

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

July 2013

December 19, 2013

Preliminary Results

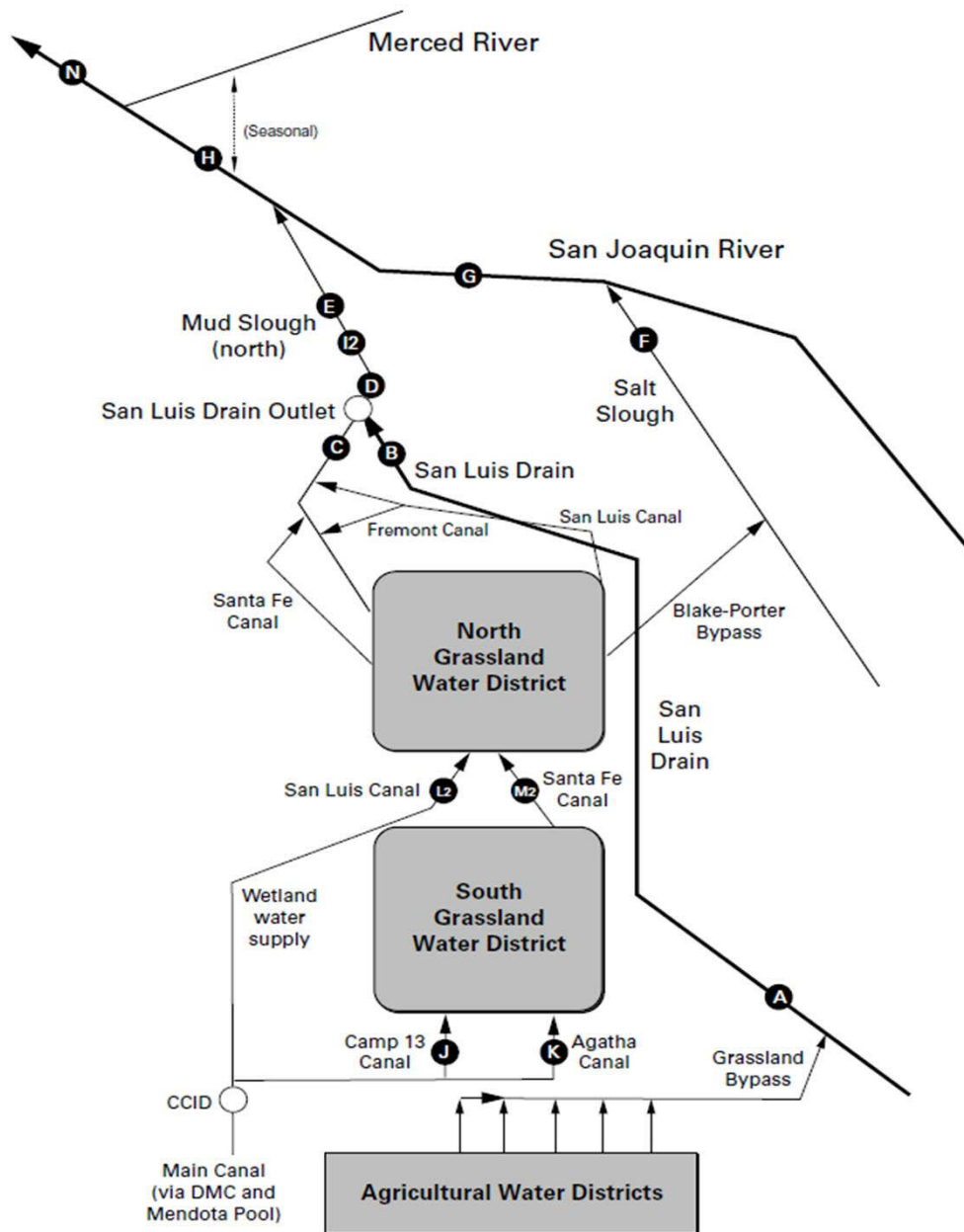
A cooperative effort of:

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

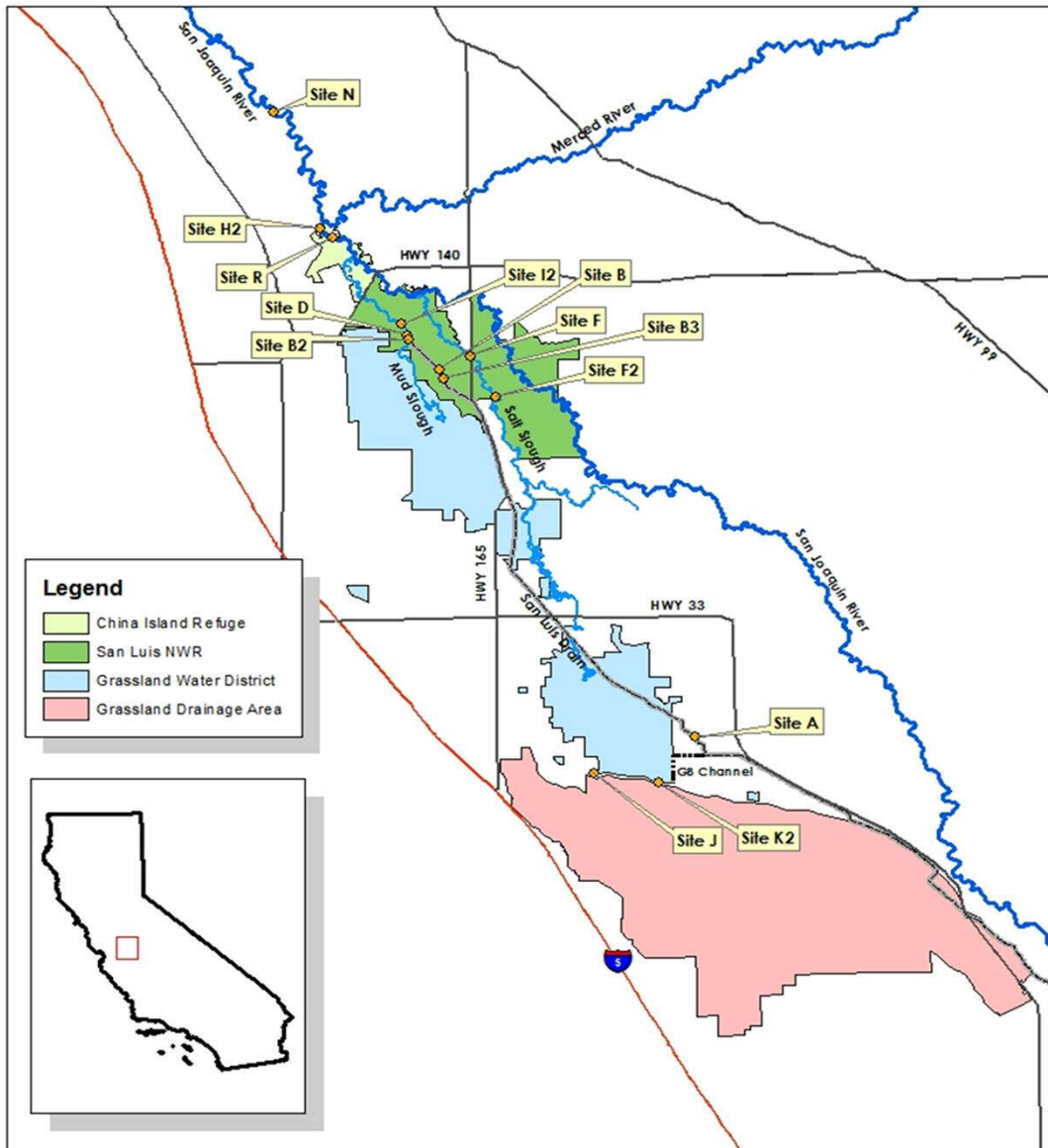
compiled by San Francisco Estuary Institute



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

LIST OF TABLES FOR MONTHLY REPORT**Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 2013.
- 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), July 2013.
- 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), July 2013.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 2013.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 2013.

Weekly Monitoring

- 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.
- 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain).
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge).
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge).
10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).
11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).
12. Weekly water quality monitoring at Station J (Camp 13 Ditch).
13. Weekly water quality monitoring at Station K (Agatha Canal).
14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).
15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).
16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).
17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).
18. Weekly water quality monitoring at Station H1 (Above Newman WW (previously SJR at Hills Ferry)).
19. Weekly water quality monitoring at Station H2 (San Joaquin River at Hills Ferry).
20. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

Monthly Monitoring

21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from August 2012 to July 2013.
22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from August 2012 to July 2013.
23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from August 2012 to July 2013.
24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from August 2012 to July 2013.
25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from August 2012 to July 2013.
26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May 2013 to July 2013.
27. Summary of total suspended solids concentrations in grab water samples collected from May 2013 to July 2013.
28. Explanations of footnotes and agency abbreviations.

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 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
Jul-01-2013	16	29.3	5,520	176
Jul-02-2013	12	29.3	5,230	125
Jul-03-2013	9	29.0	5,210	93
Jul-04-2013	6	30.9	5,490	66
Jul-05-2013	7	27.7	5,660	75
Jul-06-2013	12	25.3	5,250	126
Jul-07-2013	14	26.3	4,860	136
Jul-08-2013	17	27.0	4,940	168
Jul-09-2013	18	27.4	5,560	195
Jul-10-2013	13	26.7	7,240	182
Jul-11-2013	10	25.2	7,800	148
Jul-12-2013	11	25.0	7,300	160
Jul-13-2013	12	26.2	7,500	174
Jul-14-2013	11	26.4	7,680	169
Jul-15-2013	11	25.6	8,150	177
Jul-16-2013	9	23.9	8,320	144
Jul-17-2013	7	25.0	8,460	118
Jul-18-2013	9	26.1	8,750	157
Jul-19-2013	10	26.6	8,260	165
Jul-20-2013	15	27.3	7,220	216
Jul-21-2013	16	27.0	6,170	197
Jul-22-2013	20	25.5	5,790	231
Jul-23-2013	21	25.6	5,550	232
Jul-24-2013	17	26.8	5,790	196
Jul-25-2013	17	26.8	5,580	195
Jul-26-2013	15	27.2	6,620	197
Jul-27-2013	16	27.4	6,550	209
Jul-28-2013	14	26.1	6,870	192
Jul-29-2013	16	24.8	6,770	214
Jul-30-2013	15	24.7	6,640	199
Jul-31-2013	16	24.9	6,040	193
Mean	13	26.6	6,540	169
Total Acre-feet	812			
Total salt Load (tons)				5,224
Salinity Load Value (Critical Year, July)				6,055

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
Jul-01-2013	13	30.8	14.0	NA	18.0	1.3
Jul-02-2013	15	33.3	14.0	5,920	17.0	1.4
Jul-03-2013	12	32.4	14.0	5,930	21.0	1.4
Jul-04-2013	9	34.0	15.0	NA	19.0	1.0
Jul-05-2013	7	28.3	16.0	NA	17.0	0.6
Jul-06-2013	6	26.5	15.0	NA	16.0	0.5
Jul-07-2013	9	26.6	16.0	NA	15.0	0.7
Jul-08-2013	14	27.7	16.0	NA	17.0	1.3
Jul-09-2013	17	28.7	17.0	6,190	18.0	1.6
Jul-10-2013	17	29.1	16.0	6,350	17.0	1.6
Jul-11-2013	13	25.7	15.0	6,450	20.0	1.4
Jul-12-2013	9	25.4	15.0	6,760	20.0	1.0
Jul-13-2013	10	27.2	15.0	6,910	16.0	0.9
Jul-14-2013	11	27.1	13.0	6,460	17.0	1.0
Jul-15-2013	11	25.4	13.0	6,280	18.0	1.0
Jul-16-2013	10	23.0	13.0	6,290	16.0	0.8
Jul-17-2013	9	23.4	13.0	6,140	19.0	0.9
Jul-18-2013	7	25.5	16.0	6,390	17.0	0.7
Jul-19-2013	8	26.9	19.0	NA	15.0	0.6
Jul-20-2013	9	27.8	20.0	NA	15.0	0.7
Jul-21-2013	13	28.1	21.0	NA	16.0	1.1
Jul-22-2013	15	26.5	23.0	5,500	15.0	1.3
Jul-23-2013	21	27.8	24.0	8,080	13.0	1.4
Jul-24-2013	22	29.2	25.0	8,000	15.0	1.8
Jul-25-2013	17	30.2	22.0	NA	16.0	1.5
Jul-26-2013	17	28.5	18.0	7,900	18.0	1.7
Jul-27-2013	15	27.9	16.0	NA	17.0	1.4
Jul-28-2013	15	26.8	15.0	NA	18.0	1.5
Jul-29-2013	13	24.0	15.0	6,100	16.0	1.2
Jul-30-2013	15	24.1	16.0	6,110	15.0	1.2
Jul-31-2013	15	25.6	15.0	6,120	14.0	1.1
Mean	13	27.5	16.6	6,520	16.8	1.2
Total Acre-feet	790					
Total (lbs)						36

Load Limitation for July 2013 (lbs) **70**

Note: EC failures on 7/1/13 to 7/8/13 and 7/19/13 to 7/31/13.

◆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.

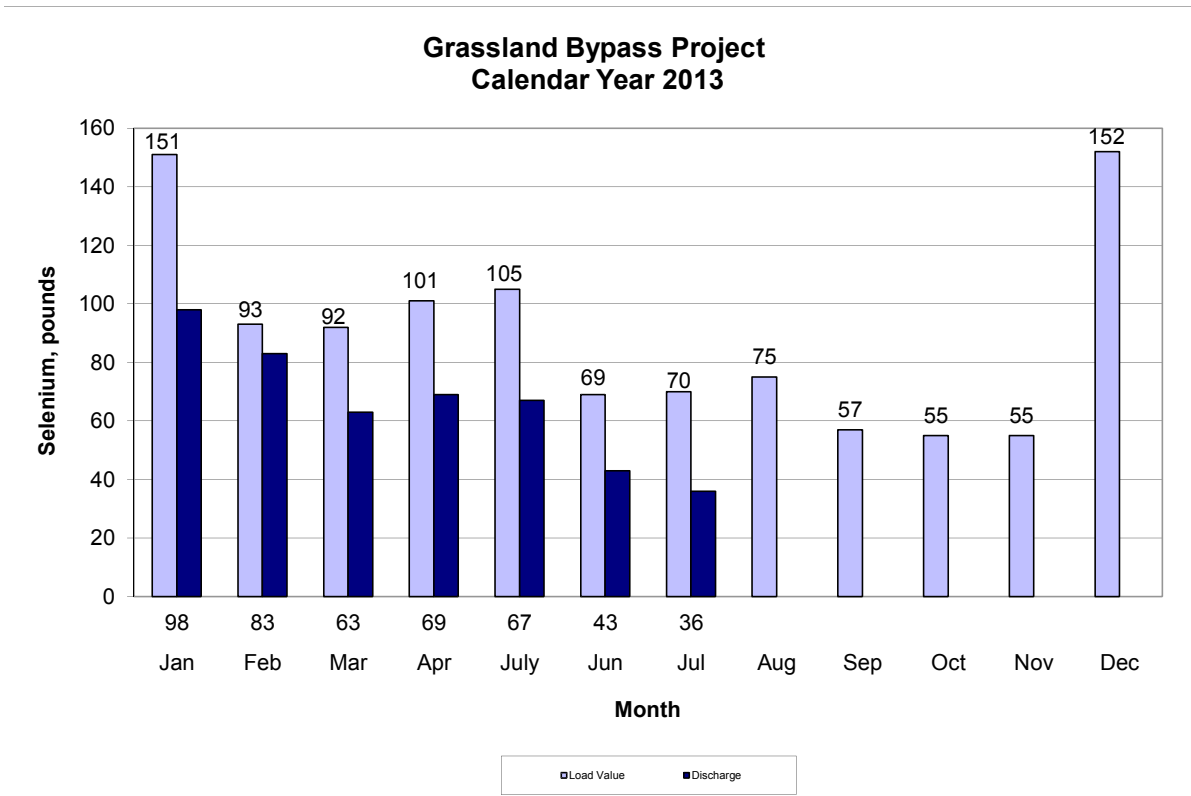


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), July 2013.

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
Jul-01-2013	54	29.5	2,380
Jul-02-2013	39	29.8	3,080
Jul-03-2013	30	29.2	3,340
Jul-04-2013	32	29.9	2,780
Jul-05-2013	36	28.5	2,150
Jul-06-2013	32	27.0	2,090
Jul-07-2013	32	26.5	2,660
Jul-08-2013	33	26.9	3,320
Jul-09-2013	32	27.2	3,760
Jul-10-2013	27	27.3	4,580
Jul-11-2013	22	27.1	4,320
Jul-12-2013	21	26.2	3,980
Jul-13-2013	26	26.6	3,420
Jul-14-2013	27	26.5	3,270
Jul-15-2013	22	26.5	3,460
Jul-16-2013	24	25.7	3,260
Jul-17-2013	29	25.5	2,670
Jul-18-2013	36	25.4	2,230
Jul-19-2013	36	25.9	2,210
Jul-20-2013	27	26.7	3,140
Jul-21-2013	27	27.3	4,300
Jul-22-2013	29	26.4	4,550
Jul-23-2013	33	26.2	4,850
Jul-24-2013	37	26.6	4,960
Jul-25-2013	36	27.3	4,660
Jul-26-2013	46	28.0	3,500
Jul-27-2013	36	28.1	3,510
Jul-28-2013	34	27.8	3,470
Jul-29-2013	40	26.9	2,810
Jul-30-2013	36	25.9	2,980
Jul-31-2013	30	25.9	3,410
Mean	32	27.1	3,390

USGS data is provisional and subject to revision

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 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
Jul-01-2013	128	29.2	1,080
Jul-02-2013	121	29.1	1,090
Jul-03-2013	109	28.9	1,120
Jul-04-2013	98	29.9	1,160
Jul-05-2013	106	27.9	1,100
Jul-06-2013	110	25.4	1,030
Jul-07-2013	110	26.0	1,070
Jul-08-2013	118	26.7	1,060
Jul-09-2013	121	27.3	969
Jul-10-2013	107	27.5	955
Jul-11-2013	88	26.8	1,010
Jul-12-2013	82	26.0	1,010
Jul-13-2013	96	26.3	998
Jul-14-2013	94	26.9	983
Jul-15-2013	101	26.6	962
Jul-16-2013	110	25.2	906
Jul-17-2013	107	24.9	949
Jul-18-2013	115	25.5	858
Jul-19-2013	136	25.9	805
Jul-20-2013	149	26.6	844
Jul-21-2013	134	27.0	885
Jul-22-2013	108	26.0	951
Jul-23-2013	101	25.5	954
Jul-24-2013	95	26.4	1,030
Jul-25-2013	111	27.5	956
Jul-26-2013	101	27.9	1,020
Jul-27-2013	101	27.8	1,020
Jul-28-2013	116	27.4	898
Jul-29-2013	122	25.7	863
Jul-30-2013	124	25.1	888
Jul-31-2013	113	25.4	945
Mean	111	26.8	980

USGS data is provisional and subject to revision

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 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
Jul-01-2013	291	28.5	1.1	1,540	0.9
Jul-02-2013	310	28.9	1.2	1,510	1.0
Jul-03-2013	270	29.2	1.3	1,550	1.2
Jul-04-2013	255	30.0	1.2	1,600	1.2
Jul-05-2013	265	28.7	1.3	1,630	1.4
Jul-06-2013	265	27.5	1.1	1,560	1.2
Jul-07-2013	267	26.9	1.0	1,420	1.0
Jul-08-2013	264	26.7	0.9	1,350	0.9
Jul-09-2013	250	27.0	1.0	1,410	1.0
Jul-10-2013	239	26.6	1.3	1,500	1.3
Jul-11-2013	237	25.8	1.4	1,540	1.4
Jul-12-2013	219	25.6	1.5	1,580	1.3
Jul-13-2013	194	26.1	1.2	1,630	1.1
Jul-14-2013	208	26.4	1.2	1,680	1.2
Jul-15-2013	239	25.8	0.9	1,470	1.1
Jul-16-2013	213	25.0	1.1	1,480	1.3
Jul-17-2013	241	24.4	0.9	1,450	0.9
Jul-18-2013	243	25.3	1.0	1,430	1.0
Jul-19-2013	250	26.0	1.0	1,450	1.0
Jul-20-2013	251	27.0	0.9	1,390	0.9
Jul-21-2013	255	27.0	0.8	1,320	0.8
Jul-22-2013	247	25.9	1.0	1,330	0.8
Jul-23-2013	231	25.1	1.3	1,420	0.9
Jul-24-2013	247	25.4	1.3	1,520	1.0
Jul-25-2013	251	26.5	1.6	1,700	1.2
Jul-26-2013	235	27.2	NA	1,830	NA
Jul-27-2013	253	27.0	NA	1,710	NA
Jul-28-2013	262	26.9	NA	1,590	NA
Jul-29-2013	279	26.1	NA	1,470	NA
Jul-30-2013	267	25.1	NA	1,370	NA
Jul-31-2013	254	25.0	NA	1,370	NA
Mean	250	26.6	1.1	1,510	1.1
Total Acre-feet	15,376				

Note: No samples collected 7/26 - 7/31 due to auto sampler malfunction.

USGS data is provisional and subject to revision

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
May-06-2013	21	102	5,720	44	10.0
May-13-2013	10	<10	5,150	42	8.0
May-20-2013	13	79	5,210	42	9.0
May-27-2013	11	107	5,480	45	9.8
Jun-03-2013	12	105	5,550	33	12.0
Jun-10-2013	16	145	5,430	24	12.0
Jun-17-2013	5	126	6,260	21	14.0
Jun-24-2013	9	158	6,410	30	14.0
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

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
May-09-2013	14	33	20.5	8.5	5,680	36.0	10.0
May-15-2013	10	22	22.4	7.8	5,310	33.0	9.4
May-20-2013	12	81	20.5	8.5	5,370	32.0	8.8
May-30-2013	10	52	22.7	8.9	5,000	36.0	8.9
Jun-04-2013	11	105	24.2	8.5	5,810	40.0	9.8
Jun-10-2013	12	32	24.5	8.5	5,970	40.0	12.0
Jun-18-2013	6	<10	23.9	8.2	5,810	20.0	13.0
Jun-26-2013	9	44	26.3	9.1	6,110	12.0	13.0
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 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	25.0
Jul-29-2013	13	38	25.3	8.3	7,110	15.0	16.0

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
May-09-2013	37	.	20.1	8.1	1,510	<0.4	1.3
May-15-2013	39	.	22.5	7.8	1,270	0.7	1.2
May-20-2013	40	.	19.9	7.9	1,510	0.5	1.3
May-30-2013	21	.	23.3	8.3	2,390	0.5	2.0
Jun-04-2013	57	.	23.0	8.0	1,380	1.1 U	1.2
Jun-10-2013	23	.	23.3	8.0	1,930	1.1	1.8
Jun-18-2013	15	.	23.2	8.1	2,190	0.9	2.1
Jun-26-2013	25	.	24.8	8.1	1,580	1.6 U	1.6
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

** 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
May-09-2013	51	21	28.6	8.0	3,060	9.4	4.6
May-15-2013	49	22	47.0	7.9	2,360	5.8	3.1
May-20-2013	52	20	34.9	8.0	2,770	7.8	3.5
May-30-2013	31	23	12.8	8.4	3,600	14 U	4.8
Jun-04-2013	68	23	29.5	8.0	1,970	4.9	2.3
Jun-10-2013	35	23	31.6	8.2	3,320	14 U	4.7
Jun-18-2013	21	24	12.0	8.2	3,420	5.9	4.8
Jun-26-2013	34	25	27.0	8.4	2,760	4.5	4.0
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

USGS data is provisional and subject to revision

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
May-09-2013	.	NA	NA	NA	NA	NA	NA
May-15-2013	.	NA	NA	NA	NA	NA	NA
May-20-2013	.	NA	NA	NA	NA	NA	NA
May-30-2013	.	NA	NA	NA	NA	NA	NA
Jun-04-2013	.	NA	NA	NA	NA	NA	NA
Jun-10-2013	.	NA	NA	NA	NA	NA	NA
Jun-18-2013	No Flow May	NA	NA	NA	NA	NA	NA
Jun-26-2013	Through July	NA	NA	NA	NA	NA	NA
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

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
May-09-2013	145	19.2	7.5	1,160	0.4	0.5
May-15-2013	112	21.0	6.9	1,520	0.4	0.7
May-20-2013	182	19.2	7.7	1,120	0.5	0.5
May-30-2013	165	20.8	7.1	1,190	0.6	0.5
Jun-04-2013	154	21.8	7.5	1,250	0.5	0.5
Jun-10-2013	100	21.8	7.8	1,490	0.9	0.6
Jun-18-2013	137	22.2	7.4	1,080	0.7	0.4
Jun-26-2013	146	22.9	7.6	1,120	0.5	0.4
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

USGS data is provisional and subject to revision

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
May-09-2013	181	20.4	8.0	1,330	< 0.4	0.5
May-15-2013	151	22.7	7.9	1,700	< 0.4	0.6
May-20-2013	200	20.4	8.1	1,250	0.5	0.5
May-30-2013	172	22.1	8.1	1,360	0.6	0.5
Jun-04-2013	179	23.7	7.9	1,380	0.5	0.5
Jun-10-2013	135	22.8	7.9	1,600	0.7	0.6
Jun-18-2013	155	23.4	8.1	1,310	0.5	0.4
Jun-26-2013	166	24.4	8.1	1,260	<0.4	0.4
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

USGS data is provisional and subject to revision

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
May-06-2013	55	.	.	434	1.4	0.3
May-14-2013	20	.	.	564	1.2	0.3
May-20-2013	20	.	.	572	1.2	0.3
May-28-2013	30	.	.	612	1.4	0.3
Jun-03-2013	5	.	.	658	2.1	0.3
Jun-10-2013	5	.	.	681	2.0	0.4
Jun-17-2013	5	.	.	880	1.3	0.5
Jun-24-2013	15	.	.	635	1.2	0.3
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

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
May-06-2013	75	.	.	444	1.2	0.3
May-14-2013	55	.	.	571	1.2	0.3
May-20-2013	35	.	.	539	0.8	0.3
May-28-2013	35	.	.	628	1.5	0.3
Jun-03-2013	35	.	.	667	1.6	0.4
Jun-10-2013	25	.	.	680	1.5	0.4
Jun-17-2013	30	.	.	767	1.8	0.4
Jun-24-2013	30	.	.	633	1.2	0.3
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

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
May-06-2013	NA	.	.	757	1.1	0.5
May-14-2013	NA	.	.	663	1.2	0.4
May-20-2013	NA	.	.	775	1.1	0.6
May-28-2013	NA	.	.	787	1.4	0.4
Jun-03-2013	NA	.	.	2,800	2.3 U	2.4 U
Jun-10-2013	NA	.	.	2,660	2.4	3.2 U
Jun-17-2013	NA	.	.	1,790	3.2	1.7
Jun-24-2013	NA	.	.	3,030	2.4	3.0 U
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

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
May-06-2013	NA	.	.	789	1.2	0.5
May-14-2013	NA	.	.	706	1.2	0.5
May-20-2013	NA	.	.	928	1.4	0.8
May-28-2013	NA	.	.	842	1.5	0.6
Jun-03-2013	NA	.	.	1,050	1.4	1.0
Jun-10-2013	NA	.	.	1,260	2.6 U	1.5
Jun-17-2013	NA	.	.	1,520	1.8	1.7
Jun-24-2013	NA	.	.	1,200	1.7	1.4
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

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
May-08-2013	.	.	.	1,830	0.8	1.0
May-15-2013	.	.	.	1,890	1.6	1.1
May-22-2013	.	.	.	1,880	1.5	1.2
May-29-2013	.	.	.	1,890	1.5	1.1
Jun-05-2013	.	.	.	1,850	2.4	1.3
Jun-12-2013	.	.	.	1,840	2.0	1.2
Jun-19-2013	.	.	.	1,670	0.9	1.0
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

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
May-08-2013	234	.	.	NA	NA	NA
May-15-2013	201	.	.	NA	NA	NA
May-22-2013	234	.	.	NA	NA	NA
May-29-2013	238	.	.	NA	NA	NA
Jun-05-2013	225	.	.	NA	NA	NA
Jun-12-2013	171	.	.	NA	NA	NA
Jun-19-2013	160	.	.	NA	NA	NA
Jul-01-2013	188	.	.	NA	NA	NA
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

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
May-09-2013	480	20.5	7.9	1,230	1.4	0.8
May-15-2013	442	23.4	8.0	1,260	0.8	0.7
May-20-2013	458	20.3	8.0	1,270	1.0	0.8
May-30-2013	453	22.3	8.1	1,250	1.1	0.7
Jun-04-2013	440	24.1	8.0	1,260	1.3	0.7
Jun-10-2013	361	22.5	8.0	1,420	1.6	0.9
Jun-18-2013	305	23.1	8.2	1,310	0.8	0.6
Jun-26-2013	319	23.6	8.2	1,330	0.7	0.7
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

USGS data is provisional and subject to revision

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
May-06-2013	.	.	.	429	1.4	0.3
May-14-2013	.	.	.	561	1.3	0.3
May-20-2013	.	.	.	578	1.1	0.3
May-28-2013	.	.	.	620	1.6	0.3
Jun-03-2013	.	.	.	653	1.8	0.3
Jun-10-2013	.	.	.	717	2.3	0.5
Jun-17-2013	.	.	.	680	1.8	0.4
Jun-26-2013	.	.	.	612	1.3	0.3
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

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

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

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from August 2012 to July 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
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
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

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from August 2012 to July 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
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
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	24	26.8	28.9	25	23.4	20.1
Jul-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, May 2013 to July 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
May-06-2013	NA	NA	NA	NA	NA
May-08-2013	NA	NA	NA	NA	NA
Jun-10-2013	40	1.2	13	0.5	< 0.4
Jun-12-2013	34	1.5	12	0.5	< 0.4
Jun-14-2013	19	1.4	5.7	0.5	< 0.4
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

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity May 2013 to July 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
May-06-2013	NA	NA	NA	NA	NA
May-08-2013	NA	NA	NA	NA	NA
Jun-10-2013	20	30	50	108	3
Jun-12-2013	13	36	41	89	5
Jun-14-2013	32	30	38	134	3
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

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 July 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 July 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.
***	DMC/Lab CI 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 Distract
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