

2022 Mississippi River Water Quality Data - Ford

Station	Sample Time	Sample type	Air Temperature (°F)	Water Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia Nitrogen (mg/L)	Carbonaceous Biological Oxygen Demand 5-day (mg/L)	Chemical Oxygen Demand (mg/L)
Ford	03/17/2022 07:30	Grab	36	3.7	320.6	540	12.91	9.2	0.26	90	189	0.09	1.8	25
Ford	04/21/2022 09:30	Grab	43	4.5	193.6	318	13.90	9.3	0.15	34	127	< 0.06	2.0	29
Ford	07/07/2022 08:20	Grab	77	23.6	299.3	307	9.17	7.8	0.15	79	136	< 0.06	0.7	40
Ford	10/06/2022 08:45	Grab	50	18.1	334.8	386	9.41	8.4	0.19	> 100	159	< 0.06	1.0	24

2022 Mississippi River Water Quality Data - Meeker

Station	Sample Time	Sample type	Air Temperature (°F)	Water Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia Nitrogen (mg/L)	Carbonaceous Biological Oxygen Demand 5-day (mg/L)	Chemical Oxygen Demand (mg/L)
Meeker	03/17/2022 08:05	Grab	35	4.2	304.3	504	12.59	8.8	0.24	> 100	186	0.08	1.7	27
Meeker	04/07/2022 08:20	Grab	35	3.1	214.9	369	13.46	8.8	0.18	75	139	0.12	1.6	30
Meeker	04/21/2022 09:45	Grab	43	4.6	195.3	320	13.91	8.6	0.15	40	128	< 0.06	2.0	29
Meeker	05/05/2022 08:25	Grab	55	10.2	222.2	309	12.13	8.8	0.15	55	125	< 0.06	1.7	36
Meeker	05/19/2022 08:50	Grab	64	17.5	245.7	287	10.02	9.0	0.14	32	116	< 0.06	1.9	49
Meeker	06/02/2022 08:45	Grab	65	18.0	290.1	335	9.99	8.2	0.16	39	137	< 0.06	1.6	35
Meeker	06/16/2022 08:35	Grab	71	21.7	324.8	347	9.32	8.1	0.17	47	138	< 0.06	1.1	38
Meeker	07/07/2022 08:35	Grab	77	23.7	299.4	307	9.26	7.9	0.15	70	142	< 0.06	0.7	44
Meeker	07/21/2022 08:10	Grab	76	25.0	333.6	333	8.73	8.8	0.16	48	143	< 0.06	1.4	33
Meeker	08/04/2022 08:35	Grab	70	25.6	368.2	364	8.67	8.3	0.17	50	156	< 0.06	2.2	30
Meeker	08/18/2022 08:55	Grab	73	24.3	361.3	366	9.40	8.2	0.17	76	154	< 0.06	1.6	23
Meeker	09/01/2022 08:45	Grab	74	24.2	366.3	372	9.68	7.0	0.18	64	158	< 0.06	2.2	28
Meeker	09/15/2022 09:15	Grab	73	21.2	349.3	377	8.99	8.4	0.18	94	153	< 0.06	7.6	25
Meeker	10/06/2022 09:00	Grab	50	18.5	335.3	383	9.80	7.7	0.18	> 100	160	< 0.06	0.9	22
Meeker	10/20/2022 09:15	Grab	40	8.0	269.5	399	12.37	8.0	0.19	> 100	173	< 0.06	1.0	18
Meeker	11/03/2022 08:27	Grab	59	11.8	297.8	398	10.99	8.2	0.19	> 100	169	< 0.06	1.2	19
Meeker	11/17/2022 10:00	Grab	27	2.7	232.2	404	13.74	8.2	0.19	> 100	156	< 0.06	1.1	18
Meeker	12/01/2022 14:10	Grab	31	0.1	202.1	386	14.34	8.9	0.18	> 100	150	< 0.06	1.3	31

2022 Mississippi River Water Quality Data - Ford continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (ppm)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Ford	03/17/2022 07:30	Grab	6.2	42.7	0.06	0.04	0.08	221	0.75	0.94	0.94	< 0.06	13.70	2.3
Ford	04/21/2022 09:30	Grab	15.0	11.4	~ 0.02	< 0.01	0.07	130	0.96	0.90	0.90	< 0.06	12.10	2.3
Ford	07/07/2022 08:20	Grab	8.8	12.0	~ 0.04	0.04	0.17	125	0.97	0.39	0.39	< 0.06	6.78	1.1
Ford	10/06/2022 08:45	Grab	8.0	19.0	~ 0.02	< 0.01	< 0.02	197	0.54	0.32	0.32	< 0.06	11.30	0.7

2022 Mississippi River Water Quality Data - Meeker continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (ppm)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Meeker	03/17/2022 08:05	Grab	6.2	41.7	< 0.02	0.01	0.06	227	0.69	0.94	0.94	< 0.06	13.90	2.1
Meeker	04/07/2022 08:20	Grab	14.0	21.8	~ 0.04	0.03	0.12	156	1.00	0.97	0.97	< 0.06	13.30	2.1
Meeker	04/21/2022 09:45	Grab	15.0	14.0	~ 0.02	0.01	0.08	134	1.20	0.97	0.97	< 0.06	12.40	2.1
Meeker	05/05/2022 08:25	Grab	22.0	12.9	~ 0.03	< 0.01	0.08	130	0.90	0.76	0.76	< 0.06	12.10	2.1
Meeker	05/19/2022 08:50	Grab	13.0	10.7	~ 0.05	0.05	0.09	116	1.10	0.88	0.88	< 0.06	10.40	1.6
Meeker	06/02/2022 08:45	Grab	17.0	10.8	~ 0.04	0.03	0.07	156	0.85	0.43	0.43	< 0.06	9.52	1.7
Meeker	06/16/2022 08:35	Grab	15.0	12.9	0.12	0.04	0.10	152	0.88	0.49	0.49	< 0.06	9.30	1.4
Meeker	07/07/2022 08:35	Grab	9.4	11.8	0.11	0.04	0.09	99	0.80	0.40	0.40	< 0.06	6.87	1.0
Meeker	07/21/2022 08:10	Grab	19.0	13.9	~ 0.02	0.02	0.07	129	0.85	0.28	0.28	< 0.06	7.72	1.7
Meeker	08/04/2022 08:35	Grab	31.0	16.4	< 0.02	< 0.01	0.06	153	0.80	< 0.20	< 0.20	< 0.06	9.85	2.6
Meeker	08/18/2022 08:55	Grab	37.0	16.5	~ 0.04	0.01	~ 0.04	159	0.80	< 0.20	< 0.20	< 0.06	11.40	3.7
Meeker	09/01/2022 08:45	Grab	31.0	18.0	< 0.02	< 0.01	< 0.02	179	0.84	< 0.20	< 0.20	< 0.06	9.43	2.3
Meeker	09/15/2022 09:15	Grab	17.0	19.1	< 0.02	< 0.01	0.06	138	0.93	0.23	0.23	< 0.06	11.10	> 7.7
Meeker	10/06/2022 09:00	Grab	7.6	19.5	~ 0.03	< 0.01	< 0.02	140	0.50	0.32	0.32	< 0.06	11.30	0.7
Meeker	10/20/2022 09:15	Grab	2.2	21.6	< 0.02	< 0.01	< 0.02	169	0.43	0.42	0.42	< 0.06	12.70	1.0
Meeker	11/03/2022 08:27	Grab	4.9	22.9	< 0.02	< 0.01	< 0.02	205	0.49	0.33	0.33	< 0.06	12.00	1.0
Meeker	11/17/2022 10:00	Grab	6.6	23.4	< 0.02	< 0.01	< 0.02	192	0.48	0.60	0.60	< 0.06	12.90	1.0
Meeker	12/01/2022 14:10	Grab	15.0	22.7	~ 0.03	< 0.01	0.09	174	0.72	0.54	0.54	< 0.06	13.40	1.6

2022 Mississippi River Water Quality Data - Ford continued

Station	Sample Time	Sample type	Total Cadmium (µg/L)	Total Chromium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Nickel (µg/L)	Total Zinc (µg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Ford	03/17/2022 07:30	Grab	< 0.10	< 1.00	1.30	0.73	0.64	7.30	292	7.3	4	< 3
Ford	04/21/2022 09:30	Grab							174	10.5	15	4
Ford	07/07/2022 08:20	Grab							210	14.9	11	3
Ford	10/06/2022 08:45	Grab							236	7.6	3	< 3

2022 Mississippi River Water Quality Data - Meeker continued

Station	Sample Time	Sample type	Total Cadmium (µg/L)	Total Chromium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Nickel (µg/L)	Total Zinc (µg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Meeker	03/17/2022 08:05	Grab	< 0.10	< 1.00	1.00	< 0.50	0.58	5.00	281	7.2	4	< 3
Meeker	04/07/2022 08:20	Grab							226	9.0	9	3
Meeker	04/21/2022 09:45	Grab							202	11.3	16	3
Meeker	05/05/2022 08:25	Grab	< 0.10	< 1.00	1.20	< 0.50	1.20	< 5.00	198	12.0	20	5
Meeker	05/19/2022 08:50	Grab	< 0.10	< 1.00	1.90	< 0.50	1.90	6.10	187	14.3	20	5
Meeker	06/02/2022 08:45	Grab							209	13.3	16	5
Meeker	06/16/2022 08:35	Grab	< 0.10	< 1.00	1.30	< 0.50	1.40	7.30	115	14.1	16	< 6
Meeker	07/07/2022 08:35	Grab							224	14.9	11	3
Meeker	07/21/2022 08:10	Grab	< 0.10	< 1.00	0.97	< 0.50	0.73	< 5.00	208	11.7	8	3
Meeker	08/04/2022 08:35	Grab							222	9.4	7	4
Meeker	08/18/2022 08:55	Grab	< 0.10	< 1.00	0.96	< 0.50	1.10	7.40	226	8.8	9	5
Meeker	09/01/2022 08:45	Grab							230	8.1	7	6
Meeker	09/15/2022 09:15	Grab	< 0.10	< 1.00	0.79	< 0.50	0.66	6.80	233	8.3	5	3
Meeker	10/06/2022 09:00	Grab							224	7.9	3	< 3
Meeker	10/20/2022 09:15	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.53	< 5.00	239	7.9	< 3	< 3
Meeker	11/03/2022 08:27	Grab							267	7.6	< 3	< 3
Meeker	11/17/2022 10:00	Grab							240	7.3	4	< 3
Meeker	12/01/2022 14:10	Grab							243	9.4	22	4

2022 Mississippi River Water Quality Data - Wash

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Wash	02/11/2022 09:30	Grab	25	-0.4	340	659	13.76	8.7	0.31	> 100	192	< 0.06	1.1	22
Wash	03/17/2022 08:25	Grab	36	4.3	303	502	12.66	8.5	0.24	> 100	187	0.08	2.1	23
Wash	04/07/2022 08:55	Grab	35	3.1	221	379	13.35	8.4	0.18	65	160	0.12	1.8	28
Wash	04/21/2022 09:55	Grab	44	4.6	196	321	13.78	8.5	0.15	27	132	< 0.06	1.9	31
Wash	05/05/2022 08:40	Grab	55	10.1	219	306	12.13	8.5	0.15	48	121	< 0.06	1.5	36
Wash	05/19/2022 09:05	Grab	64	17.5	247	288	10.39	8.4	0.14	48	118	< 0.06	2.1	47
Wash	06/02/2022 09:05	Grab	65	17.9	288	333	10.18	7.9	0.16	46	140	< 0.06	1.5	33
Wash	06/16/2022 08:45	Grab	71	21.7	325	346	9.45	8.0	0.17	46	144	< 0.06	1.0	40
Wash	07/07/2022 08:45	Grab	77	23.6	298	307	9.35	7.9	0.15	54	141	< 0.06	0.6	40
Wash	07/21/2022 08:25	Grab	76	25.3	333	331	8.74	8.3	0.16	58	145	< 0.06	1.1	33
Wash	08/04/2022 08:45	Grab	69	24.9	364	364	8.52	8.2	0.17	66	161	0.06	2.2	34
Wash	08/18/2022 09:05	Grab	73	23.9	356	363	0.43	8.1	0.17	83	161	< 0.06	1.9	27
Wash	09/01/2022 08:50	Grab	75	23.6	364	375	9.65	7.1	0.18	59	157	< 0.06	1.9	28
Wash	09/15/2022 09:30	Grab	75	20.6	344	376	8.95	7.5	0.18	> 100	154	< 0.06	1.5	27
Wash	10/06/2022 09:15	Grab	50	17.9	331	383	9.24	8.0	0.18	> 100	169	< 0.06	0.9	22
Wash	10/20/2022 09:25	Grab	40	7.7	265	396	12.15	7.7	0.19	> 100	160	< 0.06	1.0	22
Wash	11/03/2022 08:47	Grab	59	11.6	292	392	11.89	7.7	0.19	85	158	< 0.06	1.0	21
Wash	11/17/2022 10:20	Grab	27	2.6	232	405	13.55	7.6	0.19	> 100	151	< 0.06	1.2	20
Wash	12/01/2022 14:30	Grab	31	-0.1	194	373	14.24	8.7	0.18	> 100	106	0.12	1.0	23

2022 Mississippi River Water Quality Data - Wash continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (ppm)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Wash	02/11/2022 09:30	Grab	7.5	86.2	< 0.02	< 0.01	< 0.02	212	0.60	1.12	1.12	< 0.06	17.9	1.3
Wash	03/17/2022 08:25	Grab	9.0	38.5	< 0.02	< 0.01	0.06	202	0.76	0.97	0.97	< 0.06	13.8	2.2
Wash	04/07/2022 08:55	Grab	12.0	18.5	0.08	0.03	0.10	146	0.95	0.96	0.96	< 0.06	14.2	2.4
Wash	04/21/2022 09:55	Grab	15.0	10.5	~ 0.03	0.01	0.07	140	0.95	1.03	1.03	< 0.06	12.6	2.1
Wash	05/05/2022 08:40	Grab	23.0	14.3	< 0.02	< 0.01	0.15	106	1.20	0.72	0.72	< 0.06	11.8	2.0
Wash	05/19/2022 09:05	Grab	14.0	12.0	~ 0.05	0.05	0.09	105	1.10	0.93	0.93	< 0.06	10.6	2.0
Wash	06/02/2022 09:05	Grab	16.0	14.4	0.05	0.04	0.09	131	0.86	0.45	0.45	< 0.06	9.4	1.6
Wash	06/16/2022 08:45	Grab	14.0	14.6	0.06	0.04	0.21	146	0.87	0.50	0.50	< 0.06	9.3	1.7
Wash	07/07/2022 08:45	Grab	5.6	12.9	0.06	0.04	0.15	132	1.00	0.38	0.38	< 0.06	6.8	0.9
Wash	07/21/2022 08:25	Grab	20.0	13.3	~ 0.02	0.01	0.07	117	0.96	0.29	0.29	< 0.06	7.6	2.0
Wash	08/04/2022 08:45	Grab	30.0	16.2	~ 0.02	0.01	0.08	126	0.79	< 0.20	< 0.20	< 0.06	10.9	2.8
Wash	08/18/2022 09:05	Grab	37.0	15.8	~ 0.02	0.01	0.05	151	0.77	< 0.20	< 0.20	< 0.06	11.0	2.5
Wash	09/01/2022 08:50	Grab	30.0	18.5	0.07	< 0.01	~ 0.02	178	0.78	0.20	0.20	< 0.06	9.4	2.1
Wash	09/15/2022 09:30	Grab	15.0	18.7	< 0.02	< 0.01	0.05	140	0.67	0.33	0.33	< 0.06	10.7	1.6
Wash	10/06/2022 09:15	Grab	7.5	19.1	~ 0.03	< 0.01	< 0.02	152	0.51	0.33	0.33	< 0.06	11.2	0.7
Wash	10/20/2022 09:25	Grab	2.2	20.8	0.20	< 0.01	< 0.02	164	0.46	0.44	0.44	< 0.06	12.1	0.7
Wash	11/03/2022 08:47	Grab	6.5	21.5	~ 0.02	< 0.01	0.06	147	0.53	0.34	0.34	< 0.06	11.5	1.2
Wash	11/17/2022 10:20	Grab	7.3	12.2	< 0.02	< 0.01	< 0.02	193	0.47	0.60	0.60	< 0.06	13.1	1.0
Wash	12/01/2022 14:30	Grab	5.6	18.9	0.19	< 0.01	~ 0.04	169	0.56	0.54	0.54	< 0.06	11.8	1.1

2022 Mississippi River Water Quality Data - Wash continued

Station	Sample Time	Sample type	Total Cadmium (µg/L)	Total Chromium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Nickel (µg/L)	Total Zinc (µg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Wash	02/11/2022 09:30	Grab	< 0.10	< 1.00	1.20	< 0.50	0.63	6.90	378	6.2	< 3	< 3
Wash	03/17/2022 08:25	Grab	< 0.10	< 1.00	1.00	< 0.50	0.58	< 5.00	302	7.4	4	< 3
Wash	04/07/2022 08:55	Grab							230	8.8	9	< 4
Wash	04/21/2022 09:55	Grab							174	11.5	15	3
Wash	05/05/2022 08:40	Grab	< 0.10	< 1.00	1.30	< 0.50	1.20	< 5.00	190	12.9	19	4
Wash	05/19/2022 09:05	Grab	< 0.10	< 1.00	1.90	0.51	1.90	5.30	194	14.5	19	5
Wash	06/02/2022 09:05	Grab							206	13.3	17	5
Wash	06/16/2022 08:45	Grab	< 0.10	< 1.00	1.10	< 0.50	1.30	< 5.00	110	14.2	15	< 5
Wash	07/07/2022 08:45	Grab							217	14.7	11	3
Wash	07/21/2022 08:25	Grab	< 0.10	< 1.00	1.20	< 0.50	0.82	< 5.00	206	12.0	9	4
Wash	08/04/2022 08:45	Grab							219	9.3	8	4
Wash	08/18/2022 09:05	Grab	< 0.10	< 1.00	< 1.00	< 0.50	0.74	< 5.00	221	8.8	11	5
Wash	09/01/2022 08:50	Grab							226	8.1	7	5
Wash	09/15/2022 09:30	Grab	< 0.10	< 1.00	0.76	< 0.50	0.76	7.90	229	8.4	6	3
Wash	10/06/2022 09:15	Grab							223	7.9	3	< 3
Wash	10/20/2022 09:25	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.54	< 5.00	237	8.0	< 3	< 3
Wash	11/03/2022 08:47	Grab							241	7.8	5	< 3
Wash	11/17/2022 10:20	Grab							232	7.4	4	< 3
Wash	12/01/2022 14:30	Grab							240	9.7	< 3	< 3

2022 Mississippi River Water Quality Data - Boom

Station	Sample Time	Sample type (°F)	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Boom	01/13/2022 09:10	Grab	30	0.7	246.8	460.0	13.73	8.6	0.22	> 100	172	0.10	1.0	22
Boom	03/17/2022 08:45	Grab	36	4.1	286.1	476.7	12.32	8.3	0.23	> 100	187	< 0.06	1.8	21
Boom	04/07/2022 08:00	Grab	36	3.0	208.4	359.5	13.16	8.5	0.17	75	139	0.10	1.7	30
Boom	04/21/2022 10:45	Grab	46	4.6	188.4	308.5	13.03	8.6	0.15	50	121	< 0.06	1.9	27
Boom	05/05/2022 09:30	Grab	55	10.0	211.8	297.1	11.70	8.5	0.14	53	123	< 0.06	1.8	34
Boom	05/19/2022 10:10	Grab	68	17.6	248.0	288.6	9.23	8.5	0.14	52	116	< 0.06	1.8	49
Boom	06/02/2022 10:00	Grab	65	17.9	282.2	326.3	9.46	7.8	0.16	58	137	< 0.06	1.4	33
Boom	06/16/2022 09:40	Grab	73	21.5	313.7	336.1	8.66	8.2	0.16	67	143	< 0.06	0.9	34
Boom	07/07/2022 09:30	Grab	77	23.6	295.1	303.0	8.52	8.1	0.14	71	142	< 0.06	0.6	58
Boom	07/21/2022 09:20	Grab	78	25.8	330.9	326.0	8.34	8.3	0.15	54	145	< 0.06	1.1	33
Boom	08/04/2022 10:30	Grab	73							39	157	< 0.06	1.3	28
Boom	08/18/2022 10:30	Grab	73	24.3	354.3	358.8	8.57	8.1	0.17	> 100	152	< 0.06	1.8	25
Boom	09/01/2022 10:20	Grab	79	23.8	362.5	371.2	8.74	7.5	0.18	96	168	< 0.06	1.3	26
Boom	09/15/2022 10:45	Grab	75	20.4	338.6	370.8	8.69	7.5	0.18	88	155	< 0.06	1.4	25
Boom	10/06/2022 10:20	Grab	51	17.4	324.6	380.0	8.88	8.0	0.18	> 100	165	< 0.06	1.0	30
Boom	10/20/2022 10:30	Grab	50	8.2	267.7	393.7	11.30	7.7	0.19	> 100	159	< 0.06	1.2	24
Boom	11/03/2022 09:56	Grab	61	11.4	289.9	391.2	10.23	7.6	0.19	> 100	164	< 0.06	1.1	21
Boom	11/17/2022 10:40	Grab	27	1.1	211.7	389.7	13.57	7.4	0.18	> 100	154	< 0.06	1.0	22
Boom	12/01/2022 14:50	Grab	31	-0.3	186.4	360.8	14.43	8.6	0.17	76	140	< 0.06	0.9	23

2022 Mississippi River Water Quality Data - Boom continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (ppm)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate- Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Boom	01/13/2022 09:10	Grab	6.9	21.1	~ 0.02	< 0.01	< 0.02	221	0.58	1.17	1.17	< 0.06	16.6	0.7
Boom	03/17/2022 08:45	Grab	12.0	31.2	< 0.02	< 0.01	~ 0.04	210	0.65	0.97	0.97	< 0.06	12.9	1.8
Boom	04/07/2022 08:00	Grab	12.0	12.8	0.06	0.03	0.10	157	0.93	1.04	1.04	< 0.06	13.4	2.1
Boom	04/21/2022 10:45	Grab	15.0	11.0	~ 0.02	0.01	0.08	149	0.94	0.80	0.80	< 0.06	11.5	1.9
Boom	05/05/2022 09:30	Grab	22.0	12.3	< 0.02	0.01	0.07	104	1.20	0.66	0.66	< 0.06	11.2	2.0
Boom	05/19/2022 10:10	Grab	13.0	10.7	0.05	0.05	0.10	99	1.10	0.82	0.82	< 0.06	10.1	1.6
Boom	06/02/2022 10:00	Grab	15.0	13.6	~ 0.04	0.03	0.08	122	0.84	0.38	0.38	< 0.06	7.8	1.5
Boom	06/16/2022 09:40	Grab	14.0	16.2	2.08	0.05	0.11	147	0.86	0.43	0.43	< 0.06	8.2	1.4
Boom	07/07/2022 09:30	Grab	11.0	11.6	0.06	0.04	0.12	117	0.80	0.40	0.40	< 0.06	6.5	0.8
Boom	07/21/2022 09:20	Grab	18.0	13.1	~ 0.03	0.02	0.06	138	0.85	0.31	0.31	< 0.06	7.2	1.7
Boom	08/04/2022 10:30	Grab	31.0	16.8	~ 0.03	< 0.01	0.10	354	0.83	< 0.20	< 0.20	< 0.06	10.5	1.8
Boom	08/18/2022 10:30	Grab	34.0	15.8	~ 0.02	0.01	~ 0.03	167	0.74	< 0.20	< 0.20	< 0.06	10.6	2.4
Boom	09/01/2022 10:20	Grab	29.0	17.1	~ 0.03	< 0.01	0.06	178	0.86	0.22	0.22	< 0.06	9.2	1.8
Boom	09/15/2022 10:45	Grab	14.0	17.5	< 0.02	< 0.01	~ 0.04	133	0.67	0.30	0.30	< 0.06	10.3	1.4
Boom	10/06/2022 10:20	Grab	6.7	18.4	< 0.02	< 0.01	< 0.02	140	0.50	0.33	0.33	< 0.06	10.8	0.7
Boom	10/20/2022 10:30	Grab	2.2	19.9	< 0.02	< 0.01	< 0.02	169	0.43	0.40	0.40	< 0.06	11.4	0.8
Boom	11/03/2022 09:56	Grab	4.9	20.6	< 0.02	< 0.01	~ 0.03	121	0.50	0.35	0.35	< 0.06	11.2	1.0
Boom	11/17/2022 10:40	Grab	6.5	18.2	< 0.02	< 0.01	< 0.02	205	0.49	0.61	0.61	< 0.06	12.2	0.9
Boom	12/01/2022 14:50	Grab	5.3	16.8	< 0.02	< 0.01	~ 0.03	187	0.57	0.68	0.68	< 0.06	11.0	0.9

2022 Mississippi River Water Quality Data - Boom continued

Station	Sample Time	Sample type	Total Cadmium (µg/L)	Total Chromium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Nickel (µg/L)	Total Zinc (µg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Boom	01/13/2022 09:10	Grab							258	8.0	~ 2	~ 2
Boom	03/17/2022 08:45	Grab	< 0.10	< 1.00	0.65	< 0.50	0.54	< 5.00	274	7.0	3	< 3
Boom	04/07/2022 08:00	Grab							226	9.2	9	3
Boom	04/21/2022 10:45	Grab							170	10.9	14	3
Boom	05/05/2022 09:30	Grab	< 0.10	< 1.00	1.20	< 0.50	1.10	< 5.00	182	12.0	19	5
Boom	05/19/2022 10:10	Grab	< 0.10	< 1.00	1.70	< 0.50	1.70	< 5.00	185	14.6	18	5
Boom	06/02/2022 10:00	Grab							198	13.5	14	4
Boom	06/16/2022 09:40	Grab	< 0.10	< 1.00	1.20	< 0.50	1.30	< 5.00	112	14.0	15	< 5
Boom	07/07/2022 09:30	Grab							209	14.5	13	4
Boom	07/21/2022 09:20	Grab	< 0.10	< 1.00	0.97	< 0.50	0.78	5.40	202	11.7	9	3
Boom	08/04/2022 10:30	Grab							221	9.1	7	3
Boom	08/18/2022 10:30	Grab	< 0.10	< 1.00	0.98	< 0.50	2.60	6.00	217	8.7	8	5
Boom	09/01/2022 10:20	Grab							217	8.5	6	4
Boom	09/15/2022 10:45	Grab	< 0.10	< 1.00	1.30	< 0.50	0.77	16.30	224	8.4	5	3
Boom	10/06/2022 10:20	Grab							222	7.8	3	< 3
Boom	10/20/2022 10:30	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.58	< 5.00	230	8.2	< 3	< 3
Boom	11/03/2022 09:56	Grab							240	8.1	< 3	< 3
Boom	11/17/2022 10:40	Grab							227	7.5	3	< 3
Boom	12/01/2022 14:50	Grab							230	9.9	< 3	< 3

2022 Mississippi River Water Quality Data - MWMO

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Biological Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
MWMO	01/13/2022 09:50	Grab	31	0.6	242.8	454.9	13.85	8.3	0.22	> 100	189	0.10	1.2	24
MWMO	02/11/2022 09:05	Grab	32	-0.2	255.4	492.2	13.14	9.4	0.23	35	205	< 0.06	1.0	22
MWMO	03/17/2022 09:45	Grab	38	4.9	289.4	469.6	12.57	8.1	0.23	> 100	180	< 0.06	1.7	21
MWMO	04/07/2022 08:30	Grab	36	2.7	200.7	349.3	13.23	8.7	0.17	75	134	0.12	1.6	28
MWMO	04/21/2022 10:55	Grab	47	4.6	187.1	306.8	13.11	8.6	0.15	47	125	0.08	2.0	33
MWMO	05/05/2022 09:45	Grab	55	9.9	209.9	295.0	11.96	8.5	0.14	65	122	< 0.06	1.8	32
MWMO	05/19/2022 10:25	Grab	68	17.6	239.1	278.3	9.26	8.3	0.13	54	109	< 0.06	2.0	49
MWMO	06/02/2022 10:10	Grab	71	17.9	280.9	325.3	9.48	7.8	0.16	57	146	< 0.06	1.6	37
MWMO	06/16/2022 09:50	Grab	73	21.6	307.2	328.7	8.72	8.0	0.16	59	138	< 0.06	1.0	42
MWMO	07/07/2022 09:45	Grab	80	23.8	296.1	303.3	8.59	8.1	0.14	74	143	< 0.06	0.7	62
MWMO	07/21/2022 09:30	Grab	78	25.9	331.7	326.0	8.56	8.2	0.15	59	149	< 0.06	1.2	31
MWMO	08/04/2022 10:20	Grab	73	25.8	363.4	358.1	8.67	8.1	0.17	65	148	< 0.06	1.6	32
MWMO	08/18/2022 10:20	Grab	73	24.8	356.5	358.0	8.77	8.1	0.17	82	161	< 0.06	1.7	25
MWMO	09/01/2022 10:30	Grab	79	24.1	362.7	368.9	9.06	7.5	0.18	> 100	157	< 0.06	1.1	24
MWMO	09/15/2022 11:00	Grab	75	21.0	342.8	371.5	8.94	7.2	0.18	92	168	< 0.06	1.5	23
MWMO	10/06/2022 10:30	Grab	51	17.4	324.3	379.3	8.99	7.9	0.18	100	160	< 0.06	1.1	22
MWMO	10/20/2022 10:45	Grab	50	8.4	266.1	389.8	11.57	7.6	0.19	100	156	< 0.06	0.7	18
MWMO	11/03/2022 10:05	Grab	61	11.5	290.4	391.2	10.40	7.5	0.19	> 100	152	< 0.06	1.4	19
MWMO	11/17/2022 12:45	Grab	27	2.4	219.6	386.1	13.43	7.3	0.18	> 100	138	< 0.06	0.6	20
MWMO	12/01/2022 16:05	Grab	31	-0.2	188.9	364.8	14.65	8.3	0.17	69	144	< 0.06	1.2	25

2022 Mississippi River Water Quality Data - MWMO continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (ppm)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
MWMO	01/13/2022 09:50	Grab	9.4	19.2	< 0.02	< 0.01	< 0.02	193	0.64	1.13	1.13	< 0.06	16.9	0.9
MWMO	02/11/2022 09:05	Grab	6.9	23.4	< 0.02	< 0.01	~ 0.03	214	0.48	1.17	1.17	< 0.06	15.9	0.8
MWMO	03/17/2022 09:45	Grab	14.0	31.0	< 0.02	< 0.01	~ 0.04	213	0.68	0.95	0.95	< 0.06	12.7	1.8
MWMO	04/07/2022 08:30	Grab	6.1	14.0	~ 0.04	0.03	0.13	151	0.86	0.98	0.98	< 0.06	12.8	2.0
MWMO	04/21/2022 10:55	Grab	16.0	10.6	< 0.02	< 0.01	0.06	119	0.91	0.82	0.82	< 0.06	11.3	1.9
MWMO	05/05/2022 09:45	Grab	24.0	13.3	~ 0.03	0.01	0.09	105	0.94	0.61	0.61	< 0.06	11.2	1.9
MWMO	05/19/2022 10:25	Grab	13.0	14.1	0.05	0.05	0.09	118	1.20	0.81	0.81	< 0.06	9.8	2.1
MWMO	06/02/2022 10:10	Grab	15.0	11.0	0.05	0.03	0.08	133	0.92	0.42	0.42	< 0.06	8.5	1.8
MWMO	06/16/2022 09:50	Grab	13.0	12.2	~ 0.05	0.04	0.11	154	0.92	0.45	0.45	< 0.06	8.4	1.3
MWMO	07/07/2022 09:45	Grab	8.4	12.5	0.06	0.04	0.11	127	0.89	0.41	0.41	< 0.06	6.4	1.1
MWMO	07/21/2022 09:30	Grab	18.0	12.8	~ 0.03	0.02	0.06	161	0.80	0.30	0.30	< 0.06	7.3	1.6
MWMO	08/04/2022 10:20	Grab	< 1.0	15.9	~ 0.04	< 0.01	~ 0.04	127	0.76	< 0.20	< 0.20	< 0.06	10.7	2.3
MWMO	08/18/2022 10:20	Grab	34.0	15.6	< 0.02	0.01	0.06	159	0.76	< 0.20	< 0.20	< 0.06	10.6	2.2
MWMO	09/01/2022 10:30	Grab	27.0	16.7	~ 0.03	< 0.01	0.13	166	0.84	< 0.20	< 0.20	< 0.06	9.1	1.9
MWMO	09/15/2022 11:00	Grab	15.0	17.5	< 0.02	< 0.01	~ 0.03	149	0.64	0.26	0.26	< 0.06	10.6	1.5
MWMO	10/06/2022 10:30	Grab	6.7	17.4	~ 0.03	< 0.01	~ 0.02	< 45	0.50	0.37	0.37	< 0.06	10.8	0.9
MWMO	10/20/2022 10:45	Grab	2.2	19.7	< 0.02	< 0.01	< 0.02	197	0.45	0.42	0.42	< 0.06	11.4	1.0
MWMO	11/03/2022 10:05	Grab	5.0	20.7	< 0.02	< 0.01	~ 0.02	225	0.50	0.37	0.37	< 0.06	11.2	1.0
MWMO	11/17/2022 12:45	Grab	7.3	19.0	< 0.02	< 0.01	< 0.02	177	0.51	0.63	0.63	< 0.06	11.9	0.9
MWMO	12/01/2022 16:05	Grab	5.4	17.4	< 0.02	< 0.01	~ 0.03	126	0.58	0.52	0.52	< 0.06	11.1	1.1

2022 Mississippi River Water Quality Data - MWMO continued

Station	Sample Time	Sample type	Total Cadmium (µg/L)	Total Chromium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Nickel (µg/L)	Total Zinc (µg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
MWMO	01/13/2022 09:50	Grab							261	7.9	~ 2	~ 2
MWMO	02/11/2022 09:05	Grab	< 0.10	< 1.00	0.59	< 0.50	0.56	< 5.00	272	7.0	< 3	< 3
MWMO	03/17/2022 09:45	Grab	< 0.10	< 1.00	0.72	< 0.50	0.51	< 5.00	262	7.3	4	< 3
MWMO	04/07/2022 08:30	Grab							221	9.2	9	3
MWMO	04/21/2022 10:55	Grab							193	10.8	11	3
MWMO	05/05/2022 09:45	Grab	< 0.10	< 1.00	3.70	< 0.50	1.20	< 5.00	188	12.2	19	4
MWMO	05/19/2022 10:25	Grab	< 0.10	< 1.00	1.90	< 0.50	1.70	5.50	187	15.0	17	4
MWMO	06/02/2022 10:10	Grab							202	13.3	6	< 3
MWMO	06/16/2022 09:50	Grab	< 0.10	< 1.00	2.80	< 0.50	1.20	5.10	108	14.2	14	< 6
MWMO	07/07/2022 09:45	Grab							220	14.4	11	3
MWMO	07/21/2022 09:30	Grab	< 0.10	< 1.00	1.00	< 0.50	0.71	< 5.00	206	11.3	9	3
MWMO	08/04/2022 10:20	Grab							216	9.8	8	4
MWMO	08/18/2022 10:20	Grab	< 0.10	< 1.00	0.91	< 0.50	0.84	< 5.00	221	8.6	10	5
MWMO	09/01/2022 10:30	Grab							228	8.7	7	4
MWMO	09/15/2022 11:00	Grab	< 0.10	< 1.00	0.89	< 0.50	0.70	7.60	227	8.3	4	< 3
MWMO	10/06/2022 10:30	Grab							222	7.8	3	< 3
MWMO	10/20/2022 10:45	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.73	< 5.00	230	8.0	< 3	< 3
MWMO	11/03/2022 10:05	Grab							237	8.0	< 3	< 3
MWMO	11/17/2022 12:45	Grab							230	7.5	3	< 3
MWMO	12/01/2022 16:05	Grab							227	9.9	< 3	< 3

2022 Mississippi River Water Quality Data - Shingle Up

Station	Sample Time	Sample Type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Shingle Up	03/17/2022 09:10	Grab	36	4.5	313.8	509.0	12.76	8.2	0.25	> 100	186	< 0.06	< 1.9	23
Shingle Up	04/07/2022 09:40	Grab	36	2.9	200.0	346.5	13.13	8.4	0.16	76	130	0.15	1.5	30
Shingle Up	04/21/2022 11:05	Grab	47	4.6	190.8	312.8	13.53	8.4	< 0.15	48	125	< 0.06	< 2.0	31
Shingle Up	05/05/2022 09:55	Grab	55	9.9	213.9	300.9	12.15	8.3	0.14	60	124	< 0.06	1.7	36
Shingle Up	05/19/2022 10:35	Grab	68	17.7	249.2	289.8	9.35	8.2	0.14	54	60	0.06	< 1.9	49
Shingle Up	06/02/2022 10:20	Grab	71	18.0	292.5	338.0	9.81	7.8	0.16	57	148	< 0.06	1.4	35
Shingle Up	06/16/2022 10:00	Grab	73	21.9	329.6	350.1	8.93	8.0	0.17	58	145	< 0.06	0.9	< 38
Shingle Up	07/07/2022 09:55	Grab	80	23.6	296.9	305.3	8.73	8.1	0.14	68	145	< 0.06	< 0.7	40
Shingle Up	07/21/2022 09:45	Grab	78	25.7	323.9	319.7	8.68	8.2	0.15	61	136	< 0.06	1.3	33
Shingle Up	08/04/2022 10:05	Grab	73	25.7	361.6	357.2	9.19	8.2	< 0.17	56	161	< 0.06	1.6	26
Shingle Up	08/04/2022 10:06	Grab									152	< 0.06	1.5	28
Shingle Up	08/18/2022 10:15	Grab	73	24.5	348.1	351.4	9.10	8.2	0.17	93	158	< 0.06	2.0	27
Shingle Up	09/01/2022 10:35	Grab	80	24.1	358.4	364.3	9.80	7.6	0.17	90	158	< 0.06	1.5	28
Shingle Up	09/15/2022 11:05	Grab	75	20.7	337.8	368.0	9.42	7.3	< 0.18	97	165	< 0.06	1.3	23
Shingle Up	10/06/2022 10:40	Grab	51	17.6	322.1	375.4	9.90	7.9	< 0.18	> 100	155	< 0.06	< 2.1	22
Shingle Up	10/20/2022 10:55	Grab	50	7.7	259.0	387.3	12.19	7.6	< 0.19	> 100	183	< 0.06	< 1.2	< 20
Shingle Up	11/03/2022 10:13	Grab	62	11.6	289.8	389.1	10.55	7.5	< 0.19	> 100	174	< 0.06	0.9	21
Shingle Up	11/17/2022 12:15	Grab	27	2.6	219.8	384.3	13.61	7.4	0.18	> 100	154	< 0.06	1.1	20
Shingle Up	12/01/2022 15:20	Grab	31	0.1	189.2	361.1	14.78	8.5	0.17	71	130	< 0.06	< 1.2	31

2022 Mississippi River Water Quality Data - Shingle Up continued

Station	Sample Time	Sample Type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Shingle Up	03/17/2022 09:10	Grab	8.6	28.7	< 0.02	< 0.01	~ 0.04	212	0.67	1.11	1.11	< 0.06	13.9	1.8
Shingle Up	04/07/2022 09:40	Grab	12.0	18.6	0.08	0.03	0.08	146	0.95	0.92	0.92	< 0.06	12.4	2.1
Shingle Up	04/21/2022 11:05	Grab	16.0	11.0	< 0.02	0.01	0.06	135	0.99	1.38	1.38	< 0.06	12.3	1.9
Shingle Up	05/05/2022 09:55	Grab	20.0	13.9	< 0.02	< 0.01	0.12	112	0.97	0.65	0.65	< 0.06	11.4	2.0
Shingle Up	05/19/2022 10:35	Grab	13.0	12.0	0.05	0.05	0.10	120	1.20	1.02	1.02	< 0.06	10.6	1.8
Shingle Up	06/02/2022 10:20	Grab	14.0	13.5	0.05	0.04	0.08	136	0.85	0.45	0.45	< 0.06	9.3	1.4
Shingle Up	06/16/2022 10:00	Grab	14.0	13.6	0.05	0.05	0.12	161	0.88	0.49	0.49	< 0.06	9.6	1.4
Shingle Up	07/07/2022 09:55	Grab	9.1	11.1	0.06	0.04	0.09	124	0.89	0.42	0.42	< 0.06	6.7	1.0
Shingle Up	07/21/2022 09:45	Grab	20.0	12.8	~ 0.03	0.02	0.07	148	0.83	0.27	0.27	< 0.06	7.4	2.0
Shingle Up	08/04/2022 10:05	Grab	30.0	16.1	~ 0.03	< 0.01	0.10	160	0.82	< 0.20	< 0.20	< 0.06	10.8	2.6
Shingle Up	08/04/2022 10:06	Grab	32.0	15.5	~ 0.03	< 0.01	~ 0.04	< 45	0.77	< 0.20	< 0.20	< 0.06	10.9	2.3
Shingle Up	08/18/2022 10:15	Grab	37.0	13.8	< 0.02	0.01	0.07	158	0.86	< 0.20	< 0.20	< 0.06	10.7	2.4
Shingle Up	09/01/2022 10:35	Grab	28.0	15.2	~ 0.02	< 0.01	~ 0.03	172	0.80	< 0.20	< 0.20	< 0.06	9.4	2.1
Shingle Up	09/15/2022 11:05	Grab	9.0	16.4	< 0.02	< 0.01	~ 0.03	146	0.64	0.23	0.23	< 0.06	10.5	1.5
Shingle Up	10/06/2022 10:40	Grab	9.0	17.2	< 0.02	< 0.01	~ 0.02	126	0.50	0.33	0.33	< 0.06	10.5	2.0
Shingle Up	10/20/2022 10:55	Grab	2.7	18.6	< 0.02	< 0.01	< 0.02	192	0.45	0.41	0.41	< 0.06	11.3	0.8
Shingle Up	11/03/2022 10:13	Grab	5.8	19.9	~ 0.02	< 0.01	< 0.02	125	0.48	0.34	0.34	< 0.06	11.2	1.1
Shingle Up	11/17/2022 12:15	Grab	7.5	20.0	< 0.02	< 0.01	< 0.02	186	0.65	0.64	0.64	< 0.06	11.7	1.0
Shingle Up	12/01/2022 15:20	Grab	5.9	17.2	~ 0.02	< 0.01	~ 0.04	175	0.56	0.62	0.62	< 0.06	11.1	1.0

2022 Mississippi River Water Quality Data - Shingle Up continued

Station	Sample Time	Sample Type	Total Cadmium (ug/L)	Total Chromium (ug/L)	Total Copper (ug/L)	Total Lead (ug/L)	Total Nickel (ug/L)	Total Zinc (ug/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Shingle Up	03/17/2022 09:10	Grab	< 0.10	< 1.00	0.76	< 0.50	0.54	< 5.00	273	7.3	3	< 3
Shingle Up	04/07/2022 09:40	Grab							216	9.1	8	3
Shingle Up	04/21/2022 11:05	Grab							200	10.9	15	3
Shingle Up	05/05/2022 09:55	Grab	< 0.10	< 1.00	1.10	< 0.50	1.10	< 5.00	189	12.3	19	5
Shingle Up	05/19/2022 10:35	Grab	< 0.10	< 1.00	2.00	< 0.50	1.70	6.20	194	14.6	18	5
Shingle Up	06/02/2022 10:20	Grab							207	13.3	18	5
Shingle Up	06/16/2022 10:00	Grab	< 0.10	< 1.00	1.10	< 0.50	1.50	5.40	114	14.1	17	< 6
Shingle Up	07/07/2022 09:55	Grab							212	14.5	11	3
Shingle Up	07/21/2022 09:45	Grab	< 0.10	< 1.00	1.20	< 0.50	0.73	< 5.00	205	12.3	8	< 4
Shingle Up	08/04/2022 10:05	Grab							220	9.4	8	4
Shingle Up	08/04/2022 10:06	Grab							215	9.1	8	4
Shingle Up	08/18/2022 10:15	Grab	< 0.10	< 1.00	0.80	< 0.50	0.75	< 5.00	217	8.6	10	5
Shingle Up	09/01/2022 10:35	Grab							220	8.4	7	4
Shingle Up	09/15/2022 11:05	Grab	< 0.10	< 1.00	0.81	< 0.50	0.61	7.90	225	8.7	5	3
Shingle Up	10/06/2022 10:40	Grab	< 0.10	< 1.00	< 0.50	< 0.50	0.51	< 5.00	227	7.8	3	< 3
Shingle Up	10/20/2022 10:55	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.61	< 5.00	232	8.0	< 3	< 3
Shingle Up	11/03/2022 10:13	Grab							242	7.9	< 3	< 3
Shingle Up	11/17/2022 12:15	Grab							232	7.6	3	< 3
Shingle Up	12/01/2022 15:20	Grab							233	9.8	< 3	< 3

2022 Mississippi River Water Quality Data - Upper

Station	Sample Time	Sample Type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Biological Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Upper	02/11/2022 10:00	Grab	25	-0.4	339.3	658.0	13.65	8.9	< 0.31	> 100	198	< 0.06	1.1	18
Upper	03/17/2022 09:45	Grab	38	4.9	290.5	477.9	12.31	8.3	0.23	> 100	188	< 0.06	1.7	27
Upper	04/07/2022 09:10	Grab	36	3.3	235.5	401.6	13.23	9.2	< 0.19	77	153	0.09	1.7	30
Upper	04/21/2022 11:15	Grab	48	4.5	191.9	315.1	13.44	8.4	< 0.15	41	134	< 0.06	1.9	50
Upper	05/05/2022 10:05	Grab	55	9.8	215.2	302.9	12.16	8.3	0.15	51	125	< 0.06	1.7	34
Upper	05/19/2022 10:40	Grab	68	17.7	242.0	281.3	9.22	8.3	0.13	54	112	< 0.06	< 1.9	51
Upper	06/02/2022 10:30	Grab	71	17.9	282.1	326.2	9.72	7.8	0.16	56	140	< 0.06	1.3	33
Upper	06/16/2022 10:05	Grab	73	21.8	306.3	326.5	8.89	7.9	0.16	54	143	< 0.06	1.0	34
Upper	07/07/2022 10:05	Grab	80	23.6	294.9	302.8	8.78	8.1	0.14	72	146	< 0.06	0.8	36
Upper	07/21/2022 09:55	Grab	78	25.8	330.2	325.3	8.87	8.2	< 0.15	69	144	< 0.06	1.3	33
Upper	08/04/2022 09:38	Grab		25.3	370.2	368.4	9.12	8.3	0.18	76	161	< 0.06	2.1	30
Upper	08/18/2022 09:50	Grab	75	24.9	408.7	409.6	9.91	8.2	0.20	85	168	< 0.06	2.2	27
Upper	09/01/2022 09:45	Grab	79	25.7	381.1	376.0	9.23	7.7	< 0.18	82	162	< 0.06	2.1	28
Upper	09/15/2022 11:30	Grab	75	21.3	348.1	374.7	9.94	7.5	< 0.18	96	157	< 0.06	< 1.2	25
Upper	10/06/2022 09:45	Grab	54	16.9	320.9	379.4	9.69	7.9	0.18	> 100	164	< 0.06	1.1	24
Upper	10/20/2022 09:55	Grab	50	10.8	288.9	396.4	11.77	7.6	< 0.19	71	177	< 0.06	1.0	20
Upper	11/03/2022 09:20	Grab	61	11.7	287.8	398.7	10.40	7.6	< 0.19	> 100	165	< 0.06	1.2	21
Upper	11/17/2022 11:30	Grab	27	2.9	229.0	396.3	13.81	7.5	0.19	> 100	159	< 0.06	1.1	22
Upper	12/01/2022 15:40	Grab	31	0.2	195.2	371.1	15.00	8.4	< 0.18	87	119	< 0.06	0.7	23

2022 Mississippi River Water Quality Data - Upper continued

Station	Sample Time	Sample Type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Upper	02/11/2022 10:00	Grab	5.8	78.4	< 0.02	< 0.01	~ 0.03	230	0.53	1.12	1.12	< 0.06	25.8	1.0
Upper	03/17/2022 09:45	Grab	8.1	34.6	< 0.02	< 0.01	0.06	194	0.37	0.89	0.89	< 0.06	16.0	1.7
Upper	04/07/2022 09:10	Grab	13.0	23.4	~ 0.03	0.03	0.09	157	0.90	1.11	1.11	< 0.06	16.5	2.2
Upper	04/21/2022 11:15	Grab	16.0	10.6	< 0.02	0.01	0.08	127	0.89	0.94	0.94	< 0.06	11.9	1.9
Upper	05/05/2022 10:05	Grab	21.0	14.0	~ 0.03	0.01	0.15	133	0.93	0.78	0.78	< 0.06	11.8	2.1
Upper	05/19/2022 10:40	Grab	12.0	11.1	0.10	0.05	0.08	110	1.20	0.86	0.86	< 0.06	10.2	1.7
Upper	06/02/2022 10:30	Grab	13.0	12.9	~ 0.04	0.04	0.08	157	0.88	0.46	0.46	< 0.06	9.0	1.6
Upper	06/16/2022 10:05	Grab	13.0	23.5	4.78	0.04	0.10	165	0.88	0.46	0.46	< 0.06	8.0	1.3
Upper	07/07/2022 10:05	Grab	9.6	10.9	0.05	0.04	0.09	124	0.95	0.37	0.37	< 0.06	6.6	1.1
Upper	07/21/2022 09:55	Grab	18.0	12.5	~ 0.03	0.02	0.06	119	0.84	0.30	0.30	< 0.06	7.2	1.5
Upper	08/04/2022 09:38	Grab	30.0	17.6	~ 0.02	< 0.01	~ 0.03	134	0.82	< 0.20	< 0.20	< 0.06	12.5	2.3
Upper	08/18/2022 09:50	Grab	43.0	24.9	< 0.02	0.01	0.06	179	0.90	< 0.20	< 0.20	< 0.06	17.5	3.3
Upper	09/01/2022 09:45	Grab	31.0	17.7	~ 0.02	< 0.01	0.05	173	0.83	< 0.20	< 0.20	< 0.06	10.2	2.1
Upper	09/15/2022 11:30	Grab	13.0	17.8	< 0.02	< 0.01	~ 0.04	138	0.70	0.25	0.25	< 0.06	11.1	1.5
Upper	10/06/2022 09:45	Grab	6.3	17.9	< 0.02	< 0.01	~ 0.03	172	0.55	0.35	0.35	< 0.06	10.9	1.2
Upper	10/20/2022 09:55	Grab	3.5	21.4	< 0.02	< 0.01	< 0.02	202	0.49	0.38	0.38	< 0.06	12.6	1.0
Upper	11/03/2022 09:20	Grab	4.9	21.6	< 0.02	< 0.01	< 0.02	140	0.48	0.38	0.38	< 0.06	12.3	0.9
Upper	11/17/2022 11:30	Grab	4.9	20.2	< 0.02	< 0.01	< 0.02	202	0.49	0.61	0.61	< 0.06	12.6	1.0
Upper	12/01/2022 15:40	Grab	6.0	19.1	~ 0.02	< 0.01	~ 0.04	192	0.55	0.50	0.50	< 0.06	12.5	0.8

2022 Mississippi River Water Quality Data - Upper continued

Station	Sample Time	Sample Type	Total Cadmium (ug/L)	Total Chromium (ug/L)	Total Copper (ug/L)	Total Lead (ug/L)	Total Nickel (ug/L)	Total Zinc (ug/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Upper	02/11/2022 10:00	Grab	< 0.10	< 1.00	1.00	< 0.50	0.64	5.10	375	6.6	< 3	< 3
Upper	03/17/2022 09:45	Grab	< 0.10	< 1.00	0.73	< 0.50	0.54	< 5.00	283	7.1	< 3	< 3
Upper	04/07/2022 09:10	Grab							246	8.9	9	3
Upper	04/21/2022 11:15	Grab							200	10.7	14	4
Upper	05/05/2022 10:05	Grab	< 0.10	< 1.00	1.20	< 0.50	1.20	< 5.00	190	12.2	18	4
Upper	05/19/2022 10:40	Grab	< 0.10	< 1.00	1.90	< 0.50	1.80	< 5.00	182	14.7	18	5
Upper	06/02/2022 10:30	Grab							209	13.3	15	4
Upper	06/16/2022 10:05	Grab	< 0.10	< 1.00	1.10	0.59	1.10	< 5.00	112	14.2	16	< 6
Upper	07/07/2022 10:05	Grab							205	15.0	12	3
Upper	07/21/2022 09:55	Grab	< 0.10	< 1.00	1.00	< 0.50	0.85	< 5.00	205	12.0	9	< 3
Upper	08/04/2022 09:38	Grab							224	9.1	7	4
Upper	08/18/2022 09:50	Grab	< 0.10	< 1.00	1.20	< 0.50	0.87	< 5.00	244	8.6	10	5
Upper	09/01/2022 09:45	Grab							226	8.6	7	5
Upper	09/15/2022 11:30	Grab	< 0.10	< 1.00	1.40	< 0.50	1.40	5.20	227	8.3	5	< 3
Upper	10/06/2022 09:45	Grab	< 0.10	< 1.00	0.76	< 0.50	0.66	< 5.00	222	8.0	3	< 3
Upper	10/20/2022 09:55	Grab	< 0.10	< 1.00	< 5.00	< 0.50	0.64	< 5.00	243	8.0	< 3	< 3
Upper	11/03/2022 09:20	Grab							242	7.8	< 3	< 3
Upper	11/17/2022 11:30	Grab							255	7.4	3	< 3
Upper	12/01/2022 15:40	Grab							228	9.7	< 3	< 3