GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

September 2013

March, 2014

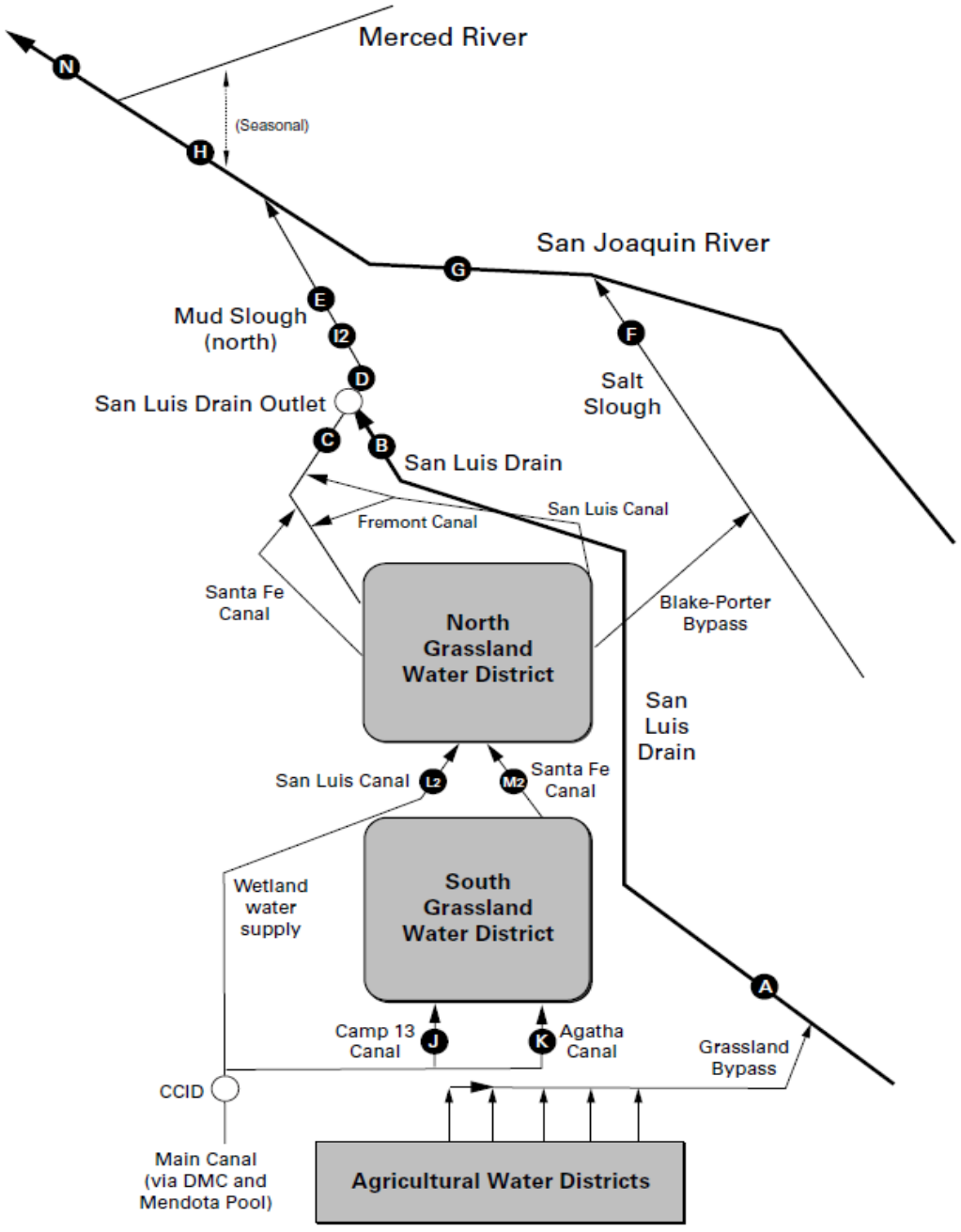
Preliminary Results

A cooperative effort of:

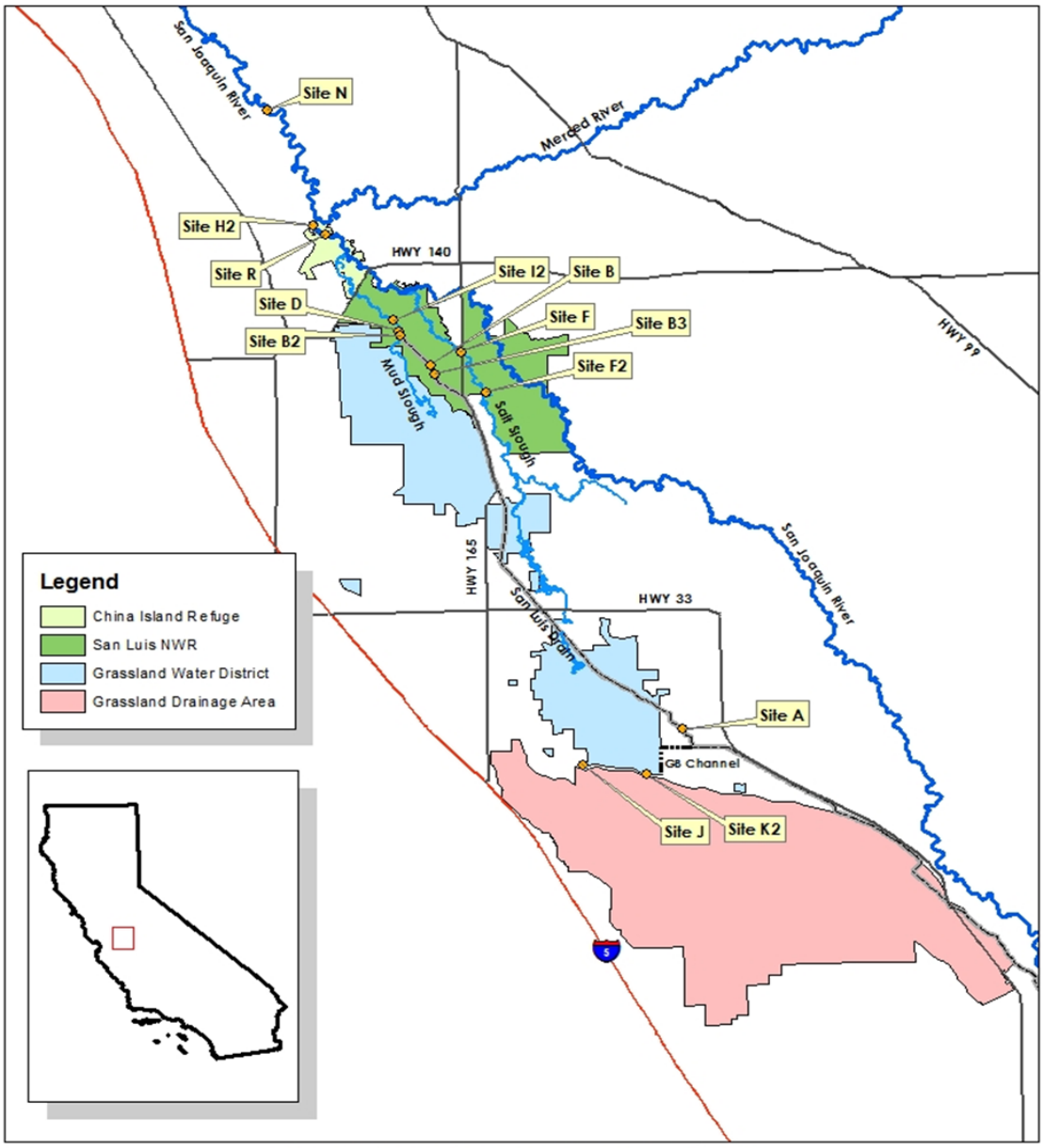
U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

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



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), September 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
Sep-01-2013	9	26.2	8,500	153
Sep-02-2013	11	25.9	6,850	150
Sep-03-2013	12	25.3	6,600	158
Sep-04-2013	11	24.8	6,530	143
Sep-05-2013	8	24.2	6,870	110
Sep-06-2013	7	24.3	7,650	107
Sep-07-2013	6	25.8	8,180	98
Sep-08-2013	6	26.2	7,900	95
Sep-09-2013	8	25.7	7,630	122
Sep-10-2013	9	24.8	7,130	128
Sep-11-2013	8	23.2	6,420	103
Sep-12-2013	10	23.9	6,570	131
Sep-13-2013	9	25.2	6,020	108
Sep-14-2013	7	25.2	7,430	104
Sep-15-2013	7	24.1	8,240	115
Sep-16-2013	6	24.2	8,660	104
Sep-17-2013	5	22.5	8,940	89
Sep-18-2013	5	21.4	9,660	96
Sep-19-2013	5	22.5	10,500	105
Sep-20-2013	8	22.7	8,770	140
Sep-21-2013	9	21.0	8,060	145
Sep-22-2013	7	20.3	7,830	109
Sep-23-2013	6	21.3	7,680	92
Sep-24-2013	5	22.0	7,390	74
Sep-25-2013	4	19.5	7,340	59
Sep-26-2013	2	17.8	7,220	29
Sep-27-2013	3	18.1	7,090	42
Sep-28-2013	7	19.2	7,070	99
Sep-29-2013	9	20.8	6,920	124
Sep-30-2013	9	21.6	6,770	122
.	.	.	.	.
Mean	7	23.0	7,610	108
Total Acre-feet	432			
Total salt Load (tons)				3,253
Salinity Load Value (Critical Year, September)				2,838

PRELIMINARY RESULTS

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), September 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
Sep-01-2013	9	27.9	20.0	9,210	6.8	0.3
Sep-02-2013	8	26.3	22.0	9,460	6.8	0.3
Sep-03-2013	11	25.4	20.0	9,960	6.8	0.4
Sep-04-2013	13	24.0	18.0	8,540	6.7	0.5
Sep-05-2013	13	23.1	18.0	8,390	6.4	0.4
Sep-06-2013	10	23.4	21.0	8,410	8.9	0.5
Sep-07-2013	8	27.2	20.0	9,050	10.0	0.4
Sep-08-2013	7	26.9	21.0	9,270	11.0	0.4
Sep-09-2013	7	26.9	25.0	9,320	9.0	0.3
Sep-10-2013	8	25.8	27.0 U	10,370	9.2	0.4
Sep-11-2013	9	22.3	22.0	11,870	9.6	0.4
Sep-12-2013	10	23.8	21.0	9,910	8.9	0.5
Sep-13-2013	11	25.3	19.0	9,080	8.7	0.5
Sep-14-2013	11	24.4	19.0	8,450	8.6	0.5
Sep-15-2013	10	22.5	21.0	8,590	7.7	0.4
Sep-16-2013	10	23.4	22.0	9,160	7.5	0.4
Sep-17-2013	9	21.8	22.0	10,030	7.7	0.4
Sep-18-2013	8	21.1	23.0	10,280	6.3	0.3
Sep-19-2013	9	22.9	24.0	10,110	7.9	0.4
Sep-20-2013	9	22.1	21.0	9,330	8.2	0.4
Sep-21-2013	11	19.0	22.0	8,270	8.6	0.5
Sep-22-2013	12	17.1	20.0	8,020	8.6	0.6
Sep-23-2013	12	20.3	19.0	7,350	8.5	0.5
Sep-24-2013	11	21.5	20.0	7,360	8.3	0.5
Sep-25-2013	9	17.2	19.0	7,400	7.9	0.4
Sep-26-2013	8	18.0	19.0	7,460	7.7	0.3
Sep-27-2013	9	18.9	21.0	7,280	7.7	0.4
Sep-28-2013	9	19.8	20.0	7,630	7.5	0.4
Sep-29-2013	10	20.5	19.0	7,710	7.3	0.4
Sep-30-2013	12	21.8	18.0	7,880	8.4	0.5
.	.	.	.	.	.	.
Mean	10	22.7	20.6	8,840	8.1	0.4
Total Acre-feet	580					
Total (lbs)						13

Load Limitation for September 2013 (lbs)	57

Note: EC failure on 8/1/13 to 8/26/13. Field data entered if available.

♦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.

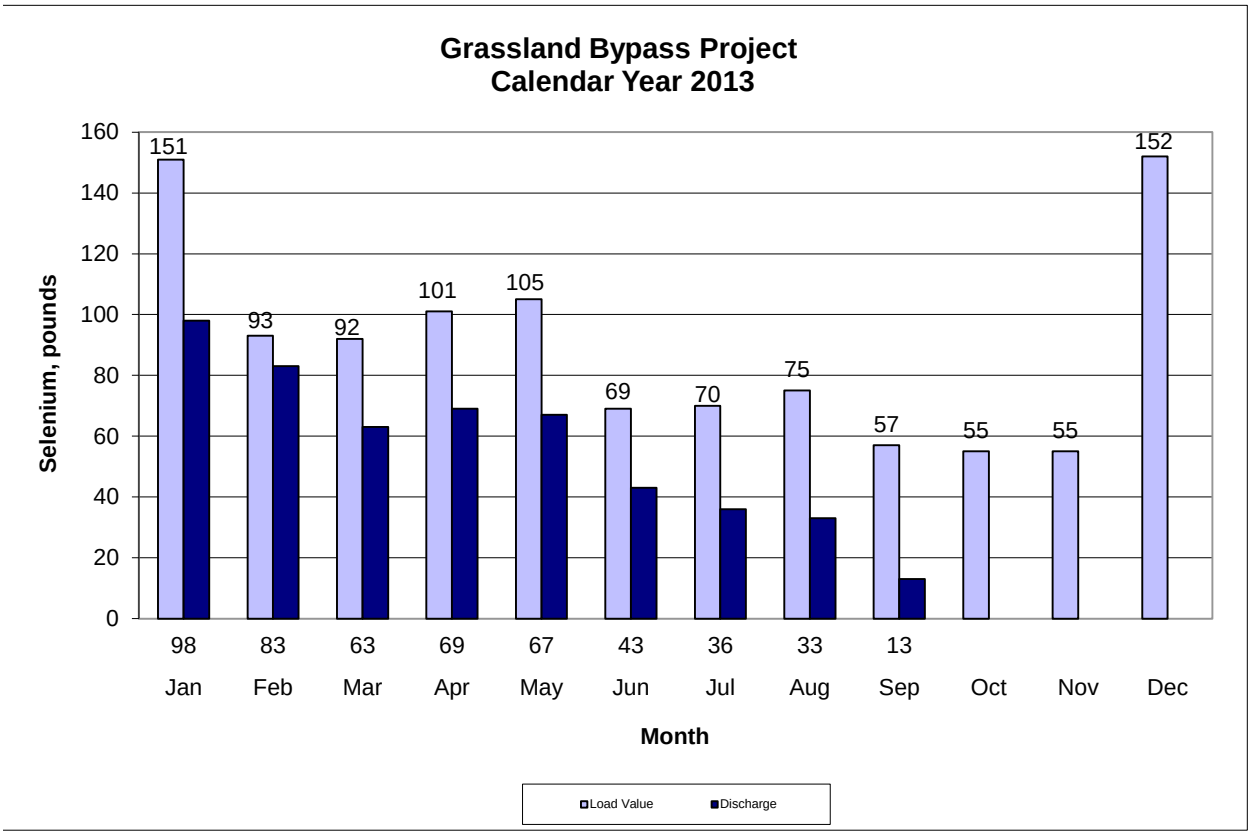


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), September 2013.

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
Sep-01-2013	19	26.5	3,930
Sep-02-2013	14	26.3	4,680
Sep-03-2013	13	25.9	6,880
Sep-04-2013	17	25.2	5,770
Sep-05-2013	16	24.7	5,850
Sep-06-2013	17	24.1	4,560
Sep-07-2013	14	24.9	4,920
Sep-08-2013	13	25.4	4,960
Sep-09-2013	22	25.2	3,060
Sep-10-2013	26	25.0	3,030
Sep-11-2013	24	23.8	3,920
Sep-12-2013	20	24.2	4,500
Sep-13-2013	20	24.9	4,590
Sep-14-2013	19	24.9	4,690
Sep-15-2013	20	24.0	4,290
Sep-16-2013	26	24.0	3,680
Sep-17-2013	21	23.4	4,490
Sep-18-2013	26	21.7	3,570
Sep-19-2013	23	21.6	4,040
Sep-20-2013	26	22.1	3,550
Sep-21-2013	31	21.5	3,070
Sep-22-2013	28	20.6	3,680
Sep-23-2013	33	20.8	2,980
Sep-24-2013	35	21.7	2,710
Sep-25-2013	32	20.7	2,600
Sep-26-2013	30	18.4	2,700
Sep-27-2013	34	17.7	2,540
Sep-28-2013	40	18.7	2,310
Sep-29-2013	46	19.8	2,240
Sep-30-2013	50	20.7	2,350
.	.	.	.
Mean	25	22.9	3,870

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), September 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
Sep-01-2013	70	27.0	1,080
Sep-02-2013	72	26.1	1,140
Sep-03-2013	69	25.3	1,160
Sep-04-2013	63	24.9	1,200
Sep-05-2013	64	24.5	1,230
Sep-06-2013	75	23.9	1,190
Sep-07-2013	86	24.5	1,130
Sep-08-2013	87	25.7	1,090
Sep-09-2013	89	25.4	1,090
Sep-10-2013	83	24.9	1,080
Sep-11-2013	75	23.4	1,160
Sep-12-2013	68	23.3	1,140
Sep-13-2013	73	24.5	1,060
Sep-14-2013	76	25.0	1,050
Sep-15-2013	79	24.2	1,040
Sep-16-2013	80	23.6	1,030
Sep-17-2013	71	23.6	1,080
Sep-18-2013	73	21.8	1,120
Sep-19-2013	67	21.4	1,160
Sep-20-2013	65	22.8	1,220
Sep-21-2013	61	21.6	1,280
Sep-22-2013	62	20.3	1,320
Sep-23-2013	61	20.4	1,310
Sep-24-2013	63	21.9	1,300
Sep-25-2013	60	20.6	1,340
Sep-26-2013	65	18.2	1,320
Sep-27-2013	64	17.6	1,260
Sep-28-2013	71	18.6	1,270
Sep-29-2013	83	19.7	1,250
Sep-30-2013	88	20.7	1,190
.	.	.	.
Mean	72	22.8	1,180

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), September 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
Sep-01-2013	238	25.1	1.4	1,480	0.7
Sep-02-2013	224	25.3	1.7	1,550	0.7
Sep-03-2013	230	24.4	1.1	1,340	0.6
Sep-04-2013	223	23.6	0.9	1,340	0.6
Sep-05-2013	248	22.9	1.3	1,480	0.6
Sep-06-2013	264	22.6	1.2	1,400	0.6
Sep-07-2013	254	23.6	1.2	1,380	0.6
Sep-08-2013	263	24.4	1.1	1,280	0.6
Sep-09-2013	265	24.4	0.8	1,180	0.5
Sep-10-2013	246	24.3	0.8	1,200	0.6
Sep-11-2013	236	23.4	0.8	1,200	0.6
Sep-12-2013	208	23.0	1.0	1,300	0.6
Sep-13-2013	226	23.6	1.1	1,340	0.5
Sep-14-2013	230	23.7	1.0	1,290	0.7
Sep-15-2013	223	23.1	1.1	1,350	0.7
Sep-16-2013	236	22.8	1.2	1,370	0.6
Sep-17-2013	258	22.8	1.1	1,310	0.7
Sep-18-2013	271	21.7	1.0	1,290	0.5
Sep-19-2013	297	21.5	1.1	1,310	0.4
Sep-20-2013	388	22.3	0.9	993	0.4
Sep-21-2013	594	21.3	0.5	559	< 0.4
Sep-22-2013	825	19.2	0.3	495	< 0.4
Sep-23-2013	1,020	18.6	0.2	495	< 0.4
Sep-24-2013	1,140	18.7	0.3	497	< 0.4
Sep-25-2013	1,160	18.5	0.2	373	< 0.4
Sep-26-2013	1,200	17.4	0.2	345	< 0.4
Sep-27-2013	1,210	16.9	0.2	368	< 0.4
Sep-28-2013	1,000	17.2	0.2	418	< 0.4
Sep-29-2013	665	18.6	0.4	591	< 0.4
Sep-30-2013	564	19.9	0.5	691	< 0.4
.	.	.	.	.	.
Mean	480	21.8	0.8	1,040	0.6
Total Acre-feet	28,574				

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
Jul-01-2013	16	122	6,230	29	13.0
Jul-08-2013	17	153	9,020	24	20 H,U
Jul-15-2013	11	132	9,910	18	24.0
Jul-22-2013	20	156	7,640	22	17.0
Jul-29-2013	16	145	9,230	26	21.0
Aug-05-2013	11	104	8,480	30	18.0
Aug-12-2013	9	118	8,060	23	19 U
Aug-19-2013	13	62	8,290	12	19.0
Aug-26-2013	11	128	8,630	16	19.0
Sep-02-2013	11	96	9,650	10	22.0
Sep-09-2013	8	91	8,270	7	22.0
Sep-16-2013	6	75	8,620	10	21.0
Sep-23-2013	6	78	8,440	12	NA
Sep-24-2013	5	NA	9,180	10	NA
Sep-25-2013	4	NA	8,900	11	NA
Sep-26-2013	2	NA	9,290	8	NA
Sep-27-2013	3	NA	9,330	10	NA
Sep-28-2013	7	NA	8,330	11	NA
Sep-29-2013	9	NA	8,120	11	NA
Sep-30-2013	9	95	NA	NA	NA

Note:

9/2/13 - 9/16/13 weekly results for specific conductance, selenium, and boron from composite of seven daily samples.

Starting 9/23/13 results for specific conductance, selenium, and boron from daily salmples (autosampler)

No Boron collected at this site after 9/16/13 under 2013 Monitoring Plan

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
Jul-02-2013	15	88	30.7	8.9	6,330	19.0	14.0
Jul-09-2013	17	49	26.0	8.5	6,870	17.0	17.0 U
Jul-17-2013	9	31	23.3	8.7	6,210	20.0	13.0
Jul-25-2013	17	73	26.7	8.6	9,050	15.0	23.0
Jul-29-2013	13	38	25.3	8.3	7,110	15.0	16.0
Aug-07-2013	15	66	23.4	8.6	8,450	20.0	19.0
Aug-15-2013	13	116	26.0	8.7	9,150	16.0	20.0
Aug-23-2013	14	<10	24.3	8.4	7,880	14.0	17.0
Aug-28-2013	11	60	25.3	7.9	8,450	7.8	19.0
Sep-06-2013	10	20	23.2	7.7	8,350	8.1	18.0
Sep-09-2013	7	37	24.3	7.9	10,200	7.9	25.0
Sep-20-2013	9	21	22.4	8.4	8,110	7.7	21.0
Sep-25-2013	9	67	21.6	8.3	7,520	6.8	18.0

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
Jul-02-2013	24	.	30.3	8.1	1,400	1.6 U	1.6
Jul-09-2013	15	.	26.7	8.4	1,730	1.9 U	2.6
Jul-17-2013	20	.	23.2	8.5	1,440	1.2	1.5
Jul-25-2013	19	.	28.5	8.5	1,270	1.5	1.6
Jul-29-2013	27	.	25.4	8.5	1,440	1.1	1.6
Aug-07-2013	4	.	23.1	8.5	1,340	0.8	1.2
Aug-15-2013	1	.	26.5	8.8	1,320	0.7	0.9
Aug-23-2013	3	.	23.9	8.5	1,120	0.6	0.7
Aug-28-2013	3	.	25.8	8.7	1,080	0.8	0.7
Sep-06-2013	7	.	21.9	8.3	1,000	0.5	0.6
Sep-09-2013	15	.	23.8	8.0	920	< 0.4	0.5
Sep-20-2013	17	.	21.4	8.2	1,110	<0.4	0.7
Sep-25-2013	23	.	21.0	8.0	1,090	<0.4	0.6

++ 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
Jul-02-2013	39	31	30.2	8.4	2,950	5.6	5.1
Jul-09-2013	32	26	20.0	8.6	4,020	8.6	8.4 U
Jul-17-2013	29	23	29.7	8.5	2,790	4.7	4.4
Jul-25-2013	36	28	19.4	8.6	5,170	7.8	11.0
Jul-29-2013	40	25	30.8	8.4	2,900	5.2	5.0
Aug-07-2013	19	23	17.8	8.4	5,650	11.0	12.0
Aug-15-2013	14	26	17.6	8.6	6,470	11.0	13.0
Aug-23-2013	17	24	15.0	8.2	5,410	8.5	11 U
Aug-28-2013	14	25	11.8	8.3	5,040	4.7	11.0
Sep-06-2013	17	22	NA	8.1	4,050	2.7	7.6
Sep-09-2013	22	24	26.6	7.8	3,000	2.3	5.4
Sep-20-2013	26	21	NA	8.1	3,560	1.9	7.1
Sep-25-2013	32	20	16.6	7.9	2,510	1.5	4.1

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
Jul-02-2013	.	NA	NA	NA	NA	NA	NA
Jul-09-2013	.	NA	NA	NA	NA	NA	NA
Jul-17-2013	.	NA	NA	NA	NA	NA	NA
Jul-25-2013	.	NA	NA	NA	NA	NA	NA
Jul-29-2013	.	NA	NA	NA	NA	NA	NA
Aug-07-2013	No Flow July	NA	NA	NA	NA	NA	NA
Aug-15-2013	Through September	NA	NA	NA	NA	NA	NA
Aug-23-2013	.	NA	NA	NA	NA	NA	NA
Aug-28-2013	.	NA	NA	NA	NA	NA	NA
Sep-06-2013	.	NA	NA	NA	NA	NA	NA
Sep-09-2013	.	NA	NA	NA	NA	NA	NA
Sep-20-2013	.	NA	NA	NA	NA	NA	NA
Sep-25-2013	.	NA	NA	NA	NA	NA	NA

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
Jul-02-2013	121	26.8	7.6	1,080	0.8	0.4
Jul-09-2013	121	23.9	7.7	981	0.5	0.4
Jul-17-2013	107	21.5	7.3	1,050	< 0.4	0.4
Jul-25-2013	111	25.9	7.8	988	0.5	0.3
Jul-29-2013	122	22.9	7.6	899	0.8	0.3
Aug-07-2013	122	21.1	7.6	1,040	0.5	0.4
Aug-15-2013	106	24.7	7.6	1,170	0.4	0.4
Aug-23-2013	76	21.8	7.6	1,180	< 0.4	0.4
Aug-28-2013	77	24.1	7.7	1,210	< 0.4	0.4
Sep-06-2013	75	21.1	7.1	1,220	< 0.4	0.5
Sep-09-2013	89	23.0	7.6	1,090	< 0.4	0.4
Sep-20-2013	65	21.1	6.7	1,220	<0.4	0.6
Sep-25-2013	60	21.0	7.5	1,350	<0.4	0.6

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
Jul-02-2013	151	29.0	8.2	1,220	0.4	0.4
Jul-09-2013	133	25.2	7.7	1,190	0.5	0.5
Jul-17-2013	124	22.9	8.1	1,230	< 0.4	0.4
Jul-25-2013	115	25.8	8.1	1,160	0.7	0.3
Jul-29-2013	134	24.3	8.1	1,060	1.0 U	0.3
Aug-07-2013	120	22.3	8.1	1,180	0.4	0.4
Aug-15-2013	104	25.9	8.3	1,350	0.5	0.5
Aug-23-2013	94	22.7	8.0	1,450	< 0.4	0.5
Aug-28-2013	95	25.1	8.1	1,370	< 0.4	0.5
Sep-06-2013	83	21.6	8.1	1,580	< 0.4	0.6
Sep-09-2013	94	23.5	8.1	1,270	< 0.4	0.4
Sep-20-2013	83	20.9	8.1	1,580	<0.4	0.6
Sep-25-2013	93	20.7	8.2	1,350	<0.4	0.4

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
Jul-01-2013	5	.	.	571	1.0	0.3
Jul-08-2013	0	.	.	430	1.1	0.2
Jul-15-2013	0	.	.	3,370	3.8 U	1.3 H,U
Jul-22-2013	0	.	.	NA	NA	NA
Jul-29-2013	0	.	.	NA	NA	NA
Aug-05-2013	75	.	.	623	0.8	0.2
Aug-12-2013	65	.	.	629	0.7	0.2
Aug-19-2013	75	.	.	745	0.8	0.3
Aug-26-2013	80	.	.	587	0.5	0.2
Sep-09-2013	90	.	.	829	0.5	0.3
Sep-16-2013	90	.	.	696	<0.4	0.2
Sep-23-2013	110	.	.	749	0.7	0.2
Sep-30-2013	150	.	.	699	0.7	NA

Note: No flow at Site J July 15th and 22nd (No Sample Taken)

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
Jul-01-2013	20	.	.	632	1.0	0.3
Jul-08-2013	20	.	.	455	0.8	0.2
Jul-15-2013	0	.	.	456	0.7	0.2 H
Jul-22-2013	0	.	.	519	1.2	1.0
Jul-29-2013	0	.	.	840	1.3	1.0 U
Aug-05-2013	0	.	.	824	1.7	0.6
Aug-12-2013	25	.	.	1,600	1.3	3.0 U
Aug-19-2013	85	.	.	582	0.6	0.2
Aug-26-2013	105	.	.	561	< 0.4	0.2
Sep-03-2013	105	.	.	664	0.4	0.2
Sep-09-2013	190	.	.	709	0.5	0.3
Sep-16-2013	195	.	.	690	<0.4	0.2
Sep-23-2013	195	.	.	718	0.7	0.2
Sep-30-2013	195	.	.	668	0.7	NA

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
Jul-01-2013	NA	.	.	2,070	2.2	2.5 U
Jul-08-2013	NA	.	.	2,820	3.2	3.2 U
Jul-15-2013	NA	.	.	1,970	2.0	1.7 U
Jul-22-2013	NA	.	.	1,520	1.7	2.1
Jul-29-2013	NA	.	.	1,790	1.6	2.1
Aug-05-2013	NA	.	.	1,390	1.6	1.5
Aug-12-2013	NA	.	.	1,320	1.0	1.1
Aug-19-2013	NA	.	.	783	0.8	0.4
Aug-26-2013	NA	.	.	1,620	1.3	1.6
Sep-03-2013	NA	.	.	1,310	1.1	1.1
Sep-09-2013	NA	.	.	1,010	0.9	0.6
Sep-16-2013	NA	.	.	908	0.5	0.5
Sep-23-2013	NA	.	.	958	0.7	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
Jul-01-2013	NA	.	.	1,290	1.6	1.6
Jul-08-2013	NA	.	.	1,470	1.7	2.0
Jul-15-2013	NA	.	.	1,300	1.5	1.5 H
Jul-22-2013	NA	.	.	1,100	1.3	1.1
Jul-29-2013	NA	.	.	1,050	0.9	1.1
Aug-05-2013	NA	.	.	830	0.8	0.7
Aug-12-2013	NA	.	.	871	0.9	0.6
Aug-19-2013	NA	.	.	758	0.7	0.4
Aug-26-2013	NA	.	.	673	0.6	0.3
Sep-03-2013	NA	.	.	768	0.5	0.4
Sep-09-2013	NA	.	.	786	0.5	0.4
Sep-16-2013	NA	.	.	802	0.4	0.4
Sep-23-2013	NA	.	.	1,130	0.7	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
Jul-03-2013	.	.	.	1,660	1.0	1.0
Jul-08-2013	.	.	.	1,950	2.2	1.8
Jul-17-2013	.	.	.	1,910	2.1	1.9
Jul-24-2013	.	.	.	1,950	2.1	2.0
Jul-31-2013	.	.	.	1,650	1.6	1.6
Aug-07-2013	.	.	.	1,660	1.4	1.7
Aug-14-2013	.	.	.	2,050	1.5	1.8
Aug-21-2013	.	.	.	2,090	1.6	1.9
Aug-28-2013	.	.	.	1,970	2.2	1.9
Sep-04-2013	.	.	.	2,640	0.9	2.5
Sep-11-2013	.	.	.	2,660	0.7	2.6
Sep-18-2013	.	.	.	2,060	0.9	2.0
Sep-25-2013	.	.	.	1,810	0.9	1.6

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
Jul-08-2013	174	.	.	NA	NA	NA
Jul-15-2013	146	.	.	NA	NA	NA
Jul-22-2013	163	.	.	NA	NA	NA
Jul-29-2013	179	.	.	NA	NA	NA
Aug-07-2013	149	.	.	NA	NA	NA
Aug-14-2013	146	.	.	NA	NA	NA
Aug-21-2013	120	.	.	NA	NA	NA
Aug-28-2013	117	.	.	NA	NA	NA
Sep-04-2013	102	.	.	NA	NA	NA
Sep-11-2013	113	.	.	NA	NA	NA
Sep-18-2013	122	.	.	NA	NA	NA
Sep-25-2013	164	.	.	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	µS/cm	µg/L	mg/L
Jul-02-2013	310	27.9	8.5	1,510	1.1	1.2
Jul-09-2013	250	24.7	8.6	1,480	1.1	1.2
Jul-17-2013	241	22.1	8.4	1,540	1.1	1.0
Jul-25-2013	251	24.2	7.9	1,780	1.4	2.0
Jul-29-2013	279	23.8	8.1	1,600	1.6	1.2
Aug-07-2013	235	21.6	7.9	1,580	1.0	1.1
Aug-15-2013	234	24.7	8.4	1,670	1.0	1.0
Aug-23-2013	233	22.5	8.3	1,780	1.3	1.5
Aug-28-2013	259	24.6	8.0	1,500	1.0	1.1
Sep-06-2013	264	21.6	8.0	1,600	0.6	1.2
Sep-09-2013	265	24.1	7.8	1,260	0.5	0.8
Sep-20-2013	388	20.8	7.9	1,070	<0.4	0.8
Sep-25-2013	1,160	18.4	8.2	360	<0.4	0.2

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
Jul-01-2013	.	.	.	554	1.1	0.3
Jul-08-2013	.	.	.	508	0.9	0.2
Jul-15-2013	.	.	.	506	1.3	0.3 H
Jul-22-2013	.	.	.	491	1.1	0.3
Jul-29-2013	.	.	.	577	0.8	0.3
Aug-05-2013	.	.	.	652	0.7	0.3
Aug-12-2013	.	.	.	606	0.6	0.2
Aug-19-2013	.	.	.	663	0.8	0.3
Aug-26-2013	.	.	.	605	0.4	0.2
Sep-03-2013	.	.	.	611	0.4	0.2
Sep-09-2013	.	.	.	689	< 0.4	0.2
Sep-16-2013	.	.	.	718	<0.4	0.2
Sep-23-2013	.	.	.	754	<0.4	0.2

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples October 2012 to September 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	%	%	%	%	%	%
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	95	95	88*	93	100	83
Jul-2013	NA	NA	NA	NA	NA	NA
Aug-2013	NA	NA	NA	NA	NA	NA
Sep-2013						

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from October 2012 to September 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
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	0.22	0.21	0.22	0.20	0.19***	0.22***
Jul-2013	NA	NA	NA	NA	NA	NA
Aug-2013	NA	NA	NA	NA	NA	NA
Sep-2013	NA	NA	NA	NA	NA	NA

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from October 2012 to September 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	%	%	%	%	%	%
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	100	80	100	70	100	80
Jul-2013	NA	NA	NA	NA	NA	NA
Aug-2013	NA	NA	NA	NA	NA	NA
Sep-2013	NA	NA	NA	NA	NA	NA

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from October 2012 to September 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
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	39.9	22.8	28.0	30.0	23.7	30.4
Jul-2013	NA	NA	NA	NA	NA	NA
Aug-2013	NA	NA	NA	NA	NA	NA
Sep-2013	NA	NA	NA	NA	NA	NA

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from October 2012 to September 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
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	23.7	26.8	28.9	25.1	23.4	20.1
Jul-2013	NA	NA	NA	NA	NA	NA
Aug-2013	NA	NA	NA	NA	NA	NA
Sep-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, June 2013 to September 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
Jun-17-2013	20	1.1	4.9	0.5	< 0.4
Jul-14-2013	NA	NA	NA	NA	NA
Jul-16-2013	NA	NA	NA	NA	NA
Jul-18-2013	NA	NA	NA	NA	NA
Aug-16-2013	NA	NA	NA	NA	NA
Aug-18-2013	NA	NA	NA	NA	NA
Sep-01-2013	NA	NA	NA	NA	NA
Sep-01-2013	NA	NA	NA	NA	NA
Sep-01-2013	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 June 2013 to September 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
Jun-17-2013	39	3	7	87	2
Jul-14-2013	NA	NA	NA	NA	NA
Jul-16-2013	NA	NA	NA	NA	NA
Jul-18-2013	NA	NA	NA	NA	NA
Aug-16-2013	NA	NA	NA	NA	NA
Aug-18-2013	NA	NA	NA	NA	NA
Sep-01-2013	NA	NA	NA	NA	NA
Sep-01-2013	NA	NA	NA	NA	NA
Sep-01-2013	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
<	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 September 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 September 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 (10^6cell/mL) acceptability criteria.
***	DMC/Lab Cl water failed to meet the growth (>0.25 mg) 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 Distraict
U	Results are determined to be an outlier at the time of data validation
V	Result may vary excessively from the true value
H	Result may have high bias
L	Result may have low bias,
T	Result obtained past the holding time
U	Result determined to be an outlier at the time of data validation
J	Result is between the MDL and RL