

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

September 2003

December 8, 2003

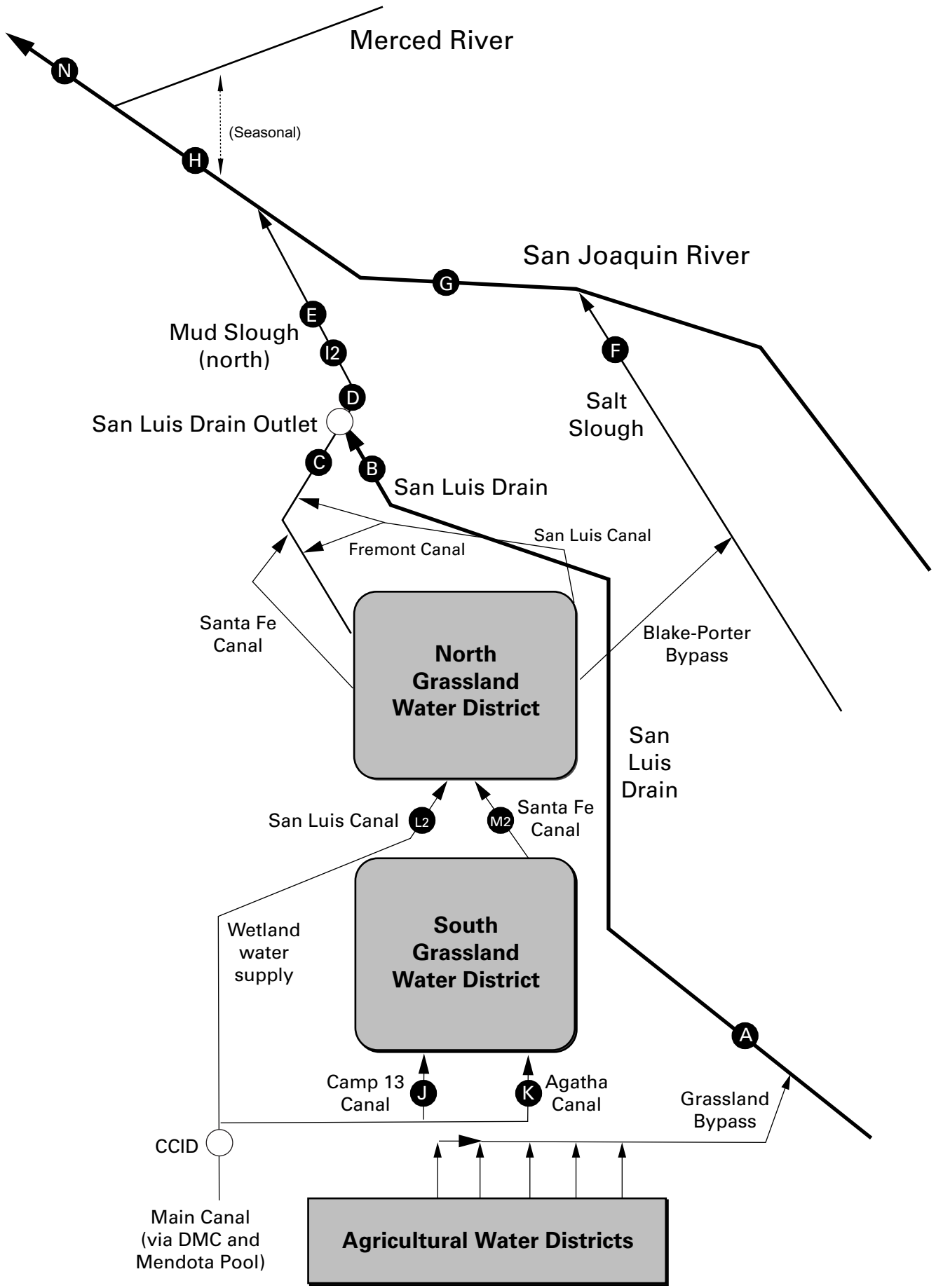
Preliminary Results

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





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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), September 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Sep-01-2003	36	3,830
Sep-02-2003	34	3,930
Sep-03-2003	34	3,700
Sep-04-2003	29	3,890
Sep-05-2003	31	3,510
Sep-06-2003	30	3,600
Sep-07-2003	36	3,120
Sep-08-2003	26	3,930
Sep-09-2003	21	4,340
Sep-10-2003	20	4,490
Sep-11-2003	21	4,010
Sep-12-2003	21	3,830
Sep-13-2003	22	4,040
Sep-14-2003	21	4,020
Sep-15-2003	16	4,750
Sep-16-2003	12	5,270
Sep-17-2003	11	5,220
Sep-18-2003	15	5,020
Sep-19-2003	15	4,990
Sep-20-2003	16	5,060
Sep-21-2003	13	4,920
Sep-22-2003	13	4,760
Sep-23-2003	14	4,470
Sep-24-2003	16	3,980
Sep-25-2003	16	4,330
Sep-26-2003	16	4,240
Sep-27-2003	14	4,110
Sep-28-2003	12	4,830
Sep-29-2003	9	4,890
Sep-30-2003	10	4,910
.	.	.
Mean	20	4,330

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), September 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Sep-01-2003	43	25.3	5.9	3,490	26.6	6.2
Sep-02-2003	37	25.8	6.2	3,640	29.0	5.8
Sep-03-2003	35	26.2	5.8	3,430	26.9	5.1
Sep-04-2003	34	26.3	6.3	3,710	33.1	6.1
Sep-05-2003	30	26.0	6.8	3,950	41.1	6.7
Sep-06-2003	31	25.3	7.0	4,010	39.5	6.6
Sep-07-2003	31	24.4	6.8	4,080	43.6	7.3
Sep-08-2003	36	24.1	7.2	3,880	36.0	7.0
Sep-09-2003	29	23.6	7.0	4,090	30.6	4.8
Sep-10-2003	24	23.8	5.9	3,540	24.7	3.2
Sep-11-2003	21	23.7	6.6	3,850	27.9	3.2
Sep-12-2003	22	24.6	5.8	3,550	23.7	2.8
Sep-13-2003	22	24.7	5.1	3,250	25.0	3.0
Sep-14-2003	22	24.5	5.9	3,650	27.3	3.2
Sep-15-2003	22	24.8	7.0	4,100	28.4	3.4
Sep-16-2003	19	24.7	7.4	4,370	29.6	3.0
Sep-17-2003	16	23.4	7.8	4,520	36.0	3.1
Sep-18-2003	14	22.1	7.6	4,450	35.8	2.7
Sep-19-2003	16	22.4	6.8	4,100	31.0	2.7
Sep-20-2003	17	23.2	6.5	3,930	27.6	2.5
Sep-21-2003	18	23.8	6.8	4,050	32.9	3.2
Sep-22-2003	17	24.5	6.9	4,190	36.5	3.3
Sep-23-2003	16	24.9	6.8	4,040	33.8	2.9
Sep-24-2003	17	24.5	7.4	4,340	34.5	3.2
Sep-25-2003	19	23.7	8.0	4,590	37.2	3.8
Sep-26-2003	21	23.3	8.7	4,820	41.2	4.7
Sep-27-2003	20	23.3	8.4	4,770	42.4	4.6
Sep-28-2003	20	23.3	8.0	4,730	49.7	5.4
Sep-29-2003	17	23.3	7.8	4,550	44.0	4.0
Sep-30-2003	15	22.9	7.8	4,460	38.2	3.1
Mean	23	24.2	6.9	4,070	33.8	4.2
Total Acre-feet	1,390					
Total (lbs)						126

Load Limitation for September 2003 (lbs)	303
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, September 2003.

Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Sep-01-2003	45	26.6	6.5
Sep-02-2003	39	29.0	6.1
Sep-03-2003	37	26.9	5.3
Sep-04-2003	36	33.1	6.5
Sep-05-2003	32	41.1	7.0
Sep-06-2003	33	39.5	7.0
Sep-07-2003	32	43.6	7.6
Sep-08-2003	38	36.0	7.4
Sep-09-2003	30	30.6	4.9
Sep-10-2003	24	24.7	3.1
Sep-11-2003	22	27.9	3.4
Sep-12-2003	22	23.7	2.9
Sep-13-2003	22	25.0	3.0
Sep-14-2003	23	27.3	3.3
Sep-15-2003	23	28.4	3.5
Sep-16-2003	20	29.6	3.2
Sep-17-2003	15	36.0	2.9
Sep-18-2003	14	35.8	2.8
Sep-19-2003	17	31.0	2.8
Sep-20-2003	18	27.6	2.7
Sep-21-2003	19	32.9	3.4
Sep-22-2003	18	36.5	3.5
Sep-23-2003	16	33.8	2.9
Sep-24-2003	18	34.5	3.3
Sep-25-2003	19	37.2	3.9
Sep-26-2003	21	41.2	4.7
Sep-27-2003	20	42.4	4.7
Sep-28-2003	20	49.7	5.4
Sep-29-2003	17	44.0	4.1
Sep-30-2003	16	38.2	3.2
Mean	24	33.8	4.4
Total Acre-feet	1,440		
Total (lbs)			131

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

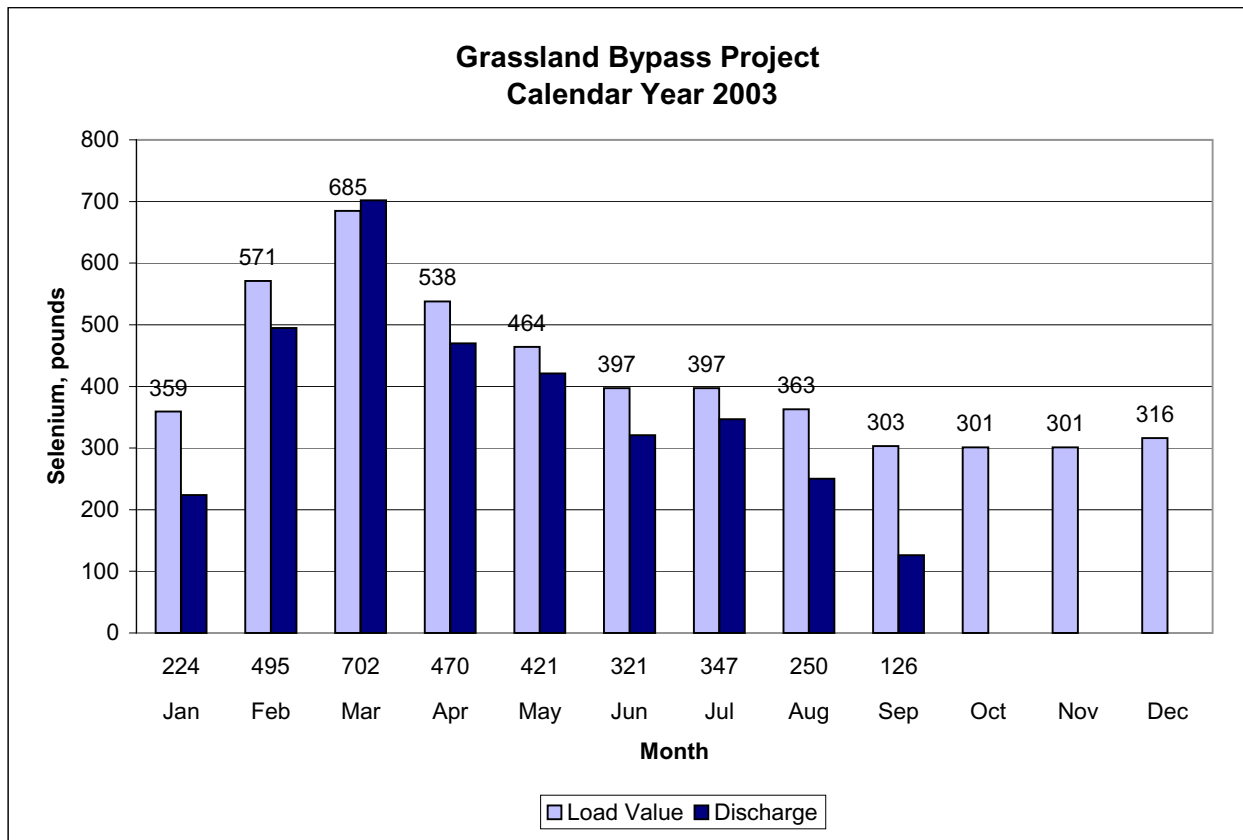
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, propose to measure flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested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

This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that as of October 1, 2003, flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

*Selenium (total) concentrations from Site B (San Luis Drain)
 Note: SLD Terminus weir under construction, flows are estimated.

Figure 2c. 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), September 2003.**

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
Sep-01-2003	75	26.0	2,350
Sep-02-2003	66	26.4	2,430
Sep-03-2003	64	26.8	2,310
Sep-04-2003	59	26.9	2,580
Sep-05-2003	53	26.3	2,700
Sep-06-2003	51	25.4	2,800
Sep-07-2003	52	24.5	2,840
Sep-08-2003	60	24.4	2,740
Sep-09-2003	47	23.8	2,820
Sep-10-2003	40	23.8	2,570
Sep-11-2003	40	24.1	2,400
Sep-12-2003	40	24.7	2,500
Sep-13-2003	41	24.4	2,000
Sep-14-2003	57	24.5	1,660
Sep-15-2003	47	24.7	2,040
Sep-16-2003	41	24.2	2,230
Sep-17-2003	40	22.2	2,160
Sep-18-2003	48	21.6	1,820
Sep-19-2003	45	22.4	1,940
Sep-20-2003	48	23.0	1,890
Sep-21-2003	50	24.0	1,850
Sep-22-2003	48	24.4	1,920
Sep-23-2003	57	24.6	1,690
Sep-24-2003	70	24.2	1,500
Sep-25-2003	78	23.3	1,600
Sep-26-2003	80	23.0	1,700
Sep-27-2003	71	23.0	1,810
Sep-28-2003	77	23.1	1,730
Sep-29-2003	82	22.8	1,540
Sep-30-2003	86	22.7	1,450
.	.	.	.
Mean	57	24.2	2,120

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), September 2003.

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
Sep-01-2003	128	25.7	944
Sep-02-2003	97	26.3	986
Sep-03-2003	78	26.7	1,090
Sep-04-2003	74	26.7	1,080
Sep-05-2003	65	25.9	1,200
Sep-06-2003	71	24.6	1,210
Sep-07-2003	79	23.6	1,200
Sep-08-2003	79	23.6	1,130
Sep-09-2003	76	22.8	1,130
Sep-10-2003	75	22.9	1,170
Sep-11-2003	66	23.7	1,210
Sep-12-2003	77	24.6	1,220
Sep-13-2003	88	24.3	1,040
Sep-14-2003	89	24.3	997
Sep-15-2003	80	24.5	1,010
Sep-16-2003	65	23.9	1,000
Sep-17-2003	49	21.6	1,180
Sep-18-2003	56	21.2	1,200
Sep-19-2003	67	22.2	1,090
Sep-20-2003	70	22.8	982
Sep-21-2003	68	23.7	1,030
Sep-22-2003	73	24.2	1,080
Sep-23-2003	76	24.4	1,020
Sep-24-2003	67	23.7	1,080
Sep-25-2003	57	22.6	1,180
Sep-26-2003	57	22.4	1,210
Sep-27-2003	73	22.4	1,090
Sep-28-2003	82	22.6	1,000
Sep-29-2003	82	22.2	1,060
Sep-30-2003	70	22.2	1,130
.	.	.	.
Mean	74	23.7	1,100

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), September 2003.

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
Sep-01-2003	432	25.6	1,280	3.5
Sep-02-2003	399	26.0	1,280	2.7
Sep-03-2003	394	26.6	1,270	2.6
Sep-04-2003	352	26.3	1,360	2.6
Sep-05-2003	306	25.1	1,530	3.0
Sep-06-2003	320	24.0	1,510	3.1
Sep-07-2003	291	23.1	1,600	3.6
Sep-08-2003	342	23.1	1,470	3.3
Sep-09-2003	311	22.6	1,440	3.8
Sep-10-2003	312	22.8	1,490	3.4
Sep-11-2003	351	23.4	1,410	2.4
Sep-12-2003	327	24.2	1,220	2.4
Sep-13-2003	295	23.7	1,440	2.1
Sep-14-2003	345	23.8	1,280	1.8
Sep-15-2003	383	24.0	1,110	1.6
Sep-16-2003	297	23.3	1,140	1.6
Sep-17-2003	267	21.4	1,380	1.8
Sep-18-2003	251	20.8	1,420	1.8
Sep-19-2003	250	21.6	1,530	1.9
Sep-20-2003	254	22.5	1,480	1.9
Sep-21-2003	310	23.3	1,360	1.9
Sep-22-2003	322	23.8	1,180	1.5
Sep-23-2003	328	23.9	1,190	1.6
Sep-24-2003	310	23.6	NA	NA
Sep-25-2003	344	22.8	1,200	1.7
Sep-26-2003	343	22.4	1,260	1.8
Sep-27-2003	338	22.4	1,310	2.1
Sep-28-2003	390	22.5	1,150	2.0
Sep-29-2003	427	22.3	1,020	1.9
Sep-30-2003	412	22.0	988	1.9
.
Mean	333	23.4	1,320	2.3

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	.	.	.
Jul-02-2003	56	.	.	4,560	90	.	.	.
Jul-09-2003	54	.	.	4,320	85	.	.	.
Jul-16-2003	50	.	.	4,170	82	.	.	.
Jul-23-2003	58	.	.	3,990	150	.	.	.
Jul-30-2003	59	.	.	3,300	200	.	.	.
Aug-06-2003	64	.	.	3,680	77	.	.	.
Aug-13-2003	46	.	.	3,620	110	.	.	.
Aug-20-2003	51	.	.	3,650	160	.	.	.
Aug-27-2003	47	.	.	3,450	150	.	.	.
Sep-03-2003	34	.	.	3,680	180	.	.	.
Sep-10-2003	20	.	.	4,630	78	.	.	.
Sep-17-2003	11	.	.	5,560	24	.	.	.
Sep-24-2003	16	.	.	3,970	89	.	.	.

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
Jul-01-2003	54	.	.	4,560	.	43.8	.	P
Jul-08-2003	57	.	.	4,760	.	50.9	.	P
Jul-15-2003	37	.	.	4,380	.	34.2	.	P
Jul-22-2003	57	.	.	4,110	.	32.9	.	P
Jul-29-2003	53	.	.	3,780	.	27.2	.	P
Aug-05-2003	61	.	.	3,690	.	28.0	.	P
Aug-12-2003	50	.	.	3,590	.	26.0	.	P
Aug-19-2003	46	.	.	4,200	.	24.0	.	P
Aug-26-2003	48	.	.	3,710	.	28.6	.	P
Sep-02-2003	34	.	.	3,740	.	34.4	.	P
Sep-09-2003	21	.	.	3,950	.	30.6	.	P
Sep-16-2003	12	.	.	4,640	.	42.0	.	P
Sep-23-2003	14	.	.	5,060	.	54.0	.	P
Sep-30-2003	10	.	.	4,830	.	45.0	.	P

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
Jul-03-2003	56	24.9	8.5	4,630	53	55.2	8.3
Jul-10-2003	55	24.9	8.5	4,500	48	47.4	8.1
Jul-17-2003	49	26.6	8.9	4,260	54	28.0	9.0
Jul-24-2003	59	27.8	8.4	4,020	44	30.5	7.5
Jul-03-2003	56	26.7	8.2	3,610	47	22.9	6.7
Aug-07-2003	66	24.5	8.4	3,700	51	31.6	6.4
Aug-14-2003	47	24.4	8.5	3,950	63	29.2	6.7
Aug-21-2003	52	25.6	8.9	4,400	39	25.2	8.0
Aug-28-2003	50	25.0	8.4	3,570	NA	25.3	6.0
Sep-04-2003	34	25.8	8.3	3,610	27	31.8	6.0
Sep-11-2003	21	22.7	8.4	4,020	32	28.6	6.7
Sep-18-2003	14	21.2	8.5	4,480	33	36.0	7.5
Sep-25-2003	19	22.7	8.7	4,690	39	36.6	8.0

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
Jul-03-2003	12	24.7	8.2	1,260	.	1.4	1.2
Jul-10-2003	-3	24.5	8.4	1,560	.	1.3	1.3
Jul-17-2003	15	26.1	8.0	711	.	1.1	0.7
Jul-24-2003	-5	26.0	8.4	1,260	.	1.4	1.1
Jul-31-2003	0	24.7	8.5	1,360	.	0.9	1.4
Aug-07-2003	27	23.6	8.2	1,010	.	1.1	1.2
Aug-14-2003	-3	21.8	8.4	930	.	0.8	1.4
Aug-21-2003	0	22.5	8.1	1,260	.	0.6	1.2
Aug-28-2003	18	22.9	7.7	795	.	0.6	0.7
Sep-04-2003	25	24.6	7.7	783	.	0.4	0.6
Sep-11-2003	19	NA	NA	NA	.	NA	NA
Sep-18-2003	34	20.1	7.8	679	.	0.4	0.5
Sep-25-2003	59	21.9	7.5	722	.	<0.4	0.5

** 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
Jul-03-2003	68	24.7	8.4	3,820	42.9	6.5
Jul-10-2003	52	24.8	8.4	4,370	48.0	7.7
Jul-17-2003	64	26.5	8.5	2,770	15.9	5.4
Jul-24-2003	54	27.3	8.4	3,740	26.0	6.8
Jul-31-2003	56	26.5	8.3	3,410	22.2	6.2
Aug-07-2003	93	24.1	8.4	2,810	20.9	4.6
Aug-14-2003	44	23.9	8.7	3,560	21.0	6.0
Aug-21-2003	52	25.2	8.4	4,110	21.2	7.4
Aug-28-2003	68	24.2	8.2	2,910	19.4	4.7
Sep-04-2003	59	25.0	8.0	2,640	20.0	4.1
Sep-11-2003	40	23.5	8.3	2,340	13.6	3.6
Sep-18-2003	48	19.6	8.0	1,750	9.2	2.4
Sep-25-2003	78	21.9	7.7	1,650	7.6	2.2

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
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-15-2003	.	8.2	2,110	78	13.5	3.4
Jul-22-2003	.	8.5	3,620	25	27.3	6.2
Jul-30-2003	.	8.5	2,980	26	18.1	5.1
Aug-04-2003	.	8.3	3,360	48	17.7	4.7
Aug-11-2003	.	8.0	3,830	35	22.2	5.1
Aug-21-2003	.	8.4	4,080	33	21.2	7.6
Aug-27-2003	.	8.1	3,200	22	18.4	4.8
Sep-04-2003	.	7.1	2,650	22	19.3	4.1
Sep-09-2003	.	8.0	2,840	34	18.4	4.4
Sep-17-2003	.	8.1	2,310	31	10.2	3.2
Sep-24-2003	.	7.7	1,600	19	7.1	2.0

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
Jul-03-2003	148 e	23.4	7.7	921	0.8	P
Jul-10-2003	135 e	24.3	7.7	990	0.9	P
Jul-17-2003	135 e	25.6	7.8	906	0.6	P
Jul-24-2003	126 e	26.2	7.8	1,080	1.0	P
Jul-31-2003	170	25.9	7.6	936	0.5	P
Aug-07-2003	201	23.0	7.7	824	0.6	P
Aug-14-2003	97	22.8	7.8	1,030	0.5	P
Aug-21-2003	113	23.9	7.7	839	0.4	P
Aug-28-2003	138	23.3	7.7	772	0.6	P
Sep-04-2003	74	24.2	7.9	1,060	0.4	P
Sep-11-2003	66	20.8	8.0	1,180	0.6	P
Sep-18-2003	56	18.3	7.8	1,290	<0.4	P
Sep-25-2003	57	19.9	8.0	1,260	<0.4	P

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
Jul-02-2003	15	.	.	375	1.3	P
Jul-09-2003	5	.	.	669	1.5	P
Jul-16-2003	15	.	.	336	0.8	P
Jul-23-2003	15	.	.	327	0.7	P
Jul-30-2003	5	.	.	435	0.6	P
Aug-06-2003	25	.	.	342	0.5	P
Aug-13-2003	35	.	.	360	1.0	P
Aug-20-2003	75	.	.	382	0.7	P
Aug-27-2003	120	.	.	626	1.2	P
Sep-03-2003	155	.	.	401	0.9	P
Sep-10-2003	180	.	.	400	0.6	P
Sep-17-2003	180	.	.	418	0.8	P
Sep-24-2003	180	.	.	382	<0.4	P

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
Jul-02-2003	26	.	.	257	1.0	P
Jul-09-2003	25	.	.	274	1.0	P
Jul-16-2003	26	.	.	436	0.8	P
Jul-23-2003	35	.	.	453	0.9	P
Jul-30-2003	35	.	.	302	0.6	P
Aug-06-2003	35	.	.	350	0.6	P
Aug-13-2003	45	.	.	499	0.9	P
Aug-20-2003	45	.	.	293	0.5	P
Aug-27-2003	45	.	.	323	0.7	P
Sep-03-2003	55	.	.	349	0.7	P
Sep-10-2003	140	.	.	383	0.6	P
Sep-17-2003	160	.	.	370	0.5	P
Sep-24-2003	160	.	.	394	0.4	P

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
Jul-02-2003	60	.	.	661	1.5	P
Jul-09-2003	60	.	.	646	1.6	P
Jul-16-2003	60	.	.	445	0.8	P
Jul-23-2003	60	.	.	NA	1.0	P
Jul-30-2003	40	.	.	623	1.0	P
Aug-06-2003	40	.	.	729	1.1	P
Aug-13-2003	95	.	.	504	1.2	P
Aug-20-2003	145	.	.	420	0.7	P
Aug-27-2003	145	.	.	491	1.1	P
Sep-03-2003	145	.	.	575	1.0	P
Sep-10-2003	145	.	.	573	1.0	P
Sep-17-2003	145	.	.	449	0.7	P
Sep-24-2003	145	.	.	406	0.5	P

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
Jul-02-2003	48	.	.	1,490	2.3	P
Jul-09-2003	26	.	.	1,060	1.5	P
Jul-16-2003	33	.	.	932	1.1	P
Jul-23-2003	51	.	.	944	1.2	P
Jul-30-2003	53	.	.	797	1.0	P
Aug-06-2003	63	.	.	1,060	1.0	P
Aug-13-2003	42	.	.	943	1.1	P
Aug-20-2003	57	.	.	680	0.8	P
Aug-27-2003	82	.	.	613	0.8	P
Sep-03-2003	57	.	.	552	0.7	P
Sep-10-2003	66	.	.	578	0.9	P
Sep-17-2003	46	.	.	559	0.7	P
Sep-24-2003	41	.	.	563	0.4	P

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
Jul-02-2003	.	.	.	285	0.9	P
Jul-09-2003	.	.	.	240	0.8	P
Jul-16-2003	.	.	.	287	0.9	P
Jul-23-2003	.	.	.	309	0.7	P
Jul-30-2003	.	.	.	297	0.6	P
Aug-06-2003	.	.	.	278	0.5	P
Aug-13-2003	.	.	.	289	0.7	P
Aug-20-2003	.	.	.	322	0.5	P
Aug-27-2003	.	.	.	283	0.6	P
Sep-03-2003	.	.	.	348	0.6	P
Sep-10-2003	.	.	.	370	0.5	P
Sep-17-2003	.	.	.	400	0.5	P
Sep-24-2003	.	.	.	380	<0.4	P

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
Jul-03-2003	165	24.5	7.8	1,070	0.8	1.3
Jul-10-2003	164	24.8	7.8	1,180	0.8	0.7
Jul-17-2003	149	26.8	7.6	1,090	<0.4	0.5
Jul-24-2003	133	27.0	7.8	1,080	0.5	0.5
Jul-31-2003	207	26.1	7.6	1,060	0.5	0.5
Aug-07-2003	202	23.6	7.8	901	0.6	0.4
Aug-14-2003	135	23.3	7.7	1,270	0.4	0.5
Aug-21-2003	124	24.2	7.8	940	0.4	0.4
Aug-28-2003	147	23.9	8.1	995	0.5	0.4
Sep-04-2003	88	24.6	7.9	1,510	0.4	0.6
Sep-11-2003	76	23.1	8.1	1,680	0.4	0.7
Sep-18-2003	60	19.0	7.9	2,200	<0.4	0.8
Sep-25-2003	72	21.3	8.0	1,690	<0.4	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
Jul-01-2003	.	.	.	1,940	6.3	1.8
Jul-08-2003	.	.	.	2,120	9.0	2.4
Jul-15-2003	.	.	.	NA	NA	NA
Jul-22-2003	.	.	.	1,620	4.9	1.7
Aug-01-2003	.	.	.	1,700	4.7	1.8
Aug-05-2003	.	.	.	1,510	5.4	1.6
Aug-19-2003	.	.	.	1,940	4.3	1.7
Aug-26-2003	.	.	.	1,700	4.8	1.7
Sep-02-2003	.	.	.	1,530	4.5	1.4
Sep-09-2003	.	.	.	1,960	6.9	1.9
Sep-16-2003	.	.	.	1,860	3.2	1.5
Sep-30-2003	.	.	.	1,310	3.0	1.1

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
Jul-03-2003	440	23.9	8.1	1,390	4.5	0.5
Jul-10-2003	410	25.0	8.1	1,370	5.7	1.3
Jul-17-2003	364	25.8	8.0	1,360	3.0	1.2
Jul-24-2003	324	26.4	7.9	1,350	4.1	1.2
Jul-31-2003	452	25.3	7.9	1,250	2.6	1.2
Aug-07-2003	507	23.5	8.2	1,230	3.3	1.1
Aug-14-2003	388	23.2	8.2	1,460	0.6	1.2
Aug-21-2003	344	24.3	7.9	1,450	2.7	1.3
Aug-28-2003	392	23.1	7.9	1,300	2.9	1.1
Sep-04-2003	352	24.6	8.0	1,390	2.3	0.9
Sep-11-2003	351	23.2	8.0	1,310	1.8	0.9
Sep-18-2003	251	19.3	7.8	1,450	1.7	0.9
Sep-25-2003	344	21.8	8.0	1,180	1.6	0.7

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from October 2002 to September 2003. 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	%	%	%	%	%	%
Oct-2002	93	98	100	93	98	100
Nov-2002	98	55*	83	65*	100	100
Dec-2002	100	88	78*	98	98	100
Jan-2003	98	65*	80	95	88	80
Feb-2003	98	78	73	88	98	100
Mar-2003	93	85*	100	95	100	100
Apr-2003	90	100	100	75*	88	100
May-2003	98	100	100	95	100	100
Jun-2003	95	93	98	93	65†	100
Jul-2003	95	100	93	98	93	100
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from October 2002 to September 2003. 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
Oct-2002	0.66	0.66	0.71	0.62	0.67	0.61
Nov-2002	0.41	0.22*	0.41	0.27*	0.38	0.33
Dec-2002	0.55	0.48*	0.49*	0.60	0.57	0.52
Jan-2003	0.37	0.32	0.33	0.32	0.40	0.35
Feb-2003	0.27	0.24	0.22	0.25	0.26	0.30
Mar-2003	0.33	0.36	0.34	0.28	0.30	0.35
Apr-2003	0.34	0.50	0.47	0.31	0.30	0.24
May-2003	0.37*	0.46*	0.40*	0.46	0.50	0.30
Jun-2003	0.47	0.43	0.40	0.40	0.47	0.37
Jul-2003	0.58*	0.61*	0.73	0.65	0.71	0.65
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33
Sep-2003	0.46	0.37	0.45	0.38	0.31	0.38

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from October 2002 to September 2003. 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	%	%	%	%	%	%
Oct-2002	100	89	90	100	100	89
Nov-2002	60*†† D	100	100	100	100	100
Dec-2002	100	100	100	90	100	90
Jan-2003	90	90	100	90	100	100
Feb-2003	100	100	100	100	100	100
Mar-2003	100	100	90	90	100	90
Apr-2003	90	100	100	100	80	100
May-2003	100	100	100	80	100	100
Jun-2003	90	100	90	100	80	90
Jul-2003	100	90	100	90	80	100
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from October 2002 to September 2003. 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
Oct-2002	70.4	30.2	29.6	27.9	29.9	21.1
Nov-2002	7.9* D	30.3	33.5	29.5	18.4	20.3
Dec-2002	22.8	26.3	36.7	29.9	26.7	21.4
Jan-2003	30.1	37.0	38.8	26.3*	38.6	43.0
Feb-2003	36.1	38.0	32.9	37.0	35.0	28.7
Mar-2003	50.9	43.2	46.6	44.4	44.0	41.5
Apr-2003	38.5	42.0	43.3	34.6	31.1	35.1
May-2003	31.7	29.2	34.6	19.0*	30.4	23.7
Jun-2003	28.5	23.0	24.3	29.7	19.5	27.4
Jul-2003	39.9	28.8	46.9	28.2	25.0	26.0
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7
Sep-2003	25.1	30.1	36.1	31.2	33.0	25.6

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from October 2002 to September 2003. 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
Oct-2002	8.9	5.9*	6.4*	6.4*	7.8	9.5
Nov-2002	10.8*	15.7	11.9*	10.8*	15.7	14.2
Dec-2002	7.3‡	9.7	10.0	6.8‡	2.4 † † † †	7.7‡‡
Jan-2003	3.9*	11.7	10.2	5.7*	7.7‡	7.7‡
Feb-2003	0.6*	2.0*‡	1.0*‡	1.5*	3.0††††	1.2††††
Mar-2003	12.4*	18.4	14.6	20.3	17.4	22.2
Apr-2003	11.1*	15.4	13.3	8.9*	15.7	27.6
May-2003	8.4*	12.9	10.4	10.9	12.1	13.2
Jun-2003	16.2*	15.8*	13.2*	22.8*	31.6	35.2
Jul-2003	15.9*	22.7	12.1*	8.7*	19.5	16.6
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9
Sep-2003	11.8*	15.5	14.5*	13.9*	15.9	12.2

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, July 2003 to September 2003.

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
Jul-21-2003	28	1.2	17	0.5	<0.4
Jul-23-2003	32	1.0	33	0.5	<0.4
Jul-25-2003	32	1.2	23	0.6	<0.4
Aug-18-2003	18	0.8	16	<0.4	<0.4
Aug-20-2003	22	0.7	18	<0.4	<0.4
Aug-22-2003	22	0.8	17	<0.4	<0.4
Sep-15-2003	28	<0.4	10	<0.4	<0.4
Sep-17-2003	36	0.5	8	<0.4	<0.4
Sep-19-2003	31	0.5	10	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from July 2003 to September 2003.

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
Jul-21-2003	35	145	75	180	67
Jul-23-2003	27	79	84	175	41
Jul-25-2003	29	128	64	208	40
Aug-18-2003	69	110	89	216	45
Aug-20-2003	58	116	74	187	50
Aug-22-2003	36	193	183	262	30
Sep-15-2003	35	74	121	121	33
Sep-17-2003	67	93	90	79	46
Sep-19-2003	30	127	128	170	30

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.
†	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 $0.4 \mu\text{g/L}$ as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated