

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

October 2012

April 2013

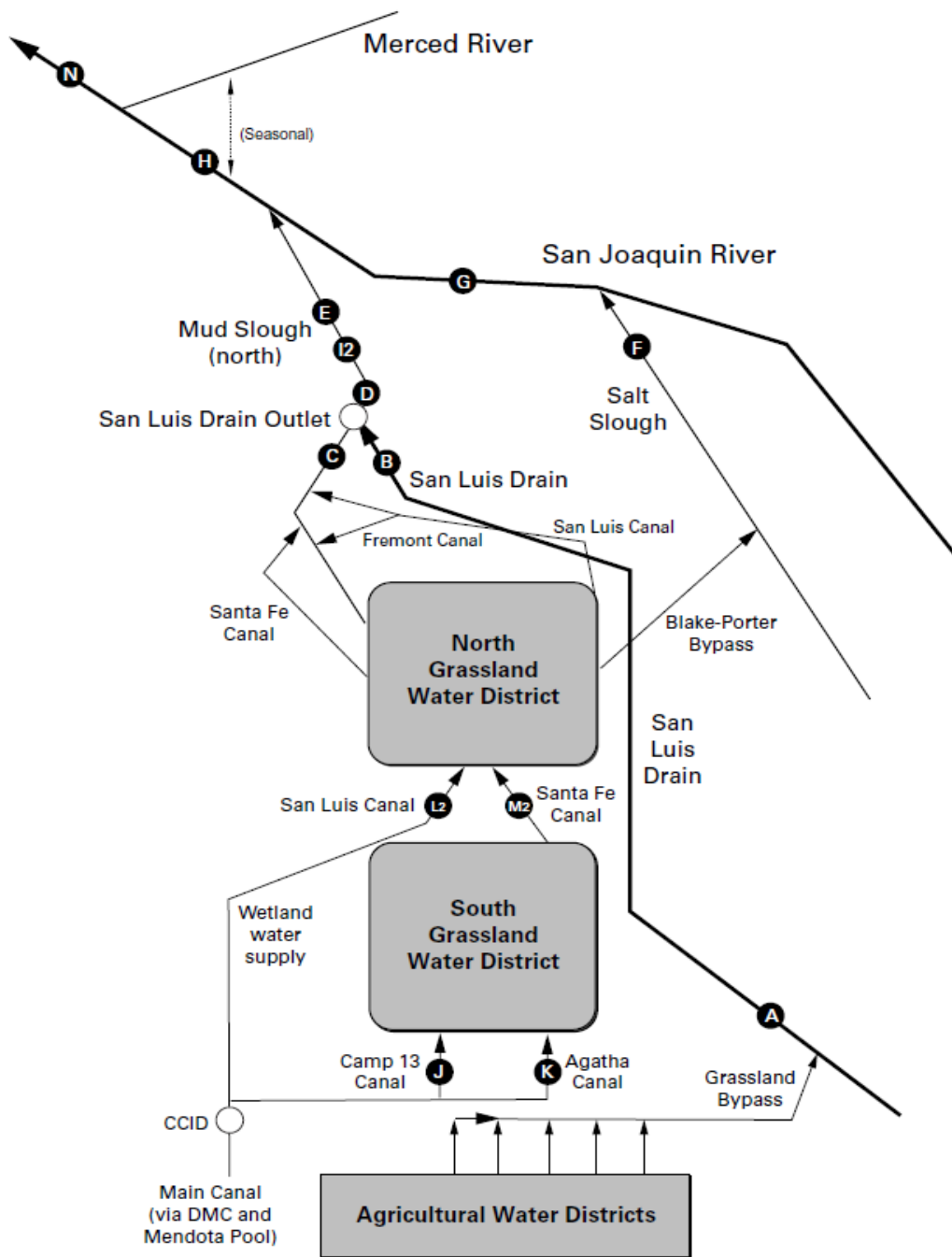
Preliminary Results

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), October 2012.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Salt Load
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	Computed
UNITS	cfs	°C	µS/cm	tons
Oct-01-2012	8	23.8	3,770	60
Oct-02-2012	1	24.5	4,330	13
Oct-03-2012	1	23.3	4,610	9
Oct-04-2012	1	21.5	4,590	7
Oct-05-2012	3	20.3	4,500	23
Oct-06-2012	5	20.8	4,490	43
Oct-07-2012	4	21.0	4,590	39
Oct-08-2012	4	20.0	4,570	32
Oct-09-2012	4	20.0	4,970	40
Oct-10-2012	2	20.3	5,340	20
Oct-11-2012	2	17.7	5,650	18
Oct-12-2012	3	17.6	5,400	36
Oct-13-2012	4	18.5	5,380	38
Oct-14-2012	2	19.7	5,580	25
Oct-15-2012	2	20.5	5,560	20
Oct-16-2012	3	21.2	5,460	31
Oct-17-2012	4	20.6	5,580	48
Oct-18-2012	4	20.2	5,750	48
Oct-19-2012	7	21.0	5,790	80
Oct-20-2012	6	21.2	5,130	63
Oct-21-2012	5	18.1	3,960	38
Oct-22-2012	5	16.2	3,720	40
Oct-23-2012	6	15.1	3,710	45
Oct-24-2012	9	15.0	4,130	74
Oct-25-2012	5	16.3	4,090	44
Oct-26-2012	3	15.4	4,630	26
Oct-27-2012	2	16.3	4,740	22
Oct-28-2012	2	17.4	5,170	21
Oct-29-2012	3	18.3	5,380	33
Oct-30-2012	5	18.8	5,170	53
Oct-31-2012	5	18.2	4,920	50
Mean	4	19.3	4,860	1,142
Total Acre-feet	239			
Salinity Load Value (Dry Year, October)				3,706

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), October 2012.

See Table 28 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	USBR	SLDMWA	USBR	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Oct-01-2012	11	25.4	6.6	3,700	5.6	0.3
Oct-02-2012	12	26.3	7.0	3,700	6.4	0.4
Oct-03-2012	9	25.4	7.0	3,990	5.7	0.3
Oct-04-2012	7	22.1	7.6	3,610	5.4	0.2
Oct-05-2012	7	19.4	7.2	3,760	6.0	0.2
Oct-06-2012	7	19.7	8.4	3,730	9.2	0.4
Oct-07-2012	10	20.0	7.1	4,090	10.0	0.5
Oct-08-2012	10	19.0	6.7	3,510	8.0	0.4
Oct-09-2012	10	18.4	6.4	3,360	8.5	0.4
Oct-10-2012	10	18.7	6.5	3,370	9.7	0.5
Oct-11-2012	9	15.2	6.0	3,370	9.4	0.5
Oct-12-2012	9	16.7	5.4	3,240	6.6	0.3
Oct-13-2012	10	17.4	4.8	2,940	4.9	0.3
Oct-14-2012	11	19.1	5.5	2,810	4.8	0.3
Oct-15-2012	11	20.8	6.1	3,070	4.7	0.3
Oct-16-2012	10	22.7	6.1	3,260	4.7	0.3
Oct-17-2012	11	21.7	5.9	3,200	4.6	0.3
Oct-18-2012	12	22.1	5.7	3,070	5.0	0.3
Oct-19-2012	12	21.6	5.6	3,120	4.7	0.3
Oct-20-2012	13	19.9	6.5	3,120	5.2	0.4
Oct-21-2012	13	16.5	7.0	3,450	5.6	0.4
Oct-22-2012	12	14.8	6.5	3,350	5.0	0.3
Oct-23-2012	12	14.4	6.3	3,130	4.9	0.3
Oct-24-2012	13	13.5	7.7	3,260	5.5	0.4
Oct-25-2012	15	16.7	8.2	3,590	6.1	0.5
Oct-26-2012	13	16.0	9.3	3,740	7.9	0.6
Oct-27-2012	11	16.7	9.8	4,210	8.3	0.5
Oct-28-2012	10	18.5	6.7	4,000	7.5	0.4
Oct-29-2012	10	19.0	5.4	3,870	9.0	0.5
Oct-30-2012	10	19.3	5.2	3,130	8.3	0.5
Oct-31-2012	12	16.5	5.6	2,880	9.3	0.6
Mean	11	19.2	6.6	3,440	6.7	0.4
Total Acre-feet	660					
Total (lbs)						12

Load Limitation for October 2012 (lbs)	233
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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.

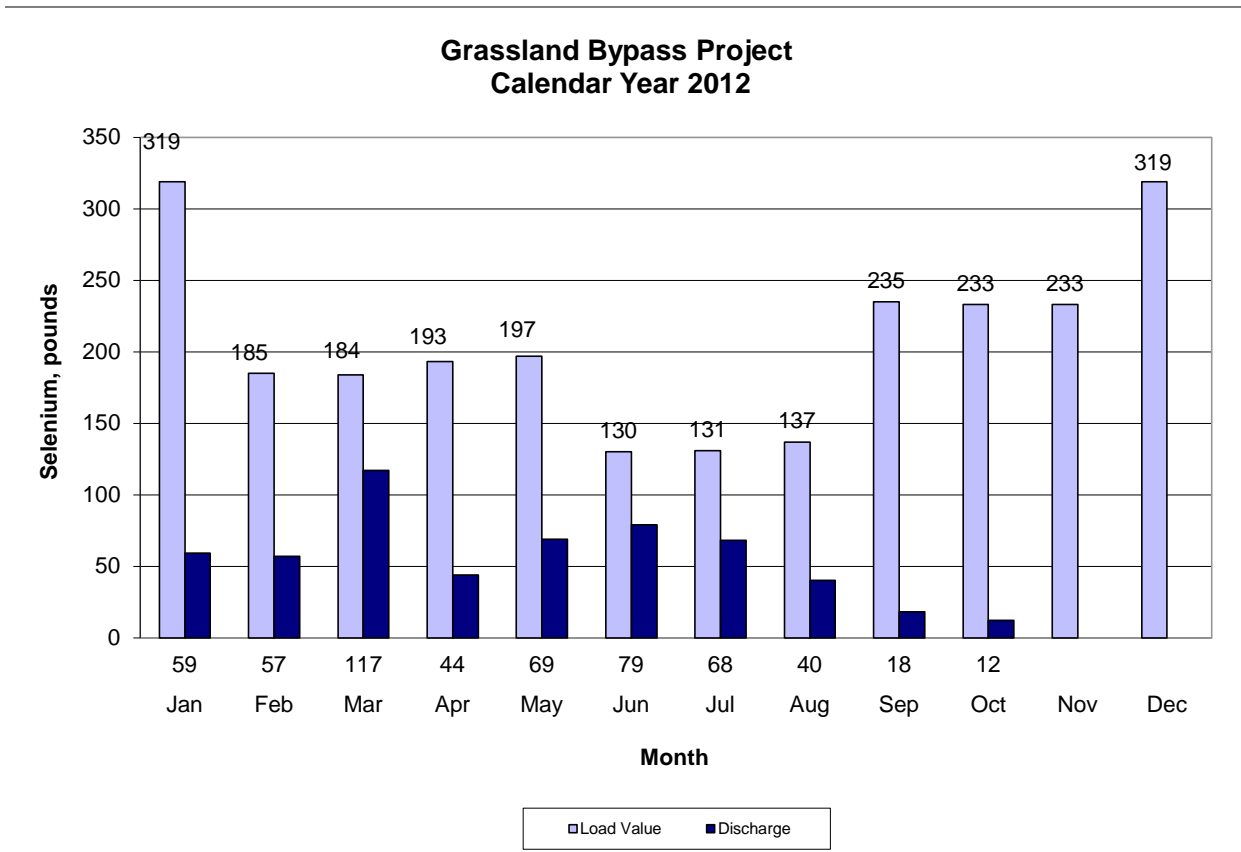


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), October 2012.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Oct-01-2012	41	23.4	1,960
Oct-02-2012	44	23.6	1,970
Oct-03-2012	44	23.5	1,750
Oct-04-2012	43	22.6	1,600
Oct-05-2012	49	21.3	1,540
Oct-06-2012	49	20.6	1,610
Oct-07-2012	53	20.6	1,770
Oct-08-2012	72	20.5	1,440
Oct-09-2012	81	20.1	1,380
Oct-10-2012	73	19.8	1,440
Oct-11-2012	64	18.4	1,630
Oct-12-2012	77	17.7	1,480
Oct-13-2012	93	17.8	1,370
Oct-14-2012	96	18.6	1,360
Oct-15-2012	87	19.6	1,430
Oct-16-2012	94	20.4	1,440
Oct-17-2012	113	20.3	1,350
Oct-18-2012	127	19.8	1,300
Oct-19-2012	122	20.5	1,330
Oct-20-2012	108	20.7	1,440
Oct-21-2012	94	19.4	1,630
Oct-22-2012	97	17.9	1,600
Oct-23-2012	99	16.7	1,570
Oct-24-2012	93	15.9	1,680
Oct-25-2012	88	16.1	1,840
Oct-26-2012	85	15.7	1,840
Oct-27-2012	85	15.7	1,850
Oct-28-2012	88	16.6	1,720
Oct-29-2012	84	17.5	1,680
Oct-30-2012	83	18.2	1,670
Oct-31-2012	87	18.3	1,670
Mean	81	19.3	1,590

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), October 2012.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Oct-01-2012	94	22.4	1,130
Oct-02-2012	97	22.6	1,140
Oct-03-2012	95	22.5	1,150
Oct-04-2012	82	22.0	1,200
Oct-05-2012	69	20.9	1,220
Oct-06-2012	65	20.0	1,210
Oct-07-2012	61	19.7	1,260
Oct-08-2012	72	19.5	1,320
Oct-09-2012	102	18.9	1,210
Oct-10-2012	109	18.6	1,170
Oct-11-2012	95	18.0	1,260
Oct-12-2012	103	17.4	1,210
Oct-13-2012	102	17.0	1,220
Oct-14-2012	92	17.4	1,270
Oct-15-2012	92	18.4	1,280
Oct-16-2012	99	19.4	1,250
Oct-17-2012	91	19.2	1,310
Oct-18-2012	97	19.0	1,320
Oct-19-2012	116	19.7	1,170
Oct-20-2012	129	19.6	1,180
Oct-21-2012	129	18.8	1,220
Oct-22-2012	111	17.3	1,320
Oct-23-2012	100	16.1	1,380
Oct-24-2012	111	15.1	1,310
Oct-25-2012	123	15.3	1,260
Oct-26-2012	118	15.1	1,360
Oct-27-2012	112	15.1	1,370
Oct-28-2012	103	15.5	1,430
Oct-29-2012	99	16.3	1,470
Oct-30-2012	97	16.9	1,460
Oct-31-2012	100	17.2	1,470
Mean	99	18.4	1,280

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), October 2012.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	USBR	USGS	USBR
UNITS	cfs	°C	mg/L	µS/cm	µg/L
Oct-01-2012	280	23.3	0.7	1,190	0.5
Oct-02-2012	286	23.3	0.6	1,180	0.5
Oct-03-2012	291	23.4	0.6	1,200	0.5
Oct-04-2012	300	22.8	0.6	1,220	0.7
Oct-05-2012	296	21.6	0.6	1,150	0.4
Oct-06-2012	304	20.3	0.5	1,110	< 0.4
Oct-07-2012	304	20.3	0.5	1,120	< 0.4
Oct-08-2012	308	20.2	0.6	1,170	0.4
Oct-09-2012	320	19.8	0.7	1,130	0.7
Oct-10-2012	339	19.8	0.6	1,120	0.6
Oct-11-2012	367	18.9	0.6	1,030	0.6
Oct-12-2012	375	18.2	0.5	1,010	0.5
Oct-13-2012	355	18.5	0.6	1,090	0.7
Oct-14-2012	364	19.2	0.6	1,100	0.5
Oct-15-2012	408	20.0	0.5	1,030	0.7
Oct-16-2012	406	20.8	0.5	991	< 0.4
Oct-17-2012	425	20.2	0.5	993	< 0.4
Oct-18-2012	485	19.8	0.5	864	< 0.4
Oct-19-2012	558	20.6	0.4	804	0.6
Oct-20-2012	911	19.9	0.3	600	0.5
Oct-21-2012	1,280	17.8	0.2	446	0.5
Oct-22-2012	1,190	16.8	0.2	452	< 0.4
Oct-23-2012	962	16.3	0.3	518	0.5
Oct-24-2012	851	15.7	0.3	577	0.9
Oct-25-2012	823	16.0	0.3	611	0.4
Oct-26-2012	764	15.6	0.4	645	0.5
Oct-27-2012	666	16.0	0.4	706	0.8
Oct-28-2012	588	16.9	0.5	790	0.4
Oct-29-2012	571	17.6	0.5	833	0.5
Oct-30-2012	564	18.0	0.5	841	0.6
Oct-31-2012	545	17.9	0.5	848	0.5
Mean	532	19.2	0.5	920	0.6
Total Acre-feet	32,700				

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Total Suspended Solids	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA	Panoche DD	USBR	USBR	USBR
		Grab sample	Composite	Composite	Composite
UNITS	cfs	mg/L	µS/cm	µg/L	mg/L
Aug-06-2012	10	126	5,480	29	9.8
Aug-13-2012	10	150	5,130	35	9.4
Aug-20-2012	13	98	4,870	30	8.8
Aug-27-2012	3	30	5,350	25	9.3
Sep-03-2012	7	101	5,310	31	9.6
Sep-10-2012	5	125	5,690	22	10.0
Sep-17-2012	6	206	5,660	12	12.0
Sep-24-2012	1	86	4,350	19	7.7
Oct-01-2012	8	155	4,726	10	10.0
Oct-08-2012	4	145	6,070	12	13.0
Oct-15-2012	2	80	5,660	17	13.0
Oct-22-2012	5	138	4,990	25	9.5
Oct-29-2012	3	80	4,880	20	10.0

Note: Weekly results for specific conductance, selenium, and boron from composite of seven daily samples.

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Total Suspended Solids	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA	Panoche DD	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	mg/L	°C	.	µS/cm	µg/L	mg/L
Aug-01-2012	10	36	25.5	8.5	5,670	34.0	11.0
Aug-09-2012	12	27	25.8	8.5	6,050	21.0	12.0
Aug-14-2012	8	31	28.5	8.6	5,380	26.0	9.8
Aug-21-2012	10	20	25.7	8.3	5,120	27.0	8.5
Aug-28-2012	6	40	24.6	8.6	5,250	35.0	8.4
Sep-06-2012	6	38	23.4	8.9	4,860	21.0	8.0
Sep-13-2012	6	44	25.2	8.9	5,270	18.0	9.0
Sep-18-2012	9	18	22.5	9.0	5,190	16.0	10.0
Sep-26-2012	6	23	22.7	8.5	3,570	6.3	6.4
Oct-02-2012	12	24	23.2	8.0	3,740	4.9	6.7
Oct-10-2012	10	25	19.4	8.5	3,600	10.0	6.6
Oct-16-2012	10	39	20.4	8.0	3,410	4.9	5.6
Oct-23-2012	12	48	16.3	8.2	3,330	4.9	6.0
Oct-30-2012	10	38	17.1	8.2	3,010	8.5	5.1

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow		Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	calculated **		USBR	USBR	USBR	USBR	USBR
UNITS	cfs		°C	.	µS/cm	µg/L	mg/L
Aug-01-2012	22	.	24.6	9.1	1,390	1.4	1.6
Aug-09-2012	22	.	24.9	8.8	1,250	1.2	1.4
Aug-14-2012	28	.	28.8	9.0	1,250	1.4	1.4
Aug-21-2012	35	.	25.2	8.9	797	0.7	0.6
Aug-28-2012	19	.	24.2	9.1	931	0.8	0.6
Sep-06-2012	17	.	21.8	8.3	957	0.8	0.7
Sep-13-2012	13	.	25.9	8.8	1,350	0.4	0.9
Sep-18-2012	22	.	20.8	7.8	1,190	<0.4	0.7
Sep-26-2012	26	.	21.7	7.8	1,220	<0.4	0.7
Oct-02-2012	31	.	21.8	7.8	1,140	<0.4	0.7
Oct-10-2012	63	.	18.2	7.8	1,110	0.5	0.6
Oct-16-2012	84	.	19.6	7.7	1,180	<0.4	0.6
Oct-23-2012	88	.	15.7	7.9	1,330	0.6	0.9
Oct-30-2012	73	.	16.9	7.9	1,480	<0.4	1.0

** Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Turbidity	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	NTU	.	µS/cm	µg/L	mg/L
Aug-01-2012	32	25.1	52.6	8.6	3,040	11.0	5.0
Aug-21-2012	45	25.5	65.1	8.4	1,710	6.1	2.1
Aug-28-2012	25	24.0	27.6	8.5	2,600	10.0	3.6
Sep-06-2012	23	21.5	40.4	8.5	2,280	7.2	2.8
Sep-13-2012	19	24.9	16.8	8.5	3,170	5.8	4.3
Sep-18-2012	31	21.3	26.4	8.2	3,090	6.7	5.0
Sep-26-2012	32	21.6	23.0	7.8	2,000	2.3	2.3
Oct-02-2012	44	22.4	29.4	7.7	1,790	1.2	2.0
Oct-10-2012	73	18.8	19.5	7.6	1,440	1.4	1.3
Oct-16-2012	94	19.9	10.7	7.5	1,460	0.8	1.2
Oct-23-2012	99	16.2	15.5	7.6	1,590	0.9	1.5
Oct-30-2012	83	17.0	16.5	7.6	1,730	1.4	1.6

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER		Temperature	Turbidity	pH	Specific Conductance	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR	USBR
UNITS		°C	NTU	.	µS/cm	µg/L	mg/L
Aug-01-2012		NA	NA	NA	NA	NA	NA
Aug-09-2012	.	NA	NA	NA	NA	NA	NA
Aug-14-2012	.	NA	NA	NA	NA	NA	NA
Aug-28-2012	No Flow	NA	NA	NA	NA	NA	NA
Sep-06-2012	August-	NA	NA	NA	NA	NA	NA
Sep-13-2012	early October	NA	NA	NA	NA	NA	NA
Sep-18-2012	.	NA	NA	NA	NA	NA	NA
Sep-26-2012	.	NA	NA	NA	NA	NA	NA
Oct-02-2012	.	NA	NA	NA	NA	NA	NA
Oct-10-2012	.	19.1	14	7.6	1,440	1.3	1.2
Oct-16-2012	.	20.1	26	7.6	1,490	0.8	1.2
Oct-23-2012	.	16.0	7	7.6	1,610	0.8	1.6
Oct-30-2012	.	16.5	15	7.8	1,850	1.2	1.6

No samples were collected because this site had no flow through early October.

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	usgs	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-01-2012	166	24.2	7.7	831	< 0.4	0.3
Aug-09-2012	125	24.1	7.9	934	< 0.4	0.3
Aug-14-2012	136	26.5	8.7	903	0.5	0.3
Aug-21-2012	145	23.7	9.0	849	< 0.4	0.4
Aug-28-2012	109	22.1	8.6	1,030	0.4	0.4
Sep-06-2012	79	22.2	7.6	1,090	< 0.4	0.4
Sep-13-2012	64	22.9	7.7	1,180	< 0.4	0.5
Sep-18-2012	76	20.6	7.5	1,010	<0.4	0.4
Sep-26-2012	95	20.7	7.4	1,130	<0.4	0.4
Oct-02-2012	97	21.2	7.3	1,150	<0.4	0.5
Oct-10-2012	109	17.5	7.4	1,160	0.6	0.5
Oct-16-2012	99	18.9	7.5	1,290	<0.4	0.5
Oct-23-2012	100	15.4	7.3	1,440	<0.4	0.7
Oct-30-2012	97	16.2	7.5	1,500	0.4	0.7

Table 12. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	usgs	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-01-2012	162	25.5	8.8	900	< 0.4	0.3
Aug-09-2012	129	24.7	8.7	1,040	< 0.4	0.3
Aug-14-2012	129	27.5	8.7	1,020	< 0.4	0.4
Aug-21-2012	144	24.1	8.5	886	< 0.4	0.4
Aug-28-2012	94	23.1	8.6	1,280	0.4	0.4
Sep-06-2012	92	22.4	8.0	1,330	0.4	0.4
Sep-13-2012	56	23.6	8.1	1,680	< 0.4	0.5
Sep-18-2012	78	21.6	8.0	1,370	0.4	0.5
Sep-26-2012	99	21.5	7.8	1,300	<0.4	0.4
Oct-02-2012	120	22.1	7.9	1,260	<0.4	0.4
Oct-10-2012	123	17.8	8.1	1,290	0.7	0.5
Oct-16-2012	115	19.8	7.9	1,440	<0.4	0.5
Oct-23-2012	129	16.4	7.9	1,550	<0.4	0.7
Oct-30-2012	114	16.6	7.9	1,740	<0.4	0.7

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2012	20	.	.	481	< 0.4	0.2
Aug-13-2012	20	.	.	454	0.5	0.2
Aug-20-2012	20	.	.	484	< 0.4	0.2
Aug-27-2012	45	.	.	491	0.7	0.2
Sep-04-2012	45	.	.	533	0.5	0.2
Sep-10-2012	45	.	.	566	0.4	0.2
Sep-17-2012	105	.	.	637	0.6	0.2
Sep-24-2012	105	.	.	732	0.5	0.2
Oct-01-2012	105	.	.	681	0.6	0.2
Oct-08-2012	90	.	.	651	0.4	0.2
Oct-15-2012	60	.	.	577	0.6	0.2
Oct-22-2012	40	.	.	612	0.6	0.2
Oct-29-2012	40	.	.	618	0.6	0.2

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2012	0	.	.	705	0.9	0.6
Aug-13-2012	0	.	.	616	1.0	0.3
Aug-20-2012	25	.	.	428	< 0.4	0.2
Aug-27-2012	50	.	.	473	0.5	0.2
Sep-04-2012	80	.	.	532	0.6	0.2
Sep-10-2012	120	.	.	555	0.4	0.2
Sep-17-2012	140	.	.	629	0.4	0.2
Sep-24-2012	140	.	.	716	0.5	0.2
Oct-01-2012	140	.	.	692	<0.4	0.2
Oct-08-2012	140	.	.	637	0.5	0.2
Oct-15-2012	110	.	.	575	0.6	0.2
Oct-22-2012	100	.	.	607	0.5	0.2
Oct-29-2012	100	.	.	659	0.5	0.3

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2012	NA	.	.	1,100	0.8	0.8
Aug-13-2012	NA	.	.	2,110	2.4	1.9
Aug-20-2012	NA	.	.	628	0.5	0.4
Aug-27-2012	NA	.	.	568	0.7	0.3
Sep-04-2012	NA	.	.	605	0.6	0.3
Sep-10-2012	NA	.	.	582	0.4	0.2
Sep-17-2012	NA	.	.	648	0.5	0.3
Sep-24-2012	NA	.	.	728	0.7	0.3
Oct-01-2012	NA	.	.	838	0.5	0.4
Oct-08-2012	NA	.	.	742	0.7	0.3
Oct-15-2012	NA	.	.	643	0.6	0.2
Oct-22-2012	NA	.	.	1,150	1.1	1.0
Oct-29-2012	NA	.	.	1,050	0.8	0.9

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2012	NA	.	.	1,150	1.0	1.3
Aug-13-2012	NA	.	.	1,270	1.5	1.4
Aug-20-2012	NA	.	.	770	0.7	0.7
Aug-27-2012	NA	.	.	622	0.8	0.4
Sep-04-2012	NA	.	.	638	0.6	0.3
Sep-10-2012	NA	.	.	632	0.5	0.3
Sep-17-2012	NA	.	.	766	0.5	0.5
Sep-24-2012	NA	.	.	756	0.6	0.3
Oct-01-2012	NA	.	.	849	0.8	0.4
Oct-08-2012	NA	.	.	748	0.7	0.3
Oct-15-2012	NA	.	.	678	0.6	0.3
Oct-22-2012	NA	.	.	962	0.7	0.7
Oct-29-2012	NA	.	.	972	0.6	0.8

Table 17. Weekly water quality monitoring at Station H1 (Above Newman WW (previously SJR at Hills Ferry)).

(Collected data intended for use with biological monitoring.)

See Table 28 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
Aug-01-2012	.	.	.	1,670	2.4	1.1
Aug-08-2012	.	.	.	1,550	1.8	1.0
Aug-15-2012	.	.	.	1,550	1.3	1.0
Aug-22-2012	.	.	.	1,220	1.9	0.8
Aug-29-2012	.	.	.	1,340	1.4	0.9
Sep-05-2012	.	.	.	1,690	1.9	1.0
Sep-12-2012	.	.	.	1,680	1.2	1.0
Sep-19-2012	.	.	.	1,810	2.1	1.5
Sep-26-2012	.	.	.	1,540	0.7	0.8
Oct-03-2012	.	.	.	1,540	0.7	0.9
Oct-10-2012	.	.	.	1,350	1.2	0.9
Oct-17-2012	.	.	.	1,400	0.6	0.9
Oct-24-2012	.	.	.	1,600	0.5	1.0
Oct-31-2012	.	.	.	1,840	0.7	1.1

Table 18. Weekly water quality monitoring at Station H2 (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-01-2012	300	.	.	NA	NA	NA
Aug-08-2012	310	.	.	NA	NA	NA
Aug-15-2012	271	.	.	NA	NA	NA
Aug-22-2012	341	.	.	NA	NA	NA
Aug-29-2012	261	.	.	NA	NA	NA
Sep-05-2012	274	.	.	NA	NA	NA
Sep-12-2012	221	.	.	NA	NA	NA
Sep-19-2012	244	.	.	NA	NA	NA
Sep-26-2012	218	.	.	NA	NA	NA
Oct-03-2012	176	.	.	NA	NA	NA
Oct-10-2012	191	.	.	NA	NA	NA
Oct-17-2012	242	.	.	NA	NA	NA
Oct-24-2012	465	.	.	NA	NA	NA
Oct-31-2012	248	.	.	NA	NA	NA

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	°C	°C	µg/L	mg/L
Aug-01-2012	335	25.0	8.1	1,130	0.8	0.6
Aug-09-2012	355	24.9	8.2	1,180	0.7	0.6
Aug-14-2012	299	26.9	8.3	1,160	1.2	0.7
Aug-21-2012	357	25.6	8.9	1,100	1.0	0.6
Aug-28-2012	316	22.5	8.2	1,160	0.9	0.5
Sep-06-2012	320	21.8	7.9	1,120	0.8	0.5
Sep-13-2012	310	23.1	8.0	1,070	0.5	0.4
Sep-18-2012	290	20.6	7.9	1,040	0.6	0.4
Sep-26-2012	277	21.1	7.9	1,210	0.7	0.6
Oct-02-2012	286	21.8	7.9	1,280	0.5	0.7
Oct-10-2012	339	18.3	7.9	1,220	0.7	0.6
Oct-16-2012	406	19.6	7.9	1,100	0.4	0.5
Oct-23-2012	962	15.4	8.0	556	<0.4	0.3
Oct-30-2012	564	16.4	7.9	939	0.4	0.5

Table 20. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER				Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	USBR	USBR	USBR
UNITS	.	.	.	µS/cm	µg/L	mg/L
Aug-06-2012	.	.	.	442	< 0.4	0.2
Aug-13-2012	.	.	.	430	0.6	0.2
Aug-20-2012	.	.	.	434	<0.4	0.2
Aug-27-2012	.	.	.	475	0.6	0.2
Sep-04-2012	.	.	.	514	0.5	0.2
Sep-10-2012	.	.	.	562	0.4	0.2
Sep-17-2012	.	.	.	628	0.5	0.2
Sep-24-2012	.	.	.	717	0.4	0.2
Oct-01-2012	.	.	.	719	<0.4	0.2
Oct-08-2012	.	.	.	587	0.5	0.2
Oct-15-2012	.	.	.	612	0.5	0.2
Oct-22-2012	.	.	.	606	0.5	0.2
Oct-29-2012	.	.	.	599	0.6	0.2

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from November 2011 to October 2012. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 28 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	%	%	%	%	%	%
Nov-2011	100	93	98	93	100	100
Dec-2011	100	98	98	95	95	98
Jan-2012	85	75	78	80	78	85
Feb-2012	98	90	100	100	98	98
Mar-2012	98	98	100	98	95	95
Apr-2012	98	100	98	95	93	93
May-2012	98	88	98	88	90	95
Jun-2012	95	100	100	98	100	98
Jul-2012	68	90	98	98	95	98
Aug-2012	65	93	100	100	93	93
Sep-2012	98	100	100	95	98	93
Oct-2012	NA	NA	NA	NA	NA	NA

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from November 2011 to October 2012. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 28 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
Nov-2011	0.50	0.47	0.47	0.46	0.48	0.44
Dec-2011	0.42	0.38	0.44	0.39	0.37	0.36
Jan-2012	0.37	0.33	0.33	0.33	0.34	0.35
Feb-2012	0.38	0.33	0.36	0.38	0.35	0.39
Mar-2012	0.56	0.46	0.45	0.44	0.41	0.49
Apr-2012	0.39	0.35	0.34	0.40	0.34	0.34
May-2012	0.32	0.32	0.36	0.34	0.30	0.31
Jun-2012	0.34	0.37	0.39	0.38	0.38	0.36
Jul-2012	0.27	0.33	0.39	0.37	0.34	0.36
Aug-2012	0.22	0.33	0.31	0.30	0.33	0.30
Sep-2012	0.33	0.27	0.31	0.32	0.32	0.34
Oct-2012	NA	NA	NA	NA	NA	NA

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from November 2011 to October 2012. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 28 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	%	%	%	%	%	%
Nov-2011	100	100	100	100	100	100
Dec-2011	90	80	80	70	80	90
Jan-2012	90	100	100	90	100	100
Feb-2012	100	90	100	90	100	100
Mar-2012	100	100	80	80	90	90
Apr-2012	100	80	90	100	100	90
May-2012	90	90	80	90	100	100
Jun-2012	90	80	90	90	100	100
Jul-2012	90	20*	40*	100	100	100
Aug-2012	40*	100	100	100	100	100
Sep-2012	90	100	90	80	90	100
Oct-2012	NA	NA	NA	NA	NA	NA

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from November 2011 to October 2012. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 28 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
Nov-2011	51.9	46.8	48.1	39.3	44.6	27.0
Dec-2011	24.3	32.1	36.7	24.0	28.0	34.1
Jan-2012	34.1	41.4	35.7	29.2	33.9	28.5
Feb-2012	58.0	48.9	63.8	54.9	58.6	52.0
Mar-2012	58.3	49.7	41.8	40.8	45.1	31.5
Apr-2012	35.4	30.0	33.7	27.7	31.4	25.4
May-2012	33.0*	39.7	40.2	42.2	47.2	38.9
Jun-2012	41.9	37.7	33.1	29.8	35.7	28.3
Jul-2012	56.3	24.1*	36.4	54.3	46.8	55.8
Aug-2012	10.2*	25.0	26.2	27.3	29.3	24.5
Sep-2012	28.2	26.2	34.6	18.2*	29.7	24.2
Oct-2012	NA	NA	NA	NA	NA	NA

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from November 2011 to October 2012. Each value is the mean of 4 replicates.

See Table 28 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
Nov-2011	14.7*	32.5	30.7	26.7	22.2	26.3
Dec-2011	17.4	36.6	36.0	35.6	25.1	2.9††††
Jan-2012	25.1	33.6	37.5	32.9	27.8	28.5
Feb-2012	25.0	36.4	34.9	4.9*	29.8	23.5
Mar-2012	17.9*	27.6	17.8*	26.7	25.6	24.0
Apr-2012	22.2	30.9	27.5	24.4	23.4	23.5
May-2012	18.1	8.3*	20.2	21.1	19.5	16.7
Jun-2012	21.8	27.7	27.1	34.3	23.1	16.3‡
Jul-2012	23.8	22.8	23.3	26.2	25.8	27.2
Aug-2012	24.3	29.5	27.8	32.3	27.5	23.1
Sep-2012	13.7*	19.0	17.4	20.2	14.4	16.8
Oct-2012	NA	NA	NA	NA	NA	NA

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, August 2012 to October 2012.

See Table 28 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
Aug-06-2012	19	1.2	6	< 0.4	< 0.4
Aug-08-2012	19	1.3	6	< 0.4	< 0.4
Aug-10-2012	21	1.3	12.0	< 0.4	< 0.4
Aug-13-2012	24	1.4	11.0	< 0.4	< 0.4
Sep-17-2012	17	< 0.4	6	< 0.4	< 0.4
Sep-19-2012	16	< 0.4	4	< 0.4	< 0.4
Sep-21-2012	15	< 0.4	2.7	< 0.4	< 0.4
Oct-17-2012	NA	NA	NA	NA	NA
Oct-19-2012	NA	NA	NA	NA	NA
Oct-21-2012	NA	NA	NA	NA	NA

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, August 2012 to October 2012.

See Table 28 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
Aug-06-2012	15	59	60	109	19
Aug-08-2012	20	83	84	105	19
Aug-10-2012	33	90	76	135	25
Aug-13-2012	36	55	64	88	14
Sep-17-2012	32	25	37	52	0
Sep-19-2012	33	29	79	48	8
Sep-21-2012	39	35	97	56	8
Oct-17-2012	NA	NA	NA	NA	NA
Oct-19-2012	NA	NA	NA	NA	NA
Oct-21-2012	NA	NA	NA	NA	NA

Table 28. 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 October 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated
PPD	Panoche Drainage District
U	results are determined to be an outlier at the time of data validation