

Annex F5

## Groundwater Monitoring Results

**Table F5.1 Groundwater Monitoring Results (January 2023)**

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.85	2.94	2.91	2.91	2.92	2.89	2.55	2.91	2.54	2.43	2.95	6.79	35.59	41.91
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	100	256	139	<1	<1	<1	33	<1	123	221	251	54	18	13
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	63	77	113	29	90	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	100	256	139	101	132	189	62	131	123	221	251	54	18	13
pH Value	pH Unit	8	7.9	7.9	10.9	11.1	11.3	9.3	10.9	8.2	7.9	7.6	7	5.9	5.9
Electrical Conductivity	µS/cm	1270	922	1130	945	1260	1320	2440	1770	1000	948	856	306	92	98
Ammonia as N	mg/L	0.8	0.02	1.58	4.27	2.34	3.74	6.35	8.64	1.22	0.02	0.13	0.02	<0.01	<0.01
Chloride	mg/L	305	38	204	175	206	190	665	364	184	114	74	21	15	18
Nitrite as N	mg/L	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Reactive Phosphorus as P	mg/L	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	0.01	0.01	0.04	0.01	<0.01
Sulphate as SO <sub>4</sub> - Turbidimetric	mg/L	70	197	90	74	124	100	36	196	88	93	83	61	3	4
Sulphide as S <sub>2</sub>	mg/L	0.2	<0.1	<0.1	7.2	7.7	17.4	2.5	5.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	0.8	0.1	1.8	5	2.4	4.2	7.1	9.6	1.4	0.1	0.2	0.1	<0.1	<0.1
Nitrate as N	mg/L	<0.01	0.59	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03	0.01	<0.01	0.01	0.1	0.08
Total Nitrogen as N	mg/L	0.8	0.7	1.8	5	2.5	4.2	7.1	9.7	1.4	0.1	0.2	0.1	0.1	<0.1
Boron	µg/L	110	180	200	200	200	180	690	190	270	180	90	20	20	10
Calcium	mg/L	63.6	59.6	72.6	35.3	35	33.6	22.5	40.4	53.8	84.2	96.7	24.8	0.85	1.01
Mercury	µg/L	<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	<0.20
Magnesium	mg/L	8.39	57.5	4.79	0.13	<0.05	<0.05	3.2	<0.05	6.27	7.01	6.84	4.26	0.98	0.88
Sodium	mg/L	151	47.4	120	113	151	161	370	247	113	88.9	51.5	22.6	12.3	13.2
Iron	mg/L	0.06	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Potassium	mg/L	20.8	11.8	27.2	29.8	54.9	56.2	49.5	64.8	21.6	13.1	9.26	2.95	3.63	3.41
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	664	156	848	<1	<1	<1	<1	<1	58	657	754	590	18	8
Nickel	µg/L	<1	<1	<1	1	1	2	<1	4	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	24	11	<10
Biochemical Oxygen Demand	mg/L	<2	<2	2	<2	<2	7	<2	<2	2	3	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	7	3	15	24	30	44	11	38	8	8	4	<2	2	2
Total Organic Carbon	mg/L	4	1	8	10	12	12	6	16	4	4	2	<1	<1	<1

**Table F5.2 Groundwater Monitoring Results (February 2023)**

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.41	2.71	2.94	2.37	2.72	1.71	2.64	2.96	2.84	2.03	3.17	6.29	Dry	41.41
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	132	260	126	<1	<1	<1	42	<1	123	242	223	56	NA	12
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	72	88	134	24	79	<1	<1	<1	<1	NA	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	132	260	126	108	141	204	66	117	123	242	223	56	NA	12
pH Value	pH Unit	7.9	8	8	10.9	11.2	11.4	9.2	10.9	8.3	8	8	7	NA	5.6
Electrical Conductivity	µS/cm	998	874	1110	960	1280	1300	2430	2050	862	776	667	302	NA	99
Ammonia	mg/L	<0.01	<0.01	0.18	0.48	0.27	0.44	0.66	0.96	1.74	0.04	0.17	<0.01	NA	<0.01
Chloride	mg/L	179	41	203	188	215	193	652	458	151	72	51	21	NA	18
Nitrite	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01
Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.02	0.01	0.03	NA	<0.01
Sulphate	mg/L	60	141	79	63	123	79	41	167	58	36	47	55	NA	4
Sulphide	mg/L	<0.1	<0.1	<0.1	8.9	13.8	22.4	1.9	4.8	0.1	<0.1	<0.1	<0.1	NA	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	<0.1	1.9	6	3.2	5.3	6.5	10.9	1.8	<0.1	0.3	<0.1	NA	<0.1
Nitrate	mg/L	<0.01	0.45	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	0.07
Total Nitrogen	mg/L	0.1	0.5	1.9	6	3.2	5.3	6.6	10.9	1.8	<0.1	0.3	<0.1	NA	0.1
Boron	µg/L	130	180	200	190	200	190	710	240	320	90	80	20	NA	10
Calcium	mg/L	58.8	57.5	63.9	38.1	38.5	31.3	25.1	51.5	40.9	79.8	74.8	25.2	NA	0.92
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA	<0.20
Magnesium	mg/L	7.33	51.3	4.17	<0.05	<0.05	<0.05	4.64	<0.05	6.4	7.53	6	4.14	NA	0.89
Sodium	mg/L	114	46.9	125	115	158	161	437	320	102	57.9	48.6	25.9	NA	14.2
Iron	mg/L	0.05	<0.04	0.1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.38	NA	<0.04
Potassium	mg/L	19.8	10.6	27	31.3	56.8	54.9	50.4	72	18.6	8.34	8.51	3.01	NA	3.82
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	<0.2
Chromium	µg/L	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Manganese	µg/L	573	172	751	<1	2	<1	1	<1	82	1120	750	726	NA	7
Nickel	µg/L	<1	<1	<1	1	1	2	<1	4	<1	<1	<1	<1	NA	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	NA	10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	6	4	10	<2	3	<2	<2	<2	<2	NA	<2
Chemical Oxygen Demand	mg/L	6	6	16	28	30	38	12	34	10	4	4	5	NA	<2
Total Organic Carbon	mg/L	4	4	10	8	10	11	6	15	7	2	<1	3	NA	<1

**Table F5.3 Groundwater Monitoring Results (March 2023)**

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.71	2.81	2.91	2.67	2.85	2.66	2.36	2.61	2.28	2.16	2.75	6.33	35.38	39.36
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	155	256	113	<1	<1	<1	34	<1	131	214	235	55	17	16
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	62	52	120	26	79	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	155	256	113	96	76	202	61	129	131	214	235	55	17	16
pH Value	pH Unit	7.8	8	8	10.7	10.7	11.3	9.3	10.9	8.3	7.9	8	7	5.6	5.8
Electrical Conductivity	µS/cm	982	874	1090	1130	1430	1340	2240	2920	786	727	694	298	93	107
Ammonia	mg/L	0.26	<0.01	1.74	6.17	2.61	4.23	3.25	13.8	1.27	0.02	0.17	0.01	0.02	0.03
Chloride	mg/L	166	40	217	238	320	206	535	821	133	81	53	21	14	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.02	0.02	0.04	0.01	<0.01
Sulphate	mg/L	61	132	78	63	120	96	62	90	46	43	48	48	3	5
Sulphide	mg/L	<0.1	<0.1	0.2	10	8	27.8	1.2	25.2	1.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	<0.1	2.2	6.7	3.5	4.8	3.3	13.8	1.5	0.1	0.4	0.1	<0.1	0.1
Nitrate	mg/L	0.07	0.41	0.01	<0.01	<0.01	0.02	0.65	<0.01	<0.01	0.01	<0.01	0.01	0.1	0.07
Total Nitrogen	mg/L	0.4	0.5	2.2	6.7	3.5	4.9	6.7	13.8	1.5	0.1	0.4	0.1	0.2	0.2
Boron	µg/L	140	180	220	190	190	180	400	430	320	80	80	20	10	10
Calcium	mg/L	57.6	59.4	60.9	40.5	35.2	36.1	17.3	80.4	42.3	80.3	81.1	24.7	0.82	1.01
Mercury	µg/L	<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	<0.20
Magnesium	mg/L	8.5	49.4	3.44	<0.05	<0.05	<0.05	1.6	<0.05	6.22	7.26	6.29	3.78	0.94	0.8
Sodium	mg/L	108	45.1	123	138	185	157	286	415	90.9	43.7	49.7	23.9	13.3	13.5
Iron	mg/L	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.29	<0.04	<0.04
Potassium	mg/L	18.8	10.5	26	31.4	53.1	54	54.6	69	15.2	7.05	8.72	2.9	3.89	3.56
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	1220	197	633	<1	<1	<1	<1	<1	126	1130	759	590	12	8
Nickel	µg/L	<1	<1	<1	1	<1	2	1	2	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10	<10	11	13
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	2	3	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	11	6	19	34	30	48	30	42	10	8	8	12	5	5
Total Organic Carbon	mg/L	6	6	6	9	6	10	6	13	5	5	5	4	3	2

Figure F5.1 Graphical Presentation for Groundwater Monitoring (MWX-1)

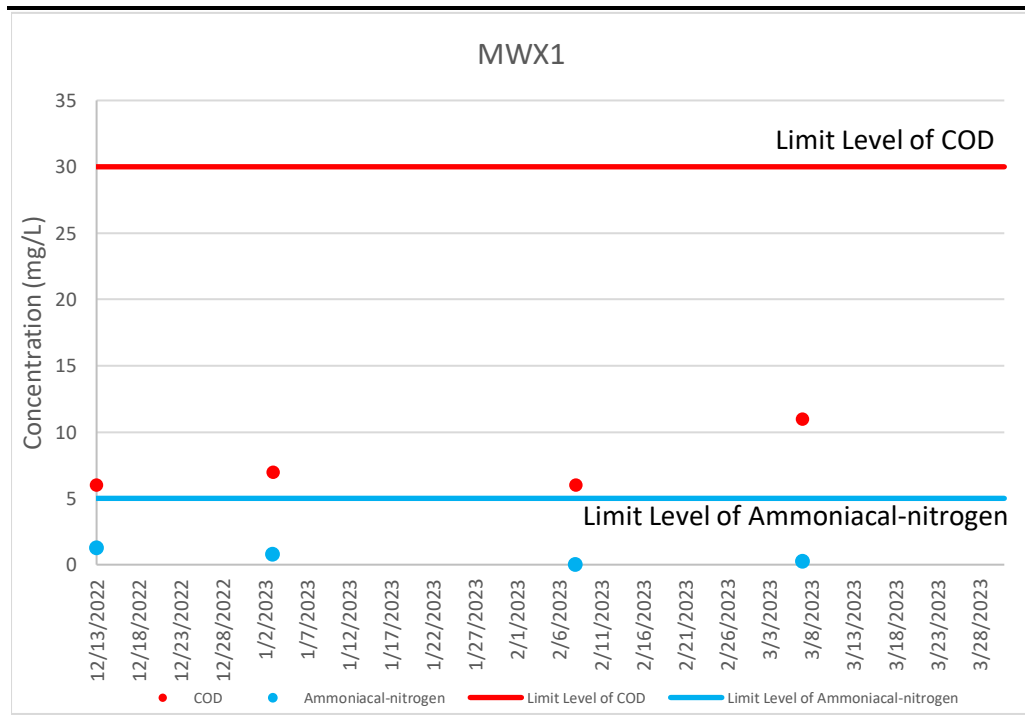


Figure F5.2 Graphical Presentation for Groundwater Monitoring (MWX-2)

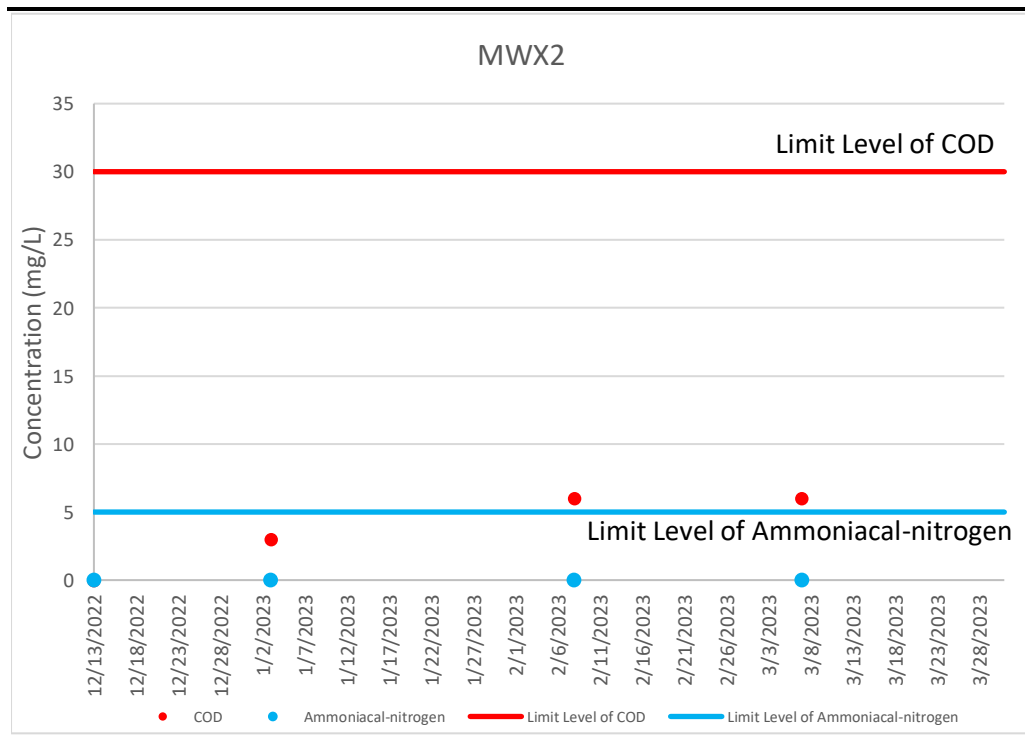


Figure F5.3 Graphical Presentation for Groundwater Monitoring (MWX-3)

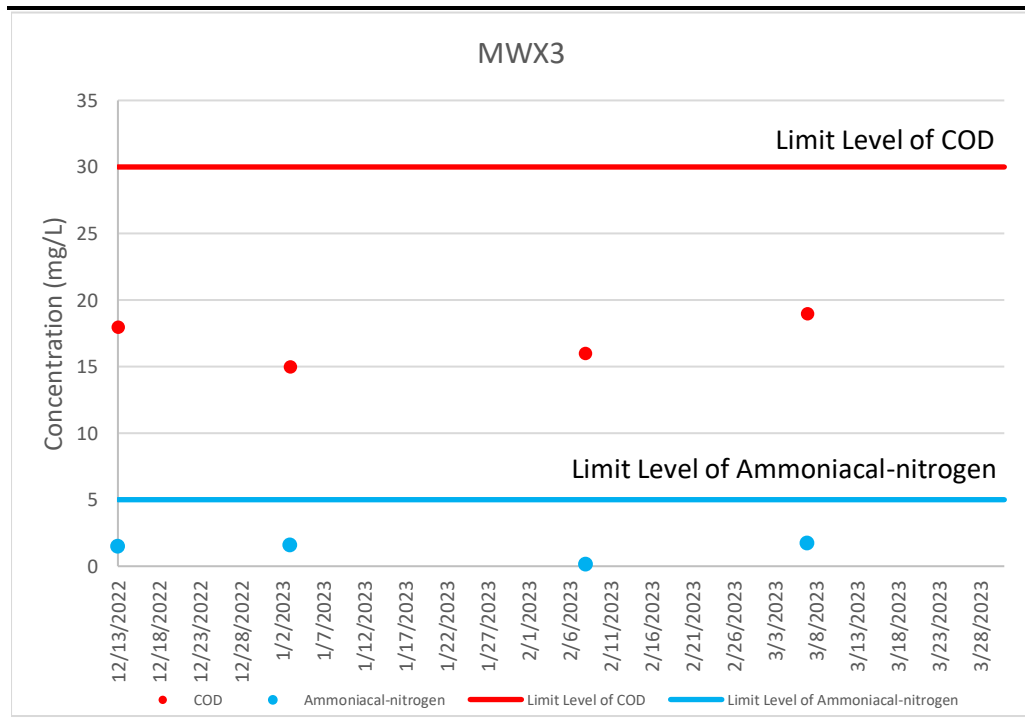


Figure F5.4 Graphical Presentation for Groundwater Monitoring (MWX-4)

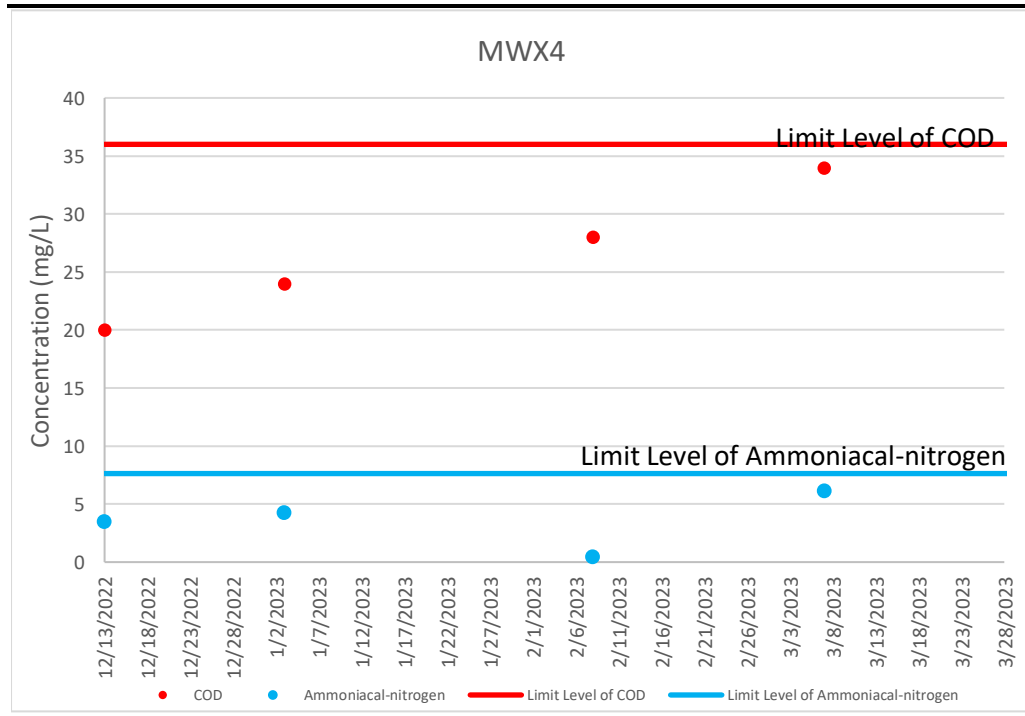


Figure F5.5 Graphical Presentation for Groundwater Monitoring (MWX-5)

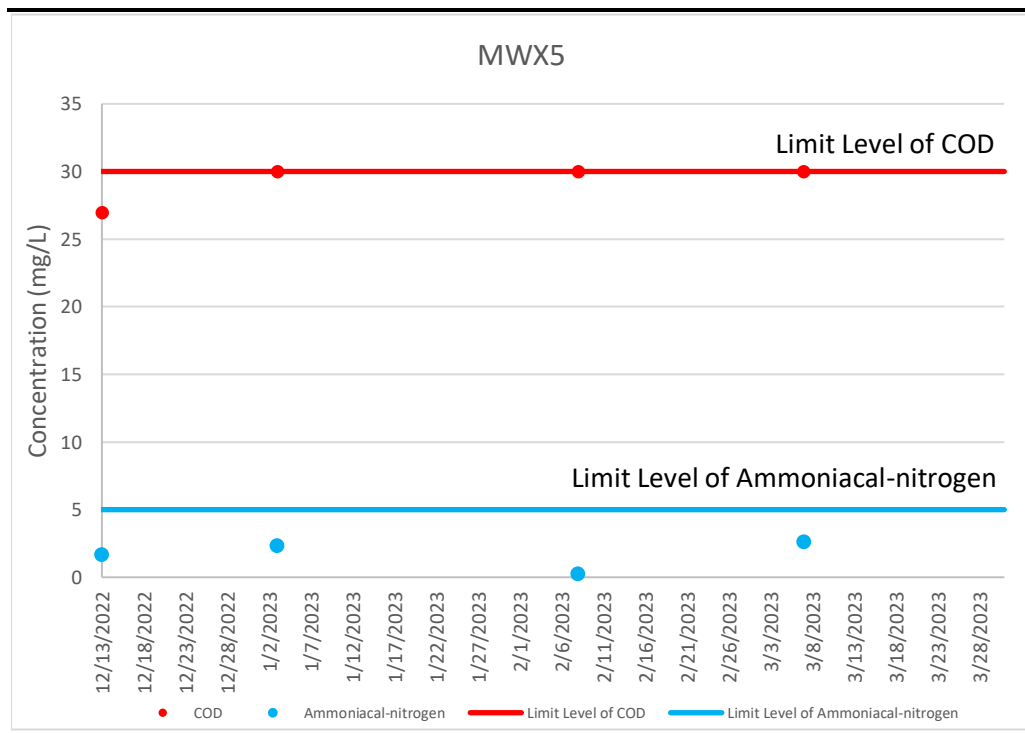


Figure F5.6 Graphical Presentation for Groundwater Monitoring (MWX-6)

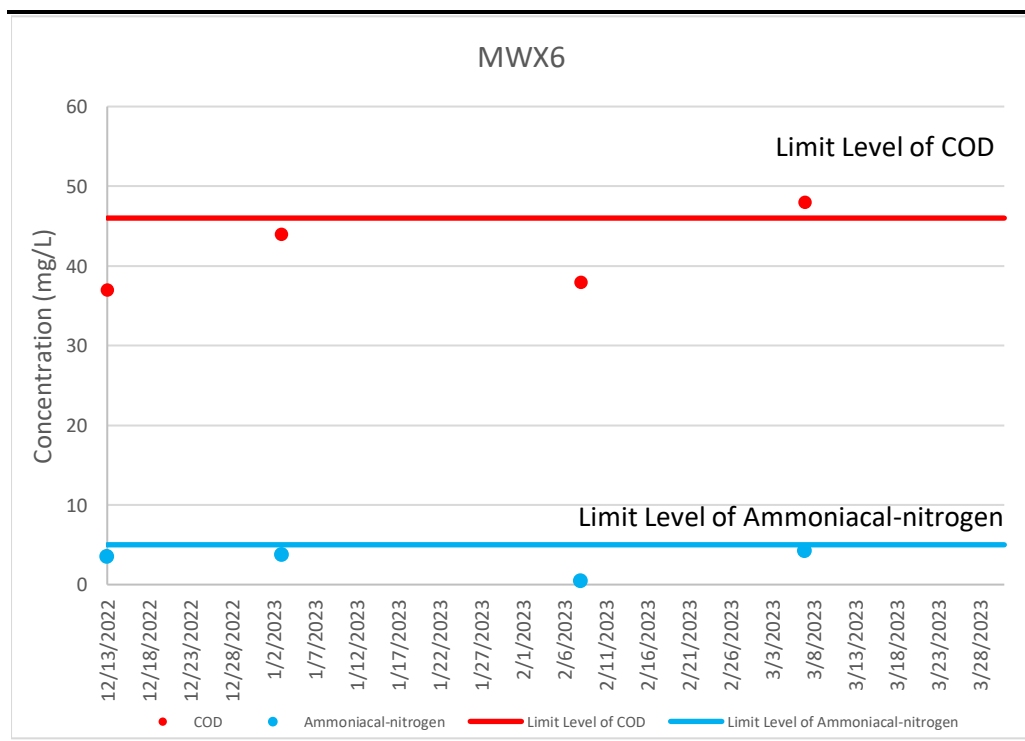


Figure F5.7 Graphical Presentation for Groundwater Monitoring (MWX-7)

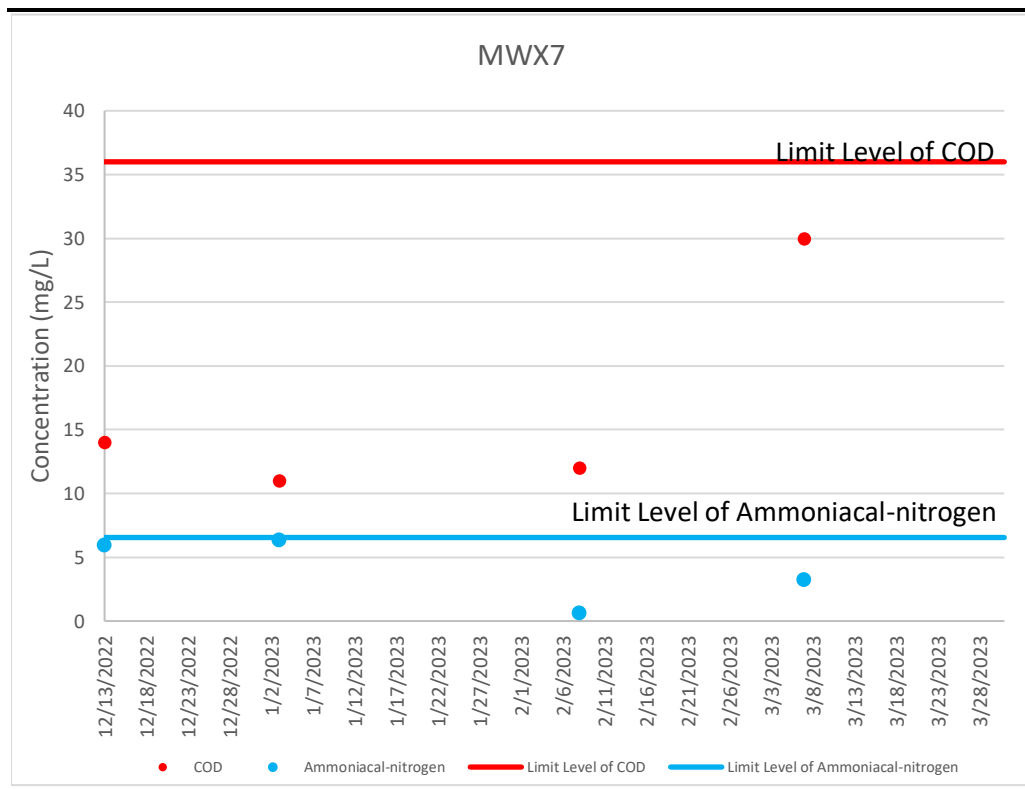


Figure F5.8 Graphical Presentation for Groundwater Monitoring (MWX-8)

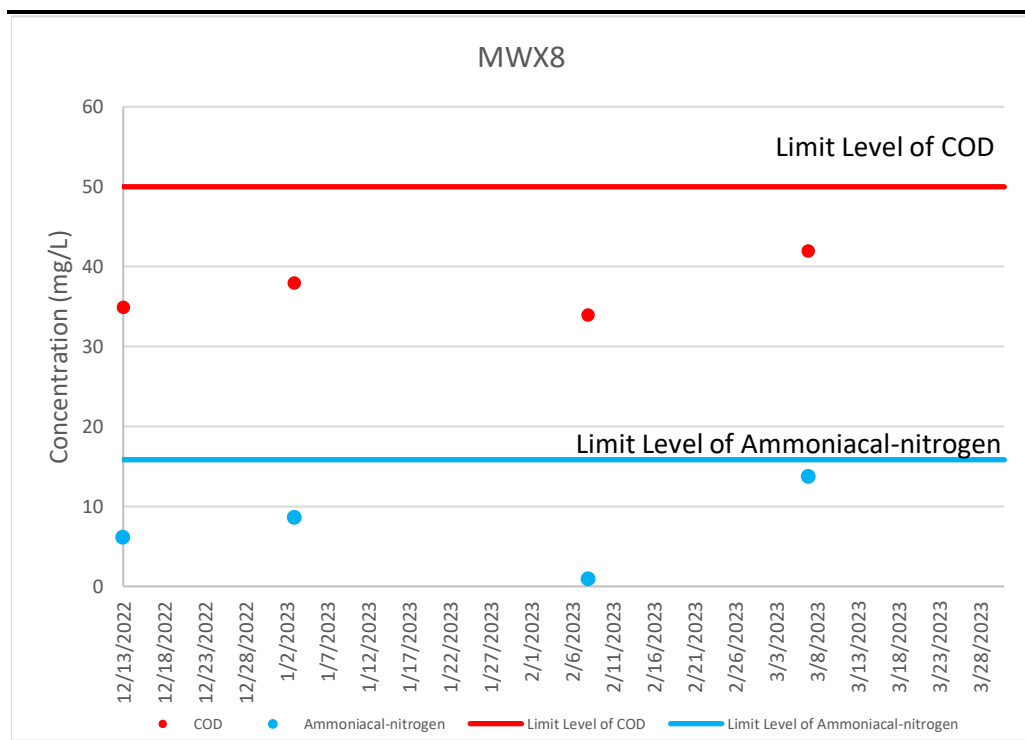




Figure F5.9 Graphical Presentation for Groundwater Monitoring (MWX-9)

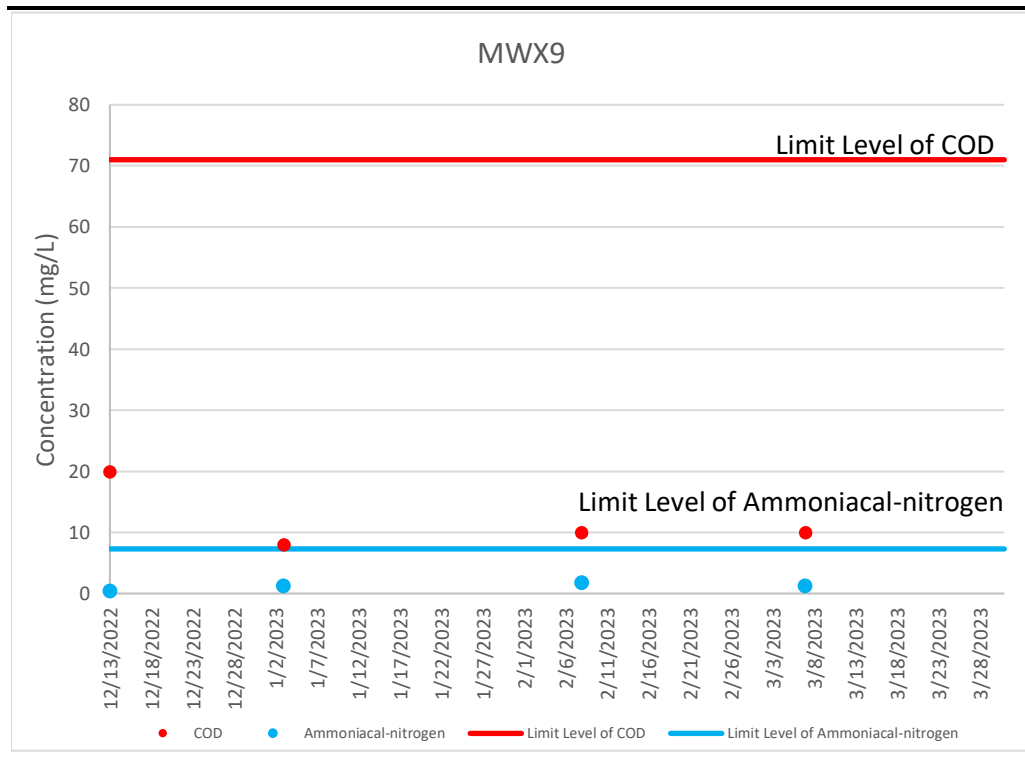


Figure F5.10 Graphical Presentation for Groundwater Monitoring (MWX-10)

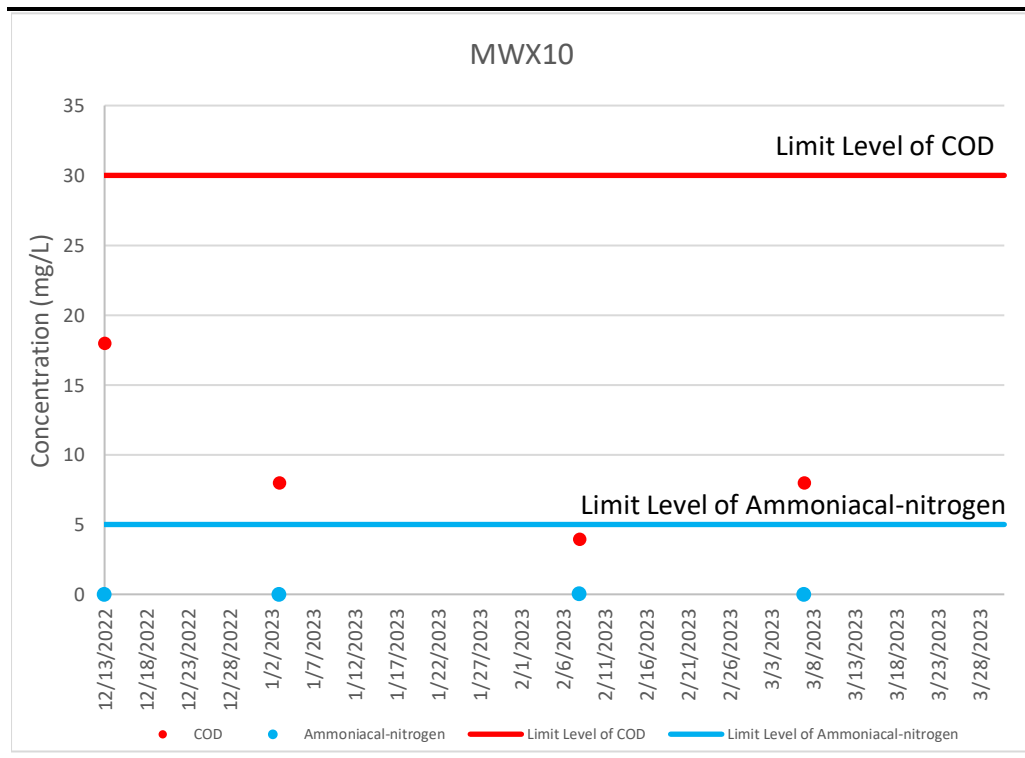


Figure F5.11 Graphical Presentation for Groundwater Monitoring (MWX-11)

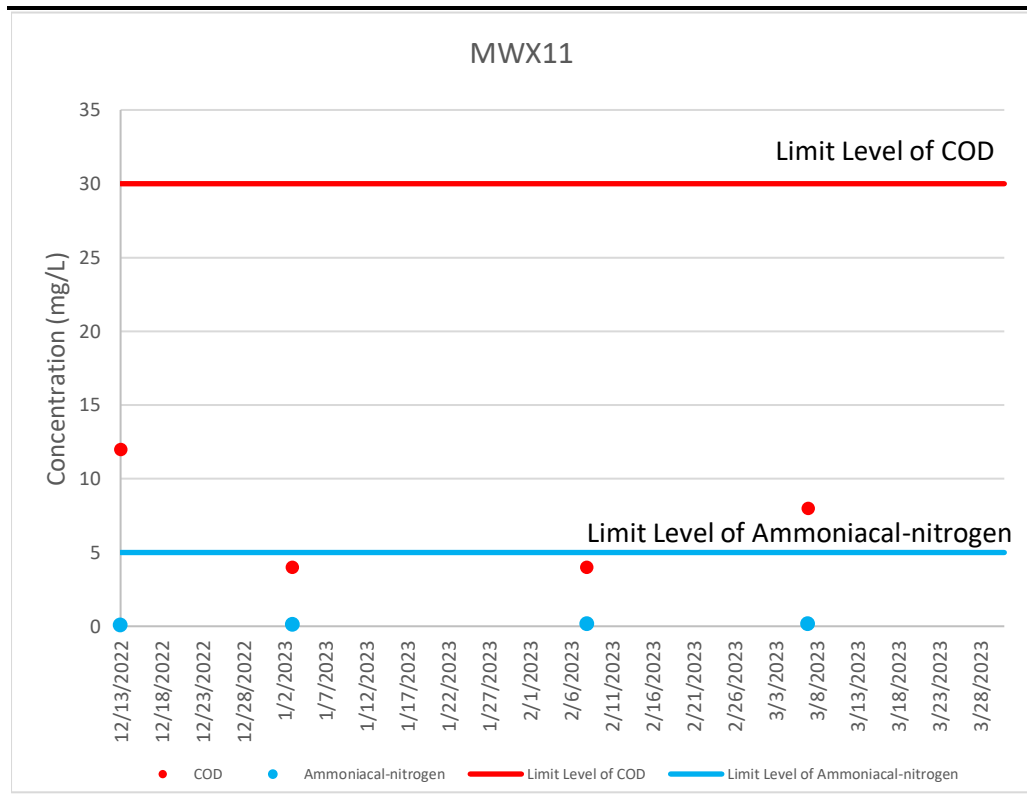


Figure F5.12 Graphical Presentation for Groundwater Monitoring (MWX-12)

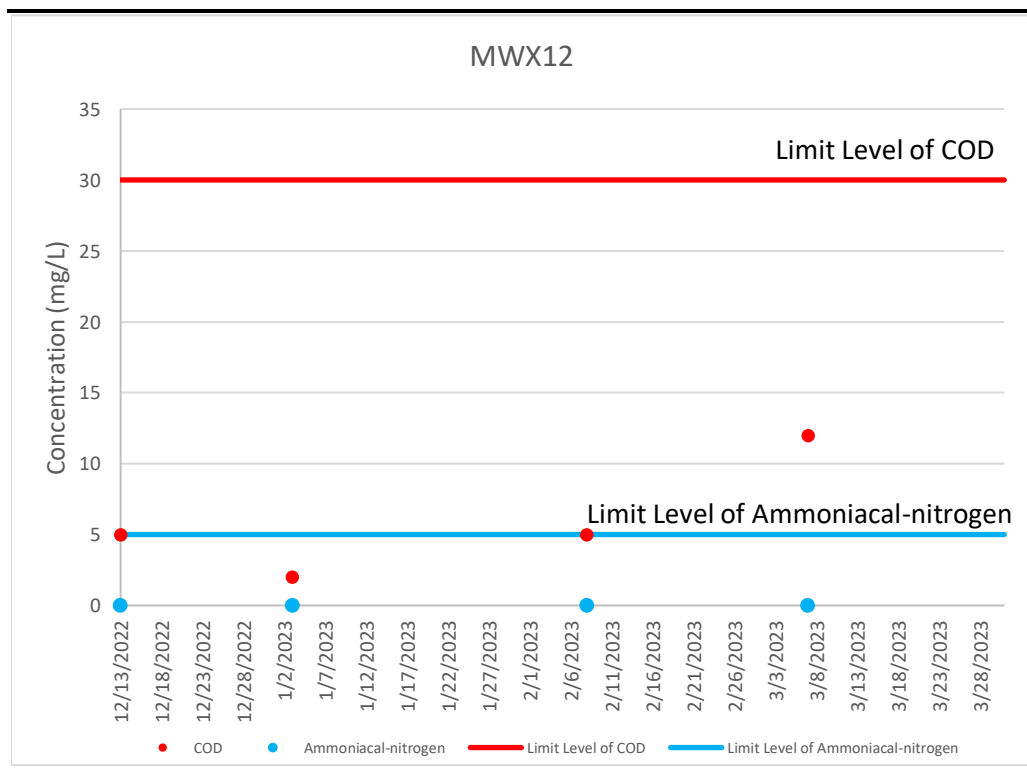


Figure F5.13 Graphical Presentation for Groundwater Monitoring (MWX-13)

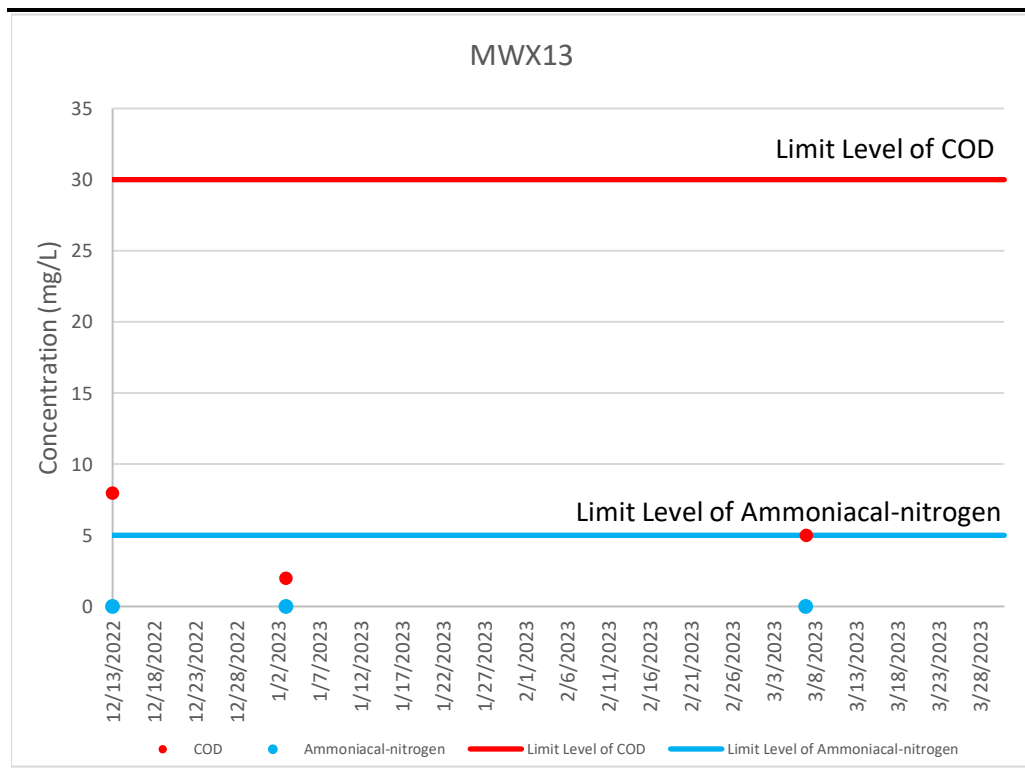


Figure F5.14 Graphical Presentation for Groundwater Monitoring (MWX-14)

