

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

March 2010

July 19, 2010

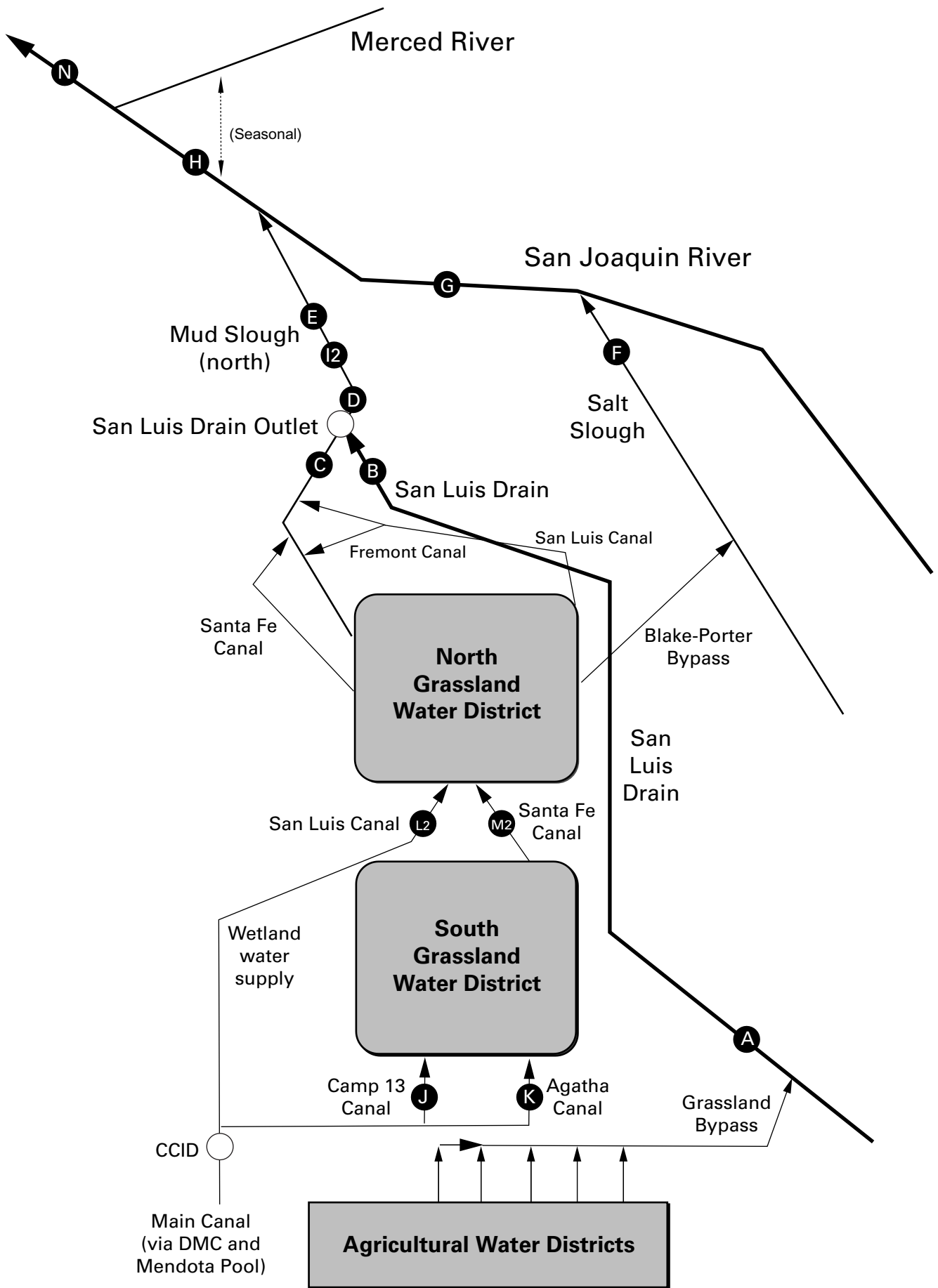
Preliminary Results

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), March 2010.
- 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), March 2010.
- 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), March 2010.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), March 2010.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), March 2010.

Weekly Monitoring

- 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.
- 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain).
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge).
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge).
10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).
11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).
12. Weekly water quality monitoring at Station J (Camp 13 Ditch).
13. Weekly water quality monitoring at Station K (Agatha Canal).
14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).
15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).
16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).
17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).
18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

Monthly Monitoring

20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from April 2009 to March 2010.
21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from April 2009 to March 2010.
22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from April 2009 to March 2010.
23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from April 2009 to March 2010.
24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from April 2009 to March 2010.
25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2010 to March 2010.
26. Summary of total suspended solids concentrations in grab water samples collected from January 2010 to March 2010.
27. Explanations of footnotes and agency abbreviations.

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), March 2010.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Mar-01-2010	38	4,310
Mar-02-2010	41	4,020
Mar-03-2010	42	3,960
Mar-04-2010	50	3,710
Mar-05-2010	44	4,140
Mar-06-2010	41	4,460
Mar-07-2010	41	4,550
Mar-08-2010	37	4,460
Mar-09-2010	34	4,270
Mar-10-2010	35	4,430
Mar-11-2010	35	4,560
Mar-12-2010	33	4,530
Mar-13-2010	24	4,270
Mar-14-2010	26	4,540
Mar-15-2010	24	4,320
Mar-16-2010	21	4,630
Mar-17-2010	23	5,130
Mar-18-2010	27	4,580
Mar-19-2010	35	4,520
Mar-20-2010	24	4,790
Mar-21-2010	14	4,640
Mar-22-2010	13	4,910
Mar-23-2010	16	4,930
Mar-24-2010	10	5,510
Mar-25-2010	9	5,380
Mar-26-2010	9	5,210
Mar-27-2010	8	3,840
Mar-28-2010	8	3,730
Mar-29-2010	7	3,640
Mar-30-2010	7	3,450
Mar-31-2010	8	4,430
Mean	28	4,540

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), March 2010.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	SLDMWA*	SLDMWA	CVRWQCB	SLDMWA	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Mar-01-2010	35	15.2	8.5	4,660	48.4	9.2
Mar-02-2010	43	15.3	8.6	4,700	41.8	9.7
Mar-03-2010	46	14.1	8.0	4,870	46.0	11.4
Mar-04-2010	48	13.9	8.6	5,180	51.6	13.3
Mar-05-2010	53	14.1	8.1	4,910	46.6	13.3
Mar-06-2010	49	14.0	8.0	4,790	45.4	11.9
Mar-07-2010	45	14.7	8.1	4,590	49.3	12.0
Mar-08-2010	44	14.7	8.3	4,900	56.7	13.5
Mar-09-2010	41	13.7	8.5	4,850	56.2	12.5
Mar-10-2010	39	13.4	8.5	5,170	59.8	12.5
Mar-11-2010	40	13.6	8.5	4,970	55.9	12.1
Mar-12-2010	39	13.8	8.0	4,720	48.0	10.1
Mar-13-2010	36	13.3	8.5	4,800	49.0	9.4
Mar-14-2010	30	12.7	8.7	4,890	46.2	7.6
Mar-15-2010	30	14.2	9.1	4,960	48.4	7.9
Mar-16-2010	28	15.4	8.7	5,140	48.6	7.4
Mar-17-2010	26	17.1	8.0	4,940	47.4	6.6
Mar-18-2010	27	17.9	7.9	5,000	50.7	7.4
Mar-19-2010	31	17.5	7.5	5,020	51.5	8.7
Mar-20-2010	38	18.5	8.7	5,100	47.8	9.7
Mar-21-2010	29	18.5	9.4	5,780	57.5	9.0
Mar-22-2010	19	18.6	8.9	5,340	53.5	5.4
Mar-23-2010	18	17.7	8.7	5,420	59.8	5.7
Mar-24-2010	20	18.2	8.2	5,340	59.3	6.3
Mar-25-2010	14	17.5	8.2	5,150	56.1	4.2
Mar-26-2010	12	17.2	9.4	5,280	54.7	3.6
Mar-27-2010	12	16.6	8.4	5,570	47.3	3.1
Mar-28-2010	10	18.4	8.1	5,110	36.0	2.0
Mar-29-2010	11	18.5	8.2	4,820	35.1	2.0
Mar-30-2010	10	18.2	8.7	5,130	35.6	2.0
Mar-31-2010	10	17.1	9.3	5,390	32.8	1.7
Mean	30	15.9	8.5	5,050	49.1	8.1
Total Acre-feet	1,850					
Total (lbs)						251

Load Limitation for March 2010 (lbs)	472
---	------------

◆To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge is measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation. Water quality data are still collected at the old Site B.

Figure 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

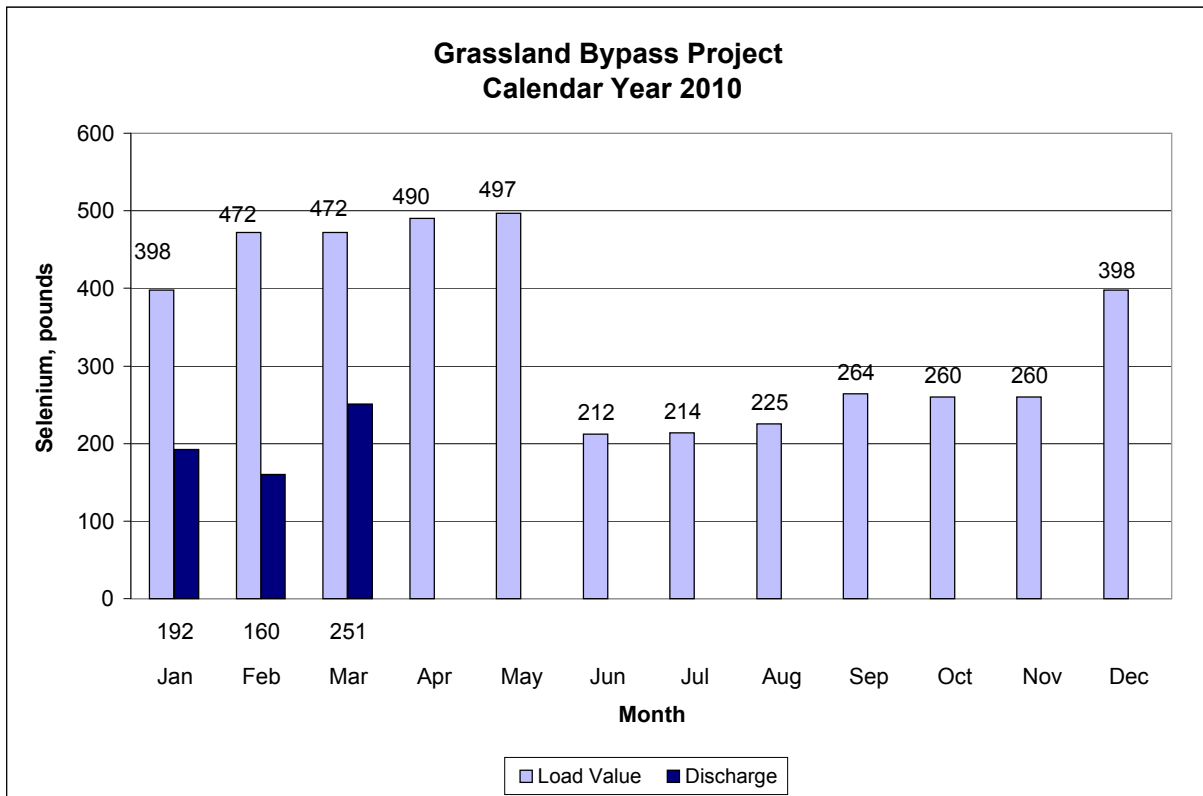


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), March 2010.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Mar-01-2010	151	15.1	2,760
Mar-02-2010	251	14.8	2,320
Mar-03-2010	317	13.0	1,960
Mar-04-2010	330	12.9	2,000
Mar-05-2010	299	13.7	2,300
Mar-06-2010	243	13.9	2,360
Mar-07-2010	214	14.6	2,420
Mar-08-2010	195	14.4	2,520
Mar-09-2010	216	13.0	2,380
Mar-10-2010	212	13.0	2,460
Mar-11-2010	213	13.3	2,480
Mar-12-2010	190	13.6	2,710
Mar-13-2010	178	13.1	2,750
Mar-14-2010	160	12.5	2,770
Mar-15-2010	145	14.3	2,940
Mar-16-2010	144	16.2	2,940
Mar-17-2010	215	17.8	2,440
Mar-18-2010	250	18.1	2,390
Mar-19-2010	241	17.3	2,510
Mar-20-2010	235	18.2	2,620
Mar-21-2010	224	18.2	2,590
Mar-22-2010	185	18.0	2,460
Mar-23-2010	161	17.1	2,460
Mar-24-2010	145	17.6	2,560
Mar-25-2010	133	16.9	2,490
Mar-26-2010	116	16.3	2,680
Mar-27-2010	108	16.8	2,830
Mar-28-2010	104	18.2	2,710
Mar-29-2010	110	18.8	2,810
Mar-30-2010	106	17.9	2,950
Mar-31-2010	87	16.4	3,170
Mean	199	15.4	2,530

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), March 2010.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Mar-01-2010	385	14.0	1,540
Mar-02-2010	401	14.3	1,560
Mar-03-2010	383	13.3	1,600
Mar-04-2010	355	12.9	1,620
Mar-05-2010	340	12.9	1,630
Mar-06-2010	361	13.3	1,630
Mar-07-2010	360	13.8	1,650
Mar-08-2010	341	13.9	1,650
Mar-09-2010	319	13.2	1,630
Mar-10-2010	305	12.8	1,630
Mar-11-2010	290	12.8	1,670
Mar-12-2010	281	12.9	1,650
Mar-13-2010	276	12.8	1,640
Mar-14-2010	270	12.6	1,640
Mar-15-2010	267	13.4	1,620
Mar-16-2010	268	14.7	1,610
Mar-17-2010	272	16.5	1,620
Mar-18-2010	285	17.4	1,600
Mar-19-2010	302	17.2	1,620
Mar-20-2010	328	17.3	1,590
Mar-21-2010	352	17.3	1,550
Mar-22-2010	363	17.4	1,590
Mar-23-2010	361	17.2	1,630
Mar-24-2010	338	17.1	1,740
Mar-25-2010	311	16.6	1,810
Mar-26-2010	287	16.1	1,810
Mar-27-2010	264	16.0	1,810
Mar-28-2010	244	16.8	1,690
Mar-29-2010	235	17.5	1,590
Mar-30-2010	233	17.3	1,490
Mar-31-2010	236	16.2	1,420
Mean	318	14.9	1,640

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), March 2010.

See Table 27 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
Mar-01-2010	2,000	13.7	830	1.3
Mar-02-2010	2,140	14.1	710	1.3
Mar-03-2010	2,270	13.5	790	1.7
Mar-04-2010	2,230	13.1	900	1.8
Mar-05-2010	2,360	12.9	920	1.5
Mar-06-2010	2,500	12.9	770	1.4
Mar-07-2010	2,500	13.5	730	1.4
Mar-08-2010	2,330	13.8	870	1.5
Mar-09-2010	2,110	13.4	980	1.9
Mar-10-2010	1,910	13.2	1,010	1.8
Mar-11-2010	1,760	13.1	1,040	1.9
Mar-12-2010	1,680	13.1	1,080	2.0
Mar-13-2010	1,600	12.9	1,170	1.8
Mar-14-2010	1,520	12.7	1,150	1.8
Mar-15-2010	1,480	13.4	1,130	1.6
Mar-16-2010	1,480	14.6	1,140	1.5
Mar-17-2010	1,430	16.0	1,120	1.5
Mar-18-2010	1,480	16.8	1,160	1.2
Mar-19-2010	1,530	16.9	1,190	1.1
Mar-20-2010	1,490	17.4	1,230	1.4
Mar-21-2010	1,490	17.6	1,260	1.5
Mar-22-2010	1,470	17.6	1,320	1.6
Mar-23-2010	1,430	17.2	1,310	1.3
Mar-24-2010	1,380	17.4	1,340	1.3
Mar-25-2010	1,370	17.1	1,340	1.3
Mar-26-2010	1,350	16.6	1,330	1.1
Mar-27-2010	1,310	16.6	1,320	1.0
Mar-28-2010	1,320	17.2	1,270	0.9
Mar-29-2010	1,290	17.7	1,250	0.9
Mar-30-2010	1,260	18.0	1,190	0.9
Mar-31-2010	1,230	17.1	1,210	0.7
Mean	1,747	14.9	1,090	1.5

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Jan-04-2010	16	.	.	5,110	165	.	.	.
Jan-11-2010	15	.	.	5,060	84	.	.	.
Jan-19-2010	26	.	.	4,930	290	.	.	.
Jan-25-2010	13	.	.	4,720	40	.	.	.
Feb-01-2010	15	.	.	5,060	70	.	.	.
Feb-08-2010	19	.	.	4,550	174	.	.	.
Feb-16-2010	18	.	.	5,250	77	.	.	.
Feb-22-2010	28	.	.	5,170	110	.	.	.
Mar-01-2010	38	.	.	5,200	278	.	.	.
Mar-08-2010	37	.	.	5,030	162	.	.	.
Mar-15-2010	24	.	.	4,880	99	.	.	.
Mar-22-2010	13	.	.	5,690	36	.	.	.
Mar-29-2010	7	.	.	4,240	17	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Jan-03-2010	16	.	.	5,130	.	68.7	.	9.2
Jan-10-2010	16	.	.	5,040	.	65.3	.	8.4
Jan-17-2010	19	.	.	4,980	.	66.0	.	8.4
Jan-24-2010	15	.	.	4,830	.	43.0	.	9.7
Jan-31-2010	16	.	.	4,810	.	28.2	.	9.9
Feb-07-2010	23	.	.	4,870	.	32.7	.	9.6
Feb-14-2010	24	.	.	4,900	.	41.4	.	8.5
Feb-21-2010	29	.	.	5,160	.	49.5	.	8.6
Mar-07-2010	41	.	.	4,880	.	59.8	.	8.6
Mar-14-2010	26	.	.	5,080	.	61.2	.	8.8
Mar-21-2010	14	.	.	5,270	.	59.9	.	9.9
Mar-28-2010	8	.	.	5,570	.	46.3	.	10.7

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	SLDMWA	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Jan-05-2010	21	10.5	7.3	4,310	32	37.1	7.4
Jan-12-2010	21	9.1	7.1	4,560	31	29.5	7.3
Jan-19-2010	32	9.9	7.2	4,120	59	48.3	6.5
Jan-26-2010	20	9.8	7.6	4,700	35	50.6	8.6
Feb-02-2010	20	12.4	8.2	3,910	41	16.7	7.2
Feb-09-2010	26	13.0	8.4	4,380	49	26.4	8.3
Feb-16-2010	26	15.0	8.4	4,770	55	39.5	8.2
Feb-23-2010	34	13.1	7.7	4,760	70	46.7	7.8
Mar-02-2010	43	14.7	8.2	4,740	69	41.3	8.7
Mar-09-2010	41	12.6	7.8	4,980	56	57.9	8.2
Mar-16-2010	28	14.5	8.4	4,930	60	55.2	8.9
Mar-23-2010	18	16.6	8.2	5,080	59	56.1	8.8
Mar-30-2010	10	17.3	8.2	5,050	41	36.1	9.3

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Jan-05-2010	66	10.2	7.6	2,420	.	0.5	1.8
Jan-12-2010	63	9.7	7.4	2,380	.	<0.4	1.7
Jan-19-2010	195	9.9	7.0	1,740	.	<0.4	1.4
Jan-26-2010	210	10.1	7.9	1,890	.	0.5	1.6
Feb-02-2010	100	12.1	7.9	2,350	.	0.5	1.8
Feb-09-2010	98	12.6	7.8	2,250	.	<0.4	1.8
Feb-16-2010	87	14.9	7.8	2,140	.	0.5	1.9
Feb-23-2010	e91	12.4	7.4	2,510	.	0.5	2.0
Mar-02-2010	208	15.1	8.0	1,860	.	0.9	1.8
Mar-09-2010	175	11.5	8.1	1,730	.	1.2	1.6
Mar-16-2010	116	14.2	8.1	2,290	.	0.8	2.0
Mar-23-2010	143	15.2	8.1	2,060	.	0.7	2.0
Mar-30-2010	96	16.7	7.9	2,570	.	0.5	2.3

** Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-05-2010	87	10.4	7.5	2,900	9.0	3.3
Jan-12-2010	84	9.5	7.2	2,960	6.2	3.1
Jan-19-2010	227	9.9	7.2	2,160	8.2	2.3
Jan-26-2010	230	9.9	7.8	2,150	5.8	2.2
Feb-02-2010	120	12.2	7.9	2,700	3.4	2.8
Feb-09-2010	124	13.0	7.9	2,680	4.7	3.1
Feb-16-2010	113	14.8	7.9	2,850	8.9	3.3
Feb-23-2010	e125	12.8	7.6	3,460	17.5	4.2
Mar-02-2010	251	14.9	8.0	2,440	8.4	3.0
Mar-09-2010	216	12.0	8.0	2,390	11.8	2.9
Mar-16-2010	144	14.3	8.1	3,020	11.8	3.6
Mar-23-2010	161	15.5	8.1	2,450	6.3	2.8
Mar-30-2010	106	16.9	8.0	2,850	3.7	3.0

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Jan-05-2010	.	7.9	3,050	17	8.9	3.3
Jan-12-2010	.	8.1	3,070	12	12.7	3.3
Jan-28-2010	.	7.4	2,390	27	5.2	2.6
Feb-02-2010	.	8.4	2,590	46	3.5	3.2
Feb-12-2010	.	8.1	2,760	NA	5.6	3.2
Feb-17-2010	.	8.1	2,990	41	8.2	3.2
Mar-02-2010	.	8.1	2,720	39	9.6	3.3
Mar-10-2010	.	7.9	2,570	45	11.9	3.0
Mar-16-2010	.	7.3	3,130	73	11.8	3.9
Mar-24-2010	.	8.4	2,840	46	8.3	3.4

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-05-2010	51	10.9	7.7	2,340	<0.4	1.2
Jan-12-2010	62	10.3	7.4	2,020	0.6	1.1
Jan-19-2010	114	8.7	6.8	1,740	0.5	1.0
Jan-26-2010	216	9.8	7.2	1,790	0.5	1.3
Feb-02-2010	100	11.8	7.5	2,140	<0.4	1.3
Feb-09-2010	133	12.8	7.6	1,810	0.4	1.0
Feb-16-2010	157	13.8	7.6	1,720	0.9	0.8
Feb-23-2010	172	12.6	7.3	1,740	0.7	0.7
Mar-02-2010	401	13.9	7.4	1,550	0.8	0.9
Mar-09-2010	319	12.2	7.9	1,560	1.1	0.9
Mar-16-2010	268	13.0	7.6	1,660	0.6	1.0
Mar-23-2010	361	15.9	7.4	1,550	0.6	1.3
Mar-30-2010	233	16.6	7.3	1,580	0.5	1.0

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-04-2010	5	.	.	910	0.5	0.5
Jan-11-2010	5	.	.	810	0.4	0.3
Jan-19-2010	5	.	.	960	0.9	0.5
Jan-25-2010	5	.	.	1,010	3.2	0.7
Feb-01-2010	30	.	.	740	0.5	0.4
Feb-08-2010	20	.	.	770	1.2	0.4
Feb-16-2010	20	.	.	820	2.7	1.6
Feb-22-2010	20	.	.	750	2.1	0.4
Mar-01-2010	10	.	.	970	1.9	0.6
Mar-08-2010	5	.	.	720	2.5	0.5
Mar-15-2010	5	.	.	620	1.4	0.4
Mar-22-2010	5	.	.	570	1.3	0.3
Mar-29-2010	5	.	.	630	1.0	0.4

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-04-2010	50	.	.	720	0.7	0.4
Jan-11-2010	50	.	.	840	0.5	0.4
Jan-19-2010	18	.	.	780	1.8	0.6
Jan-25-2010	18	.	.	940	2.1	0.8
Feb-01-2010	18	.	.	940	1.2	0.8
Feb-08-2010	33	.	.	990	3.5	0.7
Feb-16-2010	24	.	.	790	1.6	0.5
Feb-22-2010	24	.	.	730	1.8	0.5
Mar-01-2010	0	.	.	820	2.5	0.6
Mar-08-2010	0	.	.	1,590	0.7	2.8
Mar-15-2010	0	.	.	1,460	0.8	3.1
Mar-22-2010	0	.	.	1,690	0.8	2.5
Mar-29-2010	0	.	.	1,820	0.7	2.4

Note: The peak in selenium is caused by no flow conditions at this site.

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-04-2010	NA	.	.	790	0.5	0.5
Jan-11-2010	NA	.	.	760	<0.4	0.3
Jan-19-2010	NA	.	.	900	0.7	0.5
Jan-25-2010	NA	.	.	670	<0.4	0.8
Feb-01-2010	NA	.	.	1,190	0.5	1.4
Feb-08-2010	NA	.	.	920	1.1	0.6
Feb-16-2010	NA	.	.	1,550	1.1	0.4
Feb-22-2010	NA	.	.	790	2.2	0.5
Mar-01-2010	NA	.	.	980	1.8	0.7
Mar-08-2010	NA	.	.	1,170	3.3	1.0
Mar-15-2010	NA	.	.	1,210	2.2	1.0
Mar-22-2010	NA	.	.	1,840	1.9	2.1
Mar-29-2010	NA	.	.	2,490	2.2	2.9

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-04-2010	NA	.	.	1,470	0.7	1.6
Jan-11-2010	NA	.	.	1,500	0.4	1.3
Jan-19-2010	NA	.	.	1,230	0.7	1.0
Jan-25-2010	NA	.	.	1,620	0.7	1.9
Feb-01-2010	NA	.	.	1,900	0.4	2.3
Feb-08-2010	NA	.	.	1,400	1.2	1.3
Feb-16-2010	NA	.	.	1,550	1.3	1.6
Feb-22-2010	NA	.	.	1,410	1.3	1.2
Mar-01-2010	NA	.	.	1,560	1.3	1.7
Mar-08-2010	NA	.	.	NA	1.5	1.9
Mar-15-2010	NA	.	.	1,880	1.0	2.1
Mar-22-2010	NA	.	.	1,940	0.8	2.7
Mar-29-2010	NA	.	.	1,970	0.8	2.2

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Jan-04-2010	.	.	.	700	1.4	0.4
Jan-11-2010	.	.	.	740	1.8	0.4
Jan-19-2010	.	.	.	790	1.5	0.5
Jan-25-2010	.	.	.	780	1.4	0.6
Feb-01-2010	.	.	.	840	1.0	0.4
Feb-08-2010	.	.	.	970	5.2	0.7
Feb-16-2010	.	.	.	780	1.6	0.5
Feb-22-2010	.	.	.	730	1.8	0.7
Mar-01-2010	.	.	.	940	1.8	0.6
Mar-08-2010	.	.	.	620	2.4	0.4
Mar-15-2010	.	.	.	630	1.8	0.4
Mar-22-2010	.	.	.	550	0.8	0.3
Mar-29-2010	.	.	.	600	0.7	0.4

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-05-2010	84	10.4	6.9	2,400	<0.4	1.0
Jan-12-2010	87	9.9	7.6	2,410	0.4	1.0
Jan-19-2010	132	10.1	7.8	2,120	<0.4	1.1
Jan-26-2010	1,250	9.1	7.8	640	0.7	0.4
Feb-02-2010	288	11.9	7.5	1,730	<0.4	0.8
Feb-09-2010	389	12.7	7.8	1,340	0.5	0.5
Feb-16-2010	387	13.6	7.7	1,340	0.6	0.6
Feb-23-2010	315	12.9	7.4	1,780	0.5	0.7
Mar-02-2010	1,600	14.0	7.4	590	<0.4	0.3
Mar-09-2010	1,250	13.2	7.4	870	0.6	0.4
Mar-16-2010	860	13.5	7.1	1,020	0.7	0.5
Mar-23-2010	847	16.5	8.2	1,240	0.8	0.8
Mar-30-2010	771	17.5	8.0	1,090	0.6	0.6

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Jan-12-2010	.	.	.	2,230	14.0	2.7
Jan-20-2010	.	.	.	2,230	52.0	2.5
Feb-03-2010	.	.	.	1,260	<0.4	1.2
Feb-16-2010	.	.	.	1,430	0.6	1.4
Feb-23-2010	.	.	.	1,520	<0.4	1.5
Mar-03-2010	.	.	.	1,480	0.4	1.5
Mar-17-2010	.	.	.	1,510	2.1	1.1
Mar-24-2010	.	.	.	1,610	1.6	1.3
Mar-31-2010	.	.	.	1,500	1.0	1.0

Outside of normal range.

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	usgs	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-05-2010	449	10.3	7.2	1,620	2.5	1.1
Jan-12-2010	444	9.8	7.5	1,600	2.8	1.0
Jan-19-2010	668	10.5	7.8	1,550	2.6	1.1
Jan-26-2010	2,280	9.4	7.7	790	0.9	0.6
Feb-02-2010	855	11.9	7.8	1,390	0.9	1.0
Feb-09-2010	956	12.8	7.8	1,270	0.9	0.8
Feb-16-2010	888	13.8	7.8	1,390	1.3	0.9
Feb-23-2010	760	13.2	7.6	1,620	2.3	1.1
Mar-02-2010	2,140	14.1	7.5	670	1.2	0.4
Mar-09-2010	2,110	12.9	7.6	1,000	1.9	0.7
Mar-16-2010	1,480	13.8	7.6	1,150	1.7	0.8
Mar-23-2010	1,430	16.3	8.1	1,350	1.4	1.0
Mar-30-2010	1,260	17.6	7.9	1,180	0.7	0.8

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from April 2009 to March 2010. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 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	%	%	%	%	%	%
Apr-2009	100	93	95	95	73	98
May-2009	98	98	98	100	93	95
Jun-2009	95	95	95	93	93	95
Jul-2009	95	98	93	98	98	100
Aug-2009	98	98	88	93	100	100
Sep-2009	100	98	98	100	100	98
Oct-2009	100	100	95	95	95	100
Nov-2009	100	93	90	83	95	100
Dec-2009	98	88	93	98	100	98
Jan-2010	98	95	98	100	98	100
Feb-2010	98	100	95	95	100	90
Mar-2010	98	95	95	100	98	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from April 2009 to March 2010. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 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	mg	mg	mg	mg	mg	mg
Apr-2009	0.33	0.43	0.35	0.40	0.30	0.38
May-2009	0.48	0.41	0.41	0.42	0.42	0.42
Jun-2009	0.42	0.40	0.46	0.44	0.43	0.45
Jul-2009	0.46	0.49	0.50	0.52	0.44	0.47
Aug-2009	0.42	0.40	0.41	0.38	0.43	0.52
Sep-2009	0.43	0.41	0.42	0.45	0.39	0.43
Oct-2009	0.51	0.52	0.49	0.50	0.41	0.44
Nov-2009	0.38	0.40	0.37	0.38	0.36	0.43
Dec-2009	0.50	0.48	0.52	0.49	0.46	0.47
Jan-2010	0.43	0.49	0.50	0.48	0.49	0.41
Feb-2010	0.47	0.53	0.49	0.52	0.49	0.51
Mar-2010	0.41	0.48	0.48	0.46	0.40	0.45

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from April 2009 to March 2010. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 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	%	%	%	%	%	%
Apr-2009	100	100	80	90	90	100
May-2009	80	100	90	100	100	100
Jun-2009	100	0*	30*	90	100	100
Jul-2009	90	70	100	100	90	90
Aug-2009	100	100	100	100	100	100
Sep-2009	100	100	80	90	100	100
Oct-2009	80	90	100	90	90	100
Nov-2009	90	80	90	90	70†	70†
Dec-2009	90	90	90	100	100	80
Jan-2010	100	90	90	100	90	100
Feb-2010	90	90	90	100	100	90
Mar-2010	90	100	90	80	90	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from April 2009 to March 2010. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 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 per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Apr-2009	45.4	52.3	23.1	30.2	30.2	31.6
May-2009	22.1	31.8	36.3	29.3	29.9	23.6
Jun-2009	42.9	4.8*	13.6*	35.9	28.2	28.6
Jul-2009	34.2	21.6	38.5	32.1	26.4	22.4
Aug-2009	42.6	40.9	38.5	37.8	30.6	24.7
Sep-2009	34.8	43.3	26.8	25.1	28.7	22.7
Oct-2009	36.7	32.8	42.2	33.5	31.1	28.8
Nov-2009	38.5	21.3	29.1	21.8	16.4	18.6
Dec-2009	30.2	30.7	35.4	35.2	39.7	30.9
Jan-2010	39.7	32.3	44.1	30.7	34.4	33.8
Feb-2010	22.9	22.1	26.2	25.7	23.1	25.4
Mar-2010	23.6	28.4	23.3	19.5	25.0	16.6

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from April 2009 to March 2010. Each value is the mean of 4 replicates.

See Table 27 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 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL
Apr-2009	20.9*	22.2	27.0	24.3	25.0	19.3
May-2009	21.6	33.2	25.2	11.4*	21.4	22.8
Jun-2009	19.8	20.2	24.4	21.7	20.1	17.0
Jul-2009	22.5	28.4	28.2	26.8	22.9	19.7
Aug-2009	21.7	26.4	24.6	26.6	22.0	23.0
Sep-2009	31.6	32.6	25.6	28.9	27.6	22.3
Oct-2009	35.3	30.5	32.2	26.8	20.4	19.2
Nov-2009	20.6*	39.0	35.8	33.5	26.2	28.1
Dec-2009	6.8*	28.5	21.7	26.7	20.9	24.1
Jan-2010	0.2*	27.5	1.4*	28.9	20.8	19.8
Feb-2010	19.1*	36.0	31.7	29.9	28.7	23.1
Mar-2010	17.6	28.4	27.8	27.4	19.5	15.5

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2010 to March 2010.

See Table 27 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
Jan-11-2010	54	<0.4	13	0.8	0.5
Jan-13-2010	52	<0.4	13	0.8	0.8
Jan-15-2010	51	<0.4	12	0.6	0.8
Feb-22-2010	23	>0.4	6.0	<0.4	<0.4
Feb-24-2010	45	>0.4	15	0.6	0.6
Feb-26-2010	51	0.5	19	0.7	0.7
Mar-08-2010	61	0.7	15	0.9	0.6
Mar-10-2010	63	0.8	12	0.8	0.8
Mar-12-2010	53	0.8	11	0.5	0.6

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2010 to March 2010.

See Table 27 for explanation of footnotes and agency abbreviations

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-11-2010	31	11	21	15	3
Jan-13-2010	26	45	48	50	4
Jan-15-2010	33	22	38	27	3
Feb-22-2010	104	58	75	34	17
Feb-24-2010	80	30	58	40	14
Feb-26-2010	93	63	90	33	15
Mar-08-2010	66	82	86	9	18
Mar-10-2010	59	137	128	57	17
Mar-12-2010	67	194	168	15	21

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	Sample re-analyzed and result confirmed.
L	Result may be biased low. Sample was not preserved in the field
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10 ⁶ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated