

**GRASSLAND BYPASS PROJECT**

**MONTHLY DATA REPORT**

**December 1996**

February 20, 1997

**Preliminary Results**

**A cooperative effort of:**

U.S. Bureau of Reclamation  
Central Valley Regional Water Quality Control Board  
U.S. Fish and Wildlife Service  
California Department of Fish and Game  
San Luis & Delta-Mendota Water Authority  
U.S. Environmental Protection Agency  
U.S. Geological Survey

**compiled by San Francisco Estuary Institute**

---

---

**GRASSLAND BYPASS PROJECT**  
**MONTHLY DATA REPORT**

---

---

**LIST OF TABLES FOR MONTHLY REPORT****Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 1996.
2. Continuous water monitoring at Station B (discharge from San Luis Drain), December and November 1996 (revised).
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), December 1996.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 1996.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 1996.

**Weekly Monitoring**

6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1996.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1996.
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1996.
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1996.
10. Weekly water quality monitoring at Station F (Salt Slough at Highway 165), 1996.
11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1996.
12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1996.
13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1996.
14. Weekly water quality monitoring at Station K (Agatha Canal), 1996.
15. Weekly water quality monitoring at Station L (San Luis Canal at Henry Miller Road), 1996.
16. Weekly water quality monitoring at Station M (Santa Fe Canal at Henry Miller Road), 1996.
17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1996.

**Monthly Monitoring**

18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 1995 to December 1996. Each value is the mean of 4 replicates with 10 fish in each replicate.
19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 1995 to December 1996. Each value is the mean of 4 replicates with 10 fish in each replicate.
20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 1995 to December 1996. Each value is the mean of 10 replicates with 1 animal in each replicate.
21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 1995 to December 1996. Each value is the mean of 10 replicates with 1 animal in each replicate.
22. Summary of *Selenastrum capricornutum* growth in 7-day tests using water samples collected from December 1995 to December 1996. Each value is the mean of 4 replicates.
23. Summary of selenium concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to December 1996.
24. Summary of sulfate concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to December 1996.
25. Explanations of footnotes and agency abbreviations.

**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>
<b>DATA SOURCE</b>	<b>USBR</b>
<b>UNITS</b>	<b>cfs</b>
01-Dec-96	15.5
02-Dec-96	13.2
03-Dec-96	12.1
04-Dec-96	13.0
05-Dec-96	14.9
06-Dec-96	16.4
07-Dec-96	17.6
08-Dec-96	17.6
09-Dec-96	23.7
10-Dec-96	30.9
11-Dec-96	34.1
12-Dec-96	30.6
13-Dec-96	28.0
14-Dec-96	32.5
15-Dec-96	26.8
16-Dec-96	26.2
17-Dec-96	30.3
18-Dec-96	31.3
19-Dec-96	32.0
20-Dec-96	33.9
21-Dec-96	35.9
22-Dec-96	42.2
23-Dec-96	47.8
24-Dec-96	42.4
25-Dec-96	34.3
26-Dec-96	33.9
27-Dec-96	37.5
28-Dec-96	36.1
29-Dec-96	33.8
30-Dec-96	40.7
31-Dec-96	51.2

**Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), December 1996.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USBR	USBR	USBR	CVRWQCB	Computed
UNITS	cfs	°C	µS/cm	µg/l	lbs
Dec-01-1996	19.5	11.4	3,540	46.1	4.8
Dec-02-1996	19.2	11.0	3,747	50.2	5.2
Dec-03-1996	19.3	10.5	3,811	46.2	4.8
Dec-04-1996	18.8	10.4	3,646	31.6	3.2
Dec-05-1996	19.5	10.6	3,713	29.5	3.1
Dec-06-1996	20.9	10.8	3,872	38.3	4.3
Dec-07-1996	21.8	11.2	3,932	39.3	4.6
Dec-08-1996	22.9	11.8	3,845	38.2	4.7
Dec-09-1996	23.2	12.0	3,872	34.8	4.4
Dec-10-1996	29.5	12.2	4,033	34.7	5.5
Dec-11-1996	36.0	12.7	4,059	42.4	8.2
Dec-12-1996	37.8	13.6	3,998	49.2	10.0
Dec-13-1996	34.4	14.0	3,634	45.3	8.4
Dec-14-1996	33.6	12.2	3,815	48.3	8.8
Dec-15-1996	32.9	11.6	3,992	51.8	9.2
Dec-16-1996	29.4	11.7	3,761	50.9	8.1
Dec-17-1996	30.1	11.8	3,730	47.2	7.7
Dec-18-1996	32.9	11.4	3,935	50.8	9.0
Dec-19-1996	33.0	11.0	4,030	51.1	9.1
Dec-20-1996	34.1	10.1	4,116	54.8	10.1
Dec-21-1996	37.1	9.4	4,308	56.1	11.2
Dec-22-1996	40.3	9.6	4,337	51.9	11.3
Dec-23-1996	41.5	10.1	4,447	63.4	14.2
Dec-24-1996	46.7	10.1	4,590	71.0	17.9
Dec-25-1996	40.5	9.7	4,580	71.3	15.6
Dec-26-1996	36.5	9.4	4,281	67.3	13.2
Dec-27-1996	36.3	9.9	3,858	62.9	12.3
Dec-28-1996	38.0	10.7	4,113	65.7	13.5
Dec-29-1996	36.2	11.1	4,315	63.0	12.3
Dec-30-1996	36.2	11.7	4,568	67.9	13.3
Dec-31-1996	43.2	12.7	4,592	74.6	17.4
Mean	31.7	11.2	4,035	51.5	
<b>Total</b>					<b>285</b>
<b>Load Limitation for December 1996 (lbs)</b>					<b>389</b>

**Table 3. Continuous water monitoring at Station D  
(Mud Slough North downstream of drainage discharges), December 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
01-Dec-96	173	11.0	1,570
02-Dec-96	169	10.3	1,620
03-Dec-96	163	9.6	1,660
04-Dec-96	149	9.7	1,770
05-Dec-96	145	10.3	1,780
06-Dec-96	156	10.8	1,730
07-Dec-96	172	11.3	1,690
08-Dec-96	180	12.0	1,700
09-Dec-96	208	12.2	1,590
10-Dec-96	297	12.1	1,430
11-Dec-96	367	13.0	1,400
12-Dec-96	370	13.9	1,440
13-Dec-96	354	14.0	1,370
14-Dec-96	342	11.0	1,340
15-Dec-96	329	10.3	1,400
16-Dec-96	317	10.5	1,360
17-Dec-96	307	10.8	1,350
18-Dec-96	304	10.2	1,390
19-Dec-96	303	9.7	1,410
20-Dec-96	298	9.0	1,440
21-Dec-96	281	8.4	1,670
22-Dec-96	279	8.7	1,840
23-Dec-96	341	9.3	1,580
24-Dec-96	441	9.7	1,360
25-Dec-96	471	9.2	1,250
26-Dec-96	460	9.1	1,190
27-Dec-96	453	9.9	1,140
28-Dec-96	435	10.7	1,230
29-Dec-96	414	10.9	1,320
30-Dec-96	420	11.7	1,340
31-Dec-96	445	12.7	1,400

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
01-Dec-96	212	11.0	1,370
02-Dec-96	e209	10.4	1,350
03-Dec-96	199	9.8	1,380
04-Dec-96	191	9.7	1,390
05-Dec-96	185	10.4	1,420
06-Dec-96	e196	10.9	1,330
07-Dec-96	189	11.5	1,300
08-Dec-96	191	12.0	1,330
09-Dec-96	185	12.1	1,350
10-Dec-96	168	12.0	1,320
11-Dec-96	e285	12.6	1,290
12-Dec-96	e350	13.7	1,290
13-Dec-96	e393	14.1	1,350
14-Dec-96	e346	11.7	1,410
15-Dec-96	e295	10.9	1,470
16-Dec-96	e270	10.9	1,420
17-Dec-96	e234	11.1	1,480
18-Dec-96	e202	10.6	1,500
19-Dec-96	e175	10.1	1,530
20-Dec-96	163	9.4	1,550
21-Dec-96	145	9.0	1,560
22-Dec-96	e155	9.3	1,530
23-Dec-96	e255	10.0	1,550
24-Dec-96	e339	9.9	1,620
25-Dec-96	185	9.2	1,690
26-Dec-96	e310	9.0	1,670
27-Dec-96	e295	9.9	1,640
28-Dec-96	e245	11.0	1,600
29-Dec-96	e242	11.4	1,650
30-Dec-96	e243	12.0	1,650
31-Dec-96	e306	13.1	1,660

**Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/l
01-Dec-96	953	11.1	1,042	2.0
02-Dec-96	911	10.6	1,097	1.7
03-Dec-96	904	9.7	1,096	1.6
04-Dec-96	868	9.7	1,115	1.6
05-Dec-96	826	10.5	1,171	1.6
06-Dec-96	800	11.0	1,207	1.4
07-Dec-96	991	11.1	853	0.8
08-Dec-96	1330	11.2	561	1.0
09-Dec-96	1450	11.7	599	1.1
10-Dec-96	1500	11.9	652	1.1
11-Dec-96	2420	12.6	509	0.9
12-Dec-96	e3400	13.2	333	0.7
13-Dec-96	e3720	14.0	347	0.9
14-Dec-96	e3890	12.9	361	0.8
15-Dec-96	e4580	11.5	325	0.6
16-Dec-96	e4960	10.9	281	0.6
17-Dec-96	e5300	11.0	293	0.6
18-Dec-96	e5350	10.6	288	0.5
19-Dec-96	e5210	10.3	300	0.6
20-Dec-96	e5060	9.8	289	0.6
21-Dec-96	e4830	9.4	310	0.7
22-Dec-96	e5460	9.6	293	0.6
23-Dec-96	e6700	9.5	222	0.5
24-Dec-96	e7070	9.5	215	0.6
25-Dec-96	e7350	9.3	256	0.7
26-Dec-96	e8140	9.2	NP	NP
27-Dec-96	e8310	9.6	NP	NP
28-Dec-96	e8210	10.3	NP	NP
29-Dec-96	e8020	10.8	NP	NP
30-Dec-96	e8050	11.2	NP	NP
31-Dec-96	e8760	11.9	NP	NP

Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	mg/l
03-Oct-96	20.1	21.0	8.1	5,210	P	77.4	79.1	P
08-Oct-96	20.4	25.4	8.3	4,220	44	75.5	NP	P
18-Oct-96	22.7	16.6	7.1	3,940	140	38.6	37.5 <sup>L</sup>	P
25-Oct-96	18.3	14.3	8.3	4,270	P	51.4	49.5	P
29-Oct-96	19.1	12.1	8.1	4,020	P	62.0	61.6	P
01-Nov-96	31.0	16.6	7.3	3,610	P	NA	NP	P
08-Nov-96	20.9	14.3	6.8	4,250	42	61.3	61.1 <sup>F</sup>	P
08-Nov-96	20.9	.	.	.	.	.	61.8 <sup>L</sup>	.
14-Nov-96	22.6	14.3	8.1	4,390	51	76.8	NA	P
19-Nov-96	26.5	17.7	7.7	3,460	77	56.2	57.0 <sup>F</sup>	P
26-Nov-96	19.4	15.4	7.4	3,470	64	40.6	39.6 <sup>F</sup>	P
05-Dec-96	14.9	NA	7.7	5,000	49	68.4	69.9 <sup>L</sup>	P
05-Dec-96	14.9	.	.	.	.	.	NA <sup>F</sup>	.
10-Dec-96	30.9	14.3	7.0	4,020	110	NA	54.3 <sup>L</sup>	P
10-Dec-96	30.9	.	.	.	.	.	56.3 <sup>F</sup>	.
20-Dec-96	33.9	8.8	8.5	4,970	56	80.4	80.2 <sup>F</sup>	P
27-Dec-96	37.5	12.7	7.8	5,130	92	91.7	92.0 <sup>L</sup>	P
27-Dec-96	37.5	.	.	.	.	.	91.9 <sup>F</sup>	.

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	mg/l
03-Oct-96	18.1	21.0	7.9	4,340	P	66.8	65.8	P
08-Oct-96	19.3	23.2	7.3	4,330	8	62.5	NP	P
18-Oct-96	21.7	16.6	6.9	3,590	67	43.0	41.8	P
25-Oct-96	18.3	14.3	8.0	4,280	P	79.8	77.2	P
29-Oct-96	17.8	12.1	7.6	4,260	P	54.6	NP	P
01-Nov-96	32.7	15.4	7.4	4,010	P	NA	NP	P
08-Nov-96	21.2	12.7	8.0	3,570	12	43.2	42.1 <sup>F</sup>	P
08-Nov-96	21.2	.	.	.	.	.	43.4 <sup>L</sup>	.
14-Nov-96	21.9	14.3	7.6	4,330	8	58.0	NA	P
19-Nov-96	25.8	16.6	7.2	4,770	10	75.8	75.2	P
26-Nov-96	30.0	15.4	7.4	3,300	<1	58.9	56.4	P
05-Dec-96	19.5	NA	7.1	3,910	14	30.1	28.8 <sup>L</sup>	P
05-Dec-96	19.5	.	.	.	.	.	31.0 <sup>F</sup>	.
10-Dec-96	29.5	13.2	6.5	4,330	25	38.9	36.2 <sup>L</sup>	P
10-Dec-96	29.5	.	.	.	.	.	39.0 <sup>F</sup>	.
20-Dec-96	34.1	7.7	8.1	4,200	15	49.8	51.1 <sup>L</sup>	P
20-Dec-96	34.1	.	.	.	.	.	49.0 <sup>F</sup>	.
27-Dec-96	36.3	13.8	7.6	4,000	22	60.8	63.5 <sup>L</sup>	P
27-Dec-96	36.3	.	.	.	.	.	61.6 <sup>F</sup>	.

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
03-Oct-96	18.2	6.3	1,048	0.7	P
08-Oct-96	21.6	8.0	744	0.6	P
18-Oct-96	14.3	5.2	967	0.8	P
25-Oct-96	13.8	7.8	953	0.5	P
29-Oct-96	13.2	7.8	1,124	0.5	P
01-Nov-96	14.9	5.4	1,016	NA	P
08-Nov-96	12.1	7.3	1,050	0.4	P
14-Nov-96	14.3	6.1	1,024	0.4	P
19-Nov-96	16.6	6.5	1,074	0.4	P
26-Nov-96	14.9	7.3	1,000	0.5	P
05-Dec-96	NA	5.9	1,380	0.5	P
10-Dec-96	14.3	7.4	983	0.5	P
20-Dec-96	7.7	7.9	950	0.4	P
27-Dec-96	13.2	7.4	828	0.5	P

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/l	mg/l
03-Oct-96	44	19.9	7.0	3,490	56.7	P
08-Oct-96	68	22.7	8.0	1,890	20.3	P
18-Oct-96	114	14.9	6.0	1,683	13.5	P
25-Oct-96	128	14.3	8.0	1,544	13.8	P
29-Oct-96	94	13.2	7.4	1,878	12.2	P
02-Nov-96	156	14.9	6.4	1,807	NA	P
08-Nov-96	157	12.1	7.6	1,510	8.0	P
14-Nov-96	158	14.3	6.5	1,591	9.1	P
19-Nov-96	194	16.6	6.5	1,707	11.2	P
26-Nov-96	265	14.9	6.5	1,432	9.0	P
05-Dec-96	146	NA	6.5	1,860	5.0	P
10-Dec-96	299	13.2	7.3	1,500	5.5	P
20-Dec-96	300	7.7	8.0	1,450	9.5	P
27-Dec-96	463	13.2	7.4	1,150	5.7	P

Table 10. Weekly water quality monitoring at Station F (Salt Slough at Highway 165), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/l	mg/l
03-Oct-96	88	19.3	5.6	1,400	1.2	P
08-Oct-96	124	NP	NP	NP	1.1	P
17-Oct-96	102	18.2	6.7	1,790	0.8	P
24-Oct-96	125	14.9	6.1	1,355	0.7	P
31-Oct-96	257	13.8	5.7	1,000	1.0	P
07-Nov-96	203	14.3	5.3	1,280	0.8	P
15-Nov-96	164	13.8	7.5	1,425	0.8	P
22-Nov-96	192	17.7	7.4	1,315	1.0	P
27-Nov-96	241	14.3	7.1	1,319	NP	P
06-Dec-96	185	10.4	7.2	1,502	0.9	P
12-Dec-96	253	14.3	6.9	1,134	1.1	P
19-Dec-96	290	12.1	7.0	1,680	0.7	P
26-Dec-96	242	8.8	7.4	1,781	0.8	P

Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
03-Oct-96	19.9	6.7	714	0.6	P
08-Oct-96	21.6	8.0	1,150	0.9	P
17-Oct-96	17.1	5.6	1,490	0.6	P
24-Oct-96	14.3	7.1	777	0.5	P
31-Oct-96	13.8	6.8	728	0.9	P
07-Nov-96	12.7	6.0	1,080	0.7	P
15-Nov-96	14.9	7.7	1,594	0.8	P
22-Nov-96	17.7	7.6	1,180	0.8	P
27-Nov-96	14.3	7.2	889	0.6	P
06-Dec-96	11.0	7.5	1,608	0.8	P
12-Dec-96	14.9	6.9	125	0.2	P
19-Dec-96	11.0	7.4	347	0.2	P
26-Dec-96	8.8	7.9	243	0.3	P

**Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
03-Oct-96	19.3	6.8	1,172	6.8	P
08-Oct-96	22.7	7.7	1,480	5.2	P
17-Oct-96	19.3	7.5	1,690	5.9	P
24-Oct-96	14.9	7.5	1,006	2.3	P
31-Oct-96	14.9	7.9	989	2.9	P
07-Nov-96	14.3	6.2	1,230	3.3	P
15-Nov-96	15.4	7.8	1,707	4.2	P
22-Nov-96	18.8	7.7	1,355	4.0	P
27-Nov-96	15.4	7.5	1,079	2.5	P
06-Dec-96	11.0	7.5	1,784	2.0	P
12-Dec-96	14.3	7.4	370	0.9	P
19-Dec-96	11.0	7.2	510	0.9	P
26-Dec-96	8.8	7.0	431	1.1	P

**Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
03-Oct-96	20.4	8.3	382	0.8	P
08-Oct-96	22.1	8.7	347	0.8	P
18-Oct-96	17.7	8.5	360	0.6	P
25-Oct-96	14.9	8.7	394	0.8	P
01-Nov-96	17.1	9.0	394	0.8	P
08-Nov-96	13.2	7.5	491	0.9	P
14-Nov-96	14.9	8.7	434	0.7	P
19-Nov-96	16.0	8.4	483	0.9	P
26-Nov-96	16.0	8.1	445	1.0	P
05-Dec-96	NA	NA	NA	NA	P
10-Dec-96	NA	NA	NA	NA	P
20-Dec-96	7.7	8.4	612	1.4	P
27-Dec-96	NA	NA	689	1.7	P

Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
03-Oct-96	21.0	8.5	481	1.0	P
08-Oct-96	23.2	8.7	324	0.7	P
18-Oct-96	17.7	7.9	358	0.6	P
25-Oct-96	14.9	8.6	412	0.7	P
01-Nov-96	16.6	7.7	407	1.0	P
08-Nov-96	13.8	6.6	427	0.7	P
14-Nov-96	14.9	8.5	445	0.8	P
19-Nov-96	16.0	8.5	528	0.9	P
26-Nov-96	15.4	8.3	418	1.0	P
05-Dec-96	NA	8.3	601	1.4	P
10-Dec-96	13.2	7.8	573	1.3	P
20-Dec-96	NA	NA	612	1.3	P
27-Dec-96	12.1	7.0	704	1.8	P

Table 15. Weekly water quality monitoring at Station L (San Luis Canal at Henry Miller Road), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
01-Nov-96	15.4	8.2	828	1.1	P
08-Nov-96	12.7	7.5	943	1.1	P
15-Nov-96	14.3	7.4	967	1.0	P
22-Nov-96	17.1	7.1	910	1.1	P
27-Nov-96	13.2	7.1	1,018	1.1	P
06-Dec-96	9.9	7.0	911	1.1	P
12-Dec-96	13.8	7.5	868	1.1	P
19-Dec-96	11.0	7.6	1,075	1.2	P

Table 16. Weekly water quality monitoring at Station M (Santa Fe Canal at Henry Miller Road), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
01-Nov-96	15.4	8.7	467	1.0	P
08-Nov-96	12.1	7.0	482	0.8	P
15-Nov-96	13.8	7.3	573	0.9	P
22-Nov-96	17.1	6.9	620	1.0	P
27-Nov-96	12.7	6.5	705	1.2	P
06-Dec-96	9.9	6.7	638	1.2	P
12-Dec-96	14.3	7.7	455	1.2	P
19-Dec-96	11.0	7.6	630	1.3	P
26-Dec-96	8.8	7.9	1,228	1.5	P

Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1996.

See Table 25 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/l	mg/l
03-Oct-96	715	19.9	7.0	846	3.0	P
08-Oct-96	537	21.6	7.8	967	2.3	P
17-Oct-96	1,400	17.7	8.0	524	1.4	P
24-Oct-96	1,280	14.3	7.8	503	0.9	P
31-Oct-96	1,290	14.9	7.9	638	1.5	P
07-Nov-96	955	14.3	6.4	857	1.8	P
15-Nov-96	NP	15.4	7.9	1,134	2.2	P
22-Nov-96	1,100	18.2	7.9	945	2.4	P
27-Nov-96	1,320	14.9	7.5	857	2.1	P
06-Dec-96	792	11.0	7.8	1,212	1.8	P
12-Dec-96	3,030	13.2	7.4	305	0.9	P
19-Dec-96	2,300	11.6	7.0	299	0.5	P
26-Dec-96	2,410	8.8	7.5	315	0.2	P

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 1995 to November 1996. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
December-95	NT	83	95	93	90	93
March-96	NT	93	95	93	95	96
August-96	NT	98	93	90	90	100
October-96	68	83	88	88	93	98
November-96	98	98	95	85	95	93
December-96	98	50 *	78 *	93	98	100

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 1995 to November 1996. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	grams	grams	grams	grams	grams	grams
December-95	NT	0.32	0.27	0.32	0.32	0.32
March-96	NT	0.43	0.44	0.44	0.47	0.48
August-96	NT	0.56	0.45	0.44	0.50	0.47
October-96	0.56	0.56	0.53 *	0.59	0.60	0.59
November-96	0.53	0.57	0.63	0.53	0.55	0.59
December-96	0.71	0.71	0.83	0.65	0.68	0.58

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 1995 to November 1996. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
December-95	NT	100	100	100	100	100
March-96	NT	90	90	100	100	100
August-96	NT	100	100	100	100	100
October-96	90	100	100	100	100	70
November-96	100	90	90	100	100	100
December-96	100	80	80	100	100	100

**Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 1995 to November 1996. Each value is the mean of 10 replicates with 1 animal in each replicate.**

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates/female	neonates/female	neonates/female	neonates/female	neonates/female	neonates/female
December-95 <sup>(1)</sup>	NT	21.5 *	18.5 *	18.4 *	19.8	16.9
March-96	NT	18.8	23.9 *	18.2	20.1	19.9
August-96	NT	27.0	32.8 *	27.4	27.8	26.4
October-96	16.8	20.2	17.9	13.1	12.9	16.0
November-96	30.6	21.8	21.9	22.4	21.5	15.9
December-96	23.2	14.0	17.2	17.8	16.8	14.8

**Table 22. Summary of *Selenastrum capricornutum* growth in 7-day tests using water samples collected from December 1995 to November 1996. Each value is the mean of 4 replicates.**

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 <sup>5</sup> cells/ml					
December-95	NT	22.0 *	12.0	11.0 *	12.0	11.0
March-96	NT	94.0 *	11.3	14.7	11.9	10.7
August-96	NT	6.2 *	5.6 *	13.8	16.8	14.7
October-96 <sup>(2)</sup>	4.3 *	12.3	11.3	8.5	3.5	36.6
November-96 <sup>(3)</sup>	16.6	56.1	48.9	33.5	39.7	91.1
December-96	0.5	5.9	0.5	4.2	3.4	18.9

**Table 23. Summary of selenium concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to November 1996.**

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
December 11, 1995	NT	1	1	12	<1
December 12, 1995	NT	<1	<1	14	<1
December 15, 1995	NT	<1	<1	12	<1
March 18, 1996	NT	<1	<1	17	<1
March 21, 1996	NT	<1	<1	16	<1
March 23, 1996	NT	<1	<1	18	<1
March 27, 1996	NT	1	<1	19	<1
August 6, 1996	NT	3	2	13	<1
August 8, 1996	NT	<1	1	13	<1
August 10, 1996	NT	2	2	11	<1
August 13, 1996	NT	NT	NT	NT	NT
October 8, 1996	65	<1	20	1	<1
October 10, 1997	62	<1	16	1	<1
October 12, 1997	72	<1	19	<1	<1
November 1996 #1	P	P	P	P	P
November 1996 #2	P	P	P	P	P
November 1996 #3	P	P	P	P	P
December 10, 1996	36	ND	5	ND	ND
December 12, 1996	54	ND	8	ND	ND
December 14, 1996	51	ND	5	2	ND

**Table 24. Summary of sulfate concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to November 1996. Analysis was completed at USBR.**

See Table 25 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
December 11, 1995	NT	NT	NT	NT	NT
December 12, 1995	NT	NT	NT	NT	NT
December 15, 1995	NT	NT	NT	NT	NT
March 18, 1996	NT	320	320	520	55
March 21, 1996	NT	330	360	490	52
March 23, 1996	NT	350	370	530	52
March 27, 1996	NT	350	330	550	51
August 6, 1996	NT	220	270	410	55
August 8, 1996	NT	680	450	390	20
August 10, 1996	NT	260	370	370	48
August 13, 1996	NT	NT	NT	NT	NT
October 8, 1996	1,400	89	480	140	32
October 10, 1997	1,400	89	480	140	31
October 12, 1997	1,600	85	540	150	26
November 1996 #1	P	P	P	P	P
November 1996 #2	P	P	P	P	P
November 1996 #3	P	P	P	P	P
December 10, 1996	1590	138	330	284	33
December 12, 1996	1540	124	351	255	33
December 14, 1996	1330	133	269	288	33

Table 25. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
USBR	U.S. Bureau of Reclamation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
E	estimated value - average of 11/24/96 - 11/26/96
NP	data not provided - future unknown
P	pending, data not available at this time but will be available in the future
.	Not applicable
USGS	U.S. Geological Survey
F	Sample filtered in the field
L	Sample filtered in the lab
<	less than
NA	not analyzed - operator error, data will not be available in the future
*	Significantly different from Delta Mendota Canal ( $p < 0.05$ )
(1)	This test used <i>Ceriodaphnia dubia</i> in water with high hardness. Results were compared to hard water and moderately hard water for definitive bioassays. All treatment means were significantly different from the laboratory control (hard water) for definitive tests.
NT	not tested
SLDMWA	San Luis & Delta-Mendota Water Authority
(2)	Selenate added
(3)	Lab Control was significantly different from DMC, Site B, and Site F samples. (There was no significant difference for site samples versus DMC water.) with use of 4-day old larvae resulted in 0/39. Apparent cause of mortality was elevated temperature and sediment which was found in all cages and beakers.