GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

June 2004

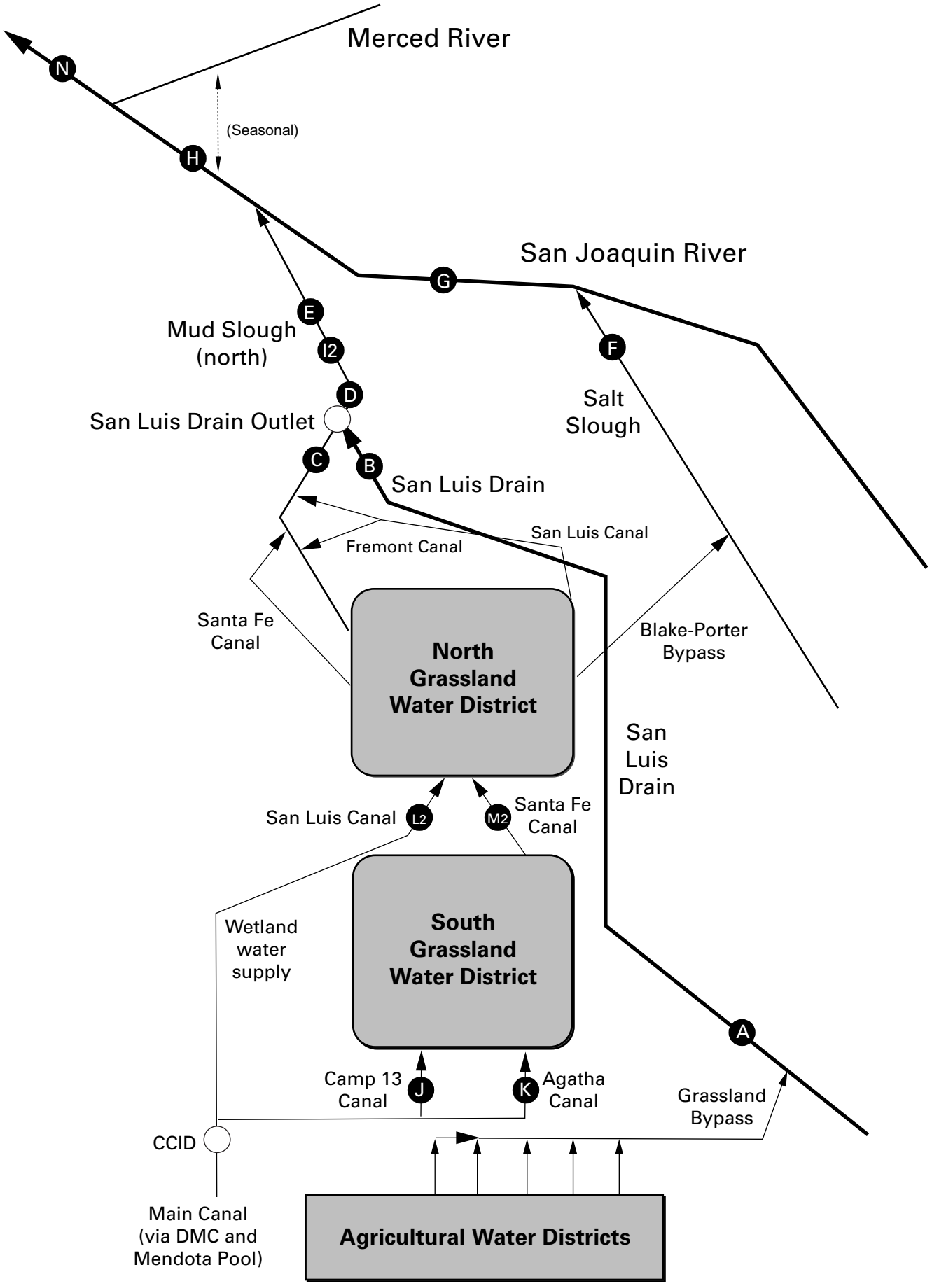
September, 2004

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
San Luis Drain Outlet
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
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L2
M2
Santa Fe
Canal
Wetland
water
supply
South
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Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), June 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jun-01-2004	62	4,480
Jun-02-2004	65	4,580
Jun-03-2004	57	4,560
Jun-04-2004	53	4,510
Jun-05-2004	52	4,220
Jun-06-2004	51	4,150
Jun-07-2004	50	4,340
Jun-08-2004	46	4,240
Jun-09-2004	47	4,230
Jun-10-2004	47	4,020
Jun-11-2004	39	4,160
Jun-12-2004	38	4,280
Jun-13-2004	42	3,980
Jun-14-2004	47	3,750
Jun-15-2004	47	3,830
Jun-16-2004	40	3,980
Jun-17-2004	40	4,020
Jun-18-2004	45	4,050
Jun-19-2004	45	3,770
Jun-20-2004	42	3,960
Jun-21-2004	42	4,090
Jun-22-2004	41	4,150
Jun-23-2004	38	4,040
Jun-24-2004	42	3,830
Jun-25-2004	43	3,730
Jun-26-2004	46	3,690
Jun-27-2004	48	3,640
Jun-28-2004	52	3,690
Jun-29-2004	58	4,050
Jun-30-2004	56	3,770
.	.	.
Mean	47	4,060

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), June 2004.

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
Jun-01-2004	61	24.5	6.8	4,310	45.9	15.1
Jun-02-2004	62	25.3	7.1	4,430	50.4	16.9
Jun-03-2004	64	25.4	7.2	4,620	54.1	18.7
Jun-04-2004	58	24.9	P	4,850	64.2	20.1
Jun-05-2004	54	24.9	P	4,820	61.6	17.9
Jun-06-2004	54	24.7	P	4,750	56.1	16.3
Jun-07-2004	51	24.2	P	4,820	54.8	15.1
Jun-08-2004	50	22.9	P	4,530	50.6	13.6
Jun-09-2004	47	21.6	P	4,450	47.0	11.9
Jun-10-2004	48	22.0	P	4,530	49.8	12.9
Jun-11-2004	48	22.7	P	4,510	49.1	12.7
Jun-12-2004	41	23.0	P	4,480	45.2	10.0
Jun-13-2004	40	23.7	P	4,310	40.3	8.7
Jun-14-2004	44	24.3	P	4,310	45.6	10.8
Jun-15-2004	49	24.7	P	4,450	41.8	11.0
Jun-16-2004	47	25.6	P	4,240	38.2	9.7
Jun-17-2004	41	25.1	P	3,620	32.7	7.2
Jun-18-2004	41	24.7	P	3,930	28.6	6.3
Jun-19-2004	47	24.4	P	4,160	28.9	7.3
Jun-20-2004	47	24.4	P	4,200	28.8	7.3
Jun-21-2004	44	24.7	P	4,300	36.1	8.6
Jun-22-2004	44	25.0	P	3,940	28.7	6.8
Jun-23-2004	43	24.9	P	4,140	30.6	7.1
Jun-24-2004	41	24.7	P	4,220	31.1	6.9
Jun-25-2004	45	24.8	P	4,290	32.1	7.8
Jun-26-2004	45	25.1	P	4,200	33.4	8.1
Jun-27-2004	47	25.1	P	4,040	31.9	8.1
Jun-28-2004	50	25.5	P	3,890	29.3	7.9
Jun-29-2004	53	25.1	P	3,850	29.3	8.4
Jun-30-2004	58	24.4	P	3,850	31.1	9.7
.	.	.	.	.	.	.
Mean	49	24.4	P	4,300	40.9	11.0
Total Acre-feet	**2,900**					
Total (lbs)						**329**

Load Limitation for June 2004 (lbs)	**365**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, June 2004.
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	USGS	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Jun-01-2004	62	45.9	15.3
Jun-02-2004	64	50.4	17.4
Jun-03-2004	65	54.1	19.0
Jun-04-2004	58	64.2	20.1
Jun-05-2004	54	61.6	17.9
Jun-06-2004	53	56.1	16.0
Jun-07-2004	52	54.8	15.4
Jun-08-2004	50	50.6	13.6
Jun-09-2004	48	47.0	12.2
Jun-10-2004	49	49.8	13.2
Jun-11-2004	48	49.1	12.7
Jun-12-2004	40	45.2	9.8
Jun-13-2004	39	40.3	8.5
Jun-14-2004	43	45.6	10.6
Jun-15-2004	48	41.8	10.8
Jun-16-2004	48	38.2	9.9
Jun-17-2004	40	32.7	7.1
Jun-18-2004	41	28.6	6.3
Jun-19-2004	46	28.9	7.2
Jun-20-2004	47	28.8	7.3
Jun-21-2004	44	36.1	8.6
Jun-22-2004	44	28.7	6.8
Jun-23-2004	43	30.6	7.1
Jun-24-2004	40	31.1	6.7
Jun-25-2004	43	32.1	7.4
Jun-26-2004	45	33.4	8.1
Jun-27-2004	47	31.9	8.1
Jun-28-2004	51	29.3	8.1
Jun-29-2004	54	29.3	8.5
Jun-30-2004	59	31.1	9.9
.	.	.	.
Mean	49	40.9	11.0
Total Acre-feet	**2,910**		
Total (lbs)			**329**

*Selenium (total) concentrations 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, are measuring 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 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.

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

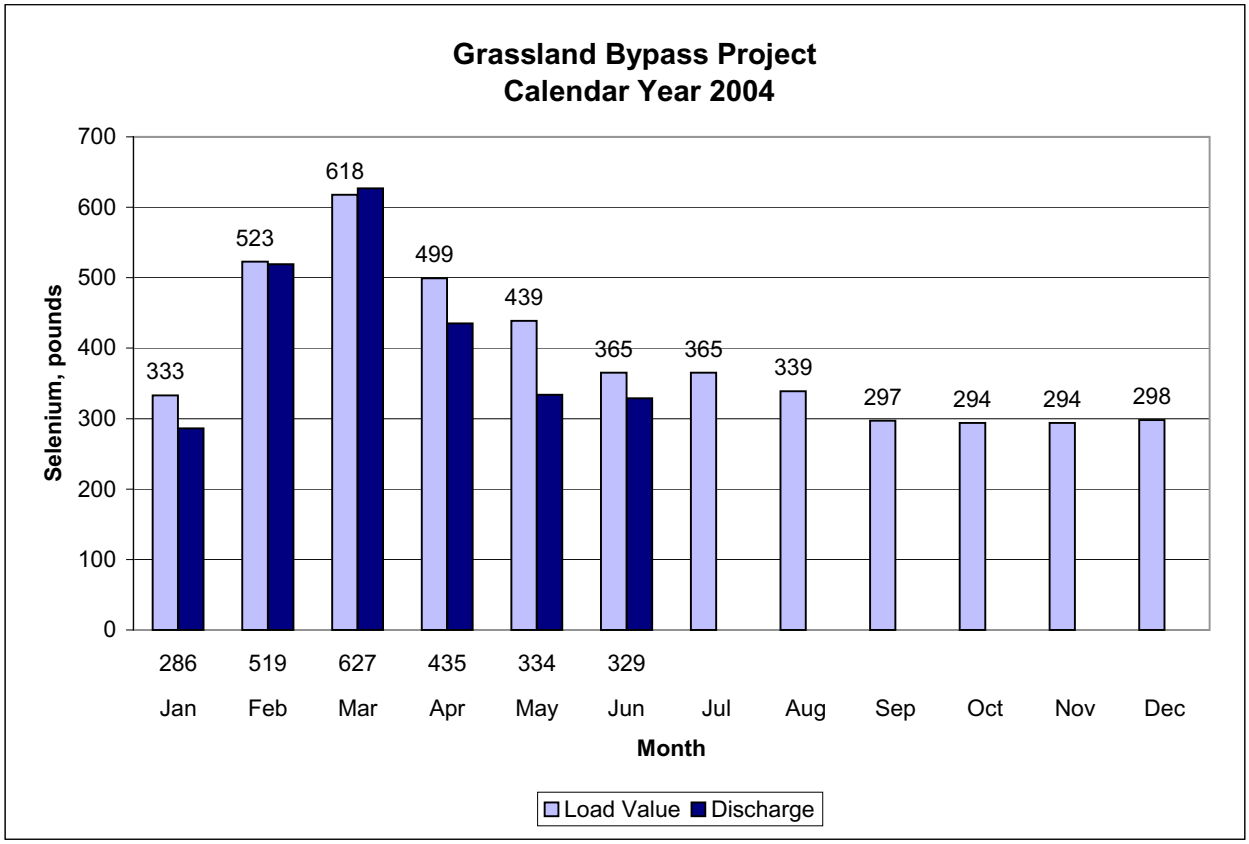

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), June 2004.

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
Jun-01-2004	85	24.4	3,810
Jun-02-2004	80	25.2	4,070
Jun-03-2004	71	25.2	4,500
Jun-04-2004	62	24.9	4,760
Jun-05-2004	69	24.7	4,320
Jun-06-2004	68	24.6	4,190
Jun-07-2004	65	24.2	4,270
Jun-08-2004	66	23.1	4,010
Jun-09-2004	65	22.1	3,830
Jun-10-2004	55	22.3	4,370
Jun-11-2004	52	23.0	4,650
Jun-12-2004	46	23.3	4,580
Jun-13-2004	53	24.0	3,910
Jun-14-2004	51	24.4	4,120
Jun-15-2004	64	24.6	3,940
Jun-16-2004	64	25.6	3,790
Jun-17-2004	51	25.3	3,630
Jun-18-2004	44	24.9	3,910
Jun-19-2004	47	24.8	4,140
Jun-20-2004	47	24.7	4,300
Jun-21-2004	44	25.0	4,340
Jun-22-2004	46	25.5	4,160
Jun-23-2004	45	25.2	3,900
Jun-24-2004	47	24.8	3,700
Jun-25-2004	56	24.6	3,470
Jun-26-2004	57	24.9	3,490
Jun-27-2004	59	25.1	3,420
Jun-28-2004	70	25.7	3,030
Jun-29-2004	64	25.2	3,410
Jun-30-2004	64	24.7	3,590
.	.	.	.
Mean	59	24.5	3,990

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), June 2004.

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
Jun-01-2004	133	24.8	1,140
Jun-02-2004	127	25.4	1,110
Jun-03-2004	120	25.2	1,130
Jun-04-2004	122	24.6	1,140
Jun-05-2004	117	24.5	1,150
Jun-06-2004	129	24.4	1,170
Jun-07-2004	153	23.8	1,110
Jun-08-2004	174	21.9	1,030
Jun-09-2004	182	21.1	1,030
Jun-10-2004	180	21.8	1,040
Jun-11-2004	155	23.1	1,100
Jun-12-2004	138	23.3	1,170
Jun-13-2004	156	24.0	1,150
Jun-14-2004	159	24.3	1,110
Jun-15-2004	149	25.0	1,090
Jun-16-2004	144	26.0	1,130
Jun-17-2004	153	25.0	1,100
Jun-18-2004	153	24.2	1,100
Jun-19-2004	166	23.9	1,060
Jun-20-2004	154	24.5	1,040
Jun-21-2004	156	24.7	1,060
Jun-22-2004	150	24.9	1,060
Jun-23-2004	133	24.7	1,070
Jun-24-2004	117	24.6	1,070
Jun-25-2004	118	24.3	1,060
Jun-26-2004	155	24.7	1,000
Jun-27-2004	156	24.7	949
Jun-28-2004	131	25.6	990
Jun-29-2004	130	24.7	981
Jun-30-2004	110	24.1	996
.	.	.	.
Mean	144	24.3	1,080

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), June 2004.

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
Jun-01-2004	565	24.3	1,520	5.2
Jun-02-2004	525	24.8	1,470	5.0
Jun-03-2004	519	24.7	1,630	6.0
Jun-04-2004	472	24.3	1,690	P
Jun-05-2004	455	24.0	1,690	6.3
Jun-06-2004	482	24.2	1,620	6.1
Jun-07-2004	490	23.8	1,580	5.4
Jun-08-2004	482	22.8	1,560	5.3
Jun-09-2004	491	22.1	1,530	4.9
Jun-10-2004	481	22.8	1,570	5.0
Jun-11-2004	465	23.3	1,550	4.8
Jun-12-2004	446	23.6	1,570	5.0
Jun-13-2004	467	24.4	1,450	4.0
Jun-14-2004	499	24.9	1,350	3.6
Jun-15-2004	482	25.4	1,420	4.3
Jun-16-2004	463	25.9	1,560	4.7
Jun-17-2004	407	26.0	1,620	3.9
Jun-18-2004	389	25.0	1,490	3.2
Jun-19-2004	429	24.6	1,460	3.2
Jun-20-2004	443	24.8	1,420	3.2
Jun-21-2004	438	25.1	1,440	3.3
Jun-22-2004	430	25.6	1,390	3.7
Jun-23-2004	444	24.9	1,420	3.6
Jun-24-2004	396	24.6	1,490	3.2
Jun-25-2004	385	NA	1,570	3.0
Jun-26-2004	394	24.6	1,660	3.6
Jun-27-2004	424	24.7	1,560	3.6
Jun-28-2004	453	26.3	1,390	3.2
Jun-29-2004	408	26.3	1,490	3.4
Jun-30-2004	384	25.7	1,610	3.7
.	.	.	.	.
Mean	450	24.6	1,530	4.6

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	.	.	.
Apr-07-2004	43	.	.	5,050	130	.	.	.
Apr-14-2004	33	.	.	5,470	94	.	.	.
Apr-21-2004	38	.	.	4,670	76	.	.	.
Apr-28-2004	45	.	.	4,960	150	.	.	.
May-05-2004	43	.	.	4,330	300	.	.	.
May-12-2004	45	.	.	4,220	110	.	.	.
May-19-2004	37	.	.	3,960	NA	.	.	.
May-26-2004	41	.	.	4,280	110	.	.	.
Jun-02-2004	65	.	.	4,670	230	.	.	.
Jun-09-2004	47	.	.	4,690	170	.	.	.
Jun-16-2004	40	.	.	3,830	200	.	.	.
Jun-23-2004	38	.	.	4,170	150	.	.	.
Jun-30-2004	56	.	.	3,570	240	.	.	.

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
Apr-06-2004	40	.	.	5,260	.	69.9	.	8.4
Apr-13-2004	35	.	.	5,330	.	72.2	.	8.8
Apr-20-2004	39	.	.	5,370	.	71.4	.	8.9
Apr-27-2004	42	.	.	4,800	.	65.0	.	7.7
May-04-2004	44	.	.	4,720	.	56.4	.	7.9
May-11-2004	38	.	.	4,310	.	48.4	.	7.4
May-18-2004	39	.	.	4,040	.	44.4	.	6.8
May-25-2004	39	.	.	4,040	.	33.3	.	6.9
Jun-01-2004	62	.	.	4,480	.	49.6	.	6.9
Jun-08-2004	46	.	.	4,600	.	50.6	.	7.3
Jun-15-2004	47	.	.	4,200	.	37.3	.	P
Jun-23-2004	38	.	.	NA	.	35.4	.	6.8
Jun-29-2004	58	.	.	3,970	.	32.8	.	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
Apr-01-2004	39	16.8	8.5	4,660	62	54.0	7.2
Apr-08-2004	43	17.9	8.4	5,470	51	71.9	8.6
Apr-15-2004	34	19.0	8.3	5,150	44	62.7	8.1
Apr-22-2004	44	17.0	8.5	5,350	96	71.1	8.9
Apr-29-2004	47	19.3	8.6	4,640	35	61.7	7.4
May-06-2004	42	23.1	8.2	4,740	49	57.4	7.8
May-13-2004	46	19.5	8.4	4,160	48	44.7	7.2
May-20-2004	39	20.9	8.2	4,560	66	55.8	7.4
May-27-2004	44	21.6	8.2	3,870	56	33.4	6.6
Jun-03-2004	64	24.4	8.3	4,680	67	54.6	8.0
Jun-10-2004	48	20.8	8.6	4,340	64	46.9	6.9
Jun-17-2004	41	24.0	8.5	3,620	51	30.1	P
Jun-24-2004	41	23.4	8.3	4,080	48	33.8	7.2

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
Apr-01-2004	42	15.5	8.3	2,360	.	1.1	2.5
Apr-08-2004	13	17.8	8.2	3,720	.	0.5	3.5
Apr-15-2004	15	17.6	8.2	2,420	.	1.0	2.2
Apr-22-2004	12	16.0	8.4	3,210	.	0.7	3.2
Apr-29-2004	15	19.4	8.2	1,720	.	0.7	1.4
May-06-2004	9	22.6	8.0	2,090	.	0.8	1.8
May-13-2004	49	20.1	8.1	1,110	.	0.8	0.9
May-20-2004	25	21.4	8.0	NA	.	0.6	1.3
May-27-2004	30	22.4	7.9	1,550	.	0.5	1.2
Jun-03-2004	7	24.0	8.3	2,290		0.8	1.7
Jun-10-2004	7	21.4	8.5	2,300		0.7	1.7
Jun-17-2004	10	25.2	8.1	1,630		0.7	P
Jun-24-2004	6	22.9	8.0	1,730		0.6	1.2

++ 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
Apr-01-2004	81	15.9	8.3	3,370	21.5	4.4
Apr-08-2004	56	17.9	8.4	4,970	48.9	7.1
Apr-15-2004	49	18.5	8.2	4,040	33.1	5.6
Apr-22-2004	56	16.1	8.3	4,570	40.5	6.8
Apr-29-2004	62	18.7	8.4	3,600	38.5	5.3
May-06-2004	51	23.0	8.1	4,180	41.2	6.2
May-13-2004	95	19.7	8.4	2,600	18.5	3.7
May-20-2004	64	20.9	8.2	3,030	25.8	4.1
May-27-2004	74	21.8	8.2	2,800	17.4	3.8
Jun-03-2004	71	24.6	8.3	4,400	46.2	7.1
Jun-10-2004	55	20.8	8.6	4,170	40.2	6.2
Jun-17-2004	51	24.3	8.4	3,530	26.9	P
Jun-24-2004	47	23.2	8.3	3,800	27.4	5.5

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
Apr-07-2004	.	8.5	4,930	20	37.9	6.2
Apr-16-2004	.	8.4	4,860	31	49.7	7.0
Apr-20-2004	.	8.4	5,190	28	47.7	7.0
Apr-27-2004	.	8.5	3,710	26	28.5	4.9
May-07-2004	.	8.4	3,710	27	33.6	5.2
May-12-2004	.	7.9	3,310	20	23.0	4.7
May-19-2004	.	8.5	4,330	21	29.0	5.9
May-26-2004	.	8.5	4,870	45	12.8	5.3
Jun-01-2004	.	8.5	4,690	32	37.3	5.9
Jun-09-2004	.	8.5	3,960	19	35.4	5.8
Jun-17-2004	.	8.3	4,620	21	27.1	6.0
Jun-22-2004	.	8.6	4,180	17	29.7	6.4

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
Apr-01-2004	183	15.7	7.6	1,980	0.9	1.0
Apr-08-2004	175	17.2	7.8	1,700	NA	NA
Apr-15-2004	132	17.5	7.9	1,690	0.8	0.8
Apr-22-2004	141	16.2	7.8	1,480	0.8	0.8
Apr-29-2004	108	17.2	7.9	1,800	0.5	0.8
May-06-2004	133	21.2	7.8	1,360	0.7	0.6
May-13-2004	122	18.8	7.8	1,330	0.6	0.5
May-20-2004	119	19.9	7.6	1,320	0.7	0.5
May-27-2004	93	21.1	7.8	1,460	0.8	0.5
Jun-03-2004	120	23.0	8.0	1,190	0.8	0.5
Jun-10-2004	180	19.4	7.8	1,010	0.9	0.5
Jun-17-2004	153	22.9	7.7	1,100	0.6	P
Jun-24-2004	117	22.4	7.8	1,130	0.7	0.4

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
Apr-07-2004	5	.	.	609	1.6	0.5
Apr-14-2004	5	.	.	845	1.4	0.6
Apr-21-2004	5	.	.	660	1.0	0.4
Apr-28-2004	15	.	.	608	0.9	0.3
May-05-2004	20	.	.	570	1.1	0.3
May-12-2004	20	.	.	564	0.8	0.3
May-19-2004	20	.	.	588	0.7	0.3
May-26-2004	20	.	.	882	1.1	0.9
Jun-02-2004	5	.	.	1,390	1.2	1.6
Jun-09-2004	20	.	.	575	1.0	0.3
Jun-16-2004	15	.	.	502	0.8	P
Jun-23-2004	15	.	.	762	1.6	0.7
Jun-30-2004	15	.	.	499	0.7	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
Apr-07-2004	5	.	.	922	2.0	0.8
Apr-14-2004	5	.	.	593	0.9	0.4
Apr-21-2004	5	.	.	600	1.0	0.3
Apr-28-2004	20	.	.	493	1.0	0.2
May-05-2004	40	.	.	560	1.0	0.2
May-12-2004	85	.	.	536	0.7	0.2
May-19-2004	85	.	.	522	0.8	0.3
May-26-2004	45	.	.	554	0.8	0.3
Jun-02-2004	25	.	.	600	0.9	0.3
Jun-09-2004	15	.	.	533	0.9	0.2
Jun-16-2004	25	.	.	444	0.8	P
Jun-23-2004	35	.	.	447	0.6	0.2
Jun-30-2004	25	.	.	471	0.6	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
Apr-07-2004	25	.	.	943	2.3	0.7
Apr-14-2004	50	.	.	600	1.2	0.4
Apr-21-2004	50	.	.	630	1.1	0.3
Apr-28-2004	40	.	.	575	1.1	0.3
May-05-2004	85	.	.	700	1.3	0.4
May-12-2004	45	.	.	642	1.0	0.4
May-19-2004	45	.	.	663	1.0	0.4
May-26-2004	90	.	.	721	1.2	0.5
Jun-02-2004	85	.	.	793	1.3	0.6
Jun-09-2004	65	.	.	1,000	1.7	0.8
Jun-16-2004	100	.	.	826	1.5	P
Jun-23-2004	90	.	.	781	1.4	0.6
Jun-30-2004	50	.	.	895	1.3	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
Apr-07-2004	47	.	.	2,040	1.5	2.6
Apr-14-2004	79	.	.	1,730	1.5	2.3
Apr-21-2004	20	.	.	1,470	1.4	1.5
Apr-28-2004	40	.	.	1,620	1.5	1.9
May-05-2004	30	.	.	1,350	2.5	1.7
May-12-2004	46	.	.	932	1.1	0.7
May-19-2004	65	.	.	1,170	1.2	1.2
May-26-2004	12	.	.	1,450	1.6	1.7
Jun-02-2004	2	.	.	1,630	1.7	2.2
Jun-09-2004	15	.	.	1,460	1.4	2.0
Jun-16-2004	6	.	.	1,140	1.2	P
Jun-23-2004	2	.	.	904	1.2	0.8
Jun-30-2004	21	.	.	1,040	1.0	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
Apr-07-2004	.	.	.	513	1.5	0.3
Apr-14-2004	.	.	.	547	1.1	0.3
Apr-21-2004	.	.	.	540	1.0	0.2
Apr-28-2004	.	.	.	561	0.9	0.3
May-05-2004	.	.	.	550	1.1	0.2
May-12-2004	.	.	.	524	0.8	0.2
May-19-2004	.	.	.	508	1.3	0.2
May-26-2004	.	.	.	518	0.8	0.2
Jun-02-2004	.	.	.	762	1.3	0.4
Jun-09-2004	.	.	.	517	1.0	0.2
Jun-16-2004	.	.	.	472	1.1	P
Jun-23-2004	.	.	.	472	0.8	0.2
Jun-30-2004	.	.	.	437	0.6	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
Apr-01-2004	264	16.3	8.0	2,250	0.8	1.0
Apr-08-2004	206	18.2	7.8	2,110	0.6	0.9
Apr-15-2004	160	17.9	8.0	2,380	0.6	0.9
Apr-22-2004	188	16.9	7.9	1,930	0.6	0.7
Apr-29-2004	148	19.2	8.1	2,530	<0.4	0.9
May-06-2004	168	22.9	7.7	1,620	0.7	0.6
May-13-2004	167	20.5	7.8	1,560	NA	NA
May-20-2004	149	20.9	7.5	1,570	0.9	0.5
May-27-2004	131	22.7	7.8	2,150	0.5	0.7
Jun-03-2004	166	24.4	8.0	1,560	0.6	0.5
Jun-10-2004	198	21.2	7.9	1,040	0.8	0.5
Jun-17-2004	170	25.0	7.9	1,390	0.6	P
Jun-24-2004	158	23.7	7.9	1,370	0.6	0.4

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
Apr-06-2004	.	.	.	2,610	6.5	2.1
Apr-13-2004	.	.	.	2,640	8.3	1.9
Apr-21-2004	.	.	.	2,160	6.7	1.7
Apr-28-2004	.	.	.	2,920	11.8	2.5
May-21-2004	.	.	.	2,510	9.3	2.1
May-25-2004	.	.	.	2,690	2.4	7.1
Jun-02-2004	.	.	.	1,860	0.6	0.4
June 8,2004	.	.	.	2,220	9.6	2.1
Jun-15-2004	.	.	.	2,130	8.6	2.0
Jun-22-2004	.	.	.	2,040	6.1	1.8
Jun-29-2004	.	.	.	2,020	6.3	1.9

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
Apr-01-2004	854	16.7	8.1	1,680	4.1	1.2
Apr-08-2004	639	18.5	7.9	1,900	4.8	1.3
Apr-15-2004	750	18.6	7.9	1,270	3.2	0.8
Apr-22-2004	938	16.9	8.0	1,000	2.9	0.7
Apr-29-2004	1,140	18.3	8.0	772	2.1	0.5
May-06-2004	1,820	18.9	7.9	494	1.6	0.4
May-13-2004	1,480	18.2	7.8	581	1.5	0.4
May-20-2004	676	20.8	7.7	1,120	3.5	0.7
May-27-2004	587	23.6	8.0	1,290	2.2	0.8
Jun-03-2004	519	24.0	8.1	1,410	4.7	1.1
Jun-10-2004	481	22.8	8.3	1,520	5.1	1.1
Jun-17-2004	407	25.3	8.2	1,590	4.4	P
Jun-24-2004	396	23.7	8.1	1,480	3.3	1.0

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from July 2003 to June 2004. 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	%	%	%	%	%	%
Jul-2003	95	100	93	98	93	100
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100
Oct-2003	100	100	93	100	100	100
Nov-2003	100	93	40*	100	75	100
Dec-2003	95	40*	53*	83	88	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	90	53*	85	100	100
Apr-2004	100	100	95	95	90	98
May-2004	100	100	100	100	100	100
Jun-2004	98	93	98	100	88	95

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from July 2003 to June 2004. 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
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
Oct-2003	0.32	0.38	0.32	0.37	0.31	0.29
Nov-2003	0.45	0.43	0.16*	0.45	0.34	0.45
Dec-2003	0.50	0.29*	0.34	0.39	0.43	0.48
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58
Feb-2004	0.57	0.55	0.56	0.60	0.63	0.63
Mar-2004	0.44	0.39*	0.32*	0.42	0.48	0.46
Apr-2004	0.59	0.57	0.63	0.54	0.56	0.60
May-2004	0.49	0.55	0.53	0.57	0.43	0.49
Jun-2004	0.42	0.42	0.40	0.45	0.36	0.40

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from July 2003 to June 2004. 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	%	%	%	%	%	%
Jul-2003	100	90	100	90	80	100
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90
Oct-2003	60*	100	100	100	100	100
Nov-2003	90	100	89	100	100	90
Dec-2003	90	90	100	100	90	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	100	90	100	100	100
Apr-2004	100	100	90	90	90	100
May-2004	90	100	90	80	90	90
Jun-2004	90	100	100	90	90	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from July 2003 to June 2004. 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
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
Oct-2003	23.3	48.1	52.8	41.5	33.8	23.0
Nov-2003	54.8	40.7	44.3	54.7	45.3	38.1
Dec-2003	59.0	58.7	64.9	73.6	64.2	68.7
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5
Feb-2004	59.4	59.0	60.7	54.3	60.0	59.0
Mar-2004	59.7	55.3	58.8	58.6	58.4	51.6
Apr-2004	35.5	34.3	35.9	34.6	21.7	15.7
May-2004	32.4	29.6	37.5	34.9	30.7	24.7
Jun-2004	25.8	29.8	25.6	16.7	19.0	30.0

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from July 2003 to June 2004. 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
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
Oct-2003	10.0	12.6	12.2	8.6*	9.9††††	8.7††††
Nov-2003	12.3	22.5	21.2	18.9	14.8	15.3
Dec-2003	0.7*	26.6	34.4	21.1*	25.0	18.5
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9
Feb-2004	0.5*	32.5	21.9	0.4*	25.0	23.1
Mar-2004	24.0*	39.2	27.5	33.1	29.9	29.3
Apr-2004	19.9	31.6	20.0	25.5	19.5	26.5
May-2004	19.3*	29.5	25.1	25.1	24.5	14.5
Jun-2004	12.1	25.2	18.1	21.5	15.4	22.4

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, April 2004 to June 2004.

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
Apr-12-2004	68	1.0	45	0.8	0.6
Apr-14-2004	65	1.2	35	0.8	1.1
Apr-16-2004	73	0.8	53	0.8	<0.4
May-10-2004	51	0.5	23	0.8	<0.4
May-12-2004	44	0.6	23	0.6	<0.4
May-14-2004	56	0.6	23	0.5	<0.4
Jun-07-2004	49	0.8	39	0.7	<0.4
Jun-09-2004	43	0.8	37	0.7	<0.4
Jun-11-2004	52	0.5	44	0.7	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, April 2004 to June 2004.

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
Apr-12-2004	46	86	61	93	25
Apr-14-2004	48	79	57	79	62
Apr-16-2004	73	129	76	103	8
May-10-2004	60	94	81	109	6
May-12-2004	48	49	56	70	0
May-14-2004	68	74	79	136	0
Jun-07-2004	48	79	82	138	59
Jun-09-2004	64	68	83	172	38
Jun-11-2004	91	121	56	191	27

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 (10^6cell/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