ERRATA

Klamath River Baseline Water Quality Sampling
– 2015 Annual Report–

Prepared for the KHSA Water Quality Monitoring Group

Prepared by
Watercourse Engineering, Inc.
January 11, 2018

Errata

In 2017 PacifiCorp completed a comprehensive quality control data review process for the data collected under Interim Measure 15. Several corrections were made to the 2015 dataset which required the following changes be made to the Klamath River Baseline Water Quality Sampling 2015 Annual Report. 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 <u>underline</u> (new text).

1. Because of the small sample size at each site during 2015, the boxplots presented in the annual report may not be statistically robust and are included for illustration purposes only.

2. The Appendix B 2015 KHSA baseline dataset has been revised since the original 2015 Annual Report was completed. The revised baseline dataset is presented in the table below in Errata Table B-1.

Errata Table B-1. 2015 KHSA baseline dataset.

Sample ID	Date	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 Phosporus	Phosphorus, Particulate Inorganic Phosporus	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
2015KHSA-001	2/24/2015	10:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	5.39	7.31	108	10.43	15.80	3.74	46.9	3.13	2.350	2.7	0.078	0.140	0.366		0.78	<0.01	0.110	0.027	0.019	18.3	24.4	<5.0	
2015KHSA-007	3/17/2015	9:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	9.30	7.28	105	9.52	16.64	3.72	44.0	3.48	1.800	2.5	0.079	0.070	0.266		0.67	<0.01	0.080	0.025	0.017	18.5	21.6	<5.0	
2015KHSA-013	4/14/2015	9:45	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	9.45	7.33	115	9.44	16.03	4.19	45.4	3.56	2.270	<2.0	<0.05	<0.01	0.333		0.59	0.021	0.170	0.034	0.014	28.1	54.4	<5.0	
2015KHSA-019	5/5/2015	8:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	15.81	7.34	114	9.68	8.28	2.09	44.7	4.70	1.450	<2.0	0.089	<0.01	0.206		0.52	0.044	0.150	0.040	0.006	13.8	18.8	<5.0	
2015KHSA-025	5/19/2015	9:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	13.29	7.75	112	8.79	7.28	1.48	47.6	3.95	2.060		<0.05	<0.01	0.263		0.51	0.047	0.130	0.023	0.028	11.6	13.6	<5.0	
2015KHSA-029	6/9/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.96	8.79	117	10.3	85.56	83.43	49.9	4.41	7.590	9.6	<0.05	<0.01	1.600		0.50	0.027	0.180	0.102	0.091	7.0	15.4	12.4	
2015KHSA-035	6/23/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	20.55	9.87	122	9.86	143.08	<0.09	50.9	4.80	11.550	6.2	<0.05	<0.01	2.350		2.14	0.018	0.210	0.139	0.091	11.2	19.6	14.8	
2015KHSA-040	7/7/2015	7:10	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	24.44	9.42	120	7.2	133.78	0.84	51.7	5.89	6.800	6.2	0.050	0.022	1.400		2.01	0.150	0.350	0.088	0.039	20.7	17.8	11.4	9.90
2015KHSA-046	7/21/2015	7:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.76	10.02	126	10.32	235.11	<0.09	54.7	5.12	13.100	25.6	<0.05	<0.01	2.710		2.70	0.120	0.320	0.158	0.141	11.5	15.2	10.5	14.00
2015KHSA-051	8/4/2015	9:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.17	10.03	124	7.67	277.09	10.38	51.2	5.82	11.400	10.8	<0.05	0.014	2.390		3.89	0.100	0.330	0.148	0.127	13.8	26.4	20.0	14.00
2015KHSA-057	8/18/2015	9:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	20.08	10.07	119	8.29	129.20	0.99	51.5	5.27	7.470	8.3	0.070	0.014	1.430		2.43	0.070	0.270	0.119	0.044	11.6	24.8	14.4	
2015KHSA-062	9/1/2015	8:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	18.29	9.83	113	7.25	171.07	6.84	52.4	5.78	8.500	5.9	<0.05	0.011	1.700		2.66	0.087	0.250	0.149	0.094	24.7	30.0	16.0	20.00
2015KHSA-068	9/22/2015	9:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	16.80	9.34	116	8.32	112.64	3.86	56.5	6.29	7.010	7.6	0.077	0.030	1.370		2.32	0.012	0.150	0.117	0.065	9.9	20.6	10.0	9.10
2015KHSA-073	10/6/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	13.55	8.69	119	8.75	37.28	2.81	53.4	5.32	3.190	8.4	0.073	0.066	0.600		1.81	<0.01	0.120	0.067	0.022	14.6	11.6	<5.0	2.40
2015KHSA-079	10/20/2015	10:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	12.98	7.82	122	7.69	33.07	2.11	55.2	5.03	2.270		0.150	0.110	0.431		1.55	0.014	0.140	0.086	0.028	8.2	9.2	<5.0	1.40
2015KHSA-083	11/17/2015	9:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	3.25	7.81	130	10.69	24.96	11.96	55.2	3.78	5.130	<2.0	0.430	0.410	0.795		2.29	<0.01	0.100	0.068	0.029	55.7	105.0	<5.0	
2015KHSA-089	12/15/2015	10:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	0.56	7.80	119	10.96	19.90	7.07	47.6	3.01	2.960	<2.0	0.310	0.550	0.430		1.41	<0.01	<0.05	0.038	0.015	36.3	64.4	<5.0	
2015KHSA-004	2/24/2015	11:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	5.51	8.00	214	12.52	45.06	8.08	82.2	4.15	2.670	2.8	<0.05	0.250	0.425		1.10	<0.01	0.130			17.3	22.8	<5.0	
2015KHSA-010	3/17/2015	8:00	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	9.40	7.26	135	8.76	24.85	6.66	50.5	3.60	2.270	2.4	0.110	0.110	0.347		1.15	0.026	0.170			26.7	38.4	<5.0	
2015KHSA-016	4/14/2015	7:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	9.31	7.78	122	10.05	22.22	3.38	46.8	3.76	1.750	<2.0	0.053	0.017	0.278		0.75	0.034	0.140			15.5	20.9	<5.0	
2015KHSA-022	5/5/2015	10:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	17.17	7.99	122	11.35	19.60	2.62	46.5	4.27	1.640	<2.0	<0.05	0.026	0.250		0.60	0.063	0.160			9.5	9.2	<5.0	<0.18
2015KHSA-032	6/9/2015	10:15	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	22.90	9.31	130	12.98	73.23	71.20	52.7	4.85	6.480	9.3	<0.05	<0.01	1.140		1.52	0.040	0.180			8.2	19.0	9.7	<0.18
2015KHSA-043	7/7/2015	9:20	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	25.18	8.39	132	1.25	94.27	21.64	54.3	6.29	4.560	7.7	0.790	<0.01	0.982		2.50	0.170	0.400			5.4	9.1	7.4	2.70
2015KHSA-054	8/4/2015	10:30	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	22.36	9.28	120	4.27	609.17	5.26	50.3	5.76	26.700	20.9	0.150	0.020	5.860		6.38	0.200	0.870			41.9	75.9	68.7	110.00

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
2015KHSA-065	9/1/2015	10:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	19.61	9.22	122	3.07	187.19	8.74	54.6	5.78	10.300	3.9	0.470	0.032	2.140		3.77	0.096	0.420			13.4	24.3	21.0	40.00
2015KHSA-076	10/6/2015	10:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	14.64	7.55	135	2.59	37.35	3.63	58.7	5.37	2.070	4.2	0.390	0.067	0.386		1.52	0.013	0.100			9.6	7.8	<5.0	3.40
2015KHSA-086	11/17/2015	11:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	4.60	7.53	135	8.57	20.12	10.53	54.9	3.83	3.680	<2.0	0.370	0.450	0.530		2.17	0.015	0.081			41.7	68.7	<5.0	
2015KHSA-092	12/15/2015	12:25	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	1.71	7.70	173	9.58	18.37	7.57	65.1	3.64	2.330	2.3	0.400	0.640	0.353		1.71	0.041	0.130			29.1	40.7	<5.0	
2015KHSA-005	2/24/2015	9:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	5.63	8.08	240	12.21	70.89	10.83	95.6	4.10	3.660	4.0	0.052	0.160	0.686		1.15	<0.01	0.079	0.064	0.023	19.3	28.4	<5.0	
2015KHSA-011	3/17/2015	8:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	9.32	7.79	159	10.37	32.64	13.01	62.3	3.74	2.620	3.4	0.140	0.068	0.395		1.04	<0.01	0.150	0.057	0.018	25.1	34.8	<5.0	
2015KHSA-017	4/14/2015	8:45	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	9.63	7.56	148	10.4	30.83	7.38	58.9	4.74	2.310	<2.0	<0.05	0.016	0.344		0.87	0.036	0.280	0.047	0.020	22.4	30.8	<5.0	
2015KHSA-023	5/5/2015	7:10	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	15.48	7.15	151	9.56	5.17	2.95	55.7	5.35	1.100	<2.0	0.051	0.015	0.134		0.69	0.092	0.210	0.018	0.006	11.0	10.4	<5.0	<0.18
2015KHSA-033	6/9/2015	7:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.50	8.69	135	8.79	3.55	2.92	55.4	4.93	1.220	3.2	0.120	<0.01	0.246		0.75	0.110	0.190	0.016	0.016	4.3	<5.0	<5.0	<0.18
2015KHSA-038	6/23/2015	8:30	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.44	9.30	130	8.44			53.5			5.1	0.130	0.023			1.92	0.088	0.220			13.6			
2015KHSA-044	7/7/2015	8:35	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	24.62	9.03	129	7.15	53.24	1.18	54.0	6.90	2.670	6.9	0.470	0.011	0.590		2.48	0.230	0.410	0.064	0.066	7.2	7.6	5.0	4.70
2015KHSA-049	7/21/2015	9:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	22.62	9.22	136	8.41			57.3	5.18		10.8	<0.05	<0.01			0.67	0.077	0.190			13.3			
2015KHSA-055	8/4/2015	7:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.72	9.35	115	7.01	57.59	6.43	47.6	5.35	4.930	2.4	<0.05	<0.01	0.825		1.69	0.250	0.390	0.074	0.031	14.5	15.7	11.1	32.00
2015KHSA-060	8/18/2015	8:00	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	20.79	9.34	130	7.11			56.8			6.1	0.250	0.025			2.28	0.160	0.380			10.9			
2015KHSA-066	9/1/2015	7:45	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	19.50	9.16	122	7.41	66.43	11.37	53.2	6.01	3.260	3.3	0.300	0.017	0.644		2.11	0.160	0.270	0.058	0.023	8.5	13.5	6.3	8.50
2015KHSA-071	9/22/2015	8:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	15.88	8.67	130	7.96			57.6			3.5	0.230	0.043			1.68	0.056	0.140			6.3			
2015KHSA-077	10/6/2015	7:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	14.50	7.67	147	8.14	6.80	1.45	63.0	6.03	1.730	<2.0	0.840	0.055	0.317		1.86	0.120	0.210	0.085	0.018	4.8	<5.0	<5.0	1.80
2015KHSA-087	11/17/2015	8:35	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	4.59	7.49	137	11.28	13.61	8.07	55.8	3.95	2.270	<2.0	0.350	0.450	0.319		1.90	0.017	0.110	0.028	0.009	27.5	37.6	5.2	
2015KHSA-093	12/15/2015	9:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	2.06	7.57	172	10.9	22.97	10.46	58.1	4.02	2.560	2.1	0.270	0.680	0.371		1.64	0.021	0.079	0.037	0.016	29.4	37.3	<5.0	
KR15002	2/18/2015	12:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	7.24	8.32	204.9	10.53	1.552	1.21	59.7	3.39	0.437		0.054	0.350	0.060		0.77	0.058	<0.05			12.3	<5.0	<5.0	
KR15022	3/17/2015	17:25	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	10.85	7.93	168.5	9.44	23.820	11.72	62.5	4.19	1.800		0.120	0.210	0.276		1.21	0.049	0.150			25.6	34.4	<5.0	
KR15042	4/14/2015	14:45	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	11.02	8.04	154.4	9.83	21.956	6.31	58.5	4.72	1.600		<0.05	0.074	0.219		0.92	0.065	0.160			22.1	32.9	<5.0	
KR15062	5/10/2015	12:15	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	16.02	7.72		8.78	12.620	6.83	49.7	4.16	1.410		0.067	0.046	0.212		0.52	0.093	0.220			12.0	16.0	<5.0	
KR15084	6/7/2015	13:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	22.19	8.27	142.3	8.31	1.562	1.49	56.2	4.94	0.398		0.065	0.140	0.050		0.74	0.140	0.190			2.6	5.2	<5.0	
KR15189	7/8/2015	17:15	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	23.58	7.65	136.4	7.19	2.158	1.63	49.6	5.90	1.400		0.140	0.940	0.211			0.290	0.380			3.0	5.8	<5.0	
KR15212	8/4/2015	8:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	20.69	7.66	120.8	8.26	20.941	6.68	47.1	5.43	3.070		<0.05	0.210	0.549		1.66	0.290	0.420			14.4	14.5	6.8	
KR15235	9/1/2015	13:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	21.40	8.24	126.7	7.61	18.990	9.80	50.3	6.14	1.490		0.120	0.470	0.268		1.96	0.210	0.290			6.6	9.6	<5.0	
KR15258	10/7/2015	15:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	15.59	8.09	151.6	8.89	6.196	3.48	61.7	6.77	1.120		0.340	0.600	0.161		1.91	0.110	0.170			4.6	6.8	<5.0	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15280	11/17/2015	11:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	5.15	6.15		11.75	8.313	5.63	53.1	4.16	0.581		0.180	0.720	0.082		1.92	0.053	<0.05			25.7	28.8	<5.0	
KR15300	12/7/2015	11:00	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	P	2.74	6.92	144.9	12.18	17.122	8.58	52.0	3.89	1.440		0.130	0.960	0.210		2.16	0.060	0.053			32.3	38.8	<5.0	
KR15064	5/19/2015	14:30	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	14.61	7.58	131.3	9.55	5.045	1.38			0.768				0.116										<0.18
KR15086	6/23/2015	8:00	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	22.65	7.56	144.6	7.47	20.366	1.77			2.250				0.438							18.7			<0.18
KR15191	7/20/2015	9:40	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	24.35	8.94		0.4	162.707	4.63			4.860				0.894										470.00
KR15214	8/4/2015	11:05	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	23.89	8.78	123.7	10.96	824.879	20.87			34.200				6.590							11.1			9.80
KR15237	9/1/2015	12:45	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	21.22	8.35	130.7	7.9	71.970	2.79			4.370				0.888							5.1			0.43
KR15260	10/7/2015	14:20	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	P	15.62	7.93	153.3	8.5	13.298	3.25			1.250				0.206							4.6			1.30
KR15001	2/18/2015	12:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	6.16	8.09	175.7	11.26	11.012	5.75	68.4	3.97	0.634		0.100	0.430	0.101		1.12	0.049	0.057			15.5	16.1	<5.0	
KR15021	3/17/2015	16:55	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	9.17	7.78	158.1	10.24	20.390	9.87	60.6	4.20	1.810		0.130	0.180	0.280		0.81	0.038	0.120			20.6	23.6	<5.0	
KR15041	4/14/2015	16:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	10.72	7.95	180.9	10.07	14.364	5.24	65.2	5.41	1.620		0.089	0.120	0.206		1.05	0.086	0.250				28.0	<5.0	
KR15061	5/10/2015	11:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	16.00	7.72		8.8	7.555	3.99	56.5	4.76	0.780		<0.05	0.072	0.115		0.54	0.100	0.170			10.8	13.2	<5.0	
KR15083	6/7/2015	15:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	20.98	7.98	145.5	7.95	1.715	1.16	56.3	4.92	0.436		0.110	0.120	0.052		0.76	0.140	0.200			3.1	<5.0	<5.0	
KR15188	7/8/2015	16:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	24.35	7.62	136.9	7.77	4.857	2.49	52.1	6.16	0.917		0.290	0.510	0.128			0.260	0.370			5.8	5.4	<5.0	
KR15211	8/4/2015	11:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	22.50	7.74	124.9	8.16	51.732	7.52	48.6	5.48	3.680		0.100	0.130	0.700		2.02	0.290	0.490			16.3	14.5	10.3	
KR15234	9/1/2015	11:40	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	19.92	7.74		8.08	37.630	5.27	53.1	6.02	3.170		0.210	0.310	0.628		2.04	0.190	0.280			7.0	9.0	<5.0	
KR15257	10/7/2015	13:40	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	14.99	8.01	153.5	9.23	3.475	2.60	61.6	6.22	0.891		0.340	0.530	0.114		1.76	0.140	0.210			3.5	<5.0	<5.0	
KR15279	11/17/2015	13:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	4.82	7.76	146.2	11.88	8.190	5.84	56.3	4.10	0.658		0.200	0.700	1.010		1.96	0.048	0.050			18.6	20.3	<5.0	
KR15299	12/7/2015	12:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	R	2.63	7.87	148.2	12.63	10.967	6.52	56.2	3.99	0.998		0.240	0.840	0.156		1.99	0.054	<0.05			27.3	32.4	<5.0	
KR15003	2/18/2015	11:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	6.70	8.16	169	11.01	10.559	5.14	66.6	3.41	0.872		0.057	0.410	0.143		1.01	0.047	0.051			13.3	13.2	<5.0	
KR15023	3/17/2015	16:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	9.62	7.78	157.9	10.05	17.730	8.19	59.9	3.63	1.700		0.080	0.200	0.271		0.90	0.033	0.120			16.5	18.8	<5.0	
KR15043	4/14/2015	15:35	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	10.92	8.02	177.6	9.93	9.968	4.20	68.3	4.98	1.280		0.058	0.120	0.165		9.18	0.077	0.110				20.9	<5.0	
KR15063	5/10/2015	11:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	15.17	7.57		9.21	6.463	3.52	57.4	4.50	0.831		0.087	0.086	0.122		0.47	0.095	0.160			9.9	12.2	<5.0	
KR15085	6/7/2015	14:40	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	20.04	8.05	145.8	8.32	1.464	1.01	59.1	4.24	0.335		0.084	0.130	0.045		0.73	0.120	0.170			4.7	5.8	<5.0	<0.18
KR15190	7/6/2015	18:20	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	23.20	7.34	138.3	7.72	10.912	3.08	54.8	5.08	0.820		0.130	0.360	0.126		1.39	0.200	0.300			3.9	7.0	<5.0	1.80
KR15213	8/4/2015	10:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	19.39	7.70	129.5	8.64	16.102	5.26	51.3	4.17	1.510		0.055	0.190	0.258		1.24	0.260	0.340			5.9	7.2	<5.0	2.00
KR15236	9/1/2015	10:50	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	18.37	7.94	132.8	8.34	13.800	5.11	54.5	5.20	1.230		0.130	0.310	0.225		2.24	0.170	0.240			6.1	6.6	<5.0	0.65
KR15259	10/7/2015	13:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	14.47	8.03	152.5	9.3	3.392	2.51	62.0	5.31	0.546		0.260	0.500	0.060		1.55	0.130	0.190			3.3	<5.0	<5.0	0.28

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15281	11/17/2015	12:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	5.70	7.64	146	11.78	7.877	5.29	57.5	3.72	0.705		0.140	0.660	0.104		1.62	0.047	<0.05			15.7	14.6	<5.0	
KR15301	12/7/2015	12:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	P	8.01	7.37	146.9	11.27	6.294	3.17	61.2	1.53	0.721		<0.05	0.490	0.104		0.89	0.049	<0.05			9.2	10.8	<5.0	
KR15008	2/17/2015	10:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	7.62	8.32	150.7	11.16	3.810	3.92	68.3	1.77	0.444	<2.0	<0.05	0.320	0.065		0.60	0.056	<0.05	0.013	0.005		7.8	<5.0	
KR15048	4/14/2015	18:15	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	11.93	8.23	180.1	10.1	1.978	0.51	64.8	4.86	1.170	<2.0	<0.05	0.140	0.158		0.91	0.076	0.160	0.029	0.012	5.9	21.7	<5.0	
KR15069	5/7/2015	14:50	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	15.74	7.84	154.8	9.45	3.851	3.12	58.0	4.36	0.810	<2.0	<0.05	0.130	0.112		0.51	0.100	2.310	0.021	0.006	11.0	11.8	<5.0	
KR15091	6/8/2015	9:30	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	19.25	7.71	152.8	9.01	1.412	1.23	62.2	3.47	0.356	<2.0	<0.05	0.110	0.046		0.83	0.100	0.170	0.009	0.002	2.5	<5.0	<5.0	<0.18
KR15196	7/8/2015	15:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	21.20	8.13	138.4	8.78	5.921	2.41	52.2	4.80	0.536	<2.0	0.053	0.580	0.083			0.200	0.300	0.027	0.012	4.9	7.2	<5.0	1.80
KR15210	7/21/2015	12:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	20.94	8.08	151.5	10.04	2.044	1.39	62.8	3.81		2.5	<0.05	0.280			0.69	0.110	0.170				<5.0	<5.0	
KR15219	8/5/2015	14:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	18.95	8.57	142.8	9.88	9.080	2.73	60.1	1.96	1.080	<2.0	<0.05	0.190	0.164		0.59	0.150	0.220	0.018	0.009	6.5	7.8	5.2	0.96
KR15233	8/17/2015	11:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	16.39	7.46		10.22	17.292	4.54		4.28	1.280	<2.0	<0.05	0.120	0.204		0.75	0.230	0.290			5.1			
KR15242	9/2/2015	12:10	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	17.41	8.48	141.5	10.07	7.090	4.73	58.4	3.48	0.702	<2.0	<0.05	0.420	0.112		0.92	0.150	0.240	0.014	0.008	4.4	6.4	<5.0	0.96
KR15256	9/22/2015	16:10	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	16.15	8.77	141.9	10.11						<2.0	<0.05	0.320			0.80	0.110	0.140						
KR15265	10/7/2015	11:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	12.57	8.22	150.5	10.45	3.136	2.59	65.1	2.69	0.375	2.0	<0.05	0.400	0.045		0.77	0.086	0.100	0.011	0.002	1.9	<5.0	<5.0	0.21
KR15286	11/18/2015	16:50	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	6.90	8.22	145.2	11.58	3.809	2.53	56.2	3.57	0.564	<2.0	<0.05	0.740	0.084		1.56	0.047	0.058	0.013	0.004	19.2	17.6	<5.0	
KR15306	12/8/2015	13:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	P	6.11	8.31	146.9	12.14	13.465	7.53	55.2	3.18	1.310	<2.0	0.064	0.850	0.216		1.72	0.055	0.120	0.030	0.013	22.3	21.1	<5.0	
KR15028	3/19/2015	13:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	10.02	8.06	159.5	10.54	18.790	10.40	60.7	3.07	1.700	<2.0	<0.05	0.280	0.228		0.85	0.044	0.130	0.045	0.020	20.6	29.1	<5.0	
KR15105	6/22/2015	16:25	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	20.90	7.94	152.9	8.96	1.972	1.74		3.95	0.506	<2.0	<0.05	0.360	0.065		0.73	0.130	0.170			2.7			
KR15010	2/17/2015	12:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	7.84	7.95	150	10.25	2.181	1.51	59.8	3.25	0.396		0.067	0.370	0.064		0.80	0.057	0.055			11.8	<5.0	<5.0	
KR15030	3/19/2015	14:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	11.83	8.70	183.1	12.27	25.360	3.39	72.0	2.99	1.200		<0.05	0.073	0.224		0.50	<0.01	0.079			8.9	11.6	<5.0	
KR15050	4/15/2015	12:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	11.55	7.87	162.2	9.13	1.475	0.75	60.4	3.96	0.323		0.073	0.170	0.037		0.72	0.064	0.140			9.1	<5.0	<5.0	
KR15071	5/7/2015	16:05	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	15.93	7.42	158.5	8.87	3.553	1.78	58.7	3.67	0.441		<0.05	0.120	0.067		0.41	0.082	0.120			5.3	<5.0	<5.0	
KR15093	6/8/2015	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	24.77	8.41	148.6	11.32	3.914	1.70	58.9	3.37	0.411		<0.05	<0.01	0.052		0.50	0.061	0.130			2.0	<5.0	<5.0	<0.18
KR15198	7/8/2015	13:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	24.97	8.94	145.5	10.86	19.253	1.33	57.5	4.04	1.370		<0.05	0.150	0.244			0.096	0.230			11.4	10.4	8.4	14.00
KR15221	8/5/2015	12:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	22.87	9.18	149.3	10.54	8.802	1.02	59.9	3.42	0.921		<0.05	<0.01	0.139		0.50	0.120	0.190			1.8	<5.0	<5.0	0.24
KR15244	9/2/2015	13:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	21.07	8.79		9.31	16.030	1.24	60.4	3.98	1.180		0.020	0.060	0.216		0.91	0.150	0.480			4.9	<5.0	<5.0	0.49
KR15267	10/6/2015	11:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P					296.740	16.62	63.3	4.23	3.900		<0.05	0.140	0.776		8.32	0.062	0.780			1.1	72.4	66.4	2.20
KR15288	11/18/2015	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	9.72	7.91	149.7	9.33	1.261	0.99	61.2	3.18	0.318		0.120	0.510	0.041		1.21	0.057	0.110			4.0	<5.0	<5.0	
KR15308	12/8/2015	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	P	6.00	8.07	150.9	10.35	5.194	2.52	58.3	3.04	0.533		0.150	0.640	0.082		1.47	0.054	0.091			8.3	<5.0	<5.0	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15009	2/17/2015	13:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.979	1.55			0.560				0.076										
KR15029	3/19/2015	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					19.680	6.09			1.210				0.205										
KR15049	4/15/2015	12:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.547	0.75			0.503				0.070										
KR15070	5/7/2015	16:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					3.622	1.48			0.706				0.083							5.7			
KR15092	6/8/2015	15:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					4.572	1.95			0.359				0.047							2.3			<0.18
KR15197	7/8/2015	13:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I	22.89				1.530	0.61			0.319				0.042							4.0			1.70
KR15220	8/5/2015	12:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					9.898	1.33			1.040				0.158							4.4			0.20
KR15243	9/2/2015	13:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					8.450	1.89			0.651				0.113							2.6			1.50
KR15266	10/6/2015	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					49.104	1.64			2.280				0.421							7.4			0.18
KR15287	11/18/2015	15:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.560	1.41			0.168				0.020							5.3			
KR15307	12/8/2015	11:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					3.570	2.54			0.628				0.089							9.5			
KR15011	2/17/2015	13:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P	6.93	7.87	153.4	9.9	1.639	1.72	60.4	2.93	0.340		0.081	0.370	0.051		0.95	0.057	<0.05			11.0	<5.0	<5.0	
KR15031	3/19/2015	15:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	8	P	8.81	7.97	188.1	9.82	18.170	6.17	70.8	2.95	0.985		0.063	0.093	0.168		0.54	<0.01	0.073			9.3	10.2	<5.0	
KR15051	4/15/2015	12:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	P	9.76	7.55	170.8	7.28	0.846	0.66	62.1	3.91	0.311		0.085	0.180	0.040		0.72	0.064	0.200			8.0	<5.0	<5.0	
KR15072	5/7/2015	16:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	13	P	13.42	6.97	160.5	7.33	2.752	1.48	59.9	3.61	0.398		0.062	0.120	0.056		0.31	0.082	0.140			5.4	<5.0	<5.0	
KR15094	6/8/2015	15:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	6	P	18.46	7.24	147.5	7.51	4.942	1.86	58.9	3.22	0.254		<0.05	<0.01	0.037		0.36	0.072	0.120			2.2	<5.0	<5.0	<0.18
KR15199	7/8/2015	13:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	NR	P					1.277	0.58	59.0	3.49	0.251		<0.05	0.310	0.029			0.150	0.200			1.7	<5.0	<5.0	0.24
KR15222	8/5/2015	13:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	16	P	15.41	7.13	162.7	0.0	10.118	2.10	60.3	3.03	0.994		0.053	0.150	0.152		0.69	0.160	0.210			5.6	<5.0	<5.0	0.21
KR15245	9/2/2015	14:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	P					1.410	1.21	64.4	3.32	0.526		0.220	0.047	0.084		0.72	0.240	0.300			2.8	<5.0	<5.0	
KR15268	10/6/2015	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	P					0.830	0.94	66.1	4.04	0.471		0.400	0.130	0.066		1.05	0.190	0.250			4.2	<5.0	<5.0	
KR15289	11/18/2015	15:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	8	P	8.51	7.80	148.4	9.37	1.646	1.19	60.8	3.20	0.318		0.130	0.500	0.049		1.21	0.080	0.110			4.3	<5.0	<5.0	
KR15309	12/8/2015	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	6	P	5.30	7.93	150.5	10.64	3.775	2.88	59.0	2.93	0.646		0.150	0.650	0.091		1.48	0.053	0.093			10.2	6.6	<5.0	
KR15012	2/17/2015	13:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	P					2.215	1.43	61.1	3.33	0.492		0.110	0.350	0.069		0.84	0.063	0.061			12.3	40.0	<5.0	
KR15032	3/19/2015	14:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	28	P							75.7	3.19			0.170	0.290			0.66	0.057	0.110				5.8	<5.0	
KR15052	4/15/2015	12:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	P	7.82	7.22	186	3.47			64.5	3.94			0.079	0.180			0.76	0.072	0.190			9.4	42.8	6.4	
KR15073	5/7/2015	16:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	28	P							63.8	3.63			<0.05	0.120			0.43	0.086	0.110				<5.0	<5.0	
KR15095	6/8/2015	15:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	27	P							64.9	3.46			0.100	0.390			0.89	0.140	0.210			2.9	5.8	<5.0	
KR15200	7/8/2015	13:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	NR	P							68.2	3.41			0.310	0.240				0.220	0.330			8.0	5.8	<5.0	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15223	8/5/2015	12:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	P							70.2	3.15			0.480	0.069			0.90	0.320	0.440				<5.0	<5.0	
KR15246	9/2/2015	13:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	P							72.3	3.17			0.610	0.018			0.96	0.430	0.510				8.0	<5.0	
KR15269	10/6/2015	11:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	25	P							79.5	4.20			1.120	<0.01			1.45	0.610	0.640				7.4	<5.0	
KR15290	11/18/2015	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	P	8.05	7.79	149.1	9.49			60.3	3.12			0.096	0.520			1.21	0.054	0.052				<5.0	<5.0	
KR15310	12/8/2015	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	P	5.21	7.88	150	10.35			57.9	3.00			0.120	0.650			1.15	0.053	0.074				<5.0	<5.0	
KR15013	2/17/2015	14:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	7.39	7.93	151.1	10.22	1.903	1.71	60.4	3.20	0.438		0.092	0.370	0.064		0.79	0.057	0.052			11.8	<5.0	<5.0	
KR15033	3/19/2015	16:05	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	9.75	8.15	183.7	10.46	16.830	5.91	74.7	2.93	1.120		<0.05	0.190	0.168		0.57	<0.01	0.073			10.1	11.2	<5.0	
KR15053	4/15/2015	13:25	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	11.26	7.81	162.8	9.08	1.403	0.63	61.7	3.64	0.328		0.071	0.200	0.038		0.76	0.065	0.160			8.6	<5.0	<5.0	
KR15074	5/7/2015	17:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	15.70	7.47	158	8.91	3.638	1.63	58.7	3.55	0.412		<0.05	0.130	0.058		0.42	0.082	0.110			5.3	<5.0	<5.0	
KR15096	6/8/2015	10:40	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	19.13	7.59		8.14	3.949	2.01	57.5	3.39	0.383		<0.05	0.061	0.048		0.55	0.089	0.140			3.0	<5.0	<5.0	<0.18
KR15201	7/8/2015	12:10	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	23.05	7.84		6.78	1.702	0.92	57.7	5.09	0.289		<0.05	0.240	0.035			0.130	0.170			3.9	<5.0	<5.0	1.10
KR15224	8/5/2015	11:25	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	21.82	8.80	149.6	7.99	10.241	1.57	60.8	3.60	0.951		<0.05	0.035	0.151		0.59	0.130	0.200			1.8	<5.0	<5.0	0.19
KR15247	9/2/2015	15:15	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	20.04	7.90	147.6	6.34	5.100	1.85	59.7	4.13	0.592		0.100	0.130	0.086		0.87	0.180	0.260			3.7	<5.0	<5.0	0.33
KR15270	10/7/2015	9:50	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	15.46	7.77	152.3	9.66	3.589	1.39	63.1	4.35	0.468		0.160	0.220	0.071		1.00	0.140	0.180			2.2	<5.0	<5.0	<0.18
KR15291	11/18/2015	14:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	8.95	7.85	149	9.61	1.948	1.95	59.9	3.24	0.358		0.091	0.520	0.052		1.21	0.055	0.081			5.7	<5.0	<5.0	
KR15311	12/8/2015	9:50	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	P	5.40	7.90	150.9	10.73	3.588	3.23	57.7	2.94	0.587		0.110	0.660	0.085		1.13	0.055	0.078			10.1	7.2	<5.0	
KR15015	2/17/2015	16:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	8.04	7.90	142.3	10.43	1.691	1.07	58.1	3.82	0.406		<0.05	0.350	0.064		0.66	0.058	0.081			12.9	<5.0	<5.0	
KR15035	3/19/2015	17:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	12.14	8.94	171	14.3	22.250	5.53	68.9	2.95	1.190		<0.05	0.110	0.223		0.49	<0.01	0.057			9.4	8.6	<5.0	
KR15055	4/16/2015	17:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	13.81	7.82	163	9.33	3.572	0.49	60.9	3.70	0.422		0.077	0.250	0.058		0.57		0.086			5.6			
KR15076	5/7/2015	12:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	16.21	8.17	160.1	10.38	10.146	5.66	64.5	3.55	0.524		<0.05	0.020	0.089		0.47	0.048	0.085			4.6	5.4	<5.0	
KR15098	6/8/2015	17:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	24.44	8.30	150.6	9.72	0.385	0.30	60.8	3.41	0.391		<0.05	<0.01	0.058		0.44	0.073	0.230			2.4	5.6	<5.0	<0.18
KR15203	7/7/2015	11:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	26.31	8.86		9.69	1.255	0.39	62.6	3.58	0.267		<0.05	<0.01	0.036		0.40	0.044	0.150			1.1	<5.0	<5.0	0.23
KR15226	8/5/2015	8:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	24.29	9.72	153.9	12.61	30.233	1.62	61.9	3.49	1.200		<0.05	<0.01	0.225		0.69	0.059	0.170			7.7	<5.0	<5.0	<0.18
KR15249	9/2/2015	9:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	21.70	9.39	152.3	9.08	43.350	3.18	64.6	3.73	1.690		<0.05	0.012	0.305		0.75	0.069	0.170			6.0	7.8	5.6	0.26
KR15272	10/20/2015	14:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	17.40	8.13	153.1	7.63	2.210	0.65	62.6	3.97	0.166		0.180	0.160	0.026		0.78	0.150	0.130			1.0	<5.0	<5.0	0.25
KR15293	11/18/2015	11:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	11.73	7.63	155.4	6.64	0.784	0.42	64.2	3.46	0.184		0.250	0.410	0.026		1.24	0.110	0.130			1.5	<5.0	<5.0	
KR15313	12/8/2015	16:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	P	7.88	7.90	154.3	8.43	1.940	1.18	62.1	3.08	0.304		0.210	0.530	0.042		1.06	0.079	0.097			3.5	<5.0	<5.0	
KR15014	2/17/2015	16:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.503	1.13			0.494				0.068										

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15034	3/19/2015	17:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					11.570	5.19			0.921				0.146										
KR15054	4/16/2015	16:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					4.091	1.07			0.462				0.042										
KR15075	5/7/2015	13:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					8.072	5.12			0.645				0.103							4.8			
KR15097	6/8/2015	18:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.592	0.60			0.569				0.095							3.0			<0.18
KR15202	7/7/2015	11:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					3.315	2.53		0.10	0.359				0.046							1.6			0.24
KR15225	8/5/2015	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					12.360	1.17			0.942				0.159							3.0			0.97
KR15248	9/2/2015	9:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					13.760	1.03			0.676				0.122							2.2			0.97
KR15271	10/20/2015	14:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.777	0.84			0.172				0.028										0.39
KR15292	11/18/2015	12:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.731	0.58			0.438				0.079							1.7			
KR15312	12/8/2015	16:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.813	1.09			0.432				0.056							3.7			
KR15036	3/19/2015	17:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	4	P	9.17	8.11	172.4	10.61	13.470	6.22	69.3	2.82	0.752		<0.05	0.190	0.132		0.53	<0.01	0.066			8.2	7.8	<5.0	
KR15099	6/8/2015	18:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	7	P	16.18	7.32	154	7.13	6.462	1.68	59.9	3.33	0.271		<0.05	0.032	0.042		0.32	0.071	0.130			2.8	<5.0	<5.0	<0.18
KR15077	5/7/2015	13:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	14	P	10.66	6.62	165.8	6.88	1.993	1.97	61.0	4.83	0.396		<0.05	0.230	0.049		0.44	0.061	0.095			5.2	<5.0	<5.0	<0.18
KR15227	8/5/2015	8:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	14.5	P					5.669	1.23	62.7	2.60	0.540		<0.05	0.130	0.082		0.50	0.140	0.240			2.0	<5.0	<5.0	0.54
KR15250	9/2/2015	10:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	16	P					1.070	0.35	63.8	2.91	0.255		0.053	0.170	0.042		0.59	0.170	0.260			1.2	<5.0	<5.0	
KR15204	7/7/2015	12:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	P	9.61				0.367	0.13	63.7	3.69	0.456		<0.05	<0.01	0.084		0.47	0.045	0.140			0.7	<5.0	<5.0	0.35
KR15273	10/20/2015	14:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	P	15.06	7.43	159.6	3.24	0.851	0.52	62.3	4.30	0.226		0.210	0.210	0.037		0.94	0.120	0.140				<5.0	<5.0	
KR15294	11/18/2015	12:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	P	10.54	7.39	160.3	2.97	0.595	0.46	63.6	3.37	0.220		0.240	0.420	0.030		1.22	0.110	0.140			1.8	<5.0	<5.0	
KR15016	2/17/2015	16:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	20	P					1.317	1.36	61.8	3.54	0.442		<0.05	0.470	0.064		0.84	0.064	0.072			13.8	<5.0	<5.0	
KR15056	4/16/2015	17:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	22	P	6.37	7.44	167.1	7	1.085	1.09	63.0	3.09	0.346		0.077	0.520	0.038		0.73		0.084						
KR15314	12/8/2015	16:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	36	P	6.65	7.74	152.8	8.92	1.450	0.99	61.5	3.00	0.383		0.160	0.510	0.045		1.01	0.080	0.100			3.4	<5.0	<5.0	
KR15017	2/17/2015	16:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P					1.042	1.42	67.9	3.19	0.545		<0.05	0.640	0.085		0.99	0.092	0.110			17.1	<5.0	<5.0	
KR15037	3/19/2015	17:15	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P							65.0	3.65			<0.05	0.650			0.98	0.080	0.120			12.8	<5.0	<5.0	
KR15057	4/16/2015	17:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P	5.78	7.24	174.4	5.16			65.3	3.27			<0.05	0.630			0.84		0.110			10.8			
KR15078	5/7/2015	13:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P							65.9	3.13			<0.05	0.660			0.75	0.095	0.100				<5.0	<5.0	
KR15100	6/8/2015	17:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P	6.23	6.58	173.4	1.01			60.9	3.23			<0.05	0.061			0.48	0.074	0.120				<5.0	<5.0	
KR15205	7/7/2015	12:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	NR	P							66.9	3.18			<0.05	0.580			0.87	0.110	0.170			5.2	<5.0	<5.0	
KR15228	8/5/2015	8:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	44	P							66.3	2.73			0.120	0.470			0.92	0.150	0.210				<5.0	<5.0	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
KR15251	9/2/2015	9:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P							68.3	2.69			0.250	0.350			0.88	0.190	0.250				<5.0	<5.0	
KR15274	10/20/2015	14:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	P	7.25	7.05	190	0.0			57.4	3.55			0.320	0.086			0.78	0.190	0.220				<5.0	<5.0	
KR15295	11/18/2015	12:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	44	P	7.65	7.11	184	0.0			68.4	2.74			0.350	0.240			0.95	0.180	0.190				5.3	<5.0	
KR15315	12/8/2015	17:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	P	6.62	7.74	152.9	8.87			60.3	3.16			0.190	0.580			1.06	0.072	0.089				11.6	<5.0	
KR15007	2/18/2015	8:30	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	6.90	7.86	144.6	11.52	1.435	1.10	59.5	3.41	0.426	<2.0	<0.05	0.340	0.064		0.75	0.056	0.055	0.011	0.005		<5.0	<5.0	
KR15027	3/19/2015	18:45	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P	9.41	8.25	171.7	11.65	11.230	5.17	65.4	2.93	0.762	<2.0	<0.05	0.260	0.134		0.51	0.023	0.068	0.040	0.007	8.8	5.2	<5.0	
KR15047	4/16/2015	11:50	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	11.72	7.68	164.1	10.19	1.689	0.58	62.7	3.14	0.537		0.079	0.280	0.050		0.59			0.007	0.002				
KR15068	5/7/2015	18:25	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	15.74	7.85	162.1	10.27	9.759	4.16	64.5	3.68	0.698	<2.0	<0.05	0.066	0.112		0.50	0.049	0.130	0.020	0.010	4.9	<5.0	<5.0	
KR15082	5/18/2015	18:20	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P					7.213	2.80	63.4	3.55	0.490	<2.0	0.023	0.140	0.062		0.52	0.068	0.110	0.012	0.005	4.5	<5.0	<5.0	<0.18
KR15090	6/8/2015	18:35	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	21.34	7.99		8.16	3.185	1.15	59.7	3.36	0.243	2.9	<0.05	0.018	0.036		0.45	0.060	0.110	0.010	0.004	2.2	<5.0	<5.0	<0.18
KR15104	6/22/2015	11:15	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P	19.51	7.86	152.7	9.49	6.478	1.78	65.7	3.40	0.438	<2.0	<0.05	0.030	0.065		0.25	0.074	0.110			2.7	<5.0	<5.0	<0.18
KR15195	7/8/2015	11:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	22.89	8.30	154	9.27	3.012	1.15	62.3	3.39	0.293	5.1	<0.05	0.071	0.034			0.078	0.180	0.005	0.006	1.6	<5.0	<5.0	0.25
KR15209	7/21/2015	14:00	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P	22.16	8.15	151.4	8.95	6.702	1.16	60.8	3.11	0.893	2.6	<0.05	0.095	0.151		0.50	0.120	0.160		0.003		<5.0	<5.0	
KR15218	8/5/2015	15:30	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	21.58	8.62	150.7	8.32	9.482	1.74	63.7	3.06	0.991	<2.0	<0.05	0.041	0.158		0.50	0.130	0.190	0.017	0.007	4.5	<5.0	<5.0	0.18
KR15232	8/17/2015	14:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P	20.91	8.46	150.6	8.65	4.295	0.91	60.4	4.68	0.377	<2.0	0.120	0.089	0.049		0.53	0.130	0.180	0.008	0.006	2.0	<5.0	<5.0	0.38
KR15241	9/2/2015	16:20	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	20.60	8.42	151.8	7.6	1.710	0.91	63.8	3.45	0.281	<2.0	0.130	0.100	0.052		0.65	0.150	0.140	0.014	0.009	1.2	<5.0	<5.0	0.21
KR15255	9/22/2015	13:30	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	P	18.05	7.99	152.5	7.82	1.260	0.68	64.2	4.23	0.315	<2.0	0.180	0.150	0.044		0.73	0.200	0.180	0.008	0.004	2.1	<5.0	<5.0	0.40
KR15264	10/6/2015	14:40	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	16.90	7.70	153.5	8.09	1.377	0.75	67.7	4.29	0.297	<2.0	0.190	0.200	0.037		0.94	0.150	0.180	0.010	0.003	1.6	<5.0	<5.0	0.23
KR15278	10/20/2015	9:20	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	15.61	7.37	155.6	8.43	0.902	0.74	64.8	4.18	0.510	<2.0	0.260	0.320	0.084		1.08	0.130	0.140			1.2	<5.0	<5.0	0.30
KR15285	11/18/2015	9:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	11.15	7.66	155.3	9.26	0.748	0.62	64.6	3.47	0.200	<2.0	0.200	0.450	0.029		1.21	0.110	0.130	0.008	0.003	2.6	<5.0	<5.0	0.20
KR15305	12/8/2015	14:40	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	7.77	7.78	154.5	10.21	1.733	1.39	62.1	3.08	0.421	<2.0	0.160	0.570	0.062		1.34	0.079	0.160	0.012	0.010	3.9	<5.0	<5.0	
WA022515-OC	2/25/2015	11:50	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	6.83	8.26	231	12.20	2.100	3.50		3.57			0.013	0.348			0.83	0.059	0.081				5.2	1.5	
WA031815-OC	3/18/2015	12:25	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	9.74	8.17	218	11.27	4.800	6.40		3.43			<0.010	0.244			0.98	0.045	0.069			6.3	5.5	1.8	
WA041515-OC	4/15/2015	11:50	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.89	8.38	192	11.59	4.800	3.80		3.13	0.639		0.010	0.193			0.76	0.074	0.078				4.0	0.8	
WA050615-OC	5/6/2015	11:52	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	15.19	8.20	186	9.78	2.100	2.70		3.64	0.446		0.020	0.122			0.69	0.063	0.086				4.6	1.2	
WA061015-OC	6/10/2015	11:27	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.57	8.52	174	8.70	1.600	1.40		3.20	0.487		<0.010	0.022			0.42	0.083	0.101				2.3	<0.50	<0.18
WA070815-OC	7/8/2015	11:54	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.44	8.03	179	7.84	2.100	4.60		3.03	3.460		0.014	0.102			0.68	0.121	0.476				106.0	8.0	0.23
WA080515-OC	8/5/2015	11:46	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.92	8.63	171	8.61	9.600	3.10		3.58	0.949		0.012	0.036			0.61	0.168	0.178				5.3	1.8	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
WA090915-OC	9/9/2015	11:42	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	19.82	8.45	174	9.28	1.100	1.50		3.13	0.447		0.013	0.170			0.61	0.140	0.174				2.5	<0.50	0.22
WA100715-OC	10/7/2015	12:16	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	16.41	8.33	184	9.85	1.100	0.80		3.75			<0.010	0.253			0.67	0.146	0.165				2.5	1.2	
WA111815-OC	11/18/2015	12:17	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.65	8.47	191	11.25	2.400	1.10		3.97			0.014	0.560			1.10	0.126	0.128				2.2	0.7	
WA121615-OC	12/16/2015	12:22	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	5.87	8.44	223	12.37	1.300	2.00		3.28			0.020	0.656			1.21	0.095	0.110				5.8	<0.50	
SV022515-OC	2/25/2015	10:39	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	5.98	8.15	216	12.39	1.600	0.80		2.60		<2.00	<0.010	0.361			1.06	0.039	0.051			5.6	4.7	1.2	
SV031815-OC	3/18/2015	11:15	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.13	8.11	209	10.94	3.700	3.70		3.31		<2.00	<0.010	0.266			0.74	0.032	0.047			4.2	4.5	1.3	
SV041515-OC	4/15/2015	10:40	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.54	8.34	197	11.74	13.000	6.50		2.55	0.800		0.011	0.116	0.105		0.63	0.025	0.040	0.015	0.012	2.6	5.0	1.5	
SV050615-OC	5/6/2015	10:30	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.15	8.15	196	10.68	1.900	2.20		3.69	0.833		0.016	0.115	0.113		0.56	0.051	0.071	0.015	0.014	3.0	5.8	2.0	
SV061015-OC	6/10/2015	10:04	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.96	8.34	171	8.41	2.700	1.40	57.3	3.09	0.709	<2.00	0.012	0.043	0.087		0.45	0.067	0.094	0.017	0.024	1.7	9.2	<0.50	<0.18
SV070815-OC	7/8/2015	10:18	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	23.38	8.02	186	7.70	4.300	4.70		3.08	7.090	<2.00	0.014	0.054	0.404		0.65	0.115	0.477	0.204	0.153	31.0	155.0	6.7	<0.18
SV080515-OC	8/5/2015	10:18	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.75	8.32	177	8.41	9.600	3.10		3.37	1.580	2.6	<0.010	<0.010	0.193		0.57	0.154	0.169	0.029	0.015	1.7	13.0	2.0	4.40
SV090915-OC	9/9/2015	10:16	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	19.20	8.34	184	9.16	1.300	2.20		3.22	0.463		<0.010	0.126	0.051		0.54	0.134	0.171	0.019	0.008	1.1	5.7	1.3	<0.18
SV100715-OC	10/7/2015	10:43	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.87	8.19	190	9.80	2.100	0.50	81.0	3.47		<2.00	<0.010	0.188			0.57	0.130	0.149			0.8	4.2	0.7	<0.18
SV111815-OC	11/18/2015	11:03	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.11	8.46	197	11.44	1.200	1.90		3.58		<2.00	<0.010	0.458			0.90	0.110	0.128			20.0	7.3	0.7	
SV121615-OC	12/16/2015	11:04	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	5.43	8.31	206	12.33	1.900	1.10		2.73		<2.00	0.011	0.561			0.90	0.058	0.066			2.6	31.0	2.5	
HC022415-OC	2/25/2015	9:51	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	6.12	8.12	198	12.59	2.100	0.50		2.21			<0.010	0.312			1.00	0.035	0.044				11.0	2.0	
HC031815-OC	3/18/2015	10:24	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	10.61	7.99	196	11.01	4.800	1.50		2.62			<0.010	0.196			0.73	0.027	0.035				4.7	1.3	
HC041515-OC	4/15/2015	9:56	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	10.47	8.25	184	11.39	14.000	7.00		2.34	0.840		<0.010	0.015			0.33	0.010	0.030				7.0	1.4	
HC050615-OC	5/6/2015	9:45	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.18	8.20	189	10.68	6.100	5.30		2.94	1.160		0.016	0.101			0.57	0.043	0.075			2.9	11.0	2.3	
HC061015-OC	6/10/2015	9:16	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	23.35	8.57	198	9.47	1.100	1.90		2.36	0.679		<0.010	0.018			0.41	0.055	0.066				2.3	<0.50	<0.18
HC070815-OC	7/8/2015	9:26	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	24.40	7.96	196	7.84	2.000	1.80		2.54	0.597		0.013	<0.010			0.51	0.087	0.105				6.0	1.6	<0.18
HC080515-OC	8/5/2015	9:19	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	22.22	8.15	181	8.45	9.600	4.20		3.23	2.000		<0.010	<0.010			0.52	0.144	0.172				11.0	2.7	2.60
HC090915-OC	9/9/2015	9:19	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	18.83	8.20	182	8.92	1.600	2.90		2.67	0.591		<0.010	0.044			0.40	0.114	0.140				4.2	1.2	0.20
HC100715-OC	10/7/2015	9:42	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	16.14	8.01	195	9.48	2.700	0.30		3.26			<0.010	0.061			0.45	0.110	0.125				4.0	0.7	0.19
HC111815-OC	11/18/2015	10:14	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.55	8.25	195	11.28	1.300	2.80		3.24			<0.010	0.417			0.82	0.106	0.109				3.2	0.7	
HC121615-OC	12/16/2015	10:22	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	5.53	8.21	181	12.54	1.600	1.60		2.50			0.018	0.434			0.61	0.042	0.060				15.0	1.3	
OR022515-OC	2/25/2015	8:38	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	6.46	8.45	162	12.73	1.700	<0.1	76.2	1.59			<0.010	0.164			0.60	0.022	0.026			2.6	3.8	1.0	
OR031815-OC	3/18/2015	8:54	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	10.93	8.30	160	11.15	2.300	1.50	74.3	1.87			<0.010	0.137			0.41	0.019	0.025			3.0	2.6	0.9	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
OR041515-OC	4/15/2015	8:42	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	10.30	8.60	149	11.60	4.300	3.20	66.8	2.12	0.461		<0.010	0.023			0.15	0.005	0.017			1.3	3.0	0.6	
OR050615-OC	5/6/2015	8:31	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	15.39	8.45	165	10.44	4.300	2.10	67.0	2.01	0.696		<0.010	<0.010			0.41	0.020	0.036			1.6	5.4	1.4	
OR061015-OC	6/10/2015	7:42	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.25	8.24	177	8.24	1.600	0.50	73.0	1.80	0.267		<0.010	<0.010			0.37	0.039	0.046			0.9	4.3	<0.50	0.18
OR070815-OC	7/8/2015	7:58	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	24.81	8.01	183	7.54	1.600	2.00	71.8	1.66	0.395		<0.010	<0.010			0.39	0.050	0.058			0.5	1.8	1.0	0.19
OR080515-OC	8/5/2015	7:54	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.00	8.43	179	8.27	6.900	2.80		2.59	0.951		0.015	0.016			0.40	0.082	0.110			0.5	5.7	1.5	1.40
OR090915-OC	9/9/2015	7:57	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	19.32	8.56	179	8.85	2.400	1.50	81.3	2.13	0.523		<0.010	<0.010			0.30	0.072	0.091			0.8	2.3	0.8	<0.18
OR100715-OC	10/7/2015	8:05	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	16.51	8.32	185	9.38	2.100	0.50		3.01			<0.010	0.027			0.30	0.086	0.088			0.5	1.7	<0.50	<0.18
OR111815-OC	11/18/2015	8:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	9.68	8.21	183	11.46	1.900	2.10	77.3	2.60			<0.010	0.245			0.52	0.067	0.078			0.7	2.7	0.8	
OR121615-OC	12/16/2015	8:46	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	6.07	8.39	136	12.43	1.300	0.50	61.8	1.86			<0.010	0.254			0.41	0.025	0.041			3.3	13.0	0.6	
WE022515-OC	2/25/2015	10:48	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	6.84	7.61	158	12.45	1.500	<0.1		1.42	0.287		<0.010	0.139			0.62	0.020	0.024			3.0	4.5	0.9	
WE031815-OC	3/18/2015	10:45	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	11.40	7.90	158	11.08	1.602	2.63		1.61	0.193		0.011	0.101			0.32	0.016	0.026			2.4	3.0	0.9	
WE041515-OC	4/15/2015	11:45	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	10.76	7.84	148	11.26	2.136	1.85		1.25	0.155		<0.010	<0.010			0.19	0.005	0.015			1.7	3.1	1.3	
WE050615-OC	5/6/2015	11:05	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.00	7.99	164	11.74	3.738	1.12		1.78	0.791		<0.010	<0.010			0.28	0.020	0.028			1.7	4.8	1.2	<0.18
WE061015-OC	6/10/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	22.89	8.23	178	8.79	0.890	0.73		1.70	0.351		<0.010	0.012			0.20	0.028	0.028			0.7	1.5	<0.50	<0.18
WE070115-SG	7/1/2015	10:56	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE070815-OC	7/8/2015	11:12	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P					1.780	1.21		1.49	0.340		<0.010	<0.010			0.30	0.038	0.021			0.7	1.0	<0.50	<0.18
WE070815-SG	7/8/2015	11:12	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE071515-SG	7/15/2015	11:29	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE072215-SG	7/22/2015	10:41	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE072915-SG	7/29/2015	13:28	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							3.60
WE080515-OC	8/5/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	22.52	8.37	179	8.92	2.670	0.82		2.62	0.949		<0.010	<0.010			0.27	0.073	0.093			0.3	4.2	1.0	0.96
WE080515-SG	8/5/2015	11:14	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							2.10
WE081215-SG	8/12/2015	9:44	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							0.47
WE081915-SG	8/19/2015	11:07	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							0.27
WE082515-SG	8/26/2015	11:02	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE090215-SG	9/2/2015	12:24	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE090915-SG	9/9/22015		KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE092315-SG	9/23/2015	11:39	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							0.26

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
WE093015-SG	9/30/2015	10:43	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE100715-OC	10/7/2015	10:26	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.77	8.57	194	10.69	2.136	0.48		2.51			<0.010	0.030			0.32	0.081	0.086			0.6	1.0	0.8	<0.18
WE100715-SG	10/7/2015	10:36	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE101415-SG	10/14/2015	11:07	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																							<0.18
WE111815-OC	11/18/2015	11:22	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.94	7.07	184	11.46	2.403	4.33		2.29			<0.010	0.222			0.60	0.053	0.069			0.7	2.3	2.3	
WE121615-OC	12/16/2015	11:52	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	6.51	6.88	132	12.73	2.400	0.40		1.44			0.012	0.229			0.27	0.023	0.043			3.4	13.0	0.8	
TC022515-OC	2/25/2015	10:00	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	7.02	7.73	163	12.29	1.500	<0.1		1.19	0.261		<0.010	0.120			0.24	0.015	0.020			5.1	5.5	1.0	
TC031815-OC	3/18/2015	9:56	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	11.89	7.93	163	10.85	1.602	1.39		1.38	0.315		0.011	0.071			0.41	0.012	0.017			2.1	2.8	0.6	
TC041515-OC	4/15/2015	10:52	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	11.19	7.93	153	11.05	2.492	1.37		1.06	0.290		<0.010	<0.010			0.20	0.003	0.013			1.5	2.5	0.9	
TC050615-OC	5/6/2015	10:08	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	13.55	7.74	126	12.16	4.806	3.04		2.02	1.920		0.022	0.060			0.37	0.010	0.077			34.0	67.0	3.0	<0.18
TC061015-OC	6/10/2015	10:20	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.05	8.20	165	8.54	0.712	0.28		1.40	0.346		<0.010	0.013			0.16	0.016	0.018			0.7	1.5	<0.50	<0.18
TC070815-OC	7/8/2015	10:01	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	24.18	8.38	175	7.64	1.780	0.96		1.40	0.352		<0.010	<0.010	0.054		0.18	0.027	0.032	0.010	0.003	0.6	<0.50	<0.50	0.18
TC080515-OC	8/5/2015	10:17	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.39	8.44	172	8.37	6.942	1.66		2.08	1.030		<0.010	<0.010			0.21	0.052	0.062			0.3	3.0	0.8	0.70
TC100715-OC	10/7/2015	9:46	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	17.11	8.42	185	9.44	1.800	<0.1		2.35			0.039	0.052			0.23	0.057	0.068			0.4	0.5	<0.50	<0.18
TC111815-OC	11/18/2015	10:32	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	10.11	6.93	183	11.43	2.937	3.23		2.16			<0.010	0.162			0.49	0.043	0.046			0.6	2.5	0.7	
TC121615-OC	12/16/2015	11:12	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	6.65	6.42	137	12.66	1.900	0.40		1.43			<0.010	0.182			0.28	0.016	0.032			3.7	15.0	1.0	
TG022515-OC	2/25/2015	7:22	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	7.50	7.20	159	11.85	2.400	<0.1		1.45	0.264		<0.010	0.128	0.020		0.34	0.022	0.023	0.008	0.004	4.3	8.1	1.0	
TG031815-OC	3/18/2015	7:39	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	12.21	7.68	161	7.68	2.492	0.75		1.33	0.300		<0.010	0.111	0.028		0.40	0.010	0.015	0.003	0.002	2.0	2.4	0.9	
TG041515-OC	4/15/2015	8:12	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	11.30	7.60	151	10.36	1.424	1.32		0.87	0.275		<0.010	0.046	0.030		0.30	0.005	0.013	0.005	0.002	1.5	3.1	0.5	
TG050515-OC	5/5/5015	12:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG050615-OC	5/6/2015	7:49	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	14.58	7.52	133	11.25	6.942	3.15		2.06	2.040		0.015	0.061	0.202		0.29	0.008	0.072	0.046	0.032	23.0	48.0	5.5	
TG060915-OC	6/9/2015	12:44	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG061015-OC	6/10/2015	7:52	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	20.69	7.62	170	7.22	1.780	0.59		1.05	0.349		<0.010	0.114	0.036		0.29	0.014	0.014	0.005	0.002	0.8	1.0	<0.50	
TG063015-SG	6/30/2015	11:52	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG070715-OC	7/7/2015	12:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG070715-SG	7/7/2015	12:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG070815-OC	7/8/2015	7:48	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.17	7.74	179	6.72	1.958	1.28		0.69	0.294		<0.010	0.036			0.23	0.018	0.024			0.7	1.3	0.8	
TG071415-SG	7/14/2015	10:42	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
TG072115-SG	7/21/2015	12:10	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG072815-SG	7/28/2015	10:59	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.35
TG080315-OC	8/3/2015	14:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.28
TG080315-SG	8/3/2015	14:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.31
TG080515-OC	8/5/2015	8:07	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.18	8.30	174	7.86	4.806	3.42		1.85	0.812		0.015	<0.010	0.100		0.20	0.041	0.052	0.016	0.007	0.3	2.3	0.5	
TG080815-SG	8/18/2015	13:04	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.23
TG081115-SG	8/11/2015	13:56	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.50
TG082515-SG	8/25/2015	13:18	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.28
TG090115-SG	9/1/2015	13:50	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							0.20
TG090815-SG	9/8/2015	13:25	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG092215-SG	9/22/2015	13:14	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG092915-SG	9/29/2015	13:04	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG100715-OC	10/7/2015	9:53	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	16.92	8.10	181	8.64	3.204	0.16		2.18			<0.010	0.027			0.30	0.040	0.053			0.5	2.8	1.0	
TG100715-OC	10/6/2015	13:33	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	17.51	8.64	177	11.01																			<0.18
TG100715-SG	10/6/2015	13:38	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG101315-SG	10/13/2015	14:30	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																							<0.18
TG111815-OC	11/18/2015	8:34	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	10.75	6.88	167	10.59	1.869	4.67		2.05			<0.010	0.134			0.36	0.029	0.031			0.5	1.5	<0.50	
TG121615-OC	12/16/2015	8:58	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	7.46	4.20	125	11.90	1.600	1.20		1.16			0.011	0.216			0.27	0.014	0.039			5.7	21.0	<0.50	
LES022515-OC	2/25/2015	8:01	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	7.78	7.51	159	11.59	1.600	<0.1		1.08	0.351		<0.010	0.135			0.25	0.014	0.019			4.1	5.9	0.8	
LES031815-OC	3/18/2015	7:09	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	12.10	7.73	183	10.35	1.602	1.01		1.37	0.267		0.018	0.086			0.28	0.012	0.018			2.4	4.3	0.9	
LES041515-OC	4/15/2015	6:53	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	11.58	7.57	148	10.38	1.424	0.45		1.08	0.382		<0.010	0.046			0.24	0.005	0.016			1.6	3.6	0.9	
LES050515-OC	5/5/2015	11:45	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.18
LES050615-OC	5/6/2015	6:57	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	14.58	7.38	136	11.16	2.403	1.90		1.96	0.577		0.014	0.048			0.28	0.009	0.025			6.9	12.8	1.5	
LES060915-OC	6/9/2015	10:47	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.18
LES061015-OC	6/10/2015	7:03	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.53	7.74	41624	5.08	1.068	0.30		1.32	0.203		0.020	0.025			0.23	0.015	0.021			0.7	0.8	<0.50	
LES070715-OC	7/7/2015	11:29	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.18
LES070815-OC	7/8/2015	6:51	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.73	8.27	2109	8.05	1.780	0.46		1.28	0.256		0.010	0.012			0.30	0.022	0.025			0.8	<0.50	<0.50	
LES080315-OC	8/3/2015	13:45	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																							<0.18

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
LES080515-OC	8/5/2015	7:22	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.35	8.29	312	8.31	7.476	4.11		1.61	0.483		<0.010	0.012			0.22	0.035	0.048			0.4	2.5	0.7	
LES100715-OC	10/7/2015	9:24	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	16.76	7.80	4452	8.13	0.534	0.96		2.36			<0.010	0.034			0.23	0.041	0.045			0.5	1.2	<0.50	
LES100715-OC	10/6/2015	12:50	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	17.35	7.92	2580	8.60																			<0.18
LES111815-OC	11/18/2015	7:55	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.89	6.93	302	10.67	1.335	2.96		1.82			0.012	0.153			0.47	0.035	0.037			0.7	0.8	<0.50	
LES121615-OC	12/16/2015	8:05	KR00050	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	7.48	4.64	149	12.08	2.700	2.60		1.19			0.011	0.337			0.42	0.014	0.056			13.0	41.0	2.0	
SH022515-OC	2/25/2015	12:35	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	7.30	8.42	515	11.48	6.400	2.90		3.34			<0.010	0.421			1.85	0.135	0.210			6.9	59.0	10.0	
SH031815-OC	3/18/2015	13:07	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	11.95	8.40	484	10.54	6.700	1.00		3.15			<0.010	0.216			0.76	0.150	0.170			2.5	6.3	1.7	
SH041515-OC	4/15/2015	12:33	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	11.59	8.46	514	10.95	2.900	1.20		4.06	0.408		0.010	0.071			0.47	0.138	0.176			0.8	2.8	1.0	
SH050615-OC	5/6/2015	12:40	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	16.11	8.45	545	9.61	2.100	1.40		4.78	0.656		<0.010	0.018			0.61	0.167	0.186			1.5	3.5	0.8	
SH061015-OC	6/10/2015	12:15	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	23.54	8.78	541	8.80	2.600	<0.1		4.57	0.618		0.011	<0.010			0.51	0.216	0.217			1.2	4.0	0.5	
SH070815-OC	7/8/2015	12:49	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	23.00	8.64	615	8.83	1.400	0.70		6.67	0.367		<0.010	0.012			0.72	0.252	0.312			0.6	1.3	<0.50	
SH080515-OC	8/5/2015	12:51	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	22.63	8.70	542	9.38	2.400	1.30		5.12	0.285		<0.010	<0.010			0.46	0.202	0.202			0.4	0.8	<0.50	
SH090915-OC	9/9/2015	12:27	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	17.13	8.65	577	9.75	2.200	<0.1		4.97	0.315		<0.010	0.010			0.40	0.149	0.179			0.6	1.5	<0.50	
SH100715-OC	10/7/2015	12:58	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	14.14	8.55	463	9.87	2.100	0.50		2.15			<0.010	0.034			0.18	0.167	0.172			0.6	4.2	1.2	
SH111815-OC	11/18/2015	13:00	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	8.77	8.80	427	11.91	1.800	1.30		2.16			<0.010	0.210			0.47	0.188	0.192				0.8	<0.50	
SH121615-OC	12/16/2015	13:08	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	5.67	8.79	494	12.28	4.300	<0.1		3.40			0.018	0.468			0.84	0.208	0.215			1.1	2.5	<0.50	
SC022515-OC	2/25/2015	11:15	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	6.04	8.27	191	12.03	1.100	<0.1		1.77			<0.010	0.509			1.10	0.011	0.015			2.2	3.5	0.5	
SC031815-OC	3/18/2015	11:49	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	9.99	8.21	186	11.06	7.200	<0.1		1.92			<0.010	0.382			0.73	0.005	0.010				1.4	0.5	
SC041515-OC	4/15/2015	11:18	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	9.53	8.40	209	11.69	4.100	0.90		1.08	0.350		<0.010	0.270			0.49	<0.001	0.006			0.3	1.0	0.7	
SC050615-OC	5/6/2015	11:08	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	13.88	8.29	224	10.20	2.700	0.30		1.68	0.495		0.011	0.131			0.57	<0.001	0.005			0.4	1.7	<0.50	
SC061015-OC	6/10/2015	10:49	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	21.20	8.57	255	8.80	1.100	0.60		1.07	0.242		0.014	0.376			0.50	0.001	0.006			0.4	1.0	<0.50	
SC070815-OC	7/8/2015	11:05	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	22.76	8.37	262	8.34	0.900	1.10		0.86	0.429		<0.010	<0.010			0.23	0.002	0.005			0.6	2.7	1.3	
SC080515-OC	8/5/2015	10:59	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	22.27	8.60	269	9.26	1.100	0.40		1.16	0.265		<0.010	<0.010			0.18	0.002	0.007			0.2	<0.50	<0.50	
SC090915-OC	9/9/2015	11:02	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	18.13	8.48	278	9.80	1.700	<0.1		0.41	0.301		<0.010	<0.010			0.18	0.002	0.005			0.5	<0.50	<0.50	
SC100715-OC	10/7/2015	11:29	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	14.67	8.39	277	10.37	0.700	<0.1		1.03			<0.010	<0.010			<0.050	<0.001	0.004			0.2	<0.50	<0.50	
SC111815-OC	11/18/2015	11:44	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	8.16	8.57	260	11.74	0.700	0.40		1.52			<0.010	<0.010			<0.050	0.002	0.006			0.2	1.2	<0.50	
SC121615-OC	12/16/2015	11:40	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	4.73	8.29	170	12.53	2.200	<0.1		2.15			0.020	0.358			0.43	0.007	0.013			0.8	<0.50	<0.50	
SA022515-OC	2/25/2015	9:00	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	5.66	8.25	111	12.92	0.500	<0.1		0.87			<0.010	0.063			0.45	0.005	0.005			0.6	1.1	0.9	

Sample ID	Date	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 Phosporus mg/l	Phosphorus, Particulate Inorganic Phosporus mg/l	Turbidity NTU	Solids, Total Suspended Solids mg/l	Solids, Volatile Suspended Solids mg/l	Toxins, Microcystin µg/l
SA031815-OC	3/18/2015	9:20	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	9.82	7.98	102	11.28	1.000	<0.1		1.09			<0.010	0.022			0.12	0.004	0.007			0.4	3.0	1.0	
SA041515-OC	4/15/2015	9:07	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	8.29	8.31	98	11.76	0.600	<0.1		0.68	0.170		<0.010	<0.010			0.12	<0.001	0.004			0.4	<0.50	<0.50	
SA050615-OC	5/6/2015	8:57	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	13.38	8.38	108	10.54	<0.1	<0.1		0.83	0.134		<0.010	<0.010			0.24	0.003	0.005				0.9	0.8	
SA061015-OC	6/10/2015	8:13	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	20.07	8.09	115	8.79	1.300	0.50		0.76	0.492		<0.010	<0.010			0.07	0.003	0.011			0.5	11.0	<0.50	
SA070815-OC	7/8/2015	8:27	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	22.32	7.63	144	8.16	0.500	0.30		0.30	0.176		<0.010	0.013			0.20	0.003	0.006			0.3	0.5	<0.50	
SA080515-OC	8/5/2015	8:23	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	20.14	8.20	149	8.62	1.300	0.70		0.48	0.307		<0.010	<0.010			0.14	<0.001	0.005			0.2	0.5	<0.50	
SA090915-OC	9/9/2015	8:23	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	16.92	8.23	155	9.18	1.500	<0.1		<0.250	0.342		<0.010	<0.010			0.08	<0.001	0.003			0.3	1.8	0.5	
SA100715-OC	10/7/2015	8:39	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	14.58	8.06	156	9.51	1.100	<0.1		0.76			<0.010	<0.010			<0.050	<0.001	0.005			0.2	0.8	<0.50	
SA111815-OC	11/18/2015	9:17	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	8.79	8.21	140	11.58	2.900	0.80		1.26			<0.010	<0.010			<0.050	0.002	0.011			0.3	3.0	0.8	
SA121615-OC	12/16/2015	9:18	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	5.19	8.29	88	12.63	0.800	<0.1		1.21			<0.010	0.182			0.19	0.003	0.007			0.6	2.2	<0.50	
TR022515-OC	2/25/2015	11:04	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	7.30	7.80	175	12.18	1.700	<0.1		0.81	0.195		<0.010	0.049			0.56	0.006	0.009			3.1	4.5	0.6	
TR031815-OC	3/18/2015	10:58	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.71	7.91	177	10.82	1.800	<0.1		0.91	0.282		<0.010	<0.010			0.44	0.003	0.005			1.4	1.3	<0.50	
TR041515-OC	4/15/2015	12:03	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.09	7.97	167	10.98	1.068	<0.1		0.77	0.404		0.018	<0.010			0.19	0.003	0.006			0.4	1.1	0.6	
TR050615-OC	5/6/2015	11:20	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.94	7.74	112	12.44	5.340	4.01		2.05	2.060		0.030	0.075			0.30	0.008	0.096			42.0	78.5	4.5	
TR061015-OC	6/10/2015	11:38	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.61	7.99	143	8.89	0.712	0.78		1.13	0.182		<0.010	0.014			<0.050	<0.001	0.002			0.7	1.5	<0.50	
TR070815-OC	7/8/2015	11:28	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P					1.300	<0.1		1.02	0.125		<0.010	<0.010			0.24	0.002	0.005			0.5	<0.50	<0.50	
TR080515-OC	8/5/2015	11:40	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.63	8.24	157	9.22	2.670	1.07		1.03	0.190		<0.010	<0.010			0.07	0.002	0.003			0.2	<0.50	<0.50	
TR100715-OC	10/7/2015	10:57	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	16.68	8.33	159	10.03	2.136	0.85		1.11			<0.010	<0.010			0.10	0.001	<0.002			0.4	<0.50	<0.50	
TR111815-OC	11/18/2015	11:39	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.39	6.95	186	11.58	1.700	<0.1		1.23			<0.010	<0.010			0.15	<0.001	0.003			0.3	1.0	<0.50	
TR121615-OC	12/16/2015	12:04	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	6.86	6.90	155	12.50	1.900	<0.1		1.61			<0.010	0.091			0.17	0.007	0.016			3.6	8.2	1.0	

End of Errata

Klamath River Water Quality Sampling
Final 2015 Annual Report

Prepared for the
KHSA Water Quality Monitoring Group

Prepared by
Watercourse Engineering, Inc.
September 29, 2016
Revised December 9, 2016


Photo: Grant Johnson

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Note:

Revisions to this report made in December 2016 are related to standardization of site names and reporting limit and method detection limit presentation.

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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 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. The monitoring is performed by an entity or entities agreed upon by the parties to the KHSA and in consultation with the appropriate water quality agencies. The 2015 water quality monitoring program was conducted under IM 15 and represents the seventh 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 IM15 monitoring study plan that 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 group that includes the Yurok Tribe, Karuk Tribe, PacifiCorp, and the U.S. Bureau of Reclamation (USBR). The program continues to collect data from 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 that 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 2015 grab sampling data collection and available water quality probe data, as well as the 2015 public health data collection. Four appendices accompany this report: the sampling locations (Appendix A); the 2015 baseline grab sample results (Appendix B); the phytoplankton species charts and biovolume graphs (Appendix C); and the 2015 public health data (Appendix D). The inter-laboratory comparison summary from 2015 is also included (Appendix E).

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[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] http://www.pacificorp.com/es/hydro/hl/kr.html#
[3] http://kbmp.net/collaboration/klamath-hydroelectric-settlement-agreement-monitoring

2. Program Elements

The primary elements of the IM 15 monitoring program include baseline and public health monitoring. The baseline water quality monitoring element includes water quality grab samples, physical observations associated with these grab samples, and water quality probe and algae species data. 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 grab samples are collected for analytical determination of a suite of water quality constituents (Section 5.1). The algae data in the baseline monitoring element includes algae species identification and quantification from samples collected at each sampling location. The grab sample and water quality probe data and algae species quantification are presented in this report, and are available in electronic form. Monitoring was carried out from February through December.

The public health monitoring program data consists of sampling of algae species at specific sites within reservoirs and river reaches and focuses on toxin-producing algae species and algal toxin sampling. These results were presented in public health memoranda produced throughout the season[4]. These memoranda are used to track phytoplankton and toxin conditions that supported management decisions to post and de-post reservoir and river reaches with public health advisory information. A summary of the 2015 public health monitoring program data is presented herein.

KBMP has worked with the California Environmental Data Exchange Network (CEDEN) to develop a website that makes information collected under the IM 15 program accessible to anyone. In addition, the KBMP website includes links to previous reports and other, associated program documents, and other materials and features that provide transparency to the KBMP process 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] Public health memoranda are available online here: http://www.pacificorp.com/es/hydro/hl/kr.html#.

3. Baseline Program Water Quality Sampling

In 2015, sampling was conducted at 24 sites along the Klamath River and its tributaries, from Link River Dam to the Klamath River Estuary (Figure 1), by the four sampling entities: U.S. Bureau of Reclamation (USBR), PacifiCorp, Karuk Tribe, and Yurok Tribe. Sixteen of those sites were located on the mainstem of the Klamath River, four sites were located in the reservoirs on the Klamath River, and four sites were located on the major tributaries of the Klamath River (Shasta, Scott, Salmon and Trinity River). Sampling locations, sampling frequency and sampling entity are presented in 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 parameters were collected at six sites, four of which are at baseline program sites and two of which are near baseline program sites. Sondes were deployed to collect continuous physical parameters at the following baseline program sites: Link Dam (River Mile [RM] 254.44; Baseline), , Klamath River below Iron Gate Dam (RM 189.73; Baseline), Klamath River below Seiad (RM 128.5; Baseline), and Klamath River at Weitchpec (RM 43.5; Baseline).

One of the two non-baseline program locations for sonde deployment was Klamath River above Keno Dam, at RM 234.9, which is just upstream of Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline) site. While data collected above Keno Dam is not a proxy for water quality conditions below the dam, as conditions can differ in Keno Reservoir and in the Klamath River below Keno Dam, the sonde provided data to illustrate conditions at the downstream end of the reservoir prior to being released to Klamath River. The other non-baseline program location for sonde deployment was Klamath River above Turwar, at RM 8.0, which is upstream of the baseline sampling site Klamath River near Klamath (RM 6.0; Baseline). This sonde provides the physical conditions of the Klamath River just before it enters the estuary.

Grab samples of all other baseline water quality constituents were collected monthly. Exceptions include: (a) at Link Dam (RM 254.44; Baseline)and Klamath River below Iron Gate Dam (RM 189.73; Baseline), where samples were collected bi-monthly from May through October and monthly for the remainder of the sampling season, and (b) Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline) and Klamath River above Shovel Creek (RM 206.42; Baseline), where samples were collected bi-monthly from June through September and monthly for the remainder of the sampling season. Please refer to Table 1 for the frequencies at each sampling location.

The following constituents were analyzed: 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 and volatile suspended solids, carbonaceous biological oxygen demand, turbidity, chlorophyll-a, pheophytin, and microcystin. Phytoplankton species samples were also collected. Not all parameters were collected at every site (Table 1). Data results from the 2015 baseline grab samples are presented in Appendix B.

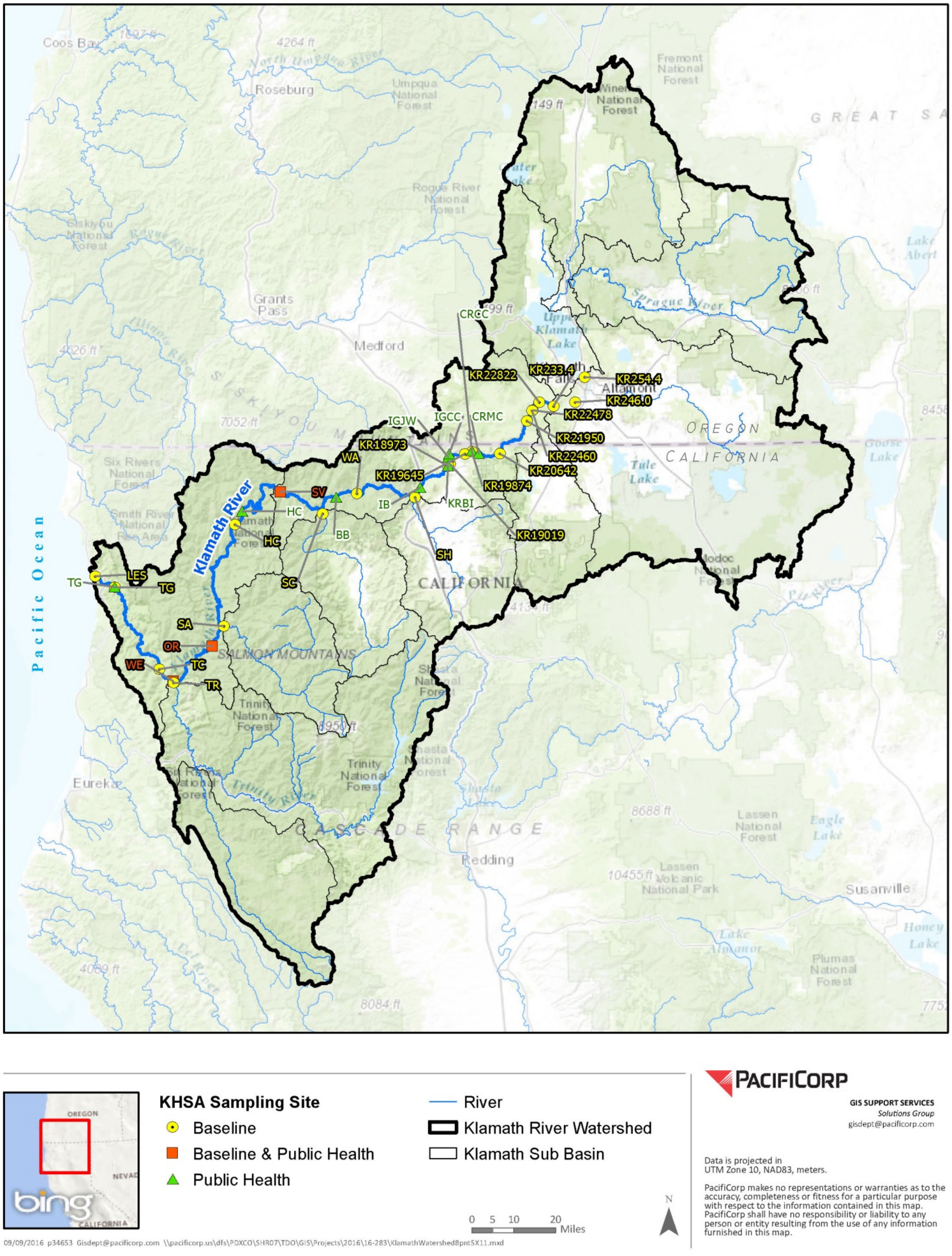

Figure 1. 2015 KHSA Klamath River baseline monitoring and public health sampling sites.

Table 1. 2015 Baseline monitoring locations, sampling frequency, and sampling entities.

Site ID	Monitoring Location	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH (log(H+))	Conductance (uS/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/VSS (mg/l)	Alkalinity (mg/l)	Water Column chl_a/Pheo (µg/l)	Phytoplankton species	Microcystin (µg/l)	LCMS confirmation	CBOD (mg/l)	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*	*G*	
KR25444	Link Dam (RM 254.44; Baseline)	H	H	H	H		M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	BM/S		M2/BM2	M2/BM2**	USBR
KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	H	H	H	H		M	M	M	M			M		M	M	M	M	M/S		M	M	USBR
KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	H	D	D	D		M2/BM2	M2/BM2	M2/BM2	M2/BM2	M		M	M	M	M2/BM2**	M	M	M/S		M2/BM2	M2/BM2**	USBR
KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	H	D	D	D	M	M	M	M	M			M		M	M	M	M-					PacifiCorp
KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)[a]	VP	VP	VP	VP												M/S	M/S	M/S				PacifiCorp
KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	H	D	D	D	M	M	M	M	M			M		M	M	M	M-					PacifiCorp
KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	H	D	D	D	M	M	M	M	M			M		M	M	M	M	M/S			M	PacifiCorp
KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	H	D	D	D	M2/BM2	M2/BM2	M2/BM2	M2/BM2	M2/BM2	M		M	M	M	M	M	M	M/S		M2/BM2	M	PacifiCorp
KR19874	Copco Reservoir (RM 198.74; Baseline)[b]	VP	VP	VP	VP	M	M	M	M	M			M		M	M	M	M-	M/S				PacifiCorp
KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	H	D	D	D	M	M	M	M	M			M		M	M	M	M-	M/S				PacifiCorp
KR19019	Iron Gate Reservoir (RM 190.19; Baseline)[c]	VP	VP	VP	VP	M	M	M	M	M			M		M	M	M	M-	M/S				PacifiCorp
KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	H	H	H	H	M/BM	M/BM	M/BM	M/BM	M/BM	M/BM		M/BM	M/BM	M/BM	M/BM	M/BM	M/BM	BM/S		M2/BM2	M/BM	PacifiCorp
KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	H	D	D	D	M	M	M	M	M			M		M	*	M	M-	M/S	S2			Karuk
KR12850	Klamath River below Seiad (RM 128.5; Baseline)	H	H	H	H	M	M	M	M	M	M		M	M	M	*	M	M	M/S		M	M	Karuk
KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	H	D	D	D	M	M	M	M	M			M		M	*	M	M-	M/S				Karuk
KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	H	H	H	H	M	M	M	M	M			M		M	M	M	M	M/S			M	Karuk
KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	M-	M/S	S2			Yurok
KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	M-	M/S				Yurok
KR00600	Klamath River near Klamath (RM 6.0; Baseline)[d]	H	H	H	H	M	M	M	M	M	M		M	M	M	*	M	M	M/S			M	Yurok
KR00050	Klamath River Estuary (RM 0.5; Baseline)[e]	HP	D	D	D	M	M	M	M	M			M		M	*	M	M-	M/S				Yurok
SH00000	Shasta River near mouth (Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	*				M	Karuk
SC00000	Scott River near mouth (Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	*				M	Karuk
SA00000	Salmon River near mouth (Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	*				M	Karuk
TR00000	Trinity River near mouth (Baseline)	H	H	H	H	M	M	M	M	M			M		M	*	M	*				M	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 2 miles upstream of this site at Klamath above Turwar (RM 8.0)
[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
M – monthly sampling, excluding January
M/S – monthly sampling, seasonally from May through October
M/BM – Bi-monthly sampling May - October and monthly sampling the remainder of the year
M2/BM2 – Bi-monthly sampling June-September and monthly the remainder of the year
M- = Monthly Sampling with exception of December, January and February
M2/BM2** – Bi-monthly sampling June-September and monthly the remainder of the year and consider adding May and October to go to M/BM
BM/S –Bimonthly sampling July-Oct
S2 – monthly sampling July – Oct
***** - Not sampled This parameter is covered at a M/S frequency by Tribal Water Quality Workgroup

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 within the Klamath River and reservoirs. Several species of cyanobacteria have been documented in the Klamath River, including but not limited to *Aphanizomenon flos aquae, Microcystis aeruginosa* (MSAE)*, Anabaena flos aquae*, and *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 which is produced by some strains of cyanobacteria, including MSAE, and are released into the water when cyanobacterial cells die or cell membranes degrade. MSAE blooms and microcystins at elevated levels can present risks to human health and to terrestrial and aquatic species, and result in impairments to a number of beneficial uses for the Klamath River system. Microcystin toxins can induce skin rashes, sore throat, oral blistering, nausea, gastroenteritis, fever and liver toxicity (WHO 2003; OEHHA 2012).

In 2015, public health sampling was conducted at 13 locations along the Klamath River used for public access and recreation (Table 2, Figure 1). Designated public health locations included:

- Two shoreline sites each in Copco (Mallard Cove and Copco Cove) and Iron Gate reservoirs (Camp Creek and Jay Williams Boat Ramp). These cove sites provide public access, are known areas of accumulation during blooms, and have been monitored since 2005.
- Eight river sites stretching from Iron Gate dam (RM 189.7) to Klamath (RM 6.0). Most of these sites have been monitored since 2005, and all represent areas of public access.
- A new site located at the South Slough, near the Klamath Estuary (RM 0.1).

Table 2. 2015 Klamath River public health monitoring locations, constituents, method, and sampling frequency.

Location	Site ID	River Mile	Phytoplankton Species	Microcystin - EPA	LC/MS/MS water for cyanotoxins	Sampling Entity
Copco Reservoir at Mallard Cove (Public Health)	CRMC	200.8	BM7-mod	BM7-mod	S	PacifiCorp
Copco Reservoir at Copco Cove (Public Health)	CRCC	198.5	BM7-mod	BM7-mod	S	PacifiCorp
Iron Gate Reservoir at Camp Creek (Public Health	IRCC	192.8	BM7-mod	BM7-mod	S	PacifiCorp
Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	IRJW	192.4	BM7-mod	BM7-mod	S	PacifiCorp
Klamath River below Iron Gate Dam (RM 189.73; Public Health)	KRBI	189.73	BM/W	BM/W	-	PacifiCorp
Klamath River at I-5 Rest Area (RM 179.2; Public Health)	KRIB	179.2	BM/W	BM/W	BM5	Karuk
Klamath River at Brown Bear River Access (RM 150.0; Public Health)	KRBB	150.0	BM/W	BM/W	-	Karuk
Klamath River below Seiad (RM 128.5; Public Health)	KRSV	128.5	BM/W	BM/W	-	Karuk
Klamath River below Happy Camp (RM 101.3; Public Health)	KRHC	101.3	BM/W	BM/W	-	Karuk
Klamath River at Orleans (USGS) (RM 59.1; Public Health)	KROR	59.1	BM/W	BM/W	-	Karuk
Klamath River at Weitchpec (RM 43.5; Public Health)	KRWE	43.5	BM/W	BM/W	-	Yurok
Klamath River near Klamath (RM 6.0; Public Health)	KRTG	6.0	BM/W	BM/W	-	Yurok
Klamath River at South Slough (RM 0.1; Public Health)	KRSS	0.1	BM/W	BM/W	-	Yurok

Key:

Frequency	# of sample events	Sampling frequency description
BM7-mod	9	1x month in May and at least 2x month June through November
BM/W	16	Timing of public health monitoring will be at the discretion of the sampling entity; however, weekly sampling usually occurs from July through September during peak algae bloom season.
BM5	10	2x month June-October
S	4	Analysis for anatoxin-a will be tied to the temporal and density distribution of *Anabaena* in the reservoirs however; four test analysis are budgeted.

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., physical and chemical constituents listed in Table 1 and Table 2) were sent to respective laboratories for analysis. For turbidity, USBR used a HACH 2100P Turbidimeter, and 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), particulate nitrogen (PN)
- Phosphorus: orthophosphate (OPO4) and 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) and volatile suspended solids (VSS)
- Carbonaceous biological oxygen demand (CBOD)
- Alkalinity (ALKT)
- Turbidity (TURB)
- Phytoplankton (algae): chlorophyll-*a* and pheophytin
- Microcystin (MCYN) and anatoxin-a (if warranted)
- Algae species

Seven laboratories completed the analytical work during the field season:

- CH2MHill Applied Sciences Laboratory (CH2M) in Corvalis, Oregon
  - http://www.ch2m.com/corporate/services/asl/default.asp
- IEH Aquatic Research (IEH) in Seattle, Washington.
  - http://www.iehinc.com/ieh-locations/
- Chesapeake Biological Laboratories (CBL) in Solomons, Maryland
  - http://www.umces.edu/cbl
- EPA Region 9 (EPA) laboratory in Richmond, California
  - http://www.epa.gov/region9/lab/
- California Department of Fish and Wildlife (DFW) Water Pollution Control Laboratory in Rancho Cordova, California
  - https://www.wildlife.ca.gov/
- Green Water Laboratories in Palatka, Florida
  - https:// http://greenwaterlab.com/
- Aquatic Analysts in Friday Harbor, Washington

5.2. Physical 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. Physical measurements were recorded at each site using either thermistors or 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. Physical 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; USBR 2009; 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). Because of the risk to public health from toxins produced by cyanobacteria, initial public health samples are analyzed under a 'rush' order with Aquatic Analysts in Friday Harbor, Washington. During analysis, only potentially toxic cyanobacteria are identified and enumerated. If a risk to public health is identified and the reservoirs or Klamath River downstream of Iron Gate dam are posted with health advisory warnings, subsequent samples at a posted location will continue to be collected but not analyzed under a 'rush' order. Once the bloom has diminished, public health samples may again be analyzed under a 'rush' order to provide timely results to identify public health risks and potentially de-post a waterbody.

5.4. Water Quality Analytical Methods

CH2M, IEH, and CBL used either Standard Methods or EPA analytical methods for analysis of nutrients, dissolved and particulate carbon, alkalinity, carbonaceous biological oxygen demand, total suspended solids and volatile suspended solids chlorophyll-a, and pheophytin (Table 3). Each laboratory used its own internal water quality control and assurance samples during analysis of the KHSA 2015 samples. Method detection limits (MDL) and reporting limits (RL) varied among the laboratories. Some constituent MDLs at CH2M varied over the course of the year and all unique pairs of MDLs and RLs are presented below. At IEH, MDL values did not vary during the year, so only one value is presented below per constituent; IEH does not generate RLs.

Algae species analysis method information for Aquatic Analysts is not presented because this analysis does not include MDLs or RLs.

5.5. Algae Sample Analytical Methods

Analysis of chlorophyll-a and pheophytin was performed by CBL for samples collected by USBR and PacifiCorp and by IEH for samples collected by the Karuk and Yurok tribes. Algae species samples collected by USBR, PacifiCorp, Karuk Tribe, and Yurok Tribe were sent to Aquatic Analysts in Friday Harbor, Washington. Microcystin analysis was performed using the Enzyme-Linked ImmunoSorbent Assay (ELISA) method at the EPA laboratory. Additional microcystin analysis was completed by the DFW laboratory using liquid chromatography-tandem mass spectrometry (LCMS/MS) for selected locations, as well as anatoxin-a using Anatoxin-a Receptor Binding Assay (RBA). Anatoxin-a analysis was also performed by Green Water Laboratories using LCMS/MS.

Table 3. 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.

		CH2M			IEH			CBL			DFW			EPA			GreenWater		
Constituent Name	**Constituent ID**	**Method**	**MDL[1]**	**RL[2]**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**
Alkalinity	ALKT	SM2320B	n/a	5.0	SM18 2320B	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	NH4	EPA 350.1	0.02	0.05	SM18 4500NH3H	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbonaceous Biological Oxygen Demand – 5 day	CBOD5	SM5210B	n/a	2.0	SM20 5120B	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	DOC	SM5310B	0.092 0.023 0.2	0.5 0.5 0.5	SM20 5310B	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	NO3+NO2	EPA 353.2	0.0028	0.010	SM18 4500N03F	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen	TN	SM4500-N C	0.048	0.20	SM204500NC	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Ortho-phosphate	OPO4	EPA 365.1	0.0014	0.010	SM18 4500PF	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	TP	EPA 365.4	0.017	0.050	SM18 4500PF	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids	TSS	SM2540D	0.6	5.0	SM20 2540D	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Suspended Solids	VSS	EPA 160.4	n/a	5.0	SM20 2540E	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	TURB	-	-	-	SM20 2130B	0.10	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-a[3]	CHLOR-A	-	-	-	SM1810200H	0.1	-	EPA 446.0	0.62	-	-	-	-	-	-	-	-	-	-
Pheophytin	PHEO	-	-	-	SM1810200H	0.1	-	EPA 446.0	0.62										
Particulate Carbon	PC	-	-	-	-	-	-	EPA 440.0	0.0633	-	-	-	-	-	-	-	-	-	-
Particulate Inorganic Phosphorus	PIP	-	-	-	-	-	-	EPA 365.1	0.0008	-	-	-	-	-	-	-	-	-	-
Particulate Phosphorus	PP	-	-	-	-	-	-	EPA 365.1	0.0021	-	-	-	-	-	-	-	-	-	-
Particulate Nitrogen	PN	-	-	-	-	-	-	EPA 440.0	0.0105	-	-	-	-	-	-	-	-	-	-
Microcystin[3]	MYCN	-	-	-	-	-	-	-	-	-	LCMS/MS	0.05	0.2	ELISA	0.15	0.18	-	-	-
Anatoxin-a[3]	ANTX-A	-	-	-	-	-	-	-	-	-	RBA	n/a	10	-	-	-	LCMS/MS	0.05	0.10

MDL – method detection limit RL – method reporting limit
[1] CH2M uses the term limit of detection (LOD) instead of MDL
[2] CH2M uses the term limit of quantification (LOQ) instead of RL
[3] Units for chlorophyll-a, microcystin, and anatoxin-a are in µg/L (or ppb).

6. Baseline Program Water Quality Data

Water quality samples for the 2015 IM15 baseline water quality monitoring program were collected from February 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 other obligations, shipping constraints, travel considerations, and other factors. In most cases all 24 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. The data is summarized in the appendices.

6.1. Data Summary

Physical 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), carbonaceous biological oxygen demand, 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, volatile suspended solids, turbidity and microcystin. Density and biovolume for algal species and groups were also measured.

Data are summarized in this report to illustrate general spatial and temporal patterns during the 2015 sampling period. In addition to the dataset (Appendix B), data also are summarized in three formats:

(1) longitudinal boxplots[5] based on seasonal grab sample data

(2) physical water quality sonde data (hourly) at specific locations

(3) charts and bar graphs representing the groups of algae and respective biovolumes at the sampling locations

The first two formats are presented in the main report; the third format is presented in Appendix C. The data summary constituents presented include: dissolved oxygen, dissolved organic carbon, total nitrogen, total phosphorus, and microcystin. The mainstem sites and major tributaries (Shasta, Scott, Salmon, and Trinity rivers) are presented separately.

Time series data are presented for summary constituents at locations on the Klamath River for which there are United States Geological (USGS) flow gages[6] (Table 4). While algae data are available for the May to October period, September percent biovolume are presented for

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[5] 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.
[6] http://water.usgs.gov/

illustration at eight locations: (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) (Figure 2). Plots representing algae species for other months are presented in Appendix C.

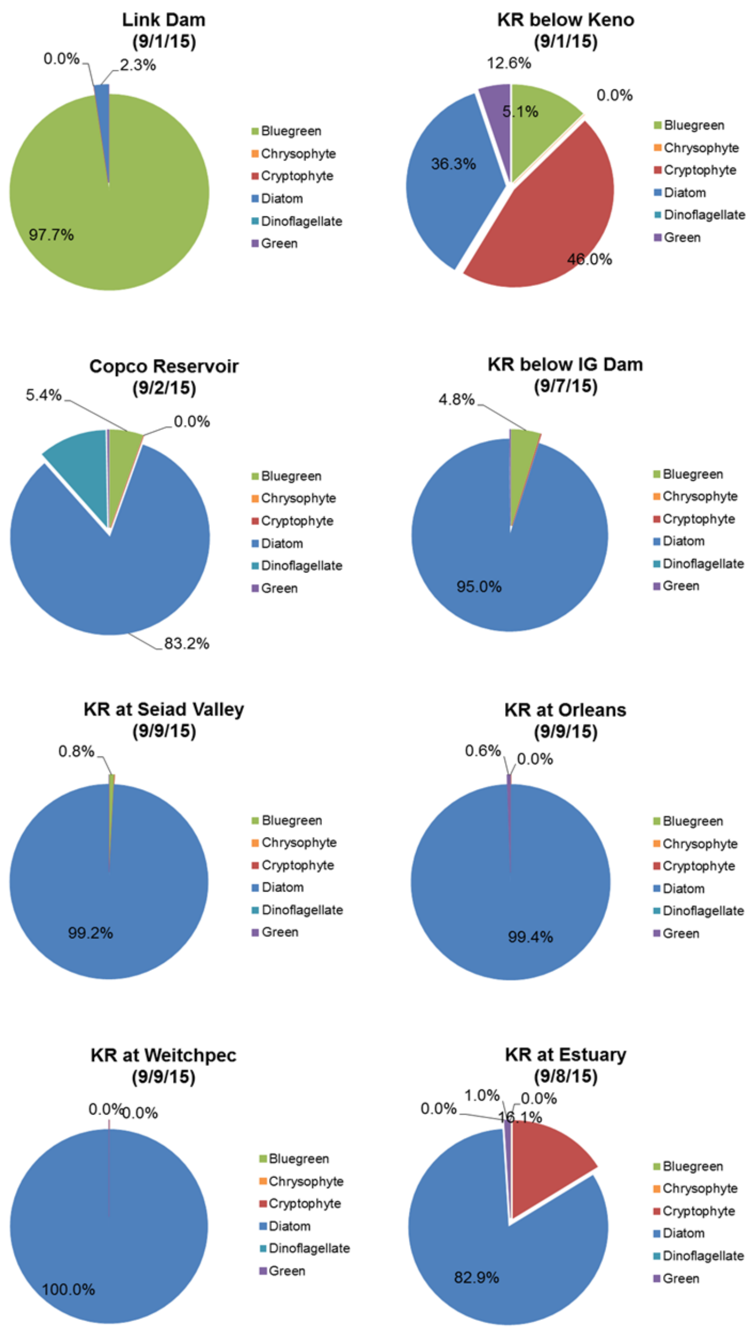


Figure 2. Phytoplankton species percent biovolume for eight locations in the Klamath River: September 2015.

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

Grab sample data and the associated physical water quality measurements (e.g., water temperature and dissolved oxygen) are presented in the following figures. These illustrations are not intended to be comprehensive, but rather to present general conditions throughout the Klamath River during the sampling season. The complete data set is available on the KBMP website (http://www.kbmp.net/). Box plots of constituents from samples collected in the Shasta, Scott, Salmon and Trinity rivers are presented first (Figure 3) followed by individual plots of the same constituents for the Klamath River from Link River Dam to the Klamath River estuary (Figures 4-8). Time series data of water temperature, dissolved oxygen, pH, total nitrogen, total phosphorus, and microcystin are presented in Figures 9 through 17.

6.1.1. Major Tributaries (Boxplot)

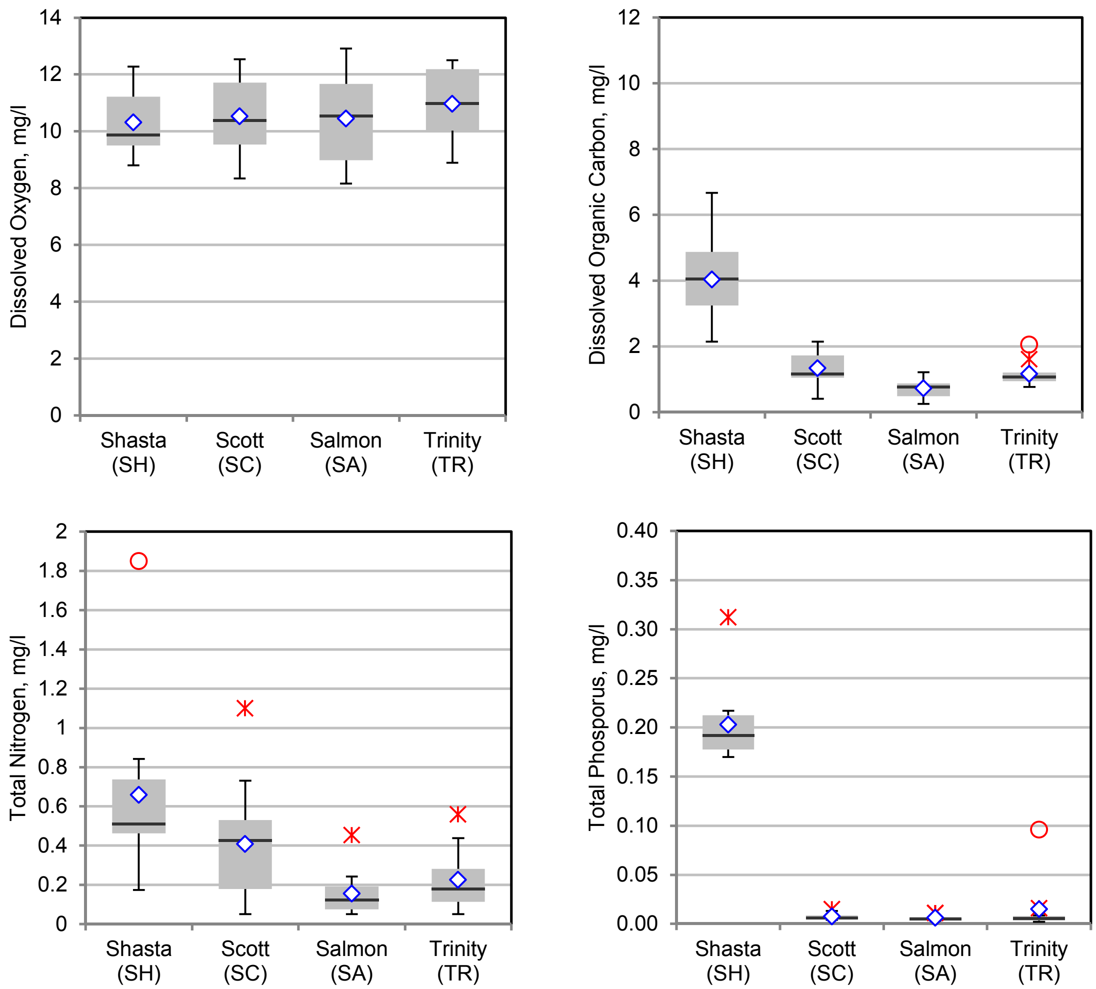


Figure 3. Baseline data for dissolved oxygen, dissolved organic carbon, total nitrogen, and total phosphorus for the Shasta, Scott, Salmon, and Trinity rivers with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015).

6.1.2. Mainstem Klamath River (Boxplot)

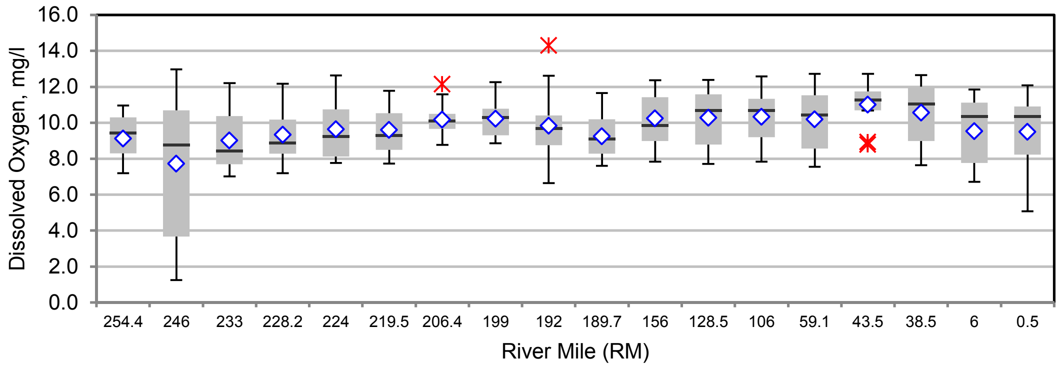


Figure 4. Dissolved oxygen concentration in the Klamath River from Link River Dam to the Klamath River Estuary with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale.

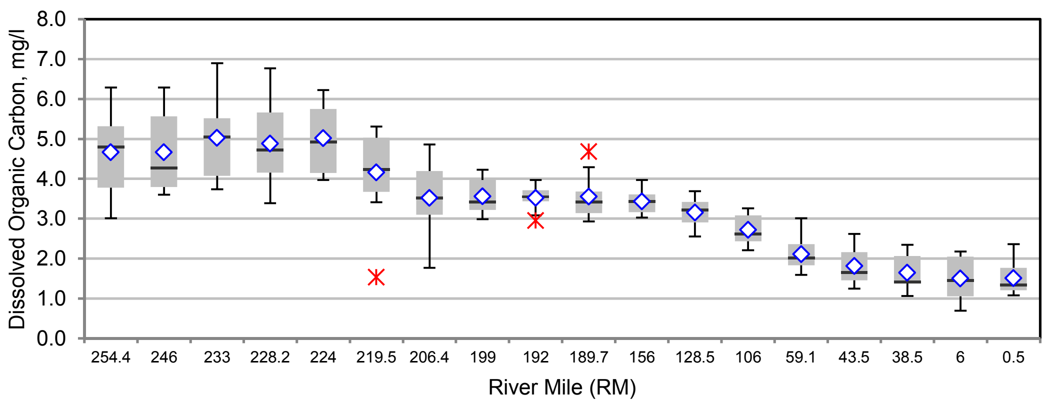


Figure 5. Dissolved organic carbon in the Klamath River from Link River Dam to the Klamath River Estuary with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale.

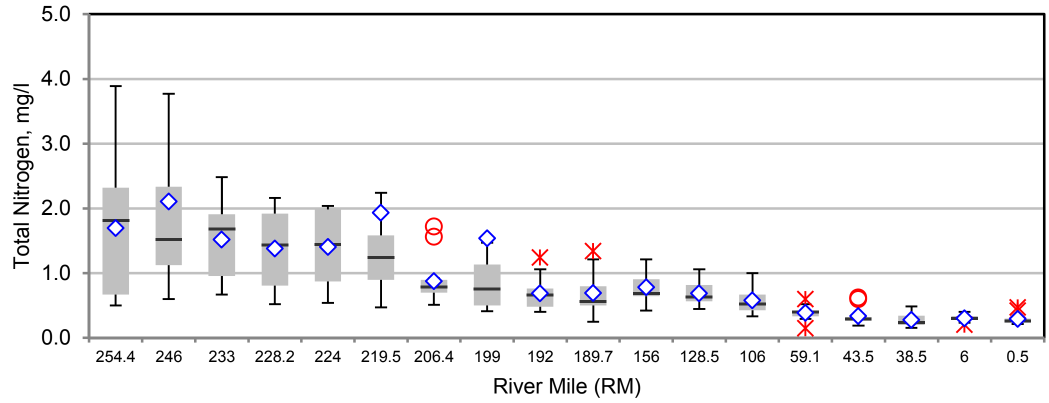


Figure 6. Total nitrogen in the Klamath River from Link River Dam to the Klamath River Estuary with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale. Presented data excludes three extreme outliers at three locations to allow for clearer presentation of other data: RM 246 (6.38 mg/l), RM 219.5 (9.18 mg/l) and RM 199 (8.32 mg/l).

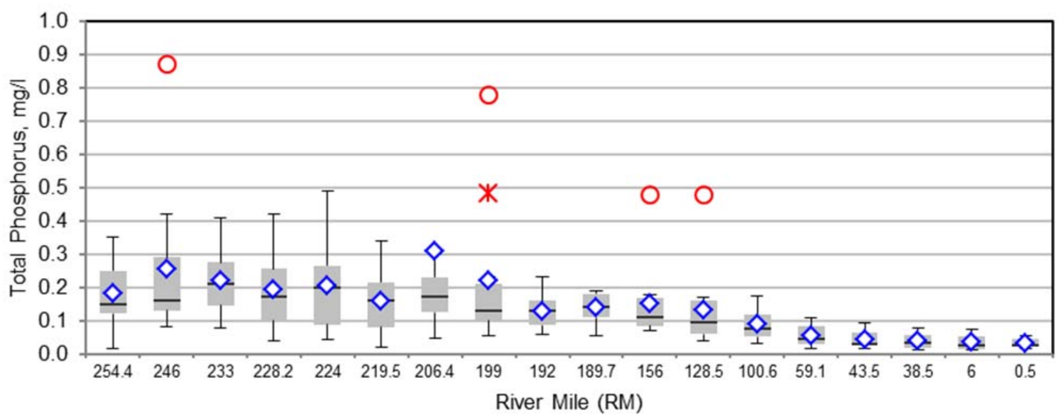


Figure 7. Total phosphorus in the Klamath River from Link River Dam to the Klamath River Estuary with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale. Presented data excludes extreme outlier at RM 206.4 (2.31 mg/l) to allow for clearer presentation of other data.

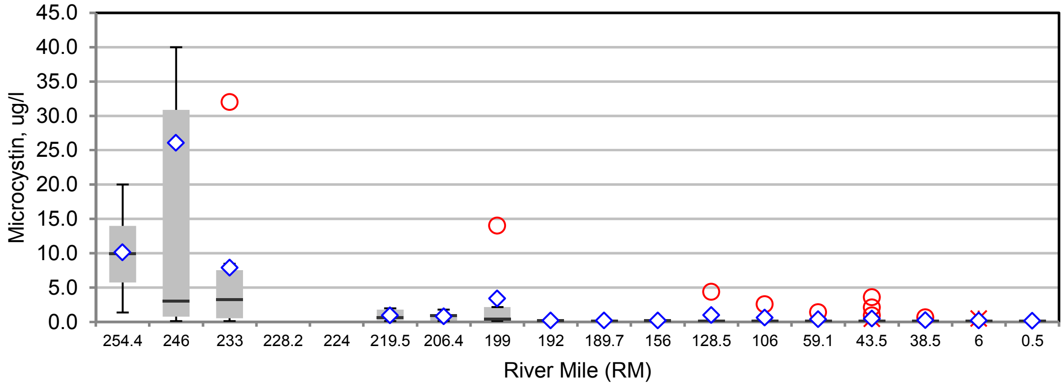


Figure 8. Microcystin in the Klamath River from Link River Dam to the Klamath River Estuary with median (−), mean (◊), outliers (*), and extreme outliers (○) identified (February 2015 – December 2015). Note: Includes reservoir sites at Keno Reservoir at Miller Island (RM 246.0; Baseline), Copco Reservoir (RM 198.74; Baseline), and Iron Gate Reservoir (RM 190.19; Baseline). River mile on x-axis not to scale. Presented data excludes extreme outlier at RM 246 (110 µg/l) to allow for clearer presentation of other data.

6.1.3. Major Tributaries (Time Series)

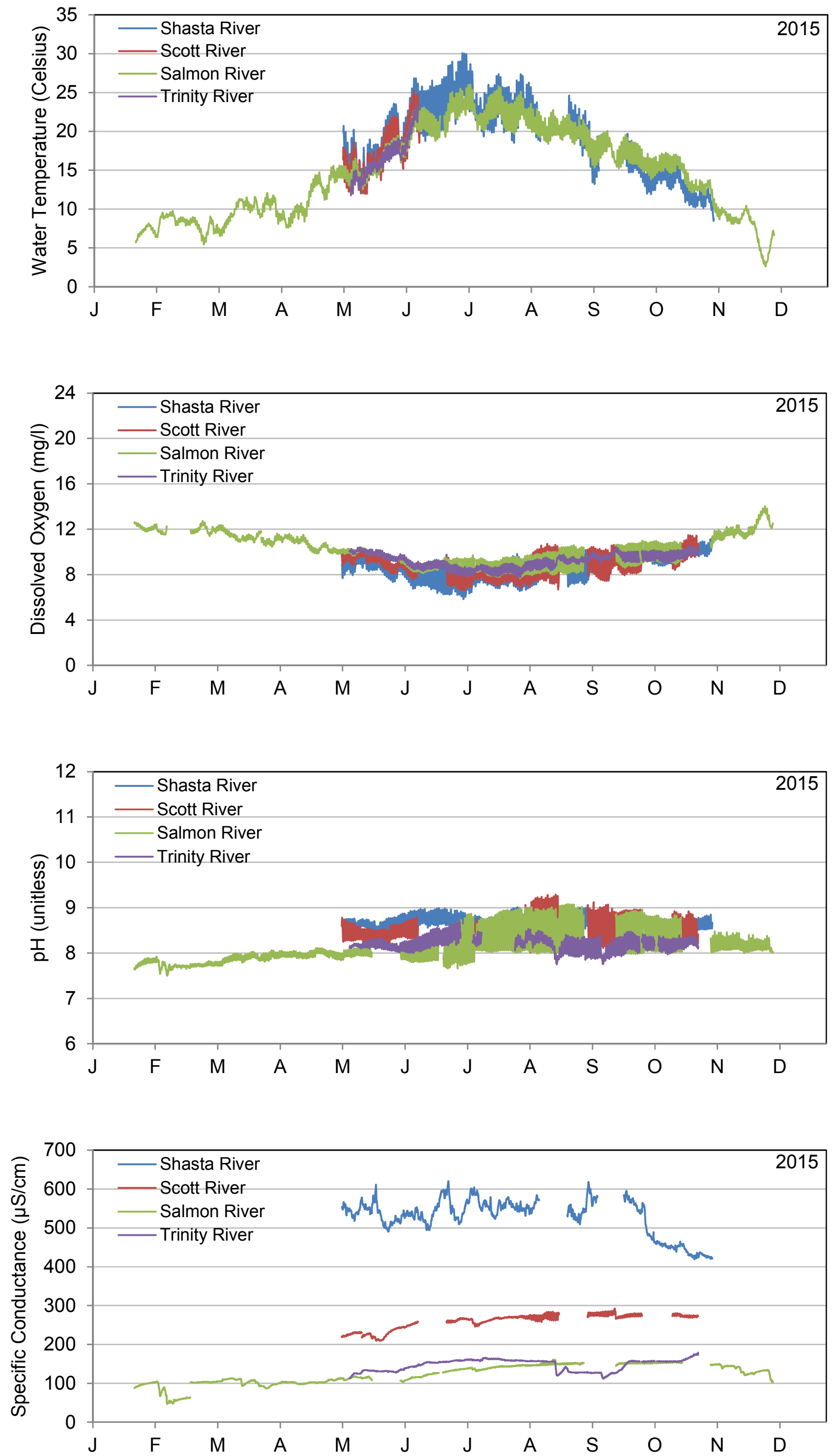


Figure 9. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2015) for the Shasta River, Scott River, Salmon River, and Trinity River.

6.1.4. Mainstem Klamath River (Time Series)

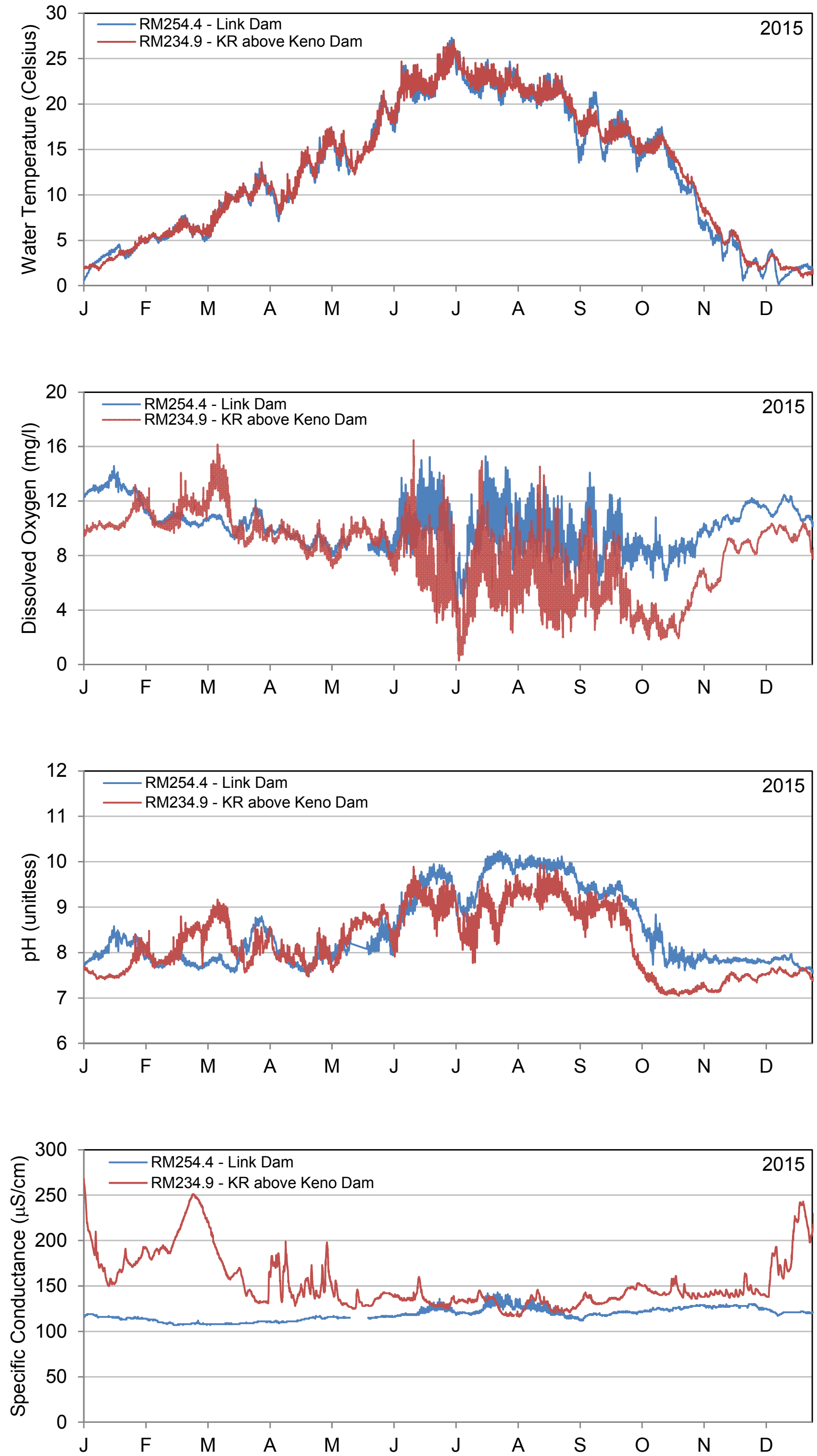


Figure 10. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2015) for the Klamath River (KR) at Link Dam (RM 254.44; Baseline)and Klamath River above Keno Dam (surface) (RM 234.9).

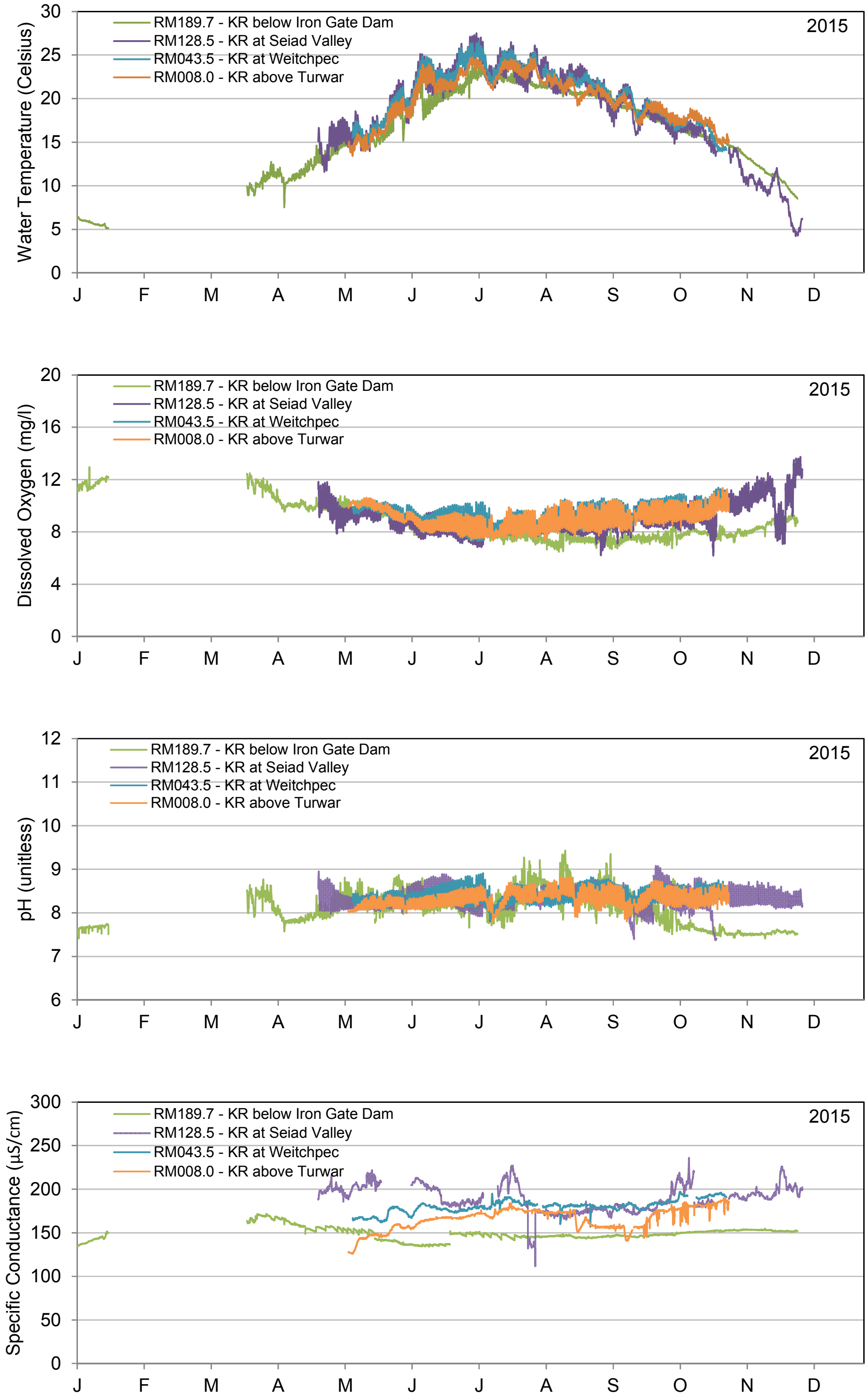


Figure 11. Continuous water temperature, dissolved oxygen, pH, and specific conductance data (2015) for the Klamath River below Iron Gate Dam (RM 189.73; Baseline), Klamath River below Seiad (RM 128.5; Baseline), Klamath River at Weitchpec (RM 43.5; Baseline), and Klamath River above Turwar (RM 8.0).

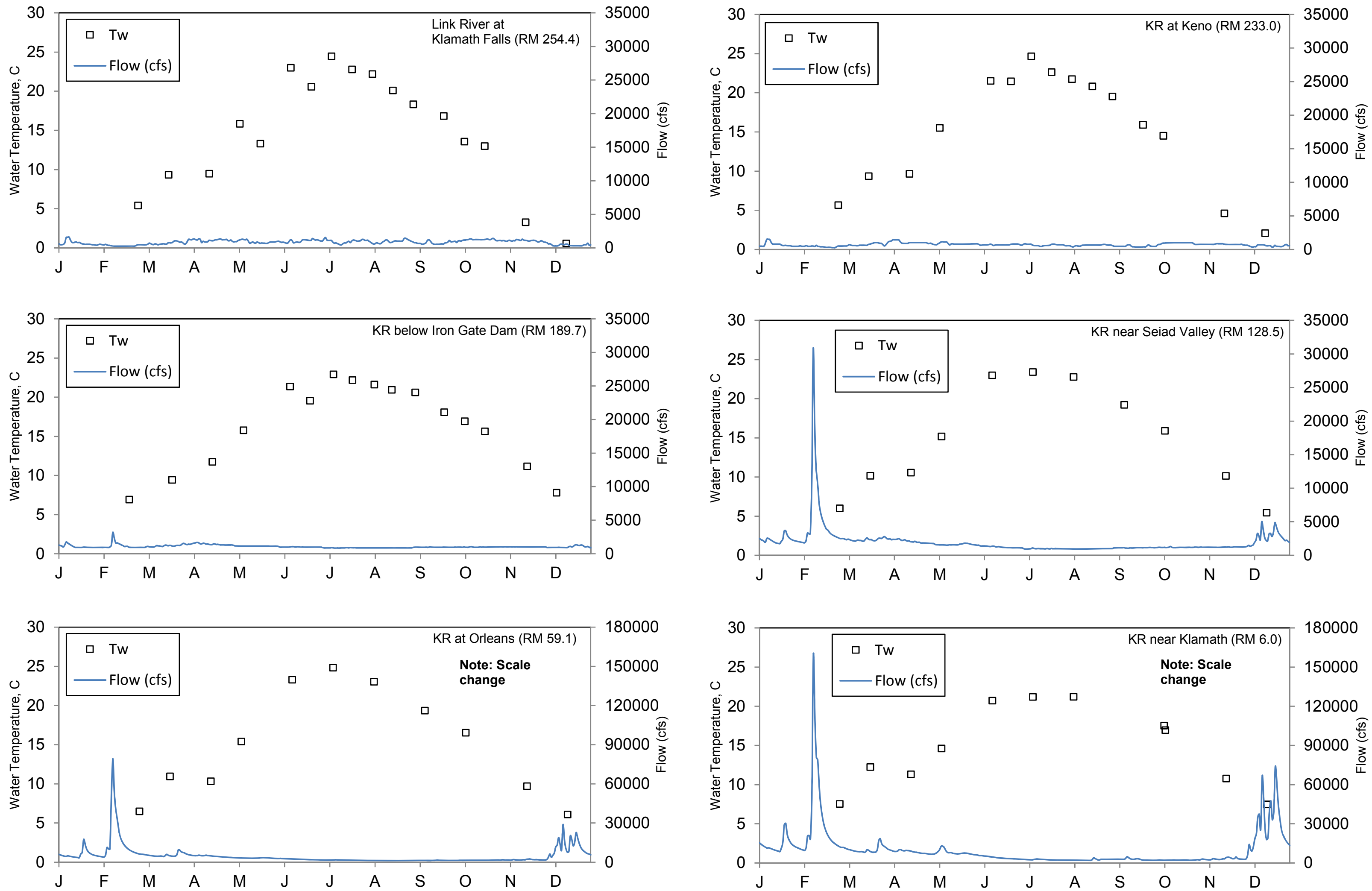


Figure 12. Discrete water temperature (T_w) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

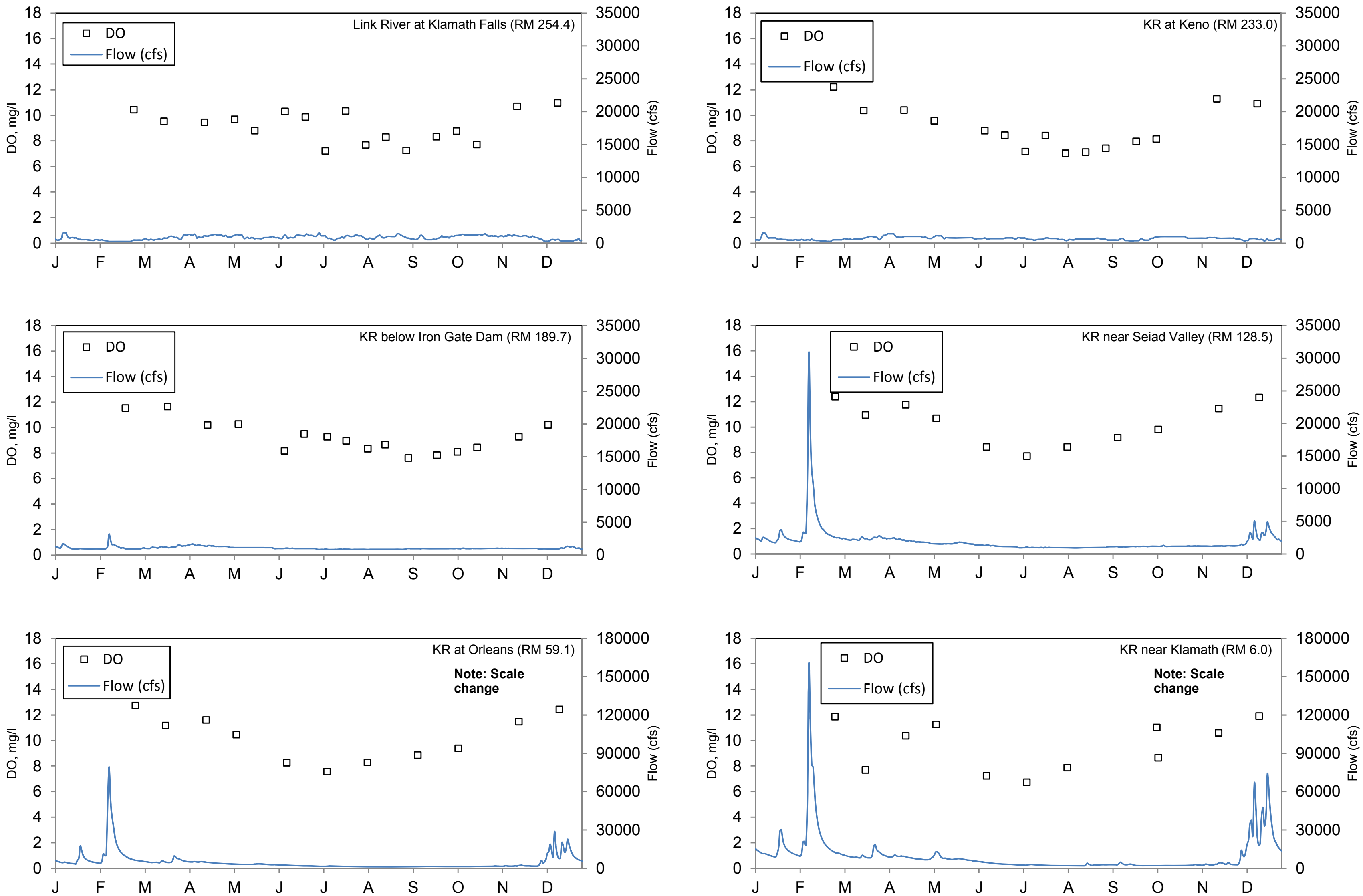


Figure 13. Discrete dissolved oxygen (DO) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

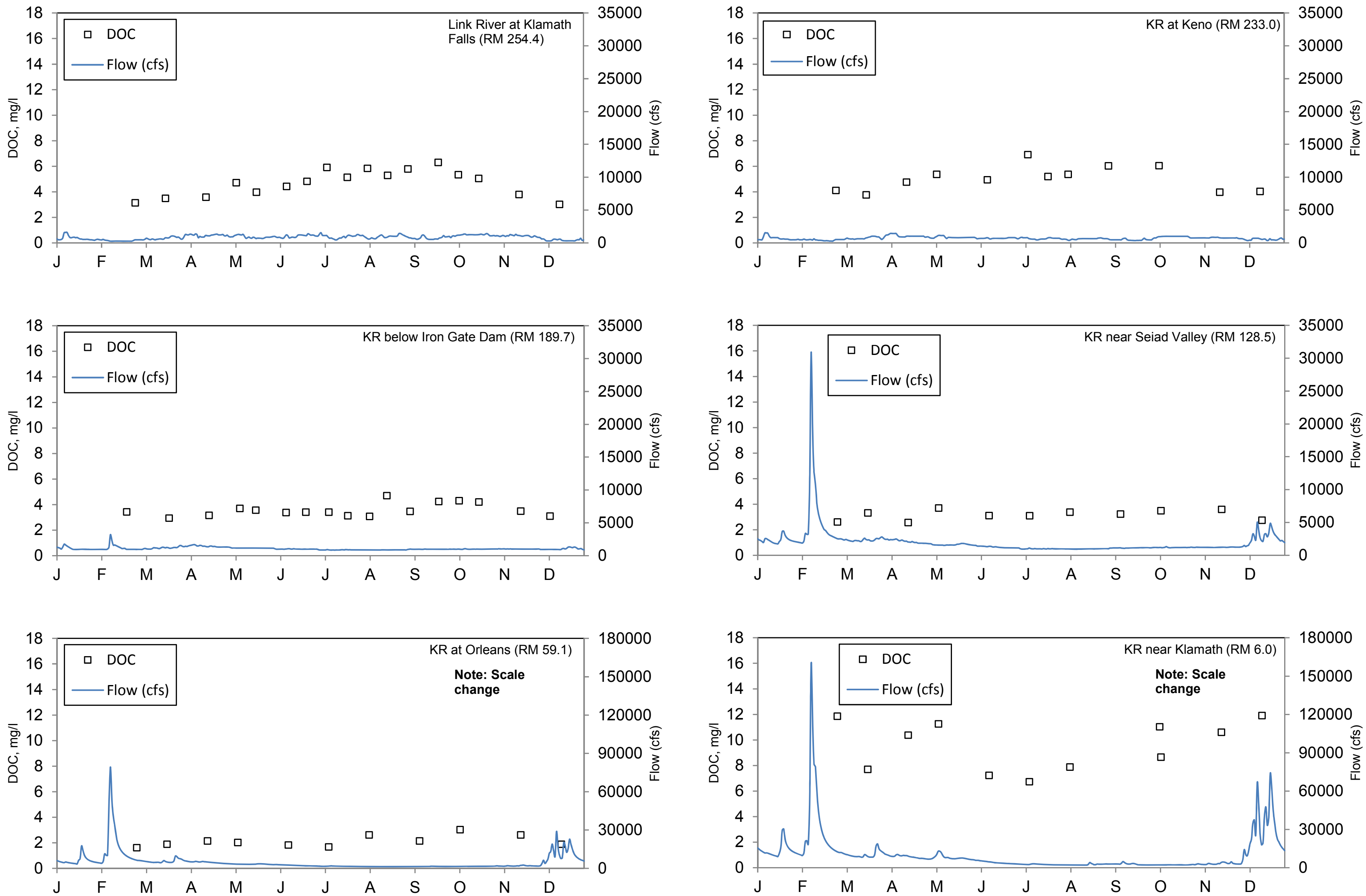


Figure 14. Discrete dissolved organic carbon (DOC) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

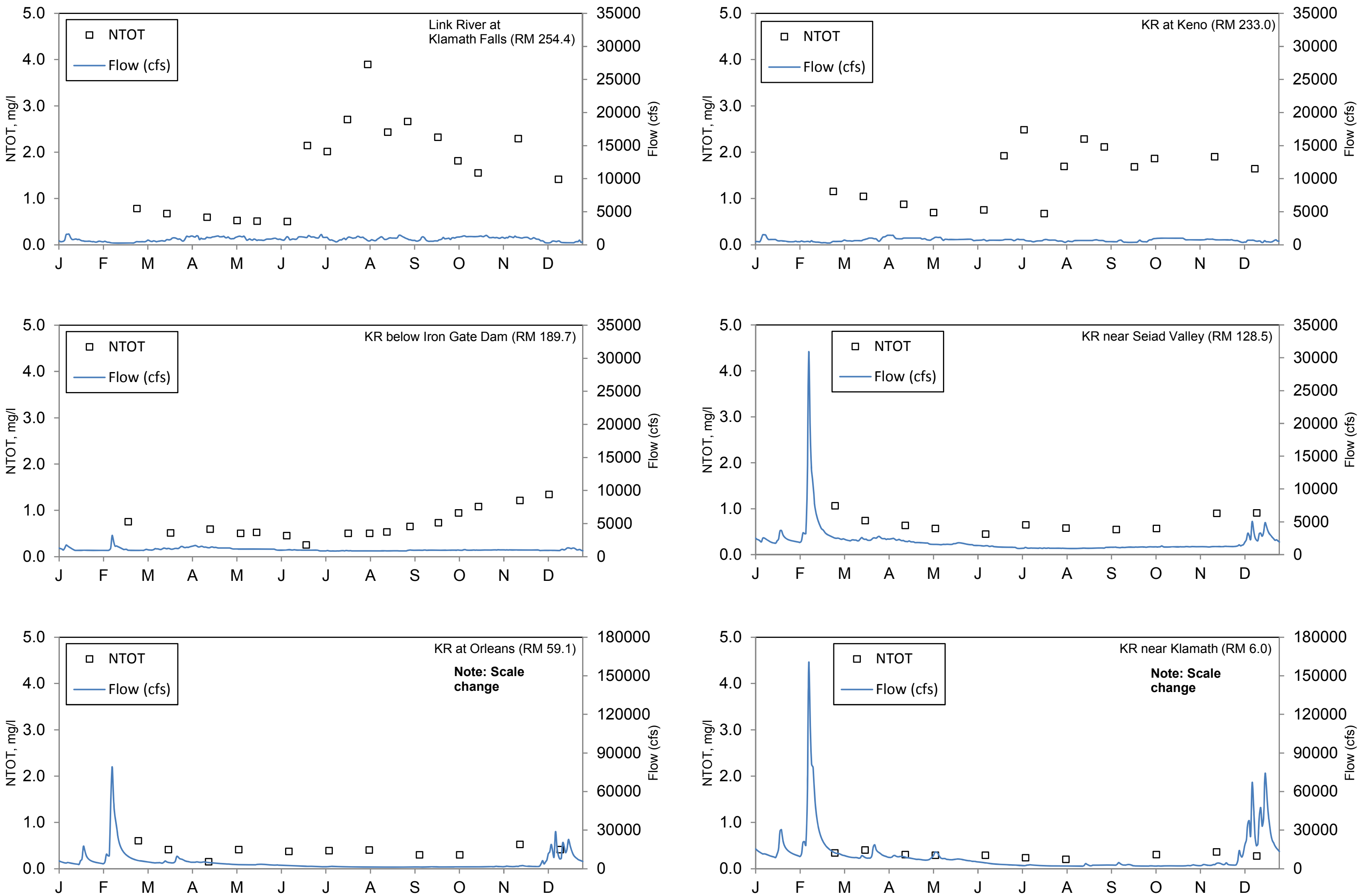


Figure 15. Discrete total nitrogen (NTOT) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

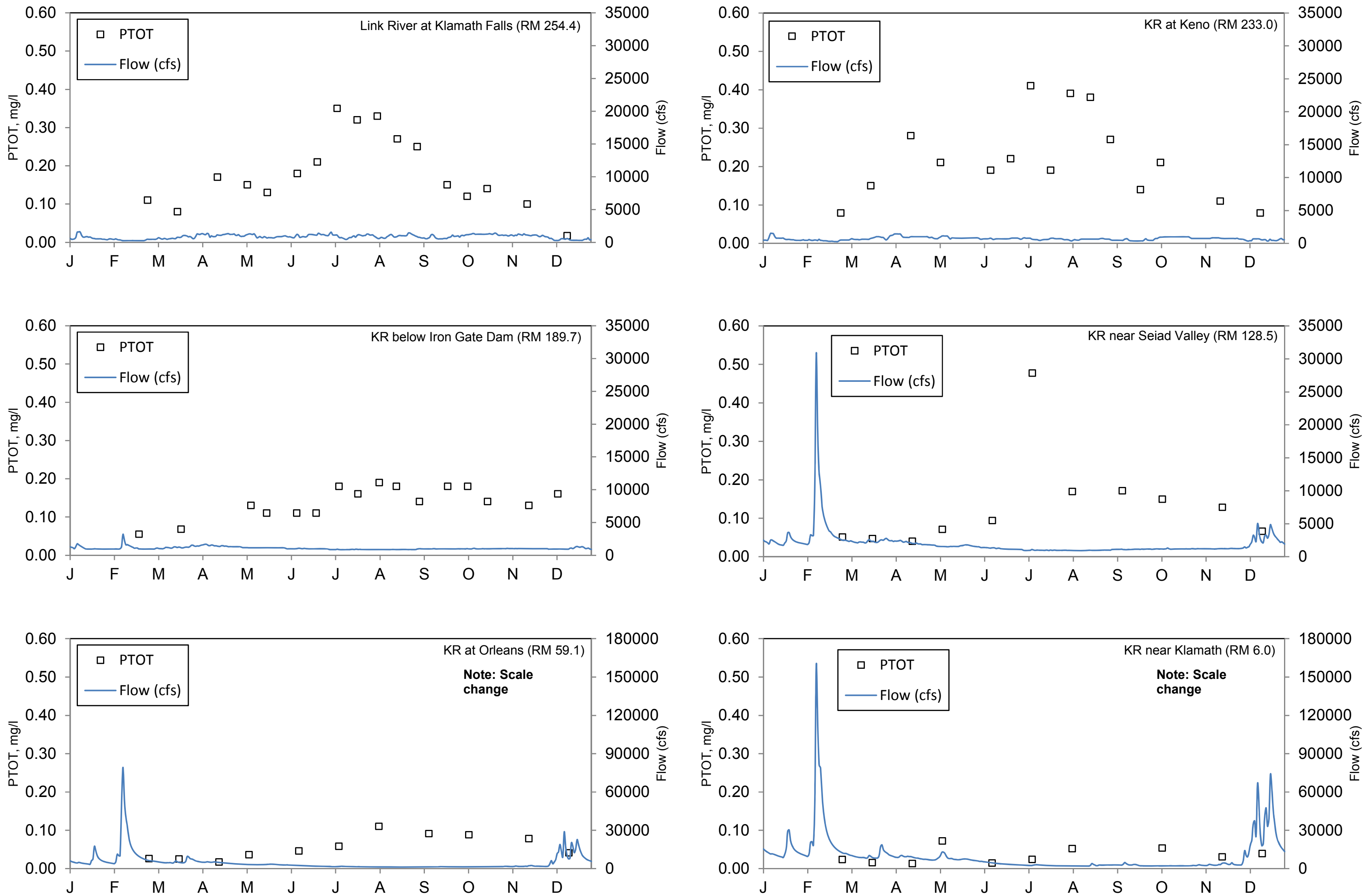


Figure 16. Discrete total phosphorus (PTOT) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline).

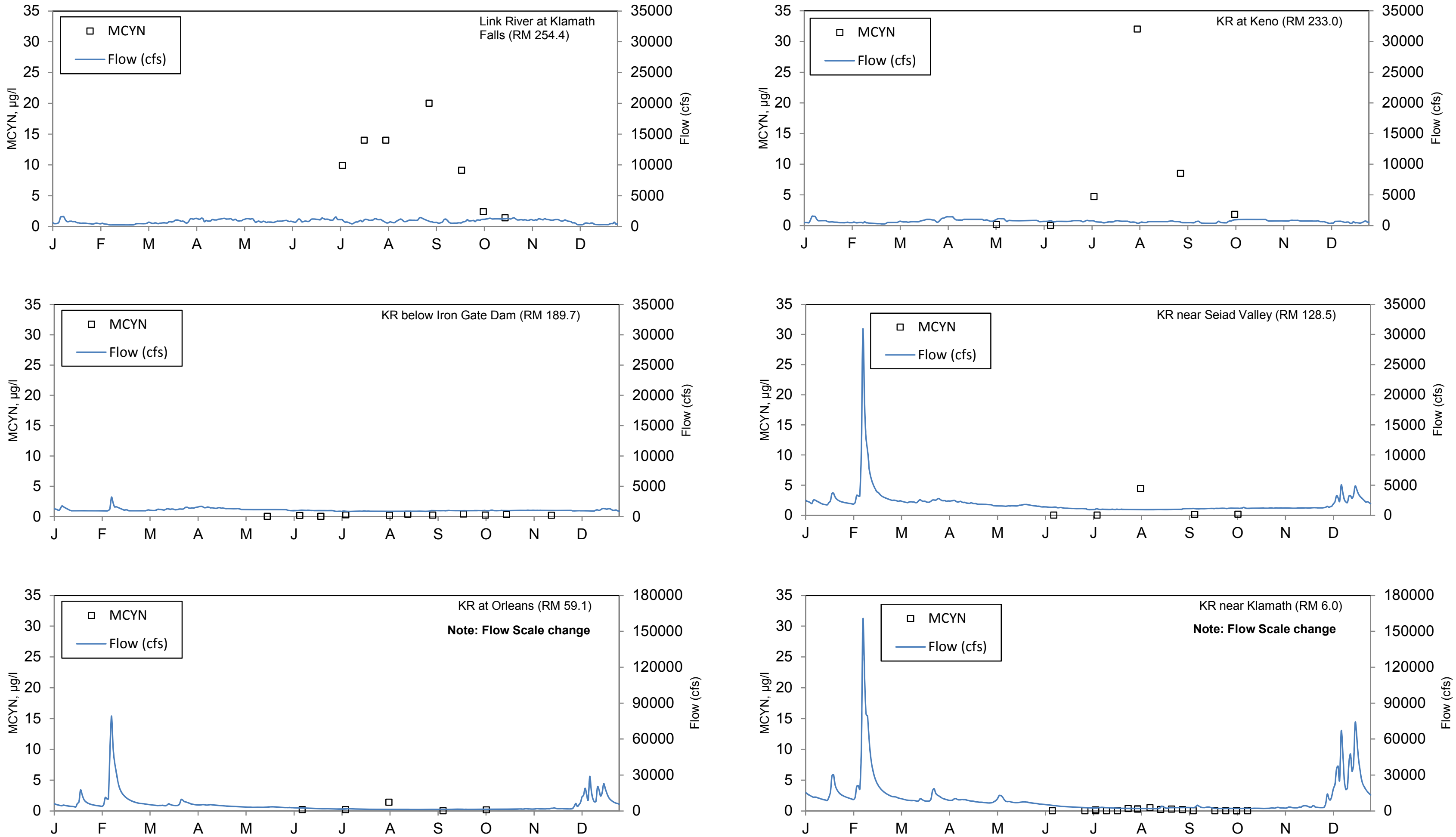


Figure 17. Discrete microcystin (MCYN) measured during grab sampling and mean daily flow at USGS flow gage locations for the mainstem Klamath River (KR) and Link River. Note the scale change for the secondary y-axis for Klamath River at Orleans (USGS) (RM 59.1; Baseline) and Klamath River near Klamath (RM 6.0; Baseline). Only surface samples are taken in consideration. Non-detect values are presented as zeros.

7. Public Health Water Quality Data

Water quality samples for the 2015 IM15 public health monitoring program were collected from February through December. Sampling crews from the various entities generally collected samples within a few days of each other. Sampling on the same day throughout the basin was infeasible because of other obligations, shipping constraints, travel considerations, and other factors. In most cases all 13 sites were sampled each month. There were periods when one or more sites were omitted or one or more constituents were not sampled. The full dataset is presented in Appendix D.

7.1. Public Health Advisories

In the Oregon portion of the Klamath River, there were several public health advisories issued during 2015. On July 28, 2015, the Oregon Health Authority issued a health advisory for Upper Klamath Lake due to cyanotoxins in that waterbody at concentrations greater than the Oregon guideline values. This posting was extended to Lake Ewauna and Keno Reservoir on July 29, 2015. Another health advisory was issued on August 5, 2015 by the Oregon Health Authority for J.C. Boyle Reservoir and the Klamath River downstream to the California state line due to the results of a baseline water quality sample collected in J.C. Boyle Reservoir on July 20, 2015. Because of the algae bloom occurring in Upper Klamath Lake, PacifiCorp authorized the rush analysis of the algae species samples collected in the Klamath River on August 4 and 5, 2015, including those collected in J.C. Boyle Reservoir and the Klamath River below that reservoir. These results indicated that J.C. Boyle Reservoir and the reach of river immediately downstream of the reservoir continued to exceed the Oregon public health posting guidelines. However, the samples collected below the J.C. Boyle powerhouse and upstream of Copco Reservoir were below the posting guidelines, although they were very close to the threshold. On August 10, 2015, this data were sent to the Oregon Health Authority and the Oregon Department of Environmental Quality and Oregon Health Authority decided to lift the public health advisory for this area.

Public health samples collected in Copco Reservoir at Copco Cove (CRCC) on June 22, 2015 resulted in toxin levels above the California posting guidelines (SWRCB 2010) and therefore Copco Reservoir was posted with health advisories on July 1, 2015.

Iron Gate Reservoir was posted with health advisories on July 29, 2015 in accordance with California posting guidelines (SWRCB 2010). This was the result of public health samples collected at the Iron Gate Reservoir Camp Creek location on July 21, 2015 that exceeded the posting guideline limits.

7.2. Data Summary

The public health data is summarized below to illustrate general spatial and temporal patterns during the 2015 sampling period (the full 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, (2) bar graphs representing the toxic algae cell counts for the different sampling events at a specific location, and (3) longitudinal graphs of river mile versus and corresponding microcystin testing lab results. Data for each location is presented on two separate graphs.

All microcystin data included below was collected in accordance with the public health sampling SOP for the public health monitoring program, except for the South Slough site, where microcystin samples were collected using the baseline SOP instead of the public health SOP.

The MDL for microcystin 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. If a sample was not collected at a location, a note was added to the specific graph for that site.

There were also instances when an algae sample was collected, but no toxic algae were detected. In such cases, a zero value for a toxic algae cell count indicated that a sample was collected and no toxic algae were detected. The toxic algae cell counts graphs present values for *Anabaena flos-aquae* (ABFA) and MSAE. Also presented on the graphs is a summation of other potentially toxic cyanobacteria, including *Anabaena planctonica, Anabaena* sp.*, Gloeotrichia echinulate, Oscillatoria limosa, Oscillatoria* sp., and *Pseudanabaena* sp., which were present in the Klamath River samples. While *Aphanizomenon flos-aquae* cell counts were reported for the public health samples, in the Klamath River system this species of cyanobacteria has not been found to produce toxins. Therefore, *Aphanizomenon flos-aquae* values were omitted from the public health summary graphs.

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

Figure 18. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected in Copco Reservoir at Mallard Cove and Copco Cove (ND indicates non-detect results).

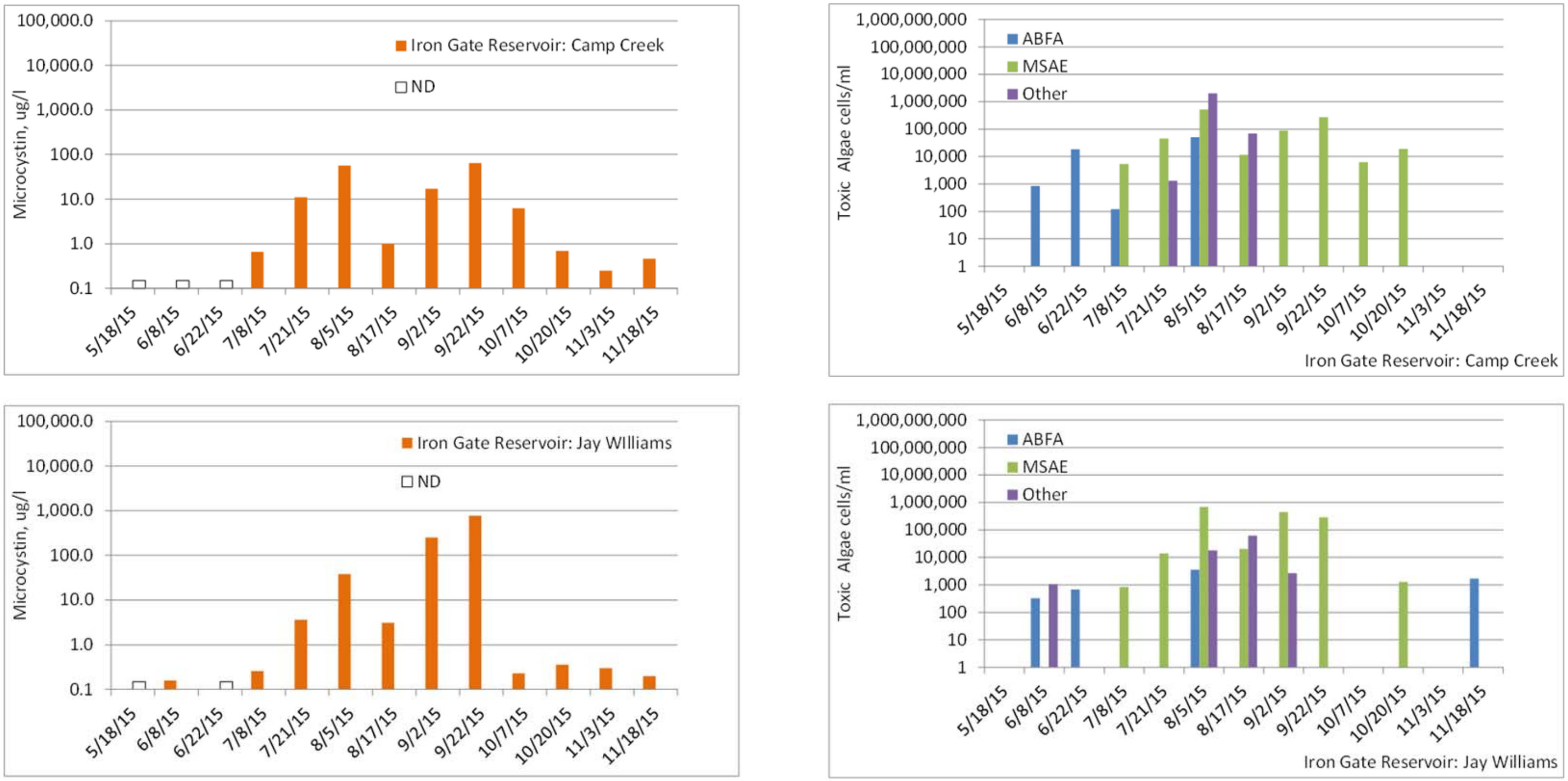


Figure 19. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected in Iron Gate Reservoir at Camp Creek and Jay Williams Boat Ramp (ND indicates non-detect results).

Figure 20. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected in Klamath River 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).

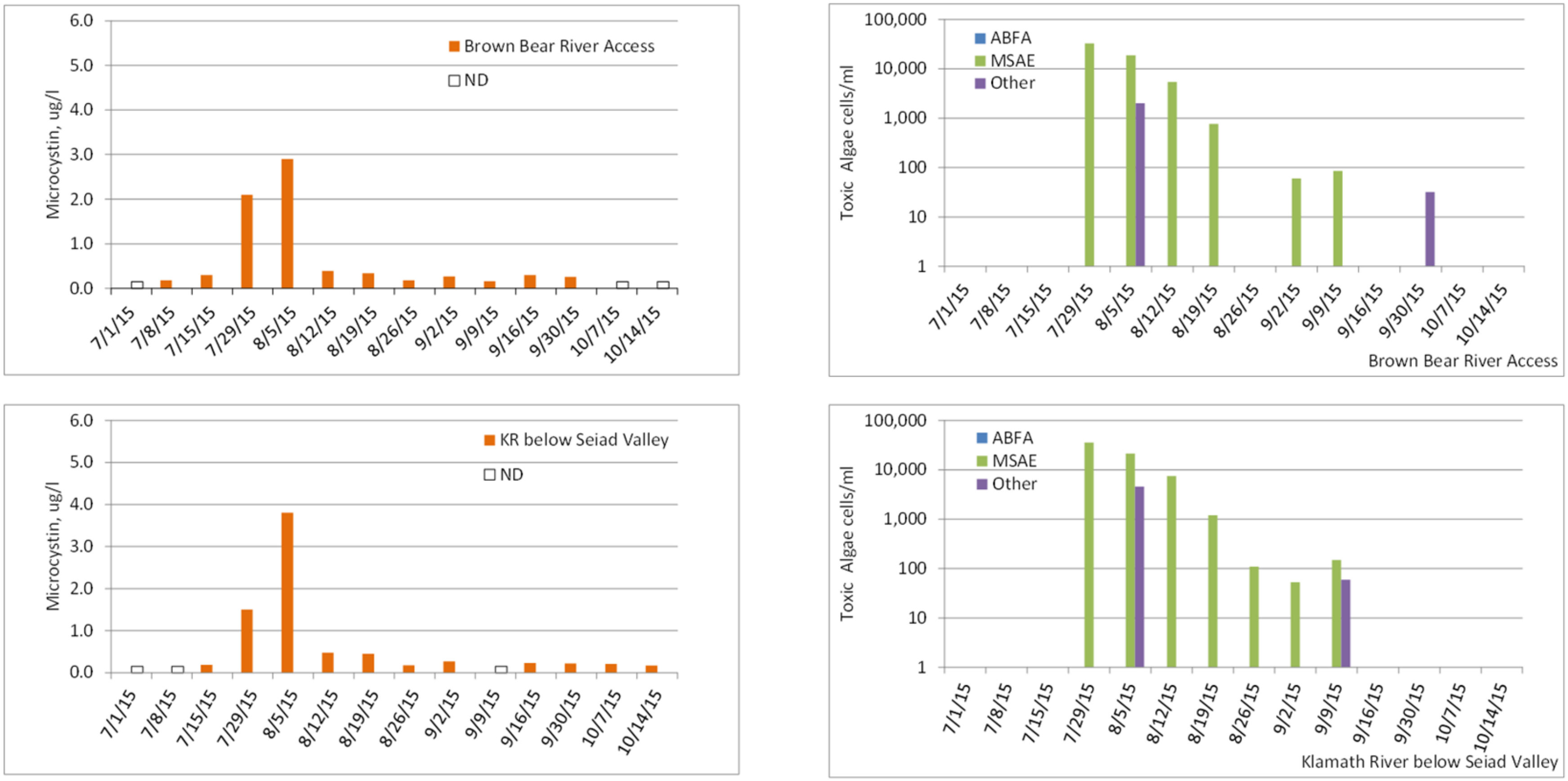


Figure 21. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected at Klamath River at Brown Bear River Access (RM 150.00; Public Health) and Klamath River below Seiad (RM 128.5; Public Health) (ND indicates non-detect results).

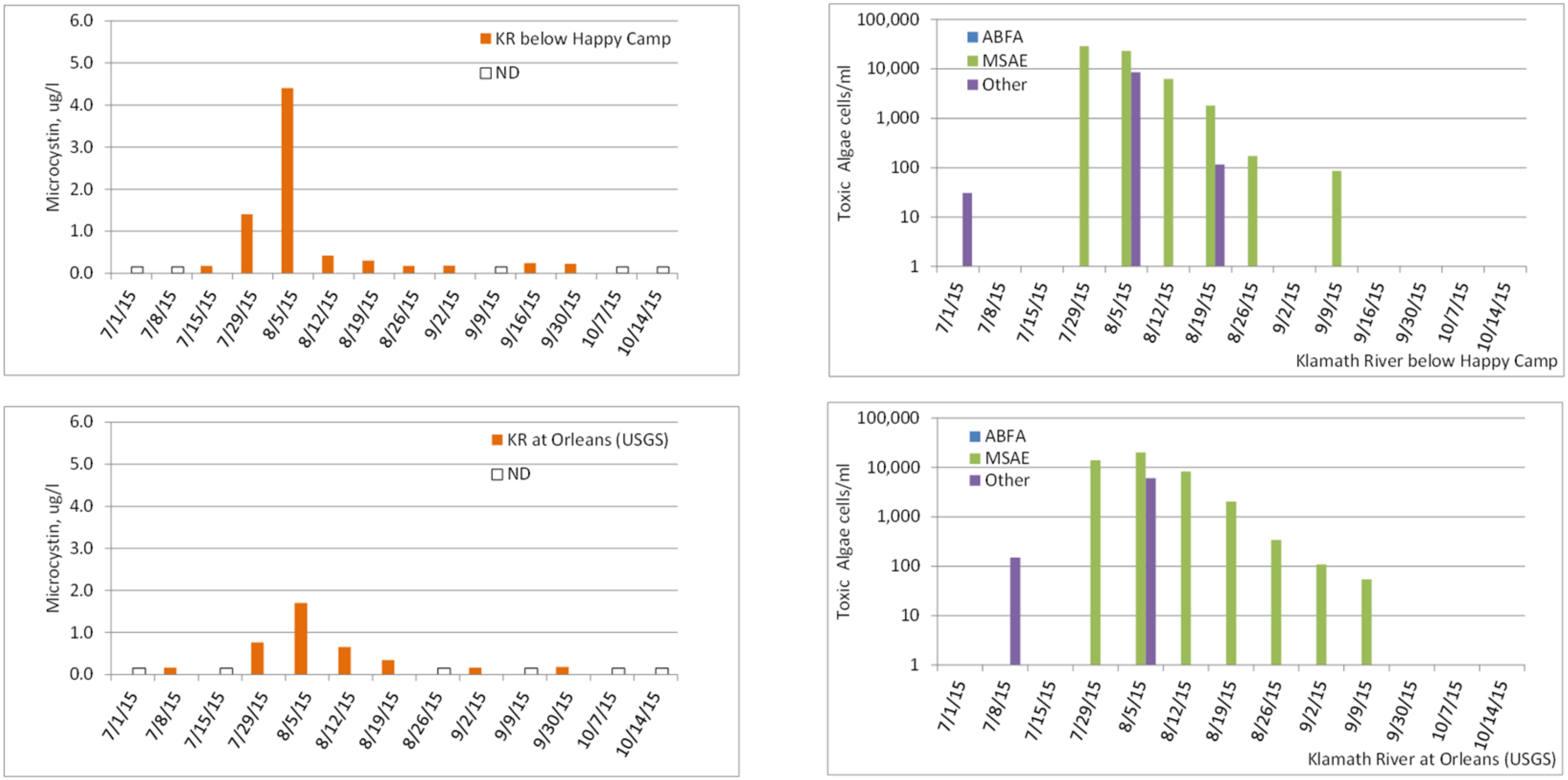
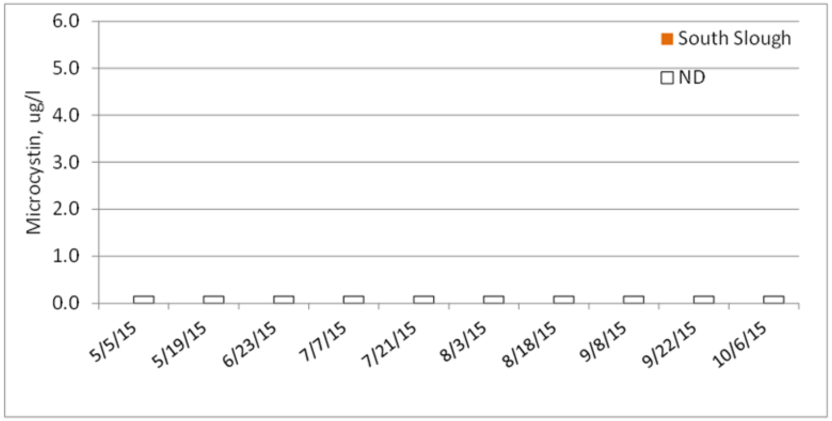


Figure 22. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected in Klamath River below Happy Camp (RM 101.3; Public Health) and Klamath River at Orleans (USGS) (RM 59.1; Public Health) (ND indicates non-detect results).

Figure 23. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected at Klamath River at Weitchpec (RM 43.5; Public Health) and Klamath River near Klamath (RM 6.0; Public Health) (ND indicates non-detect results).



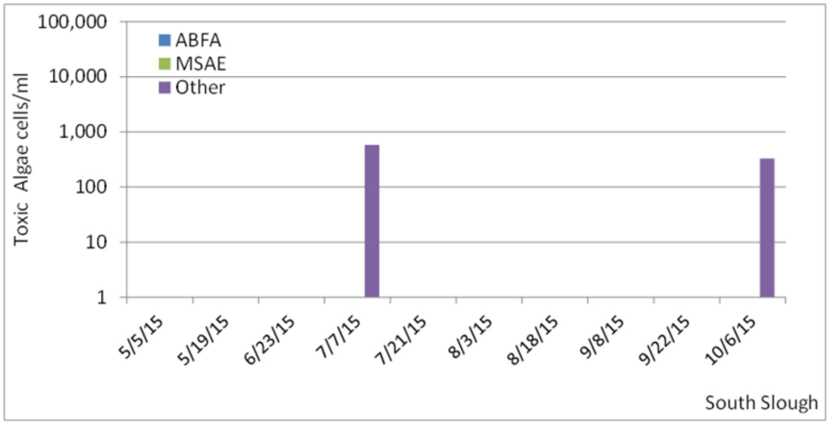


Figure 24. Microcystin concentrations and toxic algae cell counts from 2015 public health samples collected at Klamath River at South Slough (RM 0.1; Public Health) (ND indicates non-detect results).

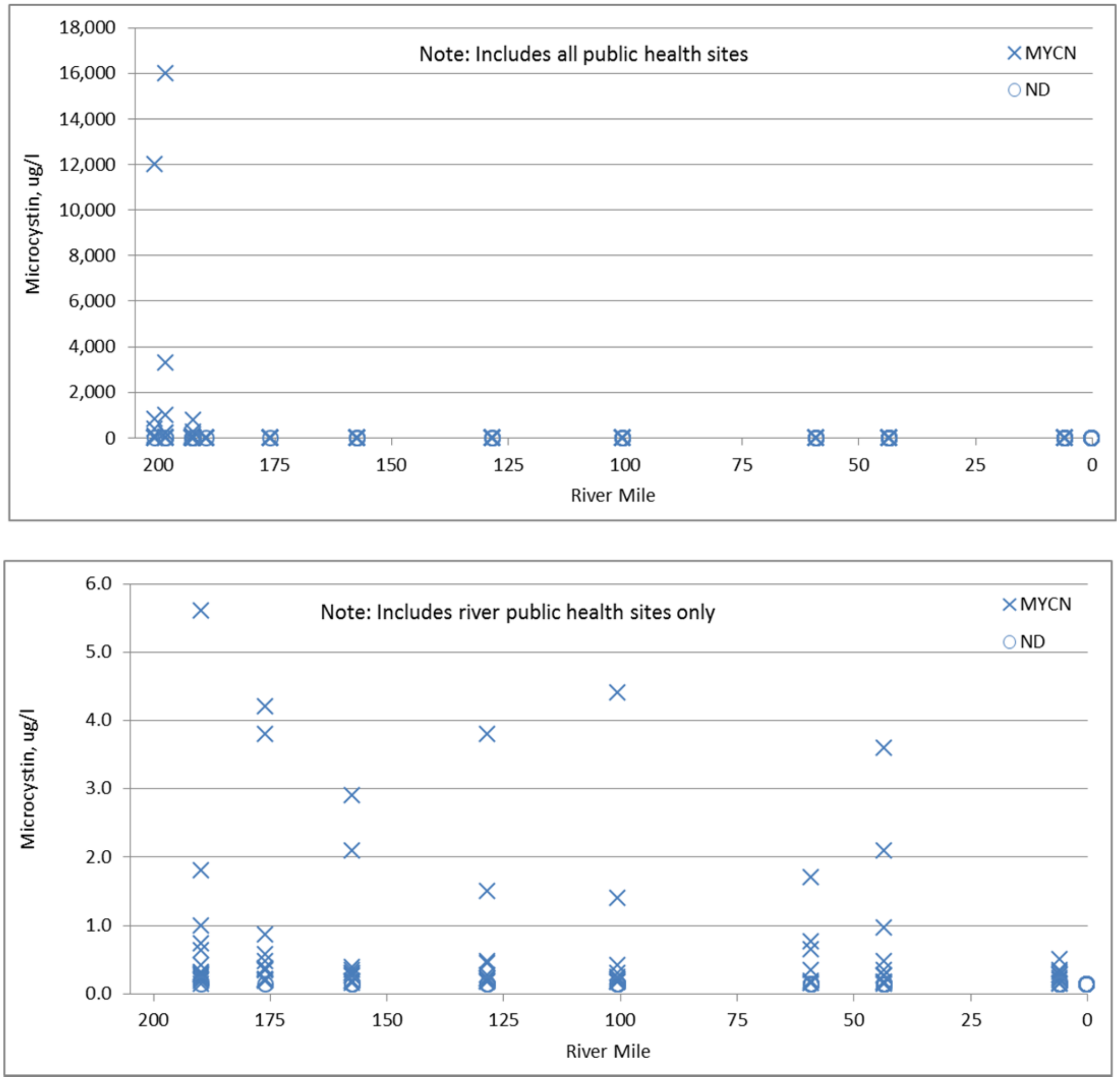


Figure 25. 2015 microcystin (MYCN) concentrations at all public health sampling sites (top) and at river public health sampling sites from Iron Gate dam downstream (bottom). ND indicates non-detect results.

8. Summary

The KHSA IM15 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. 2015 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	USBR
KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	Mainstem	246.00	USBR
KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	Mainstem	233.40	USBR
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. 2015 Baseline Data Summary

Appendix Table B-1 presents the complete data set for the 2015 KHSA baseline sampling. The four sampling entities are United States Bureau of Reclamation (USBR), PacifiCorp, the Karuk Tribe, and the Yurok Tribe.

Table B-1. 2015 Klamath River Baseline Data Summary (Mainstem).

Sample ID	Date	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)	Nitrogen, Particulate Nitrogen (mg/l)	Demand, Carbonaceous Biological Oxygen Demand (mg/l)	Nitrogen, Ammonia (mg/l)	Nitrogen, Nitrate+Nitrite (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)
2015KHSA-001	2/24/2015	10:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	5.39	7.31	108	10.43	15.80	3.74	46.9	3.13	2.350	0.366	2.7	0.078	0.140	0.78	0.003j	0.110	0.027	0.019	18.3	24.4	4.4j	
2015KHSA-007	3/17/2015	9:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	9.30	7.28	105	9.52	16.64	3.72	44.0	3.48	1.800	0.266	2.5	0.079	0.070	0.67	0.004j	0.080	0.025	0.017	18.5	21.6	-0.8j	
2015KHSA-013	4/14/2015	9:45	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	9.45	7.33	115	9.44	16.03	4.19	45.4	3.56	2.270	0.333	0.9j	0.012j	0.003j	0.59	0.021	0.170	0.034	0.014	28.1	54.4	6.4j	
2015KHSA-019	5/5/2015	8:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	15.81	7.34	114	9.68	8.28	2.09	44.7	4.70	1.450	0.206	1.0j	0.089	0.008j	0.52	0.044	0.150	0.040	0.006	13.8	18.8	4j	
2015KHSA-025	5/19/2015	9:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	13.29	7.75	112	8.79	7.28	1.48	47.6	3.95	2.060	0.263		0.004j	0.005j	0.51	0.047	0.130	0.023	0.028	11.6	13.6	2.2j	
2015KHSA-029	6/9/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.96	8.79	117	10.3	85.56	83.43	49.9	4.41	7.590	1.600	9.6	0.023j	0.005j	0.50	0.027	0.180	0.102	0.091	7.0	15.4	12.4	
2015KHSA-035	6/23/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	20.55	9.87	122	9.86	143.08	<0.09	50.9	4.80	11.550	2.350	6.2	<0.02	0.008j	2.14	0.018	0.210	0.139	0.091	11.2	19.6	14.8	
2015KHSA-040	7/7/2015	7:10	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	24.44	9.42	120	7.2	133.78	0.84	51.7	5.89	6.800	1.400	6.2	0.050	0.022	2.01	0.150	0.350	0.088	0.039	20.7	17.8	11.4	9.90
2015KHSA-046	7/21/2015	7:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.76	10.02	126	10.32	235.11	<0.09	54.7	5.12	13.100	2.710	25.6	0.048j	0.009j	2.70	0.120	0.320	0.158	0.141	11.5	15.2	10.5	14.00
2015KHSA-051	8/4/2015	9:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	22.17	10.03	124	7.67	277.09	10.38	51.2	5.82	11.400	2.390	10.8	0.049j	0.014	3.89	0.100	0.330	0.148	0.127	13.8	26.4	20.0	14.00
2015KHSA-057	8/18/2015	9:00	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	20.08	10.07	119	8.29	129.20	0.99	51.5	5.27	7.470	1.430	8.3	0.070	0.014	2.43	0.070	0.270	0.119	0.044	11.6	24.8	14.4	
2015KHSA-062	9/1/2015	8:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	18.29	9.83	113	7.25	171.07	6.84	52.4	5.78	8.500	1.700	5.9	0.026j	0.011	2.66	0.087	0.250	0.149	0.094	24.7	30.0	16.0	20.00
2015KHSA-068	9/22/2015	9:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	16.80	9.34	116	8.32	112.64	3.86	56.5	6.29	7.010	1.370	7.6	0.077	0.030	2.32	0.012	0.150	0.117	0.065	9.9	20.6	10.0	9.10
2015KHSA-073	10/6/2015	9:15	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	13.55	8.69	119	8.75	37.28	2.81	53.4	5.32	3.190	0.600	8.4	0.073	0.066	1.81	0.006j	0.120	0.067	0.022	14.6	11.6	5j	2.40
2015KHSA-079	10/20/2015	10:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	12.98	7.82	122	7.69	33.07	2.11	55.2	5.03	2.270	0.431		0.150	0.110	1.55	0.014	0.140	0.086	0.028	8.2	9.2	4.4j	1.40
2015KHSA-083	11/17/2015	9:40	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	3.25	7.81	130	10.69	24.96	11.96	55.2	3.78	5.130	0.795	1.1j	0.430	0.410	2.29	0.004j	0.100	0.068	0.029	55.7	105.0	14.1j	
2015KHSA-089	12/15/2015	10:20	KR25444	Link Dam (RM 254.44; Baseline)	USBR	0.5	R	0.56	7.80	119	10.96	19.90	7.07	47.6	3.01	2.960	0.430	1.7j	0.310	0.550	1.41	0.008j	<0.017	0.038	0.015	36.3	64.4	5.0j	
2015KHSA-004	2/24/2015	11:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	5.51	8.00	214	12.52	45.06	8.08	82.2	4.15	2.670	0.425	2.8	0.035j	0.250	1.10	0.003j	0.130			17.3	22.8	4.8j	
2015KHSA-010	3/17/2015	8:00	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	9.40	7.26	135	8.76	24.85	6.66	50.5	3.60	2.270	0.347	2.4	0.110	0.110	1.15	0.026	0.170			26.7	38.4	-0.4j	
2015KHSA-016	4/14/2015	7:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	9.31	7.78	122	10.05	22.22	3.38	46.8	3.76	1.750	0.278	0.5j	0.053	0.017	0.75	0.034	0.140			15.5	20.9	1.7j	
2015KHSA-022	5/5/2015	10:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	17.17	7.99	122	11.35	19.60	2.62	46.5	4.27	1.640	0.250	0.8j	0.006j	0.026	0.60	0.063	0.160			9.5	9.2	1.4j	0.17j
2015KHSA-032	6/9/2015	10:15	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	22.90	9.31	130	12.98	73.23	71.20	52.7	4.85	6.480	1.140	9.3	0.020j	0.003j	1.52	0.040	0.180			8.2	19.0	9.7	0.16j

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
2015KHSA-043	7/7/2015	9:20	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	25.18	8.39	132	1.25	94.27	21.64	54.3	6.29	4.560	0.982	7.7	0.790	0.005j	2.50	0.170	0.400			5.4	9.1	7.4	2.70
2015KHSA-054	8/4/2015	10:30	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	22.36	9.28	120	4.27	609.17	5.26	50.3	5.76	26.700	5.860	20.9	0.150	0.020	6.38	0.200	0.870			41.9	75.9	68.7	110.00
2015KHSA-065	9/1/2015	10:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	19.61	9.22	122	3.07	187.19	8.74	54.6	5.78	10.300	2.140	3.9	0.470	0.032	3.77	0.096	0.420			13.4	24.3	21.0	40.00
2015KHSA-076	10/6/2015	10:45	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	14.64	7.55	135	2.59	37.35	3.63	58.7	5.37	2.070	0.386	4.2	0.390	0.067	1.52	0.013	0.100			9.6	7.8	3.0j	3.40
2015KHSA-086	11/17/2015	11:10	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	4.60	7.53	135	8.57	20.12	10.53	54.9	3.83	3.680	0.530	0.4j	0.370	0.450	2.17	0.015	0.081			41.7	68.7	6.7j	
2015KHSA-092	12/15/2015	12:25	KR24600	Keno Reservoir at Miller Island (RM 246.0; Baseline)	USBR	0.5	P	1.71	7.70	173	9.58	18.37	7.57	65.1	3.64	2.330	0.353	2.3	0.400	0.640	1.71	0.041	0.130			29.1	40.7	-0.7j	
2015KHSA-005	2/24/2015	9:05	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	5.63	8.08	240	12.21	70.89	10.83	95.6	4.10	3.660	0.686	4.0	0.052	0.160	1.15	0.001j	0.079	0.064	0.023	19.3	28.4	6.4j	
2015KHSA-011	3/17/2015	8:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	9.32	7.79	159	10.37	32.64	13.01	62.3	3.74	2.620	0.395	3.4	0.140	0.068	1.04	0.001j	0.150	0.057	0.018	25.1	34.8	1.6j	
2015KHSA-017	4/14/2015	8:45	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.3	P	9.63	7.56	148	10.4	30.83	7.38	58.9	4.74	2.310	0.344	0.9j	0.032j	0.016	0.87	0.036	0.280	0.047	0.020	22.4	30.8	4.4j	
2015KHSA-023	5/5/2015	7:10	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	15.48	7.15	151	9.56	5.17	2.95	55.7	5.35	1.100	0.134	0.2j	0.051	0.015	0.69	0.092	0.210	0.018	0.006	11.0	10.4	2.0j	0.16j
2015KHSA-033	6/9/2015	7:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.50	8.69	135	8.79	3.55	2.92	55.4	4.93	1.220	0.246	3.2	0.120	0.008j	0.75	0.110	0.190	0.016	0.016	4.3	4.0j	1.6j	<0.15
2015KHSA-038	6/23/2015	8:30	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.44	9.30	130	8.44			53.5				5.1	0.130	0.023	1.92	0.088	0.220			13.6			
2015KHSA-044	7/7/2015	8:35	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	24.62	9.03	129	7.15	53.24	1.18	54.0	6.90	2.670	0.590	6.9	0.470	0.011	2.48	0.230	0.410	0.064	0.066	7.2	7.6	5.0	4.70
2015KHSA-049	7/21/2015	9:50	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	22.62	9.22	136	8.41			57.3	5.18			10.8	0.031j	0.003j	0.67	0.077	0.190			13.3			
2015KHSA-055	8/4/2015	7:40	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	21.72	9.35	115	7.01	57.59	6.43	47.6	5.35	4.930	0.825	2.4	0.040j	0.005j	1.69	0.250	0.390	0.074	0.031	14.5	15.7	11.1	32.00
2015KHSA-060	8/18/2015	8:00	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	20.79	9.34	130	7.11			56.8				6.1	0.250	0.025	2.28	0.160	0.380			10.9			
2015KHSA-066	9/1/2015	7:45	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	19.50	9.16	122	7.41	66.43	11.37	53.2	6.01	3.260	0.644	3.3	0.300	0.017	2.11	0.160	0.270	0.058	0.023	8.5	13.5	6.3	8.50
2015KHSA-071	9/22/2015	8:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	15.88	8.67	130	7.96			57.6				3.5	0.230	0.043	1.68	0.056	0.140			6.3			
2015KHSA-077	10/6/2015	7:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	14.50	7.67	147	8.14	6.80	1.45	63.0	6.03	1.730	0.317	0.8j	0.840	0.055	1.86	0.120	0.210	0.085	0.018	4.8	-54.0j	-0.8j	1.80
2015KHSA-087	11/17/2015	8:35	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	4.59	7.49	137	11.28	13.61	8.07	55.8	3.95	2.270	0.319	1.1j	0.350	0.450	1.90	0.017	0.110	0.028	0.009	27.5	37.6	5.2	
2015KHSA-093	12/15/2015	9:20	KR23340	Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline)	USBR	0.5	P	2.06	7.57	172	10.9	22.97	10.46	58.1	4.02	2.560	0.371	2.1	0.270	0.680	1.64	0.021	0.079	0.037	0.016	29.4	37.3	2.0j	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
KR15002	2/18/2015	12:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	7.24	8.32	204.9	10.53	1.552	1.21	59.7	3.39	0.437	0.060		0.054	0.350	0.77	0.058	0.038j			12.3	1.8j	0.8j	
KR15022	3/17/2015	17:25	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	10.85	7.93	168.5	9.44	23.820	11.72	62.5	4.19	1.800	0.276		0.120	0.210	1.21	0.049	0.150			25.6	34.4	1.2j	
KR15042	4/14/2015	14:45	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	11.02	8.04	154.4	9.83	21.956	6.31	58.5	4.72	1.600	0.219		0.044j	0.074	0.92	0.065	0.160			22.1	32.9	2.0j	
KR15062	5/10/2015	12:15	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	16.02	7.72		8.78	12.620	6.83	49.7	4.16	1.410	0.212		0.067	0.046	0.52	0.093	0.220			12.0	16.0	2.6j	
KR15084	6/7/2015	13:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	22.19	8.27	142.3	8.31	1.562	1.49	56.2	4.94	0.398	0.050		0.065	0.140	0.74	0.140	0.190			2.6	5.2	-0.6j	
KR15189	7/8/2015	17:15	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	23.58	7.65	136.4	7.19	2.158	1.63	49.6	5.90	1.400	0.211		0.140	0.940		0.290	0.380			3.0	5.8	-0.6j	
KR15212	8/4/2015	8:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	20.69	7.66	120.8	8.26	20.941	6.68	47.1	5.43	3.070	0.549		0.029j	0.210	1.66	0.290	0.420			14.4	14.5	10.3	
KR15235	9/1/2015	13:30	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	21.40	8.24	126.7	7.61	18.990	9.80	50.3	6.14	1.490	0.268		0.120	0.470	1.96	0.210	0.290			6.6	9.6	7.0	
KR15258	10/7/2015	15:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	15.59	8.09	151.6	8.89	6.196	3.48	61.7	6.77	1.120	0.161		0.340	0.600	1.91	0.110	0.170			4.6	6.8	0.4j	
KR15280	11/17/2015	11:10	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	5.15	6.15		11.75	8.313	5.63	53.1	4.16	0.581	0.082		0.180	0.720	1.92	0.053	0.046j			25.7	28.8	2.0j	
KR15300	12/7/2015	11:00	KR22822	Klamath River above J.C. Boyle Reservoir (RM 228.22; Baseline)	PacifiCorp	0.5	R	2.74	6.92	144.9	12.18	17.122	8.58	52.0	3.89	1.440	0.210		0.130	0.960	2.16	0.060	0.053			32.3	38.8	2.8j	
KR15064	5/19/2015	14:30	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	14.61	7.58	131.3	9.55	5.045	1.38			0.768	0.116												<0.15
KR15086	6/23/2015	8:00	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	22.65	7.56	144.6	7.47	20.366	1.77			2.250	0.438									18.7		-0.4j	0.17j
KR15191	7/20/2015	9:40	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	24.35	8.94		0.4	162.707	4.63			4.860	0.894												470.00
KR15214	8/4/2015	11:05	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	23.89	8.78	123.7	10.96	824.879	20.87			34.200	6.590									11.1			9.80
KR15237	9/1/2015	12:45	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	21.22	8.35	130.7	7.9	71.970	2.79			4.370	0.888									5.1			0.43
KR15260	10/7/2015	14:20	KR22478	J.C. Boyle Reservoir (RM 224.78; Baseline)	PacifiCorp	0.5	R	15.62	7.93	153.3	8.5	13.298	3.25			1.250	0.206									4.6			1.30
KR15001	2/18/2015	12:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	6.16	8.09	175.7	11.26	11.012	5.75	68.4	3.97	0.634	0.101		0.100	0.430	1.12	0.049	0.057			15.5	16.1	3.7j	
KR15021	3/17/2015	16:55	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	9.17	7.78	158.1	10.24	20.390	9.87	60.6	4.20	1.810	0.280		0.130	0.180	0.81	0.038	0.120			20.6	23.6	0.0j	
KR15041	4/14/2015	16:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	10.72	7.95	180.9	10.07	14.364	5.24	65.2	5.41	1.620	0.206		0.089	0.120	1.05	0.086	0.250				28.0	4.8j	
KR15061	5/10/2015	11:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	16.00	7.72		8.8	7.555	3.99	56.5	4.76	0.780	0.115		0.038j	0.072	0.54	0.100	0.170			10.8	13.2	2.0j	
KR15083	6/7/2015	15:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	20.98	7.98	145.5	7.95	1.715	1.16	56.3	4.92	0.436	0.052		0.110	0.120	0.76	0.140	0.200			3.1	4.6j	1.4j	
KR15188	7/8/2015	16:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	24.35	7.62	136.9	7.77	4.857	2.49	52.1	6.16	0.917	0.128		0.290	0.510		0.260	0.370			5.8	5.4	1.8j	
KR15211	8/4/2015	11:30	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	22.50	7.74	124.9	8.16	51.732	7.52	48.6	5.48	3.680	0.700		0.100	0.130	2.02	0.290	0.490			16.3	14.5	1.2j	
KR15234	9/1/2015	11:40	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	19.92	7.74		8.08	37.630	5.27	53.1	6.02	3.170	0.628		0.210	0.310	2.04	0.190	0.280			7.0	9.0	-0.2j	
KR15257	10/7/2015	13:40	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	14.99	8.01	153.5	9.23	3.475	2.60	61.6	6.22	0.891	0.114		0.340	0.530	1.76	0.140	0.210			3.5	3.6j	0.6j	
KR15279	11/17/2015	13:00	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	4.82	7.76	146.2	11.88	8.190	5.84	56.3	4.10	0.658	1.010		0.200	0.700	1.96	0.048	0.050			18.6	20.3	0.2j	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
KR15299	12/7/2015	12:50	KR22460	Klamath River below J.C. Boyle Dam (RM 224.60; Baseline)	PacifiCorp	0.5	Q	2.63	7.87	148.2	12.63	10.967	6.52	56.2	3.99	0.998	0.156		0.240	0.840	1.99	0.054	0.041j			27.3	32.4	0.2j	
KR15003	2/18/2015	11:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	6.70	8.16	169	11.01	10.559	5.14	66.6	3.41	0.872	0.143		0.057	0.410	1.01	0.047	0.051			13.3	13.2	2.0j	
KR15023	3/17/2015	16:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	9.62	7.78	157.9	10.05	17.730	8.19	59.9	3.63	1.700	0.271		0.080	0.200	0.90	0.033	0.120			16.5	18.8	-2.4	
KR15043	4/14/2015	15:35	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	10.92	8.02	177.6	9.93	9.968	4.20	68.3	4.98	1.280	0.165		0.058	0.120	9.18	0.077	0.110				20.9	2.0j	
KR15063	5/10/2015	11:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	15.17	7.57		9.21	6.463	3.52	57.4	4.50	0.831	0.122		0.087	0.086	0.47	0.095	0.160			9.9	12.2	1.4j	
KR15085	6/7/2015	14:40	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	20.04	8.05	145.8	8.32	1.464	1.01	59.1	4.24	0.335	0.045		0.084	0.130	0.73	0.120	0.170			4.7	5.8	0.8j	0.16j
KR15190	7/6/2015	18:20	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	23.20	7.34	138.3	7.72	10.912	3.08	54.8	5.08	0.820	0.126		0.130	0.360	1.39	0.200	0.300			3.9	7.0	2.0j	1.80
KR15213	8/4/2015	10:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	19.39	7.70	129.5	8.64	16.102	5.26	51.3	4.17	1.510	0.258		0.055	0.190	1.24	0.260	0.340			5.9	7.2	2.4j	2.00
KR15236	9/1/2015	10:50	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	18.37	7.94	132.8	8.34	13.800	5.11	54.5	5.20	1.230	0.225		0.130	0.310	2.24	0.170	0.240			6.1	6.6	1.4j	0.65
KR15259	10/7/2015	13:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	14.47	8.03	152.5	9.3	3.392	2.51	62.0	5.31	0.546	0.060		0.260	0.500	1.55	0.130	0.190			3.3	3.4j	0.4j	0.28
KR15281	11/17/2015	12:10	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	5.70	7.64	146	11.78	7.877	5.29	57.5	3.72	0.705	0.104		0.140	0.660	1.62	0.047	0.019j			15.7	14.6	1.4j	
KR15301	12/7/2015	12:00	KR21950	Klamath River below USGS Gage (RM 219.50; Baseline)	PacifiCorp	0.5	R	8.01	7.37	146.9	11.27	6.294	3.17	61.2	1.53	0.721	0.104		0.020j	0.490	0.89	0.049	0.047j			9.2	10.8	0.2j	
KR15028	3/19/2015	13:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	Q	10.02	8.06	159.5	10.54	18.790	10.40	60.7	3.07	1.700	0.228	1.6j	0.027j	0.280	0.85	0.044	0.130	0.045	0.020	20.6	29.1	2.9j	
KR15105	6/22/2015	16:25	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	Q	20.90	7.94	152.9	8.96	1.972	1.74		3.95	0.506	0.065	1.0j	0.045j	0.360	0.73	0.130	0.170			2.7		2.6j	
KR15008	2/17/2015	10:40	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	7.62	8.32	150.7	11.16	3.810	3.92	68.3	1.77	0.444	0.065	0.8j	0.043j	0.320	0.60	0.056	0.047j	0.013	0.005		7.8	2.2j	
KR15048	4/14/2015	18:15	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	11.93	8.23	180.1	10.1	1.978	0.51	64.8	4.86	1.170	0.158	1.1j	0.037j	0.140	0.91	0.076	0.160	0.029	0.012	5.9	21.7	3.4j	
KR15069	5/7/2015	14:50	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	15.74	7.84	154.8	9.45	3.851	3.12	58.0	4.36	0.810	0.112	0.2j	0.020j	0.130	0.51	0.100	2.310	0.021	0.006	11.0	11.8	1.8j	
KR15091	6/8/2015	9:30	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	19.25	7.71	152.8	9.01	1.412	1.23	62.2	3.47	0.356	0.046	1.9j	0.046j	0.110	0.83	0.100	0.170	0.009	0.002	2.5	4.0j	0.6j	<0.15
KR15196	7/8/2015	15:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	21.20	8.13	138.4	8.78	5.921	2.41	52.2	4.80	0.536	0.083	1.9j	0.053	0.580		0.200	0.300	0.027	0.012	4.9	7.2	1.4j	1.80
KR15210	7/21/2015	12:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	20.94	8.08	151.5	10.04	2.044	1.39	62.8	3.81			2.5	<0.02	0.280	0.69	0.110	0.170				2.8j	1.6j	
KR15219	8/5/2015	14:35	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	18.95	8.57	142.8	9.88	9.080	2.73	60.1	1.96	1.080	0.164	1.9j	<0.02	0.190	0.59	0.150	0.220	0.018	0.009	6.5	7.8	2.8j	0.96
KR15233	8/17/2015	11:00	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	16.39	7.46		10.22	17.292	4.54		4.28	1.280	0.204	1.4j	0.042j	0.120	0.75	0.230	0.290			5.1		0.6j	
KR15242	9/2/2015	12:10	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	17.41	8.48	141.5	10.07	7.090	4.73	58.4	3.48	0.702	0.112	1.0j	<0.02	0.420	0.92	0.150	0.240	0.014	0.008	4.4	6.4	1.6j	0.96
KR15256	9/22/2015	16:10	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	16.15	8.77	141.9	10.11							0.6j	0.041j	0.320	0.80	0.110	0.140					12.4	
KR15265	10/7/2015	11:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	12.57	8.22	150.5	10.45	3.136	2.59	65.1	2.69	0.375	0.045	2.0	<0.02	0.400	0.77	0.086	0.100	0.011	0.002	1.9	4.2j	0.4j	0.21
KR15286	11/18/2015	16:50	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	6.90	8.22	145.2	11.58	3.809	2.53	56.2	3.57	0.564	0.084	1.1j	0.043j	0.740	1.56	0.047	0.058	0.013	0.004	19.2	17.6	0.6j	

Sample ID	Date	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)	Nitrogen, Particulate Nitrogen (mg/l)	Demand, Carbonaceous Biological Oxygen Demand (mg/l)	Nitrogen, Ammonia (mg/l)	Nitrogen, Nitrate+Nitrite (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)
KR15306	12/8/2015	13:20	KR20642	Klamath River above Shovel Creek (RM 206.42; Baseline)	PacifiCorp	0.5	R	6.11	8.31	146.9	12.14	13.465	7.53	55.2	3.18	1.310	0.216	0.4j	0.064	0.850	1.72	0.055	0.120	0.030	0.013	22.3	21.1	2.0j	
KR15010	2/17/2015	12:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	7.84	7.95	150	10.25	2.181	1.51	59.8	3.25	0.396	0.064		0.067	0.370	0.80	0.057	0.055			11.8	2.6j	0.2j	
KR15030	3/19/2015	14:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	11.83	8.70	183.1	12.27	25.360	3.39	72.0	2.99	1.200	0.224		0.022j	0.073	0.50	0.002j	0.079			8.9	11.6	2.6j	
KR15050	4/15/2015	12:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	11.55	7.87	162.2	9.13	1.475	0.75	60.4	3.96	0.323	0.037		0.073	0.170	0.72	0.064	0.140			9.1	4.0j	-2j	
KR15071	5/7/2015	16:05	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	15.93	7.42	158.5	8.87	3.553	1.78	58.7	3.67	0.441	0.067		0.049j	0.120	0.41	0.082	0.120			5.3	4.4j	0.2j	
KR15093	6/8/2015	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	24.77	8.41	148.6	11.32	3.914	1.70	58.9	3.37	0.411	0.052		0.039j	<0.0028	0.50	0.061	0.130			2.0	2.8j	2.4j	0.15j
KR15198	7/8/2015	13:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	24.97	8.94	145.5	10.86	19.253	1.33	57.5	4.04	1.370	0.244		<0.02	0.150		0.096	0.230			11.4	10.4		14.00
KR15221	8/5/2015	12:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	22.87	9.18	149.3	10.54	8.802	1.02	59.9	3.42	0.921	0.139		<0.02	<0.0028	0.50	0.120	0.190			1.8	2.8j	3.6j	0.24
KR15244	9/2/2015	13:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	21.07	8.79		9.31	16.030	1.24	60.4	3.98	1.180	0.216		0.020	0.060	0.91	0.150	0.480			4.9	4.2j	5.6	0.49
KR15267	10/6/2015	11:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R					296.740	16.62	63.3	4.23	3.900	0.776		0.039j	0.140	8.32	0.062	0.780			1.1	72.4	-0.6j	2.20
KR15288	11/18/2015	15:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	9.72	7.91	149.7	9.33	1.261	0.99	61.2	3.18	0.318	0.041		0.120	0.510	1.21	0.057	0.110			4.0	2.0j	0.7j	
KR15308	12/8/2015	11:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0.5	R	6.00	8.07	150.9	10.35	5.194	2.52	58.3	3.04	0.533	0.082		0.150	0.640	1.47	0.054	0.091			8.3	4.2j	0.4j	
KR15009	2/17/2015	13:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.979	1.55			0.560	0.076												
KR15029	3/19/2015	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					19.680	6.09			1.210	0.205												
KR15049	4/15/2015	12:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.547	0.75			0.503	0.070												
KR15070	5/7/2015	16:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					3.622	1.48			0.706	0.083									5.7		0.8j	
KR15092	6/8/2015	15:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					4.572	1.95			0.359	0.047									2.3			0.15j
KR15197	7/8/2015	13:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I	22.89				1.530	0.61			0.319	0.042									4.0			1.70
KR15220	8/5/2015	12:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					9.898	1.33			1.040	0.158									4.4			0.20
KR15243	9/2/2015	13:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					8.450	1.89			0.651	0.113									2.6			1.50
KR15266	10/6/2015	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					49.104	1.64			2.280	0.421									7.4			0.18
KR15287	11/18/2015	15:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					1.560	1.41			0.168	0.020									5.3			
KR15307	12/8/2015	11:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	0-8	I					3.570	2.54			0.628	0.089									9.5			
KR15011	2/17/2015	13:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	R	6.93	7.87	153.4	9.9	1.639	1.72	60.4	2.93	0.340	0.051		0.081	0.370	0.95	0.057	0.045j			11.0	3.6j	0.0j	
KR15031	3/19/2015	15:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	8	R	8.81	7.97	188.1	9.82	18.170	6.17	70.8	2.95	0.985	0.168		0.063	0.093	0.54	<0.0014	0.073			9.3	10.2	1.0j	
KR15051	4/15/2015	12:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	15	R	9.76	7.55	170.8	7.28	0.846	0.66	62.1	3.91	0.311	0.040		0.085	0.180	0.72	0.064	0.200			8.0	4.2j	0.6j	
KR15072	5/7/2015	16:25	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	13	R	13.42	6.97	160.5	7.33	2.752	1.48	59.9	3.61	0.398	0.056		0.062	0.120	0.31	0.082	0.140			5.4	3.2j	1.4j	
KR15094	6/8/2015	15:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	6	R	18.46	7.24	147.5	7.51	4.942	1.86	58.9	3.22	0.254	0.037		<0.02	0.009j	0.36	0.072	0.120			2.2	2.6j	3.2j	<0.15
KR15199	7/8/2015	13:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	NR	R					1.277	0.58	59.0	3.49	0.251	0.029		<0.02	0.310		0.150	0.200			1.7	2.4j	0.0j	0.24

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
KR15222	8/5/2015	13:00	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	16	R	15.41	7.13	162.7	0.0	10.118	2.10	60.3	3.03	0.994	0.152		0.053	0.150	0.69	0.160	0.210			5.6	4.0j	2.4j	0.21
KR15245	9/2/2015	14:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	R					1.410	1.21	64.4	3.32	0.526	0.084		0.220	0.047	0.72	0.240	0.300			2.8	3.2j	-0.6j	
KR15268	10/6/2015	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	18	R					0.830	0.94	66.1	4.04	0.471	0.066		0.400	0.130	1.05	0.190	0.250			4.2	3.4j	-0.2j	
KR15289	11/18/2015	15:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	8	R	8.51	7.80	148.4	9.37	1.646	1.19	60.8	3.20	0.318	0.049		0.130	0.500	1.21	0.080	0.110			4.3	3.0j	2.2j	
KR15309	12/8/2015	11:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	6	R	5.30	7.93	150.5	10.64	3.775	2.88	59.0	2.93	0.646	0.091		0.150	0.650	1.48	0.053	0.093			10.2	6.6	0.6j	
KR15012	2/17/2015	13:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	R					2.215	1.43	61.1	3.33	0.492	0.069		0.110	0.350	0.84	0.063	0.061			12.3	40.0	4.0j	
KR15032	3/19/2015	14:55	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	28	R							75.7	3.19				0.170	0.290	0.66	0.057	0.110				5.8	-1.2j	
KR15052	4/15/2015	12:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	R	7.82	7.22	186	3.47			64.5	3.94				0.079	0.180	0.76	0.072	0.190			9.4	42.8	6.4	
KR15073	5/7/2015	16:15	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	28	R							63.8	3.63				0.037j	0.120	0.43	0.086	0.110				4.0j	0.2j	
KR15095	6/8/2015	15:20	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	27	R							64.9	3.46				0.100	0.390	0.89	0.140	0.210			2.9	5.8	0.4j	
KR15200	7/8/2015	13:35	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	NR	R							68.2	3.41				0.310	0.240		0.220	0.330			8.0	5.8	0.2j	
KR15223	8/5/2015	12:45	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	R							70.2	3.15				0.480	0.069	0.90	0.320	0.440				4.8j	0.8j	
KR15246	9/2/2015	13:50	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	26	R							72.3	3.17				0.610	0.018	0.96	0.430	0.510				8.0	1.2j	
KR15269	10/6/2015	11:40	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	25	R							79.5	4.20				1.120	0.0078j	1.45	0.610	0.640				7.4	0.6j	
KR15290	11/18/2015	15:10	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	30	R	8.05	7.79	149.1	9.49			60.3	3.12				0.096	0.520	1.21	0.054	0.052				3.2j	2.0j	
KR15310	12/8/2015	11:30	KR19874	Copco Reservoir (RM 198.74; Baseline)	PacifiCorp	29	R	5.21	7.88	150	10.35			57.9	3.00				0.120	0.650	1.15	0.053	0.074				4.2j	2.6j	
KR15013	2/17/2015	14:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	7.39	7.93	151.1	10.22	1.903	1.71	60.4	3.20	0.438	0.064		0.092	0.370	0.79	0.057	0.052			11.8	2.6j	0.6j	
KR15033	3/19/2015	16:05	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	9.75	8.15	183.7	10.46	16.830	5.91	74.7	2.93	1.120	0.168		0.045j	0.190	0.57	0.007j	0.073			10.1	11.2	1.8j	
KR15053	4/15/2015	13:25	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	11.26	7.81	162.8	9.08	1.403	0.63	61.7	3.64	0.328	0.038		0.071	0.200	0.76	0.065	0.160			8.6	3.8j	-0.2j	
KR15074	5/7/2015	17:30	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	15.70	7.47	158	8.91	3.638	1.63	58.7	3.55	0.412	0.058		0.045j	0.130	0.42	0.082	0.110			5.3	4.2j	1.6j	
KR15096	6/8/2015	10:40	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	19.13	7.59		8.14	3.949	2.01	57.5	3.39	0.383	0.048		0.045j	0.061	0.55	0.089	0.140			3.0	3.4j	-1.0j	<0.15
KR15201	7/8/2015	12:10	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	23.05	7.84		6.78	1.702	0.92	57.7	5.09	0.289	0.035		0.041j	0.240		0.130	0.170			3.9	2.6j	-0.6j	1.10
KR15224	8/5/2015	11:25	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	21.82	8.80	149.6	7.99	10.241	1.57	60.8	3.60	0.951	0.151		<0.02	0.035	0.59	0.130	0.200			1.8	2.8j	-0.4j	0.19
KR15247	9/2/2015	15:15	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	20.04	7.90	147.6	6.34	5.100	1.85	59.7	4.13	0.592	0.086		0.100	0.130	0.87	0.180	0.260			3.7	4.6j	0.8j	0.33
KR15270	10/7/2015	9:50	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	15.46	7.77	152.3	9.66	3.589	1.39	63.1	4.35	0.468	0.071		0.160	0.220	1.00	0.140	0.180			2.2	3.6j	0.4j	0.16j
KR15291	11/18/2015	14:00	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	8.95	7.85	149	9.61	1.948	1.95	59.9	3.24	0.358	0.052		0.091	0.520	1.21	0.055	0.081			5.7	2.6j	-0.4j	
KR15311	12/8/2015	9:50	KR19645	Klamath River below Copco Dam (RM 196.45; Baseline)	PacifiCorp	0.5	R	5.40	7.90	150.9	10.73	3.588	3.23	57.7	2.94	0.587	0.085		0.110	0.660	1.13	0.055	0.078			10.1	7.2	1.0j	
KR15015	2/17/2015	16:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	8.04	7.90	142.3	10.43	1.691	1.07	58.1	3.82	0.406	0.064		0.039j	0.350	0.66	0.058	0.081			12.9	1.8j	0.8j	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
KR15035	3/19/2015	17:05	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	12.14	8.94	171	14.3	22.250	5.53	68.9	2.95	1.190	0.223		<0.02	0.110	0.49	0.005j	0.057			9.4	8.6	3.2j	
KR15055	4/16/2015	17:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	13.81	7.82	163	9.33	3.572	0.49	60.9	3.70	0.422	0.058		0.077	0.250	0.57		0.086			5.6			
KR15076	5/7/2015	12:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	16.21	8.17	160.1	10.38	10.146	5.66	64.5	3.55	0.524	0.089		0.032j	0.020	0.47	0.048	0.085			4.6	5.4	0.4j	
KR15098	6/8/2015	17:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	24.44	8.30	150.6	9.72	0.385	0.30	60.8	3.41	0.391	0.058		0.048j	<0.0028	0.44	0.073	0.230			2.4	5.6	-0.2j	<0.15
KR15203	7/7/2015	11:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	26.31	8.86		9.69	1.255	0.39	62.6	3.58	0.267	0.036		0.025j	0.004j	0.40	0.044	0.150			1.1	<0.6	-0.6j	0.23
KR15226	8/5/2015	8:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	24.29	9.72	153.9	12.61	30.233	1.62	61.9	3.49	1.200	0.225		<0.02	<0.0028	0.69	0.059	0.170			7.7	4.6j	-1.0j	0.17j
KR15249	9/2/2015	9:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	21.70	9.39	152.3	9.08	43.350	3.18	64.6	3.73	1.690	0.305		0.040j	0.012	0.75	0.069	0.170			6.0	7.8	0.0j	0.26
KR15272	10/20/2015	14:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	17.40	8.13	153.1	7.63	2.210	0.65	62.6	3.97	0.166	0.026		0.180	0.160	0.78	0.150	0.130			1.0	1.2j	-1.2j	0.25
KR15293	11/18/2015	11:50	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	11.73	7.63	155.4	6.64	0.784	0.42	64.2	3.46	0.184	0.026		0.250	0.410	1.24	0.110	0.130			1.5	1.0j	0.0j	
KR15313	12/8/2015	16:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0.5	R	7.88	7.90	154.3	8.43	1.940	1.18	62.1	3.08	0.304	0.042		0.210	0.530	1.06	0.079	0.097			3.5	2.0j	0.0j	
KR15014	2/17/2015	16:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.503	1.13			0.494	0.068												
KR15034	3/19/2015	17:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					11.570	5.19			0.921	0.146												
KR15054	4/16/2015	16:55	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					4.091	1.07			0.462	0.042												
KR15075	5/7/2015	13:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					8.072	5.12			0.645	0.103									4.8		0.4j	
KR15097	6/8/2015	18:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.592	0.60			0.569	0.095									3.0			<0.15
KR15202	7/7/2015	11:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					3.315	2.53		0.10	0.359	0.046									1.6			0.24
KR15225	8/5/2015	8:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					12.360	1.17			0.942	0.159									3.0			0.97
KR15248	9/2/2015	9:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					13.760	1.03			0.676	0.122									2.2			0.97
KR15271	10/20/2015	14:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.777	0.84			0.172	0.028												0.39
KR15292	11/18/2015	12:00	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					0.731	0.58			0.438	0.079									1.7			
KR15312	12/8/2015	16:40	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	0-8	I					1.813	1.09			0.432	0.056									3.7			
KR15016	2/17/2015	16:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	20	R					1.317	1.36	61.8	3.54	0.442	0.064		<0.02	0.470	0.84	0.064	0.072			13.8	3.8j	-0.2j	
KR15036	3/19/2015	17:25	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	4	R	9.17	8.11	172.4	10.61	13.470	6.22	69.3	2.82	0.752	0.132		0.028j	0.190	0.53	0.004j	0.066			8.2	7.8	2.6j	
KR15056	4/16/2015	17:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	22	R	6.37	7.44	167.1	7	1.085	1.09	63.0	3.09	0.346	0.038		0.077	0.520	0.73		0.084						
KR15077	5/7/2015	13:30	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	14	R	10.66	6.62	165.8	6.88	1.993	1.97	61.0	4.83	0.396	0.049		0.034j	0.230	0.44	0.061	0.095			5.2	4.0j		<0.15
KR15099	6/8/2015	18:10	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	7	R	16.18	7.32	154	7.13	6.462	1.68	59.9	3.33	0.271	0.042		0.031j	0.032	0.32	0.071	0.130			2.8	3.4j	0.8j	<0.15
KR15204	7/7/2015	12:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	R	9.61				0.367	0.13	63.7	3.69	0.456	0.084		<0.02	0.006j	0.47	0.045	0.140			0.7	1.2j	0.0j	0.35
KR15227	8/5/2015	8:35	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	14.5	R					5.669	1.23	62.7	2.60	0.540	0.082		<0.02	0.130	0.50	0.140	0.240			2.0	2.4j	1.2j	0.54
KR15250	9/2/2015	10:20	KR19019	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	16	R					1.070	0.35	63.8	2.91	0.255	0.042		0.053	0.170	0.59	0.170	0.260			1.2	0.8j	0.8j	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
KR15273	10/20/2015	14:20	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	R	15.06	7.43	159.6	3.24	0.851	0.52	62.3	4.30	0.226	0.037		0.210	0.210	0.94	0.120	0.140				2.2j	0.8j	
KR15294	11/18/2015	12:10	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	19	R	10.54	7.39	160.3	2.97	0.595	0.46	63.6	3.37	0.220	0.030		0.240	0.420	1.22	0.110	0.140			1.8	1.8j	-0.2j	
KR15314	12/8/2015	16:50	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	36	R	6.65	7.74	152.8	8.92	1.450	0.99	61.5	3.00	0.383	0.045		0.160	0.510	1.01	0.080	0.100			3.4	2.0j	0.4j	
KR15017	2/17/2015	16:20	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R					1.042	1.42	67.9	3.19	0.545	0.085		<0.02	0.640	0.99	0.092	0.110			17.1	4.8j	0.0j	
KR15037	3/19/2015	17:15	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R							65.0	3.65				0.021j	0.650	0.98	0.080	0.120			12.8	4.2j	-0.2j	
KR15057	4/16/2015	17:10	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R	5.78	7.24	174.4	5.16			65.3	3.27				0.032j	0.630	0.84		0.110			10.8			
KR15078	5/7/2015	13:05	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R							65.9	3.13				<0.02	0.660	0.75	0.095	0.100				3.8j	0.2j	
KR15100	6/8/2015	17:50	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R	6.23	6.58	173.4	1.01			60.9	3.23				0.025j	0.061	0.48	0.074	0.120				3.6j		
KR15205	7/7/2015	12:05	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	NR	R							66.9	3.18				<0.02	0.580	0.87	0.110	0.170			5.2	1.4j	1.2j	
KR15228	8/5/2015	8:30	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	44	R							66.3	2.73				0.120	0.470	0.92	0.150	0.210				3.6j	0.4j	
KR15251	9/2/2015	9:50	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R							68.3	2.69				0.250	0.350	0.88	0.190	0.250				4.4j	-0.2j	
KR15274	10/20/2015	14:30	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	43	R	7.25	7.05	190	0.0			57.4	3.55				0.320	0.086	0.78	0.190	0.220				2.6j	-0.2j	
KR15295	11/18/2015	12:20	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	44	R	7.65	7.11	184	0.0			68.4	2.74				0.350	0.240	0.95	0.180	0.190				5.3	4j	
KR15315	12/8/2015	17:00	KR1901 9	Iron Gate Reservoir (RM 190.19; Baseline)	PacifiCorp	45	R	6.62	7.74	152.9	8.87			60.3	3.16				0.190	0.580	1.06	0.072	0.089				11.6		
KR15007	2/18/2015	8:30	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	6.90	7.86	144.6	11.52	1.435	1.10	59.5	3.41	0.426	0.064	1.2j	0.042j	0.340	0.75	0.056	0.055	0.011	0.005		3.4j	-0.4j	
KR15027	3/19/2015	18:45	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	9.41	8.25	171.7	11.65	11.230	5.17	65.4	2.93	0.762	0.134	1.3j	<0.02	0.260	0.51	0.023	0.068	0.040	0.007	8.8	5.2	-0.8j	
KR15047	4/16/2015	11:50	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	11.72	7.68	164.1	10.19	1.689	0.58	62.7	3.14	0.537	0.050		0.079	0.280	0.59			0.007	0.002				
KR15068	5/7/2015	18:25	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	15.74	7.85	162.1	10.27	9.759	4.16	64.5	3.68	0.698	0.112	0.3j	0.028j	0.066	0.50	0.049	0.130	0.020	0.010	4.9	4.2j	1.4j	
KR15082	5/18/2015	18:20	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R					7.213	2.80	63.4	3.55	0.490	0.062	1.2j	0.023	0.140	0.52	0.068	0.110	0.012	0.005	4.5	4.2j	0.4j	<0.15
KR15090	6/8/2015	18:35	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	21.34	7.99		8.16	3.185	1.15	59.7	3.36	0.243	0.036	2.9	0.038j	0.018	0.45	0.060	0.110	0.010	0.004	2.2	3.0j	0.8j	0.15j
KR15104	6/22/2015	11:15	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	19.51	7.86	152.7	9.49	6.478	1.78	65.7	3.40	0.438	0.065	1.4j	0.024j	0.030	0.25	0.074	0.110			2.7	3.6j	0.0j	<0.15
KR15195	7/8/2015	11:00	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	22.89	8.30	154	9.27	3.012	1.15	62.3	3.39	0.293	0.034	5.1	<0.02	0.071		0.078	0.180	0.005	0.006	1.6	2.2j	1.6j	0.25
KR15209	7/21/2015	14:00	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	22.16	8.15	151.4	8.95	6.702	1.16	60.8	3.11	0.893	0.151	2.6	<0.02	0.095	0.50	0.120	0.160		0.003		3.0j	3.8j	
KR15218	8/5/2015	15:30	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	21.58	8.62	150.7	8.32	9.482	1.74	63.7	3.06	0.991	0.158	1.9j	0.025j	0.041	0.50	0.130	0.190	0.017	0.007	4.5	2.8j	1.8j	0.18
KR15232	8/17/2015	14:10	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	20.91	8.46	150.6	8.65	4.295	0.91	60.4	4.68	0.377	0.049	0.8j	0.120	0.089	0.53	0.130	0.180	0.008	0.006	2.0	1.4j	2.4j	0.38
KR15241	9/2/2015	16:20	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	20.60	8.42	151.8	7.6	1.710	0.91	63.8	3.45	0.281	0.052	0.4j	0.130	0.100	0.65	0.150	0.140	0.014	0.009	1.2	1.8j	2.6j	0.21
KR15255	9/22/2015	13:30	KR1897 3	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	R	18.05	7.99	152.5	7.82	1.260	0.68	64.2	4.23	0.315	0.044	0.6j	0.180	0.150	0.73	0.200	0.180	0.008	0.004	2.1	0.6j	1.4j	0.40
KR15264	10/6/2015	14:40	KR1897 3	Klamath River below Iron Gate Dam (RM	PacifiCorp	0.5	Q	16.90	7.70	153.5	8.09	1.377	0.75	67.7	4.29	0.297	0.037	0.7j	0.190	0.200	0.94	0.150	0.180	0.010	0.003	1.6	1.6j	2.6j	0.23

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
				189.73; Baseline)																									
KR15278	10/20/2015	9:20	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	15.61	7.37	155.6	8.43	0.902	0.74	64.8	4.18	0.510	0.084	0.6j	0.260	0.320	1.08	0.130	0.140			1.2	2.2j	1.0j	0.30
KR15285	11/18/2015	9:10	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	11.15	7.66	155.3	9.26	0.748	0.62	64.6	3.47	0.200	0.029	1.4j	0.200	0.450	1.21	0.110	0.130	0.008	0.003	2.6	2.0j	0.8j	0.20
KR15305	12/8/2015	14:40	KR18973	Klamath River below Iron Gate Dam (RM 189.73; Baseline)	PacifiCorp	0.5	Q	7.77	7.78	154.5	10.21	1.733	1.39	62.1	3.08	0.421	0.062	0.6j	0.160	0.570	1.34	0.079	0.160	0.012	0.010	3.9	2.6j	0.8j	
WA022515-OC	2/25/2015	11:50	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	6.83	8.26	231	12.20	2.100	3.50		3.57				0.013	0.348	0.83	0.059	0.081				5.2	1.5	
WA031815-OC	3/18/2015	12:25	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	9.74	8.17	218	11.27	4.800	6.40		3.43				<0.010	0.244	0.98	0.045	0.069			6.3	5.5	1.8	
WA041515-OC	4/15/2015	11:50	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.89	8.38	192	11.59	4.800	3.80		3.13	0.639			0.010	0.193	0.76	0.074	0.078				4.0	0.8	
WA050615-OC	5/6/2015	11:52	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	15.19	8.20	186	9.78	2.100	2.70		3.64	0.446			0.020	0.122	0.69	0.063	0.086				4.6	1.2	
WA061015-OC	6/10/2015	11:27	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.57	8.52	174	8.70	1.600	1.40		3.20	0.487			<0.010	0.022	0.42	0.083	0.101				2.3	<0.50	<0.15
WA070815-OC	7/8/2015	11:54	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.44	8.03	179	7.84	2.100	4.60		3.03	3.460			0.014	0.102	0.68	0.121	0.476				106.0	8.0	0.23
WA080515-OC	8/5/2015	11:46	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	22.92	8.63	171	8.61	9.600	3.10		3.58	0.949			0.012	0.036	0.61	0.168	0.178				5.3	1.8	
WA090915-OC	9/9/2015	11:42	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	19.82	8.45	174	9.28	1.100	1.50		3.13	0.447			0.013	0.170	0.61	0.140	0.174				2.5	<0.50	0.22
WA100715-OC	10/7/2015	12:16	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	16.41	8.33	184	9.85	1.100	0.80		3.75				<0.010	0.253	0.67	0.146	0.165				2.5	1.2	
WA111815-OC	11/18/2015	12:17	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	10.65	8.47	191	11.25	2.400	1.10		3.97				0.014	0.560	1.10	0.126	0.128				2.2	0.7	
WA121615-OC	12/16/2015	12:22	KR15626	Klamath River at Walker Bridge (RM 156.26; Baseline)	Karuk	0.5	P	5.87	8.44	223	12.37	1.300	2.00		3.28				0.020	0.656	1.21	0.095	0.110				5.8	<0.50	
SV022515-OC	2/25/2015	10:39	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	5.98	8.15	216	12.39	1.600	0.80		2.60			<2.00	<0.010	0.361	1.06	0.039	0.051			5.6	4.7	1.2	
SV031815-OC	3/18/2015	11:15	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.13	8.11	209	10.94	3.700	3.70		3.31			<2.00	<0.010	0.266	0.74	0.032	0.047			4.2	4.5	1.3	
SV041515-OC	4/15/2015	10:40	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.54	8.34	197	11.74	13.000	6.50		2.55	0.800	0.105		0.011	0.116	0.63	0.025	0.040	0.015	0.012	2.6	5.0	1.5	
SV050615-OC	5/6/2015	10:30	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.15	8.15	196	10.68	1.900	2.20		3.69	0.833	0.113		0.016	0.115	0.56	0.051	0.071	0.015	0.014	3.0	5.8	2.0	
SV061015-OC	6/10/2015	10:04	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.96	8.34	171	8.41	2.700	1.40	57.3	3.09	0.709	0.087	<2.00	0.012	0.043	0.45	0.067	0.094	0.017	0.024	1.7	9.2	<0.50	<0.15
SV070815-OC	7/8/2015	10:18	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	23.38	8.02	186	7.70	4.300	4.70		3.08	7.090	0.404	<2.00	0.014	0.054	0.65	0.115	0.477	0.204	0.153	31.0	155.0	6.7	<0.15
SV080515-OC	8/5/2015	10:18	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	22.75	8.32	177	8.41	9.600	3.10		3.37	1.580	0.193	2.6	<0.010	<0.010	0.57	0.154	0.169	0.029	0.015	1.7	13.0	2.0	4.40
SV090915-OC	9/9/2015	10:16	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	19.20	8.34	184	9.16	1.300	2.20		3.22	0.463	0.051		<0.010	0.126	0.54	0.134	0.171	0.019	0.008	1.1	5.7	1.3	0.15j
SV100715-OC	10/7/2015	10:43	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	15.87	8.19	190	9.80	2.100	0.50	81.0	3.47			<2.00	<0.010	0.188	0.57	0.130	0.149			0.8	4.2	0.7	0.17j
SV111815-OC	11/18/2015	11:03	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	10.11	8.46	197	11.44	1.200	1.90		3.58			<2.00	<0.010	0.458	0.90	0.110	0.128			20.0	7.3	0.7	
SV121615-OC	12/16/2015	11:04	KR12850	Klamath River below Seiad (RM 128.5; Baseline)	Karuk	0.5	P	5.43	8.31	206	12.33	1.900	1.10		2.73			<2.00	0.011	0.561	0.90	0.058	0.066			2.6	31.0	2.5	
KR0935022415-OC	2/25/2015	9:51	KR10130	Klamath River below Happy Camp (RM	Karuk	0.5	P	6.12	8.12	198	12.59	2.100	0.50		2.21				<0.010	0.312	1.00	0.035	0.044				11.0	2.0	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
				101.3; Baseline)																									
KR0935031815-OC	3/18/2015	10:24	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	10.61	7.99	196	11.01	4.800	1.50		2.62				<0.010	0.196	0.73	0.027	0.035				4.7	1.3	
KR0935041515-OC	4/15/2015	9:56	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	10.47	8.25	184	11.39	14.000	7.00		2.34	0.840			<0.010	0.015	0.33	0.010	0.030				7.0	1.4	
KR0935050615-OC	5/6/2015	9:45	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	15.18	8.20	189	10.68	6.100	5.30		2.94	1.160			0.016	0.101	0.57	0.043	0.075			2.9	11.0	2.3	
KR0935061015-OC	6/10/2015	9:16	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	23.35	8.57	198	9.47	1.100	1.90		2.36	0.679			<0.010	0.018	0.41	0.055	0.066				2.3	<0.50	<0.15
KR0935070815-OC	7/8/2015	9:26	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	24.40	7.96	196	7.84	2.000	1.80		2.54	0.597			0.013	<0.010	0.51	0.087	0.105				6.0	1.6	<0.15
KR0935080515-OC	8/5/2015	9:19	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	22.22	8.15	181	8.45	9.600	4.20		3.23	2.000			<0.010	<0.010	0.52	0.144	0.172				11.0	2.7	2.60
KR0935090915-OC	9/9/2015	9:19	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	18.83	8.20	182	8.92	1.600	2.90		2.67	0.591			<0.010	0.044	0.40	0.114	0.140				4.2	1.2	0.20
KR0935100715-OC	10/7/2015	9:42	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	16.14	8.01	195	9.48	2.700	0.30		3.26				<0.010	0.061	0.45	0.110	0.125				4.0	0.7	0.19
KR0935111815-OC	11/18/2015	10:14	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	9.55	8.25	195	11.28	1.300	2.80		3.24				<0.010	0.417	0.82	0.106	0.109				3.2	0.7	
KR0935121615-OC	12/16/2015	10:22	KR10130	Klamath River below Happy Camp (RM 101.3; Baseline)	Karuk	0.5	P	5.53	8.21	181	12.54	1.600	1.60		2.50				0.018	0.434	0.61	0.042	0.060				15.0	1.3	
OR022515-OC	2/25/2015	8:38	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	6.46	8.45	162	12.73	1.700	<0.1	76.2	1.59				<0.010	0.164	0.60	0.022	0.026			2.6	3.8	1.0	
OR031815-OC	3/18/2015	8:54	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	10.93	8.30	160	11.15	2.300	1.50	74.3	1.87				<0.010	0.137	0.41	0.019	0.025			3.0	2.6	0.9	
OR041515-OC	4/15/2015	8:42	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	10.30	8.60	149	11.60	4.300	3.20	66.8	2.12	0.461			<0.010	0.023	0.15	0.005	0.017			1.3	3.0	0.6	
OR050615-OC	5/6/2015	8:31	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	15.39	8.45	165	10.44	4.300	2.10	67.0	2.01	0.696			<0.010	<0.010	0.41	0.020	0.036			1.6	5.4	1.4	
OR061015-OC	6/10/2015	7:42	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.25	8.24	177	8.24	1.600	0.50	73.0	1.80	0.267			<0.010	<0.010	0.37	0.039	0.046			0.9	4.3	<0.50	0.18
OR070815-OC	7/8/2015	7:58	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	24.81	8.01	183	7.54	1.600	2.00	71.8	1.66	0.395			<0.010	<0.010	0.39	0.050	0.058			0.5	1.8	1.0	0.19
OR080515-OC	8/5/2015	7:54	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	23.00	8.43	179	8.27	6.900	2.80		2.59	0.951			0.015	0.016	0.40	0.082	0.110			0.5	5.7	1.5	1.40
OR090915-OC	9/9/2015	7:57	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	19.32	8.56	179	8.85	2.400	1.50	81.3	2.13	0.523			<0.010	<0.010	0.30	0.072	0.091			0.8	2.3	0.8	<0.15
OR100715-OC	10/7/2015	8:05	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	16.51	8.32	185	9.38	2.100	0.50		3.01				<0.010	0.027	0.30	0.086	0.088			0.5	1.7	<0.50	0.17j
OR111815-OC	11/18/2015	8:50	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	9.68	8.21	183	11.46	1.900	2.10	77.3	2.60				<0.010	0.245	0.52	0.067	0.078			0.7	2.7	0.8	
OR121615-OC	12/16/2015	8:46	KR05910	Klamath River at Orleans (USGS) (RM 59.1; Baseline)	Karuk	0.5	P	6.07	8.39	136	12.43	1.300	0.50	61.8	1.86				<0.010	0.254	0.41	0.025	0.041			3.3	13.0	0.6	
WE022515-OC	2/25/2015	10:48	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	6.84	7.61	158	12.45	1.500	<0.1		1.42	0.195			<0.010	0.139	0.62	0.020	0.024			3.0	4.5	0.9	
WE031815-OC	3/18/2015	10:45	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	11.40	7.90	158	11.08	1.602	2.63		1.61	0.193			0.011	0.101	0.32	0.016	0.026			2.4	3.0	0.9	
WE041515-OC	4/15/2015	11:45	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	10.76	7.84	148	11.26	2.136	1.85		1.25	0.155			<0.010	<0.010	0.19	0.005	0.015			1.7	3.1	1.3	
WE050615-OC	5/6/2015	11:05	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.00	7.99	164	11.74	3.738	1.12		1.78	0.791			<0.010	<0.010	0.28	0.020	0.028			1.7	4.8	1.2	<0.15
WE061015-OC	6/10/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5;	Yurok	0.5	P	22.89	8.23	178	8.79	0.890	0.73		1.70	0.351			<0.010	0.012	0.20	0.028	0.028			0.7	1.5	<0.50	<0.15

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
				Baseline)																									
WE070115-SG	7/1/2015	10:56	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE070815-OC	7/8/2015	11:12	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P					1.780	1.21		1.49	0.340			<0.010	<0.010	0.30	0.038	0.021			0.7	1.0	<0.50	<0.15
WE070815-SG	7/8/2015	11:12	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.17j
WE071515-SG	7/15/2015	11:29	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE072215-SG	7/22/2015	10:41	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE072915-SG	7/29/2015	13:28	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						3.60
WE080515-OC	8/5/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	22.52	8.37	179	8.92	2.670	0.82		2.62	0.949			<0.010	<0.010	0.27	0.073	0.093			0.3	4.2	1.0	0.96
WE080515-SG	8/5/2015	11:14	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						2.10
WE081215-SG	8/12/2015	9:44	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.47
WE081915-SG	8/19/2015	11:07	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.27
WE082515-SG	8/26/2015	11:02	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.15j
WE090215-SG	9/2/2015	12:24	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.17j
WE090915-SG	9/9/22015	NR	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE092315-SG	9/23/2015	11:39	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.26
WE093015-SG	9/30/2015	10:43	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE100715-OC	10/7/2015	10:26	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	16.77	8.57	194	10.69	2.136	0.48		2.51				<0.010	0.030	0.32	0.081	0.086			0.6	1.0	0.8	<0.15
WE100715-SG	10/7/2015	10:36	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						<0.15
WE101415-SG	10/14/2015	11:07	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P																						0.16j
WE111815-OC	11/18/2015	11:22	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	9.94	7.07	184	11.46	2.403	4.33		2.29				<0.010	0.222	0.60	0.053	0.069			0.7	2.3	2.3	
WE121615-OC	12/16/2015	11:52	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	Yurok	0.5	P	6.51	6.88	132	12.73	2.400	0.40		1.44				0.012	0.229	0.27	0.023	0.043			3.4	13.0	0.8	
TC022515-OC	2/25/2015	10:00	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	7.02	7.73	163	12.29	1.500	<0.1		1.19	0.261			<0.010	0.120	0.24	0.015	0.020			5.1	5.5	1.0	
TC031815-OC	3/18/2015	9:56	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	11.89	7.93	163	10.85	1.602	1.39		1.38	0.315			0.011	0.071	0.41	0.012	0.017			2.1	2.8	0.6	
TC041515-OC	4/15/2015	10:52	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	11.19	7.93	153	11.05	2.492	1.37		1.06	0.290			<0.010	<0.010	0.20	0.003	0.013			1.5	2.5	0.9	
TC050615-OC	5/6/2015	10:08	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	13.55	7.74	126	12.16	4.806	3.04		2.02	1.920			0.022	0.060	0.37	0.010	0.077			34.0	67.0	3.0	<0.15
TC061015-OC	6/10/2015	10:20	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.05	8.20	165	8.54	0.712	0.28		1.40	0.346			<0.010	0.013	0.16	0.016	0.018			0.7	1.5	<0.50	<0.15
TC070815-OC	7/8/2015	10:01	KR03850	Klamath River below Trinity River (RM 38.5;	Yurok	0.5	P	24.18	8.38	175	7.64	1.780	0.96		1.40	0.352	0.054		<0.010	<0.010	0.18	0.027	0.032	0.010	0.003	0.6	<0.50	<0.50	0.18

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
				Baseline)																									
TC080515-OC	8/5/2015	10:17	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	22.39	8.44	172	8.37	6.942	1.66		2.08	1.030			<0.010	<0.010	0.21	0.052	0.062			0.3	3.0	0.8	0.70
TC100715-OC	10/7/2015	9:46	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	17.11	8.42	185	9.44	1.800	<0.1		2.35				0.039	0.052	0.23	0.057	0.068			0.4	0.5	<0.50	<0.15
TC111815-OC	11/18/2015	10:32	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	10.11	6.93	183	11.43	2.937	3.23		2.16				<0.010	0.162	0.49	0.043	0.046			0.6	2.5	0.7	
TC121615-OC	12/16/2015	11:12	KR03850	Klamath River below Trinity River (RM 38.5; Baseline)	Yurok	0.5	P	6.65	6.42	137	12.66	1.900	0.40		1.43				<0.010	0.182	0.28	0.016	0.032			3.7	15.0	1.0	
TG022515-OC	2/25/2015	7:22	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	7.50	7.20	159	11.85	2.400	<0.1		1.45	0.264	0.020		<0.010	0.128	0.34	0.022	0.023	0.008	0.004	4.3	8.1	1.0	
TG031815-OC	3/18/2015	7:39	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	12.21	7.68	161	7.68	2.492	0.75		1.33	0.300	0.028		<0.010	0.111	0.40	0.010	0.015	0.003	0.002	2.0	2.4	0.9	
TG041515-OC	4/15/2015	8:12	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	11.30	7.60	151	10.36	1.424	1.32		0.87	0.275	0.030		<0.010	0.046	0.30	0.005	0.013	0.005	0.002	1.5	3.1	0.5	
TG050515-OC	5/5/5015	12:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG050615-OC	5/6/2015	7:49	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	14.58	7.52	133	11.25	6.942	3.15		2.06	2.040	0.202		0.015	0.061	0.29	0.008	0.072	0.046	0.032	23.0	48.0	5.5	
TG060915-OC	6/9/2015	12:44	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG061015-OC	6/10/2015	7:52	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	20.69	7.62	170	7.22	1.780	0.59		1.05	0.349	0.036		<0.010	0.114	0.29	0.014	0.014	0.005	0.002	0.8	1.0	<0.50	
TG063015-SG	6/30/2015	11:52	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG070715-OC	7/7/2015	12:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.16j
TG070715-SG	7/7/2015	12:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG070815-OC	7/8/2015	7:48	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.17	7.74	179	6.72	1.958	1.28		0.69	0.294			<0.010	0.036	0.23	0.018	0.024			0.7	1.3	0.8	
TG071415-SG	7/14/2015	10:42	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG072115-SG	7/21/2015	12:10	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG072815-SG	7/28/2015	10:59	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.35
TG080315-OC	8/3/2015	14:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.28
TG080315-SG	8/3/2015	14:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.31
TG080515-OC	8/5/2015	8:07	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	21.18	8.30	174	7.86	4.806	3.42		1.85	0.812	0.100		0.015	<0.010	0.20	0.041	0.052	0.016	0.007	0.3	2.3	0.5	
TG080815-SG	8/18/2015	13:04	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.23
TG081115-SG	8/11/2015	13:56	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.50
TG082515-SG	8/25/2015	13:18	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.28
TG090115-SG	9/1/2015	13:50	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						0.20
TG090815-SG	9/8/2015	13:25	KR00600	Klamath River near Klamath (RM 6.0;	Yurok	0.5	P																						<0.15

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	NTU	mg/l	mg/l	µg/l
				Baseline)																									
TG092215-SG	9/22/2015	13:14	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG092915-SG	9/29/2015	13:04	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG100715-OC	10/7/2015	9:53	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	16.92	8.10	181	8.64	3.204	0.16		2.18				<0.010	0.027	0.30	0.040	0.053			0.5	2.8	1.0	
TG100715-OC	10/6/2015	13:33	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	17.51	8.64	177	11.01																		<0.15
TG100715-SG	10/6/2015	13:38	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG101315-SG	10/13/2015	14:30	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P																						<0.15
TG111815-OC	11/18/2015	8:34	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	10.75	6.88	167	10.59	1.869	4.67		2.05				<0.010	0.134	0.36	0.029	0.031			0.5	1.5	<0.50	
TG121615-OC	12/16/2015	8:58	KR0060 0	Klamath River near Klamath (RM 6.0; Baseline)	Yurok	0.5	P	7.46	4.20	125	11.90	1.600	1.20		1.16				0.011	0.216	0.27	0.014	0.039			5.7	21.0	<0.50	
LES022515-OC	2/25/2015	8:01	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	7.78	7.51	159	11.59	1.600	<0.1		1.08	0.351			<0.010	0.135	0.25	0.014	0.019			4.1	5.9	0.8	
LES031815-OC	3/18/2015	7:09	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	12.10	7.73	183	10.35	1.602	1.01		1.37	0.267			0.018	0.086	0.28	0.012	0.018			2.4	4.3	0.9	
LES041515-OC	4/15/2015	6:53	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	11.58	7.57	148	10.38	1.424	0.45		1.08	0.382			<0.010	0.046	0.24	0.005	0.016			1.6	3.6	0.9	
LES050515-OC	5/5/2015	11:45	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																						<0.15
LES050615-OC	5/6/2015	6:57	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	14.58	7.38	136	11.16	2.403	1.90		1.96	0.577			0.014	0.048	0.28	0.009	0.025			6.9	12.8	1.5	
LES060915-OC	6/9/2015	10:47	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																						0.16j
LES061015-OC	6/10/2015	7:03	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	15.53	7.74	41624	5.08	1.068	0.30		1.32	0.203			0.020	0.025	0.23	0.015	0.021			0.7	0.8	<0.50	
LES070715-OC	7/7/2015	11:29	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																						0.15j
LES070815-OC	7/8/2015	6:51	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.73	8.27	2109	8.05	1.780	0.46		1.28	0.256			0.010	0.012	0.30	0.022	0.025			0.8	<0.50	<0.50	
LES080315-OC	8/3/2015	13:45	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P																						0.16j
LES080515-OC	8/5/2015	7:22	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	21.35	8.29	312	8.31	7.476	4.11		1.61	0.483			<0.010	0.012	0.22	0.035	0.048			0.4	2.5	0.7	
LES100715-OC	10/7/2015	9:24	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	16.76	7.80	4452	8.13	0.534	0.96		2.36				<0.010	0.034	0.23	0.041	0.045			0.5	1.2	<0.50	
LES100715-OC	10/6/2015	12:50	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	17.35	7.92	2580	8.60																		<0.15
LES111815-OC	11/18/2015	7:55	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	10.89	6.93	302	10.67	1.335	2.96		1.82				0.012	0.153	0.47	0.035	0.037			0.7	0.8	<0.50	
LES121615-OC	12/16/2015	8:05	KR0005 0	Klamath River Estuary (RM 0.5; Baseline)	Yurok	0.5	P	7.48	4.64	149	12.08	2.700	2.60		1.19				0.011	0.337	0.42	0.014	0.056			13.0	41.0	2.0	

All Non-detect values were replaced with "<" and the MDL value.
PacifiCorp and USBR values below the reporting limit (RL) but above the method detection limit (MDL) are j-flagged and italicized.
Sample Types include: P- Production sample (USBR, Karuk, Yurok); R- Production sample (PacifiCorp); R – Regular sample associated with QA sample set (USBR); Q– Regular sample associated with QA sample set (PacifiCorp).

Table B-2. 2015 Klamath River Baseline Data Summary (Major Tributaries)

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	-	uS/cm	mg/l	ug/l	ug/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	ug/l
SH022515-OC	2/25/2015	12:35	SH00000	Shasta River	Karuk	0.50	P	7.30	8.42	515	11.48	6.400	2.90		3.34				<0.010	0.421	1.85	0.135	0.210			6.9	59.0	10.0	
SH031815-OC	3/18/2015	13:07	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	11.95	8.40	484	10.54	6.700	1.00		3.15				<0.010	0.216	0.76	0.150	0.170			2.5	6.3	1.7	
SH041515-OC	4/15/2015	12:33	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	11.59	8.46	514	10.95	2.900	1.20		4.06	0.408			0.010	0.071	0.47	0.138	0.176			0.8	2.8	1.0	
SH050615-OC	5/6/2015	12:40	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	16.11	8.45	545	9.61	2.100	1.40		4.78	0.656			<0.010	0.018	0.61	0.167	0.186			1.5	3.5	0.8	
SH061015-OC	6/10/2015	12:15	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	23.54	8.78	541	8.80	2.600	<0.1		4.57	0.618			0.011	<0.010	0.51	0.216	0.217			1.2	4.0	0.5	
SH070815-OC	7/8/2015	12:49	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	23.00	8.64	615	8.83	1.400	0.70		6.67	0.367			<0.010	0.012	0.72	0.252	0.312			0.6	1.3	<0.50	
SH080515-OC	8/5/2015	12:51	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	22.63	8.70	542	9.38	2.400	1.30		5.12	0.285			<0.010	<0.010	0.46	0.202	0.202			0.4	0.8	<0.50	
SH090915-OC	9/9/2015	12:27	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	17.13	8.65	577	9.75	2.200	<0.1		4.97	0.315			<0.010	0.010	0.40	0.149	0.179			0.6	1.5	<0.50	
SH100715-OC	10/7/2015	12:58	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	14.14	8.55	463	9.87	2.100	0.50		2.15				<0.010	0.034	0.18	0.167	0.172			0.6	4.2	1.2	
SH111815-OC	11/18/2015	13:00	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	8.77	8.80	427	11.91	1.800	1.30		2.16				<0.010	0.210	0.47	0.188	0.192				0.8	<0.50	
SH121615-OC	12/16/2015	13:08	SH00000	Shasta River near mouth (Baseline)	Karuk	0.50	P	5.67	8.79	494	12.28	4.300	<0.1		3.40				0.018	0.468	0.84	0.208	0.215			1.1	2.5	<0.50	
SC022515-OC	2/25/2015	11:15	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	6.04	8.27	191	12.03	1.100	<0.1		1.77				<0.010	0.509	1.10	0.011	0.015			2.2	3.5	0.5	
SC031815-OC	3/18/2015	11:49	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	9.99	8.21	186	11.06	7.200	<0.1		1.92				<0.010	0.382	0.73	0.005	0.010				1.4	0.5	
SC041515-OC	4/15/2015	11:18	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	9.53	8.40	209	11.69	4.100	0.90		1.08	0.350			<0.010	0.270	0.49	<0.001	0.006			0.3	1.0	0.7	
SC050615-OC	5/6/2015	11:08	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	13.88	8.29	224	10.20	2.700	0.30		1.68	0.495			0.011	0.131	0.57	<0.001	0.005			0.4	1.7	<0.50	
SC061015-OC	6/10/2015	10:49	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	21.20	8.57	255	8.80	1.100	0.60		1.07	0.242			0.014	0.376	0.50	0.001	0.006			0.4	1.0	<0.50	
SC070815-OC	7/8/2015	11:05	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	22.76	8.37	262	8.34	0.900	1.10		0.86	0.429			<0.010	<0.010	0.23	0.002	0.005			0.6	2.7	1.3	
SC080515-OC	8/5/2015	10:59	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	22.27	8.60	269	9.26	1.100	0.40		1.16	0.265			<0.010	<0.010	0.18	0.002	0.007			0.2	<0.50	<0.50	
SC090915-OC	9/9/2015	11:02	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	18.13	8.48	278	9.80	1.700	<0.1		0.41	0.301			<0.010	<0.010	0.18	0.002	0.005			0.5	<0.50	<0.50	
SC100715-OC	10/7/2015	11:29	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	14.67	8.39	277	10.37	0.700	<0.1		1.03				<0.010	<0.010	<0.050	<0.001	0.004			0.2	<0.50	<0.50	
SC111815-OC	11/18/2015	11:44	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	8.16	8.57	260	11.74	0.700	0.40		1.52				<0.010	<0.010	<0.050	0.002	0.006			0.2	1.2	<0.50	
SC121615-OC	12/16/2015	11:40	SC00000	Scott River near mouth (Baseline)	Karuk	0.50	P	4.73	8.29	170	12.53	2.200	<0.1		2.15				0.020	0.358	0.43	0.007	0.013			0.8	<0.50	<0.50	
SA022515-OC	2/25/2015	9:00	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	5.66	8.25	111	12.92	0.500	<0.1		0.87				<0.010	0.063	0.45	0.005	0.005			0.6	1.1	0.9	
SA031815-OC	3/18/2015	9:20	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	9.82	7.98	102	11.28	1.000	<0.1		1.09				<0.010	0.022	0.12	0.004	0.007			0.4	3.0	1.0	
SA041515-OC	4/15/2015	9:07	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	8.29	8.31	98	11.76	0.600	<0.1		0.68	0.170			<0.010	<0.010	0.12	<0.001	0.004			0.4	<0.50	<0.50	
SA050615-OC	5/6/2015	8:57	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	13.38	8.38	108	10.54	<0.1	<0.1		0.83	0.134			<0.010	<0.010	0.24	0.003	0.005				0.9	0.8	

Sample ID	Date	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	Nitrogen, Particulate Nitrogen	Demand, Carbonaceous Biological Oxygen Demand	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	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	-	uS/cm	mg/l	ug/l	ug/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	ug/l
SA061015-OC	6/10/2015	8:13	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	20.07	8.09	115	8.79	1.300	0.50		0.76	0.492			<0.010	<0.010	0.07	0.003	0.011			0.5	11.0	<0.50	
SA070815-OC	7/8/2015	8:27	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	22.32	7.63	144	8.16	0.500	0.30		0.30	0.176			<0.010	0.013	0.20	0.003	0.006			0.3	0.5	<0.50	
SA080515-OC	8/5/2015	8:23	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	20.14	8.20	149	8.62	1.300	0.70		0.48	0.307			<0.010	<0.010	0.14	<0.001	0.005			0.2	0.5	<0.50	
SA090915-OC	9/9/2015	8:23	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	16.92	8.23	155	9.18	1.500	<0.1		<0.250	0.342			<0.010	<0.010	0.08	<0.001	0.003			0.3	1.8	0.5	
SA100715-OC	10/7/2015	8:39	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	14.58	8.06	156	9.51	1.100	<0.1		0.76				<0.010	<0.010	<0.050	<0.001	0.005			0.2	0.8	<0.50	
SA111815-OC	11/18/2015	9:17	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	8.79	8.21	140	11.58	2.900	0.80		1.26				<0.010	<0.010	<0.050	0.002	0.011			0.3	3.0	0.8	
SA121615-OC	12/16/2015	9:18	SA00000	Salmon River near mouth (Baseline)	Karuk	0.50	P	5.19	8.29	88	12.63	0.800	<0.1		1.21				<0.010	0.182	0.19	0.003	0.007			0.6	2.2	<0.50	
TR022515-OC	2/25/2015	11:04	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	7.30	7.80	175	12.18	1.700	<0.1		0.81	0.287			<0.010	0.049	0.56	0.006	0.009			3.1	4.5	0.6	
TR031815-OC	3/18/2015	10:58	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.71	7.91	177	10.82	1.800	<0.1		0.91	0.282			<0.010	<0.010	0.44	0.003	0.005			1.4	1.3	<0.50	
TR041515-OC	4/15/2015	12:03	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.09	7.97	167	10.98	1.068	<0.1		0.77	0.404			0.018	<0.010	0.19	0.003	0.006			0.4	1.1	0.6	
TR050615-OC	5/6/2015	11:20	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	12.94	7.74	112	12.44	5.340	4.01		2.05	2.060			0.030	0.075	0.30	0.008	0.096			42.0	78.5	4.5	
TR061015-OC	6/10/2015	11:38	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.61	7.99	143	8.89	0.712	0.78		1.13	0.182			<0.010	0.014	<0.050	<0.001	0.002			0.7	1.5	<0.50	
TR070815-OC	7/8/2015	11:28	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P					1.300	<0.1		1.02	0.125			<0.010	<0.010	0.24	0.002	0.005			0.5	<0.50	<0.50	
TR080515-OC	8/5/2015	11:40	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	21.63	8.24	157	9.22	2.670	1.07		1.03	0.190			<0.010	<0.010	0.07	0.002	0.003			0.2	<0.50	<0.50	
TR100715-OC	10/7/2015	10:57	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	16.68	8.33	159	10.03	2.136	0.85		1.11				<0.010	<0.010	0.10	0.001	<0.002			0.4	<0.50	<0.50	
TR111815-OC	11/18/2015	11:39	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	10.39	6.95	186	11.58	1.700	<0.1		1.23				<0.010	<0.010	0.15	<0.001	0.003			0.3	1.0	<0.50	
TR121615-OC	12/16/2015	12:04	TR00000	Trinity River near mouth (Baseline)	Yurok	0.5	P	6.86	6.90	155	12.50	1.900	<0.1		1.61				<0.010	0.091	0.17	0.007	0.016			3.6	8.2	1.0	

All Non-detect values were replaced with "<" and the MDL value.
PacifiCorp and USBR values below the reporting limit (RL) but above the method detection limit (MDL) are j-flagged and italicized.
Sample Types include: P- Production sample (USBR, Karuk, Yurok)

Appendix C. Selected Results of 2015 Baseline Phytoplankton Analysis

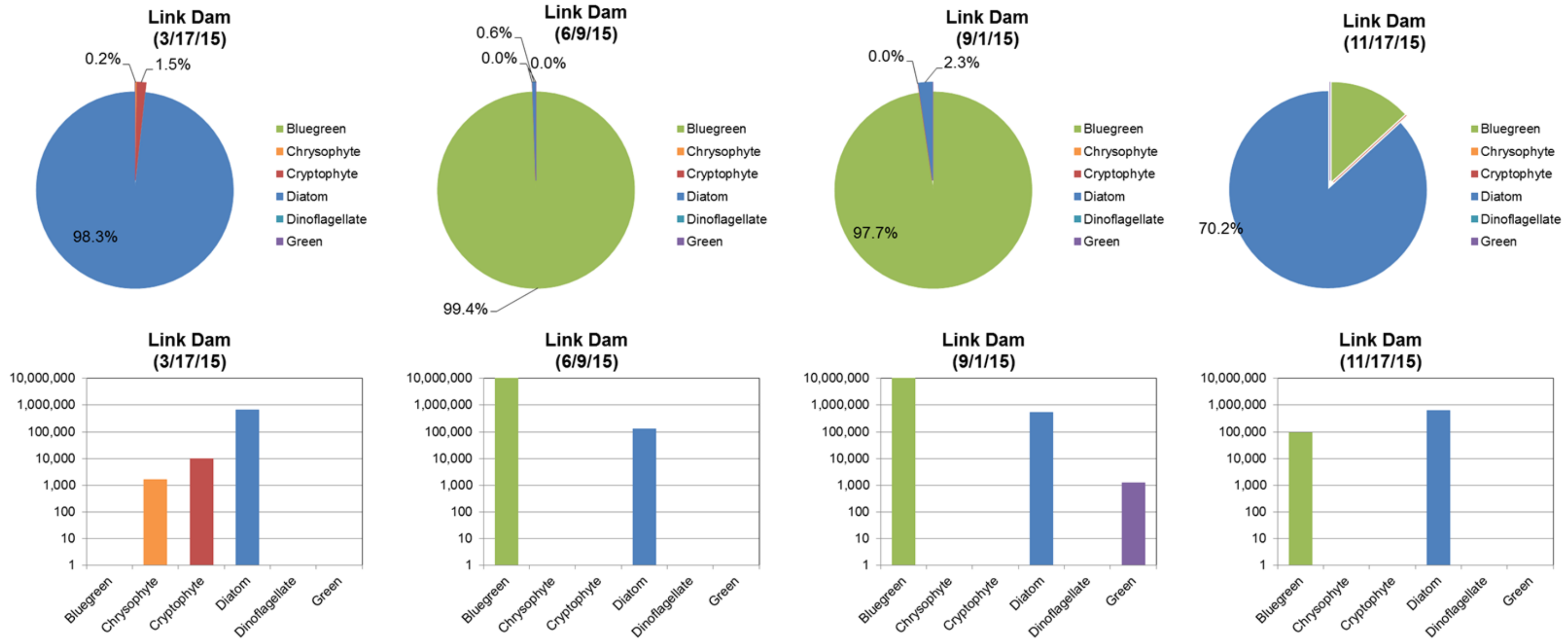

Figure C-1. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Link Dam (RM 254.44; Baseline) for samples collected as part of Baseline sampling on 3/17/15, 6/9/15, 9/1/15, and 11/17/15. Note: y-axis in logarithmic scale.

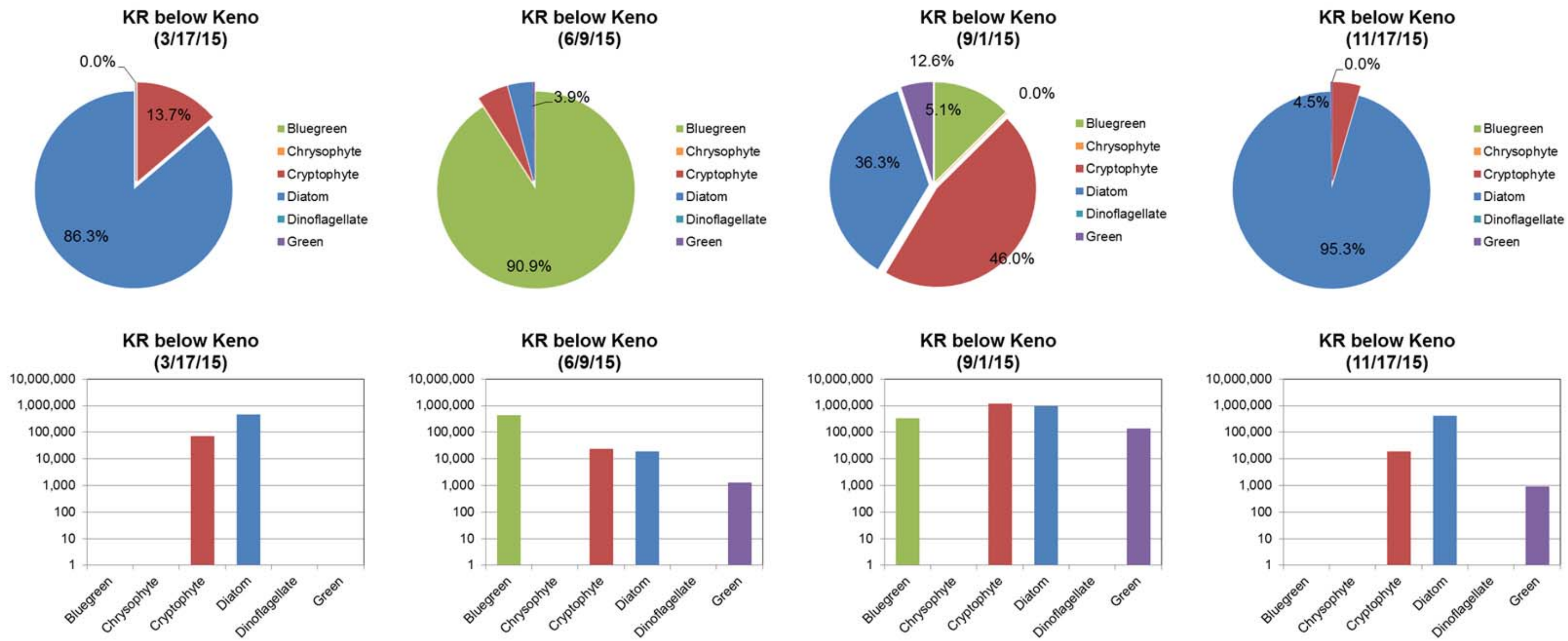

Figure C-2. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Keno Dam near a USGS gage (RM 233.4; Baseline) for samples collected as part of Baseline sampling on 3/17/15, 6/9/15, 9/1/15, and 11/17/15. Note: y-axis in logarithmic scale.

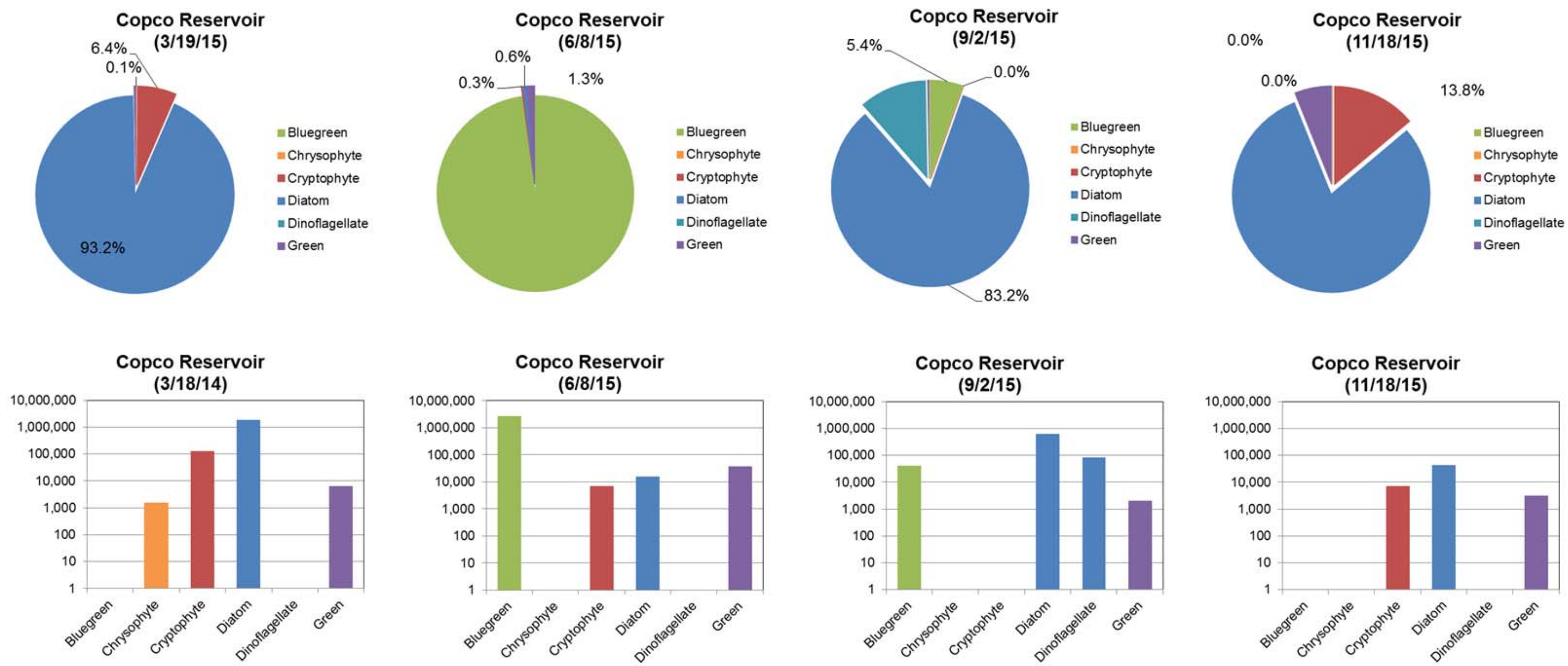

Figure C-3. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Copco Reservoir (RM 198.74; Baseline) for samples collected on 3/19/15, 6/8/15, 9/2/15, and 11/18/15. Note: y-axis in logarithmic scale.

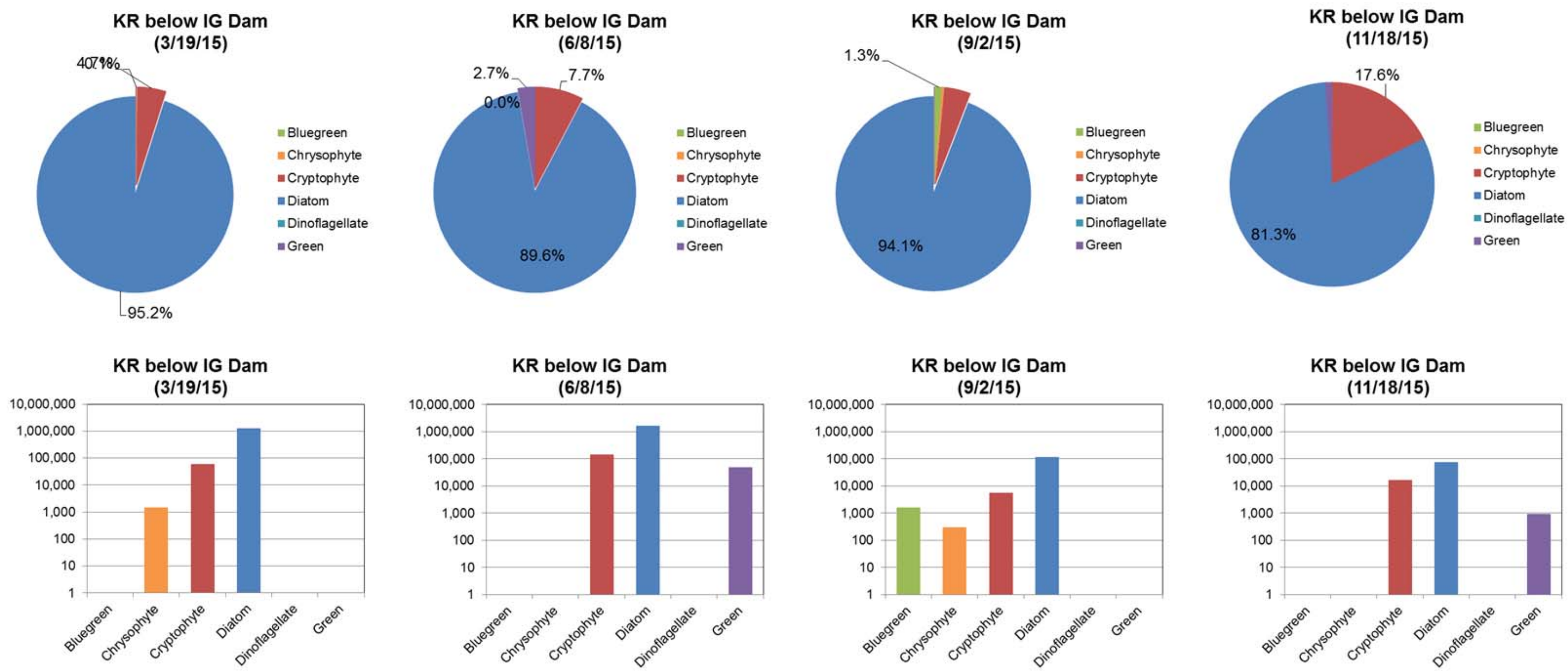

Figure C-4. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Iron Gate Dam (RM 189.73; Baseline) for samples collected on 3/19/15, 6/8/15, 9/2/15, and 11/18/15. Note: y-axis in logarithmic scale.

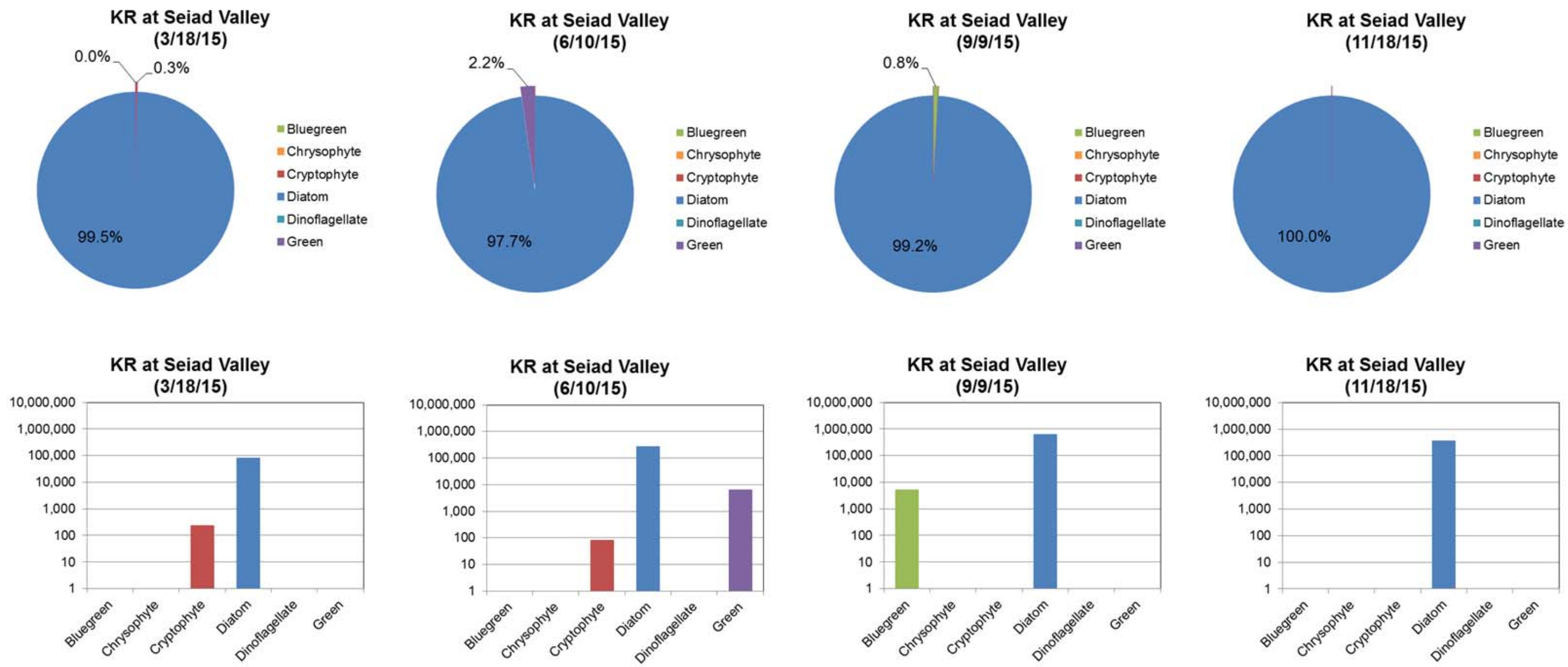

Figure C-5. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River below Seiad (RM 128.5; Baseline) for samples collected on 3/18/15, 6/10/15, 9/9/15, and 11/18/15. Note: y-axis in logarithmic scale.

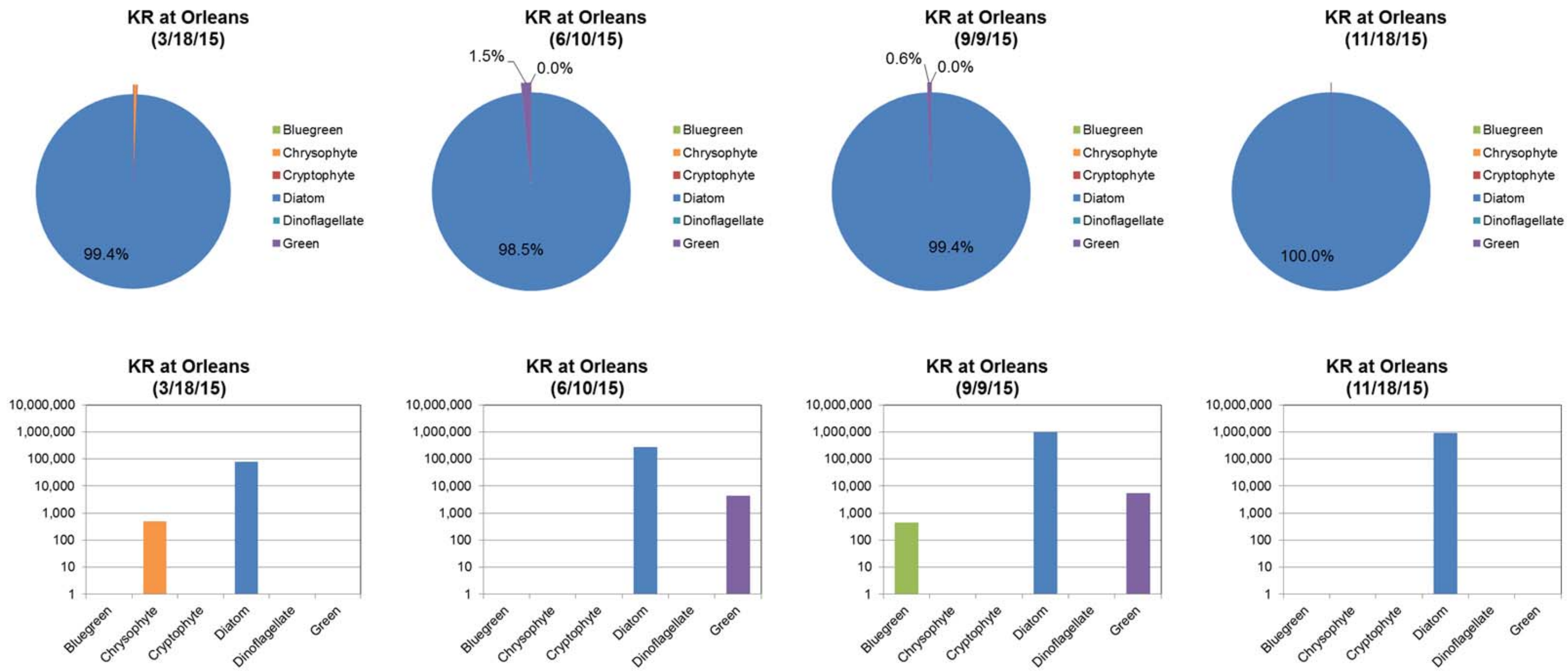

Figure C-6. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River at Orleans (USGS) (RM 59.1; Baseline) for samples collected on 3/18/15, 6/10/15, 9/9/15, and 11/18/15. Note: y-axis in logarithmic scale.

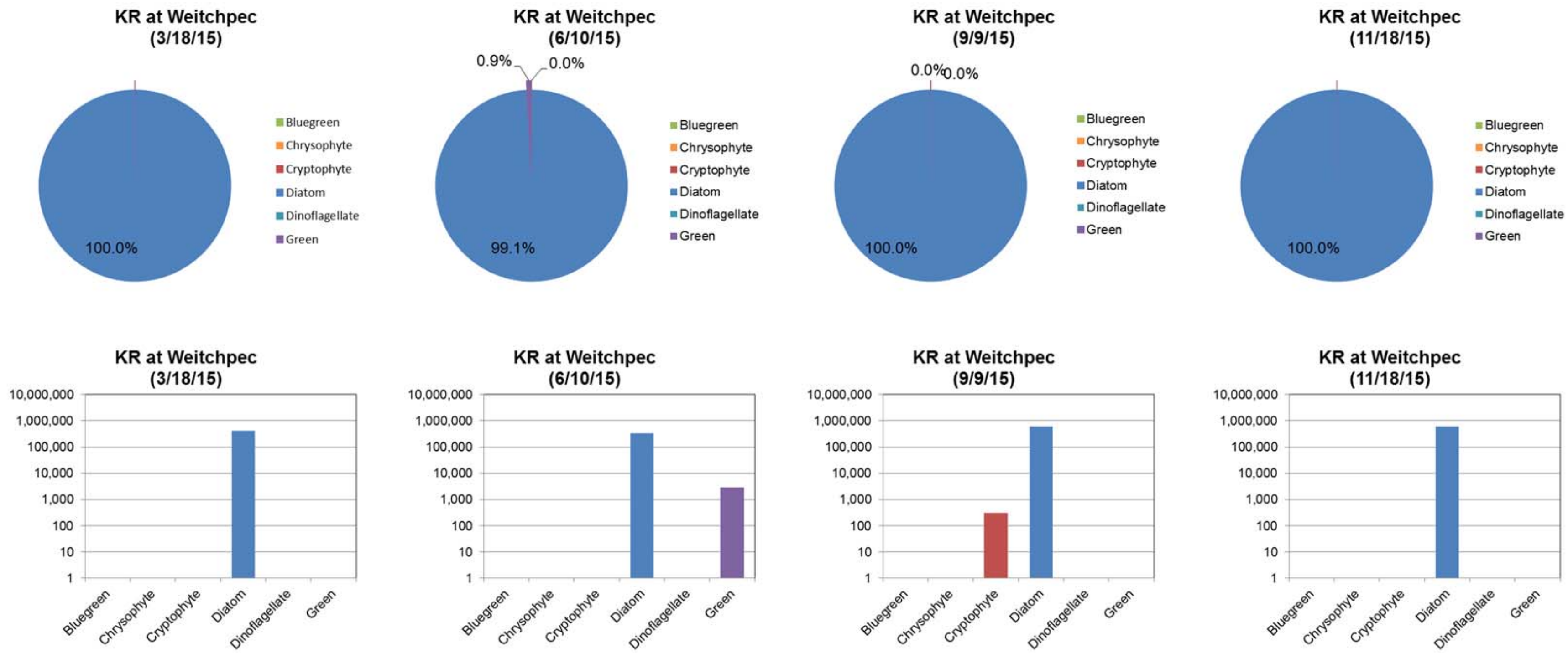

Figure C-7. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River at Weitchpec (RM 43.5; Baseline) for samples collected on 3/18/15, 6/10/15, 9/9/15, and 11/18/15. Note: y-axis in logarithmic scale.

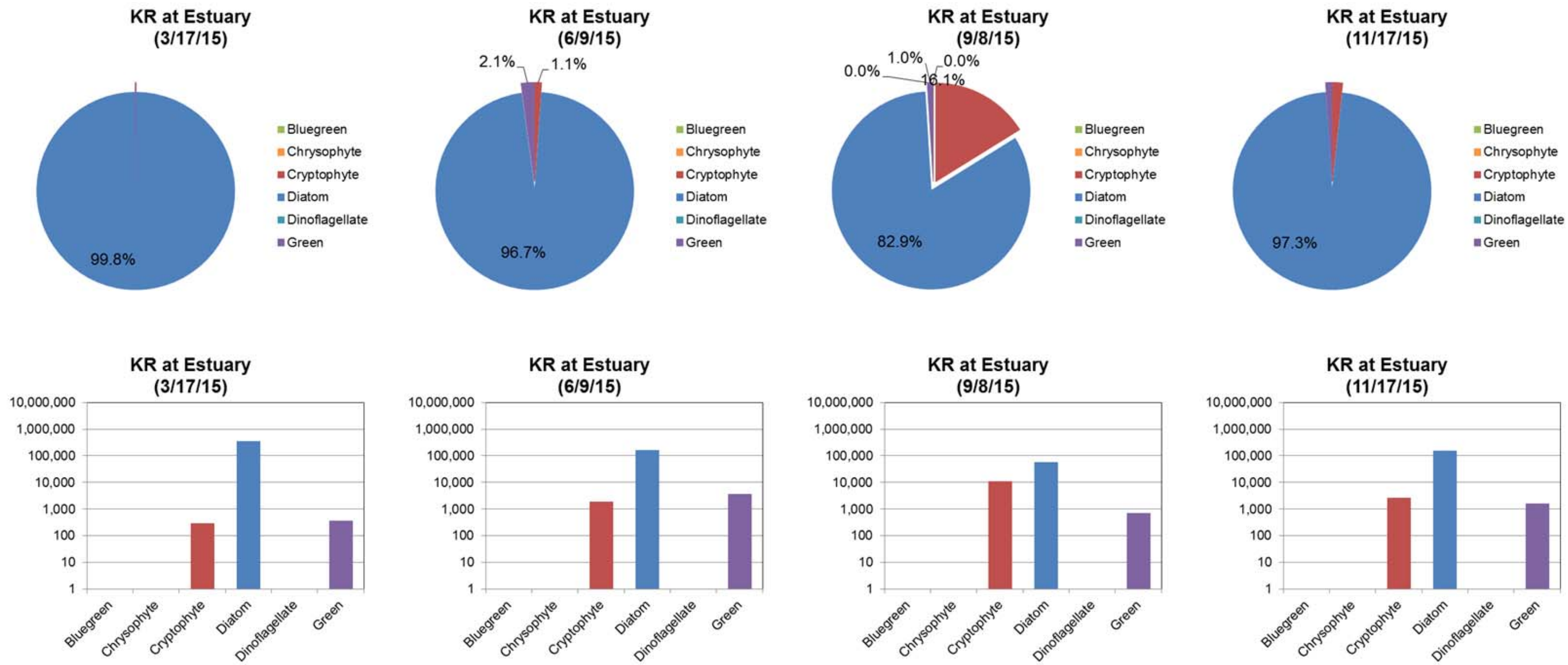

Figure C-8. Phytoplankton species percent biovolume (top) and biovolume by taxa (bottom) at Klamath River Estuary (RM 0.5; Baseline) for samples collected on 3/17/15, 6/9/15, 9/8/15, and 11/17/15. Note: y-axis in logarithmic scale.

Appendix D. 2015 Public Health Data

Table D-1. 2015 Public Health Dataset. NS indicates an analysis for a sample that was not conducted or a sample that was not collected. Sample IDs for Karuk and Yurok algae species data were assigned based on date and location and matched with microcystin sample IDs as no unique sample IDs were provided to the algae speciation laboratory for analysis. Microcystin test results of non-detect or values less than the reporting limit of 0.18 µg/l have been replaced with <0.18 µg/l..

Sample ID	Date	Time	Site ID	Site Name	Depth	Agency	Microcystin, µg/l	Anabaena flos-aquae, cells/ml	Aphanizomenon flos-aquae, cells/ml	Microcystis aeruginosa, cells/ml	Other Potentially Toxic algae, cells, ml
KR15800	5/18/2015	16:00	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	<0.18	0	0	0	0
KR15804	6/8/2015	9:00	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	0.20	104	139	0	0
KR15809	6/22/2015	10:30	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	NS	0	0	0	0
KR15814	7/8/2015	14:40	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	12,000.00	97,338	0	10,950,540	0
KR15819	7/21/2015	11:25	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	830.00	0	0	1,503,333	716
KR15824	8/5/2015	15:00	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	2.10	0	0	29,896	0
KR15830	8/17/2015	10:20	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	370.00	0	11,275	1,684,485	6282
KR15836	9/2/2015	11:35	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	4.30	0	2,654,393	5,002,510	0
KR15843	9/22/2015	15:30	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	4.00	0	44,496	0	0
KR15848	10/6/2015	10:25	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	3.20	0	74,341	95,156	0
KR15853	10/20/2015	17:00	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	94.00	33,657	11,129,154	123,408	0
KR15858	11/3/2015	14:00	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	0.30	0	9,304	0	0
KR15862a	11/18/2015	17:15	CRMC	Copco Reservoir at Mallard Cove (Public Health)	0.1	PacifiCorp	0.19	273	0	0	0
KR15801	5/18/2015	17:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	<0.18	0	0	0	0
KR15805	6/8/2015	10:20	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	<0.18	967	0	0	0
KR15810	6/22/2015	12:05	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	1,000.00	218,262	0	2,373,318	0
KR15815	7/8/2015	12:30	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	3,300.00	33,621	0	4,228,125	0
KR15820	7/21/2015	13:10	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	16,000.00	0	0	8,850,424	368016
KR15825	8/5/2015	11:55	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	14.00	0	20,346	203,459	2714138
KR15831	8/17/2015	12:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	3.50	0	5,880	42,316	0
KR15837	9/2/2015	13:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	210.00	0	1,413,885	4,466,028	0
KR15844	9/22/2015	15:00	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	57.00	7,982	1,760,097	3,735,717	0
KR15849	10/7/2015	10:40	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	200.00	0	0	112,750,000	0
KR15854	10/20/2015	16:45	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	0.31	0	0	116,638	0
KR15859	11/3/2015	13:40	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	NS	0	0	7,177	0
KR15863	11/18/2015	14:50	CRCC	Copco Reservoir at Copco Cove (Public Health)	0.1	PacifiCorp	0.18	138	5,330	0	0
KR15802	5/18/2015	17:40	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	<0.18	0	0	0	0
KR15806	6/8/2015	11:00	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	<0.18	841	0	0	0
KR15811	6/22/2015	12:25	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	<0.18	18,401	0	0	0
KR15816	7/8/2015	11:40	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	0.66	121	4,905	5,315	0
KR15821	7/21/2015	13:30	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	11.00	0	4,997	45,100	1298
KR15826	8/5/2015	10:55	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	56.00	50,485	0	519,035	2041039
KR15832	8/17/2015	12:25	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	1.00	0	1,165	11,561	68541
KR15838	9/2/2015	15:40	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	17.00	0	14,802	87,887	0
KR15845	9/22/2015	14:35	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	64.00	0	13,877	270,600	0
KR15850	10/7/2015	9:30	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	6.20	0	1,321	6,166	0
KR15855	10/20/2015	16:15	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	0.69	0	0	19,060	0
KR15860	11/3/2015	13:20	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	0.25	0	0	0	0

Sample ID	Date	Time	Site ID	Site Name	Depth	Agency	Microcystin, µg/l	Anabaena flos-aquae, cells/ml	Aphanizomenon flos-aquae, cells/ml	Microcystis aeruginosa, cells/ml	Other Potentially Toxic algae, cells, ml
KR15864	11/18/2015	13:40	IGCC	Iron Gate Reservoir at Camp Creek (Public Health)	0.1	PacifiCorp	0.46	0	562	0	0
KR15803	5/18/2015	18:05	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	<0.18	0	0	0	0
KR15807	6/8/2015	11:10	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	<0.18	324	0	0	1060
KR15812	6/22/2015	12:40	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	<0.18	678	0	0	0
KR15817	7/8/2015	11:20	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	0.26	0	2,322	841	0
KR15822	7/21/2015	13:40	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	3.60	0	10,616	13,877	0
KR15827	8/5/2015	10:40	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	38.00	3,553	51,164	674,368	18002
KR15833	8/17/2015	12:45	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	3.10	0	3,131	20,686	61444
KR15839	9/2/2015	15:50	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	250.00	0	2,739,825	447,242	2685
KR15846	9/22/2015	14:20	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	770.00	0	0	285,870	0
KR15851	10/7/2015	9:15	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	0.23	0	12,062	0	0
KR15856	10/20/2015	16:00	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	0.36	0	137,716	1,281	0
KR15861	11/3/2015	13:15	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	0.30	0	1,466	0	0
KR15865	11/18/2015	13:30	IGJW	Iron Gate Reservoir at Jay Williams Boat Ramp (Public Health)	0.1	PacifiCorp	0.20	1,670	38,123	0	0
KR15808	6/8/2015	18:30	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	<0.18	163	0	0	0
KR15813	6/22/2015	16:30	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	<0.18	335	18	0	0
KR15818	7/8/2015	10:35	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.31	33	249	0	0
KR15823	7/21/2015	14:05	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	5.60	0	0	12,916	0
KR15828	8/5/2015	15:30	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	1.00	0	224	13,423	0
KR15829	8/11/2015	13:50	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	1.80	0	0	3,819	0
KR15834	8/17/2015	14:00	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.64	0	559	6,060	0
KR15835	8/25/2015	14:35	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.42	0	583	583	0
KR15840	9/2/2015	16:10	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.25	0	0	4,249	0
KR15841	9/7/2015	13:00	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.74	0	805	826	55
KR15842	9/15/2015	16:40	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.28	0	0	0	0
KR15847	9/22/2015	14:10	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.30	0	0	0	0
KR15852	10/7/2015	9:00	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.21	0	0	254	0
KR15857	10/20/2015	9:15	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.29	0	232	0	0
KR15862	11/3/2015	13:00	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.27	0	734	0	0
KR15866	11/18/2015	10:00	KRBI	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	0.1	PacifiCorp	0.19	0	68	0	0
IB070115-SG	7/1/2015	10:43	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	<0.18	0	0	0	0
IB070815-SG	7/8/2015	13:14	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.22	0	0	0	0
IB071515-SG	7/15/2015	11:35	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.86	0	0	663	0
IB072915-SG	7/29/2015	10:55	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	3.80	0	0	34,060	0
IB080515-SG	8/5/2015	12:29	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	4.20	0	64	14,578	1048
IB081215-SG	8/12/2015	11:34	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.58	0	0	5,865	0
IB081915-SG	8/19/2015	12:54	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.35	0	0	1,326	0
IB082615-SG	8/26/2015	11:02	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.20	0	0	80	0
IB090215-SG	9/2/2015	11:22	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.37	0	0	0	0
IB090915-SG	9/9/2015	12:48	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.48	0	0	524	0
IB091615-SG	9/16/2015	11:44	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.36	0	0	268	0
IB093015-SG	9/30/2015	11:13	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.34	0	0	402	34
IB100715-SG	10/7/2015	13:29	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.20	0	213	0	0
IB101415-SG	10/14/2015	11:03	KRIB	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	0.1	Karuk	0.18	0	0	0	0
BB070115-SG	7/1/2015	9:55	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	<0.18	0	0	0	0

Sample ID	Date	Time	Site ID	Site Name	Depth	Agency	Microcystin, µg/l	Anabaena flos-aquae, cells/ml	Aphanizomenon flos-aquae, cells/ml	Microcystis aeruginosa, cells/ml	Other Potentially Toxic algae, cells, ml
BB070815-SG	7/8/2015	11:35	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.18	0	0	0	0
BB071515-SG	7/15/2015	10:50	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.30	0	0	0	0
BB072915-SG	7/29/2015	10:07	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	2.10	0	0	32,879	0
BB080515-SG	8/5/2015	11:28	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	2.90	0	0	18,792	1990
BB081215-SG	8/12/2015	10:51	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.39	0	0	5,437	0
BB081915-SG	8/19/2015	11:04	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.34	0	0	760	0
BB082615-SG	8/26/2015	10:17	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.18	0	0	0	0
BB090215-SG	9/2/2015	10:28	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.27	0	24	60	0
BB090915-SG	9/9/2015	11:24	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	<0.18	0	0	85	0
BB091615-SG	9/16/2015	10:06	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.30	0	0	0	0
BB093015-SG	9/30/2015	10:34	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	0.26	0	0	0	32
BB100715-SG	10/7/2015	11:57	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	<0.18	0	0	0	0
BB101415-SG	10/14/2015	10:26	KRBB	Klamath River at Brown Bear River Access (RM 150.00; Public Health)	0.1	Karuk	<0.18	0	0	0	0
SV070115-SG	7/1/2015	9:26	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	<0.18	0	0	0	0
SV070815-SG	7/8/2015	10:18	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	<0.18	0	0	0	0
SV071515-SG	7/15/2015	10:15	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.19	0	0	0	0
SV072915-SG	7/29/2015	9:33	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	1.50	0	0	35,784	0
SV080515-SG	8/5/2015	10:18	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	3.80	0	0	21,492	4610
SV081215-SG	8/12/2015	10:19	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.48	0	0	7,517	0
SV081915-SG	8/19/2015	10:03	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.45	0	0	1,194	0
SV082615-SG	8/26/2015	9:45	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.18	0	0	109	0
SV090215-SG	9/2/2015	9:37	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.27	0	0	53	0
SV090915-SG	9/9/2015	10:16	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	<0.18	0	0	148	59
SV091615-SG	9/16/2015	9:35	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.23	0	0	0	0
SV093015-SG	9/30/2015	10:00	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.22	0	0	0	0
SV100715-SG	10/7/2015	10:50	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	0.21	0	0	0	0
SV101415-SG	10/14/2015	9:49	KRSV	Klamath River below Seiad (RM 128.5; Public Health)	0.1	Karuk	<0.18	0	0	0	0
HC070115-SG	7/1/2015	8:40	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	0	30
HC070815-SG	7/8/2015	9:26	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	0	0
HC071515-SG	7/15/2015	9:05	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	0	0
HC072915-SG	7/29/2015	8:56	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	1.40	0	0	28,831	0
HC080515-SG	8/5/2015	9:19	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	4.40	0	0	23,147	8512
HC081215-SG	8/12/2015	9:37	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	0.42	0	0	6,298	0
HC081915-SG	8/19/2015	9:17	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	0.30	0	0	1,815	116
HC082615-SG	8/26/2015	9:01	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	172	0
HC090215-SG	9/2/2015	9:01	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	0.18	0	0	0	0
HC090915-SG	9/9/2015	9:19	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	86	0
HC091615-SG	9/16/2015	8:56	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	0.24	0	0	0	0
HC093015-SG	9/30/2015	9:04	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	0.22	0	0	0	0
HC100715-SG	10/7/2015	9:42	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	0	0
HC101415-SG	10/14/2015	8:53	KRHC	Klamath River below Happy Camp (RM 101.3; Public Health)	0.1	Karuk	<0.18	0	0	0	0
OR070115-SG	7/1/2015	7:42	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	0	0
OR070815-SG	7/8/2015	7:58	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	0	150
OR071515-SG	7/15/2015	8:04	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	0	0
OR072915-SG	7/29/2015	7:53	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	0.76	0	0	13,938	0

Sample ID	Date	Time	Site ID	Site Name	Depth	Agency	Microcystin, µg/l	Anabaena flos-aquae, cells/ml	Aphanizomenon flos-aquae, cells/ml	Microcystis aeruginosa, cells/ml	Other Potentially Toxic algae, cells, ml
OR080515-SG	8/5/2015	7:54	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	1.70	0	0	20,024	6061
OR081215-SG	8/12/2015	8:22	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	0.65	0	0	8,280	0
OR081915-SG	8/19/2015	7:59	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	0.34	0	0	2,039	0
OR082615-SG	8/26/2015	8:09	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	342	0
OR090215-SG	9/2/2015	8:00	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	109	0
OR090915-SG	9/9/2015	7:57	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	54	0
OR093015-SG	9/30/2015	7:58	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	0.18	0	0	0	0
OR100715-SG	10/7/2015	8:05	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	0	0
OR101415-SG	10/14/2015	7:53	KROR	Klamath River at Orleans (USGS) (RM 59.1; Public Health)	0.1	Karuk	<0.18	0	0	0	0
WE050615-OC	5/6/2015	11:05	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	<0.18	0	0	0	0
WE061015-OC	6/10/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	<0.18	0	0	0	0
WE070115-SG	7/1/2015	10:56	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE070815-SG	7/8/2015	11:10	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	233
WE070815-OC	7/8/2015	11:12	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	<0.18	0	0	0	0
WE071515-SG	7/15/2015	11:29	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE072215-SG	7/22/2015	10:41	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE072915-SG	7/29/2015	10:57	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	3.60	0	0	16,871	0
WE080515-SG	8/5/2015	11:14	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	2.10	0	0	0	0
WE080515-OC	8/3/2015	11:17	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	0.96	0	0	12,237	2345
WE081215-SG	8/12/2015	9:45	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	0.47	0	0	7,858	0
WE081915-SG	8/19/2015	11:07	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	0.27	0	0	2,523	0
WE082615-SG	8/26/2015	11:02	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	124	829	0
WE090215-SG	9/2/2015	12:24	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	81	0
WE090915-SG	9/9/2015	11:12	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE090915-OC	9/9/2015	11:03	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	<0.18	0	0	0	0
WE091615-SG	9/16/2015	10:03	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	0.34	0	0	0	0
WE092315-SG	9/23/2015	11:39	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	0.26	0	0	0	0
WE093015-SG	9/30/2015	10:43	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE100715-SG	10/7/2015	10:36	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	0
WE100715-OC	10/7/2015	10:26	KR04350	Klamath River at Weitchpec (RM 43.5; Baseline)	0.1	Yurok	<0.18	0	0	0	0
WE101415-SG	10/14/2015	11:07	KRWE	Klamath River at Weitchpec (RM 43.5; Public Health)	0.1	Yurok	<0.18	0	0	0	63
TG050515-OC	5/5/2015	12:15	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	<0.18	0	0	0	0
TG060915-OC	6/9/2015	12:44	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	<0.18	0	0	0	0
TG063015-SG	6/30/2015	11:52	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG070715-SG	7/7/2015	12:11	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG070715-OC	7/7/2015	12:21	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	<0.18	0	0	0	0
TG070715-SG	7/7/2015	12:11	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG071415-SG	7/14/2015	12:10	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG072115-SG	7/21/2015	12:18	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG072815-SG	7/28/2015	13:28	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.35	0	0	1,049	0
TG080315-SG	8/3/2015	14:11	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.31	0	0	593	0
TG080315-OC	8/3/2015	14:11	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	0.28	0	0	1,990	0
TG081115-SG	8/11/2015	13:56	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.50	0	0	1,503	167
TG081815-SG	8/18/2015	13:04	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.23	0	0	2,043	0
TG082515-SG	8/25/2015	13:17	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.28	0	0	0	0

Sample ID	Date	Time	Site ID	Site Name	Depth	Agency	Microcystin, µg/l	Anabaena flos-aquae, cells/ml	Aphanizomenon flos-aquae, cells/ml	Microcystis aeruginosa, cells/ml	Other Potentially Toxic algae, cells, ml
TG090115-SG	9/1/2015	13:50	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	0.20	0	0	0	68
TG090815-SG	9/8/2015	13:25	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG090815-OC	9/8/2015	13:10	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	<0.18	0	0	0	0
TG091515-SG	9/15/2015	11:57	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG092215-SG	9/22/2015	13:14	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG092915-SG	9/29/2015	13:04	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG100615-SG	10/6/2015	13:38	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
TG100615-OC	10/6/2015	13:33	KR00600	Klamath River near Klamath (RM 6.0; Baseline)	0.1	Yurok	<0.18	0	0	0	0
TG101315-SG	10/13/2015	14:30	KRTG	Klamath River near Klamath (RM 6.0; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS050515-OC	5/5/2015	12:58	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS051915-OC	5/19/2015	13:26	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS062315-OC	6/23/2015	13:02	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS070715-OC	7/7/2015	13:10	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	579
SS072115-OC	7/21/2015	13:30	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS080315-OC	8/3/2015	14:58	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS081815-OC	8/18/2015	13:49	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS090815-OC	9/8/2015	13:55	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS092215-OC	9/22/2015	12:33	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	0
SS100615-OC	10/6/2015	13:55	KRSS	Klamath River at South Slough (RM 0.1; Public Health)	0.1	Yurok	<0.18	0	0	0	328

Table D-2. Mass spectroscopy data for the samples collected by the Karuk Tribe and the Yurok Tribe. Note: Results are presented in micrograms per liter (µg/l). NR = Not recorded, the MDL of <0.05 is used to indicate a non-detection result.

Sample ID	Lab	Date	Time	Site Name	Sampling Organization	Microcystin -RR	MC-Desmethyl –RR	Microcystin -LR	MC-Desmethyl -LR	Microcystin -YR	Microcystin -LA	Microcystin-LW (screening only)	Microcystin -LF	Microcystin -LY	Domoic acid	Okadaic acid	Nodularin
IG062415-OC	DFW	6/24/2015	15:09	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SD072215-OC	DFW	7/22/2015	13:30	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	<0.05	<0.05	0.489	<0.05	<0.05	6.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IG072215-OC	DFW	7/22/2015	13:24	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	<0.05	<0.05	<0.05	<0.05	<0.05	4.81	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IG102115-OC	DFW	10/21/2015	12:12	Klamath River below Iron Gate Dam (RM 189.73; Public Health)	Karuk	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IB092315-SG	DFW	9/23/2015	13:58	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	Karuk	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG051915-OC	DFW	5/19/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG062315-OC	DFW	6/23/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG072115-OC	DFW	7/21/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG081815-OC	DFW	8/18/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG092215-OC	DFW	9/22/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LESDFG102015-OC	DFW	10/20/2015	NR	Klamath River Estuary (RM 0.5; Baseline)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SSDFG062315-OC	DFW	6/23/2015	13:02	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.152	<0.05	<0.05
SSDFG081815-OC	DFW	8/18/2015	13:49	Klamath River at South Slough (RM 0.1; Public Health)	Yurok	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table D-3. Results for anatoxin-a analysis for samples collected by PacifiCorp, the Karuk Tribe, and the Yurok Tribe. Note: ND = non-detect, entries of <10 indicate test results of less than the RL.

Sample ID	Lab	Date	Time	Organization	Site Name	Total Anatoxin-a (μg/L)
KR15814	GreenWater	7/8/2015	14:40	PacifiCorp	Copco Reservoir at Mallard Cove (Public Health)	ND
KR15826	GreenWater	8/5/2015	10:55	PacifiCorp	Iron Gate Reservoir at Camp Creek (Public Health)	ND
IB061015-SG	DFW	6/10/2015	13:00	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	<10
IB062415-SG	DFW	6/24/2015	13:44	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	<10
IB070815-SG	DFW	7/8/2015	13:14	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	>525
IB070815-SG	DFW	7/8/2015	13:14	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	128
IB090915-SG	DFW	9/9/2015	12:48	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	<10
IB100715-SG	DFW	10/7/2015	13:29	Karuk	Klamath River at I-5 Rest Area (RM 179.20; Public Health)	<10
WA070815-OC	DFW	7/8/2015	11:54	Karuk	Klamath River at Walker Bridge (RM 156.26; Baseline)	<10
WA090915-OC	DFW	9/9/2015	11:42	Karuk	Klamath River at Walker Bridge (RM 156.26; Baseline)	<10
WA100715-OC	DFW	10/7/2015	12:16	Karuk	Klamath River at Walker Bridge (RM 156.26; Baseline)	<10
WEDFG070815-OC	DFW	7/8/2015	11:10	Yurok	Klamath River at Weitchpec (RM 43.5; Public Health)	<10
WEDFG080515-OC	DFW	8/5/2015	11:14	Yurok	Klamath River at Weitchpec (RM 43.5; Public Health)	<10
WEDFG090915-OC	DFW	9/9/2015	11:12	Yurok	Klamath River at Weitchpec (RM 43.5; Public Health)	<10
WEDFG100715-OC	DFW	10/7/2015	10:36	Yurok	Klamath River at Weitchpec (RM 43.5; Public Health)	<10
SSDFG062315-OC	DFW	6/23/2015	13:02	Yurok	Klamath River at South Slough (RM 0.1; Public Health)	<10
SSDFG072115-OC	DFW	7/21/2015	13:30	Yurok	Klamath River at South Slough (RM 0.1; Public Health)	<10
SSDFG092215-OC	DFW	9/22/2015	12:33	Yurok	Klamath River at South Slough (RM 0.1; Public Health)	<10

Appendix E. 2015 Inter-laboratory Comparison Summary

Watercourse Engineering Inc.

Technical Memorandum

Date: February 2, 2016
Revised December 9, 2016(site name standardization only)

To: Susan Corum, Karuk Tribe
Micah Gibson, Yurok Tribe
Sue Keydel, U.S. Environmental Protection Agency, Region 9
Rick Carlson, U.S. Bureau of Reclamation
Clayton Creager, North Coast Regional Water Quality Control Board
Chris Stine, Oregon Department of Environmental Quality
Todd McDonnell, E&S Environmental Chemistry
Demian Ebert, PacifiCorp
Tim Hemstreet, PacifiCorp

From: Jennifer Vaughn, Watercourse Engineering, Inc.
Mike Deas, Watercourse Engineering, Inc.

Re: 2015 Interim Measure 15 Inter-laboratory Comparison Memo

1. Introduction

For large monitoring projects involving multiple stakeholders, it is not uncommon to have more than one laboratory involved in the analysis of the environmental samples collected. While external quality assurance and laboratory quality control can offer insight into the accuracy and precision of results reported for environmental samples for a specific laboratory, such procedures do not provide a comparison of the performances of multiple laboratories. Even for an identical sample, laboratories may report different results because of the individual equipment used, the differences in experience of technicians performing the work, and the variety of analytical methods employed.

Therefore, an inter-laboratory comparison procedure has been devised and implemented for the 2015 Klamath Hydroelectric Settlement Agreement (KHSA) Interim Measure 15 (IM 15) baseline monitoring program. The comparison method is not intended to rate the performance of each laboratory or to determine which laboratory is "best" or "right." Such an undertaking would require a more comprehensive study and is beyond the scope of this project. The comparisons are intended to illustrate the range of results produced by two laboratories for the identified constituents over a sampling season and evaluate the similarities and differences of results from the two laboratories.

Four inter-laboratory comparison sampling events occurred during the 2015 IM 15 baseline monitoring program to provide insight into laboratory performance at the principal laboratories employed. The location of the sampling events has changed every 2 years since program inception in 2009, including: Link Dam (RM 254.44; Baseline) Klamath River Estuary (RM 0.5; Baseline), Klamath River at Weitchpec (RM 43.5; Baseline), and Klamath River below Seiad (RM 128.5; Baseline). During the 2015 IM 15 baseline monitoring season, the inter-laboratory comparison sampling occurred at Klamath River below Iron Gate Dam (RM 189.73; Baseline).

In 2015, six constituents were analyzed at two laboratories to compare laboratory performance. These constituents included dissolved organic carbon (DOC), total nitrogen (TN), ortho-phosphate (OPO4), total phosphorus (TP), total suspended solids (TSS), and volatile suspended solids (VSS). Samples were collected on May 18, July 8, September 2 and October 20, 2015. Samples were split into two separate bottles using a churn splitter and sent to both CH2M Applied Sciences Laboratory and IEH Analytical Laboratories (formerly Aquatic Research, Inc.).

This memorandum presents background information on the inter-laboratory comparison study; overview of each laboratory's methods, detection limits and reporting limits; inter-laboratory comparison methods; summary of sampling issues, comparison results, and plots for each constituent.

2. Background

The IM 15 inter-laboratory comparison, which began in 2009, is now in its seventh year. To explore different water quality conditions as well as share the responsibilities in collecting the comparison samples, the IM 15 monitoring group decided to move sampling locations every 2 years among the four sampling entities. Grab sampling locations for the comparison in 2009 and 2010 was Link Dam (RM 254.44; Baseline), where samples were collected by the United States Bureau of Reclamation. In 2011, three samples were collected at the Klamath River Estuary (RM 0.5; Baseline)by the Yurok Tribe. Several constituents were below detection levels at this location. Therefore, the KHSA stakeholders decided to move the 2012 sampling site further upstream. In 2012, three samples were collected at the Klamath River at Weitchpec (RM 43.5; Baseline) by the Yurok Tribe.

In 2013, three samples were collected at the Klamath River below Seiad (RM 128.5; Baseline) by the Karuk Tribe. In 2014, four samples were collected at the Klamath River below Seiad (RM 128.5; Baseline)by the Karuk Tribe. In 2015, PacifiCorp collected four samples at Klamath River below Iron Gate Dam (RM 189.73; Baseline). As of 2015, a 7 year dataset has been created, through the combined efforts of the monitoring stakeholders, that has allowed a comparison of different laboratories.

In any dataset, there is the possibility that some of the constituents have results which are censored data. Censored data refer to laboratory results of less than (<), non-detect (ND), and (j) flag values. Results given a less than or ND result are those that are below the method detection limit (MDL). The MDL is explicitly defined in Standard Methods

(APHA 2005) as “The constituent concentration that, when processed through the complete method, produces a signal with a 99 percent probability that it is different than the blank.” The method reporting limit (RL) is defined as the lowest constituent concentration in a sample that can be quantitatively determined with statistical rigor. However, not all laboratories calculate an RL; some laboratories report values down to the MDL. Results greater than or equal to the laboratory MDL, but below the RL are referred to as (j) flag data.

When censored data is reported by two laboratories for the same constituent in a specific sample, the pair of values is excluded from the comparisons. More information on this topic is discussed in the comparison methods section below.

3. Overview of Labs: Methods, Detection and Reporting Limits

While different laboratories may use the same method, the differences in equipment and technician experience between the laboratories often produces different MDLs and RLs for the same method. Therefore, the MDL and RL for each laboratory for each method used must be known before any inter-laboratory comparison can be performed. The two laboratories used only EPA methods or Standard Methods in 2015 (Table E-1). Three of the analysis methods were used at both laboratories, but in each case the MDL was different. The RL values could not be compared because IEH Analyitical Laboratories did not calculate and utlize an independently defined RL, but rather set the RL equal to the MDL. By setting the RL equal to the MDL, the RL values used by IEH were 2 – 25 times smaller than the RL values used by CH2M.

Table E-1. Laboratory methods, method detection limits (MDL), and reporting limits (RL) for CH2M Applied Sciences Laboratory and IEH Analytical Laboratories (2015). N/A = not applicable

		CH2M Applied Sciences Laboratory			IEH Analytical Laboratories		
Constituent	**unit**	**Method**	**MDL**	**RL**	**Method**	**MDL**	**RL**
DOC	mg/l	SM5310B	0.2	0.5	SM205310B	0.25	0.25
TN	mg/l	SM4500-N C	0.048	0.2	SM204500NC	0.05	0.05
OPO4	mg/l	E365.1	0.0014	0.01	SM18 4500PF	0.001	0.001
TP	mg/l	E365.4	0.017	0.05	SM18 4500PF	0.002	0.002
TSS	mg/l	SM2540D	0.6	5	SM20 2540D	0.5	0.5
VSS	mg/l	E160.4	N/A	5	SM20 2540E	0.5	0.5

4. Comparison Method

To compare the results from each laboratory, relative percent difference (RPD) or absolute difference (AD) were calculated for each paired sample result from CH2M and IEH. Censored and non-applicable data was not included in this process. CH2M and IEH reported different significant figures and the data presented herein are directly from respective laboratory reports. The RPD and AD, used for assessing precision from regular and duplicate sample results, are calculated as:

$$RPD\ (percent) = |(R - D)|/((R + D)/2) * 100 \quad (1)$$

$$AD\ (concentration) = |R - D| \quad (2)$$

Where: R = Regular sample result
D = Duplicate sample result

These RPD and AD formulae were adapted for the laboratory comparison as follows:

$$RPD\ (percent) = |(X1 - X2)|/((X1 + X2)/2) * 100 \quad (3)$$

$$AD\ (concentration) = |X1 - X2| \quad (4)$$

Where: X1 = Result sample result from laboratory 1
X2 = Result sample result from laboratory 2

If the average of the two sample results was equal to or greater than five times the selected RL, the RPD was calculated (Figure E-1). If the average of the two sample results was less than five times the RL, the AD was calculated (Figure A-1). During comparison of results for each constituent, if the laboratories used different RLs, the larger RL value was selected as the criteria to determine whether to use the RPD or AD. Use of the larger RL value allowed the comparison to encapsulate the largest possible uncertainty associated with the results.

If the RPD was calculated, a criterion of 20 percent was used to determine if two samples were similar or not (Figure E-1; USBR 2009). If the RPD result was less than or equal to 20 percent, the two samples were deemed to be similar and the comparison was labeled with an "OK" result. If the RPD result was greater than 20 percent, the results were termed dissimilar and the RPD was presented.

If the AD was calculated because the average of the two sample results was less than five times the selected reporting limit, then the RL was used as the criterion to determine if two samples were similar or not (Figure E-1; USBR 2009). If the AD was less than the selected RL for the sample comparison, the comparison was labeled with an "OK" result. If the AD was greater than the selected RL for the sample comparison, the results were termed dissimilar and the AD result was presented, along with a footnote of the laboratory reporting limit used.

When censored data was present in the results of one lab for a specific constituent, that censored data was replaced with the appropriate RL and either the RPD or AD was calculated as appropriate based on the average of the RL and the other sample result. When only censored data was present for a constituent, the sample pair was excluded from the comparison analysis. As a hypothetical example, if duplicate samples were sent to two laboratories to be analyzed for TP, and the results were 0.04(j) milligrams per liter (mg/L) and 0.03(j) mg/L, no comparison would be completed for TP as both values would be replaced with the RL for calculations during the comparison. Comparisons were not performed for paired data that consist of two RL values.

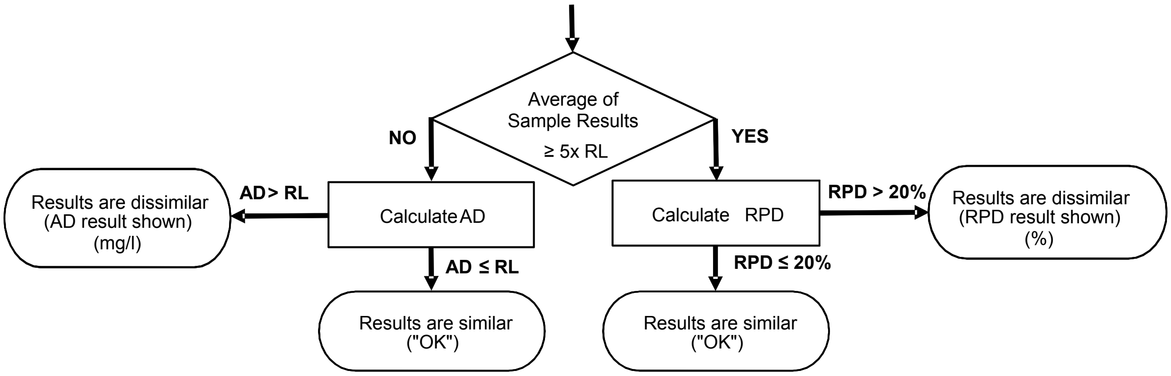

Figure E-1. Flow diagram of the comparison process. RL = reporting limit. RPD = relative percent difference. AD = absolute difference.

5. 2015 Sampling

E&S Environmental Chemistry (E&S) was contracted to carry out the PacifiCorp portion of the IM 15 2015 baseline monitoring program, including the collection of the laboratory comparison samples. E&S collected samples on May 18, July 8, September 2 and October 20, 2015. All samples were received by CH2M and IEH laboratories within 3 days of collection and there were no issues with lost or invalid samples during 2015. However, the May 18 IEH chain-of-custody did not request VSS as a constituent, and therefore VSS has only three comparisons in 2015. Similarly, the July 8 CH2M chain-of-custody did not request TN as a constituent, and therefore TN has only three comparisons in 2015.

6. Comparison of Laboratory Results

The comparison of the laboratory results from the two labs was completed as identified above (Figure E-1Figure E-1) based on data from the two labs indicates that there was little difference between the results (Table E-3Table E-3, Table E-5

Table E-5, Table E-7Table E-7, and Table E-9). From the four 2015 samples collected and analyzed by the two laboratories, there were 18 similar pairs, one dissimilar pair, three censored pairs, and two instances when missing data precluded a comparison (Table E-2).Of the 19 comparisons completed, 18 comparisons were determined to be OK (Table E-4, Table E-6, Table E-8, and
Table E-10) only one sample (TP on September 2) was found to have an AD greater than the RL (Table E-8).

Table E-2. Summary of 2015 comparisons for each constituent.

	Similar Pairs	Dissimilar Pairs	Censored Pairs	Not applicable*
DOC	4	0	0	0
TN	3	0	0	1
OPO4	4	0	0	0
TP	3	1	0	0
TSS	3	0	1	0
VSS	1	0	2	1
Total	**18**	**1**	**3**	**2**

*There is no lab data for sample pair.

Table E-3. Laboratory data used for lab comparison: May 18, 2015.

Constituent	Units	Data Used for Comparison		Average of Data	RL Used in Calculations	Criteria Used
		CH2M	IEH			
Dissolved Organic Carbon (DOC)	mg/l	3.55	3.53	3.54	0.5	RPD
Total Nitrogen (TN)	mg/l	0.52	0.45	0.49	0.2	AD
Orthophosphate (OPO4)	mg/l	0.07	0.07	0.07	0.01	RPD
Total Phosphorus (TP)	mg/l	0.11	0.10	0.11	0.05	AD
Total Suspended Solids (TSS)	mg/l	5.00[a]	0.57	5.00	5	AD
Volatile Suspended Solids (VSS)	mg/l	5.00[b]	N/A	N/A	5	N/A

[a] The CH2M TSS result was 4.20 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.
[b] The CH2M VSS result was 0.40 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.

Table E-4. Results for paired laboratory comparisons: May 18, 2015.

Constituent	CH2M versus IEH
Dissolved Organic Carbon (DOC)	OK
Total Nitrogen (TN)	OK
Orthophosphate (OPO4)	OK
Total Phosphorus (TP)	OK
Total Suspended Solids (TSS)	OK
Volatile Suspended Solids (VSS)	N/A[a]

[a] There was no IEH result for VSS on May 18, 2015, and therefore no comparison was performed.

Table E-5. Laboratory data used for lab comparison: July 8, 2015.

Constituent	Unit s	Data Used for Comparison IEH		Average of Data	RL Used in Calculations	Criteria Used
		CH2M	IEH			
Dissolved Organic Carbon (DOC)	mg/l	3.46	3.44	3.45	0.5	RPD
Total Nitrogen (TN)	mg/l	N/A	0.611	0.61	0.2	AD
Orthophosphate (OPO4)	mg/l	0.076	0.085	0.08	0.01	RPD
Total Phosphorus (TP)	mg/l	0.13	0.115	0.12	0.05	AD
Total Suspended Solids (TSS)	mg/l	5.00[a]	6.2	5.60	5	AD
Volatile Suspended Solids (VSS)	mg/l	5.00[b]	0.83	2.92	5	AD

[a] The CH2M TSS result was 3.00 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.
[b] The CH2M VSS result was 0.00 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.

Table E-6. Results for paired laboratory comparisons: July 8, 2015.

Constituent	CH2M versus IEH
Dissolved Organic Carbon (DOC)	OK
Total Nitrogen (TN)	N/A[a]
Orthophosphate (OPO4)	OK
Total Phosphorus (TP)	OK
Total Suspended Solids (TSS)	OK
Volatile Suspended Solids (VSS)	OK

[a] There was no CH2M result for TN on July 8, 2015, and therefore no comparison was performed.

Table E-7. Laboratory data used for lab comparison: September 2, 2015.

Constituent	Units	Data Used for Comparison IEH		Average of Data	RL Used in Calculations	Criteria Used
		`CH2M	IEH			
Dissolved Organic Carbon (DOC)	mg/l	3.38	3.91	3.65	0.5	RPD
Total Nitrogen (TN)	mg/l	0.62	0.693	0.62	0.2	AD
Orthophosphate (OPO4)	mg/l	0.16	0.183	0.17	0.01	RPD
Total Phosphorus (TP)	mg/l	0.13	0.198	0.16	0.05	AD
Total Suspended Solids (TSS)	mg/l	5.00[a]	0.50[b]	N/A	5	N/A
Volatile Suspended Solids (VSS)	mg/l	5.00[c]	0.50[d]	N/A	5	N/A

[a] The CH2M TSS result was 1.00 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.
[b] The IEH TSS result was <0.50 mg/l, and was replaced with the RL of 0.50 mg/l during calculations.
[c] The CH2M VSS result was 0.80 mg/l, which is less than the RL of 5.00, and the value was replaced with the RL during calculations.
[d] The IEH VSS result was <0.50 mg/l, and was replaced with the RL of 0.50 mg/l during calculations.

Table E-8. Results for paired laboratory comparisons: September 2, 2015.

Constituent	CH2M versus IEH
Dissolved Organic Carbon (DOC)	OK
Total Nitrogen (TN)	OK
Orthophosphate (OPO4)	OK
Total Phosphorus (TP)	(0.068 mg/l)[a]
Total Suspended Solids (TSS)	N/A[b]
Volatile Suspended Solids (VSS)	N/A[c]

[a] The average values of TP in September were not greater or equal to five times the selected RL of 0.05 mg/l. Therefore, the AD was calculated and was found to be greater than the selected RL.
[b] Both CH2M and IEH TSS results were below the RL, and therefore no comparison was performed
[c] Both CH2M and IEH VSS results were below the RL, and therefore no comparison was performed

Table E-9. Laboratory data used for lab comparison: October 20, 2015.

Constituent	Units	Data Used for Comparison		Average of Data	RL Used in Calculations	Criteria Used
		CH2M	IEH			
Dissolved Organic Carbon (DOC)	mg/l	4.18	3.93	4.06	0.5	RPD
Total Nitrogen (TN)	mg/l	1.08	1.25	1.17	0.2	RPD
Orthophosphate (OPO4)	mg/l	0.13	0.135	0.13	0.01	RPD
Total Phosphorus (TP)	mg/l	0.14	0.152	0.15	0.05	AD
Total Suspended Solids (TSS)	mg/l	5.0[a]	1.8	3.40	5	AD
Volatile Suspended Solids (VSS)	mg/l	5.0[b]	0.50[c]	N/A	5	N/A

[a] The CH2M TSS result was 2.2 mg/l, and was replaced with the RL of 5.0 mg/l during calculations.
[b] The CH2M VSS result was -0.2 mg/l, and was replaced with the RL of 5.0 mg/l during the calculations.
[c] The IEH VSS result was <0.50 mg/l, and was replaced with the RL of 0.50 mg/l during calculations.

Table E-10. Results for paired laboratory comparisons: October 20, 2015.

Constituent	CH2M versus IEH
Dissolved Organic Carbon (DOC)	OK
Total Nitrogen (TN)	OK
Orthophosphate (OPO4)	OK
Total Phosphorus (TP)	OK
Total Suspended Solids (TSS)	OK
Volatile Suspended Solids (VSS)	N/A[a]

[a] Both CH2M and IEH VSS results were below the RL, and therefore no comparison was performed.

7. Summary

The 2015 inter-laboratory comparison samples were collected in the Klamath River below Iron Gate Dam (RM 189.73; Baseline). Comparisons were completed for dissolved organic carbon (DOC), total nitrogen (TN), orthophosphate (OPO4), total phosphorus (TP), total suspended solids (TSS), and volatile suspended solids (VSS). Overall, agreement between the two labs was excellent with 18 out of 19 samples (95 percent) having similar results.

Comparison pairs for each constituent were plotted for 2015 samples, as well as for 2009-2014 samples. Censored pairs or non-applicable data were not included. Trend lines and linear regression equations for the entire 2009 – 2015 dataset (excluding censored data and non-applicable data) were included in the graphs, which are presented in Appendix E-A (Figure E-A-1 through Figure E-A-6.Acknowledgements

We would like to thank staff from E&S Environmental Chemistry, Inc. for collecting the data required for us to complete the 2015 inter-laboratory comparison. Also, we would like to thank everyone who provided insight and feedback during the project meetings and comments for this technical memorandum.

8. References

U.S. Bureau of Reclamation (USBR). 2009. *Standard Operating Procedures for Quality Assurance*. Revision 2009-05. Environmental Monitoring Branch, Mid-Pacific Region, Sacramento, CA. May.

American Public Health Association., American Water Works Association., and Water Environment Federation (APHA). 2005. *Standard Methods for the Examination of Water and Wastewater*, 21st Ed. Eds. A.E. Eaton, L.S. Clesceri, E.W. Rice, and A.E. Greenberg. Washington D.C. Section 1010C p1-3.

Appendix E-A. 2009-2015 Constituent Plots

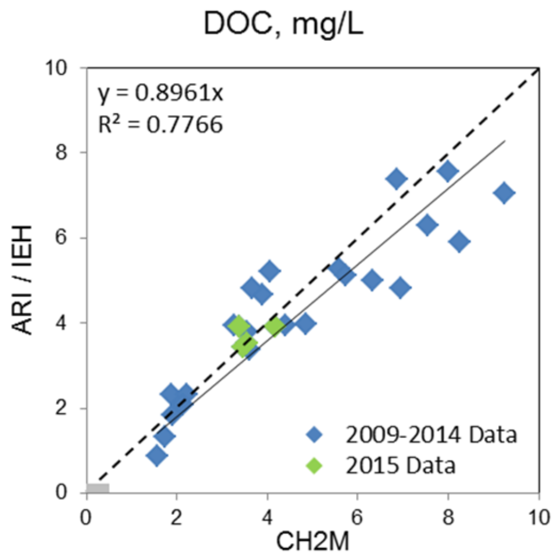

Figure E-A-1. KHSA inter-laboratory comparison plots from 2009-2015 for Dissolved Organic Carbon (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.

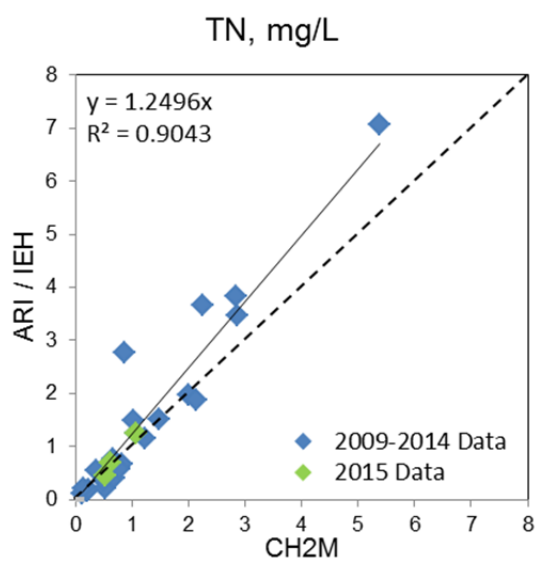

Figure E-A-2. KHSA inter-laboratory comparison plots from 2009-2015 for Total Nitrogen (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.

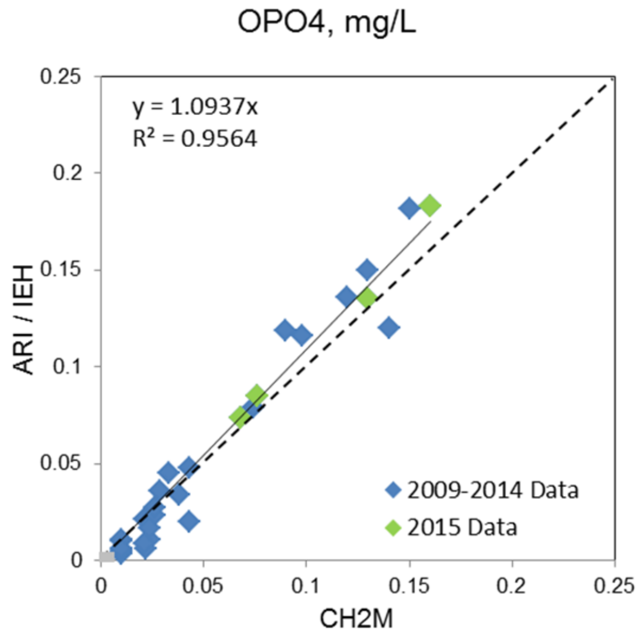

Figure E-A-3. KHSA inter-laboratory comparison plots from 2009-2015 for Orthophosphate (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.

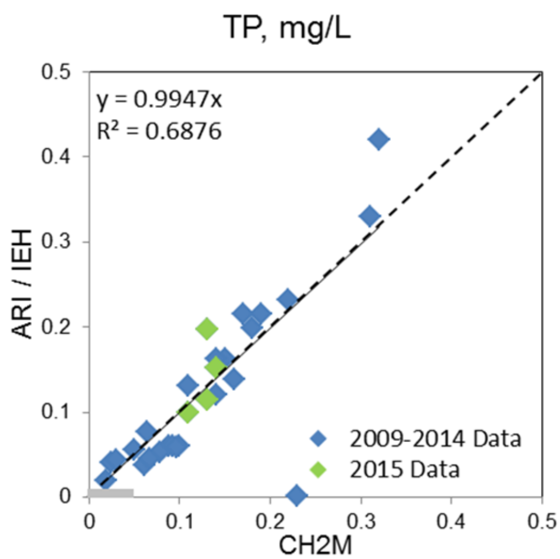

Figure E-A-4. KHSA inter-laboratory comparison plots from 2009-2015 for Total Phosphorus (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.

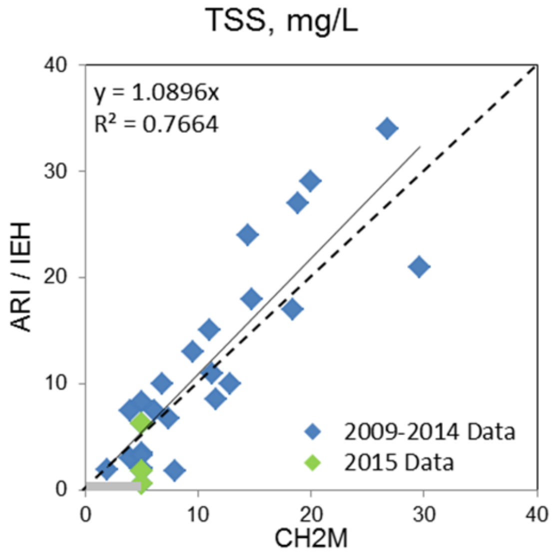

Figure E-A-5. KHSA inter-laboratory comparison plots from 2009-2015 for Total Suspended Solids (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.

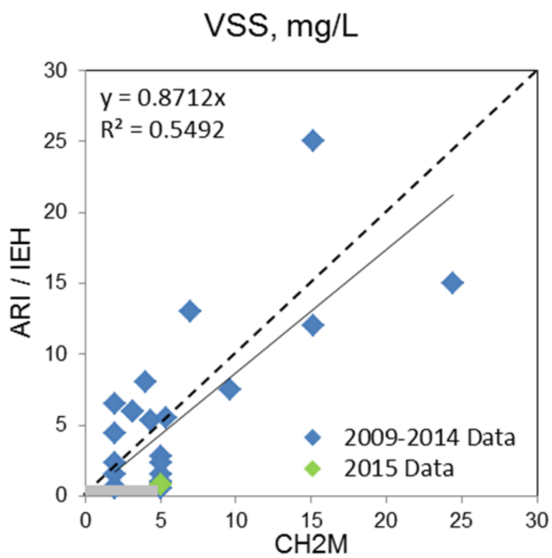

Figure E-A-6. KHSA inter-laboratory comparison plots from 2009-2015 for Volatile Suspended Solids (mg/l). Censored and non-applicable data excluded from graph and linear regression formula. Dashed line represents a one to one ratio. Grey region in lower corner represents the region below the RL for the respective laboratories in 2015.