

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

January 2009

April 15, 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



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MONTHLY DATA REPORT

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jan-01-2009	13	4,260
Jan-02-2009	13	4,110
Jan-03-2009	13	4,170
Jan-04-2009	12	4,250
Jan-05-2009	12	4,300
Jan-06-2009	12	4,230
Jan-07-2009	12	4,190
Jan-08-2009	13	4,240
Jan-09-2009	14	4,220
Jan-10-2009	15	4,360
Jan-11-2009	14	4,450
Jan-12-2009	13	4,170
Jan-13-2009	12	4,090
Jan-14-2009	9	4,180
Jan-15-2009	9	4,240
Jan-16-2009	9	4,260
Jan-17-2009	8	4,300
Jan-18-2009	8	4,310
Jan-19-2009	8	4,370
Jan-20-2009	8	4,410
Jan-21-2009	10	4,920
Jan-22-2009	14	5,700
Jan-23-2009	19	4,360
Jan-24-2009	40	3,410
Jan-25-2009	40	3,520
Jan-26-2009	28	4,020
Jan-27-2009	27	4,070
Jan-28-2009	30	3,410
Jan-29-2009	28	3,600
Jan-30-2009	23	4,090
Jan-31-2009	21	4,380
Mean	16	4,210

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), January 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
Jan-01-2009	16	9.4	6.1	4,300	46.4	4.1
Jan-02-2009	18	9.4	6.2	4,270	44.3	4.2
Jan-03-2009	17	8.9	6.4	4,300	45.5	4.0
Jan-04-2009	17	8.3	6.0	4,240	38.8	3.6
Jan-05-2009	17	8.2	6.0	4,140	35.1	3.2
Jan-06-2009	17	8.3	6.1	4,100	35.2	3.2
Jan-07-2009	17	8.1	6.1	4,150	43.9	4.0
Jan-08-2009	16	8.1	6.0	4,190	44.3	3.9
Jan-09-2009	17	8.3	5.5	4,060	44.6	4.2
Jan-10-2009	18	8.6	5.4	4,080	44.9	4.4
Jan-11-2009	19	8.8	5.5	4,100	45.9	4.8
Jan-12-2009	19	9.2	5.5	4,140	47.5	4.8
Jan-13-2009	18	9.6	5.6	4,130	45.9	4.4
Jan-14-2009	16	10.0	5.7	4,170	48.6	4.3
Jan-15-2009	14	10.1	5.8	4,220	51.2	3.9
Jan-16-2009	13	10.2	5.8	4,150	45.1	3.2
Jan-17-2009	13	10.5	6.1	4,270	44.8	3.2
Jan-18-2009	13	10.9	6.1	4,260	45.8	3.2
Jan-19-2009	13	10.9	5.8	4,180	45.8	3.2
Jan-20-2009	13	11.1	5.3	4,070	42.0	2.9
Jan-21-2009	13	11.5	5.4	3,960	36.8	2.6
Jan-22-2009	14	12.0	4.9	3,900	33.4	2.6
Jan-23-2009	20	12.5	P	3,850	29.7	3.3
Jan-24-2009	29	13.4	P	3,730	29.3	4.6
Jan-25-2009	44	13.1	P	3,880	29.2	6.9
Jan-26-2009	43	12.5	P	4,980	44.0	10.3
Jan-27-2009	33	11.0	P	4,260	50.0	8.9
Jan-28-2009	30	10.6	P	3,660	38.0	6.2
Jan-29-2009	34	10.8	P	3,980	46.2	8.4
Jan-30-2009	31	11.0	P	4,400	48.6	8.2
Jan-31-2009	27	11.2	P	4,530	47.9	7.0
Mean	21	10.2	5.8	4,150	42.5	4.7
Total Acre-feet	1,270					
Total (lbs)						145

Load Limitation for January 2009 (lbs)	270
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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.

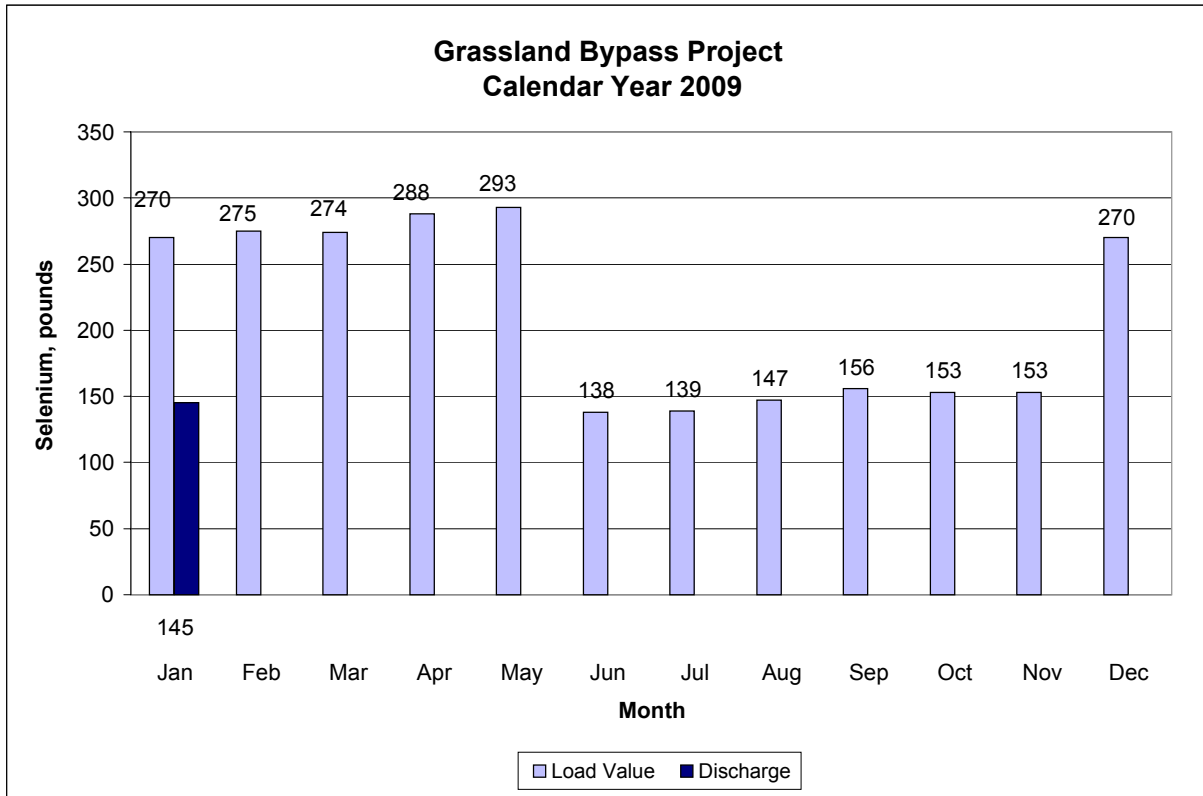


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), January 2009.

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
Jan-01-2009	92	9.1	2,360
Jan-02-2009	90	9.2	2,410
Jan-03-2009	88	8.7	2,470
Jan-04-2009	79	7.8	2,670
Jan-05-2009	72	7.9	2,730
Jan-06-2009	73	8.1	2,680
Jan-07-2009	71	8.0	2,760
Jan-08-2009	67	8.1	2,830
Jan-09-2009	63	8.4	2,840
Jan-10-2009	62	8.7	2,870
Jan-11-2009	60	8.8	2,950
Jan-12-2009	57	9.4	3,030
Jan-13-2009	55	9.9	3,070
Jan-14-2009	58	10.2	2,970
Jan-15-2009	53	10.4	2,980
Jan-16-2009	51	10.8	2,980
Jan-17-2009	54	10.8	2,910
Jan-18-2009	62	11.0	2,670
Jan-19-2009	63	11.0	2,560
Jan-20-2009	56	11.1	2,710
Jan-21-2009	59	11.5	2,720
Jan-22-2009	64	12.1	2,660
Jan-23-2009	82	12.5	2,590
Jan-24-2009	166	13.2	2,190
Jan-25-2009	239	12.7	2,190
Jan-26-2009	229	11.8	2,480
Jan-27-2009	189	10.1	2,350
Jan-28-2009	152	9.8	2,340
Jan-29-2009	128	10.2	2,570
Jan-30-2009	111	10.8	2,780
Jan-31-2009	104	11.2	2,770
Mean	92	10.1	2,680

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 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
Jan-01-2009	37	10.2	2,210
Jan-02-2009	29	10.4	2,270
Jan-03-2009	34	9.5	2,260
Jan-04-2009	28	8.4	2,280
Jan-05-2009	31	8.6	2,260
Jan-06-2009	26	9.2	2,260
Jan-07-2009	30	9.0	2,260
Jan-08-2009	27	8.9	2,220
Jan-09-2009	29	9.8	2,400
Jan-10-2009	25	9.5	2,570
Jan-11-2009	27	9.8	2,540
Jan-12-2009	25	10.1	2,540
Jan-13-2009	33	10.6	2,570
Jan-14-2009	29	10.6	2,600
Jan-15-2009	33	10.6	2,540
Jan-16-2009	39	10.8	2,220
Jan-17-2009	30	11.0	2,300
Jan-18-2009	42	10.9	2,140
Jan-19-2009	35	11.0	2,210
Jan-20-2009	42	11.1	2,150
Jan-21-2009	32	11.5	2,250
Jan-22-2009	39	12.4	2,210
Jan-23-2009	37	13.1	2,190
Jan-24-2009	65	13.7	2,090
Jan-25-2009	89	12.4	1,920
Jan-26-2009	90	11.5	1,900
Jan-27-2009	80	10.1	1,900
Jan-28-2009	65	10.0	2,010
Jan-29-2009	58	10.6	2,090
Jan-30-2009	45	11.0	2,250
Jan-31-2009	43	11.7	2,310
Mean	41	10.6	2,260

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 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
Jan-01-2009	472	9.3	1,370	1.8
Jan-02-2009	472	9.4	1,370	1.8
Jan-03-2009	468	NA	1,390	2.2
Jan-04-2009	464	NA	1,390	1.8
Jan-05-2009	454	NA	1,400	1.7
Jan-06-2009	452	8.2	1,410	1.7
Jan-07-2009	443	8.2	1,380	1.6
Jan-08-2009	441	8.3	1,440	1.6
Jan-09-2009	427	8.4	1,420	1.9
Jan-10-2009	415	8.7	1,530	2.0
Jan-11-2009	412	8.7	1,500	2.1
Jan-12-2009	410	8.9	1,490	2.0
Jan-13-2009	404	9.5	1,480	2.1
Jan-14-2009	406	9.7	1,510	2.2
Jan-15-2009	408	9.8	1,470	2.0
Jan-16-2009	409	9.9	1,520	1.9
Jan-17-2009	413	10.1	1,500	2.2
Jan-18-2009	414	10.3	1,480	1.6
Jan-19-2009	418	10.3	1,480	1.7
Jan-20-2009	415	10.4	1,450	1.6
Jan-21-2009	410	10.6	1,470	1.7
Jan-22-2009	412	11.3	1,470	1.7
Jan-23-2009	429	12.1	1,460	1.5
Jan-24-2009	481 e	13.0	1,420	1.5
Jan-25-2009	599	12.8	1,330	1.9
Jan-26-2009	787	11.6	1,150	1.5
Jan-27-2009	843	10.1	1,220	2.4
Jan-28-2009	805	9.6	1,280	2.7
Jan-29-2009	727	9.8	1,200	2.7
Jan-30-2009	662	10.2	1,300	2.2
Jan-31-2009	597	10.6	1,400	2.8
Mean	496	10.0	1,410	1.9

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-05-2008	11	.	.	3,190	39	.	.	.
Nov-12-2008	20	.	.	4,530	257	.	.	.
Nov-19-2008	18	.	.	4,450	207	.	.	.
Nov-25-2008	23	.	.	3,520	747	.	.	.
Dec-03-2008	19	.	.	4,150	222	.	.	.
Dec-10-2008	23	.	.	3,940	111	.	.	.
Dec-17-2008	18	.	.	4,530	68	.	.	.
Dec-23-2008	16	.	.	4,740	93	.	.	.
Dec-30-2008	12	.	.	4,560	29	.	.	.
Jan-07-2009	12	.	.	4,500	24	.	.	.
Jan-14-2009	9	.	.	4,670	19	.	.	.
Jan-21-2009	10	.	.	4,890	15	.	.	.
Jan-28-2009	30	.	.	3,950	198	.	.	.

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-04-2008	14	.	.	3,210	.	15.4	.	5.6
Nov-11-2008	15	.	.	3,520	.	28.7	.	6.2
Nov-18-2008	18	.	.	4,290	.	53.6	.	7.0
Nov-24-2008	26	.	.	3,370	.	45.9	.	6.6
Dec-01-2008	11	.	.	4,380	.	38.4	.	7.5
Dec-09-2008	21	.	.	4,360	.	50.4	.	7.0
Dec-16-2008	20	.	.	4,280	.	56.8	.	6.5
Dec-22-2008	16	.	.	4,660	.	59.6	.	7.9
Dec-30-2008	12	.	.	4,780	.	64.7	.	7.4
Jan-05-2009	12	.	.	4,550	.	61.2	.	7.7
Jan-13-2009	12	.	.	4,660	.	61.5	.	P
Jan-20-2009	8	.	.	4,700	.	48.6	.	6.9
Jan-27-2009	27	.	.	4,720	.	56.1	.	8.6

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-06-2008	12	13.9	8.1	3,080	36	7.5	4.6
Nov-13-2008	23	15.4	7.3	3,170	23	22.8	4.4
Nov-20-2008	22	15.3	7.4	4,060	46	41.8	5.8
Nov-25-2008	29	12.9	7.4	3,930	50	35.0	5.9
Dec-04-2008	23	12.9	7.0	3,610	34	23.8	5.6
Dec-11-2008	27	8.8	7.6	3,980	N/A	40.0	5.7
Dec-18-2008	23	5.9	7.5	4,080	13	52.7	5.5
Dec-23-2008	20	8.8	8.0	4,150	18	45.3	6.4
Dec-30-2008	17	8.8	8.0	4,200	22	51.1	6.4
Jan-08-2009	16	7.3	7.1	3,940	33	41.6	5.7
Jan-15-2009	14	9.1	6.8	4,100	28	53.0	6.0
Jan-22-2009	14	11.4	7.3	3,750	23	33.1	5.2
Jan-29-2009	34	9.5	6.8	4,030	42	45.2	6.4

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	Conductance	.	(total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Nov-06-2008	78	13.1	7.9	1,510	.	<0.4	1.0
Nov-13-2008	60	15.7	7.8	1,700	.	<0.4	1.1
Nov-20-2008	46	14.1	7.8	1,850	.	<0.4	1.2
Nov-25-2008	48	12.7	7.8	1,910	.	0.4	1.2
Dec-04-2008	60	12.6	7.7	1,930	.	<0.4	1.4
Dec-11-2008	52	8.4	6.8	2,090	.	<0.4	1.3
Dec-18-2008	95	5.3	7.8	1,830	.	0.4	1.3
Dec-23-2008	95	9.2	8.0	1,850	.	<0.4	1.4
Dec-30-2008	74	9.1	8.0	2,020	.	<0.4	1.4
Jan-08-2009	51	7.8	7.8	2,400	.	<0.4	1.6
Jan-15-2009	39	8.8	7.6	1,510	.	<0.4	1.9
Jan-22-2009	50	11.8	7.7	2,450	.	<0.4	1.7
Jan-29-2009	94	8.5	7.5	2,160	.	<0.4	1.7

++ 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-06-2008	90	13.3	8.0	1,740	1.2	1.4
Nov-13-2008	83	15.7	7.8	2,040	5.1	1.9
Nov-20-2008	68	14.2	7.8	2,620	11.0	2.8
Nov-25-2008	77	12.7	7.8	2,830	15.8	3.0
Dec-04-2008	83	12.7	7.6	2,340	5.5	2.3
Dec-11-2008	79	8.5	7.3	2,790	14.4	2.8
Dec-18-2008	118	5.6	7.7	2,290	9.3	2.1
Dec-23-2008	115	9.1	7.8	2,330	9.0	2.3
Dec-30-2008	91	9.0	7.8	2,500	9.8	2.3
Jan-08-2009	67	7.8	7.8	2,920	11.6	2.7
Jan-15-2009	53	9.0	7.4	3,110	11.5	2.9
Jan-22-2009	64	11.7	7.6	2,820	7.0	2.5
Jan-29-2009	128	8.9	7.4	2,620	10.8	2.8

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-04-2008	.	7.9	1,856	31	1.7	1.8
Nov-13-2008	.	7.7	2,108	13	4.6	2.0
Nov-18-2008	.	7.9	2,756	28	16.2	3.3
Nov-25-2008	.	8.3	2,531	13	15.8	3.5
Dec-02-2008	.	7.7	2,376	17	6.5	2.2
Dec-23-2008	.	7.8	2,521	12	8.4	2.3
Jan-13-2009	.	8.0	3,008	18	13.6	3.3
Jan-27-2009	.	7.9	2,529	15	9.0	2.7

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-06-2008	123	12.5	8.1	1,350	0.5	0.6
Nov-13-2008	101	14.5	7.7	1,570	<0.4	0.7
Nov-20-2008	112	13.6	7.7	1,530	<0.4	0.7
Nov-25-2008	91	12.0	8.0	1,760	<0.4	0.8
Dec-04-2008	56	12.7	7.4	2,060	<0.4	1.1
Dec-11-2008	38	8.7	7.1	2,230	<0.4	1.0
Dec-18-2008	58	5.6	7.5	1,970	<0.4	1.1
Dec-23-2008	72	10.2	7.7	1,900	<0.4	1.2
Dec-30-2008	41	9.6	7.8	2,030	<0.4	1.2
Jan-08-2009	27	8.1	7.8	2,440	<0.4	1.1
Jan-15-2009	33	8.7	6.8	2,770	<0.4	1.4
Jan-22-2009	39	11.8	7.3	2,090	1.0	1.0
Jan-29-2009	58	8.6	6.2	2,040	0.4	1.4

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2008	50	.	.	570	0.6	0.2
Nov-12-2008	40	.	.	560	0.8	0.2
Nov-19-2008	65	.	.	600	0.8	0.2
Nov-25-2008	60	.	.	650	0.7	0.2
Dec-03-2008	35	.	.	720	0.5	0.3
Dec-10-2008	15	.	.	670	0.6	0.3
Dec-17-2008	5	.	.	790	0.7	0.4
Dec-23-2008	5	.	.	700	0.7	0.3
Dec-30-2008	5	.	.	790	<0.4	0.4
Jan-07-2009	P	.	.	930	0.8	0.5
Jan-14-2009	P	.	.	900	2.5	0.5
Jan-21-2009	P	.	.	930	2.1	0.5
Jan-28-2009	P	.	.	1,030	1.1	0.7

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-05-2008	35	.	.	600	0.7	0.4
Nov-12-2008	35	.	.	790	1.3	0.5
Nov-19-2008	35	.	.	660	0.9	0.3
Nov-25-2008	30	.	.	610	0.6	0.3
Dec-03-2008	30	.	.	640	0.6	0.3
Dec-10-2008	30	.	.	710	0.6	0.3
Dec-17-2008	30	.	.	710	0.8	0.3
Dec-23-2008	20	.	.	750	<0.4	0.3
Dec-30-2008	20	.	.	780	0.6	0.4
Jan-07-2009	P	.	.	840	1.0	0.5
Jan-14-2009	P	.	.	940	1.4	0.6
Jan-21-2009	P	.	.	930	2.0	0.5
Jan-28-2009	P	.	.	1,100	1.5	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2008	NA	.	.	650	0.7	0.4
Nov-12-2008	NA	.	.	1,080	0.8	0.9
Nov-19-2008	NA	.	.	1,030	0.8	0.8
Nov-25-2008	NA	.	.	1,040	0.7	0.8
Dec-03-2008	NA	.	.	1,550	2.2	1.5
Dec-10-2008	NA	.	.	820	0.5	0.5
Dec-17-2008	NA	.	.	1,220	0.8	1.0
Dec-23-2008	NA	.	.	800	0.5	0.4
Dec-30-2008	NA	.	.	1,270	0.9	1.1
Jan-07-2009	NA	.	.	2,090	1.2	1.5
Jan-14-2009	NA	.	.	1,160	1.0	0.8
Jan-21-2009	NA	.	.	1,810	1.5	1.6
Jan-28-2009	NA	.	.	1,940	0.6	2.3

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-05-2008	NA	.	.	920	0.6	0.7
Nov-12-2008	NA	.	.	890	0.6	0.6
Nov-19-2008	NA	.	.	940	0.5	0.7
Nov-25-2008	NA	.	.	1,040	0.6	0.8
Dec-03-2008	NA	.	.	1,040	<0.4	0.9
Dec-10-2008	NA	.	.	1,330	<0.4	1.3
Dec-17-2008	NA	.	.	1,460	0.6	1.3
Dec-23-2008	NA	.	.	1,520	<0.4	1.4
Dec-30-2008	NA	.	.	1,820	0.5	1.8
Jan-07-2009	NA	.	.	1,500	<0.4	2.2
Jan-14-2009	NA	.	.	1,910	0.4	1.8
Jan-21-2009	NA	.	.	1,580	1.3	1.3
Jan-28-2009	NA	.	.	1,920	1.2	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-05-2008	.	.	.	560	0.7	0.2
Nov-12-2008	.	.	.	570	<0.4	0.2
Nov-19-2008	.	.	.	630	0.6	0.2
Nov-25-2008	.	.	.	720	0.8	0.3
Dec-03-2008	.	.	.	730	0.5	0.3
Dec-10-2008	.	.	.	630	0.5	0.2
Dec-17-2008	.	.	.	680	<0.4	0.2
Dec-23-2008	.	.	.	730	0.7	0.3
Dec-30-2008	.	.	.	620	0.6	0.2
Jan-07-2009	.	.	.	630	0.5	0.2
Jan-14-2009	.	.	.	900	2.4	0.5
Jan-21-2009	.	.	.	930	1.5	0.4
Jan-28-2009	.	.	.	830	0.9	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-06-2008	98	13.2	8.2	1,420	<0.4	0.7
Nov-13-2008	112	15.8	7.8	1,450	<0.4	0.7
Nov-20-2008	116	13.9	7.1	1,770	<0.4	0.7
Nov-25-2008	104	12.5	7.1	1,910	<0.4	0.7
Dec-04-2008	66	12.5	6.8	2,660	<0.4	0.7
Dec-11-2008	59	7.9	7.9	2,100	<0.4	0.9
Dec-18-2008	78	5.2	7.9	1,970	<0.4	0.9
Dec-23-2008	95	8.9	7.8	2,020	<0.4	1.1
Dec-30-2008	65	8.4	7.9	2,560	<0.4	1.1
Jan-08-2009	53	7.4	7.8	2,940	<0.4	1.1
Jan-15-2009	61	8.2	6.9	2,910	<0.4	1.2
Jan-22-2009	64	11.4	8.0	2,610	0.4	0.9
Jan-29-2009	166	8.9	7.8	1,370	<0.4	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
Nov-04-2008	.	.	.	628	<0.4	0.2
Nov-11-2008	.	.	.	1,900	1.2	1.2
Nov-18-2008	.	.	.	2,060	4.3	1.6
Nov-25-2008	.	.	.	3,700	41	5.3
Dec-03-2008	.	.	.	1,050	0.5	0.8
Dec-10-2008	.	.	.	1,080	<0.4	0.8
Dec-12-2008	.	.	.	1,110	<0.4	0.8
Dec-23-2008	.	.	.	1,180	<0.4	0.9
Jan-07-2009	.	.	.	1,460	<0.4	1.2
Jan-13-2009	.	.	.	3,230	4.5	2.0

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-06-2008	520	13.9	8.1	940	0.8	0.5
Nov-13-2008	547	15.5	8.2	1,000	0.8	0.5
Nov-20-2008	510	14.1	7.9	1,130	1.9	0.7
Nov-25-2008	512	12.3	7.8	1,210	2.1	0.7
Dec-04-2008	479	12.8	7.7	1,220	1.3	1.0
Dec-11-2008	467	8.7	8.0	1,300	2.2	0.8
Dec-18-2008	504	6.3	7.9	1,320	2.1	0.8
Dec-23-2008	552	9.0	7.8	1,270	1.9	0.8
Dec-30-2008	490	8.7	7.9	1,390	1.8	0.9
Jan-08-2009	441	8.1	8.0	1,460	1.5	0.8
Jan-15-2009	408	9.0	8.0	1,480	1.9	0.9
Jan-22-2009	412	11.0	8.0	1,460	1.6	0.8
Jan-29-2009	727	9.1	7.7	1,220	2.2	0.9

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 2008 to January 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	%	%	%	%	%	%
Feb-2008	100	95	100	95	98	100
Mar-2008	93	95	100	100	73	100
Apr-2008	98	100	100	100	95	98
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 2008 to January 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
Feb-2008	0.46	0.43	0.41	0.41	0.38	0.33
Mar-2008	0.33	0.33	0.37	0.38	0.22	0.29
Apr-2008	0.31	0.39	0.31	0.24*	0.30	0.27
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

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 2008 to January 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	%	%	%	%	%	%
Feb-2008	100	90	80	90	100	100
Mar-2008	100	100	90	100	100	90
Apr-2008	100	100	80	100	90	90
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

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 2008 to January 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
Feb-2008	35.6	33.6	33.4	35.8	27.7	28.3
Mar-2008	27.4	29.0	29.5	26.2	30.1	19.6
Apr-2008	31.4	31.1	27.5	24.8	33.6	25.8
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

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 2008 to January 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 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL
Feb-2008	6.2	13.9	12.1	12.8	7.7++++	12.3
Mar-2008	18.1	14.2*	22.2	11.2*	20.5	24.9
Apr-2008	13.3*	16.7	22.4	11.9*	17.2	18.3
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	15.82*	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

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2008 to January 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
Nov-03-2008	11	0.4	3.2	<0.4	<0.4
Nov-05-2008	9	<0.4	2.2	0.5	<0.4
Nov-07-2008	9	<0.4	1.6	<0.4	<0.4
Dec-01-2008	30	<0.4	6.1	<0.4	<0.4
Dec-03-2008	19	<0.4	6.3	<0.4	<0.4
Dec-05-2008	24	<0.4	7.2	<0.4	0.5
Jan-12-2009	44	<0.4	13	<0.4	<0.4
Jan-14-2009	48	<0.4	11	<0.4	<0.4
Jan-16-2009	44	<0.4	10	0.8	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2008 to January 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
Nov-03-2008	51	17	43	66	3
Nov-05-2008	45	32	35	88	9
Nov-07-2008	32	23	29	94	10
Dec-01-2008	28	28	28	34	5
Dec-03-2008	24	15	26	37	4
Dec-05-2008	39	14	27	25	6
Jan-12-2009	19	25	23	9	2
Jan-14-2009	18	19	27	18	2
Jan-16-2009	43	11	30	50	5

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 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