ERRATA

KLAMATH RIVER BASELINE WATER QUALITY SAMPLING – 2022 ANNUAL REPORT–

Prepared for the KHSA Water Quality Monitoring Group

Prepared by
Watercourse Engineering, Inc.
August 30, 2023

Errata

A review of the 2022 finalized dataset investigated possible invalid values. Corrections were made to the 2022 dataset which required the changes listed below to be made to the Klamath River Baseline Water Quality Sampling 2022 Annual Report. If applicable, tables and figures in this errata sheet replace tables and figures with the corresponding number (e.g., Errata Figure 4 replaces report Figure 4). Completely new tables and figures are given a new number that would place them in the correct location within the original report (e.g., Errata Figure 3-a would follow report Figure 3). Any changes to the text are referenced to page and paragraph and indicated in ~~strikeout~~ (old text) and underline (new text).

1. Three specific conductivity values (WE091422-OC, LES110922-OC, and LES121422-OC) provided by Yurok were investigated as possible invalid values. These values were found to be erroneous due to transcription errors by the Yurok tribe during submittal to Watercourse Engineering, Inc. The specific conductivity values were replaced with corrected values, shown in yellow below. These changes did not require any edits to the report text or figures.

2. The revised dataset (in MS Excel format) has been posted to the PacifiCorp Klamath Project webpage (https://www.pacificorp.com/energy/hydro/klamath-river/water-quality.html).

Errata Table B-1. 2022 Klamath River Baseline Data Summary. All Non-detect values were replaced with "<" and the RL value. Sample Types include: P- Production sample; R – Regular sample associated with QA sample set; I = Depth Integrated sample.

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22014	4/25/2022	15:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	11.39	7.98	107.449	10.38	17.45	5.14	49.60	3.53	2.23		0.01	0.37	0.31		1.05	<0.01	0.10	0.04	0.00	26.50	44.0		
KR22036	5/9/2022	13:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	9.05	7.23	109.182	10.11	24.38	7.19	50.30	3.11	2.73		<0.01	0.27	0.38		1.26	0.01	0.08	0.03	0.01	23.90	27.0		
KR22044	5/23/2022	14:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	16.86	8.83	107.24	9.90	30.77	5.06	48.90	3.36	2.48		0.04	0.02	0.33		1.09	<0.01	0.07	0.02	<0.003		22.0		
KR22062	6/6/2022	14:50	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	18.12	7.88	108.639	7.59	4.64	1.95	49.90	3.49	0.94		0.05	0.02	0.13		0.62	0.03	0.08	0.03	<0.003	10.50	5.0		
KR22071	6/20/2022	14:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	19.84	7.85	106.297	7.67	8.10	2.74	52.40	3.70	1.38		<0.01	<0.01	0.22		0.79	0.03	0.10	0.02	0.01	8.58	6.0		
KR22090	7/11/2022	13:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					200.73	1.52	55.30	4.24	9.46		<0.01	<0.01	1.96		2.68	<0.01	0.18	0.13	0.06	26.70	21.0		0.20
KR22099	7/25/2022	13:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					169.36	4.11	57.80	5.15	4.80		0.02	<0.01	0.84		3.10	0.02	0.20	0.05	0.02	30.00	14.0		0.20
KR22118	8/8/2022	14:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					75.41	5.00	55.60	6.59	4.91		0.70	<0.01	1.03		3.51	0.06	0.25	0.11	0.03	17.70	31.0		0.22
KR22127	8/22/2022	13:25	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					76.95	2.70	53.50	6.38	3.04		0.08	0.07	0.71		2.67	0.09	0.22	0.04	0.01	10.50	14.0		1.20
KR22146	9/12/2022	14:50	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					204.28	2.33	58.20	6.71	8.42		0.06	<0.01	1.63		5.15	0.09	0.36	0.12	0.05	60.00	48.0		0.45
KR22155	9/26/2022	15:05	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	18.48	9.74	110.739	13.38	139.74	4.28	57.60	6.55	8.99		0.10	0.01	1.83		3.74	0.03	0.26	0.13	0.07	23.80	48.0		<0.15
KR22174	10/11/2022	13:45	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	17.03	9.59	110.037	11.25	167.17	0.46	62.50	6.29	6.79		0.05	<0.01	1.36		2.33	0.03	0.17	0.09	0.04	14.80	13.0		0.17
KR22182	10/23/2022	15:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	10.56	9.09	92.7715	7.91	119.64	8.25	57.10	5.95	2.87		0.10	0.03	0.43		2.09	0.04	0.20	0.08	0.05		100.0		<0.15
KR22200	11/14/2022	14:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	3.64	7.51	133.013	9.70	13.18	4.00	63.00	5.43	2.07		0.92	0.19	0.32		2.52	<0.01	0.13	0.08	0.06	16.70	15.0		
KR22222	12/6/2022	13:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	2.64	6.83	124.986	11.07	7.88	2.85	56.30	5.51	1.29		0.76	0.29	0.19		2.27	0.02	0.10	0.03	0.01	11.00	11.0		
KR22018	4/25/2022	16:40	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	13.23	8.28	114.512	10.19	25.78	6.12	50.40	3.47	2.42		0.07	0.38	0.33		1.26	<0.01	0.11			27.20	34.0		
KR22040	5/9/2022	14:20	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	10.76	7.84	117.111	9.79	26.74	7.91	51.70	3.23	2.28		0.05	0.28	0.32		1.26	0.02	0.11			18.90	20.0		<0.15
KR22066	6/6/2022	13:35	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	19.95	7.38	67.1697	8.46	12.50	3.12	51.40	3.60	1.37		0.08	0.02	0.20		0.87	0.09	0.15			10.50	9.0		<0.15
KR22094	7/11/2022	15:15	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					75.91	2.29	54.40	4.36	6.10		<0.01	0.04	1.25		1.64	0.01	0.16			21.00	17.0		0.16
KR22122	8/8/2022	15:55	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					203.78	45.70	56.10	6.67	8.97		0.62	<0.01	1.72		3.89	0.02	0.34			10.80	18.0		0.22
KR22150	9/12/2022	16:55	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					263.19	0.46	58.90	6.96	15.30		0.34	0.01	3.39		4.86	0.12	0.37			50.20	31.0		0.23
KR22178	10/11/2022	15:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	18.14	8.58	122.183	0.81	232.90	5.67	69.80	7.43	14.20		1.39	<0.01	3.14		4.81	0.10	0.38			11.10	26.0		<0.15
KR22204	11/14/2022	16:05	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	4.11	7.63	146.662	7.55	26.54	7.19	66.00	5.56	2.66		1.24	0.24	0.44		2.90	<0.01	0.16			22.10	34.0		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Phycophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22226	12/6/2022	17:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	2.26	7.69	130.037	11.12	18.29	3.20			3.71				0.41								11.20			
KR22017	4/25/2022	17:25	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	10.68	7.95	114.703	10.14	24.49	7.41	51.90	3.32	2.05		0.01	0.34	0.30		1.18	<0.01	0.11	0.04	0.01	28.10	39.0		
KR22039	5/9/2022	15:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	10.89	8.01	120.725	10.18	51.39	10.05	54.10	3.50	2.92		0.01	0.28	0.44		1.45	0.03	0.14	0.05	0.01	21.30	20.0		<0.15
KR22065	6/6/2022	16:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.92	8.00	112.588	8.32	2.38	1.62	54.90	3.60	0.90		0.07	0.01	0.14		0.68	0.07	0.12	0.01	<0.003	6.92	3.0		<0.15
KR22072	6/20/2022	16:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	19.44	8.35	116.224	8.27			57.20				0.06	0.02			0.81	0.09	0.14			6.05			
KR22093	7/11/2022	16:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					23.01	1.89	55.10	4.36	1.51		0.01	0.17	0.27		0.64	0.05	0.14	0.04	0.04	4.24	3.0		0.21
KR22100	7/25/2022	15:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P							59.20				0.18	<0.01			2.03	0.25	0.37			15.50			
KR22121	8/8/2022	16:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					99.11	19.77	57.30	6.32	5.50		0.81	<0.01	1.13		3.39	0.10	0.29	0.12	0.06	12.30	9.0		0.18
KR22128	8/22/2022	16:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P							57.70				0.78	<0.01			3.01	0.20	0.32			6.60			
KR22149	9/12/2022	17:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					74.32	3.76	58.10	7.76	4.22		0.70	<0.01	0.90		2.96	0.18	0.26	0.09	0.05	10.10	8.0		0.20
KR22156	9/26/2022	16:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.63	8.86	124.687	8.46			64.50				0.82	0.01			3.31	0.08	0.23			5.74			
KR22177	10/11/2022	17:30	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.02	8.37	128.153	7.27	8.97	2.88	65.40	6.76	1.40		1.08	<0.01	0.24		2.47	0.13	0.23	0.05	0.02	4.11	3.0		<0.15
KR22203	11/14/2022	16:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	4.13	7.59	142.513	10.67	9.94	6.46	63.00	5.27	1.60		0.95	0.22	0.21		2.33	<0.01	0.11	0.02	0.01	19.80	16.0		
KR22225	12/6/2022	16:55	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	2.02	7.64	145.345	12.30	8.90	4.15			1.20				0.17					0.03	0.01	12.30			
KR22015	4/25/2022	19:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	10.39	7.88	111.158	9.95	17.85	7.67	49.30	2.26	1.70		0.05	0.42	0.23		1.14	0.03	0.10				23.0		
KR22037	5/9/2022	16:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	10.40	8.08	118.577	10.24	24.78	8.16	52.80	3.44	2.03		0.02	0.35	0.28		1.39	0.04	0.11				17.0		<0.15
KR22063	6/6/2022	16:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	17.47	8.08	120.194	8.48	5.46	4.46	53.60	3.67	0.98		0.05	0.13	0.12		0.77	0.11	0.16				5.0		<0.15
KR22091	7/11/2022	16:50	KR22460	Klamath River below J.C. Boyle Dam (RM	PacifiCorp	0.5	P					4.38	2.15	55.70	4.30	0.62		0.03	0.17	0.10		0.73	0.93	0.16				3.0		<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Phycophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
				224.60; Baseline) Klamath River below J.C. Boyle Dam (RM 224.60;																											
KR22119	8/8/2022	17:35	KR22460	Baseline) Klamath River below J.C. Boyle Dam (RM 224.60;	PacifiCorp	0.5	P					11.95	7.31	50.30	5.91	1.38		0.30	1.04	0.24		2.58	0.21	0.27				3.0		<0.15
KR22147	9/12/2022	19:15	KR22460	Baseline) Klamath River below J.C. Boyle Dam (RM 224.60;	PacifiCorp	0.5	P					12.86	7.91	56	7.32	1.6		0.55	0.68	0.285		3.38	0.068	0.276				4		0.2
KR22175	10/11/2022	16:50	KR22460	Baseline) Klamath River below J.C. Boyle Dam (RM 224.60;	PacifiCorp	0.5	P	16.52	7.746	124.151	8.275	4.49	4.34	59.3	7.02	0.969		0.23	0.94	0.124		2.16	0.153	0.207				<2.0		<0.15
KR22201	11/14/2022	17:35	KR22460	Baseline) Klamath River below J.C. Boyle Dam (RM 224.60;	PacifiCorp	0.5	P	3.987	7.817	139.527	11.62	6.92	6.51	60	5.1	1.31		0.38	0.76	0.166		2.06	<0.01	0.105				15		
KR22223	12/6/2022	16:10	KR22460	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	2.279	7.707	140.57	12.45	7.27	3.97	57.2	6.09	1.18		0.58	0.8	0.166		2.53	0.063	0.106				8		
KR22016	4/25/2022	18:20	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	10.44	7.764	114.479	9.976	16.66	7.07	52.3	3.18	1.64		0.04	0.39	0.22		0.98	0.035	0.098			19.7	21		
KR22038	5/9/2022	17:35	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	10.63	8.31	119.67	10.15	22.99	7.53	56.4	2.96	1.64		<0.01	0.33	0.225		1.13	0.043	0.1			16	16		<0.15
KR22064	6/6/2022	17:30	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	16.85	8.266	118.581	8.728	3.68	3.04	56.2	3.33	0.821		0.05	0.13	0.0951		0.65	0.102	0.141			7.49	7		<0.15
KR22092	7/11/2022	17:30	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P					2.56	2.06	58	3.58	0.609		0.04	0.036	0.0953		1.276	0.096	0.126			3.99	3		<0.15
KR22120	8/8/2022	18:20	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P					10.07	6.27	50.3	4.88	1.18		0.2	0.97	0.195		2.39	0.181	0.237			2.57	7		<0.15
KR22148	9/12/2022	18:40	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P					9.91	6.94	57.4	6.15	1.35		0.43	0.65	0.232		2.56	0.194	0.243			2.83	2		0.2
KR22176	10/11/2022	16:15	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	15.89	7.749	125.231	8.196	3.92	3.80	60.1	5.92	0.932		0.16	0.86	0.105		1.78	0.14	0.175			2.82	<2.0		<0.15
KR22224	12/6/2022	15:35	KR21950	Baseline) Klamath River below USGS Gage (RM 219.50;	PacifiCorp	0.5	P	4.272	7.422	142.012	11.69	6.38	4.38	58.9	4.77	1.15		0.42	0.76	0.142		2.15	0.068	0.107			11.6	7		
KR22202	11/XX/2022	XX:XX	KR21950	Baseline) Klamath River above Shovel Creek (RM 206.42;	PacifiCorp	0.5	P																							
KR22010	4/26/2022	9:30	KR20642	Baseline) Klamath River above Shovel Creek (RM 206.42;	PacifiCorp	0.5	P	11.19	7.245	117.741	10.06	17.92	6.93	52.4	2.87	1.88		0.02	0.41	0.244		1.04	0.033	0.106	0.02835	0.00328	20.3	2		
KR22032	5/10/2022	7:50	KR20642	Baseline) Klamath River above Shovel Creek (RM 206.42;	PacifiCorp	0.5	P	9.591	7.913	122.198	10.94	17.97	7.65	56	2.97	1.32		<0.01	0.32	0.177		1.14	0.046	0.091	0.02557	<0.003	14.6	10		<0.15
KR22058	6/7/2022	6:40	KR20642	Baseline)	PacifiCorp	0.5	P	15.55	8.022	123.578	8.952	6.36	6.02	53.7	3.05	0.916		<0.01	0.14	0.115		0.68	0.101	0.125	0.02162	<0.003	7.38	5		<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
				Baseline)																										
KR22070	6/21/2022	8:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	18.65	8.446	121.482	9.168							<0.01	0.12			0.6	0.097	0.138						
KR22086	7/12/2022	15:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					5.01	4.21	62.9	2.31	0.779		<0.01	0.1	0.0978		0.89	0.076	0.118	0.01875	0.00876	4.05	7		<0.15
KR22098	7/26/2022	9:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P											0.019	0.31			1.09	0.184	0.244						
KR22114	8/9/2022	16:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					8.38	5.28	53.4	4.62	1.22		0.032	1	0.178		1.93	0.166	0.211	0.02481	0.00629	3.45	6		<0.15
KR22126	8/23/2022	8:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P											0.023	1.29			2.41	0.208	0.26						
KR22142	9/13/2022	16:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					8.47	6.02	54.9	6.04	1.07		0.049	1.06	0.158		2.43	0.175	0.236	0.02711	0.00989	3.87	4		<0.15
KR22154	9/27/2022	8:45	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.16	8.022	125.136	8.948							0.026	1.3			2.42	0.125	0.177						
KR22170	10/12/2022	16:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.06	8.956	128.132	9.986	2.82	2.70	64.1	3.62	0.53		0.01	0.75	<0.0789		1.2	0.114	0.147	0.01195	0.00459	1.76	<2.0		0.16
KR22196	11/15/2022	8:05	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	4.469	7.941	140.569	11.69	1.54	1.55	62	3.86	0.936		0.031	0.9	0.1049		1.63	0.022	0.099	0.01142	0.00328	10.5	7		
KR22218	12/7/2022	7:55	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	2.314	7.869	142.591	12.97	4.90	4.13			0.892				0.1032					0.01636	0.00814	10.8			
KR22007	4/26/2022	14:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					9.69	5.18																	
KR22006	4/26/2022	14:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	11.99	7.892	121.703	10.71	13.11	4.58		2.75	1.55		<0.01	0.43	0.21		0.95	0.029	0.084				11		
KR22008	4/26/2022	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	12.14	7.872	121.887	10.68	13.21	4.82		2.77	1.34		0.01	0.44	0.193		1.01	0.092	0.087				11		
KR22009	4/26/2022	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	P	8.366	6.699	119.072	8.637			51.8	2.87	1.21		0.1	0.43	0.144		0.95	0.038	0.082				10		
KR22029	5/10/2022	12:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					7.12	3.88																	<0.15
KR22028	5/10/2022	12:05	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	14.15	8.054	121.409	9.495	6.07	2.97		2.63	0.843		0.02	0.35	0.106		1.09	0.049	0.077				4		<0.15
KR22030	5/10/2022	12:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	1	P	13.7	8.169	121.794	9.525	7.90	3.32		2.6	0.933		0.02	0.35	0.121		1.08	0.045	0.074				5		
KR22031	5/10/2022	12:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	P	8.834	6.618	122.889	6.382			54.9	2.81	0.99		0.14	0.43	0.109		1.34	0.06	0.094				6		
KR22055	6/7/2022	11:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					16.13	2.08																	<0.15
KR22054	6/7/2022	11:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	19.91	8.514	126.095	10.45	8.46	1.86		2.74	0.76		<0.01	0.03	0.11		0.49	0.065	0.08				<2.0		<0.15
KR22056	6/7/2022	11:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P	14.41	6.925	124.184	5.182	2.22	2.27		2.76	0.578		0.02	0.19	<0.0789		0.59	0.095	0.092				2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Phycophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR22057	6/7/2022	11:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	23	P	11.36	6.757	123.187	2.472			50.3	2.67	0.948		0.02	0.44	0.105		0.8	0.082	0.108				3		
KR22083	7/12/2022	10:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					22.80	2.01																		0.88
KR22082	7/12/2022	9:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					795.58	7.66		4.04	39		<0.01	<0.01	8.48		9.44	0.062	1.1				101		46
KR22084	7/12/2022	10:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P					3.46	1.45		2.95	0.646		0.03	0.17	0.0855		0.52	0.114	0.149				3		
KR22085	7/12/2022	10:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	27	P							58.7	2.74	0.788		0.05	0.46	0.103		0.85	0.107	0.168				4		
KR22111	8/9/2022	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					58.00	3.26																		2.7
KR22110	8/9/2022	10:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					57.94	3.20		3.93	3.76		<0.01	<0.01	0.578		1.19	0.09	0.175						5
KR22112	8/9/2022	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P					6.31	1.74		3.14	0.62		<0.01	0.45	0.094		0.97	0.223	0.217						
KR22113	8/9/2022	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	24	P							61.3	2.74	0.557		0.13	0.23	<0.0789		0.71	0.165	0.193				<2.0		
KR22139	9/13/2022	10:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					29.06	1.14																		<0.15
KR22138	9/13/2022	10:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					89.74	0.46		4.79	9.28		<0.01	0.16	1.54		2.52		0.256				17		<0.15
KR22140	9/13/2022	10:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	P					2.63	1.75		4.92	0.786		0.12	0.5	0.0935		1.49	0.164	0.213				3		
KR22141	9/13/2022	10:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	24	P							65.4	3.05	0.649		0.47	<0.01	<0.0789		0.91	0.309	0.332				3		
KR22167	10/12/2022	10:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I																								0.2
KR22166	10/12/2022	10:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	17.43	9.066	54.3429	10.23	30.77	0.90		4.5	3.3		0.02	0.57	0.554		1.14	0.114	0.158				6		<0.15
KR22168	10/12/2022	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	21	P	15	7.129	135.702	0.747	8.95	0.84		4.67	0.7		0.21	0.71	0.0851		1.4	0.14	0.172	0.01651	0.00555		3		
KR22169	10/12/2022	10:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	P	12.28	6.762	154.823	0.026	2.77	1.84	72.7	3.36	0.871		0.69	0.14	0.117		1.03	0.471	0.434				5		
KR22215	12/7/2022	13:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.60	1.70																		
KR22214	12/7/2022	13:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	4.666	7.811	129.611	10.86	1.53	1.78			0.503				<0.0789											
KR22216	12/7/2022	14:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	1	P	4.68	7.798	129.471	10.83	1.63	1.81			0.476				<0.0789											
KR22217	12/7/2022	14:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	23	P	4.623	7.684	146.563	10.63					0.658				0.0864											
KR22005	4/26/2022	16:10	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	9.884	7.505	121.763	9.632	7.89	5.19	53.4	2.89	1.31		0.04	0.45	0.161		0.97	0.038	0.08				9		
KR22027	5/10/2022	14:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	12.39	8.053	122.982	9.78	7.19	3.88	55.9	2.73	1.47		0.04	0.36	0.138		1.02	0.047	0.1				8		<0.15
KR22053	6/7/2022	13:05	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	20.9	8.401	149.399	9.075	4.71	1.03	53.6	2.9	0.681		0.04	0.11	0.112		0.62	0.064	0.079				2		<0.15
KR22081	7/12/2022	11:55	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					16.21	1.51	61.7	3.23	1.18		<0.01	0.05	0.205		1.11	0.078	0.132				3		0.88

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR22109	8/9/2022	13:20	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					95.10	3.43	62.7	3.86	12.9		<0.01	<0.01	1.58		2.44	0.058	0.284						4.8
KR22137	9/13/2022	12:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					5.69	1.04	59.5	4.9	1.1		0.032	0.27	0.144		1.2	0.147	0.187				6		<0.15
KR22165	10/12/2022	12:40	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	17.72	8.547	126.919	8.415	3.23	1.17	62.4	4.71	0.634		0.067	0.63	0.0802		1.19	0.124	0.145				<2.0		<0.15
KR22191	11/15/2022	13:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	8.506	7.842	117.034	10.21	1.81	1.54	62	4.32	0.638		0.096	0.97	<0.0789		1.77	0.073	0.119				4		
KR22213	12/7/2022	12:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	4.67	7.89	141.441	11.07	2.07	2.38			0.913				0.0864										
KR22002	4/26/2022	12:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					7.11	3.54																	
KR22001	4/26/2022	11:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	13.5	7.977	104.202	10.49	9.24	2.97		2.92	0.959		0.01	0.49	0.147		0.97	0.042	0.075				6		
KR22003	4/26/2022	12:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	P	7.935	6.57	131.647	7.56	3.87	3.48		2.83	0.721		0.02	0.65	0.083		1.05	0.062	0.079				4		
KR22004	4/26/2022	12:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	40	P	5.86	6.49	139.564	5.834			67.6	2.71	0.501		0.02	0.86	<0.0789		1.3	0.062	0.08				<2.0		
KR22024	5/10/2022	9:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					9.63	3.85																	<0.15
KR22023	5/10/2022	9:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	12.53	7.872	127.518	9.83	6.50	2.92		2.76	0.877		<0.01	0.41	0.119		0.99	0.033	0.062				4		<0.15
KR22025	5/10/2022	10:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	12.53	7.872	127.566	9.845	5.06	2.64		1.76	0.764		<0.01	0.41	0.0993		0.94	0.033	0.058				5		
KR22026	5/10/2022	10:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	38	P	6.06	6.567	153.463	5.37			67.7	2.68	0.503		<0.01	0.9	<0.0789		1.45	0.068	0.086				2		
KR22050	6/7/2022	8:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					2.39	1.60																	<0.15
KR22049	6/7/2022	8:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	19.52	8.512	118.896	8.999	2.30	1.15		2.66	0.317		0.05	0.08	<0.0789		0.52	0.029	0.048				<2.0		<0.15
KR22051	6/7/2022	9:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	11	P	14.52	6.675	124.123	6.428	2.43	2.12		2.58	0.636		<0.01	0.2	<0.0789		0.54	0.056	0.066				<2.0		
KR22052	6/7/2022	9:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	42	P	7.08	6.374	150.82	1.308			61.7	2.68	0.46		<0.01	0.79	<0.0789		1.17	0.082	0.099				2		
KR22078	7/12/2022	7:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					11.46	1.42																	0.16
KR22077	7/12/2022	7:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					52.47	2.52		3.08	2.36		<0.01	<0.01	0.467		0.86	<0.01	0.091				5		0.24
KR22079	7/12/2022	8:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	12	P					2.78	1.33		2.82	0.522		0.01	0.08	0.0831		0.38	0.079	0.111				2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR22080	7/12/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	40	P							66	2.73	0.6		<0.01	1.04	0.117		1.48	0.081	0.11				2		
KR22106	8/9/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					7.51	0.70																	0.23
KR22105	8/9/2022	7:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					12.36	0.90		3.23	2.01		<0.01	<0.01	0.244		0.58	0.021	0.052				6		0.26
KR22107	8/9/2022	8:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	12	P					5.71	0.96		3.11	1		0.019	0.08	0.135		0.64	0.116	0.134				4		
KR22108	8/9/2022	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P							67.8	2.77	0.33		0.15	0.86	<0.0789		1.48	0.123	0.138						
KR22134	9/13/2022	7:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					9.73	0.87																	0.16
KR22133	9/13/2022	7:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					10.87	0.95		4.01	1.83		<0.01	<0.01	0.225		0.59	0.041	0.074				4		<0.15
KR22135	9/13/2022	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	16	P					5.09	1.02		4.02	1.06		0.071	0.1	0.144		0.87	0.126	0.162				<2.0		
KR22136	9/13/2022	8:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	42	P							68.2	2.88	0.45		0.41	0.72	<0.0789		1.47	0.145	0.186				2		
KR22162	10/12/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I																							0.21
KR22161	10/12/2022	7:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	18.42	9.607	128.101	10.85	12.98	0.46		4.1	0.895		0.012	<0.01	0.143		0.31	0.079	0.098				<2.0		<0.15
KR22163	10/12/2022	8:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	21	P	15.5	7.5	132.245	0.37	8.19	0.80		4.21	0.562		0.13	0.43	<0.0789		0.86	0.137	0.148				<2.0		
KR22164	10/12/2022	8:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P	7.05	6.374	159.322	0.015	2.41	0.92	72.3	2.73	0.461		0.43	0.58	<0.0789		1.21	0.147	0.179				<2.0		
KR22188	11/15/2022	10:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					3.15	0.91																	
KR22187	11/15/2022	9:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	11.05	7.833	145.64	6.857	3.47	0.94		4.12	0.484		0.18	0.64	<0.0789		1.33	0.103	0.118				<2.0		
KR22189	11/15/2022	10:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	24	P	10.2	7.278	148.426	3.636	1.36	1.21		3.85	0.4		0.24	0.65	<0.0789		1.24	0.108	0.136				<2.0		
KR22190	11/15/2022	10:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P	7.169	6.938	186.937	0.029			72	2.76	0.404		0.46	0.54	<0.0789		1.15	0.144	0.165				2		
KR22210	12/7/2022	10:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.98	0.77																	
KR22209	12/7/2022	9:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	6.789	7.611	146.688	8.556	1.64	0.86			0.406				<0.0789										
KR22211	12/7/2022	10:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	15	P	6.749	7.591	146.673	8.544	1.30	1.37			0.497				<0.0789										
KR22212	12/7/2022	10:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	42	P	5.747	7.589	148.184	9.39					0.634				<0.0789										
KR22000	4/26/2022	17:00	KR18973	Klamath River below Iron Gate Dam (RM	PacifiCorp	0.5	R	12.78	8.584	137.748	10.47	11.13	3.43	60.8	2.91	1.09		<0.01	0.5	0.166		1	0.034	0.078	0.02471	<0.003	10.6	6		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
				189.73; Baseline)																											
KR22022	5/10/2022	15:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	12.2	8.367	127.966	10.92	10.15	3.79	57.3	2.73	0.951		<0.01	0.42	0.133		1	0.034	0.07	0.01881	<0.003	10.8	5		
KR22048	6/7/2022	14:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	16.13	7.815	126.872	9.154	3.77	3.23	54.9	2.55	0.512		0.01	0.2	<0.0789		0.58	0.045	0.068	0.02179	<0.003	5.66	2		
KR22076	7/12/2022	13:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					4.30	2.34	63.2	2.8	0.641		<0.01	0.08	0.083		0.38	0.074	0.107	<0.003	<0.003	2.47	<2.0		<0.15
KR22104	8/9/2022	14:40	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					6.54	1.67	75	2.95	0.89		<0.01	0.09	0.111		0.6	0.122	0.138	0.01594	0.01104	2.4	5		<0.15
KR22132	9/13/2022	14:05	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					5.12	1.24	62.2	4.1	1.09		0.034	0.09	0.132		0.86	0.122	0.154	0.02418	0.00979	2.59	4		<0.15
KR22160	10/12/2022	14:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	17.5	9.044	129.43	9.157	2.20	0.91	64.1	4.29	0.52		0.08	0.42	<0.0789		0.82	0.143	0.136			1.59	<2.0		<0.15
KR22186	11/15/2022	14:30	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	11.02	7.862	145.238	9.279	2.49	1.20	66	4.19	0.486		0.16	0.67	<0.0789		2.09	0.104	0.139	0.00844	0.00705	1.78	<2.0		
KR22208	12/7/2022	15:50	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	6.735	7.643	147.501	11.09	1.18	1.09			0.396				<0.0789					0.00597	0.00958	2.15			
WA041322-OC	4/13/2022	12:14	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	8.948	8.24	172.5	11.4	2.90	7.30		3.9	1.13		<0.01	0.39			1.64	0.039	0.069				7.2		
WA051122-OC	5/11/2022	11:53	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	11.6	8.29	159.3	11.08	2.10	5.30		3.75	0.981		0.02	0.353			1	0.035	0.082				8.7		
WA060822-OC	6/8/2022	12:05	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	17.21	8.46	106.8	10.29	1.10	3.00		3.53	0.526		<0.01	0.142			0.647	0.039	0.07				4.8		<0.15
WA071322-OC	7/13/2022	11:34	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	23.43	8.52	159.6	9.43	0.80	2.40		3.84	0.738		0.025	<0.01			0.477	0.073	0.095				1.6		<0.15
WA091422-OC	9/14/2022	12:03	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	19.75	8.87	155.3	8.62	4.00	4.80		5.4	3.23		0.016	0.101			0.866	0.128	0.221				41		0.34
WA101222-OC	10/12/2022	12:03	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	16.55	8.38	168.7	9.38	1.20	3.00		4.04	1.2		0.012	0.252			0.967	0.139	0.19			2.9	16		0.15
WA110922-OC	11/9/2022	11:15	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.58	8.17	178.5	10.54	2.30	3.00		5.69	0.862		0.033	0.453			1.2	0.123	0.172				10		
WA121422-OC	12/14/2022	11:07	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	4.654	8.28	184	12.28	1.40	2.20		4.57	0.492		0.05	0.754			1.41	0.088	0.116				4.8		
SV041322-OC	4/13/2022	10:38	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	8.536	8.31	171.7	11.6	2.70	5.40		2.76	0.863		0.012	0.407	0.0922		1.13	0.027	0.049	0.0041	<0.0063	5	5.7		
SV051122-OC	5/11/2022	10:38	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	9.899	8.26	152.9	11.5	2.10	4.60		2.58	0.88		<0.01	0.231	0.0978		0.659	0.021	0.048	0.0046	<0.0063	4.6	4.8		
SV060822-OC	6/8/2022	10:56	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	16.37	8.4	151.8	10.34	1.60	4.20		2.65	0.777		0.021	0.068	0.0995		0.36	0.021	0.043	<0.003	<0.0063	2.6	4.2		<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Phycophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
SV071322-OC	7/13/2022	10:12	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	24.22	8.27	170	8.48	0.80	2.60		3.38	0.633		<0.01	<0.01			0.44	0.061	0.078	<0.003	<0.0063	1.6	2.2		<0.15
SV081022-OC	8/10/2022	11:02	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.73	7.98	179.9	8.14	2.90	3.00		4.22	2.78		0.035	0.07			0.702	0.164	0.291	0.106	0.0254	21	67		<0.15
SV091422-OC	9/14/2022	10:24	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	19.32	8.4	160.6	8.73	4.50	4.80		4.97	4.28		0.02	0.107			0.879	0.142	0.263	0.0899	0.0375	15	59		0.32
SV101222-OC	10/12/2022	10:32	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.78	8.36	175.9	9.8	2.80	2.90		4.44	1.39		0.013	0.204			0.79	0.127	0.183	0.0229	0.0131	4.4	21		<0.15
SV110922-OC	11/9/2022	10:00	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	9.621	8.19	187.9	10.87	4.30	5.60		4.98	1.97		0.017	0.425			1.49	0.173	0.196	0.0553	0.0417	6.7	46		
SV121422-OC	12/14/2022	9:57	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	3.991	8.25	196.7	12.69	2.30	3.00		4.29	0.552		0.017	0.684			1.28	0.078	0.113	0.0198	<0.0063	3.4	14		
HC041322-OC	4/13/2022	9:34	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	8.033	8.12	159.7	11.51	2.70	5.70		2.39	0.778		<0.01	0.293			1.07	0.018	0.037				2.5		
HC051122-OC	5/11/2022	9:40	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.16	8.04	135.9	11.36	2.10	3.70		1.92	0.535		<0.01	0.185			1.18	0.014	0.033				5.6		
HC060822-OC	6/8/2022	10:00	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.85	8.05	139.1	9.69	1.90	3.20		2.25	0.414		0.021	0.054			0.304	0.016	0.034				5.1		<0.15
HC071322-OC	7/13/2022	9:17	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	23.77	7.99	167.1	8.34	1.60	0.60		2.86	0.498		0.011	<0.01			0.311	0.052	0.067				1.6		<0.15
HC081022-OC	8/10/2022	9:51	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	21.83	7.94	180.9	8.44	2.40	3.00		3.88	3.53		0.066	0.112			0.77	0.164	0.28			23	75		<0.15
HC091422-OC	9/14/2022	9:32	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	19.6	8.19	160.9	8.84	5.30	5.90		4.4	3.86		0.024	0.132			0.847	0.177	0.289				69		0.29
HC101222-OC	10/12/2022	9:26	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.52	8.18	178.4	9.65	2.10	4.40		4.09	1.61		0.01	0.216			0.737	0.117	0.183			5.4	21		<0.15
HC110922-OC	11/9/2022	9:10	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.113	8.13	184.8	11.19	2.8	5		4.5	1.24		0.018	0.401			1.29	0.149	0.16				16		
HC121422-OC	12/14/2022	9:08	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	4.588	8.22	193.6	12.73	2.7	3.7		3.58	0.656		<0.01	0.583			1.06	0.062	0.085				6.8		
OR041322-OC	4/13/2022	7:55	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	7.916	8.03	128.9	12.06	2.4	4.1	62.8	1.65	0.364		0.014	0.187			0.503	0.01	0.021			2.5	2.3		
OR051122-OC	5/11/2022	8:16	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	8.945	7.97	109.7	11.93	1.9	2.4	54.8	2.15	0.637		<0.01	0.112			0.271	0.007	0.019			2.3	3.8		
OR060822-OC	6/8/2022	8:01	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	15.46	7.87	110.7	10.05	1.6	1.9	54.6	1.6	0.561		<0.01	0.04			0.181	0.009	0.024			1.8	5.9		<0.15
OR071322-OC	7/13/2022	7:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.74	7.99	152.8	8.26	1.6	1.4	72.2	2.08	0.425		0.02	<0.01			0.204	0.032	0.036			0.49	0.93		<0.15
OR081022-OC	8/10/2022	8:12	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	22.27	7.97	175.1	8.52	1.9	3.9	83	3.18	2.82		0.09	0.134			0.662	0.15	0.317			25	63		<0.15
OR091422-OC	9/14/2022	8:09	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	20.1	8.13	161.2	8.88	6.3	9.1	76	3.77	4.85		0.031	0.138			0.837	0.124	0.319			24	85		0.29
OR101222-OC	10/12/2022	7:56	KR05910	Klamath River at Orleans (USGS) (RM 59.1;	Karuk	0.5	P	16.43	8.16	173.8	9.59	3	2.6	82	3.39	1.34		<0.01	0.157			0.507	0.096	0.145			4.3	14		<0.15

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				Baseline)																											
OR110922-OC	11/9/2022	7:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	8.824	7.88	163.4	11.55	4	6.7	73.8	4.18	2.07		<0.01	0.234			0.881	0.062	0.119			4.3	22		
OR121422-OC	12/14/2022	7:43	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	5.071	8.16	172.6	12.84	2.7	2.8	78.4	3.62	0.705		<0.01	0.391			0.746	0.036	0.051			2.4	4.9		
WE041222-OC	4/12/2022	10:34	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	8.457	7.9	127.3	12.52	2.26	2.8		2.09	0.912		0.015	0.132	0.124		0.297	0.01	0.03			1.68	3.2		
WE051122-OC	5/11/2022	10:55	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.207	7.96	110.8	11.93	<1	1.1		1.51	0.426		0.015	0.098	<0.0789		0.183	0.009	0.026			1.59	3.5		
WE052522-OC	5/25/2022	10:30	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE060822-OC	6/8/2022	10:59	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	15.94	9.63	114.1	10.34	1.63	2.21		1.82	0.465		0.012	0.018	<0.0789		0.165	0.013	0.032			1.32	4		<0.15
WE062222-OC	6/22/2022	10:16	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE071322-OC	7/13/2022	10:43	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	23.1	8.14	155.5	8.87	<1	<1		1.97	0.284		<0.012	<0.016	<0.0789		0.148	0.028	0.064			0.39	<2		<0.15
WE072722-OC	7/27/2022	10:03	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE081022-OC	8/10/2022	10:04	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	21.39	8.04	176.9	8.51	1.05	2.67		2.76	3.59		0.114	0.157	0.269		0.669	0.158	0.253			34.43	54.8		<0.15
WE082422-OC	8/24/2022	10:35	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE091422-OC	9/14/2022	10:28	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	19.88	8.04	192.78	8.5	9.33	14.4		3.42	3		<0.012	<0.016	0.248		0.672	0.09	0.204			22.18	37.6		<0.15
WE092822-OC	9/28/2022	10:13	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE101222-OC	10/12/2022	11:20	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.21	8.12	176.4	10.06	<1	1.65		3.13	0.928		<0.012	0.171	<0.0789		0.533	0.086	0.107			6.03	9.5		0.16
WE110922-OC	11/9/2022	12:04	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.284	7.92	162.6	11.6				3.15	0.954		<0.012	0.297	<0.0789		0.588	0.056	0.095			5.77	10.1		
WE121422-OC	12/14/2022	12:47	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	5.439	8.12	172.3	12.93				2.43			<0.012	0.334			0.552	0.038	0.048			4.23	4.24		
TC041222-OC	4/12/2022	9:30	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.067	7.94	134	11.96	<1	<1		1.66	0.521		<0.012	0.089	<0.0789		0.277	0.007	0.023			1.47	3		
TC051122-OC	5/11/2022	9:59	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.389	7.88	118.9	11.69	<1	<1		1.46	0.353		<0.012	0.077	<0.0789		0.143	0.008	0.025			2.04	3.1		
TC060822-OC	6/8/2022	9:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	16.12	9.39	121.4	9.96	1.35	1.8		1.71	0.473		0.013	<0.016	<0.0789		0.138	0.009	0.028			1.37	6.6		<0.15
TC062222-OC	6/22/2022	9:08	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC071322-OC	7/13/2022	9:41	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.8	7.99	160.3	8.4	<1	<1		1.63	0.234		0.012	<0.016	<0.0789		0.118	0.019	0.037			1.58	<2		<0.15
TC072722-OC	7/27/2022	9:03	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC081022-OC	8/10/2022	8:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	21.55	8.05	177.1	8.37	1.56	2.85		2.3	2.5		0.075	0.095	0.186		0.536	0.111	0.193			26.75	39.7		<0.15
TC082422-OC	8/24/2022	9:22	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
TC091422-OC	9/14/2022	9:11	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	19.13	8.07	157.3	8.91	6.72	8.87		2.88	2.16		<0.012	<0.016	0.179		0.494	0.068	0.138			15.05	27.4		<0.15
TC092822-OC	9/28/2022	8:59	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC101222-OC	10/12/2022	9:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	16.82	8.08	175.9	9.77	1.47	2.2		2.44	0.755		<0.012	0.068	<0.0789		0.373	0.039	0.064			4.3	8.5		<0.15
TC110922-OC	11/9/2022	10:56	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.6	8.07	169.7	11.4				3.57	0.847		<0.012	0.193	<0.0789		0.432	0.038	0.059			4.03	8.1		
TC121422-OC	12/14/2022	11:53	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	5.802	8.1	180.3	12.76				2.34			<0.012	0.28			0.421	0.021	0.033			2.36	3.98		
TG041222-OC	4/12/2022	7:13	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	9.911	7.44	134	10.68	<1	<1		1.59	0.848		0.017	0.114	0.0844		0.259	0.006	0.03	0.01517	<0.003	1.21	6.2		
TG051122-OC	5/11/2022	7:39	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	9.721	7.65	114.6	11.25	<1	<1		1.49	0.39		0.012	0.091	<0.0789		0.127	0.009	<0.018	0.00596	<0.003	7.36	5.5		
TG052422-OC	5/24/2022	11:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG060722-OC	6/7/2022	9:38	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	15.79	8.79	116.4	10.14																1.37			<0.15
TG060822-OC	6/8/2022	7:47	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	15.97	8.95	120.8	9.66	<1	1.27		1.65	0.326		0.021	0.037	<0.0789		0.144	0.017	0.028			10.43	7.1		
TG062122-OC	6/21/2022	10:32	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG071222-OC	7/12/2022	13:16	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	23.1	8.76	157.1	11.84																0.75			<0.15
TG071322-OC	7/13/2022	7:26	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.06	7.65	159.7	7.22	1.19	1.69		1.36	0.296		0.018	0.04	<0.0789		0.163	0.012	0.027	0.00657	<0.003	1.186	<2		
TG072622-OC	7/26/2022	12:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG080922-OC	8/9/2022	12:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG081022-OC	8/10/2022	6:58	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	19.86	7.59	179.1	6.86	1.42	3.2		2.09	1.64		0.105	0.143	0.13		0.573	0.119	0.191	0.1081	0.04841	49.31	23.8		
TG082322-OC	8/23/2022	10:47	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG091322-OC	9/13/2022	11:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	20.43	8.27	164.3	9.7																5.36			<0.15
TG091422-OC	9/14/2022	7:17	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	19.07	7.78	161	7.59	30.6	25		2.74	1.98		0.039	<0.016	0.187		0.506	0.087	0.136	0.08204	0.03451	30.32	18.3		
TG092722-OC	9/27/2022	11:06	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG101122-OC	10/11/2022	13:08	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	14.38	9.06	173	13.39																1.19			<0.15
TG101222-OC	10/12/2022	7:15	KR00600	Klamath River near Klamath (RM 6.0;	Yurok	0.5	P	16.57	7.88	175.9	8.51	2.68	3.71		2.15	0.421		0.013	0.056	<0.0789		0.289	0.038	0.051	0.01151	0.00331	104.1	2.9		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Phycophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
				Baseline)																											
TG110922-OC	11/9/2022	8:00	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	10.56	7.62	165.9	9.39				2.87	1.01		0.024	0.275	0.102		0.495	0.03	0.058	0.03115	0.01214	12.24	9.2			
TG121422-OC	12/14/2022	8:42	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	6.209	7.47	168.7	11.14				2.02			0.014	0.304			0.414	0.017	0.023			2.01	2.93			
LES041222-OC	4/12/2022	6:38	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.13	7.67	127.9	10.87	<1	1.15		1.64	0.577		0.032	0.139	<0.0789		0.314	0.014	0.044			1.16	4.5			
LES051122-OC	5/11/2022	7:00	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	9.672	7.84	118.9	11.24	<1	1.15		1.47	0.631		0.016	0.098	<0.0789		0.187	0.007	<0.018			2.49	8.8			
LES052422-OC	5/24/2022	10:15	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES060722-OC	6/7/2022	10:06	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.46	8.65	113.5	10.13																4.48				<0.15
LES060822-OC	6/8/2022	6:57	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.58	9.27	122.1	9.52	1.28	1.71		1.6	0.498		0.015	0.036	<0.0789		0.151	0.012	0.025			1.06	5.5			
LES062122-OC	6/21/2022	0:50	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES071222-OC	7/12/2022	13:50	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	22.07	7.87	1122	8.54																0.31				<0.15
LES071322-OC	7/13/2022	6:47	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.19	7.57	5582	7.7	1.03	<1		<0.4	0.334		0.027	0.016	<0.0789		<0.06	0.015	0.047			0.46	<2			
LES072622-OC	7/26/2022	11:36	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES080922-OC	8/9/2022	11:36	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES081022-OC	8/10/2022	6:04	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.48	7.56	4749	6.95	<1	2.04		0.718	1.2		0.142	0.106	0.102		0.267	0.137	0.179			20.28	19.4			
LES082322-OC	8/23/2022	11:20	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES091322-OC	9/13/2022	12:08	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.75	7.85	7387	7.97																3.68				<0.15
LES091422-OC	9/14/2022	6:34	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.18	7.89	3030	8.11	7.37	12.40		0.666	0.835		0.014	<0.016	<0.0789		0.2	0.033	0.088			4.25	6.5			
LES092722-OC	9/27/2022	12:01	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																								<0.15
LES101122-OC	10/11/2022	13:48	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	17.42	8.02	4565	9.73																1.1				
LES101222-OC	10/12/2022	6:29	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	16.63	8.04	2791	9.63	1.33	2.53		0.622	0.753		0.029	0.035	<0.0789		0.185	0.044	0.056			1.34	4.6			
LES110922-OC	11/9/2022	7:23	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.4	7.57	1514	9.96				1.34	1.35		0.024	0.344	0.0979		0.317	0.032	0.082			4.2	6.9			
LES121422-OC	12/14/2022	7:30	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	6.55	7.63	214.8	11.69				2.12			0.014	0.345			0.46	0.018	0.028			3.99	3.65			
SH041322-OC	4/13/2022	13:12	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	9.576	8.68	497.1	11.17	2.7	3.6		3.34	0.63		<0.01	0.155			0.589	0.15	0.187			2.5	8			
SH051122-OC	5/11/2022	12:41	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	12.19	8.72	564	11.36	3.2	0.5		5.3	0.447		<0.01	<0.01			0.502	0.168	0.187			1.7	1.8			
SH060822-OC	6/8/2022	13:05	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P					2.1	0.3		4.26	0.355		<0.01	<0.01			0.335	0.162	0.221			4.8	1.9			
SH071322-OC	7/13/2022	12:35	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	25	8.58	470.3	9.46	0.8	1.6		3.43	0.461		<0.01	<0.01			0.273	0.196	0.224			1.2	1.8			
SH081022-OC	8/10/2022	13:38	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	22.49	8.72	456.3	10.24	0.8	1.8		3.38	0.44		<0.01	<0.01			0.223	0.16	0.166			1.2	2.7			

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Phycophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
SH091422-OC	9/14/2022	13:19	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	18.56	8.74	473	10.41	2.7	0.7		3.43	0.275		<0.01	<0.01			0.303	0.199	0.225			1.2	2.1		
SH101222-OC	10/12/2022	13:45	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	13.71	8.63	417.8	10.5	2.7	2.4		1.68	0.699		<0.01	0.017			0.175	0.182	0.189			2.3	8.2		
SH110922-OC	11/9/2022	11:50	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	7.713	8.55	414.2	11.43	3.7	3.4		2.59	0.992		<0.01	0.115			1.24	0.203	0.22			2.1	11		
SH121422-OC	12/14/2022	11:50	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	4.432	8.59	417.8	12.45	4.3	3.3		2.01	1		<0.01	0.286			0.54	0.217	0.562			2.5	10		
SC041322-OC	4/13/2022	11:19	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	7.404	8.36	164.5	11.73	2.4	2.1		1.87	0.299		<0.01	0.386			0.546	<0.001	0.009			1.2	2		
SC051122-OC	5/11/2022	11:23	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	8.832	8.28	134.8	11.53	2.4	1.1		1.9	0.377		<0.01	0.124			0.301	0.003	0.049			1.7	2.8		
SC060822-OC	6/8/2022	11:40	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	15.05	8.4	133.5	10.05	1.3	2		1.92	0.382		0.046	0.02			0.135	<0.001	0.008			1.5	2.3		
SC071322-OC	7/13/2022	10:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	23.1	8.35	201.1	8.83	1.3	0.7		1.19	0.431		0.017	<0.01			0.134	<0.001	0.007			0.33	0.8		
SC081022-OC	8/10/2022	11:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	22.48	9.53	228.3	8.5	1.1	1.4		1.82	0.494		<0.01	<0.01			0.111	<0.001	0.009			0.37	0.8		
SC091422-OC	9/14/2022	11:00	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	18.58	8.46	250.8	9.61	0.9	1.6		1.22	0.198		<0.01	<0.01			0.105	0.003	0.009			0.27	0.67		
SC101222-OC	10/12/2022	11:14	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	13.94	8.49	259.9	10.64	3.9	1.4		1.37	0.616		<0.01	<0.01			0.067	0.001	0.017			0.41	6.4		
SC110922-OC	11/9/2022	10:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	7.858	8.41	238.3	11.82	1.8	0.5		2.37	0.287		<0.01	0.01			0.21	0.001	0.004			0.33	<0.5		
SC121422-OC	12/14/2022	10:37	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	1.969	8.53	255	13.79	2.8	0.8		1.55	0.284		<0.01	0.117			0.191	0.009	0.009			0.41	0.8		
SA041322-OC	4/13/2022	8:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	6.097	7.89	83.7	12.38	1.3	1.8		1.1	0.285		<0.01	0.08			0.083	0.001	0.008			0.15	0.75		
SA051122-OC	5/11/2022	8:38	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	7.284	7.89	81.1	12.24	1.6	0.6		0.994	0.382		<0.01	0.078			0.194	0.001	0.007			1.1	2		
SA060822-OC	6/8/2022	8:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	14.03	7.85	76.5	10.28	1.1	1.5		1.27	0.365		0.012	0.052			0.105	0.002	0.009			1.1	2.4		
SA071322-OC	7/13/2022	8:18	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	20.86	7.79	115.5	8.71	1.1	1.2		0.96	0.421		0.01	<0.01			0.063	<0.001	0.007			0.32	0.8		
SA081022-OC	8/10/2022	8:52	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	19.49	7.89	133.9	8.85	1.1	2.3		1.56	0.831		<0.01	0.026			0.079	0.016	0.034			2.6	6.8		
SA091422-OC	9/14/2022	7:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	17.53	7.91	144.5	8.84	1.4	1.8		0.968	0.347		<0.01	<0.01			0.106	<0.001	0.007			0.33	1.7		
SA101222-OC	10/12/2022	8:27	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	13.94	7.96	146.2	9.76	5.2	2.8		0.669	1.19		<0.01	<0.01			0.071	0.002	0.034			0.78	14		
SA110922-OC	11/9/2022	8:15	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	8.206	7.93	130.5	11.44	6.8	4.8		2.42	2.42		<0.01	0.089			0.572	0.004	0.043			2.8	15		
SA121422-OC	12/14/2022	8:08	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	3.388	8.05	137.8	12.99	4.1	0.8		1.24	0.468		<0.01	0.139			0.192	<0.001	0.005			0.58	2.3		
TR041222-OC	4/12/2022	10:15	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.2	7.84	152.4	11.59	<1	<1		1.45	0.3		0.013	0.026	<0.0789		0.093	<0.006	<0.018			0.55	<2		
TR051122-OC	5/11/2022	10:40	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.48	7.88	136.4	11.41	<1	<1		1.42	0.296		0.013	0.035	<0.0789		0.181	<0.006	<0.018			2.9	2.3		
TR052522-OC	5/25/2022	10:05	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR060822-OC	6/8/2022	10:42	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	17.07	9.29	140.6	9.8	<1	<1		1.35	0.252		0.013	<0.016	<0.0789		0.098	0.01	<0.018			7.37	4.3		
TR062222-OC	6/22/2022	9:58	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR071322-OC	7/13/2022	10:28	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	23.53	8.05	172.8	8.58	<1	<1		1.32			0.012	<0.016			0.062	<0.006	<0.018			0.830	<2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
TR072722-OC	7/27/2022	9:49	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																								<0.15
TR081022-OC	8/10/2022	9:48	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.58	8.38	175.4	9.41	<1	<1		1.41			<0.012	<0.016			0.077	<0.006	<0.018			3.950	<2		
TR082422-OC	8/24/2022	10:19	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																								<0.15
TR091422-OC	9/14/2022	10:09	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	18.7	8.03	150.3	9.45	13.4	11.2		1.39			0.036	<0.016			0.163	<0.006	<0.018			5.190	#####		
TR092822-OC	9/28/2022	9:52	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																								<0.15
TR101222-OC	10/12/2022	10:56	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	16.86	8.28	175.8	10.36	1.07	1.56		1.29			0.014	<0.016			0.106	<0.006	<0.018			4.760	9.100		
TR110922-OC	11/9/2022	11:47	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	11.13	8.1	189.4	11.37				2.38			0.014	0.070			0.170	<0.006	0.019			3.700	<2		
TR121422-OC	12/14/2022	12:32	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	6.107	8	164.9	12.66				2.03			<0.012	0.169			0.235	<0.006	<0.018			4.650	2.370		

End of Errata

KLAMATH RIVER WATER QUALITY SAMPLING
2022 ANNUAL REPORT

Prepared for the
KHSA Water Quality Monitoring Group

Prepared by
Watercourse Engineering, Inc.
July 5, 2023

Photo: Grant Johnson

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1. Introduction

On November 13, 2008, the United States, the states of California and Oregon, and PacifiCorp executed an Agreement in Principle (AIP) describing a framework for possible removal of four of PacifiCorp's dams on the Klamath River. Interim Measure 12 of the AIP stipulated a water quality monitoring program, including on-going monitoring of cyanobacteria (blue-green algae) and associated toxins. The Klamath Hydroelectric Settlement Agreement (KHSA), signed on February 18, 2010 (subsequently amended on April 6, 2016), superseded the AIP. Interim Measure 15 (IM 15) - Water Quality Monitoring states that PacifiCorp shall fund ($500,000 per year) long-term baseline water quality monitoring to support water quality improvement activities, dam removal studies, permitting studies, and form a long-term record to assess trends and other potential changes in the basin. This includes funding for cyanobacteria and cyanobacteria-generated toxin monitoring to protect public health. Monitoring is performed by entities agreed upon by the parties to the KHSA and in consultation with the appropriate water quality agencies. The 2022 water quality monitoring program conducted under IM 15 represents the fourteenth year of water quality monitoring under the AIP and the KHSA.

The monitoring program is a cooperative effort of the KHSA Monitoring Group.[1] This group developed the KHSA IM 15 monitoring study plan, which is located on PacifiCorp's Klamath website,[2] as well as the Klamath Basin Monitoring Program (KBMP) website.[3] Actual monitoring is completed by a sub-set of the Monitoring Group that includes the Yurok Tribe, the Karuk Tribe, PacifiCorp, and the Oregon Department of Environmental Quality. The program continues to collect data from sites along 254 miles of river and reservoirs from Link River Dam near Klamath Falls in Oregon to the Klamath River Estuary in California. Annual planning and coordination meetings include the IM 15 Monitoring Group and interested stakeholders. The IM 15 Monitoring Group ensures the intent of IM 15 is met, appropriate quality assurance protocols and standard operating procedures are in place, water quality conditions and sampling matters are tracked in a timely fashion, and the process is transparent.

This report summarizes the results from the 2022 baseline and public health data collection efforts. Four appendices accompany this report: the 2022 baseline sampling locations (Appendix A); the 2022 baseline grab sample results and field measurements (Appendix B); the 2022 phytoplankton species charts and biovolume graphs (Appendix C); and the 2022 public health data (Appendix D).

[1] The KHSA Monitoring Group consists of representatives from the North Coast Regional Water Quality Control Board; Oregon Department of Environmental Quality; U.S. Environmental Protection Agency, Region IX; Karuk Tribe; Yurok Tribe; PacifiCorp; and U.S. Bureau of Reclamation.

[2] https://www.pacificorp.com/energy/hydro/klamath-river.html

[3] http://kbmp.net/collaboration/klamath-hydroelectric-settlement-agreement-monitoring

2. Program Elements

The primary elements of the 2022 IM 15 monitoring program included baseline and public health monitoring conducted from April through December 2022. The baseline water quality monitoring element included water quality grab samples, physical observations associated with these grab samples, water quality probe measurements, and phytoplankton (algae) species data. The grab samples were collected for analytical determination of a suite of water quality constituents (Section 5.1). The water quality probes recorded observations at hourly or sub-hourly intervals. Parameters sampled by probes included water temperature, dissolved oxygen, specific conductivity, and pH at specific locations in the Klamath River (Table 1). The phytoplankton (algae) data in the baseline monitoring element included algae species identification and quantification from samples collected at each sampling location. The grab sample, water quality probe data, and algae species quantification are presented in this report and are available in electronic form.[4]

The 2022 public health monitoring program consisted of algal toxin sampling. These results were presented in public health memoranda produced by the sampling entities throughout the season.[5] These memoranda were used to track toxin conditions and supported management decisions to post and de-post reservoir and river reaches with public health advisory information. A summary of the 2022 public health monitoring program data is presented herein.

To provide transparency, the KBMP website provides access to reports from previous years, associated program documents, and other materials and features that are directly transferable to the IM 15 monitoring program. There are other Klamath River monitoring efforts outside of the IM 15 program that are sponsored by individual entities, including those that participate in the IM 15 program. However, only data collected under the IM 15 are included in this report.

[4] https://www.pacificorp.com/energy/hydro/klamath-river.html

[5] PacifiCorp public health memoranda are available online at https://www.pacificorp.com/energy/hydro/klamath-river.html. All memoranda (including those from the Karuk and Yurok tribes) are available online at: http://www.kbmp.net/bga

3. Baseline Program Water Quality Sampling

In 2022, baseline sampling was conducted at 22 sites along the Klamath River and its tributaries, from Link River Dam to the Klamath River Estuary (Figure 1), by the three sampling entities: PacifiCorp, Karuk Tribe, and Yurok Tribe. Fifteen of those sites were located on the mainstem of the Klamath River, three sites were located in reservoirs on the Klamath River, and four sites were located on major tributaries of the Klamath River (Shasta, Scott, Salmon, and Trinity rivers). Sampling locations, sampling frequency, and sampling entity varied across the study area (Table 1).

Discrete physical parameters (water temperature, dissolved oxygen, specific conductivity, and pH) were collected at all sites when grab samples were collected during the sampling year. Continuous physical parameter data were collected at four sites, three of which are baseline program sites and one of which is at a non-baseline program location near a baseline program site. Sondes were deployed to collect continuous data (e.g., hourly frequency) for physical parameters at the following baseline program sites: Link Dam (RM 254.44; Baseline) (maintained by USGS, with USBR providing funding and oversight for its maintenance and deployment), Klamath River below Iron Gate Dam (RM 189.73; Baseline) (maintained by PacifiCorp), and Klamath River below Seiad (RM 128.5; Baseline) (maintained by the Karuk Tribe).

The non-baseline program location for sonde deployment was Klamath River above Keno Dam, at River Mile 234.9, just upstream of baseline program location Klamath River below Keno Dam near a U.S. Geological Survey (USGS) gage (RM 233.4; Baseline). Two sondes, (1) surface and (2) bottom, were maintained by USGS, with USBR providing funding and oversight for its maintenance and deployment. Data from the (1) surface sonde was used herein. While water quality conditions data collected upstream of Keno Dam can differ from water quality conditions downstream of the dam, as conditions can differ in Keno Reservoir and in the Klamath River downstream of Keno Dam, the sonde provided data to illustrate conditions at the downstream end of the reservoir prior to water being released to Klamath River.

Except for three sites, grab samples of all other baseline water quality constituents were collected monthly (Table 1). At Link Dam (RM 254.44; Baseline) samples were collected bi-monthly from May through October and monthly for the remainder of the sampling season. At the Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline) and Klamath River above Shovel Creek (RM 206.42; Baseline) sites samples were collected bi-monthly from June through September and monthly for the remainder of the sampling season.

The following constituents were analyzed in 2022: inorganic nitrogen (total nitrogen, nitrate+nitrite, and ammonia), particulate nitrogen, particulate phosphorus, particulate inorganic phosphorus, inorganic phosphorus (total phosphorus and orthophosphate), particulate carbon, dissolved organic carbon, total suspended solids, turbidity, chlorophyll-*a*, pheophytin, and microcystin. Phytoplankton species samples were also

collected. Not all parameters were analyzed for samples from every site (Table 1). Data results from the 2022 baseline grab samples are presented in Appendix B.

The baseline program has gone through several revisions throughout its implementation. In 2016, the IM 15 sampling program substantially exceeded the available budget, and therefore changes were made in late 2016 to control costs in future years. From 2017-2019, program costs increased steadily despite these changes. In 2021, the IM 15 baseline sampling program was revised again to control costs. In 2022, baseline sampling was consistent with 2021 sampling.

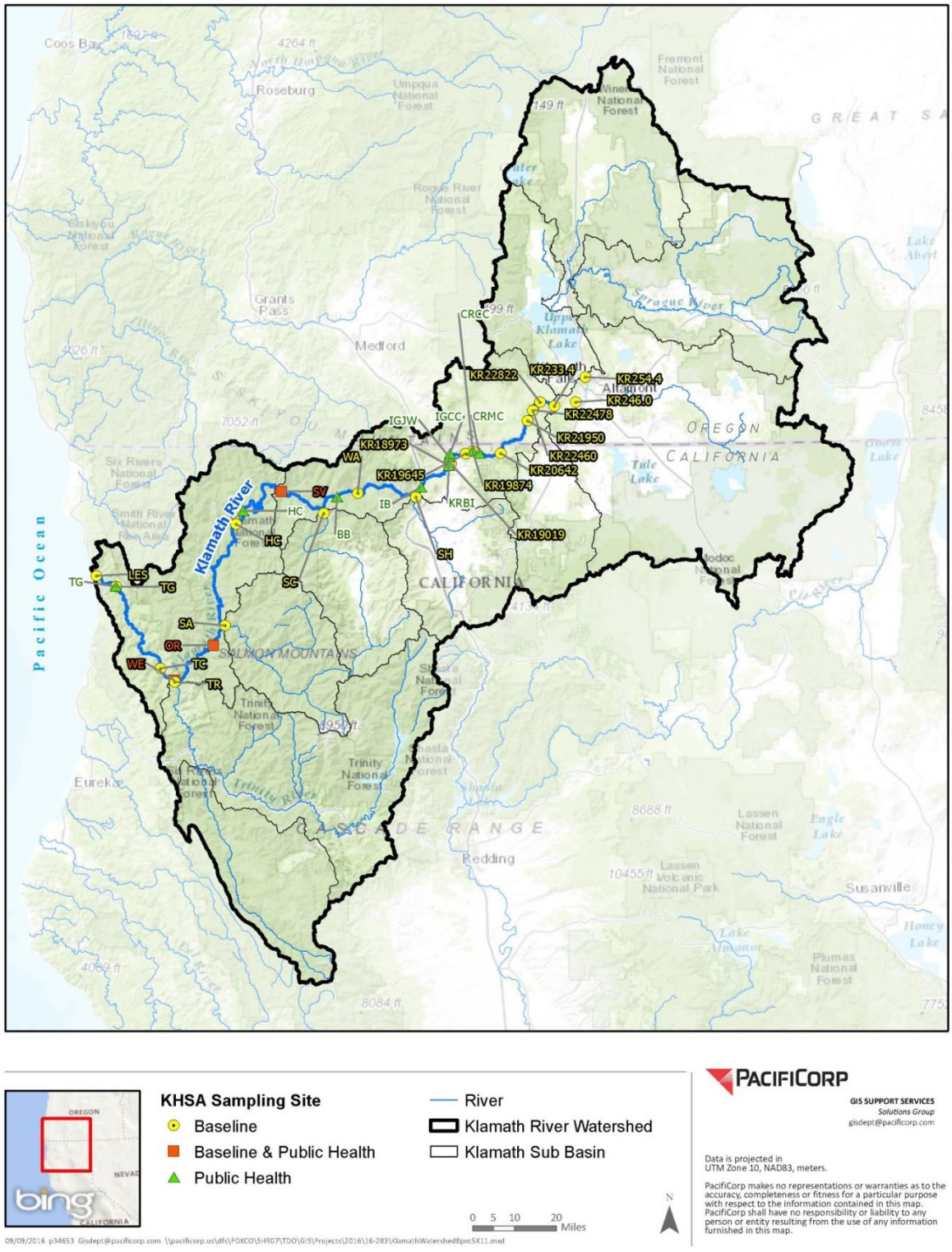

Figure 1. 2022 KHSA Klamath River baseline monitoring and public health sampling sites

Table 1. 2022 Baseline monitoring locations, sampling frequency, and sampling entities.

Site ID	Monitoring Location	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH (log(H+))	Conductance (@ S/cm)	Total N (mg/l)	Ammonia N (mg/l)	Nitrite + Nitrate (mg/l)	Total P (mg/L)	Ortho P (mg/L)	Particulate P & Particulate Inorganic P (mg/l)	Dissolved Organic N & P (mg/l)	Particulate and Dissolved C (mg/l)	Particulate N (mg/l)	TSS (mg/l)	Alkalinity (mg/l)	Water Column chl_a/Pheo (µg/l)	Phytoplankton species	Microcystin (µg/l)	LCMS confirmation	Turbidity (NTU)	Sampling Entity
Sampling Method:		*T, P*	*P*	*P*	*P*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	*G*	
KR25444	**Link Dam (RM 254.44; Baseline)**	H	H	H	H	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	A1/BM	BM/S	-	A1/BM2	**PacifiCorp**
KR24600	**Keno Reservoir at Miller Island (RM 246.0; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	A1	M/S	M/S	-	A1	**PacifiCorp**
KR23340	**Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)**	H	D	D	D	A1/BM2	A1/BM2	A1/BM2	A1/BM2	A1/BM2	A1	-	A1	A1	A1	A1/BM2	A1	M/S	M/S	-	A1/BM2	**PacifiCorp**
KR22822	**Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)**					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**Dropped**
KR22478	**J.C. Boyle Reservoir (RM 224.78; Baseline)[a]**					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**Dropped**
KR22460	**Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)**	H	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	A1	M/S	M/S	-	-	**PacifiCorp**
KR21950	**Klamath River below USGS Gage (RM 219.50; Baseline)**	H	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	A1	M/S	M/S	-	A1	**PacifiCorp**
KR20642	**Klamath River above Shovel Creek (RM 206.42; Baseline)**	H	D	D	D	A1/BM2	A1/BM2	A1/BM2	A1/BM2	A1/BM2	A1	-	A1	A1	A1	A1	A1	M/S	M/S	-	A1	**PacifiCorp**
KR19874	**Copco Reservoir (RM 198.74; Baseline)**	VP	VP	VP	VP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**PacifiCorp**
	Copco Res 0.5 m from Surface					A1	A1	A1	A1	A1	-	-	A1	-	A1	-	A1	M/S	M/S	-	-	**PacifiCorp**
	Copco Res Thermocline					A1	A1	A1	A1	A1	-	-	A1	-	A1	-	A1	-	-	-	-	**PacifiCorp**
	Copco Res 1 m from Bottom					A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	-	-	-	-	-	**PacifiCorp**
	Copco Res 0-8 m Integrated					-	-	-	-	-	-	-	-	-	-	-	A1	M/S	M/S	-	-	**PacifiCorp**
KR19645	**Klamath River below Copco Dam (RM 196.45; Baseline)[b]**	H	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	A1	M/S	M/S	-	-	**PacifiCorp**
KR19019	**Iron Gate Reservoir (RM 190.19; Baseline)**	VP	VP	VP	VP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**PacifiCorp**
	Iron Gate Res 0.5 m from Surface					A1	A1	A1	A1	A1	-	-	A1	-	A1	-	A1	M/S	M/S	-	-	**PacifiCorp**
	Iron Gate Res Thermocline					A1	A1	A1	A1	A1	-	-	A1	-	A1	-	A1	-	-	-	-	**PacifiCorp**
	Iron Gate Res 1 m from Bottom					A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	-	-	-	-	-	**PacifiCorp**
	Iron Gate Res 0-8 m Integrated					-	-	-	-	-	-	-	-	-	-	-	A1	M/S	M/S	-	-	**PacifiCorp**
KR18973	**Klamath River below Iron Gate Dam (RM 189.73; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	A1	-	A1	A1	A1	A1	A1	A1	S2	-	A1	**PacifiCorp**
KR15626	**Klamath River at Walker Bridge (RM 156.26; Baseline)**	H	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	S3	S3	S2	-	**Karuk**
KR12850	**Klamath River below Seiad (RM 128.5; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	A1	-	A1	A1	A1	*	A1	S3	S3	-	A1	**Karuk**
KR10130	**Klamath River below Happy Camp (RM 101.3; Baseline)**	H	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	S3	S3	-	-	**Karuk**
KR05910	**Klamath River at Orleans (USGS) (RM 59.1; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	A1	A1	S3	S3	-	A1	**Karuk**
KR04350	**Klamath River at Weitchpec (RM 43.5; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	S3	S3	-	-	**Yurok**
KR03850	**Klamath River below Trinity River (RM 38.5; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	S3	S3	-	-	**Yurok**
KR00600	**Klamath River near Klamath (RM 6.0; Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	A1	-	A1	A1	A1	*	A1	S3	S3	-	A1	**Yurok**
KR00050	**Klamath River Estuary (RM 0.5; Baseline)[c]**	HP	D	D	D	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	S3	S3	-	-	**Yurok**
SA00000	**Salmon River near mouth (Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	*	-	-	A1	**Karuk**
SC00000	**Scott River near mouth (Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	*	-	-	A1	**Karuk**
SH00000	**Shasta River near mouth (Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	*	-	-	A1	**Karuk**
TR00000	**Trinity River near mouth (Baseline)**	H	H	H	H	A1	A1	A1	A1	A1	-	-	A1	-	A1	*	A1	*	-	-	A1	**Yurok**

Notes:
[a] Sampling at one depth in J.C. Boyle reservoir (0.5 m depth = surface)
[b] Sampling at three depths in Copco Reservoir (0.5 m below surface, thermocline, and 0.5 m above bottom)
[c] Sampling at three depths in Iron Gate Reservoir (0.5 m below surface, thermocline, and 0.5 m above bottom)
[d] Continuously deployed sonde is located two miles upstream of this site at Klamath above Turwar (RM8.0)
[e] Hourly measurements at four locations (two in lower estuary, one in mid-estuary, and one in upper estuary) at two depths (0.5 m below surface and 0.5 m above bottom)
Key:
Sampling Method
T – Thermistor
P – Probe or data sonde
G – Grab sample
Sampling Frequency Codes
VP – vertical profile at stated sampling frequency
H – hourly measurements by sondes (in some instances sub-hourly data may be collected)
D – Discrete sample
HP - Hourly measurements in a profile
- = Not Sampled
***** = Not sampled. Parameter covered at M/S frequency by Tribal WQ Workgroup
A1 = Monthly sampling April - December
A1/BM = Bimonthly sampling May - October, and monthly sampling April, November & December
A1/BM2 = Bimonthly sampling June - September, and monthly sampling April, May, October, November & December
BM/S = Bimonthly sampling July - October
M/S = Monthly seasonal sampling May - October
S2 = Monthly seasonal sampling July - October
S3 = Monthly seasonal sampling June - October

4. Public Health Sampling

To determine the potential risks to public health resulting from exposure to cyanobacteria and the toxins they produce in the Klamath River, public health monitoring included water column and shoreline water sampling of microcystin within Upper Klamath Lake, the Klamath River, and Copco and Iron Gate reservoirs. Several species of cyanobacteria have been documented in the Klamath River, including but not limited to *Aphanizomenon flos aquae* (AFA)*, Microcystis aeruginosa* (MSAE)*, Dolichospermum flos aquae* (formerly *Anabaena flos aquae*), and *Planktothrix* sp. *(formerly Oscillatoria* sp.). Since 2004, Klamath River public health sampling has documented elevated levels of toxin-producing cyanobacteria, primarily MSAE and the associated toxin microcystin. Microcystins are a class of toxic chemical produced by some strains of cyanobacteria, including MSAE, and are released into the water when cyanobacterial cells die, or cell membranes degrade. Microcystins at elevated levels can present risks to human health and to terrestrial and aquatic species, and result in impairments to several beneficial uses for the Klamath River system (NCRWQCB 2018). Microcystin toxins can induce skin rashes, sore throat, oral blistering, nausea, gastroenteritis, fever, liver toxicity, and general tumor promotion (WHO 2003; OEHHA 2012).

In 2021, the IM 15 public health sampling program was revised to control costs, in tandem with the baseline monitoring program changes for cost control. The 2022 public health sampling program was consistent with the 2021 program.

4.1. Pre-Holiday Sampling

In addition to the normal public health sampling program of 2022, the North Coast Regional Water Quality Control Board (NC Board) funded two additional samples collected May 10, 2022, one from Copco Reservoir and one from Iron Gate Reservoirs (Figure 2), to determine any public health issues associated with those reservoirs prior to the beginning of the summer holiday season. These 'pre-holiday' public health samples were sent to Bend Genetics, LLC (Bend Genetics) for analysis of total cyanobacterial toxins (anatoxin-a, cylindrospermopsin, microcystin/nodularin and saxitoxin) by enzyme linked immunosorbent assay (ELISA), as well as algae species of potentially toxigenic cyanobacteria.

Table 2. 2022 Klamath River public health monitoring locations, constituents, and sampling frequency.

Location	Site ID	River Mile	Microcystin	LC/MS/MS water for cyanotoxins	Sampling Entity
Upper Klamath Lake at Eagle Ridge County Park (Public Health)	UKEP	-	BM7-mod	-	ODEQ
Upper Klamath Lake at Howard's Bay Park (Public Health)	UKHP	-	BM7-mod	-	ODEQ
Upper Klamath Lake at Moore Park (Public Health)	UKMP	-	BM7-mod	-	ODEQ
Keno Reservoir at Keno Park (Public Health)	KEKP	234.0	BM7-mod	-	ODEQ
J.C. Boyle Reservoir at Topsy Campground (Public Health)	BRTC	225.0	BM7-mod	-	ODEQ
Copco Reservoir at Mallard Cove (Public Health)	CRMC	200.8	BM7-mod	S	PacifiCorp
Copco Reservoir at Copco Cove (Public Health)	CRCC	198.5	BM7-mod	S	PacifiCorp
Iron Gate Reservoir at Camp Creek (Public Health	IRCC	192.8	BM7-mod	S	PacifiCorp
Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	IRJW	192.4	BM7-mod	S	PacifiCorp
Klamath River below Iron Gate Dam (RM 189.73; Public Health)	KRBI	189.7	BM7-mod	-	PacifiCorp
Klamath River at I-5 Rest Area (RM 179.20; Public Health)	KRIB	179.2	BM5	BM5	Karuk
Klamath River at Brown Bear River Access (RM 150.00; Public Health)	KRBB	150.0	BM5	-	Karuk
Klamath River below Seiad (RM 128.5; Public Health)	KRSV	128.5	BM5	-	Karuk
Klamath River below Happy Camp (RM 101.3; Public Health)	KRHC	101.3	BM5	-	Karuk
Klamath River at Orleans (USGS) (RM 59.1; Public Health)	KROR	59.1	BM5	-	Karuk
Klamath River at Weitchpec (RM 43.5; Public Health)	KRWE	43.5	BM5	-	Yurok
Klamath River near Klamath (RM 6.0; Public Health)	KRTG	6.0	BM5	-	Yurok
Klamath River at South Slough (RM 0.1; Public Health)	KRSS	0.1	BM5	S2	Yurok

Key:

Frequency	# of sample events	Sampling frequency description
-	0	Not Sampled
BM7-mod	13	Monthly sampling in May and at least bimonthly sampling June - November
BM5	10	Bimonthly sampling June - October
S	4	Analysis for anatoxin-a will be tied to results of anatoxin-a screening tests run on each public health sample; however, four test analysis are budgeted.
S2	4	Monthly sampling from July - October

Figure 2. Pre-holiday public health sampling sites in Copco Reservoir and Iron Gate Reservoir sponsored by the North Coast Regional Water Quality Control Board in May of 2022.

5. Water Sample Collection

Water samples included both water quality data collected with probes (temperature, dissolved oxygen, specific conductivity, and pH) and grab samples. Grab samples (i.e., samples analyzed for the physical and chemical constituents listed in Table 1 and Table 2) were sent to respective laboratories for analysis. For turbidity, PacifiCorp used a HACH 2100Q Turbidimeter for measurements, rather than collecting grab samples.

5.1. Analytical Samples

Grab water samples were collected for analytical determination of:

- Nitrogen: ammonia (NH4), nitrate+nitrite (NO3+NO2), total nitrogen (TN), and particulate nitrogen (PN)
- Phosphorus: orthophosphate (OPO4), total phosphorus (TP), particulate phosphorus (PP), and particulate inorganic phosphorus (PIP)
- Carbon: dissolved organic carbon (DOC) and particulate carbon (PC)
- Solids: total suspended solids (TSS)
- Alkalinity (ALKT)
- Turbidity (TURB)
- Phytoplankton (algae): chlorophyll-*a* (CHL-A) and pheophytin (PHEO)
- Microcystin (MCYN) and anatoxin-a (if warranted)
- Algae species

Eight laboratories completed the analytical work during the field season:

- Edge Analytical Laboratories (Edge) in Wilsonville, Oregon and Burlington, Washington.
    - https://www.edgeanalytical.com/
- IEH Aquatic Research (IEH) in Seattle, Washington.
    - http://www.iehinc.com/ieh-locations/
- Sprague River Water Quality Laboratory (SRWQL)
    - ben.harris@klamathtribes.com
- Chesapeake Biological Laboratories (CBL) in Solomons, Maryland
    - http://www.umces.edu/cbl
- Environmental Protection Agency Region 9 (EPA) laboratory in Richmond, California
    - http://www.epa.gov/region9/lab/
- GreenWater Laboratories in Palatka, Florida
    - http://greenwaterlab.com/
- Aquatic Analysts in Friday Harbor, Washington
    - www.AAalgae.com
- Bend Genetics, LLC in Sacramento, California
    - https://bendgenetics.com/

5.2. Field Measurements

Water temperature, pH, specific conductivity, and dissolved oxygen were measured at all sampling sites. In some cases, sampling entities collected additional information (e.g., turbidity) during field visits. Field measurements were recorded at some sites using water quality probes that were maintained and calibrated by each sampling entity. In addition to the vertical profiles in reservoirs and continuous time series monitoring (Table 1), physical water quality parameters were measured when grab samples were collected. Field measurements that were collected during grab sampling are included in the field data (Appendix B) while time series monitoring data are maintained by (and available from) each sampling entity.

5.3. Quality Assurance of Samples

Baseline monitoring samples were collected under individual entity Quality Assurance Project Plans, Standard Operating Procedures, and/or Sampling Analysis Plans (Karuk 2009; PacifiCorp 2008; Yurok 2008). These methods have been compared and reviewed by the KHSA Working Group to ensure consistent sampling techniques are applied (KHSA-WG 2010). Public health samples were collected according to the Standard Operating Procedure developed by the Klamath Blue Green Algae Working Group (www.kbmp.net/collaboration/klamath-hydroelectric-settlement-agreement-monitoring).

5.4. Water Quality Analytical Methods

Edge, IEH, SRWQL, CBL, and EPA laboratories used either Standard Methods, EPA, or USGS analytical methods for analysis of nutrients, dissolved and particulate carbon, alkalinity, total suspended solids, and turbidity (Table 3). Each laboratory used its own internal water quality control and assurance samples during analysis of the KHSA 2022 samples. Method detection limits (MDL) and reporting limits (RL) varied among the laboratories.[6]

5.5. Algae Sample Analytical Methods

Analysis of chlorophyll-*a* and pheophytin was performed by CBL for samples collected by PacifiCorp, by IEH for samples collected by the Karuk Tribe, and by SRWQL for samples collected by the Yurok Tribe (Table 3). Algae species analysis was performed by Aquatic Analysts for all samples. Microcystin analysis was performed using the Enzyme-Linked ImmunoSorbent Assay (ELISA) method at the EPA laboratory and Bend Genetics. Additional microcystin analysis, as well as anatoxin-a analysis was completed by the GreenWater Laboratories using liquid chromatography-tandem mass spectrometry (LCMS/MS) for selected locations and samples. GreenWater microcystin MDLs and RLs

[6] Laboratories may complete internal quality assurance, update equipment, refine analyses, or complete internal testing of MDL and/or RL, and other activities that can result in slight changes to the MDL and/or RL values. These activities can occur at any time during the year and can occur more than once during the year.

varied with each microcystin variant analysis performed (Table D-2 in Appendix D). Microcystin and other toxin analysis performed by Bend Genetics was carried out using the ELISA method, with MDLs varied with each toxin (Table 5). Algae species analysis method information for Aquatic Analysts and Bend Genetics is not presented because this analysis does not include MDLs or RLs.

Table 3. 2022 Analyzing laboratory method references, method detection limits (MDLs), and method reporting limits (RLs) for water quality constituents. Units presented in milligrams per liter (mg/L) or parts per million (ppm) unless otherwise noted. All unique MDLs and RLs are shown.

		Edge			IEH			SRWQL			CBL			EPA			GreenWater			Bend Genetics		
Constituent Name	**Constituent ID**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**
Alkalinity	ALKT	SM2320 B EPA 310.2	1.0 2.0 5.0	1.0 2.0 5.0	SM 2320B	0.7	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	NH4	EPA 350.1	0.00846	0.01	SM 4500-NH3 H	0.005	0.01	EPA 350.1	0.006	0.012	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	DOC	SM5310 B	0.045 0.075	0.5	SM 5310 B v20	0.1	0.25	SM 5310 C	0.123	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	NO3+NO2	SM4500-NO3 F	0.0063	0.01	SM 4500-NO3 F	0.006	0.01	EPA 353.2	0.008	0.016	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen[2]	TN	Calculated	0.0585	0.2	SM 4500-N C	0.024	0.05	USGS I-2650-03	0.03	0.06	-	-	-	-	-	-	-	-	-	-	-	-
Orthophosphate	OPO4	SM4500-P F	0.01	0.01	SM 4500-P F	0.001	0.001	EPA 365.1	0.003	0.006	-	-	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	TP	SM4500-P F	0.0021	0.01	SM 4500-P F	0.001	0.002	EPA 365.2	0.009	0.018	-	-	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids[1]	TSS	I-3765-85	1	varied	SM 2540 D v20	0.3	0.5	EPA 160.2 SM 2540 D	1	2	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	TURB	-	-	-	SM 2130 B	0.1	0.1	EPA 180.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-*a*[2]	CHLOR-A	-	-	-	SM 10200 H	0.1	0.1	EPA 445.0	0.5	1	E445.0	0.68	0.68	-	-	-	-	-	-	-	-	-
Pheophytin[2]	PHEO	-	-	-	SM 10200 H	0.1	0.1	EPA 445.0	0.5	1	E445.0	0.46	0.46	-	-	-	-	-	-	-	-	-
Particulate Carbon	PC	-	-	-	-	-	-	-	-	-	E440.0	0.0633	0.1899	-	-	-	-	-	-	-	-	-
Particulate Inorganic Phosphorus	PIP	-	-	-	-	-	-	-	-	-	EPA 365.1, ASPILA	0.0010	0.0030	-	-	-	-	-	-	-	-	-
Particulate Phosphorus	PP	-	-	-	-	-	-	-	-	-	EPA 365.1, ASPILA	0.0010	0.0030	-	-	-	-	-	-	-	-	-
Particulate Nitrogen	PN	-	-	-	-	-	-	-	-	-	E440.0	0.0263	0.0789	-	-	-	-	-	-	-	-	-
Microcystin[2, 4]	MCYN	-	-	-	-	-	-	-	-	-	-	-	-	ELISA	0.10	0.15	LCMS/MS	varied	varied	ELIZA	0.15	-
Anatoxin-a[2]	ANTX-A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LCMS/MS	0.05 0.10	n/a	ELIZA	0.15	-

[1] Total Suspended Solids Method used by Edge produced variable RL, which ranged from 1.0 – 6.67 mg/l for the 2022 baseline sampling program.
[2] Units for chlorophyll-*a*, pheophytin, microcystin, and anatoxin-a are in µg/L (or ppb).
[3] Edge analyzes samples for Total Kjeldahl Nitrogen (TKN) using EPA 351.2. TKN includes ammonia and organic nitrogen. Total Nitrogen is calculated as TN = TKN + NO3+NO2. MDL and RL for TN are based on the levels for TKN, which were larger than those for ammonia.
[4] Microcystin analysis at GreenWater produces different MDLs and RLS for each type of variant of microcystin, each of which are presented in Appendix D

6. Baseline Program Water Quality Data

Water quality samples for the 2022 IM 15 baseline water quality monitoring program were collected from April through December. Sampling crews from the various entities typically collected samples within a few days of each other. Sampling on the same day throughout the basin was infeasible because of shipping constraints, travel considerations, conflicting obligations, and other factors. In most cases, all 22 sites (Figure 1) were sampled each month. There were periods when one or more sites were omitted, or one or more constituents were not sampled due to summer wildfire or hazardous winter weather conditions in 2022. Because of these uncontrollable events that affected the safety of the sampling crews, some planned samples were unable to be collected. Data was reviewed by sampling entities before being compiled for presentation in this report. Compiled data from all baseline program sampling is presented in the appendices (Appendix B) and summarized below, except for time series data, which can be obtained from the individual sampling entities (Table 1). Selected results of algae species identification are presented below and in Appendix C.

6.1. Data Summary

Field measurements collected included water temperature, pH, specific conductivity, and dissolved oxygen. Chemical and biological water quality measurements include two types of algae related estimates (chlorophyll-*a* and pheophytin), alkalinity, two forms of carbon (dissolved organic and particulate), four forms of nitrogen (ammonia, nitrate+nitrite, total nitrogen, and particulate nitrogen), four forms of phosphorus (orthophosphate, total phosphorus, particulate phosphorus, and particulate inorganic phosphorus), total suspended solids, turbidity, and microcystin. Density and biovolume for algal species were also reported.

Data are summarized herein illustrate general spatial and temporal patterns during the 2022 sampling period. The data summary constituents presented include dissolved oxygen, dissolved organic carbon, total nitrogen, total phosphorus, and microcystin. Mainstem sites and major tributaries (Shasta, Scott, Salmon, and Trinity rivers) are presented separately.

In addition to the dataset (Appendix B), data also are summarized in three formats:

(1) Longitudinal boxplots[7] based on seasonal grab sample data.

(2) Physical water quality sonde data (hourly) at specific locations.

(3) Charts and graphs representing the groups of algae and respective biovolumes at the selected sampling locations for May, June, September, and October or November (location dependent).

[7] A box-and-whisker plot is a graphical way of presenting statistical parameters including median, mean, lower and upper quartiles, and outliers. The median value is represented by a horizontal line; a box (gray) is formed by the 25th quartile and 75th quartile and represents the inter-quartile range (IQR); the whiskers extend beyond the 1.5*IQR above and below the quartiles; and points beyond the whiskers are termed outliers. Outliers are values between 1.5 to 3 times the IQR. Extreme outliers are values greater than 3 times the IQR.

The boxplots and hourly sonde data are presented in the main report; however, because of the small sample size at each site during 2022, the boxplots presented in the annual report are not statistically robust and are included for illustration purposes only. No boxplots were generated for sites with less than six points of data for a specific parameter in 2022; the captions of the boxplot figures indicate the locations that were omitted because of insufficient sample size.

Time series data are presented for summary constituents at locations on the Klamath River for which there are USGS flow gages (Table 4). While phytoplankton data are available for the April through December period, September percent biovolume are presented for illustration at eight locations (Figure 3). These locations are: (1) Link Dam (RM 254.44; Baseline), (2) Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline), (3) Copco Reservoir (RM 198.74; Baseline), (4) Klamath River below Iron Gate Dam (RM 189.73; Baseline), (5) Klamath River below Seiad (RM 128.5; Baseline), (6) Klamath River at Orleans (USGS) (RM 59.1; Baseline), (7) Klamath River at Weitchpec (RM 43.5; Baseline), and (8) Klamath River Estuary (RM 0.5; Baseline). Plots representing algae species for May, June, and October or November (depending on location) are presented in Appendix C.

Table 4. United States Geological Survey (USGS) flow gage locations for time series data.

USGS Location Name	River Mile (RM) (*approximate*)	USGS Gage Number
Link River at Klamath Falls, OR	254	11507500
Klamath River at Keno, OR	232	11509500
Klamath River below Iron Gate Dam, CA	190	11516530
Klamath River near Seiad Valley, CA	129	11520500
Klamath River at Orleans, CA	59	11523000
Klamath River near Klamath, CA	8	11530500

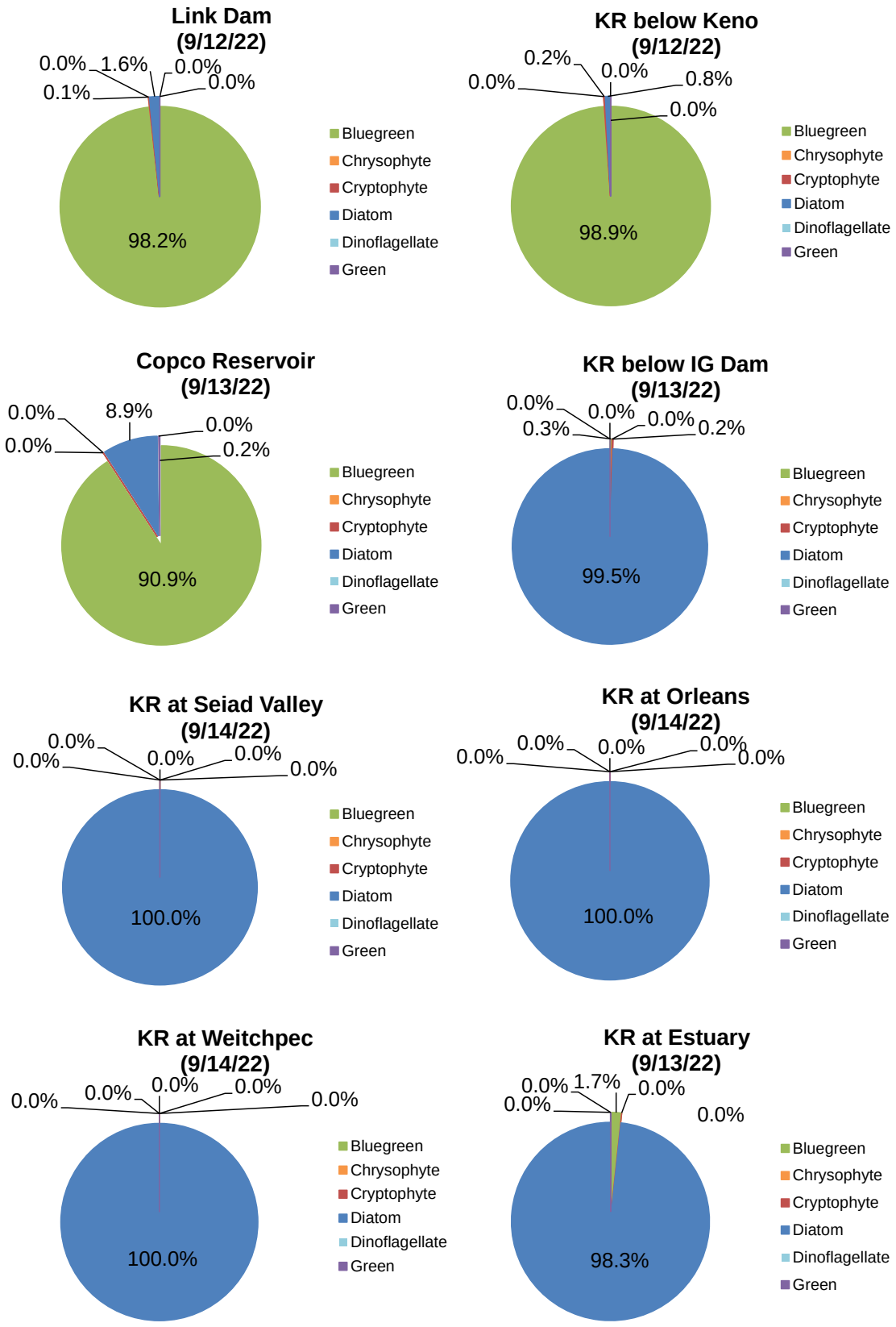

Figure 3. Phytoplankton species percent biovolume for eight locations in the Klamath River: September 2022.

6.1.1. Major Tributaries (Boxplot)

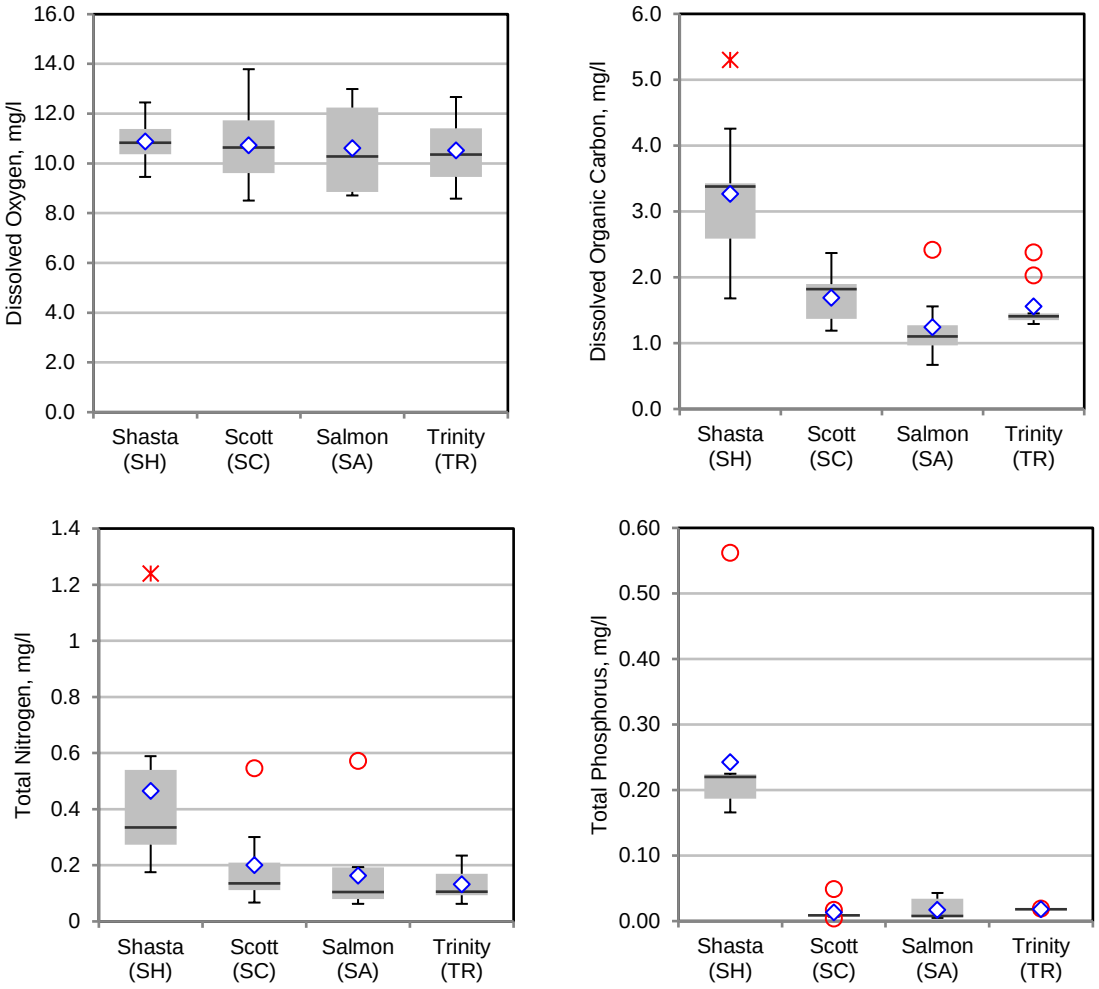

Figure 4. Baseline data for discrete dissolved oxygen, dissolved organic carbon, total nitrogen, and total phosphorus for the Shasta, Scott, Salmon, and Trinity rivers with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022).

6.1.2. Mainstem Klamath River (Boxplot)

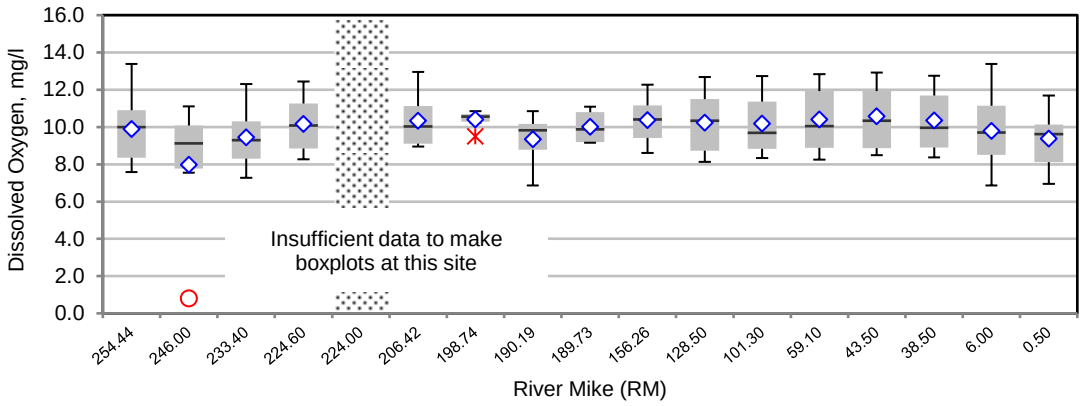

Figure 5. Discrete dissolved oxygen concentration in the Klamath River from Link River Dam to the Klamath River Estuary with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale. No dissolved oxygen boxplots are included for River Mile 224.00 as there were fewer than six microcystin data points at this site.

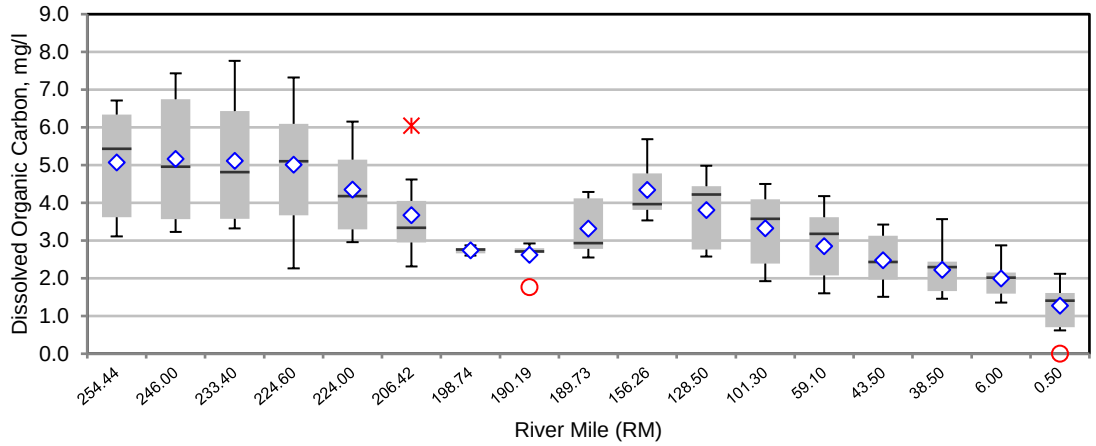

Figure 6. Dissolved organic carbon in the Klamath River from Link River Dam to the Klamath River Estuary with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale.

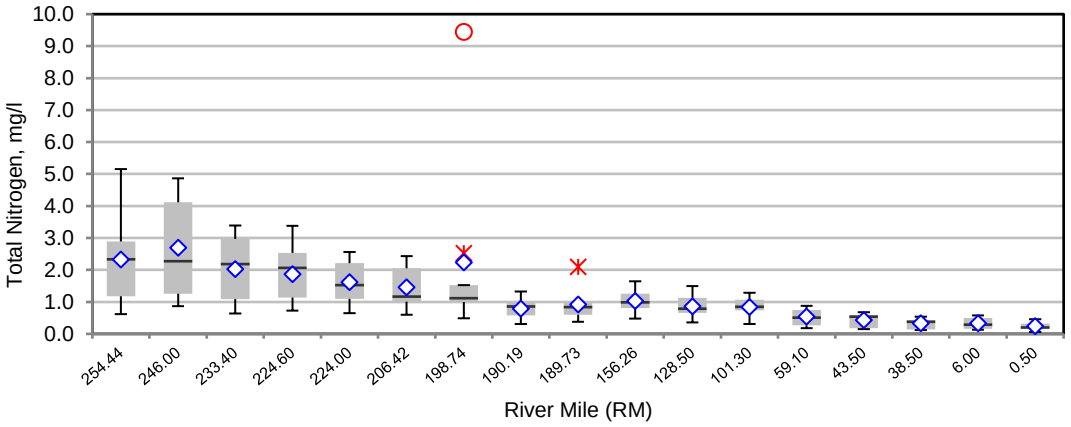

Figure 7. Total nitrogen in the Klamath River from Link River Dam to the Klamath River Estuary with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale.

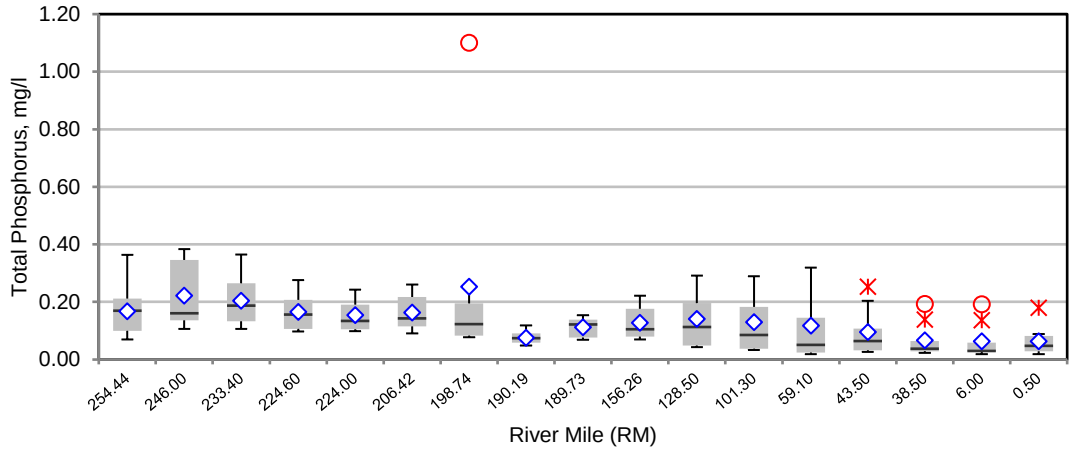

Figure 8. Total phosphorus in the Klamath River from Link River Dam to the Klamath River Estuary with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale.

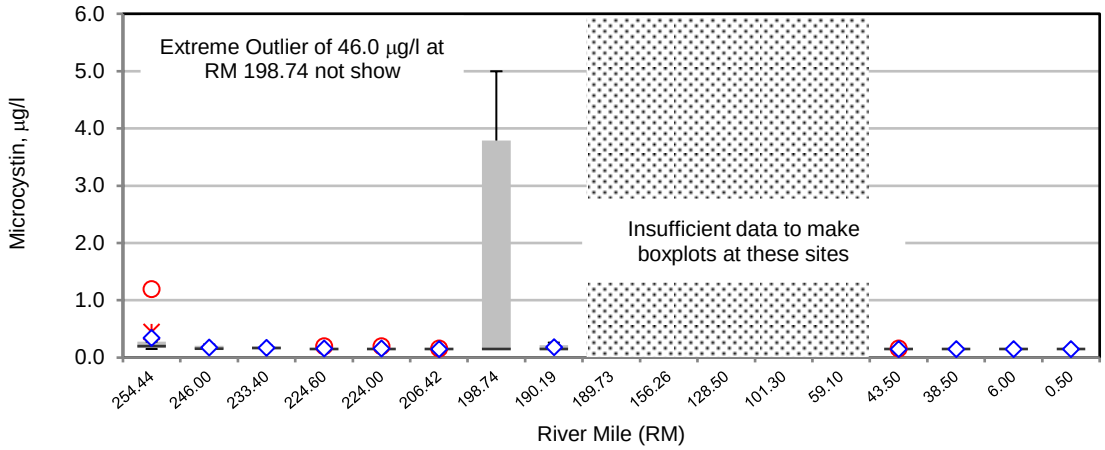

Figure 9. Microcystin in the Klamath River from Link River Dam to the Klamath River Estuary with median (–), mean (◊), outliers (*), and extreme outliers (○) identified (April 2022 – December 2022). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale. An extreme outlier of 46.0 µg/l at River Mile 198.74 is not shown. No microcystin boxplots are included for River Mile 189.73, 156.29, 128.50, 101.30, and 59.10 as there were fewer than six microcystin data points at each of these sites.

6.1.3. Major Tributaries (Time Series)

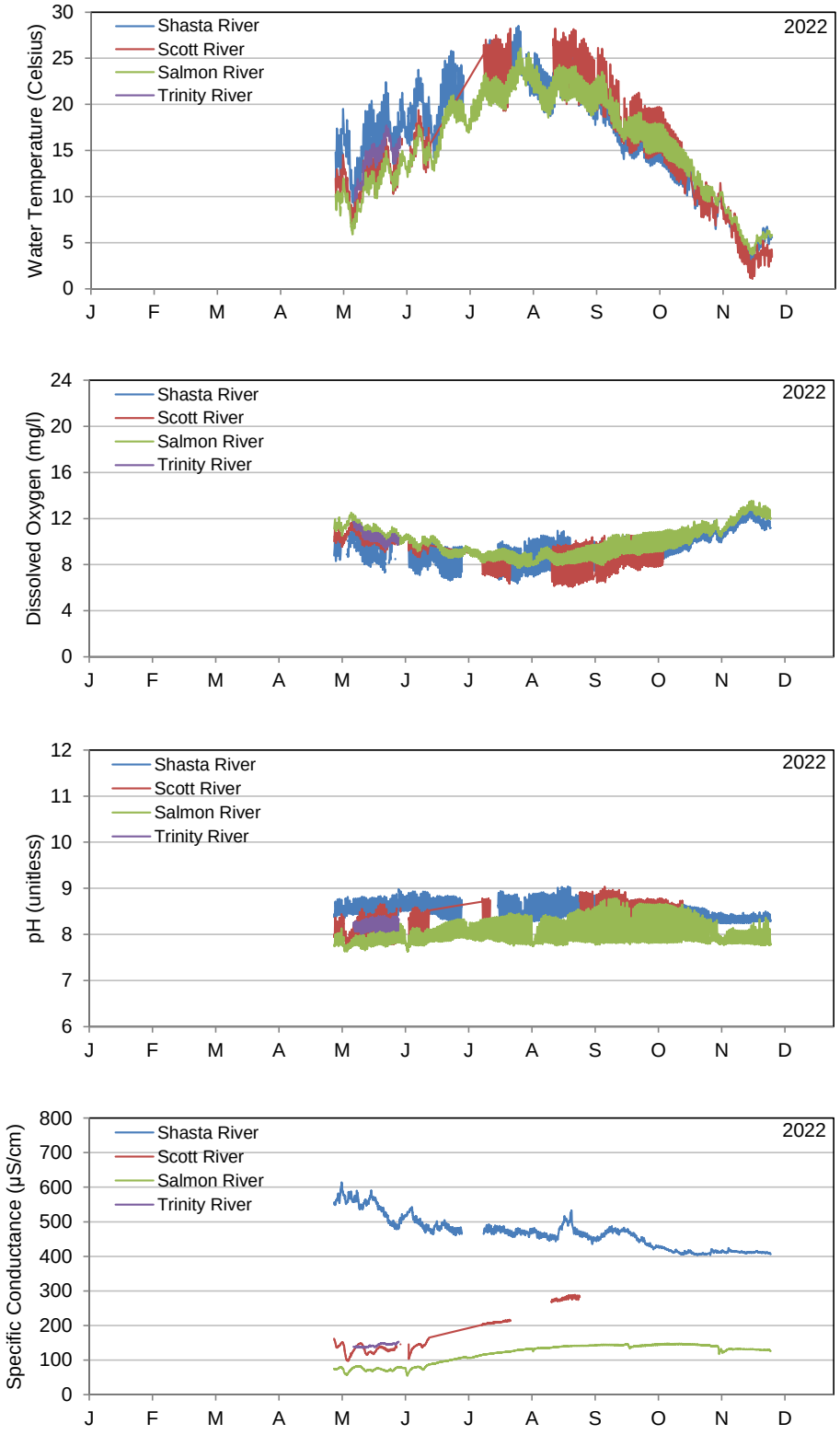

Figure 10. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2022) for the Shasta River, Scott River, and Salmon River.

6.1.4. Mainstem Klamath River (Time Series)

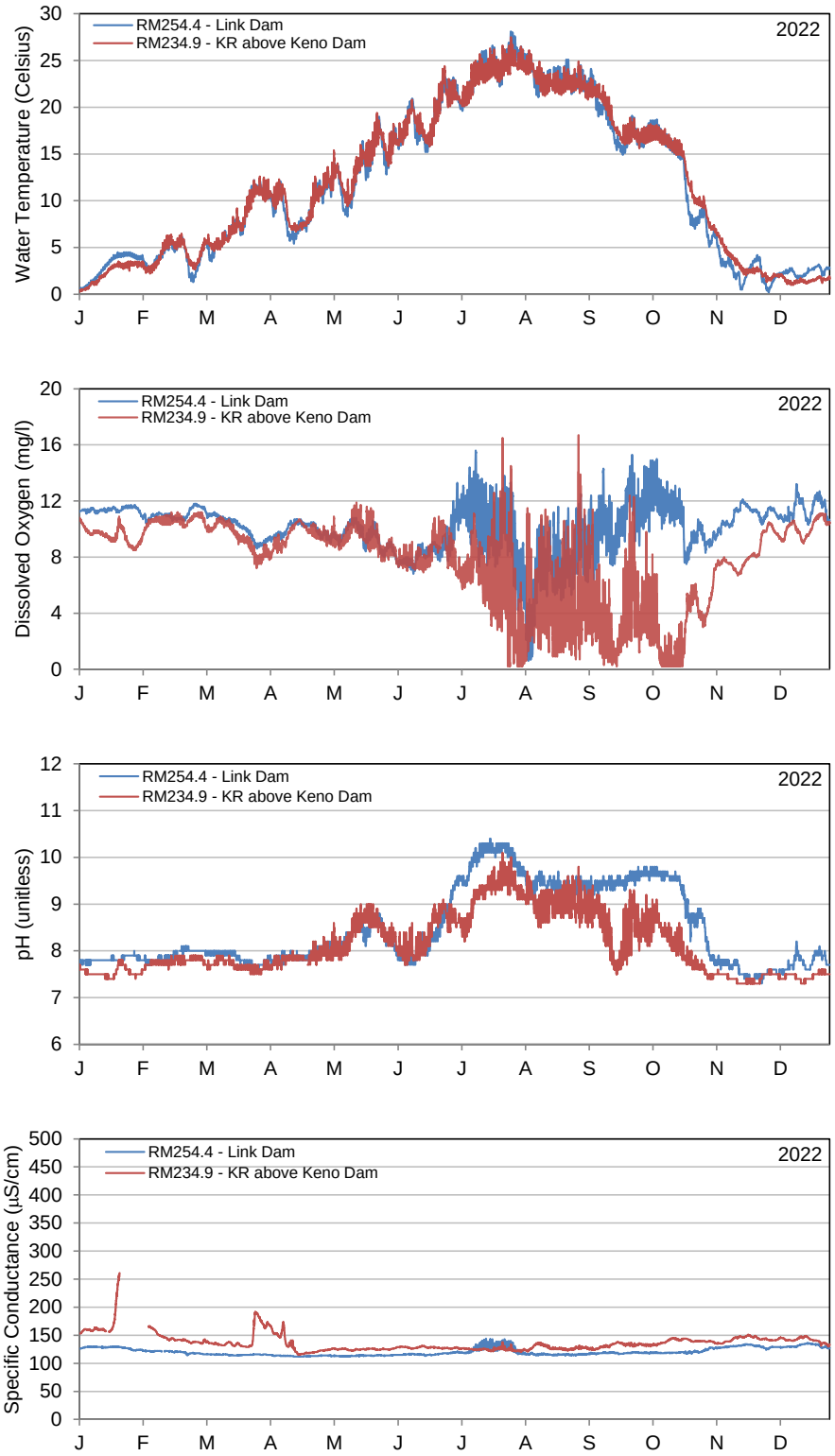

Figure 11. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2022) for the Klamath River (KR) at Link Dam (RM 254.44; Baseline) and Klamath River above Keno Dam (surface) (RM 234.9).

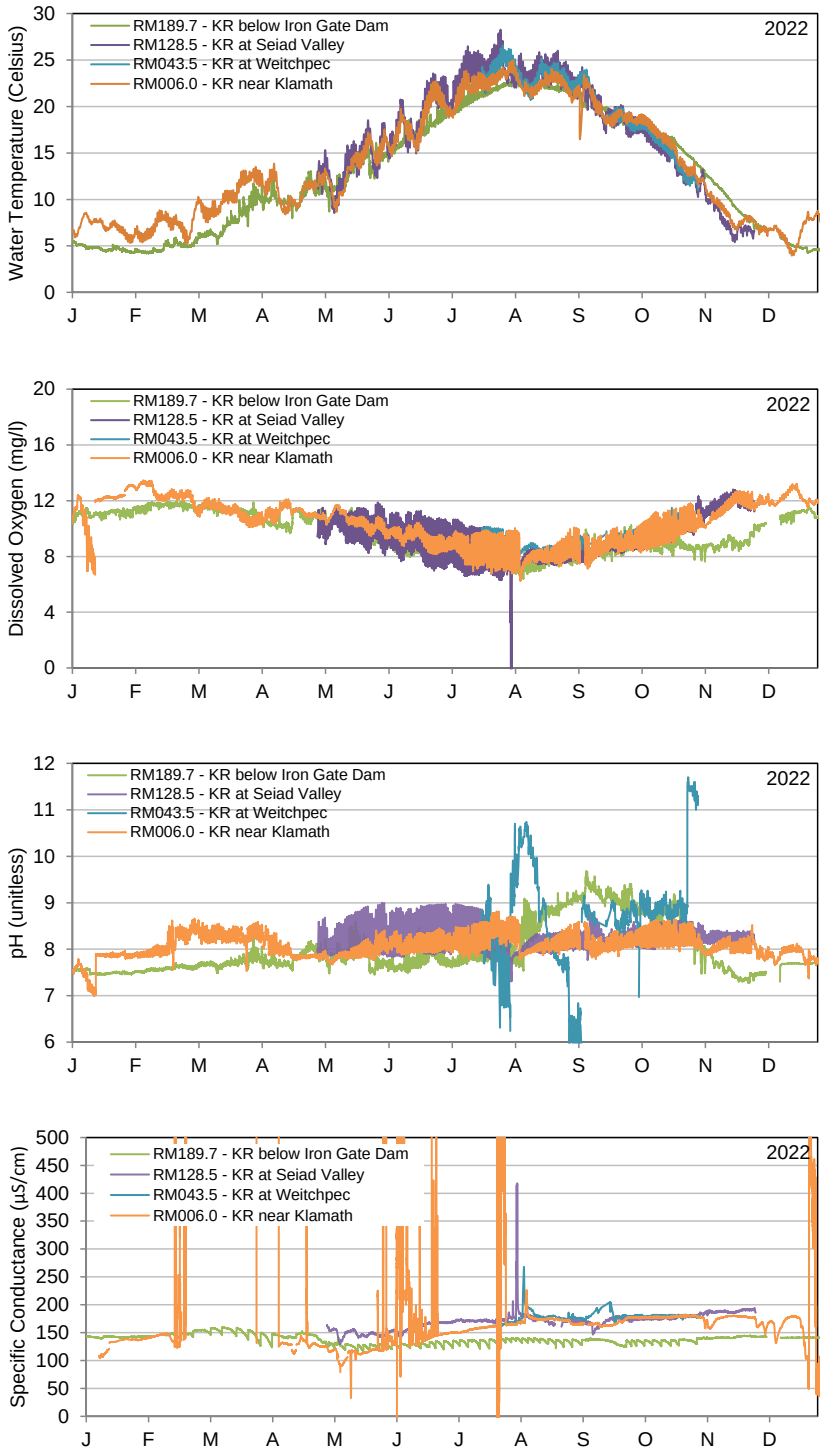

Figure 12. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2022) for the Klamath River below Iron Gate Dam (RM 189.73; Baseline), Klamath River below Seiad (RM 128.5; Baseline), Klamath River at Weitchpec (RM 43.5; Baseline), and Klamath River near Klamath (RM 6.0; Baseline). Extremely low dissolved oxygen recorded in early August at KR below Seiad Valley (RM 128.5: Baseline) were the result of the McKinney Fire debris flows. Extremely high specific conductance at Klamath River near Klamath (RM 6.0; Baseline) is presented in Figure 13 below.

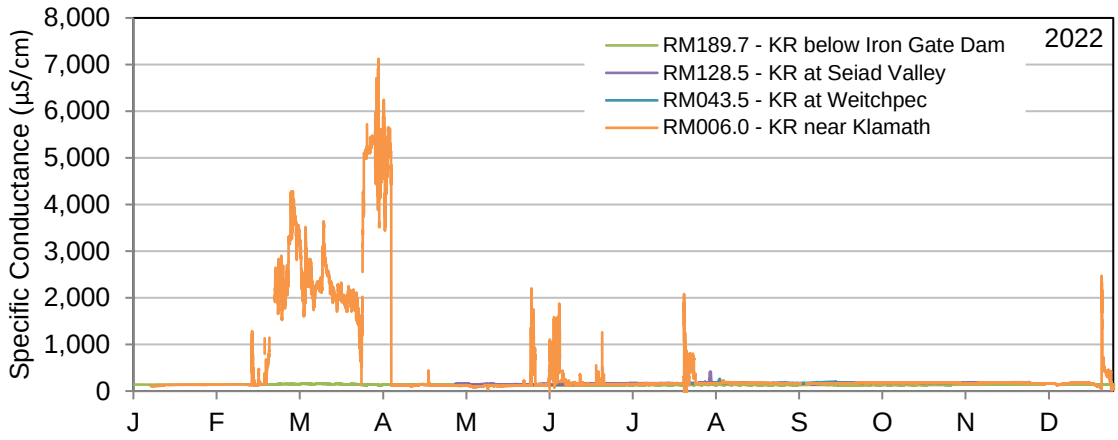

Figure 13. Specific conductance data (2022) for the for the Klamath River below Iron Gate Dam (RM 189.73; Baseline), Klamath River below Seiad (RM 128.5; Baseline), Klamath River at Weitchpec (RM 43.5; Baseline), and Klamath River near Klamath (RM 6.0; Baseline). Y-axis scaled to allow presentation of full scope of specific conductance measurements at Klamath River near Klamath (RM 6.0; Baseline).

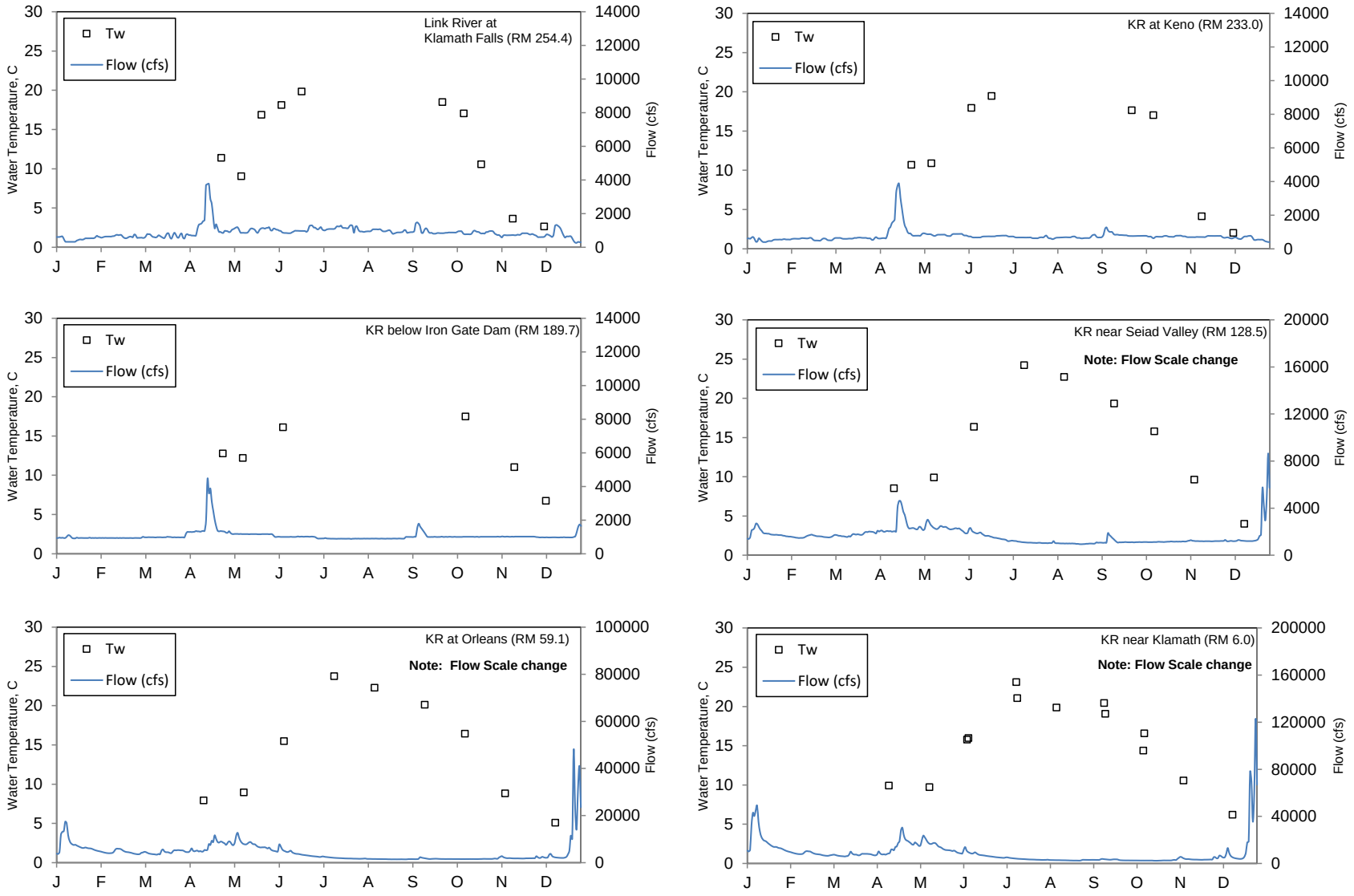

Figure 14. Discrete 2022 water temperature (T_w) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

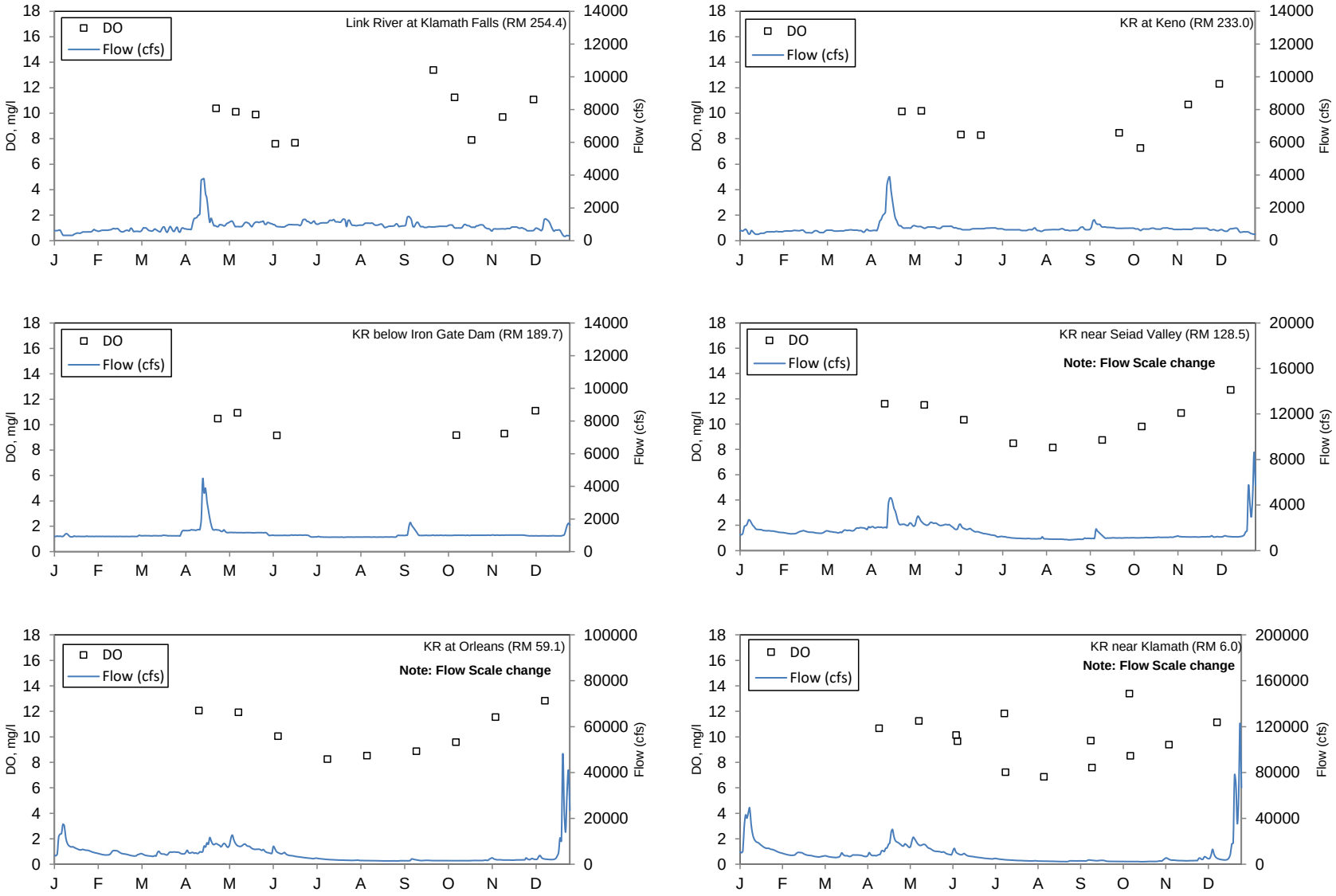

Figure 15. Discrete 2022 dissolved oxygen (DO) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

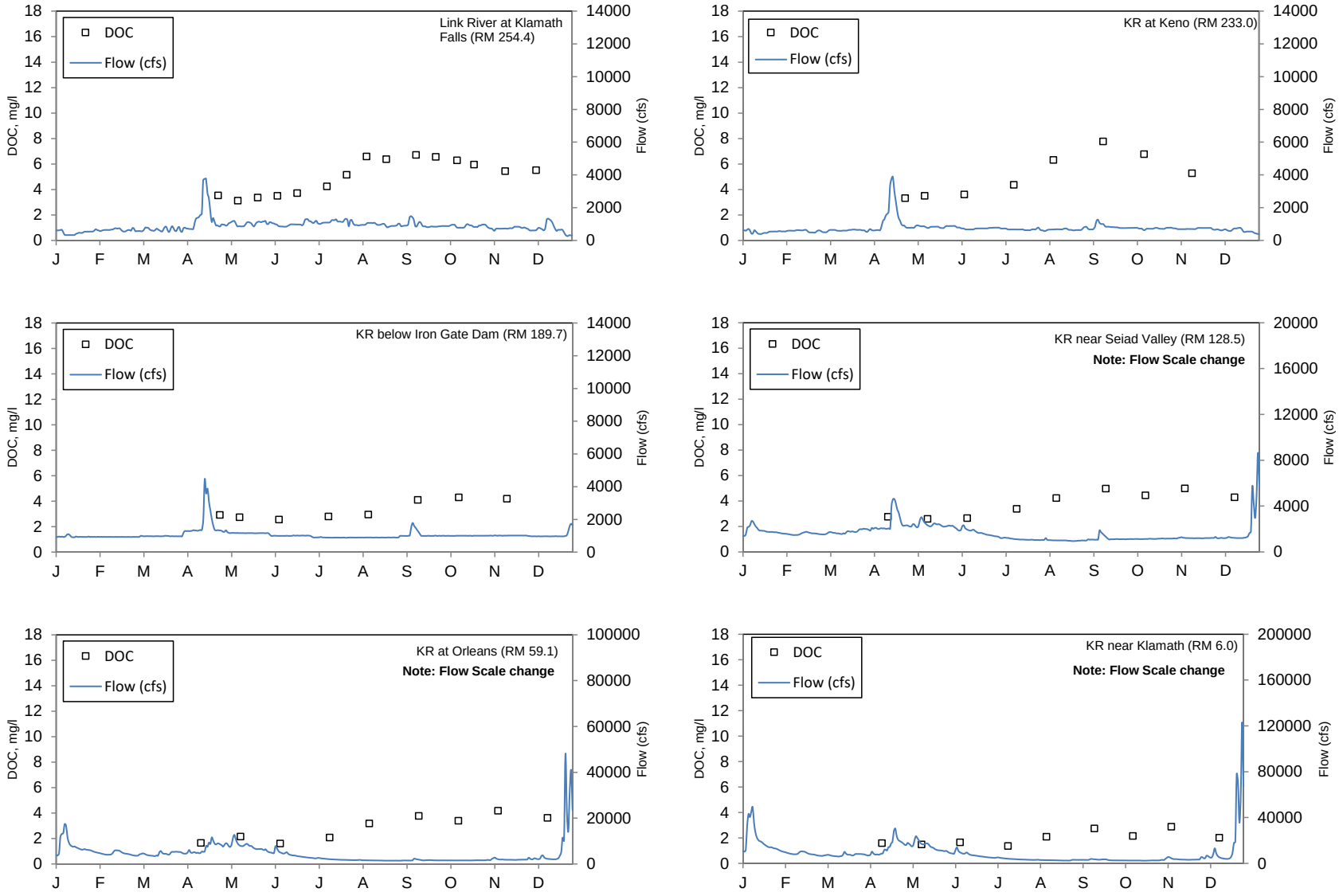

Figure 16. Discrete 2022 dissolved organic carbon (DOC) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

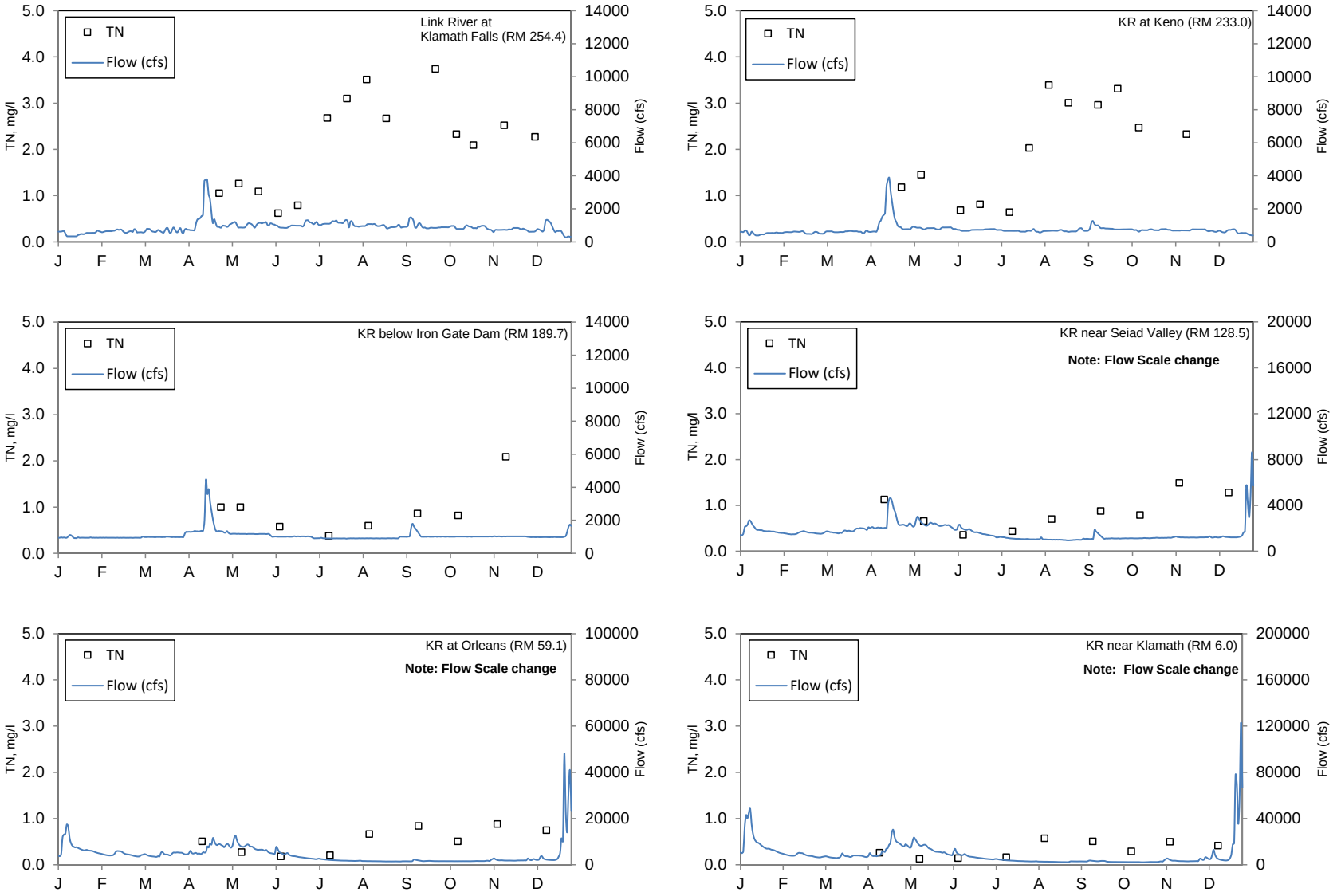

Figure 17. Discrete 2022 total nitrogen (TN) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

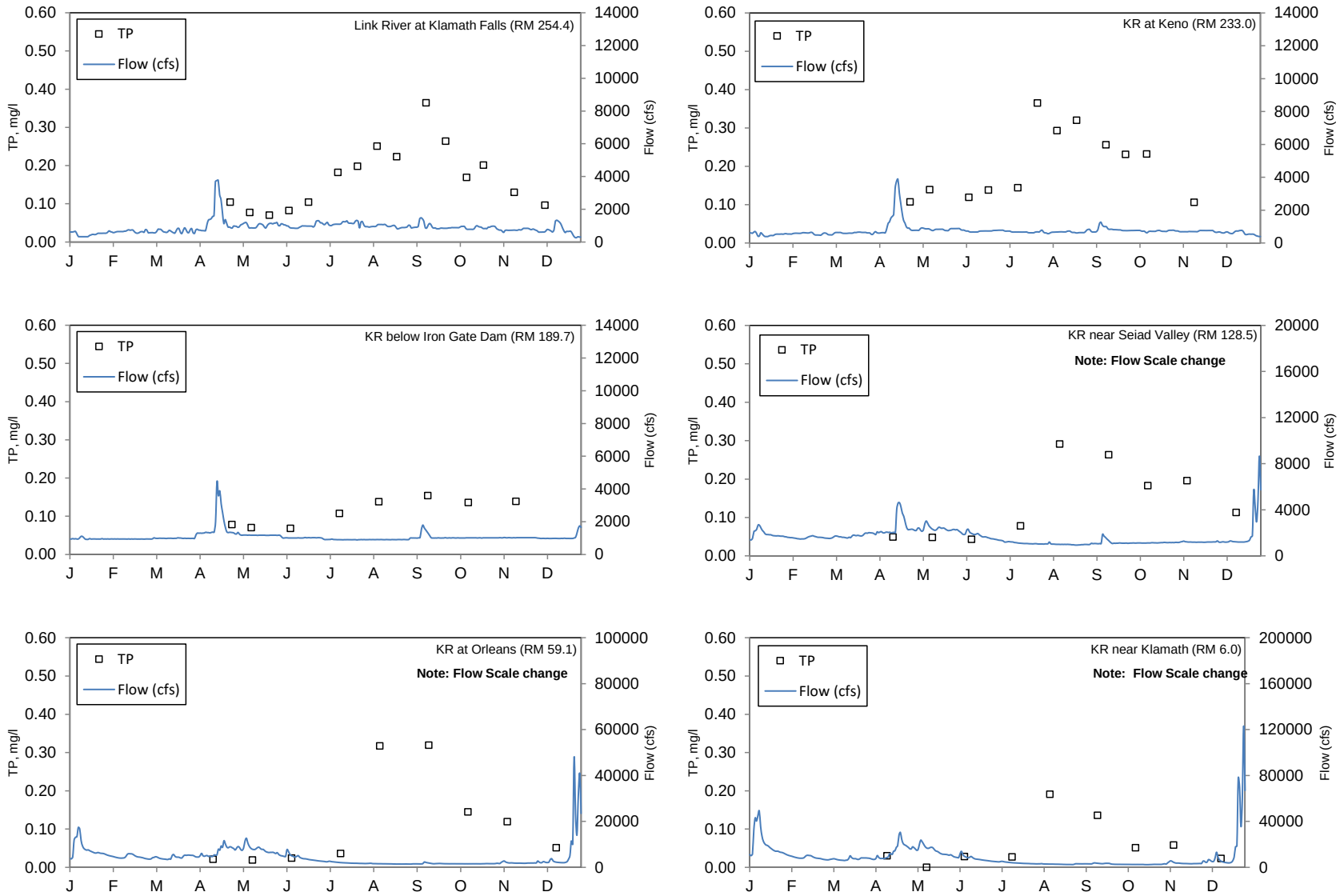

Figure 18. Discrete 2022 total phosphorus (TP) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline). Non-detect values are presented as zeros.

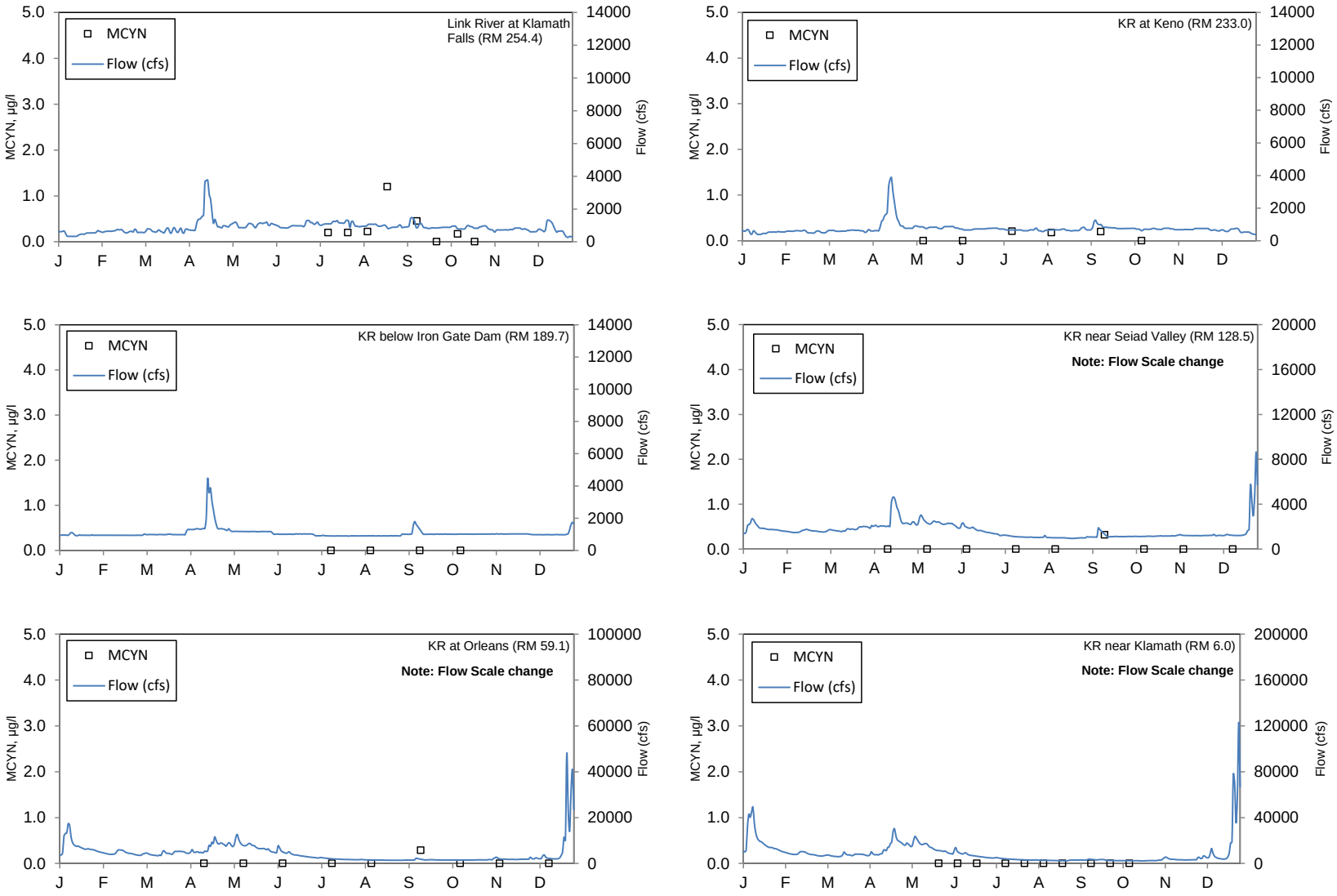

Figure 19. Discrete 2022 microcystin (MCYN) measured during grab sampling and mean daily flow at USGS flow gage locations for: Link River at Klamath Falls (USGS Gage 11507500), Klamath River at Keno (USGS Gage 11509500), Klamath River below Iron Gate Dam (USGS Gage 11516530), Klamath River near Seiad Valley (USGS Gage 11520500), Klamath River at Orleans (USGS Gage 11523000), and Klamath River near Klamath (USGS Gage 11530500). Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline). Only surface samples are presented. Non-detect values are presented as zeros.

7. Public Health Water Quality Data

Water quality samples for the 2022 IM 15 public health monitoring program were collected from May through December. Sampling crews from the various entities typically collected samples within a few days of each other. Sampling on the same day throughout the basin was infeasible because of shipping constraints, travel considerations, conflicting obligations, and other factors. In most cases, all 18 sites were sampled each month. The full public health dataset is presented in Appendix D.

7.1. Pre-Holiday Sampling Results

The North Coast Regional Water Quality Control Board (NC Board) samples collected May 10, 2022, from Copco Reservoir and Iron Gate Reservoirs were analyzed by Bend Genetics to determine any public health issues associated with those reservoirs prior to the beginning of the summer holiday season. These 'pre-holiday' public health samples were analyzed for anatoxin-a, cylindrospermopsin, microcystin/nodularin and saxitoxin by ELISA methods. Also, algae species of potentially toxigenic cyanobacteria were identified using microscopy.

No toxins examined during analysis were detected at the two sites (Table 5). During microscopy, both the Copco Reservoir and Iron Gate Reservoir samples were found to contain moderately low amounts of eukaryotic algae, but no cyanobacteria were observed in either sample.

Table 5. Pre-holiday sampling results for Copco and Iron Gate Reservoirs May 10, 2022.

Site	Method	Toxin	Result	MDL	Units
Copco Reservoir	ELISA	Anatoxin-a	ND	0.15	µg/L
Copco Reservoir	ELISA	Cylindrospermopsin	ND	0.05	µg/L
Copco Reservoir	ELISA	Microcystin/Nod.	ND	0.15	µg/L
Copco Reservoir	ELISA	Saxitoxin	ND	0.02	µg/L
Iron Gate Res.	ELISA	Anatoxin-a	ND	0.15	µg/L
Iron Gate Res.	ELISA	Cylindrospermopsin	ND	0.05	µg/L
Iron Gate Res.	ELISA	Microcystin/Nod.	ND	0.15	µg/L
Iron Gate Res.	ELISA	Saxitoxin	ND	0.02	µg/L

7.2. Public Health Advisories

In 2022, the Oregon Health Authority, working under the 2018 Oregon guideline values (OHA 2019) issued a health advisory for the Eagle Ridge County Park and Howard's Bay Park areas of Upper Klamath Lake on July 1, 2022[8]. An advisory for the entire Upper

[8] Note that the dates in the posting discussion reference the date that the Oregon Health issued an advisory for a waterbody. They do not refer to the dates that water samples were collected.

Klamath Lake was issued on July 28, 2022, and remained in place until it was lifted December 15, 2022.

Table 6. Oregon Health Authority health advisories actions in 2022.

Waterbody	Sub-area	Date	Action
Upper Klamath Lake	Eagle Ridge County Park	7/1/2022	Advisory
		12/15/2022	Lifted Advisory
	Howard's Bay Park	7/1/2022	Advisory
		12/15/2022	Lifted Advisory
	Entire Lake	7/28/2022	Advisory
		12/15/2022	Lifted Advisory

In 2022, the North Coast Regional Water Quality Control Board (NCRWQCB), working under the posting guidelines defined in 2016[9], issued a health advisory at the Caution level for Copco Reservoir on June 17, 2022.[10] The advisory level was raised to the Danger level for Copco Reservoir on July 22, 2022, but was lowered back to Caution level on October 7, 2022. The Caution level advisory for Copco Reservoir remained in place until the reservoir was de-posted on December 16, 2022. A health advisory was issued for Iron Gate Reservoir at the Caution level on July 22, 2022, and remained in place until the reservoir was de-posted on December 16, 2022.

In 2022, only one section of the Klamath River downstream of Iron Gate Dam required health advisory posting. The Klamath River from Weitchpec to Turwar was posted at the Yurok Level 1 (Caution) level on August 3, 2022. This section of river remained at this posting level for the remainder of the Yurok sampling season, as microcystin levels met the health advisory guidelines for de-posting before sampling ended October 11, 2022. However, as of December 19, 2022, all reaches of the Klamath River, from Upper Klamath Lake through the estuary were considered de-posted as per the KBMP Blue Green Algae Tracker website.

[9] http://www.mywaterquality.ca.gov/habs/

[10] Note that the dates in the posting discussion reference the date that the North Coast Regional Water Quality Control Board issued direction to post or de-post a waterbody. They do not refer to the dates that water samples were collected.

Table 7. North Coast Regional Water Quality Control Board (NCRWQCB) and Yurok Tribe health advisory actions for the Klamath River in 2022.

Waterbody	Sub-area	Date	Posting Level/Action
Copco Reservoir	-	6/17/2022	Caution
		7/22/2022	Danger
		10/7/2022	Caution
		12/16/2022	De-posted
Iron Gate Reservoir	-	7/22/2022	Caution
		12/16/2022	De-posted
Klamath River (Downstream of Iron Gate Reservoir)	Weitchpec to Turwar	8/3/2022	Yurok Level 1

7.3. Data Summary

The public health data is summarized below to illustrate general spatial and temporal patterns during the 2022 sampling period (the full public health dataset is in Appendix D). Data also are summarized in (1) bar graphs representing the microcystin concentration for the different sampling events at a specific location, and (2) longitudinal graphs of river mile versus corresponding lab results for microcystin. There were no algae species samples collected for the public health program in 2022.

Anatoxin-a data was collected in accordance with the public health sampling SOP for the public health monitoring program. GreenWater analyzed all anatoxin-a samples using LC/MS-MS (Table D-3). The GreenWater anatoxin-a method had an MDL of 0.05 µg/l or 0.10 µg/l and no anatoxin-a was detected in any samples collected at any location in 2022.

All microcystin data included below was collected in accordance with the public health sampling SOP for the public health monitoring program. The MDL for microcystin was 0.10 µg/l and the RL was 0.15 µg/l. There were many samples where microcystin was not detected above the MDL. To clearly indicate when a sample was collected but microcystin was not detected, all non-detect values were graphed as a clearly identified, separate series on the figures below (using a 'ND' label). If a sample was not collected at a location on a specific date, a note was added to the graph for that site.

Because of the higher microcystin concentrations at the reservoir sites, the graphs for the reservoir locations have a different scale than the graphs for the river locations.

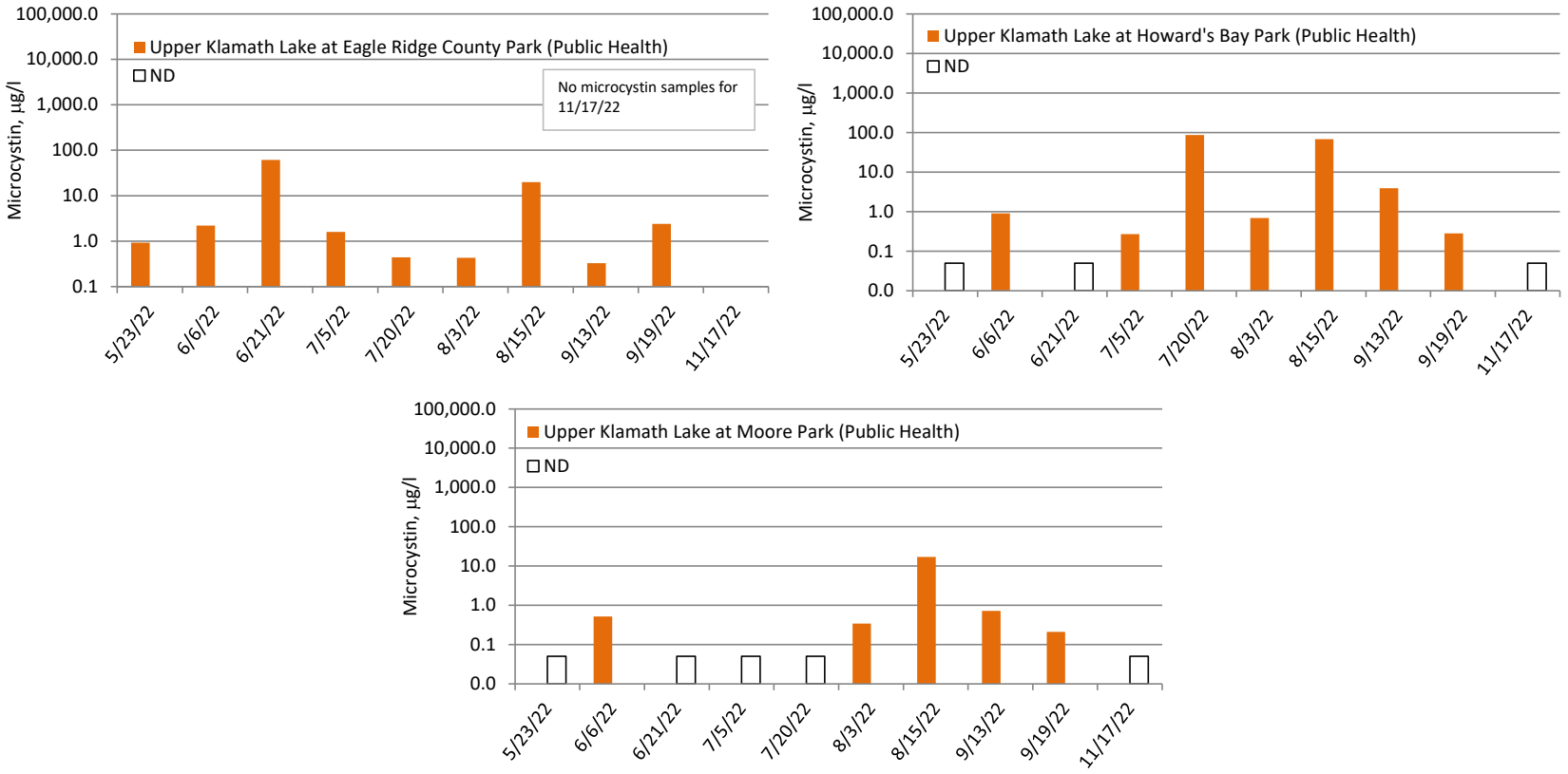

Figure 20. Microcystin concentrations from 2022 public health samples collected in Upper Klamath Lake at Eagle Ridge County Park (Public Health), Upper Klamath Lake at Howard's Bay Park (Public Health), and Upper Klamath Lake at Moore Park (Public Health) (ND indicates non-detect results).

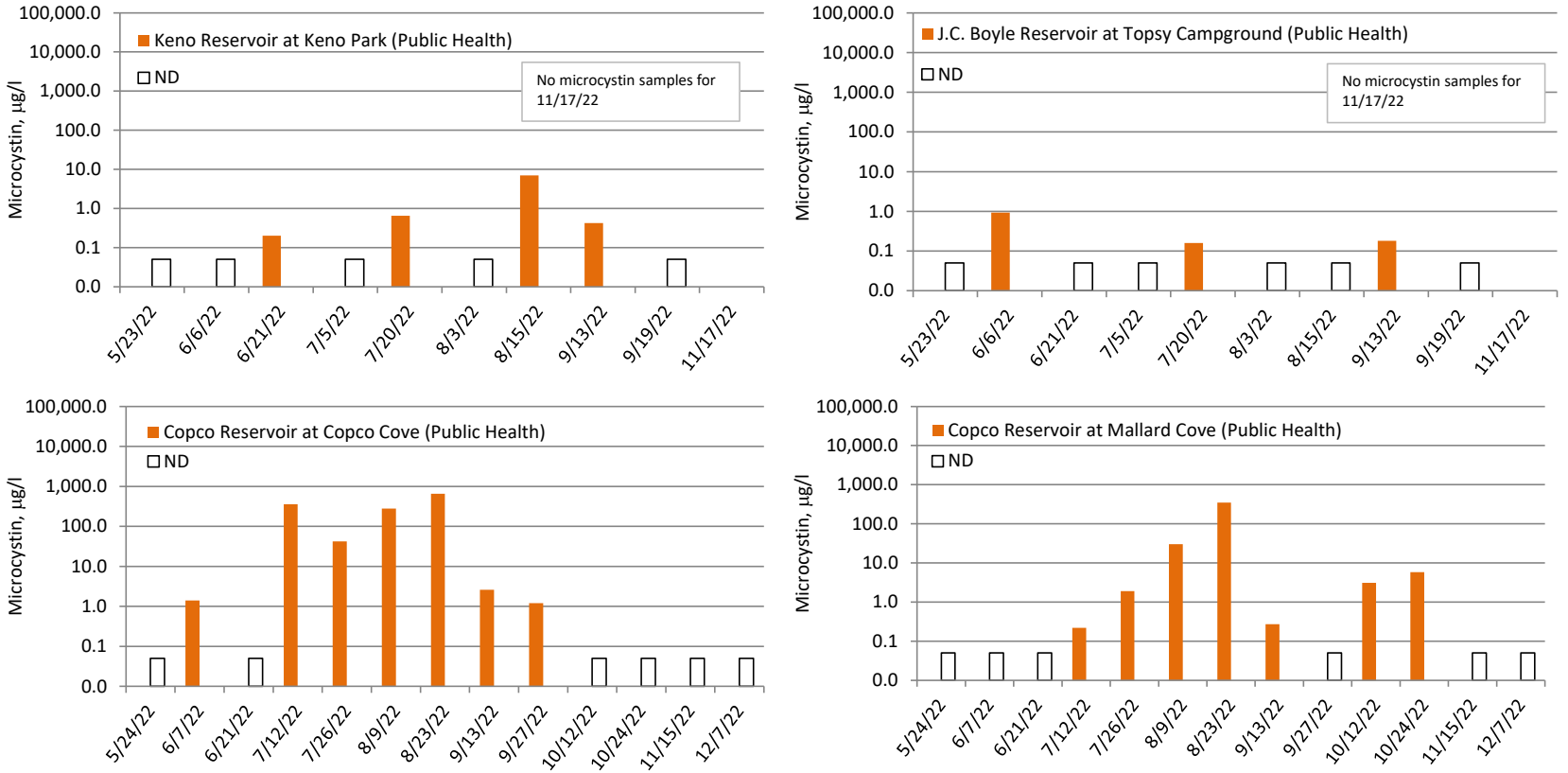

Figure 21. Microcystin concentrations from 2022 public health samples collected in Keno Reservoir at Keno Park (Public Health), J.C. Boyle Reservoir at Topsy Campground (Public Health), Copco Reservoir at Copco Cove (Public Health) and Copco Reservoir at Mallard Cove (Public Health) (ND indicates non-detect results).

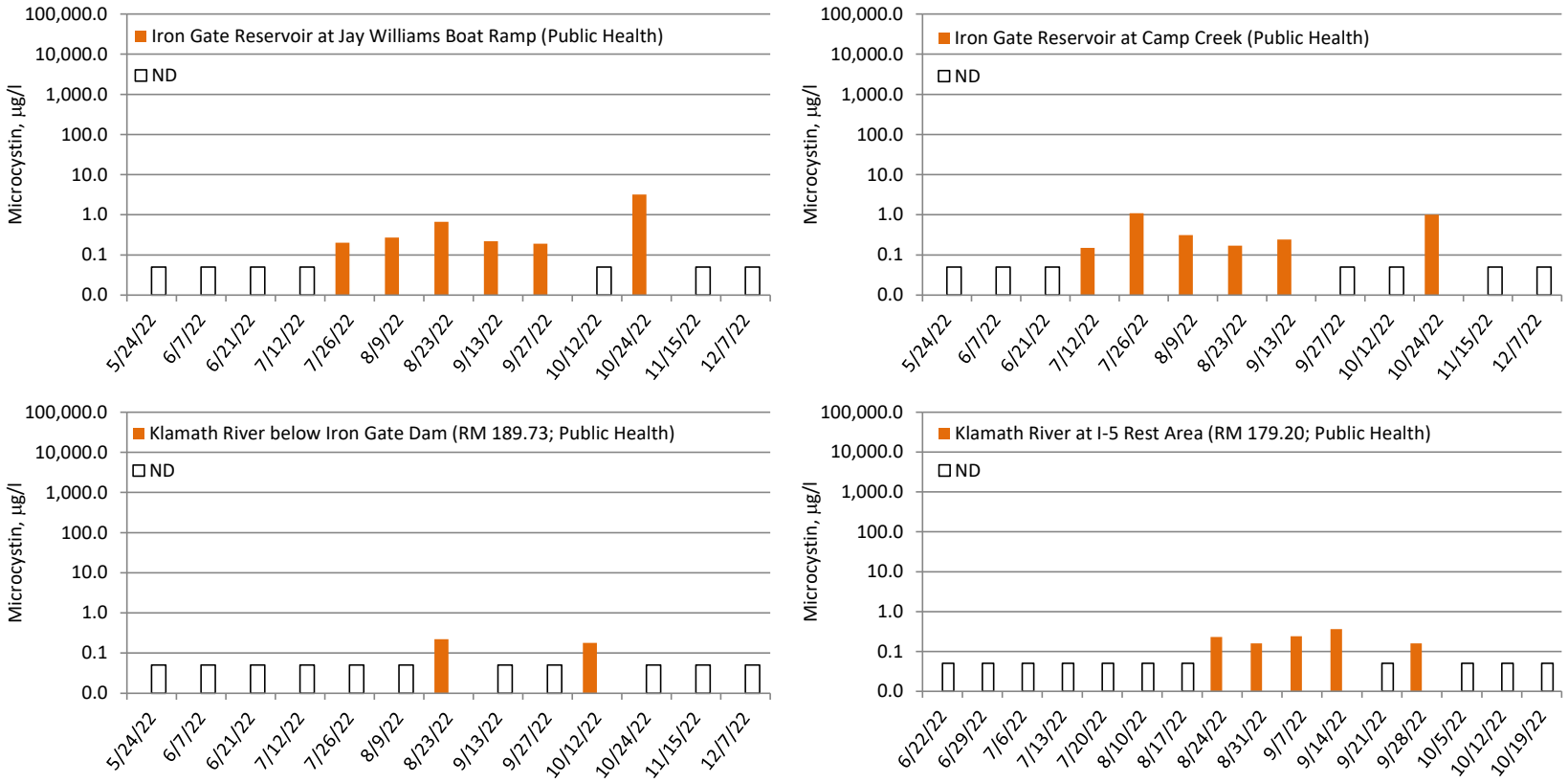

Figure 22. Microcystin concentrations from 2022 public health samples collected in Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health), Iron Gate Reservoir at Camp Creek (Public Health), Klamath River below Iron Gate Dam (RM 189.73; Public Health), and Klamath River at I-5 Rest Area (RM 179.20; Public Health) (ND indicates non-detect results).

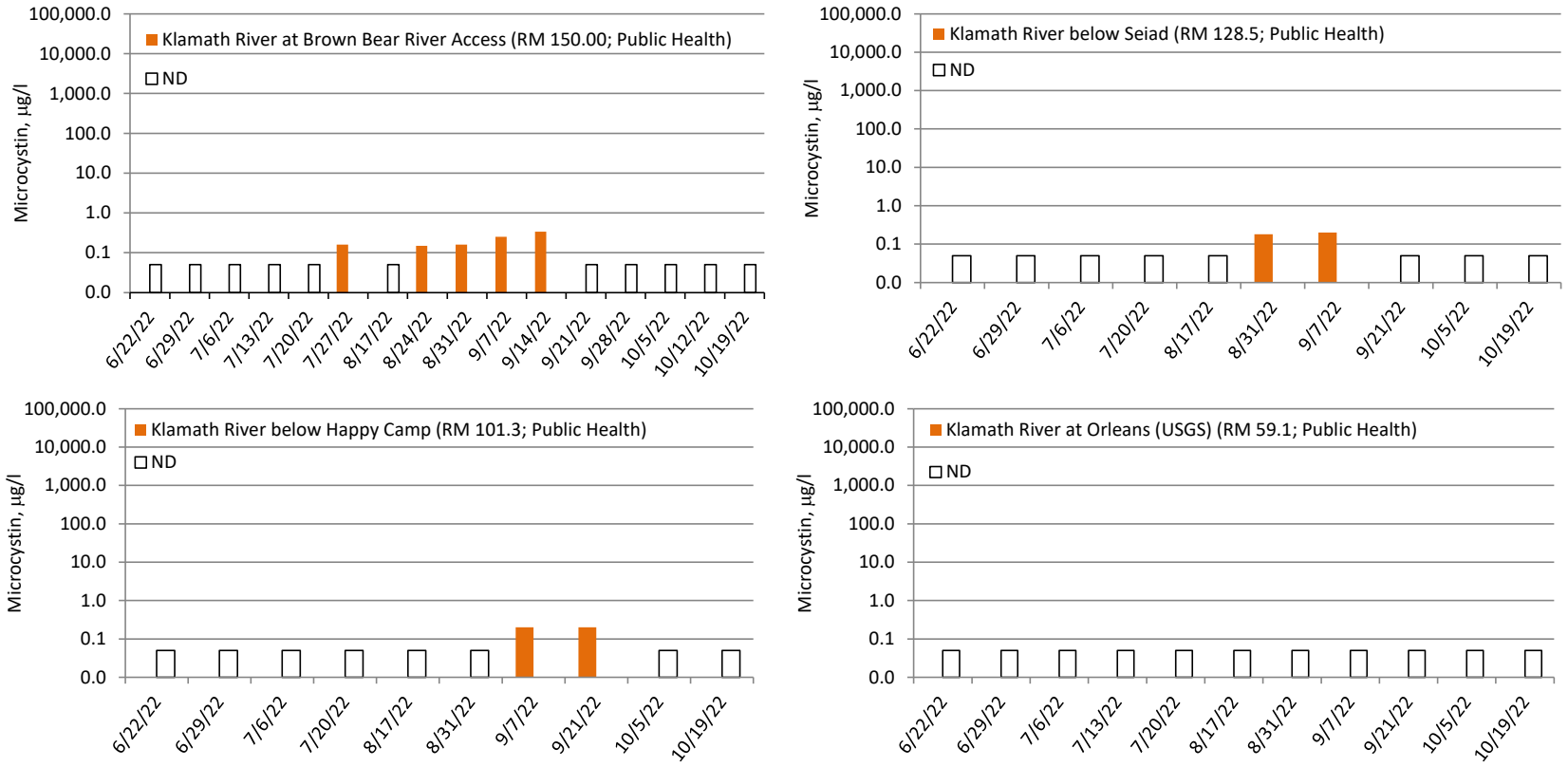

Figure 23. Microcystin concentrations from 2022 public health samples collected at Klamath River at Brown Bear River Access (RM 150.00; Public Health), Klamath River below Seiad (RM 128.5; Public Health), Klamath River below Happy Camp (RM 101.3; Public Health), and Klamath River at Orleans (USGS) (RM 59.1; Public Health) (ND indicates non-detect results).

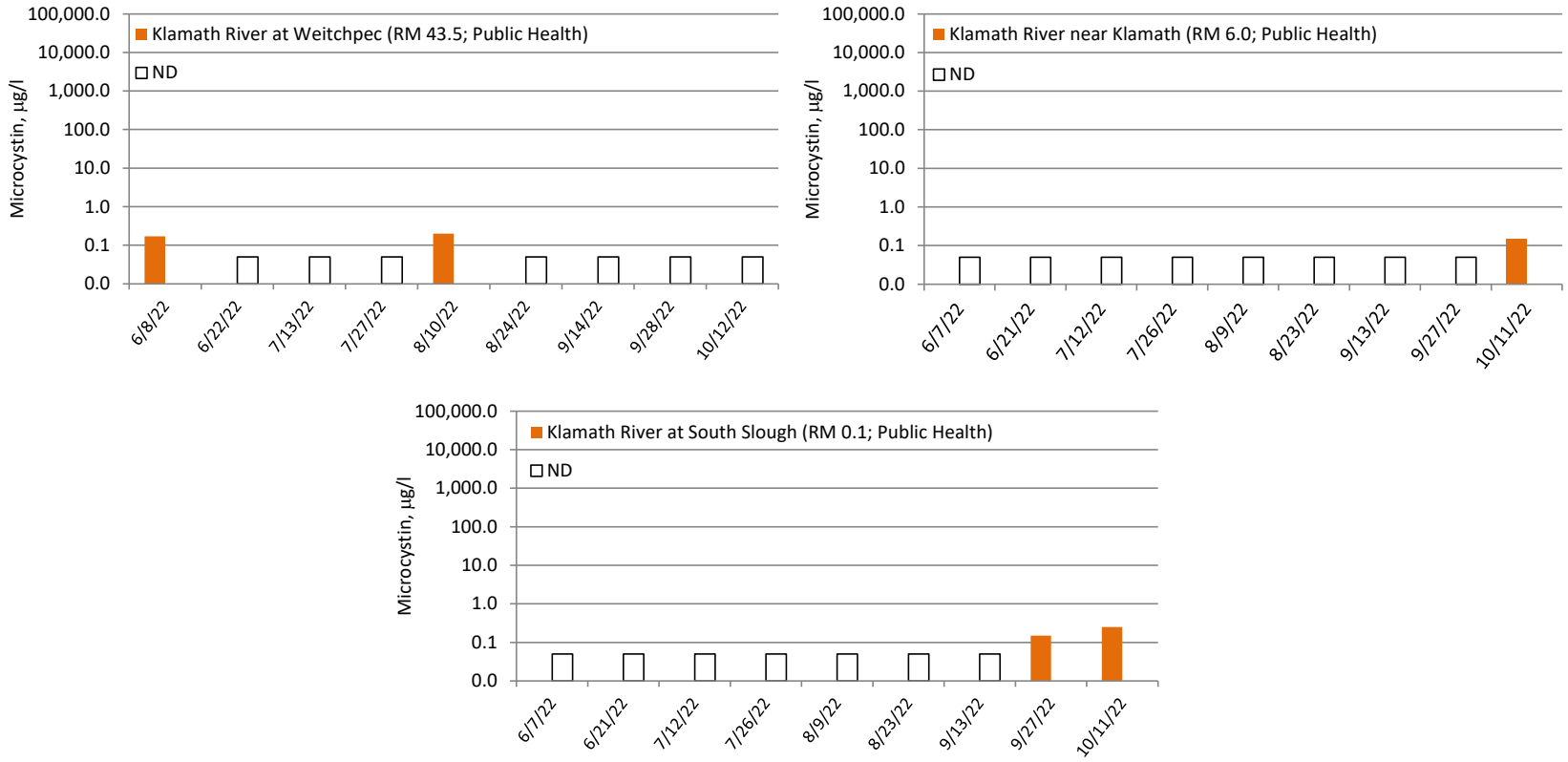

Figure 24. Microcystin concentrations from 2022 public health samples collected at Klamath River at Weitchpec (RM 43.5; Public Health), Klamath River near Klamath (RM 6.0; Public Health), and Klamath River at South Slough (RM 0.1; Public Health) (ND indicates non-detect results).

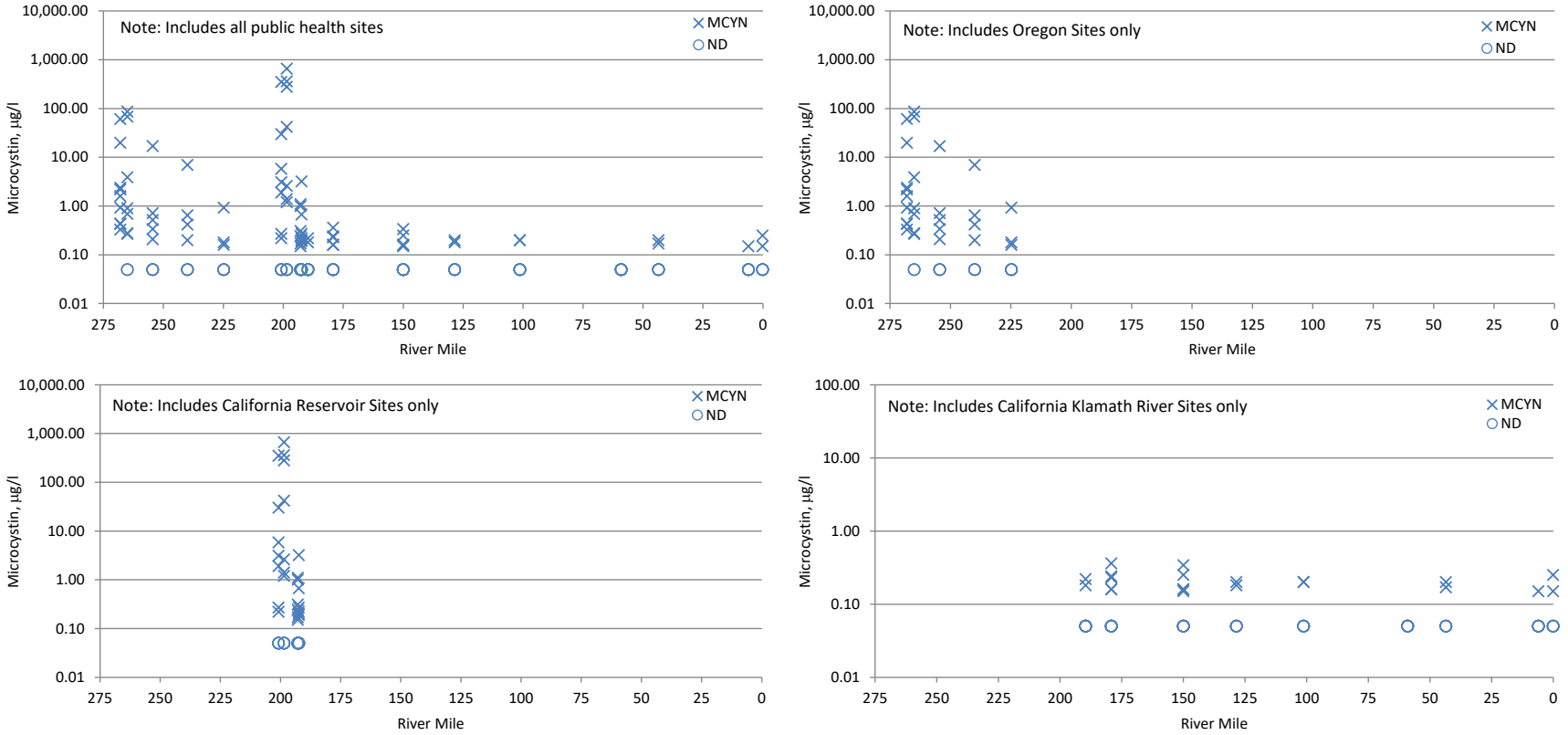

Figure 25. 2022 microcystin (MCYN) concentrations from public health program: at all public health sampling sites (top left), Oregon sites (top right), California reservoir sites (bottom let), and California Klamath River sites from Iron Gate Dam downstream (bottom right). ND (○) indicates non-detect results. Sites in Upper Klamath Lake and reservoirs were given approximate river miles to locate them appropriately on the graph.

8. Summary

The KHSA IM 15 baseline water quality sampling program and public health monitoring program are an interagency cooperative effort to characterize water quality conditions in the Klamath Basin in support of ongoing and future measures pertaining to restoration, dam removal studies, public health, and other factors. The programs were originally implemented in 2009 under the AIP and have been on-going in a consistent manner ever since. Quality assurance measures have been incorporated into the process and final data sets are available to all interested parties. This planning and monitoring effort has laid the groundwork for continued cooperation and quality data collection in the Klamath River basin.

9. References

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Appendix A. Baseline Water Quality Sampling Site Locations

Table A-1. 2022 baseline water quality sampling locations in the Klamath River mainstem and major tributaries.

Site ID	Location	Site Type	River Mile	Sampling Entity
KR25444	Link Dam (RM 254.44; Baseline)	Mainstem	254.44	PacifiCorp
KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	Mainstem	246.00	PacifiCorp
KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	Mainstem	233.40	PacifiCorp
KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	Mainstem	228.22	PacifiCorp
KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	Reservoir	224.78	PacifiCorp
KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	Mainstem	224.60	PacifiCorp
KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	Mainstem	219.50	PacifiCorp
KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	Mainstem	206.42	PacifiCorp
KR19874	Copco Reservoir (RM 198.74; Baseline) (0.5 m, thermocline, 0.5 m from bottom, and 0-8m integrated)	Reservoir	198.74	PacifiCorp
KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	Mainstem	196.45	PacifiCorp
KR19019	Iron Gate Reservoir (RM 190.19; Baseline) (0.5 m, thermocline, 0.5 m from bottom, and 0-8m integrated)	Reservoir	190.19	PacifiCorp
KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	Mainstem	189.73	PacifiCorp
KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Mainstem	156.26	Karuk
KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Mainstem	128.50	Karuk
KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Mainstem	101.30	Karuk
KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Mainstem	59.10	Karuk
KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Mainstem	43.50	Yurok
KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Mainstem	38.50	Yurok
KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Mainstem	6.00	Yurok
KR00050	Klamath River Estuary (RM 0.5; Baseline)	Mainstem	0.50	Yurok
SH00000	Shasta River near mouth (Baseline)	Tributary	-	Karuk
SC00000	Scott River near mouth (Baseline)	Tributary	-	Karuk
SA00000	Salmon River near mouth (Baseline)	Tributary	-	Karuk
TR00000	Trinity River near mouth (Baseline)	Tributary	-	Yurok

Appendix B. 2022 Baseline Data Summary

This appendix presents the complete general water quality and nutrient data set for the 2022 KHSA baseline sampling (Table B-1). The three sampling entities are PacifiCorp, the Karuk Tribe, and the Yurok Tribe. CBOD, TKN, and VSS were not sampled in 2022 but columns are in the table to preserve data formatting with historic datasets.

Table B-1. 2022 Klamath River Baseline Data Summary. All Non-detect values were replaced with "<" and the RL value. Sample Types include: P- Production sample; R – Regular sample associated with QA sample set; I = Depth Integrated sample.

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22014	4/25/2022	15:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	11.39	7.98	107.449	10.38	17.45	5.14	49.60	3.53	2.23		0.01	0.37	0.31		1.05	<0.01	0.10	0.04	0.00	26.50	44.0		
KR22036	5/9/2022	13:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	9.05	7.23	109.182	10.11	24.38	7.19	50.30	3.11	2.73		<0.01	0.27	0.38		1.26	0.01	0.08	0.03	0.01	23.90	27.0		
KR22044	5/23/2022	14:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	16.86	8.83	107.24	9.90	30.77	5.06	48.90	3.36	2.48		0.04	0.02	0.33		1.09	<0.01	0.07	0.02	<0.003		22.0		
KR22062	6/6/2022	14:50	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	18.12	7.88	108.639	7.59	4.64	1.95	49.90	3.49	0.94		0.05	0.02	0.13		0.62	0.03	0.08	0.03	<0.003	10.50	5.0		
KR22071	6/20/2022	14:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	19.84	7.85	106.297	7.67	8.10	2.74	52.40	3.70	1.38		<0.01	<0.01	0.22		0.79	0.03	0.10	0.02	0.01	8.58	6.0		
KR22090	7/11/2022	13:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					200.73	1.52	55.30	4.24	9.46		<0.01	<0.01	1.96		2.68	<0.01	0.18	0.13	0.06	26.70	21.0		0.20
KR22099	7/25/2022	13:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					169.36	4.11	57.80	5.15	4.80		0.02	<0.01	0.84		3.10	0.02	0.20	0.05	0.02	30.00	14.0		0.20
KR22118	8/8/2022	14:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					75.41	5.00	55.60	6.59	4.91		0.70	<0.01	1.03		3.51	0.06	0.25	0.11	0.03	17.70	31.0		0.22
KR22127	8/22/2022	13:25	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					76.95	2.70	53.50	6.38	3.04		0.08	0.07	0.71		2.67	0.09	0.22	0.04	0.01	10.50	14.0		1.20
KR22146	9/12/2022	14:50	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R					204.28	2.33	58.20	6.71	8.42		0.06	<0.01	1.63		5.15	0.09	0.36	0.12	0.05	60.00	48.0		0.45
KR22155	9/26/2022	15:05	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	18.48	9.74	110.739	13.38	139.74	4.28	57.60	6.55	8.99		0.10	0.01	1.83		3.74	0.03	0.26	0.13	0.07	23.80	48.0		<0.15
KR22174	10/11/2022	13:45	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	17.03	9.59	110.037	11.25	167.17	0.46	62.50	6.29	6.79		0.05	<0.01	1.36		2.33	0.03	0.17	0.09	0.04	14.80	13.0		0.17
KR22182	10/23/2022	15:00	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	10.56	9.09	92.7715	7.91	119.64	8.25	57.10	5.95	2.87		0.10	0.03	0.43		2.09	0.04	0.20	0.08	0.05		100.0		<0.15
KR22200	11/14/2022	14:35	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	3.64	7.51	133.013	9.70	13.18	4.00	63.00	5.43	2.07		0.92	0.19	0.32		2.52	<0.01	0.13	0.08	0.06	16.70	15.0		
KR22222	12/6/2022	13:20	KR25444	Link Dam (RM 254.44; Baseline)	PacifiCorp	0.5	R	2.64	6.83	124.986	11.07	7.88	2.85	56.30	5.51	1.29		0.76	0.29	0.19		2.27	0.02	0.10	0.03	0.01	11.00	11.0		
KR22018	4/25/2022	16:40	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	13.23	8.28	114.512	10.19	25.78	6.12	50.40	3.47	2.42		0.07	0.38	0.33		1.26	<0.01	0.11			27.20	34.0		
KR22040	5/9/2022	14:20	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	10.76	7.84	117.111	9.79	26.74	7.91	51.70	3.23	2.28		0.05	0.28	0.32		1.26	0.02	0.11			18.90	20.0		<0.15
KR22066	6/6/2022	13:35	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	19.95	7.38	67.1697	8.46	12.50	3.12	51.40	3.60	1.37		0.08	0.02	0.20		0.87	0.09	0.15			10.50	9.0		<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22094	7/11/2022	15:15	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					75.91	2.29	54.40	4.36	6.10		<0.01	0.04	1.25		1.64	0.01	0.16			21.00	17.0		0.16
KR22122	8/8/2022	15:55	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					203.78	45.70	56.10	6.67	8.97		0.62	<0.01	1.72		3.89	0.02	0.34			10.80	18.0		0.22
KR22150	9/12/2022	16:55	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P					263.19	0.46	58.90	6.96	15.30		0.34	0.01	3.39		4.86	0.12	0.37			50.20	31.0		0.23
KR22178	10/11/2022	15:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	18.14	8.58	122.183	0.81	232.90	5.67	69.80	7.43	14.20		1.39	<0.01	3.14		4.81	0.10	0.38			11.10	26.0		<0.15
KR22204	11/14/2022	16:05	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	4.11	7.63	146.662	7.55	26.54	7.19	66.00	5.56	2.66		1.24	0.24	0.44		2.90	<0.01	0.16			22.10	34.0		
KR22226	12/6/2022	17:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	PacifiCorp	0.5	P	2.26	7.69	130.037	11.12	18.29	3.20			3.71				0.41							11.20			
KR22017	4/25/2022	17:25	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	10.68	7.95	114.703	10.14	24.49	7.41	51.90	3.32	2.05		0.01	0.34	0.30		1.18	<0.01	0.11	0.04	0.01	28.10	39.0		
KR22039	5/9/2022	15:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	10.89	8.01	120.725	10.18	51.39	10.05	54.10	3.50	2.92		0.01	0.28	0.44		1.45	0.03	0.14	0.05	0.01	21.30	20.0		<0.15
KR22065	6/6/2022	16:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.92	8.00	112.588	8.32	2.38	1.62	54.90	3.60	0.90		0.07	0.01	0.14		0.68	0.07	0.12	0.01	<0.003	6.92	3.0		<0.15
KR22072	6/20/2022	16:15	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	19.44	8.35	116.224	8.27			57.20				0.06	0.02			0.81	0.09	0.14			6.05			
KR22093	7/11/2022	16:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					23.01	1.89	55.10	4.36	1.51		0.01	0.17	0.27		0.64	0.05	0.14	0.04	0.04	4.24	3.0		0.21
KR22100	7/25/2022	15:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P							59.20				0.18	<0.01			2.03	0.25	0.37			15.50			
KR22121	8/8/2022	16:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					99.11	19.77	57.30	6.32	5.50		0.81	<0.01	1.13		3.39	0.10	0.29	0.12	0.06	12.30	9.0		0.18
KR22128	8/22/2022	16:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P							57.70				0.78	<0.01			3.01	0.20	0.32			6.60			
KR22149	9/12/2022	17:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P					74.32	3.76	58.10	7.76	4.22		0.70	<0.01	0.90		2.96	0.18	0.26	0.09	0.05	10.10	8.0		0.20
KR22156	9/26/2022	16:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.63	8.86	124.687	8.46			64.50				0.82	0.01			3.31	0.08	0.23			5.74			
KR22177	10/11/2022	17:30	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	17.02	8.37	128.153	7.27	8.97	2.88	65.40	6.76	1.40		1.08	<0.01	0.24		2.47	0.13	0.23	0.05	0.02	4.11	3.0		<0.15
KR22203	11/14/2022	16:50	KR23340	Klamath River below Keno Dam near a	PacifiCorp	0.5	P	4.13	7.59	142.513	10.67	9.94	6.46	63.00	5.27	1.60		0.95	0.22	0.21		2.33	<0.01	0.11	0.02	0.01	19.80	16.0		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22225	12/6/2022	16:55	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	PacifiCorp	0.5	P	2.02	7.64	145.345	12.30	8.90	4.15			1.20				0.17					0.03	0.01	12.30			
KR22015	4/25/2022	19:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	10.39	7.88	111.158	9.95	17.85	7.67	49.30	2.26	1.70		0.05	0.42	0.23		1.14	0.03	0.10				23.0		
KR22037	5/9/2022	16:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	10.40	8.08	118.577	10.24	24.78	8.16	52.80	3.44	2.03		0.02	0.35	0.28		1.39	0.04	0.11				17.0		<0.15
KR22063	6/6/2022	16:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	17.47	8.08	120.194	8.48	5.46	4.46	53.60	3.67	0.98		0.05	0.13	0.12		0.77	0.11	0.16				5.0		<0.15
KR22091	7/11/2022	16:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P					4.38	2.15	55.70	4.30	0.62		0.03	0.17	0.10		0.73	0.93	0.16				3.0		<0.15
KR22119	8/8/2022	17:35	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P					11.95	7.31	50.30	5.91	1.38		0.30	1.04	0.24		2.58	0.21	0.27				3.0		<0.15
KR22147	9/12/2022	19:15	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P					12.86	7.91	56	7.32	1.6		0.55	0.68	0.285		3.38	0.068	0.276				4		0.2
KR22175	10/11/2022	16:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	16.52	7.746	124.151	8.275	4.49	4.34	59.3	7.02	0.969		0.23	0.94	0.124		2.16	0.153	0.207				<2.0		<0.15
KR22201	11/14/2022	17:35	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	3.987	7.817	139.527	11.62	6.92	6.51	60	5.1	1.31		0.38	0.76	0.166		2.06	<0.01	0.105				15		
KR22223	12/6/2022	16:10	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	P	2.279	7.707	140.57	12.45	7.27	3.97	57.2	6.09	1.18		0.58	0.8	0.166		2.53	0.063	0.106				8		
KR22016	4/25/2022	18:20	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	10.44	7.764	114.479	9.976	16.66	7.07	52.3	3.18	1.64		0.04	0.39	0.22		0.98	0.035	0.098			19.7	21		
KR22038	5/9/2022	17:35	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	10.63	8.31	119.67	10.15	22.99	7.53	56.4	2.96	1.64		<0.01	0.33	0.225		1.13	0.043	0.1			16	16		<0.15
KR22064	6/6/2022	17:30	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	16.85	8.266	118.581	8.728	3.68	3.04	56.2	3.33	0.821		0.05	0.13	0.0951		0.65	0.102	0.141			7.49	7		<0.15
KR22092	7/11/2022	17:30	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P					2.56	2.06	58	3.58	0.609		0.04	0.036	0.0953		1.276	0.096	0.126			3.99	3		<0.15
KR22120	8/8/2022	18:20	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P					10.07	6.27	50.3	4.88	1.18		0.2	0.97	0.195		2.39	0.181	0.237			2.57	7		<0.15
KR22148	9/12/2022	18:40	KR21950	Klamath River below USGS Gage (RM	PacifiCorp	0.5	P					9.91	6.94	57.4	6.15	1.35		0.43	0.65	0.232		2.56	0.194	0.243			2.83	2		0.2

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
				219.50; Baseline)																										
KR22176	10/11/2022	16:15	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	15.89	7.749	125.231	8.196	3.92	3.80	60.1	5.92	0.932		0.16	0.86	0.105		1.78	0.14	0.175			2.82	<2.0		<0.15
KR22224	12/6/2022	15:35	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	4.272	7.422	142.012	11.69	6.38	4.38	58.9	4.77	1.15		0.42	0.76	0.142		2.15	0.068	0.107			11.6	7		
KR22202	11/XX/2022	XX:XX	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P																							
KR22010	4/26/2022	9:30	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	11.19	7.245	117.741	10.06	17.92	6.93	52.4	2.87	1.88		0.02	0.41	0.244		1.04	0.033	0.106	0.02835	0.00328	20.3	2		
KR22032	5/10/2022	7:50	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	9.591	7.913	122.198	10.94	17.97	7.65	56	2.97	1.32		<0.01	0.32	0.177		1.14	0.046	0.091	0.02557	<0.003	14.6	10		<0.15
KR22058	6/7/2022	6:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.55	8.022	123.578	8.952	6.36	6.02	53.7	3.05	0.916		<0.01	0.14	0.115		0.68	0.101	0.125	0.02162	<0.003	7.38	5		<0.15
KR22070	6/21/2022	8:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	18.65	8.446	121.482	9.168							<0.01	0.12			0.6	0.097	0.138						
KR22086	7/12/2022	15:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					5.01	4.21	62.9	2.31	0.779		<0.01	0.1	0.0978		0.89	0.076	0.118	0.01875	0.00876	4.05	7		<0.15
KR22098	7/26/2022	9:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P											0.019	0.31			1.09	0.184	0.244						
KR22114	8/9/2022	16:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					8.38	5.28	53.4	4.62	1.22		0.032	1	0.178		1.93	0.166	0.211	0.02481	0.00629	3.45	6		<0.15
KR22126	8/23/2022	8:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P											0.023	1.29			2.41	0.208	0.26						
KR22142	9/13/2022	16:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P					8.47	6.02	54.9	6.04	1.07		0.049	1.06	0.158		2.43	0.175	0.236	0.02711	0.00989	3.87	4		<0.15
KR22154	9/27/2022	8:45	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.16	8.022	125.136	8.948							0.026	1.3			2.42	0.125	0.177						
KR22170	10/12/2022	16:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.06	8.956	128.132	9.986	2.82	2.70	64.1	3.62	0.53		0.01	0.75	<0.0789		1.2	0.114	0.147	0.01195	0.00459	1.76	<2.0		0.16
KR22196	11/15/2022	8:05	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	4.469	7.941	140.569	11.69	1.54	1.55	62	3.86	0.936		0.031	0.9	0.1049		1.63	0.022	0.099	0.01142	0.00328	10.5	7		
KR22218	12/7/2022	7:55	KR20642	Klamath River above Shovel Creek (RM	PacifiCorp	0.5	P	2.314	7.869	142.591	12.97	4.90	4.13			0.892				0.1032					0.01636	0.00814	10.8			

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
				206.42; Baseline)				°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22007	4/26/2022	14:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					9.69	5.18																	
KR22006	4/26/2022	14:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	11.99	7.892	121.703	10.71	13.11	4.58		2.75	1.55		<0.01	0.43	0.21		0.95	0.029	0.084				11		
KR22008	4/26/2022	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	12.14	7.872	121.887	10.68	13.21	4.82		2.77	1.34		0.01	0.44	0.193		1.01	0.092	0.087				11		
KR22009	4/26/2022	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	P	8.366	6.699	119.072	8.637			51.8	2.87	1.21		0.1	0.43	0.144		0.95	0.038	0.082				10		
KR22029	5/10/2022	12:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					7.12	3.88																	<0.15
KR22028	5/10/2022	12:05	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	14.15	8.054	121.409	9.495	6.07	2.97		2.63	0.843		0.02	0.35	0.106		1.09	0.049	0.077				4		<0.15
KR22030	5/10/2022	12:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	1	P	13.7	8.169	121.794	9.525	7.90	3.32		2.6	0.933		0.02	0.35	0.121		1.08	0.045	0.074				5		
KR22031	5/10/2022	12:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	P	8.834	6.618	122.889	6.382			54.9	2.81	0.99		0.14	0.43	0.109		1.34	0.06	0.094				6		
KR22055	6/7/2022	11:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					16.13	2.08																	<0.15
KR22054	6/7/2022	11:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	19.91	8.514	126.095	10.45	8.46	1.86		2.74	0.76		<0.01	0.03	0.11		0.49	0.065	0.08				<2.0		<0.15
KR22056	6/7/2022	11:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P	14.41	6.925	124.184	5.182	2.22	2.27		2.76	0.578		0.02	0.19	<0.0789		0.59	0.095	0.092				2		
KR22057	6/7/2022	11:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	23	P	11.36	6.757	123.187	2.472			50.3	2.67	0.948		0.02	0.44	0.105		0.8	0.082	0.108				3		
KR22083	7/12/2022	10:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					22.80	2.01																	0.88
KR22082	7/12/2022	9:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					795.58	7.66		4.04	39		<0.01	<0.01	8.48		9.44	0.062	1.1				101		46
KR22084	7/12/2022	10:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P					3.46	1.45		2.95	0.646		0.03	0.17	0.0855		0.52	0.114	0.149				3		
KR22085	7/12/2022	10:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	27	P							58.7	2.74	0.788		0.05	0.46	0.103		0.85	0.107	0.168				4		
KR22111	8/9/2022	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					58.00	3.26																	2.7
KR22110	8/9/2022	10:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					57.94	3.20		3.93	3.76		<0.01	<0.01	0.578		1.19	0.09	0.175						5
KR22112	8/9/2022	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P					6.31	1.74		3.14	0.62		<0.01	0.45	0.094		0.97	0.223	0.217						
KR22113	8/9/2022	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	24	P							61.3	2.74	0.557		0.13	0.23	<0.0789		0.71	0.165	0.193				<2.0		
KR22139	9/13/2022	10:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					29.06	1.14																	<0.15
KR22138	9/13/2022	10:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					89.74	0.46		4.79	9.28		<0.01	0.16	1.54		2.52		0.256				17		<0.15
KR22140	9/13/2022	10:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	P					2.63	1.75		4.92	0.786		0.12	0.5	0.0935		1.49	0.164	0.213				3		
KR22141	9/13/2022	10:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	24	P							65.4	3.05	0.649		0.47	<0.01	<0.0789		0.91	0.309	0.332				3		
KR22167	10/12/2022	10:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I																							0.2

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22166	10/12/2022	10:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	17.43	9.066	54.3429	10.23	30.77	0.90		4.5	3.3		0.02	0.57	0.554		1.14	0.114	0.158				6		<0.15
KR22168	10/12/2022	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	21	P	15	7.129	135.702	0.747	8.95	0.84		4.67	0.7		0.21	0.71	0.0851		1.4	0.14	0.172	0.01651	0.00555		3		
KR22169	10/12/2022	10:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	P	12.28	6.762	154.823	0.026	2.77	1.84	72.7	3.36	0.871		0.69	0.14	0.117		1.03	0.471	0.434				5		
KR22215	12/7/2022	13:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.60	1.70																	
KR22214	12/7/2022	13:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	4.666	7.811	129.611	10.86	1.53	1.78			0.503				<0.0789										
KR22216	12/7/2022	14:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	1	P	4.68	7.798	129.471	10.83	1.63	1.81			0.476				<0.0789										
KR22217	12/7/2022	14:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	23	P	4.623	7.684	146.563	10.63					0.658				0.0864										
KR22005	4/26/2022	16:10	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	9.884	7.505	121.763	9.632	7.89	5.19	53.4	2.89	1.31		0.04	0.45	0.161		0.97	0.038	0.08				9		
KR22027	5/10/2022	14:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	12.39	8.053	122.982	9.78	7.19	3.88	55.9	2.73	1.47		0.04	0.36	0.138		1.02	0.047	0.1				8		<0.15
KR22053	6/7/2022	13:05	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	20.9	8.401	149.399	9.075	4.71	1.03	53.6	2.9	0.681		0.04	0.11	0.112		0.62	0.064	0.079				2		<0.15
KR22081	7/12/2022	11:55	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					16.21	1.51	61.7	3.23	1.18		<0.01	0.05	0.205		1.11	0.078	0.132				3		0.88
KR22109	8/9/2022	13:20	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					95.10	3.43	62.7	3.86	12.9		<0.01	<0.01	1.58		2.44	0.058	0.284						4.8
KR22137	9/13/2022	12:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P					5.69	1.04	59.5	4.9	1.1		0.032	0.27	0.144		1.2	0.147	0.187				6		<0.15
KR22165	10/12/2022	12:40	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	17.72	8.547	126.919	8.415	3.23	1.17	62.4	4.71	0.634		0.067	0.63	0.0802		1.19	0.124	0.145				<2.0		<0.15
KR22191	11/15/2022	13:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	8.506	7.842	117.034	10.21	1.81	1.54	62	4.32	0.638		0.096	0.97	<0.0789		1.77	0.073	0.119				4		
KR22213	12/7/2022	12:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	4.67	7.89	141.441	11.07	2.07	2.38			0.913				0.0864										
KR22002	4/26/2022	12:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					7.11	3.54																	
KR22001	4/26/2022	11:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	13.5	7.977	104.202	10.49	9.24	2.97		2.92	0.959		0.01	0.49	0.147		0.97	0.042	0.075				6		
KR22003	4/26/2022	12:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	P	7.935	6.57	131.647	7.56	3.87	3.48		2.83	0.721		0.02	0.65	0.083		1.05	0.062	0.079				4		
KR22004	4/26/2022	12:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	40	P	5.86	6.49	139.564	5.834			67.6	2.71	0.501		0.02	0.86	<0.0789		1.3	0.062	0.08				<2.0		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22024	5/10/2022	9:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					9.63	3.85																		
KR22023	5/10/2022	9:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	12.53	7.872	127.518	9.83	6.50	2.92		2.76	0.877		<0.01	0.41	0.119		0.99	0.033	0.062				4		<0.15
KR22025	5/10/2022	10:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	12.53	7.872	127.566	9.845	5.06	2.64		1.76	0.764		<0.01	0.41	0.0993		0.94	0.033	0.058				5		
KR22026	5/10/2022	10:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	38	P	6.06	6.567	153.463	5.37			67.7	2.68	0.503		<0.01	0.9	<0.0789		1.45	0.068	0.086				2		
KR22050	6/7/2022	8:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					2.39	1.60																	<0.15
KR22049	6/7/2022	8:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	19.52	8.512	118.896	8.999	2.30	1.15		2.66	0.317		0.05	0.08	<0.0789		0.52	0.029	0.048				<2.0		<0.15
KR22051	6/7/2022	9:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	11	P	14.52	6.675	124.123	6.428	2.43	2.12		2.58	0.636		<0.01	0.2	<0.0789		0.54	0.056	0.066				<2.0		
KR22052	6/7/2022	9:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	42	P	7.08	6.374	150.82	1.308			61.7	2.68	0.46		<0.01	0.79	<0.0789		1.17	0.082	0.099				2		
KR22078	7/12/2022	7:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					11.46	1.42																	0.16
KR22077	7/12/2022	7:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					52.47	2.52		3.08	2.36		<0.01	<0.01	0.467		0.86	<0.01	0.091				5		0.24
KR22079	7/12/2022	8:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	12	P					2.78	1.33		2.82	0.522		0.01	0.08	0.0831		0.38	0.079	0.111				2		
KR22080	7/12/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	40	P							66	2.73	0.6		<0.01	1.04	0.117		1.48	0.081	0.11				2		
KR22106	8/9/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					7.51	0.70																	0.23
KR22105	8/9/2022	7:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					12.36	0.90		3.23	2.01		<0.01	<0.01	0.244		0.58	0.021	0.052				6		0.26
KR22107	8/9/2022	8:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	12	P					5.71	0.96		3.11	1		0.019	0.08	0.135		0.64	0.116	0.134				4		
KR22108	8/9/2022	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P							67.8	2.77	0.33		0.15	0.86	<0.0789		1.48	0.123	0.138						
KR22134	9/13/2022	7:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					9.73	0.87																	0.16
KR22133	9/13/2022	7:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P					10.87	0.95		4.01	1.83		<0.01	<0.01	0.225		0.59	0.041	0.074				4		<0.15
KR22135	9/13/2022	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	16	P					5.09	1.02		4.02	1.06		0.071	0.1	0.144		0.87	0.126	0.162				<2.0		
KR22136	9/13/2022	8:00	KR19019	Baseline)	PacifiCorp	42	P							68.2	2.88	0.45		0.41	0.72	<0.0789		1.47	0.145	0.186				2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22162	10/12/2022	7:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I																							0.21
KR22161	10/12/2022	7:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	18.42	9.607	128.101	10.85	12.98	0.46		4.1	0.895		0.012	<0.01	0.143		0.31	0.079	0.098				<2.0		<0.15
KR22163	10/12/2022	8:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	21	P	15.5	7.5	132.245	0.37	8.19	0.80		4.21	0.562		0.13	0.43	<0.0789		0.86	0.137	0.148				<2.0		
KR22164	10/12/2022	8:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P	7.05	6.374	159.322	0.015	2.41	0.92	72.3	2.73	0.461		0.43	0.58	<0.0789		1.21	0.147	0.179				<2.0		
KR22188	11/15/2022	10:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					3.15	0.91																	
KR22187	11/15/2022	9:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	11.05	7.833	145.64	6.857	3.47	0.94		4.12	0.484		0.18	0.64	<0.0789		1.33	0.103	0.118				<2.0		
KR22189	11/15/2022	10:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	24	P	10.2	7.278	148.426	3.636	1.36	1.21		3.85	0.4		0.24	0.65	<0.0789		1.24	0.108	0.136				<2.0		
KR22190	11/15/2022	10:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P	7.169	6.938	186.937	0.029			72	2.76	0.404		0.46	0.54	<0.0789		1.15	0.144	0.165				2		
KR22210	12/7/2022	10:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.98	0.77																	
KR22209	12/7/2022	9:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	6.789	7.611	146.688	8.556	1.64	0.86			0.406				<0.0789										
KR22211	12/7/2022	10:45	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	15	P	6.749	7.591	146.673	8.544	1.30	1.37			0.497				<0.0789										
KR22212	12/7/2022	10:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	42	P	5.747	7.589	148.184	9.39					0.634				<0.0789										
KR22000	4/26/2022	17:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	12.78	8.584	137.748	10.47	11.13	3.43	60.8	2.91	1.09		<0.01	0.5	0.166		1	0.034	0.078	0.02471	<0.003	10.6	6		
KR22022	5/10/2022	15:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	12.2	8.367	127.966	10.92	10.15	3.79	57.3	2.73	0.951		<0.01	0.42	0.133		1	0.034	0.07	0.01881	<0.003	10.8	5		
KR22048	6/7/2022	14:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	16.13	7.815	126.872	9.154	3.77	3.23	54.9	2.55	0.512		0.01	0.2	<0.0789		0.58	0.045	0.068	0.02179	<0.003	5.66	2		
KR22076	7/12/2022	13:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					4.30	2.34	63.2	2.8	0.641		<0.01	0.08	0.083		0.38	0.074	0.107	<0.003	<0.003	2.47	<2.0		<0.15
KR22104	8/9/2022	14:40	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					6.54	1.67	75	2.95	0.89		<0.01	0.09	0.111		0.6	0.122	0.138	0.01594	0.01104	2.4	5		<0.15
KR22132	9/13/2022	14:05	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					5.12	1.24	62.2	4.1	1.09		0.034	0.09	0.132		0.86	0.122	0.154	0.02418	0.00979	2.59	4		<0.15
KR22160	10/12/2022	14:00	KR18973	Klamath River below Iron Gate Dam (RM	PacifiCorp	0.5	R	17.5	9.044	129.43	9.157	2.20	0.91	64.1	4.29	0.52		0.08	0.42	<0.0789		0.82	0.143	0.136			1.59	<2.0		<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
KR22186	11/15/2022	14:30	KR18973	189.73; Baseline) Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	11.02	7.862	145.238	9.279	2.49	1.20	66	4.19	0.486		0.16	0.67	<0.0789		2.09	0.104	0.139	0.00844	0.00705	1.78	<2.0		
KR22208	12/7/2022	15:50	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	6.735	7.643	147.501	11.09	1.18	1.09			0.396				<0.0789					0.00597	0.00958	2.15			
WA041322-OC	4/13/2022	12:14	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	8.948	8.24	172.5	11.4	2.90	7.30		3.9	1.13		<0.01	0.39			1.64	0.039	0.069				7.2			
WA051122-OC	5/11/2022	11:53	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	11.6	8.29	159.3	11.08	2.10	5.30		3.75	0.981		0.02	0.353			1	0.035	0.082				8.7			
WA060822-OC	6/8/2022	12:05	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	17.21	8.46	106.8	10.29	1.10	3.00		3.53	0.526		<0.01	0.142			0.647	0.039	0.07				4.8			<0.15
WA071322-OC	7/13/2022	11:34	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	23.43	8.52	159.6	9.43	0.80	2.40		3.84	0.738		0.025	<0.01			0.477	0.073	0.095				1.6			<0.15
WA091422-OC	9/14/2022	12:03	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	19.75	8.87	155.3	8.62	4.00	4.80		5.4	3.23		0.016	0.101			0.866	0.128	0.221				41			0.34
WA101222-OC	10/12/2022	12:03	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	16.55	8.38	168.7	9.38	1.20	3.00		4.04	1.2		0.012	0.252			0.967	0.139	0.19			2.9	16			0.15
WA110922-OC	11/9/2022	11:15	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.58	8.17	178.5	10.54	2.30	3.00		5.69	0.862		0.033	0.453			1.2	0.123	0.172				10			
WA121422-OC	12/14/2022	11:07	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	4.654	8.28	184	12.28	1.40	2.20		4.57	0.492		0.05	0.754			1.41	0.088	0.116				4.8			
SV041322-OC	4/13/2022	10:38	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	8.536	8.31	171.7	11.6	2.70	5.40		2.76	0.863		0.012	0.407	0.0922		1.13	0.027	0.049	0.0041	<0.0063	5	5.7			
SV051122-OC	5/11/2022	10:38	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	9.899	8.26	152.9	11.5	2.10	4.60		2.58	0.88		<0.01	0.231	0.0978		0.659	0.021	0.048	0.0046	<0.0063	4.6	4.8			
SV060822-OC	6/8/2022	10:56	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	16.37	8.4	151.8	10.34	1.60	4.20		2.65	0.777		0.021	0.068	0.0995		0.36	0.021	0.043	<0.003	<0.0063	2.6	4.2			<0.15
SV071322-OC	7/13/2022	10:12	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	24.22	8.27	170	8.48	0.80	2.60		3.38	0.633		<0.01	<0.01			0.44	0.061	0.078	<0.003	<0.0063	1.6	2.2			<0.15
SV081022-OC	8/10/2022	11:02	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.73	7.98	179.9	8.14	2.90	3.00		4.22	2.78		0.035	0.07			0.702	0.164	0.291	0.106	0.0254	21	67			<0.15
SV091422-OC	9/14/2022	10:24	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	19.32	8.4	160.6	8.73	4.50	4.80		4.97	4.28		0.02	0.107			0.879	0.142	0.263	0.0899	0.0375	15	59			0.32
SV101222-OC	10/12/2022	10:32	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.78	8.36	175.9	9.8	2.80	2.90		4.44	1.39		0.013	0.204			0.79	0.127	0.183	0.0229	0.0131	4.4	21			<0.15
SV110922-OC	11/9/2022	10:00	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	9.621	8.19	187.9	10.87	4.30	5.60		4.98	1.97		0.017	0.425			1.49	0.173	0.196	0.0553	0.0417	6.7	46			
SV121422-OC	12/14/2022	9:57	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	3.991	8.25	196.7	12.69	2.30	3.00		4.29	0.552		0.017	0.684			1.28	0.078	0.113	0.0198	<0.0063	3.4	14			

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
HC041322-OC	4/13/2022	9:34	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	8.033	8.12	159.7	11.51	2.70	5.70		2.39	0.778		<0.01	0.293			1.07	0.018	0.037				2.5		
HC051122-OC	5/11/2022	9:40	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.16	8.04	135.9	11.36	2.10	3.70		1.92	0.535		<0.01	0.185			1.18	0.014	0.033				5.6		
HC060822-OC	6/8/2022	10:00	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.85	8.05	139.1	9.69	1.90	3.20		2.25	0.414		0.021	0.054			0.304	0.016	0.034				5.1		<0.15
HC071322-OC	7/13/2022	9:17	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	23.77	7.99	167.1	8.34	1.60	0.60		2.86	0.498		0.011	<0.01			0.311	0.052	0.067				1.6		<0.15
HC081022-OC	8/10/2022	9:51	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	21.83	7.94	180.9	8.44	2.40	3.00		3.88	3.53		0.066	0.112			0.77	0.164	0.28			23	75		<0.15
HC091422-OC	9/14/2022	9:32	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	19.6	8.19	160.9	8.84	5.30	5.90		4.4	3.86		0.024	0.132			0.847	0.177	0.289				69		0.29
HC101222-OC	10/12/2022	9:26	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.52	8.18	178.4	9.65	2.10	4.40		4.09	1.61		0.01	0.216			0.737	0.117	0.183			5.4	21		<0.15
HC110922-OC	11/9/2022	9:10	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.113	8.13	184.8	11.19	2.8	5		4.5	1.24		0.018	0.401			1.29	0.149	0.16				16		
HC121422-OC	12/14/2022	9:08	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	4.588	8.22	193.6	12.73	2.7	3.7		3.58	0.656		<0.01	0.583			1.06	0.062	0.085				6.8		
OR041322-OC	4/13/2022	7:55	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	7.916	8.03	128.9	12.06	2.4	4.1	62.8	1.65	0.364		0.014	0.187			0.503	0.01	0.021			2.5	2.3		
OR051122-OC	5/11/2022	8:16	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	8.945	7.97	109.7	11.93	1.9	2.4	54.8	2.15	0.637		<0.01	0.112			0.271	0.007	0.019			2.3	3.8		
OR060822-OC	6/8/2022	8:01	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	15.46	7.87	110.7	10.05	1.6	1.9	54.6	1.6	0.561		<0.01	0.04			0.181	0.009	0.024			1.8	5.9		<0.15
OR071322-OC	7/13/2022	7:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.74	7.99	152.8	8.26	1.6	1.4	72.2	2.08	0.425		0.02	<0.01			0.204	0.032	0.036			0.49	0.93		<0.15
OR081022-OC	8/10/2022	8:12	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	22.27	7.97	175.1	8.52	1.9	3.9	83	3.18	2.82		0.09	0.134			0.662	0.15	0.317			25	63		<0.15
OR091422-OC	9/14/2022	8:09	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	20.1	8.13	161.2	8.88	6.3	9.1	76	3.77	4.85		0.031	0.138			0.837	0.124	0.319			24	85		0.29
OR101222-OC	10/12/2022	7:56	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	16.43	8.16	173.8	9.59	3	2.6	82	3.39	1.34		<0.01	0.157			0.507	0.096	0.145			4.3	14		<0.15
OR110922-OC	11/9/2022	7:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	8.824	7.88	163.4	11.55	4	6.7	73.8	4.18	2.07		<0.01	0.234			0.881	0.062	0.119			4.3	22		
OR121422-OC	12/14/2022	7:43	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	5.071	8.16	172.6	12.84	2.7	2.8	78.4	3.62	0.705		<0.01	0.391			0.746	0.036	0.051			2.4	4.9		
WE041222-OC	4/12/2022	10:34	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	8.457	7.9	127.3	12.52	2.26	2.8		2.09	0.912		0.015	0.132	0.124		0.297	0.01	0.03			1.68	3.2		
WE051122-OC	5/11/2022	10:55	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.207	7.96	110.8	11.93	<1	1.1		1.51	0.426		0.015	0.098	<0.0789		0.183	0.009	0.026			1.59	3.5		
WE052522-OC	5/25/2022	10:30	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
WE060822-OC	6/8/2022	10:59	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	15.94	9.63	114.1	10.34	1.63	2.21		1.82	0.465		0.012	0.018	<0.0789		0.165	0.013	0.032			1.32	4		<0.15
WE062222-OC	6/22/2022	10:16	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE071322-OC	7/13/2022	10:43	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	23.1	8.14	155.5	8.87	<1	<1		1.97	0.284		<0.012	<0.016	<0.0789		0.148	0.028	0.064			0.39	<2		<0.15
WE072722-OC	7/27/2022	10:03	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE081022-OC	8/10/2022	10:04	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	21.39	8.04	176.9	8.51	1.05	2.67		2.76	3.59		0.114	0.157	0.269		0.669	0.158	0.253			34.43	54.8		<0.15
WE082422-OC	8/24/2022	10:35	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE091422-OC	9/14/2022	10:28	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	19.88	8.04	763.2	8.5	9.33	14.4		3.42	3		<0.012	<0.016	0.248		0.672	0.09	0.204			22.18	37.6		<0.15
WE092822-OC	9/28/2022	10:13	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.15
WE101222-OC	10/12/2022	11:20	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.21	8.12	176.4	10.06	<1	1.65		3.13	0.928		<0.012	0.171	<0.0789		0.533	0.086	0.107			6.03	9.5		0.16
WE110922-OC	11/9/2022	12:04	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.284	7.92	162.6	11.6				3.15	0.954		<0.012	0.297	<0.0789		0.588	0.056	0.095			5.77	10.1		
WE121422-OC	12/14/2022	12:47	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	5.439	8.12	172.3	12.93				2.43			<0.012	0.334			0.552	0.038	0.048			4.23	4.24		
TC041222-OC	4/12/2022	9:30	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.067	7.94	134	11.96	<1	<1		1.66	0.521		<0.012	0.089	<0.0789		0.277	0.007	0.023			1.47	3		
TC051122-OC	5/11/2022	9:59	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.389	7.88	118.9	11.69	<1	<1		1.46	0.353		<0.012	0.077	<0.0789		0.143	0.008	0.025			2.04	3.1		
TC060822-OC	6/8/2022	9:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	16.12	9.39	121.4	9.96	1.35	1.8		1.71	0.473		0.013	<0.016	<0.0789		0.138	0.009	0.028			1.37	6.6		<0.15
TC062222-OC	6/22/2022	9:08	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC071322-OC	7/13/2022	9:41	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.8	7.99	160.3	8.4	<1	<1		1.63	0.234		0.012	<0.016	<0.0789		0.118	0.019	0.037			1.58	<2		<0.15
TC072722-OC	7/27/2022	9:03	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC081022-OC	8/10/2022	8:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	21.55	8.05	177.1	8.37	1.56	2.85		2.3	2.5		0.075	0.095	0.186		0.536	0.111	0.193			26.75	39.7		<0.15
TC082422-OC	8/24/2022	9:22	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC091422-OC	9/14/2022	9:11	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	19.13	8.07	157.3	8.91	6.72	8.87		2.88	2.16		<0.012	<0.016	0.179		0.494	0.068	0.138			15.05	27.4		<0.15
TC092822-OC	9/28/2022	8:59	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P																							<0.15
TC101222-OC	10/12/2022	9:54	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	16.82	8.08	175.9	9.77	1.47	2.2		2.44	0.755		<0.012	0.068	<0.0789		0.373	0.039	0.064			4.3	8.5		<0.15
TC110922-OC	11/9/2022	10:56	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	9.6	8.07	169.7	11.4				3.57	0.847		<0.012	0.193	<0.0789		0.432	0.038	0.059			4.03	8.1		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature °C	pH -	Specific Conductivity µS/cm	Dissolved Oxygen mg/l	Algae, Chlorophyll-a µg/l	Algae, Pheophytin µg/l	Alkalinity mg/l	Carbon, Dissolved Organic Carbon mg/l	Carbon, Particulate Carbon mg/l	Demand, Carbonaceous Biological Oxygen Demand mg/l	Nitrogen, Ammonia mg/l	Nitrogen, Nitrate+Nitrite mg/l	Nitrogen, Particulate Nitrogen mg/l	Nitrogen, Total Kjeldahl Nitrogen mg/l	Nitrogen, Total Nitrogen mg/l	Phosphorus, Phosphate mg/l	Phosphorus, Total Phosphorus mg/l	Phosphorus, Particulate Phosphorus mg/l	Phosphorus, Particulate Inorganic Phosphorus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
TC121422-OC	12/14/2022	11:53	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	5.802	8.1	180.3	12.76				2.34			<0.012	0.28			0.421	0.021	0.033			2.36	3.98		
TG041222-OC	4/12/2022	7:13	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	9.911	7.44	134	10.68	<1	<1		1.59	0.848		0.017	0.114	0.0844		0.259	0.006	0.03	0.01517	<0.003	1.21	6.2		
TG051122-OC	5/11/2022	7:39	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	9.721	7.65	114.6	11.25	<1	<1		1.49	0.39		0.012	0.091	<0.0789		0.127	0.009	<0.018	0.00596	<0.003	7.36	5.5		
TG052422-OC	5/24/2022	11:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG060722-OC	6/7/2022	9:38	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	15.79	8.79	116.4	10.14																1.37			<0.15
TG060822-OC	6/8/2022	7:47	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	15.97	8.95	120.8	9.66	<1	1.27		1.65	0.326		0.021	0.037	<0.0789		0.144	0.017	0.028			10.43	7.1		
TG062122-OC	6/21/2022	10:32	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG071222-OC	7/12/2022	13:16	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	23.1	8.76	157.1	11.84																0.75			<0.15
TG071322-OC	7/13/2022	7:26	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.06	7.65	159.7	7.22	1.19	1.69		1.36	0.296		0.018	0.04	<0.0789		0.163	0.012	0.027	0.00657	<0.003	1.186	<2		
TG072622-OC	7/26/2022	12:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG080922-OC	8/9/2022	12:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG081022-OC	8/10/2022	6:58	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	19.86	7.59	179.1	6.86	1.42	3.2		2.09	1.64		0.105	0.143	0.13		0.573	0.119	0.191	0.1081	0.04841	49.31	23.8		
TG082322-OC	8/23/2022	10:47	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG091322-OC	9/13/2022	11:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	20.43	8.27	164.3	9.7																5.36			<0.15
TG091422-OC	9/14/2022	7:17	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	19.07	7.78	161	7.59	30.6	25		2.74	1.98		0.039	<0.016	0.187		0.506	0.087	0.136	0.08204	0.03451	30.32	18.3		
TG092722-OC	9/27/2022	11:06	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.15
TG101122-OC	10/11/2022	13:08	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	14.38	9.06	173	13.39																1.19			<0.15
TG101222-OC	10/12/2022	7:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	16.57	7.88	175.9	8.51	2.68	3.71		2.15	0.421		0.013	0.056	<0.0789		0.289	0.038	0.051	0.01151	0.00331	104.1	2.9		
TG110922-OC	11/9/2022	8:00	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	10.56	7.62	165.9	9.39				2.87	1.01		0.024	0.275	0.102		0.495	0.03	0.058	0.03115	0.01214	12.24	9.2		
TG121422-OC	12/14/2022	8:42	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	6.209	7.47	168.7	11.14				2.02			0.014	0.304			0.414	0.017	0.023			2.01	2.93		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
LES041222-OC	4/12/2022	6:38	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.13	7.67	127.9	10.87	<1	1.15		1.64	0.577		0.032	0.139	<0.0789		0.314	0.014	0.044			1.16	4.5		
LES051122-OC	5/11/2022	7:00	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	9.672	7.84	118.9	11.24	<1	1.15		1.47	0.631		0.016	0.098	<0.0789		0.187	0.007	<0.018			2.49	8.8		
LES052422-OC	5/24/2022	10:15	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES060722-OC	6/7/2022	10:06	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.46	8.65	113.5	10.13																4.48			<0.15
LES060822-OC	6/8/2022	6:57	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.58	9.27	122.1	9.52	1.28	1.71		1.6	0.498		0.015	0.036	<0.0789		0.151	0.012	0.025			1.06	5.5		
LES062122-OC	6/21/2022	0:50	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES071222-OC	7/12/2022	13:50	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	22.07	7.87	1122	8.54																0.31			<0.15
LES071322-OC	7/13/2022	6:47	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.19	7.57	5582	7.7	1.03	<1		<0.4	0.334		0.027	0.016	<0.0789		<0.06	0.015	0.047			0.46	<2		
LES072622-OC	7/26/2022	11:36	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES080922-OC	8/9/2022	11:36	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES081022-OC	8/10/2022	6:04	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.48	7.56	4749	6.95	<1	2.04		0.718	1.2		0.142	0.106	0.102		0.267	0.137	0.179			20.28	19.4		
LES082322-OC	8/23/2022	11:20	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES091322-OC	9/13/2022	12:08	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.75	7.85	7387	7.97																3.68			<0.15
LES091422-OC	9/14/2022	6:34	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	19.18	7.89	3030	8.11	7.37	12.40		0.666	0.835		0.014	<0.016	<0.0789		0.2	0.033	0.088			4.25	6.5		
LES092722-OC	9/27/2022	12:01	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.15
LES101122-OC	10/11/2022	13:48	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	17.42	8.02	4565	9.73																1.1			
LES101222-OC	10/12/2022	6:29	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	16.63	8.04	2791	9.63	1.33	2.53		0.622	0.753		0.029	0.035	<0.0789		0.185	0.044	0.056			1.34	4.6		
LES110922-OC	11/9/2022	7:23	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.4	7.57	0	9.96				1.34	1.35		0.024	0.344	0.0979		0.317	0.032	0.082			4.2	6.9		
LES121422-OC	12/14/2022	7:30	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	6.55	7.63	0.8	11.69				2.12			0.014	0.345			0.46	0.018	0.028			3.99	3.65		
SH041322-OC	4/13/2022	13:12	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	9.576	8.68	497.1	11.17	2.7	3.6		3.34	0.63		<0.01	0.155			0.589	0.15	0.187			2.5	8		
SH051122-OC	5/11/2022	12:41	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	12.19	8.72	564	11.36	3.2	0.5		5.3	0.447		<0.01	<0.01			0.502	0.168	0.187			1.7	1.8		
SH060822-OC	6/8/2022	13:05	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P					2.1	0.3		4.26	0.355		<0.01	<0.01			0.335	0.162	0.221			4.8	1.9		
SH071322-OC	7/13/2022	12:35	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	25	8.58	470.3	9.46	0.8	1.6		3.43	0.461		<0.01	<0.01			0.273	0.196	0.224			1.2	1.8		
SH081022-OC	8/10/2022	13:38	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	22.49	8.72	456.3	10.24	0.8	1.8		3.38	0.44		<0.01	<0.01			0.223	0.16	0.166			1.2	2.7		
SH091422-OC	9/14/2022	13:19	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	18.56	8.74	473	10.41	2.7	0.7		3.43	0.275		<0.01	<0.01			0.303	0.199	0.225			1.2	2.1		
SH101222-OC	10/12/2022	13:45	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	13.71	8.63	417.8	10.5	2.7	2.4		1.68	0.699		<0.01	0.017			0.175	0.182	0.189			2.3	8.2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
SH110922-OC	11/9/2022	11:50	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	7.713	8.55	414.2	11.43	3.7	3.4		2.59	0.992		<0.01	0.115			1.24	0.203	0.22			2.1	11		
SH121422-OC	12/14/2022	11:50	SH00000	Shasta River near mouth (Baseline)	Karuk	0.5	P	4.432	8.59	417.8	12.45	4.3	3.3		2.01	1		<0.01	0.286			0.54	0.217	0.562			2.5	10		
SC041322-OC	4/13/2022	11:19	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	7.404	8.36	164.5	11.73	2.4	2.1		1.87	0.299		<0.01	0.386			0.546	<0.001	0.009			1.2	2		
SC051122-OC	5/11/2022	11:23	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	8.832	8.28	134.8	11.53	2.4	1.1		1.9	0.377		<0.01	0.124			0.301	0.003	0.049			1.7	2.8		
SC060822-OC	6/8/2022	11:40	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	15.05	8.4	133.5	10.05	1.3	2		1.92	0.382		0.046	0.02			0.135	<0.001	0.008			1.5	2.3		
SC071322-OC	7/13/2022	10:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	23.1	8.35	201.1	8.83	1.3	0.7		1.19	0.431		0.017	<0.01			0.134	<0.001	0.007			0.33	0.8		
SC081022-OC	8/10/2022	11:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	22.48	9.53	228.3	8.5	1.1	1.4		1.82	0.494		<0.01	<0.01			0.111	<0.001	0.009			0.37	0.8		
SC091422-OC	9/14/2022	11:00	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	18.58	8.46	250.8	9.61	0.9	1.6		1.22	0.198		<0.01	<0.01			0.105	0.003	0.009			0.27	0.67		
SC101222-OC	10/12/2022	11:14	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	13.94	8.49	259.9	10.64	3.9	1.4		1.37	0.616		<0.01	<0.01			0.067	0.001	0.017			0.41	6.4		
SC110922-OC	11/9/2022	10:45	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	7.858	8.41	238.3	11.82	1.8	0.5		2.37	0.287		<0.01	0.01			0.21	0.001	0.004			0.33	<0.5		
SC121422-OC	12/14/2022	10:37	SC00000	Scott River near mouth (Baseline)	Karuk	0.5	P	1.969	8.53	255	13.79	2.8	0.8		1.55	0.284		<0.01	0.117			0.191	0.009	0.009			0.41	0.8		
SA041322-OC	4/13/2022	8:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	6.097	7.89	83.7	12.38	1.3	1.8		1.1	0.285		<0.01	0.08			0.083	0.001	0.008			0.15	0.75		
SA051122-OC	5/11/2022	8:38	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	7.284	7.89	81.1	12.24	1.6	0.6		0.994	0.382		<0.01	0.078			0.194	0.001	0.007			1.1	2		
SA060822-OC	6/8/2022	8:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	14.03	7.85	76.5	10.28	1.1	1.5		1.27	0.365		0.012	0.052			0.105	0.002	0.009			1.1	2.4		
SA071322-OC	7/13/2022	8:18	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	20.86	7.79	115.5	8.71	1.1	1.2		0.96	0.421		0.01	<0.01			0.063	<0.001	0.007			0.32	0.8		
SA081022-OC	8/10/2022	8:52	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	19.49	7.89	133.9	8.85	1.1	2.3		1.56	0.831		<0.01	0.026			0.079	0.016	0.034			2.6	6.8		
SA091422-OC	9/14/2022	7:36	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	17.53	7.91	144.5	8.84	1.4	1.8		0.968	0.347		<0.01	<0.01			0.106	<0.001	0.007			0.33	1.7		
SA101222-OC	10/12/2022	8:27	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	13.94	7.96	146.2	9.76	5.2	2.8		0.669	1.19		<0.01	<0.01			0.071	0.002	0.034			0.78	14		
SA110922-OC	11/9/2022	8:15	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	8.206	7.93	130.5	11.44	6.8	4.8		2.42	2.42		<0.01	0.089			0.572	0.004	0.043			2.8	15		
SA121422-OC	12/14/2022	8:08	SA00000	Salmon River near mouth (Baseline)	Karuk	0.5	P	3.388	8.05	137.8	12.99	4.1	0.8		1.24	0.468		<0.01	0.139			0.192	<0.001	0.005			0.58	2.3		
TR041222-OC	4/12/2022	10:15	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.2	7.84	152.4	11.59	<1	<1		1.45	0.3		0.013	0.026	<0.0789		0.093	<0.006	<0.018			0.55	<2		
TR051122-OC	5/11/2022	10:40	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.48	7.88	136.4	11.41	<1	<1		1.42	0.296		0.013	0.035	<0.0789		0.181	<0.006	<0.018			2.9	2.3		
TR052522-OC	5/25/2022	10:05	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR060822-OC	6/8/2022	10:42	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	17.07	9.29	140.6	9.8	<1	<1		1.35	0.252		0.013	<0.016	<0.0789		0.098	0.01	<0.018			7.37	4.3		
TR062222-OC	6/22/2022	9:58	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR071322-OC	7/13/2022	10:28	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	23.53	8.05	172.8	8.58	<1	<1		1.32			0.012	<0.016			0.062	<0.006	<0.018			0.830	<2		

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Type	Water Temperature	pH	Specific Conductivity	Dissolved Oxygen	Algae, Chlorophyll-a	Algae, Pheophytin	Alkalinity	Carbon, Dissolved Organic Carbon	Carbon, Particulate Carbon	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Particulate Nitrogen	Nitrogen, Total Kjeldahl Nitrogen	Nitrogen, Total Nitrogen	Phosphorus, Phosphate	Phosphorus, Total Phosphorus	Phosphorus, Particulate Phosphorus	Phosphorus, Particulate Inorganic Phosphorus	Turbidity	Solids, Total Suspended Solids	Solids, Volatile Suspended Solids	Toxins, Microcystin
								°C	-	µS/cm	mg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	NTU	mg/l	mg/l	µg/l
TR072722-OC	7/27/2022	9:49	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR081022-OC	8/10/2022	9:48	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.58	8.38	175.4	9.41	<1	<1		1.41			<0.012	<0.016			0.077	<0.006	<0.018			3.950	<2		
TR082422-OC	8/24/2022	10:19	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR091422-OC	9/14/2022	10:09	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	18.7	8.03	150.3	9.45	13.4	11.2		1.39			0.036	<0.016			0.163	<0.006	<0.018			5.190	#####		
TR092822-OC	9/28/2022	9:52	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P																							<0.15
TR101222-OC	10/12/2022	10:56	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	16.86	8.28	175.8	10.36	1.07	1.56		1.29			0.014	<0.016			0.106	<0.006	<0.018			4.760	9.100		
TR110922-OC	11/9/2022	11:47	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	11.13	8.1	189.4	11.37				2.38			0.014	0.070			0.170	<0.006	0.019			3.700	<2		
TR121422-OC	12/14/2022	12:32	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	6.107	8	164.9	12.66				2.03			<0.012	0.169			0.235	<0.006	<0.018			4.650	2.370		

Appendix C. Selected Results of 2022 Baseline Phytoplankton Analysis

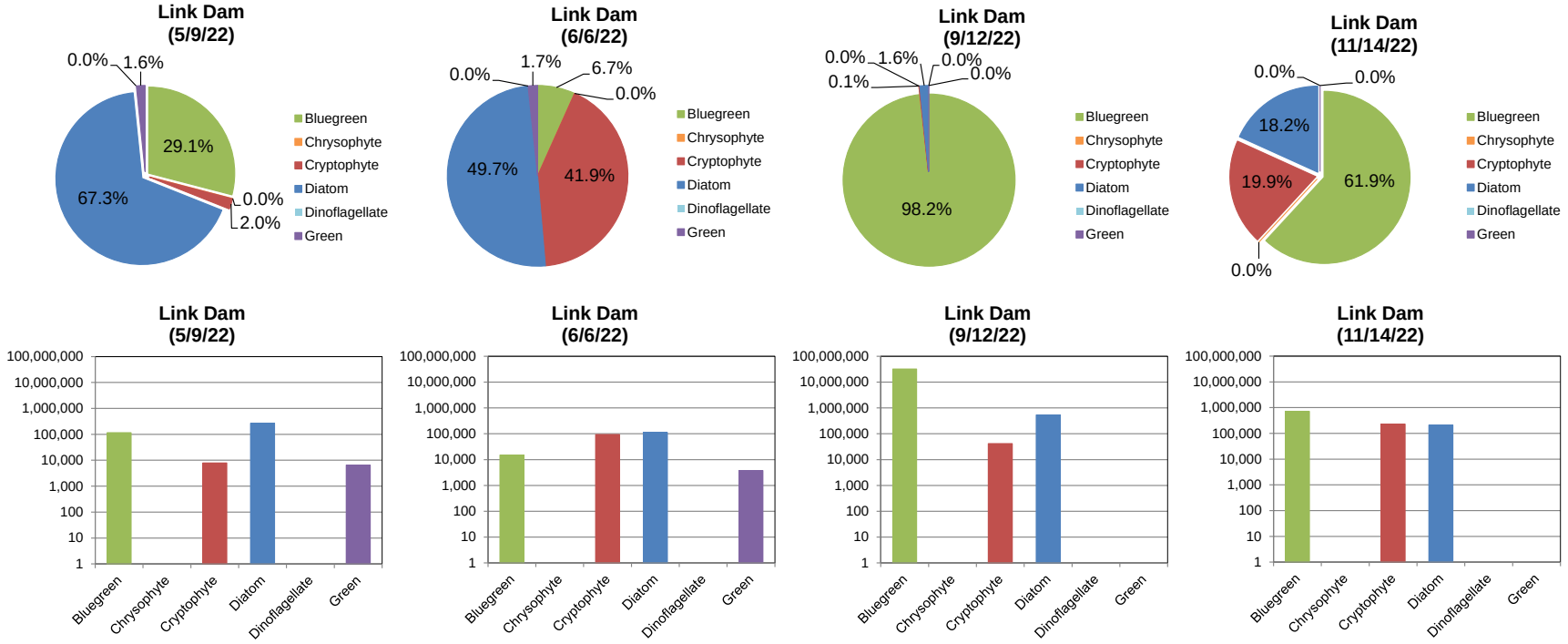

Figure C-1. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Link Dam (RM 254.44; Baseline) for samples collected as part of Baseline sampling on May 9, 2022, June 6, 2022, September 12, 2022, and November 14, 2022. Note: y-axis in logarithmic scale.

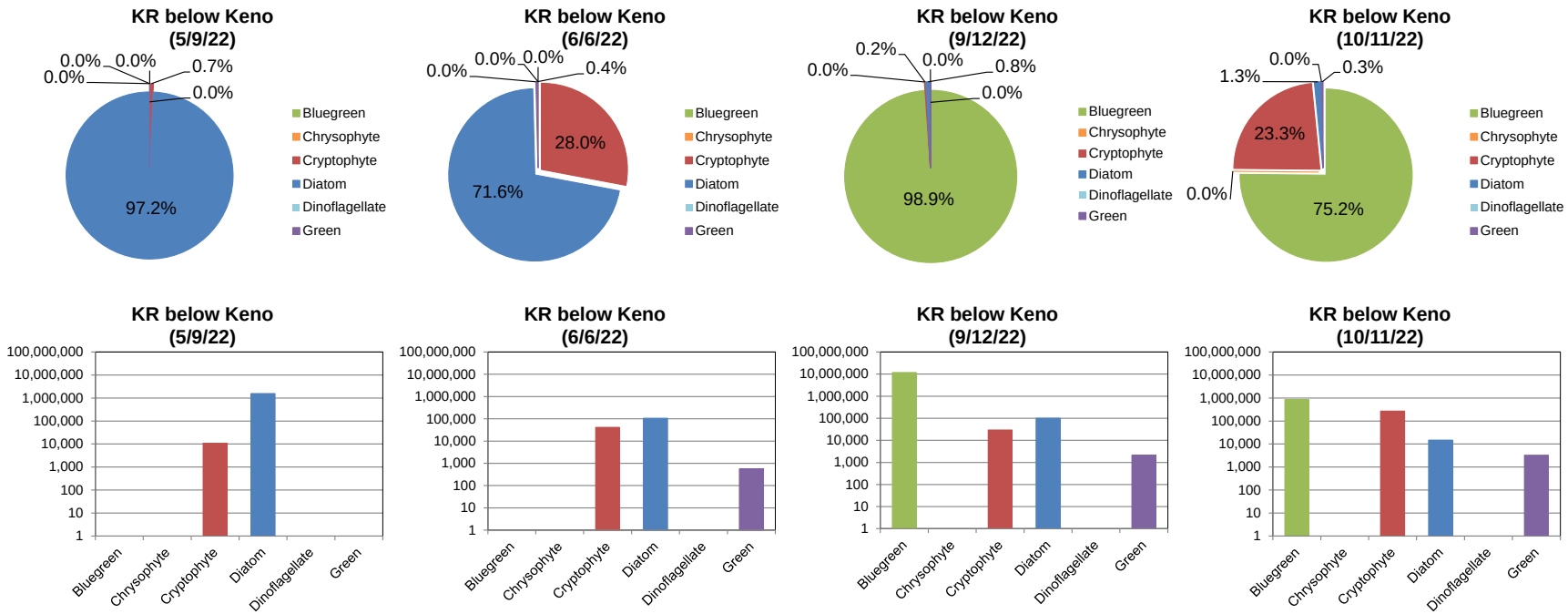

Figure C-2. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline) for samples collected as part of Baseline sampling on May 9, 2022, June 6, 2022, September 12, 2022, and October 11, 2022. Note: y-axis in logarithmic scale.

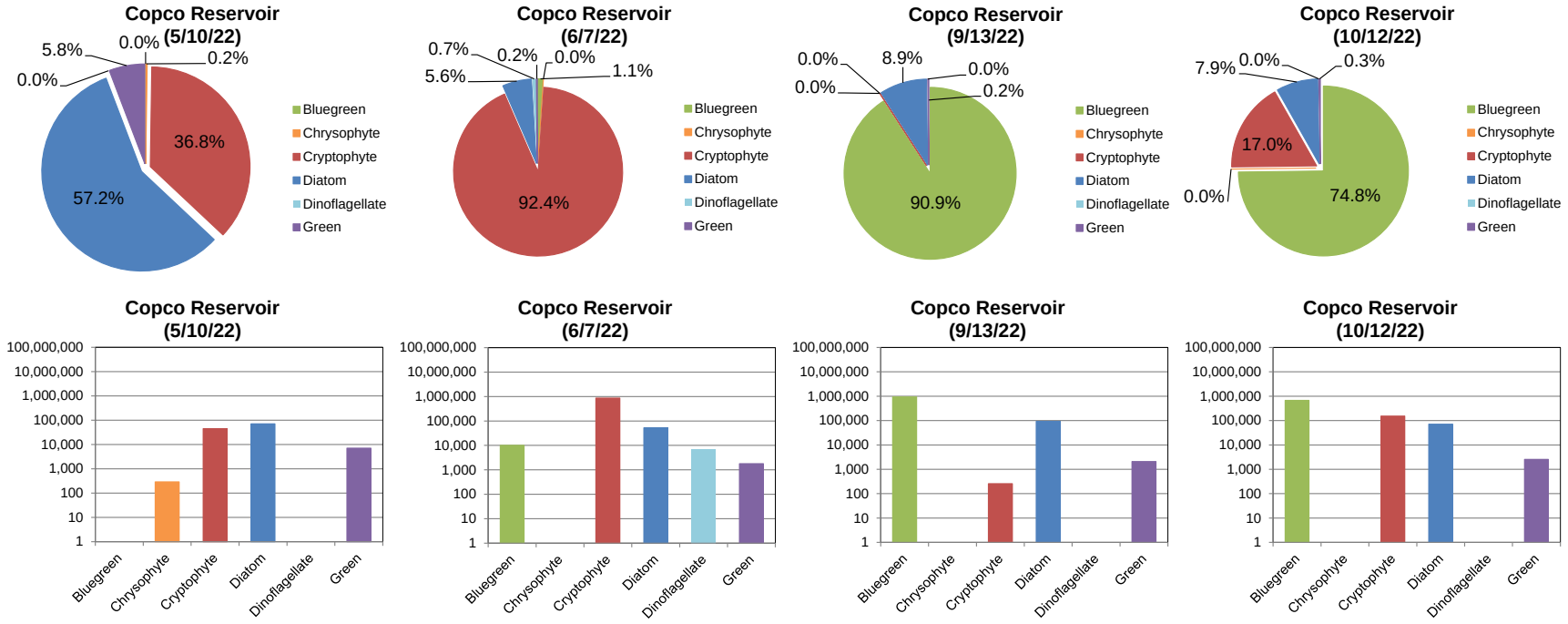

Figure C-3. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Copco Reservoir (RM 198.74; Baseline) near dam for samples collected as part of Baseline sampling on May 10, 2022, June 7, 2022, September 13, 2022, and October 12, 2022. Note: y-axis in logarithmic scale.

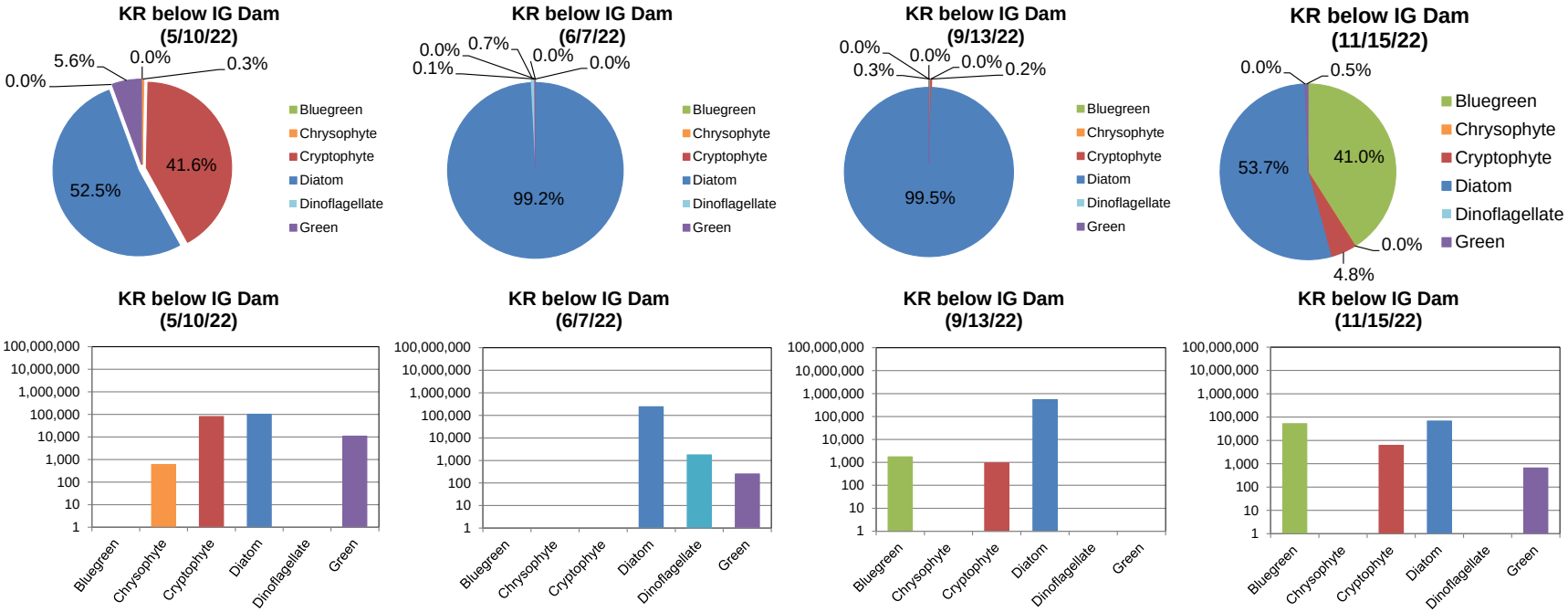

Figure C-4. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Iron Gate Dam (RM 189.73; Baseline) for samples collected as part of Baseline sampling on May 10, 2022, June 7, 2022, September 13, 2022, and November 15, 2022. Note: y-axis in logarithmic scale.

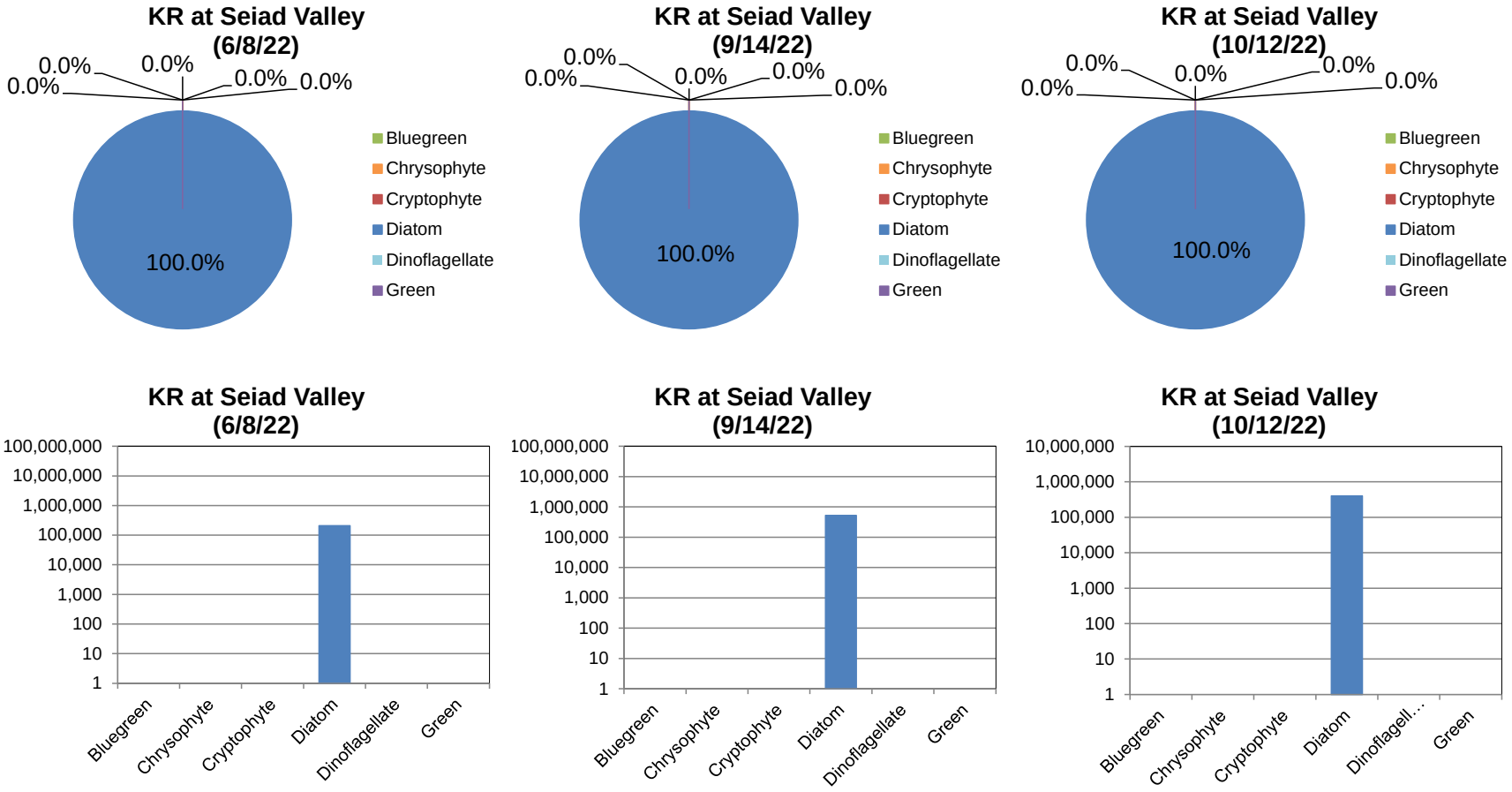

Figure C-5. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Seiad (RM 128.5; Baseline) for samples collected as part of Baseline sampling on June 8, 2022, September 14, 2022, and October 12, 2022. Note: y-axis in logarithmic scale.

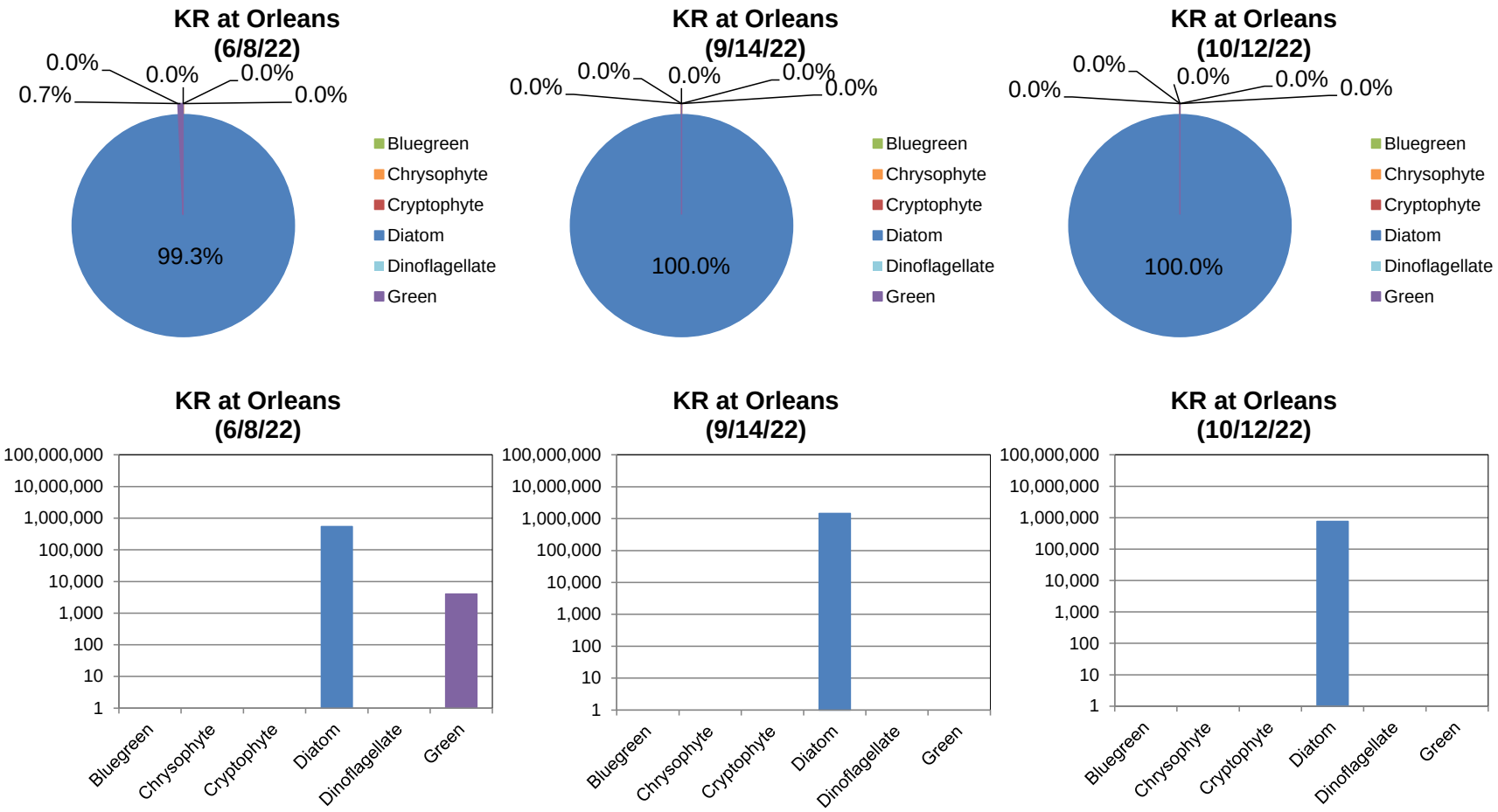

Figure C-6. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River at Orleans (USGS) (RM 59.1; Baseline) for samples collected as part of Baseline sampling on June 8, 2022, September 14, 2022, and October 12, 2022. Note: y-axis in logarithmic scale.

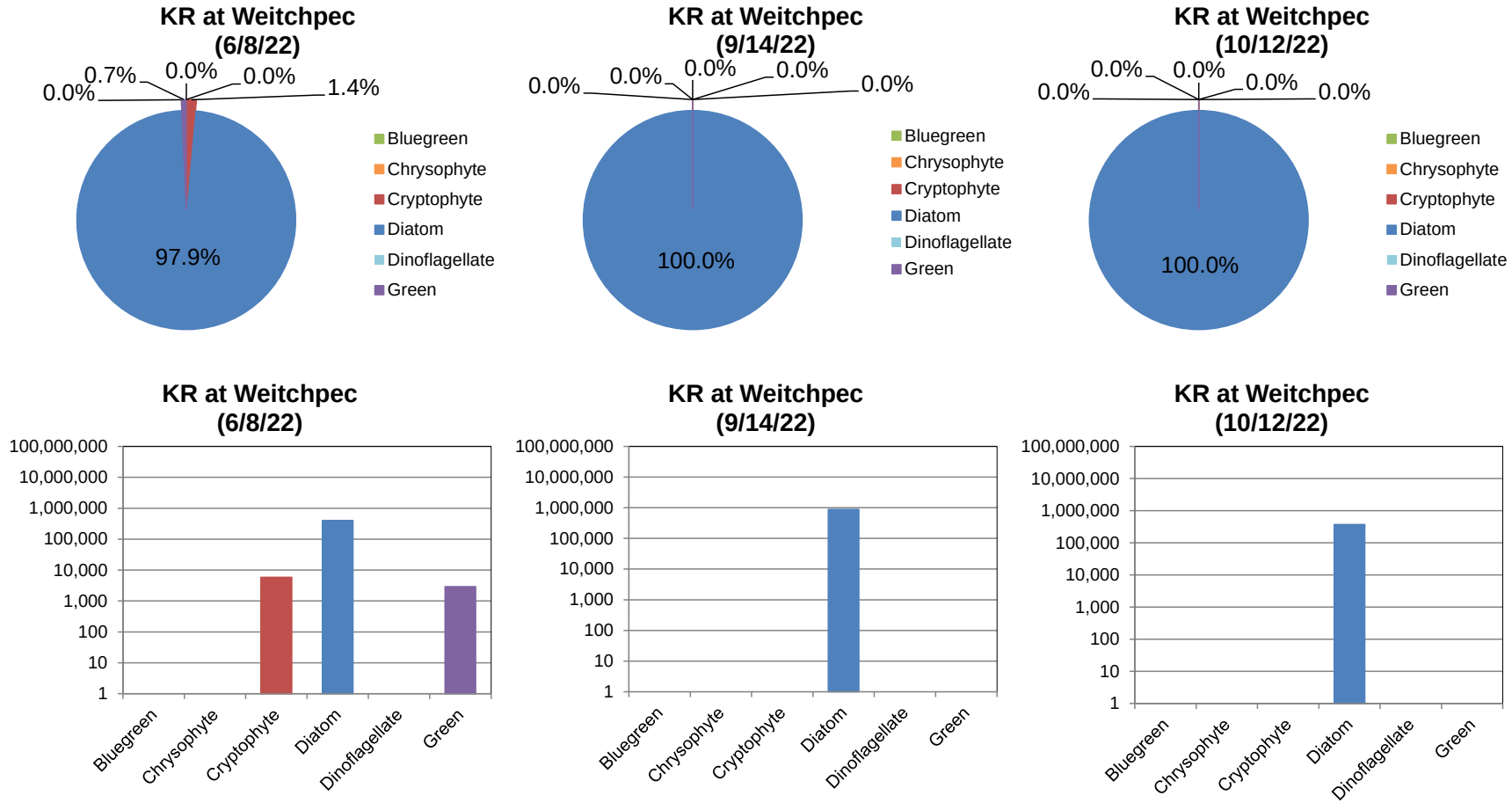

Figure C-7. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River at Weitchpec (RM 43.5; Baseline) for samples collected as part of Baseline sampling on June 8, 2022, September 14, 2022, and October 12, 2022. Note: y-axis in logarithmic scale.

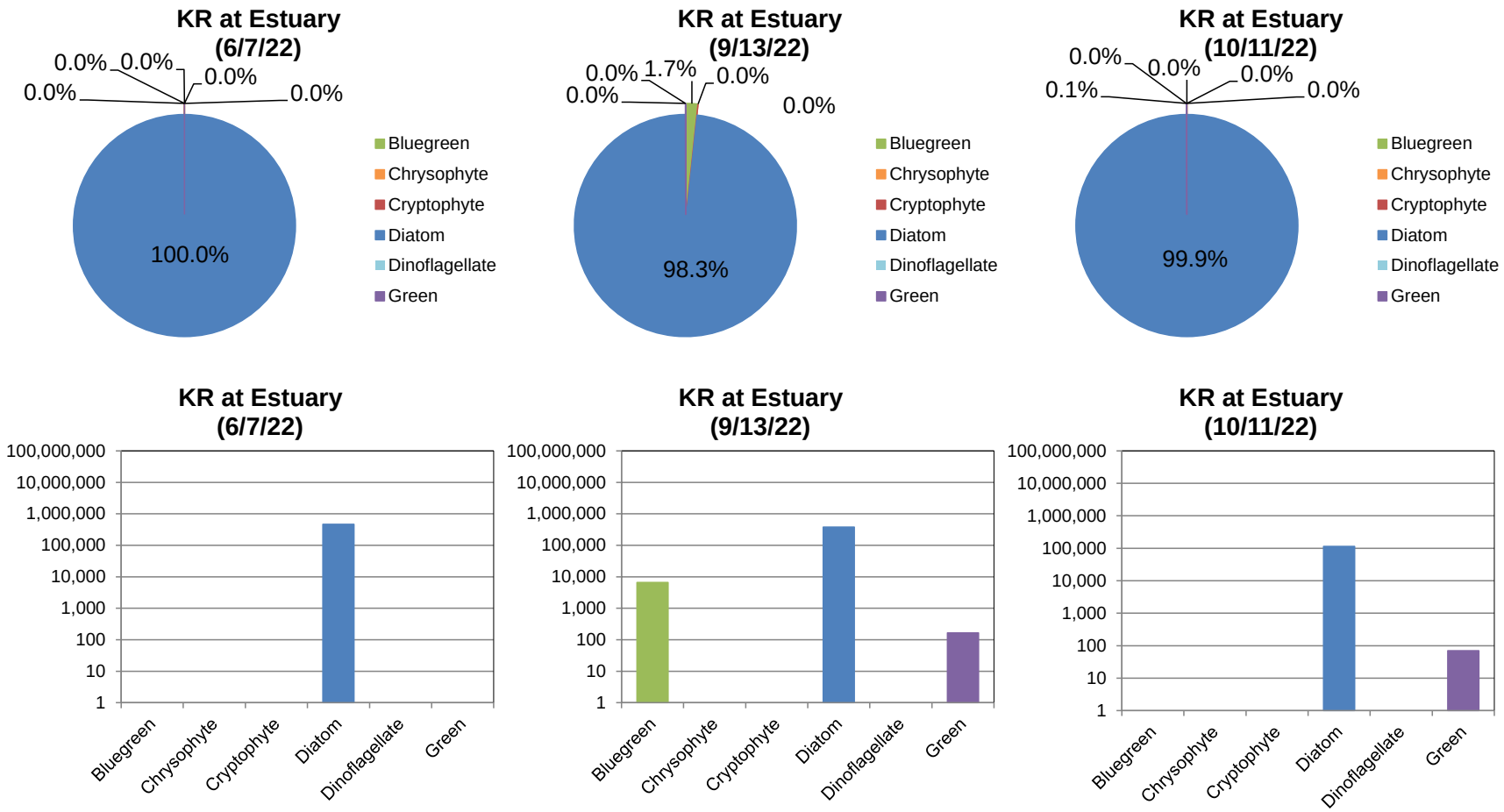

Figure C-8. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River Estuary (RM 0.5; Baseline) for samples collected as part of Baseline sampling on June 7, 2022, September 13, 2022, and October 11, 2022. Note: y-axis in logarithmic scale.

Appendix D. 2022 Public Health Data

Table D-1. 2022 Public Health Dataset. Microcystin test results of non-detect or values less than the reporting limit of 0.15 µg/l have been replaced with <0.15 µg/l. Phytoplankton (algae) species data was not collected for public health in 2022.

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
UKEP22001	5/23/2022	10:33	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	0.93
UKEP22002	6/6/2022	10:08	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	2.2
UKEP22003	6/21/2022	10:25	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	61
UKEP22004	7/5/2022	10:33	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	1.6
UKEP22005	7/20/2022	10:05	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	0.44
UKEP22006	8/3/2022	10:11	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	0.43
UKEP22007	8/15/2022	10:38	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	20
UKEP22008	9/13/2022	11:17	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	0.33
UKEP22009	9/19/2022	10:54	UKEP	Upper Klamath Lake at Eagle Ridge County Park (Public Health)	ODEQ	0.1	2.4
UKHP22001	5/23/2022	11:23	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	<0.15
UKHP22002	6/6/2022	10:35	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	0.9
UKHP22003	6/21/2022	10:46	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	<0.15
UKHP22004	7/5/2022	10:59	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	0.27
UKHP22005	7/20/2022	10:21	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	87
UKHP22006	8/3/2022	10:32	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	0.69
UKHP22007	8/15/2022	10:54	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	68
UKHP22008	9/13/2022	9:58	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	3.9
UKHP22009	9/19/2022	11:09	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	0.28
UKHP22011	11/17/2022	13:01	UKHP	Upper Klamath Lake at Howard's Bay Park (Public Health)	ODEQ	0.1	<0.15
UKMP22001	5/23/2022	11:43	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	<0.15
UKMP22002	6/6/2022	11:08	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	0.52
UKMP22003	6/21/2022	11:04	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	<0.15
UKMP22004	7/5/2022	11:19	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	<0.15
UKMP22005	7/20/2022	10:35	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	<0.15
UKMP22006	8/3/2022	10:52	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	0.34
UKMP22007	8/15/2022	11:07	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	17
UKMP22008	9/13/2022	11:44	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	0.72

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
UKMP22009	9/19/2022	11:22	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	0.21
UKMP22011	11/17/2022	13:17	UKMP	Upper Klamath Lake at Moore Park (Public Health)	ODEQ	0.1	<0.15
KEKP22001	5/23/2022	9:41	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	<0.15
KEKP22002	6/6/2022	9:12	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	<0.15
KEKP22003	6/21/2022	9:35	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	0.2
KEKP22004	7/5/2022	9:34	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	<0.15
KEKP22005	7/20/2022	9:20	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	0.65
KEKP22006	8/3/2022	9:25	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	<0.15
KEKP22007	8/15/2022	9:57	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	7
KEKP22008	9/13/2022	9:30	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	0.42
KEKP22009	9/19/2022	10:13	KEKP	Keno Reservoir at Keno Park (Public Health)	ODEQ	0.1	<0.15
BRTC22001	5/23/2022	9:21	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
BRTC22002	6/6/2022	8:53	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	0.93
BRTC22003	6/21/2022	9:16	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
BRTC22004	7/5/2022	9:14	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
BRTC22005	7/20/2022	9:00	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	0.16
BRTC22006	8/3/2022	9:10	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
BRTC22007	8/15/2022	9:42	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
BRTC22008	9/13/2022	9:14	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	0.18
BRTC22009	9/19/2022	9:57	BRTC	J.C. Boyle Reservoir at Topsy Campground (Public Health)	ODEQ	0.1	<0.15
KR22801	5/24/2022	7:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22806	6/7/2022	12:30	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	1.4
KR22811	6/21/2022	9:30	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22816	7/12/2022	11:15	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	360
KR22821	7/26/2022	8:40	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	42
KR22826	8/9/2022	12:30	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	280
KR22831	8/23/2022	9:10	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	660
KR22836	9/13/2022	11:35	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	2.6
KR22841	9/27/2022	9:40	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	1.2
KR22846	10/12/2022	12:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
KR22851	10/24/2022	10:10	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22856	11/15/2022	12:20	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22861	12/7/2022	14:50	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22800	5/24/2022	6:25	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22805	6/7/2022	7:15	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22810	6/21/2022	8:15	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22815	7/12/2022	14:50	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	0.22
KR22820	7/26/2022	10:15	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	1.9
KR22825	8/9/2022	16:05	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	30
KR22830	8/23/2022	7:40	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	350
KR22835	9/13/2022	15:30	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	0.27
KR22840	9/27/2022	8:05	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22845	10/12/2022	15:35	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	3.1
KR22850	10/24/2022	8:30	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	5.8
KR22855	11/15/2022	7:35	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22860	12/7/2022	7:30	CRMC	Copco Reservoir at Mallard Cove (Public Health)	PacifiCorp	0.1	<0.15
KR22803	5/24/2022	7:35	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22808	6/7/2022	13:45	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22813	6/21/2022	10:20	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22818	7/12/2022	12:40	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22823	7/26/2022	7:50	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	0.2
KR22828	8/9/2022	14:15	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	0.27
KR22833	8/23/2022	10:00	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	0.67
KR22838	9/13/2022	13:20	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	0.22
KR22843	9/27/2022	10:35	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	0.19
KR22848	10/12/2022	13:20	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22853	10/24/2022	11:00	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	3.2
KR22858	11/15/2022	13:55	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22863	12/7/2022	11:50	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	PacifiCorp	0.1	<0.15
KR22802	5/24/2022	7:25	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
KR22807	6/7/2022	13:30	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22812	6/21/2022	10:05	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22817	7/12/2022	12:25	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	0.15
KR22822	7/26/2022	8:05	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	1.1
KR22827	8/9/2022	14:00	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	0.31
KR22832	8/23/2022	9:45	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	0.17
KR22837	9/13/2022	13:10	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	0.24
KR22842	9/27/2022	10:15	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22847	10/12/2022	13:10	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22852	10/24/2022	10:45	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	1
KR22857	11/15/2022	13:35	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22862	12/7/2022	12:05	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	PacifiCorp	0.1	<0.15
KR22804	5/24/2022	7:50	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22809	6/7/2022	14:05	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22814	6/21/2022	10:35	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22819	7/12/2022	13:05	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22824	7/26/2022	11:05	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22829	8/9/2022	14:35	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22834	8/23/2022	10:25	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	0.22
KR22839	9/13/2022	13:55	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22844	9/27/2022	10:55	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22849	10/12/2022	13:50	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	0.18
KR22854	10/24/2022	11:20	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22859	11/15/2022	14:20	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
KR22864	12/7/2022	15:45	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	PacifiCorp	0.1	<0.15
IB062222-SG	6/22/2022	13:06	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB062922-SG	6/29/2022	12:26	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB070622-SG	7/6/2022	10:47	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB071322-SG	7/13/2022	12:25	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB072022-SG	7/20/2022	11:19	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
IB081022-SG	8/10/2022	14:01	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB081722-SG	8/17/2022	13:16	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB082422-SG	8/24/2022	14:45	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	0.23
IB083122-SG	8/31/2022	12:44	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	0.16
IB090722-SG	9/7/2022	11:55	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	0.24
IB091422-SG	9/14/2022	13:04	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	0.36
IB092122-SG	9/21/2022	12:01	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB092822-SG	9/28/2022	13:10	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	0.16
IB100522-SG	10/5/2022	11:32	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB101222-SG	10/12/2022	12:53	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
IB101922-SG	10/19/2022	12:12	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	<0.15
BB062222-SG	6/22/2022	11:30	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB062922-SG	6/29/2022	11:39	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB070622-SG	7/6/2022	10:05	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB071322-SG	7/13/2022	11:15	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB072022-SG	7/20/2022	10:20	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB072722-SG	7/27/2022	11:58	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	0.16
BB081722-SG	8/17/2022	12:01	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB082422-SG	8/24/2022	12:02	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	0.15
BB083122-SG	8/31/2022	11:39	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	0.16
BB090722-SG	9/7/2022	11:03	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	0.25
BB091422-SG	9/14/2022	11:26	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	0.34
BB092122-SG	9/21/2022	11:09	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB092822-SG	9/28/2022	11:03	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB100522-SG	10/5/2022	10:36	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB101222-SG	10/12/2022	11:42	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
BB101922-SG	10/19/2022	11:37	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	Karuk	0.1	<0.15
SV062222-SG	6/22/2022	10:20	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV062922-SG	6/29/2022	10:57	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV070622-SG	7/6/2022	9:26	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
SV072022-SG	7/20/2022	9:48	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV081722-SG	8/17/2022	11:24	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV083122-SG	8/31/2022	10:51	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	0.18
SV090722-SG	9/7/2022	10:19	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	0.2
SV092122-SG	9/21/2022	10:35	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV100522-SG	10/5/2022	9:49	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
SV101922-SG	10/19/2022	11:09	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	Karuk	0.1	<0.15
HC062222-SG	6/22/2022	9:16	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC062922-SG	6/29/2022	10:06	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC070622-SG	7/6/2022	8:39	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC072022-SG	7/20/2022	8:57	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC081722-SG	8/17/2022	9:37	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC083122-SG	8/31/2022	9:27	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC090722-SG	9/7/2022	9:10	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	0.2
HC092122-SG	9/21/2022	10:02	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	0.2
HC100522-SG	10/5/2022	9:00	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
HC101922-SG	10/19/2022	9:29	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	Karuk	0.1	<0.15
OR062222-SG	6/22/2022	7:45	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR062922-SG	6/29/2022	8:55	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR070622-SG	7/6/2022	7:45	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR071322-SG	7/13/2022	7:45	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR072022-SG	7/20/2022	8:02	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR081722-SG	8/17/2022	8:04	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR083122-SG	8/31/2022	8:18	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR090722-SG	9/7/2022	7:55	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR092122-SG	9/21/2022	9:03	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR100522-SG	10/5/2022	7:50	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
OR101922-SG	10/19/2022	8:36	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	Karuk	0.1	<0.15
WE060822-SG	6/8/2022	10:59	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	0.17
WE062222-SG	6/22/2022	10:16	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Microcystin ug/l
WE071322-SG	7/13/2022	10:43	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
WE072722-SG	7/27/2022	10:03	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
WE081022-SG	8/10/2022	10:03	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	0.2
WE082422-SG	8/24/2022	10:35	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
WE091422-SG	9/14/2022	10:28	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
WE092822-SG	9/28/2022	10:13	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
WE101222-SG	10/12/2022	11:20	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	Yurok	0.1	<0.15
TG060722-SG	6/7/2022	9:38	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG062122-SG	6/21/2022	10:40	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG071222-SG	7/12/2022	13:16	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG072622-SG	7/26/2022	12:21	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG080922-SG	8/9/2022	12:21	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG082322-SG	8/23/2022	10:47	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG091322-SG	9/13/2022	11:21	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG092722-SG	9/27/2022	11:06	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	<0.15
TG101122-SG	10/11/2022	13:08	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	Yurok	0.1	0.15
SS060722-SG	6/7/2022	9:07	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS062122-SG	6/21/2022	11:08	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS071222-SG	7/12/2022	12:32	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS072622-SG	7/26/2022	11:05	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS080922-SG	8/9/2022	11:05	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS082322-SG	8/23/2022	10:12	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS091322-SG	9/13/2022	10:41	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	<0.15
SS092722-SG	9/27/2022	11:44	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	0.15
SS101122-SG	10/11/2022	12:36	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	0.25

Table D-2. Mass spectroscopy data for the 2022 samples collected by the Karuk Tribe and Yurok Tribe. Results are presented in micrograms per liter (µg/l). NS = Samples not analyzed for these constituents during 2022.

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Lab	Microcystin -RR µg/l	MC-Desmethyl -RR µg/l	Microcystin -LR µg/l	MC-Desmethyl -LR µg/l	Microcystin -YR µg/l	Microcystin -LA µg/l	Microcystin-LW (screening only) µg/l	Microcystin -LF µg/l	Microcystin -LY µg/l	Domoic acid µg/l	Okadaic acid µg/l	Nodularin µg/l
IG072722-OC	7/27/2022	13:57	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.05	<0.05	0.04	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	NS	NS	<0.05
IG082422-OC	8/24/2022	13:53	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	<0.02	<0.02	<0.02	NS	NS	<0.05
IG092822-OC	9/28/2022	13:35	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	NS	NS	<0.05
IG102622-OC	10/26/2022	12:54	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	NS	NS	<0.05
IB101922-SG	10/19/2022	12:12	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	NS	NS	<0.05
WA091422-OC	9/14/2022	12:03	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	GreenWater	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	NS	NS	<0.05
TG091322-OC	9/13/2022	11:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.1	GreenWater	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NS	NS	<0.05
TG101122-OC	10/11/2022	13:08	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.1	GreenWater	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NS	NS	<0.05
LES091322-OC	9/13/2022	12:08	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.1	GreenWater	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	NS	NS	<0.05
LES101122-OC	10/11/2022	13:48	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.1	GreenWater	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NS	NS	<0.05

Table D-3. Results for anatoxin-a analysis for 2022 samples collected by PacifiCorp, the Karuk Tribe, and the Yurok Tribe.

Sample ID	Date	Standard Time	Site ID	Site Name	Agency	Depth, m	Lab	Total Anatoxin-a µg/l
KR22831	8/23/2022	9:10	CRCC	Copco Reservoir at Copco Cove (Public Health)	PacifiCorp	0.1	GreenWater	<0.05
IG052522-OC	5/25/2022	13:18	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.05
IG102622-OC	10/26/2022	12:54	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	0.5	GreenWater	<0.10
IB062222-SG	6/22/2022	13:06	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05
IB070622-SG	7/6/2022	10:47	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05
IB071322-SG	7/13/2022	12:25	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05
IB081722-SG	8/17/2022	13:16	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05
IB090722-SG	9/7/2022	11:55	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.05
IB092122-SG	9/21/2022	12:01	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.10
IB100522-SG	10/5/2022	11:32	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.10
IB101922-SG	10/19/2022	12:12	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	0.1	GreenWater	<0.10
SS091322-SG	9/13/2022	10:41	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	GreenWater	<0.05
SS101122-SG	10/11/2022	12:36	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	0.1	GreenWater	<0.10