

## check List

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**GRASSLAND BYPASS PROJECT**

**MONTHLY DATA REPORT**

**April 2009**

***DCRT DRAFT***

August 2009

**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), April 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>
Apr-01-2009	20	4,220
Apr-02-2009	22	4,130
Apr-03-2009	29	4,320
Apr-04-2009	29	4,330
Apr-05-2009	26	4,440
Apr-06-2009	20	4,540
Apr-07-2009	13	4,740
Apr-08-2009	16	3,670
Apr-09-2009	16	3,650
Apr-10-2009	19	3,570
Apr-11-2009	18	3,700
Apr-12-2009	21	3,220
Apr-13-2009	19	3,150
Apr-14-2009	21	3,370
Apr-15-2009	27	4,120
Apr-16-2009	23	4,210
Apr-17-2009	20	4,090
Apr-18-2009	19	4,120
Apr-19-2009	20	4,300
Apr-20-2009	18	4,440
Apr-21-2009	18	4,460
Apr-22-2009	21	4,560
Apr-23-2009	17	4,560
Apr-24-2009	15	4,550
Apr-25-2009	14	4,880
Apr-26-2009	14	4,640
Apr-27-2009	18	4,450
Apr-28-2009	26	3,830
Apr-29-2009	25	3,700
Apr-30-2009	16	3,770
.	.	.
Mean	20	4,120

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

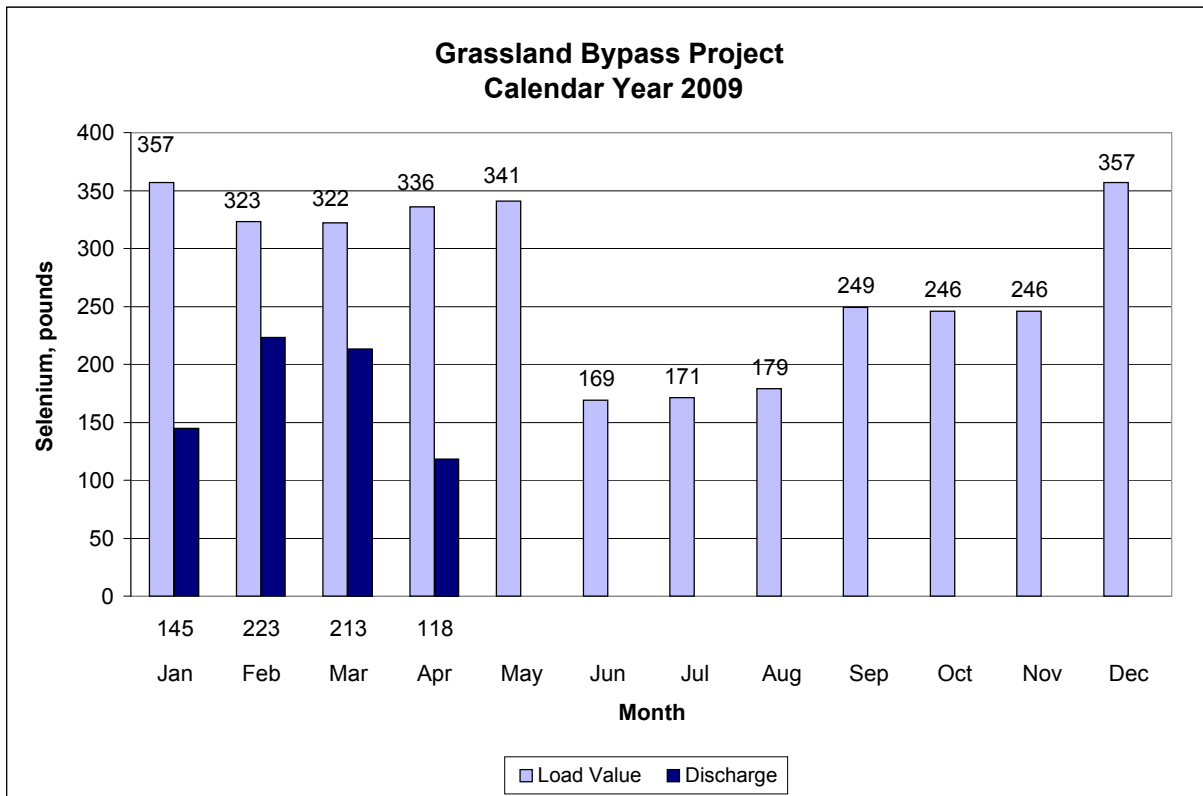
See Table 27 for explanation of footnotes and agency abbreviations.

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
Apr-01-2009	20	16.7	7.0	4,330	37.4	4.0
Apr-02-2009	21	17.2	7.1	4,380	42.4	4.8
Apr-03-2009	19	16.6	7.6	4,360	42.3	4.4
Apr-04-2009	29	15.1	7.3	4,620	42.7	6.8
Apr-05-2009	30	16.3	7.9	4,840	45.0	7.3
Apr-06-2009	25	17.0	7.5	4,770	42.9	5.8
Apr-07-2009	20	17.6	7.9	4,850	50.4	5.4
Apr-08-2009	13	17.2	7.5	5,080	56.0	4.0
Apr-09-2009	15	16.9	7.6	4,870	49.2	3.9
Apr-10-2009	15	17.2	8.1	4,910	50.7	4.0
Apr-11-2009	17	17.4	8.0	4,950	45.5	4.2
Apr-12-2009	17	18.0	8.5	4,980	45.3	4.2
Apr-13-2009	19	19.2	9.4	5,160	33.4	3.5
Apr-14-2009	17	18.0	7.6	4,690	18.0	1.6
Apr-15-2009	17	15.0	6.8	4,200	26.3	2.5
Apr-16-2009	25	15.4	6.8	4,110	25.9	3.5
Apr-17-2009	21	16.5	6.1	4,070	24.4	2.8
Apr-18-2009	19	17.7	5.6	3,590	25.6	2.7
Apr-19-2009	17	19.3	5.9	3,730	29.1	2.7
Apr-20-2009	18	21.3	7.8	4,360	39.4	3.8
Apr-21-2009	17	22.7	7.8	4,710	48.0	4.3
Apr-22-2009	16	24.1	7.7	4,940	38.8	3.4
Apr-23-2009	18	23.4	7.9	4,670	34.5	3.4
Apr-24-2009	14	22.2	8.3	4,770	33.4	2.6
Apr-25-2009	13	20.1	8.6	4,760	42.7	3.0
Apr-26-2009	12	19.5	8.9	4,970	42.4	2.7
Apr-27-2009	12	19.2	9.5	5,060	44.7	2.8
Apr-28-2009	15	18.0	9.4	5,270	40.2	3.3
Apr-29-2009	23	17.9	9.2	5,400	47.6	6.0
Apr-30-2009	27	17.6	9.8	5,610	35.3	5.1
.	.	.	.	.	.	.
<b>Mean</b>	19	18.3	7.8	4,700	39.3	3.9
<b>Total Acre-feet</b>	<b>1,120</b>					
<b>Total (lbs)</b>						<b>118</b>

<b>Load Limitation for April 2009 (lbs)</b>	<b>336</b>
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◆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), April 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>
Apr-01-2009	70	16.7	3,250
Apr-02-2009	67	17.5	3,190
Apr-03-2009	72	16.2	2,990
Apr-04-2009	87	15.0	3,110
Apr-05-2009	72	16.3	3,510
Apr-06-2009	92	17.8	3,270
Apr-07-2009	96	17.9	3,060
Apr-08-2009	65	16.9	3,150
Apr-09-2009	63	16.5	3,030
Apr-10-2009	61	17.0	3,220
Apr-11-2009	62	17.4	3,330
Apr-12-2009	59	18.6	3,370
Apr-13-2009	53	19.4	3,550
Apr-14-2009	57	17.4	3,130
Apr-15-2009	54	14.4	3,050
Apr-16-2009	54	15.4	3,340
Apr-17-2009	46	17.1	3,510
Apr-18-2009	38	19.1	3,600
Apr-19-2009	35	21.5	3,570
Apr-20-2009	33	22.8	3,820
Apr-21-2009	31	23.3	4,230
Apr-22-2009	28	23.9	4,150
Apr-23-2009	30	22.9	3,800
Apr-24-2009	26	21.1	4,060
Apr-25-2009	22	19.6	4,340
Apr-26-2009	22	19.4	4,460
Apr-27-2009	26	18.7	3,930
Apr-28-2009	28	17.9	4,080
Apr-29-2009	40	18.0	3,740
Apr-30-2009	39	18.6	4,000
Mean	51	18.5	3,560

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), April 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>
Apr-01-2009	113	16.5	2,040
Apr-02-2009	113	17.4	1,920
Apr-03-2009	107	16.0	1,970
Apr-04-2009	111	15.0	1,980
Apr-05-2009	113	16.0	2,000
Apr-06-2009	108	17.3	2,010
Apr-07-2009	105	17.2	2,020
Apr-08-2009	98	16.4	1,990
Apr-09-2009	96	16.1	1,850
Apr-10-2009	110	16.4	1,800
Apr-11-2009	129	16.5	1,620
Apr-12-2009	141	17.4	1,400
Apr-13-2009	143	18.2	1,360
Apr-14-2009	144	16.9	1,380
Apr-15-2009	145	14.6	NA
Apr-16-2009	147	14.8	NA
Apr-17-2009	115	16.7	NA
Apr-18-2009	90	19.1	NA
Apr-19-2009	85	21.4	NA
Apr-20-2009	87	23.0	NA
Apr-21-2009	78	23.5	NA
Apr-22-2009	79	23.6	1,860
Apr-23-2009	84	22.2	1,710
Apr-24-2009	87	19.9	1,600
Apr-25-2009	93	17.7	1,490
Apr-26-2009	81	17.8	1,550
Apr-27-2009	78	17.6	1,650
Apr-28-2009	70	16.6	1,640
Apr-29-2009	78	17.3	1,670
Apr-30-2009	81	18.1	1,540
.	.	.	.
Mean	104	17.9	1,740



Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), April 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
Apr-01-2009	570	17.1	1,890	2.9
Apr-02-2009	536	18.0	1,820	1.8
Apr-03-2009	513	17.2	1,820	1.7
Apr-04-2009	504	16.1	1,810	1.9
Apr-05-2009	494	16.9	1,880	2.0
Apr-06-2009	491	18.2	1,880	2.9
Apr-07-2009	500	18.1	1,880	2.6
Apr-08-2009	525	17.4	1,790	2.0
Apr-09-2009	525	16.8	1,690	1.8
Apr-10-2009	534	17.0	1,640	2.0
Apr-11-2009	545	17.5	1,530	1.8
Apr-12-2009	566	18.5	1,490	1.8
Apr-13-2009	570	19.1	1,450	1.8
Apr-14-2009	553	18.0	1,380	1.7
Apr-15-2009	561	15.5	1,390	1.7
Apr-16-2009	542	16.2	1,420	1.1
Apr-17-2009	550	17.7	1,400	1.9
Apr-18-2009	515	19.4	1,460	1.6
Apr-19-2009	495	21.4	1,560	1.6
Apr-20-2009	485	22.9	1,600	1.3
Apr-21-2009	446	23.7	1,630	1.6
Apr-22-2009	409	24.0	1,690	2.0
Apr-23-2009	392	23.2	1,780	2.0
Apr-24-2009	406	21.1	1,730	1.8
Apr-25-2009	407	19.1	1,650	1.6
Apr-26-2009	402	19.2	1,570	1.3
Apr-27-2009	431	19.7	1,480	1.3
Apr-28-2009	428	18.7	1,470	1.6
Apr-29-2009	387	18.8	1,560	1.6
Apr-30-2009	395	19.1	1,550	2.1
.	.	.	.	.
Mean	489	18.9	1,630	1.8

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	.	.	.
Feb-04-2009	23	.	.	4,850	188	.	.	.
Feb-11-2009	23	.	.	4,640	119	.	.	.
Feb-18-2009	30	.	.	4,020	169	.	.	.
Feb-25-2009	36	.	.	4,030	220	.	.	.
Mar-04-2009	35	.	.	4,040	207	.	.	.
Mar-11-2009	20	.	.	4,850	57	.	.	.
Mar-18-2009	20	.	.	4,620	28	.	.	.
Mar-25-2009	31	.	.	4,430	70	.	.	.
Apr-01-2009	20	.	.	4,670	109	.	.	.
Apr-08-2009	16	.	.	3,860	65	.	.	.
Apr-15-2009	27	.	.	4,580	218	.	.	.
Apr-22-2009	21	.	.	5,080	228	.	.	.
Apr-29-2009	25	.	.	4,380	131	.	.	.

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
Feb-03-2009	23	.	.	4,540	.	57.1	.	8.1
Feb-10-2009	27	.	.	4,310	.	58.6	.	7.4
Feb-17-2009	28	.	.	4,570	.	55.5	.	7.3
Feb-24-2009	34	.	.	4,010	.	44.1	.	6.5
Mar-03-2009	39	.	.	3,800	.	38.4	.	6.2
Mar-10-2009	25	.	.	4,480	.	51.5	.	7.6
Mar-17-2009	19	.	.	4,730	.	45.8	.	7.8
Mar-24-2009	32	.	.	4,250	.	47.4	.	6.5
Mar-31-2009	21	.	.	4,450	.	45.9	.	7.3
Apr-07-2009	13	.	.	4,170	.	19.5	.	7.3
Apr-14-2009	21	.	.	3,830	.	26.7	.	6.1
Apr-21-2009	18	.	.	4,790	.	41.6	.	7.8
Apr-28-2009	26	.	.	4,390	.	41.3	.	8.8

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
Feb-05-2009	27	12.8	7.7	4,540	36	54.2	7.4
Feb-10-2009	34	10.7	7.1	4,150	26	52.2	6.9
Feb-19-2009	34	10.3	7.2	4,330	34	47.8	7.4
Feb-26-2009	39	14.8	7.1	3,830	26	41.2	5.7
Mar-05-2009	37	13.4	6.9	3,560	42	33.4	5.5
Mar-12-2009	22	18.0	7.1	4,390	31	48.2	7.0
Mar-19-2009	21	17.2	8.1	4,720	58	44.1	7.6
Mar-26-2009	31	15.1	8.2	4,410	50	54.3	7.0
Apr-02-2009	21	16.0	7.2	4,250	46	41.6	7.0
Apr-09-2009	15	16.1	8.0	4,660	42	44.5	6.8
Apr-16-2009	25	13.7	7.4	4,120	66	28.2	6.8
Apr-23-2009	18	22.3	7.5	4,510	77	32.9	8.3
Apr-30-2009	27	17.0	8.2	5,220	84	34.4	9.3

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
Feb-05-2009	84	12.8	7.8	2,060	.	<0.4	1.7
Feb-10-2009	116	10.0	7.8	2,110	.	<0.4	1.7
Feb-19-2009	114	10.6	7.7	2,180	.	<0.4	1.9
Feb-26-2009	81	14.6	7.7	2,350	.	0.4	2.0
Mar-05-2009	115	12.7	7.7	2,230	.	0.5	2.1
Mar-12-2009	150	12.0	7.9	2,210	.	0.7	2.1
Mar-19-2009	165	17.1	8.1	2,250	.	1.1	2.1
Mar-26-2009	115	15.1	8.2	2,420	.	0.8	2.2
Apr-02-2009	46	15.1	8.1	2,590	.	0.6	2.2
Apr-09-2009	48	15.5	8.1	2,370	.	0.8	2.3
Apr-16-2009	29	13.6	8.0	2,400	.	0.7	2.2
Apr-23-2009	12	18.4	7.8	3,580	.	0.5	3.1
Apr-30-2009	12	18.1	8.4	2,650	.	0.6	2.0

\*\* 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
Feb-05-2009	111	12.7	7.8	2,750	13.2	3.1
Feb-10-2009	150 e	10.2	7.6	2,640	11.6	2.8
Feb-19-2009	148	10.6	7.6	2,750	11.0	3.1
Feb-26-2009	120	15.1	7.6	2,840	11.0	3.1
Mar-05-2009	152	12.9	7.6	2,690	8.8	2.9
Mar-12-2009	172	12.3	7.7	2,530	6.2	2.6
Mar-19-2009	186	17.0	8.0	2,520	5.4	2.6
Mar-26-2009	146	15.2	8.1	2,810	10.0	3.1
Apr-02-2009	67	15.4	8.0	3,300	12.3	3.7
Apr-09-2009	63	15.5	8.1	3,180	11.4	3.5
Apr-16-2009	54	13.4	8.0	3,210	10.8	4.2
Apr-23-2009	30	20.8	7.9	4,400	22.6	6.6
Apr-30-2009	39	17.3	8.3	3,970	23.4	6.6

**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
Feb-03-2009	.	8.1	2,590	31	7.1	2.6
Feb-10-2009	.	7.8	2,730	22	11.2	2.9
Feb-19-2009	.	7.5	2,830	26	10.9	3.0
Feb-25-2009	.	7.9	3,070	41	9.7	3.1
Mar-10-2009	.	8.1	2,870	44	12.0	2.9
Mar-18-2009	.	8.1	2,520	75	5.1	2.7
Mar-24-2009	.	8.3	2,740	69	8.6	2.9
Mar-31-2009	.	7.8	3,360	52	10.2	3.9
Apr-08-2009	.	8.3	3,630	58	9.4	4.0
Apr-14-2009	.	7.9	3,400	47	6.1	4.3
Apr-22-2009	.	8.1	4,790	26	24.2	6.4
Apr-28-2009	.	8.3	4,690	27	22.0	6.5

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
Feb-05-2009	89	12.0	7.7	1,900	<0.4	1.2
Feb-10-2009	169	9.8	7.8	1,530	0.6	0.8
Feb-19-2009	151	10.3	7.6	1,770	0.5	1.1
Feb-26-2009	172	14.3	7.6	1,960	0.8	1.1
Mar-05-2009	152	12.7	6.5	1,900	<0.4	0.9
Mar-12-2009	135	12.0	7.6	2,090	0.5	1.2
Mar-19-2009	195	16.4	7.7	1,900	0.6	1.2
Mar-26-2009	174	15.1	7.8	1,920	0.6	1.2
Apr-02-2009	113	15.5	8.1	2,000	0.6	1.1
Apr-09-2009	96	15.4	7.5	1,840	0.5	0.9
Apr-16-2009	147	12.9	7.8	1,460	0.5	0.8
Apr-23-2009	84	20.1	7.6	1,830	0.4	0.9
Apr-30-2009	81	15.3	7.1	1,490	0.6	0.6

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
Feb-04-2009	20	.	.	690	0.9	0.3
Feb-11-2009	5	.	.	960	2.0	0.5
Feb-18-2009	5	.	.	890	0.9	0.5
Feb-25-2009	5	.	.	980	2.6	0.5
Mar-04-2009	0	.	.	2,460	4.0	3.1
Mar-11-2009	0	.	.	2,690	2.5	4.1
Mar-18-2009	0	.	.	1,600	2.6	2.1
Mar-25-2009	0	.	.	1,930	2.0	2.4
Apr-01-2009	0	.	.	1,830	1.4	2.2
Apr-08-2009	0	.	.	2,050	1.5	2.5
Apr-15-2009	15	.	.	788	1.2	0.5
Apr-22-2009	30	.	.	637	0.9	0.4
Apr-29-2009	30	.	.	644	1.3	0.3

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
Feb-04-2009	0	.	.	1,550	1.4	1.8
Feb-11-2009	35	.	.	970	1.5	0.5
Feb-18-2009	25	.	.	900	0.8	0.5
Feb-25-2009	25	.	.	1,020	2.6	0.7
Mar-04-2009	0	.	.	1,520	2.1	1.5
Mar-11-2009	0	.	.	1,710	1.1	2.6
Mar-18-2009	0	.	.	1,670	0.6	2.8
Mar-25-2009	0	.	.	1,710	1.0	2.2
Apr-01-2009	0	.	.	1,910	1.2	2.4
Apr-08-2009	0	.	.	2,030	0.9	2.5
Apr-15-2009	10	.	.	2,040	1.3	2.7
Apr-22-2009	25	.	.	713	1.3	0.5
Apr-29-2009	40	.	.	816	2.8	0.6

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
Feb-04-2009	NA	.	.	1,560	1.0	1.5
Feb-11-2009	NA	.	.	1,900	1.3	1.8
Feb-18-2009	NA	.	.	950	0.6	0.8
Feb-25-2009	NA	.	.	1,990	1.7	2.2
Mar-04-2009	NA	.	.	2,260	2.2	2.5
Mar-11-2009	NA	.	.	2,830	3.3	3.6
Mar-18-2009	NA	.	.	1,760	2.3	1.9
Mar-25-2009	NA	.	.	1,550	1.6	1.3
Apr-01-2009	NA	.	.	1,700	1.6	1.6
Apr-08-2009	NA	.	.	2,110	1.0	2.2
Apr-15-2009	NA	.	.	2,110	2.0	2.1
Apr-22-2009	NA	.	.	1,640	1.8	1.7
Apr-29-2009	NA	.	.	1,630	1.5	1.5

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
Feb-04-2009	NA	.	.	1,600	1.0	1.5
Feb-11-2009	NA	.	.	1,840	1.4	1.8
Feb-18-2009	NA	.	.	1,860	0.8	1.9
Feb-25-2009	NA	.	.	2,150	1.7	2.6
Mar-04-2009	NA	.	.	1,990	0.7	2.0
Mar-11-2009	NA	.	.	2,310	0.7	2.8
Mar-18-2009	NA	.	.	2,120	1.0	2.5
Mar-25-2009	NA	.	.	2,070	0.8	2.3
Apr-01-2009	NA	.	.	2,030	1.4	2.0
Apr-08-2009	NA	.	.	2,860	1.1	3.6
Apr-15-2009	NA	.	.	1,480	0.9	1.4
Apr-22-2009	NA	.	.	1,410	1.4	1.4
Apr-29-2009	NA	.	.	1,150	1.0	0.9

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
Feb-04-2009	.	.	.	840	2.5	0.5
Feb-11-2009	.	.	.	810	0.8	0.3
Feb-18-2009	.	.	.	900	1.0	0.4
Feb-25-2009	.	.	.	980	3.2	0.5
Mar-04-2009	.	.	.	1,010	2.9	0.6
Mar-11-2009	.	.	.	900	1.2	0.5
Mar-18-2009	.	.	.	800	1.3	0.5
Mar-25-2009	.	.	.	580	0.6	0.3
Apr-01-2009	.	.	.	651	0.8	0.3
Apr-08-2009	.	.	.	872	1.0	0.5
Apr-15-2009	.	.	.	891	1.2	0.5
Apr-22-2009	.	.	.	571	1.0	0.3
Apr-29-2009	.	.	.	655	1.1	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
Feb-05-2009	139	12.1	7.0	1,800	0.6	1.0
Feb-10-2009	205	9.8	7.7	1,490	0.8	0.7
Feb-19-2009	427	10.1	7.9	910	<0.4	0.4
Feb-26-2009	387	14.3	7.3	1,160	0.6	0.6
Mar-05-2009	274	13.3	7.0	1,640	<0.4	0.7
Mar-12-2009	259	12.4	7.2	1,590	0.4	0.8
Mar-19-2009	256	16.9	7.8	1,790	0.6	1.1
Mar-26-2009	227	15.0	8.1	2,020	0.7	1.1
Apr-02-2009	168	15.6	7.3	2330	<0.4	1.0
Apr-09-2009	156	16.1	7.1	2240	<0.4	0.9
Apr-16-2009	200	14.2	7.3	1640	0.5	0.7
Apr-23-2009	114	21.3	7.2	2400	0.5	0.9
Apr-30-2009	117	17.3	7.0	1980	0.5	0.7

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
Feb-03-2009	.	.	.	2,360	2.6	1.7
Feb-10-2009	.	.	.	1,620	<0.4	1.5
Feb-17-2009	.	.	.	1,570	<0.4	1.3
Feb-25-2009	.	.	.	1,610	<0.4	1.4
Mar-03-2009	.	.	.	1,700	<0.4	1.5
Mar-10-2009	.	.	.	1,810	2.7	1.3
Mar-17-2009	.	.	.	2,030	<0.4	1.9
Mar-24-2009	.	.	.	2,410	3.9	1.7
Apr-07-2009	.	.	.	2,790	3.4	1.9
Apr-14-2009	.	.	.	2,280	3.2	1.5
Apr-21-2009	.	.	.	2,780	3.2	1.6



**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>
Feb-05-2009	579	12.2	7.5	1,460	2.0	1.0
Feb-10-2009	682	10.5	7.7	1,480	3.4	1.1
Feb-19-2009	1,080	10.1	7.8	910	1.5	0.7
Feb-26-2009	867	14.6	7.7	1,250	1.9	0.9
Mar-05-2009	943	13.0	7.3	1,320	1.9	0.9
Mar-12-2009	890	12.6	7.5	1,390	1.9	1.0
Mar-19-2009	810	17.2	8.0	1,630	1.6	1.2
Mar-26-2009	704	15.6	8.2	1,680	2.8	1.1
Apr-02-2009	536	16.5	7.8	1,760	1.7	1.0
Apr-09-2009	525	16.5	7.5	1,640	1.7	1.0
Apr-16-2009	542	15.0	7.4	1,370	0.9	0.8
Apr-23-2009	392	21.6	7.4	1,840	1.9	1.0
Apr-30-2009	395	17.7	7.3	1,610	2.0	0.9

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2008 to April 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	%	%	%	%	%	%
May-2008	98	95	98	95	98	100
Jun-2008	98	95	100	93	100	98
Jul-2008	90	98	100	90	100	95
Aug-2008	98	93	95	98	100	100
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

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from May 2008 to April 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
May-2008	0.31	0.31	0.29*	0.31	0.34	0.32
Jun-2008	0.31	0.33	0.36	0.31	0.31	0.31
Jul-2008	0.32	0.34	0.30	0.26	0.29	0.25
Aug-2008	0.36	0.33	0.37	0.33	0.34	0.32
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

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2008 to April 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	%	%	%	%	%	%
May-2008	80	70	80	100	90	90
Jun-2008	100	100	100	90	90	90
Jul-2008	100	80	100	100	90	100
Aug-2008	100	70	70	100	100	100
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

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2008 to April 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
May-2008	22.2	19.6	23.5	33.1	25.7	28.8
Jun-2008	23.4	21.0	29.3	23.6	26.6	26.0
Jul-2008	19.1	22.4	23.8	18.4	21.4	24.3
Aug-2008	26.5	15.3*	23.3	30.2	24.1	29.5
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

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2008 to April 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
May-2008	17.1	30.5	22.3	14.2*	21.6	19.8
Jun-2008	15.9*	20.9	8.6*	22.7	20.5	20.1
Jul-2008	22.1	27.7	22.7	26.1	21.5	12.6
Aug-2008	16.8*	23.3	18.2*	19.5	20.9	20.8
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

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2009 to April 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
Feb-09-2009	53	<0.4	12	0.7	1.0**
Feb-11-2009	42	<0.4	11	0.5	1.0**
Feb-13-2009	47	<0.4	12	<0.4	0.7
Mar-09-2009	49	0.5	8.7	0.4	<0.4
Mar-11-2009	45	0.5	8.1	<0.4	<0.4
Mar-13-2009	49	0.5	6.8	0.4	0.7
Apr-06-2009	39	0.5	10	<0.4	<0.4
Apr-08-2009	56	0.5	10	<0.4	<0.4
Apr-10-2009	49	0.5	11	<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, February 2009 to April 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
Feb-09-2009	44	35	41	101	3
Feb-11-2009	32	23	24	46	3
Feb-13-2009	42	31	40	59	12
Mar-09-2009	42	98	91	53	11
Mar-11-2009	30	133	78	40	11
Mar-13-2009	56	90	117	53	26
Apr-06-2009	44	70	95	58	18
Apr-08-2009	34	132	92	47	11
Apr-10-2009	49	108	131	81	11

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