GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

August 1999

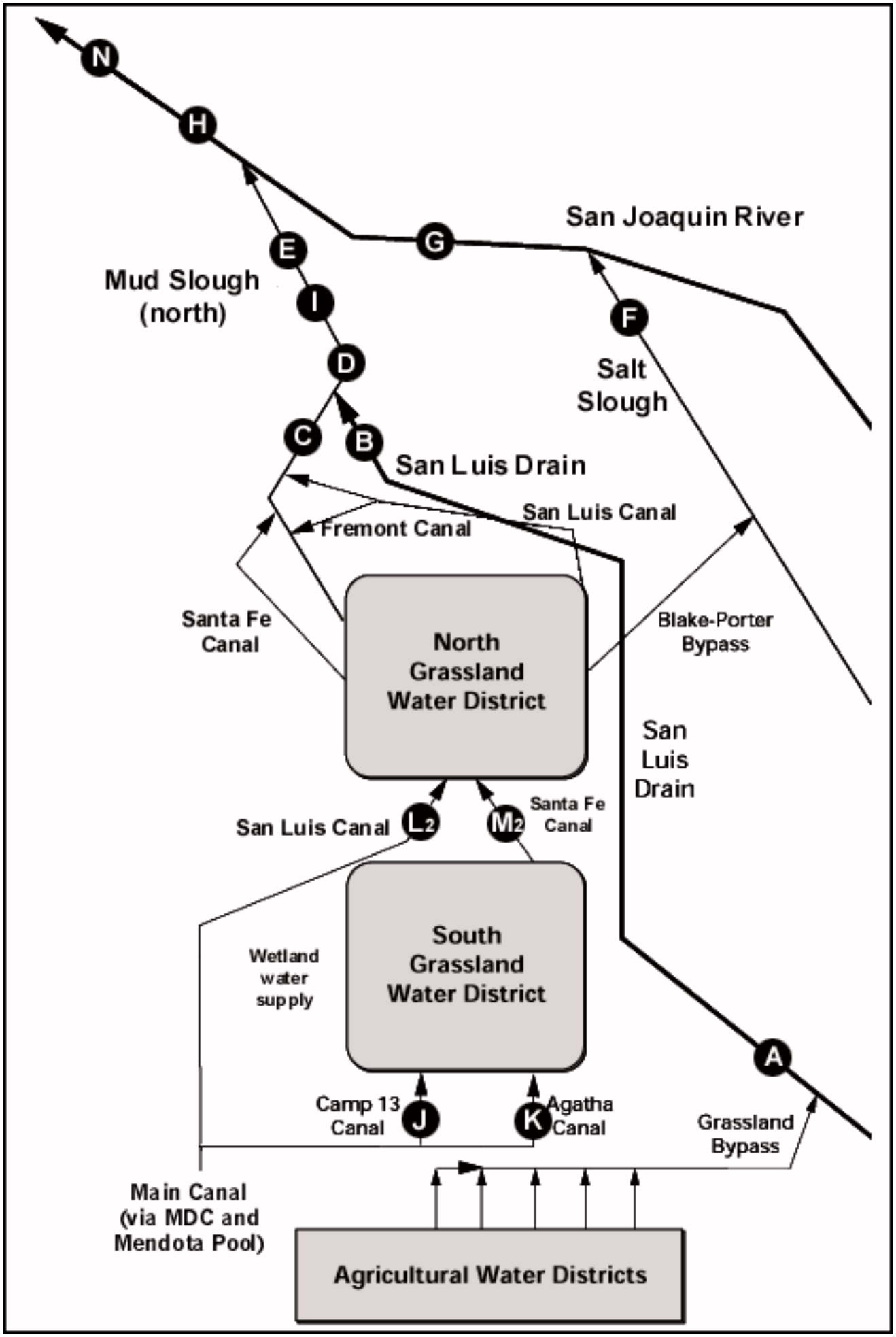
October 27, 1999

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
Wetland
water
supply
South
Grassland
Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
Main Canal
(via MDC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

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See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	USGS
UNITS	cfs
Aug-01-1999	70
Aug-02-1999	75
Aug-03-1999	66
Aug-04-1999	61
Aug-05-1999	58
Aug-06-1999	60
Aug-07-1999	65
Aug-08-1999	65
Aug-09-1999	69
Aug-10-1999	62
Aug-11-1999	55
Aug-12-1999	56
Aug-13-1999	58
Aug-14-1999	60
Aug-15-1999	55
Aug-16-1999	55
Aug-17-1999	57
Aug-18-1999	53
Aug-19-1999	53
Aug-20-1999	58
Aug-21-1999	57
Aug-22-1999	59
Aug-23-1999	68
Aug-24-1999	68
Aug-25-1999	76
Aug-26-1999	81
Aug-27-1999	81
Aug-28-1999	83
Aug-29-1999	77
Aug-30-1999	63
Aug-31-1999	64
Mean	64

Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), August 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
Aug-01-1999	64	25.7	7.7	4,600	47.6	16.4
Aug-02-1999	68	26.0	8.2	4,720	47.4	17.4
Aug-03-1999	70	26.6	8.5	4,850	51.4	19.4
Aug-04-1999	63	26.9	8.2	4,550	51.3	17.4
Aug-05-1999	59	26.2	7.5	4,240	50.0	15.9
Aug-06-1999	59	24.4	7.4	4,010	39.5	12.6
Aug-07-1999	61	23.6	7.8	4,180	39.6	13.0
Aug-08-1999	66	24.1	7.7	4,020	37.4	13.3
Aug-09-1999	67	24.0	7.6	3,960	40.1	14.5
Aug-10-1999	67	24.1	7.4	3,860	34.4	12.4
Aug-11-1999	60	23.8	7.6	3,700	30.8	10.0
Aug-12-1999	56	24.2	6.7	3,850	32.0	9.7
Aug-13-1999	56	24.7	7.1	4,160	35.2	10.6
Aug-14-1999	57	25.2	7.0	4,190	34.8	10.7
Aug-15-1999	60	24.9	6.8	4,000	29.3	9.5
Aug-16-1999	56	24.9	6.7	3,960	31.7	9.6
Aug-17-1999	54	25.6	6.9	4,250	43.2	12.6
Aug-18-1999	56	25.8	6.9	4,100	39.1	11.8
Aug-19-1999	53	25.4	6.6	3,960	34.6	9.9
Aug-20-1999	55	25.6	6.7	4,130	42.9	12.7
Aug-21-1999	58	25.6	6.7	4,120	42.3	13.2
Aug-22-1999	58	26.0	6.5	4,010	38.9	12.2
Aug-23-1999	60	27.0	5.6	3,640	32.3	10.5
Aug-24-1999	67	27.1	5.7	3,540	25.9	9.4
Aug-25-1999	68	27.3	5.4	3,380	24.8	9.1
Aug-26-1999	76	26.8	5.6	3,780	38.6	15.8
Aug-27-1999	81	26.7	6.3	3,800	40.3	17.6
Aug-28-1999	81	26.9	5.8	3,480	38.8	17.0
Aug-29-1999	82	26.8	5.8	3,580	42.9	19.0
Aug-30-1999	73	26.1	6.1	3,670	44.9	17.7
Aug-31-1999	62	23.7	5.7	3,690	50.2	16.8
Mean	64	25.5	6.8	4,000	39.1	
Total						**418**

Load Limitation for August 1999 (lbs)	**506**

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), August 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
Aug-01-1999	71	25.1	4,230
Aug-02-1999	74	25.4	4,740
Aug-03-1999	76	25.9	4,820
Aug-04-1999	70	26.4	4,750
Aug-05-1999	67	25.8	4,400
Aug-06-1999	67	24.2	4,030
Aug-07-1999	70	23.4	3,700
Aug-08-1999	80	23.8	3,330
Aug-09-1999	79	23.6	2,930
Aug-10-1999	75	23.7	P
Aug-11-1999	68	23.4	P
Aug-12-1999	63	23.6	P
Aug-13-1999	75	24.1	P
Aug-14-1999	73	24.2	P
Aug-15-1999	76	24.0	P
Aug-16-1999	68	24.1	P
Aug-17-1999	65	25.1	P
Aug-18-1999	59	P	P
Aug-19-1999	63	P	P
Aug-20-1999	74	P	P
Aug-21-1999	75	P	P
Aug-22-1999	74	P	P
Aug-23-1999	87	P	P
Aug-24-1999	92	P	P
Aug-25-1999	73	26.7	2,940
Aug-26-1999	79	26.1	3,210
Aug-27-1999	95	26.3	2,900
Aug-28-1999	105	P	P
Aug-29-1999	111	P	P
Aug-30-1999	117	25.5	2,280
Aug-31-1999	93	22.8	2,500

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), August 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
Aug-01-1999	256	24.6	831
Aug-02-1999	258	25.3	789
Aug-03-1999	245	26.0	793
Aug-04-1999	180	26.4	860
Aug-05-1999	161	25.2	943
Aug-06-1999	174	22.9	883
Aug-07-1999	187	22.5	886
Aug-08-1999	231	23.4	768
Aug-09-1999	261	23.4	760
Aug-10-1999	255	23.5	805
Aug-11-1999	225	23.2	858
Aug-12-1999	152	24.0	1,020
Aug-13-1999	155	24.3	960
Aug-14-1999	171	24.3	879
Aug-15-1999	188	23.6	851
Aug-16-1999	222	24.2	821
Aug-17-1999	236	25.3	814
Aug-18-1999	189	25.2	869
Aug-19-1999	193	24.0	835
Aug-20-1999	214	24.5	773
Aug-21-1999	217	24.7	733
Aug-22-1999	241	25.2	700
Aug-23-1999	228	26.5	700
Aug-24-1999	189	26.4	736
Aug-25-1999	143	26.3	888
Aug-26-1999	182	25.6	837
Aug-27-1999	195	25.4	762
Aug-28-1999	191	26.2	745
Aug-29-1999	200	26.5	736
Aug-30-1999	182	25.0	781
Aug-31-1999	192	22.4	738

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), August 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
Aug-01-1999	652	24.3	1,230	3.8
Aug-02-1999	703	25.0	1,200	4.2
Aug-03-1999	710	25.6	1,220	4.5
Aug-04-1999	718	25.8	1,160	4.4
Aug-05-1999	675	25.2	1,210	4.7
Aug-06-1999	590	24.5	1,290	4.6
Aug-07-1999	600	23.6	1,330	4.6
Aug-08-1999	635	23.7	1,300	3.9
Aug-09-1999	661	23.7	1,310	4.2
Aug-10-1999	689	23.8	1,210	3.8
Aug-11-1999	653	23.8	1,200	4.0
Aug-12-1999	604	23.8	1,270	3.6
Aug-13-1999	548	23.7	1,330	3.2
Aug-14-1999	583	23.7	1,370	3.3
Aug-15-1999	587	23.5	1,310	3.2
Aug-16-1999	587	24.3	1,320	3.5
Aug-17-1999	557	25.0	1,240	3.2
Aug-18-1999	556	24.8	1,280	3.3
Aug-19-1999	533	23.9	1,270	3.6
Aug-20-1999	527	24.2	1,320	4.3
Aug-21-1999	560	24.4	1,340	4.2
Aug-22-1999	632	24.9	1,210	4.3
Aug-23-1999	659	26.0	1,150	4.2
Aug-24-1999	605	26.2	1,120	4.0
Aug-25-1999	579	26.3	1,160	3.6
Aug-26-1999	509	25.3	1,280	3.6
Aug-27-1999	549	25.0	1,400	3.8
Aug-28-1999	616	25.8	1,370	5.7
Aug-29-1999	630	26.3	1,270	5.2
Aug-30-1999	677	25.0	1,190	5.0
Aug-31-1999	677	22.6	1,200	5.4

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
Jun-02-1999	47	.	.	5,210	110	51.3	50.9	8.2
Jun-09-1999	66	.	.	4,940	170	49.8	49.8	7.4
Jun-16-1999	62	.	.	5,210	180	56.0	55.4	7.8
Jun-23-1999	55	.	.	5,040	180	47.4	48.4	7.9
Jul-07-1999	70	.	.	4,510	150	47.8	47.2	7.1
Jul-14-1999	58	.	.	4,640	130	41.2	42.3	7.7
Jul-21-1999	62	.	.	4,480	150	42.9	39.9	7.3
Jul-28-1999	60	.	.	4,250	150	40.3	40.8	7.1
Aug-04-1999	61	.	.	4,550	200	47.3	43.9	7.0
Aug-11-1999	55	.	.	4,180	79	39.3	39.0	6.9
Aug-18-1999	53	.	.	4,410	P	43.7	45.2	7.3
Aug-25-1999	76	.	.	3,870	P	51.6	49.3	6.0

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
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
Aug-05-1999	59.0	24.3	8.3	3,870	50	42.6	40.5	7.0
Aug-12-1999	56.0	22.9	8.3	3,720	58	31.4	29.5	6.2
Aug-19-1999	53.0	23.2	8.1	3,960	69	32.2	30.8	6.6
Aug-26-1999	76.0	24.0	7.6	3,590	66	42.1	38.3	5.6

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
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
Aug-05-1999	8	23.8	8.2	1,860	1.8	2.1
Aug-12-1999	7	22.4	8.2	1,870	1.5	1.7
Aug-19-1999	10	20.5	8.0	2,040	1.5	1.7
Aug-26-1999	3	22.2	6.1	1,190	1.4	1.2

++ 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
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
Aug-05-1999	67	24.6	8.2	4,360	50.7	7.7
Aug-12-1999	63	23.4	8.3	3,700	29.3	6.2
Aug-19-1999	63	23.1	7.9	3,990	33.2	6.5
Aug-26-1999	79	24.0	6.6	3,790	42.4	5.7

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
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
Aug-05-1999	161	23.4	8.0	1,010	0.8	0.5
Aug-12-1999	152	21.7	7.7	1,070	0.7	0.5
Aug-19-1999	193	21.3	7.2	868	0.8	0.5
Aug-26-1999	182	24.3	7.3	872	0.7	0.4

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
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
Aug-05-1999	.	22.8	7.3	1,080	0.8	0.5
Aug-12-1999	.	21.1	7.1	970	0.7	0.4
Aug-19-1999	.	21.2	8.3	967	0.7	0.5
Aug-26-1999	.	24.5	8.1	1,070	0.7	0.4

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
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
Aug-05-1999	.	26.0	8.1	1,700	8.4	1.9
Aug-12-1999	.	24.2	8.1	1,580	5.2	1.4
Aug-19-1999	.	23.4	7.5	1,710	6.5	1.7
Aug-26-1999	.	24.4	8.0	1,730	6.0	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
Jun-02-1999	10	.	.	512	0.9	0.3
Jun-09-1999	10	.	.	553	1.3	0.5
Jun-16-1999	10	.	.	435	1.0	0.2
Jun-23-1999	5	.	.	548	1.1	0.3
Jul-07-1999	20	.	.	774	1.1	0.8
Jul-14-1999	20	.	.	371	1.2	0.3
Jul-21-1999	5	.	.	446	1.9	0.6
Jul-28-1999	5	.	.	492	0.9	0.5
Aug-04-1999	P	.	.	753	1.1	0.9
Aug-11-1999	P	.	.	633	1.2	0.7
Aug-18-1999	P	.	.	401	1.3	0.5
Aug-25-1999	P	.	.	417	1.4	0.4

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
Jun-02-1999	40	.	.	452	1.0	0.2
Jun-09-1999	40	.	.	419	1.0	0.2
Jun-16-1999	20	.	.	454	1.2	0.3
Jun-23-1999	15	.	.	484	1.1	0.3
Jul-07-1999	30	.	.	442	1.0	0.2
Jul-14-1999	10	.	.	329	1.0	0.2
Jul-21-1999	10	.	.	352	1.0	0.2
Jul-28-1999	10	.	.	417	0.8	0.2
Aug-04-1999	P	.	.	315	0.8	0.2
Aug-11-1999	P	.	.	345	0.9	0.2
Aug-18-1999	P	.	.	303	0.8	0.2
Aug-25-1999	P	.	.	316	1.3	0.2

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
Jun-02-1999	78	.	.	671	1.1	0.5
Jun-09-1999	11	.	.	2,170	3.0	2.7
Jun-16-1999	2	.	.	1,560	2.4	1.6
Jun-23-1999	1	.	.	1,650	2.2	1.8
Jul-07-1999	1	.	.	1,310	2.3	1.4
Jul-14-1999	38	.	.	965	2.0	1.0
Jul-21-1999	13	.	.	1,330	2.1	1.4
Jul-28-1999	7	.	.	1,520	2.1	1.8
Aug-04-1999	P	.	.	960	1.7	1.0
Aug-11-1999	P	.	.	867	1.5	0.9
Aug-18-1999	P	.	.	806	1.5	0.9
Aug-25-1999	P	.	.	744	1.6	0.7

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
Jun-02-1999	48	.	.	791	1.3	0.7
Jun-09-1999	38	.	.	1,230	1.8	1.5
Jun-16-1999	22	.	.	1,150	2.1	1.4
Jun-23-1999	29	.	.	1,100	1.8	1.4
Jul-07-1999	24	.	.	1,140	2.0	1.6
Jul-14-1999	12	.	.	979	1.7	1.4
Jul-21-1999	22	.	.	1,320	2.1	2.4
Jul-28-1999	28	.	.	1,060	1.6	1.6
Aug-04-1999	P	.	.	1,400	2.5	2.5
Aug-11-1999	P	.	.	1,140	2.1	1.6
Aug-18-1999	P	.	.	1,250	2.5	2.2
Aug-25-1999	P	.	.	1,070	2.1	1.1

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
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
Aug-05-1999	675	26.1	8.1	1,180	4.8	1.1
Aug-12-1999	604	23.7	7.9	1,250	3.5	1.0
Aug-19-1999	533	25.0	8.0	1,300	4.2	1.0
Aug-26-1999	509	24.8	8.1	1,310	3.4	1.0

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from September 1998 to August 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	%	%	%	%	%	%
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
August-99	93	100	89	68	98	100

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from September 1998 to August 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
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
August-99	0.60	0.70	0.54	0.44*	0.65	0.63

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from September 1998 to August 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	%	%	%	%	%	%
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
August-99	100	100	100	100	90	80

Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from September 1998 to August 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
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
August-99	19.9	23.2	24.3	19.9	11.4	12.3

Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from September 1998 to August 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
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
August-99	9.2*	10.0	10.2	11.9	13.3 ‡	14.9 ‡

Table 23. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, June to August 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
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
Aug-09-1999	23	1.8	13	0.8	<0.4
Aug-11-1999	18	0.9	16	0.7	<0.4
Aug-13-1999	24	1.0	21	0.9	<0.4

Table 24. Summary of sulfate concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, June to August 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
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
Aug-09-1999	1,170	230	1,020	89	19
Aug-11-1999	1,020	299	1,110	62	16
Aug-13-1999	866	296	1,230	130	12

Table 25. Summary of total suspended solids concentrations in grab water samples collected from June to August 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
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
Aug-09-1999	28	95	49	128	21
Aug-11-1999	23	117	100	131	19
Aug-13-1999	40	107	44	119	29

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%) 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.