

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

November 2012

May 2013

Preliminary Results

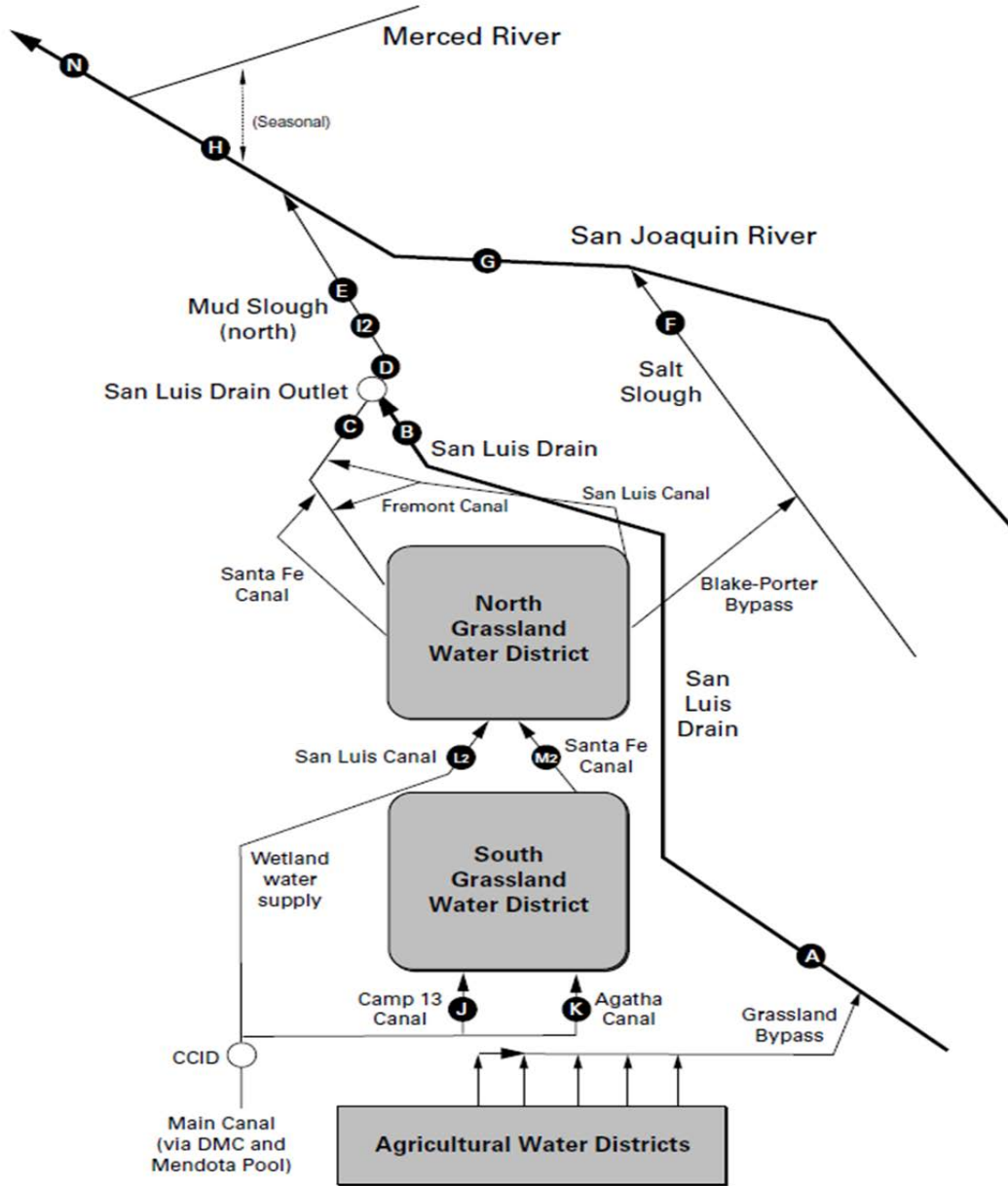
A cooperative effort of:

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

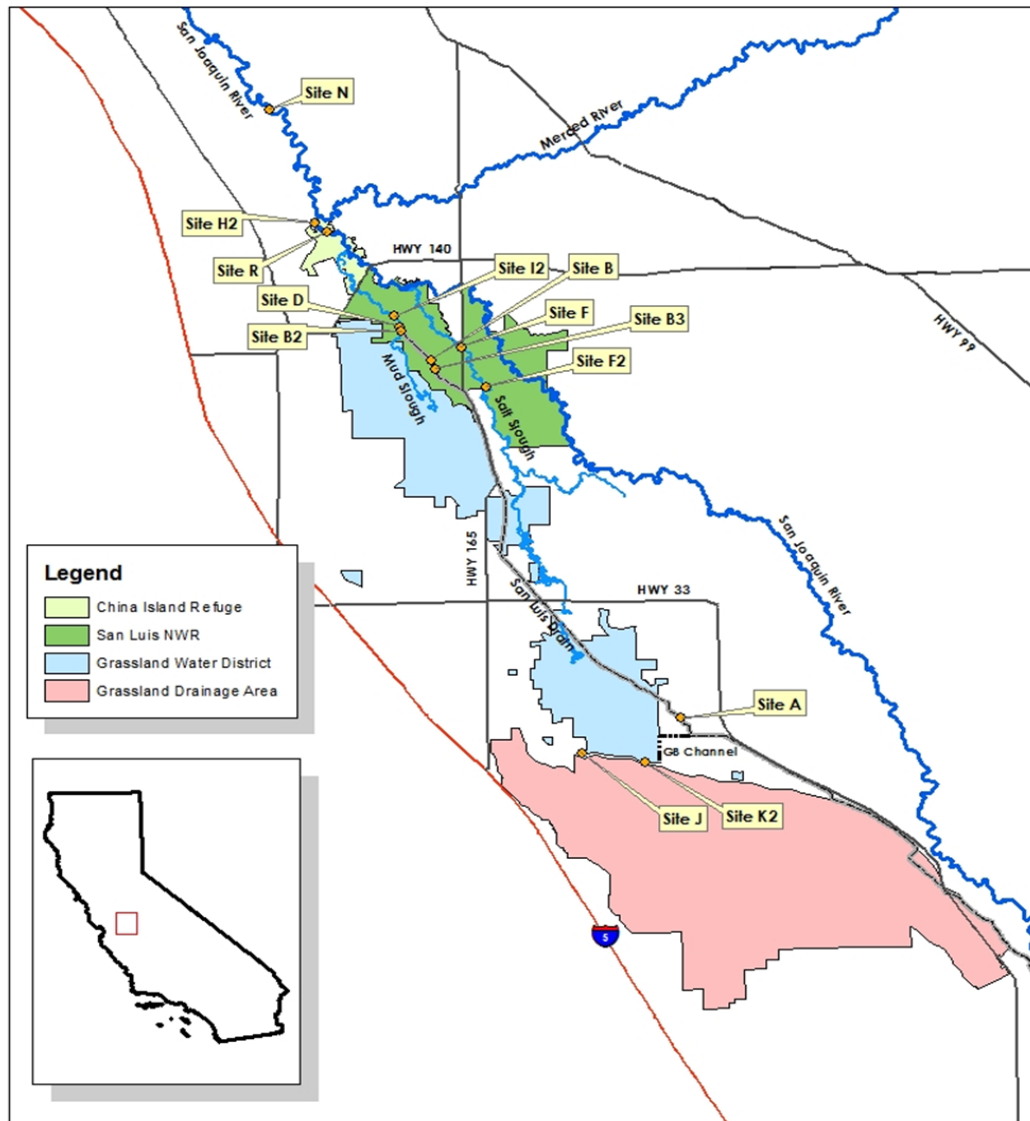
compiled by San Francisco Estuary Institute



Map 1: Current Monitoring Plan for the Grasslands Bypass Project

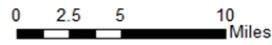


Map 2: Proposed 2013 Monitoring Plan for the Grasslands Bypass Project



Grasslands Bypass Project

2013 Monitoring Plan Sites



Grasslands Bypass Project
NAD 1983 California Zone 10
U.S. Bureau of Reclamation

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

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Monthly Monitoring

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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), November 2012.

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
Nov-01-2012	5	16.9	4,730	45
Nov-02-2012	5	16.9	4,240	44
Nov-03-2012	3	17.3	4,020	28
Nov-04-2012	0	17.5	4,190	4
Nov-05-2012	0	17.5	4,430	0
Nov-06-2012	0	17.8	4,310	3
Nov-07-2012	6	17.5	4,730	60
Nov-08-2012	5	15.5	4,690	51
Nov-09-2012	5	13.4	4,650	42
Nov-10-2012	9	12.1	4,290	78
Nov-11-2012	6	11.5	4,380	50
Nov-12-2012	5	10.9	4,460	40
Nov-13-2012	4	11.4	4,710	35
Nov-14-2012	4	11.9	4,840	35
Nov-15-2012	4	11.6	4,820	35
Nov-16-2012	4	12.4	4,730	34
Nov-17-2012	4	14.3	4,620	41
Nov-18-2012	8	14.7	4,630	78
Nov-19-2012	6	14.1	4,480	53
Nov-20-2012	4	14.0	4,480	38
Nov-21-2012	15	14.2	4,720	138
Nov-22-2012	23	14.1	4,640	216
Nov-23-2012	22	13.3	4,460	200
Nov-24-2012	14	13.0	4,540	129
Nov-25-2012	12	12.9	4,440	110
Nov-26-2012	11	12.4	4,410	93
Nov-27-2012	4	14.8	4,610	39
Nov-28-2012	2	12.5	4,900	16
Nov-29-2012	2	13.2	4,880	18
Nov-30-2012	3	14.6	4,660	27
.
Mean	7	14.1	4,560	1,783
Total Acre-feet	389			
Salinity Load Value (Dry Year, November)				3,851

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), November 2012.

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
Nov-01-2012	12	16.4	6.7	3,100	10.0	0.7
Nov-02-2012	13	15.8	6.0	3,280	9.4	0.6
Nov-03-2012	13	16.2	5.2	3,020	10.0	0.7
Nov-04-2012	12	17.4	5.0	2,980	10.0	0.7
Nov-05-2012	10	17.8	5.4	2,990	9.0	0.5
Nov-06-2012	9	18.4	6.2	3,150	8.8	0.4
Nov-07-2012	9	18.5	6.9	3,450	9.5	0.4
Nov-08-2012	11	14.8	7.0	3,600	9.0	0.6
Nov-09-2012	14	9.9	6.3	3,420	8.7	0.6
Nov-10-2012	13	8.8	6.0	3,220	9.2	0.6
Nov-11-2012	15	8.6	5.8	3,100	7.8	0.7
Nov-12-2012	14	9.4	4.4	2,750	5.1	0.4
Nov-13-2012	13	10.9	3.8	2,330	4.4	0.3
Nov-14-2012	12	11.6	6.3	2,840	9.3	0.6
Nov-15-2012	12	10.3	6.1	3,360	11.0	0.7
Nov-16-2012	12	12.7	6.4	3,340	11.0	0.7
Nov-17-2012	13	15.1	6.6	3,300	14.0	1.0
Nov-18-2012	13	15.0	5.7	3,430	13.0	0.9
Nov-19-2012	16	14.3	5.9	3,200	13.0	1.1
Nov-20-2012	15	14.0	6.0	3,220	12.0	1.0
Nov-21-2012	13	14.4	5.9	3,260	12.0	0.8
Nov-22-2012	21	12.4	5.9	3,360	12.0	1.4
Nov-23-2012	32	11.7	6.7	3,440	14.0	2.4
Nov-24-2012	31	12.5	7.0	3,560	14.0	2.4
Nov-25-2012	24	10.7	9.6	4,090	22.0	2.8
Nov-26-2012	21	10.6	9.2	4,630	26.0	2.9
Nov-27-2012	19	10.1	8.2	4,210	30.0	3.0
Nov-28-2012	15	12.2	8.2	3,990	32.0	2.5
Nov-29-2012	12	14.0	7.9	4,260	32.0	2.1
Nov-30-2012	12	15.7	7.2	4,040	28.0	1.8
.
Mean	15	13.3	6.5	3,400	13.9	1.2
Total Acre-feet	890					
Total (lbs)						35

Load Limitation for November 2012 (lbs)	233
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♦To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge is measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation. Water quality data are still collected at the old Site B.

Figure 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

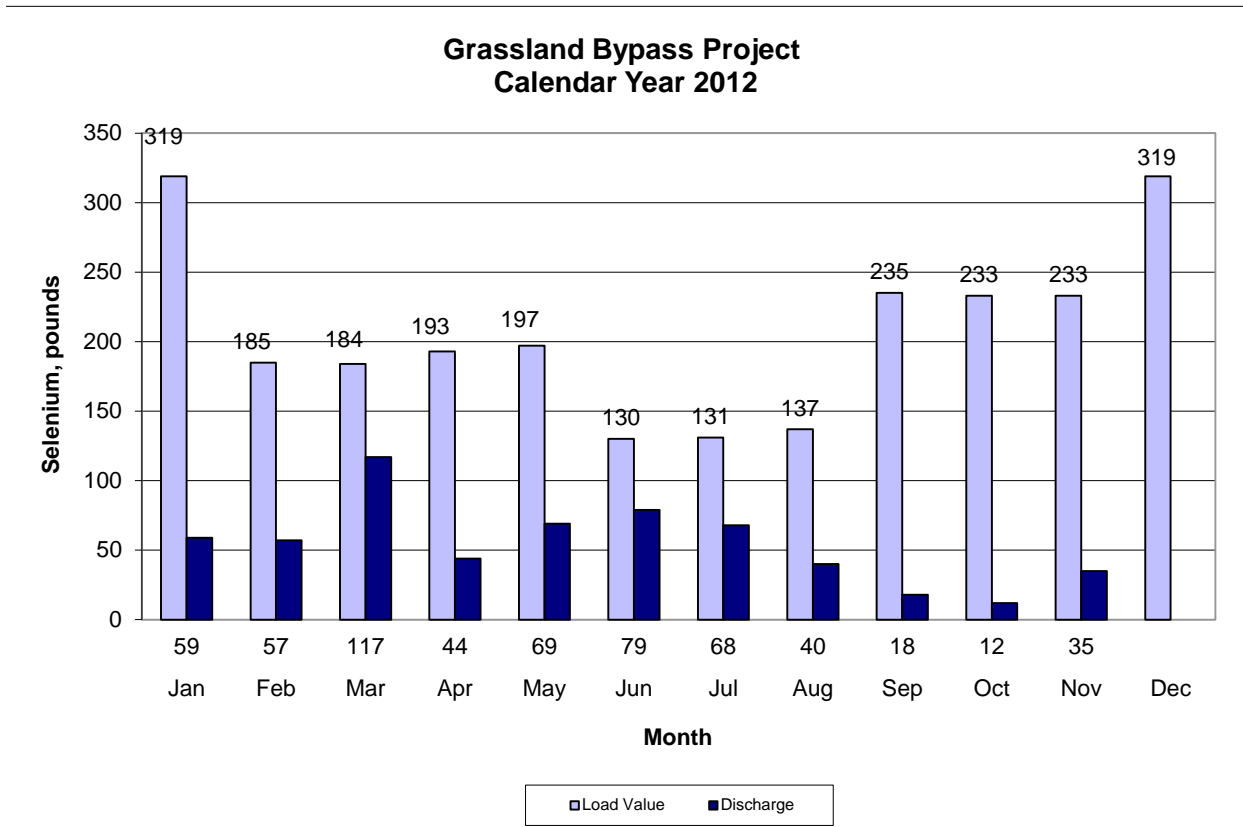


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), November 2012.

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
Nov-01-2012	116	17.9	1,590
Nov-02-2012	99	17.2	1,680
Nov-03-2012	99	17.2	1,650
Nov-04-2012	98	17.3	1,640
Nov-05-2012	97	17.6	1,620
Nov-06-2012	94	17.9	1,640
Nov-07-2012	95	17.9	1,680
Nov-08-2012	96	17.0	1,850
Nov-09-2012	98	15.1	1,870
Nov-10-2012	99	13.9	1,820
Nov-11-2012	99	12.9	1,880
Nov-12-2012	95	12.4	1,820
Nov-13-2012	92	12.5	1,750
Nov-14-2012	90	12.9	1,830
Nov-15-2012	88	12.9	1,940
Nov-16-2012	89	13.2	1,930
Nov-17-2012	98	14.1	1,840
Nov-18-2012	104	14.6	1,840
Nov-19-2012	116	14.6	1,760
Nov-20-2012	116	14.8	1,750
Nov-21-2012	107	14.8	1,800
Nov-22-2012	110	14.3	1,970
Nov-23-2012	121	13.8	2,090
Nov-24-2012	124	13.6	2,110
Nov-25-2012	116	13.4	2,120
Nov-26-2012	114	13.1	2,180
Nov-27-2012	113	13.0	2,070
Nov-28-2012	121	13.0	1,850
Nov-29-2012	126	13.0	1,810
Nov-30-2012	141	14.0	1,700
.	.	.	.
Mean	106	14.7	1,840

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 2012.

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
Nov-01-2012	104	17.0	1,440
Nov-02-2012	109	16.5	1,430
Nov-03-2012	106	16.1	1,490
Nov-04-2012	103	16.0	1,490
Nov-05-2012	116	16.1	1,430
Nov-06-2012	124	16.3	1,360
Nov-07-2012	121	16.4	1,410
Nov-08-2012	117	16.0	1,420
Nov-09-2012	112	14.6	1,460
Nov-10-2012	108	13.2	1,480
Nov-11-2012	107	12.0	1,450
Nov-12-2012	110	11.4	1,400
Nov-13-2012	114	11.3	1,390
Nov-14-2012	113	11.6	1,400
Nov-15-2012	111	11.7	1,410
Nov-16-2012	113	12.2	1,390
Nov-17-2012	127	13.3	1,310
Nov-18-2012	151	13.6	1,210
Nov-19-2012	167	13.6	1,160
Nov-20-2012	173	13.4	1,200
Nov-21-2012	176	13.6	1,200
Nov-22-2012	171	13.3	1,220
Nov-23-2012	159	12.8	1,280
Nov-24-2012	149	12.4	1,280
Nov-25-2012	148	12.3	1,260
Nov-26-2012	148	12.0	1,270
Nov-27-2012	153	11.9	1,240
Nov-28-2012	154	12.2	1,290
Nov-29-2012	164	12.7	1,310
Nov-30-2012	190	13.6	1,270
.	.	.	.
Mean	134	13.6	1,350

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 2012.

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
Nov-01-2012	530	17.7	0.5	869	0.8
Nov-02-2012	536	17.3	0.5	877	0.8
Nov-03-2012	539	17.3	0.6	896	0.6
Nov-04-2012	544	17.2	0.6	904	0.5
Nov-05-2012	549	17.4	0.6	926	0.5
Nov-06-2012	542	17.5	0.6	939	0.6
Nov-07-2012	545	17.6	0.5	942	0.5
Nov-08-2012	528	17.0	0.6	948	0.4
Nov-09-2012	516	15.7	0.6	973	0.4
Nov-10-2012	519	14.4	0.6	986	0.4
Nov-11-2012	523	13.3	0.6	984	0.5
Nov-12-2012	541	12.7	0.6	968	0.4
Nov-13-2012	551	12.5	0.6	955	< 0.4
Nov-14-2012	571	12.6	0.5	922	0.4
Nov-15-2012	575	12.4	0.5	878	< 0.4
Nov-16-2012	568	12.8	0.5	909	< 0.4
Nov-17-2012	572	13.9	0.5	924	< 0.4
Nov-18-2012	591	14.6	0.5	908	0.5
Nov-19-2012	610	14.7	0.5	885	0.9
Nov-20-2012	627	14.5	0.5	856	0.5
Nov-21-2012	634	14.8	0.6	858	0.6
Nov-22-2012	627	14.3	0.6	880	0.5
Nov-23-2012	620	13.5	0.6	911	0.6
Nov-24-2012	630	13.3	0.7	957	0.8
Nov-25-2012	622	13.1	0.7	1,000	1.0
Nov-26-2012	607	12.7	0.7	1,010	0.9
Nov-27-2012	602	12.5	0.8	1,010	0.9
Nov-28-2012	611	12.7	0.7	982	0.9
Nov-29-2012	626	13.0	0.7	949	0.9
Nov-30-2012	653	13.9	0.6	936	1.1
.
Mean	577	14.6	0.6	930	0.7
Total Acre-feet	34,332				

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
Sep-03-2012	7	101	5,310	31	9.6
Sep-10-2012	5	125	5,690	22	10.0
Sep-17-2012	6	206	5,660	12	12.0
Sep-24-2012	1	86	4,350	19	7.7
Oct-01-2012	8	155	4,726	10	10.0
Oct-08-2012	4	145	6,070	12	13.0
Oct-15-2012	2	80	5,660	17	13.0
Oct-22-2012	5	138	4,990	25	9.5
Oct-29-2012	3	80	4,880	20	10.0
Nov-05-2012	0	40	4,830	27	9.7
Nov-12-2012	5	42	1,980	34	9.9
Nov-17-2012	4	96	4,770	34	9.5
Nov-26-2012	11	125	5,200	33	10.0

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
Sep-06-2012	6	38	23.4	8.9	4,860	21.0	8.0
Sep-13-2012	6	44	25.2	8.9	5,270	18.0	9.0
Sep-18-2012	9	18	22.5	9.0	5,190	16.0	10.0
Sep-26-2012	6	23	22.7	8.5	3,570	6.3	6.4
Oct-02-2012	12	24	23.2	8.0	3,740	4.9	6.7
Oct-10-2012	10	25	19.4	8.5	3,600	10.0	6.6
Oct-16-2012	10	39	20.4	8.0	3,410	4.9	5.6
Oct-23-2012	12	48	16.3	8.2	3,330	4.9	6.0
Oct-30-2012	10	38	17.1	8.2	3,010	8.5	5.1
Nov-07-2012	9	34	19.6	8.2	3,760	9.6	6.9
Nov-15-2012	12	18	11.8	8.2	3,590	11.0	6.4
Nov-20-2012	15	25	14.0	7.9	3,430	11.0	6.0
Nov-26-2012	21	32	13.4	7.8	4,490	27.0	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
Sep-06-2012	17	.	21.8	8.3	957	0.8	0.7
Sep-13-2012	13	.	25.9	8.8	1,350	0.4	0.9
Sep-18-2012	22	.	20.8	7.8	1,190	<0.4	0.7
Sep-26-2012	26	.	21.7	7.8	1,220	<0.4	0.7
Oct-02-2012	31	.	21.8	7.8	1,140	<0.4	0.7
Oct-10-2012	63	.	18.2	7.8	1,110	0.5	0.6
Oct-16-2012	84	.	19.6	7.7	1,180	<0.4	0.6
Oct-23-2012	88	.	15.7	7.9	1,330	0.6	0.9
Oct-30-2012	73	.	16.9	7.9	1,480	<0.4	1.0
Nov-07-2012	86	.	18.6	7.9	1,550	<0.4	1.1
Nov-15-2012	76	.	11.5	8.0	1,680	<0.4	1.2
Nov-20-2012	101	.	14.2	8.0	1,510	0.7	1.1
Nov-26-2012	93	.	14.2	7.8	1,620	<0.4	1.1

** 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
Sep-06-2012	23	21.5	40.4	8.5	2,280	7.2	2.8
Sep-13-2012	19	24.9	16.8	8.5	3,170	5.8	4.3
Sep-18-2012	31	21.3	26.4	8.2	3,090	6.7	5.0
Sep-26-2012	32	21.6	23.0	7.8	2,000	2.3	2.3
Oct-02-2012	43	22.4	29.4	7.7	1,790	1.2	2.0
Oct-10-2012	73	18.8	19.5	7.6	1,440	1.4	1.3
Oct-16-2012	94	19.9	10.7	7.5	1,460	0.8	1.2
Oct-23-2012	100	16.2	15.5	7.6	1,590	0.9	1.5
Oct-30-2012	83	17.0	16.5	7.6	1,730	1.4	1.6
Nov-07-2012	95	18.4	16.8	7.8	1,750	1.0	1.6
Nov-15-2012	88	11.5	13.9	7.8	2,000	1.6	1.8
Nov-20-2012	116	14.5	20.0	7.8	1,440	2.2	1.7
Nov-26-2012	114	12.8	15.5	7.9	2,240	4.4	2.7

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
Sep-13-2012	No flow in	NA	NA	NA	NA	NA	NA
Sep-18-2012	September	NA	NA	NA	NA	NA	NA
Sep-26-2012	and early	NA	NA	NA	NA	NA	NA
Oct-02-2012	October	NA	NA	NA	NA	NA	NA
Oct-10-2012	.	19.1	14	7.6	1,440	1.3	1.2
Oct-16-2012	.	20.1	26	7.6	1,490	0.8	1.2
Oct-23-2012	.	16.0	7	7.6	1,610	0.8	1.6
Oct-30-2012	.	16.5	15	7.8	1,850	1.2	1.6
Nov-07-2012	.	17.5	7	7.7	2,900	2.0	2.3
Nov-15-2012	.	11.0	11	7.8	2,110	1.4	1.9
Nov-20-2012	.	14.0	16	7.8	1,820	2.2	1.7
Nov-26-2012	.	15.9	7	7.8	4,980	2.9	3.5

No samples were collected because this site had no flow through early November.

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
Sep-06-2012	79	22.2	7.6	1,090	< 0.4	0.4
Sep-13-2012	64	22.9	7.7	1,180	< 0.4	0.5
Sep-18-2012	76	20.6	7.5	1,010	<0.4	0.4
Sep-26-2012	95	20.7	7.4	1,130	<0.4	0.4
Oct-02-2012	97	21.2	7.3	1,150	<0.4	0.5
Oct-10-2012	109	17.5	7.4	1,160	0.6	0.5
Oct-16-2012	99	18.9	7.5	1,290	<0.4	0.5
Oct-23-2012	100	15.4	7.3	1,440	<0.4	0.7
Oct-30-2012	97	16.2	7.5	1,500	0.4	0.7
Nov-07-2012	121	16.2	7.3	1,430	<0.4	0.7
Nov-15-2012	111	10.7	7.5	1,440	<0.4	0.7
Nov-20-2012	173	13.5	7.4	1,210	0.5	0.7
Nov-26-2012	148	11.8	7.6	1,310	<0.4	0.7

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
Sep-06-2012	92	22.4	8.0	1,330	0.4	0.4
Sep-13-2012	56	23.6	8.1	1,680	< 0.4	0.5
Sep-18-2012	78	21.6	8.0	1,370	0.4	0.5
Sep-26-2012	99	21.5	7.8	1,300	<0.4	0.4
Oct-02-2012	120	22.1	7.9	1,260	<0.4	0.4
Oct-10-2012	123	17.8	8.1	1,290	0.7	0.5
Oct-16-2012	115	19.8	7.9	1,440	<0.4	0.5
Oct-23-2012	129	16.4	7.9	1,550	<0.4	0.7
Oct-30-2012	114	16.6	7.9	1,740	<0.4	0.7
Nov-07-2012	162	17.5	8	1,510	<0.4	0.6
Nov-15-2012	129	10.7	7.9	1,570	<0.4	0.7
Nov-20-2012	205	14.0	8.0	1,170	0.8	0.6
Nov-26-2012	182	11.3	7.7	1,400	<0.4	0.7

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
Sep-04-2012	45	.	.	533	0.5	0.2
Sep-10-2012	45	.	.	566	0.4	0.2
Sep-17-2012	105	.	.	637	0.6	0.2
Sep-24-2012	105	.	.	732	0.5	0.2
Oct-01-2012	105	.	.	681	0.6	0.2
Oct-08-2012	90	.	.	651	0.4	0.2
Oct-15-2012	60	.	.	577	0.6	0.2
Oct-22-2012	40	.	.	612	0.6	0.2
Oct-29-2012	40	.	.	618	0.6	0.2
Nov-05-2012	25	.	.	599	0.6	0.2
Nov-12-2012	25	.	.	634	0.9	0.3
Nov-19-2012	15	.	.	574	0.9	0.3
Nov-26-2012	10	.	.	500	0.5	0.2

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
Sep-04-2012	80	.	.	532	0.6	0.2
Sep-10-2012	120	.	.	555	0.4	0.2
Sep-17-2012	140	.	.	629	0.4	0.2
Sep-24-2012	140	.	.	716	0.5	0.2
Oct-01-2012	140	.	.	692	<0.4	0.2
Oct-08-2012	140	.	.	637	0.5	0.2
Oct-15-2012	110	.	.	575	0.6	0.2
Oct-22-2012	100	.	.	607	0.5	0.2
Oct-29-2012	100	.	.	659	0.5	0.3
Nov-05-2012	100	.	.	593	<0.4	0.2
Nov-12-2012	100	.	.	298	0.4	0.1
Nov-19-2012	85	.	.	538	0.8	0.3
Nov-26-2012	85	.	.	562	0.5	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
Sep-04-2012	NA	.	.	605	0.6	0.3
Sep-10-2012	NA	.	.	582	0.4	0.2
Sep-17-2012	NA	.	.	648	0.5	0.3
Sep-24-2012	NA	.	.	728	0.7	0.3
Oct-01-2012	NA	.	.	838	0.5	0.4
Oct-08-2012	NA	.	.	742	0.7	0.3
Oct-15-2012	NA	.	.	643	0.6	0.2
Oct-22-2012	NA	.	.	1,150	1.1	1.0
Oct-29-2012	NA	.	.	1,050	0.8	0.9
Nov-05-2012	NA	.	.	784	0.6	0.6
Nov-12-2012	NA	.	.	733	0.6	0.5
Nov-19-2012	NA	.	.	611	0.7	0.5
Nov-26-2012	NA	.	.	825	1.1	0.6

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
Sep-04-2012	NA	.	.	638	0.6	0.3
Sep-10-2012	NA	.	.	632	0.5	0.3
Sep-17-2012	NA	.	.	766	0.5	0.5
Sep-24-2012	NA	.	.	756	0.6	0.3
Oct-01-2012	NA	.	.	849	0.8	0.4
Oct-08-2012	NA	.	.	748	0.7	0.3
Oct-15-2012	NA	.	.	678	0.6	0.3
Oct-22-2012	NA	.	.	962	0.7	0.7
Oct-29-2012	NA	.	.	972	0.6	0.8
Nov-05-2012	NA	.	.	944	<0.4	0.8
Nov-12-2012	NA	.	.	941	0.7	0.8
Nov-19-2012	NA	.	.	813	0.8	0.7
Nov-26-2012	NA	.	.	937	0.6	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
Sep-05-2012	.	.	.	1,690	1.9	1.0
Sep-12-2012	.	.	.	1,680	1.2	1.0
Sep-19-2012	.	.	.	1,810	2.1	1.5
Sep-26-2012	.	.	.	1,540	0.7	0.8
Oct-03-2012	.	.	.	1,540	0.7	0.9
Oct-10-2012	.	.	.	1,350	1.2	0.9
Oct-17-2012	.	.	.	1,400	0.6	0.9
Oct-24-2012	.	.	.	1,600	0.5	1.0
Oct-31-2012	.	.	.	1,840	0.7	1.1
Nov-07-2012	.	.	.	1,670	0.7	1.0
Nov-14-2012	.	.	.	1,840	0.6	1.1
Nov-21-2012	.	.	.	1,810	0.5	1.1
Nov-28-2012	.	.	.	1,810	0.7	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
Sep-05-2012	274	.	.	NA	NA	NA
Sep-12-2012	221	.	.	NA	NA	NA
Sep-19-2012	244	.	.	NA	NA	NA
Sep-26-2012	218	.	.	NA	NA	NA
Oct-03-2012	176	.	.	NA	NA	NA
Oct-10-2012	191	.	.	NA	NA	NA
Oct-17-2012	242	.	.	NA	NA	NA
Oct-24-2012	465	.	.	NA	NA	NA
Oct-31-2012	248	.	.	NA	NA	NA
Nov-07-2012	e485	.	.	NA	NA	NA
Nov-14-2012	563	.	.	NA	NA	NA
Nov-21-2012	613	.	.	NA	NA	NA
Nov-28-2012	585	.	.	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
Sep-06-2012	320	21.8	7.9	1,120	0.8	0.5
Sep-13-2012	310	23.1	8.0	1,070	0.5	0.4
Sep-18-2012	290	20.6	7.9	1,040	0.6	0.4
Sep-26-2012	277	21.1	7.9	1,210	0.7	0.6
Oct-02-2012	286	21.8	7.9	1,280	0.5	0.7
Oct-10-2012	339	18.3	7.9	1,220	0.7	0.6
Oct-16-2012	406	19.6	7.9	1,100	0.4	0.5
Oct-23-2012	962	15.4	8.0	556	<0.4	0.3
Oct-30-2012	564	16.4	7.9	939	0.4	0.5
Nov-07-2012	545	17.7	8.1	1,040	<0.4	0.5
Nov-15-2012	575	11.0	7.9	900	<0.4	0.5
Nov-20-2012	627	13.8	7.9	885	0.8	0.5
Nov-26-2012	607	11.6	7.5	1,070	0.7	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
Sep-04-2012	.	.	.	514	0.5	0.2
Sep-10-2012	.	.	.	562	0.4	0.2
Sep-17-2012	.	.	.	628	0.5	0.2
Sep-24-2012	.	.	.	717	0.4	0.2
Oct-01-2012	.	.	.	719	<0.4	0.2
Oct-08-2012	.	.	.	587	0.5	0.2
Oct-15-2012	.	.	.	612	0.5	0.2
Oct-22-2012	.	.	.	606	0.5	0.2
Oct-29-2012	.	.	.	599	0.6	0.2
Nov-05-2012	.	.	.	516	<0.4	0.2
Nov-12-2012	.	.	.	300	<0.4	0.1
Nov-19-2012	.	.	.	404	0.9	0.2
Nov-26-2012	.	.	.	479	0.5	0.2

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 2011 to November 2012. 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	%	%	%	%	%	%
Dec-2011	100	98	98	95	95	98
Jan-2012	85	75	78	80	78	85
Feb-2012	98	90	100	100	98	98
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

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 2011 to November 2012. 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
Dec-2011	0.42	0.38	0.44	0.39	0.37	0.36
Jan-2012	0.37	0.33	0.33	0.33	0.34	0.35
Feb-2012	0.38	0.33	0.36	0.38	0.35	0.39
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

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 2011 to November 2012. 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	%	%	%	%	%	%
Dec-2011	90	80	80	70	80	90
Jan-2012	90	100	100	90	100	100
Feb-2012	100	90	100	90	100	100
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

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 2011 to November 2012. 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
Dec-2011	24.3	32.1	36.7	24.0	28.0	34.1
Jan-2012	34.1	41.4	35.7	29.2	33.9	28.5
Feb-2012	58.0	48.9	63.8	54.9	58.6	52.0
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

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 2011 to November 2012. 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
Dec-2011	17.4	36.6	36.0	35.6	25.1	2.9††††
Jan-2012	25.1	33.6	37.5	32.9	27.8	28.5
Feb-2012	25.0	36.4	34.9	4.9*	29.8	23.5
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

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2012 to November 2012.

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
Sep-17-2012	17	< 0.4	6.0	< 0.4	< 0.4
Sep-19-2012	16	< 0.4	4.1	< 0.4	< 0.4
Sep-21-2012	15	< 0.4	2.7	< 0.4	< 0.4
Aug-13-2012	24	1.4	11	< 0.4	< 0.4
Sep-17-2012	17	< 0.4	6.0	< 0.4	< 0.4
Sep-19-2012	16	< 0.4	4.1	< 0.4	< 0.4
Sep-21-2012	15	< 0.4	2.7	< 0.4	< 0.4
Nov-26-2012	27	< 0.4	4.6	< 0.4	< 0.4
Nov-28-2012	30	< 0.4	3.9	< 0.4	< 0.4
Nov-30-2012	27	< 0.4	< 0.4	0.5	< 0.4

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity September 2012 to November 2012.

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
Sep-17-2012	32	25	37	52	0
Sep-19-2012	33	29	79	48	8
Sep-21-2012	39	35	97	56	8
Oct-26-2012	NA	NA	NA	NA	NA
Oct-28-2012	NA	NA	NA	NA	NA
Oct-30-2012	NA	NA	NA	NA	NA
Nov-26-2012	36	12	22	42	2
Nov-28-2012	25	17	72	44	0
Nov-30-2012	41	21	NA	63	3

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 ⁶ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of November 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated
PPD	Panoche Drainage District
U	results are determined to be an outlier at the time of data validation