GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

May 2013

November 14, 2013

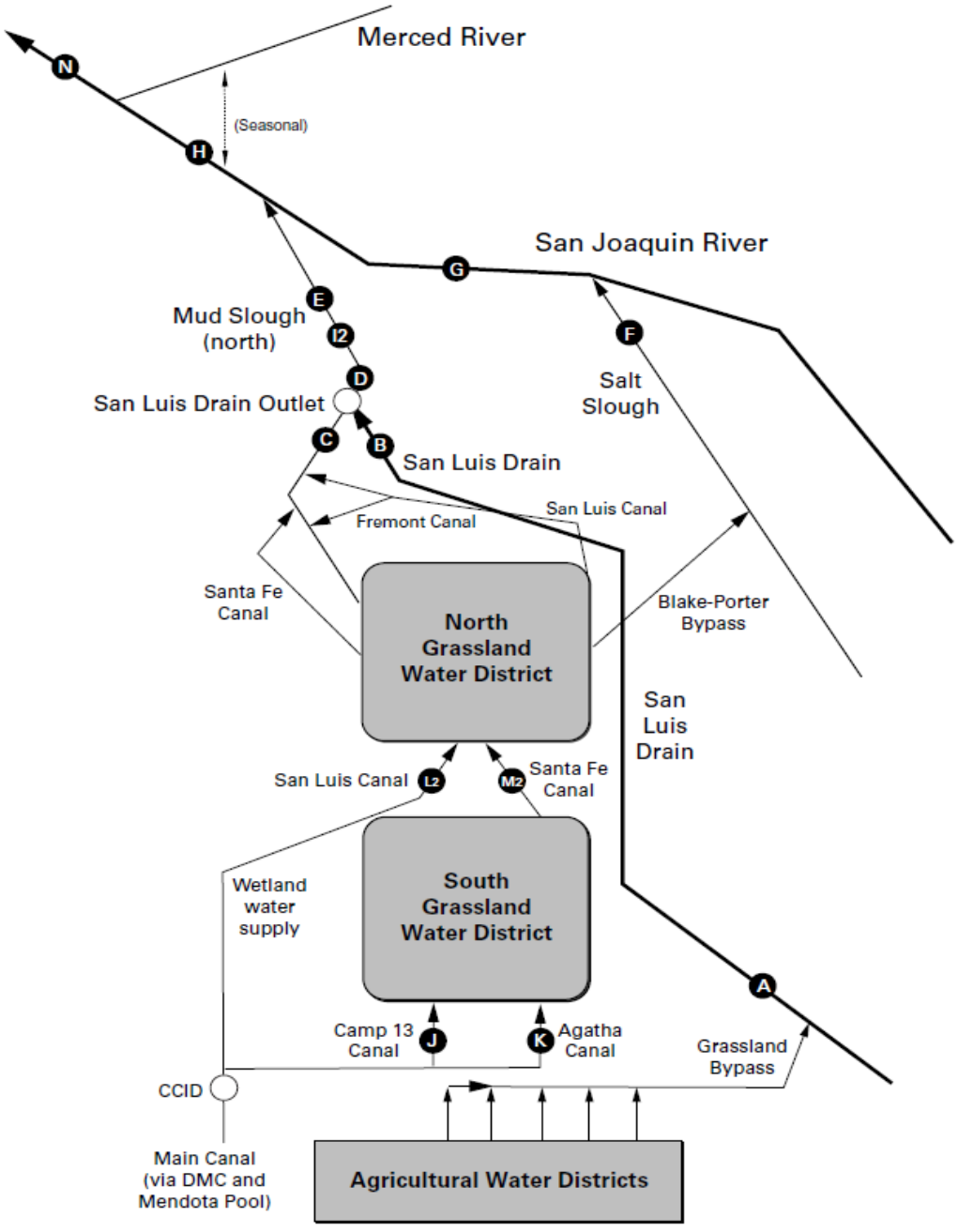
Preliminary Results

A cooperative effort of:

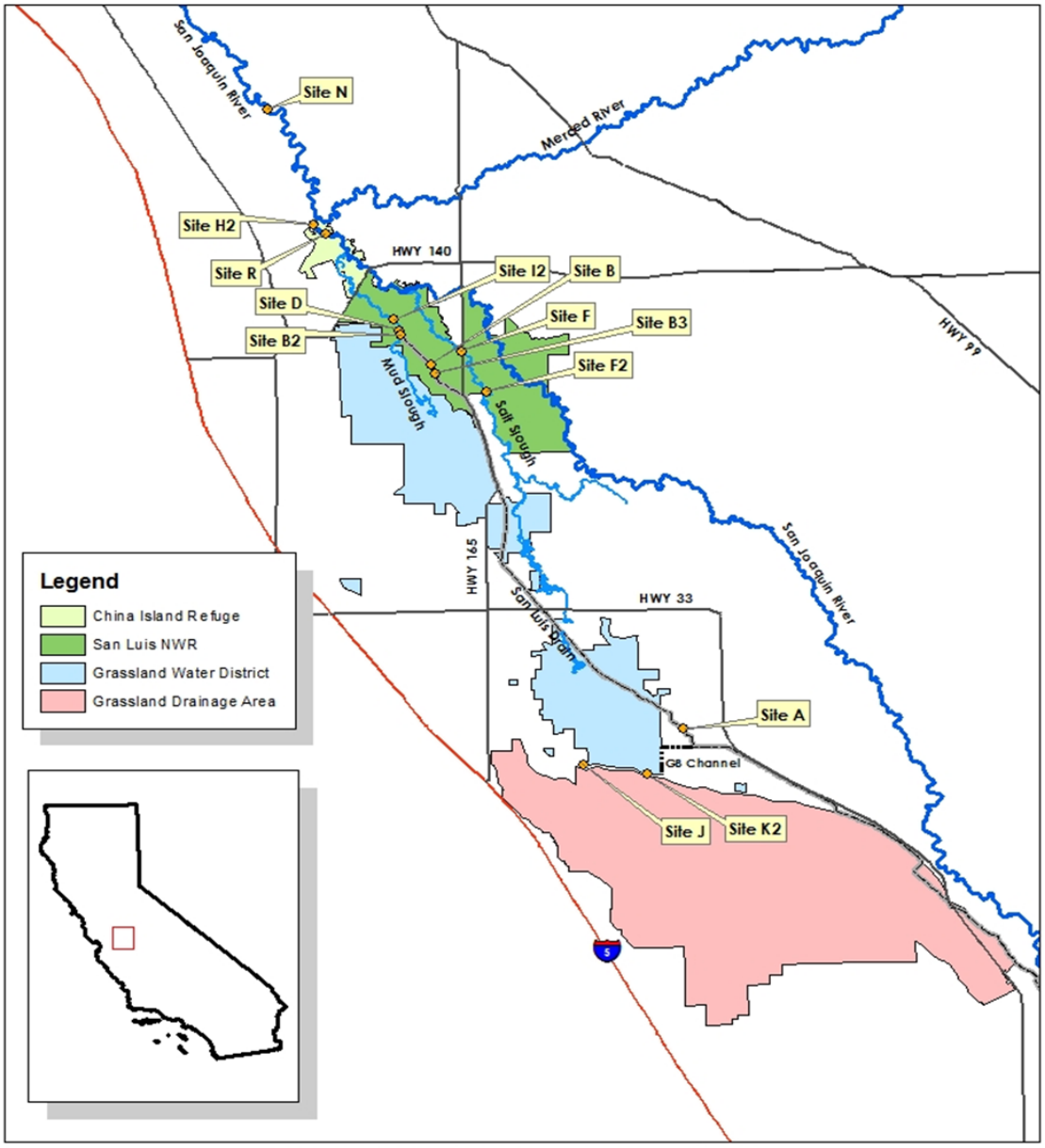
U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

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



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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), May 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
May-01-2013	7	19.8	5,210	74
May-02-2013	6	22.7	5,250	58
May-03-2013	5	23.7	5,270	49
May-04-2013	12	23.2	5,060	123
May-05-2013	17	20.5	4,500	150
May-06-2013	21	19.5	4,710	194
May-07-2013	18	20.4	4,690	164
May-08-2013	14	21.0	4,420	126
May-09-2013	12	21.6	4,690	112
May-10-2013	9	23.6	4,900	92
May-11-2013	7	26.2	4,720	66
May-12-2013	8	26.4	4,750	80
May-13-2013	10	25.6	4,710	94
May-14-2013	10	24.3	4,670	95
May-15-2013	11	22.3	4,350	92
May-16-2013	10	19.9	4,270	85
May-17-2013	13	20.7	4,380	114
May-18-2013	12	20.6	4,240	100
May-19-2013	12	21.2	4,150	96
May-20-2013	13	22.5	4,020	102
May-21-2013	13	22.5	3,920	102
May-22-2013	15	17.9	4,180	122
May-23-2013	20	18.4	4,270	172
May-24-2013	14	20.3	4,540	130
May-25-2013	10	20.5	4,600	89
May-26-2013	10	20.7	4,730	98
May-27-2013	11	20.6	4,830	111
May-28-2013	10	21.7	4,820	95
May-29-2013	11	22.7	4,800	102
May-30-2013	12	22.6	4,810	120
May-31-2013	13	23.1	4,820	128
Mean	12	21.8	4,620	3,337
Total Acre-feet	725			
Salinity Load Value (Critical Year, May)				5,792

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), May 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
May-01-2013	7	23.5	9.7	5,960	33.0	1.3
May-02-2013	7	23.3	9.8	5,860	38.0	1.5
May-03-2013	7	24.3	9.7	6,290	41.0	1.4
May-04-2013	6	23.4	9.9	6,450	45.0	1.4
May-05-2013	8	19.7	9.8	6,430	45.0	1.9
May-06-2013	16	21.4	10.0	6,420	34.0	2.9
May-07-2013	21	19.8	12.0	6,550	31.0	3.6
May-08-2013	18	20.5	12.0	6,930	30.0	2.9
May-09-2013	14	21.0	11.0	6,490	37.0	2.9
May-10-2013	13	23.3	11.0	6,440	34.0	2.3
May-11-2013	11	27.0	11.0	5,980	35.0	2.1
May-12-2013	8	27.4	11.0	5,860	32.0	1.4
May-13-2013	8	26.2	13.0	6,080	29.0	1.2
May-14-2013	10	24.8	12.0	6,390	33.0	1.7
May-15-2013	10	22.4	11.0	6,280	34.0	1.8
May-16-2013	11	19.6	9.8	5,970	26.0	1.5
May-17-2013	11	19.4	10.0	5,680	24.0	1.4
May-18-2013	13	20.0	12.0	5,950	25.0	1.7
May-19-2013	12	22.0	9.4	6,080	27.0	1.7
May-20-2013	12	24.4	9.2	5,860	33.0	2.2
May-21-2013	12	21.8	9.4	5,970	36.0	2.4
May-22-2013	11	16.7	8.2	5,890	37.0	2.3
May-23-2013	15	16.8	7.7	5,400	34.0	2.8
May-24-2013	22	20.0	9.6	5,510	38.0	4.4
May-25-2013	14	19.2	8.4	5,410	38.0	2.9
May-26-2013	10	19.5	8.0	5,360	39.0	2.2
May-27-2013	10	18.5	8.1	5,180	34.0	1.8
May-28-2013	12	22.0	8.9	5,030	36.0	2.2
May-29-2013	11	22.1	10.0	5,460	40.0	2.3
May-30-2013	10	22.1	9.8	5,700	38.0	2.0
May-31-2013	11	23.7	11.0	5,700	39.0	2.3
Mean	12	21.8	10.1	5,950	34.7	2.1
Total Acre-feet	710					
Total (lbs)						67

Load Limitation for May 2013 (lbs)	105

♦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.

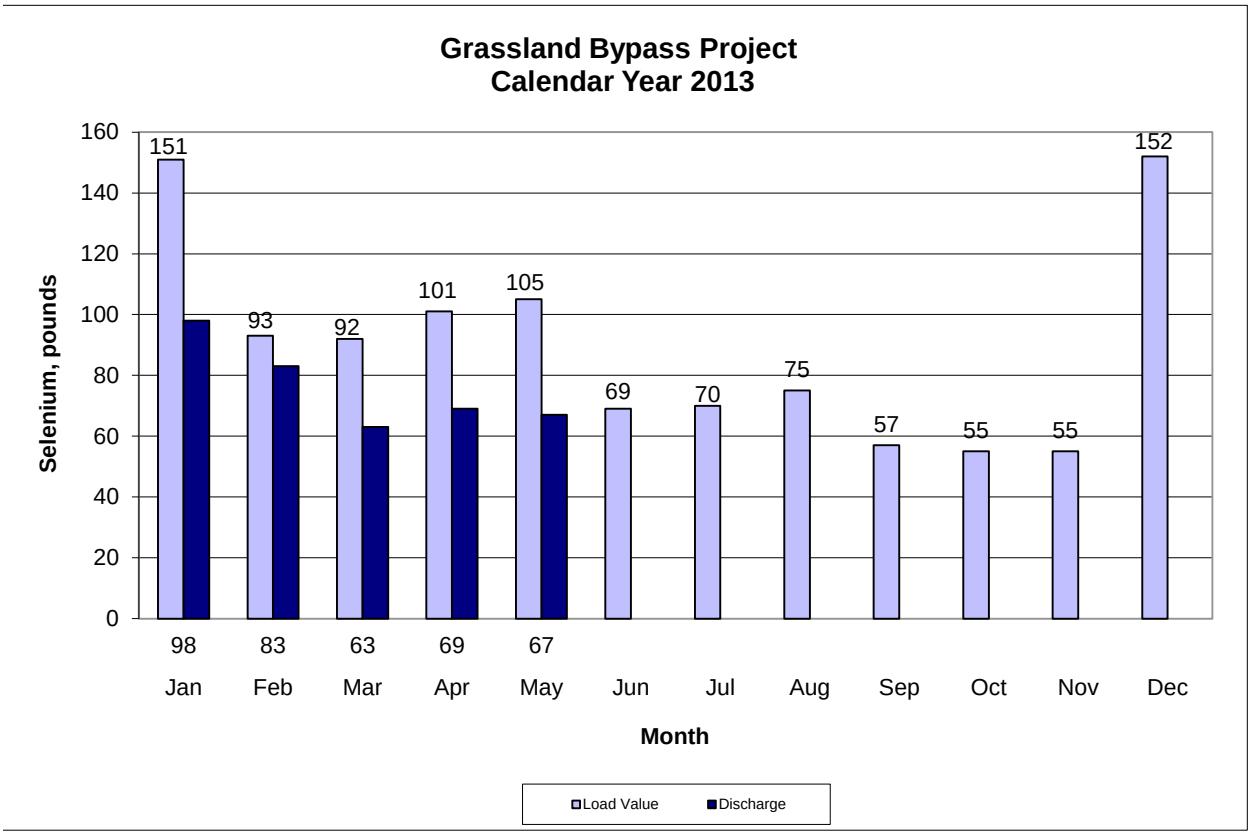

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), May 2013.

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
May-01-2013	33	19.0	3,230
May-02-2013	31	20.8	3,530
May-03-2013	30	22.1	3,580
May-04-2013	39	22.6	2,490
May-05-2013	39	21.3	2,650
May-06-2013	41	21.5	3,690
May-07-2013	52	21.3	3,350
May-08-2013	50	21.8	3,420
May-09-2013	51	22.4	2,940
May-10-2013	60	23.6	2,370
May-11-2013	60	25.1	2,100
May-12-2013	49	25.8	2,180
May-13-2013	47	25.0	2,310
May-14-2013	50	25.3	2,350
May-15-2013	49	24.0	2,410
May-16-2013	53	22.4	2,350
May-17-2013	56	22.1	2,160
May-18-2013	52	22.0	2,530
May-19-2013	47	21.8	2,740
May-20-2013	52	21.8	2,530
May-21-2013	52	22.9	2,560
May-22-2013	39	19.5	3,090
May-23-2013	39	19.4	3,320
May-24-2013	44	20.9	3,450
May-25-2013	37	21.4	3,460
May-26-2013	33	21.4	3,450
May-27-2013	32	20.5	3,430
May-28-2013	34	21.9	3,320
May-29-2013	32	23.0	3,440
May-30-2013	31	22.7	3,410
May-31-2013	35	22.8	3,150
Mean	44	22.2	2,940

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), May 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
May-01-2013	138	19.8	1,280
May-02-2013	141	21.1	1,390
May-03-2013	134	22.8	1,370
May-04-2013	138	23.3	1,250
May-05-2013	150	21.6	1,210
May-06-2013	164	20.9	1,190
May-07-2013	177	20.7	1,060
May-08-2013	164	21.2	1,030
May-09-2013	145	21.6	1,150
May-10-2013	133	22.9	1,210
May-11-2013	141	24.5	1,140
May-12-2013	142	25.6	1,110
May-13-2013	133	25.5	1,230
May-14-2013	117	25.2	1,270
May-15-2013	112	23.3	1,470
May-16-2013	127	21.5	1,340
May-17-2013	139	21.1	1,280
May-18-2013	159	21.2	1,130
May-19-2013	182	21.3	1,060
May-20-2013	182	21.7	1,080
May-21-2013	173	22.5	1,070
May-22-2013	151	20.1	1,260
May-23-2013	133	19.3	1,230
May-24-2013	134	20.2	1,200
May-25-2013	155	20.6	1,200
May-26-2013	163	20.4	1,120
May-27-2013	162	20.3	1,150
May-28-2013	163	21.3	1,110
May-29-2013	165	22.5	1,170
May-30-2013	165	22.6	1,200
May-31-2013	166	22.5	1,210
Mean	150	21.9	1,200

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), May 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
May-01-2013	494	19.5	0.7	1,200	0.8
May-02-2013	471	21.2	0.6	1,200	0.7
May-03-2013	453	22.6	0.6	1,220	0.7
May-04-2013	415	23.2	0.8	1,290	0.9
May-05-2013	422	22.5	0.7	1,290	0.9
May-06-2013	442	21.8	0.7	1,170	0.8
May-07-2013	478	21.6	1.1	1,130	1.1
May-08-2013	515	21.5	0.7	1,090	1.3
May-09-2013	480	22.3	0.8	1,140	1.4
May-10-2013	441	23.4	0.8	1,210	1.2
May-11-2013	440	24.7	0.8	1,240	1.4
May-12-2013	441	25.5	0.9	1,250	1.2
May-13-2013	480	25.1	0.7	1,130	1.0
May-14-2013	470	25.1	0.6	1,070	0.7
May-15-2013	442	24.8	0.7	1,150	0.8
May-16-2013	417	23.0	0.8	1,260	0.9
May-17-2013	412	22.1	0.8	1,330	1.0
May-18-2013	421	21.9	0.8	1,250	1.0
May-19-2013	438	22.1	0.8	1,220	0.9
May-20-2013	458	22.1	0.8	1,160	0.9
May-21-2013	484	22.9	0.7	1,100	0.8
May-22-2013	467	20.7	0.8	1,110	1.1
May-23-2013	418	20.1	0.8	1,170	1.1
May-24-2013	397	21.2	0.9	1,260	1.4
May-25-2013	382	22.1	1.0	1,330	1.8
May-26-2013	420	22.2	1.0	1,210	2.0
May-27-2013	438	21.3	0.7	1,110	1.4
May-28-2013	425	22.0	0.7	1,150	1.2
May-29-2013	459	23.2	0.7	1,180	1.2
May-30-2013	453	23.0	0.7	1,180	1.5
May-31-2013	426	23.0	0.7	1,230	1.4
Mean	445	22.5	NA	1,190	1.1
Total Acre-feet	27,370				

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
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
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

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
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
May-02-2013	7	15	18.5	7.9	5,660	40.0	10.0
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

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
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
May-02-2013	24	.	18.4	8.4	2,000	< 0.4	1.5
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

++ 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
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
May-02-2013	31	18.4	44.6	8.0	3,450	10.0	4.6
May-09-2013	51	20.5	28.6	8.0	3,060	9.4	4.6
May-15-2013	49	22.2	47.0	7.9	2,360	5.8	3.1
May-20-2013	52	20.2	34.9	8.0	2,770	7.8	3.5
May-30-2013	31	22.9	12.8	8.4	3,600	14 U	4.8

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
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	.	NA	NA	NA	NA	NA	NA
Apr-04-2013	.	NA	NA	NA	NA	NA	NA
Apr-11-2013	No Flow	NA	NA	NA	NA	NA	NA
Apr-16-2013	Late March	NA	NA	NA	NA	NA	NA
Apr-23-2013	Through May	NA	NA	NA	NA	NA	NA
May-02-2013	.	NA	NA	NA	NA	NA	NA
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

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
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
May-02-2013	141	18.4	6.7	1,400	< 0.4	0.7
May-09-2013	145	19.2	7.5	1,160	0.4	0.5
May-15-2013	112	21	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

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
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
May-02-2013	166	19.8	8.1	1,500	< 0.4	0.6
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

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
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
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

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
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
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

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
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
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

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
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
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

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
Mar-06-2013	.	.	.	1,810	1.6	1.3
Mar-13-2013	.	.	.	2,250	9.1U	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
May-01-2013	.	.	.	1,860	1.1	1.1
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

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
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
May-01-2013	215	.	.	NA	NA	NA
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

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
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
May-02-2013	471	19.2	8.0	1,280	0.6	0.7
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

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
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
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from June 2012 to May 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	%	%	%	%	%	%
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
May-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 June 2012 to May 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
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
May-2013	NA	NA	NA	NA	NA	NA

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from June 2012 to May 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	%	%	%	%	%	%
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
May-2013	NA	NA	NA	NA	NA	NA

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from June 2012 to May 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
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
May-2013	NA	NA	NA	NA	NA	NA

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from June 2012 to May 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
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
May-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, March 2013 to May 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
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
May-04-2013	NA	NA	NA	NA	NA
May-06-2013	NA	NA	NA	NA	NA
May-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 March 2013 to May 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
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
May-04-2013	NA	NA	NA	NA	NA
May-06-2013	NA	NA	NA	NA	NA
May-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
<	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