GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

July 1999

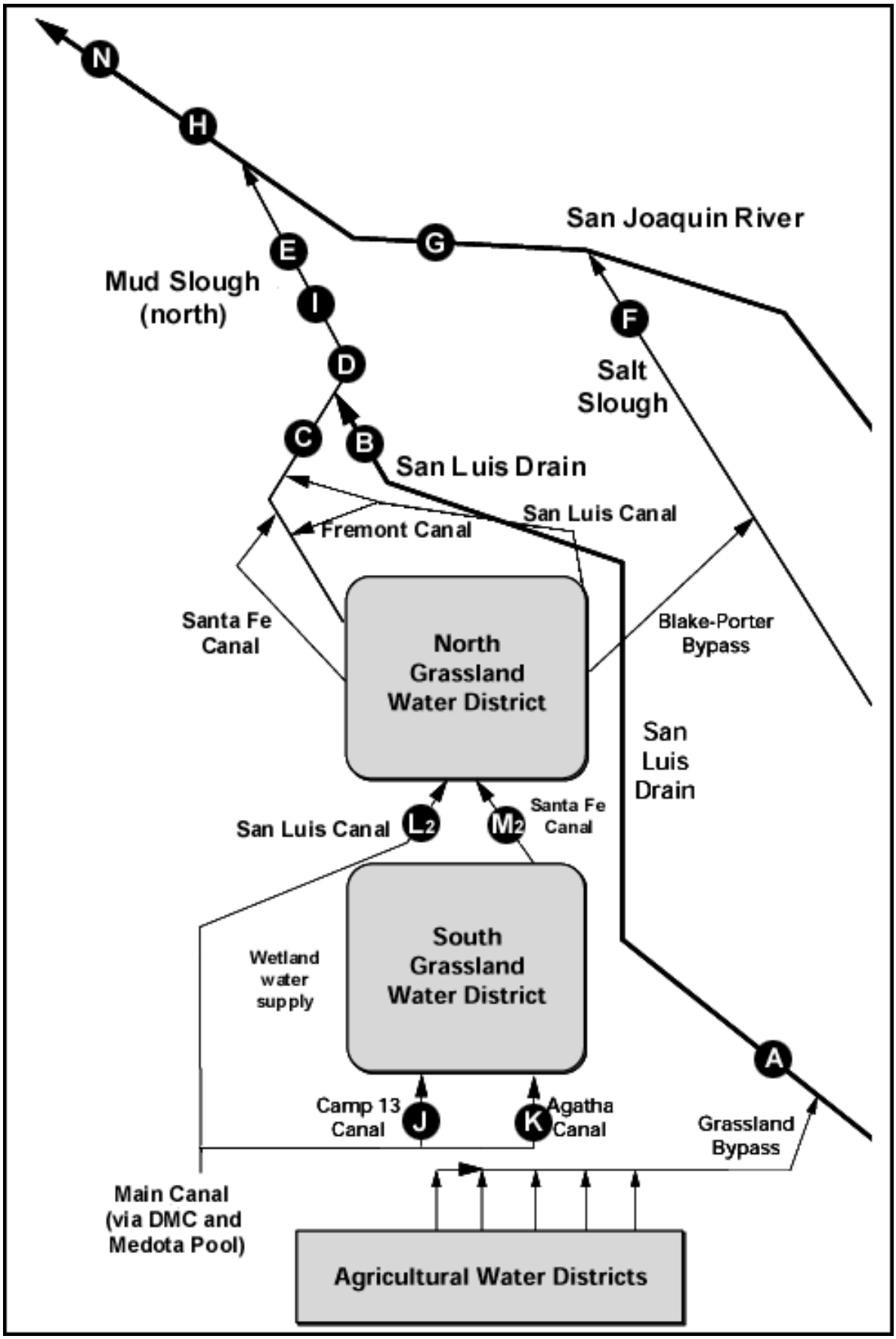
October 5, 1999

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


N
H
San Joaquin River
G
E
Mud Slough
(north)
I
F
D
Salt
Slough
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
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water
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Main Canal
(via DMC and
Medota Pool)
Agricultural Water Districts

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 1999.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	USGS
UNITS	cfs
Jul-01-1999	56
Jul-02-1999	59
Jul-03-1999	59
Jul-04-1999	65
Jul-05-1999	72
Jul-06-1999	69
Jul-07-1999	70
Jul-08-1999	73
Jul-09-1999	66
Jul-10-1999	63
Jul-11-1999	65
Jul-12-1999	68
Jul-13-1999	62
Jul-14-1999	58
Jul-15-1999	61
Jul-16-1999	62
Jul-17-1999	62
Jul-18-1999	67
Jul-19-1999	65
Jul-20-1999	67
Jul-21-1999	62
Jul-22-1999	65
Jul-23-1999	69
Jul-24-1999	70
Jul-25-1999	69
Jul-26-1999	72
Jul-27-1999	61
Jul-28-1999	60
Jul-29-1999	60
Jul-30-1999	67
Jul-31-1999	66
Mean	65

Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), July 1999.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Jul-01-1999	54.0	29.0	7.7	4,540	50.2	14.6
Jul-02-1999	55.0	28.0	7.7	4,830	50.5	15.0
Jul-03-1999	57.0	25.9	7.7	4,740	44.5	13.7
Jul-04-1999	58.0	24.1	7.9	4,850	47.5	14.9
Jul-05-1999	65.0	23.8	7.6	4,860	51.5	18.1
Jul-06-1999	69.0	24.7	7.9	4,870	50.7	18.9
Jul-07-1999	66.0	24.7	7.6	4,770	55.3	19.7
Jul-08-1999	70.0	25.0	7.2	4,510	50.2	19.0
Jul-09-1999	73.0	26.2	7.2	4,690	52.0	20.5
Jul-10-1999	66.0	26.7	6.9	4,480	47.7	17.0
Jul-11-1999	62.0	27.7	6.8	4,250	41.2	13.8
Jul-12-1999	65.0	29.4	6.9	4,410	42.7	15.0
Jul-13-1999	64.0	30.3	7.3	4,640	45.5	15.7
Jul-14-1999	59.0	29.2	6.8	4,270	35.6	11.3
Jul-15-1999	57.0	28.0	7.3	4,440	43.0	13.2
Jul-16-1999	60.0	26.8	8.6	4,480	42.9	13.9
Jul-17-1999	62.0 e	25.9	8.5	4,630	45.9	15.3
Jul-18-1999	64.0 e	25.7	8.5	4,470	45.9	15.8
Jul-19-1999	67.0 e	25.3	7.1	4,230	43.0	15.5
Jul-20-1999	62.0	24.9	7.1	4,080	40.0	13.4
Jul-21-1999	65.0	24.6	7.5	4,170	42.0	14.7
Jul-22-1999	60.0	25.1	7.7	4,160	39.2	12.7
Jul-23-1999	63.0	25.6	7.8	4,140	37.5	12.7
Jul-24-1999	66.0	25.1	7.9	4,050	33.3	11.9
Jul-25-1999	68.0	25.1	8.3	4,280	36.6	13.4
Jul-26-1999	68.0	25.8	7.1	4,190	36.9	13.5
Jul-27-1999	68.0	26.1	7.2	4,370	43.0	15.8
Jul-28-1999	58.0	25.8	7.1	4,200	40.1	12.5
Jul-29-1999	58.0	25.4	7.4	4,400	44.1	13.8
Jul-30-1999	59.0	25.3	P	4,350	39.5	12.6
Jul-31-1999	64.0	25.6	P	4,320	41.2	14.2
Mean	63.0	26.2	7.5	4,440	43.8	
Total						**462**

Load Limitation for July 1999 (lbs)	**569**

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), July 1999.

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
Jul-01-1999	81	28.6	3,570
Jul-02-1999	91	27.4	3,150
Jul-03-1999	73	25.7	3,380
Jul-04-1999	76	24.2	3,560
Jul-05-1999	86	23.8	3,320
Jul-06-1999	91	24.7	3,240
Jul-07-1999	88	24.5	3,380
Jul-08-1999	86	25.0	3,370
Jul-09-1999	87	26.0	3,540
Jul-10-1999	86	26.4	3,160
Jul-11-1999	81	27.6	3,110
Jul-12-1999	81	29.4	3,310
Jul-13-1999	85	30.1	3,860
Jul-14-1999	79	28.7	3,650
Jul-15-1999	76	27.6	3,710
Jul-16-1999	78	26.4	3,700
Jul-17-1999	73	25.4	3,980
Jul-18-1999	74	25.2	3,710
Jul-19-1999	77	24.8	3,510
Jul-20-1999	78	24.4	3,430
Jul-21-1999	77	24.1	3,650
Jul-22-1999	71	24.5	3,810
Jul-23-1999	73	25.0	3,760
Jul-24-1999	75	24.4	3,710
Jul-25-1999	78	24.7	3,760
Jul-26-1999	74	25.3	3,920
Jul-27-1999	75	25.4	4,060
Jul-28-1999	67	25.3	3,970
Jul-29-1999	67	24.9	4,020
Jul-30-1999	66	24.7	4,020
Jul-31-1999	67	25.0	4,140

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 1999.

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
Jul-01-1999	144	28.6	1,180
Jul-02-1999	140	26.7	1,080
Jul-03-1999	169	24.0	987
Jul-04-1999	183	22.7	955
Jul-05-1999	217	23.5	902
Jul-06-1999	238	24.8	834
Jul-07-1999	196	24.4	867
Jul-08-1999	161	25.0	912
Jul-09-1999	147	26.2	935
Jul-10-1999	142	26.4	990
Jul-11-1999	156	27.6	899
Jul-12-1999	148	30.0	900
Jul-13-1999	168	30.4	872
Jul-14-1999	176	28.5	858
Jul-15-1999	208	27.0	820
Jul-16-1999	200	25.5	882
Jul-17-1999	187	24.9	912
Jul-18-1999	173	25.0	986
Jul-19-1999	204	24.2	902
Jul-20-1999	223	23.9	847
Jul-21-1999	201	23.9	933
Jul-22-1999	160 e	24.8	1,050
Jul-23-1999	147 e	25.2	1,090
Jul-24-1999	145 e	24.0	1,030
Jul-25-1999	186 e	24.3	845
Jul-26-1999	248 e	25.4	745
Jul-27-1999	263 e	25.4	795
Jul-28-1999	207 e	24.9	919
Jul-29-1999	233	24.4	854
Jul-30-1999	261	24.5	810
Jul-31-1999	275	24.8	805

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 1999.

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
Jul-01-1999	527	28.1	1,450	4.6
Jul-02-1999	501	27.8	1,530	5.2
Jul-03-1999	520	26.4	1,530	4.8
Jul-04-1999	523	24.2	1,500	4.7
Jul-05-1999	597	23.8	1,370	4.1
Jul-06-1999	606	24.6	1,310	4.6
Jul-07-1999	610	24.2	1,340	5.3
Jul-08-1999	596	24.7	1,310	5.0
Jul-09-1999	595	25.7	1,380	5.6
Jul-10-1999	569	26.0	1,300	5.1
Jul-11-1999	574	27.0	1,420	5.9
Jul-12-1999	555	28.9	1,340	4.8
Jul-13-1999	523	29.9	1,320	4.4
Jul-14-1999	503	28.9	1,450	5.1
Jul-15-1999	515	27.3	1,450	5.2
Jul-16-1999	519	26.1	1,360	4.1
Jul-17-1999	514	25.0	1,350	4.4
Jul-18-1999	529	24.5	1,330	4.1
Jul-19-1999	579	24.4	1,280	4.1
Jul-20-1999	568	24.0	1,280	4.6
Jul-21-1999	572	23.7	1,280	4.3
Jul-22-1999	563	24.1	1,200	3.8
Jul-23-1999	510	24.7	1,360	4.1
Jul-24-1999	527	24.0	1,420	4.4
Jul-25-1999	559	24.5	1,380	4.3
Jul-26-1999	630	25.4	1,360	4.1
Jul-27-1999	664	25.1	1,190	4.0
Jul-28-1999	656	24.7	1,210	4.1
Jul-29-1999	584	24.3	1,300	4.4
Jul-30-1999	602	24.2	1,330	3.9
Jul-31-1999	629	24.3	1,250	4.1

Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1999.

See Table 27 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
May-05-1999	40	NA	NA	4,520	35	51.0	50.9	6.7
May-12-1999	41	NA	NA	4,880	41	64.6	60.3	7.9
May-19-1999	48	NA	NA	4,640	210	51.4	51.7	7.2
May-26-1999	51	NA	NA	4,840	100	48.9	51.2	7.6
Jun-02-1999	47	NA	NA	5,210	110	51.3	50.9	8.2
Jun-09-1999	66	NA	NA	4,940	170	49.8	49.8	7.4
Jun-16-1999	62	NA	NA	5,210	180	56.0	55.4	7.8
Jun-23-1999	55	NA	NA	5,040	180	47.4	48.4	7.9
Jul-07-1999	70	NA	NA	4,510	150	47.8	47.2	7.1
Jul-14-1999	58	NA	NA	4,640	130	41.2	42.3	7.7
Jul-21-1999	62	NA	NA	4,480	P	42.9	39.9	7.3
Jul-28-1999	60	NA	NA	4,250	150	40.3	40.8	P

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1999.

See Table 27 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
May-13-1999	41.1	19.5	7.5	4,260	36	59.7	58.3	6.8
May-20-1999	48.6	20.8	6.5	4,630	78	58.0	60.1	7.0
May-27-1999	51.1	NA	NA	4,670	80	54.1	53.9	6.7
Jun-03-1999	46.0	17.2	7.4	4,610	65	54.3	54.0	7.0
Jun-10-1999	66.0	21.5	8.1	5,090	83	60.0	59.3	7.3
Jun-17-1999	63.0	24.7	7.9	4,910	51	54.4	55.8	7.9
Jun-24-1999	45.0	24.4	7.8	5,040	73	62.0	57.6	7.6
Jul-01-1999	54.0	30.7	6.9	4,800	78	47.7	49.4	8.1
Jul-08-1999	70.0	27.4	8.0	4,200	120	45.9	43.4	6.7
Jul-15-1999	57.0	28.4	8.0	4,200	56	40.5	38.6	7.3
Jul-22-1999	60.0	22.9	8.3	4,030	31	36.1	35.8	6.5
Jul-29-1999	58.0	21.5	8.1	4,370	38	47.7	48.9	7.3

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1999.

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
May-13-1999	44	19.4	8.2	1,710	1.1	1.4
May-20-1999	46	21.9	7.9	1,140	0.9	0.9
May-27-1999	67	NA	NA	1,170	0.9	1.0
Jun-03-1999	60	15.7	8.2	1,160	0.9	0.9
Jun-10-1999	43	23.0	8.1	1,420	1.0	1.2
Jun-17-1999	22	25.6	8.4	1,910	1.1	1.7
Jun-24-1999	24	23.4	7.3	1,750	1.7	1.6
Jul-01-1999	27	29.8	8.4	1,710	2.2	1.8
Jul-08-1999	16	25.6	8.6	1,560	1.8	1.5
Jul-15-1999	19	31.2	8.2	1,260	2.0	1.3
Jul-22-1999	11	22.9	8.6	1,670	1.7	1.9
Jul-29-1999	9	19.3	7.6	1,800	1.9	2.1

++ 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), 1999.

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
May-13-1999	85	18.9	7.9	3,970	45.5	6.1
May-20-1999	95	21.4	7.5	2,850	25.2	3.7
May-27-1999	118	NA	NA	2,730	22.9	3.3
Jun-03-1999	106	16.4	7.0	2,690	23.4	3.5
Jun-10-1999	109	22.6	8.3	3,570	32.1	4.9
Jun-17-1999	85	25.0	8.2	4,100	38.0	6.3
Jun-24-1999	69	24.3	7.6	4,220	40.0	6.1
Jul-01-1999	81	29.6	8.0	3,910	37.7	6.3
Jul-08-1999	86	26.1	8.6	4,100	43.0	6.3
Jul-15-1999	76	29.1	7.9	3,910	38.6	6.0
Jul-22-1999	71	22.8	8.3	4,160	38.9	6.8
Jul-29-1999	67	21.5	7.7	4,110	38.7	6.9

Table 10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1999.

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
May-13-1999	130	18.6	7.8	1,290	0.9	0.6
May-20-1999	124	17.9	7.1	1,370	0.8	0.6
May-27-1999	116	22.7	7.5	1,440	0.7	0.6
Jun-03-1999	147	17.0	6.7	1,350	0.5	0.6
Jun-10-1999	175	20.0	7.8	1,180	0.8	0.5
Jun-17-1999	115	22.9	7.9	1,450	0.9	0.7
Jun-24-1999	176	23.9	7.0	1,110	0.9	0.5
Jul-01-1999	144	27.8	7.7	1,270	0.8	0.5
Jul-08-1999	161	23.1	8.5	938	0.8	0.4
Jul-15-1999	208	26.2	8.7	864	0.9	0.5
Jul-22-1999	160	22.2	7.7	1,120	0.6	0.6
Jul-29-1999	233	22.1	7.5	885	0.8	0.6

Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1999.

See Table 27 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
May-13-1999	.	18.2	7.2	1,490	0.8	0.6
May-20-1999	.	18.7	7.3	1,740	0.6	0.7
May-27-1999	.	21.4	7.4	1,530	0.6	0.5
Jun-03-1999	.	19.0	6.7	1,730	0.4	0.6
Jun-10-1999	.	19.0	7.4	1,340	0.7	0.5
Jun-17-1999	.	22.6	7.1	1,520	0.8	0.6
Jun-24-1999	.	25.7	7.4	1,240	0.9	0.5
Jul-01-1999	.	27.6	7.5	1,450	0.7	0.5
Jul-08-1999	.	23.1	7.2	1,090	0.7	0.4
Jul-15-1999	.	26.8	7.9	972	0.9	0.4
Jul-22-1999	.	21.3	7.8	1,120	0.7	0.5
Jul-29-1999	.	22.7	7.9	1,050	0.6	0.5

Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1999.

See Table 27 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
May-06-1999	.	20.6	7.6	1,370	4.3	0.9
May-13-1999	.	19.6	8.1	1,680	6.2	1.2
May-20-1999	.	22.6	7.3	2,340	7.7	1.8
May-27-1999	.	26.4	7.2	1,960	6.9	1.5
Jun-03-1999	.	20.4	7.5	2,170	6.8	1.7
Jun-10-1999	.	22.1	8.1	2,050	8.4	1.9
Jun-17-1999	.	27.2	8.0	2,350	10.7	2.3
Jun-24-1999	.	26.5	7.3	2,080	9.5	1.9
Jul-01-1999	.	25.9	7.8	2,270	9.3	2.2
Jul-08-1999	.	26.9	8.5	2,020	11.1	2.1
Jul-15-1999	.	25.4	8.2	1,870	7.5	1.9
Jul-29-1999	.	24.2	8.2	1,650	5.5	1.6

Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1999.

See Table 27 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
May-05-1999	5	NA	NA	435	1.3	0.3
May-12-1999	15	NA	NA	418	1.8	0.3
May-19-1999	15	NA	NA	454	1.3	0.3
May-26-1999	60	NA	NA	459	1.0	0.2
Jun-02-1999	10	NA	NA	512	0.9	0.3
Jun-09-1999	10	NA	NA	553	1.3	0.5
Jun-16-1999	10	NA	NA	435	1.0	0.2
Jun-23-1999	5	NA	NA	548	1.1	0.3
Jul-07-1999	20	NA	NA	774	1.1	0.8
Jul-14-1999	20	NA	NA	371	1.2	0.3
Jul-21-1999	5	NA	NA	446	1.9	0.6
Jul-28-1999	5	NA	NA	492	0.9	P

Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1999.

See Table 27 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
May-05-1999	30	NA	NA	396	1.0	0.3
May-12-1999	4	NA	NA	359	1.4	0.2
May-19-1999	7	NA	NA	419	1.2	0.3
May-26-1999	5	NA	NA	461	1.0	0.2
Jun-02-1999	40	NA	NA	452	1.0	0.2
Jun-09-1999	40	NA	NA	419	1.0	0.2
Jun-16-1999	20	NA	NA	454	1.2	0.3
Jun-23-1999	15	NA	NA	484	1.1	0.3
Jul-07-1999	30	NA	NA	442	1.0	0.2
Jul-14-1999	10	NA	NA	329	1.0	0.2
Jul-21-1999	10	NA	NA	352	1.0	0.2
Jul-28-1999	10	NA	NA	417	0.8	P

Table 15. Weekly water quality monitoring at Station L2 (San Luis Canal at splits), 1999.

See Table 27 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
May-05-1999	66	NA	NA	656	1.2	0.5
May-12-1999	80	NA	NA	569	2.1	0.4
May-19-1999	110	NA	NA	497	1.4	0.3
May-26-1999	90	NA	NA	485	1.3	0.3
Jun-02-1999	78	NA	NA	671	1.1	0.5
Jun-09-1999	11	NA	NA	2,170	3.0	2.7
Jun-16-1999	2	NA	NA	1,560	2.4	1.6
Jun-23-1999	1	NA	NA	1,650	2.2	1.8
Jul-07-1999	1	NA	NA	1,310	2.3	1.4
Jul-14-1999	38	NA	NA	965	2.0	1.0
Jul-21-1999	13	NA	NA	1,330	2.1	1.4
Jul-28-1999	7	NA	NA	1,520	2.1	P

Table 16. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir), 1999.

See Table 27 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
May-05-1999	28	NA	NA	950	1.4	0.8
May-12-1999	36	NA	NA	968	1.7	1.0
May-19-1999	43	NA	NA	840	1.4	0.8
May-26-1999	54	NA	NA	1,060	1.7	1.3
Jun-02-1999	48	NA	NA	791	1.3	0.7
Jun-09-1999	38	NA	NA	1,230	1.8	1.5
Jun-16-1999	22	NA	NA	1,150	2.1	1.4
Jun-23-1999	29	NA	NA	1,100	1.8	1.4
Jul-07-1999	24	NA	NA	1,140	2.0	1.6
Jul-14-1999	12	NA	NA	979	1.7	1.4
Jul-21-1999	22	NA	NA	1,320	2.1	2.4
Jul-28-1999	28	NA	NA	1,060	1.6	p

Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1999.

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
May-13-1999	1,640	18.2	8.4	610	1.9	0.4
May-20-1999	836	22.2	7.6	1,200	2.8	0.8
May-27-1999	836	25.8	7.9	1,180	3.7	0.8
Jun-03-1999	703	19.9	7.8	1,340	3.6	0.9
Jun-10-1999	832	21.5	8.0	1,210	4.0	0.9
Jun-17-1999	593	25.9	7.6	1,420	6.0	1.2
Jun-24-1999	584	27.4	7.9	1,320	4.5	1.0
Jul-01-1999	527	25.6	7.7	1,460	4.3	1.2
Jul-08-1999	596	26.7	8.3	1,270	5.1	1.1
Jul-15-1999	515	25.6	8.1	1,430	5.1	1.2
Jul-22-1999	563	24.4	8.2	1,200	3.7	1.1
Jul-29-1999	584	23.3	8.0	1,320	4.2	1.2

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from August 1998 to July 1999. 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	%	%	%	%	%	%
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
January-99	100	88	60*	43*	80	100
February-99	98	65	90	78	48 †	83
March-99	75	58	88	85	65 †	100
April-99	93	88	100	83	73 †	100
May-99	98	90	93	88	50 †	98
June-99	98	93	100	98	70 †	100
July-99	93	100	90	93	98	100

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from August 1998 to July 1999. 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
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
January-99	0.72	0.62	0.38	0.23*	0.49	0.69
February-99	0.64	0.43	0.50	0.47	0.30	0.50
March-99	0.45	0.37	0.55	0.54	0.38	0.56
April-99	0.66	0.61	0.78	0.57	0.48	0.72
May-99	0.78	0.76	0.74	0.61	0.39	0.71
June-99	0.67	0.68	0.72	0.67	0.43	0.72
July-99	0.72	0.77	0.69	0.67	0.68	0.63

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from August 1998 to July 1999. 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	%	%	%	%	%	%
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
January-99	100	100	100	100	100	100
February-99	100	100	90	90	80	90
March-99	100	90	90	100	80	90
April-99	90	100	100	100	100	100
May-99	100	90	90	100	100	100
June-99	100	80	90	100	90	90
July-99	90	100	80	90	50 †	90

Table 21. Summary of Daphnia magna reproduction in 7-day tests using water samples collected from August 1998 to July 1999. 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
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
January-99	33.0	28.7	31.2	22.9	14.9	48.0
February-99	25.4	24.0	31.7	21.1	23.8	20.3
March-99	65.4	69.6	70.9	57.4	45.1	52.7
April-99	17.1	24.4	20.6	21.6	19.9	13.8
May-99	31.6	36.0	33.8	37.4	30.8	39.2
June-99	23.8	24.0	21.2	18.5	8.6 †††	10.3
July-99	31.1	35.9	32.6	27.2	12.8	15.7

Table 22. Summary of Selenastrum capricornutum growth in 4-day tests using water samples collected from August 1998 to July 1999. 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
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 ‡
January-99	13.0*	20.6	20.7	19.2*	24.4	25.6
February-99	16.0*	33.5	24.1*	15.7*	31.5	27.1
March-99	14.5	11.8*	15.5	17.6	17.1	22.9
April-99	17.6	14.4*	15.8	23.0	19.6	22.6 ‡
May-99	12.0	13.3	11.8	8.5	11.5 ‡	14.7 ‡
June-99	9.3	10.1	9.4	11.1	7.4 ††††	11.6
July-99	9.1	10.5	9.9	11.2	7.5	11.9

Table 23. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May to July 1999.

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
May-10-1999	69	1.3	42	0.9	0.7
May-12-1999	67	1.4	30	1.0	0.5
May-14-1999	61	1.0	48	0.7	0.6
Jun-14-1999	44	1.2	34	1.0	<0.4
Jun-16-1999	52	1.4	37	0.9	<0.4
Jun-18-1999	54	1.4	43	0.7	0.5
Jul-12-1999	45	2.5	38	0.9	<0.4
Jul-14-1999	38	1.9	28	0.9	<0.4
Jul-16-1999	43	1.9	29	1.0	<0.4

Table 24. Summary of sulfate concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May to July 1999.

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	mg/L	mg/L	mg/L	mg/L	mg/L
May-10-1999	1,720	345	1,380	206	35
May-12-1999	1,770	217	943	177	37
May-14-1999	1,780	448	1,480	265	38
Jun-14-1999	1,500	414	1,190	149	30
Jun-16-1999	1,580	332	1,120	164	32
Jun-18-1999	1,600	417	1,340	191	43
Jul-12-1999	1,360	308	1,190	128	24
Jul-14-1999	1,370	245	1,060	120	18
Jul-16-1999	1,370	260	1,060	135	18

Table 25. Summary of total suspended solids concentrations in grab water samples collected from May to July 1999.

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
May-10-1999	24	132	25	142	19
May-12-1999	24	143	82	138	13
May-14-1999	36	45	24	31	11
Jun-14-1999	17	299	53	172	25
Jun-16-1999	41	155	34	152	40
Jun-18-1999	52	150	87	135	29
Jul-12-1999	49	97	60	122	21
Jul-14-1999	50	86	77	71	0
Jul-16-1999	29	50	23	89	3

Table 26. 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 27 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 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
.	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
NT	Not tested
(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 ($p<0.05$)
†	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.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.