

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

April 2013

October 2013

Preliminary Results

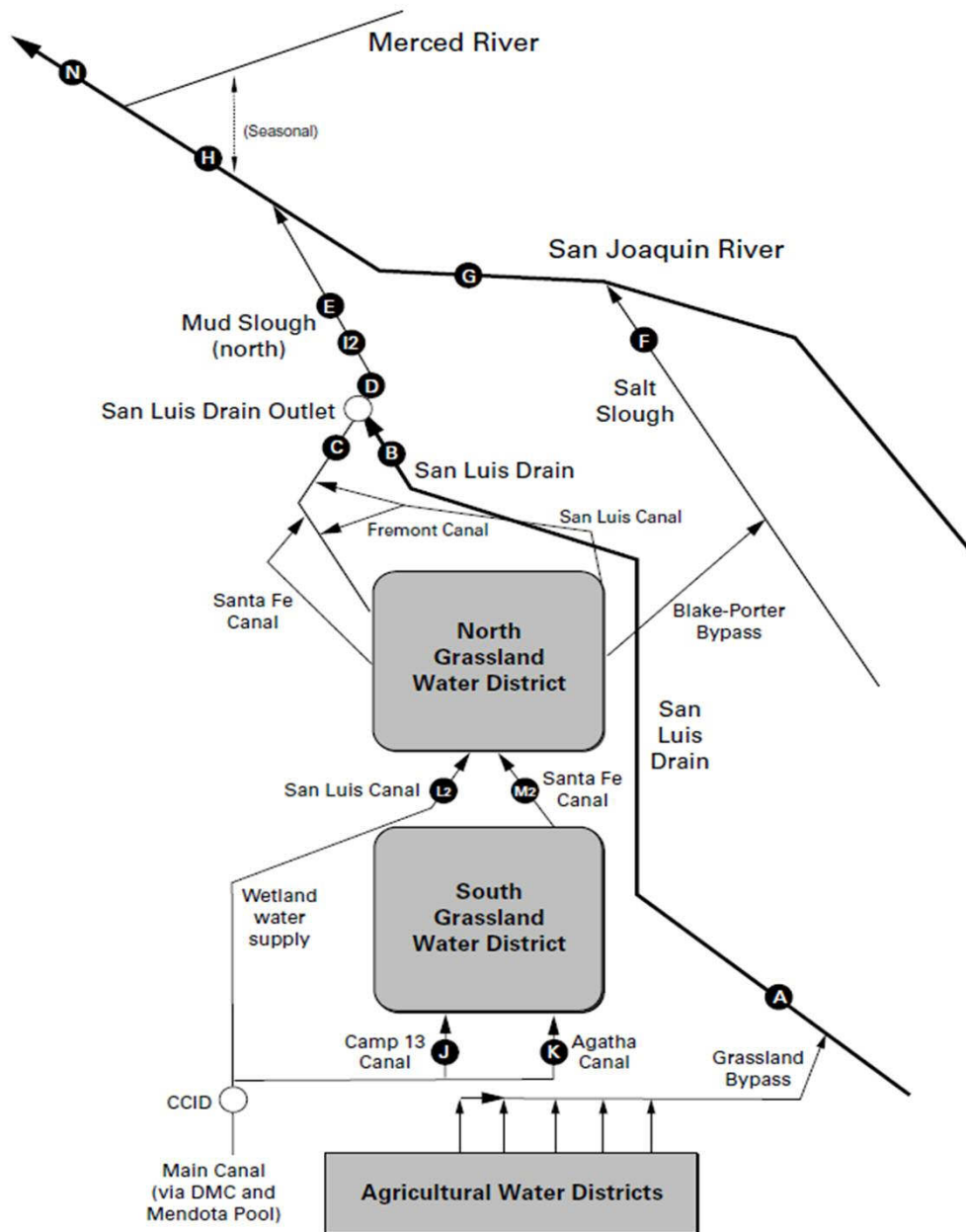
A cooperative effort of:

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

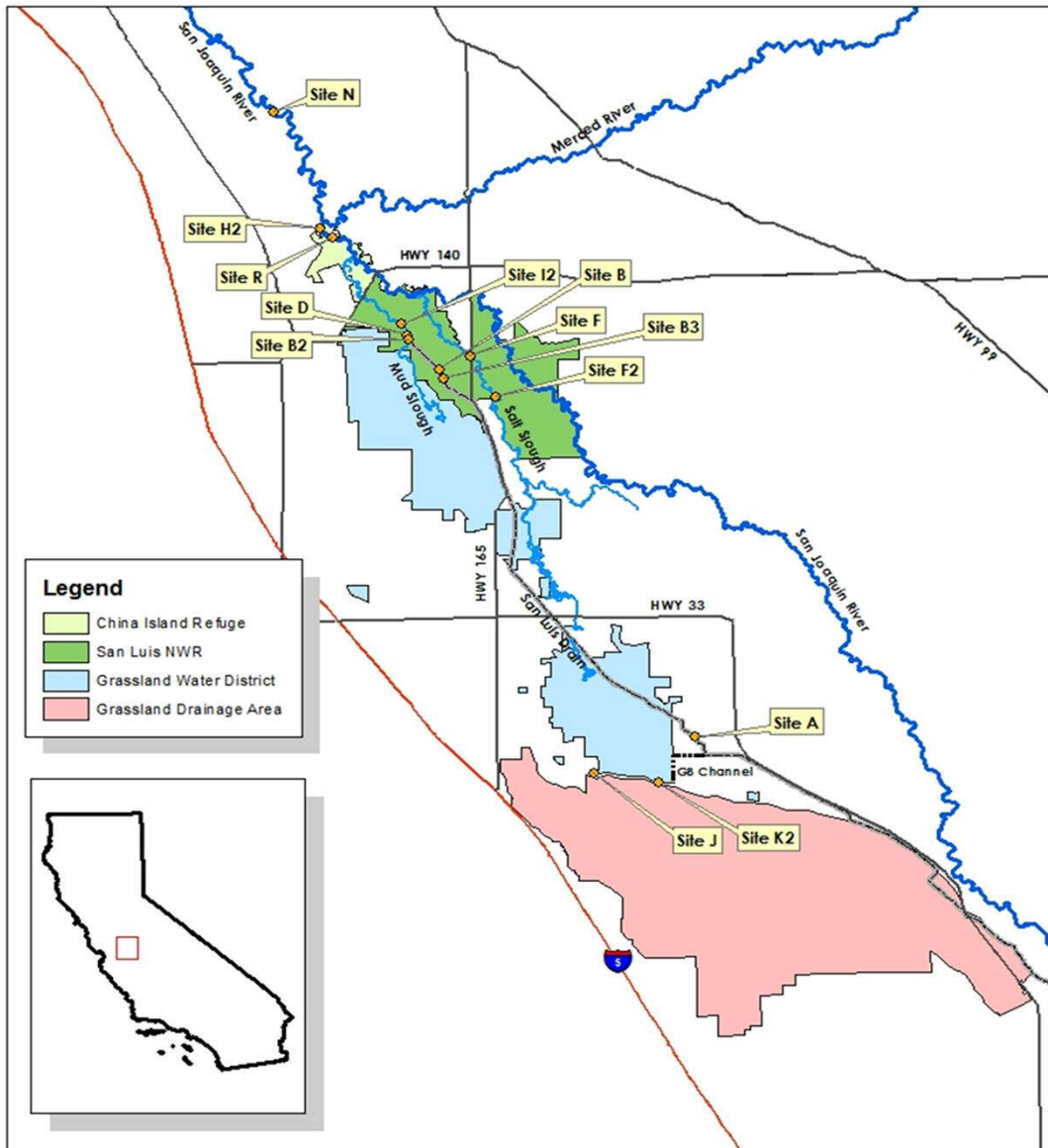
compiled by San Francisco Estuary Institute



Map 1: Current Monitoring Plan for the Grasslands Bypass Project



Map 2: Proposed 2013 Monitoring Plan for the Grasslands Bypass Project



Grasslands Bypass Project

2013 Monitoring Plan Sites

0 2.5 5 10 Miles



Grasslands Bypass Project
NAD 1983 California Zone 12
U.S. Bureau of Reclamation

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

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Monthly Monitoring

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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), April 2013.

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
Apr-01-2013	26	20.0	5,080	264
Apr-02-2013	20	19.2	4,930	193
Apr-03-2013	13	20.4	5,110	134
Apr-04-2013	13	20.5	5,180	136
Apr-05-2013	10	19.3	5,200	106
Apr-06-2013	13	19.2	5,590	145
Apr-07-2013	16	19.3	5,500	176
Apr-08-2013	26	15.8	5,520	292
Apr-09-2013	27	14.5	5,440	298
Apr-10-2013	27	17.1	5,380	285
Apr-11-2013	22	19.2	5,230	234
Apr-12-2013	16	19.6	4,980	156
Apr-13-2013	8	20.6	4,960	76
Apr-14-2013	11	18.4	4,940	105
Apr-15-2013	14	16.4	4,800	138
Apr-16-2013	15	14.1	5,140	157
Apr-17-2013	13	13.9	5,140	132
Apr-18-2013	13	16.4	4,620	124
Apr-19-2013	14	19.0	4,410	121
Apr-20-2013	13	20.2	4,530	120
Apr-21-2013	12	21.1	4,670	111
Apr-22-2013	10	21.8	4,810	96
Apr-23-2013	8	20.2	4,900	80
Apr-24-2013	9	20.5	4,950	90
Apr-25-2013	11	20.0	4,800	108
Apr-26-2013	8	21.2	4,810	74
Apr-27-2013	9	22.7	5,570	103
Apr-28-2013	9	23.7	5,390	93
Apr-29-2013	9	23.9	5,540	96
Apr-30-2013	9	21.3	5,250	94
.
Mean	14	19.3	5,080	4,339
Total Acre-feet	843			
Salinity Load Value (Critical Year, April)				5,910

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), April 2013.

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
Apr-01-2013	22	17.4	9.4	5,190	19.0	2.2
Apr-02-2013	25	16.8	9.9	5,550	25.0	3.4
Apr-03-2013	20	19.5	9.6	5,480	30.0	3.2
Apr-04-2013	12	17.8	9.8	5,280	28.0	1.9
Apr-05-2013	12	18.3	11.0	5,790	29.0	1.9
Apr-06-2013	9	17.1	12.0	5,820	25.0	1.3
Apr-07-2013	11	17.7	12.0	6,040	24.0	1.4
Apr-08-2013	10	15.6	12.0	5,730	25.0	1.4
Apr-09-2013	23	17.5	12.0	5,620	24.0	2.9
Apr-10-2013	31	19.8	11.0	5,770	33.0	5.5
Apr-11-2013	27	18.5	12.0	6,220	42.0	6.2
Apr-12-2013	24	18.9	14.0	6,510	39.0	5.1
Apr-13-2013	16	18.7	13.0	6,460	36.0	3.2
Apr-14-2013	9	17.3	13.0	6,510	37.0	1.8
Apr-15-2013	8	14.7	13.0	6,440	35.0	1.4
Apr-16-2013	10	14.5	12.0	6,350	36.0	2.0
Apr-17-2013	13	15.7	14.0	6,230	36.0	2.6
Apr-18-2013	14	16.0	12.0	6,340	36.0	2.7
Apr-19-2013	12	19.9	11.0	6,110	40.0	2.7
Apr-20-2013	12	20.7	12.0	6,170	35.0	2.2
Apr-21-2013	12	20.8	11.0	6,180	36.0	2.4
Apr-22-2013	11	21.8	12.0	6,170	29.0	1.7
Apr-23-2013	9	22.5	12.0	6,040	31.0	1.4
Apr-24-2013	8	19.5	12.0	6,280	29.0	1.2
Apr-25-2013	7	19.2	12.0	6,480	26.0	1.0
Apr-26-2013	10	19.6	11.0	6,650	26.0	1.4
Apr-27-2013	8	21.9	10.0	6,280	30.0	1.4
Apr-28-2013	8	22.6	9.5	5,940	33.0	1.3
Apr-29-2013	8	24.5	9.9	5,760	30.0	1.2
Apr-30-2013	6	23.8	10.0	5,920	34.0	1.1
.
Mean	14	19.0	11.5	6,040	31.3	2.3
Total Acre-feet	810					
Total (lbs)						69

Load Limitation for April 2013 (lbs)	101
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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.

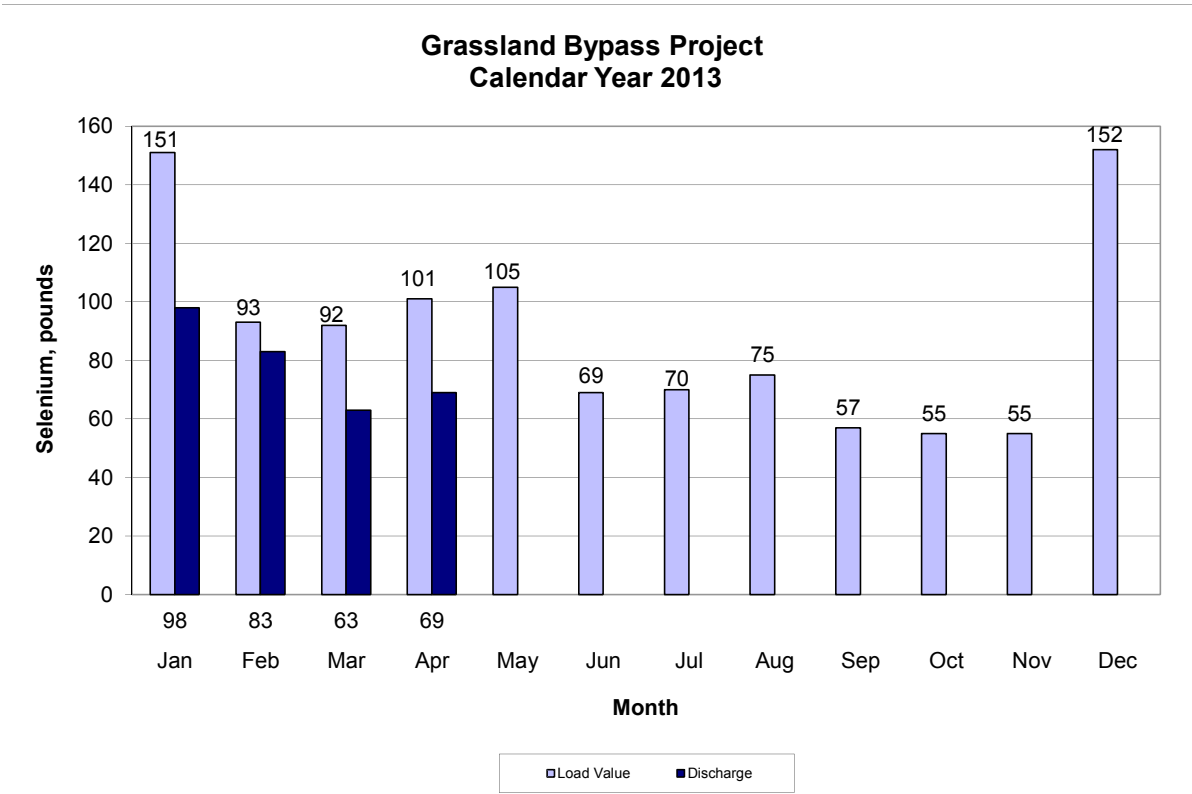


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), April 2013.

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
Apr-01-2013	78	20.4	3,240
Apr-02-2013	74	19.9	3,550
Apr-03-2013	72	20.4	3,370
Apr-04-2013	91	20.6	2,800
Apr-05-2013	83	20.1	3,000
Apr-06-2013	81	19.7	2,890
Apr-07-2013	67	19.7	3,250
Apr-08-2013	54	17.0	3,590
Apr-09-2013	63	14.8	3,760
Apr-10-2013	68	16.5	3,820
Apr-11-2013	57	18.6	4,380
Apr-12-2013	61	19.2	3,930
Apr-13-2013	50	19.9	3,940
Apr-14-2013	40	19.4	3,870
Apr-15-2013	35	18.4	4,000
Apr-16-2013	37	15.6	4,150
Apr-17-2013	40	14.6	4,130
Apr-18-2013	40	15.9	4,000
Apr-19-2013	36	17.9	4,070
Apr-20-2013	33	19.1	4,720
Apr-21-2013	32	20.0	5,110
Apr-22-2013	31	20.7	4,720
Apr-23-2013	30	19.2	4,570
Apr-24-2013	32	20.2	3,730
Apr-25-2013	27	20.7	4,730
Apr-26-2013	35	21.3	3,790
Apr-27-2013	27	22.1	4,720
Apr-28-2013	26	22.6	4,420
Apr-29-2013	29	22.7	3,700
Apr-30-2013	31	21.1	3,040
.	.	.	.
Mean	49	19.3	3,900

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), April 2013.

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
Apr-01-2013	174	19.7	1,580
Apr-02-2013	185	19.4	1,520
Apr-03-2013	185	19.7	1,560
Apr-04-2013	192	19.8	1,630
Apr-05-2013	202	19.4	1,570
Apr-06-2013	207	19.0	1,490
Apr-07-2013	217	18.9	1,550
Apr-08-2013	226	17.4	1,550
Apr-09-2013	222	15.4	1,460
Apr-10-2013	204	16.3	1,480
Apr-11-2013	183	18.2	1,540
Apr-12-2013	151	19.3	1,680
Apr-13-2013	126	20.1	1,740
Apr-14-2013	120	19.7	1,730
Apr-15-2013	126	18.5	1,610
Apr-16-2013	130	16.0	1,440
Apr-17-2013	123	14.6	1,460
Apr-18-2013	118	15.9	1,360
Apr-19-2013	127	17.9	1,200
Apr-20-2013	129	19.5	1,170
Apr-21-2013	129	20.3	1,140
Apr-22-2013	133	20.9	1,060
Apr-23-2013	129	20.1	1,160
Apr-24-2013	128	20.3	1,150
Apr-25-2013	117	20.6	1,270
Apr-26-2013	111	20.8	1,420
Apr-27-2013	112	21.8	1,400
Apr-28-2013	124	22.7	1,310
Apr-29-2013	142	23.1	1,280
Apr-30-2013	141	22.0	1,240
.	.	.	.
Mean	154	19.2	1,430

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), April 2013.

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
Apr-01-2013	562	20.6	1.0	1,510	0.7
Apr-02-2013	575	20.1	1.1	1,510	1.0
Apr-03-2013	591	20.4	1.1	1,500	1.0
Apr-04-2013	616	20.9	1.1	1,480	1.1
Apr-05-2013	626	20.4	1.0	1,440	0.9
Apr-06-2013	618	20.2	1.0	1,440	1.0
Apr-07-2013	614	20.3	1.0	1,410	0.7
Apr-08-2013	623	18.8	1.0	1,390	0.6
Apr-09-2013	607	16.5	1.0	1,400	0.6
Apr-10-2013	580	17.6	1.0	1,440	0.7
Apr-11-2013	549	19.6	1.2	1,510	1.2
Apr-12-2013	495	20.0	1.3	1,620	1.8
Apr-13-2013	448	20.7	1.3	1,640	1.8
Apr-14-2013	416	20.4	1.3	1,680	1.6
Apr-15-2013	419	19.5	1.2	1,660	1.2
Apr-16-2013	434	17.3	1.0	1,570	0.9
Apr-17-2013	469	16.1	0.8	1,400	0.8
Apr-18-2013	424	16.9	0.9	1,360	0.9
Apr-19-2013	674	18.3	0.7	970	0.9
Apr-20-2013	809	18.3	0.4	740	0.6
Apr-21-2013	689	19.4	0.5	820	0.7
Apr-22-2013	663	20.4	0.5	870	0.7
Apr-23-2013	581	19.7	0.5	910	0.7
Apr-24-2013	487	20.3	0.6	980	0.8
Apr-25-2013	438	21.2	0.7	1,130	0.8
Apr-26-2013	416	21.3	0.6	1,150	0.7
Apr-27-2013	375	22.1	0.7	1,360	0.8
Apr-28-2013	369	22.7	0.7	1,310	0.7
Apr-29-2013	395	23.0	0.8	1,270	0.7
Apr-30-2013	388	21.9	0.7	1,190	0.7
.
Mean	532	19.8	NA	1,320	0.9
Total Acre-feet	31,637				

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
Feb-04-2013	12	44	5,760	39	11.0
Feb-11-2013	12	71	5,600	30	11.0
Feb-18-2013	16	79	5,100	27	10.0
Feb-25-2013	20	90	4,850	26	9.9
Mar-04-2013	16	83	5,230	30	9.9
Mar-11-2013	9	81	5,550	26	10.0
Mar-18-2013	12	107	5,120	22	10.0
Mar-25-2013	12	53	5,730	33	10.0
Apr-01-2013	26	81	6,020	38	11.0
Apr-08-2013	26	277	5,800	35	11.0
Apr-15-2013	14	144	5,510	37	9.9
Apr-22-2013	10	131	6,110	49	11.0
Apr-29-2013	9	50	5,860	34	11.0

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
Feb-05-2013	16	33	11.5	8.1	4,920	37.0	8.6
Feb-12-2013	17	45	9.9	8.3	4,860	29.0	8.8
Feb-19-2013	20	52	12.0	8.0	4,870	26.0	9.0
Feb-26-2013	24	35	10.4	8.0	4,700	26.0	9.0
Mar-05-2013	19	34	14.8	8.3	4,360	23.0	8.5
Mar-12-2013	13	42	14.6	8.1	4,770	33.0	8.8
Mar-19-2013	13	37	16.9	8.5	4,550	20.0	8.2
Mar-29-2013	12	70	18.3	8.8	4,310	17.0	8.1
Apr-04-2013	12	81	19.5	8.7	4,970	29.0	8.9
Apr-11-2013	27	45	16.7	8.0	6,070	41.0	11.0
Apr-16-2013	10	43	15.4	8.6	5,960	37.0	12.0
Apr-23-2013	9	72	17.9	8.8	5,780	31.0	11.0

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
Feb-05-2013	76	.	11.5	8.0	2,290	0.5	2.0
Feb-12-2013	76	.	10.2	8.2	2,300	0.4	2.0
Feb-19-2013	83	.	11.5	7.8	2,210	0.4	1.9
Feb-26-2013	106	.	10.3	7.9	2,030	0.6	1.8
Mar-05-2013	162	.	14.5	8.0	2,190	1.0	2.0
Mar-12-2013	165	.	15.1	7.9	2,020	0.7	1.9
Mar-19-2013	168	.	15.7	8.1	2,330	0.7	2.3
Mar-29-2013	56	.	19.4	8.1	2,450	0.6	2.0
Apr-04-2013	79	.	19.9	8.1	2,440	0.5	2.1
Apr-11-2013	30	.	16.4	8.0	3,100	0.5	2.7
Apr-16-2013	27	.	15.1	8.1	2,280	0.6	2.4
Apr-23-2013	21	.	16.7	8.2	2,580	0.7	2.9

** 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
Feb-05-2013	92	11.3	14.1	7.8	2,880	7.2	3.0
Feb-12-2013	93	9.9	18.2	8.0	2,840	5.8	3.4
Feb-19-2013	103	11.6	23.6	7.8	2,810	5.0	3.3
Feb-26-2013	130	10.5	32.3	8.0	2,600	4.3	3.2
Mar-05-2013	181	14.9	45.1	8.0	2,450	3.3	2.6
Mar-12-2013	178	15.3	77.3	7.9	2,260	2.9	2.4
Mar-19-2013	181	15.4	99.9	8.0	2,510	2.0	2.9
Mar-29-2013	68	19.5	47.9	8.2	2,970	3.4	3.4
Apr-04-2013	91	19.9	53.2	8.2	2,810	3.8	2.9
Apr-11-2013	57	16.5	61.4	8.1	4,480	14 U	6.0 U
Apr-16-2013	37	15.0	40.2	8.3	4,520	14 U	6.2 U
Apr-23-2013	30	16.7	37.8	8.4	5,130	14 U	7.8 U

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
Feb-05-2013	No Flow	NA	NA	NA	NA	NA	NA
Feb-12-2013	through	NA	NA	NA	NA	NA	NA
Feb-19-2013	mid-February	NA	NA	NA	NA	NA	NA
Feb-26-2013	.	10.3	45	7.9	3,910	4.1	3.2
Mar-05-2013	.	15.0	35	8.0	3,350	3.3	2.8
Mar-12-2013	.	14.4	64	7.9	2,460	3.0	2.4
Mar-19-2013	.	16.1	40	8.0	2,640	2.1	2.9
Mar-29-2013	No Flow	NA	NA	NA	NA	NA	NA
Apr-04-2013	Late March	NA	NA	NA	NA	NA	NA
Apr-11-2013	Through May	NA	NA	NA	NA	NA	NA
Apr-16-2013	.	NA	NA	NA	NA	NA	NA
Apr-23-2013	.	NA	NA	NA	NA	NA	NA

No samples were collected through mid-February because this site had no flow.

The site was also inaccessible in late March through April.

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
Feb-05-2013	93	10.7	6.9	1,880	0.8	0.9
Feb-12-2013	101	9.1	7.5	1,860	< 0.4	1.0
Feb-19-2013	208	10.9	7.2	1,300	0.7	0.6
Feb-26-2013	308	9.4	7.2	1,210	0.6	0.5
Mar-05-2013	293	13.8	7.0	1,310	0.7	0.6
Mar-12-2013	220	13.9	7.1	1,580	0.4	0.7
Mar-19-2013	205	15.4	7.5	1,570	0.6	0.7
Mar-29-2013	151	18.3	7.3	1,720	0.6	0.8
Apr-04-2013	192	18.3	7.1	1,690	< 0.4	0.9
Apr-11-2013	183	16.4	7.8	1,710	0.5	1.3
Apr-16-2013	130	14.2	7.5	1,480	0.5	0.9
Apr-23-2013	129	18.3	6.7	1,170	< 0.4	0.5

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
Feb-05-2013	149	11.6	8.0	1,810	0.5	0.8
Feb-12-2013	134	9.9	8.0	2,250	< 0.4	0.9
Feb-19-2013	215	11.0	7.6	1,440	0.6	0.6
Feb-26-2013	315	9.8	8.0	1,360	0.6	0.5
Mar-05-2013	320	14.6	7.9	1,430	0.6	0.6
Mar-12-2013	287	14.8	8.0	1,670	0.5	0.7
Mar-19-2013	248	16.2	7.9	1,800	0.6	0.7
Mar-29-2013	186	19.3	8.0	1,980	0.6	0.8
Apr-04-2013	250	18.7	7.4	1,780	< 0.4	0.8
Apr-11-2013	250	16.5	8.1	1,860	< 0.4	1.0
Apr-16-2013	181	15.9	8.0	1,920	0.6	0.8
Apr-23-2013	163	18.4	8.3	1,860	< 0.4	0.6

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
Feb-04-2013	15	.	.	607	1.2	0.4 U
Feb-11-2013	15	.	.	593	0.9	0.3
Feb-19-2013	5	.	.	790	1.3	0.4 U
Feb-25-2013	5	.	.	655	1.0	0.3
Mar-04-2013	5	.	.	540	0.9	0.3
Mar-11-2013	5	.	.	618	1.1	0.3
Mar-18-2013	5	.	.	693	1.5	0.4
Mar-25-2013	5	.	.	968	1.6	0.6 U
Apr-01-2013	5	.	.	553	0.7	0.3
Apr-08-2013	5	.	.	1,420	2.6 U	1.9 U
Apr-15-2013	5	.	.	424	1.2	0.2
Apr-22-2013	5	.	.	633	0.8	0.4
Apr-29-2013	15	.	.	498	0.9	0.3

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
Feb-04-2013	75	.	.	556	1.1	0.3
Feb-11-2013	75	.	.	556	0.9	0.3
Feb-19-2013	65	.	.	621	0.8	0.3
Feb-25-2013	65	.	.	757	0.9	0.5
Mar-04-2013	0	.	.	653	1.1	0.4
Mar-11-2013	0	.	.	1,400	< 0.4	1.8 U
Mar-18-2013	0	.	.	1,590	0.5	3.0 U
Mar-25-2013	0	.	.	2,100	0.7	2.7 U
Apr-01-2013	0	.	.	2,010	0.7	2.2 U
Apr-08-2013	20	.	.	1,940	0.7	2.3 U
Apr-15-2013	20	.	.	542	0.9	0.5
Apr-22-2013	40	.	.	681	0.8	0.5
Apr-29-2013	40	.	.	525	0.8	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
Feb-04-2013	NA	.	.	1,160	1.0	1.1
Feb-11-2013	NA	.	.	2,020	1.5	2.4 U
Feb-19-2013	NA	.	.	1,340	0.9	1.3
Feb-25-2013	NA	.	.	1,130	1.3	1.0
Mar-04-2013	NA	.	.	2,200	2.7 U	2.5 U
Mar-11-2013	NA	.	.	2,340	2.3 U	2.9 U
Mar-18-2013	NA	.	.	2,990	2.9 U	3.6 U
Mar-25-2013	NA	.	.	1,770	1.7	1.8
Apr-01-2013	NA	.	.	465	< 0.4	0.5
Apr-08-2013	NA	.	.	774	0.9	0.6
Apr-15-2013	NA	.	.	727	1.1	0.6
Apr-22-2013	NA	.	.	659	0.8	0.4
Apr-29-2013	NA	.	.	677	0.9	0.4

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
Feb-04-2013	NA	.	.	1,170	1.1	1.1
Feb-11-2013	NA	.	.	1,020	0.8	1.1
Feb-19-2013	NA	.	.	1,420	0.9	1.3
Feb-25-2013	NA	.	.	1,250	1.0	1.2
Mar-04-2013	NA	.	.	1,730	2.0 U	1.9
Mar-11-2013	NA	.	.	1,560	0.8	1.6
Mar-18-2013	NA	.	.	2,160	0.9	2.5
Mar-25-2013	NA	.	.	2,260	1.1	2.5
Apr-01-2013	NA	.	.	1,940	0.9	2.3
Apr-08-2013	NA	.	.	843	0.9	0.7
Apr-15-2013	NA	.	.	826	1.1	0.8
Apr-22-2013	NA	.	.	853	0.9	0.7
Apr-29-2013	NA	.	.	766	1.1	0.6

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
Feb-06-2013	.	.	.	452	1.5	1.1
Feb-13-2013	.	.	.	781	2.6	1.8
Feb-27-2013	.	.	.	1,790	1.9	1.2
Mar-06-2013	.	.	.	1,810	1.6	1.3
Mar-13-2013	.	.	.	2,250	8.8 U	1.5
Mar-20-2013	.	.	.	2,290	1.4	1.7
Mar-27-2013	.	.	.	1,910	1.6	1.3
Apr-03-2013	.	.	.	2,380	2.3	1.7
Apr-10-2013	.	.	.	2,340	2.0	1.7
Apr-17-2013	.	.	.	2,610	2.9	1.7
Apr-24-2013	.	.	.	2,590	1.9	1.8

Note: In October of 2012 samples were collected upstream of Station H1. Site name will be changed to Site R (SJR at China Island) under the 2013 Monitoring Plan.

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
Feb-06-2013	613	.	.	NA	NA	NA
Feb-13-2013	558	.	.	NA	NA	NA
Feb-27-2013	734	.	.	NA	NA	NA
Mar-06-2013	771	.	.	NA	NA	NA
Mar-13-2013	714	.	.	NA	NA	NA
Mar-20-2013	1,270	.	.	NA	NA	NA
Mar-27-2013	742	.	.	NA	NA	NA
Apr-03-2013	616	.	.	NA	NA	NA
Apr-10-2013	533	.	.	NA	NA	NA
Apr-17-2013	1,190	.	.	NA	NA	NA
Apr-24-2013	472	.	.	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
Feb-05-2013	613	11.5	8.1	1,560	1.3	0.9
Feb-12-2013	570	9.8	8.2	1,620	1.2	1.0
Feb-19-2013	588	11.5	7.9	1,420	1.2	0.9
Feb-26-2013	680	10.6	8.0	1,440	1.1	0.9
Mar-05-2013	720	15.1	8.0	1,510	1.4	1.0
Mar-12-2013	695	14.8	8.1	1,610	1.2	1.1
Mar-19-2013	769	16.4	8.0	1,680	0.9	1.2
Mar-29-2013	511	18.7	8.1	1,760	0.9	1.0
Apr-04-2013	616	19.4	8.1	1,590	1.2	1.0
Apr-11-2013	549	17.6	8.0	1,620	1.4	1.1
Apr-16-2013	434	15.7	8.1	1,630	1.0	0.9
Apr-23-2013	581	17.5	8.3	960	0.8	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
Feb-04-2013	.	.	.	602	1.1	0.4 U
Feb-11-2013	.	.	.	672	1.0	0.4 U
Feb-19-2013	.	.	.	740	1.1	0.4 U
Feb-25-2013	.	.	.	712	0.9	0.4 U
Mar-04-2013	.	.	.	666	0.9	0.4 U
Mar-11-2013	.	.	.	669	1.0	0.4 U
Mar-18-2013	.	.	.	682	1.7	0.4
Mar-25-2013	.	.	.	674	1.1	0.4
Apr-01-2013	.	.	.	585	0.5	3.2
Apr-08-2013	.	.	.	480	0.5	0.3
Apr-15-2013	.	.	.	411	0.8	0.2
Apr-22-2013	.	.	.	485	0.6	0.3
Apr-29-2013	.	.	.	478	0.9	0.3

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2012 to April 2013. 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	%	%	%	%	%	%
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
Nov-2012	100	93	100	95	98	100
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	98	98	98	93	95	88
Apr-2013	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 May 2012 to April 2013. 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
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
Nov-2012	0.29	0.33	0.34	0.33	0.28	0.35
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	0.39	0.37	0.37	0.38	0.32	0.33
Apr-2013	NA	NA	NA	NA	NA	NA

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2012 to April 2013. 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	%	%	%	%	%	%
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
Nov-2012	80	90	100	90	90	100
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	90	100	90	100	100	100
Apr-2013	NA	NA	NA	NA	NA	NA

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2012 to April 2013. 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
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
Nov-2012	25.7	21.1	23.8	21.6	22.6	22.8
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	32.9	28.9	32.7	36.2	34.8	31.7
Apr-2013	NA	NA	NA	NA	NA	NA

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2012 to April 2013. 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
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
Nov-2012	14.1*	25.4	24.7*	29.3	26.7	19.4
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	19.1*	22.8	22.7	19.2*	24.8	20.2
Apr-2013	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, February 2013 to April 2013.

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
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	NA	NA	NA	NA	NA
Mar-04-2013	24	0.9	3.7	0.6	< 0.4
Mar-06-2013	24	0.7	3.3	0.5	< 0.4
Mar-08-2013	24	0.6	3.7	0.5	< 0.4
Apr-04-2013	NA	NA	NA	NA	NA
Apr-06-2013	NA	NA	NA	NA	NA
Apr-08-2013	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 February 2013 to April 2013.

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
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	NA	NA	NA	NA	NA
Mar-04-2013	41	66	73	17	13
Mar-06-2013	50	94	95	28	15
Mar-08-2013	70	109	84	20	10
Apr-04-2013	NA	NA	NA	NA	NA
Apr-06-2013	NA	NA	NA	NA	NA
Apr-08-2013	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
41,334.00	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 December 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