-C60) in Soil by GC/FID	Oil and Grease by IR	PAH in Soil by GC/MS	Total Extractable HC Calculation C11-C60
Pond 1	1	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A
Pond 2	2	2022/06/19	SEDIMENT	4	A	A	A	A	A	A	A
Pond 3	3	2022/06/19	SEDIMENT	4	A	A	A	A	A	A	A
Pond 4	4	2022/06/19	SEDIMENT	4	A	A	A	A	A	A	A
Pond 5	5	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A
Pond 7	6	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A
Pond 10	7	2022/06/20	SEDIMENT	4	A	A	A	A	A	A	A
Pond 10 Dup	8	2022/06/20	SEDIMENT	4	A	A	A	A	A	A	A
Pond 11	9	2022/06/20	SEDIMENT	4	A	A	A	A	A	A	A
Pond 11 Dup	10	2022/06/20	SEDIMENT	4	A	A	A	A	A	A	A
Pond12	11	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A
Pond 13	12	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A
Sump E21	13	2022/06/17	SEDIMENT	4	A	A	A	A	A	A	A

Deadlines are estimates only and are subject to change. Please refer to your Job Confirmation report for final due dates.

Submission Information

# of Samples: 13

Details: *If sample has significant amounts of water, please have the lab decant the sample and analyze the sediment portion.

eCOC: W50164

Project Information:	C245456
Job Received:	2022/06/27 17:00
Expected TAT:	Standard TAT
Expected Arrival:	2022/06/24 17:00
Submitted By:	Brett Potter
Submitted To:	Edmonton ENV: 9331 48th St

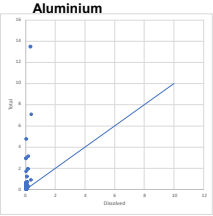
Total vs Dissolved Graphs of SNP Results

Water quality data collected as part of the Surveillance Network Program covering the period of approximately summer 2011 through summer 2024. Total metals are plotted against dissolved metals with a 1:1 relationship line for reference.

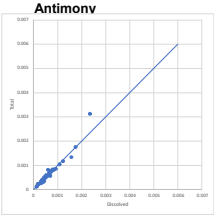
Pond 1

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

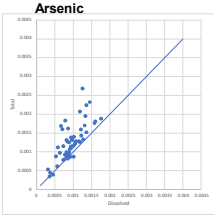
Aluminium



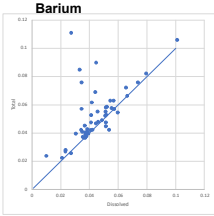
Antimony



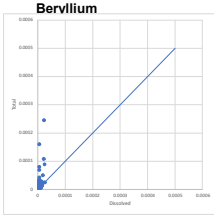
Arsenic



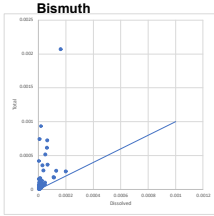
Barium



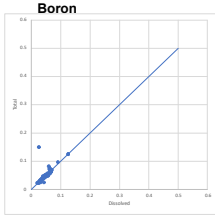
Beryllium



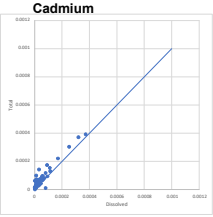
Bismuth



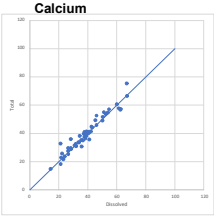
Boron



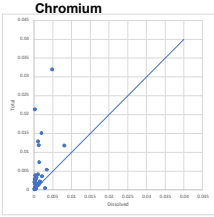
Cadmium



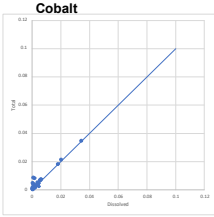
Calcium



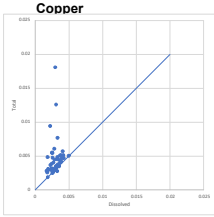
Chromium



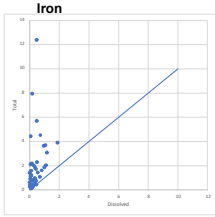
Cobalt



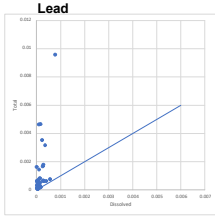
Copper



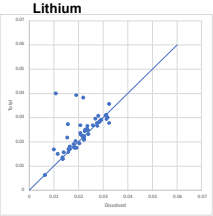
Iron



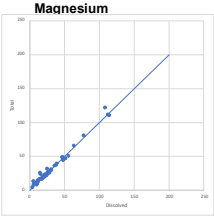
Lead



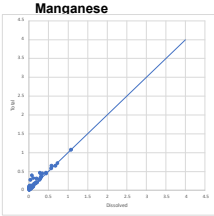
Lithium



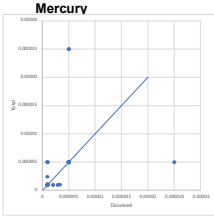
Magnesium



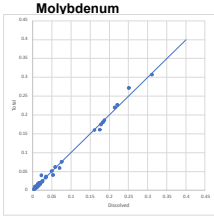
Manganese



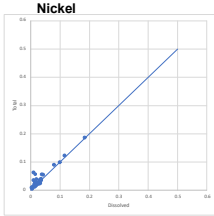
Mercury



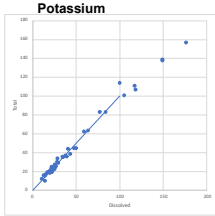
Molybdenum



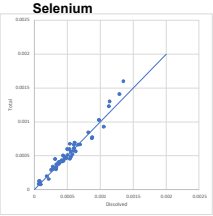
Nickel



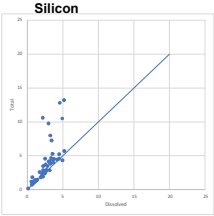
Potassium



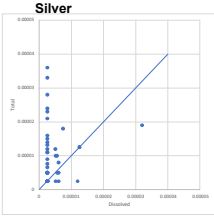
Selenium



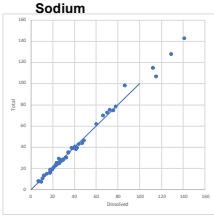
Silicon



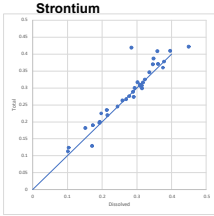
Silver



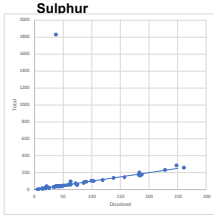
Sodium



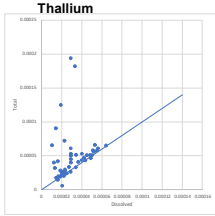
Strontium



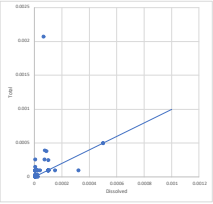
Sulphur



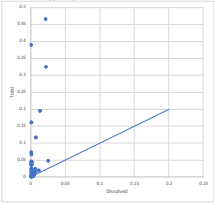
Thallium



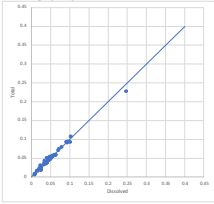
Tin



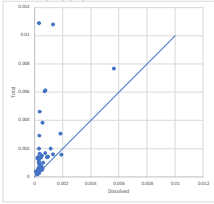
Titanium



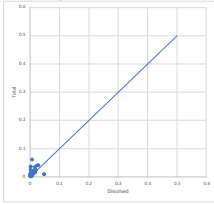
Uranium



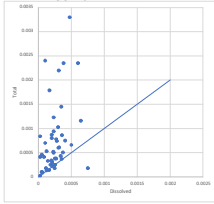
Vanadium



Zinc



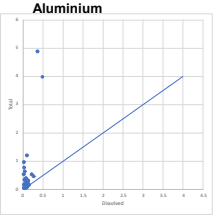
Zirconium



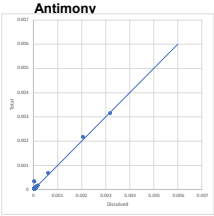
Pond 2

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

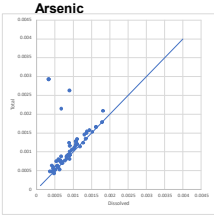
Aluminium



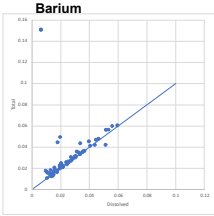
Antimony



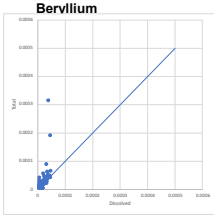
Arsenic



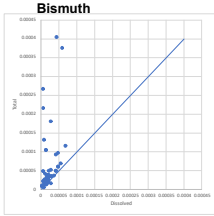
Barium



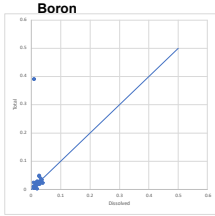
Beryllium



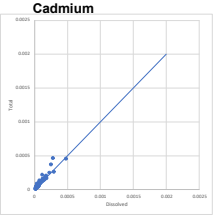
Bismuth



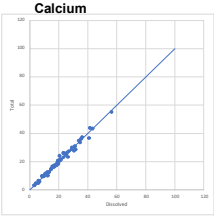
Boron



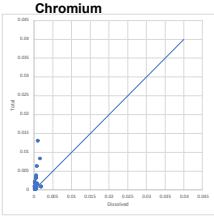
Cadmium



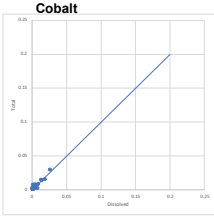
Calcium



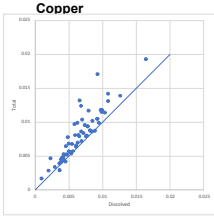
Chromium



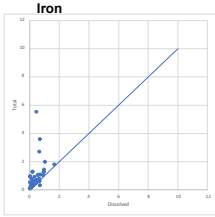
Cobalt



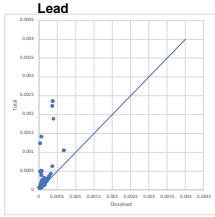
Copper



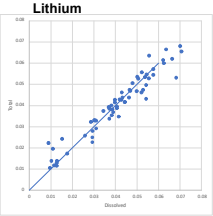
Iron



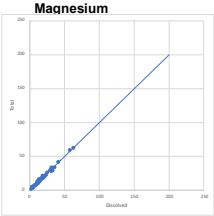
Lead



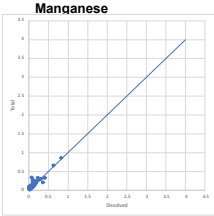
Lithium



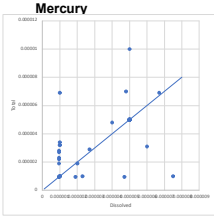
Magnesium



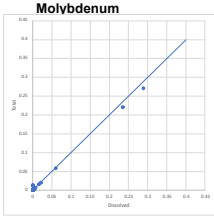
Manganese



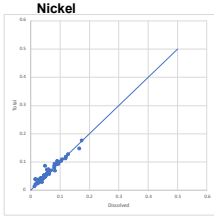
Mercury



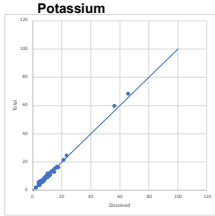
Molybdenum



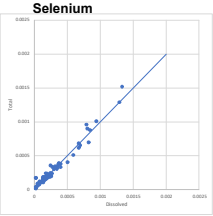
Nickel



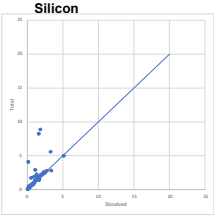
Potassium



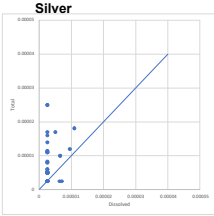
Selenium



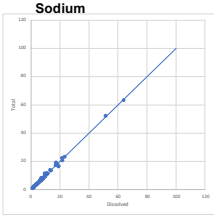
Silicon



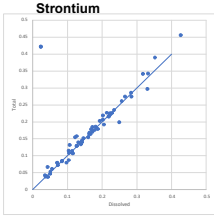
Silver



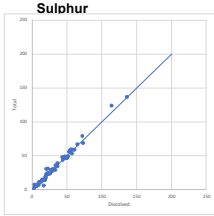
Sodium



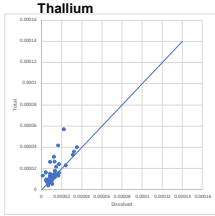
Strontium



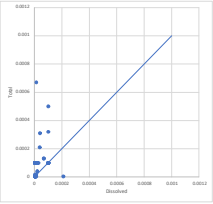
Sulphur



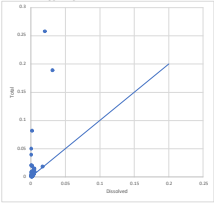
Thallium



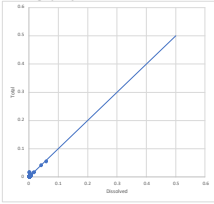
Tin



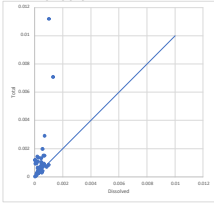
Titanium



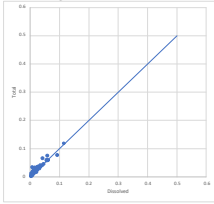
Uranium



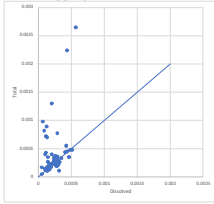
Vanadium



Zinc



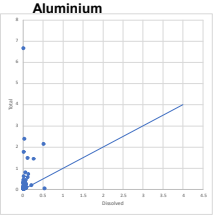
Zirconium



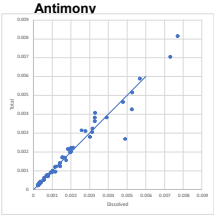
Pond 3

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

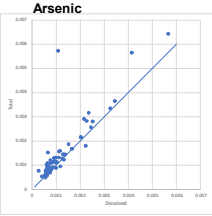
Aluminium



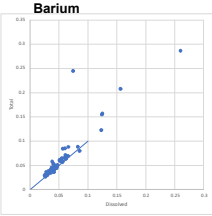
Antimony



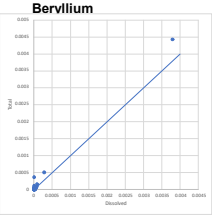
Arsenic



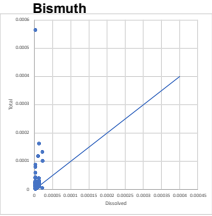
Barium



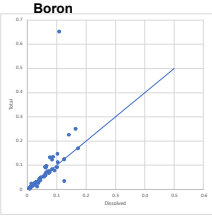
Beryllium



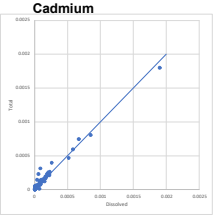
Bismuth



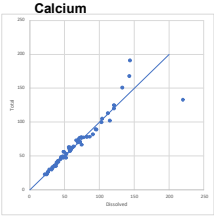
Boron



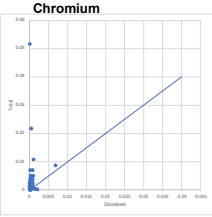
Cadmium



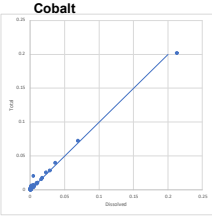
Calcium



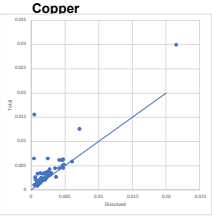
Chromium



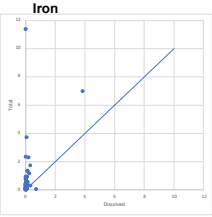
Cobalt



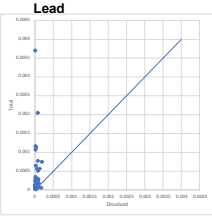
Copper



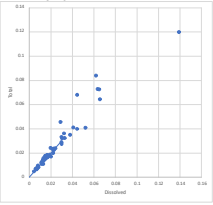
Iron



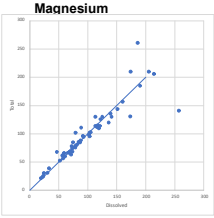
Lead



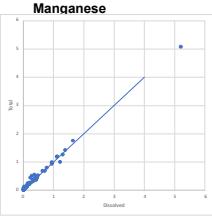
Lithium



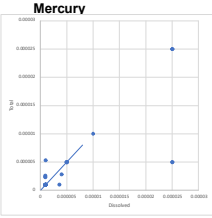
Magnesium



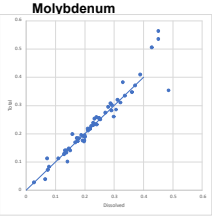
Manganese



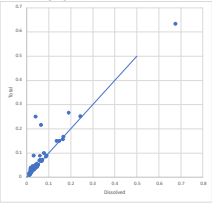
Mercury



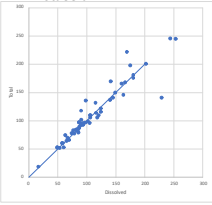
Molybdenum



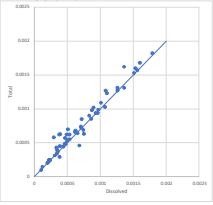
Nickel



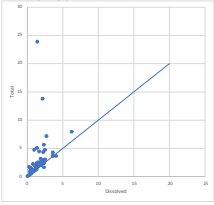
Potassium



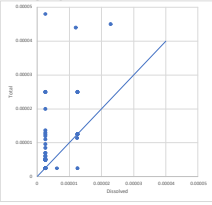
Selenium



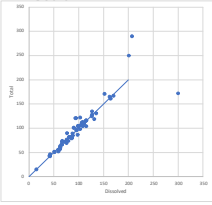
Silicon



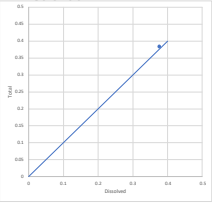
Silver



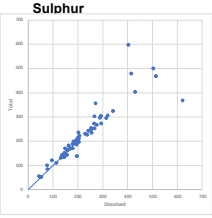
Sodium



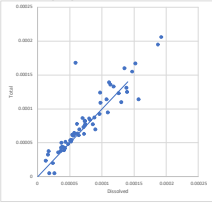
Strontium



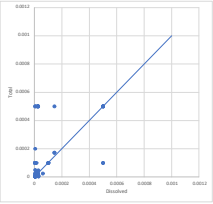
Sulphur



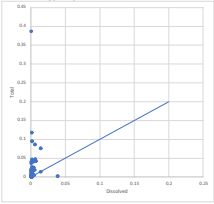
Thallium



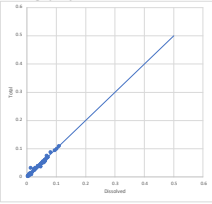
Tin



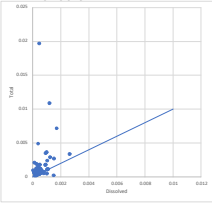
Titanium



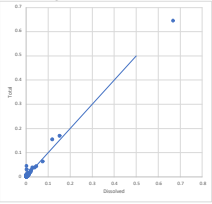
Uranium



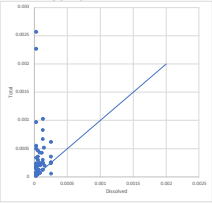
Vanadium



Zinc



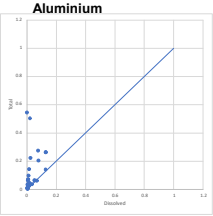
Zirconium



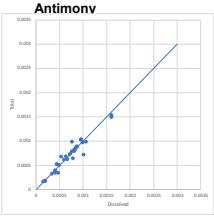
Pond 4

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

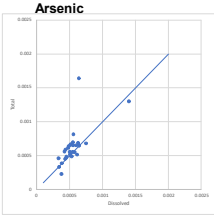
Aluminium



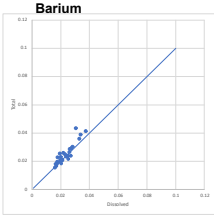
Antimony



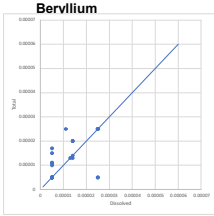
Arsenic



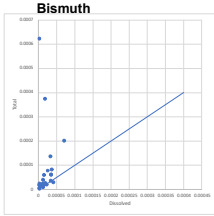
Barium



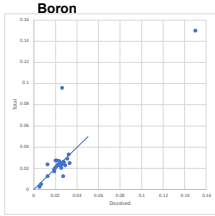
Beryllium



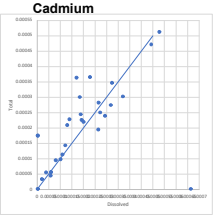
Bismuth



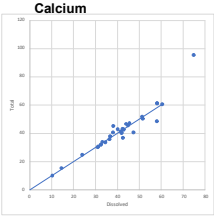
Boron



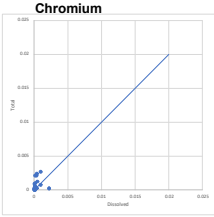
Cadmium



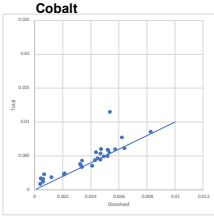
Calcium



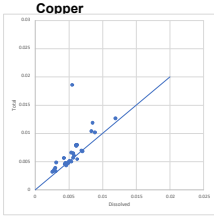
Chromium



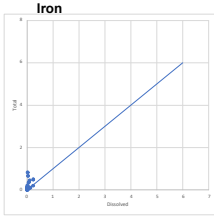
Cobalt



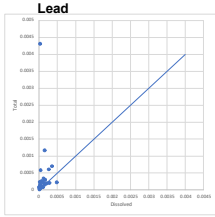
Copper



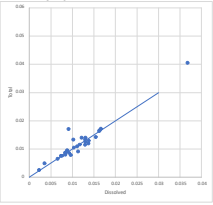
Iron



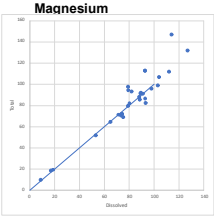
Lead



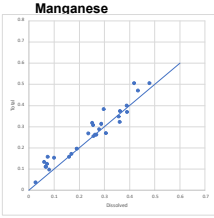
Lithium



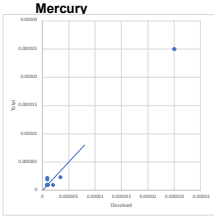
Magnesium



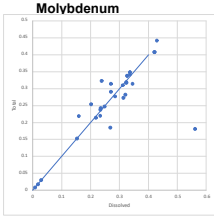
Manganese



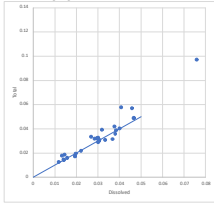
Mercury



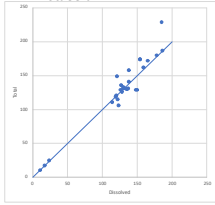
Molybdenum



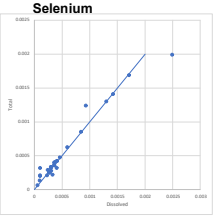
Nickel



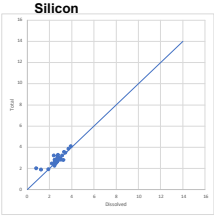
Potassium



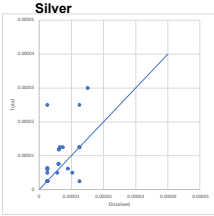
Selenium



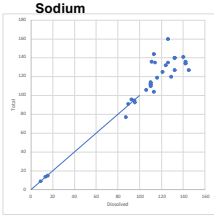
Silicon



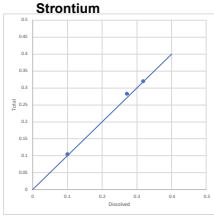
Silver



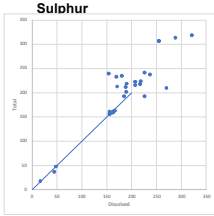
Sodium



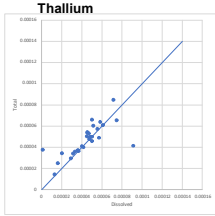
Strontium



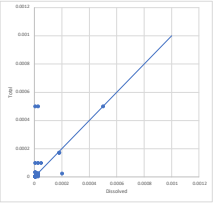
Sulphur



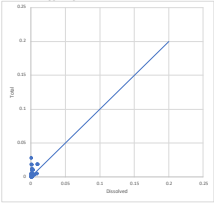
Thallium



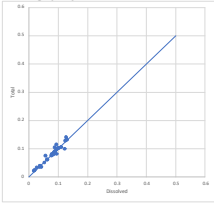
Tin



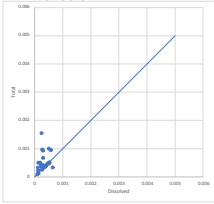
Titanium



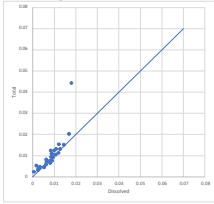
Uranium



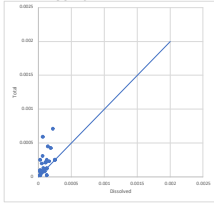
Vanadium



Zinc



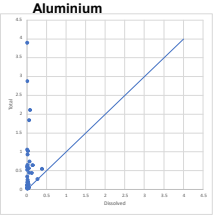
Zirconium



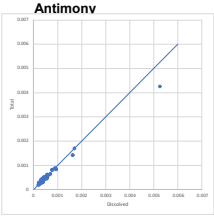
Pond 5

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

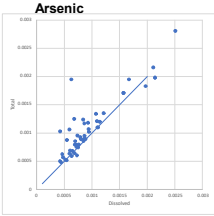
Aluminium



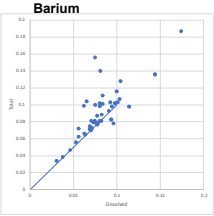
Antimony



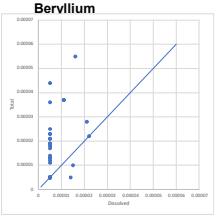
Arsenic



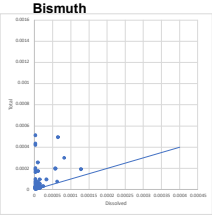
Barium



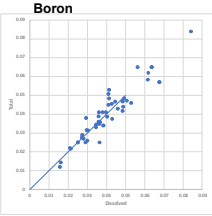
Beryllium



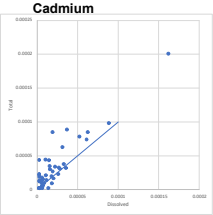
Bismuth



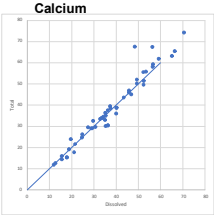
Boron



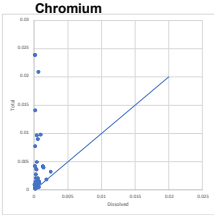
Cadmium



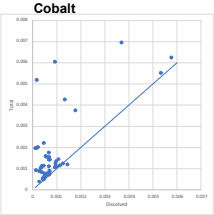
Calcium



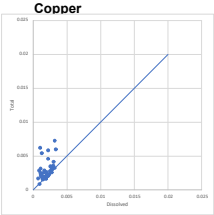
Chromium



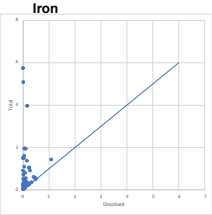
Cobalt



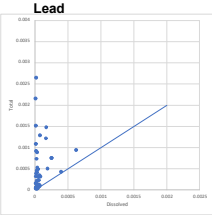
Copper



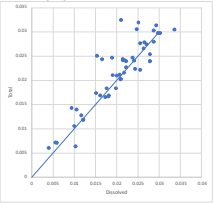
Iron



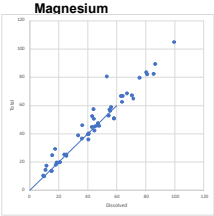
Lead



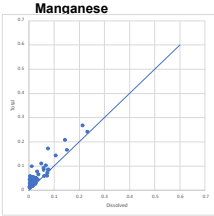
Lithium



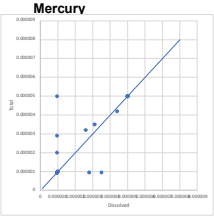
Magnesium



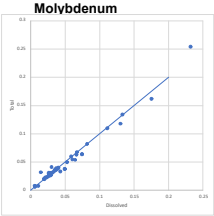
Manganese



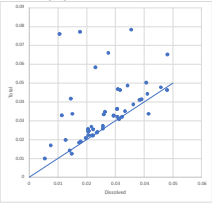
Mercury



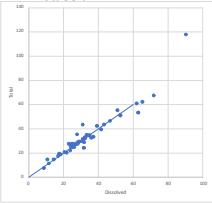
Molybdenum



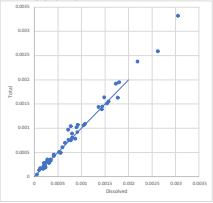
Nickel



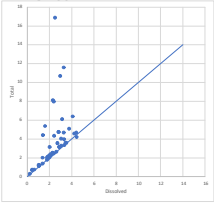
Potassium



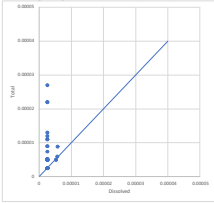
Selenium



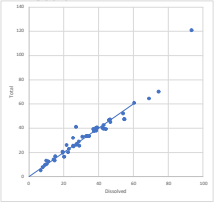
Silicon



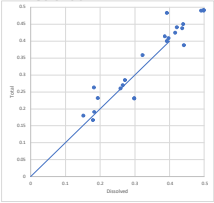
Silver



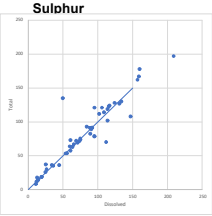
Sodium



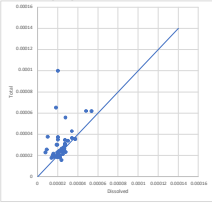
Strontium



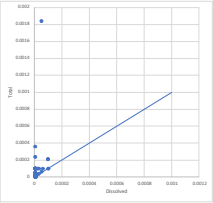
Sulphur



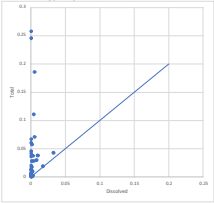
Thallium



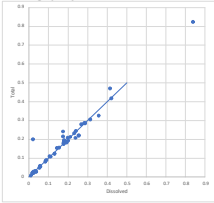
Tin



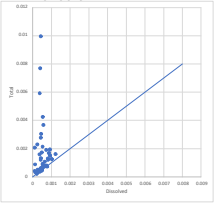
Titanium



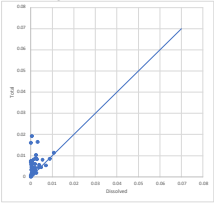
Uranium



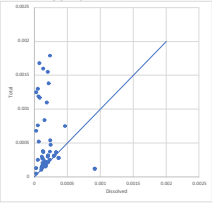
Vanadium



Zinc



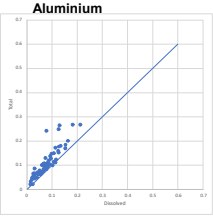
Zirconium



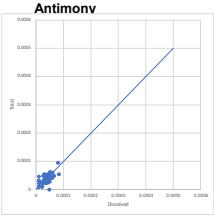
Pond 7

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

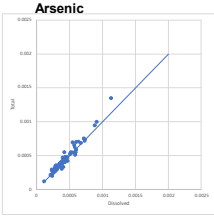
Aluminium



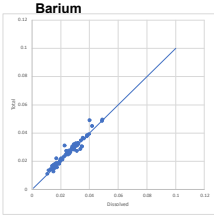
Antimony



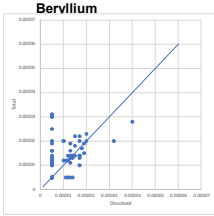
Arsenic



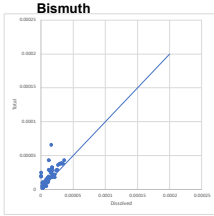
Barium



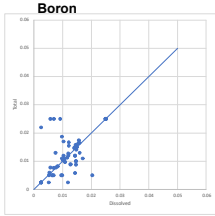
Beryllium



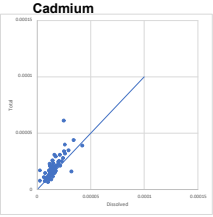
Bismuth



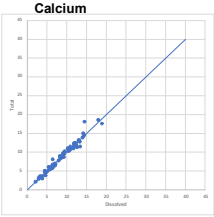
Boron



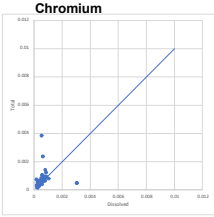
Cadmium



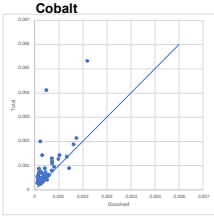
Calcium



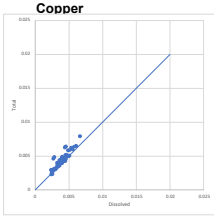
Chromium



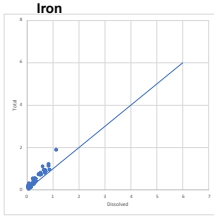
Cobalt



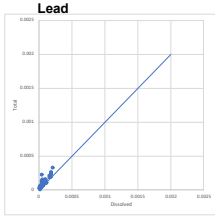
Copper



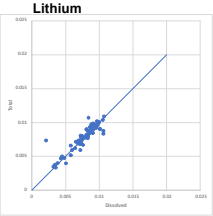
Iron



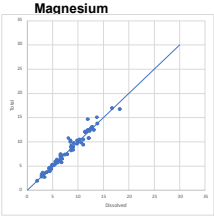
Lead



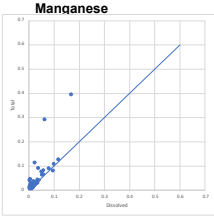
Lithium



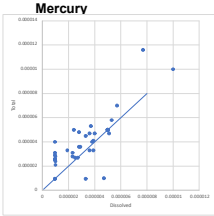
Magnesium



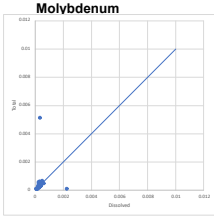
Manganese



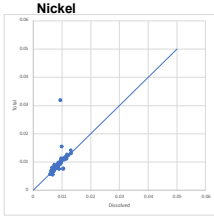
Mercury



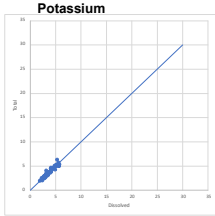
Molybdenum



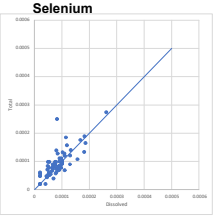
Nickel



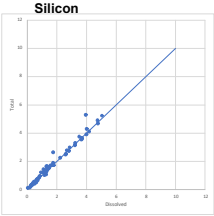
Potassium



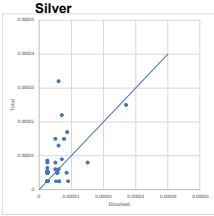
Selenium



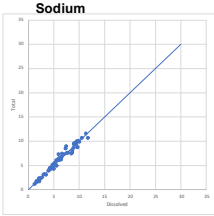
Silicon



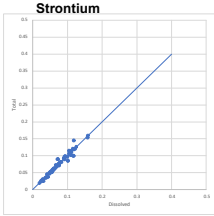
Silver



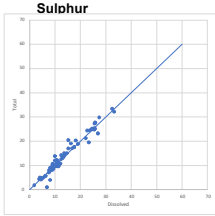
Sodium



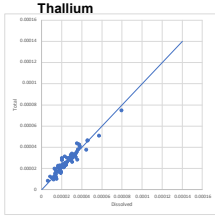
Strontium



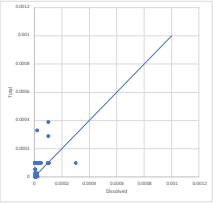
Sulphur



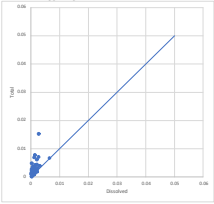
Thallium



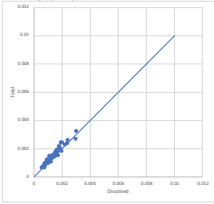
Tin



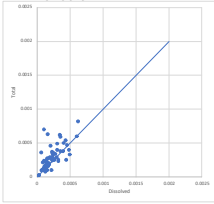
Titanium



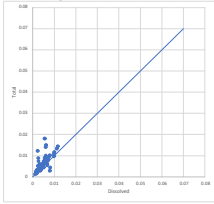
Uranium



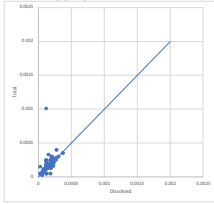
Vanadium



Zinc



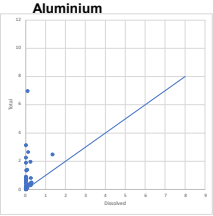
Zirconium



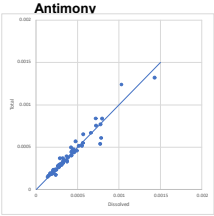
Pond 10

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

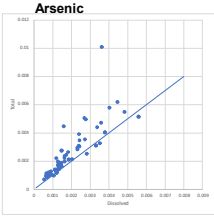
Aluminium



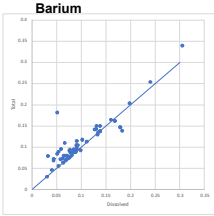
Antimony



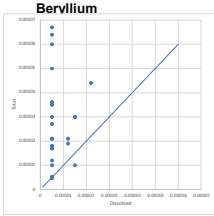
Arsenic



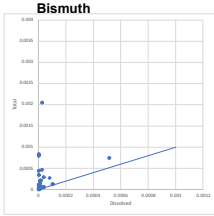
Barium



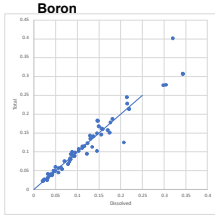
Beryllium



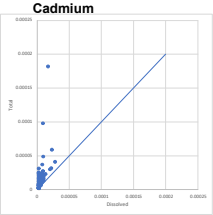
Bismuth



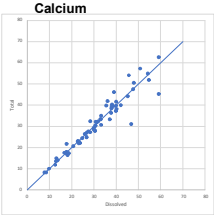
Boron



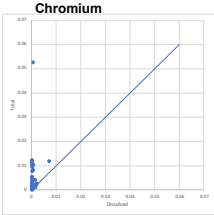
Cadmium



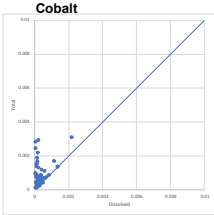
Calcium



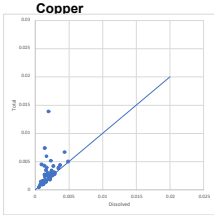
Chromium



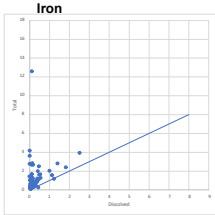
Cobalt



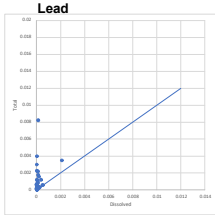
Copper



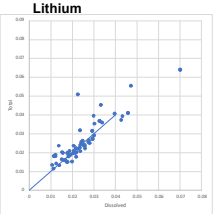
Iron



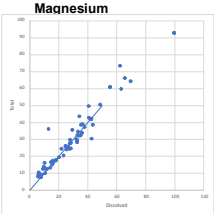
Lead



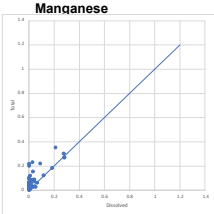
Lithium



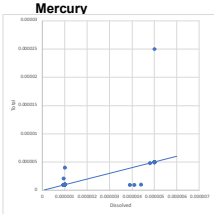
Magnesium



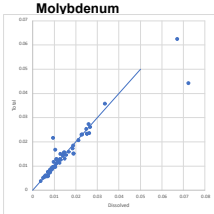
Manganese



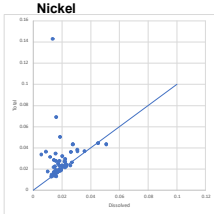
Mercury



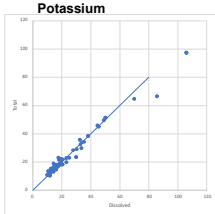
Molybdenum



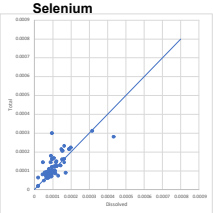
Nickel



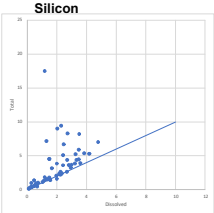
Potassium



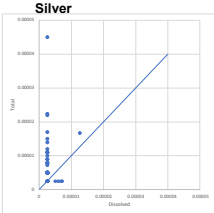
Selenium



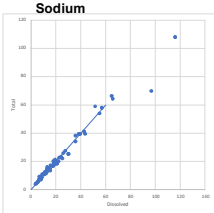
Silicon



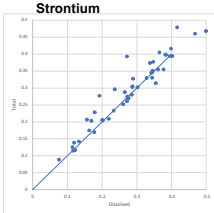
Silver



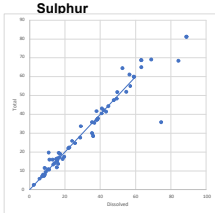
Sodium



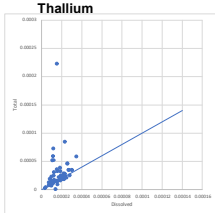
Strontium



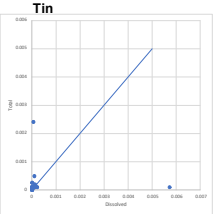
Sulphur



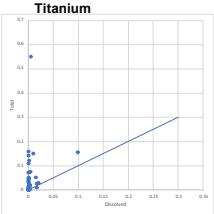
Thallium



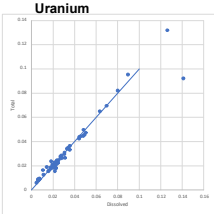
Tin



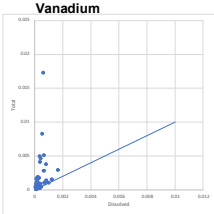
Titanium



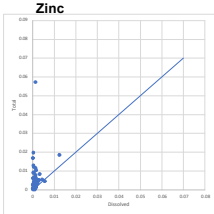
Uranium



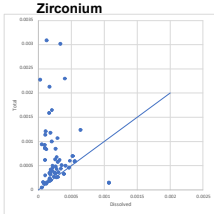
Vanadium



Zinc



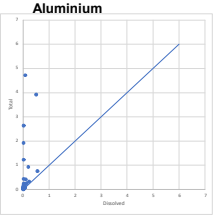
Zirconium



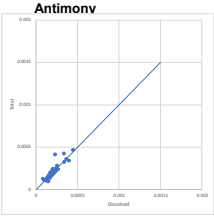
Pond 11

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

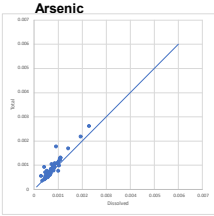
Aluminium



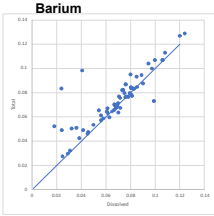
Antimony



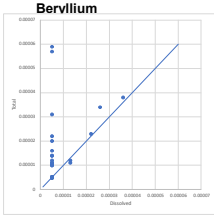
Arsenic



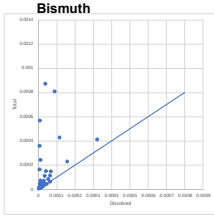
Barium



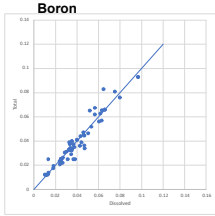
Beryllium



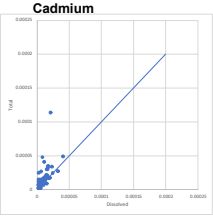
Bismuth



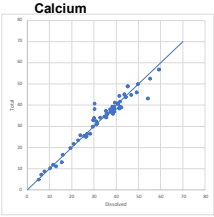
Boron



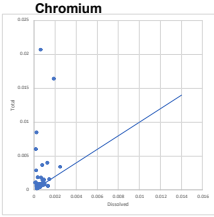
Cadmium



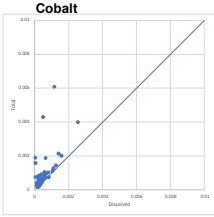
Calcium



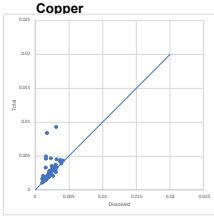
Chromium



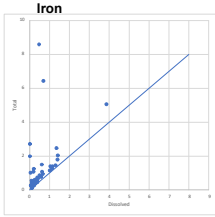
Cobalt



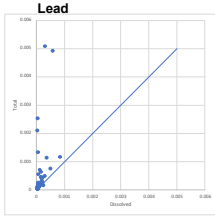
Copper



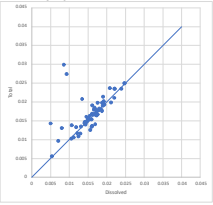
Iron



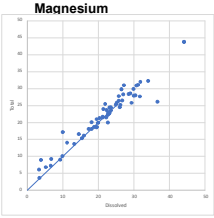
Lead



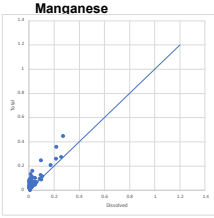
Lithium



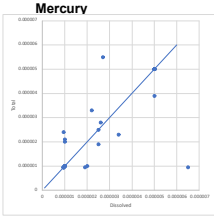
Magnesium



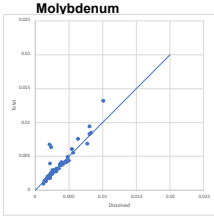
Manganese



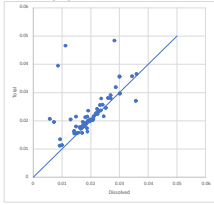
Mercury



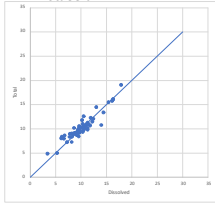
Molybdenum



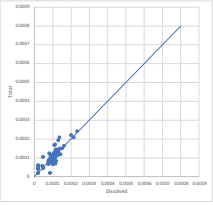
Nickel



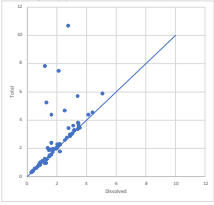
Potassium



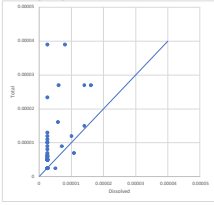
Selenium



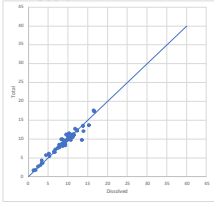
Silicon



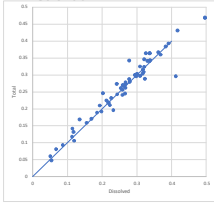
Silver



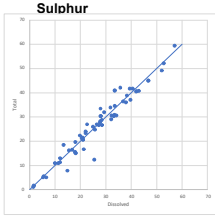
Sodium



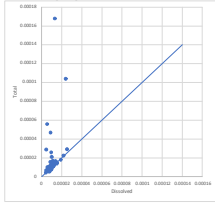
Strontium



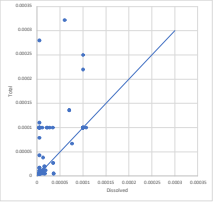
Sulphur



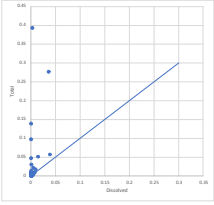
Thallium



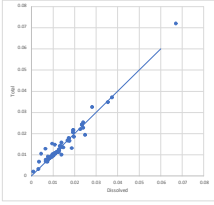
Tin



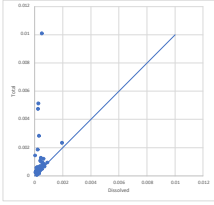
Titanium



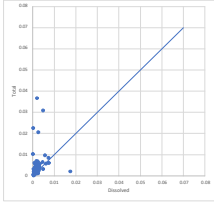
Uranium



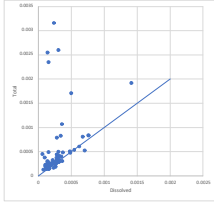
Vanadium



Zinc



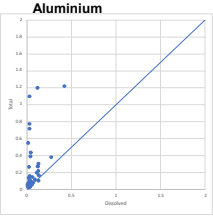
Zirconium



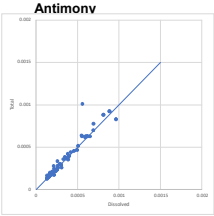
Pond 12

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

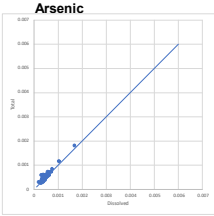
Aluminium



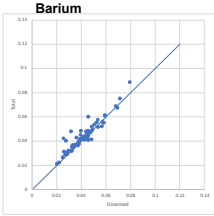
Antimony



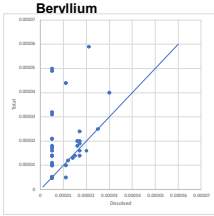
Arsenic



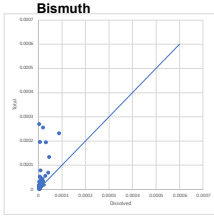
Barium



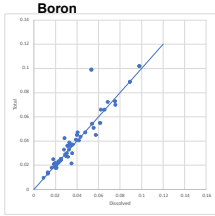
Beryllium



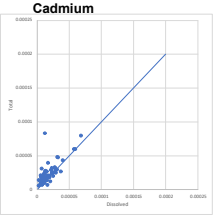
Bismuth



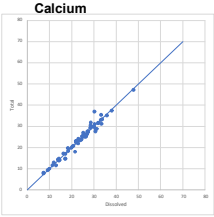
Boron



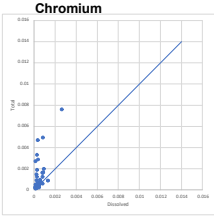
Cadmium



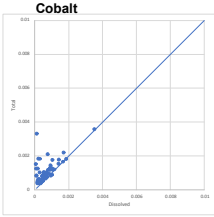
Calcium



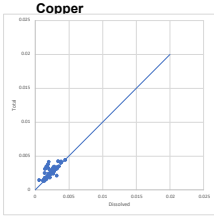
Chromium



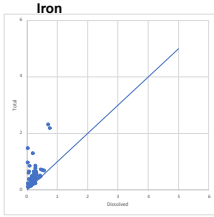
Cobalt



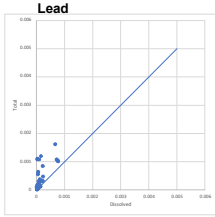
Copper



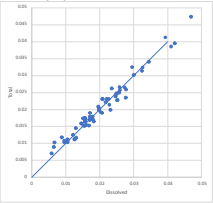
Iron



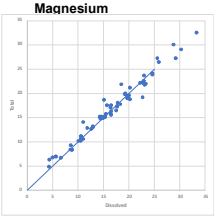
Lead



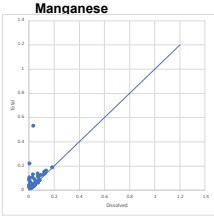
Lithium



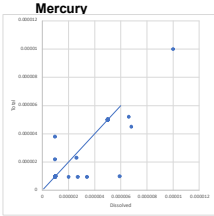
Magnesium



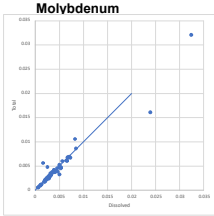
Manganese



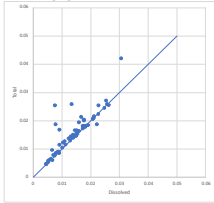
Mercury



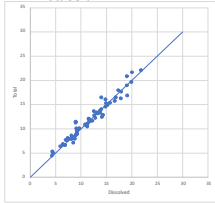
Molybdenum



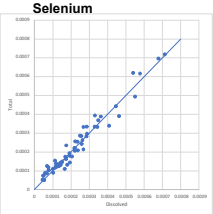
Nickel



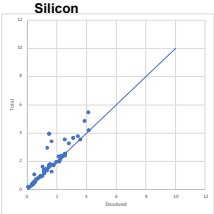
Potassium



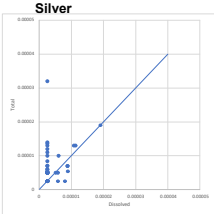
Selenium



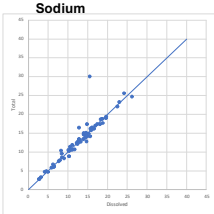
Silicon



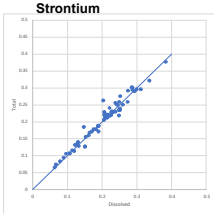
Silver



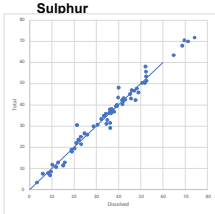
Sodium



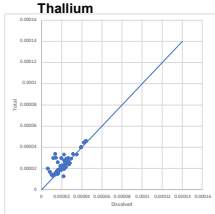
Strontium



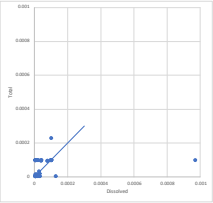
Sulphur



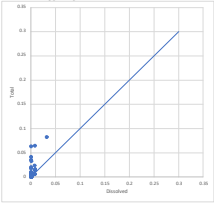
Thallium



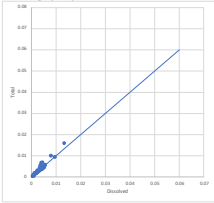
Tin



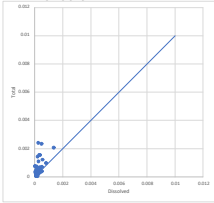
Titanium



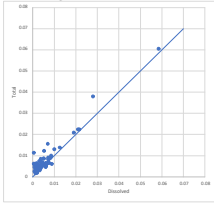
Uranium



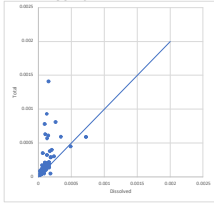
Vanadium



Zinc



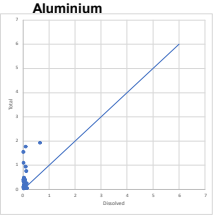
Zirconium



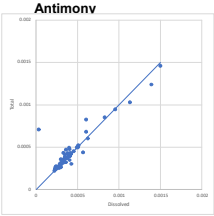
Pond 13

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

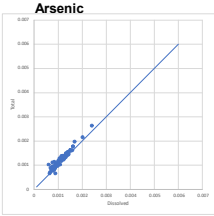
Aluminium



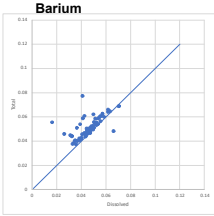
Antimony



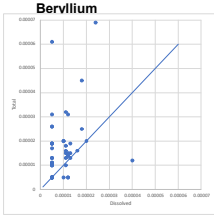
Arsenic



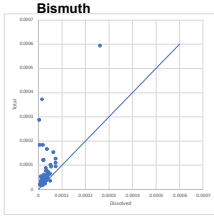
Barium



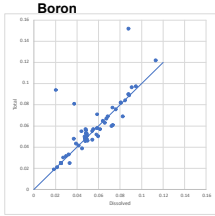
Beryllium



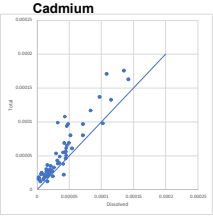
Bismuth



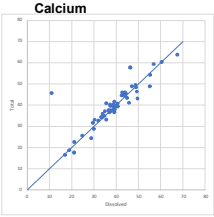
Boron



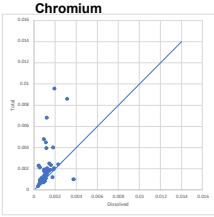
Cadmium



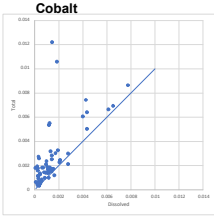
Calcium



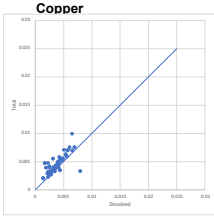
Chromium



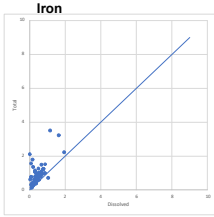
Cobalt



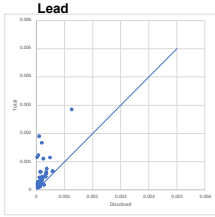
Copper



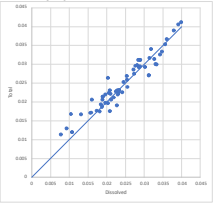
Iron



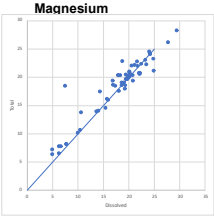
Lead



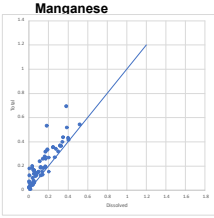
Lithium



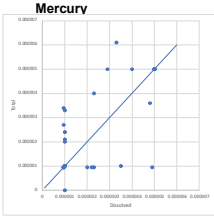
Magnesium



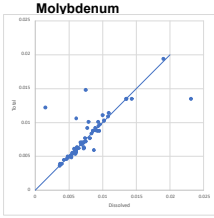
Manganese



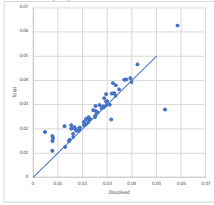
Mercury



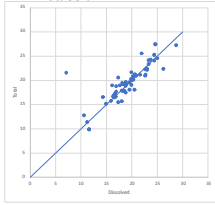
Molybdenum



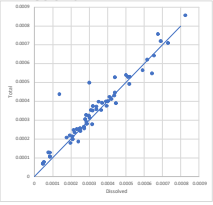
Nickel



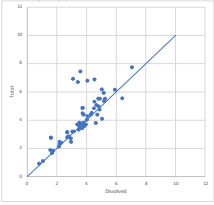
Potassium



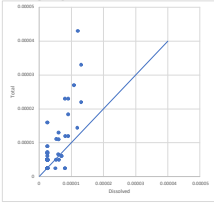
Selenium



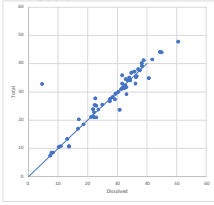
Silicon



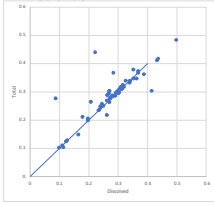
Silver



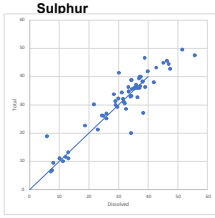
Sodium



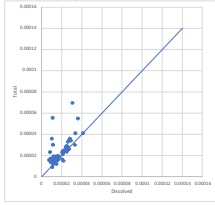
Strontium



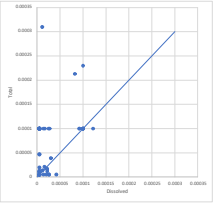
Sulphur



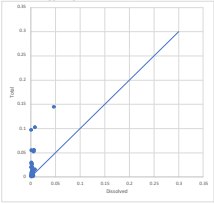
Thallium



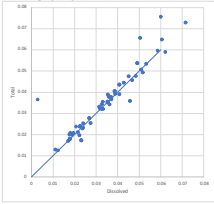
Tin



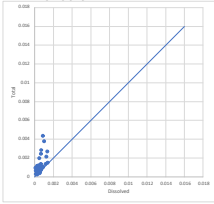
Titanium



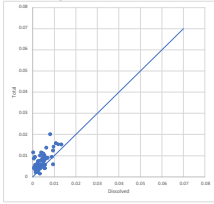
Uranium



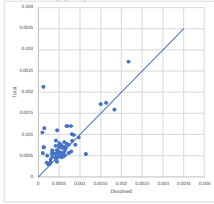
Vanadium



Zinc



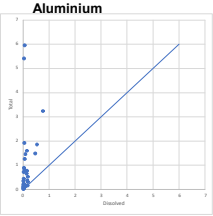
Zirconium



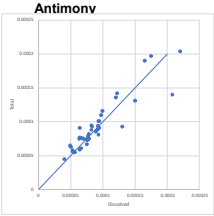
Sump E21

Total versus Dissolved Parameters
Line indicates the 1:1 relationship
Values are in mg/L

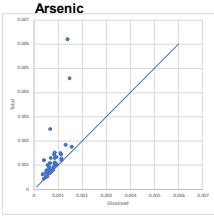
Aluminium



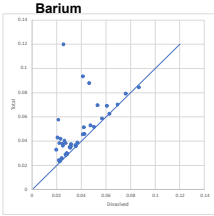
Antimony



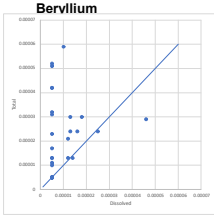
Arsenic



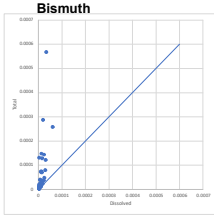
Barium



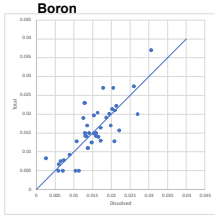
Beryllium



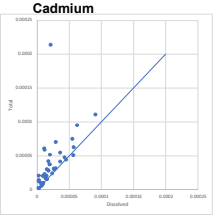
Bismuth



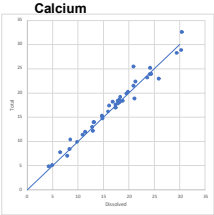
Boron



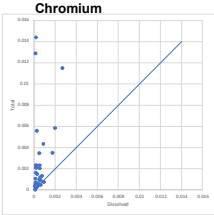
Cadmium



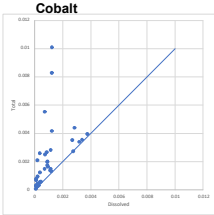
Calcium



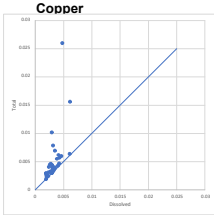
Chromium



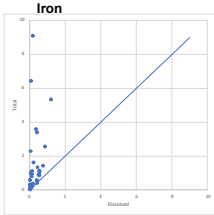
Cobalt



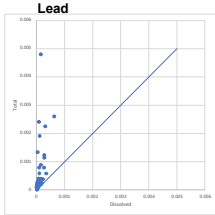
Copper



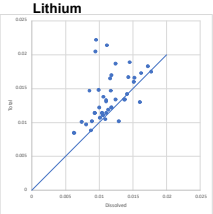
Iron



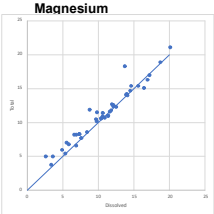
Lead



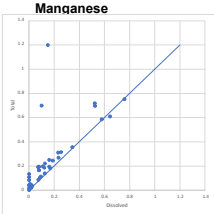
Lithium



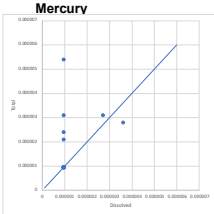
Magnesium



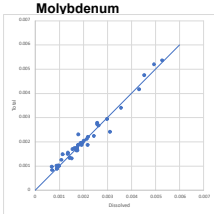
Manganese



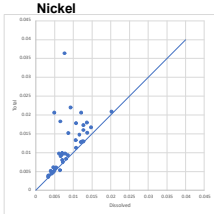
Mercury



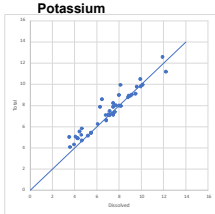
Molybdenum



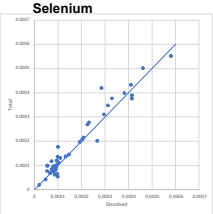
Nickel



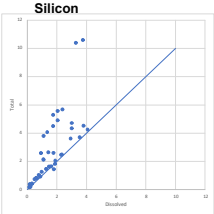
Potassium



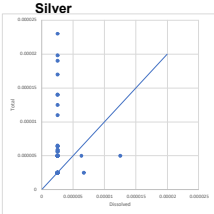
Selenium



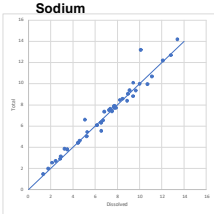
Silicon



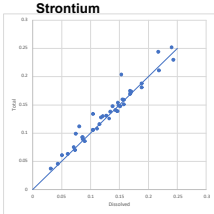
Silver



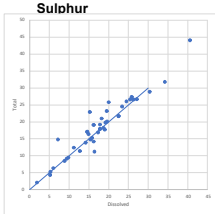
Sodium



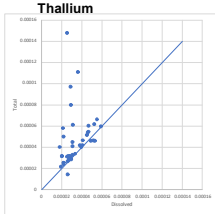
Strontium



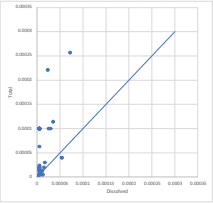
Sulphur



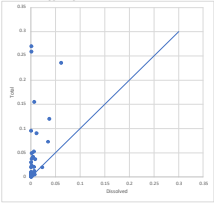
Thallium



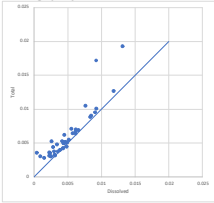
Tin



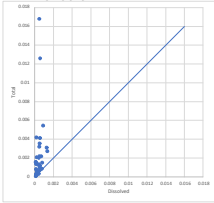
Titanium



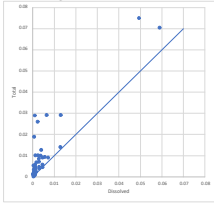
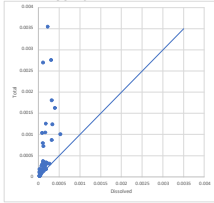
Uranium



Vanadium



Zinc



Zirconium