GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

February 2004

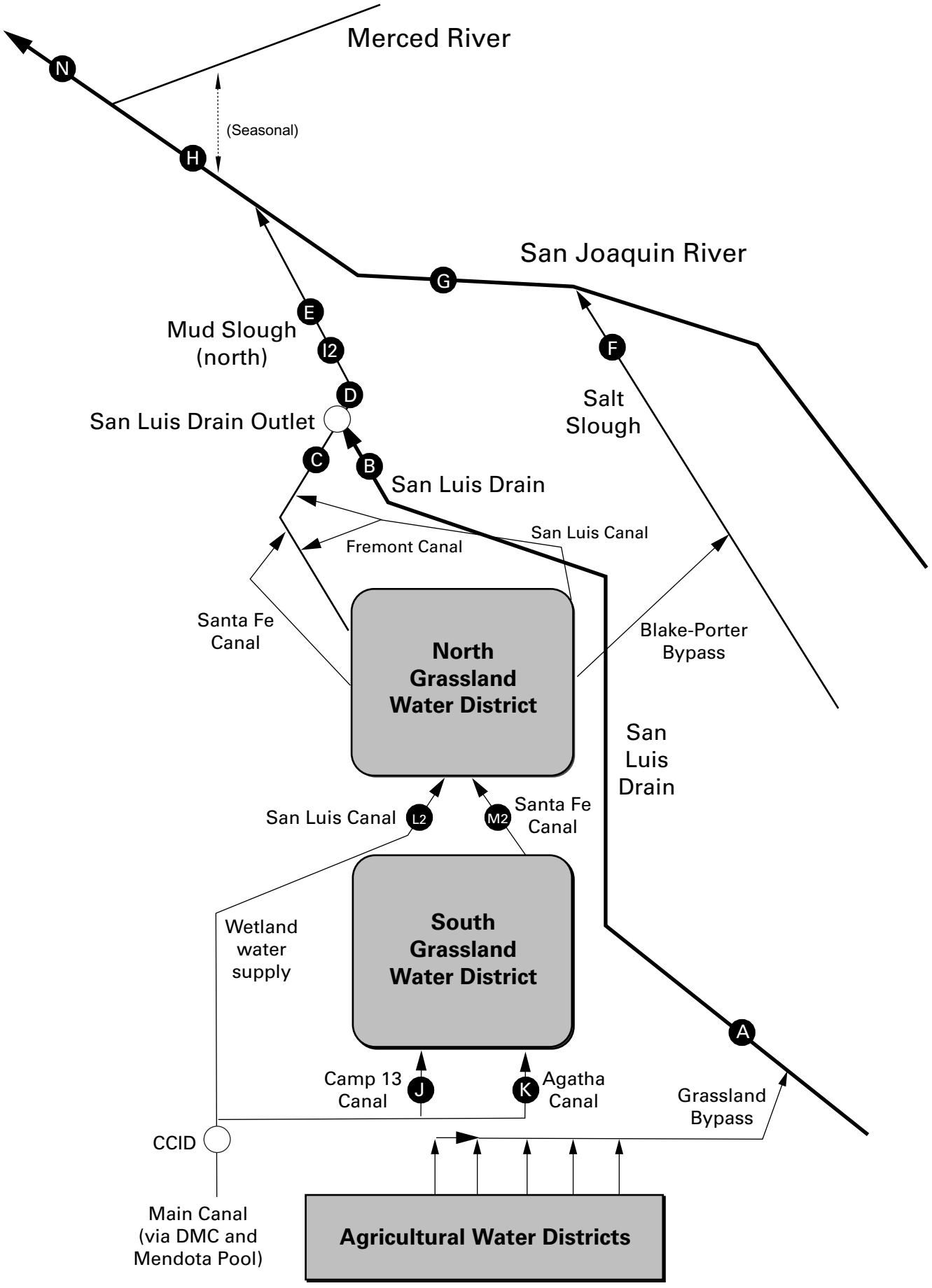
April 29, 2004

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

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Feb-01-2004	28	4,650
Feb-02-2004	30	4,540
Feb-03-2004	34	4,260
Feb-04-2004	37	4,240
Feb-05-2004	39	4,160
Feb-06-2004	41	3,990
Feb-07-2004	39	4,030
Feb-08-2004	37	4,200
Feb-09-2004	48	4,600
Feb-10-2004	54	4,600
Feb-11-2004	52	4,350
Feb-12-2004	50	4,150
Feb-13-2004	53	4,200
Feb-14-2004	53	3,980
Feb-15-2004	55	3,800
Feb-16-2004	58	3,660
Feb-17-2004	60	3,770
Feb-18-2004	75	3,560
Feb-19-2004	97	2,880
Feb-20-2004	113	3,540
Feb-21-2004	110	3,930
Feb-22-2004	83	4,270
Feb-23-2004	82	4,270
Feb-24-2004	64	4,620
Feb-25-2004	71	4,530
Feb-26-2004	68	4,560
Feb-27-2004	51	5,170
Feb-28-2004	71	5,000
Feb-29-2004	68	5,130
.	.	.
.	.	.
Mean	59	4,230

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), February 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
Feb-01-2004	32 e	10.1	6.8	4,400	70.8	12.2
Feb-02-2004	34	10.1	6.3	4,150	70.8	13.0
Feb-03-2004	37	10.1	6.7	4,460	65.0	13.0
Feb-04-2004	41 e	10.9	6.7	4,270	57.3	12.7
Feb-05-2004	43 e	11.0	7.2	4,460	74.0	17.2
Feb-06-2004	43 e	11.3	7.1	4,420	70.4	16.3
Feb-07-2004	46	11.6	6.6	4,180	58.0	14.4
Feb-08-2004	43	11.4	6.8	4,180	51.6	12.0
Feb-09-2004	40	11.5	6.7	4,130	50.5	10.9
Feb-10-2004	52 e	11.6	6.2	3,980	48.4	13.6
Feb-11-2004	55 e	11.8	6.4	4,150	51.6	15.3
Feb-12-2004	54	12.3	7.1	4,240	56.4	16.4
Feb-13-2004	52	12.1	6.4	4,550	59.1	16.6
Feb-14-2004	54	12.2	6.6	4,270	59.0	17.2
Feb-15-2004	54	13.2	6.2	4,090	54.1	15.8
Feb-16-2004	57	13.1	6.2	4,060	51.6	15.9
Feb-17-2004	58	13.2	6.0	3,930	47.0	14.7
Feb-18-2004	65	13.7	5.6	3,710	43.3	15.2
Feb-19-2004	78	13.6	5.4	3,570	41.2	17.3
Feb-20-2004	99	13.4	5.6	3,670	45.1	24.1
Feb-21-2004	111	13.5	4.2	2,950	36.8	22.0
Feb-22-2004	101	13.8	5.2	3,590	49.2	26.8
Feb-23-2004	85	14.0	5.7	3,900	53.9	24.7
Feb-24-2004	79	14.6	6.6	4,250	60.8	25.9
Feb-25-2004	65	13.8	6.2	4,170	60.2	21.1
Feb-26-2004	70	13.2	6.3	4,430	56.3	21.3
Feb-27-2004	68	12.9	P	4,710	65.4	24.0
Feb-28-2004	58	12.8	P	4,630	71.2	22.3
Feb-29-2004	70	13.4	P	4,930	71.9	27.1
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Mean	60	12.4	6.3	4,150	56.9	17.9
Total Acre-feet	**3,460**					
Total (lbs)						**519**

Load Limitation for February 2004 (lbs)	**523**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, February 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	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Feb-01-2004	32	70.8	12.2
Feb-02-2004	34	70.8	13.0
Feb-03-2004	36	65.0	12.6
Feb-04-2004	38	57.3	11.7
Feb-05-2004	42	74.0	16.8
Feb-06-2004	44	70.4	16.7
Feb-07-2004	45	58.0	14.1
Feb-08-2004	43	51.6	12.0
Feb-09-2004	40	50.5	10.9
Feb-10-2004	53	48.4	13.8
Feb-11-2004	57	51.6	15.9
Feb-12-2004	55	56.4	16.7
Feb-13-2004	54	59.1	17.2
Feb-14-2004	55	59.0	17.5
Feb-15-2004	56	54.1	16.3
Feb-16-2004	60	51.6	16.7
Feb-17-2004	61	47.0	15.5
Feb-18-2004	68	43.3	15.9
Feb-19-2004	83	41.2	18.4
Feb-20-2004	107	45.1	26.0
Feb-21-2004	122	36.8	24.2
Feb-22-2004	110	49.2	29.2
Feb-23-2004	92	53.9	26.7
Feb-24-2004	86	60.8	28.2
Feb-25-2004	75	60.2	24.4
Feb-26-2004	75	56.3	22.8
Feb-27-2004	71	65.4	25.0
Feb-28-2004	60	71.2	23.0
Feb-29-2004	74	71.9	28.7
.	.	.	.
.	.	.	.
Mean	63	56.9	18.7
Total Acre-feet	**3,630**		
Total (lbs)			**542**

*Selenium (total) concentrations from Site B (San Luis Drain)
Note: USGS is verifying flow data for the SLD Terminus.

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.

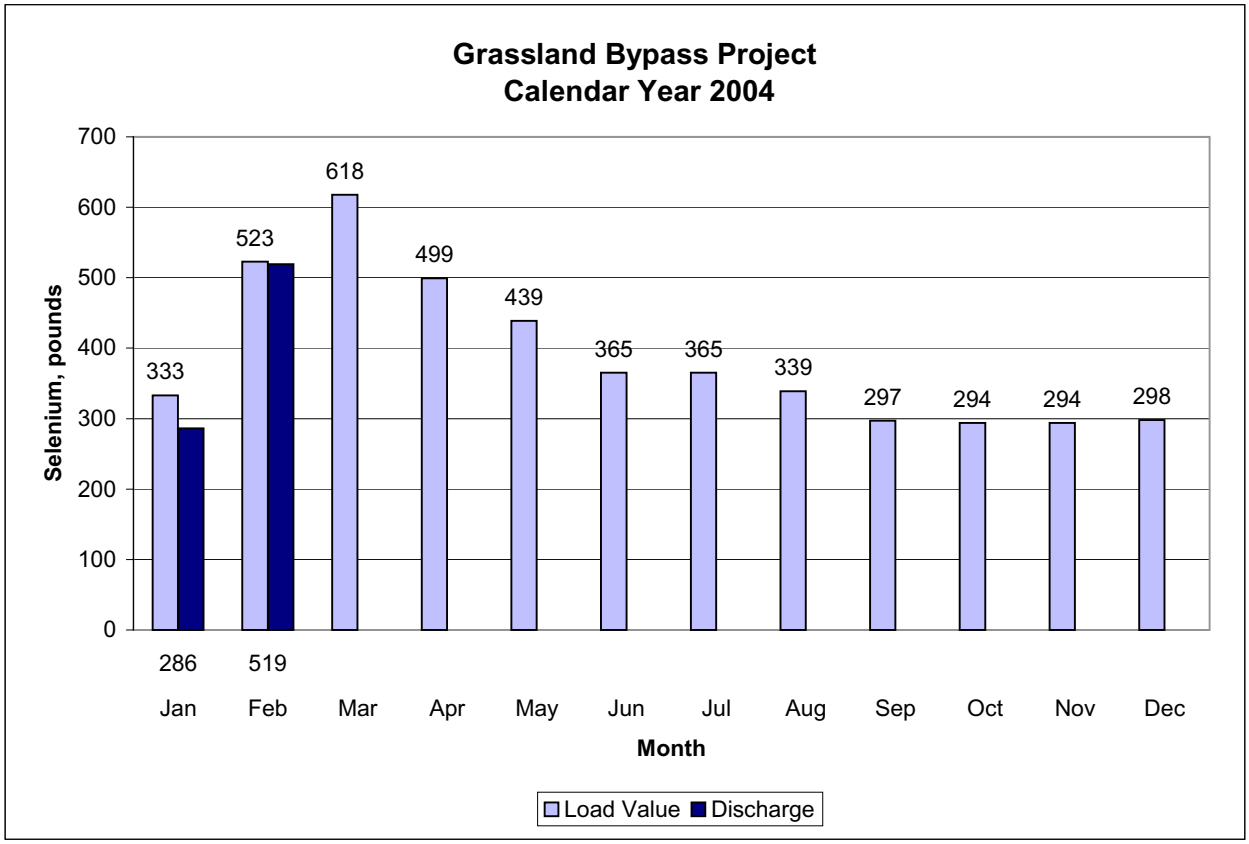


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), February 2004.

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
Feb-01-2004	118	9.7	2,530
Feb-02-2004	126	9.9	2,470
Feb-03-2004	139	10.0	2,430
Feb-04-2004	147	11.1	2,400
Feb-05-2004	150	11.0	2,490
Feb-06-2004	153	11.2	2,510
Feb-07-2004	162	11.3	2,460
Feb-08-2004	148	10.9	2,490
Feb-09-2004	131	11.0	2,590
Feb-10-2004	138	11.1	2,670
Feb-11-2004	147	11.6	2,710
Feb-12-2004	146	12.0	2,770
Feb-13-2004	160	11.8	2,750
Feb-14-2004	156	12.1	2,690
Feb-15-2004	152	13.3	2,630
Feb-16-2004	162	13.4	2,670
Feb-17-2004	165	13.3	2,670
Feb-18-2004	186	13.9	2,580
Feb-19-2004	217	13.4	2,490
Feb-20-2004	243	13.2	2,530
Feb-21-2004	262	13.3	2,290
Feb-22-2004	251	13.6	2,520
Feb-23-2004	224	14.0	2,590
Feb-24-2004	215	14.6	2,720
Feb-25-2004	222	13.1	2,570
Feb-26-2004	320	12.2	2,310
Feb-27-2004	354	12.2	2,330
Feb-28-2004	356	12.4	2,340
Feb-29-2004	458	12.8	2,140
.	.	.	.
.	.	.	.
Mean	200	12.2	2,530

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), February 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
Feb-01-2004	196	10.0	1,610
Feb-02-2004	194	10.1	1,620
Feb-03-2004	226	10.1	1,620
Feb-04-2004	259	10.9	1,570
Feb-05-2004	251	10.9	1,520
Feb-06-2004	233	11.0	1,520
Feb-07-2004	221	11.4	1,600
Feb-08-2004	217	11.0	1,640
Feb-09-2004	214	10.9	1,680
Feb-10-2004	211	10.9	1,680
Feb-11-2004	194	11.3	1,740
Feb-12-2004	182	11.7	1,740
Feb-13-2004	177	11.6	1,730
Feb-14-2004	181	11.9	1,700
Feb-15-2004	188	13.1	1,720
Feb-16-2004	200	13.4	1,720
Feb-17-2004	236	13.2	1,570
Feb-18-2004	267	13.5	1,490
Feb-19-2004	329	13.0	1,390
Feb-20-2004	392	12.7	1,390
Feb-21-2004	413	12.9	1,460
Feb-22-2004	405	13.1	1,550
Feb-23-2004	388	13.4	1,600
Feb-24-2004	389	14.0	1,550
Feb-25-2004	416	13.2	1,520
Feb-26-2004	458	12.3	1,530
Feb-27-2004	482	11.9	1,480
Feb-28-2004	532	12.1	1,500
Feb-29-2004	553	12.6	1,540
.	.	.	.
.	.	.	.
Mean	297	12.0	1,590

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), February 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
Feb-01-2004	758	10.2	NA	NA
Feb-02-2004	778	10.2	NA	NA
Feb-03-2004	796	10.3	NA	NA
Feb-04-2004	842	11.3	NA	NA
Feb-05-2004	913	11.1	NA	NA
Feb-06-2004	939	11.0	1,390	3.2
Feb-07-2004	935	11.3	1,480	3.7
Feb-08-2004	903	11.0	1,530	3.6
Feb-09-2004	867	10.9	1,560	3.2
Feb-10-2004	828	11.0	1,590	2.8
Feb-11-2004	816	11.2	1,620	3.3
Feb-12-2004	821	11.6	1,640	4.0
Feb-13-2004	800	11.6	1,700	4.2
Feb-14-2004	793	12.0	1,740	4.2
Feb-15-2004	786	13.0	1,720	4.5
Feb-16-2004	788	13.4	1,700	4.3
Feb-17-2004	811	13.4	1,650	4.0
Feb-18-2004	889	14.0	1,580	4.0
Feb-19-2004	948	13.4	1,490	3.5
Feb-20-2004	1,160	13.1	1,350	3.1
Feb-21-2004	1,330	13.1	1,310	3.5
Feb-22-2004	1,370	13.4	1,250	3.6
Feb-23-2004	1,320	13.6	1,350	4.4
Feb-24-2004	1,260	14.1	1,450	4.4
Feb-25-2004	1,270	13.5	1,470	4.5
Feb-26-2004	1,890	12.1	1,270	3.6
Feb-27-2004	1,990	12.1	1,070	2.3
Feb-28-2004	2,310	11.9	963	2.2
Feb-29-2004	2,610	12.1	702	1.7
.	.	.	.	.
.	.	.	.	.
Mean	1,120	12.1	1,440	3.6

PRELIMINARY RESULTS

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	.	.	.
Dec-03-2003	16	.	.	4,680	53	.	.	.
Dec-10-2003	17	.	.	5,210	54	.	.	.
Dec-17-2003	14	.	.	5,260	21	.	.	.
Dec-22-2003	17	.	.	4,710	120	.	.	.
Dec-29-2003	12	.	.	4,360	NA	.	.	.
Jan-07-2004	18	.	.	5,020	45	.	.	.
Jan-14-2004	18	.	.	4,760	120	.	.	.
Jan-21-2004	20	.	.	4,480	87	.	.	.
Jan-28-2004	16	.	.	5,170	34	.	.	.
Feb-04-2004	37	.	.	4,400	200	.	.	.
Feb-10-2004	54	.	.	4,530	210	.	.	.
Feb-18-2004	75	.	.	3,660	720	.	.	.
Feb-25-2004	71	.	.	4,800	270	.	.	.

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
Dec-01-2003	18	.	.	5,140	.	99.0	.	8.4
Dec-09-2003	15	.	.	5,080	.	95.4	.	8.3
Dec-16-2003	16	.	.	5,260	.	104	.	7.5
Dec-21-2003	21	.	.	5,070	.	100	.	7.7
Dec-28-2003	13	.	.	4,980	.	93.6	.	NA
Jan-06-2004	17	.	.	5,110	.	91.5	.	NA
Jan-13-2004	18	.	.	5,150	.	100	.	7.6
Jan-20-2004	21	.	.	4,730	.	82.5	.	7.5
Jan-27-2004	16	.	.	4,740	.	80.2	.	6.9
Feb-03-2004	34	.	.	4,720	.	67.7	.	7.1
Feb-09-2004	48	.	.	4,320	.	55.2	.	6.5
Feb-16-2004	58	.	.	4,020	.	51.7	.	6.0
Feb-24-2004	64	.	.	4,000	.	54.6	.	5.8

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
Dec-04-2003	20	11.9	7.7	4,350	38	65.9	6.6
Dec-11-2003	22	11.1	8.0	4,030	NA	58.2	6.4
Dec-18-2003	20	9.5	8.1	4,430	26	69.9	6.3
Dec-23-2003	23	10.9	7.9	4,460	24	78.8	6.2
Dec-30-2003	21	8.5	7.8	4,020	21	55.1	NA
Jan-08-2004	23	9.0	7.9	4,450	27	70.6	NA
Jan-15-2004	23	10.1	8.0	4,560	24	79.9	6.6
Jan-22-2004	25	9.5	8.0	4,410	24	68.2	6.7
Jan-29-2004	23	10.2	7.9	4,550	NA	93.1	6.7
Feb-05-2004	43 e	10.2	8.1	4,550	24	74.5	6.6
Feb-12-2004	54	11.1	8.2	4,290	26	56.4	6.9
Feb-19-2004	78	13.0	7.9	3,660	36	41.2	5.5
Feb-26-2004	70	12.5	8.0	4,580	45	59.3	6.5

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
Dec-04-2003	98	12.0	7.8	1,500	.	<0.4	1.0
Dec-11-2003	133	10.7	7.9	1,500	.	<0.4	1.4
Dec-18-2003	127	8.6	8.0	1,560	.	<0.4	1.2
Dec-23-2003	154	10.8	7.7	1,640	.	<0.4	1.2
Dec-30-2003	198	8.1	7.9	1,530	.	<0.4	NA
Jan-08-2004	151	8.9	7.8	1,740	.	<0.4	NA
Jan-15-2004	106	9.6	7.8	1,980	.	<0.4	1.6
Jan-22-2004	105	8.6	7.8	2,010	.	<0.4	1.7
Jan-29-2004	109	10.5	7.9	2,140	.	<0.4	1.7
Feb-05-2004	107 e	9.6	8.0	2,150	.	0.5	1.8
Feb-12-2004	92	10.5	8.0	2,350	.	<0.4	2.1
Feb-19-2004	139	12.0	7.9	2,230	.	0.7	2.0
Feb-26-2004	249	11.2	7.9	1,970	.	0.8	1.9

++ 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
Dec-04-2003	118	12.0	7.7	2,040	10.5	2.0
Dec-11-2003	155	10.8	7.8	1,900	8.0	2.0
Dec-18-2003	147	8.6	7.9	2,020	10.0	1.9
Dec-23-2003	177	10.9	7.6	2,010	11.4	1.8
Dec-30-2003	219	8.1	7.9	1,820	5.8	NA
Jan-08-2004	174	8.9	7.7	2,140	8.4	NA
Jan-15-2004	129	9.6	7.9	2,470	12.8	2.5
Jan-22-2004	130	8.7	7.8	2,490	11.5	2.6
Jan-29-2004	132	10.5	7.9	2,460	8.4	2.4
Feb-05-2004	150	9.8	8.0	2,780	18.7	3.1
Feb-12-2004	146	10.7	8.1	3,070	19.4	3.7
Feb-19-2004	217	12.3	7.9	2,750	14.8	3.2
Feb-26-2004	320	11.5	7.9	2,143	14.3	3.1

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
Dec-01-2003	.	7.8	2,320	14	12.8	2.4
Dec-11-2003	.	7.7	1,420	11	7.9	1.9
Dec-15-2003	.	7.7	1,410	11	8.9	2.0
Dec-22-2003	.	7.5	1,910	12	8.4	1.9
Dec-29-2003	.	NA	NA	NA	NA	NA
Jan-06-2004	.	7.9	1,870	6	5.5	2.0
Jan-13-2004	.	7.6	2,310	6	9.8	2.4
Jan-22-2004	.	7.8	2,550	12	11.6	2.8
Jan-30-2004	.	7.8	2,750	8	10.7	2.8
Feb-03-2004	.	7.9	3,120	8	16.4	3.5
Feb-10-2004	.	8.0	3,100	8	16.7	3.5
Feb-18-2004	.	NA	NA	NA	13.8	3.3
Feb-27-2004	.	7.9	2,740	22	14.0	3.2

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
Dec-04-2003	113	12.2	7.9	1,670	<0.4	NA
Dec-11-2003	90	11.2	7.5	2,020	<0.4	NA
Dec-18-2003	90	8.6	7.6	1,920	<0.4	1.2
Dec-23-2003	108	11.4	7.4	1,740	0.6	1.0
Dec-30-2003	193	8.3	7.7	1,600	0.8	NA
Jan-08-2004	254	8.5	7.7	1,560	0.6	NA
Jan-15-2004	216	9.8	7.7	1,690	0.7	1.1
Jan-22-2004	183	9.4	7.7	1,680	0.7	1.0
Jan-29-2004	196	10.3	7.6	1,630	<0.4	NA
Feb-05-2004	251	10.1	7.7	1,510	1.0	1.0
Feb-12-2004	182	10.6	7.4	1,860	0.7	1.1
Feb-19-2004	329	12.1	7.5	1,400	1.1	0.9
Feb-26-2004	458	11.9	7.5	1,500	1.1	NA

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
Dec-03-2003	10	.	.	842	0.7	NA
Dec-10-2003	10	.	.	740	0.7	0.5
Dec-17-2003	10	.	.	649	<0.4	NA
Dec-22-2003	10	.	.	609	<0.4	NA
Dec-29-2003	10	.	.	555	<0.4	NA
Jan-07-2004	10	.	.	752	0.8	NA
Jan-14-2004	10	.	.	600	0.7	0.3
Jan-21-2004	10	.	.	645	0.9	0.3
Jan-28-2004	10	.	.	868	1.6	0.5
Feb-04-2004	10	.	.	685	1.5	0.4
Feb-10-2004	10	.	.	665	1.3	0.4
Feb-18-2004	10	.	.	726	2.1	0.5
Feb-25-2004	10	.	.	795	2.0	0.6

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
Dec-03-2003	50	.	.	598	<0.4	NA
Dec-10-2003	50	.	.	630	0.4	0.2
Dec-17-2003	50	.	.	779	0.7	0.3
Dec-22-2003	50	.	.	737	0.6	NA
Dec-29-2003	50	.	.	674	<0.4	NA
Jan-07-2004	50	.	.	670	0.7	NA
Jan-14-2004	50	.	.	565	0.8	0.3
Jan-21-2004	50	.	.	635	0.8	0.3
Jan-28-2004	50	.	.	669	1.4	0.3
Feb-04-2004	50	.	.	534	1.3	0.3
Feb-10-2004	10	.	.	2,280	1.2	4.0
Feb-18-2004	10	.	.	853	1.7	0.8
Feb-25-2004	10	.	.	1,000	2.1	1.1

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
Dec-03-2003	0	.	.	1,740	1.6	2.2
Dec-10-2003	25	.	.	725	0.8	0.4
Dec-17-2003	0	.	.	824	0.8	0.4
Dec-22-2003	0	.	.	1,300	1.4	1.4
Dec-29-2003	0	.	.	900	0.6	NA
Jan-07-2004	0	.	.	895	0.9	NA
Jan-14-2004	0	.	.	1,290	1.7	1.3
Jan-21-2004	0	.	.	1,430	1.9	1.5
Jan-28-2004	0	.	.	855	1.1	0.6
Feb-04-2004	8	.	.	470	0.8	0.4
Feb-10-2004	0	.	.	971	1.4	0.7
Feb-18-2004	12	.	.	324	0.7	0.3
Feb-25-2004	0	.	.	1,400	2.9	1.2

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
Dec-03-2003	134	.	.	1,150	0.5	1.2
Dec-10-2003	107	.	.	1,250	0.5	1.3
Dec-17-2003	61	.	.	1,280	0.5	1.2
Dec-22-2003	55	.	.	1,300	0.5	1.3
Dec-29-2003	60	.	.	1,200	0.6	NA
Jan-07-2004	119	.	.	1,270	0.5	NA
Jan-14-2004	125	.	.	1,310	0.9	1.4
Jan-21-2004	160	.	.	1,210	0.9	1.2
Jan-28-2004	145	.	.	1,460	1.0	1.4
Feb-04-2004	127	.	.	1,550	1.9	1.8
Feb-10-2004	116	.	.	1,710	1.4	1.9
Feb-18-2004	99	.	.	2,020	2.3	2.6
Feb-25-2004	162	.	.	1,850	1.6	2.3

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
Dec-03-2003	.	.	.	662	1.0	0.3
Dec-10-2003	.	.	.	655	1.0	0.3
Dec-17-2003	.	.	.	655	0.9	0.3
Dec-22-2003	.	.	.	660	0.8	0.3
Dec-29-2003	.	.	.	660	0.6	NA
Jan-07-2004	.	.	.	656	0.8	NA
Jan-14-2004	.	.	.	655	1.1	0.3
Jan-21-2004	.	.	.	660	1.0	0.3
Jan-28-2004	.	.	.	754	1.5	0.4
Feb-04-2004	.	.	.	468	1.2	0.2
Feb-10-2004	.	.	.	549	1.4	0.3
Feb-18-2004	.	.	.	430	1.5	0.2
Feb-25-2004	.	.	.	467	1.3	0.3

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
Dec-04-2003	132	12.1	8.0	2,000	<0.4	0.9
Dec-11-2003	109	11.3	7.5	2,210	<0.4	1.0
Dec-18-2003	136	8.9	8.2	1,780	<0.4	0.8
Dec-23-2003	145	10.9	7.6	1,840	0.5	0.7
Dec-30-2003	242	8.5	7.6	1,520	0.8	NA
Jan-08-2004	341	8.4	7.4	1,370	0.4	NA
Jan-15-2004	243	9.8	7.8	1,730	0.5	1.0
Jan-22-2004	205	9.3	7.9	1,890	0.7	1.0
Jan-29-2004	207	10.8	7.8	1,880	0.4	1.0
Feb-05-2004	313	9.9	7.4	1,510	0.9	0.9
Feb-12-2004	232	10.6	7.5	1,900	0.5	1.0
Feb-19-2004	342	12.4	7.6	1,610	1.0	1.0
Feb-26-2004	662	12.4	7.5	1,300	0.9	0.8

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
Dec-03-2003	.	.	.	NA	NA	NA
Dec-11-2003	.	.	.	2,080	4.0	1.4
Dec-16-2003	.	.	.	2,090	4.6	1.4
Dec-23-2003	.	.	.	1,850	4.7	1.3
Jan-06-2004	.	.	.	1,520	2.3	1.2
Jan-13-2004	.	.	.	2,000	3.5	1.5
Jan-20-2004	.	.	.	2,220	4.3	1.6
Feb-03-2004	.	.	.	2,220	5.2	1.5
Feb-11-2004	.	.	.	2,280	5.6	1.9
Feb-17-2004	.	.	.	2,420	6.7	2.0
Feb-24-2004	.	.	.	1,890	6.1	1.7

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
Dec-04-2003	607	12.3	7.9	1,280	2.4	0.8
Dec-11-2003	634	11.5	7.8	1,300	2.6	0.8
Dec-18-2003	673	9.2	8.0	1,300	2.5	0.8
Dec-23-2003	756	11.2	7.8	1,300	2.6	0.8
Dec-30-2003	892	8.6	7.8	1,240	1.8	NA
Jan-08-2004	1,040	9.0	7.8	1,240	1.3	NA
Jan-15-2004	845	10.0	7.8	1,440	2.4	1.1
Jan-22-2004	767	9.4	7.9	1,540	2.3	1.0
Jan-29-2004	770	11.3	7.9	1,550	2.4	1.0
Feb-05-2004	913	10.4	7.7	1,310	2.5	0.9
Feb-12-2004	821	10.8	7.9	1,640	3.5	1.2
Feb-19-2004	948	12.9	7.9	1,480	3.4	1.2
Feb-26-2004	1,890	12.0	7.8	1,110	3.0	0.9

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from March 2003 to February 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	%	%	%	%	%	%
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
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	100	90	53*	85	100	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from March 2003 to February 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
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
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	0.44	0.39*	0.32*	0.42	0.48	0.46

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from March 2003 to February 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	%	%	%	%	%	%
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
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	100	100	90	100	100	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from March 2003 to February 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
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
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	59.7	55.3	58.8	58.6	58.4	51.6

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from March 2003 to February 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
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
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	24.0*	39.2	27.5	33.1	29.9	29.3

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, December 2003 to February 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
Dec-08-2003	73	<0.4	10	<0.4	<0.4
Dec-10-2003	63	<0.4	9.4	<0.4	<0.4
Dec-12-2003	60	<0.4	7.9	<0.4	1.0
Jan-05-2004	56	<0.4	8.0	0.5	<0.4
Jan-07-2004	62	<0.4	6.0	0.4	<0.4
Jan-09-2004	78	<0.4	10	<0.4	<0.4
Feb-02-2004	70	0.5	18	0.9	1.3
Feb-04-2004	48	0.5	11	1.0	<0.4
Feb-06-2004	71	0.5	19	1.1	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from December 2003 to February 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
Dec-08-2003	40	17	12	79	3
Dec-10-2003	30	17	18	67	3
Dec-12-2003	33	18	30	37	8
Jan-05-2004	25	7	13	44	16
Jan-07-2004	34	7	10	45	11
Jan-09-2004	39	24	29	70	11
Feb-02-2004	35	42	106	82	21
Feb-04-2004	47	56	42	82	19
Feb-06-2004	45	42	47	76	31

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