

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

December 1998

March 30, 1999

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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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	usgs
UNITS	cfs
Dec-01-1998	17
Dec-02-1998	20
Dec-03-1998	21
Dec-04-1998	17
Dec-05-1998	15
Dec-06-1998	15
Dec-07-1998	14
Dec-08-1998	13
Dec-09-1998	6
Dec-10-1998	16
Dec-11-1998	22
Dec-12-1998	18
Dec-13-1998	18
Dec-14-1998	20
Dec-15-1998	20
Dec-16-1998	18
Dec-17-1998	23
Dec-18-1998	28
Dec-19-1998	21
Dec-20-1998	20
Dec-21-1998	19
Dec-22-1998	18
Dec-23-1998	20
Dec-24-1998	23
Dec-25-1998	21
Dec-26-1998	20
Dec-27-1998	16
Dec-28-1998	19
Dec-29-1998	17
Dec-30-1998	22
Dec-31-1998	20

Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), December 1998.

See Table 26 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
Dec-01-1998	18.6	13.4	8.1	5,320	42.6	4.3
Dec-02-1998	21.9	13.4	8.1	5,230	41.3	4.9
Dec-03-1998	23.3	13.5	7.9	5,240	47.0	5.9
Dec-04-1998	25.6	12.0	8.3	5,300	64.8	8.9
Dec-05-1998	23.5	10.3	8.1	5,060	60.6	7.7
Dec-06-1998	19.8	9.6	8.2	5,120	50.0	5.3
Dec-07-1998	21.7	9.2	8.5	5,040	55.3	6.5
Dec-08-1998	19.9	9.5	8.3	4,980	57.4	6.2
Dec-09-1998	19.9	9.1	7.8	5,020	92.7	9.9
Dec-10-1998	17.8	8.9	7.3	4,860	92.8	8.9
Dec-11-1998	19.6	9.0	7.0	4,500	67.9	7.2
Dec-12-1998	26.8	9.4	6.7	4,170	38.4	5.6
Dec-13-1998	24.8	9.4	7.8	4,570	39.1	5.2
Dec-14-1998	22.7	9.9	8.2	4,720	43.0	5.3
Dec-15-1998	25.9	10.1	8.0	4,700	42.3	5.9
Dec-16-1998	25.6	10.1	8.3	4,820	38.8	5.4
Dec-17-1998	25.0	10.0	8.6	5,320	57.4	7.7
Dec-18-1998	27.2	10.1	7.5	5,200	79.3	11.6
Dec-19-1998	30.8	9.7	7.6	5,040	59.5	9.9
Dec-20-1998	26.8	8.5	8.1	5,210	56.5	8.2
Dec-21-1998	23.4	6.0	8.3	5,220	54.6	6.9
Dec-22-1998	23.4	5.4	8.4	5,300	58.5	7.4
Dec-23-1998	23.7	5.2	8.1	5,150	51.3	6.6
Dec-24-1998	23.8	5.2	8.4	5,260	62.8	8.1
Dec-25-1998	26.4	5.6	7.9	5,400	95.0	13.5
Dec-26-1998	26.2	5.6	7.9	5,340	74.1	10.5
Dec-27-1998	24.0	5.7	8.0	5,350	76.1	9.9
Dec-28-1998	18.9	6.7	8.1	5,300	69.5	7.1
Dec-29-1998	23.2	6.8	8.1	5,300	61.9	7.7
Dec-30-1998	24.0	7.3	8.1	5,260	64.8	8.4
Dec-31-1998	25.5	8.3	8.4	5,570	94.8	13.0
Mean	23.5	8.8	8.0	5,090	61.0	
Total						239

Load Limitation for December 1998 (lbs)	389
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**Table 3. Continuous water monitoring at Station D
(Mud Slough North downstream of drainage discharges), December 1998.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Dec-01-1998	149	13.2	1,810
Dec-02-1998	150	13.1	1,860
Dec-03-1998	156	13.1	1,840
Dec-04-1998	158	10.7	1,870
Dec-05-1998	157	9.1	1,820
Dec-06-1998	159	8.7	1,760
Dec-07-1998	165	8.1	1,700
Dec-08-1998	168	8.7	1,670
Dec-09-1998	165	8.3	1,690
Dec-10-1998	164	8.1	1,650
Dec-11-1998	158	8.3	1,690
Dec-12-1998	162	8.4	1,790
Dec-13-1998	158	8.7	1,810
Dec-14-1998	152	9.6	1,860
Dec-15-1998	149	9.6	1,930
Dec-16-1998	146	9.7	1,960
Dec-17-1998	144	9.7	2,020
Dec-18-1998	146	9.7	2,090
Dec-19-1998	149	9.0	2,110
Dec-20-1998	151	7.3	2,110
Dec-21-1998	146	4.5	2,120
Dec-22-1998	145	4.3	2,150
Dec-23-1998	144	3.9	2,140
Dec-24-1998	141	4.0	2,170
Dec-25-1998	137	4.7	2,310
Dec-26-1998	143	5.0	2,230
Dec-27-1998	144	5.4	2,120
Dec-28-1998	136	6.3	2,090
Dec-29-1998	135	6.7	2,110
Dec-30-1998	137	7.1	2,130
Dec-31-1998	138	8.6	2,160

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Dec-01-1998	193	13.1	1,190
Dec-02-1998	189	13.0	1,170
Dec-03-1998	193	13.0	1,170
Dec-04-1998	194	10.8	1,190
Dec-05-1998	186	9.3	1,270
Dec-06-1998	181	9.0	1,320
Dec-07-1998	178	8.4	1,360
Dec-08-1998	166	9.0	1,450
Dec-09-1998	160	8.7	1,460
Dec-10-1998	162	8.5	1,480
Dec-11-1998	160	8.5	1,470
Dec-12-1998	162	8.6	1,460
Dec-13-1998	163	9.0	1,450
Dec-14-1998	153	10.0	1,510
Dec-15-1998	148	9.9	1,590
Dec-16-1998	146	9.8	1,580
Dec-17-1998	140	9.8	1,560
Dec-18-1998	128	9.8	1,530
Dec-19-1998	123	9.3	1,620
Dec-20-1998	125	7.6	1,590
Dec-21-1998	129	5.1	1,600
Dec-22-1998	126	5.0	1,590
Dec-23-1998	118	4.7	1,550
Dec-24-1998	119	4.7	1,530
Dec-25-1998	131	5.2	1,560
Dec-26-1998	133	5.5	1,590
Dec-27-1998	136	6.0	1,590
Dec-28-1998	134	6.7	1,640
Dec-29-1998	123	7.3	1,610
Dec-30-1998	122	7.6	1,570
Dec-31-1998	133	9.1	1,540

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 1998.

See Table 26 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
Dec-01-1998	1,370	12.8	946	1.8
Dec-02-1998	1,310	12.7	755	1.5
Dec-03-1998	1,360 e	12.9	867	1.5
Dec-04-1998	1,500 e	11.4	673	1.2
Dec-05-1998	1,600 e	9.9	630	1.3
Dec-06-1998	1,700 e	9.2	597	1.4
Dec-07-1998	1,760 e	8.5	527	1.1
Dec-08-1998	1,790 e	8.4	497	1.0
Dec-09-1998	1,860 e	8.1	488	1.7
Dec-10-1998	1,920 e	7.9	495	0.7
Dec-11-1998	1,950 e	7.9	424	0.8
Dec-12-1998	1,920 e	7.9	460	0.9
Dec-13-1998	1,900 e	8.2	484	0.9
Dec-14-1998	1,890 e	8.8	453	0.6
Dec-15-1998	1,940	8.9	449	0.5
Dec-16-1998	1,950	9.1	450	0.6
Dec-17-1998	1,930	9.1	480	0.6
Dec-18-1998	1,760	9.2	535	0.7
Dec-19-1998	1,500	9.3	722	1.2
Dec-20-1998	1,450	8.3	731	1.6
Dec-21-1998	1,420	6.4	712	1.4
Dec-22-1998	1,340	5.6	709	1.3
Dec-23-1998	1,300	5.3	NA	NA
Dec-24-1998	1,270	4.7	827	1.4
Dec-25-1998	1,240	5.1	838	1.1
Dec-26-1998	1,190	5.4	895	1.4
Dec-27-1998	1,160	5.8	974	2.2
Dec-28-1998	1,140	6.3	989	1.9
Dec-29-1998	1,120	6.9	1,010	1.7
Dec-30-1998	1,110	7.4	1,000	1.6
Dec-31-1998	1,100	8.4	1,020	1.5

Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Oct-07-1998	28	NA	NA	4,970	26	55.6	57.3	P
Oct-14-1998	28	NA	NA	5,600	NA	66.2	64.8	9.3
Oct-21-1998	21	NA	NA	6,570	35	104	105	9.5
Oct-28-1998	31	NA	NA	4,740	67	48.6	49.2	7.4
Nov-04-1998	24	NA	NA	5,040	NA	55.2	55.8	7.8
Nov-11-1998	19	NA	NA	5,660	37	72.4	73.2	8.3
Nov-18-1998	17	NA	NA	6,680	26	63.9	65.7	11
Nov-24-1998	16	NA	NA	5,790	21	61.8	62.7	9.5
Dec-02-1998	20	NA	NA	5,250	P	P	P	7.9
Dec-09-1998	6	NA	NA	5,420	16	50.9	52.7	9.2
Dec-16-1998	18	P	P	5,650	30	88.7	89.7	9.5
Dec-22-1998	18	NA	NA	5,680	20	102	95.9	9.0
Dec-30-1998	22	P	P	4,870	9	46.0	49.0	P

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Oct-08-1998	32.3	21.7	8.5	4,500	61	45.3	44.1	7.0
Oct-15-1998	36.0	18.9	8.1	5,280	84	50.0	49.6	7.9
Oct-22-1998	28.7	20.0	8.2	5,200	43	49.6	49.0	7.7
Oct-29-1998	36.8	19.4	NA	5,120	54	55.5	55.6	9.2
Nov-05-1998	28.1	16.7	8.0	5,080	46	68.0	65.0	6.8
Nov-12-1998	25.1	14.4	7.9	4,740	30	46.0	46.4	6.9
Nov-19-1998	23.0	11.1	8.1	5,020	59	49.5	50.2	7.3
Nov-24-1998	22.3	16.1	8.1	5,850	24	53.8	53.9	9.3
Dec-03-1998	23.3	14.4	8.3	5,060	45	53.7	42.9	8.2
Dec-09-1998	19.9	11.1	NA	5,120	28	93.2	92.6	7.3
Dec-17-1998	25.0	9.4	7.8	5,370	P	63.0	69.8	8.6
Dec-22-1998	23.4	7.8	8.0	5,300	18	68.8	67.6	8.2
Dec-31-1998	25.5	10.0	7.7	5,700	28	110	112	8.1

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Oct-08-1998	.	21.7	7.9	676	0.7	0.6
Oct-15-1998	.	17.8	7.9	735	0.7	0.6
Oct-22-1998	.	20.0	7.8	898	0.7	0.8
Oct-29-1998	.	20.0	NA	862	0.6	0.8
Nov-05-1998	.	16.7	8.1	947	0.7	0.8
Nov-12-1998	.	12.2	8.1	1,000	0.7	0.9
Nov-19-1998	.	12.8	8.1	1,160	0.5	1.0
Nov-24-1998	.	15.6	8.1	1,280	0.5	1.1
Dec-03-1998	.	14.4	NA	1,300	0.5	1.1
Dec-09-1998	.	10.0	NA	1,260	0.5	1.1
Dec-17-1998	.	9.4	7.8	1,430	0.5	1.2
Dec-22-1998	.	6.7	8.3	1,470	<0.4	1.2
Dec-31-1998	.	11.7	8.0	1,510	<0.4	1.3

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1998.

See Table 26 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
Oct-08-1998	206	20.0	8.3	1,410	7.3	1.8
Oct-15-1998	202	18.3	8.1	1,630	8.8	1.9
Oct-22-1998	148	18.9	7.9	2,100	12.3	2.6
Oct-29-1998	219	19.4	NA	1,660	10.4	P
Nov-05-1998	193	16.7	7.9	1,640	11.2	1.8
Nov-12-1998	183	14.4	7.9	1,590	6.6	P
Nov-19-1998	159	12.8	8.3	1,820	8.1	2.1
Nov-24-1998	142	15.6	8.2	2,100	9.5	2.6
Dec-03-1998	156	P	P	P	9.8	P
Dec-09-1998	165	10.6	NA	1,770	7.7	1.9
Dec-17-1998	144	9.4	7.8	2,160	10.2	2.5
Dec-22-1998	145	5.6	8.1	2,170	10.7	2.4
Dec-31-1998	138	12.2	7.5	2,330	11.4	2.7

Table 10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1998.

See Table 26 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
Oct-08-1998	159	19.4	7.4	871	0.9	0.5
Oct-15-1998	208	17.8	7.7	982	0.9	0.5
Oct-22-1998	144	17.2	7.5	1,200	1.1	0.6
Oct-29-1998	196	18.3	NA	1,030	1.0	0.6
Nov-05-1998	168	15.6	7.5	1,110	1.1	0.6
Nov-12-1998	177	11.7	8.0	1,150	0.9	0.6
Nov-18-1998	179	15.0	7.6	1,110	0.9	0.6
Nov-24-1998	146	16.1	8.2	1,330	0.9	0.8
Dec-03-1998	193	14.4	7.8	1,210	0.7	0.9
Dec-09-1998	160	12.2	NA	1,480	0.6	1.0
Dec-17-1998	140	9.4	7.5	1,640	0.5	1.0
Dec-22-1998	126	6.7	7.7	1,580	<0.4	1.0
Dec-30-1998	122	10.6	7.3	1,610	0.5	1.0

Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Oct-08-1998	.	20.0	7.4	727	0.6	0.3
Oct-15-1998	.	17.8	7.6	709	0.7	0.3
Oct-22-1998	.	17.8	7.5	792	0.5	0.3
Oct-29-1998	.	17.8	NA	424	0.5	0.2
Nov-05-1998	.	15.0	8.0	459	P	0.2
Nov-12-1998	.	12.2	8.0	979	1.0	0.5
Nov-18-1998	.	14.4	7.7	1,190	0.7	0.6
Nov-24-1998	.	15.6	7.6	1,430	0.4	0.7
Dec-03-1998	.	14.4	7.8	426	<0.4	0.2
Dec-09-1998	.	10.6	6.8	300	<0.4	0.2
Dec-17-1998	.	9.4	7.8	337	<0.4	0.1
Dec-22-1998	.	6.7	8.3	738	<0.4	0.4
Dec-30-1998	.	9.4	7.6	1,230	<0.4	0.6

Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER		Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Oct-08-1998	.	21.1	7.5	728	1.9	0.5
Oct-15-1998	.	17.8	8.5	790	2.6	0.6
Oct-22-1998	.	20.0	7.5	1,290	3.5	1.0
Oct-29-1998	.	18.3	NA	795	2.8	0.7
Nov-05-1998	.	16.1	7.8	797	1.9	0.6
Nov-12-1998	.	12.8	8.0	1,310	3.1	1.0
Nov-19-1998	.	13.3	8.2	1,480	3.0	1.1
Nov-24-1998	.	15.6	8.1	1,350	2.0	1.0
Dec-03-1998	.	14.4	NA	746	1.7	0.6
Dec-09-1998	.	11.1	7.2	568	1.0	0.4
Dec-17-1998	.	9.4	7.7	591	0.9	0.4
Dec-22-1998	.	6.1	8.2	1,090	2.1	0.8
Dec-30-1998	.	8.9	7.8	1,670	3.5	1.2

Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Oct-07-1998	45	NA	NA	266	1.5	P
Oct-14-1998	10	NA	NA	241	0.9	0.2
Oct-21-1998	10	NA	NA	265	2.4	0.2
Oct-28-1998	10	NA	NA	294	2.4	0.2
Nov-04-1998	25	NA	NA	312	2.0	0.2
Nov-11-1998	25	NA	NA	303	1.1	0.2
Nov-18-1998	15	NA	NA	301	1.3	0.3
Nov-24-1998	15	NA	NA	436	3.3	0.4
Dec-02-1998	15	NA	NA	212	1.8	0.2
Dec-09-1998	15	NA	NA	194	0.7	0.2
Dec-16-1998	7	P	P	140	<0.4	0.1
Dec-23-1998	7	NA	NA	157	<0.4	0.2
Dec-30-1998	7	P	P	579	6.8	P

Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Oct-07-1998	100	NA	NA	260	1.4	P
Oct-14-1998	50	NA	NA	312	2.1	0.2
Oct-21-1998	50	NA	NA	252	2.7	0.2
Oct-28-1998	65	NA	NA	275	2.0	0.2
Nov-04-1998	65	NA	NA	342	2.8	0.2
Nov-11-1998	45	NA	NA	303	1.1	0.2
Nov-18-1998	45	NA	NA	360	1.6	0.2
Nov-24-1998	45	NA	NA	461	1.3	0.3
Dec-02-1998	45	NA	NA	167	0.6	0.1
Dec-09-1998	45	NA	NA	164	0.5	0.2
Dec-16-1998	30	P	P	136	<0.4	0.1
Dec-23-1998	30	NA	NA	199	<0.4	0.3
Dec-30-1998	30	P	P	608	6.4	P

Table 15. Weekly water quality monitoring at Station L2 (San Luis Canal at splits), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Oct-07-1998	180	NA	NA	436	1.5	P
Oct-14-1998	162	NA	NA	401	2.3	0.4
Oct-21-1998	37	NA	NA	429	2.5	0.4
Oct-28-1998	35	NA	NA	394	1.2	0.4
Nov-04-1998	38	NA	NA	636	2.3	0.6
Nov-11-1998	26	NA	NA	344	1.4	0.3
Nov-18-1998	28	NA	NA	301	1.3	0.2
Nov-24-1998	12	NA	NA	459	3.1	0.4
Dec-02-1998	28	NA	NA	342	2.1	0.3
Dec-09-1998	10	NA	NA	349	1.0	0.4
Dec-16-1998	20	NA	NA	174	0.5	0.2
Dec-23-1998	15	NA	NA	116	<0.4	0.1
Dec-30-1998	13	NA	NA	318	2.9	P

Table 16. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir), 1998.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Oct-07-1998	141	NA	NA	569	1.1	0.6
Oct-14-1998	125	NA	NA	634	2.0	0.7
Oct-21-1998	74	NA	NA	1,050	1.1	1.3
Oct-28-1998	80	NA	NA	877	1.6	1.1
Nov-04-1998	81	NA	NA	843	1.4	1.0
Nov-11-1998	76	NA	NA	876	1.3	1.1
Nov-18-1998	85	NA	NA	1,010	1.1	1.4
Nov-24-1998	81	NA	NA	1,080	1.0	1.5
Dec-02-1998	50	NA	NA	1,150	1.2	1.6
Dec-09-1998	59	NA	NA	1,160	0.8	1.5
Dec-16-1998	40	P	P	1,210	0.8	1.7
Dec-23-1998	30	NA	NA	1,550	0.8	2.2
Dec-30-1998	28	P	P	1,560	1.0	P

Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1998.

See Table 26 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
Oct-08-1998	2,410	18.9	7.5	313	0.7	0.2
Oct-15-1998	2,620	20.0	7.6	359	0.8	0.2
Oct-22-1998	1,300	19.4	7.7	786	1.6	0.5
Oct-28-1998	1,740	17.8	NA	592	2.5	0.5
Nov-05-1998	1,590	15.6	7.8	626	1.6	0.4
Nov-12-1998	1,180	13.9	7.8	922	2.0	0.6
Nov-19-1998	1,010	13.3	8.1	1,050	1.7	0.7
Nov-24-1998	1,090	15.0	8.0	1,020	1.3	0.7
Dec-03-1998	1,360	14.4	NA	869	1.5	0.6
Dec-09-1998	1,860	11.1	NA	481	0.9	0.4
Dec-17-1998	1,930	10.0	7.7	482	0.7	0.3
Dec-22-1998	1,340	6.7	7.7	778	1.4	0.5
Dec-30-1998	1,110	8.9	7.8	998	1.6	0.6

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January to December 1998. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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	%	%	%	%	%	%
January-98	100	40*	50*	90	90	95
February-98	93	43*	73*	80*	93	93
March-98	95	60*	68*	53*	95	84
April-98	100	95	95	100	85	100
May-98	100	98	98	58	80	100
June-98	88	98	98	65*	98	95
July-98	98	93	100	78	93	100
August-98	88	100	95	95	95	100
September-98	98	93	100	100	100	100
October-98	98	53*	80	85	97	100
November-98	95	55*	55*	45*	90	85
December-98	98	68*	68	80	93	93

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January to December 1998. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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
January-98	0.65	0.26*	0.30*	0.58	0.54	0.57
February-98	0.74	0.35*	0.53*	0.56*	0.70	0.59
March-98	0.67	0.31*	0.39*	0.30*	0.54	0.53
April-98	0.67	0.53	0.59	0.58	0.47	0.54
May-98	0.62	0.50	0.54	0.32	0.41	0.51
June-98	0.64	0.56	0.59	0.38*	0.57	0.64
July-98	0.69	0.52	0.68	0.45	0.53	0.68
August-98	0.65	0.59*	0.64	0.65	0.65	0.63
September-98	0.57	0.56	0.60	0.51	0.53	0.66
October-98	0.74	0.31*	0.53	0.55	0.58	0.67
November-98	0.53	0.31*	0.28*	0.26*	0.50	0.49
December-98	0.68	0.48	0.45	0.50	0.53	0.55

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January to December 1998. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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	%	%	%	%	%	%
January-98	80	90	100	100	100	0
February-98	80	80	100	90	50 [†]	0
March-98	100	90	100	100	100	0
April-98	100	100	90	100	100	0
May-98	100	100	90	100	100	40
June-98	90	100	75	100	90	0
July-98	70	90	100	90	90	70
August-98	100	100	100	90	90	100
September-98	80	100	90	100	80	100
October-98	80	90	70	70	90	80
November-98	100	80	90	100	90	90
December-98	100	100	100	100	80	90

Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January to December 1998. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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
January-98	13.7*	21.8	18.5*	14.5*	27.4	0.0
February-98 ⁽²⁾	67.0	70.5	69.9	61.3	39.3 [†]	0.0
March-98	32.0	28.9	28.0	29.1	28.5	0.0
April-98	18.7	25.2	19.6	20.2	10.2	0.0
May-98	34.9	34.6	31.6	21.1	20.1	18.4
June-98	30.8	5.7	7.9	2.3	9.0 ^{†††}	0.0
July-98	10.8	11.9	12.6	8.2	6.6 ^{†††}	5.9
August-98	57.5	71.3	49.1	29.9	32.7	28.2
September-98	46.4	56.2	50.7	45.8	40.5	50.2
October-98	14.7*	22.9	12.5*	22.0	24.2	23.5
November-98	53.4	50.0	53.4	50.6	38.9	24.3
December-98	30.2	38.4	35.0	35.8	30.0	26.8

Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January to December 1998. Each value is the mean of 4 replicates.

See Table 26 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
January-98	1.0*	11.9	14.5	6.8	9.1 ^{††††}	9.1
February-98	4.2*	7.9	10.9	11.8	8.3 ^{††††}	17.1
March-98	5.4*	20.3	16.8	16.5	13.4	25.5
April-98	19.0	36.1	25.8	34.8	23.7	32.5
May-98	8.7*	26.6	17.8	9.9*	22.2	19.3
June-98	15.8*	25.4	21.3	20.1	22.7	32.1
July-98	23.4	20.5	23.7	23.2	22.2	27.6
August-98	5.6	6.4	6.0	7.5	4.2 ^{††††}	7.5
September-98	21.6*	27.4	27.7*	29.8	32.3	28.0
October-98	15.5*	33.5	29.8	29.0	26.5	22.0
November-98	10.8*	16.7	15.0*	21.5	21.3	22.0
December-98	6.0*	18.9	16.0	13.6*	16.2	24.4

Table 23. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September to December 1998.

See Table 26 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
Sep-08-1998	52	1.1	28	1.2	0.8
Sep-10-1998	43	0.9	37	1.0	<0.4
Sep-12-1998	50	0.9	43	1.2	<0.4
Oct-12-1998	49	0.7	9.4	0.8	<0.4
Oct-14-1998	37	0.6	8.1	1.1	0.4
Oct-16-1998	46	0.6	10	1.0	<0.4
Nov-10-1998	47	0.6	7.8	1.0	<0.4
Nov-12-1998	46	0.7	6.7	0.9	0.7
Nov-14-1998	52	0.6	8.0	0.9	0.5
Dec-07-1998	50	0.5	6.3	0.8	0.5
Dec-09-1998	79	0.6	7.5	0.8	0.5
Dec-11-1998	56	0.5	8.7	0.8	0.6

Table 24. Summary of sulfate concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September to December 1998.

See Table 26 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	mg/L	mg/L	mg/L	mg/L	mg/L
Sep-08-1998	1,500	67	861	110	47
Sep-10-1998	1,390	84	1,180	119	19
Sep-12-1998	1,470	94	1,170	136	20
Oct-12-1998	1,390	71	317	115	15
Oct-14-1998	1,630	69	287	108	17
Oct-16-1998	1,660	77	373	112	25
Nov-10-1998	1,510	126	342	148	18
Nov-12-1998	1,470	131	322	160	48
Nov-14-1998	1,560	139	318	161	35
Dec-07-1998	1,710	176	374	205	44
Dec-09-1998	1,690	186	389	225	50
Dec-11-1998	1,440	193	343	226	53

Table 25. Summary of quarterly in situ bioassay results from December 1995 to May 1998.

Results are the number of live fathead minnows (*Pimephales promelas*) per number of fish recovered at the end of the 7 day deployment at each station (initial count of 80 used at each station).

See Table 26 for explanation of footnotes and agency abbreviations.

LOCATION	Windmill (4 day old larvae)	Station B (4 day old larvae)	Station D (4 day old larvae)	Station D (14 day old larvae)	Station F (4 day old larvae)	Station F (14 day old larvae)
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count
December-1995 ⁽⁴⁾	NT	NT	NT	NT	NT	NT
March-1996 ⁽⁵⁾	80/80	NT	NT	44/44	NT	70/70
August-1996 ⁽⁶⁾	NT	NT	13/19	22/29	28/40	20/49
November-1996 ⁽⁷⁾	46/62	63/68	0/2	.	16/36	.
February-1997 ⁽⁸⁾	NT	3/13	0/0	.	0/11	.
May-1997	64/66	0/0	0/24	.	5/9	.
August-1997 ⁽⁹⁾	NT	38/38	27/31	.	0/8	.
May-1998	5/24	3/23	2/21	.	1/21	.

Table 26. 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
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
e	Estimated value
P	Pending, data not available at this time but will be available in the future
NA	Not analyzed - operator error, data will not be available in the future
NP	Data not provided - future unknown
NT	Not tested
(1)	Calculated average of daily min and max values from source file.
(2)	Increased reproduction for the February 1998 sampling period is due to increased nutrients added to the test water.
(3)	There were no surviving <i>D. magna</i> at test completion. Value represents reproduction that occurred prior to mortality.
(4)	In situ cages could not be deployed due to wet weather conditions.
(5)	Baseline results for 3/96 are for 14-day old larvae. There was no survival for the 24-hour old larvae.
(6)	Windmill station was dry due to water drainage. Use of plastic screened beakers for Station F during 8/96 with use of 4-day old larvae resulted in 0/39. Apparent cause of mortality was elevated temperature and sediment which was found in all cages and beakers.
(7)	Heavy silt accumulation was noted in Stations D and F cages and light silt accumulation was observed in both the Windmill station and Station B.
(8)	Moderate silt accumulation was noted in Stations B and F cages and light silt accumulation was observed in Station D.
(9)	No test deployment was done at the Windmill Station due to extreme conditions (stagnant & pH>9.0). Station B replicate A was retrieved with no cork and replicate C lost its cork during retrieval. There were no surviving fish for a growth determination for Station F cages.
*	Significantly reduced from Delta Mendota Canal ($p < 0.05$)
**	Possible calibration problem
†	DMC water failed to meet the survival (>80%) and the 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 (1997 draft).
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (1×10^6 cell/mL) acceptability criteria.
#	New testing laboratory with precision to 0.4 µg/L