

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

**April 2012**

September 2012

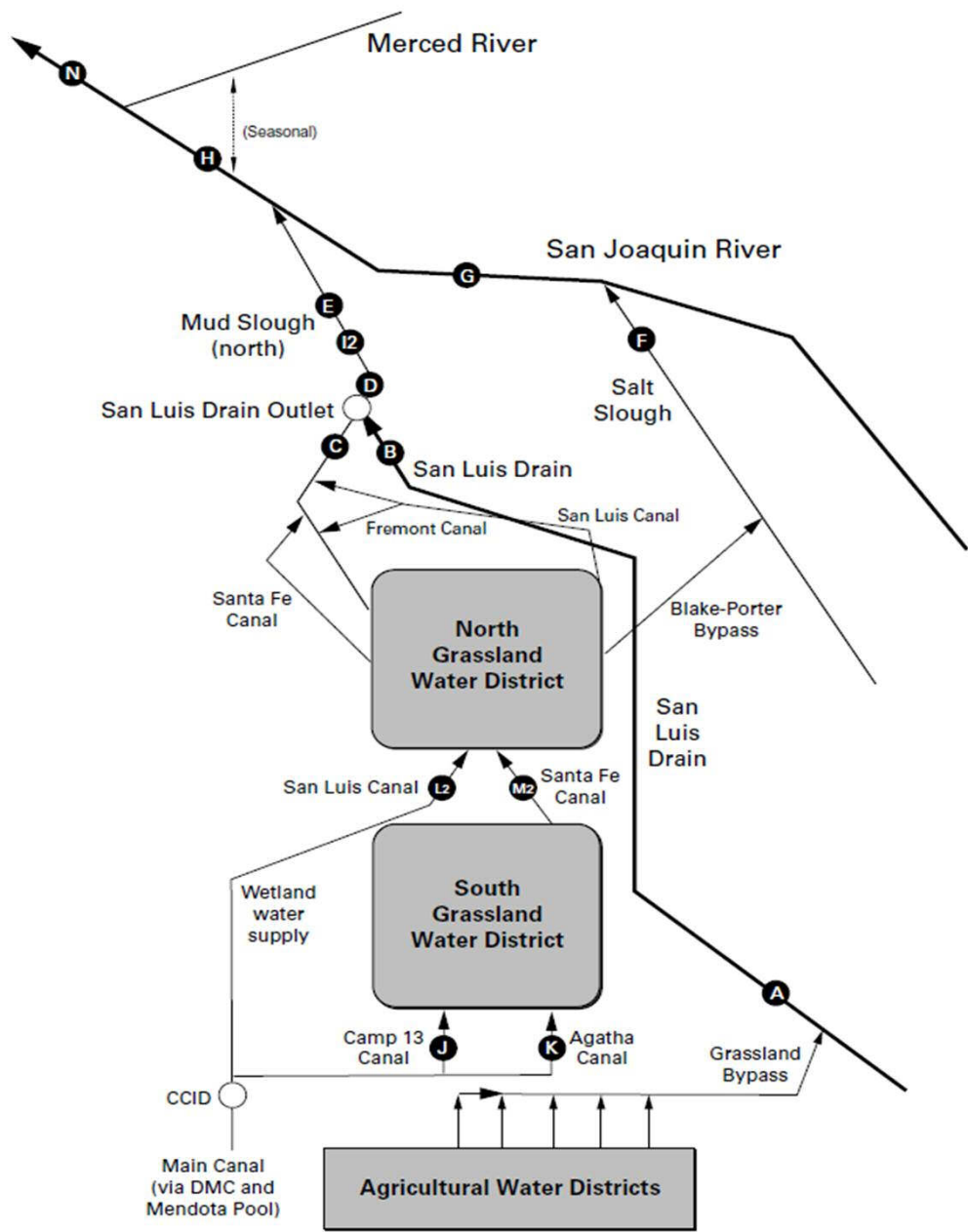
### **Preliminary Results**

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





## GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

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

See Table 28 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>	<b>Salt Load</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>	<b>SLDMWA</b>	<b>Computed</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>	<b>tons</b>
Apr-01-2012	18	14.6	6,000	210
Apr-02-2012	18	15.8	5,900	209
Apr-03-2012	11	17.8	5,900	133
Apr-04-2012	7	15.8	5,900	85
Apr-05-2012	6	14.4	5,710	72
Apr-06-2012	7	15.2	5,720	79
Apr-07-2012	6	16.6	5,790	74
Apr-08-2012	7	17.8	5,870	83
Apr-09-2012	7	17.5	5,860	80
Apr-10-2012	6	16.5	6,150	75
Apr-11-2012	6	15.9	6,180	78
Apr-12-2012	12	14.1	5,820	145
Apr-13-2012	29	14.8	5,540	316
Apr-14-2012	31	14.3	5,840	358
Apr-15-2012	20	17.7	5,820	227
Apr-16-2012	12	20.2	5,770	141
Apr-17-2012	12	20.4	5,800	135
Apr-18-2012	12	20.0	5,470	128
Apr-19-2012	7	20.9	5,600	81
Apr-20-2012	9	23.6	5,540	100
Apr-21-2012	9	25.1	5,700	106
Apr-22-2012	8	26.1	5,750	89
Apr-23-2012	10	22.3	5,950	123
Apr-24-2012	11	20.6	5,790	125
Apr-25-2012	10	20.7	5,570	114
Apr-26-2012	10	20.0	5,630	115
Apr-27-2012	9	18.3	5,550	98
Apr-28-2012	8	20.2	5,500	82
Apr-29-2012	9	22.7	5,500	94
Apr-30-2012	16	23.2	5,320	172
.	.	.	.	.
Mean	11	18.8	5,750	3,926
Total Acre-feet	680			
<b>Salinity Load Value (Dry Year, April)</b>				<b>10,047</b>

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

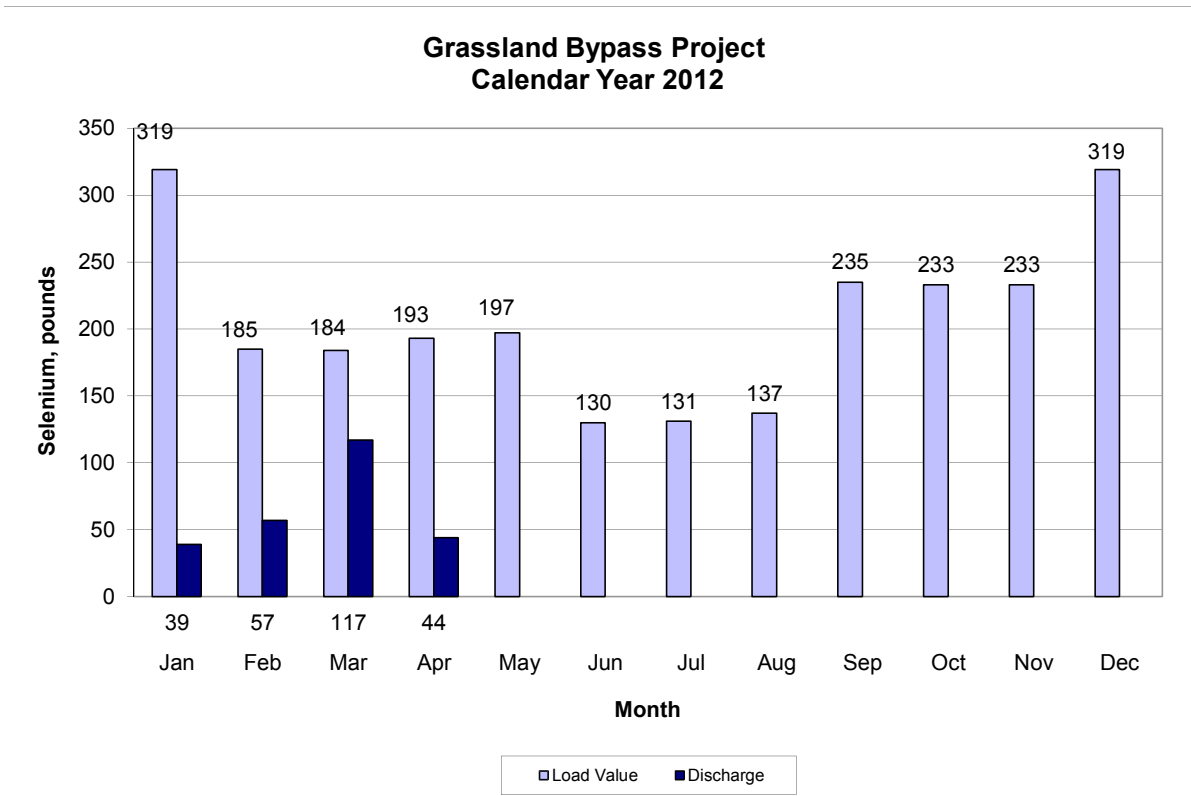
See Table 28 for explanation of footnotes and agency abbreviations.

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
Apr-01-2012	11	12.5	9.7	4,100	31.0	1.8
Apr-02-2012	16	13.1	10.0	4,160	30.0	2.6
Apr-03-2012	18	16.1	9.6	4,130	30.0	2.9
Apr-04-2012	11	13.3	10.0	4,130	33.0	2.0
Apr-05-2012	8	9.9	11.0	4,420	34.0	1.5
Apr-06-2012	7	11.0	11.0	4,490	34.0	1.3
Apr-07-2012	7	13.9	11.0	4,550	30.0	1.1
Apr-08-2012	7	16.8	10.0	4,560	28.0	1.1
Apr-09-2012	7	16.4	11.0	4,400	27.0	1.0
Apr-10-2012	7	14.8	10.0	4,390	25.0	1.0
Apr-11-2012	7	14.7	10.0	4,420	29.0	1.1
Apr-12-2012	8	12.6	11.0	4,220	26.0	1.1
Apr-13-2012	12	12.0	10.0	4,200	22.0	1.4
Apr-14-2012	28	13.7	9.0	4,090	18.0	2.8
Apr-15-2012	33	16.1	9.5	4,050	18.0	3.2
Apr-16-2012	21	18.2	9.2	4,360	17.0	1.9
Apr-17-2012	13	18.9	9.4	4,210	22.0	1.5
Apr-18-2012	11	17.5	10.0	4,470	23.0	1.3
Apr-19-2012	12	20.3	11.0	4,640	30.0	1.9
Apr-20-2012	8	23.5	12.0	4,930	31.0	1.4
Apr-21-2012	8	25.4	11.0	4,700	32.0	1.4
Apr-22-2012	9	26.9	12.0	4,690	31.0	1.5
Apr-23-2012	7	21.2	12.0	4,660	28.0	1.1
Apr-24-2012	8	20.7	11.0	4,820	24.0	1.1
Apr-25-2012	10	18.9	11.0	4,700	22.0	1.2
Apr-26-2012	10	17.7	11.0	4,750	18.0	1.0
Apr-27-2012	9	14.6	10.0	4,770	14.0	0.6
Apr-28-2012	8	18.4	10.0	4,600	16.0	0.7
Apr-29-2012	7	21.5	9.4	4,430	20.0	0.8
Apr-30-2012	7	24.2	9.7	4,190	19.0	0.7
.	.	.	.	.	.	.
<b>Mean</b>	11	17.2	10.4	4,440	25.4	1.5
<b>Total Acre-feet</b>	<b>660</b>					
<b>Total (lbs)</b>						<b>44</b>

<b>Load Limitation for April 2012 (lbs)</b>	<b>193</b>
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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), April 2012.**

See Table 28 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	usgs	usgs	usgs
<b>UNITS</b>	cfs	°C	µS/cm
Apr-01-2012	47	15.8	3,930
Apr-02-2012	45	15.7	4,270
Apr-03-2012	50	17.1	4,190
Apr-04-2012	67	16.8	3,210
Apr-05-2012	64	15.5	3,360
Apr-06-2012	52	15.0	3,480
Apr-07-2012	50	16.3	3,330
Apr-08-2012	48	18.0	3,410
Apr-09-2012	57	17.9	3,170
Apr-10-2012	56	17.4	3,080
Apr-11-2012	53	17.2	3,170
Apr-12-2012	63	15.9	2,960
Apr-13-2012	71	15.0	3,050
Apr-14-2012	84	15.8	3,380
Apr-15-2012	80	17.9	3,590
Apr-16-2012	75	19.4	3,280
Apr-17-2012	72	20.0	2,920
Apr-18-2012	65	20.2	3,010
Apr-19-2012	76	21.1	2,960
Apr-20-2012	58	22.9	3,140
Apr-21-2012	47	24.3	3,360
Apr-22-2012	40	25.5	3,560
Apr-23-2012	34	24.5	3,710
Apr-24-2012	31	22.5	3,980
Apr-25-2012	32	22.3	3,840
Apr-26-2012	29	21.4	4,200
Apr-27-2012	25	19.4	4,430
Apr-28-2012	23	20.0	4,570
Apr-29-2012	21	21.7	4,700
Apr-30-2012	20	23.3	4,800
.	.	.	.
Mean	51	19.2	3,600

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

See Table 28 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Apr-01-2012	157	15.6	1,800
Apr-02-2012	153	15.5	1,750
Apr-03-2012	147	17.0	1,810
Apr-04-2012	145	16.9	1,920
Apr-05-2012	152	15.5	1,890
Apr-06-2012	170	14.9	1,830
Apr-07-2012	177	15.8	1,820
Apr-08-2012	181	17.2	1,670
Apr-09-2012	156	17.9	1,770
Apr-10-2012	128	17.1	1,950
Apr-11-2012	131	17.0	1,910
Apr-12-2012	143	15.2	1,690
Apr-13-2012	166	14.4	1,650
Apr-14-2012	221	15.1	1,610
Apr-15-2012	254	16.5	1,470
Apr-16-2012	245	18.4	1,530
Apr-17-2012	206	19.5	1,710
Apr-18-2012	177	20.0	1,800
Apr-19-2012	173	20.6	1,750
Apr-20-2012	174	22.4	1,730
Apr-21-2012	155	24.2	1,630
Apr-22-2012	155	25.7	1,530
Apr-23-2012	155	25.0	1,470
Apr-24-2012	148	22.2	1,560
Apr-25-2012	139	21.2	1,570
Apr-26-2012	113	20.8	1,610
Apr-27-2012	113	19.3	1,600
Apr-28-2012	108	19.8	1,550
Apr-29-2012	110	21.5	1,530
Apr-30-2012	117	23.1	1,420
.	.	.	.
Mean	159	18.8	1,680



**Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), April 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
Apr-01-2012	658	16.8	1.0	1,750	0.9
Apr-02-2012	647	16.5	0.9	1,690	0.7
Apr-03-2012	617	17.3	0.9	1,690	0.8
Apr-04-2012	591	17.7	1.0	1,780	1.0
Apr-05-2012	589	16.6	1.0	1,690	1.0
Apr-06-2012	542	16.2	1.1	1,750	0.9
Apr-07-2012	529	16.8	1.0	1,780	1.2
Apr-08-2012	522	18.1	1.0	1,760	0.8
Apr-09-2012	543	18.6	1.1	1,710	0.9
Apr-10-2012	543	17.8	0.9	1,630	0.9
Apr-11-2012	540	17.4	1.0	1,710	0.9
Apr-12-2012	576	16.5	0.8	1,660	0.7
Apr-13-2012	616	15.8	1.0	1,670	0.7
Apr-14-2012	720	16.2	0.9	1,710	0.9
Apr-15-2012	1,230	16.9	0.7	1,640	0.8
Apr-16-2012	1,420	17.5	0.5 U	1,130	0.7
Apr-17-2012	1,250	18.9	0.6	964	0.7
Apr-18-2012	958	19.9	0.8	1,160	0.7
Apr-19-2012	795	20.6	0.8	1,260	0.8
Apr-20-2012	725	22.4	0.9	1,320	0.9
Apr-21-2012	629	23.9	1.0	1,460	0.9
Apr-22-2012	574	25.2	0.9	1,470	0.8
Apr-23-2012	544	24.9	0.9	1,500	0.9
Apr-24-2012	496	23.7	0.9	1,490	0.9
Apr-25-2012	456	22.6	0.8	1,570	0.9
Apr-26-2012	489	21.2	0.9	1,590	0.9
Apr-27-2012	482	19.8	0.8	1,520	0.9
Apr-28-2012	450	20.2	0.8	1,560	0.8
Apr-29-2012	431	21.8	0.8	1,610	0.7
Apr-30-2012	680	23.0	0.5	1,220	0.5
.	.	.	.	.	.
Mean	661	19.4	0.9	1,550	0.8

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
Feb-06-2012	15	120	4,320	17	7.1
Feb-13-2012	9	123	5,570	33	9.2
Feb-20-2012	18	114	4,780	26	8.2
Feb-27-2012	27	268	5,730	32	9.0
Mar-05-2012	14	80	6,510	38	12.0
Mar-12-2012	13	25	5,680	37	10.0
Mar-19-2012	57	131	6,060	36	11.0
Mar-26-2012	17	97	6,400	39	11.0
Apr-02-2012	18	83	6,040	24	9.8
Apr-09-2012	7	61	6,140	28	12.0
Apr-16-2012	12	93	5,860	33	8.5
Apr-23-2012	10	93	8,690	41	9.2
Apr-30-2012	16	81	5,730	38	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
Feb-07-2012	21	27	11.4	7.7	4,040	15.0	6.7
Feb-17-2012	25	<10	11.6	7.9	3,600	11.0	5.4
Feb-21-2012	27	31	13.3	8.0	5,040	26.0	8.1
Feb-28-2012	31	47	12.3	8.6	5,130	23.0	8.6
Mar-06-2012	15	23	14.3	8.2	4,740	29.0	7.2
Mar-13-2012	16	30	14.3	7.9	5,520	27.0	9.2
Mar-21-2012	40	56	15.2	7.7	5,460	34.0	10.0
Mar-28-2012	17	43	14.4	8.2	5,450	29.0	10.0
Apr-03-2012	18	79	15.3	8.2	5,460	31.0	8.9
Apr-10-2012	7	38	17.8	8.7	5,740	26.0	9.1
Apr-17-2012	13	75	22.1	8.3	5,610	23.0	11.0
Apr-24-2012	8	93	23.1	8.9	5,860	24.0	9.6

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
Feb-07-2012	89	.	11.8	8.6	2,080	0.4	1.7
Feb-17-2012	88	.	11.1	8.2	2,140	0.5	1.6
Feb-21-2012	86	.	13.1	8.4	2,130	0.7	1.7
Feb-28-2012	79	.	13.2	8.0	1,840	0.7	1.9
Mar-06-2012	148	.	14.6	8.4	2,140	0.9	1.8
Mar-13-2012	123	.	13.9	8.2	2,410	0.6	2.0
Mar-21-2012	129	.	15.7	8.0	2,350	0.8	2.0
Mar-28-2012	82	.	14.4	8.3	2,610	0.7	2.2
Apr-03-2012	32	.	14.5	8.3	3,340	0.4	2.6
Apr-10-2012	49	.	17.0	8.6	2,570	0.7	2.0
Apr-17-2012	59	.	20.2	8.5	2,370	0.9	2.3
Apr-24-2012	23	.	20.2	8.6	2,990	0.7	2.3

\*\* 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
Feb-07-2012	110	11.8	26.9	7.9	2,540	3.1	2.8
Feb-17-2012	113	11.6	32.9	8.2	2,490	2.6	2.4
Feb-21-2012	113	13.4	32.2	8.2	2,770	4.4	2.8
Feb-28-2012	110	13.1	40.4	8.2	3,250	5.9	3.8
Mar-06-2012	163	14.5	59.9	8.1	2,340	2.4	2.1
Mar-13-2012	139	13.9	56.6	8.2	2,860	3.6	2.8
Mar-21-2012	169	16.0	51.7	7.9	3,110	8.0	3.8
Mar-28-2012	99	14.7	49.8	8.3	3,250	6.3	3.7
Apr-03-2012	50	15.0	27.4	8.2	4,240	11.0	4.9
Apr-10-2012	56	17.4	30.7	8.3	3,040	3.2	2.9
Apr-17-2012	72	20.2	44.4	8.5	2,850	2.9	3.3
Apr-24-2012	31	21.3	36.8	8.1	4,030	6.5	4.2

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
Feb-07-2012	.	11.8	191	7.8	2,980	2.9	2.8
Feb-17-2012	.	13.2	39	8.1	2,640	2.5	2.4
Feb-21-2012	.	13.3	49	8.1	2,940	4.5	3.0
Feb-28-2012	.	13.7	58	8.3	2,470	5.5	3.8
Mar-06-2012	.	14.4	133	8.1	2,830	2.8	2.4
Mar-13-2012	.	13.9	51	8.1	2,960	3.6	2.8
Mar-21-2012	.	16.6	107	7.9	3,360	8.5	3.7
Mar-28-2012	.	14.4	35	8.2	4,020	6.2	4.1
Apr-03-2012	.	16.0	73	8.1	1,980	9.9	5.0
Apr-17-2012	.	22.8	30	8.3	5,400	4.7	4.8
Apr-24-2012	.	NA	NA	NA	NA	NA	NA

No flow late April and May

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
Feb-07-2012	190	11.4	7.0	1,460	0.6	0.6
Feb-17-2012	272	11.6	7.3	1,230	0.5	0.6
Feb-21-2012	253	12.1	7.4	1,520	0.6	0.7
Feb-28-2012	226	NA	NA	NA	NA	NA
Mar-06-2012	194	15.1	7.2	1,820	0.8	0.9 U
Mar-13-2012	177	14.2	6.6	1,820	0.6	0.9
Mar-21-2012	248	14.8	7.4	1,750	0.8	0.9 U
Mar-28-2012	161	14.7	7.0	1,980	0.4	0.9 U
Apr-03-2012	147	14.8	7.1	2,000	<0.4	0.9 U
Apr-10-2012	128	16.8	7.3	2,130	0.5	1.0 U
Apr-17-2012	206	19.7	7.1	1,820	0.8	1.1 U
Apr-24-2012	148	20.0	7.0	1,670	0.9	0.9

No grab sample taken February 28<sup>th</sup>, site inaccessible

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
Feb-07-2012	214	10.7	8.0	1,530	0.6	0.6
Feb-17-2012	284	10.8	8.2	1,500	0.6	0.6
Feb-21-2012	276	12.4	8.3	1,670	0.5	0.7
Feb-28-2012	268	12.6	8.1	1,630	0.8	0.8
Mar-06-2012	256	14.1	8.2	1,860	0.5	0.7
Mar-13-2012	228	13.7	8.2	1,980	0.4	0.8
Mar-21-2012	498	15.0	8.1	1,230	0.7	0.5
Mar-28-2012	232	14.6	8.3	2,110	0.4	0.8
Apr-03-2012	203	15.3	8.3	2,220	<0.4	0.8
Apr-10-2012	199	17.1	8.3	2,220	0.4	0.8
Apr-17-2012	NA	18.8	8.6	1,170	0.5	0.6
Apr-24-2012	207	22.1	8.2	1,760	0.7	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 <sup>††</sup>	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-06-2012	30	.	.	730	1.1	0.3
Feb-13-2012	20	.	.	712	1.1	0.3
Feb-21-2012	20	.	.	840	1.5	0.4
Feb-27-2012	20	.	.	794	1.6	0.4
Mar-05-2012	0	.	.	767	1.3	0.4
Mar-12-2012	0	.	.	850	1.8	0.4
Mar-19-2012	0	.	.	930	1.9	0.5
Mar-26-2012	0	.	.	462	1.0	0.2
Apr-02-2012	0	.	.	1,420	2.5 U	0.6 U
Apr-09-2012	0	.	.	861	2.2	0.4
Apr-16-2012	0	.	.	11,200	50 U	25 U
Apr-23-2012	0	.	.	899	2.4	0.4
Apr-30-2012	0	.	.	639	1.2	0.3

Note: The peak in Se is caused by no flow conditions. At this site water was collected from small areas pooling but not flowing in March and April.

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 <sup>††</sup>	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-06-2012	45	.	.	707	0.7	0.2
Feb-13-2012	45	.	.	723	0.7	0.3
Feb-21-2012	45	.	.	799	1.1	0.3
Feb-27-2012	0	.	.	805	1.4 U	0.4
Mar-05-2012	0	.	.	1,010	1.1	0.8 U
Mar-12-2012	0	.	.	2,910	0.5	6.9 U
Mar-19-2012	0	.	.	2,100	0.8	4.3 U
Mar-26-2012	0	.	.	1,930	0.7	3.7 U
Apr-02-2012	0	.	.	2,000	0.6	3.3 U
Apr-09-2012	0	.	.	2,440	0.9	4.8 U
Apr-16-2012	0	.	.	1,030	1.9 U	1.0
Apr-23-2012	0	.	.	1,160	1.3	1.1
Apr-30-2012	0	.	.	1,330	1.3	1.0

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 <sup>††</sup>	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-06-2012	NA	.	.	1,620	1.2	1.3
Feb-13-2012	NA	.	.	1,600	1.3	1.5
Feb-21-2012	NA	.	.	975	1.3	0.5
Feb-27-2012	NA	.	.	1,650	1.5	1.6
Mar-05-2012	NA	.	.	2,060	2.6 U	2.1
Mar-12-2012	NA	.	.	1,930	2.2 U	2.0
Mar-19-2012	NA	.	.	2,470	2.2U	2.6
Mar-26-2012	NA	.	.	1,750	1.4	2.1
Apr-02-2012	NA	.	.	2,210	1.9	2.2
Apr-09-2012	NA	.	.	2,950	2.2	3.2
Apr-16-2012	NA	.	.	2,590	2.1	2.9
Apr-23-2012	NA	.	.	2,500	2.1	2.3
Apr-30-2012	NA	.	.	1,070	1.3	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 <sup>††</sup>	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-06-2012	NA	.	.	1,440	1.1	1.3
Feb-13-2012	NA	.	.	1,640	1.3	1.6
Feb-21-2012	NA	.	.	1,650	1.4	1.4
Feb-27-2012	NA	.	.	1,580	1.5	1.5
Mar-05-2012	NA	.	.	2,040	1.3	2.0
Mar-12-2012	NA	.	.	2,240	1.0	2.3
Mar-19-2012	NA	.	.	2,390	1.3	2.5
Mar-26-2012	NA	.	.	2,280	1.3	2.5
Apr-02-2012	NA	.	.	2,490	1.5	3.0
Apr-09-2012	NA	.	.	2,230	1.4	2.1
Apr-16-2012	NA	.	.	2,460	1.8	3.2
Apr-26-2012	NA	.	.	2,300	1.9	5.2 U
Apr-30-2012	NA	.	.	1,420	1.5	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
Feb-01-2012	.	.	.	2,190	1.3	1.4
Feb-08-2012	.	.	.	2,160	1.4	1.4
Feb-15-2012	.	.	.	1,980	1.0	1.2
Feb-22-2012	.	.	.	2,090	1.8	1.5
Feb-29-2012	.	.	.	2,410	2.1	1.7
Mar-07-2012	.	.	.	2,280	1.6	1.5
Mar-14-2012	.	.	.	2,190	1.2	1.4
Mar-21-2012	.	.	.	1,960	2.5	1.5
Mar-28-2012	.	.	.	2,580	2.0	1.8
Apr-04-2012	.	.	.	2,870	2.1	1.8
Apr-11-2012	.	.	.	2,670	1.0	1.5
Apr-18-2012	.	.	.	1,690	1.2	1.2
Apr-25-2012	.	.	.	2,450	1.5	1.5

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
Feb-01-2012	622	.	.	2,210	1.2	1.4
Feb-08-2012	642	.	.	2,150	1.3	1.4
Feb-15-2012	690	.	.	1,970	1.0	1.2
Feb-22-2012	682	.	.	2,170	1.7	1.5
Feb-29-2012	652	.	.	2,370	2.2	1.7
Mar-07-2012	409	.	.	2,280	1.5	1.5
Mar-14-2012	416	.	.	1,530	0.9	0.1
Mar-21-2012	702	.	.	1,920	2.6	1.5
Mar-28-2012	415	.	.	NA	NA	NA
Apr-04-2012	387	.	.	2,870	2.1	1.8
Apr-11-2012	337	.	.	2,650	1.1	1.5
Apr-18-2012	479	.	.	1,690	1.2	1.2
Apr-25-2012	317	.	.	2,440	1.5	1.5



**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
Feb-07-2012	600	11.4	7.9	1,570	0.8	0.8
Feb-17-2012	700	11.3	8.0	1,430	0.7	0.8
Feb-21-2012	662	12.8	8.0	1,590	1.0	0.9
Feb-28-2012	629	12.8	8.0	1,750	1.4	1.0
Mar-06-2012	729	14.3	8.3	1,640	0.9	0.9
Mar-13-2012	739	13.9	8.1	1,660	0.9	1.0
Mar-21-2012	1,180	14.8	7.8	1,340	1.9 U	1.0
Mar-28-2012	722	14.9	8.1	1,680	1.2	0.9
Apr-03-2012	617	15.6	8.1	1,720	0.8	0.9
Apr-10-2012	543	16.9	8.1	1,660	0.7	0.9
Apr-17-2012	1,250	18.6	8.1	1,020	0.7	0.7
Apr-24-2012	496	21.9	7.9	1,560	0.9	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
Feb-06-2012	.	.	.	694	0.8	0.2
Feb-13-2012	.	.	.	632	0.8	0.2
Feb-21-2012	.	.	.	837	1.3	0.4
Feb-27-2012	.	.	.	628	1.2	0.3
Mar-05-2012	.	.	.	742	1.0	0.4
Mar-12-2012	.	.	.	933	1.6	0.5
Mar-19-2012	.	.	.	947	2.0	0.6
Mar-26-2012	.	.	.	551	0.7	0.2
Apr-02-2012	.	.	.	882	1.6	0.5
Apr-09-2012	.	.	.	871	2.6	0.4
Apr-16-2012	.	.	.	831	1.5	0.4
Apr-23-2012	.	.	.	779	1.2	0.3
Apr-30-2012	.	.	.	592	1.0	0.3

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2011 to April 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	%	%	%	%	%	%
May-2011	95	83	95	78	80	95
Jun-2011	95	98	98	93	93	95
Jul-2011	33*	100	95	100	98	90
Aug-2011	90	88	95	93	70	90
Sep-2011	79*	88	90	95	95	95
Oct-2011	90	98	98	100	98	100
Nov-2011	100	93	98	93	100	100
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

**Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from May 2011 to April 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
May-2011	0.48	0.48	0.50	0.40	0.38	0.43
Jun-2011	0.36	0.34	0.36	0.36	0.33	0.33
Jul-2011	0.06*	0.26	0.25	0.28	0.27	0.26
Aug-2011	0.26	0.25	0.26	0.28	0.25	0.29
Sep-2011	0.28	0.30	0.33	0.34	0.32	0.32
Oct-2011	0.45	0.34	0.41	0.42	0.37	0.38
Nov-2011	0.50	0.47	0.47	0.46	0.48	0.44
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

**Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2011 to April 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	%	%	%	%	%	%
May-2011	70	80	70	60	10†	80
Jun-2011	100	100	100	80	90	90
Jul-2011	90	80	100	90	100	100
Aug-2011	90	90	90	100	90	90
Sep-2011	100	90	70	100	90	90
Oct-2011	90	60	100	90	100	100
Nov-2011	100	100	100	100	100	100
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

**Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2011 to April 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
May-2011	44.8	36.6	45.7	24.8	22.9	37.9
Jun-2011	66.0	58.0	62.8	38.9*	50.3	42.2
Jul-2011	31.7	43.8	40.9	21.7	30.5	25.3
Aug-2011	38.1	32.8	40.4	31.4	31.0	34.3
Sep-2011	41.3	33.1	37.2	35.0	28.4	29.6
Oct-2011	26.9	13.2*	29.9	20.8	24.2	27.1
Nov-2011	51.9	46.8	48.1	39.3	44.6	27.0
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

**Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2011 to April 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 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
May-2011	23.7	27.7	22.9	24.5	10.0	23.6
Jun-2011	20.4	31.2	29.1	32.4	23.8	19.9
Jul-2011	20.8	26.0	18.2	20.3	22.8	19.1
Aug-2011	20.4*	23.5	23.2	24.3	27.4	19.0
Sep-2011	7.1*	24.9	3.3*	29.2	17.8	2.0††††
Oct-2011	20.1	26.6	33.3	25.9	22.9	18.8
Nov-2011	14.7*	32.5	30.7	26.7	22.2	26.3
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

**Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2012 to April 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
Feb-06-2012	15	< 0.4	3.3	0.8	< 0.4
Feb-08-2012	13	< 0.4	2.6	0.5	< 0.4
Feb-10-2012	11	< 0.4	2.2	0.5	< 0.4
Mar-05-2012	17	0.6	2.5	0.6	< 0.4
Mar-07-2012	28	0.8	3.4	0.5	0.6
Mar-09-2012	28	0.5	3.1	0.8	0.7
Apr-16-2012	17	0.8	5.1	1.0	< 0.4
Apr-18-2012	24	0.6	3.8	0.7	< 0.4
Apr-20-2012	30	1.0	4.2	0.8	< 0.4

**Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2012 to April 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
Feb-06-2012	50	40	43	75	14
Feb-08-2012	47	32	35	52	12
Feb-10-2012	46	24	26	63	6
Mar-05-2012	32	80	67	55	12
Mar-07-2012	152	75	75	50	7
Mar-09-2012	26	22	68	51	4
Apr-16-2012	67	76	83	42	6
Apr-18-2012	77	70	88	75	15
Apr-20-2012	65	37	109	84	6

**Table 28. Explanations of footnotes and agency abbreviations.**

<b>Footnote</b>	<b>Explanation</b>
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 <sup>6</sup> 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 June 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