

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

January 2005

August 1, 2005

Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute





GRASSLAND BYPASS PROJECT
MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT**Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), January 2005.
- 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), January 2005.
- 2b. Continuous water monitoring at San Luis Drain Outlet, January 2005.
- 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), January 2005.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 2005.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 2005.

Weekly Monitoring

- 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.
- 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain).
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge).
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge).
10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).
11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).
12. Weekly water quality monitoring at Station J (Camp 13 Ditch).
13. Weekly water quality monitoring at Station K (Agatha Canal).
14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).
15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).
16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).
17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).
18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

Monthly Monitoring

20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 2004 to January 2005.
21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 2004 to January 2005.
22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 2004 to January 2005.
23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 2004 to January 2005.
24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 2004 to January 2005.
25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2004 to January 2005.
26. Summary of total suspended solids concentrations in grab water samples collected from November 2004 to January 2005.
27. Explanations of footnotes and agency abbreviations.

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), January 2005.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jan-01-2005	39	4,200
Jan-02-2005	28	4,450
Jan-03-2005	27	4,790
Jan-04-2005	27	4,900
Jan-05-2005	24	4,950
Jan-06-2005	24	4,970
Jan-07-2005	30	4,740
Jan-08-2005	34	4,750
Jan-09-2005	32	4,700
Jan-10-2005	68	3,820
Jan-11-2005	64	3,850
Jan-12-2005	53	4,420
Jan-13-2005	41	4,640
Jan-14-2005	36	4,840
Jan-15-2005	34	4,960
Jan-16-2005	35	5,040
Jan-17-2005	37	5,180
Jan-18-2005	34	5,130
Jan-19-2005	32	4,980
Jan-20-2005	33	5,000
Jan-21-2005	37	4,890
Jan-22-2005	37	5,050
Jan-23-2005	38	4,980
Jan-24-2005	38	4,500
Jan-25-2005	38	4,890
Jan-26-2005	42	4,640
Jan-27-2005	45	4,550
Jan-28-2005	49	4,480
Jan-29-2005	57	4,320
Jan-30-2005	52	4,500
Jan-31-2005	50	4,730
Mean	39	4,700

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), January 2005.

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
Jan-01-2005	42	10.6	7.4	4,120	45.0	10.2
Jan-02-2005	45	10.7	6.8	4,000	56.9	13.8
Jan-03-2005	38	10.5	7.3	4,080	43.2	8.9
Jan-04-2005	36	10.1	7.2	4,060	45.3	8.8
Jan-05-2005	36	10.1	7.1	3,970	47.1	9.1
Jan-06-2005	34	10.4	7.2	4,120	38.2	7.0
Jan-07-2005	31	10.1	7.4	4,280	40.0	6.7
Jan-08-2005	41	10.5	7.9	4,350	44.4	9.8
Jan-09-2005	48	10.8	7.9	4,370	42.5	11.0
Jan-10-2005	46	11.3	8.2	4,430	44.3	11.0
Jan-11-2005	72	11.2	8.0	4,330	47.8	18.6
Jan-12-2005	68	10.7	7.7	4,240	47.8	17.5
Jan-13-2005	58	10.1	5.9	3,250	36.4	11.4
Jan-14-2005	48	9.7	7.2	3,870	40.2	10.4
Jan-15-2005	43	9.3	7.1	4,180	43.9	10.2
Jan-16-2005	41	9.0	8.0	4,360	45.4	10.0
Jan-17-2005	42	8.9	8.9	4,480	43.3	9.8
Jan-18-2005	43	9.0	8.8	4,590	48.9	11.3
Jan-19-2005	41	9.2	8.8	4,670	56.6	12.5
Jan-20-2005	39	9.4	9.1	4,820	56.2	11.8
Jan-21-2005	40	9.6	9.2	4,890	59.8	12.9
Jan-22-2005	43	9.7	9.2	4,790	61.0	14.1
Jan-23-2005	44	9.7	9.1	4,680	56.1	13.3
Jan-24-2005	44	10.0	8.5	4,660	57.6	13.7
Jan-25-2005	43	10.6	8.4	4,730	60.4	14.0
Jan-26-2005	45	11.2	8.2	4,790	65.0	15.8
Jan-27-2005	47	11.4	8.0	4,610	63.1	16.0
Jan-28-2005	51	11.9	7.7	4,680	61.9	17.0
Jan-29-2005	56	11.8	8.1	4,480	59.8	18.1
Jan-30-2005	61	11.4	8.0	4,410	57.8	19.0
Jan-31-2005	57	11.5	8.0	4,400	56.7	17.4
Mean	46	10.3	7.9	4,380	50.7	12.6
Total Acre-feet	2,820					
Total (lbs)						391

Load Limitation for January 2005 (lbs)	211
---	------------

Table 2b. Continuous water monitoring at San Luis Drain Outlet, January 2005.

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
Jan-01-2005	42	45.0	10.2
Jan-02-2005	47	56.9	14.4
Jan-03-2005	38	43.2	8.9
Jan-04-2005	36	45.3	8.8
Jan-05-2005	36	47.1	9.1
Jan-06-2005	34	38.2	7.0
Jan-07-2005	36	40.0	7.8
Jan-08-2005	42	44.4	10.1
Jan-09-2005	47	42.5	10.8
Jan-10-2005	46	44.3	11.0
Jan-11-2005	72	47.8	18.6
Jan-12-2005	69	47.8	17.8
Jan-13-2005	59	36.4	11.6
Jan-14-2005	48	40.2	10.4
Jan-15-2005	43	43.9	10.2
Jan-16-2005	41	45.4	10.0
Jan-17-2005	41	43.3	9.6
Jan-18-2005	42	48.9	11.1
Jan-19-2005	41	56.6	12.5
Jan-20-2005	39	56.2	11.8
Jan-21-2005	39	59.8	12.6
Jan-22-2005	42	61.0	13.8
Jan-23-2005	43	56.1	13.0
Jan-24-2005	43	57.6	13.4
Jan-25-2005	43	60.4	14.0
Jan-26-2005	45	65.0	15.8
Jan-27-2005	48	63.1	16.3
Jan-28-2005	51	61.9	17.0
Jan-29-2005	55	59.8	17.7
Jan-30-2005	61	57.8	19.0
Jan-31-2005	57	56.7	17.4
Mean	46	49.5	12.6
Total Acre-feet	2,830		
Total (lbs)			392

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.

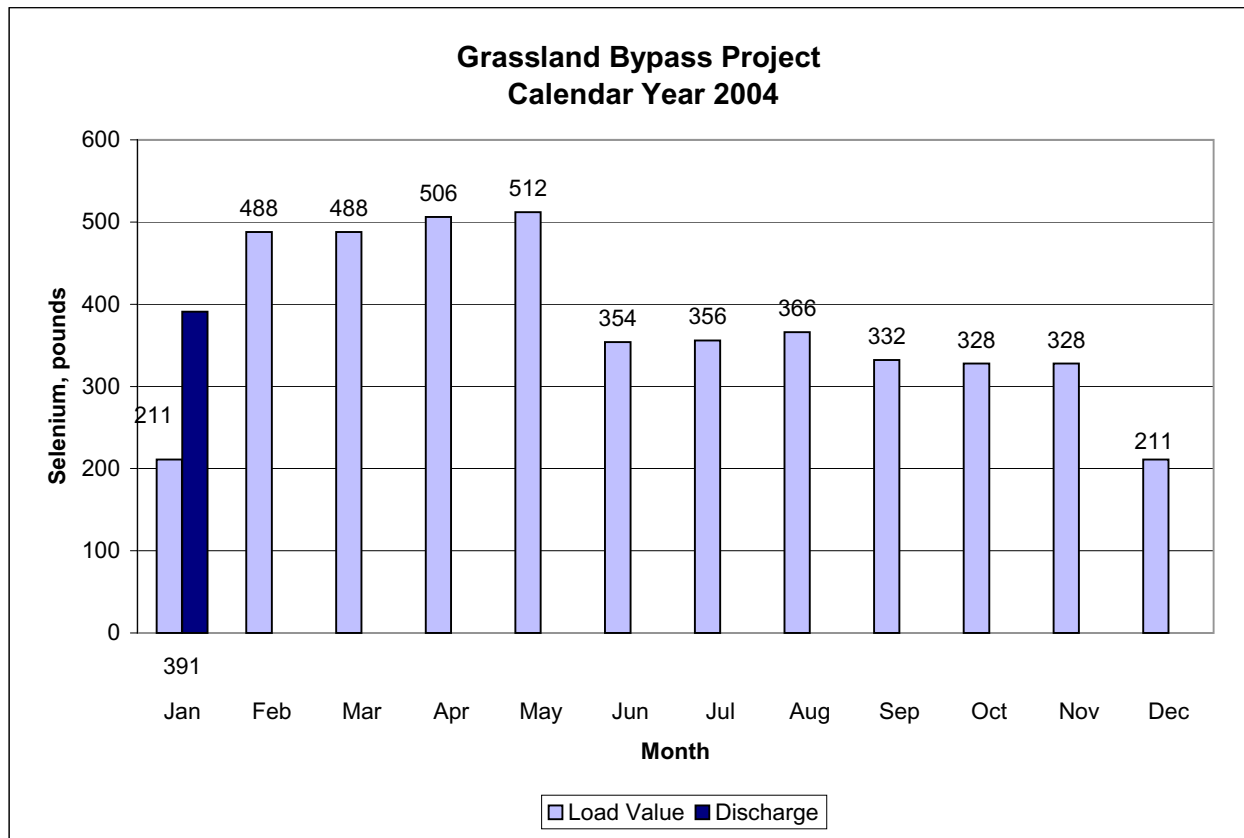
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested 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.

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

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), January 2005.**

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
Jan-01-2005	439	10.7	1,570
Jan-02-2005	431	10.5	1,640
Jan-03-2005	400	10.0	1,640
Jan-04-2005	354	9.5	1,680
Jan-05-2005	322	9.4	1,700
Jan-06-2005	309	10.1	1,720
Jan-07-2005	301	9.7	1,770
Jan-08-2005	286	10.1	1,850
Jan-09-2005	272	10.5	1,940
Jan-10-2005	295	11.1	1,880
Jan-11-2005	394	10.6	1,960
Jan-12-2005	450	9.7	1,780
Jan-13-2005	428	9.2	1,630
Jan-14-2005	406	9.0	1,660
Jan-15-2005	375	8.7	1,700
Jan-16-2005	337	8.6	1,740
Jan-17-2005	310	8.8	1,800
Jan-18-2005	291	9.0	1,890
Jan-19-2005	270	9.2	1,860
Jan-20-2005	273	9.2	1,870
Jan-21-2005	271	9.3	1,890
Jan-22-2005	238	9.3	2,230
Jan-23-2005	166	9.3	2,740
Jan-24-2005	148	9.6	2,930
Jan-25-2005	159	10.5	2,790
Jan-26-2005	171	11.5	2,820
Jan-27-2005	193	11.4	2,810
Jan-28-2005	218	11.8	2,700
Jan-29-2005	228	11.4	2,670
Jan-30-2005	224	11.1	2,680
Jan-31-2005	213	11.2	2,710
Mean	296	10.0	2,070

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 2005.

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
Jan-01-2005	252	10.6	1,530
Jan-02-2005	316	10.5	1,490
Jan-03-2005	326	10.2	1,510
Jan-04-2005	292	9.7	1,520
Jan-05-2005	322 e	9.4	1,520
Jan-06-2005	299 e	9.9	1,490
Jan-07-2005	244 e	9.8	1,450
Jan-08-2005	216	10.2	1,430
Jan-09-2005	225 e	10.6	1,440
Jan-10-2005	323 e	11.1	1,460
Jan-11-2005	377 e	10.9	1,450
Jan-12-2005	395 e	10.2	1,440
Jan-13-2005	418 e	9.5	1,500
Jan-14-2005	438 e	9.2	1,530
Jan-15-2005	427	8.8	1,570
Jan-16-2005	390	8.6	1,740
Jan-17-2005	341	8.7	1,820
Jan-18-2005	298	9.0	1,880
Jan-19-2005	261	9.4	1,920
Jan-20-2005	243	9.5	1,840
Jan-21-2005	239	9.6	1,840
Jan-22-2005	250	9.6	1,820
Jan-23-2005	238	9.6	1,940
Jan-24-2005	204	10.0	2,030
Jan-25-2005	166	11.1	2,110
Jan-26-2005	132	12.4	2,230
Jan-27-2005	139	12.2	2,240
Jan-28-2005	162	12.4	2,210
Jan-29-2005	220	11.7	2,120
Jan-30-2005	266	11.2	2,080
Jan-31-2005	262	11.2	2,170
Mean	280	10.2	1,750

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 2005.

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
Jan-01-2005	2,350	10.4	NA	NA
Jan-02-2005	2,760	10.2	NA	NA
Jan-03-2005	3,020	10.2	NA	NA
Jan-04-2005	3,220	9.7	NA	NA
Jan-05-2005	3,420	9.1	NA	NA
Jan-06-2005	3,370	9.2	NA	NA
Jan-07-2005	3,210	9.4	NA	NA
Jan-08-2005	3,060	9.7	NA	NA
Jan-09-2005	3,310	9.9	NA	NA
Jan-10-2005	3,830	10.5	NA	NA
Jan-11-2005	5,010	10.6	NA	NA
Jan-12-2005	5,710	10.1	NA	NA
Jan-13-2005	6,090	9.4	NA	NA
Jan-14-2005	6,190	8.9	NA	NA
Jan-15-2005	5,900	8.4	400	0.6
Jan-16-2005	5,220	8.2	478	0.6
Jan-17-2005	4,530	8.3	568	0.7
Jan-18-2005	3,950	8.3	622	0.8
Jan-19-2005	3,490	8.5	654	0.9
Jan-20-2005	3,100	8.6	701	1.0
Jan-21-2005	2,800	8.8	739	1.1
Jan-22-2005	2,580	8.8	773	1.3
Jan-23-2005	2,380	8.9	833	1.3
Jan-24-2005	2,080	9.1	952	1.5
Jan-25-2005	1,840	9.8	1,070	1.5
Jan-26-2005	1,690	10.8	1,140	1.8
Jan-27-2005	1,640	11.1	1,200	2.1
Jan-28-2005	2030	11.4	1,090	1.7
Jan-29-2005	2500	11.1	745	1.8
Jan-30-2005	3,060	10.6	617	1.1
Jan-31-2005	2,920	10.4	687	1.3
Mean	3,430	9.6	780	1.2

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	.	.	.
Nov-03-2004	17	.	.	5,080	34	.	.	.
Nov-10-2004	18	.	.	4,960	32	.	.	.
Nov-17-2004	17	.	.	5,540	45	.	.	.
Nov-23-2004	17	.	.	5,250	20	.	.	.
Dec-01-2004	16	.	.	5,330	P	.	.	.
Dec-08-2004	21	.	.	4,940	120	.	.	.
Dec-15-2004	18	.	.	5,100	46	.	.	.
Dec-22-2004	19	.	.	4,900	23	.	.	.
Dec-29-2004	33	.	.	4,460	190	.	.	.
Jan-05-2005	24	.	.	4,880	68	.	.	.
Jan-12-2005	53	.	.	4,440	150	.	.	.
Jan-19-2005	32	.	.	4,860	P	.	.	.
Jan-26-2005	42	.	.	4,570	P	.	.	.

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
Nov-02-2004	16	.	.	4,900	.	62.2	.	9.0
Nov-09-2004	19	.	.	4,890	.	73.2	.	9.8
Nov-16-2004	17	.	.	5,330	.	51.0	.	10.0
Nov-22-2004	17	.	.	5,170	.	48.0	.	9.0
Nov-29-2004	16	.	.	5,230	.	53.2	.	9.6
Dec-07-2004	19	.	.	5,090	.	61.4	.	9.1
Dec-14-2004	18	.	.	4,770	.	53.0	.	8.5
Dec-21-2004	19	.	.	4,950	.	51.0	.	8.5
Dec-28-2004	26	.	.	4,710	.	58.3	.	7.8
Jan-04-2005	27	.	.	4,500	.	55.7	.	8.5
Jan-11-2005	64	.	.	4,400	.	47.8	.	8.4
Jan-18-2005	34	.	.	4,860	.	56.0	.	8.6
Jan-25-2005	38	.	.	4,880	.	69.2	.	8.9

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
Nov-04-2004	23	13.2	8.4	4,100	P	35.5	7.2
Nov-11-2004	25	14.3	7.3	4,310	25	52.4	7.1
Nov-18-2004	24	14.0	7.6	4,410	52	36.8	7.8
Nov-23-2004	25	9.9	7.7	4,510	24	29.2	7.9
Dec-02-2004	22	7.6	8.0	4,390	P	32.0	7.4
Dec-09-2004	27	10.3	8.0	4,400	40	41.8	7.4
Dec-16-2004	25	11.7	7.4	4,170	P	34.8	7.4
Dec-22-2004	25	9.1	8.0	4,610	35	39.0	7.4
Dec-29-2004	34	9.2	7.6	4,070	38	33.3	6.4
Jan-06-2005	34	10.1	7.3	4,150	63	39.0	6.8
Jan-13-2005	58	10.1	7.6	3,390	90	35.0	5.6
Jan-20-2005	39	9.3	7.5	4,860	P	55.6	8.1
Jan-27-2005	47	10.9	7.9	4,690	P	62.0	8.8

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
Nov-04-2004	115	12.8	8.0	1,230	.	0.9	0.8
Nov-11-2004	126	14.5	7.6	1,170	.	<0.4	0.8
Nov-18-2004	141	13.3	7.7	1,210	.	<0.4	0.9
Nov-23-2004	125	10.0	7.8	1,330	.	<0.4	1.1
Dec-02-2004	96	7.4	8.0	1,580	.	<0.4	1.2
Dec-09-2004	132	10.6	8.0	1,370	.	<0.4	1.1
Dec-16-2004	133	10.9	7.8	1,440	.	0.5	1.2
Dec-22-2004	134	8.6	7.9	1,480	.	0.4	1.1
Dec-29-2004	220	9.5	7.8	1,390	.	<0.4	1.0
Jan-06-2005	275	9.5	7.7	1,430	.	<0.4	1.2
Jan-13-2005	370	9.0	7.8	1,280	.	0.4	1.1
Jan-20-2005	234	9.0	7.7	1,280	.	0.5	1.1
Jan-27-2005	146	10.7	7.9	1,950	.	0.5	1.4

** 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
Nov-04-2004	138	12.8	7.9	1,780	6.2	1.9
Nov-11-2004	151	14.5	7.5	1,800	8.9	2.0
Nov-18-2004	165	13.5	7.7	1,750	6.0	1.9
Nov-23-2004	150	9.8	7.6	1,940	4.9	2.1
Dec-02-2004	118	7.4	8.0	2,280	7.2	2.3
Dec-09-2004	159	10.6	8.0	1,960	6.6	2.0
Dec-16-2004	158	11.0	7.7	1,970	6.2	2.2
Dec-22-2004	159	8.6	8.0	2,040	5.9	2.2
Dec-29-2004	254	9.4	7.8	1,800	4.7	1.7
Jan-06-2005	309	9.6	7.6	1,740	5.3	1.8
Jan-13-2005	428	9.2	7.8	1,610	5.5	1.7
Jan-20-2005	273	9.1	7.6	1,840	7.5	2.0
Jan-27-2005	193	10.7	7.9	2,740	15.9	3.8

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
Nov-01-2004	.	7.8	1,570	14	6.0	1.6
Nov-09-2004	.	7.7	1,850	12	8.2	1.8
Nov-18-2004	.	7.6	1,860	9	5.7	1.9
Nov-23-2004	.	7.9	2,060	9	4.8	2.2
Dec-02-2004	.	8.0	2,620	8	7.2	2.4
Dec-06-2004	.	7.8	2,260	9	8.4	2.3
Dec-16-2004	.	7.6	2,070	10	5.7	2.0
Dec-21-2004	.	7.6	2,070	9	5.5	2.0
Dec-30-2004	.	7.8	1,850	12	5.1	1.8
Jan-06-2005	.	7.7	1,800	13	3.8	1.7
Jan-11-2005	.	8.1	2,080	26	8.1	2.4
Jan-19-2005	.	8.1	1,910	39	7.3	2.2
Jan-25-2005	.	7.6	3,040	41	14.8	3.4

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
Nov-04-2004	155	12.3	7.8	1,340	0.4	0.7
Nov-11-2004	150	14.0	7.0	1,400	0.4	0.8
Nov-18-2004	202	13.5	7.5	1,250	0.5	0.8
Nov-23-2004	183	9.5	7.5	1,330	0.5	0.8
Dec-02-2004	129	7.2	7.9	1,590	0.5	1.0
Dec-09-2004	129	11.2	7.9	1,660	0.5	1.0
Dec-16-2004	120	11.1	7.8	1,770	<0.4	1.2
Dec-22-2004	109	9.1	7.7	1,750	<0.4	1.2
Dec-29-2004	146	10.1	7.7	1,720	<0.4	1.2
Jan-06-2005	299 e	9.7	7.8	1,500	0.4	1.2
Jan-13-2005	418 e	9.4	7.7	1,590	0.7	1.2
Jan-20-2005	243	9.4	7.4	2,040	0.5	1.1
Jan-27-2005	139	11.6	7.6	2,340	<0.4	0.8

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
Nov-03-2004	35	.	.	702	1.1	0.3
Nov-10-2004	35	.	.	511	0.9	0.2
Nov-17-2004	35	.	.	511	1.1	0.3
Nov-24-2004	35	.	.	596	1.0	0.4
Dec-01-2004	35	.	.	666	1.2	0.4
Dec-08-2004	35	.	.	913	0.5	0.8
Dec-15-2004	35	.	.	675	0.5	0.4
Dec-22-2004	35	.	.	567	0.7	0.2
Dec-29-2004	35	.	.	931	0.4	0.8
Jan-05-2005	20	.	.	841	0.6	0.5
Jan-12-2005	10	.	.	1,230	0.8	1.5
Jan-19-2005	20	.	.	986	3.1	0.7
Jan-26-2005	20	.	.	739	1.7	0.5

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
Nov-03-2004	35	.	.	637	0.9	0.4
Nov-10-2004	45	.	.	514	0.6	0.2
Nov-17-2004	45	.	.	496	1.0	0.3
Nov-24-2004	45	.	.	499	0.8	0.2
Dec-01-2004	45	.	.	714	1.2	0.4
Dec-08-2004	45	.	.	752	1.2	0.4
Dec-15-2004	45	.	.	746	0.8	0.4
Dec-22-2004	45	.	.	624	0.6	0.3
Dec-29-2004	45	.	.	724	<0.4	0.3
Jan-05-2005	35	.	.	683	<0.4	0.3
Jan-12-2005	15	.	.	739	2.1	0.4
Jan-19-2005	10	.	.	1,510	1.7	1.6
Jan-26-2005	10	.	.	668	1.1	0.4

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
Nov-01-2004	30	.	.	850	0.9	0.6
Nov-10-2004	30	.	.	651	0.9	0.4
Nov-17-2004	30	.	.	585	1.1	0.3
Nov-24-2004	30	.	.	723	1.1	0.6
Dec-01-2004	30	.	.	687	1.1	0.4
Dec-08-2004	30	.	.	574	1.0	0.3
Dec-15-2004	30	.	.	906	0.8	0.6
Dec-22-2004	30	.	.	660	0.7	0.4
Dec-29-2004	30	.	.	656	<0.4	0.3
Jan-05-2005	30	.	.	791	0.6	0.5
Jan-12-2005	45	.	.	864	2.0	0.7
Jan-19-2005	5	.	.	2,210	2.4	2.1
Jan-26-2005	60	.	.	1,090	1.4	0.8

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
Nov-03-2004	56	.	.	1,060	0.9	1.0
Nov-10-2004	74	.	.	1,080	0.7	1.0
Nov-17-2004	89	.	.	1,100	0.7	1.0
Nov-24-2004	93	.	.	1,100	0.6	1.0
Dec-01-2004	96	.	.	1,110	0.6	0.9
Dec-08-2004	90	.	.	1,280	0.7	1.3
Dec-15-2004	77	.	.	1,240	0.7	1.3
Dec-22-2004	140	.	.	1,260	0.6	1.2
Dec-29-2004	184	.	.	1,220	0.4	1.2
Jan-05-2005	188	.	.	1,250	0.5	1.2
Jan-12-2005	138	.	.	1,490	1.2	1.6
Jan-19-2005	102	.	.	1,510	0.9	1.4
Jan-26-2005	80	.	.	1,820	0.8	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
Nov-03-2004	.	.	.	585	0.9	0.2
Nov-10-2004	.	.	.	501	0.7	0.3
Nov-17-2004	.	.	.	481	0.9	0.3
Nov-23-2004	.	.	.	614	1.1	0.3
Dec-01-2004	.	.	.	646	1.4	0.3
Dec-08-2004	.	.	.	518	0.9	0.2
Dec-15-2004	.	.	.	724	1.2	0.4
Dec-22-2004	.	.	.	720	1.3	0.6
Dec-29-2004	.	.	.	780	0.8	0.7
Jan-05-2005	.	.	.	948	1.2	1.0
Jan-12-2005	.	.	.	737	1.8	0.4
Jan-19-2005	.	.	.	829	2.0	0.4
Jan-26-2005	.	.	.	453	1.2	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
Nov-04-2004	193	12.8	7.9	1,290	0.5	0.7
Nov-11-2004	180	14.2	7.2	1,450	<0.4	0.8
Nov-18-2004	271	13.5	7.7	1,120	0.5	0.7
Nov-23-2004	232	9.2	7.8	1,310	0.4	0.9
Dec-02-2004	170	7.3	7.6	1,750	0.7	1.0
Dec-09-2004	177	10.8	7.9	1,740	<0.4	1.0
Dec-16-2004	324	11.0	7.4	1,110	0.6	0.7
Dec-22-2004	201	9.1	7.9	1,610	0.6	1.0
Dec-29-2004	221	9.5	7.8	1,850	<0.4	1.1
Jan-06-2005	2,350	8.6	7.5	344	<0.4	0.2
Jan-13-2005	3,700	9.3	7.6	179	<0.4	0.1
Jan-20-2005	1,910	8.5	7.2	579	<0.4	0.3
Jan-27-2005	763	10.9	7.3	1,170	<0.4	0.3

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
Nov-02-2004	.	.	.	1,410	2.8	1.1
Nov-09-2004	.	.	.	1,540	3.1	1.1
Nov-16-2004	.	.	.	1,330	2.7	1.0
Nov-23-2004	.	.	.	1,620	1.8	1.2
Nov-30-2004	.	.	.	1,900	2.6	1.4
Dec-08-2004	.	.	.	1,190	<0.4	0.3
Dec-14-2004	.	.	.	1,300	2.2	0.9
Dec-21-2004	.	.	.	1,810	2.0	1.2
Dec-28-2004	.	.	.	961	0.4	0.3
Jan-04-2005	.	.	.	196	0.4	0.1
Jan-11-2005	.	.	.	128	NA	0.1
Jan-25-2005	.	.	.	495	0.4	0.1

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
Nov-04-2004	800	13.3	7.8	1,000	1.2	0.7
Nov-11-2004	826	14.5	7.6	1,080	2.0	0.7
Nov-18-2004	899	13.8	7.7	991	1.4	0.7
Nov-23-2004	832	9.4	7.8	1,100	1.3	0.8
Dec-02-2004	685	8.0	7.8	1,310	1.2	0.9
Dec-09-2004	749	11.1	7.7	1,270	1.8	0.9
Dec-16-2004	913	11.5	7.7	1,060	1.5	0.7
Dec-22-2004	770	8.9	7.9	1,330	1.4	0.9
Dec-29-2004	844	9.5	7.8	1,340	1.3	1.0
Jan-06-2005	3,370	9.3	7.5	450	0.6	0.4
Jan-13-2005	6,090	9.5	7.4	399	0.7	0.3
Jan-20-2005	3,100	8.7	7.5	719	1.3	0.5
Jan-27-2005	1,640	11.0	7.6	1,230	2.1	0.6

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 2004 to January 2005. 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	%	%	%	%	%	%
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
Jul-2004	100	90	93	88	98	98
Aug-2004	98	98	100	95	85	100
Sep-2004	98	93	95	100	93	95
Oct-2004	100	95	98	95	98	98
Nov-2004	95	98	58*	88	98	98
Dec-2004	100	68*	75*	98	98	100
Jan-2005	98	85	80	100	100	98

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 2004 to January 2005. 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
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
Jul-2004	0.55	0.50	0.51	0.54	0.51	0.48
Aug-2004	0.60	0.62	0.62	0.64	0.55	0.59
Sep-2004	0.71	0.60	0.75	0.74	0.62	0.51
Oct-2004	0.69	0.67	0.71	0.71	0.66	0.58
Nov-2004	0.58	0.62	0.41*	0.62	0.62	0.71
Dec-2004	0.58	0.47	0.53	0.66	0.54	0.48
Jan-2005	0.62	0.57	0.51	0.61	0.54	0.46

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 2004 to January 2005. 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	%	%	%	%	%	%
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
Jul-2004	100	100	80	90	90	90
Aug-2004	100	88	88	100	90	100
Sep-2004	80	100	90	100	100	90
Oct-2004	100	100	80	100	100	100
Nov-2004	80	70	90	80	100	80
Dec-2004	100	100	90	90	80	100
Jan-2005	100	90	80	100	100	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 2004 to January 2005. 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
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
Jul-2004	51.3	32.4	48.5	36.2	38.8	34.9
Aug-2004	41.9	41.8	46.1	37.4	32.0	33.9
Sep-2004	49.8	48.0	40.4	38.7	41.8	44.3
Oct-2004	48.1	39.8	29.2*	36.6	47.0	32.1
Nov-2004	37.0	28.3	44.6	41.8	35.9	27.0
Dec-2004	30.8	30.8	32.8	34.4	26.6	31.1
Jan-2005	41.7	38.8	40.2	45.9	47.6	34.7

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 2004 to January 2005. 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
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
Jul-2004	3.6*	13.1	16.3	17.5	12.5	10.1
Aug-2004	14.8	17.7	14.2	16.9	12.2	17.6
Sep-2004	12.4*	13.4*	15.6	16.3	16.2	14.6
Oct-2004	14.5	22.1	17.7	5.9*	16.6	16.8
Nov-2004	18.5	21.1	20.4	22.0	16.5	17.6
Dec-2004	0.9*	10.4	12.2	23.4	3.5	15.6
Jan-2005	1.3*	12.7	10.6*	18.0	13.7	16.2

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2004 to January 2005.

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
Nov-08-2004	52	<0.4	7.5	0.4	0.5
Nov-10-2004	49	<0.4	9.3	0.4	<0.4
Nov-12-2004	56	<0.4	10	0.4	<0.4
Dec-06-2004	44	<0.4	6.7	0.5	<0.4
Dec-08-2004	40	0.4	7.5	0.5	<0.4
Dec-10-2004	42	<0.4	6.3	0.5	0.9
Jan-03-2005	44	0.6	4.5	0.6	0.4
Jan-05-2005	42	<0.4	4.8	0.5	<0.4
Jan-07-2005	38	<0.4	4.4	1.1	0.5

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2004 to January 2005.

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
Nov-08-2004	104	27	27	67	16
Nov-10-2004	51	28	19	83	80
Nov-12-2004	61	26	23	124	5
Dec-06-2004	38	15	18	35	8
Dec-08-2004	77	23	28	55	3
Dec-10-2004	56	18	37	48	4
Jan-03-2005	37	56	87	38	8
Jan-05-2005	92	68	69	31	8
Jan-07-2005	179	92	109	63	13

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 µg/L as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated