GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

October 2011

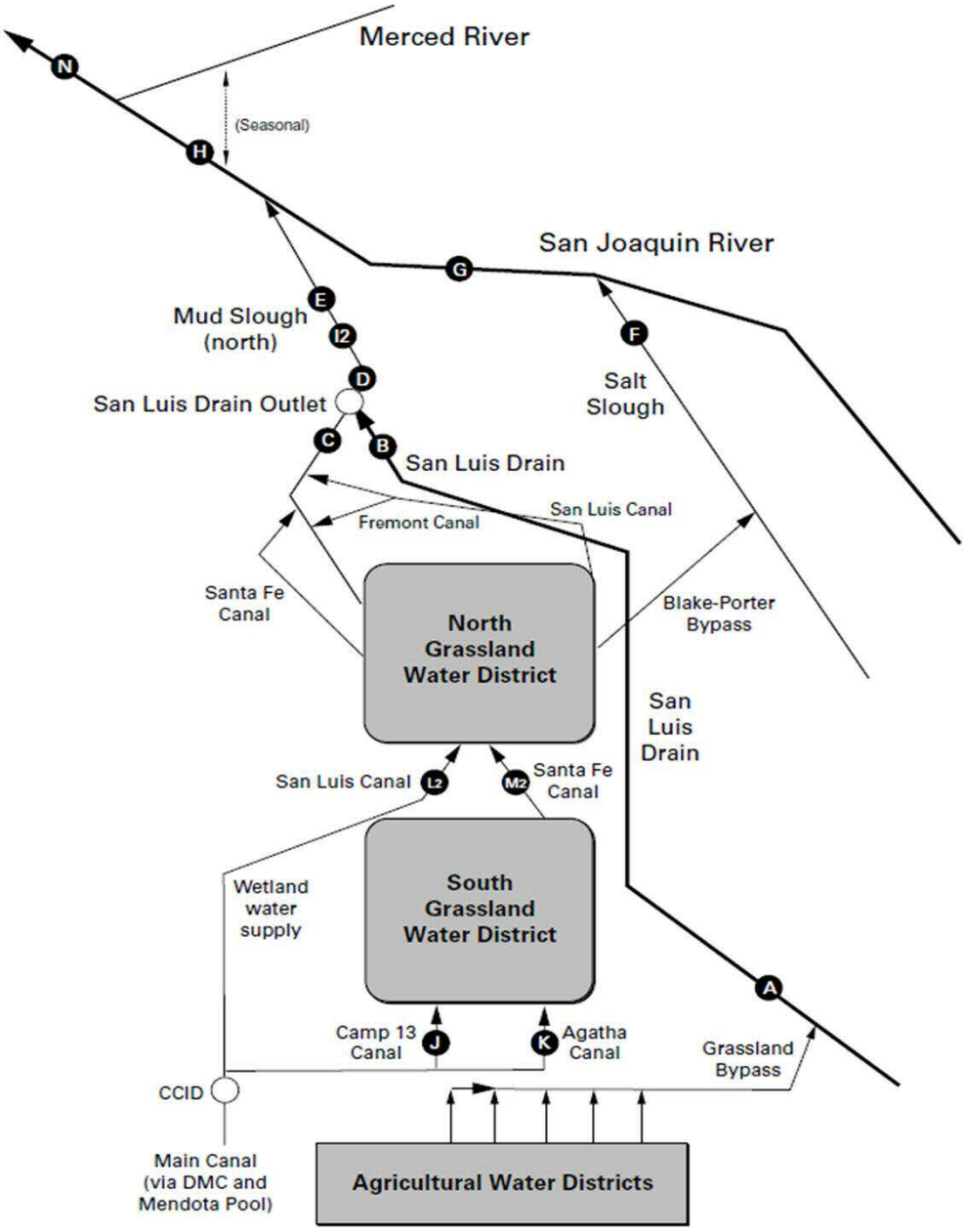
May 29, 2012

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


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
D
San Luis Drain Outlet
F
Salt
Slough
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
Grassland
Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Continuous Monitoring

Weekly Monitoring

Monthly Monitoring

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), October 2011.

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
Oct-01-2011	6	21.5	5,480	70
Oct-02-2011	7	21.6	5,670	79
Oct-03-2011	8	19.3	5,810	93
Oct-04-2011	10	19.2	5,850	121
Oct-05-2011	13	18.2	6,080	164
Oct-06-2011	20	16.8	5,480	215
Oct-07-2011	15	17.4	5,410	163
Oct-08-2011	12	18.6	5,480	127
Oct-09-2011	10	19.6	5,520	111
Oct-10-2011	9	20.0	5,320	100
Oct-11-2011	10	21.8	5,530	114
Oct-12-2011	10	21.2	5,930	122
Oct-13-2011	8	21.0	6,290	97
Oct-14-2011	9	21.6	6,200	111
Oct-15-2011	10	22.6	6,180	120
Oct-16-2011	14	21.8	6,040	168
Oct-17-2011	14	21.9	5,960	161
Oct-18-2011	13	21.7	6,110	161
Oct-19-2011	15	20.6	6,200	184
Oct-20-2011	15	20.1	6,120	185
Oct-21-2011	14	20.2	5,960	169
Oct-22-2011	6	20.1	6,260	75
Oct-23-2011	5	20.3	6,080	64
Oct-24-2011	5	19.9	5,970	61
Oct-25-2011	8	17.5	5,930	96
Oct-26-2011	10	15.9	5,290	108
Oct-27-2011	16	15.4	5,200	168
Oct-28-2011	9	15.9	4,890	90
Oct-29-2011	7	16.0	4,820	63
Oct-30-2011	4	16.0	5,370	45
Oct-31-2011	5	16.8	5,200	48
Mean	10	19	5,730	3,654
Total Acre-feet	632			
Salinity Load Value (Wet Year, October)				**6,308**

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), October 2011.

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
Oct-01-2011	10	21.0	7.0	2,710	15.0	0.8
Oct-02-2011	11	20.5	7.1	2,610	16.0	0.9
Oct-03-2011	11	17.9	8.0	2,720	17.0	1.0
Oct-04-2011	12	19.0	7.8	2,870	16.0	1.1
Oct-05-2011	16	15.1	7.1	2,800	14.0	1.2
Oct-06-2011	18	12.5	6.7	2,710	16.0	1.6
Oct-07-2011	23	15.2	6.4	2,640	18.0	2.2
Oct-08-2011	21	17.2	7.6	2,620	11.0	1.2
Oct-09-2011	17	18.6	8.5	2,690	12.0	1.1
Oct-10-2011	15	19.4	8.5	2,860	18.0	1.4
Oct-11-2011	13	21.9	9.6	3,150	20.0	1.4
Oct-12-2011	14	20.2	8.8	3,360	24.0	1.9
Oct-13-2011	15	20.9	9.6	3,240	18.0	1.5
Oct-14-2011	14	22.6	8.7	3,220	17.0	1.2
Oct-15-2011	14	23.2	8.2	3,120	16.0	1.2
Oct-16-2011	15	20.5	8.6	3,100	14.0	1.1
Oct-17-2011	18	21.3	8.1	3,040	12.0	1.1
Oct-18-2011	19	22.1	8.6	2,960	12.0	1.2
Oct-19-2011	18	19.1	8.9	3,190	15.0	1.5
Oct-20-2011	20	19.9	8.7	3,180	13.0	1.4
Oct-21-2011	20	18.7	10.0	3,260	14.0	1.5
Oct-22-2011	21	20.1	10.0	3,330	25.0	2.8
Oct-23-2011	15	20.4	10.0	3,260	26.0	2.1
Oct-24-2011	13	20.6	10.0	3,190	22.0	1.5
Oct-25-2011	12	16.9	10.0	3,270	23.0	1.5
Oct-26-2011	14	16.4	11.0	3,260	19.0	1.4
Oct-27-2011	17	14.9	10.0	3,110	17.0	1.5
Oct-28-2011	22	15.6	9.7	3,090	20.0	2.4
Oct-29-2011	17	15.8	8.3	2,980	15.0	1.4
Oct-30-2011	15	16.6	7.6	2,610	12.0	1.0
Oct-31-2011	13	17.5	7.7	2,580	9.8	0.7
Mean	16	18.8	8.6	2,990	16.7	1.4
Total Acre-feet	**980**					
Total (lbs)						**44**

Load Limitation for October 2011 (lbs)	**328**

♦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.

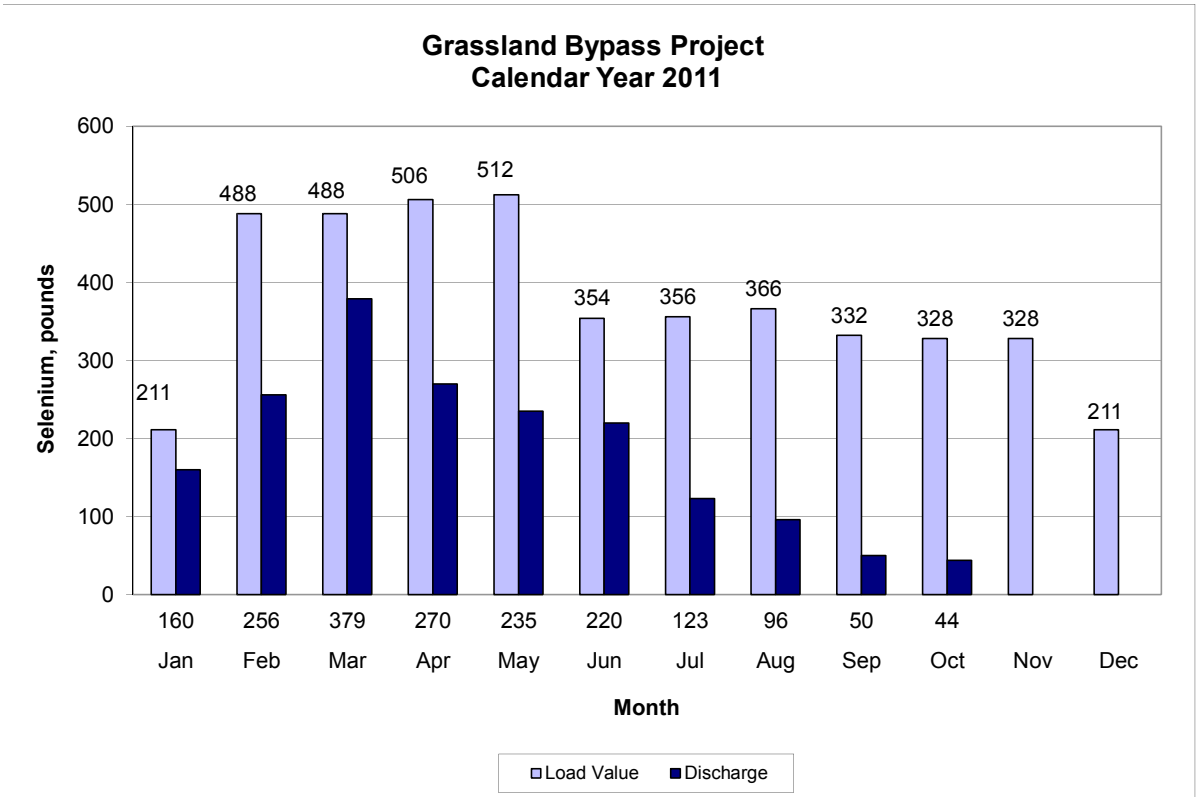


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), October 2011.

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
Oct-01-2011	74	22.5	1,190
Oct-02-2011	84	22.2	1,090
Oct-03-2011	83	20.9	1,170
Oct-04-2011	89	20.1	1,210
Oct-05-2011	114	18.9	1,130
Oct-06-2011	141	17.5	1,040
Oct-07-2011	130	17.4	1,270
Oct-08-2011	127	18.1	1,240
Oct-09-2011	153	19.2	998
Oct-10-2011	146	19.8	1,040
Oct-11-2011	140	20.8	1,060
Oct-12-2011	159	20.8	1,060
Oct-13-2011	161	21.0	1,080
Oct-14-2011	136	21.5	1,180
Oct-15-2011	114	22.3	1,310
Oct-16-2011	118	22.1	1,360
Oct-17-2011	128	21.7	1,340
Oct-18-2011	131	21.9	1,350
Oct-19-2011	128	21.6	1,380
Oct-20-2011	132	20.9	1,460
Oct-21-2011	122	20.6	1,570
Oct-22-2011	130	20.5	1,540
Oct-23-2011	125	20.6	1,410
Oct-24-2011	128	20.8	1,300
Oct-25-2011	130	19.5	1,280
Oct-26-2011	130	16.9	1,370
Oct-27-2011	135	16.1	1,430
Oct-28-2011	138	16.5	1,560
Oct-29-2011	131	16.7	1,490
Oct-30-2011	128	16.9	1,400
Oct-31-2011	131	17.4	1,310
Mean	126	19.8	1,280

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), October 2011.

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
Oct-01-2011	115	21.4	941
Oct-02-2011	128	20.8	852
Oct-03-2011	130	19.9	867
Oct-04-2011	130	19.3	887
Oct-05-2011	142	18.3	872
Oct-06-2011	162	NA	NA
Oct-07-2011	195	NA	NA
Oct-08-2011	219	NA	NA
Oct-09-2011	214	NA	NA
Oct-10-2011	198	NA	NA
Oct-11-2011	179	NA	NA
Oct-12-2011	157	NA	NA
Oct-13-2011	139	19.5	962
Oct-14-2011	134	19.7	933
Oct-15-2011	133	20.3	955
Oct-16-2011	123	20.6	1,010
Oct-17-2011	117	20.5	1,010
Oct-18-2011	118	20.4	1,000
Oct-19-2011	126	20.1	941
Oct-20-2011	118	19.5	956
Oct-21-2011	130	19.1	913
Oct-22-2011	162	19.1	885
Oct-23-2011	181	19.2	871
Oct-24-2011	190	19.4	829
Oct-25-2011	194	18.9	824
Oct-26-2011	199	17.2	815
Oct-27-2011	205	15.9	806
Oct-28-2011	196	15.5	819
Oct-29-2011	197	15.5	839
Oct-30-2011	198	15.6	839
Oct-31-2011	214	15.8	851
Mean	163	18.8	890

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow s Landing), October 2011.

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
Oct-01-2011	1,150	20.8	0.3	465	0.6
Oct-02-2011	1,200	20.6	0.3	430	0.6
Oct-03-2011	1,270	19.8	0.2	391	< 0.4
Oct-04-2011	1,300	19.1	0.2	377	< 0.4
Oct-05-2011	1,400	18.6	0.2	391	< 0.4
Oct-06-2011	1,550	17.3	0.2	383	< 0.4
Oct-07-2011	1,620	16.7	0.2	367	0.5
Oct-08-2011	1,690	17.0	0.2	372	0.4
Oct-09-2011	1,710	17.5	0.2	374	0.6
Oct-10-2011	1,740	17.9	0.2	367	0.4
Oct-11-2011	1,700	18.8	0.2	419	0.4
Oct-12-2011	1,720	19.1	0.2	398	< 0.4
Oct-13-2011	1,760	18.9	0.2	376	< 0.4
Oct-14-2011	1,730	18.8	0.2	391	0.4
Oct-15-2011	1,720	19.2	0.2	409	0.4
Oct-16-2011	1,710	19.4	0.2	428	0.4
Oct-17-2011	1,740	19.3	0.2	429	0.7
Oct-18-2011	1,660	19.1	0.2	435	< 0.4
Oct-19-2011	1,610	18.8	0.2	457	< 0.4
Oct-20-2011	1,640	18.5	0.2	467	< 0.4
Oct-21-2011	1,610	18.2	0.3	477	< 0.4
Oct-22-2011	1,640	17.9	0.3	491	< 0.4
Oct-23-2011	1,630	17.9	0.3	502	0.5
Oct-24-2011	1,690	18.0	0.3	514	< 0.4
Oct-25-2011	1,660	17.6	0.2	510	< 0.4
Oct-26-2011	1,660	16.0	0.2	503	< 0.4
Oct-27-2011	1,640	15.3	0.2	507	< 0.4
Oct-28-2011	1,710	15.2	0.2	512	< 0.4
Oct-29-2011	1,770	15.2	0.3	511	< 0.4
Oct-30-2011	1,750	15.2	0.3	516	< 0.4
Oct-31-2011	1,770	15.4	0.2	519	< 0.4
Mean	1,618	18.0	0.2	440	0.5

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
Aug-01-2011	16	86	5,300	41	8.6
Aug-08-2011	21	149	5,350	33	10.0
Aug-15-2011	19	136	5,370	37	10.0
Aug-22-2011	10	52	4,820	31	8.7
Aug-29-2011	15	130	5,320	36	8.4
Sep-05-2011	9	NA	5,310	32	9.0
Sep-06-2011	9	122	NA	NA	NA
Sep-12-2011	15	133	6,180	35	11.0
Sep-19-2011	12	142	5,360	30	10.0
Sep-26-2011	13	89	5,540	31	11.0
Oct-03-2011	8	89	5,510	29	13.0
Oct-10-2011	9	118	5,920	31	12.0
Oct-17-2011	14	110	6,020	32	12.0
Oct-24-2011	5	73	5,140	21	11.0
Oct-31-2011	5	72	5,450	23	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
Aug-03-2011	15	58	24.5	9.1	4,770	22	9.2
Aug-11-2011	13	44	24.8	8.7	5,080	37	8.9
Aug-16-2011	19	33	25.4	9.0	5,420	33	9.8
Aug-23-2011	10	53	24.0	9.1	5,120	28	9.4
Aug-30-2011	16	119	24.9	8.8	3,900	25	6.4
Sep-08-2011	11	58	25.8	9.2	4,910	28	8.0
Sep-15-2011	12	23	26.8	8.9	4,830	18	7.0
Sep-22-2011	13	51	24.4	8.8	5,000	22	9.4
Sep-29-2011	13	66	24.2	8.7	4,630	20	8.4
Oct-06-2011	18	62	17.0	7.9	3,900	14	6.6
Oct-13-2011	15	58	21.5	8.3	4,670	19	10.0
Oct-20-2011	20	50	21.7	8.1	4,530	15	7.6
Oct-27-2011	17	103	17.2	8.5	4,800	18	9.1

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
Aug-03-2011	20	.	24.0	8.0	2,590	0.8	2.0
Aug-11-2011	31	.	26.1	8.6	820	0.9	0.6
Aug-16-2011	25	.	25.2	8.7	903	0.9	0.7
Aug-23-2011	37	.	23.6	8.7	729	0.7	0.5
Aug-30-2011	20	.	25.0	8.6	846	0.7	0.6
Sep-08-2011	13	.	27.0	9.8	1,150	< 0.4	0.8
Sep-15-2011	30	.	24.0	8.0	584	< 0.4	0.4
Sep-22-2011	35	.	24.1	8.4	781	< 0.4	0.6
Sep-29-2011	17	.	23.0	8.3	835	0.4	0.5
Oct-06-2011	123	.	15.7	8.0	643	< 0.4	0.4
Oct-13-2011	146	.	20.2	8.5	714	< 0.4	0.5
Oct-20-2011	112	.	20.0	8.0	880	< 0.4	0.7
Oct-27-2011	118	.	15.2	8.4	948	< 0.4	0.7

++ 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		pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR		USBR	USBR	USBR	USBR
UNITS	cfs	°C		.	µS/cm	µg/L	mg/L
Aug-03-2011	35	24.8	.	8.8	4,910	21.0	8.7
Aug-11-2011	44	25.7	.	8.4	2,160	10.0	3.0
Aug-16-2011	44	25.2	.	8.8	3,020	14.0	4.4
Aug-23-2011	47	23.4	.	8.5	1,840	6.3	2.6
Aug-30-2011	36	24.6	.	8.7	2,800	13.0	4.3
Sep-08-2011	24	26.0	.	8.7	3,430	14.0	5.0
Sep-15-2011	42	25.7	.	8.0	1,470	3.5	1.8
Sep-22-2011	48	24.7	.	7.9	1,720	4.3	2.3
Sep-29-2011	60	23.4	.	7.9	1,800	4.4	2.3
Oct-06-2011	141	16.1	.	7.6	1,070	1.8	1.0
Oct-13-2011	161	20.7	.	7.8	1,060	1.5	1.2
Oct-20-2011	132	20.6	.	7.8	1,480	2.2	1.8
Oct-27-2011	135	15.4	.	7.8	1,440	2.3	1.6

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
Aug-02-2011	.	NA	NA	NA	NA	NA	NA
Aug-09-2011	.	NA	NA	NA	NA	NA	NA
Aug-16-2011	.	NA	NA	NA	NA	NA	NA
Aug-23-2011	No flow in	NA	NA	NA	NA	NA	NA
Aug-30-2011	Aug and Sep	NA	NA	NA	NA	NA	NA
Sep-06-2011	.	NA	NA	NA	NA	NA	NA
Sep-13-2011	.	NA	NA	NA	NA	NA	NA
Sep-20-2011	No flow in	NA	NA	NA	NA	NA	NA
Sep-27-2011	Aug and Sep	NA	NA	NA	NA	NA	NA
Oct-04-2011	.	NA	NA	NA	NA	NA	NA
Oct-13-2011	.	21.5	21	7.7	2,120	5.5	1.8
Oct-20-2011	.	21.5	31	7.6	3,160	3.7	2.8
Oct-27-2011	.	15.7	27	7.7	1,890	2.4	1.8

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
Aug-03-2011	195	23.3	7.3	785	0.6	0.3
Aug-11-2011	204	22.9	7.5	779	< 0.4	0.3
Aug-16-2011	182	23.1	7.3	777	0.5	0.3
Aug-23-2011	234	22.7	7.4	707	0.5	0.3
Aug-30-2011	220	23.0	7.3	712	0.4	0.3
Sep-08-2011	151	24.5	7.5	911	< 0.4	0.4
Sep-15-2011	113	24.5	8.4	1,080	< 0.4	0.5
Sep-22-2011	127	23.0	7.5	950	< 0.4	0.5
Sep-29-2011	124	21.7	7.3	886	< 0.4	0.4
Oct-06-2011	162	16.5	6.9	846	< 0.4	0.4
Oct-13-2011	139	19.3	7.1	979	< 0.4	0.4
Oct-20-2011	118	18.8	7.2	965	0.4	0.5
Oct-27-2011	205	16.6	7.2	827	0.5	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
Aug-03-2011	427	24.8	7.9	760	0.5	0.2
Aug-11-2011	399	24.8	8.0	739	< 0.4	0.3
Aug-16-2011	405	25.6	7.9	598	0.4	0.2
Aug-23-2011	425	23.7	7.9	572	< 0.4	0.2
Aug-30-2011	341	23.9	7.9	685	< 0.4	0.3
Sep-08-2011	277	23.9	7.7	848	< 0.4	0.4
Sep-15-2011	228	24.1	7.7	990	< 0.4	0.4
Sep-22-2011	243	23.1	8.0	814	< 0.4	0.3
Sep-29-2011	224	22.1	8.0	832	< 0.4	0.3
Oct-06-2011	268	16.2	7.7	699	< 0.4	0.3
Oct-13-2011	277	19.9	7.8	718	< 0.4	0.4
Oct-20-2011	222	20.0	7.7	912	0.4	0.4
Oct-27-2011	272	15.5	7.8	778	0.4	0.4

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
Aug-03-2011	15	.	.	402	1.1	0.2
Aug-08-2011	30	.	.	453	0.7	0.2
Aug-15-2011	30	.	.	356	0.8	0.1
Aug-22-2011	30	.	.	346	0.8	0.2
Aug-29-2011	55	.	.	296	0.6	0.2
Sep-06-2011	55	.	.	297	0.5	0.2
Sep-12-2011	95	.	.	300	0.5	0.2
Sep-19-2011	145	.	.	381	0.6	0.2
Sep-26-2011	170	.	.	386	0.6	0.1
Oct-03-2011	170	.	.	331	0.6	0.1
Oct-10-2011	130	.	.	333	0.7	0.2
Oct-17-2011	105	.	.	254	0.5	0.1
Oct-24-2011	75	.	.	237	0.9	0.1
Oct-31-2011	40	.	.	248	0.6	0.1

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
Aug-03-2011	10	.	.	313	1.0	0.2
Aug-08-2011	10	.	.	362	0.5	0.2
Aug-15-2011	70	.	.	289	0.6	0.1
Aug-22-2011	70	.	.	331	0.6	0.1
Aug-29-2011	85	.	.	284	0.6	0.1
Sep-06-2011	100	.	.	291	< 0.4	0.2
Sep-12-2011	155	.	.	262	< 0.4	0.1
Sep-19-2011	175	.	.	422	0.6	0.2
Sep-26-2011	175	.	.	361	0.5	0.1
Oct-03-2011	160	.	.	343	0.5	0.1
Oct-10-2011	120	.	.	329	0.4	0.2
Oct-17-2011	90	.	.	237	< 0.4	0.1
Oct-24-2011	80	.	.	253	0.6	0.2
Oct-31-2011	80	.	.	258	0.5	0.2

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
Aug-03-2011	NA	.	.	733	0.9	0.5
Aug-08-2011	NA	.	.	452	0.6	0.3
Aug-15-2011	NA	.	.	508	0.6	0.3
Aug-22-2011	NA	.	.	465	0.7	0.3
Aug-29-2011	NA	.	.	365	0.6	0.2
Sep-06-2011	NA	.	.	369	0.5	0.3
Sep-12-2011	NA	.	.	371	< 0.4	0.2
Sep-19-2011	NA	.	.	365	0.4	0.2
Sep-26-2011	NA	.	.	403	0.5	0.2
Oct-03-2011	NA	.	.	415	0.5	0.2
Oct-10-2011	NA	.	.	293	0.6	0.1
Oct-17-2011	NA	.	.	463	0.6	0.3
Oct-24-2011	NA	.	.	778	1.2	0.8
Oct-31-2011	NA	.	.	666	0.9	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
Aug-03-2011	NA	.	.	750	1.2	0.6
Aug-08-2011	NA	.	.	496	0.7	0.4
Aug-15-2011	NA	.	.	541	0.7	0.4
Aug-22-2011	NA	.	.	507	0.8	0.3
Aug-29-2011	NA	.	.	395	0.7	0.3
Sep-06-2011	NA	.	.	388	0.5	0.3
Sep-12-2011	NA	.	.	388	0.5	0.2
Sep-19-2011	NA	.	.	496	0.5	0.3
Sep-26-2011	NA	.	.	409	0.7	0.2
Oct-03-2011	NA	.	.	436	0.5	0.2
Oct-10-2011	NA	.	.	266	< 0.4	0.1
Oct-17-2011	NA	.	.	540	0.6	0.5
Oct-24-2011	NA	.	.	593	0.7	0.7
Oct-31-2011	NA	.	.	679	0.7	0.7

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
Aug-03-2011	.	.	.	1,320	1.0	0.7
Aug-10-2011	.	.	.	1,150	2.2	0.7
Aug-17-2011	.	.	.	886	1.4	0.6
Aug-24-2011	.	.	.	807	1.0	0.5
Aug-31-2011	.	.	.	682	0.8	0.5
Sep-07-2011	.	.	.	547	<0.4	0.3
Sep-14-2011	.	.	.	910	0.8	0.5
Sep-21-2011	.	.	.	1,080	1.0	0.7
Sep-28-2011	.	.	.	1,150	1.5	0.8
Oct-05-2011	.	.	.	934	0.7	0.6
Oct-12-2011	.	.	.	811	0.7	0.5
Oct-19-2011	.	.	.	1,010	0.7	0.7
Oct-26-2011	.	.	.	1,090	1.0	0.8

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
Aug-03-2011	737	.	.	1,320	1.2	0.7
Aug-10-2011	686	.	.	1,150	2.1	0.7
Aug-17-2011	774	.	.	885	1.4	0.6
Aug-24-2011	1,890	.	.	805	1.0	0.5
Aug-31-2011	2,530	.	.	678	1.0	0.5
Sep-07-2011	747	.	.	546	<0.4	0.3
Sep-14-2011	855	.	.	907	0.7	0.6
Sep-21-2011	976	.	.	1,080	1.1	0.7
Sep-28-2011	1,020	.	.	1,140	1.3	0.8
Oct-05-2011	1,310	.	.	941	0.9	0.6
Oct-12-2011	1,750	.	.	811	0.9	0.5
Oct-19-2011	1,580	.	.	1,030	0.6	0.7
Oct-26-2011	1,620	.	.	1,020	1.0	0.7

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	µS/cm	µS/cm
Aug-03-2011	933	24.0	7.7	929	0.8	0.4
Aug-11-2011	872	24.4	7.8	935	1.2	0.5
Aug-16-2011	928	24.6	7.9	776	0.9	0.4
Aug-23-2011	949	23.3	7.7	668	0.8	0.3
Aug-30-2011	2,180	20.3	7.8	294	0.5	0.2
Sep-08-2011	832	23.2	7.9	728	0.4	0.3
Sep-15-2011	997	22.8	7.7	558	< 0.4	0.3
Sep-22-2011	1,080	21.6	8.0	550	0.6	0.3
Sep-29-2011	1,150	21.0	8.1	541	0.6	0.3
Oct-06-2011	1,550	15.9	7.9	351	< 0.4	0.2
Oct-13-2011	1,760	18.3	7.9	346	< 0.4	0.2
Oct-20-2011	1,640	17.8	8.1	405	< 0.4	0.2
Oct-27-2011	1,640	14.6	7.8	410	0.4	0.2

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	µS/cm	µS/cm
Aug-03-2011	.	.	.	289	0.9	0.2
Aug-08-2011	.	.	.	320	0.4	0.1
Aug-15-2011	.	.	.	315	0.5	0.1
Aug-22-2011	.	.	.	293	0.6	0.1
Aug-29-2011	.	.	.	307	0.7	0.2
Sep-06-2011	.	.	.	297	< 0.4	0.2
Sep-12-2011	.	.	.	316	< 0.4	0.1
Sep-19-2011	.	.	.	354	0.5	0.2
Sep-26-2011	.	.	.	330	0.5	0.1
Oct-03-2011	.	.	.	347	0.5	0.1
Oct-10-2011	.	.	.	310	< 0.4	0.2
Oct-17-2011	.	.	.	241	0.4	0.1
Oct-24-2011	.	.	.	242	0.7	0.2
Oct-31-2011	.	.	.	331	0.4	0.2

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from November 2010 to October 2011. 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	%	%	%	%	%	%
Nov-2010	95	100	83	98	100	100
Dec-2010	98	95	95	100	98	100
Jan-2011	88	95	100	98	90	100
Feb-2011	93	95	100	100	93	100
Mar-2011	100	100	98	88	98	100
Apr-2011	93	95	88	60	63	93
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

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from November 2010 to October 2011. 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
Nov-2010	0.46	0.47	0.43	0.47	0.42	0.35
Dec-2010	0.39	0.40	0.46	0.44	0.39	0.39
Jan-2011	0.37	0.38	0.41	0.38	0.35	0.38
Feb-2011	0.46	0.34*	0.44	0.42	0.40	0.32
Mar-2011	0.36	0.40	0.37	0.38	0.37	0.35
Apr-2011	0.37	0.40	0.40	0.33	0.22	0.29
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

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from November 2010 to October 2011. 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	%	%	%	%	%	%
Nov-2010	90	90	100	80	100	80
Dec-2010	90	80	70	80	90	80
Jan-2011	100	90	90	100	90	90
Feb-2011	90	90	100	90	100	90
Mar-2011	90	80	90	80	80	90
Apr-2011	100	100	80	100	100	100
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

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from November 2010 to October 2011. 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
Nov-2010	40.7	27.2	36.3	30.1	31.6	28.8
Dec-2010	31.5	30.5	26.2	33.6	25.6	34.2
Jan-2011	40.8	35.9	37.4	42.7	31.6	38.5
Feb-2011	25.7	26.4	24.4	26.8	25.5	22.1
Mar-2011	53.1	39.1	59.1	41.3	29.8	49.9
Apr-2011	28.6	23.1	25.4	29.9	28.6	29.2
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	13.20*	29.9	20.8	24.2	27.1

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from November 2010 to October 2011. 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
Nov-2010	18.2*	29.0	33.4	28.3	26.5	26.7
Dec-2010	12.4*	28.5	29.8	24.8	19.7	20.3
Jan-2011	23.5	30.2	33.0	30.9	24.5	28.7
Feb-2011	20.9*	31.3	30.3	25.4	26.9	27.6
Mar-2011	2.9*	18.0	9.8*	10.3*	21.5	19.6
Apr-2011	22.3	33.6	33.2	30.4	20.5	21.2
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

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, August 2011 to October 2011.

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
Aug-09-2011	37	1.1	25	<0.4	0.7
Aug-11-2011	40	0.9	25	<0.4	0.5
Aug-13-2011	26	0.6	32	0.4	<0.4
Sep-20-2011	16	<0.4	5.9	0.4	<0.4
Sep-22-2011	21	0.5	5.9	<0.4	<0.4
Sep-24-2011	20	<0.4	6.9	0.4	<0.4
Oct-17-2011	12	<0.4	1.9	0.4	<0.4
Oct-19-2011	15	<0.4	1.7	<0.4	<0.4
Oct-21-2011	13	<0.4	1.9	<0.4	<0.4

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, August 2011 to October 2011.

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
Aug-08-2011	31	92	67	52	36
Aug-10-2011	27	55	73	65	37
Aug-12-2011	16	43	71	150	29
Aug-15-2011	39	18	40	101	30
Aug-17-2011	18	33	39	34	35
Sep-19-2011	78	55	58	60	17
Sep-21-2011	17	64	66	53	17
Sep-23-2011	25	74	90	67	25
Oct-17-2011	56	14	26	128	9
Oct-19-2011	45	24	28	90	11
Oct-21-2011	80	37	49	69	11

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 June 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated
PPD	Panoche Drainage Distraict