

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

**November 2006**

February 28, 2007

### **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), November 2006.
- 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), November 2006.
- 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), November 2006.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 2006.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 2006.

**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 December 2005 to November 2006.
21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 2005 to November 2006.
22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 2005 to November 2006.
23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 2005 to November 2006.
24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 2005 to November 2006.
25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2006 to November 2006.
26. Summary of total suspended solids concentrations in grab water samples collected from September 2006 to November 2006.
27. Explanations of footnotes and agency abbreviations.

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), November 2006.

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>
<b>UNITS</b>	<b>cfs</b>	<b>µS/cm</b>
Nov-01-2006	15	6,270
Nov-02-2006	15	6,290
Nov-03-2006	15	6,140
Nov-04-2006	15	6,110
Nov-05-2006	16	6,100
Nov-06-2006	15	5,600
Nov-07-2006	15	5,710
Nov-08-2006	16	5,810
Nov-09-2006	18	5,890
Nov-10-2006	18	5,250
Nov-11-2006	18	5,050
Nov-12-2006	18	5,110
Nov-13-2006	18	5,090
Nov-14-2006	17	5,440
Nov-15-2006	17	5,260
Nov-16-2006	17	5,060
Nov-17-2006	17	4,950
Nov-18-2006	17	4,990
Nov-19-2006	17	4,980
Nov-20-2006	20	4,920
Nov-21-2006	20	4,630
Nov-22-2006	20	4,500
Nov-23-2006	20	4,450
Nov-24-2006	21	4,340
Nov-25-2006	20	4,330
Nov-26-2006	17	4,570
Nov-27-2006	17	5,170
Nov-28-2006	15	5,330
Nov-29-2006	14	5,370
Nov-30-2006	14	5,450
.	.	.
Mean	17	5,270

**Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), November 2006.**

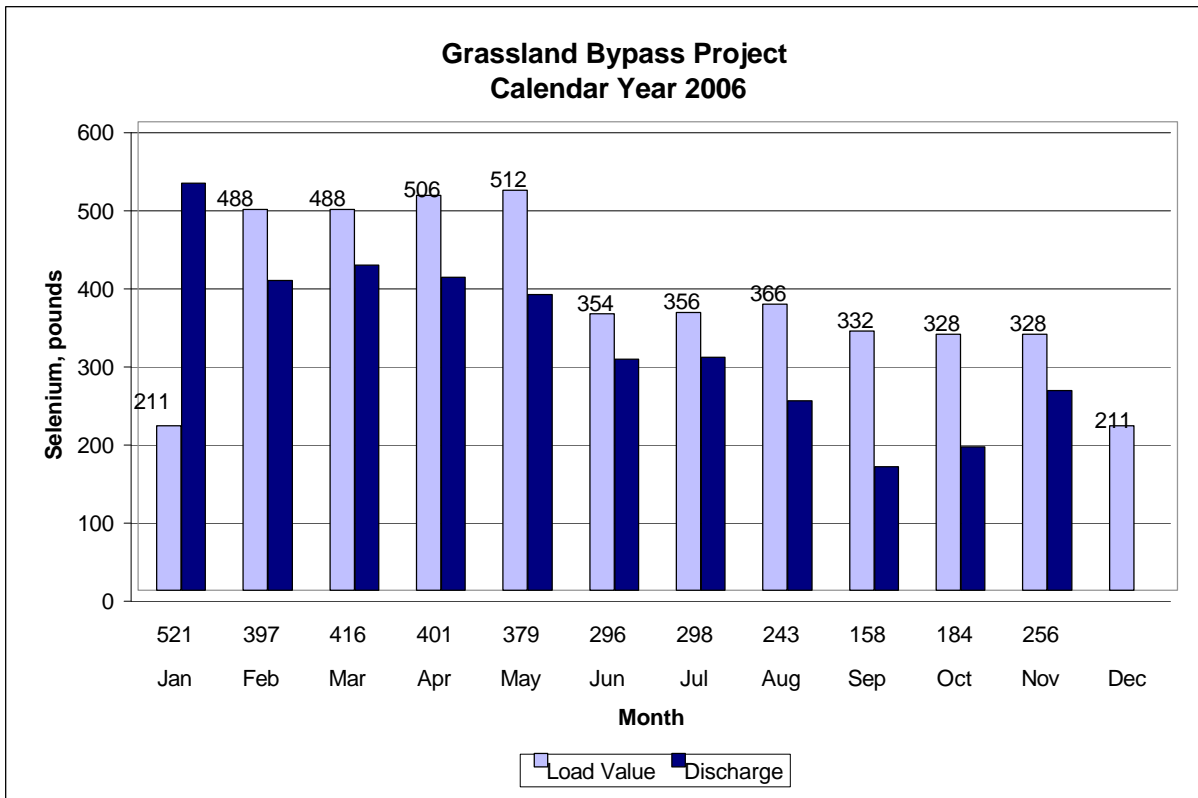
See Table 27 for explanation of footnotes and agency abbreviations.

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
Nov-01-2006	21	16.0	8.9	5,470	85.4	9.5
Nov-02-2006	21	17.2	8.4	5,240	77.0	8.8
Nov-03-2006	21	17.8	6.6	4,800	73.9	8.4
Nov-04-2006	21	17.5	6.3	4,480	70.6	8.1
Nov-05-2006	22	17.3	6.2	4,510	64.6	7.5
Nov-06-2006	23	17.7	6.3	4,590	69.0	8.4
Nov-07-2006	22	18.1	6.4	4,740	74.7	9.0
Nov-08-2006	23	18.2	6.4	4,740	76.0	9.6
Nov-09-2006	22	16.7	6.6	4,600	73.5	8.6
Nov-10-2006	24	15.2	6.6	4,550	77.8	10.0
Nov-11-2006	24	14.8	6.4	4,670	90.3	11.8
Nov-12-2006	25	13.7	6.0	4,370	64.1	8.6
Nov-13-2006	25	14.0	6.4	4,470	66.1	8.9
Nov-14-2006	25	14.6	6.9	4,640	77.8	10.4
Nov-15-2006	24	14.9	6.3	4,450	67.0	8.5
Nov-16-2006	24	15.4	6.0	4,210	70.7	9.1
Nov-17-2006	23	16.2	6.3	4,200	65.0	8.1
Nov-18-2006	23	16.2	5.8	4,110	69.6	8.8
Nov-19-2006	24	16.1	6.5	4,260	62.2	8.1
Nov-20-2006	24	15.8	6.6	4,290	62.8	8.0
Nov-21-2006	26	15.6	6.7	4,270	59.4	8.3
Nov-22-2006	27	15.1	6.1	4,100	61.1	8.8
Nov-23-2006	26	14.1	6.1	4,110	67.9	9.4
Nov-24-2006	27	12.5	6.0	3,990	64.7	9.4
Nov-25-2006	27	12.3	6.6	4,160	60.5	8.9
Nov-26-2006	27	12.1	5.7	3,900	56.4	8.3
Nov-27-2006	25	12.1	5.5	3,880	52.6	7.2
Nov-28-2006	24	11.4	5.6	3,860	53.8	6.8
Nov-29-2006	22	9.8	5.5	3,770	47.6	5.6
Nov-30-2006	22	9.2	5.4	3,630	44.1	5.1
Mean	24	14.9	6.4	4,370	66.9	8.5
<b>Total Acre-feet</b>	<b>1,410</b>					
<b>Total (lbs)</b>						<b>256</b>

<b>Load Limitation for November 2006 (lbs)</b>	<b>328</b>
--	------------

?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), November 2006.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Nov-01-2006	193	15.2	1,370
Nov-02-2006	193	16.7	1,400
Nov-03-2006	181	17.5	1,410
Nov-04-2006	176	16.9	1,420
Nov-05-2006	171	16.6	1,440
Nov-06-2006	173	17.1	1,460
Nov-07-2006	172	17.8	1,500
Nov-08-2006	175	17.8	1,530
Nov-09-2006	180	15.8	1,470
Nov-10-2006	185	14.1	1,490
Nov-11-2006	196	13.8	1,470
Nov-12-2006	205	12.7	1,400
Nov-13-2006	204	13.2	1,450
Nov-14-2006	208	14.2	1,480
Nov-15-2006	215	14.5	1,460
Nov-16-2006	225	15.0	1,400
Nov-17-2006	218	15.8	1,440
Nov-18-2006	207	15.6	1,510
Nov-19-2006	203	15.3	1,560
Nov-20-2006	199	14.9	1,590
Nov-21-2006	196	14.7	1,620
Nov-22-2006	185	14.1	1,650
Nov-23-2006	192	13.1	1,640
Nov-24-2006	196	11.4	1,650
Nov-25-2006	199	11.4	1,640
Nov-26-2006	193	11.1	1,640
Nov-27-2006	184	11.3	1,600
Nov-28-2006	176	10.6	1,600
Nov-29-2006	172	9.0	1,620
Nov-30-2006	170	8.4	1,620
.	.	.	.
Mean	191	14.2	1,520

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 2006.

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Nov-01-2006	176	14.5	1,050
Nov-02-2006	182	15.9	1,030
Nov-03-2006	183	16.8	1,050
Nov-04-2006	186	16.6	1,060
Nov-05-2006	188	16.3	1,040
Nov-06-2006	187	16.5	1,070
Nov-07-2006	197	17.0	1,060
Nov-08-2006	198	16.9	1,060
Nov-09-2006	204	15.3	1,070
Nov-10-2006	204	13.7	1,090
Nov-11-2006	204	13.2	1,130
Nov-12-2006	214	12.5	1,110
Nov-13-2006	218	13.0	1,110
Nov-14-2006	227	14.0	1,090
Nov-15-2006	229	14.2	1,120
Nov-16-2006	224	14.5	1,130
Nov-17-2006	227	15.2	1,120
Nov-18-2006	233	15.2	1,120
Nov-19-2006	230	15.1	1,150
Nov-20-2006	235	14.8	1,140
Nov-21-2006	229	14.6	1,170
Nov-22-2006	224	13.8	1,220
Nov-23-2006	210	12.9	1,280
Nov-24-2006	198	11.4	1,330
Nov-25-2006	198	11.2	1,300
Nov-26-2006	185	10.8	1,380
Nov-27-2006	170	11.4	1,450
Nov-28-2006	150	10.8	1,550
Nov-29-2006	129	9.4	1,710
Nov-30-2006	119	9.1	1,700
.	.	.	.
Mean	199	13.9	1,200



Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 2006.

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
Nov-01-2006	1,490	14.2	630	1.2
Nov-02-2006	1,380	15.4	677	1.4
Nov-03-2006	1,330	16.4	742	1.4
Nov-04-2006	1,310	16.1	694	1.4
Nov-05-2006	1,210	16.0	732	1.5
Nov-06-2006	1,140	16.5	840	1.5
Nov-07-2006	1,110	17.0	894	1.5
Nov-08-2006	1,070	17.1	939	1.6
Nov-09-2006	1,050	15.6	948	1.8
Nov-10-2006	1,040	14.2	981	2.0
Nov-11-2006	1,040	13.9	966	2.0
Nov-12-2006	1,050	13.0	1,010	2.4
Nov-13-2006	1,060	13.3	976	2.3
Nov-14-2006	1,070	13.9	1,000	2.0
Nov-15-2006	1,060	14.3	1,020	2.2
Nov-16-2006	1,060	14.5	995	2.1
Nov-17-2006	1,060	15.1	1,000	2.0
Nov-18-2006	1,050	15.4	1,000	1.9
Nov-19-2006	1,060	15.3	1,010	1.8
Nov-20-2006	1,050	15.1	1,020	2.0
Nov-21-2006	1,040	14.9	1,070	1.8
Nov-22-2006	1,020	14.4	1,080	1.7
Nov-23-2006	985	13.6	1,110	1.7
Nov-24-2006	976	12.1	1,120	1.7
Nov-25-2006	979	11.7	1,150	2.0
Nov-26-2006	970	11.4	1,140	1.8
Nov-27-2006	949	11.5	1,130	1.8
Nov-28-2006	963	11.1	1,170	1.7
Nov-29-2006	995	10.0	1,100	1.4
Nov-30-2006	959	9.1	1,070	1.3
.	.	.	.	.
Mean	1,080	14.1	970	1.8

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	.	.	.
Sep-06-2006	24	.	.	4,230	140	.	.	.
Sep-13-2006	30	.	.	4,020	120	.	.	.
Sep-20-2006	16	.	.	5,460	42	.	.	.
Sep-27-2006	19	.	.	3,690	61	.	.	.
Oct-04-2006	11	.	.	4,660	23	.	.	.
Oct-11-2006	17	.	.	5,250	66	.	.	.
Oct-18-2006	15	.	.	5,410	46	.	.	.
Oct-25-2006	16	.	.	6,600	130	.	.	.
Nov-01-2006	15	.	.	5,810	62	.	.	.
Nov-08-2006	16	.	.	5,610	100	.	.	.
Nov-15-2006	17	.	.	5,120	34	.	.	.
Nov-21-2006	20	.	.	4,370	61	.	.	.
Nov-29-2006	14	.	.	5,050	47	.	.	.

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
Sep-05-2006	29	.	.	3,730	.	33.8	.	6.9
Sep-12-2006	29	.	.	4,250	.	45.0	.	7.7
Sep-19-2006	16	.	.	4,590	.	47.0	.	8.3
Sep-26-2006	18	.	.	4,540	.	45.4	.	8.3
Oct-03-2006	13	.	.	4,390	.	57.0	.	7.4
Oct-10-2006	11	.	.	4,570	.	50.0	.	7.1
Oct-17-2006	16	.	.	5,380	.	104	.	8.8
Oct-24-2006	15	.	.	5,740	.	119	.	9.8
Oct-31-2006	14	.	.	6,080	.	118	.	10.0
Nov-07-2006	15	.	.	5,770	.	120	.	9.4
Nov-14-2006	17	.	.	5,070	.	98.8	.	7.7
Nov-20-2006	20	.	.	4,750	.	84.2	.	7.1
Nov-27-2006	17	.	.	4,370	.	72.6	.	6.7

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	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Sep-07-2006	27	24.6	7.8	3,700	31	31.6	6.4
Sep-14-2006	33	24.1	8.1	4,170	45	36.7	7.6
Sep-21-2006	20	19.2	8.5	4,630	38	43.1	8.8
Sep-28-2006	22	20.9	8.2	4,070	41	31.5	7.2
Oct-05-2006	19	18.9	8.3	3,150	33	23.2	4.9
Oct-12-2006	20	18.4	8.4	4,010	46	33.0	6.0
Oct-19-2006	21	15.9	8.3	4,710	46	82.8	7.8
Oct-26-2006	22	14.2	8.4	4,500	47	65.2	6.8
Nov-02-2006	21	15.8	8.4	5,240	35	75.3	8.0
Nov-09-2006	22	16.0	8.3	4,640	30	76.2	7.0
Nov-16-2006	24	14.2	8.1	4,180	9	72.8	5.6
Nov-21-2006	26	15.3	8.4	4,270	25	58.0	6.4
Nov-30-2006	22	8.1	8.2	3,740	12	43.4	5.5

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
Sep-07-2006	62	23.5	8.1	463	.	0.5	0.3
Sep-14-2006	69	23.4	7.9	614	.	<0.4	0.5
Sep-21-2006	54	19.0	7.8	611	.	<0.4	0.4
Sep-28-2006	44	19.4	7.9	774	.	0.5	0.6
Oct-05-2006	74	18.1	7.8	851	.	<0.4	0.6
Oct-12-2006	126	18.1	7.5	759	.	<0.4	0.6
Oct-19-2006	203	15.8	7.6	725	.	0.4	0.6
Oct-26-2006	201	13.8	7.7	773	.	<0.4	0.6
Nov-02-2006	172	16.3	7.6	866	.	<0.4	0.7
Nov-09-2006	158	15.4	7.6	954	.	<0.4	0.8
Nov-16-2006	201	14.4	7.7	994	.	<0.4	0.7
Nov-21-2006	170	15.0	7.6	1,190	.	<0.4	1.0
Nov-30-2006	148	7.7	7.9	1,260	.	<0.4	1.0

\*\* 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
Sep-07-2006	89	24.1	7.8	1,320	7.9	1.8
Sep-14-2006	102	23.5	7.8	1,830	12.5	2.7
Sep-21-2006	74	18.8	8.1	1,630	10.2	2.5
Sep-28-2006	66	19.7	7.9	2,050	11.3	3.0
Oct-05-2006	93	18.2	7.8	1,360	4.4	1.6
Oct-12-2006	146	18.1	7.6	1,160	3.9	1.2
Oct-19-2006	224	15.9	7.7	1,120	7.1	1.3
Oct-26-2006	223	13.8	7.7	1,130	6.0	1.1
Nov-02-2006	193	16.2	7.7	1,380	8.2	1.5
Nov-09-2006	180	15.3	7.9	1,430	8.3	1.5
Nov-16-2006	225	14.3	7.7	1,400	7.8	1.3
Nov-21-2006	196	15.0	7.7	1,640	7.8	1.7
Nov-30-2006	170	7.7	7.9	1,630	5.8	1.7

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
Sep-06-2006	.	8.7	1,580	33	9.0	2.3
Sep-12-2006	.	8.5	2,040	27	11.6	3.3
Sep-18-2006	.	8.2	2,000	24	15.5	3.0
Sep-27-2006	.	8.1	2,180	38	12.8	3.3
Oct-11-2006	.	7.6	1,280	19	3.7	1.4
Oct-16-2006	.	8.0	1,120	17	3.3	1.3
Oct-24-2006	.	7.4	1,150	11	6.3	1.3
Nov-02-2006	.	8.1	1,750	51	6.4	1.9
Nov-07-2006	.	7.5	1,540	24	8.5	1.9
Nov-14-2006	.	7.8	1,510	15	8.5	1.8
Nov-20-2006	.	7.8	1,620	19	6.7	1.9
Nov-28-2006	.	8.0	1,670	11	5.9	1.8

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
Sep-07-2006	105	23.1	7.7	1,170	0.5	0.6
Sep-14-2006	88	22.4	7.5	1,040	0.5	0.5
Sep-21-2006	56	17.3	7.9	1,560	<0.4	0.8
Sep-28-2006	92	19.5	7.8	981	0.5	0.5
Oct-05-2006	124	18.2	7.6	963	<0.4	0.5
Oct-12-2006	119	17.4	7.7	1,040	0.7	0.6
Oct-19-2006	203	15.3	7.7	867	0.5	0.5
Oct-26-2006	177	13.6	7.7	1,030	0.4	0.6
Nov-02-2006	182	15.1	7.7	1,080	<0.4	0.6
Nov-09-2006	204	14.9	7.7	1,120	<0.4	0.7
Nov-16-2006	224	13.7	7.7	1,110	0.5	0.6
Nov-21-2006	229	14.9	7.6	1,170	0.4	0.7
Nov-30-2006	119	8.0	7.7	1,630	<0.4	0.9

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-06-2006	85	.	.	317	0.7	0.2
Sep-13-2006	85	.	.	335	0.6	0.2
Sep-20-2006	125	.	.	435	0.8	0.2
Sep-27-2006	160	.	.	400	1.0	0.2
Oct-04-2006	190	.	.	294	<0.4	0.1
Oct-11-2006	115	.	.	326	0.6	0.1
Oct-18-2006	65	.	.	321	0.6	0.1
Oct-25-2006	30	.	.	325	0.6	0.2
Nov-01-2006	30	.	.	353	0.4	0.2
Nov-08-2006	30	.	.	359	0.7	0.2
Nov-15-2006	30	.	.	502	0.8	0.3
Nov-21-2006	30	.	.	410	0.8	0.2
Nov-29-2006	0	.	.	847	0.8	0.8

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-06-2006	100	.	.	304	0.7	0.2
Sep-13-2006	110	.	.	304	0.6	0.1
Sep-20-2006	150	.	.	323	0.6	0.2
Sep-27-2006	160	.	.	326	0.6	0.2
Oct-04-2006	160	.	.	388	<0.4	0.2
Oct-11-2006	85	.	.	296	0.7	0.1
Oct-18-2006	65	.	.	307	0.5	0.2
Oct-25-2006	65	.	.	320	0.6	0.2
Nov-01-2006	65	.	.	324	0.4	0.2
Nov-08-2006	65	.	.	365	0.6	0.2
Nov-15-2006	65	.	.	468	0.6	0.2
Nov-21-2006	65	.	.	404	0.5	0.2
Nov-29-2006	0	.	.	460	0.5	0.3

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-06-2006	125	.	.	417	0.9	0.3
Sep-13-2006	125	.	.	508	0.8	0.4
Sep-20-2006	125	.	.	407	0.7	0.3
Sep-27-2006	125	.	.	380	0.7	0.2
Oct-04-2006	125	.	.	371	<0.4	0.2
Oct-11-2006	100	.	.	372	0.6	0.2
Oct-18-2006	70	.	.	326	0.6	0.2
Oct-25-2006	50	.	.	371	0.6	0.2
Nov-01-2006	30	.	.	399	0.5	0.3
Nov-08-2006	30	.	.	468	0.6	0.3
Nov-15-2006	15	.	.	527	0.7	0.3
Nov-21-2006	0	.	.	909	0.6	0.9
Nov-29-2006	0	.	.	1,070	0.6	1.1

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-06-2006	NA	.	.	487	0.8	0.3
Sep-13-2006	NA	.	.	492	0.8	0.4
Sep-20-2006	NA	.	.	500	0.7	0.4
Sep-27-2006	NA	.	.	710	0.8	0.6
Oct-04-2006	NA	.	.	560	0.5	0.5
Oct-11-2006	NA	.	.	550	0.7	0.4
Oct-18-2006	NA	.	.	522	0.6	0.5
Oct-25-2006	NA	.	.	643	0.7	0.6
Nov-01-2006	NA	.	.	723	0.4	0.8
Nov-08-2006	NA	.	.	741	0.5	0.8
Nov-15-2006	NA	.	.	764	0.5	0.7
Nov-21-2006	NA	.	.	824	0.5	0.9
Nov-29-2006	NA	.	.	989	0.4	1.1

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
Sep-06-2006	.	.	.	426	1.0	0.3
Sep-13-2006	.	.	.	377	0.7	0.2
Sep-20-2006	.	.	.	305	0.6	0.1
Sep-27-2006	.	.	.	400	0.7	0.2
Oct-04-2006	.	.	.	318	<0.4	0.1
Oct-11-2006	.	.	.	360	0.7	0.2
Oct-18-2006	.	.	.	300	0.7	0.1
Oct-25-2006	.	.	.	327	0.6	0.2
Nov-01-2006	.	.	.	358	<0.4	0.2
Nov-08-2006	.	.	.	338	0.6	0.1
Nov-15-2006	.	.	.	401	0.7	0.2
Nov-21-2006	.	.	.	409	0.4	0.2
Nov-29-2006	.	.	.	397	0.5	0.2

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
Sep-07-2006	176	24.5	7.8	1,200	0.5	0.5
Sep-14-2006	197	24.1	7.5	852	<0.4	0.3
Sep-21-2006	156	19.8	7.5	1,030	<0.4	0.3
Sep-28-2006	149	20.2	7.6	1,080	0.4	0.4
Oct-05-2006	229	18.6	7.4	707	<0.4	0.3
Oct-12-2006	230	18.0	7.6	743	<0.4	0.4
Oct-19-2006	267	15.7	7.7	775	0.5	0.4
Oct-26-2006	248	13.8	7.9	913	0.4	0.4
Nov-02-2006	322	15.1	7.8	820	<0.4	0.4
Nov-09-2006	223	14.9	7.8	1,130	<0.4	0.6
Nov-16-2006	244	14.1	7.5	1,220	<0.4	0.6
Nov-21-2006	252	14.7	7.8	1,210	0.4	0.6
Nov-30-2006	284	8.6	7.6	1,150	<0.4	0.5

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
Sep-05-2006	.	.	.	NA	0.8	0.2
Sep-12-2006	.	.	.	NA	2.9	0.9
Sep-19-2006	.	.	.	NA	4.4	1.2
Oct-10-2006	.	.	.	NA	2.5	0.7
Oct-17-2006	.	.	.	NA	1.8	0.7
Oct-24-2006	.	.	.	NA	2.6	0.9
Oct-31-2006	.	.	.	NA	2.8	0.8
Nov-08-2006	.	.	.	NA	<0.4	0.2
Nov-14-2006	.	.	.	NA	ND	0.3
Nov-28-2006	.	.	.	NA	2.4	1.0



**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.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>pH</b>	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>cvrwqcb</b>	<b>cvrwqcb</b>	<b>cvrwqcb</b>	<b>cvrwqcb</b>	<b>cvrwqcb</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>.</b>	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Sep-07-2006	1,180	22.4	7.6	547	0.9	0.3
Sep-14-2006	1270	22.1	7.6	552	1.1	0.4
Sep-21-2006	1,200	18.7	7.6	511	0.8	0.3
Sep-28-2006	1,040	19.5	7.6	611	1.1	0.4
Oct-05-2006	1,080	18.1	7.5	591	0.6	0.3
Oct-12-2006	1,440	17.1	7.6	404	0.6	0.2
Oct-19-2006	1,620	15.3	7.7	456	1.2	0.3
Oct-26-2006	1,660	14.1	7.7	414	0.8	0.3
Nov-02-2006	1,380	15.2	7.7	696	1.4	0.4
Nov-09-2006	1,050	15.5	7.8	955	1.7	0.6
Nov-16-2006	1,060	14.3	7.7	993	2.1	0.6
Nov-21-2006	1,040	14.8	7.8	1,080	1.8	0.7
Nov-30-2006	959	8.9	7.8	1,080	1.2	0.6

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 2005 to November 2006. 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	%	%	%	%	%	%
Dec-2006	95	28*	55*	63	95	98
Jan-2006	100	95	95	100	73	100
Feb-2006	98	95	98	100	100	100
Mar-2006	93	95	98	90	98	95
Apr-2006	90	95	98	100	95	100
May-2006	95	100	98	100	88	100
Jun-2006	93	100	98	98	98	100
Jul-2006	83	98	100	100	95	95
Aug-2006	98	98	95	98	98	90
Sep-2006	98	95	98	98	100	98
Oct-2006	95	85	85	90	98	100
Nov-2007	95	98	85	100	100	98

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 2005 to November 2006. 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
Dec-2006	0.36	0.12*	0.23	0.25	0.33	0.31
Jan-2006	0.47	0.43	0.46	0.43	0.35	0.36
Feb-2006	0.39	0.39	0.42	0.42	0.31	0.28
Mar-2006	0.49	0.45	0.45	0.45	0.46	0.40
Apr-2006	0.31	0.38	0.36	0.36	0.29	0.28
May-2006	0.38	0.43	0.39	0.58	0.34	0.33
Jun-2006	0.45*	0.41*	0.46*	0.49	0.54	0.41
Jul-2006	0.34	0.36	0.38	0.56	0.36	0.35
Aug-2006	0.36	0.33	0.38	0.37	0.39	0.33
Sep-2006	0.31	0.39	0.41	0.35	0.33	0.34
Oct-2006	0.39	0.36	0.36	0.35	0.40	0.40
Nov-2007	0.30	0.28*	0.30	0.33	0.33	0.32

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 2005 to November 2006. 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	%	%	%	%	%	%
Dec-2006	100	80	70	70	80	100
Jan-2006	90	90	80	80	80	100
Feb-2006	100	100	100	100	100	50†
Mar-2006	100	90	80	80	80	100
Apr-2006	80	90	100	90	100	100
May-2006	100	90	100	100	100	100
Jun-2006	90	90	100	90	90	80
Jul-2006	80	100	80	90	80	100
Aug-2006	100	100	90	100	100	100
Sep-2006	100	80	100	100	100	90
Oct-2006	70	80	100	80	90	80
Nov-2007	90	100	100	90	90	100

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 2005 to November 2006. 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
Dec-2006	19.0	17.4	14.9	13.4	19.8	22.4
Jan-2006	32.2	29.6	33.1	24.7	25.3	26.6
Feb-2006	30.7	34.8	34.9	30.8	32.0	13.2
Mar-2006	39.0	33.0	28.2	28.8	31.5	33.9
Apr-2006	43.6	42.7	43.5	39.9	32.7	37.4
May-2006	49.2	28.1	27.3	26.4	22.9	18.2
Jun-2006	26.2	25.9	29.9	26.7	20.9	19.1
Jul-2006	35.8	42.3	42.1	35.4	32.7	29.3
Aug-2006	34.7	33.3	23.9*	31.4	36.2	30.8
Sep-2006	25.9	20.1	23.8	26.9	27.6	23.6
Oct-2006	25.9	27.4	30.1	26.3	26.9	19.6
Nov-2007	36.6	49.6	47.0	47.9	38.3	46.2

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 2005 to November 2006. 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 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
Dec-2006	13.8*	26.9	37.2	21.1	22.1	23.4
Jan-2006	8.9*	27.5	29.5	24.3	22.5	25.5
Feb-2006	8.3*	12.6	5.9*	1.7*	12.8	23.8
Mar-2006	17.4	24.2	25.0	24.0	15.4	23.9
Apr-2006	9.9	21.5	18.8	18.6	12.7	19.7
May-2006	20.6	11.5*	15.9	13.6	15.4	16.4
Jun-2006	12.0	9.7	10.0	10.2	11.3	16.0
Jul-2006	19.0	14.4	22.5	17.9	9.5	14.0
Aug-2006	16.4	17.8	17.3	21.4	16.8	13.5
Sep-2006	4.1*	20.7	21.7	22.6	17.7	12.9
Oct-2006	21.4	27.8	30.4	23.4	12.5	20.3
Nov-2007	17.6	26.2	23.3	24.7	17.7	17.5

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2006 to November 2006.**

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
Sep-11-2006	32	0.6	9.2	0.5	<0.4
Sep-13-2006	41	0.5	12	0.4	<0.4
Sep-15-2006	34	<0.4	12	<0.4	<0.4
Oct-23-2006	76	0.4	5.9	0.4	<0.4
Oct-25-2006	68	<0.4	4.4	0.5	0.5
Oct-27-2006	69	<0.4	5.9	0.5	<0.4
Nov-13-2006	69	<0.4	7.9	0.5	<0.4
Nov-15-2006	66	0.7	8.1	<0.4	0.6
Nov-17-2006	65	0.5	6.3	0.4	0.6

**Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2006 to November 2006.**

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
Sep-11-2006	20	82	83	108	27
Sep-13-2006	38	65	70	118	40
Sep-15-2006	40	80	77	69	33
Oct-23-2006	45	43	53	66	9
Oct-25-2006	89	43	52	142	20
Oct-27-2006	70	48	67	117	17
Nov-13-2006	41	39	29	87	10
Nov-15-2006	17	30	44	95	23
Nov-17-2006	31	38	52	111	20

**Table 27. Explanations of footnotes and agency abbreviations.**

<b>Footnote</b>	<b>Explanation</b>
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.
†	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 <sup>6</sup> 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