GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

March 2003

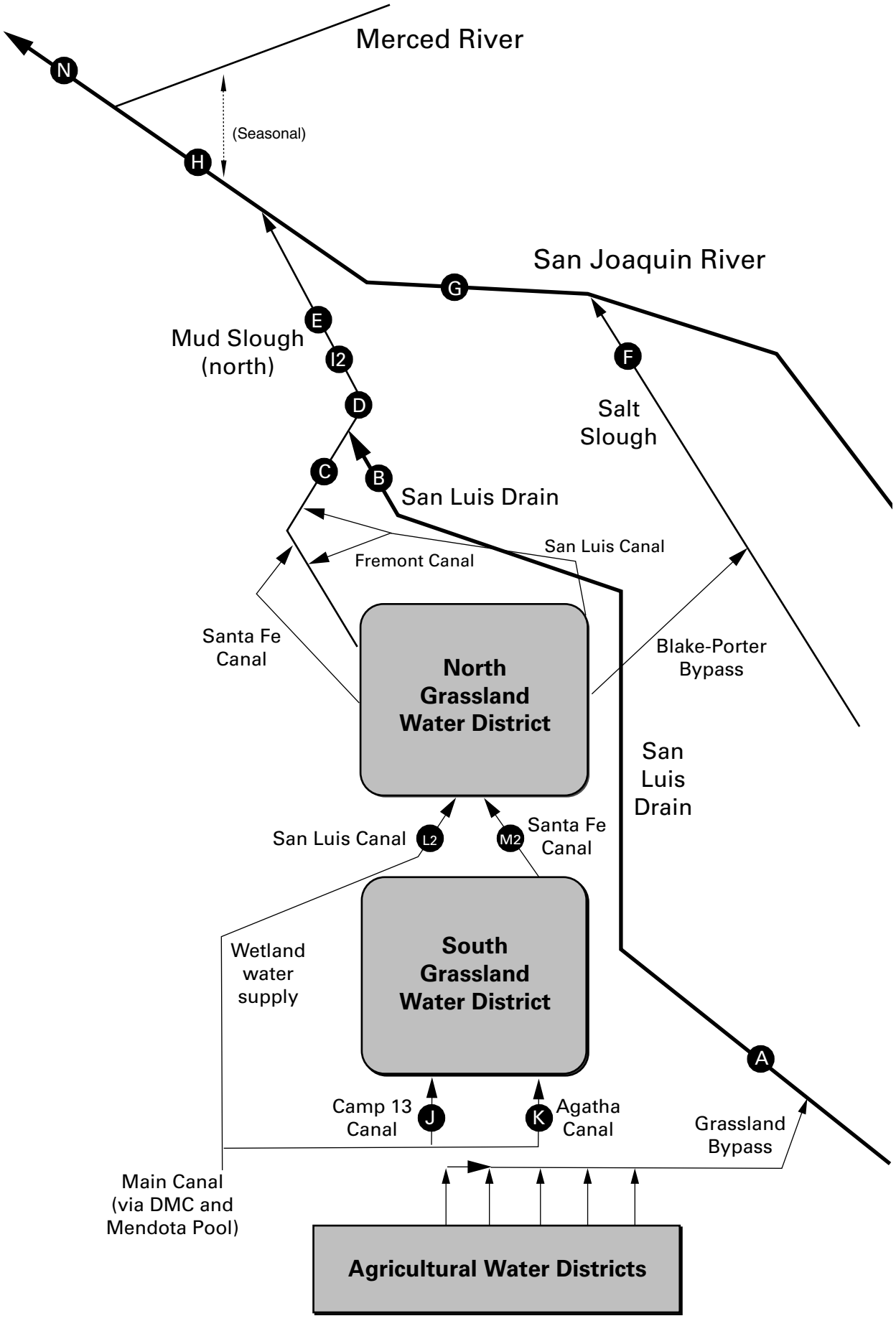
June 12, 2003

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


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
Salt
Slough
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
Grassland
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A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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LIST OF TABLES FOR MONTHLY REPORT

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

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Mar-01-2003	65	4,510
Mar-02-2003	65	4,590
Mar-03-2003	62	4,780
Mar-04-2003	63	4,950
Mar-05-2003	65	4,880
Mar-06-2003	67	4,880
Mar-07-2003	64	5,010
Mar-08-2003	61	5,180
Mar-09-2003	59	5,300
Mar-10-2003	58	5,370
Mar-11-2003	58	5,380
Mar-12-2003	58	5,340
Mar-13-2003	56	5,420
Mar-14-2003	52	5,490
Mar-15-2003	59	5,260
Mar-16-2003	65	5,170
Mar-17-2003	52	5,600
Mar-18-2003	42	5,830
Mar-19-2003	40	5,780
Mar-20-2003	37	5,710
Mar-21-2003	36	5,670
Mar-22-2003	35	5,500
Mar-23-2003	33	5,430
Mar-24-2003	31	5,390
Mar-25-2003	31	5,460
Mar-26-2003	36	5,300
Mar-27-2003	34	5,130
Mar-28-2003	31	5,200
Mar-29-2003	26	5,230
Mar-30-2003	22	5,360
Mar-31-2003	26	5,380
Mean	48	5,270

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

See Table 26 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
Mar-01-2003	73	14.0	6.6	4,400	64.5	25.4
Mar-02-2003	70	14.4	7.1	4,600	64.8	24.5
Mar-03-2003	69	14.6	7.2	4,690	64.9	24.2
Mar-04-2003	66	14.9	7.3	4,850	69.6	24.8
Mar-05-2003	68	15.2	7.5	4,920	74.4	27.3
Mar-06-2003	69	15.5	7.8	5,080	74.2	27.6
Mar-07-2003	71	16.0	7.9	5,150	82.8	31.7
Mar-08-2003	68	16.2	7.8	5,170	82.8	30.4
Mar-09-2003	66	16.8	8.0	5,110	77.7	27.7
Mar-10-2003	64	17.1	8.2	5,220	77.0	26.6
Mar-11-2003	63	17.7	8.4	5,400	86.6	29.4
Mar-12-2003	63	19.0	8.6	5,530	85.6	29.1
Mar-13-2003	63	19.3	8.5	5,520	83.7	28.4
Mar-14-2003	61	19.0	9.0	5,670	85.4	28.1
Mar-15-2003	61	18.6	8.7	5,580	86.1	28.3
Mar-16-2003	65	17.4	8.6	5,590	84.7	29.7
Mar-17-2003	70	16.1	8.5	5,680	79.3	29.9
Mar-18-2003	61	15.2	8.2	5,470	74.1	24.4
Mar-19-2003	48	15.3	7.8	5,390	88.1	22.8
Mar-20-2003	46	16.1	7.7	5,510	82.0	20.3
Mar-21-2003	44	16.8	7.7	5,610	80.4	19.1
Mar-22-2003	42	18.3	8.7	5,750	76.2	17.3
Mar-23-2003	40	18.2	8.5	5,690	73.6	15.9
Mar-24-2003	39	18.5	8.6	5,670	73.9	15.5
Mar-25-2003	36	18.8	8.9	5,650	77.2	15.0
Mar-26-2003	37	19.7	8.4	5,580	72.6	14.5
Mar-27-2003	46	17.6	8.3	5,530	68.0	16.9
Mar-28-2003	41	15.5	9.2	5,560	64.6	14.3
Mar-29-2003	35	17.8	8.9	5,680	67.5	12.7
Mar-30-2003	30	20.1	8.4	5,620	68.0	11.0
Mar-31-2003	25	21.3	8.8	5,530	66.8	9.0
Mean	55	17.1	8.2	5,370	76.0	22.6
Total Acre-feet	**3,370**					
Total (lbs)						**702**

Load Limitation for March 2003 (lbs)	**685**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, March 2003.
Note: This is unofficial data reported for comparison with Station B.

See Table 26 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
Mar-01-2003	72	64.5	24.9
Mar-02-2003	69	64.8	24.0
Mar-03-2003	68	64.9	23.7
Mar-04-2003	66	69.6	24.7
Mar-05-2003	67	74.4	26.8
Mar-06-2003	68	74.2	27.3
Mar-07-2003	68	82.8	30.5
Mar-08-2003	66	82.8	29.5
Mar-09-2003	64	77.7	26.7
Mar-10-2003	63	77.0	26.0
Mar-11-2003	62	86.6	29.1
Mar-12-2003	63	85.6	28.9
Mar-13-2003	63	83.7	28.4
Mar-14-2003	62	85.4	28.3
Mar-15-2003	61	86.1	28.4
Mar-16-2003	63	84.7	28.9
Mar-17-2003	65	79.3	27.8
Mar-18-2003	54	74.1	21.6
Mar-19-2003	48	88.1	22.6
Mar-20-2003	45	82.0	20.0
Mar-21-2003	43	80.4	18.6
Mar-22-2003	41	76.2	16.8
Mar-23-2003	40	73.6	15.8
Mar-24-2003	37	73.9	14.7
Mar-25-2003	35	77.2	14.4
Mar-26-2003	35	72.6	13.8
Mar-27-2003	38	68.0	14.0
Mar-28-2003	38	64.6	13.3
Mar-29-2003	34	67.5	12.4
Mar-30-2003	29	68.0	10.5
Mar-31-2003	23	66.8	8.4
Mean	53	76.0	22.0
Total Acre-feet	**3,270**		
Total (lbs)			**681**

*Selenium (total) concentrations values from Site B (San Luis Drain)

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 here in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

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

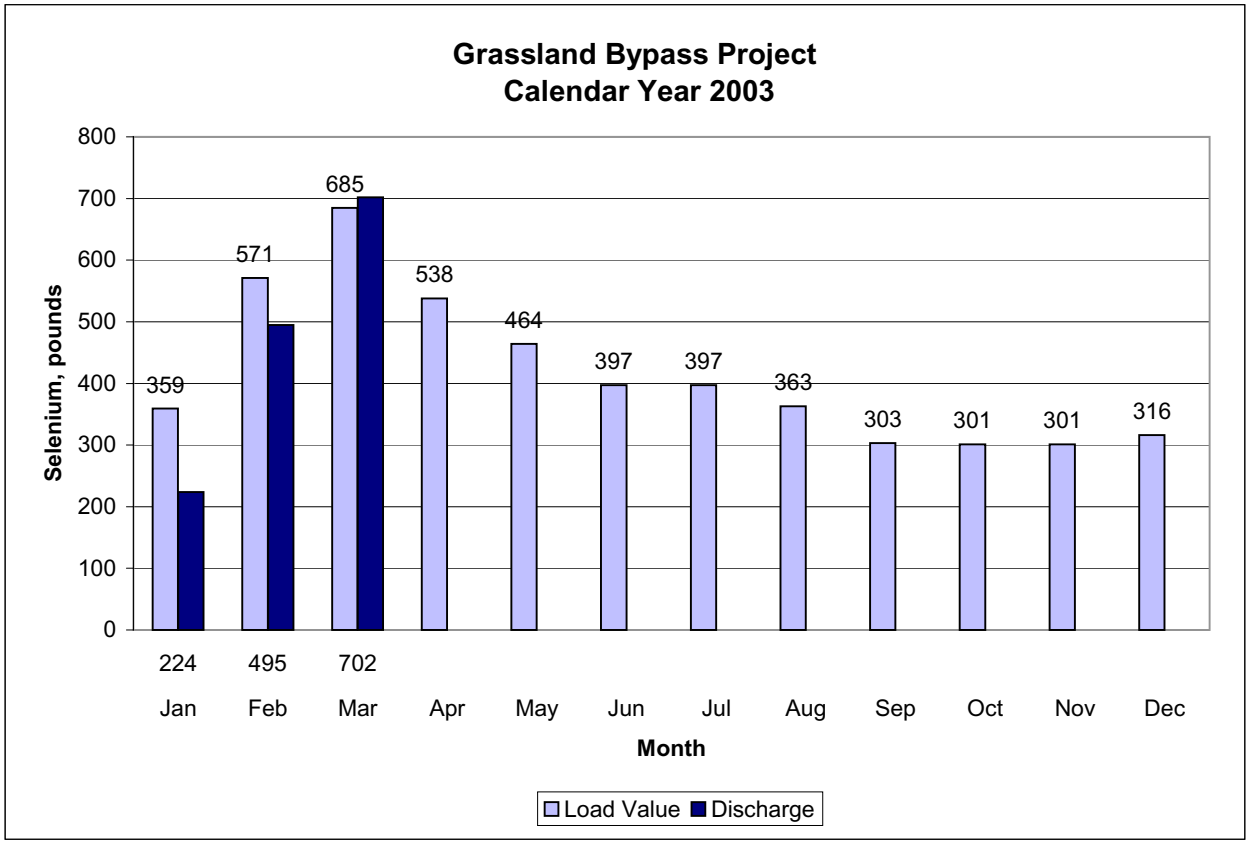

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), March 2003.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Mar-01-2003	235	14.3	2,690
Mar-02-2003	244	14.5	2,670
Mar-03-2003	250	14.9	2,700
Mar-04-2003	248	15.0	2,800
Mar-05-2003	231	15.1	3,050
Mar-06-2003	218	15.6	3,150
Mar-07-2003	216	15.9	3,170
Mar-08-2003	221	16.1	3,130
Mar-09-2003	223	16.6	2,970
Mar-10-2003	219	16.8	3,030
Mar-11-2003	220	17.4	3,130
Mar-12-2003	214	18.5	3,190
Mar-13-2003	207	19.0	3,320
Mar-14-2003	202	18.3	3,470
Mar-15-2003	216	17.8	3,450
Mar-16-2003	231	16.6	3,490
Mar-17-2003	239	15.4	3,600
Mar-18-2003	212	14.4	3,580
Mar-19-2003	182	15.1	3,590
Mar-20-2003	179	16.4	3,490
Mar-21-2003	163	16.9	3,570
Mar-22-2003	152	18.2	3,630
Mar-23-2003	140	17.5	3,730
Mar-24-2003	137	17.5	3,670
Mar-25-2003	147	17.7	3,510
Mar-26-2003	161	18.6	3,260
Mar-27-2003	171	16.7	3,250
Mar-28-2003	179	15.2	3,070
Mar-29-2003	184	17.2	3,070
Mar-30-2003	169	18.9	3,080
Mar-31-2003	160	20.1	3,010
Mean	199	16.7	3,240

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

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Mar-01-2003	391	13.4	1,460
Mar-02-2003	391	13.8	1,510
Mar-03-2003	379	14.1	1,500
Mar-04-2003	371	14.0	1,530
Mar-05-2003	383	14.1	1,570
Mar-06-2003	404	14.5	1,590
Mar-07-2003	423	14.9	1,600
Mar-08-2003	427	15.0	1,600
Mar-09-2003	445	15.4	1,520
Mar-10-2003	463	16.0	1,540
Mar-11-2003	462	16.5	1,580
Mar-12-2003	450	17.5	1,600
Mar-13-2003	436	18.0	1,610
Mar-14-2003	425	17.8	1,650
Mar-15-2003	447	17.5	1,600
Mar-16-2003	482	16.4	1,590
Mar-17-2003	487	15.3	1,600
Mar-18-2003	442	14.6	1,750
Mar-19-2003	360	14.8	1,900
Mar-20-2003	324	15.8	1,810
Mar-21-2003	325	16.4	1,740
Mar-22-2003	321	17.3	1,730
Mar-23-2003	311	17.3	1,700
Mar-24-2003	310	17.0	1,660
Mar-25-2003	314	17.2	1,630
Mar-26-2003	307	18.0	1,640
Mar-27-2003	284	16.8	1,710
Mar-28-2003	276	15.4	1,670
Mar-29-2003	271	16.8	1,650
Mar-30-2003	256	18.7	1,660
Mar-31-2003	240	19.8	1,670
Mean	374	16.1	1,630

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

See Table 26 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-01-2003	1,070	14.0	1,630	5.5
Mar-02-2003	1,090	14.2	1,600	4.9
Mar-03-2003	1,120	14.5	1,590	4.6
Mar-04-2003	1,090	14.8	1,640	4.7
Mar-05-2003	1,100	14.8	1,650	4.4
Mar-06-2003	1,120	15.3	1,690	4.9
Mar-07-2003	1,150	15.5	1,720	4.3
Mar-08-2003	1,140	15.6	1,760	4.8
Mar-09-2003	1,130	16.0	1,710	4.9
Mar-10-2003	1,120	16.4	1,690	5.0
Mar-11-2003	1,140	17.2	1,620	4.3
Mar-12-2003	1,150	17.9	1,650	4.4
Mar-13-2003	1,140	18.6	1,710	4.8
Mar-14-2003	1,160	18.7	1,680	4.3
Mar-15-2003	1,170	18.4	1,730	4.5
Mar-16-2003	1,200	17.3	1,750	4.8
Mar-17-2003	1,260	16.1	1,640	3.9
Mar-18-2003	1,250	15.5	1,660	4.6
Mar-19-2003	1,200	15.6	1,730	4.2
Mar-20-2003	1,120	16.8	1,840	4.0
Mar-21-2003	1,070	17.2	1,860	3.8
Mar-22-2003	1,030	18.0	1,840	3.7
Mar-23-2003	1,010	17.9	1,840	1.7
Mar-24-2003	993	17.6	1,830	3.5
Mar-25-2003	967	18.0	1,770	3.4
Mar-26-2003	952	18.7	1,710	3.3
Mar-27-2003	945	17.4	1,680	3.1
Mar-28-2003	931	16.1	1,720	3.6
Mar-29-2003	907	17.6	1,650	3.1
Mar-30-2003	911	19.2	1,670	2.9
Mar-31-2003	889	20.3	1,640	2.8
Mean	1,080	16.8	1,710	4.1

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

See Table 26 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-02-2003	18	.	.	5,030	76	.	.	.
Jan-08-2003	18	.	.	5,360	59	.	.	.
Jan-15-2003	17	.	.	4,850	120	.	.	.
Jan-29-2003	22	.	.	4,950	120	.	.	.
Feb-05-2003	33	.	.	4,960	130	.	.	.
Feb-12-2003	54	.	.	4,630	190	.	.	.
Feb-19-2003	54	.	.	4,350	160	.	.	.
Feb-26-2003	82	.	.	4,210	180	.	.	.
Mar-05-2003	65	.	.	4,970	140	.	.	.
Mar-12-2003	58	.	.	5,510	NA	.	.	.
Mar-19-2003	40	.	.	5,940	40	.	.	.
Mar-26-2003	36	.	.	5,420	46	.	.	.

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

See Table 26 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-08-2003	18	.	.	5,190	.	82.5	.	8.7
Jan-14-2003	17	.	.	5,140	.	87.8	.	8.8
Jan-21-2003	17	.	.	5,100	.	46.4	.	8.5
Jan-28-2003	17	.	.	5,090	.	50.2	.	8.6
Feb-04-2003	33	.	.	4,830	.	64.0	.	7.6
Feb-11-2003	52	.	.	4,750	.	70.3	.	7.3
Feb-18-2003	52	.	.	4,390	.	57.7	.	7.0
Feb-25-2003	72	.	.	4,690	.	59.9	.	7.7
Mar-04-2003	63	.	.	4,820	.	70.6	.	7.8
Mar-11-2003	58	.	.	5,490	.	87.1	.	8.5
Mar-18-2003	42	.	.	5,620	.	84.4	.	8.9
Mar-25-2003	31	.	.	5,740	.	72.1	.	8.9

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

See Table 26 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
Jan-02-2003	27	10.4	7.3	4,510	35	40.0	.	6.9
Jan-09-2003	23	10.2	7.8	4,830	36	72.6	.	8.2
Jan-16-2003	20	11.5	7.8	4,850	40	79.0	.	8.6
Jan-23-2003	22	11.0	7.3	4,510	40	30.3	.	7.4
Jan-30-2003	24	12.9	7.9	4,520	40	44.1	.	8.0
Feb-06-2003	36	10.4	7.9	4,610	44	60.6	.	7.2
Feb-13-2003	59	11.8	8.0	4,510	46	63.2	.	6.6
Feb-20-2003	58	12.4	8.1	4,280	54	54.4	.	6.8
Feb-27-2003	82	13.4	8.0	4,920	54	63.6	.	7.6
Mar-06-2003	69	15.0	7.7	5,080	39	73.5	.	8.4
Mar-13-2003	63	18.1	8.3	5,520	30	80.3	.	8.6
Mar-20-2003	46	14.9	8.1	5,580	NA	88.1	.	8.4
Mar-27-2003	46	16.6	8.4	5,590	54	66.6	.	8.1

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

See Table 26 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-02-2003	343	10.4	7.8	1,310	0.5	1.1
Jan-09-2003	118	9.6	7.7	1,990	<0.4	1.6
Jan-16-2003	181	11.6	7.8	1,570	<0.4	1.4
Jan-23-2003	127	10.6	7.5	1,960	<0.4	1.6
Jan-30-2003	121	12.7	7.7	2,030	0.6	P
Feb-06-2003	105	9.1	7.9	2,310	0.8	2.0
Feb-13-2003	130	13.1	7.9	1,890	1.3	1.6
Feb-20-2003	150	12.1	8.0	1,960	1.2	1.8
Feb-27-2003	140	12.6	7.9	1,930	0.8	1.7
Mar-06-2003	149	14.9	7.8	2,150	1.0	2.0
Mar-13-2003	144	18.2	8.1	3,030	1.1	3.7
Mar-20-2003	133	14.7	8.0	2,180	0.9	2.1
Mar-27-2003	125	15.7	8.3	1,940	1.1	1.7

++ 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 26 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-02-2003	361	10.4	7.7	1,610	4.0	1.6
Jan-09-2003	137	9.7	7.7	2,540	12.0	2.8
Jan-16-2003	192	11.6	7.8	2,010	8.8	2.2
Jan-23-2003	144	10.7	7.5	2,450	7.2	2.5
Jan-30-2003	144	12.7	7.7	2,500	7.9	3.0
Feb-06-2003	141	9.4	7.9	2,940	14.5	3.3
Feb-13-2003	189	12.6	7.8	2,780	21.1	3.1
Feb-20-2003	208	12.1	8.0	2,640	14.5	3.1
Feb-27-2003	222	13.3	7.9	3,100	23.6	3.9
Mar-06-2003	218	14.8	7.8	3,070	21.1	3.9
Mar-13-2003	207	18.4	8.0	1,970	20.2	1.9
Mar-20-2003	179	14.9	8.0	2,980	18.6	3.5
Mar-27-2003	171	15.8	8.3	2,270	13.6	3.0

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

See Table 26 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-07-2003	.	7.3	2,580	NA	8.6	2.4
Jan-14-2003	.	7.5	2,260	NA	10.4	2.3
Jan-22-2003	.	7.5	2,500	NA	8.8	2.5
Jan-28-2003	.	7.3	2,510	36	6.3	2.8
Feb-02-2003	.	7.8	2,550	24	9.8	3.2
Feb-10-2003	.	7.8	3,060	23	21.6	3.8
Feb-19-2003	.	7.4	2,560	35	13.8	3.1
Feb-26-2003	.	7.2	2,870	38	19.8	3.6
Mar-04-2003	.	6.7	2,760	27	17.8	3.3
Mar-10-2003	.	7.6	2,910	39	20.2	3.5
Mar-17-2003	.	7.5	3,100	65	19.1	3.9
Mar-25-2003	.	8.1	2,850	55	15.4	3.6

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

See Table 26 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-02-2003	315	9.9	7.6	1,630	0.8	1.2
Jan-09-2003	173	10.2	7.6	1,850	1.0	1.1
Jan-16-2003	186	11.7	7.6	1,730	0.4	1.1
Jan-23-2003	177	11.2	7.0	1,700	0.5	1.0
Jan-30-2003	143	12.8	7.6	1,910	0.4	1.2
Feb-06-2003	112	9.7	7.7	2,230	0.5	1.2
Feb-13-2003	126	13.0	7.7	2,080	1.2	1.2
Feb-20-2003	241	11.3	7.8	1,340	1.0	0.8
Feb-27-2003	406	12.6	7.6	1,440	1.3	0.9
Mar-06-2003	404	13.4	7.9	1,590	1.2	1.1
Mar-13-2003	436	17.4	7.7	1,620	1.1	1.2
Mar-20-2003	324	14.6	7.7	1,820	0.9	1.3
Mar-27-2003	284	17.5	7.9	1,540	1.1	1.0

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

See Table 26 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-02-2003	10	.	.	824	2.4	0.5
Jan-08-2003	10	.	.	817	2.0	0.5
Jan-15-2003	10	.	.	719	1.1	0.4
Jan-22-2003	10	.	.	751	1.5	0.5
Jan-29-2003	10	.	.	730	1.2	0.4
Feb-05-2003	10	.	.	736	2.7	0.6
Feb-12-2003	10	.	.	666	3.1	0.4
Feb-19-2003	10	.	.	683	1.7	0.5
Feb-26-2003	10	.	.	810	2.2	0.6
Mar-05-2003	5	.	.	1,050	3.3	1.1
Mar-12-2003	5	.	.	832	2.5	0.6
Mar-19-2003	50	.	.	656	1.7	0.4
Mar-26-2003	50	.	.	442	1.3	0.3

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

See Table 26 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-02-2003	30	.	.	801	1.9	0.5
Jan-08-2003	30	.	.	843	1.2	0.5
Jan-15-2003	30	.	.	783	3.6	0.5
Jan-22-2003	30	.	.	764	1.1	0.5
Jan-29-2003	30	.	.	674	1.4	0.5
Feb-05-2003	30	.	.	769	2.4	0.5
Feb-12-2003	30	.	.	961	2.1	0.6
Feb-19-2003	30	.	.	672	1.1	0.5
Feb-26-2003	30	.	.	993	2.4	0.8
Mar-05-2003	10	.	.	1,250	3.3	1.1
Mar-12-2003	10	.	.	1,150	1.6	1.4
Mar-19-2003	80	.	.	676	1.8	0.4
Mar-26-2003	80	.	.	483	1.2	0.3

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

See Table 26 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-02-2003	0	.	.	1,020	1.1	0.8
Jan-08-2003	0	.	.	1,330	1.0	1.2
Jan-15-2003	0	.	.	1,820	1.3	2.0
Jan-22-2003	0	.	.	1,660	1.3	1.8
Jan-29-2003	10	.	.	2,100	1.7	2.4
Feb-05-2003	0	.	.	1,980	2.3	2.2
Feb-12-2003	25	.	.	887	3.1	0.6
Feb-19-2003	25	.	.	882	1.8	0.6
Feb-26-2003	41	.	.	997	2.2	0.9
Mar-05-2003	25	.	.	873	2.0	0.7
Mar-12-2003	25	.	.	1,230	1.8	1.1
Mar-19-2003	25	.	.	808	1.6	0.6
Mar-26-2003	25	.	.	1,250	2.1	1.2

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

See Table 26 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-02-2003	147	.	.	1,520	1.0	1.7
Jan-08-2003	138	.	.	1,580	0.8	1.7
Jan-15-2003	117	.	.	1,550	0.8	1.7
Jan-22-2003	116	.	.	1,390	1.1	1.4
Jan-29-2003	119	.	.	1,860	2.0	2.0
Feb-05-2003	107	.	.	1,840	3.2	1.9
Feb-12-2003	112	.	.	1,910	4.7	2.2
Feb-19-2003	108	.	.	1,970	3.7	2.3
Feb-26-2003	78	.		1,920	3.4	2.4
Mar-05-2003	118	.	.	2,370	3.8	2.6
Mar-12-2003	122	.	.	1,980	1.4	2.6
Mar-19-2003	117	.	.	1,910	2.1	2.1
Mar-26-2003	91	.		1,520	2.0	1.6

Table 16. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 26 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-02-2003	520	9.8	7.7	1,210	0.5	0.8
Jan-09-2003	262	9.9	7.9	1,780	0.9	0.9
Jan-16-2003	356	11.5	7.8	1,330	<0.4	0.7
Jan-23-2003	241	11.0	7.2	1,810	<0.4	0.8
Jan-30-2003	194	12.8	7.4	2,070	<0.4	P
Feb-06-2003	153	9.4	7.7	2,450	<0.4	1.0
Feb-13-2003	152	12.3	7.7	2,420	0.9	1.1
Feb-20-2003	268	11.2	7.9	1,470	1.0	0.8
Feb-27-2003	401	13.1	7.8	1,490	1.2	0.9
Mar-06-2003	451	14.5	7.9	1,680	1.0	1.0
Mar-13-2003	503	17.5	7.6	1,650	1.2	1.1
Mar-20-2003	437	15.1	7.5	1,780	0.8	1.3
Mar-27-2003	360	17.6	7.9	1,890	1.0	0.9

Table 17. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
(Collected data intended for use with biological monitoring.)

See Table 26 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-03-2003	.	.	.	1,390	1.8	1.2
Jan-07-2003	.	.	.	1,770	3.3	1.4
Jan-14-2003	.	.	.	1,480	2.6	1.0
Jan-21-2003	.	.	.	2,080	2.8	1.6
Jan-29-2003	.	.	.	2,240	2.3	1.4
Feb-04-2003	.	.	.	2,400	3.7	1.8
Feb-11-2003	.	.	.	2,570	8.2	2.0
Feb-18-2003	.	.	.	2,160	7.0	1.8
Mar-04-2003	.	.	.	2,070	5.9	1.6
Mar-11-2003	.	.	.	2,070	6.3	1.7
Mar-18-2003	.	.	.	2,230	6.1	1.9
Mar-25-2003	.	.	.	2,370	5.1	1.7

Table 18. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 26 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-02-2003	1,280	9.7	7.8	1,130	1.5	0.9
Jan-09-2003	940	10.1	7.9	1,530	2.1	1.1
Jan-16-2003	1,040	11.3	7.7	1,330	2.6	0.9
Jan-23-2003	857	11.2	7.6	1,600	2.0	1.0
Jan-30-2003	822	13.1	7.6	1,570	1.3	P
Feb-06-2003	832	9.6	7.8	1,650	2.7	1.1
Feb-13-2003	813	11.7	7.7	1,730	6.0	1.3
Feb-20-2003	933	11.4	7.8	1,560	3.7	1.3
Feb-27-2003	1,040	13.9	7.8	1,570	4.8	1.3
Mar-06-2003	1,120	15.4	7.8	1,700	5.0	1.5
Mar-13-2003	1,140	18.1	8.0	1,710	4.9	1.4
Mar-20-2003	1,120	15.9	8.0	1,860	4.0	1.5
Mar-27-2003	945	16.4	7.9	1,640	3.2	1.1

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from April 2002 to March 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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-2002	93	93	85	95	95	98
May-2002	98	95	95	90	85	88
Jun-2002	98	100	100	95	95	100
Jul-2002	100	95	98	93	90	100
Aug-2002	85	88	95	90	95	98
Sep-2002	100	98	98	95	95	93
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

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from April 2002 to March 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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-2002	0.64	0.63	0.50	0.63	0.55	0.58
May-2002	0.63	0.70	0.62	0.65	0.61	0.56
Jun-2002	0.38	0.43	0.41	0.42	0.31	0.50
Jul-2002	0.31	0.33	0.34	0.35	0.31	0.34
Aug-2002	0.49*	0.49	0.49	0.58	0.57	0.55
Sep-2002	0.38	0.38	0.29	0.33	0.31	0.30
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

Table 21. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from April 2002 to March 2002. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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-2002	100	90	100	90	100	100
May-2002	80	100	80	100	89	30†
Jun-2002	100	90	90	90	100	90
Jul-2002	90	100	100	100	100	100
Aug-2002	100	90	100	60*	100	90
Sep-2002	90	100	90	100	90	90
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

Table 22. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from April 2002 to March 2003. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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-2002	56.2	43.4	59.8	49.3	49.5	47.3
May-2002	26.4	36.5	30.7	37.2	27.9	2.9†
Jun-2002	40.0	36.1	43.1	24.3*	45.3	28.6
Jul-2002	28.3	29.7	34.6	29.6	33.1	29.1
Aug-2002	40.8	26.6	34.1	20.4	25.6	22.9
Sep-2002	24.4	28.0	28.7	31.1	23.7	16.6
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

(a) Although reproduction values were less at Stations C, D, and F, they were not statistically different from the DMC water.
This was due to the increased survival rate at Sation B.

Table 23. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from April 2002 to March 2003. Each value is the mean of 4 replicates.

See Table 26 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-2002	1.4*	7.0	4.4*	6.6	5.8	33.0
May-2002	4.8 ‡	7.9	6.1	6.3	7.1 ‡‡‡	3.8 ‡
Jun-2002	3.7*	9.5	7.7*	6.8*	11.7	10.2
Jul-2002	6.0	10.2	10.3	10.5	6.8	8.7
Aug-2002	NA	NA	NA	NA	NA	NA
Sep-2002	10.9	8.2	7.4	7.6	11.9	12.0
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

Table 24. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2003 to March 2003.

See Table 26 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-20-2003	72	<0.4	11	<0.4	<0.4
Jan-22-2003	54	<0.4	8.8	<0.4	<0.4
Jan-24-2003	35	<0.4	5.8	0.5	<0.4
Feb-17-2002	57	1.2	18	1.1	<0.4
Feb-19-2002	54	1.0	15	0.9	0.6
Feb-21-2002	56	1.0	15	1.0	<0.4
Mar-17-2003	74	0.7	20	1.3	0.9
Mar-19-2003	84	0.7	20	1.2	<0.4
Mar-21-2003	86	1.1	19	0.9	<0.4

Table 25. Summary of total suspended solids concentrations in grab water samples collected from January 2003 to March 2003.

See Table 26 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-20-2003	70	29	30	39	16
Jan-22-2003	53	21	37	46	28
Jan-24-2003	98	58	68	105	56
Feb-17-2003	117	70	88	164	19
Feb-19-2003	108	49	75	150	56
Feb-21-2003	92	65	72	103	37
Mar-17-2003	74	123	131	36	35
Mar-19-2003	44	110	100	37	27
Mar-21-2003	57	207	169	103	36

Table 26. 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 (10^6cell/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.
v	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated