

Annex F5

## Groundwater Monitoring Results

**Table F5.1 Groundwater Monitoring Results (October 2022)**

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	2.92	3.06	3.03	3.1	3.38	3.05	2.88	3.06	3.49	3.41	3.53	6.73	36.54	45.13
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	90	251	186	<1	2	<1	<1	<1	53	189	167	54	16	11
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	76	66	125	72	91	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	90	251	186	127	68	197	85	133	53	189	167	54	16	11
pH Value	pH Unit	8	8	7.9	11.2	10.2	11.3	10.6	11.1	8.1	7.7	8	6.9	5.7	5.5
Electrical Conductivity	µS/cm	2080	953	1140	912	1020	1330	2110	1810	2060	1170	461	314	92	97
Ammonia as N	mg/L	1.23	0.02	1.47	2.49	1.28	3.1	5.23	4.97	0.43	<0.01	<0.01	<0.01	<0.01	<0.01
Chloride	mg/L	534	46	182	139	173	205	601	344	388	178	30	22	15	19
Nitrite as N	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<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	<0.01	<0.01	<0.01	0.02	<0.01	0.04	<0.01	<0.01
Sulphate as SO <sub>4</sub> - Turbidimetric	mg/L	83	187	112	71	137	98	70	218	371	130	30	60	3	2
Sulphide as S <sub>2</sub>	mg/L	0.2	<0.1	0.1	4.7	1.5	10.1	4	2.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	1.4	0.1	1.6	3.1	1.8	4.3	6.1	6.3	1	0.1	<0.1	0.2	<0.1	<0.1
Nitrate as N	mg/L	<0.01	0.64	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1.2	0.1	<0.01	<0.01	0.1	0.11
Total Nitrogen as N	mg/L	1.4	0.8	1.6	3.1	1.8	4.3	6.1	6.3	2.3	0.2	<0.1	0.2	0.1	0.1
Boron	µg/L	240	190	210	200	240	200	480	190	380	240	70	20	20	10
Calcium	mg/L	60.7	62.3	82.7	40.6	16.8	34.4	32.5	56.6	120	95.7	62.7	27.2	0.92	0.9
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	23	52.4	6.44	<0.05	0.08	<0.05	<0.05	<0.05	4.12	8.96	3.27	4.55	1	1.02
Sodium	mg/L	293	50.9	112	95.5	140	161	309	238	266	128	25.9	23.9	11.4	12.2
Iron	mg/L	<0.04	<0.04	0.16	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.58	<0.04	<0.04
Potassium	mg/L	23.1	11.5	25.3	27.9	46.4	55.3	53.7	69.4	43.4	12.3	6.66	2.71	3.4	3.37
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	2	<1	<1	<1	1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	800	152	1000	2	<1	<1	<1	<1	33	209	58	809	31	8
Nickel	µg/L	<1	<1	<1	<1	<1	2	<1	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	491	<10	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	3	<2	8	2	2	2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	12	4	14	19	22	39	22	34	27	8	4	4	4	3
Total Organic Carbon	mg/L	3	2	5	4	7	8	4	10	8	3	1	<1	<1	<1

**Table F5.2 Groundwater Monitoring Results (November 2022)**

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	3.07	3.1	3.15	3.27	3.23	3.09	2.91	3.07	3.46	3.34	3.46	6.8	36.3	44.87
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	88	223	188	<1	<1	<1	12	<1	102	183	170	54	16	12
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	90	64	141	51	92	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	88	223	188	108	68	184	63	125	102	183	170	54	16	12
pH Value	pH Unit	8.1	8	7.9	10.9	10.6	11.3	10	11.1	8	7.9	8.1	7	5.7	5.6
Electrical Conductivity	µS/cm	1440	2340	946	848	1170	1230	2330	1760	1520	876	583	309	92	95
Ammonia as N	mg/L	1.4	0.35	0.61	2.98	1.94	3.33	5.73	5.82	0.02	<0.01	0.02	0.02	<0.01	0.03
Chloride	mg/L	326	514	119	150	198	199	642	342	234	97	50	21	14	18
Nitrite as N	mg/L	<0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L	0.02	0.01	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.02	0.01	0.04	0.01	<0.01
Sulphate as SO <sub>4</sub> - Turbidimetric	mg/L	66	162	96	75	154	87	48	184	278	106	54	58	3	3
Sulphide as S <sub>2</sub>	mg/L	0.2	<0.1	<0.1	4.4	0.7	5.7	1.6	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	1.4	0.4	0.8	3.5	2.4	3.9	6.1	7	0.5	0.1	0.1	0.2	0.1	<0.1
Nitrate as N	mg/L	<0.01	0.04	0.19	<0.01	<0.01	<0.01	<0.01	0.02	1.37	<0.01	<0.01	<0.01	0.09	0.12
Total Nitrogen as N	mg/L	1.4	0.5	1	3.5	2.4	3.9	6.1	7	1.8	0.1	0.1	0.2	0.2	0.2
Boron	µg/L	130	380	180	190	240	160	560	190	270	220	110	20	20	10
Calcium	mg/L	51.2	64.4	84	39.4	25.6	35.5	25.4	53.9	117	73.2	64.4	25.7	0.81	0.85
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	11.8	56.7	5.69	0.59	<0.05	<0.05	0.72	<0.05	4.44	5.49	3.37	1.06	0.96	0.88
Sodium	mg/L	191	315	85.2	106	165	160	384	246	168	95.3	45.2	23.5	13	13.6
Iron	mg/L	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.52	<0.04	<0.04
Potassium	mg/L	22	21.4	25.8	31.4	58.8	61.7	60.2	73.5	36.7	13.2	9.17	3.09	4.13	3.94
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	2	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	1	<1	<1	<1	5	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	610	34	690	1	<1	<1	<1	<1	28	5	319	789	21	8
Nickel	µg/L	<1	<1	<1	<1	1	1	<1	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	10	7	14	22	27	39	18	34	24	9	8	7	6	7
Total Organic Carbon	mg/L	4	2	8	6	8	8	4	11	10	7	6	2	3	2

**Table F5.3 Groundwater Monitoring Results (December 2022)**

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	2.97	2.94	2.94	2.96	2.88	2.52	2.68	2.86	2.85	3.1	6.69	35.9	41.66
Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	88	253	142	3	8	<1	23	<1	105	213	214	54	17	12
Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	<1	<1	<1	54	63	144	41	103	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	mg/L	88	253	142	57	72	172	64	120	105	213	214	54	17	12
pH Value	pH Unit	8.2	8.2	8.1	10.3	10.4	11.3	9.8	11.1	8.2	8	8.1	7.2	5.7	5.8
Electrical Conductivity	µS/cm	1280	930	1120	960	980	1200	2340	1680	1540	1310	687	310	93	97
Ammonia as N	mg/L	1.24	0.01	1.49	3.5	1.66	3.54	5.98	6.19	0.46	<0.01	0.07	<0.01	<0.01	<0.01
Chloride	mg/L	294	39	192	166	153	187	728	318	268	157	55	21	15	19
Nitrite as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<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	0.01	<0.01	0.01	0.02	0.03	0.08	<0.01	<0.01
Sulphate as SO <sub>4</sub> - Turbidimetric	mg/L	64	177	93	79	115	92	42	180	220	176	66	59	3	4
Sulphide as S <sub>2</sub>	mg/L	0.1	<0.1	<0.1	4.1	1.6	15	2.2	6.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	1.3	0.2	1.8	4	2.1	4.7	6.9	8.4	1	0.2	0.3	0.1	<0.1	<0.1
Nitrate as N	mg/L	<0.01	0.57	<0.01	<0.01	<0.01	0.01	<0.01	0.01	0.38	<0.01	<0.01	<0.01	0.09	0.1
Total Nitrogen as N	mg/L	1.3	0.8	1.8	4	2.1	4.7	6.9	8.4	1.4	0.2	0.3	0.1	0.2	0.1
Boron	µg/L	120	180	200	200	220	180	630	190	290	400	90	20	20	10
Calcium	mg/L	54.3	57.2	72.9	30.4	12.8	34.2	23.1	46.7	89	87.3	78.3	24	0.8	0.89
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	8.2	55.6	5.02	0.62	<0.05	<0.05	1.28	<0.05	5.74	7.14	5.12	4.13	0.88	0.74
Sodium	mg/L	150	47.9	116	118	136	153	369	230	172	146	43.6	23.9	13.2	13.2
Iron	mg/L	0.07	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.34	<0.04	<0.04
Potassium	mg/L	18.7	11.6	26.7	28	51.3	58.2	52.7	68	32.8	17.5	9.52	3.12	3.99	3.65
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	644	149	923	1	<1	<1	<1	<1	52	135	604	654	21	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	<10	<10	<10
Biochemical Oxygen Demand	mg/L	<2	<2	4	4	<2	7	<2	4	4	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	6	<2	18	20	27	37	14	35	20	18	12	5	8	8
Total Organic Carbon	mg/L	2	<1	10	14	16	20	8	22	7	10	8	3	5	5

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

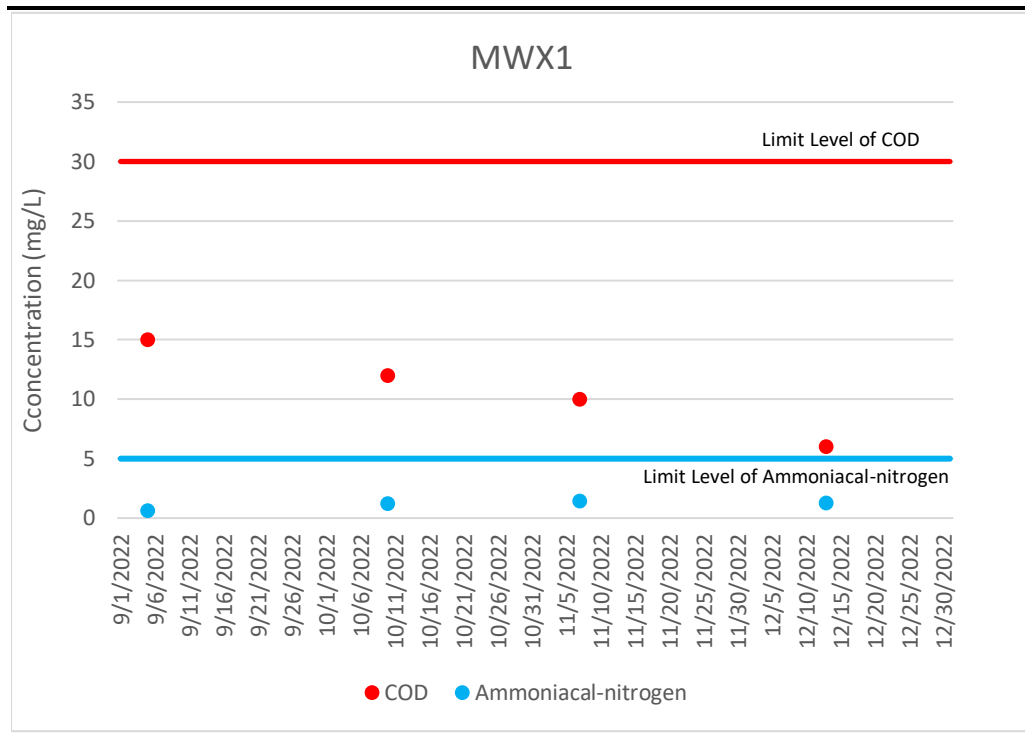


Figure F5.2 Graphical Presentation for Groundwater Monitoring (MWX-2)

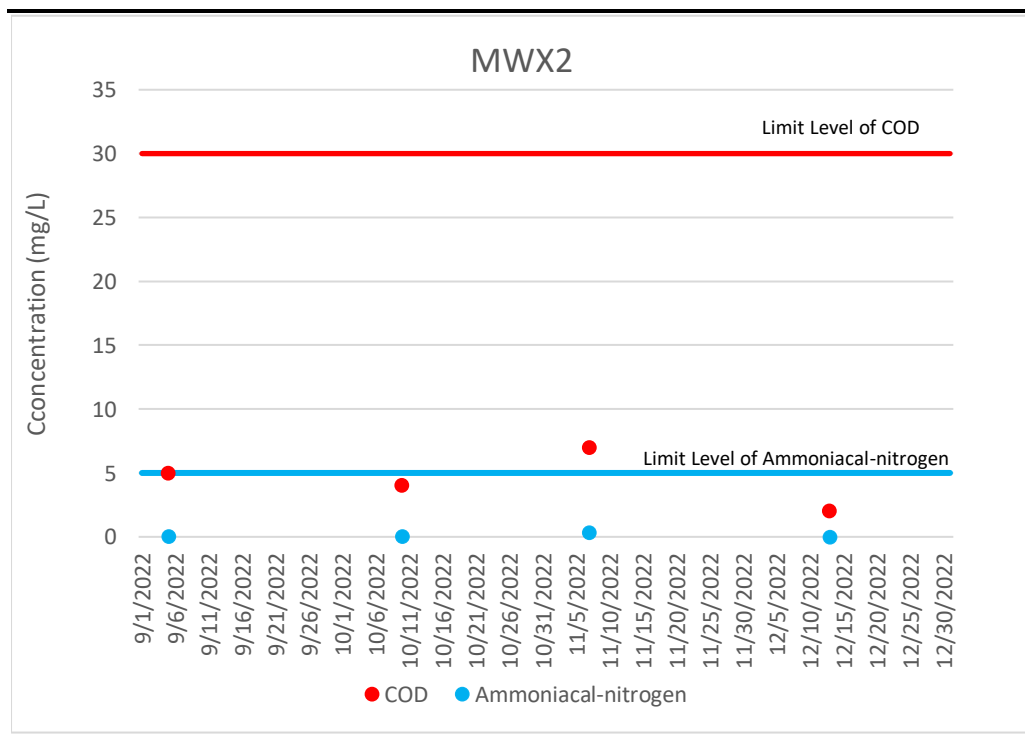


Figure F5.3 Graphical Presentation for Groundwater Monitoring (MWX-3)

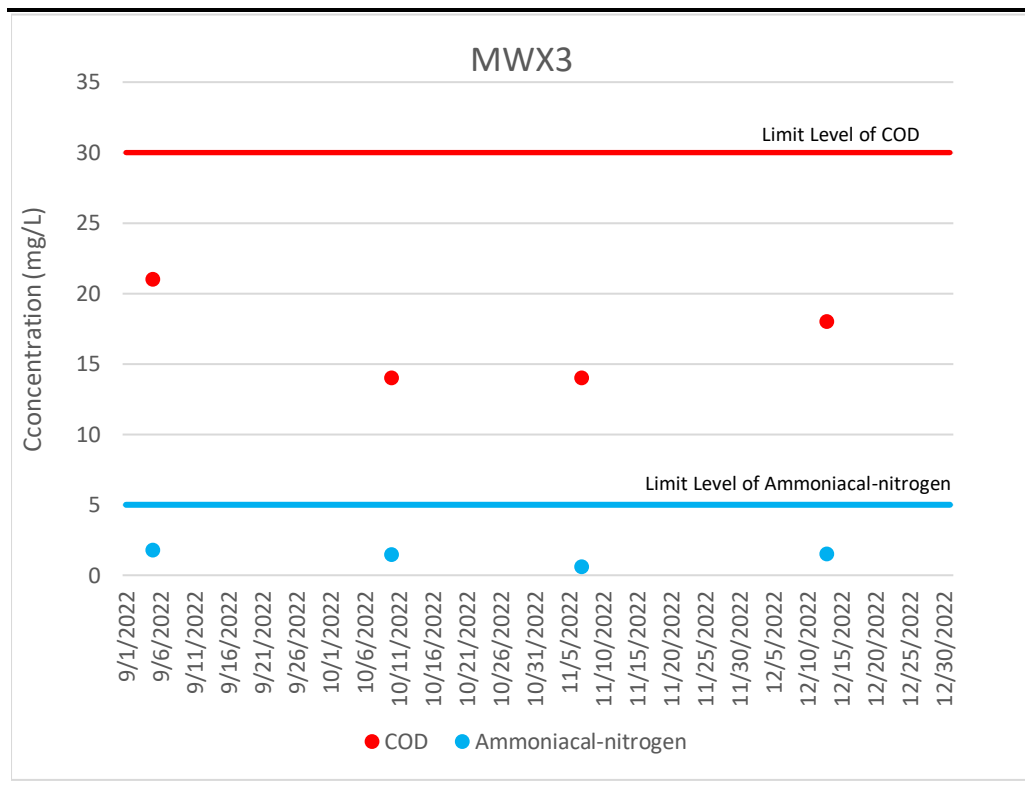


Figure F5.4 Graphical Presentation for Groundwater Monitoring (MWX-4)

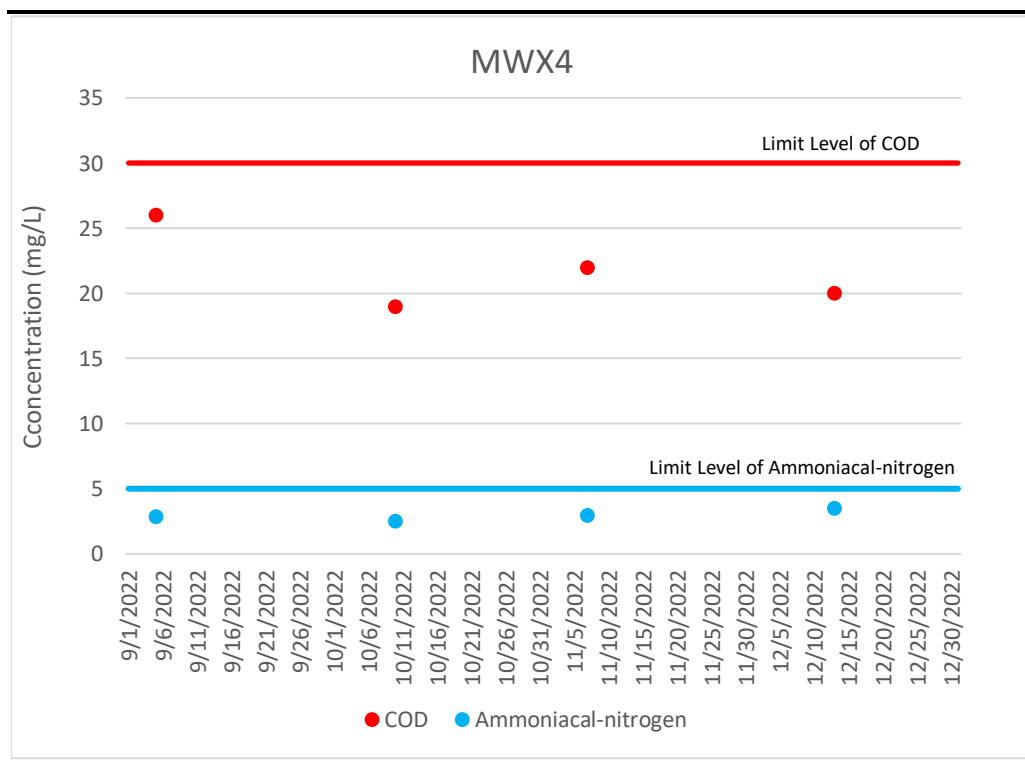


Figure F5.5 Graphical Presentation for Groundwater Monitoring (MWX-5)

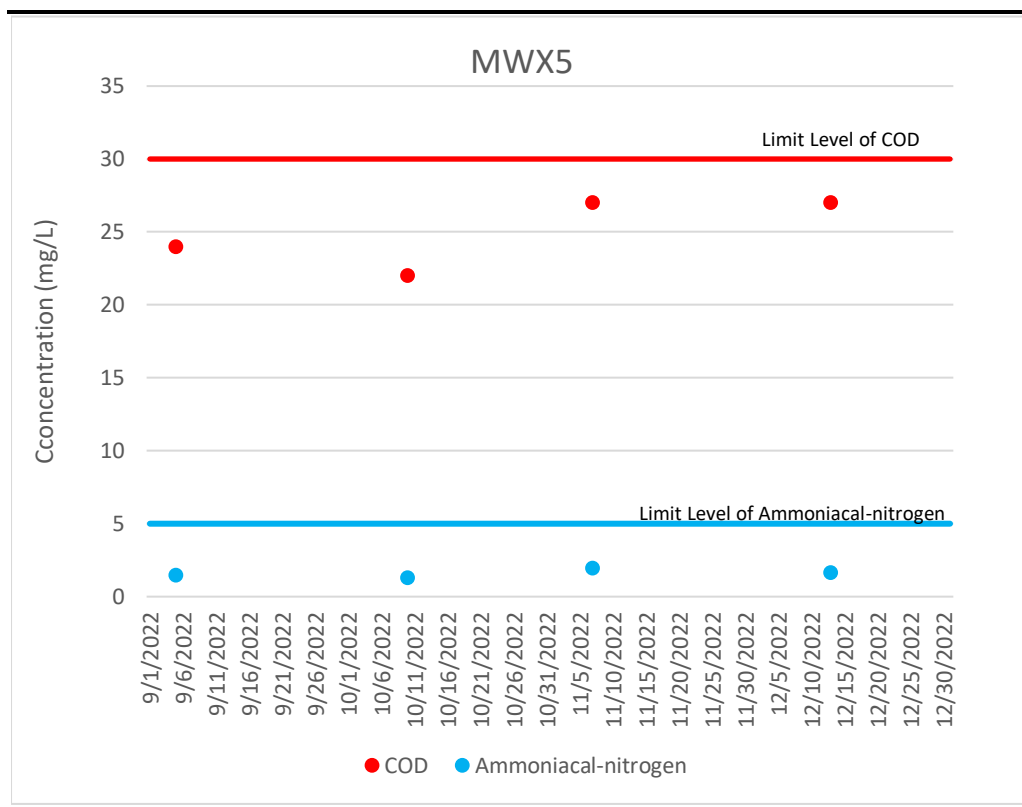


Figure F5.6 Graphical Presentation for Groundwater Monitoring (MWX-6)

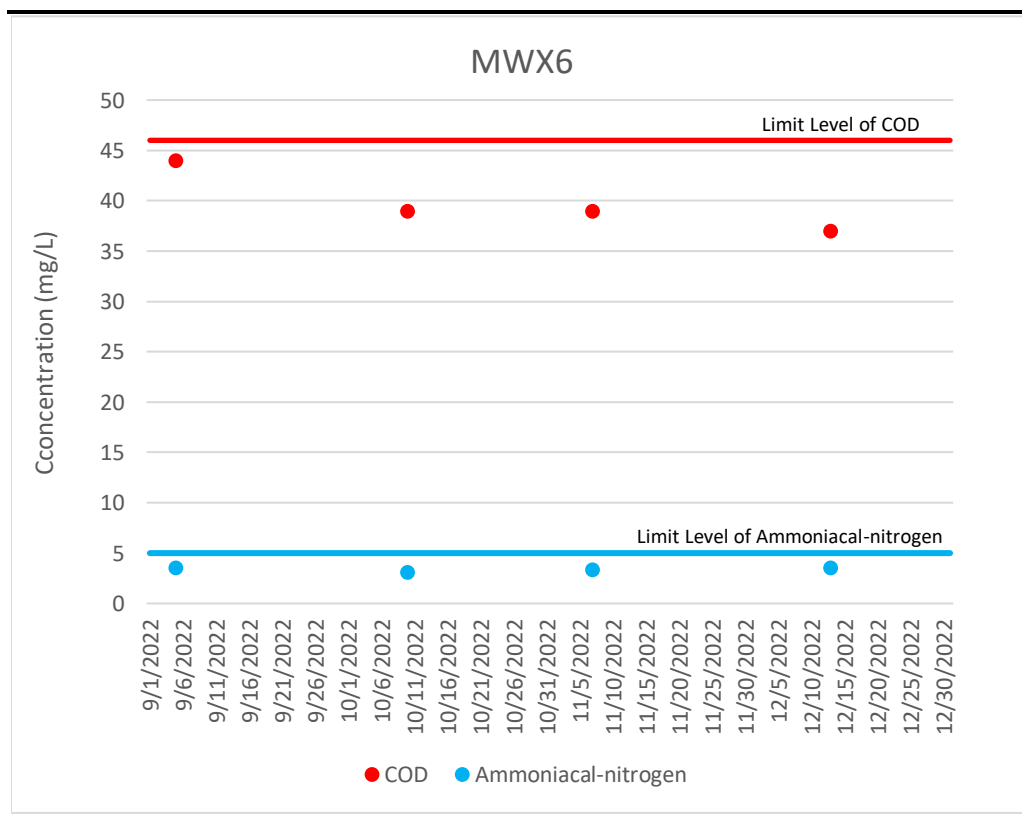


Figure F5.7 Graphical Presentation for Groundwater Monitoring (MWX-7)

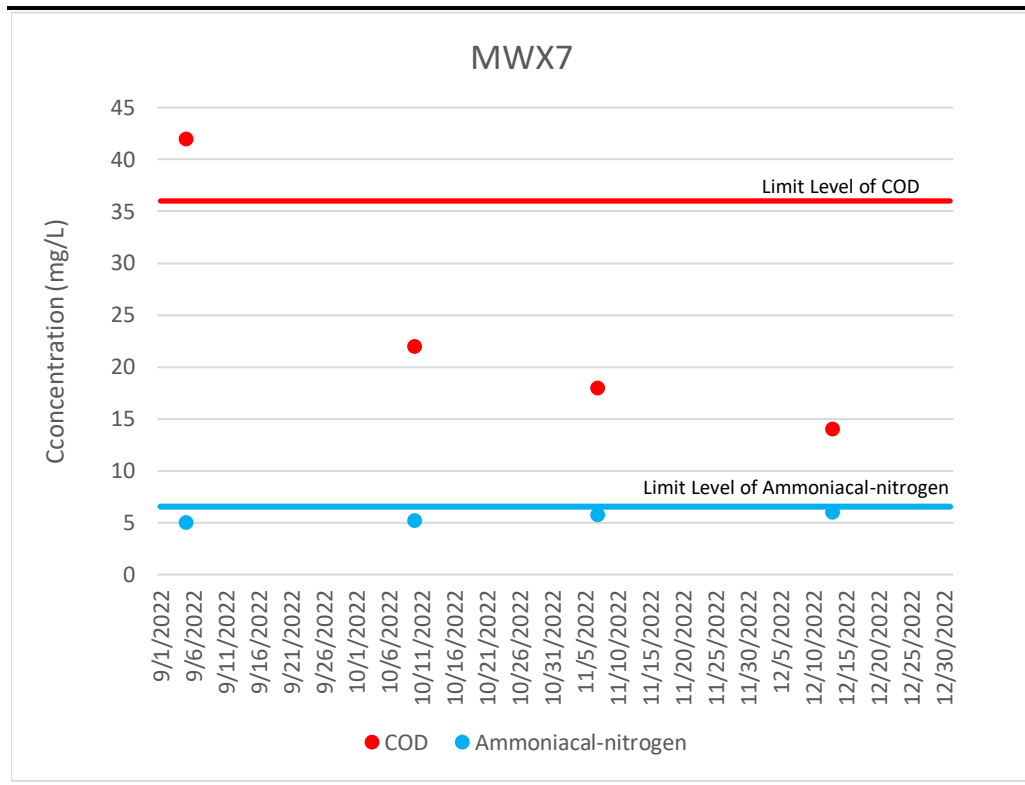


Figure F5.8 Graphical Presentation for Groundwater Monitoring (MWX-8)

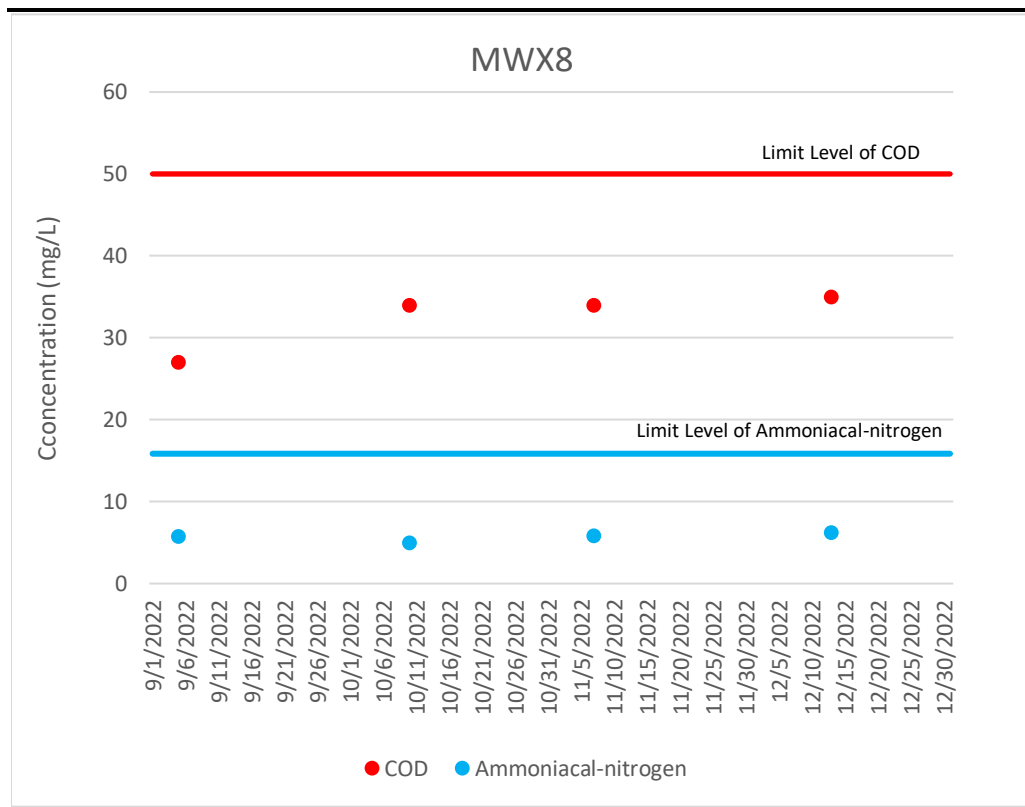




Figure F5.9 Graphical Presentation for Groundwater Monitoring (MWX-9)

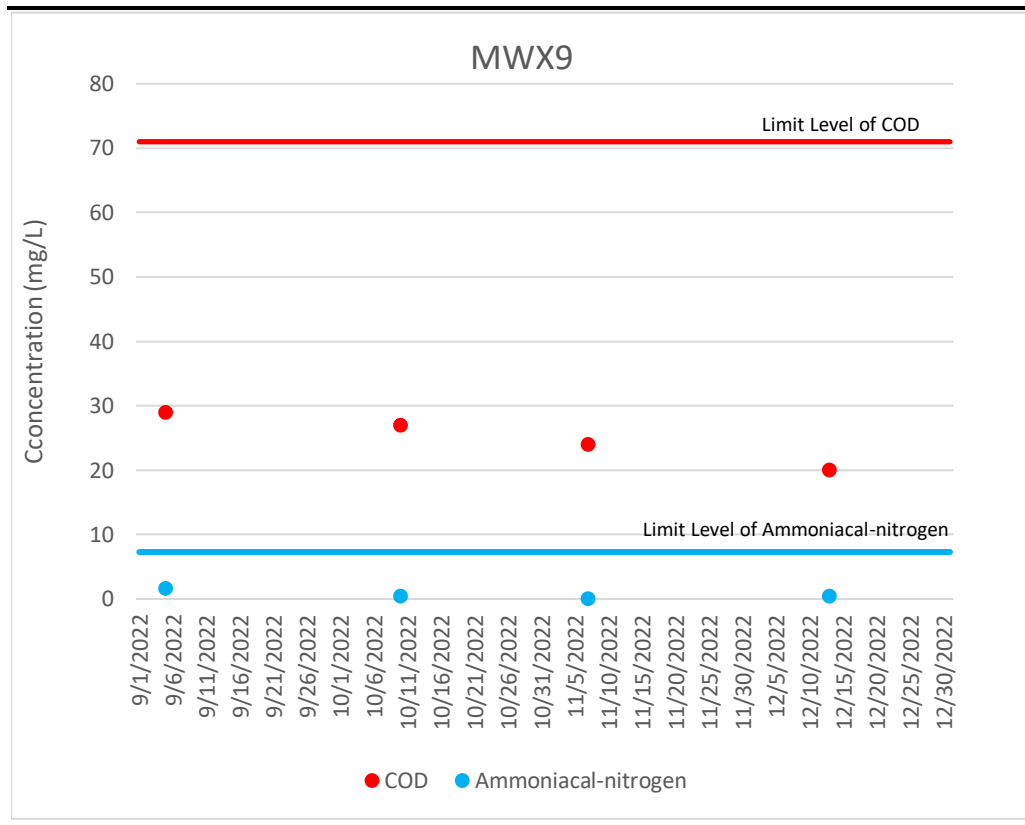


Figure F5.10 Graphical Presentation for Groundwater Monitoring (MWX-10)

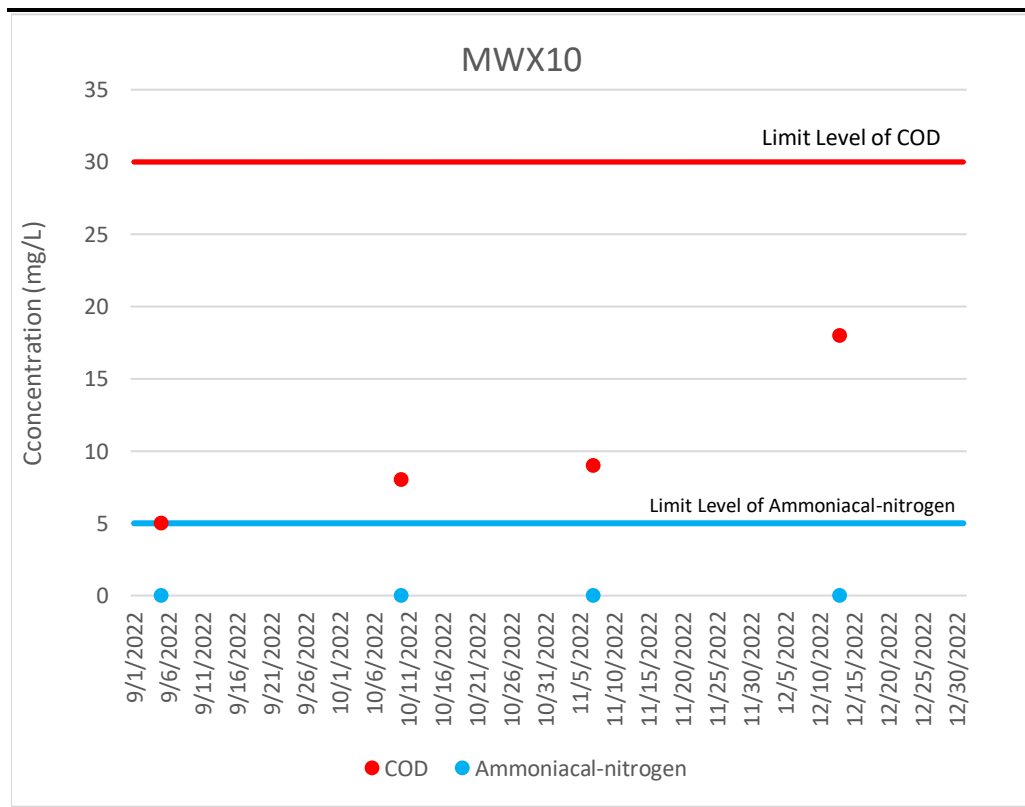


Figure F5.11 Graphical Presentation for Groundwater Monitoring (MWX-11)

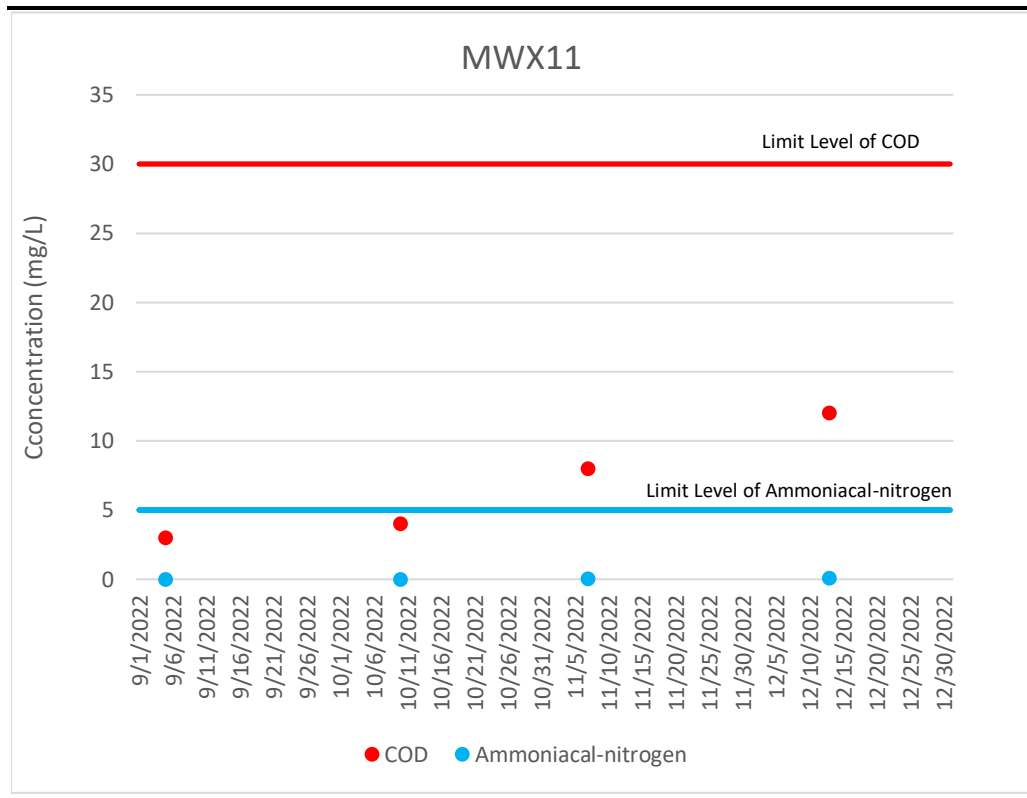


Figure F5.12 Graphical Presentation for Groundwater Monitoring (MWX-12)

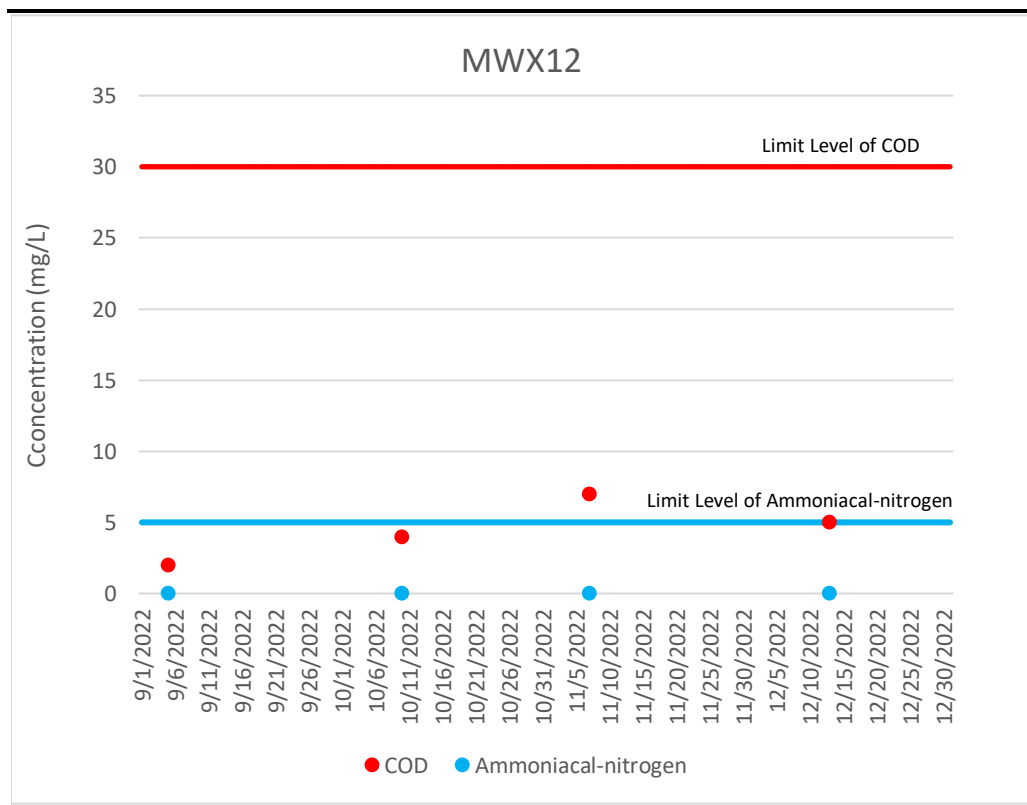


Figure F5.13 Graphical Presentation for Groundwater Monitoring (MWX-13)

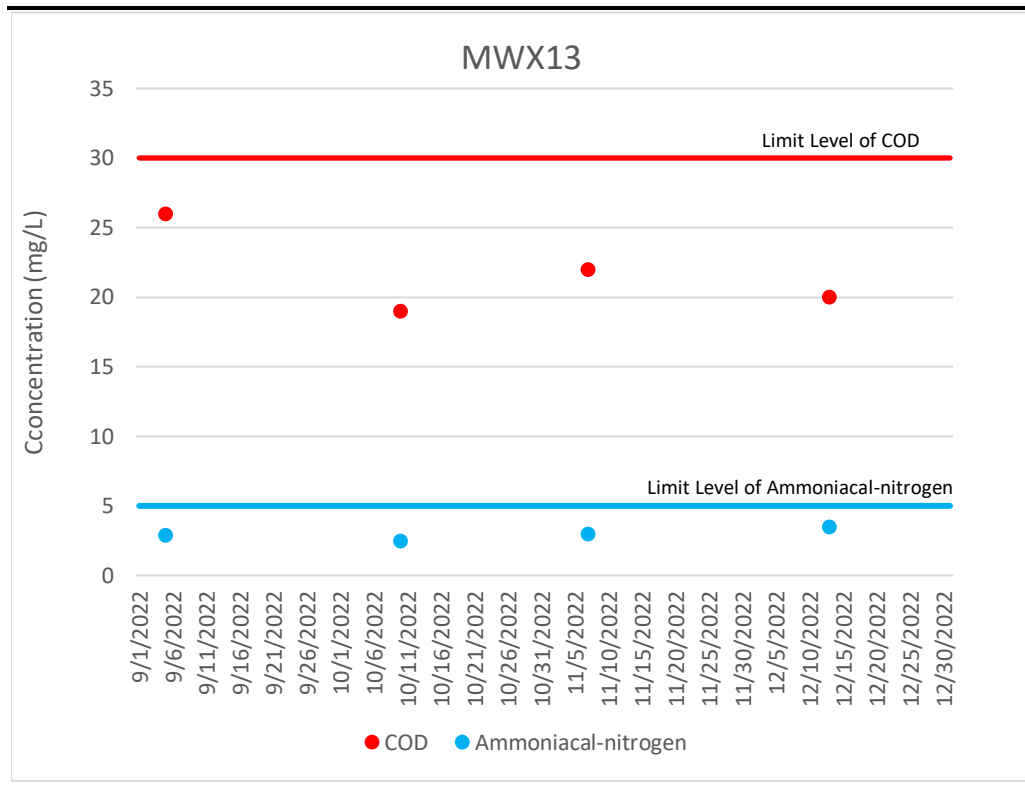


Figure F5.14 Graphical Presentation for Groundwater Monitoring (MWX-14)

