

Appendix 1. Tables of Data Comparing Metal Loads in Dissolved Form, Colloidal Form, and Whole Water

Table A1-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples

Table A1-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in kilograms per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; Sac., Sacramento; SCPP, Spring Creek Power Plant; R., River; TR, total recoverable analysis. \geq , load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	48	33	10	400	NA	27
	Colloid	7,300	NA	780	$\geq 11,000$	NA	15,000
	Dissolved + Colloid	7,300	NC	790	$\geq 11,000$	NC	15,000
	Whole Water, TR	5,900	1,500	550	7,400	NA	6,500
Sac R.–Keswick	Dissolved	75	120	140	1,700	1,300	100
	Colloid	7,700	NA	4,200	18,000	94,000	22,000
	Dissolved + Colloid	7,800	NC	4,300	20,000	95,000	22,000
	Whole Water, TR	6,200	1,700	3,000	14,000	62,000	9,400
Sac R.–Bend Br.	Dissolved	77	60	130	1,000	880	89
	Colloid	10,000	4,400	14,000	280,000	2,100,000	23,000
	Dissolved + Colloid	10,000	4,400	15,000	280,000	2,100,000	23,000
	Whole Water, TR	8,400	3,300	10,000	190,000	1,300,000	10,000
Sac R.–Colusa	Dissolved	NA	34	24	310	540	51
	Colloid	92,000	18,000	22,000	420,000	4,100,000	50,000
	Dissolved + Colloid	NA	18,000	22,000	420,000	4,100,000	50,000
	Whole Water, TR	74,000	13,000	15,000	280,000	2,600,000	21,000
Sac R.–Verona	Dissolved	120	41	NA	300	NA	44
	Colloid	60,000	79,000	40,000	390,000	NA	76,000
	Dissolved + Colloid	60,000	79,000	NA	390,000	NC	76,000
	Whole Water, TR	48,000	58,000	28,000	260,000	NA	31,000
Sac R.–Freeport	Dissolved	110	41	25	620	¹ 1,500	63
	Colloid	$\geq 58,000$	$\geq 33,000$	15,000	550,000	¹ 3,700,000	63,000
	Dissolved + Colloid	$\geq 58,000$	$\geq 33,000$	15,000	550,000	¹ 3,700,000	63,000
	Whole Water, TR	46,000	24,000	10,000	370,000	¹ 2,300,000	26,000
Flat Cr.	Dissolved	NA	NA	NA	0.83	NA	0.0039
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	8.8	NA	0.017
Spring Cr.–Weir	Dissolved	NA	NA	NA	1,200	NA	97
	Colloid	NA	NA	NA	290	NA	84
	Dissolved + Colloid	NC	NC	NC	1,500	NC	180
	Whole Water, TR	NA	NA	NA	1,400	NA	130
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	4,200	NA
	Colloid	NA	NA	NA	NA	2,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	6,200	NC
	Whole Water, TR	NA	NA	NA	NA	5,500	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	21	NA	16
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	310	NA	2,800
Spring Cr. arm	Dissolved	25	46	130	580	NA	82
	Colloid	130	NA	860	4,600	NA	6,600
	Dissolved + Colloid	160	NC	990	5,100	NC	6,600
	Whole Water, TR	130	190	720	3,600	NA	2,900

Table A1-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	1
	Colloid	NA	NA	NA	NA	NA	16,000
	Dissolved + Colloid	NC	NC	NC	NC	NC	16,000
	Whole Water, TR	NA	NA	NA	NA	NA	6,500
Yolo Bypass	Dissolved	NA	NA	NA	NA	1,100	NA
	Colloid	NA	NA	NA	NA	5,600,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	5,600,000	NC
	Whole Water, TR	NA	NA	NA	NA	3,600,000	NA
Freeport + Yolo Bypass	Dissolved	110	41	25	620	2,600	63
	Colloid	58,000	33,000	15,000	550,000	9,300,000	63,000
	Dissolved + Colloid	58,000	33,000	15,000	551,000	9,300,000	63,000
	Whole Water, TR	46,000	24,000	10,000	370,000	5,900,000	26,000

¹Samples collected at Tower Bridge in January 1997.

Table A1-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in grams per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis. \leq , load is less than or equal to value shown because of concentration less than detection limit; \geq , load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.–Shasta	Dissolved	570	370	60	2,600	NA	\leq 96
	Colloid	190	NA	59	\geq 320	NA	140
	Dissolved + Colloid	760	NC	120	\geq 2,900	NC	\leq 230
	Whole Water, TR	960	650	160	5,400	NA	390
Sac R.–Keswick	Dissolved	580	410	500	4,400	8,800	290
	Colloid	340	NA	220	980	6,300	260
	Dissolved + Colloid	910	NC	720	5,300	15,000	550
	Whole Water, TR	1,000	730	1,200	8,300	21,000	530
Sac R.–Bend Br.	Dissolved	800	340	380	2,100	1,200	130
	Colloid	390	78	380	4,500	23,000	270
	Dissolved + Colloid	1,200	420	760	6,600	24,000	410
	Whole Water, TR	1,200	690	1,200	9,200	25,000	860
Sac R.–Colusa	Dissolved	NA	150	87	420	530	\leq 160
	Colloid	2,300	690	860	7,800	29,000	710
	Dissolved + Colloid	NA	840	950	8,200	30,000	\leq 870
	Whole Water, TR	1,900	780	450	7,800	26,000	710
Sac R.–Verona	Dissolved	\leq 200	250	NA	650	NA	\leq 210
	Colloid	2,400	1,400	910	6,000	NA	870
	Dissolved + Colloid	\leq 2,600	1,600	NC	6,700	NC	\leq 1,100
	Whole Water, TR	2,200	1,500	860	6,100	NA	1,000
Sac R.–Freepoint	Dissolved	420	\leq 190	\leq 160	720	¹ \leq 1,100	\leq 260
	Colloid	\geq 2,900	\geq 4,300	220	5,200	¹ 19,000	770
	Dissolved + Colloid	\geq 3,300	\geq 4,500	\leq 380	5,900	¹ \leq 20,000	\leq 1,000
	Whole Water, TR	2,000	990	600	10,000	¹ 17,000	840
Flat Cr.	Dissolved	NA	NA	NA	3.8	NA	0.18
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	5.0	NA	0.31
Spring Cr.–Weir	Dissolved	NA	NA	NA	1,700	NA	140
	Colloid	NA	NA	NA	4.2	NA	1.3
	Dissolved + Colloid	NC	NC	NC	1,700	NC	150
	Whole Water, TR	NA	NA	NA	1,800	NA	160
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	18,000	NA
	Colloid	NA	NA	NA	NA	16	NA
	Dissolved + Colloid	NC	NC	NC	NC	18,000	NC
	Whole Water, TR	NA	NA	NA	NA	17,000	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	84	NA	\leq 27
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	\leq 93	NA	88
Spring Cr. arm	Dissolved	73	68	310	3,200	NA	110
	Colloid	10	NA	56	540	NA	89
	Dissolved + Colloid	83	NC	370	3,800	NC	200
	Whole Water, TR	\leq 59	130	510	4,800	NA	270

Table A1-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	≤7
	Colloid	NA	NA	NA	NA	NA	86
	Dissolved + Colloid	NC	NC	NC	NC	NC	≤94
	Whole Water, TR	NA	NA	NA	NA	NA	55
Yolo Bypass	Dissolved	NA	NA	NA	NA	1,600	NA
	Colloid	NA	NA	NA	NA	45,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	47,000	NC
	Whole Water, TR	NA	NA	NA	NA	39,000	NA
Freeport + Yolo Bypass	Dissolved	420	240	160	900	≤3,000	260
	Colloid	2,900	4,300	220	5,200	64,000	770
	Dissolved + Colloid	3,300	4,500	380	6,100	≤67,000	1,000
	Whole Water, TR	2,000	990	600	10,000	56,000	840

¹Samples collected at Tower Bridge in January 1997.

Table A1-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in kilograms per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis. ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.–Shasta	Dissolved	30	10	4.3	87	NA	5.6
	Colloid	15	NA	2.7	≥95	NA	18
	Dissolved + Colloid	44	NC	7.0	≥180	NC	24
	Whole Water, TR	55	27	14	320	NA	27
Sac R.–Keswick	Dissolved	29	12	9.2	130	260	14
	Colloid	15	NA	22	180	1,000	31
	Dissolved + Colloid	43	NC	31	310	1,300	45
	Whole Water, TR	56	40	56	670	1,400	48
Sac R.–Bend Br.	Dissolved	32	7.7	11	92	230	14
	Colloid	28	7.8	100	640	3,500	34
	Dissolved + Colloid	61	15	110	730	3,700	49
	Whole Water, TR	63	43	80	870	3,200	55
Sac R.–Colusa	Dissolved	NA	12	8.5	46	170	16
	Colloid	230	76	64	1,200	4,700	71
	Dissolved + Colloid	NA	89	72	1,200	4,800	86
	Whole Water, TR	140	64	39	820	4,300	75
Sac R.–Verona	Dissolved	31	22	NA	120	NA	15
	Colloid	280	180	91	930	NA	99
	Dissolved + Colloid	310	200	NC	1,100	NC	110
	Whole Water, TR	130	140	87	720	NA	110
Sac R.–Freeport	Dissolved	39	15	12	140	¹ 280	16
	Colloid	≥290	≥220	26	740	¹ 4,000	91
	Dissolved + Colloid	≥330	≥230	37	880	¹ 4,300	110
	Whole Water, TR	130	88	68	930	¹ 3,200	91
Flat Cr.	Dissolved	NA	NA	NA	0.081	NA	0.0016
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.30	NA	0.0063
Spring Cr–Weir	Dissolved	NA	NA	NA	210	NA	11
	Colloid	NA	NA	NA	1.4	NA	0.63
	Dissolved + Colloid	NC	NC	NC	210	NC	12
	Whole Water, TR	NA	NA	NA	200	NA	12
Spring Cr–Road	Dissolved	NA	NA	NA	NA	1,100	NA
	Colloid	NA	NA	NA	NA	6.7	NA
	Dissolved + Colloid	NC	NC	NC	NC	1,100	NC
	Whole Water, TR	NA	NA	NA	NA	1,100	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	6.2	NA	2.7
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	11	NA	11
Spring Cr. arm	Dissolved	10	2.9	7.8	91	NA	3.6
	Colloid	0.77	NA	21	430	NA	16
	Dissolved + Colloid	10	NC	28	520	NC	20
	Whole Water, TR	5.6	8.9	40	480	NA	22

Table A1-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	1.6
	Colloid	NA	NA	NA	NA	NA	17
	Dissolved + Colloid	NC	NC	NC	NC	NC	18
	Whole Water, TR	NA	NA	NA	NA	NA	15
Yolo Bypass	Dissolved	NA	NA	NA	NA	360	NA
	Colloid	NA	NA	NA	NA	7,300	NA
	Dissolved + Colloid	NC	NC	NC	NC	7,700	NC
	Whole Water, TR	NA	NA	NA	NA	6,600	NA
Freeport + Yolo Bypass	Dissolved	39	15	12	140	640	16
	Colloid	290	220	26	740	11,000	91
	Dissolved + Colloid	330	240	38	880	12,000	110
	Whole Water, TR	130	88	68	930	9,800	91

¹Samples collected at Tower Bridge in January 1997.

Table A1-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in kilograms per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SSCP, Spring Creek Power Plant; TR, total recoverable analysis. ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	270	93	21	220	NA	41
	Colloid	4,900	NA	490	≥6,300	NA	9,100
	Dissolved + Colloid	5,200	NC	510	≥6,500	NC	9,200
	Whole Water, TR	4,100	930	490	6,400	NA	5,500
Sac R.–Keswick	Dissolved	77	45	27	230	550	70
	Colloid	4,600	NA	3,600	13,000	110,000	16,000
	Dissolved + Colloid	4,700	NC	3,600	14,000	110,000	16,000
	Whole Water, TR	4,200	1,200	3,200	14,000	84,000	9,400
Sac R.–Bend Br.	Dissolved	110	33	55	280	1,100	≤25
	Colloid	7,200	3,300	10,000	200,000	1,800,000	17,000
	Dissolved + Colloid	7,300	3,300	10,000	200,000	1,800,000	≤17,000
	Whole Water, TR	6,600	3,100	12,000	220,000	1,600,000	9,900
Sac R.–Colusa	Dissolved	NA	61	36	180	720	22
	Colloid	76,000	13,000	19,000	590,000	3,200,000	35,000
	Dissolved + Colloid	NA	13,000	19,000	590,000	3,200,000	35,000
	Whole Water, TR	62,000	13,000	12,000	320,000	2,900,000	24,000
Sac R.–Verona	Dissolved	110	60	NA	610	NA	78
	Colloid	47,000	58,000	34,000	480,000	NA	57,000
	Dissolved + Colloid	47,000	58,000	NA	480,000	NC	57,000
	Whole Water, TR	42,000	58,000	27,000	280,000	NA	37,000
Sac R.–Freeport	Dissolved	220	150	32	690	¹ 1,600	75
	Colloid	≥72,000	≥43,000	12,000	450,000	¹ 2,300,000	44,000
	Dissolved + Colloid	≥73,000	≥44,000	12,000	450,000	¹ 2,300,000	44,000
	Whole Water, TR	42,000	22,000	13,000	410,000	¹ 1,900,000	28,000
Flat Cr.	Dissolved	NA	NA	NA	0.10	NA	0.30
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	6.2	NA	1.2
Spring Cr.–Weir	Dissolved	NA	NA	NA	480	NA	14
	Colloid	NA	NA	NA	340	NA	1,100
	Dissolved + Colloid	NC	NC	NC	820	NC	1,100
	Whole Water, TR	NA	NA	NA	690	NA	45
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	24,000	NA
	Colloid	NA	NA	NA	NA	5,200	NA
	Dissolved + Colloid	NC	NC	NC	NC	29,000	NC
	Whole Water, TR	NA	NA	NA	NA	27,000	NA
Whiskeytown Lake at SSCP	Dissolved	NA	NA	NA	21	NA	19
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	380	NA	3,700
Spring Cr. arm	Dissolved	10	19	13	71	NA	31
	Colloid	140	NA	820	3,300	NA	6,600
	Dissolved + Colloid	150	NC	830	3,300	NC	6,700
	Whole Water, TR	≤200	≤280	760	2,000	NA	3,700

Table A1-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	3.9
	Colloid	NA	NA	NA	NA	NA	14,000
	Dissolved + Colloid	NC	NC	NC	NC	NC	14,000
	Whole Water, TR	NA	NA	NA	NA	NA	8,300
Yolo Bypass	Dissolved	NA	NA	NA	NA	2,400	NA
	Colloid	NA	NA	NA	NA	4,100,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	4,100,000	NC
	Whole Water, TR	NA	NA	NA	NA	4,200,000	NA
Freeport + Yolo Bypass	Dissolved	220	150	32	690	4,000	75
	Colloid	72,000	43,000	12,000	450,000	6,400,000	44,000
	Dissolved + Colloid	72,000	43,000	12,000	451,000	6,400,000	44,000
	Whole Water, TR	42,000	22,000	13,000	410,000	6,100,000	28,000

¹Samples collected at Tower Bridge in January 1997.

Table A1-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in kilograms per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis. \leq , load is less than or equal to value shown because of concentration less than detection limit; \geq , load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	≤ 0.13	0.10	≤ 0.10	0.42	NA	≤ 0.10
	Colloid	1.1	NA	0.21	≥ 4.2	NA	1.9
	Dissolved + Colloid	≤ 1.2	NC	≤ 0.30	≥ 4.6	NC	≤ 2.0
	Whole Water, TR	1.7	0.56	0.27	9.0	NA	1.8
Sac R.–Keswick	Dissolved	0.29	0.21	≤ 0.11	3.0	0.52	≤ 0.15
	Colloid	1.4	NA	3.7	13	51	2.9
	Dissolved + Colloid	1.7	NC	≤ 3.8	16	52	≤ 3.0
	Whole Water, TR	2.8	1.0	3.8	25	55	2.6
Sac R.–Bend Br.	Dissolved	0.22	0.08	0.22	0.63	0.80	≤ 0.15
	Colloid	2.5	1.4	6.7	67	600	4.6
	Dissolved + Colloid	2.7	1.5	6.9	67	600	≤ 4.7
	Whole Water, TR	3.5	1.7	7.8	98	500	4.0
Sac R.–Colusa	Dissolved	NA	0.15	0.17	0.53	0.72	0.11
	Colloid	24	6.9	11	170	930	11
	Dissolved + Colloid	NC	7.1	11	170	930	11
	Whole Water, TR	19	4.0	3.5	260	950	7.7
Sac R.–Verona	Dissolved	0.50	≤ 0.15	NA	1.1	NA	0.15
	Colloid	21	19	16	160	NA	18
	Dissolved + Colloid	21	19	NA	160	NC	18
	Whole Water, TR	16	15	9.3	200	NA	13
Sac R.–Freeport	Dissolved	1.1	0.30	0.24	≤ 1.1	¹ 1.5	0.21
	Colloid	≥ 29	≥ 22	4.8	160	¹ 1,100	15
	Dissolved + Colloid	≥ 30	≥ 22	5.1	160	¹ 1,100	16
	Whole Water, TR	18	9.1	4.4	200	¹ 1,000	12
Flat Cr.	Dissolved	NA	NA	NA	≤ 0.00033	NA	≤ 0.000010
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.0052	NA	0.000093
Spring Cr.–Weir	Dissolved	NA	NA	NA	0.54	NA	0.074
	Colloid	NA	NA	NA	0.23	NA	0.21
	Dissolved + Colloid	NC	NC	NC	0.77	NC	0.29
	Whole Water, TR	NA	NA	NA	0.67	NA	0.092
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	6.8	NA
	Colloid	NA	NA	NA	NA	1.4	NA
	Dissolved + Colloid	NC	NC	NC	NC	8.2	NC
	Whole Water, TR	NA	NA	NA	NA	8.3	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	≤ 0.086	NA	≤ 0.020
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.58	NA	0.77
Spring Cr. arm	Dissolved	≤ 0.052	≤ 0.086	≤ 0.025	0.084	NA	0.047
	Colloid	0.040	NA	0.40	2.8	NA	0.69
	Dissolved + Colloid	≤ 0.093	NC	≤ 0.43	2.9	NC	0.74
	Whole Water, TR	0.20	0.22	0.37	2.6	NA	0.55

Table A1-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.012
	Colloid	NA	NA	NA	NA	NA	3.5
	Dissolved + Colloid	NC	NC	NC	NC	NC	3.6
	Whole Water, TR	NA	NA	NA	NA	NA	2.6
Yolo Bypass	Dissolved	NA	NA	NA	NA	4.9	NA
	Colloid	NA	NA	NA	NA	1,200	NA
	Dissolved + Colloid	NC	NC	NC	NC	1,200	NC
	Whole Water, TR	NA	NA	NA	NA	1,400	NA
Freeport + Yolo Bypass	Dissolved	1.1	0.30	0.28	1.1	6.4	0.21
	Colloid	29	22	4.8	160	2,300	15
	Dissolved + Colloid	30	22	5.1	160	2,300	15
	Whole Water, TR	18	9.1	4.4	200	2,400	12

¹Samples collected at Tower Bridge in January 1997.

Table A1-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in grams per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis. \leq , load is less than or equal to value shown because of concentration less than detection limit; \geq , load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.-Shasta	Dissolved	27	≤ 9.7	6.3	85	NA	19
	Colloid	16	NA	4.1	≥ 67	NA	24
	Dissolved + Colloid	43	NC	10	≥ 150	NC	43
	Whole Water, TR	24	≤ 6.8	9.5	67.0	NA	38
Sac R.-Keswick	Dissolved	33	≤ 8.1	14	75	≤ 32	18
	Colloid	26	NA	21	160	810	53
	Dissolved + Colloid	59	NC	35	230	≤ 840	71
	Whole Water, TR	41	18	30	140	810	88
Sac R.-Bend Br.	Dissolved	33	≤ 9.3	15	97	≤ 120	26
	Colloid	35	15	62	610	6,100	48
	Dissolved + Colloid	68	≤ 24	78	710	$\leq 6,200$	74
	Whole Water, TR	59	29	63	730	2,100	71
Sac R.-Colusa	Dissolved	NA	≤ 9.0	11	57	140	11
	Colloid	290	110	170	1,800	11,000	120
	Dissolved + Colloid	NC	110	180	1,800	11,000	130
	Whole Water, TR	170	38	34	840	9,900	91
Sac R.-Verona	Dissolved	39	19.0	NA	130	NA	24
	Colloid	260	570	120	1,700	NA	210
	Dissolved + Colloid	300	590	NC	1,800	NC	230
	Whole Water, TR	180	180	44	1,000	NA	130
Sac R.-Freeport	Dissolved	41	≤ 13	22	160	¹ 160	32
	Colloid	NA	NA	54	1,700	¹ 4,600	130
	Dissolved + Colloid	NC	NC	76	1,800	¹ 4,800	160
	Whole Water, TR	210	76	49	1,800	¹ 6,700	160
Flat Cr.	Dissolved	NA	NA	NA	0.029	NA	0.0036
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.090	NA	0.0069
Spring Cr.-Weir	Dissolved	NA	NA	NA	0.69	NA	0.045
	Colloid	NA	NA	NA	8.0	NA	0.60
	Dissolved + Colloid	NC	NC	NC	8.7	NC	0.64
	Whole Water, TR	NA	NA	NA	6.6	NA	0.22
Spring Cr.-Road	Dissolved	NA	NA	NA	NA	1.9	NA
	Colloid	NA	NA	NA	NA	110	NA
	Dissolved + Colloid	NC	NC	NC	NC	110	NC
	Whole Water, TR	NA	NA	NA	NA	83	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	8.7	NA	4.3
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	9.1	NA	19
Spring Cr. arm	Dissolved	5.7	≤ 3.1	2.8	≤ 4.6	NA	16
	Colloid	1.7	NA	4.2	44	NA	19
	Dissolved + Colloid	7.4	NC	7.0	≤ 49	NC	34
	Whole Water, TR	7.7	5.5	4.1	33	NA	27

Table A1-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.91
	Colloid	NA	NA	NA	NA	NA	19
	Dissolved + Colloid	NC	NC	NC	NC	NC	20
	Whole Water, TR	NA	NA	NA	NA	NA	11
Yolo Bypass	Dissolved	NA	NA	NA	NA	440	NA
	Colloid	NA	NA	NA	NA	19,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	20,000	NC
	Whole Water, TR	NA	NA	NA	NA	18,000	NA
Freeport + Yolo Bypass	Dissolved	41	13	22	160	600	32
	Colloid	NA	NA	54	1,700	24,000	130
	Dissolved + Colloid	NC	NC	NC	1,900	24,000	160
	Whole Water, TR	210	76	49	1,800	25,000	160

¹Samples collected at Tower Bridge in January 1997.

Table A1-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples

[Loads in kilograms per day; Br., Bridge; Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis. \geq , load is greater than or equal to value shown because of incomplete digestion of colloid sample]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.–Shasta	Dissolved	67	61	12	260	NA	11
	Colloid	37	NA	7.0	≥ 110	NA	41
	Dissolved + Colloid	100	NC	19	≥ 370	NC	53
	Whole Water, TR	110	94	28	520	NA	47
Sac R.–Keswick	Dissolved	74	57	37	420	830	40
	Colloid	39	NA	40	280	1,400	83
	Dissolved + Colloid	110	NC	77	700	2,300	120
	Whole Water, TR	120	87	110	950	2,700	100
Sac R.–Bend Br.	Dissolved	45	49	36	84	88	27
	Colloid	61	11	84	1,300	6,300	93
	Dissolved + Colloid	110	60	120	1,400	6,400	120
	Whole Water, TR	130	120	180	1,300	5,300	100
Sac R.–Colusa	Dissolved	NA	8.2	6.0	47	23	15
	Colloid	350	76	120	2,400	8,400	160
	Dissolved + Colloid	NC	84	130	2,500	8,400	170
	Whole Water, TR	280	77	64	1,400	7,300	110
Sac R.–Verona	Dissolved	8.1	12	NA	66	NA	11
	Colloid	240	210	150	1,600	NA	200
	Dissolved + Colloid	250	220	NA	1,600	NC	210
	Whole Water, TR	180	200	110	1,100	NA	150
Sac R.–Freeport	Dissolved	18	45	20	70	¹ 150	11
	Colloid	≥ 430	≥ 540	57	1,300	¹ 4,700	150
	Dissolved + Colloid	≥ 450	≥ 590	77	1,400	¹ 4,800	170
	Whole Water, TR	170	110	100	1,500	¹ 4,000	110
Flat Cr.	Dissolved	NA	NA	NA	0.34	NA	0.018
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.71	NA	0.019
Spring Cr.–Weir	Dissolved	NA	NA	NA	270	NA	21
	Colloid	NA	NA	NA	1.4	NA	0.21
	Dissolved + Colloid	NC	NC	NC	270	NC	21
	Whole Water, TR	NA	NA	NA	230	NA	22
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	2,600	NA
	Colloid	NA	NA	NA	NA	3.5	NA
	Dissolved + Colloid	NC	NC	NC	NC	2,600	NC
	Whole Water, TR	NA	NA	NA	NA	2,800	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	8.9	NA	1.7
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	10.0	NA	7.1
Spring Cr. arm	Dissolved	5.0	14	40	360	NA	14
	Colloid	1.1	NA	22	220	NA	25
	Dissolved + Colloid	6.2	NA	62	580	NC	39
	Whole Water, TR	6.0	22	74	600	NA	32

Table A1-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples—*Continued*

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.37
	Colloid	NA	NA	NA	NA	NA	33
	Dissolved + Colloid	NC	NC	NC	NC	NC	34
	Whole Water, TR	NA	NA	NA	NA	NA	23
Yolo Bypass	Dissolved	NA	NA	NA	NA	79	NA
	Colloid	NA	NA	NA	NA	10,000	NA
	Dissolved + Colloid	NC	NC	NC	NC	10,000	NC
	Whole Water, TR	NA	NA	NA	NA	9,700	NA
Freeport + Yolo Bypass	Dissolved	18	45	20	70	229	11
	Colloid	430	540	57	1,300	14,700	150
	Dissolved + Colloid	450	590	77	1,400	15,000	160
	Whole Water, TR	170	110	100	1,500	13,700	110

¹Samples collected at Tower Bridge in January 1997.

Appendix 2. Tables of Data Comparing Metal Loads Relative to Loads at Freeport and in the Yolo Bypass

Table A2-1. Aluminum loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-2. Cadmium loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-3. Copper loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-4. Iron loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-5. Lead loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-6. Mercury loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-7. Zinc loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

Table A2-1. Aluminum loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SSCP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.-Shasta	Dissolved	0.44	0.80	0.40	0.65	NA	0.43
	Colloid	NA	NA	0.052	0.020	NA	0.24
	Dissolved + Colloid	0.13	NA	0.053	0.020	NA	0.24
	Whole Water, TR	0.13	0.06	0.055	0.020	NA	0.25
Sac R.-Keswick	Dissolved	0.68	2.9	5.6	2.7	0.50	1.6
	Colloid	NA	NA	0.28	0.033	0.010	0.35
	Dissolved + Colloid	0.13	NA	0.29	0.036	0.010	0.35
	Whole Water, TR	0.13	0.071	0.30	0.038	0.011	0.36
Sac R.-Bend Br.	Dissolved	0.70	1.5	5.2	1.6	0.34	1.4
	Colloid	NA	NA	0.93	0.51	0.23	0.37
	Dissolved + Colloid	0.17	0.13	1.0	0.51	0.23	0.38
	Whole Water, TR	0.18	0.14	1.0	0.51	0.22	0.38
Sac R.-Colusa	Dissolved	NA	0.83	0.96	0.50	0.21	0.81
	Colloid	NA	NA	1.5	0.76	0.44	0.79
	Dissolved + Colloid	NA	0.54	1.5	0.76	0.44	0.79
	Whole Water, TR	1.6	0.54	1.5	0.76	0.44	0.81
Sac R.-Verona	Dissolved	1.1	1.0	NA	0.48	NA	0.70
	Colloid	NA	NA	2.7	0.71	NA	1.2
	Dissolved + Colloid	1.0	2.4	NA	0.71	NA	1.2
	Whole Water, TR	1.0	2.4	2.8	0.70	NA	1.2
Sac R.-Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.58	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.40	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.40	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.39	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.0013	NA	0.000062
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.000024	NA	0.0000065
Spring Cr.-Weir	Dissolved	NA	NA	NA	1.9	NA	1.5
	Colloid	NA	NA	NA	0.00053	NA	0.0013
	Dissolved + Colloid	NA	NA	NA	0.0027	NA	0.0029
	Whole Water, TR	NA	NA	NA	0.0038	NA	0.0050
Spring Cr.-Road	Dissolved	NA	NA	NA	NA	1.6	NA
	Colloid	NA	NA	NA	NA	0.00022	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.00067	NA
	Whole Water, TR	NA	NA	NA	NA	0.00093	NA
Whiskeytown Lake at SSCP	Dissolved	NA	NA	NA	0.034	NA	0.25
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.00084	NA	0.11
Spring Cr. arm	Dissolved	0.23	1.1	5.2	0.94	NA	1.3
	Colloid	NA	NA	0.057	0.0084	NA	0.10
	Dissolved + Colloid	0.0028	NA	0.066	0.0093	NA	0.10
	Whole Water, TR	0.0028	0.0079	0.072	0.010	NA	0.11
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.017
	Colloid	NA	NA	NA	NA	NA	0.25
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.25
	Whole Water, TR	NA	NA	NA	NA	NA	0.25
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.42	NA
	Colloid	NA	NA	NA	NA	0.60	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.60	NA
	Whole Water, TR	NA	NA	NA	NA	0.39	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-2. Cadmium loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.-Shasta	Dissolved	1.4	1.5	0.51	2.9	NA	0.37
	Colloid	NA	NA	0.27	0.062	NA	0.18
	Dissolved + Colloid	0.23	NA	0.37	0.48	NA	0.22
	Whole Water, TR	0.48	0.66	0.27	0.54	NA	0.46
Sac R.-Keswick	Dissolved	1.4	1.7	3.1	4.9	2.8	1.1
	Colloid	NA	NA	1.0	0.19	0.10	0.34
	Dissolved + Colloid	0.27	NA	1.9	0.87	0.22	0.53
	Whole Water, TR	0.50	0.74	2.0	0.83	0.38	0.63
Sac R.-Bend Br.	Dissolved	1.9	1.4	2.4	2.3	0.45	0.65
	Colloid	NA	NA	1.7	0.87	0.36	0.35
	Dissolved + Colloid	0.36	0.09	2.0	1.1	0.37	0.42
	Whole Water, TR	0.60	0.70	2.0	0.92	0.45	1.02
Sac R.-Colusa	Dissolved	NA	0.75	0.54	0.59	0.22	0.62
	Colloid	NA	NA	3.9	1.5	0.45	0.92
	Dissolved + Colloid	NA	0.19	2.5	1.4	0.45	0.84
	Whole Water, TR	0.95	0.79	0.75	0.78	0.46	0.85
Sac R.-Verona	Dissolved	0.48	1.0	NA	0.88	NA	0.81
	Colloid	NA	NA	4.1	1.2	NA	1.1
	Dissolved + Colloid	0.78	0.35	NA	1.1	NA	1.1
	Whole Water, TR	1.1	1.5	1.4	0.61	NA	1.2
Sac R.-Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.35	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.30	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.30	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.30	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.0042	NA	0.00069
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.00050	NA	0.00037
Spring Cr.-Weir	Dissolved	NA	NA	NA	1.9	NA	0.54
	Colloid	NA	NA	NA	0.0008	NA	0.0017
	Dissolved + Colloid	NA	NA	NA	0.28	NA	0.15
	Whole Water, TR	NA	NA	NA	0.18	NA	0.19
Spring Cr.-Road	Dissolved	NA	NA	NA	NA	5.8	NA
	Colloid	NA	NA	NA	NA	0.00025	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.27	NA
	Whole Water, TR	NA	NA	NA	NA	0.30	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	0.093	NA	0.10
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.0093	NA	0.10
Spring Cr. arm	Dissolved	0.17	0.28	1.9	3.6	NA	0.42
	Colloid	NA	NA	0.25	0.10	NA	0.12
	Dissolved + Colloid	0.025	NA	0.97	0.62	NA	0.19
	Whole Water, TR	0.030	0.13	0.85	0.48	NA	0.32
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.028
	Colloid	NA	NA	NA	NA	NA	0.11
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.091
	Whole Water, TR	NA	NA	NA	NA	NA	0.065
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.65	NA
	Colloid	NA	NA	NA	NA	0.70	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.70	NA
	Whole Water, TR	NA	NA	NA	NA	0.70	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-3. Copper loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SSCP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	0.77	0.65	0.36	0.62	NA	0.35
	Colloid	NA	NA	0.10	0.13	NA	0.20
	Dissolved + Colloid	0.13	NA	0.18	0.20	NA	0.22
	Whole Water, TR	0.42	0.31	0.21	0.34	NA	0.30
Sac R.–Keswick	Dissolved	0.74	0.80	0.77	0.93	0.41	0.88
	Colloid	NA	NA	0.85	0.24	0.088	0.34
	Dissolved + Colloid	0.13	NA	0.82	0.35	0.11	0.42
	Whole Water, TR	0.43	0.45	0.82	0.72	0.14	0.53
Sac R.–Bend Br.	Dissolved	0.82	0.51	0.92	0.66	0.36	0.88
	Colloid	NA	NA	3.8	0.86	0.31	0.37
	Dissolved + Colloid	0.19	0.064	2.9	0.83	0.31	0.46
	Whole Water, TR	0.48	0.49	1.2	0.94	0.33	0.60
Sac R.–Colusa	Dissolved	NA	0.80	0.71	0.33	0.27	1.0
	Colloid	NA	NA	2.5	1.6	0.42	0.78
	Dissolved + Colloid	NA	0.38	1.9	1.4	0.40	0.80
	Whole Water, TR	1.1	0.73	0.57	0.88	0.44	0.82
Sac R.–Verona	Dissolved	0.79	1.5	NA	0.86	NA	0.94
	Colloid	NA	NA	3.5	1.3	NA	1.1
	Dissolved + Colloid	0.94	0.85	NA	1.3	NA	1.0
	Whole Water, TR	1.0	1.6	1.3	0.8	NA	1.2
Sac R.–Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.44	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.35	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.36	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.33	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.00058	NA	0.00010
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.00032	NA	0.000069
Spring Cr.–Weir	Dissolved	NA	NA	NA	1.5	NA	0.69
	Colloid	NA	NA	NA	0.0019	NA	0.0069
	Dissolved + Colloid	NA	NA	NA	0.24	NA	0.11
	Whole Water, TR	NA	NA	NA	0.22	NA	0.13
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	1.7	NA
	Colloid	NA	NA	NA	NA	0.00059	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.092	NA
	Whole Water, TR	NA	NA	NA	NA	0.11	NA
Whiskeytown Lake at SSCP	Dissolved	NA	NA	NA	0.044	NA	0.17
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.012	NA	0.12
Spring Cr. arm	Dissolved	0.25	0.19	0.65	0.65	NA	0.23
	Colloid	NA	NA	0.81	0.58	NA	0.18
	Dissolved + Colloid	0.030	NA	0.74	0.59	NA	0.19
	Whole Water, TR	0.043	0.10	0.59	0.52	NA	0.24
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.10
	Colloid	NA	NA	NA	NA	NA	0.19
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.17
	Whole Water, TR	NA	NA	NA	NA	NA	0.16
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.56	NA
	Colloid	NA	NA	NA	NA	0.65	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.64	NA
	Whole Water, TR	NA	NA	NA	NA	0.67	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-4. Iron loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; Sac., Sacramento; R., SCPP, Spring Creek Power Plant; River; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.–Shasta	Dissolved	1.2	0.62	0.66	0.32	NA	0.55
	Colloid	NA	NA	0.041	0.014	NA	0.21
	Dissolved + Colloid	0.071	NA	0.042	0.014	NA	0.21
	Whole Water, TR	0.10	0.042	0.038	0.016	NA	0.20
Sac R.–Keswick	Dissolved	0.35	0.30	0.84	0.33	0.14	0.93
	Colloid	NA	NA	0.30	0.029	0.017	0.36
	Dissolved + Colloid	0.07	NA	0.30	0.031	0.017	0.36
	Whole Water, TR	0.10	0.05	0.25	0.034	0.014	0.34
Sac R.–Bend Br.	Dissolved	0.50	0.22	1.7	0.41	0.28	0.33
	Colloid	NA	NA	0.83	0.44	0.28	0.39
	Dissolved + Colloid	0.10	0.076	0.83	0.44	0.28	0.39
	Whole Water, TR	0.16	0.14	0.92	0.54	0.26	0.35
Sac R.–Colusa	Dissolved	NA	0.41	1.1	0.26	0.18	0.29
	Colloid	NA	NA	1.6	1.3	0.50	0.80
	Dissolved + Colloid	NA	0.30	1.6	1.3	0.50	0.79
	Whole Water, TR	1.5	0.59	0.92	0.78	0.48	0.86
Sac R.–Verona	Dissolved	0.50	0.40	NA	0.88	NA	1.0
	Colloid	NA	NA	2.8	1.1	NA	1.3
	Dissolved + Colloid	0.65	1.3	NA	1.1	NA	1.3
	Whole Water, TR	1.0	2.6	2.1	0.7	NA	1.3
Sac R.–Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.40	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.36	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.36	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.31	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.00014	NA	0.0040
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.000015	NA	0.000043
Spring Cr.–Weir	Dissolved	NA	NA	NA	0.70	NA	0.19
	Colloid	NA	NA	NA	0.00076	NA	0.025
	Dissolved + Colloid	NA	NA	NA	0.0018	NA	0.025
	Whole Water, TR	NA	NA	NA	0.0017	NA	0.0016
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	6.0	NA
	Colloid	NA	NA	NA	NA	0.00081	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.0045	NA
	Whole Water, TR	NA	NA	NA	NA	0.0044	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	0.030	NA	0.25
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.00093	NA	0.13
Spring Cr. arm	Dissolved	0.045	0.13	0.41	0.10	NA	0.41
	Colloid	NA	NA	0.068	0.0073	NA	0.15
	Dissolved + Colloid	0.0021	NA	0.069	0.0073	NA	0.15
	Whole Water, TR	0.0048	0.013	0.058	0.0049	NA	0.13
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.052
	Colloid	NA	NA	NA	NA	NA	0.32
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.32
	Whole Water, TR	NA	NA	NA	NA	NA	0.30
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.60	NA
	Colloid	NA	NA	NA	NA	0.64	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.64	NA
	Whole Water, TR	NA	NA	NA	NA	0.69	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-5. Lead loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	0.12	0.32	0.34	0.38	NA	0.46
	Colloid	NA	NA	0.044	0.026	NA	0.13
	Dissolved + Colloid	0.040	NA	0.059	0.029	NA	0.13
	Whole Water, TR	0.094	0.062	0.061	0.045	NA	0.15
Sac R.–Keswick	Dissolved	0.26	0.73	0.39	2.7	0.092	0.71
	Colloid	NA	NA	0.77	0.081	0.022	0.19
	Dissolved + Colloid	0.056	NA	0.75	0.10	0.023	0.20
	Whole Water, TR	0.16	0.11	0.86	0.13	0.023	0.22
Sac R.–Bend Br.	Dissolved	0.20	0.37	1.0	0.57	0.16	0.71
	Colloid	NA	NA	1.4	0.42	0.26	0.29
	Dissolved + Colloid	0.090	0.067	1.4	0.42	0.26	0.30
	Whole Water, TR	0.19	0.19	1.8	0.49	0.21	0.33
Sac R.–Colusa	Dissolved	NA	0.50	0.68	0.48	0.11	0.67
	Colloid	NA	NA	2.3	1.1	0.40	0.73
	Dissolved + Colloid	NA	0.32	2.2	1.1	0.40	0.79
	Whole Water, TR	1.1	0.44	0.80	1.3	0.40	0.64
Sac R.–Verona	Dissolved	0.45	0.5	NA	1.3	NA	0.86
	Colloid	NA	NA	3.3	1.0	NA	1.2
	Dissolved + Colloid	0.70	0.85	NA	1.0	NA	1.2
	Whole Water, TR	0.89	1.6	2.1	1.0	NA	1.1
Sac R.–Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.23	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.48	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.48	1.1
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.42	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.00030	NA	0.000048
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.000026	NA	0.0000078
Spring Cr.–Weir	Dissolved	NA	NA	NA	0.49	NA	0.35
	Colloid	NA	NA	NA	0.0014	NA	0.014
	Dissolved + Colloid	NA	NA	NA	0.0048	NA	0.019
	Whole Water, TR	NA	NA	NA	0.0034	NA	0.0077
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	1.1	NA
	Colloid	NA	NA	NA	NA	0.00061	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.0036	NA
	Whole Water, TR	NA	NA	NA	NA	0.0035	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	0.078	NA	0.10
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.0029	NA	0.064
Spring Cr. arm	Dissolved	0.047	0.29	0.089	0.076	NA	0.22
	Colloid	NA	NA	0.083	0.018	NA	0.046
	Dissolved + Colloid	0.0031	NA	0.085	0.018	NA	0.049
	Whole Water, TR	0.011	0.024	0.084	0.013	NA	0.046
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.057
	Colloid	NA	NA	NA	NA	NA	0.23
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.24
	Whole Water, TR	NA	NA	NA	NA	NA	0.22
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.77	NA
	Colloid	NA	NA	NA	NA	0.52	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.52	NA
	Whole Water, TR	NA	NA	NA	NA	0.58	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-6. Mercury loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
Sac R.-Shasta	Dissolved	0.66	0.75	0.29	0.53	NA	0.59
	Colloid	NA	NA	0.076	0.039	NA	0.18
	Dissolved + Colloid	NA	NA	0.13	0.081	NA	0.27
	Whole Water, TR	0.11	0.089	0.19	0.037	NA	0.24
Sac R.-Keswick	Dissolved	0.80	0.62	0.64	0.47	0.053	0.56
	Colloid	NA	NA	0.39	0.094	0.034	0.41
	Dissolved + Colloid	NA	NA	0.46	0.12	0.035	0.44
	Whole Water, TR	0.20	0.24	0.61	0.08	0.033	0.55
Sac R.-Bend Br.	Dissolved	0.80	0.72	0.68	0.61	0.20	0.81
	Colloid	NA	NA	1.1	0.36	0.26	0.37
	Dissolved + Colloid	NA	NA	1.0	0.38	0.26	0.46
	Whole Water, TR	0.28	0.38	1.3	0.41	0.09	0.44
Sac R.-Colusa	Dissolved	NA	0.69	0.50	0.36	0.23	0.34
	Colloid	NA	NA	3.1	1.1	0.47	0.92
	Dissolved + Colloid	NA	NA	2.4	1.0	0.45	0.80
	Whole Water, TR	0.81	0.50	0.69	0.47	0.40	0.57
Sac R.-Verona	Dissolved	0.95	1.5	NA	0.8	NA	0.75
	Colloid	NA	NA	2.2	1.0	NA	1.6
	Dissolved + Colloid	NA	NA	NA	1.0	NA	1.4
	Whole Water, TR	0.86	2.4	0.9	0.6	NA	0.81
Sac R.-Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.27	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.19	1.0
	Dissolved + Colloid	NA	NA	1.0	1.0	¹ 0.20	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.27	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.00018	NA	0.00011
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.000050	NA	0.000043
Spring Cr.-Weir	Dissolved	NA	NA	NA	0.0043	NA	0.0014
	Colloid	NA	NA	NA	0.0047	NA	0.0046
	Dissolved + Colloid	NA	NA	NA	0.0047	NA	0.0040
	Whole Water, TR	NA	NA	NA	0.0037	NA	0.0014
Spring Cr.-Road	Dissolved	NA	NA	NA	NA	0.0032	NA
	Colloid	NA	NA	NA	NA	0.0047	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.0045	NA
	Whole Water, TR	NA	NA	NA	NA	0.0034	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	0.054	NA	0.13
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.0051	NA	0.12
Spring Cr. arm	Dissolved	0.14	0.24	0.13	0.029	NA	0.50
	Colloid	NA	NA	0.078	0.026	NA	0.15
	Dissolved + Colloid	NA	NA	0.092	0.026	NA	0.21
	Whole Water, TR	0.037	0.072	0.084	0.018	NA	0.17
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.028
	Colloid	NA	NA	NA	NA	NA	0.15
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.12
	Whole Water, TR	NA	NA	NA	NA	NA	0.069
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.73	NA
	Colloid	NA	NA	NA	NA	0.81	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.83	NA
	Whole Water, TR	NA	NA	NA	NA	0.73	NA

¹Samples collected at Tower Bridge in January 1997.

Table A2-7. Zinc loads divided by sum of loads at Freeport and in Yolo Bypass, derived from concentrations in dissolved, colloid, and whole water samples

[Br., Bridge; Cr., Creek; NA, not analyzed; R., River; Sac., Sacramento; SCPP, Spring Creek Power Plant; TR, total recoverable analysis]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
Sac R.–Shasta	Dissolved	3.7	1.4	0.60	3.7	NA	1.0
	Colloid	NA	NA	0.12	0.085	NA	0.27
	Dissolved + Colloid	0.22	NA	0.25	0.27	NA	0.33
	Whole Water, TR	0.65	0.85	0.28	0.35	NA	0.43
Sac R.–Keswick	Dissolved	4.1	1.3	1.9	6.0	3.6	3.6
	Colloid	NA	NA	0.70	0.22	0.10	0.55
	Dissolved + Colloid	0.25	NA	1.0	0.51	0.15	0.75
	Whole Water, TR	0.71	0.79	1.1	0.63	0.20	0.91
Sac R.–Bend Br.	Dissolved	2.5	1.1	1.8	1.2	0.38	2.5
	Colloid	NA	NA	1.5	1.0	0.43	0.62
	Dissolved + Colloid	0.25	0.10	1.6	1.0	0.43	0.75
	Whole Water, TR	0.76	1.1	1.8	0.87	0.39	0.91
Sac R.–Colusa	Dissolved	NA	0.18	0.30	0.67	0.10	1.4
	Colloid	NA	NA	2.1	1.8	0.57	1.1
	Dissolved + Colloid	NA	0.14	1.7	1.8	0.56	1.1
	Whole Water, TR	1.6	0.70	0.64	0.93	0.53	1.0
Sac R.–Verona	Dissolved	0.45	0.27	NA	0.94	NA	1.0
	Colloid	NA	NA	2.6	1.2	NA	1.3
	Dissolved + Colloid	0.56	0.38	NA	1.2	NA	1.3
	Whole Water, TR	1.1	1.8	1.1	0.73	NA	1.4
Sac R.–Freeport	Dissolved	1.0	1.0	1.0	1.0	¹ 0.66	1.0
	Colloid	NA	NA	1.0	1.0	¹ 0.32	1.0
	Dissolved + Colloid	1.0	1.0	1.0	1.0	¹ 0.32	1.0
	Whole Water, TR	1.0	1.0	1.0	1.0	¹ 0.29	1.0
Flat Cr.	Dissolved	NA	NA	NA	0.0049	NA	0.0016
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.00047	NA	0.00017
Spring Cr.–Weir	Dissolved	NA	NA	NA	3.9	NA	1.9
	Colloid	NA	NA	NA	0.0011	NA	0.0014
	Dissolved + Colloid	NA	NA	NA	0.20	NA	0.13
	Whole Water, TR	NA	NA	NA	0.15	NA	0.20
Spring Cr.–Road	Dissolved	NA	NA	NA	NA	11	NA
	Colloid	NA	NA	NA	NA	0.00024	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.17	NA
	Whole Water, TR	NA	NA	NA	NA	0.20	NA
Whiskeytown Lake at SCPP	Dissolved	NA	NA	NA	0.13	NA	0.15
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA	NA	NA	NA
	Whole Water, TR	NA	NA	NA	0.0067	NA	0.065
Spring Cr. arm	Dissolved	0.28	0.31	2.0	5.1	NA	1.3
	Colloid	NA	NA	0.39	0.17	NA	0.17
	Dissolved + Colloid	0.014	NA	0.81	0.42	NA	0.24
	Whole Water, TR	0.035	0.20	0.74	0.40	NA	0.29
Colusa Basin Drain	Dissolved	NA	NA	NA	NA	NA	0.034
	Colloid	NA	NA	NA	NA	NA	0.22
	Dissolved + Colloid	NA	NA	NA	NA	NA	0.21
	Whole Water, TR	NA	NA	NA	NA	NA	0.21
Yolo Bypass	Dissolved	NA	NA	NA	NA	0.34	NA
	Colloid	NA	NA	NA	NA	0.68	NA
	Dissolved + Colloid	NA	NA	NA	NA	0.67	NA
	Whole Water, TR	NA	NA	NA	NA	0.71	NA

¹Samples collected at Tower Bridge in January 1997.

Appendix 3. Tables of Data Comparing Metal Loads Used in Mass Balance Calculations for the Spring Creek Arm of Keswick Reservoir

Table A3-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

Table A3-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SCPP, Spring Creek Power Plant; TR, Total recoverable analysis. \geq , load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake; %, percent]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir (in kg/d)				
Spring Cr.–Weir	Dissolved	1,200	NA	97
	Colloid	290	NA	84
	Dissolved + Colloid	1,500	NC	180
	Whole Water, TR	1,400	NA	130
Spring Cr.–Road	Dissolved	NA	4,200	NA
	Colloid	NA	2,000	NA
	Dissolved + Colloid	NC	6,200	NC
	Whole Water, TR	NA	5,500	NA
Whiskeytown Lake at SCPP	Dissolved	21	NA	16
	Colloid	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC
	Whole Water, TR	310	NA	2,800
B. Total inputs to Spring Creek arm of Keswick Reservoir (in kg/d)				
	Dissolved	1,200	NC	113
	Colloid	\geq 290	NC	\geq 84
	Dissolved + Colloid	\geq 1,500	NC	\geq 180
	Whole Water, TR	1,710	NC	2,900
C. Spring Creek arm of Keswick Reservoir (in kg/d)				
	Dissolved	580	NA	82
	Colloid	4,600	NA	6,600
	Dissolved + Colloid	5,100	NC	6,600
	Whole Water, TR	3,600	NA	2,900
D. Mass balance, Spring Creek arm (B divided by C, in percent)				
	Dissolved	210%	NC	140%
	Colloid	6.3%	NC	1.3%
	Dissolved + Colloid	29%	NC	2.7%
	Whole Water, TR	48%	NC	100%

Table A3-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SSCP, Spring Creek Power Plant; TR, Total recoverable analysis. %, percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
Spring Cr.–Weir	Dissolved	1,700	NA	140
	Colloid	4.2	NA	1.3
	Dissolved + Colloid	1,700	NC	150
	Whole Water, TR	1,800	NA	160
Spring Cr.–Road	Dissolved	NA	18,000	NA
	Colloid	NA	16	NA
	Dissolved + Colloid	NC	18,000	NC
	Whole Water, TR	NA	17,000	NA
Whiskeytown Lake at SSCP	Dissolved	84	NA	≤27
	Colloid	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC
	Whole Water, TR	≤93	NA	88
B. Total inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	1,800	NC	170
	Colloid	≥4.2	NC	≥1.3
	Dissolved + Colloid	≥1,700	NC	≥150
	Whole Water, TR	1,900	NC	250
C. Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	3,200	NA	110
	Colloid	540	NA	89
	Dissolved + Colloid	3,800	NC	200
	Whole Water, TR	4,800	NA	270
D. Mass balance, Spring Creek arm		(B divided by C, in percent)		
	Dissolved	56%	NC	150%
	Colloid	0.8%	NC	1.5%
	Dissolved + Colloid	45%	NC	75%
	Whole Water, TR	40%	NC	93%

Table A3-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SSCP, Spring Creek Power Plant; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
Spring Cr.–Weir	Dissolved	210	NA	11
	Colloid	1.4	NA	0.63
	Dissolved + Colloid	210	NC	12
	Whole Water, TR	200	NA	12
Spring Cr.–Road	Dissolved	NA	1,100	NA
	Colloid	NA	6.7	NA
	Dissolved + Colloid	NC	1,100	NC
	Whole Water, TR	NA	1,100	NA
Whiskeytown Lake at SSCP	Dissolved	6.2	NA	2.7
	Colloid	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC
	Whole Water, TR	11	NA	11
B. Total inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	220	NC	14
	Colloid	≥1.4	NC	≥0.63
	Dissolved + Colloid	≥220	NC	≥12
	Whole Water, TR	210	NC	23
C. Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	91	NA	4
	Colloid	430	NA	16
	Dissolved + Colloid	520	NC	20
	Whole Water, TR	480	NA	22
D. Mass balance, Spring Creek arm		(B divided by C, in percent)		
	Dissolved	240%	NC	380%
	Colloid	0.3%	NC	3.9%
	Dissolved + Colloid	42%	NC	60%
	Whole Water, TR	44%	NC	100%

Table A3-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SCPP, Spring Creek Power Plant; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
Spring Cr.–Weir	Dissolved	480	NA	14
	Colloid	340	NA	1,100
	Dissolved + Colloid	820	NC	1,100
	Whole Water, TR	690	NA	45
Spring Cr.–Road	Dissolved	NA	24,000	NA
	Colloid	NA	5,200	NA
	Dissolved + Colloid	NC	29,000	NC
	Whole Water, TR	NA	27,000	NA
Whiskeytown Lake at SCPP	Dissolved	21	NA	19
	Colloid	NA	NA	NA
	Dissolved + Colloid	NA	NA	NA
	Whole Water, TR	380	NA	3,700
B. Total inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	500	NC	33
	Colloid	≥340	NC	≥1,100
	Dissolved + Colloid	≥840	NC	≥1,100
	Whole Water, TR	1,070	NC	3,745
C. Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	71	NA	31
	Colloid	3,300	NA	6,600
	Dissolved + Colloid	3,300	NC	6,700
	Whole Water, TR	2,000	NA	3,700
D. Mass balance, Spring Creek arm		(B divided by C, in percent)		
	Dissolved	710%	NC	110%
	Colloid	10%	NC	17%
	Dissolved + Colloid	25%	NC	16%
	Whole Water, TR	54%	NC	100%

Table A3-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SCPP, Spring Creek Power Plant; TR, Total recoverable analysis. % percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir (in kg/d)				
Spring Cr.–Weir	Dissolved	0.54	NA	0.074
	Colloid	0.23	NA	0.21
	Dissolved + Colloid	0.77	NC	0.29
	Whole Water, TR	0.67	NA	0.092
Spring Cr.–Road	Dissolved	NA	6.8	NA
	Colloid	NA	1.4	NA
	Dissolved + Colloid	NC	8.2	NC
	Whole Water, TR	NA	8.3	NA
Whiskeytown Lake at SCPP	Dissolved	≤0.086	NA	≤0.020
	Colloid	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC
	Whole Water, TR	0.58	NA	0.77
B. Total inputs to Spring Creek arm of Keswick Reservoir (in kg/d)				
	Dissolved	≤0.63	NC	≤0.094
	Colloid	≥0.23	NC	≥0.21
	Dissolved + Colloid	≥0.86	NC	≥0.31
	Whole Water, TR	1.3	NC	0.86
C. Spring Creek arm of Keswick Reservoir (in kg/d)				
	Dissolved	0.084	NA	0.047
	Colloid	2.8	NA	0.69
	Dissolved + Colloid	2.9	NC	0.74
	Whole Water, TR	2.6	NA	0.55
D. Mass balance, Spring Creek arm (B divided by C, in percent)				
	Dissolved	750%	NC	200%
	Colloid	8.2%	NC	30%
	Dissolved + Colloid	30%	NC	42%
	Whole Water, TR	48%	NC	160%

Table A3-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[g, gram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SSCP, Spring Creek Power Plant; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May-June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir		(in g/d)		
Spring Cr.-Weir	Dissolved	0.69	NA	0.045
	Colloid	8.0	NA	0.60
	Dissolved + Colloid	8.7	NC	0.64
	Whole Water, TR	6.6	NA	0.22
Spring Cr.-Road	Dissolved	NA	1.9	NA
	Colloid	NA	110	NA
	Dissolved + Colloid	NC	110	NC
	Whole Water, TR	NA	83	NA
Whiskeytown Lake at SSCP	Dissolved	8.7	NA	4.3
	Colloid	NC	NA	NC
	Dissolved + Colloid	8.7	NC	≥4.3
	Whole Water, TR	9.1	NA	19
B. Total inputs to Spring Creek arm of Keswick Reservoir		(in g/d)		
	Dissolved	9.4	NC	4.3
	Colloid	≥8.0	NC	≥0.60
	Dissolved + Colloid	≥17	NC	≥4.9
	Whole Water, TR	16	NC	19
C. Spring Creek arm of Keswick Reservoir		(in g/d)		
	Dissolved	4.6	NA	16
	Colloid	44	NA	19
	Dissolved + Colloid	49	NC	34
	Whole Water, TR	33	NA	27
D. Mass balance, Spring Creek arm		(B divided by C, in percent)		
	Dissolved	200%	NC	27%
	Colloid	18%	NC	3.2%
	Dissolved + Colloid	36%	NC	15%
	Whole Water, TR	48%	NC	71%

Table A3-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for the Spring Creek arm of Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; SSCP, Spring Creek Power Plant; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods		
		Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
Spring Cr.–Weir	Dissolved	270	NA	21
	Colloid	1.4	NA	0.21
	Dissolved + Colloid	270	NA	21
	Whole Water, TR	230	NA	22
Spring Cr.–Road	Dissolved	NA	2,600	NA
	Colloid	NA	3.5	NA
	Dissolved + Colloid	NC	2,600	NC
	Whole Water, TR	NA	2,800	NA
Whiskeytown Lake at SSCP	Dissolved	8.9	NA	1.7
	Colloid	NA	NA	NC
	Dissolved + Colloid	NC	NC	NC
	Whole Water, TR	10	NA	7.1
B. Total inputs to Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	279	NC	23
	Colloid	≥1.4	NC	≥0.21
	Dissolved + Colloid	≥279	NC	≥23
	Whole Water, TR	240	NC	29
C. Spring Creek arm of Keswick Reservoir		(in kg/d)		
	Dissolved	360	NA	14
	Colloid	220	NA	25
	Dissolved + Colloid	580	NC	39
	Whole Water, TR	600	NA	32
D. Mass balance, Spring Creek arm		(B divided by C, in percent)		
	Dissolved	77%	NC	160%
	Colloid	0.64%	NC	0.84%
	Dissolved + Colloid	48%	NC	58%
	Whole Water, TR	40%	NC	91%

Appendix 4. Tables of Data Comparing Metal Loads Used in Mass Balance Calculations for Keswick Reservoir

Table A4-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

Table A4-1. Aluminum loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Keswick Reservoir		(in kg/d)					
Sac. R.–Shasta	Dissolved	48	33	10	400	NA	27
	Colloid	7,300	NA	780	≥11,000	NA	15,000
	Dissolved + Colloid	7,300	NA	790	≥11,000	NC	15,000
	Whole Water, TR	5,900	1,500	550	7,400	NA	6,500
Flat Cr.	Dissolved	NA	NA	NA	0.83	NA	0.0039
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	8.8	NA	0.017
Spring Cr. arm	Dissolved	25	46	130	580	NA	82
	Colloid	130	NA	860	4,600	NA	6,600
	Dissolved + Colloid	160	NC	990	5,100	NC	6,600
	Whole Water, TR	130	190	720	3,600	NA	2,900
B. Total Inputs to Keswick Reservoir		(in kg/d)					
	Dissolved	73	79	140	980	NC	110
	Colloid	7,400	NC	1,600	≥16,000	NC	22,000
	Dissolved + Colloid	7,500	NC	1,800	≥16,000	NC	22,000
	Whole Water, TR	6,000	1,700	1,300	11,000	NC	9,400
C. Output from Keswick Reservoir		(in kg/d)					
Sac. R.–Keswick	Dissolved	75	120	140	1,700	1,300	100
	Colloid	7,700	NA	4,200	18,000	94,000	22,000
	Dissolved + Colloid	7,800	NA	4,300	20,000	96,000	22,000
	Whole Water, TR	6,200	1,700	3,000	14,000	62,000	9,400
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	97%	66%	100%	58%	NC	110%
	Colloid	96%	NC	39%	87%	NC	98%
	Dissolved + Colloid	96%	NC	41%	81%	NC	98%
	Whole Water, TR	97%	99%	42%	79%	NC	100%

Table A4-2. Cadmium loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[g, grams; d, day. Cr., Creek; R., River; Sac., Sacramento; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site	Sampling Periods						
	July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997	
A. Inputs to Keswick Reservoir		(in g/d)					
Sac. R.–Shasta	Dissolved	570	370	≤82	2,600	NA	≤96
	Colloid	190	NA	59	≥320	NA	140
	Dissolved + Colloid	760	NC	≤140	≥2,900	NA	≤230
	Whole Water, TR	960	650	160	5,400	NA	390
Flat Cr.	Dissolved	NA	NA	NA	3.8	NA	0.18
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	5.0	NA	0.31
Spring Cr. arm	Dissolved	73	68	310	3,200	NA	110
	Colloid	10	NA	56	540	NA	89
	Dissolved + Colloid	83	NC	370	3,800	NC	200
	Whole Water, TR	≤59	130	510	4,800	NA	270
B. Total Inputs to Keswick Reservoir		(in g/d)					
	Dissolved	640	440	390	5,800	NC	210
	Colloid	200	NC	120	≥860	NC	230
	Dissolved + Colloid	840	NC	510	≥6,700	NC	430
	Whole Water, TR	1,000	780	670	10,000	NC	660
C. Output from Keswick Reservoir		(in g/d)					
Sac. R.–Keswick	Dissolved	580	410	500	4,400	8,800	290
	Colloid	340	NA	220	980	6,300	260
	Dissolved + Colloid	910	NA	720	5,300	15,000	550
	Whole Water, TR	1,000	730	1,200	8,300	21,000	530
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	110%	110%	78%	130%	NC	71%
	Colloid	59%	NC	52%	88%	NC	88%
	Dissolved + Colloid	93%	NC	71%	130%	NC	78%
	Whole Water, TR	100%	110%	56%	120%	NC	120%

Table A4-3. Copper loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[kg, kilogram; d, day; Cr., Creek; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site	Sampling Periods						
	July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997	
A. Inputs to Keswick Reservoir		(in kg/d)					
Sac. R.–Shasta	Dissolved	30	10	4.3	87	NA	5.6
	Colloid	15	NA	2.7	≥95	NA	18
	Dissolved + Colloid	44	NC	7.0	≥180	NC	24
	Whole Water, TR	55	27	14	320	NA	27
Flat Cr.	Dissolved	NA	NA	NA	0.081	NA	0.0016
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.30	NA	0.0063
Spring Cr. arm	Dissolved	10	2.9	7.8	91	NA	3.6
	Colloid	0.77	NA	21	430	NA	16
	Dissolved + Colloid	10	NA	28	520	NC	20
	Whole Water, TR	5.6	8.9	40	480	NA	22
B. Total Inputs to Keswick Reservoir		(in kg/d)					
	Dissolved	40	13	12	180	NC	9
	Colloid	16	NA	24	≥530	NC	34
	Dissolved + Colloid	54	NA	35	≥700	NC	44
	Whole Water, TR	61	36	54	800	NC	49
C. Output from Keswick Reservoir		(in kg/d)					
Sac. R.–Keswick	Dissolved	29	12	9.2	130	260	14
	Colloid	15	NA	22	180	1,000	31
	Dissolved + Colloid	43	NC	31	310	1,300	45
	Whole Water, TR	56	40	56	670	1,400	48
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	140%	110%	130%	140%	NC	66%
	Colloid	110%	NC	110%	290%	NC	110%
	Dissolved + Colloid	130%	NC	110%	230%	NC	98%
	Whole Water, TR	110%	90%	100%	120%	NC	100%

Table A4-4. Iron loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[kg, kilogram; d, day. Cr., Creek; R., River; Sac., Sacramento; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site	Sampling Periods						
	July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997	
A. Inputs to Keswick Reservoir		(in kg/d)					
Sac. R.–Shasta	Dissolved	≤270	93	21	220	NA	41
	Colloid	4,900	NA	490	≥6,300	NA	9,100
	Dissolved + Colloid	≤5,100	NA	510	≥6,500	NC	9,200
	Whole Water, TR	4,100	930	490	6,400	NA	5,500
Flat Cr.	Dissolved	NA	NA	NA	0.10	NA	0.30
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	6.2	NA	1.2
Spring Cr. arm	Dissolved	10	19	13	71	NA	31
	Colloid	140	NA	820	3,300	NA	6,600
	Dissolved + Colloid	150	NC	830	3,300	NC	6,700
	Whole Water, TR	≤200	≤280	760	2,000	NA	3,700
B. Total Inputs to Keswick Reservoir		(in kg/d)					
	Dissolved	280	110	34	300	NC	72
	Colloid	5,000	NC	1,300	≥9,600	NC	16,000
	Dissolved + Colloid	5,300	NC	1,300	≥9,800	NC	16,000
	Whole Water, TR	4,300	1,200	1,300	8,400	NC	9,200
C. Output from Keswick Reservoir		(in kg/d)					
Sac. R.–Keswick	Dissolved	77	45	27	230	550	70
	Colloid	4,600	NA	3,600	13,000	110,000	16,000
	Dissolved + Colloid	4,700	NA	3,600	14,000	110,000	16,000
	Whole Water, TR	4,200	1,200	3,200	14,000	84,000	9,400
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	360%	250%	130%	130%	NC	100%
	Colloid	110%	NC	36%	74%	NC	98%
	Dissolved + Colloid	110%	NC	37%	70%	NC	99%
	Whole Water, TR	100%	100%	39%	60%	NC	98%

Table A4-5. Lead loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[kg, kilogram; d, day. Cr., Creek; R., River; Sac., Sacramento; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May–June 1997
A. Inputs to Keswick Reservoir		(in kg/d)					
Sac. R.–Shasta	Dissolved	≤0.13	0.10	≤0.10	0.42	NA	≤0.10
	Colloid	1.1	NA	0.21	≥4.2	NA	1.9
	Dissolved + Colloid	≤1.2	NC	≤0.30	≥4.6	NA	≤2.0
	Whole Water, TR	1.7	0.56	0.27	9.0	NA	1.8
Flat Cr.	Dissolved	NA	NA	NA	0.00033	NA	0.000010
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.0052	NA	0.000093
Spring Cr. arm	Dissolved	≤0.052	≤0.086	≤0.025	0.084	NA	0.047
	Colloid	0.040	NA	0.40	2.8	NA	0.69
	Dissolved + Colloid	≤0.093	NC	≤0.43	2.9	NC	0.74
	Whole Water, TR	0.20	0.22	0.37	2.6	NA	0.55
B. Total Inputs to Keswick Reservoir		(in kg/d)					
	Dissolved	0.18	0.18	0.12	0.50	NC	0.14
	Colloid	1.1	NC	0.61	≥7.0	NC	2.6
	Dissolved + Colloid	1.3	NC	0.73	≥7.5	NC	2.7
	Whole Water, TR	1.9	0.78	0.64	12	NC	2.4
C. Output from Keswick Reservoir		(in kg/d)					
Sac. R.–Keswick	Dissolved	0.29	≤0.22	≤0.11	3.0	≤0.59	≤0.15
	Colloid	1.4	NA	3.7	13	51	2.9
	Dissolved + Colloid	1.7	NA	≤3.8	16	≤52	≤3.0
	Whole Water, TR	2.8	1.0	3.8	25	55	2.6
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	63%	83%	110%	17%	NC	95%
	Colloid	81%	NC	16%	54%	NC	89%
	Dissolved + Colloid	76%	NC	19%	47%	NC	91%
	Whole Water, TR	68%	78%	17%	46%	NC	90%

Table A4-6. Mercury loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[g, grams; d, day. Cr., Creek; R., River; Sac., Sacramento; NA, not analyzed; NC, not calculated; TR, Total recoverable analysis. %, percent; ≤, load is less than or equal to value shown because of concentration less than detection limit; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site	Sampling Periods						
	July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997	
A. Inputs to Keswick Reservoir		(in g/d)					
Sac. R.-Shasta	Dissolved	27	≤9.7	6.3	85	NA	19
	Colloid	16	NA	4.1	≥67	NA	24
	Dissolved + Colloid	43	NC	10	≥150	NC	43
	Whole Water, TR	24	≤6.8	9.5	67	NA	38
Flat Cr.	Dissolved	NA	NA	NA	0.029	NA	0.0036
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.090	NA	0.0069
Spring Cr. arm	Dissolved	5.7	≤3.1	2.8	≤4.6	NA	16
	Colloid	1.7	NA	4.2	44	NA	19
	Dissolved + Colloid	7.4	NC	7.0	≤49	NC	34
	Whole Water, TR	7.7	5.5	4.1	33	NA	27
B. Total Inputs to Keswick Reservoir		(in g/d)					
	Dissolved	33	13	9.1	90	NC	35
	Colloid	18	NC	8.3	≥110	NC	43
	Dissolved + Colloid	50	NC	17	≥200	NC	77
	Whole Water, TR	32	12	14	100	NC	65
C. Output from Keswick Reservoir		(in g/d)					
Sac. R.-Keswick	Dissolved	33	≤8.1	14	75	≤32	18
	Colloid	26	NA	21	160	810	53
	Dissolved + Colloid	59	NA	35	230	≤840	71
	Whole Water, TR	41	18	30	140	810	88
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	99%	160%	65%	120%	NC	190%
	Colloid	68%	NC	40%	69%	NC	81%
	Dissolved + Colloid	85%	NC	49%	87%	NC	110%
	Whole Water, TR	77%	68%	45%	71%	NC	74%

Table A4-7. Zinc loads derived from concentrations in dissolved, colloid, and whole water samples used in mass balance calculations for Keswick Reservoir

[kg, kilogram; d, day. Cr., Creek; NA, not analyzed; NC, not calculated; R., River; Sac., Sacramento; TR, Total recoverable analysis. %, percent; ≥, load is greater than or equal to value shown because colloids not analyzed from Whiskeytown Lake]

Site		Sampling Periods					
		July 1996	Sept. 1996	Nov. 1996	Dec. 1996	Jan. 1997	May-June 1997
A. Inputs To Keswick Reservoir		(in kg/d)					
Sac R.–Shasta	Dissolved	67	61	12	260	NA	11
	Colloid	37	NA	7.0	≥110	NA	41
	Dissolved + Colloid	100	NC	19	≥370	NC	53
	Whole Water, TR	110	94	28	520	NA	47
Flat Cr.	Dissolved	NA	NA	NA	0.34	NA	0.018
	Colloid	NA	NA	NA	NA	NA	NA
	Dissolved + Colloid	NC	NC	NC	NC	NC	NC
	Whole Water, TR	NA	NA	NA	0.71	NA	0.019
Spring Cr. arm	Dissolved	5.0	14	40	360	NA	14
	Colloid	1.1	NC	22	220	NA	25
	Dissolved + Colloid	6.2	NC	62	580	NC	39
	Whole Water, TR	6.0	22	74	600	NA	32
B. Total Inputs to Keswick Reservoir		(in kg/d)					
	Dissolved	72	75	52	620	NC	25
	Colloid	38	NC	29	≥330	NC	66
	Dissolved + Colloid	110	NC	81	≥950	NC	92
	Whole Water, TR	120	120	102	1,100	NC	79
C. Output from Keswick Reservoir		(in kg/d)					
Sac, R.–Keswick	Dissolved	74	57	37	420	830	40
	Colloid	39	NA	40	280	1,400	83
	Dissolved + Colloid	110	NA	77	700	2,300	120
	Whole Water, TR	120	87	110	950	2,700	100
D. Inputs/Output		(B divided by C, in percent)					
	Dissolved	97%	130%	140%	150%	NC	63%
	Colloid	98%	NC	73%	120%	NC	80%
	Dissolved + Colloid	97%	NC	110%	140%	NC	77%
	Whole Water, TR	97%	130%	93%	120%	NC	79%

Appendix 5. Plots of Metal Loads in Dissolved and Colloidal Forms for Miscellaneous Trace Metals in Water

Figure A5-1. Plot of dissolved and colloidal chromium loads, July 1996 to May–June (labeled as May on graph) 1997, Sacramento River, California.

Figure A5-2. Plot of dissolved and colloidal cobalt loads, July 1996 to May–June (labeled as May on graph) 1997, Sacramento River, California.

Figure A5-3. Plot of dissolved and colloidal nickel loads, July 1996 to May–June (labeled as May on graph) 1997, Sacramento River, California.

Figure A5-4. Plot of dissolved and colloidal yttrium loads, July 1996 to May–June (labeled as May on graph) 1997, Sacramento River, California.

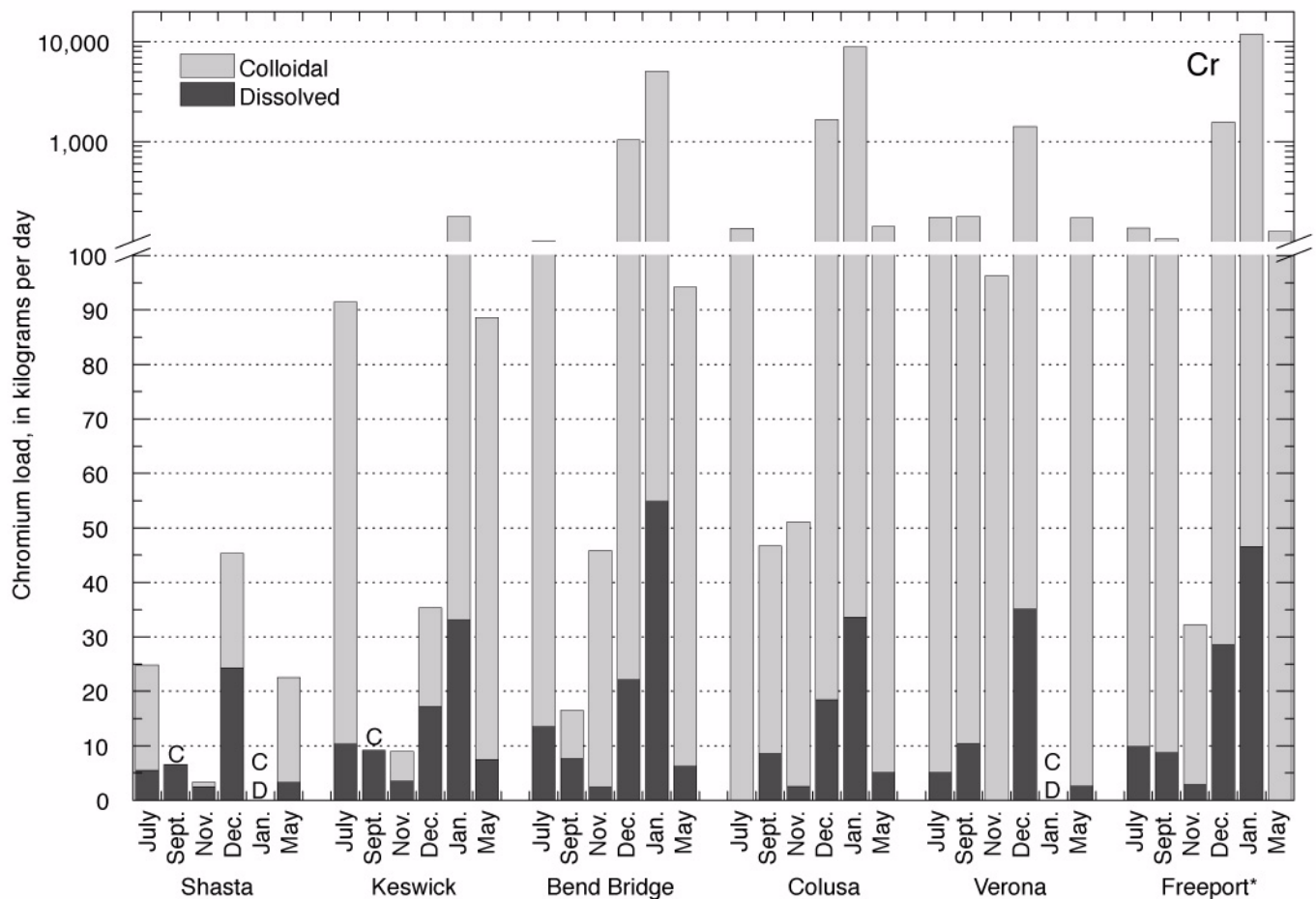


Figure A5-1. Plot of dissolved and colloidal chromium (Cr) loads, July 1996 to May-June (labeled as May on graph) 1997, Sacramento River, California. C, no colloidal load data available; D, no dissolved load data available. Freeport data for January 1997 is the sum of loads from the Sacramento River at Tower Bridge plus the Yolo Bypass.

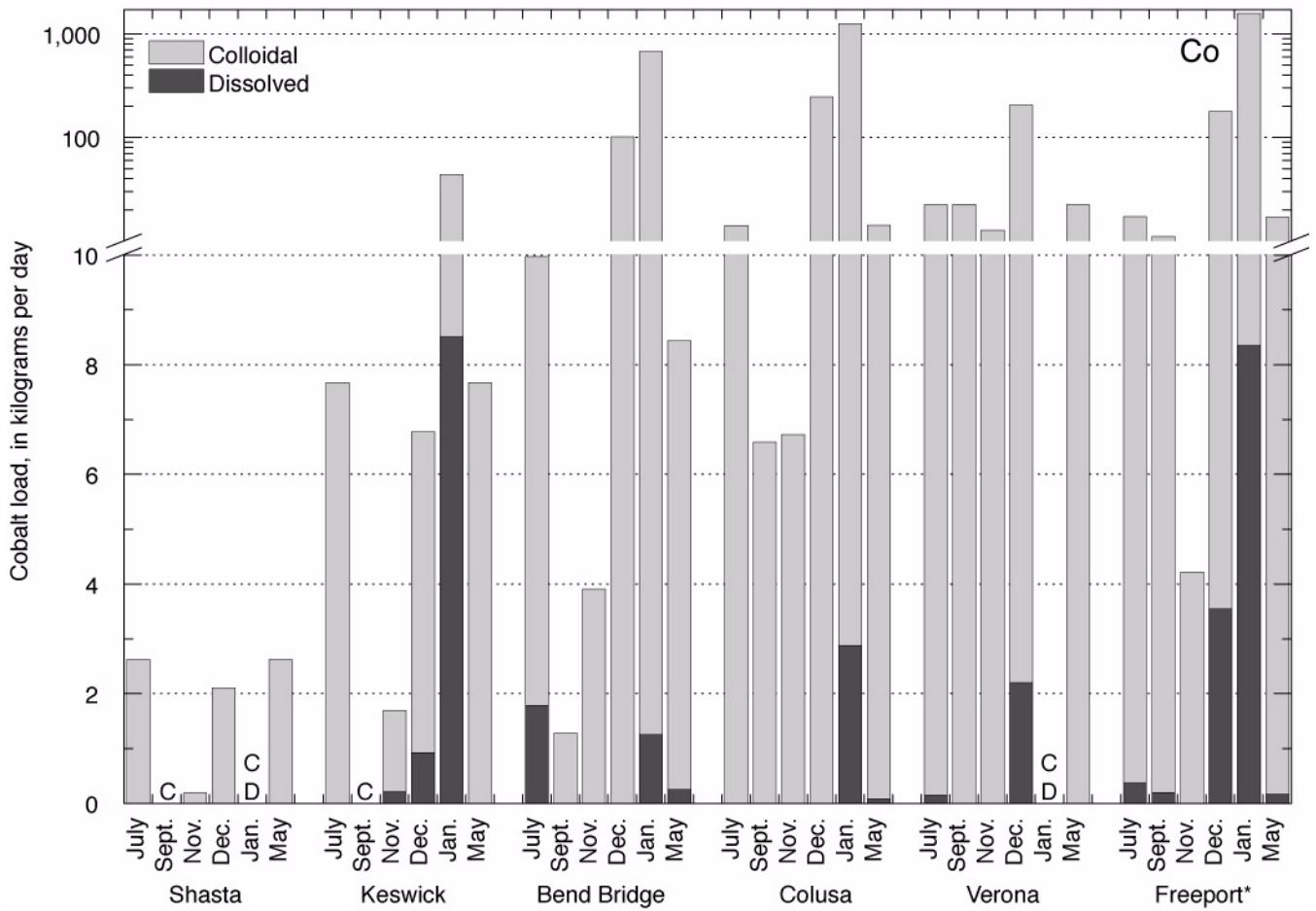


Figure A5-2. Plot of dissolved and colloidal cobalt (Co) loads, July 1996 to May-June (labeled as May on graph) 1997, Sacramento River, California. C, no colloidal load data available; D, no dissolved load data available. Freeport data for January 1997 is the sum of loads from the Sacramento River at Tower Bridge plus the Yolo Bypass.

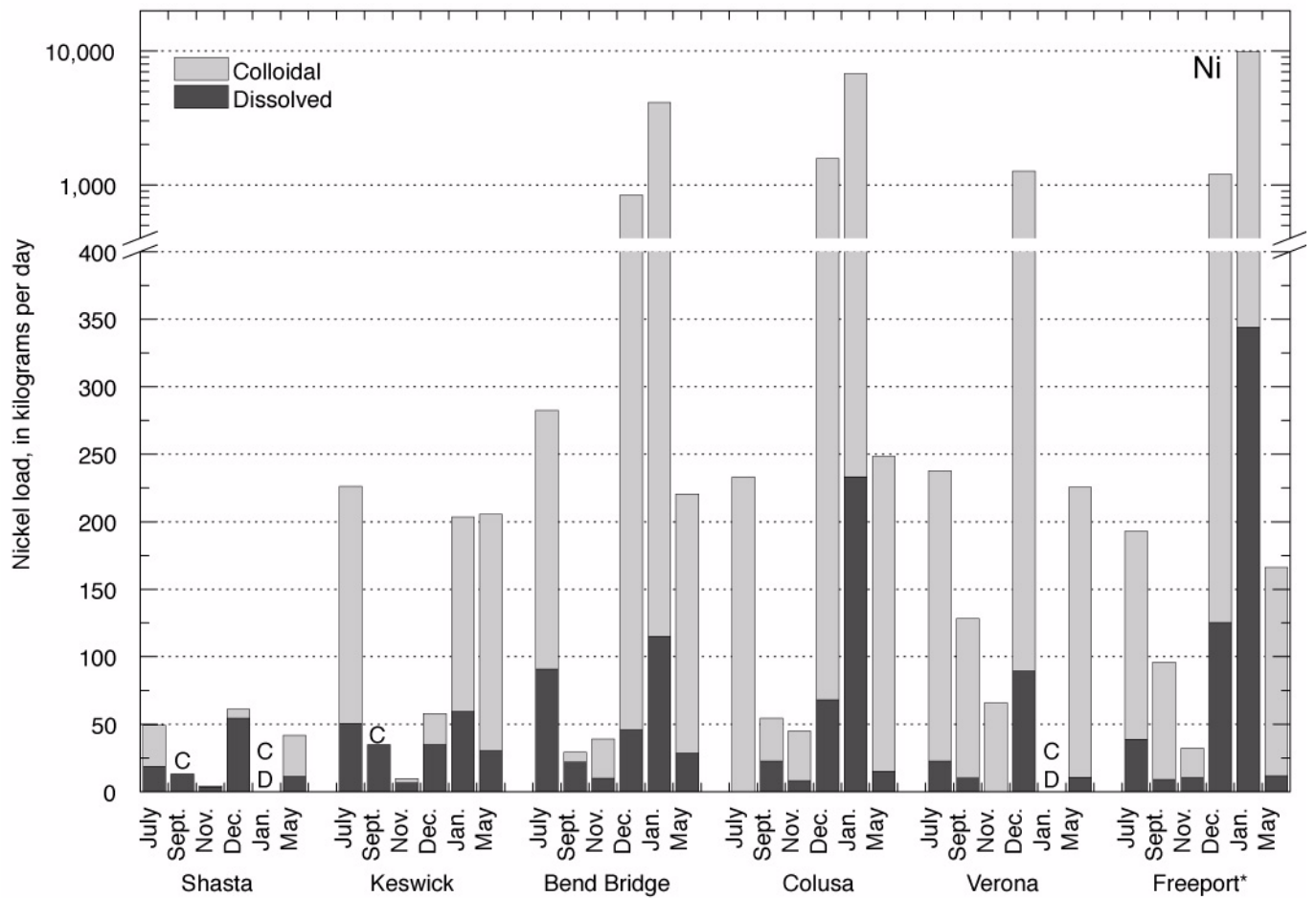


Figure A5-3. Plot of dissolved and colloidal nickel (Ni) loads, July 1996 to May-June (labeled as May on graph) 1997, Sacramento River, California. C, no colloidal load data available; D, no dissolved load data available. Freeport data for January 1997 is the sum of loads from the Sacramento River at Tower Bridge plus the Yolo Bypass.

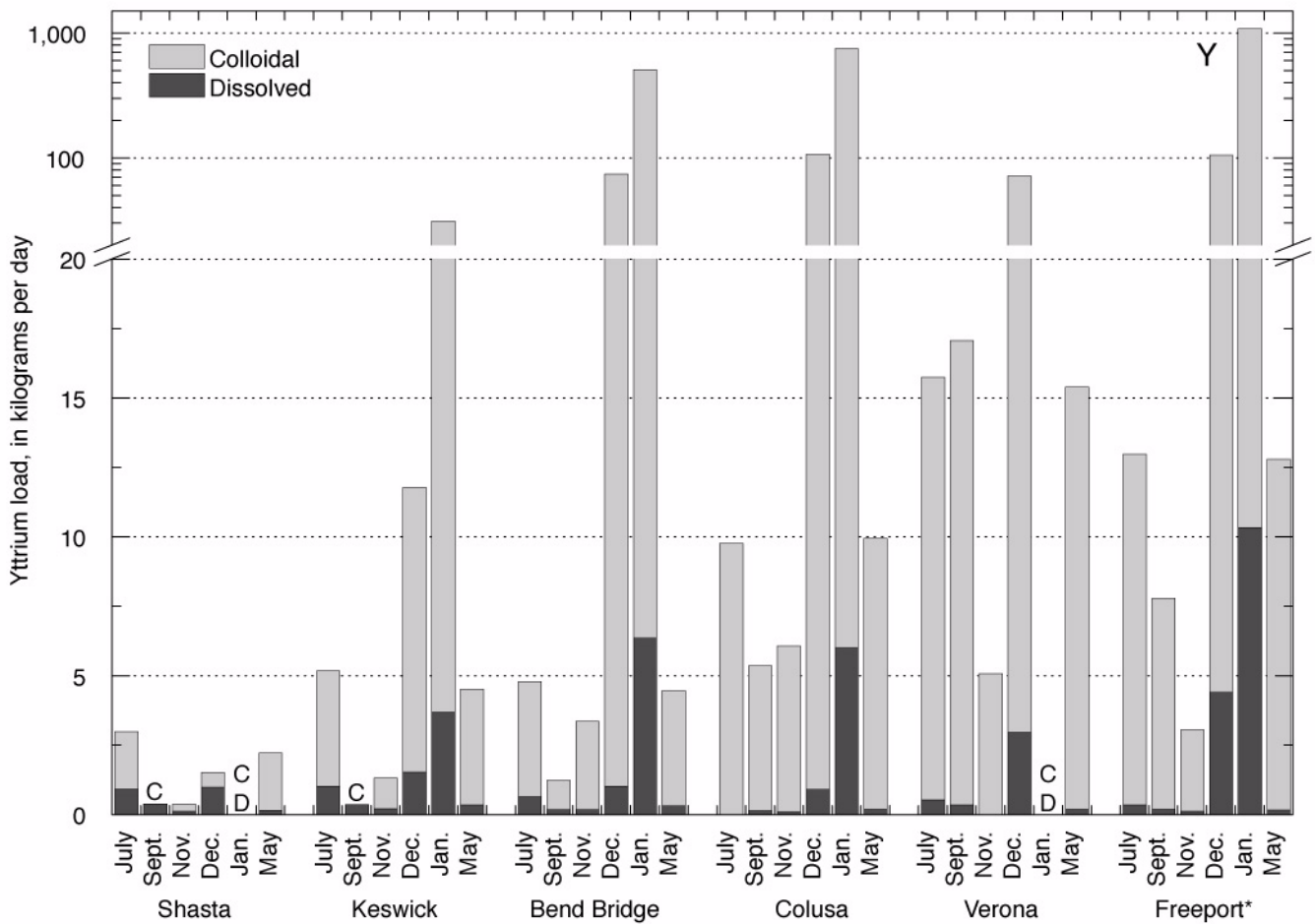


Figure A5-4. Plot of dissolved and colloidal yttrium (Y) loads, July 1996 to May-June (labeled as May on graph) 1997, Sacramento River, California. C, no colloidal load data available; D, no dissolved load data available. Freeport data for January 1997 is the sum of loads from the Sacramento River at Tower Bridge plus the Yolo Bypass.

Appendix 6. Hydrographs Showing Daily Mean Discharge and Time of Sampling

Figure A6-1. Hydrographs showing daily mean discharge and time of sampling, November 1996, Sacramento River, California for *A.* Below Keswick Dam, *B.* Bend Bridge, *C.* Colusa, *D.* Yolo Bypass, *E.* Verona, and *F.* Freeport.

Figure A6-2. Hydrographs showing daily mean discharge and time of sampling, December 1996, Sacramento River, California for *A.* Below Keswick Dam, *B.* Bend Bridge, *C.* Colusa, *D.* Yolo Bypass, *E.* Verona, and *F.* Freeport.

Figure A6-3. Hydrographs showing daily mean discharge and time of sampling, January 1997, Sacramento River, California for *A.* Below Keswick Dam, *B.* Bend Bridge, *C.* Colusa, *D.* Yolo Bypass, *E.* Verona, and *F.* Freeport.

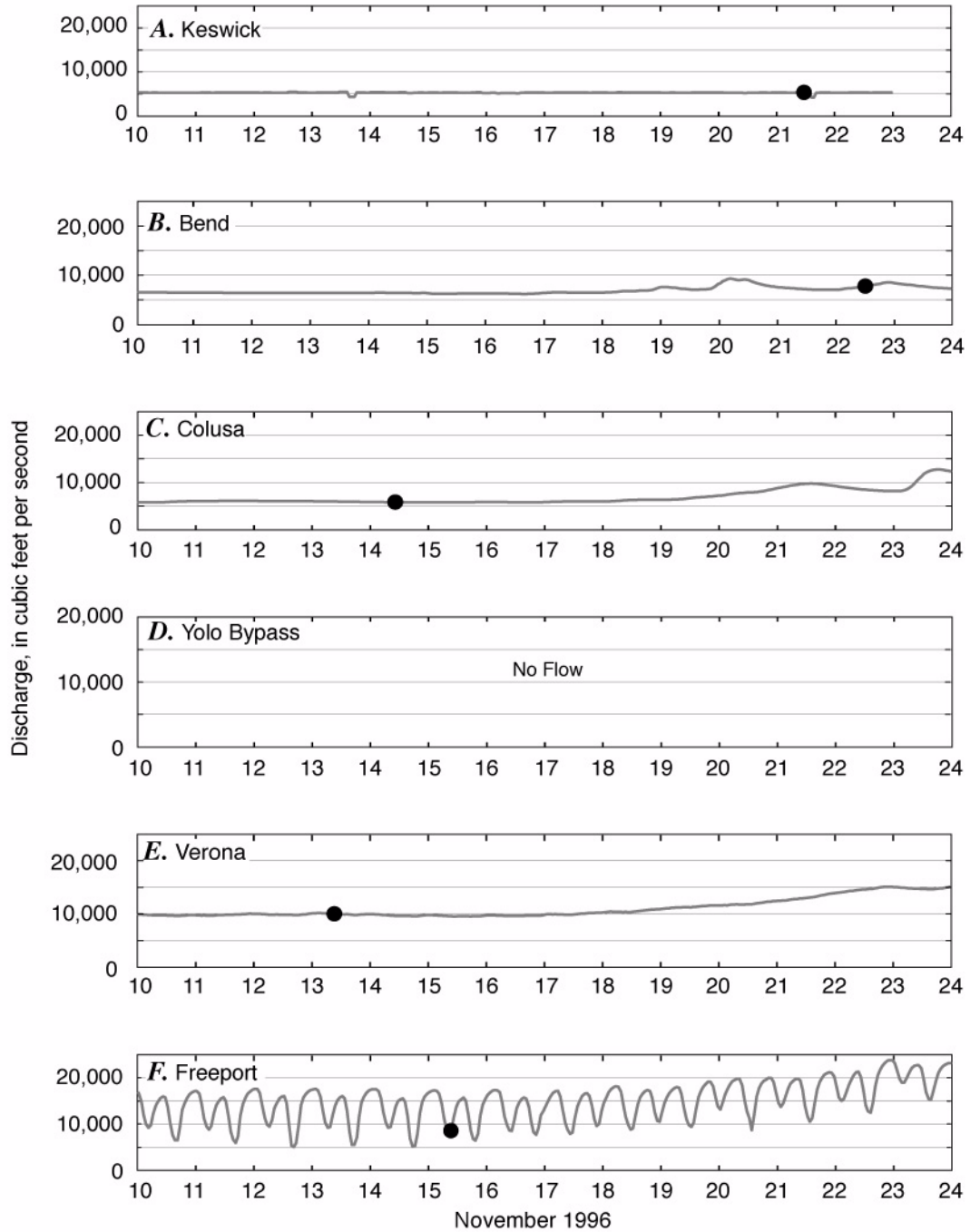


Figure A6-1. Hydrographs showing daily mean discharge and time of sampling, November 1996, Sacramento River, California for A. Below Keswick Dam, B. Bend Bridge, C. Colusa, D. Yolo Bypass, E. Verona, and F. Freeport.

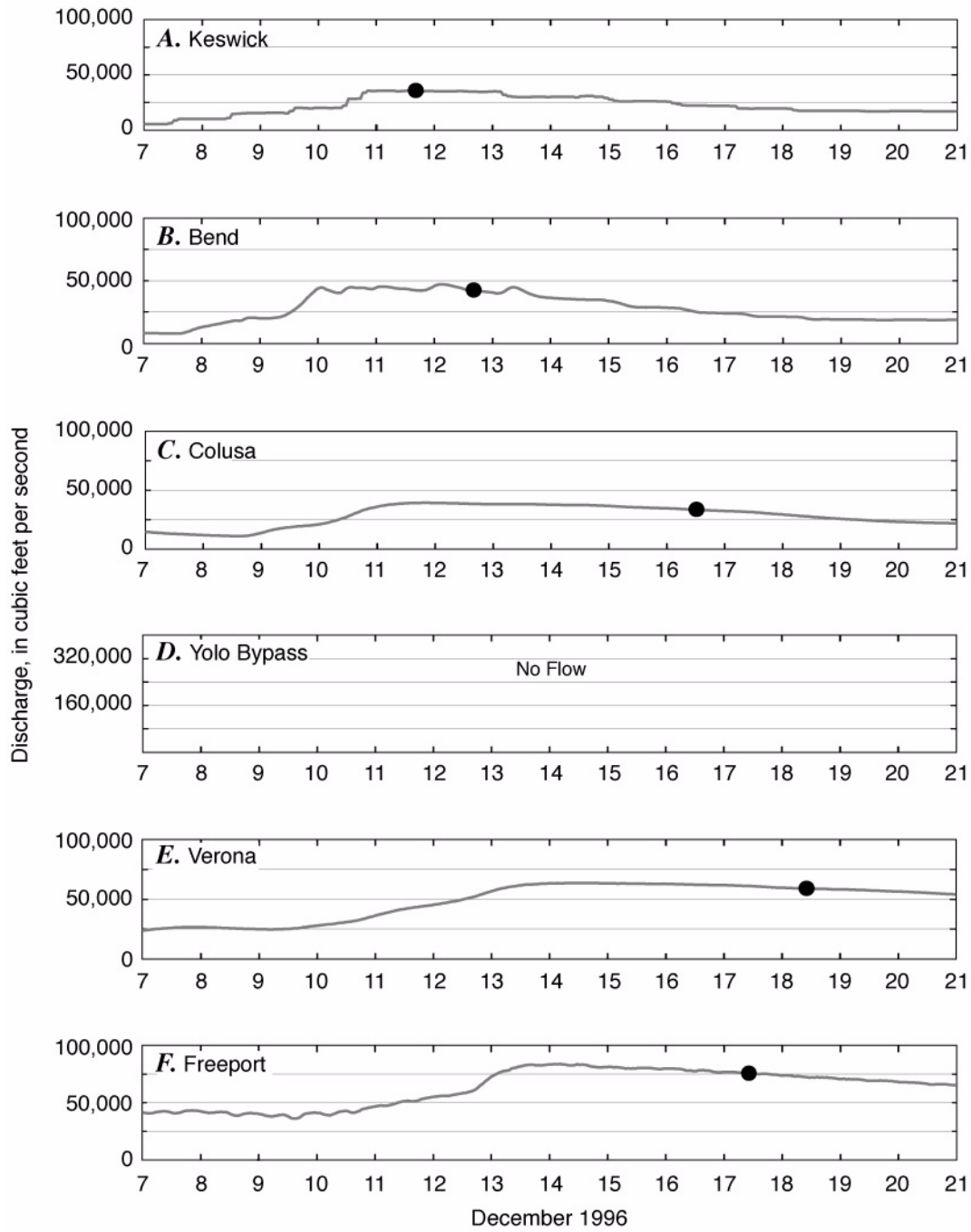


Figure A6-2. Hydrographs showing daily mean discharge and time of sampling, December 1996, Sacramento River, California for A. Below Keswick Dam, B. Bend Bridge, C. Colusa, D. Yolo Bypass, E. Verona, and F. Freeport.

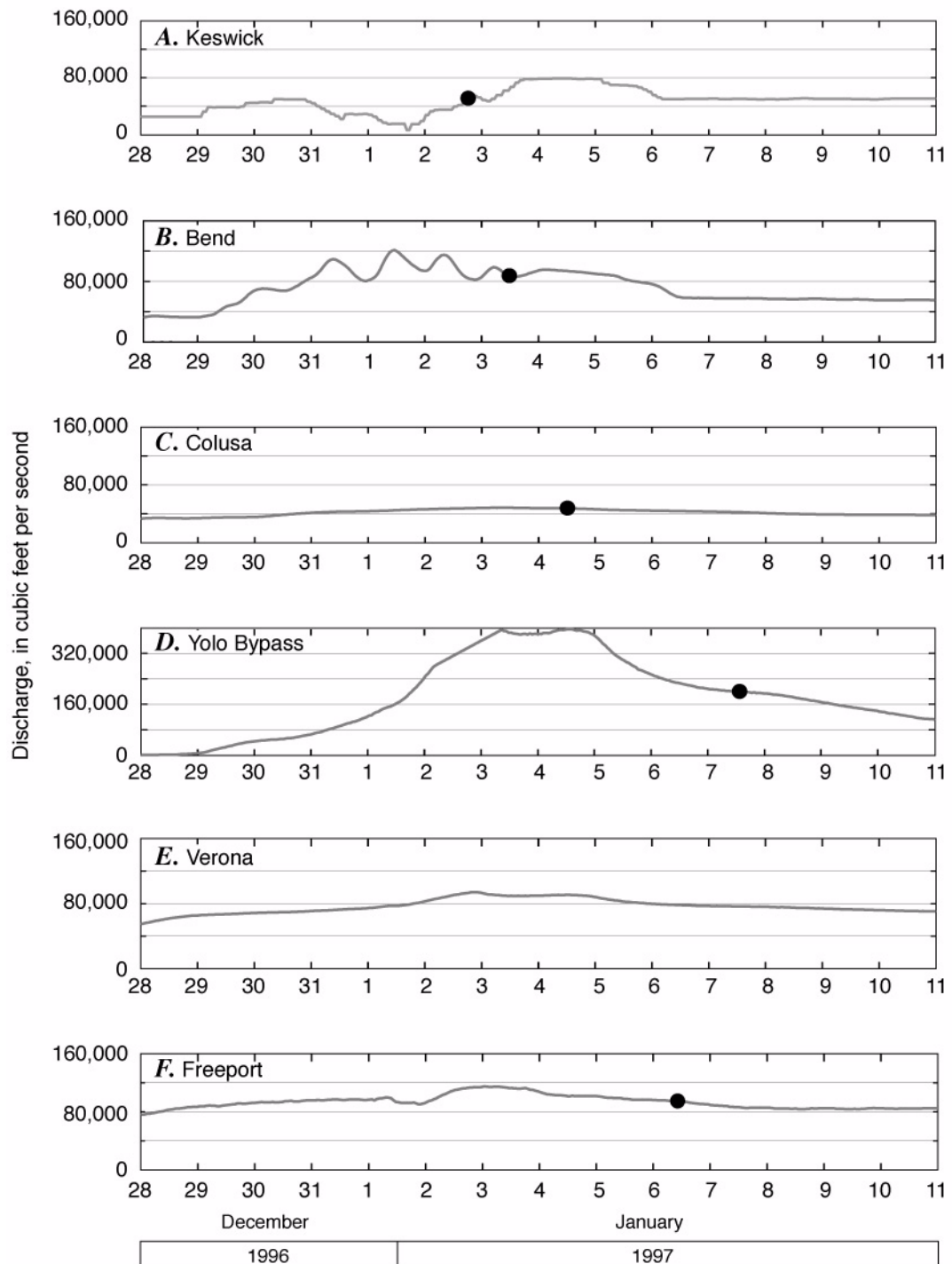


Figure A6-3. Hydrographs showing daily mean discharge and time of sampling, January 1997, Sacramento River, California for A. Below Keswick Dam, B. Bend Bridge, C. Colusa, D. Yolo Bypass, E. Verona, and F. Freeport.