

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

**August 2009**

February 12, 2010

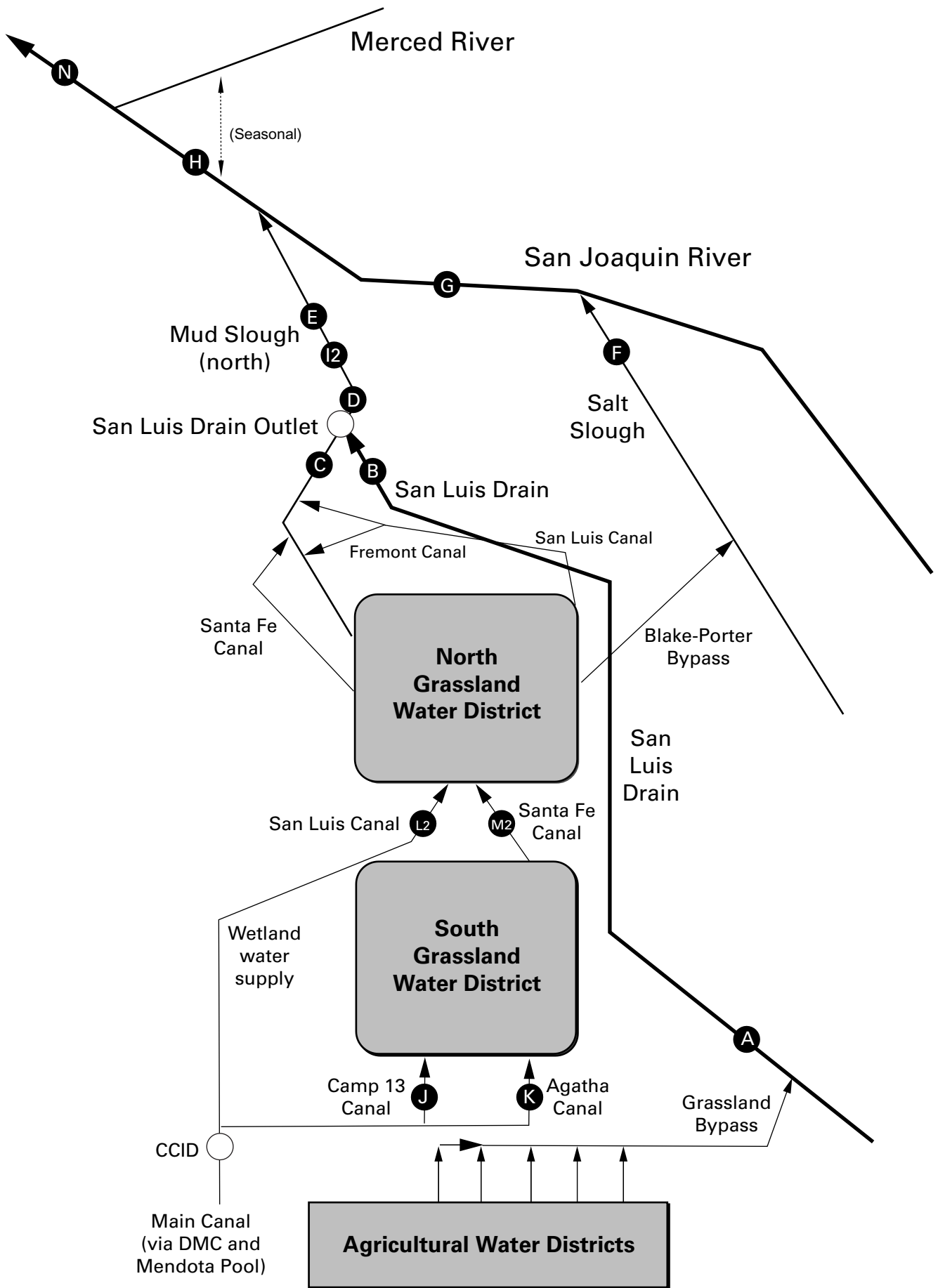
### **Preliminary Results**

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

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**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), August 2009.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>
<b>UNITS</b>	<b>cfs</b>	<b>µS/cm</b>
Aug-01-2009	8	4,010
Aug-02-2009	12	4,110
Aug-03-2009	17	3,610
Aug-04-2009	18	3,540
Aug-05-2009	17	3,750
Aug-06-2009	14	4,180
Aug-07-2009	12	4,580
Aug-08-2009	13	4,380
Aug-09-2009	12	4,520
Aug-10-2009	14	4,620
Aug-11-2009	11	3,770
Aug-12-2009	10	3,680
Aug-13-2009	10	3,360
Aug-14-2009	7	3,990
Aug-15-2009	5	4,530
Aug-16-2009	6	4,170
Aug-17-2009	9	4,010
Aug-18-2009	13	3,450
Aug-19-2009	13	2,670
Aug-20-2009	13	2,370
Aug-21-2009	15	2,680
Aug-22-2009	18	2,550
Aug-23-2009	21	2,350
Aug-24-2009	22	3,200
Aug-25-2009	17	3,240
Aug-26-2009	14	3,440
Aug-27-2009	13	3,480
Aug-28-2009	10	4,020
Aug-29-2009	8	4,050
Aug-30-2009	9	4,080
Aug-31-2009	7	4,140
Mean	13	3,690

**Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), August 2009.**

See Table 27 for explanation of footnotes and agency abbreviations.

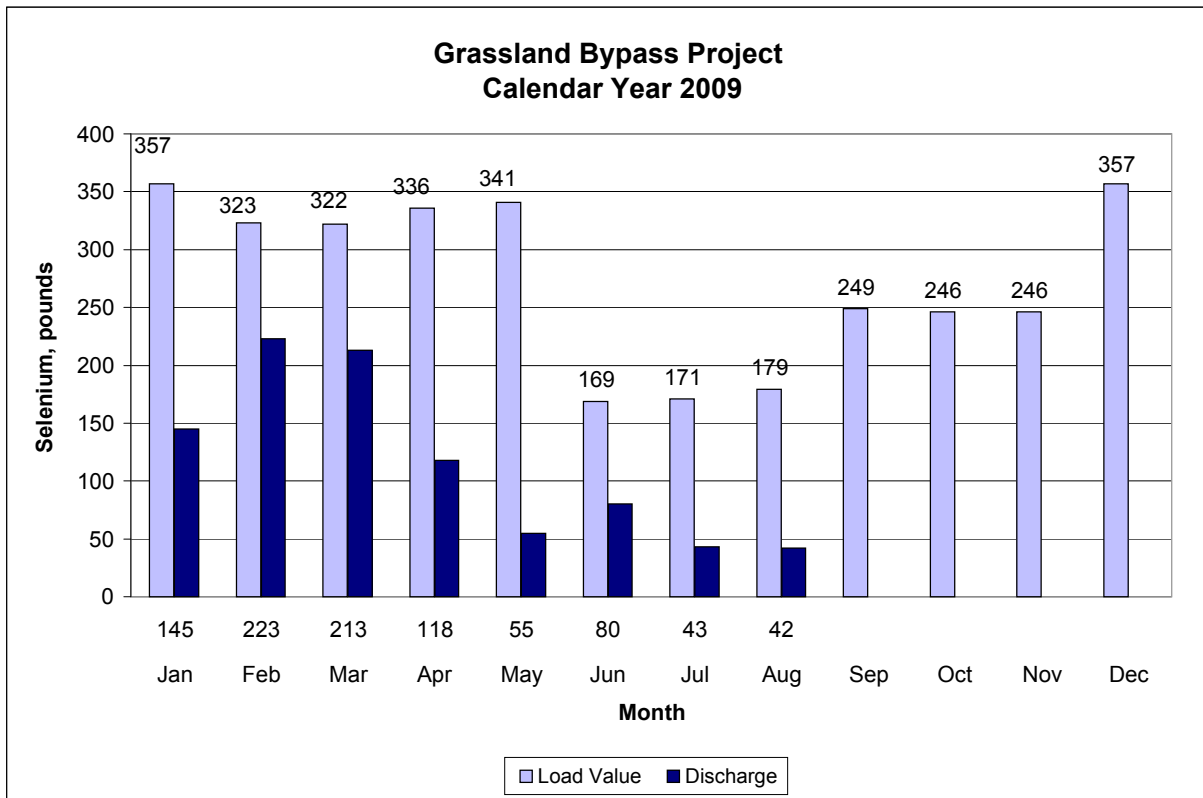
PARAMETER	San Luis Drain Outlet Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	SLDMWA*	SLDMWA	CVRWQCB	SLDMWA	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Aug-01-2009	7	27.0	4.6	3,340	14.3	0.5
Aug-02-2009	6	26.3	5.1	3,040	15.2	0.5
Aug-03-2009	8	26.0	6.2	3,190	16.8	0.8
Aug-04-2009	14	26.2	6.4	3,820	17.6	1.3
Aug-05-2009	16	26.4	6.3	4,140	18.9	1.7
Aug-06-2009	15	25.8	6.7	4,020	21.0	1.7
Aug-07-2009	12	24.7	6.3	4,530	18.1	1.2
Aug-08-2009	10	25.2	7.2	5,240	30.9	1.7
Aug-09-2009	11	25.5	7.6	5,020	34.2	2.0
Aug-10-2009	11	26.2	7.7	4,740	34.6	2.1
Aug-11-2009	11	26.5	6.8	4,420	31.0	1.8
Aug-12-2009	9	26.7	6.7	4,320	31.6	1.6
Aug-13-2009	8	26.7	7.2	4,340	24.5	1.1
Aug-14-2009	8	26.2	8.2	4,570	26.4	1.1
Aug-15-2009	6	25.5	8.5	4,940	31.7	1.1
Aug-16-2009	6	25.1	9.1	5,170	36.2	1.1
Aug-17-2009	5	24.9	9.4	5,480	40.8	1.2
Aug-18-2009	6	25.4	9.2	5,800	38.0	1.2
Aug-19-2009	10	25.8	10.6	5,730	32.6	1.8
Aug-20-2009	10	25.7	11.3	5,840	26.6	1.5
Aug-21-2009	11	25.6	11.1	5,920	22.2	1.3
Aug-22-2009	13	26.6	8.4	5,520	20.8	1.4
Aug-23-2009	16	26.0	8.4	4,680	23.0	1.9
Aug-24-2009	19	25.2	9.5	5,280	30.2	3.1
Aug-25-2009	20	24.8	6.5	4,510	16.9	1.8
Aug-26-2009	16	25.0	5.0	3,150	13.7	1.2
Aug-27-2009	13	25.1	5.6	3,230	14.6	1.0
Aug-28-2009	11	25.0	4.8	3,220	15.2	0.9
Aug-29-2009	9	25.2	4.5	2,890	14.2	0.7
Aug-30-2009	7	26.4	5.0	2,730	15.0	0.6
Aug-31-2009	7	25.2	6.2	2,880	17.8	0.6
<b>Mean</b>	<b>11</b>	<b>25.7</b>	<b>7.3</b>	<b>4,380</b>	<b>24.3</b>	<b>1.3</b>
<b>Total Acre-feet</b>	<b>660</b>					
<b>Total (lbs)</b>						<b>42</b>

**Load Limitation for August 2009 (lbs)** **179**

Autosampler failed. Data collected by SLDMWA.

♦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 is 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. Water quality data are still collected at the old Site B.

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), August 2009.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Aug-01-2009	9	26.7	3,460
Aug-02-2009	9	26.2	3,200
Aug-03-2009	13	26.1	3,160
Aug-04-2009	24	26.1	2,910
Aug-05-2009	28	26.3	3,020
Aug-06-2009	26	25.4	3,360
Aug-07-2009	21	24.7	NA
Aug-08-2009	21	24.9	NA
Aug-09-2009	22	25.8	3,430
Aug-10-2009	28	26.1	2,860
Aug-11-2009	26	26.6	2,660
Aug-12-2009	18	26.3	3,110
Aug-13-2009	14	26.3	3,400
Aug-14-2009	13	25.8	3,700
Aug-15-2009	12	24.8	3,700
Aug-16-2009	11	25.1	3,780
Aug-17-2009	9	25.2	4,240
Aug-18-2009	10	25.5	4,900
Aug-19-2009	14	26.0	5,230
Aug-20-2009	14	25.8	5,300
Aug-21-2009	14	26.1	5,410
Aug-22-2009	16	26.5	5,130
Aug-23-2009	22	26.1	4,060
Aug-24-2009	26	25.1	NA
Aug-25-2009	25	24.9	NA
Aug-26-2009	19	25.0	NA
Aug-27-2009	14	25.3	3,110
Aug-28-2009	13	25.0	3,260
Aug-29-2009	12	25.4	3,030
Aug-30-2009	13	26.6	2,570
Aug-31-2009	31	25.1	1,600
Mean	18	25.7	3,600

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), August 2009.

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
Aug-01-2009	129	26.1	940
Aug-02-2009	129	25.6	970
Aug-03-2009	140	25.3	879
Aug-04-2009	122	25.3	903
Aug-05-2009	80	25.6	1,010
Aug-06-2009	62	24.2	1,150
Aug-07-2009	76	23.5	1,200
Aug-08-2009	78	24.1	1,190
Aug-09-2009	98	25.0	1,040
Aug-10-2009	115	25.6	995
Aug-11-2009	123	26.1	965
Aug-12-2009	103	25.8	1,020
Aug-13-2009	70	25.9	1,180
Aug-14-2009	81	25.4	1,250
Aug-15-2009	89	24.0	1,160
Aug-16-2009	80	24.4	1,130
Aug-17-2009	86	25.1	1,100
Aug-18-2009	92	25.3	1,060
Aug-19-2009	83	25.6	1,110
Aug-20-2009	94	25.2	1,140
Aug-21-2009	98	25.4	1,090
Aug-22-2009	99	25.6	1,070
Aug-23-2009	102	25.0	1,080
Aug-24-2009	98	24.0	1,130
Aug-25-2009	104	NA	NA
Aug-26-2009	104	24.2	1,130
Aug-27-2009	110	24.3	1,130
Aug-28-2009	93	24.1	1,150
Aug-29-2009	104	24.4	1,130
Aug-30-2009	110	25.7	1,100
Aug-31-2009	121	25.1	1,030
Mean	99	25.0	1,080



Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), August 2009.

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
Aug-01-2009	218	25.7	1,250	1.0
Aug-02-2009	244	25.4	1,240	0.8
Aug-03-2009	265	25.1	NA	NA
Aug-04-2009	232	25.1	1,080	0.8
Aug-05-2009	259	24.9	1,150	0.9
Aug-06-2009	208	24.2	1,280	1.2
Aug-07-2009	224	23.5	1,440	1.3
Aug-08-2009	202	24.2	1,510	1.5
Aug-09-2009	197	25.0	1,580	1.4
Aug-10-2009	229	25.7	1,450	1.6
Aug-11-2009	220	26.4	1,310	1.5
Aug-12-2009	210	26.0	1,370	1.7
Aug-13-2009	195	25.8	1,360	1.4
Aug-14-2009	206	25.0	1,340	1.3
Aug-15-2009	222	23.8	1,330	1.0
Aug-16-2009	216	24.4	1,440	1.1
Aug-17-2009	200	25.1	1,430	1.0
Aug-18-2009	210	25.0	1,300	0.8
Aug-19-2009	198	25.1	1,350	0.9
Aug-20-2009	227	24.7	1,200	0.7
Aug-21-2009	220	25.1	1,240	1.1
Aug-22-2009	231	25.8	1,270	1.2
Aug-23-2009	251	25.4	1,250	1.3
Aug-24-2009	247	24.5	1,220	1.3
Aug-25-2009	240	24.2	1,310	1.5
Aug-26-2009	215	24.8	1,430	1.8
Aug-27-2009	232	24.6	1,490	2.2
Aug-28-2009	255	24.4	1,270	1.2
Aug-29-2009	219	24.9	1,180	0.9
Aug-30-2009	217	26.0	1,360	1.0
Aug-31-2009	230	24.9	1,240	0.9
Mean	224	25.0	1,320	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	.	.	.
Jun-03-2009	18	.	.	4,180	91	.	.	.
Jun-10-2009	11	.	.	4,610	47	.	.	.
Jun-17-2009	12	.	.	4,540	30	.	.	.
Jun-24-2009	17	.	.	4,070	51	.	.	.
Jun-30-2009	19	.	.	3,870	103	.	.	.
Jul-06-2009	14	.	.	4,650	46	.	.	.
Jul-13-2009	7	.	.	5,050	19	.	.	.
Jul-20-2009	9	.	.	3,470	133	.	.	.
Jul-27-2009	14	.	.	4,060	150	.	.	.
Aug-03-2009	17	.	.	4,250	119	.	.	.
Aug-10-2009	14	.	.	4,930	123	.	.	.
Aug-17-2009	9	.	.	4,730	40	.	.	.
Aug-24-2009	22	.	.	3,760	277	.	.	.
Aug-17-2009	9	.	.	4,760	124	.	.	.

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
Jun-02-2009	25	.	.	3,740	.	37.8	.	6.5
Jun-09-2009	17	.	.	4,690	.	40.6	.	8.8
Jun-16-2009	13	.	.	4,670	.	29.2	.	7.9
Jun-23-2009	16	.	.	4,080	.	24.9	.	6.4
Jun-30-2009	19	.	.	3,670	.	27.7	.	6.7
Jul-05-2009	16	.	.	4,230	.	26.1	.	7.5
Jul-12-2009	10	.	.	5,170	.	30.6	.	8.8
Jul-19-2009	11	.	.	4,570	.	28.3	.	7.8
Jul-26-2009	14	.	.	3,260	.	21.2	.	4.7
Aug-02-2009	12	.	.	4,430	.	33.5	.	7.1
Aug-09-2009	12	.	.	5,460	.	40.2	.	8.4
Aug-16-2009	6	.	.	4,730	.	33.8	.	8.5
Aug-23-2009	21	.	.	3,260	.	21.2	.	5.6
Aug-30-2009	9	.	.	4,850	.	32.3	.	6.9

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
Jun-04-2009	16	21.9	8.3	4,170	86	46.0	6.6
Jun-11-2009	11	22.6	7.7	4,580	52	38.2	8.2
Jun-18-2009	10	23.6	7.4	4,860	37	34.4	7.7
Jun-25-2009	14	26.7	8.8	4,810	35	28.2	8.4
Jul-01-2009	16	26.4	8.0	4,080	69	22.1	6.5
Jul-07-2009	13	24.3	9.0	3,810	71	25.0	6.2
Jul-14-2009	7	23.5	8.4	4,430	39	26.0	7.6
Jul-21-2009	7	26.5	8.3	4,560	34	21.5	8.1
Jul-28-2009	11	26.4	7.3	3,230	40	19.8	5.2
Aug-04-2009	14	25.4	8.8	3,770	32	18.0	6.4
Aug-11-2009	11	25.4	8.0	4,050	36	32.7	6.2
Aug-18-2009	6	24.5	8.6	5,360	35	36.5	9.5
Aug-25-2009	20	23.5	8.3	3,650	36	19.6	6.7

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
Jun-04-2009	22	21.2	8.1	1,910	.	0.8	1.5
Jun-11-2009	14	22.3	7.9	1,120	.	0.7	1.8
Jun-18-2009	8	22.2	8.0	2,550	.	0.5	1.8
Jun-25-2009	13	24.8	8.0	1,100	.	0.6	1.6
Jul-01-2009	13	23.5	8.3	2,410	.	0.6	2.0
Jul-07-2009	10	24.0	8.3	1,970	.	0.5	1.9
Jul-14-2009	18	23.7	8.2	1,740	.	0.5	1.7
Jul-21-2009	5	23.3	8.3	2,450	.	0.5	2.2
Jul-28-2009	4	22.1	7.4	3,540	.	0.4	3.0
Aug-04-2009	10	25.2	8.6	1,500	.	0.5	1.3
Aug-11-2009	15	24.3	8.0	1,210	.	0.8	1.0
Aug-18-2009	4	23.3	8.1	2,220	.	0.6	1.8
Aug-25-2009	5	19.9	8.2	1,130	.	0.7	0.8

\*\* 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
Jun-04-2009	38	21.4	8.1	2,890	19.7	3.8
Jun-11-2009	25	22.2	7.7	3,510	18.1	5.1
Jun-18-2009	18	22.4	7.9	4,140	18.2	5.4
Jun-25-2009	27	24.0	8.0	3,440	12.2	4.9
Jul-01-2009	e29	24.9	8.4	3,730	16.9	5.5
Jul-07-2009	23	23.4	8.4	2,990	12.8	4.1
Jul-14-2009	25	23.0	8.2	2,750	7.6	3.5
Jul-21-2009	12	25.8	8.6	4,690	19.0	8.2
Jul-28-2009	15	25.4	7.5	3,550	16.9	5.9
Aug-04-2009	24	24.5	8.6	3,040	11.2	4.6
Aug-11-2009	26	24.2	8.0	2,430	12.5	3.2
Aug-18-2009	10	24.1	8.5	4,890	24.6	7.9
Aug-25-2009	25	22.2	8.5	3,170	17.8	6.7

**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
Jun-03-2009	.	8.4	3,390	45	23.8	4.6
Jun-09-2009	.	8.8	4,200	35	18.8	5.5
Jun-15-2009	.	8.4	3,740	23	14.4	5.1
Jun-23-2009	.	8.4	3,580	29	12.7	5.0
Jun-29-2009	.	9.0	3,130	23	11.6	4.6
Jul-7-2009	.	8.5	3,210	24	10.8	4.1
Jul-15-2009	.	8.7	2,840	28	6.8	3.4
Jul-21-2009	.	8.6	4,860	29	17.5	7.5
Jul-29-2009	.	8.6	3,530	24	14.0	4.6
Aug-5-2009	.	8.8	3,090	12	11.8	4.6
Aug-11-2009	.	8.1	2,360	15	12.4	3.4
Aug-18-2009	.	8.6	5,090	37	22.7	8.3
Aug-25-2009	.	8.6	3,730	12	18.2	6.6

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
Jun-04-2009	80	20.2	7.6	1,350	<0.4	0.5
Jun-11-2009	105	20.2	7.5	1,340	0.5	0.5
Jun-18-2009	107	21.8	7.9	1,250	0.6	0.5
Jun-25-2009	100	22.8	7.8	1,300	P	0.5
Jul-01-2009	92	23.7	7.2	1,270	<0.4	0.5
Jul-07-2009	140	21.6	7.9	1,110	0.5	0.4
Jul-14-2009	151	22.6	7.5	968	0.8	0.4
Jul-21-2009	125	24.7	7.8	1,020	<0.4	0.4
Jul-28-2009	130	24.9	7.1	899	<0.4	0.4
Aug-04-2009	122	23.3	7.8	900	0.4	0.3
Aug-11-2009	123	23.7	7.1	950	<0.4	0.3
Aug-18-2009	92	22.6	7.8	820	<0.4	0.4
Aug-25-2009	NA	20.9	7.6	1,100	<0.4	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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jun-03-2009	25	.	.	691	1.0	0.3
Jun-10-2009	55	.	.	656	1.2	0.4
Jun-17-2009	20	.	.	675	0.9	0.4
Jun-24-2009	20	.	.	656	1.0	0.4
Jun-30-2009	20	.	.	1,040	0.7	0.8
Jul-06-2009	10	.	.	476	0.7	0.3
Jul-13-2009	0	.	.	432	0.9	0.3
Jul-20-2009	0	.	.	930	1.4	0.9
Jul-27-2009	0	.	.	2,770	1.0	4.2
Aug-03-2009	10	.	.	2,220	0.8	3.3
Aug-10-2009	30	.	.	500	0.6	0.2
Aug-17-2009	35	.	.	550	0.7	0.2
Aug-24-2009	45	.	.	1,240	0.8	1.6
Aug-31-2009	85	.	.	640	<0.4	0.2

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jun-03-2009	20	.	.	848	2.6	0.6
Jun-10-2009	20	.	.	780	1.8	0.6
Jun-17-2009	30	.	.	699	1.1	0.4
Jun-24-2009	25	.	.	787	1.4	0.5
Jun-30-2009	25	.	.	777	1.6	0.5
Jul-06-2009	15	.	.	716	1.9	0.7
Jul-13-2009	0	.	.	528	1.1	0.4
Jul-20-2009	0	.	.	621	1.1	0.5
Jul-27-2009	0	.	.	1,030	1.9	1.1
Aug-03-2009	0	.	.	2,480	4.8	3.8
Aug-10-2009	0	.	.	4,150	26.4	6.7
Aug-17-2009	0	.	.	1,560	2.7	2.7
Aug-24-2009	0	.	.	1,080	1.5	1.6
Aug-31-2009	0	.	.	970	2.3	0.9

Note: The peak in selenium is caused by no flow conditions at this site.

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jun-03-2009	NA	.	.	985	1.0	0.7
Jun-10-2009	NA	.	.	1,060	1.7	0.8
Jun-17-2009	NA	.	.	2,830	3.6	3.1
Jun-24-2009	NA	.	.	1,050	1.0	0.9
Jun-30-2009	NA	.	.	1,330	1.1	1.1
Jul-06-2009	NA	.	.	1,430	1.4	1.4
Jul-13-2009	NA	.	.	1,590	1.7	1.9
Jul-20-2009	NA	.	.	2,240	3.4	2.2
Jul-27-2009	NA	.	.	1,370	1.5	1.3
Aug-03-2009	NA	.	.	780	0.6	0.5
Aug-10-2009	NA	.	.	880	1.0	0.6
Aug-17-2009	NA	.	.	900	1.2	0.7
Aug-24-2009	NA	.	.	690	0.6	0.4
Aug-31-2009	NA	.	.	1,440	1.7	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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jun-03-2009	NA	.	.	1,040	1.2	1.1
Jun-10-2009	NA	.	.	992	1.4	1.0
Jun-17-2009	NA	.	.	968	1.5	1.0
Jun-24-2009	NA	.	.	1,040	1.0	0.9
Jun-30-2009	NA	.	.	1,080	1.1	1.5
Jul-06-2009	NA	.	.	1,200	1.3	1.7
Jul-13-2009	NA	.	.	1,010	1.0	1.3
Jul-20-2009	NA	.	.	1,020	0.7	1.1
Jul-27-2009	NA	.	.	884	1.1	1.2
Aug-03-2009	NA	.	.	860	0.6	0.7
Aug-10-2009	NA	.	.	750	0.9	0.8
Aug-17-2009	NA	.	.	770	0.8	0.6
Aug-24-2009	NA	.	.	720	0.5	0.4
Aug-31-2009	NA	.	.	660	<0.4	0.3

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
Jun-03-2009	.	.	.	686	0.6	0.3
Jun-10-2009	.	.	.	672	0.8	0.3
Jun-17-2009	.	.	.	657	0.8	0.3
Jun-24-2009	.	.	.	682	0.5	0.4
Jun-30-2009	.	.	.	634	0.6	0.3
Jul-06-2009	.	.	.	462	0.7	0.3
Jul-13-2009	.	.	.	373	0.6	0.2
Jul-20-2009	.	.	.	454	0.4	0.2
Jul-27-2009	.	.	.	391	0.4	0.2
Aug-03-2009	.	.	.	440	0.6	0.2
Aug-10-2009	.	.	.	580	0.5	0.3
Aug-17-2009	.	.	.	550	0.4	0.2
Aug-24-2009	.	.	.	560	0.4	0.2
Aug-31-2009	.	.	.	600	0.4	0.2

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
Jun-04-2009	92	21.8	7.7	1,740	<0.4	0.5
Jun-11-2009	158	22.5	7.0	1,050	0.4	0.4
Jun-18-2009	132	23.3	7.1	1,510	0.5	0.5
Jun-25-2009	136	24.4	7.1	1,440	<0.4	0.6
Jul-01-2009	111	24.6	6.9	1,460	<0.4	0.5
Jul-07-2009	128	22.7	7.5	1,240	0.5	0.5
Jul-14-2009	152	23.6	7.6	1,020	0.5	0.4
Jul-21-2009	122	25.6	7.4	1,130	<0.4	0.4
Jul-28-2009	116	25.2	7.1	1,110	<0.4	0.4
Aug-04-2009	134	24.7	8.0	920	<0.4	0.3
Aug-11-2009	124	24.6	7.2	1,070	<0.4	0.4
Aug-18-2009	90	24.0	7.8	670	0.4	0.5
Aug-25-2009	108	21.6	7.3	1,270	<0.4	0.5

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
Jun-02-2009	.	.	.	1,120	1.1	1.1
Jun-09-2009	.	.	.	1,800	2.0	0.9
Jun-16-2009	.	.	.	2,020	3.7	1.4
Jun-23-2009	.	.	.	931	0.4	0.1
Jun-30-2009	.	.	.	1,200	0.7	1.7
Jul-07-2009	.	.	.	1,720	1.9	1.1
Jul-14-2009	.	.	.	1,180	1.7	1.5
Jul-21-2009	.	.	.	1,550	2.1	0.8
Jul-29-2009	.	.	.	2,420	3.7	3.2
Aug-04-2009	.	.	.	1,280	1.0	0.7
Aug-11-2009	.	.	.	2,420	20.3	2.8
Aug-18-2009	.	.	.	1,270	10.5	1.0
Aug-25-2009	.	.	.	1,840	2.7	1.5

Outside of normal range.



**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.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>pH</b>	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>.</b>	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Jun-04-2009	371	22.7	8.2	1,400	3.0	1.0
Jun-11-2009	416	22.6	7.7	1,070	1.5	0.7
Jun-18-2009	339	23.5	7.6	1,250	1.4	0.7
Jun-25-2009	337	25.3	8.2	1,240	1.2	0.7
Jul-01-2009	276	25.0	7.9	1,370	1.4	0.8
Jul-07-2009	296	22.5	8.0	1,290	1.5	0.7
Jul-14-2009	273	22.9	7.7	1,310	1.3	0.8
Jul-21-2009	201	24.6	7.8	1,550	1.2	0.9
Jul-28-2009	188	24.7	7.4	1,590	1.6	1.1
Aug-04-2009	232	23.7	7.4	1,180	0.8	0.6
Aug-11-2009	220	24.3	7.6	1,320	1.6	0.8
Aug-18-2009	210	22.9	7.8	1,230	0.8	0.6
Aug-25-2009	240	21.7	7.7	1,330	1.3	0.9

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from September 2008 to August 2009. 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	%	%	%	%	%	%
Sep-2008	90	95	93	98	95	98
Oct-2008	100	98	95	100	93	98
Nov-2008	93	95	98	100	95	98
Dec-2008	100	100	100	95	100	100
Jan-2009	95	95	93	93	93	95
Feb-2009	98	95	100	98	100	95
Mar-2009	98	100	100	100	98	95
Apr-2009	100	93	95	95	73	98
May-2009	98	98	98	100	93	95
Jun-2009	95	95	95	93	93	95
Jul-2009	95	98	93	98	98	100
Aug-2010	98	98	88	93	100	100

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from September 2008 to August 2009. 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
Sep-2008	0.30	0.36	0.30	0.33	0.33	0.28
Oct-2008	0.43	0.44	0.38	0.41	0.37	0.38
Nov-2008	0.32*	0.35	0.31	0.32*	0.38	0.35
Dec-2008	0.34	0.35	0.35	0.34	0.34	0.32
Jan-2009	0.35	0.37	0.36	0.33	0.30	0.36
Feb-2009	0.51	0.53	0.49	0.46	0.50	0.35
Mar-2009	0.50	0.50	0.45	0.50	0.44	0.44
Apr-2009	0.33	0.43	0.35	0.40	0.30	0.38
May-2009	0.48	0.41	0.41	0.42	0.42	0.42
Jun-2009	0.42	0.40	0.46	0.44	0.43	0.45
Jul-2009	0.46	0.49	0.50	0.52	0.44	0.47
Aug-2010	0.42	0.40	0.41	0.38	0.43	0.52

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from September 2008 to August 2009. 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	%	%	%	%	%	%
Sep-2008	90	90	100	90	100	100
Oct-2008	90	100	90	90	100	100
Nov-2008	100	100	100	100	90	90
Dec-2008	100	100	100	100	100	90
Dec-2009	90	100	100	100	100	100
Feb-2009	100	80	90	70	90	80
Mar-2009	100	100	100	100	90	90
Apr-2009	100	100	80	90	90	100
May-2009	80	100	90	100	100	100
Jun-2009	100	0*	30*	90	100	100
Jul-2009	90	70	100	100	90	90
Aug-2010	100	100	100	100	100	100

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from September 2008 to August 2009. 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
Sep-2008	27.3	24.9	36.6	22.3	27.3	23.8
Oct-2008	24.4	28.2	25.6	22.3	24.9	26.3
Nov-2008	57.7	43.0	50.1	41.2	46.6	30.1
Dec-2008	32.6	26.0	26.3	22.6	30.3	21.2
Jan-2009	19.7	22.4	21.0	24.1	19.0	19.3
Feb-2009	24.0	19.1	23.9	19.0	21.9	18.9
Mar-2009	43.9	34.5	41.2	35.6	37.5	27.2
Apr-2009	45.4	52.3	23.1	30.2	30.2	31.6
May-2009	22.1	31.8	36.3	29.3	29.9	23.6
Jun-2009	42.9	4.8*	13.6*	35.9	28.2	28.6
Jul-2009	34.2	21.6	38.5	32.1	26.4	22.4
Aug-2010	42.6	40.9	38.5	37.8	30.6	24.7

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from September 2008 to August 2009. 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 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
Sep-2008	24.7	18.2*	10.0*	17.5*	26.5	17.1
Oct-2008	25.8	33.9	30.6	30.7	24.3	22.5
Nov-2008	15.8*	23.7	25.3	24.0	20.5	21.6
Dec-2008	17.5	23.9	21.0	20.0	20.3	18.4
Jan-2009	2.5*	27.9	20.2	25.1	3.2++++	22.6
Feb-2009	14.4*	36.5	42.9	33.8	34.9	29.4
Mar-2009	12.9*	32.9	31.3	34.0	27.4	29.9
Apr-2009	20.9*	22.2	27.0	24.3	25.0	19.3
May-2009	21.6	33.2	25.2	11.4*	21.4	22.8
Jun-2009	19.8	20.2	24.4	21.7	20.1	17.0
Jul-2009	22.5	28.4	28.2	26.8	22.9	19.7
Aug-2010	21.7	26.4	24.6	26.6	22.0	23.0

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, June 2009 to August 2009.**

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
Jun-15-2009	34	0.6	25	0.4	<0.4
Jun-17-2009	35	0.5	17	0.4	<0.4
Jun-19-2009	26	0.6	13	<0.4	<0.4
Jul-13-2009	22	<0.4	15	<0.4	<0.4
Jul-15-2009	27	0.4	7.0	<0.4	<0.4
Jul-17-2009	23	0.5	13	<0.4	<0.4
Aug-10-2009	31	0.6	13	<0.4	<0.4
Aug-12-2009	27	0.6	15	<0.4	<0.4
Aug-14-2009	27	0.4	14	<0.4	<0.4

**Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, June 2009 to August 2009.**

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
Jun-15-2009	21	12	30	62	5
Jun-17-2009	28	10	21	67	4
Jun-19-2009	30	20	38	70	16
Jul-13-2009	33	19	19	51	25
Jul-15-2009	31	19	22	50	24
Jul-17-2009	34	37	39	48	24
Aug-10-2009	21	12	30	62	5
Aug-12-2009	28	10	21	67	4
Aug-14-2009	30	20	38	70	16

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.
L	Result may be biased low. Sample was not preserved in the field
†	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 <sup>6</sup> 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