GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

February 2013

July 2013

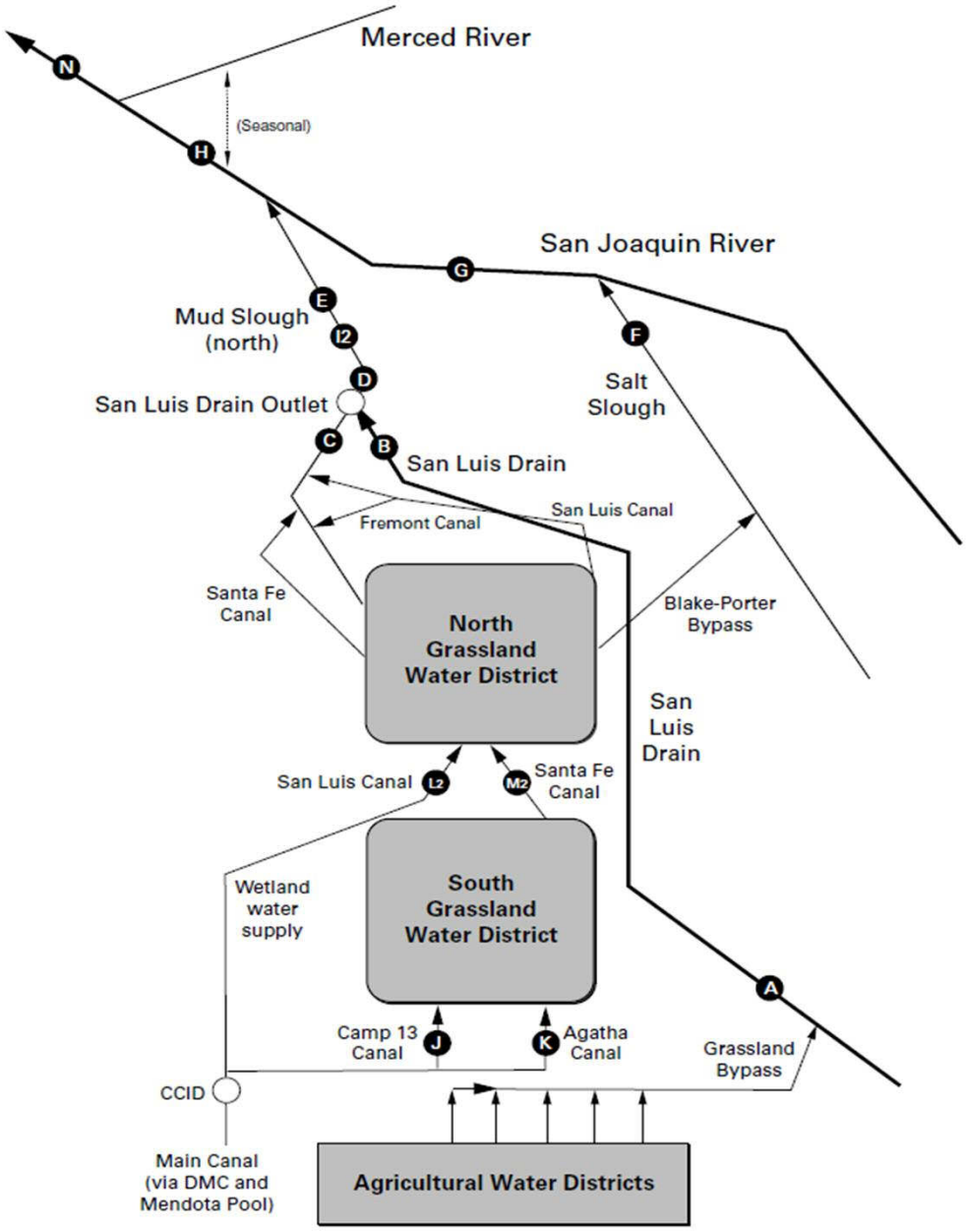
Preliminary Results

A cooperative effort of:

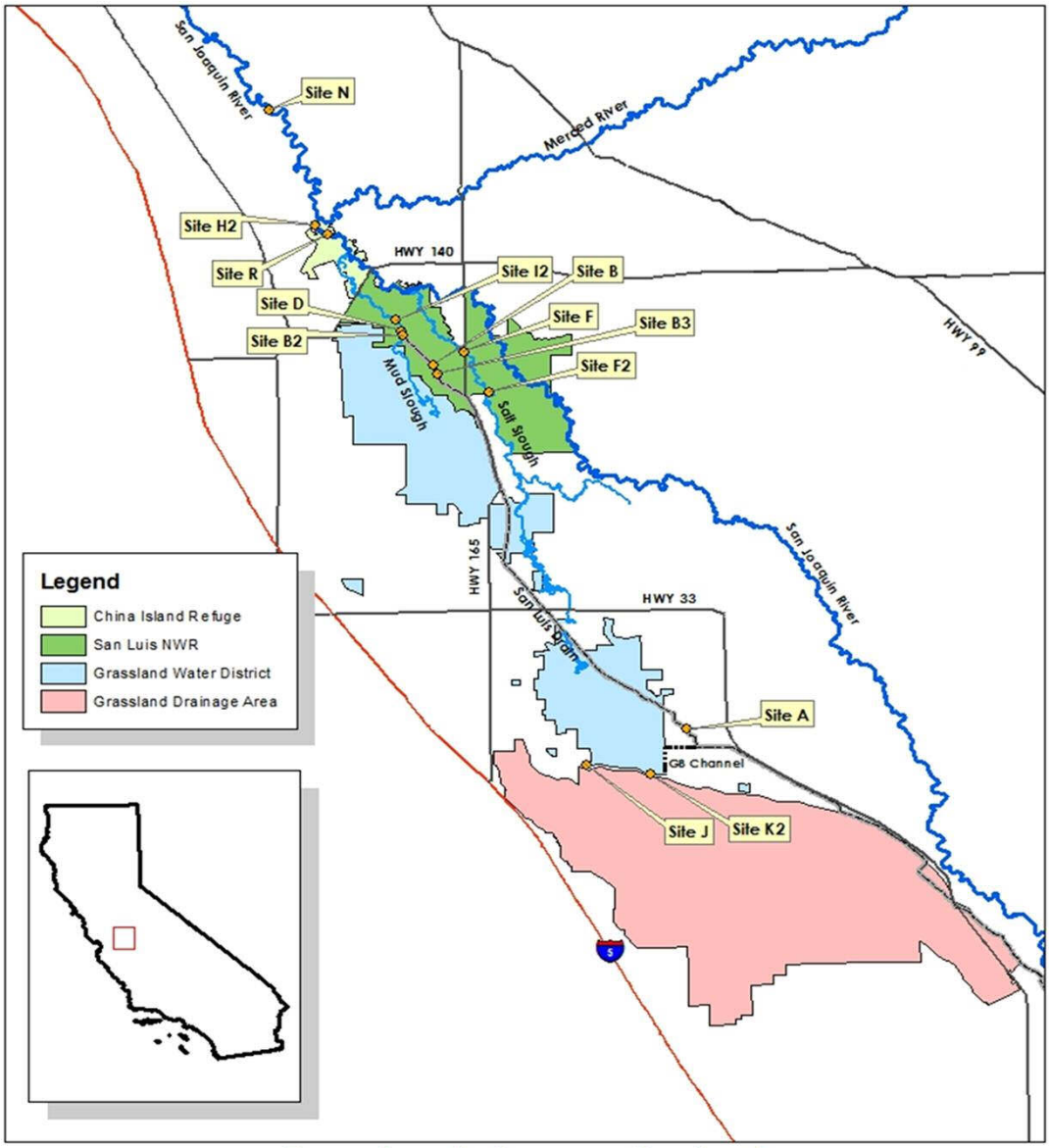
U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

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



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), February 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
Feb-01-2013	12	11.6	5,040	126
Feb-02-2013	13	12.2	4,920	130
Feb-03-2013	11	12.0	5,110	116
Feb-04-2013	12	12.2	5,680	133
Feb-05-2013	15	12.1	5,510	162
Feb-06-2013	13	11.2	5,330	143
Feb-07-2013	14	11.4	5,110	145
Feb-08-2013	12	10.7	4,980	122
Feb-09-2013	13	9.5	5,190	133
Feb-10-2013	12	9.7	5,190	124
Feb-11-2013	12	10.3	5,190	125
Feb-12-2013	11	10.5	5,470	120
Feb-13-2013	12	11.3	5,550	130
Feb-14-2013	12	12.3	5,240	121
Feb-15-2013	14	12.9	4,970	142
Feb-16-2013	15	13.2	4,650	140
Feb-17-2013	15	13.4	4,440	132
Feb-18-2013	16	12.9	4,250	133
Feb-19-2013	17	10.8	4,380	147
Feb-20-2013	15	9.7	4,520	139
Feb-21-2013	19	10.7	4,680	175
Feb-22-2013	15	11.4	4,720	146
Feb-23-2013	13	12.1	5,000	129
Feb-24-2013	19	10.4	4,890	182
Feb-25-2013	20	11.5	4,480	177
Feb-26-2013	23	11.9	5,160	238
Feb-27-2013	21	12.1	4,300	177
Feb-28-2013	20	13.5	4,130	161
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Mean	15	11.5	4,930	4,048
Total Acre-feet	825			
Salinity Load Value (Critical Year, February)				**6,779**

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), February 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
Feb-01-2013	18	10.5	8.7	4,730	28.0	2.8
Feb-02-2013	18	10.0	8.5	4,660	30.0	2.8
Feb-03-2013	18	9.6	8.6	4,460	32.0	3.1
Feb-04-2013	17	10.5	8.9	4,920	37.0	3.3
Feb-05-2013	16	9.2	8.9	4,920	38.0	3.3
Feb-06-2013	19	8.8	8.1	4,790	38.0	3.9
Feb-07-2013	18	9.2	8.2	4,630	37.0	3.6
Feb-08-2013	19	7.7	8.4	4,590	39.0	3.9
Feb-09-2013	18	7.6	9.3	4,700	36.0	3.4
Feb-10-2013	18	6.9	10.0	5,160	33.0	3.2
Feb-11-2013	17	8.5	9.2	5,070	31.0	2.9
Feb-12-2013	17	9.0	8.6	4,910	30.0	2.7
Feb-13-2013	16	10.5	7.7	4,820	30.0	2.5
Feb-14-2013	16	11.4	8.7	4,610	31.0	2.7
Feb-15-2013	16	12.3	8.4	4,760	30.0	2.6
Feb-16-2013	18	12.0	8.3	4,830	31.0	3.0
Feb-17-2013	19	11.2	9.2	4,820	31.0	3.2
Feb-18-2013	19	10.3	9.5	4,980	26.0	2.6
Feb-19-2013	20	7.3	8.7	5,130	24.0	2.5
Feb-20-2013	21	8.0	8.3	4,830	23.0	2.6
Feb-21-2013	20	7.7	8.8	4,600	25.0	2.7
Feb-22-2013	24	9.2	8.0	4,370	20.0	2.6
Feb-23-2013	19	10.8	7.7	4,150	19.0	2.0
Feb-24-2013	17	10.9	7.7	4,260	24.0	2.2
Feb-25-2013	23	10.4	8.6	4,320	21.0	2.6
Feb-26-2013	24	10.5	9.2	4,630	26.0	3.3
Feb-27-2013	27	11.1	8.8	4,670	23.0	3.4
Feb-28-2013	25	13.9	9.2	4,990	23.0	3.1
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Mean	19	9.8	8.7	4,730	29.1	2.9
Total Acre-feet	**1,060**					
Total (lbs)						**83**

Load Limitation for February 2013 (lbs)	**93**

♦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.

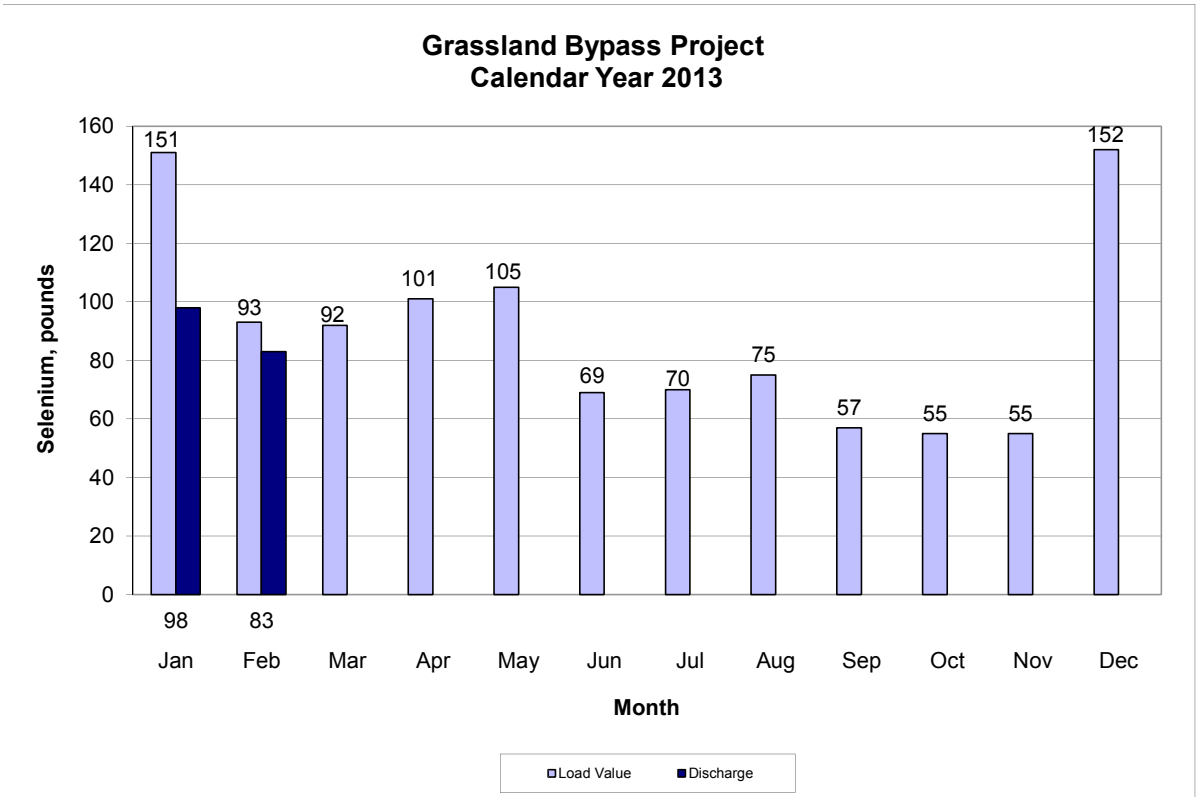

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), February 2013.

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
Feb-01-2013	91	12.0	2,830
Feb-02-2013	87	12.3	2,860
Feb-03-2013	92	12.3	2,740
Feb-04-2013	93	12.6	2,770
Feb-05-2013	92	12.5	2,790
Feb-06-2013	91	12.0	2,870
Feb-07-2013	89	12.2	2,850
Feb-08-2013	90	11.6	2,840
Feb-09-2013	91	10.6	2,810
Feb-10-2013	93	10.4	2,860
Feb-11-2013	101	10.8	2,670
Feb-12-2013	93	11.2	2,760
Feb-13-2013	84	11.8	2,830
Feb-14-2013	85	12.5	2,790
Feb-15-2013	88	13.2	2,790
Feb-16-2013	88	13.5	2,870
Feb-17-2013	85	13.8	2,910
Feb-18-2013	87	13.6	2,880
Feb-19-2013	103	12.3	2,780
Feb-20-2013	112	11.1	2,680
Feb-21-2013	118	11.1	2,550
Feb-22-2013	120	11.5	2,580
Feb-23-2013	119	12.3	2,470
Feb-24-2013	115	10.9	2,420
Feb-25-2013	133	11.5	2,390
Feb-26-2013	130	11.8	2,470
Feb-27-2013	131	12.3	2,590
Feb-28-2013	130	13.5	2,630
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Mean	101	12.0	2,720

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), February 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
Feb-01-2013	96	11.3	1,670
Feb-02-2013	92	11.7	1,730
Feb-03-2013	91	12.1	1,750
Feb-04-2013	92	12.1	1,790
Feb-05-2013	93	11.9	1,830
Feb-06-2013	93	11.8	1,820
Feb-07-2013	92	11.7	1,790
Feb-08-2013	92	11.4	1,850
Feb-09-2013	90	10.7	1,870
Feb-10-2013	84	10.4	1,970
Feb-11-2013	89	10.6	2,010
Feb-12-2013	101	10.7	1,830
Feb-13-2013	113	11.0	1,670
Feb-14-2013	105	11.5	1,690
Feb-15-2013	110	12.1	1,670
Feb-16-2013	134	12.2	1,460
Feb-17-2013	145	12.5	1,390
Feb-18-2013	170	12.4	1,350
Feb-19-2013	208	11.5	1,280
Feb-20-2013	219	10.3	1,290
Feb-21-2013	250	9.9	1,220
Feb-22-2013	281	10.3	1,210
Feb-23-2013	299	11.0	1,210
Feb-24-2013	292	10.6	1,200
Feb-25-2013	295	10.7	1,200
Feb-26-2013	308	10.9	1,210
Feb-27-2013	317	11.3	1,240
Feb-28-2013	313	12.2	1,240
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Mean	167	11.3	1,550

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), February 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
Feb-01-2013	647	11.3	NA	1,470	1.4
Feb-02-2013	626	11.6	NA	1,500	1.4
Feb-03-2013	616	11.4	NA	1,520	1.2
Feb-04-2013	620	11.8	NA	1,540	1.1
Feb-05-2013	613	12.1	NA	1,530	1.1
Feb-06-2013	608	11.8	NA	1,530	1.2
Feb-07-2013	609	12.1	0.9	1,550	1.3
Feb-08-2013	605	11.5	1.0	1,550	1.4
Feb-09-2013	600	10.7	1.0	1,540	1.3
Feb-10-2013	592	10.6	1.0	1,540	1.4
Feb-11-2013	582	10.8	1.0	1,530	1.4
Feb-12-2013	570	11.1	1.0	1,540	1.2
Feb-13-2013	551	11.6	1.1	1,550	1.2
Feb-14-2013	547	12.1	1.0	1,560	1.1
Feb-15-2013	558	12.7	1.0	1,540	1.1
Feb-16-2013	562	13.0	0.9	1,500	1.1
Feb-17-2013	576	13.1	1.0	1,480	1.1
Feb-18-2013	585	13.1	0.9	1,450	1.2
Feb-19-2013	588	12.5	0.9	1,430	1.2
Feb-20-2013	611	11.2	0.9	1,440	1.3
Feb-21-2013	627	11.5	0.9	1,430	1.2
Feb-22-2013	650	11.6	0.9	1,420	1.2
Feb-23-2013	666	12.2	0.9	1,400	1.1
Feb-24-2013	683	11.2	0.9	1,400	1.1
Feb-25-2013	681	11.6	0.9	1,390	0.9
Feb-26-2013	680	12.0	0.9	1,380	1.1
Feb-27-2013	689	12.1	0.9	1,390	1.1
Feb-28-2013	674	13.2	0.9	1,400	1.3
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Mean	615	11.8	NA	1,480	1.2
Total Acre-feet	34,148				

February 1-6 very low sample volume, analyzed for selenium only

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
Dec-03-2012	24	145	5,530	30	11.0
Dec-10-2012	12	59	5,360	38	9.9
Dec-17-2012	10	88	5,920	41	12.0
Dec-24-2012	15	86	6,000	43	12.0
Dec-31-2012	13	NA	5,530	40	11.0
Jan-02-2013	9	18	NA	NA	NA
Jan-07-2013	43	138	5,690	46	11.0
Jan-14-2013	10	13	6,330	50	12.0
Jan-21-2013	7	68	6,110	48	12.0
Jan-28-2013	10	38	5,970	50	10.0
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

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
Dec-06-2012	24	87	14.4	7.6	4,560	27.0	8.8
Dec-13-2012	18	21	10.3	7.9	4,620	20.0	8.3
Dec-20-2012	17	43	8.6	7.9	4,990	22.0	7.2
Dec-27-2012	26	28	8.8	7.9	4,150	24.0	7.2
Jan-03-2013	15	21	6.6	7.9	4,910	28.0	8.2
Jan-08-2013	48	21	7.9	8.0	4,640	26.0	8.0
Jan-15-2013	16	32	5.2	8.1	4,930	33.0	9.5
Jan-22-2013	13	22	7.9	8.1	4,800	32.0	8.5
Jan-29-2013	17	39	9.6	8.0	5,140	35.0	9.8
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

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
Dec-06-2012	203	.	14.0	7.8	1,450	<0.4	1.1
Dec-13-2012	138	.	10.0	7.9	1,660	0.8	1.1
Dec-20-2012	113	.	8.4	8.1	1,020	<0.4	1.3
Dec-27-2012	185	.	8.7	8.0	1,440	0.4	1.1
Jan-03-2013	127	.	6.3	8.0	1,870	0.6	1.4
Jan-08-2013	157	.	7.7	8.1	1,670	0.4	1.3
Jan-15-2013	112	.	4.8	8.1	1,960	0.4	1.5
Jan-22-2013	74	.	9.0	7.8	2,310	< 0.4	1.8
Jan-29-2013	86	.	9.0	8.0	2,310	<0.8	1.9
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

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

PRELIMINARY RESULTS

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
Dec-06-2012	227	13.9	19.3	7.6	1,810	3.3	1.9
Dec-13-2012	156	10.1	13.6	7.7	1,950	2.5	2.0
Dec-20-2012	130	8.4	11.0	7.7	2,070	3.2	2.0
Dec-27-2012	209	8.7	17.8	7.8	1,830	3.1	1.8
Jan-03-2013	142	6.4	9.5	7.8	2,190	3.6	2.2
Jan-08-2013	205	7.7	15.4	7.9	2,440	6.4	2.8
Jan-15-2013	128	5.0	NA	8.0	2,410	4.8	2.5
Jan-22-2013	87	8.8	9.1	8.0	2,760	4.5	2.8
Jan-29-2013	103	9.0	15.8	7.9	2,770	5.8	3.2
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

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
Dec-06-2012	.	NA	NA	NA	NA	NA	NA
Dec-13-2012	No Flow in	NA	NA	NA	NA	NA	NA
Dec-20-2012	December	NA	NA	NA	NA	NA	NA
Dec-27-2012	.	NA	NA	NA	NA	NA	NA
Jan-03-2013	Site Inaccessible	NA	NA	NA	NA	NA	NA
Jan-08-2013	In Early January	NA	NA	NA	NA	NA	NA
Jan-15-2013	.	3.8	NA	8.0	2,870	4.4	2.5
Jan-22-2013	.	9.0	12	7.5	7,980	4.2	2.8
Jan-29-2013	Site Inaccessible	NA	NA	NA	NA	NA	NA
Feb-05-2013	Late January	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

No samples were collected because this site had no flow through December, and was inaccessible in early January and late January through mid-February.

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
Dec-06-2012	245	14.6	7.3	1,340	<0.4	0.8
Dec-13-2012	168	10.0	7.3	1,500	0.5	1.0
Dec-20-2012	e118	11.5	7.2	1,580	<0.4	1.0
Dec-27-2012	177	8.9	7.3	1,550	0.5	0.8
Jan-03-2013	124	6.5	7.4	1,750	0.4	0.9
Jan-08-2013	160	7.6	7.6	1,540	0.5	0.7
Jan-15-2013	130	5.1	7.7	1,720	0.5	0.9
Jan-22-2013	118	7.8	7.4	1,600	0.4	0.8
Jan-29-2013	106	8.8	7.6	1,700	< 0.8	0.9
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

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
Dec-06-2012	352	14.2	7.9	1,110	<0.4	0.7
Dec-13-2012	239	9.8	7.9	1,460	0.4	0.8
Dec-20-2012	197	8.5	7.6	1,670	<0.4	0.8
Dec-27-2012	1070	8.6	8.3	468	<0.4	0.2
Jan-03-2013	385	6.1	8.0	1,020	< 0.4	0.4
Jan-08-2013	588	7.0	8.6	594	< 0.4	0.2
Jan-15-2013	297	5.0	7.9	1,350	< 0.4	0.5
Jan-22-2013	239	7.7	8.1	1,580	< 0.4	0.6
Jan-29-2013	195	9.0	7.8	1,670	< 0.8	0.7
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

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
Dec-03-2012	10	.	.	448	0.8	0.2
Dec-10-2012	10	.	.	612	1.3 U	0.4
Dec-17-2012	10	.	.	516	1.3	0.2
Dec-26-2012	10	.	.	354	0.6	0.2
Jan-02-2013	10	.	.	281	0.8	0.1
Jan-07-2013	15	.	.	400	1.5 U	0.2
Jan-14-2013	15	.	.	448	1.0	0.3
Jan-22-2013	15	.	.	363	1.5 U	0.2
Jan-28-2013	15	.	.	455	1.4 U	0.3
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

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
Dec-03-2012	85	.	.	457	0.6	0.2
Dec-10-2012	75	.	.	657	1.3	0.5 U
Dec-17-2012	75	.	.	529	1.1	0.3
Dec-26-2012	75	.	.	536	0.9	0.3
Jan-02-2013	50	.	.	346	0.8	0.2
Jan-07-2013	50	.	.	452	1.1	0.3
Jan-14-2013	50	.	.	501	1.0	0.3
Jan-22-2013	75	.	.	349	0.9	0.2
Jan-28-2013	75	.	.	438	1.3	0.3
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

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
Dec-03-2012	NA	.	.	697	0.8	0.5
Dec-10-2012	NA	.	.	680	1.0	0.7
Dec-17-2012	NA	.	.	741	0.9	0.5
Dec-26-2012	NA	.	.	158	<0.4	0.2
Jan-02-2013	NA	.	.	539	0.6	0.4
Jan-07-2013	NA	.	.	933	0.5	0.9
Jan-14-2013	NA	.	.	1,510	1.0	1.4
Jan-22-2013	NA	.	.	1,470	0.9	1.4
Jan-28-2013	NA	.	.	1,090	< 0.8	1.1
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

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
Dec-03-2012	NA	.	.	1,030	<0.4	1.0
Dec-10-2012	NA	.	.	1,080	0.6	1.2
Dec-17-2012	NA	.	.	1,030	0.8	1.0
Dec-26-2012	NA	.	.	1,330	0.5	1.4
Jan-02-2013	NA	.	.	549	0.5	0.4
Jan-07-2013	NA	.	.	1,260	0.8	1.4
Jan-14-2013	NA	.	.	1,290	0.9	1.4
Jan-22-2013	NA	.	.	1,250	1.0	1.4
Jan-28-2013	NA	.	.	1,100	0.9	1.2
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

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
Dec-10-2012	.	.	.	1,690	1.4	1.3
Dec-19-2012	.	.	.	305	1.3	0.6
Dec-27-2012	.	.	.	60	0.5	0.1
Jan-03-2013	.	.	.	461	1.7	1.1
Jan-09-2013	.	.	.	449	1.5	1.1
Jan-16-2013	.	.	.	583	1.8	1.3
Jan-23-2013	.	.	.	408	1.2	1.0
Jan-30-2013	.	.	.	734	2.0	1.5
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

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
Dec-10-2012	767	.	.	NA	NA	NA
Dec-19-2012	628	.	.	NA	NA	NA
Dec-27-2012	1,870	.	.	NA	NA	NA
Jan-03-2013	1,000	.	.	NA	NA	NA
Jan-09-2013	1,290	.	.	NA	NA	NA
Jan-16-2013	827	.	.	NA	NA	NA
Jan-23-2013	705	.	.	NA	NA	NA
Jan-30-2013	670	.	.	NA	NA	NA
Feb-06-2013	613			NA	NA	NA
Feb-13-2013	558			NA	NA	NA
Feb-27-2013	734			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
Dec-06-2012	952	14.3	7.8	1,010	1.1	0.8
Dec-13-2012	712	10.2	7.9	1,170	0.8	0.9
Dec-20-2012	645	NA	NA	NA	1.0	0.8
Dec-27-2012	1740	8.9	7.8	585	0.6	0.4
Jan-03-2013	1,050	6.4	7.8	1,020	0.9	0.6
Jan-08-2013	1,200	7.5	8.0	863	0.8	0.5
Jan-15-2013	883	5.5	8.0	1,290	1.0	0.8
Jan-22-2013	733	8.1	8.1	1,400	1.0	0.8
Jan-29-2013	687	9.3	7.9	1,480	1.2	0.9
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

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
Dec-03-2012	.	.	.	469	0.7	0.3
Dec-10-2012	.	.	.	621	1.3 U	0.4 U
Dec-17-2012	.	.	.	490	1.0	0.2
Dec-26-2012	.	.	.	348	0.6	0.2
Jan-02-2013	.	.	.	306	1.0	0.2
Jan-07-2013	.	.	.	408	1.4 U	0.2
Jan-14-2013	.	.	.	501	1.3 U	0.3
Jan-22-2013	.	.	.	330	1.0	0.2
Jan-28-2013	.	.	.	455	1.1	0.3
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from March 2012 to February 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	%	%	%	%	%	%
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
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

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from March 2012 to February 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
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
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

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from March 2012 to February 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	%	%	%	%	%	%
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
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

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

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from March 2012 to February 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
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
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

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, December 2012 to February 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
Dec-17-2012	NA	NA	NA	NA	NA
Dec-19-2012	NA	NA	NA	NA	NA
Dec-21-2012	NA	NA	NA	NA	NA
Jan-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	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 December 2012 to February 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
Dec-26-2012	NA	NA	NA	NA	NA
Dec-28-2012	NA	NA	NA	NA	NA
Dec-30-2012	NA	NA	NA	NA	NA
Jan-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	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 (10^6cell/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 Distraict
U	results are determined to be an outlier at the time of data validation