QUALITY OF AGRICULTURAL DRAINAGE DISCHARGING TO THE SAN JOAQUIN RIVER FROM THE WESTERN PORTION OF STANISLAUS COUNTY, CALIFORNIA APRIL 1985 TO OCTOBER 1988

California Regional Water Quality Control Board
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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INTRODUCTION

The Agricultural Unit of the Central Valley Regional Water Quality Control Board (Regional Board) initiated a water quality monitoring program in April 1985 to evaluate the effects of surface and subsurface agricultural drainage water discharges from Western Stanislaus County on San Joaquin River water quality. The study area is the agricultural land located on the western side of the San Joaquin River within Stanislaus County and east of the Delta-Mendota Canal (Figure 1). The purpose of this monitoring program was to compile a data base for selected inorganic constituents found in the agricultural drains that are discharging into the San Joaquin River. This data base will be used in the development and evaluation of an agricultural drainage reduction program in the San Joaquin River Basin.

The majority of the subsurface agricultural drainage pollutant load is discharge to the San Joaquin River via Mud Slough (north) and Salt Slough in Merced County (James et al., 1988a and 1988b). The impact of these discharges, however, is highly modified by numerous surface discharges downstream of these two sloughs. The importance of these downstream discharges is manifested by the finding that the majority of the San Joaquin River in many months of the year is made up entirely of agricultural return flows. Little information is available on the quality and magnitude of the discharges downstream. The most significant discharges occur from the western side of Stanislaus County and directly effect the quality of the San Joaquin River. The objective of this study was to characterize the discharges known to enter the San Joaquin River from the western portion of Stanislaus County (James et al., 1989). The goals were:

a) to develop a data base that could be used in assessing beneficial use impacts and appropriate water quality objectives for the San Joaquin River;

b) to identify the need for regulatory actions; and

c) to provide a data base for the flow model being developed for the San Joaquin River.

STUDY AREA

The study area consists of the drainage discharges into the San Joaquin River from the western portion of Stanislaus County. These discharges occur throughout a 45-mile section of the river from approximately the Hills Ferry Road Bridge near Newman to Airport Way near Vernalis. There are 41 discharge sites to the river from the west within the study area. Monitoring was conducted on 29 of these sites. This study attempted to monitor the flows within Stanislaus County from lands west of the San Joaquin River and east of the Delta-Mendota Canal. These monitored sites carry return flows from approximately 95 percent of the irrigated cropland on the western side of the San Joaquin River.

The size of the area flowing to these monitored drains varies from 230 to 14,740 acres. The drainage areas serving each monitored discharge point is shown in Figure 2. The drainage basin number shown in Figure 2 corresponds to the site number shown in Table 1. Also shown in Table 1 are the approximate acreages

Table 1 Drainage Area and Source of Supply Water That Influence Water Quality Sampling Sites in Western Stanislaus County That Discharge Directly to the San Joaquin River

Site #	Site Description	Acres in Drainage Area	Source of Supply Water[1]
STC 014	Hills Ferry Road Drain	4,500	CCID
STC 010	Newman Drainage District Collector "A" Line	800[2]	N/A
STC 009	Newman Drainage District Collector "I" Line	1,800	N/A
STC 015	Azevedo Road Drain	2,800	CCID
STC 016	Drain 1/2 mi S of Freitas Rd	740	CCID
STC 017	Freitas Road Drain	1,900	CCID
STC 052	Gonsalves Area Drain	2,200	CCID
STC 019	Orestimba Creek	9,800[3]	CCID, DMC
STC 053	Bernard/Carvalho Drain	340	CCID, SJR
STC 021	Marshal Rd/Spanish Grant Drain	14,740	CCID, DMC, SJR
STC 022	Ramona Lake Main Drain	4,200	SJR
STC 023	Patterson WD Main Drain	230	SJR
STC 047	Patterson WWTP	N/A	N/A
STC 024	Olive Ave Drain	4,710	DMC, SJR
STC 050	Magnolia Ave Drain	530	SJR
STC 025	Eucalyptus Ave Drain	390	SJR
STC 026	Del Puerto Creek	6,400	SJR, DMC
STC 027	Houk Ranch Drain	1,200	SJR
STC 028	Del Mar Drain	1,100[4]	SJR
STC 029	Westley Wasteway	3,400[4]	SJR, DMC
STC 030	Grayson Rd Drain	2,700[4]	SJR, DMC
STC 031	Minnie Rd Drain	1,200[4]	SJR
STC 034	Kelner Ranch Drain	540	SJR
STC 036	Haggermann Ranch Drain	3,100	SJR
STC 040	Ingram Creek	6,800	SJR, DMC
STC 042	Hospital Creek	3,260	SJR, DMC
STC 043	Center Rd Drain	1,100	SJR
STC 044	El Solyo WD Main Drain	680	SJR
STC 051	Blewett Drain	3,220	SJR, DMC

[1] The sources of supply water are the Central California Irrigation District Main Canal (CCID), the Delta-Mendota Canal (DMC) and the San Joaquin River (SJR). Where more than one source of water are listed for one drainage area, they are listed with the most significant source first, followed in sequence to the least.

[2] Acres represents the size of the area that discharges directly to the San Joaquin River. These sites are intermediate sites that discharge through one of the other listed sites. Areas are calculated from downstream of the DMC to the SJR (Drainage Basins are shown in Figure 2).

[3] Of this area, 3400 acres has tailwater that returns directly to the CCID Main Canal which then spills into Orestimba Creek.

[4] These areas flow into the Old Grayson Channel which then discharges into the San Joaquin River (Site # STC 045).

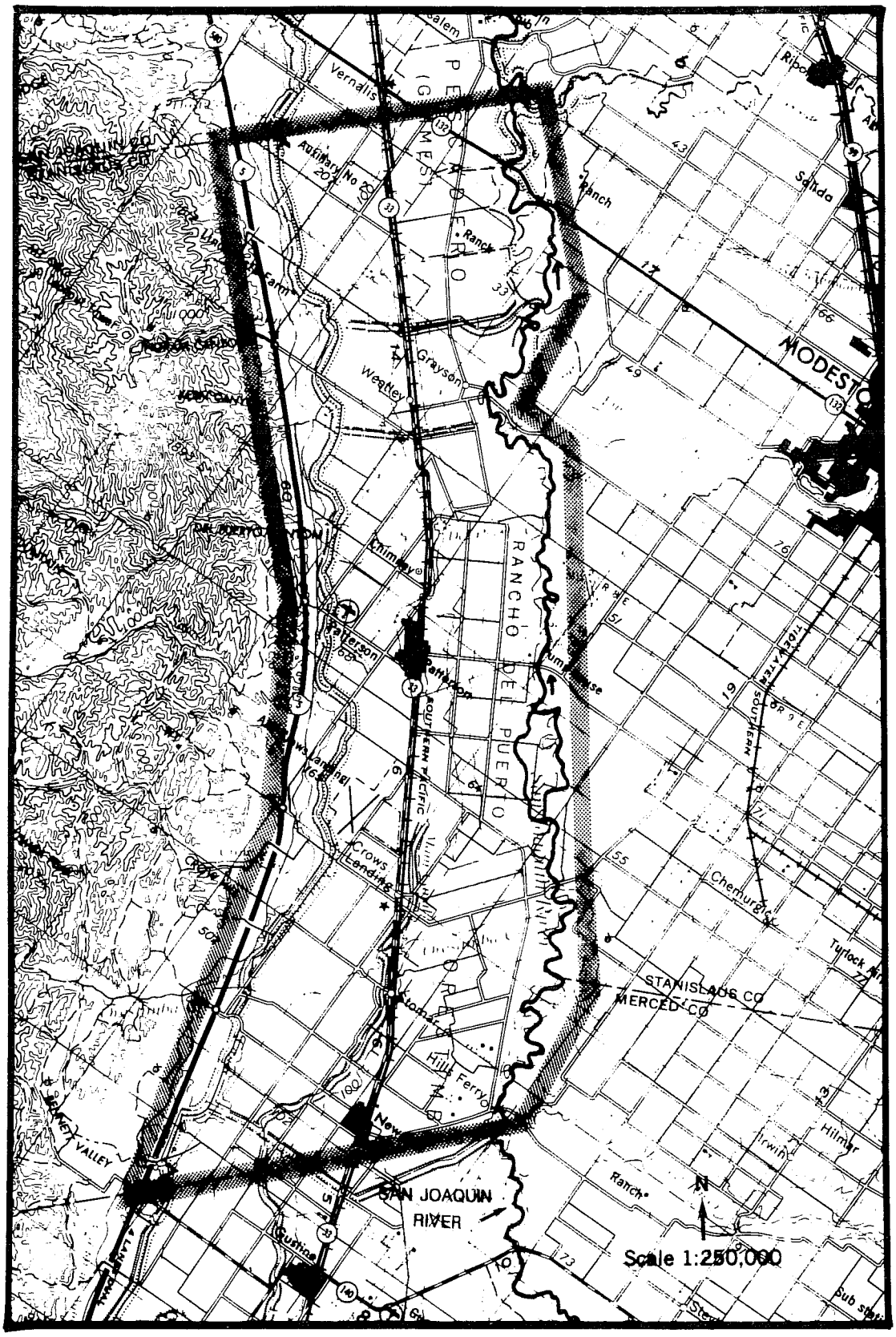

Figure 1. Study Area Location Map

FIGURE 2

SURFACE DRAINAGE MAP

WESTERN STANISLAUS COUNTY,

CALIFORNIA

LEGEND

- STUDY AREA BOUNDARY
- WATERSHED BOUNDARY
- NON-MONITORED WATERSHEDS
- RWQCB SAMPLE SITES
- SCS WEEKLY SAMPLE SITES

LOCATION

SCALE

SCALE 1:100 000

KILOMETERS

MILES

SOURCE: U.S.G.S. 1978 1:100,000
LAND OWNERSHIP SERIES
CENTRAL VALLEY REGIONAL WATER
QUALITY BOARD FIELD MAPS 1:24 000

Table 2 Sites Monitored to Determine the Quality of Subsurface Drainage Water Entering Open Drains That Discharge to the San Joaquin River

Site #	Site Description
STC 001	Thoming Tile Drain
STC 002	Chunn Tile Drain Discharge
STC 003	North Tile Drain at Patterson Water District Lift Canal
STC 004	South Tile Drain at Patterson Water District Lift Canal
STC 005	Pomelo Avenue Drain
STC 006	Apricot Avenue Drain
STC 007	George Silva Tile Drain Sump
STC 008	Perry and Fiahlo Tile Drain Sump
STC 010	Newman Drainage District Collector Line A
STC 011	Davis Tile Drain
STC 012	Composite STC 005 + STC 006
STC 013	Composite STC 003 + STC 004
STC 032	Tosta Tile Drain
STC 033	South Ingram Creek Tile Drain
STC 035	Southern Drain Pump Tile Drain at Hagermann Ranch
STC 038	Hospital Creek Collector Tile Drain
STC 039	Ingram Creek Tile Drain
STC 041	Ingram Creek Tile Drain at River Road
STC 046	Houk Ranch Tile Drain
STC 048	Poverty Flat Drain
STC 049	Upper Ingram Creek Tile Drain

within each drainage basin. Listed in Table 2 are intermediate sites that were sampled to determine the quality of drainage water entering these drains. The majority of these intermediate sites were tile drainage discharges into open drains that flowed to the San Joaquin River.

METHODS

The study was initiated in April 1985 and periodic sampling was conducted through Water Year (WY) 1988 (end September 1988). The frequency of sample collection for this monitoring program varied but generally grab samples were collected bi-monthly during the irrigation season. Additional samples were taken at selected times during the nonirrigation season. All samples were analyzed for total recoverable selenium, boron, chloride, sulfate, total alkalinity and electrical conductivity (EC). Selected sites during 1986 were tested also for total recoverable copper, chromium, lead, mercury, molybdenum, nickel and zinc. Water temperature, pH, EC, flow and sample time were recorded in the field at each site. All samples were collected in polyethylene bottles. All sample bottles were washed and acid rinsed in the laboratory prior to use and rinsed three times with the water to be sampled prior to sample collection. Selenium and other trace element samples were preserved by lowering the pH to less than 2 using ultra-pure nitric acid fixation techniques. All samples were kept on ice until preservation or submittal to the laboratory.

A quality control and quality assurance program was conducted utilizing spike and duplicate samples in the laboratory. In addition, blind replicate samples were collected at 10 percent of the sites and 50 percent of the blind replicates were spiked for laboratory quality assurance. All reported results fall within quality assurance tolerance guidelines.

RESULTS FOR RIVER DISCHARGE SITES

Concentrations of the measured constituents varied between discharge site, time of the year, and between years. Median mineral and selenium concentrations for the 29 river discharge sites are listed in Table 3. The data in Table 3 are arranged by water year (WY). Data for the individual sites and sampling dates are given in Appendix A for minerals and in Appendix B for trace elements. The tables are arranged in order by the site identification numbers given in Tables 1 and 2 for the river discharge and intermediate sites, respectively.

There are three sites that show consistently high salinity (EC) and boron (STC009, STC010 and STC036) discharges to the river. All three of these sites are strongly influenced by flow of subsurface tile drainage which make up a majority of flow in each of the sites. Although these three sites show higher concentrations of salinity and boron, these sites do not appear to be strongly elevated in selenium.

During the monitoring surveys, efforts were made to sample representative tile drainage systems to assess whether selenium concentrations in the tile drainage water represented a significant portion of the selenium being discharged to the river from the western portion of Stanislaus County. Twenty-one tile drainage discharges were sampled during this program. The highest selenium concentration was found in the Poverty Flat Drain (STC048) at 43 μg/L. This high concentration is likely associated with selenium deposits associated with the Coast Range as the site is directly adjacent to the Coast Range while the remainder of the sample sites are in close proximity to the San Joaquin River. Excluding the Poverty Flat site from the analysis reveals that total recoverable selenium concentrations varied from <1 to 9.3 μg/L with a median value of 2.2 μg/L (Table 4). The range and median values are in close approximation to those shown by Chilcott et al., 1988 for Zone D (Stanislaus County). Chilcott et al. showed a range of <1 to 8 μg/L with a median value of 2 μg/L for total recoverable selenium. Concentrations of boron shown by Chilcott et al., 1988 ranged from 0.3 to 6 mg/L with a median value of 1.2 mg/L. Data collected in this study shows a median concentration of 1.5 mg/L for the tile drainage discharges. The ranges and median concentration for tile drainage from western Stanislaus County as described by Chilcott et al., 1988 are shown in Table 5. Also shown in Table 5 are other trace element concentrations from similar subsurface tile drains in the Panoche Fan Area of Merced and Fresno Counties. As shown by Chilcott et al., 1988 the concentrations for selected trace elements in Western Stanislaus County are significantly lower than those found in the Panoche Fan Area. The largest differences occur with the four constituents, salinity (electrical conductivity), boron, molybdenum and selenium, identified in the recent update to the San Joaquin Basin Plan (RWQCB, 1988) as the most immediate to control in the San Joaquin River. The water from the tile drains exhibits

Table 3 Median Water Quality Values for Sites Discharging Directly to the San Joaquin River From the Western Portion of Stanislaus County for Water Years (WY) 1986, 1987 and 1988

Site #	Site Description	WY 1986 EC µmhos/cm	B mg/L	Cl mg/L	SO_4 mg/L	Se µg/L	WY 1987 EC µmhos/cm	B mg/L	Cl mg/L	SO_4 mg/L	Se µg/L	WY 1988 EC µmhos/cm	B mg/L	Cl mg/L	SO_4 mg/L	Se µg/L
STC 014	Hills Ferry Road Drain	--	--	--	--	--	1050	0.56	120	--	1.7	1500	0.58	200	135	1.7
STC 010	Newman Drainage District Collector "A" Line	2100	1.5	245	320	2.0	2200	1.5	258	--	2.3	2250	1.5	270	300	2.0
STC 009	Newman Drainage District Collector "I" Line	1900	1.4	180	250	2.0	1850	1.3	178	--	2.2	1850	1.1	180	230	1.9
STC 015	Azevedo Road Drain	600	0.44	76	67	1.0	750	0.34	94	--	0.8	900	0.31	130	78	1.3
STC 016	Drain 1/2 mi S of Freitas Rd	--	--	--	--	--	1000	0.42	110	--	1.9	875	0.35	130	72	1.4
STC 017	Freitas Road Drain	550	0.37	66	70	1.2	675	0.40	88	--	1.6	800	0.30	120	78	1.5
STC 052	Gonsalves Area Drain	--	--	--	--	--	700	0.33	86	--	1.8	825	0.27	120	78	1.5
STC 019	Orestimba Creek	550	0.32	59	70	2.8	700	0.34	75	--	1.5	800	0.28	105	67	1.3
STC 053	Bernard/Carvalho Drain	--	--	--	--	2.3	700	0.37	77	--	2.0	775	0.28	120	71	1.5
STC 021	Marshal Rd/Spanish Grant Drain	650	0.39	140	140	3.6	850	0.37	106	--	2.7	900	0.36	115	88	1.8
STC 022	Ramona Lake Main Drain	1200	0.63	140	240	3.2	1500	0.86	179	--	4.9	1525	0.97	195	260	4.7
STC 023	Patterson WD Main Drain	1700	0.82	190	405	3.6	1450	0.94	170	--	4.1	1675	1.0	200	320	5.6
STC 047	Patterson WWTP	2250	0.77	315	390	3.2	2025	0.79	249	--	4.5	--	--	--	--	--
STC 024	Olive Ave Drain	575	0.30	60	95	1.6	650	0.41	82	--	3.1	900	0.38	113	118	4.0
STC 050	Magnolia Ave Drain	850	0.41	100	100	3.1	1425	0.87	151	--	4.3	1300	0.72	170	230	6.2
STC 025	Eucalyptus Ave Drain	750	0.40	88	115	2.6	1400	0.93	180	--	5.4	1325	0.95	180	255	5.4
STC 026	Del Puerto Creek	775	0.32	65	82	1.6	825	0.45	107	--	1.9	1150	0.42	155	135	2.2
STC 027	Houk Ranch Drain	1250	0.56	190	145	2.6	1375	0.60	178	--	2.9	1450	0.69	210	200	3.7
STC 028	Del Mar Drain	1700	0.53	210	170	3.3	1700	0.72	260	--	4.0	1650	0.59	250	200	4.5
STC 029	Westley Wasteway	525	0.37	62	54	1.5	725	0.45	87	--	1.8	825	0.34	110	110	2.6
STC 030	Grayson Rd Drain	825	0.55	120	103	2.4	800	0.52	110	--	2.7	1225	0.72	155	165	4.1
STC 031	Minnie Rd Drain	900	0.62	130	130	3.0	1325	0.93	195	--	5.1	1475	0.94	200	200	5.6
STC 034	Kelner Ranch Drain	1150	0.62	180	165	3.6	1450	1.1	212	--	6.1	--	--	--	--	--
STC 036	Haggermann Ranch Drain	2200	1.9	360	330	4.6	1950	1.7	340	--	5.3	2050	1.7	300	340	5.7
STC 040	Ingram Creek	2000	1.6	350	280	1.0	1250	0.91	191	--	3.1	1250	0.80	170	170	2.8
STC 042	Hospital Creek	--	--	--	--	--	900	0.50	110	--	2.7	1125	0.74	165	135	3.6
STC 043	Center Rd Drain	1100	0.99	180	130	2.0	1600	1.3	211	--	3.4	1500	1.0	210	215	4.0
STC 044	El Solyo WD Main Drain	1300	1.5	160	210	2.2	1275	1.3	189	--	3.4	1600	1.2	200	235	3.5
STC 051	Blewett Drain	450	0.33	52	52	1.1	850	0.5	115	--	2.2	1075	0.48	150	170	2.6

Table 4 Trace Element and Mineral Concentrations of Selected Constituents in 20 Subsurface Tile Drainage Systems Sampled in Western Stanislaus County in 1986-1988.

STANISLAUS COUNTY

	EC (µmhos/cm)	B	Cl	SO_4	Ca	Mg	Na	K	TALK	HDNS	TDS	Se
	.....	.....	.....	.....	.....	.....	mg/L	.....	.....	.....	.....	µg/L
							Total Recoverable					
MIN	1300	0.13	25	170	21	53	132	0.8	169	160	130	<0.2
MED	2200	1.5	270	340	141	84	269	1.5	300	645	1500	2.2
MAX	4900	4.1	580	2300	248	174	429	9.2	560	1260	2790	9.3
# DATA	127	127	124	94	44	44	40	40	79	34	44	120

Table 5 Trace Element and Mineral Concentrations of Selected Constituents in Subsurface Tile Drainage Sampled in Western Stanislaus County 1986-1987 as Compared to Similar Drainage Samples Collected in the Panoche Fan Area of Merced and Fresno Counties During the Same Time Period (Taken from Chilcott et al., 1988)

	Western Stanislaus County			Panoche Fan Area
Constituent (mg/L)	Minimum	Median	Maximum	Median
B (mg/L)	0.3	1.2	9.6	7.9
As (µg/L)	<1	1	57	1.
Cd (µg/L)	<5	<5	<10	<5
Cr (µg/L)	<2	6	268	16
Cu (µg/L)	<5	<5	180	<5
Pb (µg/L)	<5	<5	42	<5
Mn (µg/L)	<5	15	4660	6
Mo (µg/L)	1	<5	32	29
Ni (µg/L)	<5	<5	230	<5
Se (µg/L)	<1	2	8	120
Zn (µg/L)	<5	6	92	<5
EC (µmhos/cm)	630	2100	7500	6100
TDS (mg/L)	500	1400	4800	4800
Cl (mg/L)	65	240	1400	2400
SO_4 (mg/L)	92	335	2300	2336
Hardness (mg/L)	190	490	1800	1790

a sodium-sulfate characteristic but not as strongly as the subsurface tile drains located further to the south in the Panoche Fan area (Chilcott et al., 1988).

The surface drains that enter the San Joaquin River from western Stanislaus County exhibit differences in water concentrations depending upon the source of drainage water and more importantly on the source of the supply water to the irrigated area. Median salinity concentrations for the discharging drains varied from 450 to 2250 μmhos/cm. Similar median concentration variation for total recoverable selenium and boron were seen. Median selenium varied from 0.8 to 6.2 μg/L while boron varied from 0.27 to 1.9 mg/L. Variation, however, was more evident depending upon the source of water used for irrigation.

There are three main sources of supply water to the western Stanislaus County area; the Central California Irrigation District (CCID) Main Canal, the Delta-Mendota Canal (DMC) and the San Joaquin River. The CCID Main Canal serves the southern part of the study area principally from Marshal Road south to the Merced County line. The service area is downstream of the main canal (eastward). The remaining land upslope of the CCID Main Canal is served by water from the DMC. The DMC service area is a large portion of the study area to the west of Highway 33 with the exception of land in the Westley area. The remainder of the study area east of Highway 33 is served principally by San Joaquin River water through established water or reclamation districts. The major sources of water for each drainage area are listed in Table 1.

Eight sites for each water supply were analyzed to show the differences in return flow water quality. The mean value for salinity during the study period for these eight sites was 800 μmhos/cm for those areas receiving water from the CCID Main Canal, 915 μmhos/cm for those areas using both DMC supply and San Joaquin River water and 1450 μmhos/cm for those areas using only San Joaquin River water. These differences were also reflected in levels of boron, chloride and sulfate as shown in Table 6. A similar trend was also noted for total recoverable selenium where over the study period, the mean of eight drain sites for each water supply type was 1.6, 2.2 and 3.9 μg/L for the CCID supply areas, DMC and San Joaquin blended areas and the San Joaquin River sole supply areas, respectively. These trends were also noticed in the individual water years as shown in Table 7. Selenium data in Table 7 shows that the tile drains in western Stanislaus County as described earlier, are not the principle factor in the selenium concentrations being discharged from that area. The data in Table 7 shows that drains carrying return San Joaquin River water show consistently higher total recoverable selenium concentrations than the other water supply areas. This trend was consistent also in other water years. As shown by James et al., 1988b, the drier years showed higher selenium levels in the San Joaquin River due to a lack of dilution flows and these higher concentrations were reflected in higher selenium concentrations in the return water to the San Joaquin River especially from areas utilizing the San Joaquin River as the sole water source. As shown in Table 7, the total recoverable selenium concentrations were lowest in WY 86, a wet year and higher in WY 87, a critical year (dry). The concentrations in WY 88, a second consecutive critical year were the highest recorded, especially in areas utilizing only San Joaquin River Water as their main supply. The exception to this trend is evident in areas using the CCID Main Canal supply where total recoverable selenium showed little variation between

water year types. This reflects the source of water for this canal as the Mendota Pool and the Delta-Mendota Canal, two supply waters known to be very low in selenium, often below 1 μg/L (Summers Engineering, 1989).

Table 6 Overall Mean and Range of Mean Concentrations for Selected Constituents From Eight Sites Each From Areas Using Different Water Supply Sources Throughout the Study Period

	CCID Main Canal	San Joaquin River/ Delta Mendota Canal mean(range)	San Joaquin River
EC μmhos/cm	800 (675-1075)	915 (650-1300)	1450 (1250-1650)
B mg/L	0.38 (0.32-0.61)	0.53 (0.36-0.91)	0.80 (0.57-1.10)
Cl mg/L	99 (78-125)	120 (80-210)	190 (160-250)
SO_4 mg/L	90 (68-150)	110 (70-185)	205 (130-390)
Se μg/L	1.6 (1.0-2.4)	2.2 (1.8-2.7)	3.9 (3.4-5.0)

Table 7 Median Total Recoverable Selenium Concentrations For WY 86-88 From Eight Sites Selected From Each of Three Areas Using Different Water Supply Sources

	Water Supply Source		
	CCID Main Canal	San Joaquin River/ Delta-Mendota Canal	San Joaquin River
		(μg/L)	
WY 86	1.6	1.5	2.8
WY 87	1.8	2.5	4.3
WY 88	1.5	3.0	5.0

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APPENDIX A

Mineral Water Quality Data for the Sampling Sites Within the Western Portion of Stanislaus County

MINERAL WATER QUALITY DATA

MISCELLANEOUS SITES

SITE	CODE	DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
						mg/L Total Recoverable											
GEORGE SILVA TILE DRAIN SUMP	STC007	03/05/86	1120	6.9	2600	1.3	280	660	147	91	326	1.1	0	290	290	780	1800
GEORGE SILVA TILE DRAIN SUMP	STC007	04/15/86	850	6.7	2600	1.2	240	680	185	88	319	0.94	0	380	380	880	2000
HOSPITAL CREEK COLLECTOR TILE	STC038	03/06/86	1240	7.2	2000	1.7	330	270	118	57	198	1.5	0	180	180	600	1200
HOSPITAL CREEK COLLECTOR TILE	STC038	04/09/86	1450	7.4	2000	1.8	320	260	124	57	209	1.5	0	200	200	570	1300
HOUK RANCH TILE DRAIN	STC046	06/18/87	1245		2800	1.7	381										
HOUK RANCH TILE DRAIN	STC046	07/16/87	1340		3000	1.7	480										
HOUK RANCH TILE DRAIN	STC046	08/20/87	1300		2900	1.8	300										
INGRAM CREEK TILE DRAIN	STC039	11/04/85	1625	7.4	2050	1.6	330	260	154	54	218	1.0		250			1250
INGRAM CREEK TILE DRAIN	STC039	03/06/86	1135	7.0	1900	1.7	340	270	119	53	196	0.98	0	190	190	600	1200
INGRAM CREEK TILE DRAIN	STC039	04/15/86	1205	7.1	1900	1.3	330	280	139	57	213	0.8	0	230	230	620	130
INGRAM CRK TILE AT RIVER ROAD	STC041	12/04/85	1325	8.5	1900	1.7	300	330									
INGRAM CRK TILE AT RIVER ROAD	STC041	01/09/86	1450	8.6	2100	1.1	420	310					0	250	250		
INGRAM CRK TILE AT RIVER ROAD	STC041	03/06/86	1120	7.9	2000	1.1	380	250	91	82	206	3.5	0	232	232	580	1300
NO TILE DRAIN AT PATTERSON WDC	STC003	03/05/86	1300	6.9	3500	1.9	500	920	187	166	424	1.5	0	370	370	1120	2500
NO TILE DRAIN AT PATTERSON WDC	STC003	04/09/86	1030	7.1	3500	1.9	570	930	210	174	414	1.5	0	430	430	1260	2700
PERRY & FIAHLO TILE DRAIN SUMP	STC008	03/05/86	1110	6.9	3300	2.1	360	1200	248	54	408	1.2	0	310	310	1110	2600
POVERTY FLAT DRAIN	STC048	03/05/86	850	7.4	6400	1.7	490	3300	411	124	686	16	0	280	280	2780	6000
POVERTY FLAT DRAIN	STC048	04/09/86	900	8.4	5800	1.6	330	3500	410	320	696	13.4	0	280	280	2680	6000

MINERAL WATER QUALITY DATA

MISCELLANEOUS SITES

SITE	CODE	DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
						mg/L Total Recoverable											
SO INGRAM CREEK TILE DRAIN	STC033	11/04/85	1605	7.0	2500	2.1	400	340	152	69	318	1.3		290			1560
SO INGRAM CREEK TILE DRAIN	STC033	03/06/86	1200	7.2	2300	1.8	410	350	123	68	270	1.3	0	240	240	620	1500
SO INGRAM CREEK TILE DRAIN	STC033	04/15/86	1150	7.2	2300	1.7	400	350	137	70	291	1.1	0	270	270	650	1600
SO TILE DRAIN AT HAGERMANN RAN	STC035	11/04/85	1445	7.2	1250	0.72	170	87	60	46	157	5.7		300			726
SO TILE DRAIN AT HAGERMANN RAN	STC035	12/04/85	1155	7.2	1250	1.1	170	83									
SO TILE DRAIN AT HAGERMANN RAN	STC035	01/09/86	1345	7.3	1300	0.6	170	86					0	310	310		
SO TILE DRAIN AT HAGERMANN RAN	STC035	02/05/86	1345	7.4	1300	0.52	220	84	56	45	150	6.4	0	310	310	400	720
UPPER INGRAM CREEK TILE DRAIN	STCW39	03/06/86	1215	7.2	2100	1.8	340	310	118	59	214	1.6	0	220	220	700	1300
UPPER INGRAM CREEK TILE DRAIN	STC049	04/15/86	1210	7.1	1600	1.5	330	310	132	58	233	1.3	0	240	240	590	1400
LEMON AVENUE DRAIN	STC055	05/25/88	1440	7.5	1500	0.9	180	230					9	130	139		
LEMON AVENUE DRAIN	STC055	06/23/88	1320	7.7	1650	1.2	220	270					13	170	183		
LEMON AVENUE DRAIN	STC055	08/22/88	1410	7.8	1450	1.3	230	260					160	<1	160		

MINERAL WATER QUALITY DATA

MAP INDEX STC002 CHUNN TILE DRAIN

LOCATION .....Latitude 37 35′ 45", Longitude 121 13′ 13",
S 1/2, SW 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
east side of River Rd, 0.35 mi S of the Ingram Creek
undercrossing, 1.1 mi N of Buckhard Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1730	6.8	3300	4.1	470	560	191	101			0	320			2100
11/04/85	1545	7.2	3200	3.7	480	590	186	100	390	1.1		330			2090
01/09/86	1425	7.2	3000	3.3	550	640					0	260	260		
02/05/86	1230	7.3	3100	3.1	530	600	142	94	372	1.4	0	280	280	740	1900
03/06/86	1030	7.1	2900	3.1	440	540	151	93	364	1.1	0	290	290	800	1900
04/09/86	1430	7.5	2800	3.0	420	540	160	94	354	1.1	0	310	310	800	2000

MINERAL WATER QUALITY DATA

MAP INDEX STC004 SOUTH TILE DRAIN AT PATTERSON WATER DISTRICT CANAL

LOCATION .....Latitude 37 29′ 35", Longitude 121 05′ 53",
NE 1/4, NE 1/4, SW 1/4, Sec. 21, T.5S., R.8E.,
south bank of open canal, 500 ft E of Elm Ave.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1405	7.2	3600	2.0	460	920	231	138			0	320			2500
11/26/85		7.0	3400	1.9	460	820									
01/07/86	1625	7.2	3100	1.6	490	880					0	320	320		
02/05/86	1540	7.4	3400	1.6	580	820	164	116	418	1.4	0	300	300	940	2400
03/05/86	1245	7.0	3300	1.9	430	930	200	119	429	2.3	0	360	360	1010	2450

MINERAL WATER QUALITY DATA

MAP INDEX STC005 POMELLO AVENUE DRAIN

LOCATION .....Latitude 37 28′ 30", Longitude 121 04′ 20",
SE 1/4, NW 1/4, SE 1/4, Sec. 27, T.5S., R.8E.,
1/2 mi E of Elm Ave and 1/4 mi N of Pomelo Ave,
through farm on Pomelo Ave.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L.....											
				Total Recoverable											
01/07/86	1550	7.9	2000	1.1	300	450					0	270	270		
02/05/86	1625	7.5	2000	0.93	260	380	102	61	254	2.4	8	340	348	540	1300
03/05/86	1215	7.1	2700	1.6	320	640	148	86	368	1.3	0	310	310	680	1800
05/20/86	1310		2400	1.2	270	575							300		
06/18/86	1130		2200	1.0	230	480	73	61	250	1.5	0	290	290	160	1600
07/16/86	1145	7.6	2400	1.3	280	520							340		
08/19/86	1305		2500	1.6	270	580							310		
09/18/86	1300		2100	1.4	210	410							320		
10/16/86			2200	1.5	250	520							390		
11/22/86	1345		1300	0.75	150	230						190			
12/19/86	1310	7.9	1800	1.0	180	270							240		
02/20/87	1655	7.2	2700	1.0	290										
04/20/87	1330	7.0	1850	0.85	200										
05/20/87	1305		2200	1.1	247										
06/18/87	1445		2250	1.3	208										
07/16/87	1620		2200	1.1	280										
08/20/87	1355		2600	1.5	260										
09/21/87	1345		2200	1.3	230										
10/20/87	1340	7.2	2200	1.3	370	450					9	160	169		
12/21/87	1350	8.2	2200	1.1											
02/23/88	1300	7.3	1500	0.72	170										
04/22/88	1515	7.3	2050	0.98	210										
05/25/88	1300	7.3	2250	0.9	270	390					<1	170	170		
06/23/88	1440	7.4	2250	1.0	25	390					6	170	176		
07/20/88	1355	7.2	2250	1.1	270	390					<1	170	170		
08/22/88	1235	7.5	2300	1.3	260	460					220	16	236		
09/20/88	1525		2050	1.0	210	300					<1	260	260		

POMELLO AVENUE DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	2000	0.13	210	380							270		
	MED	2300	1.2	270	500							310		
	MAX	2700	1.6	320	640							348		
	#DATA	8	8	8	8							8		
87 WY	MIN	1300	0.75	150										
	MED	2200	1.1	239										
	MAX	2700	1.5	290										
	#DATA	10	10	10										
88 WY	MIN	1500	0.72	25	390									
	MED	2200	1.0	235	390									
	MAX	2300	1.3	370	460									
	#DATA	9	9	8	5									
TOTAL	MIN	1300	0.13	25	230							169		
	MED	2200	1.1	255	450							280		
	MAX	2700	1.6	370	640							390		
	#DATA	27	27	26	17							16		

MINERAL WATER QUALITY DATA

MAP INDEX STC006 APRICOT AVENUE DRAIN

LOCATION .....Latitude 37 27′ 02", Longitude 121 05′ 01",
SE 1/4, NE 1/4, SE 1/4, Sec. 33, T.5S., R.8E.,
0.4 mi E of Sycamore Ave, 0.2 mi N of Apricot Ave,
and 0.3 mi S of Pomelo Ave.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
01/07/86	1530	8.1	2400	0.94	340	430					0	380	380		
02/11/86	1045	8.0	2300	0.93	300	400	99	70	278	1.7	24	260	284	560	1400
03/05/86	1140	7.3	2300	0.96	350	410	112	80	312	1.5	0	270	270	620	1600
04/15/86			2300	0.90	300	410	136	71	297	1.2	0	320	320	580	1500

MINERAL WATER QUALITY DATA

MAP INDEX STC009 NEWMAN DRAINAGE DISTRICT COLLECTOR "I" LINE

LOCATION .....Latitude 37 21′ 27", Longitude 120 58′ 42",
NW 1/4, SE 1/4, NE 1/4, Sec. 4, T.7S., R.9E.,
1/4 mi E of River Rd and 0.6 mi N of Hills Ferry Rd,
at mile 117.6 of San Joaquin River.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/26/85		7.8	2200	2.0	210	300	74	103	220	3.6		530			1320
01/07/86	1430	7.8	2000	1.6	260	340					24	520	544		
02/04/86	1125	7.8	2100	1.5	270	370	67	111	250	7.3	0	530	530	700	1300
06/18/86	930		1900	1.4	180	250	21	99	170	2.6	0	430	430	460	1200
07/16/86	1000	7.2	1800	1.2	180	240							500		
08/19/86	1040		1900	1.4	170	230							480		
09/18/86	1045		1850	1.4	160	240							510		
10/16/86			1600	1.4	170	230							520		
11/20/86	1130		2000	1.5	200	270							550		
12/19/86	1440	7.5	2000	1.5	130	170							520		
02/20/87	1250	7.0	2100	1.1	190										
04/20/87	1245	4.7	1900	1.2	180										
05/20/87	1055		1800	1.3	176										
06/18/87	1015		1800	1.3	143										
07/16/87	1045		1900	1.1	200										
08/20/87	1140		1800	1.3	200										
09/21/87	1145		1700	1.3	160										
10/20/87	1525	6.4	1750	1.3	200	240					61	260	321		
12/21/87	1515	7.9	2000	1.4											
02/23/88	1510	7.8	1800	1.0	180										
04/22/88	1230	7.3	1900	1.2	160										
05/25/88	1050	7.4	1800	1.1	160	200					47	250	297		
06/23/88	1220	7.3	1900	1.1	180	240					<1	330	330		
07/20/88	1140	7.6	1850	1.1	180	230					16	300	316		
08/22/88	1030	7.4	1700	1.2	190	210					220	270	490		
09/20/88	1335		1900	1.1	190	220					<1	400	400		

NEWMAN DRAINAGE DISTRICT COLLECTOR "I" LINE

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	1800	1.2	160	230							480		
	MED	1900	1.4	180	250							505		
	MAX	2200	2.0	270	370							544		
	#DATA	7	7	7	7							6		
87 WY	MIN	1600	1.1	130										
	MED	1850	1.3	178										
	MAX	2100	1.5	200										
	#DATA	10	10	10										
88 WY	MIN	1700	1.0	160	200									
	MED	1850	1.1	180	230									
	MAX	2000	1.4	200	240									
	#DATA	9	9	8	5									
TOTAL	MIN	1600	1.0	130	170							297		
	MED	1900	1.3	180	240							490		
	MAX	2200	2.0	270	370							550		
	#DATA	26	26	25	16							15		

MINERAL WATER QUALITY DATA

MAP INDEX STC010 NEWMAN DRAINAGE DISTRICT COLLECTOR "A" LINE

LOCATION .....Latitude 37 20′ 00", Longitude 120 58′ 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
100 ft N of Newman Wastewater Treatment Plant
at an unnamed slough.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1215	7.4	2300	1.7	260	320	100	107.0			16	370			1370
11/26/85		7.8	2400	1.9	290	300									
01/07/86	1330	7.6	2400	1.7	370	490					0	480	480		
05/20/86	945		2000	1.5	220	280							430		
06/18/86	910		2100	1.5	240	320	38	100	190	4.4	0	400	400	500	1400
07/16/86	940	7.3	2100	1.2	250	340							440		
08/19/86	1005		2100	1.5	230	320							400		
09/18/86	1025		1800	1.5	220	300							460		
10/16/86			2000	1.7	240	300							500		
12/19/86	1510	7.6	2500	1.8	210	250							560		
02/20/87	1205	6.7	2600	1.5	270										
04/20/87	1325		2000	1.3	220										
05/20/87	1035		2200	1.5	258										
06/18/87	910		2100	1.5	229										
07/16/87	1000		2000	1.5	320										
08/20/87	1050		2300	1.6	260										
09/21/87	1100		2300	1.6	260										
10/20/87	1545	6.4	2300	1.6	300	350					38	230	268		
12/21/87	1530	7.4	2700	1.8											
02/23/88	1525	7.5	2400	1.6	250										
04/22/88	1405	7.2	2100	1.3	230										
05/25/88	1030	7.4	2200	1.5	290	300					2	270	272		
06/23/88	1135	7.3	2050	1.3	250	270					18	250	268		
07/20/88	1055	7.4	2200	1.5	270	300					4	290	294		
08/22/88	945	7.0	2250	1.5	300	340					330	7	337		
09/20/88	1300		2300	1.5	270	320					<1	360	360		

NEWMAN DRAINAGE DISTRICT COLLECTOR "A" LINE

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	1800	1.2	220	280							400		
	MED	2100	1.5	245	320							435		
	MAX	2400	1.9	370	490							480		
	#DATA	8	8	8	8							6		
87 WY	MIN	2000	1.3	210										
	MED	2200	1.5	258										
	MAX	2600	1.8	320										
	#DATA	9	9	9										
88 WY	MIN	2050	1.3	230	270						7	268		
	MED	2250	1.5	270	300						260	283		
	MAX	2700	1.8	300	350						360	360		
	#DATA	9	9	8	5						6	6		
TOTAL	MIN	1800	1.2	210	250						7	268		
	MED	2200	1.5	258	310						290	400		
	MAX	2700	1.9	370	490						480	560		
	#DATA	26	26	25	16						9	14		

MINERAL WATER QUALITY DATA

MAP INDEX STC011 DAVIS TILE DRAIN

LOCATION .....Latitude 37 16′ 30", Longitude 121 04′ 37",
SE 1/4, SE 1/4, SW 1/4, Sec. 34, T.7S., R.8E.,
N side of Pete Miller Rd, 1/2 mi W of Eastin Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/26/85		7.4	3300	0.86	170	1600	207	149	280	9.2		172			2790
01/07/86	1400	8.1	4900	1.1	350	2300					0	270	270		
02/11/86	910	6.6	2000	0.5	140	760	141	99	132	4.5	8	220	228	820	1500
03/05/86	910	7.2	1900	0.4	150	560	147	92	150	3.8	0	250	250	820	1500
04/09/86	910	7.5	2100	0.42	150	660	177	102	148	4.2	0	260	260	930	1600

MINERAL WATER QUALITY DATA

MAP INDEX STC014 HILLS FERRY ROAD DRAIN

LOCATION .....Latitude 37 20′ 00", Longitude 120 58′ 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
200 yds E of the flood levee protecting the Newman WWTP,
50-100 ft N of the WWTP discharge into the same slough.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
05/20/86	910		1100	0.64	130	180							180		
06/18/86	845		1500	1.1	220	230	92	47	140	8.4	0	220	220	430	960
07/16/86	915	7.5	550	0.23	68	75							90		
08/19/86	945		850	0.72	120	120							92		
04/20/87	1300	5.4	1050	0.56	120										
05/20/87	1015		1500	0.99	205										
06/18/87	930		700	0.42	81										
07/16/87	1010		1400	0.86	230										
08/20/87	1105		950	0.4	120										
10/20/87	1600	8	2350	0.58	210	69					41	240	281		
04/22/88	1355	8.5	750	0.34	85										
05/25/88	1015	7.7	1650	1.2	240	200					16	180	196		
06/23/88	1140	7.4	1000	0.46	71	62					8	140	148		
07/20/88	1105	8	800	0.25	120	69					<1	115	115		
08/22/88	930	6.8	1500	1.0	220	250					190	8	198		
09/20/88	1310		1500	0.74	200	200					3	160	163		
87 WY	MIN		700	0.4	81										
	MED		1050	0.56	120										
	MAX		1500	0.99	230										
	#DATA		5	5	5										
88 WY	MIN		750	0.25	71	62							115		
	MED		1500	0.58	200	135							180		
	MAX		2350	1.2	240	250							281		
	#DATA		7	7	7	6							6		
TOTAL	MIN		550	0.23	68	62							90		
	MED		1075	0.61	125	150							172		
	MAX		2350	1.2	240	250							281		
	#DATA		16	16	16	10							10		

MINERAL WATER QUALITY DATA

MAP INDEX STC015 AZEVEDO ROAD DRAIN

LOCATION .....Latitude 37 21′ 37", Longitude 120 59′ 06",
NE 1/4, NE 1/4, NW 1/4, Sec. 4, T.7S., R.9E.,
San Joaquin River at mile 117 at River Rd, S of Azevado Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1145	7.2	750	0.44	100	67	36	20			0	140			415
11/26/85		6.8	1200	0.45	130	270									
05/20/86	1055		250	0.15	18	22							60		
06/18/86	0940		600	0.52	53	110	34	17	58	9.1	0	120	120	150	380
07/16/86	1015	7.3	600	0.26	82	75							130		
08/19/86	1055		550	0.40	66	54							96		
09/18/86	1100		650	0.48	76	63							120		
11/20/86	1115		650	0.33	70	120							66		
12/19/86	1420	8.8	550	0.30	40	42							100		
04/20/87	1230	4.8	750	0.45	80										
05/20/87	1105		550	0.23	59										
06/18/87	1030		900	0.56	108										
07/16/87	1100		750	0.35	110										
08/20/87	1150		850	0.42	120										
09/21/87	1155		800	0.22	130										
05/25/88	1105	7.7	650	0.29	81	67					<1	5100	100		
06/23/88	1235	7.4	800	0.31	98	69					<1	130	130		
07/20/88	1150	7.9	900	0.35	130	82					<1	130	130		
08/22/88	1040	7.9	950	0.44	150	97					100	<1	100		
09/20/88	1345		900	0.29	130	78					3	100	103		

AZEVEDO ROAD DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	250	0.15	18	22							60		
	MED	600	0.44	76	67							120		
	MAX	1200	0.52	130	270							130		
	#DATA	7	7	7	7							5		
87 WY	MIN	550	0.22	40										
	MED	750	0.34	94										
	MAX	900	0.56	130										
	#DATA	8	8	8										
88 WY	MIN	650	0.29	81	67					<1	<1	100		
	MED	900	0.31	130	78					<1	130	103		
	MAX	950	0.44	150	97					100	5100	130		
	#DATA	5	5	5	5					5	5	5		
TOTAL	MIN	250	0.15	18	22							60		
	MED	750	0.35	90	72							102		
	MAX	1200	0.56	150	270							130		
	#DATA	20	20	20	14							12		

MINERAL WATER QUALITY DATA

MAP INDEX STC016 DRAIN 1/2 MI. S. OF FREITAS RD AT RIVER ROAD

LOCATION .....Latitude 37 22′ 17", Longitude 120 39′ 28",
NW 1/4, SW 1/4, NW 1/4, Sec. 33, T.6S., R.9E.,
River Rd crossing of San Joaquin River at mile 113.4,
1/2 mile S of Freitas Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
05/20/86	1110		250	0.15	16	26							60		
06/18/86	950		550	0.49	54	110	38	17	45	6.6	0	90	90	160	360
08/19/86	1100		550	0.41	74	70							84		
09/18/86	1115		550	0.36	62	62							290		
04/20/87	1220	5.0	700	0.42	75										
05/20/87	1120		1000	0.35	110										
06/18/87	1040		700	0.38	81										
07/16/87	1110		1000	0.65	140										
08/20/87	1205		1000	0.47	120										
09/21/87	1210		750	0.22	120										
10/20/87	1510	7.4	900	0.25	160	71					10	100	110		
02/23/88	1445	8.2	1350	0.45	130										
04/22/88	1255	7.7	750	0.29	74										
05/25/88	1115	7.7	650	0.29	81	67					<1	100	100		
06/23/88	1245	7.5	850	0.37	110	72					2	160	162		
07/20/88	1200	7.7	900	0.32	130	62					<1	140	140		
08/22/88	1050	7.6	850	0.38	140	91					110	12	122		
09/20/88	1350		1200	0.37	130	130					22	210	232		

DRAIN 1/2 MI. S. OF FREITAS RD AT RIVER ROAD

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
87 WY	MIN	700	0.35	75										
	MED	1000	0.42	110										
	MAX	1000	0.65	140										
	#DATA	5	5	5										
88 WY	MIN	650	0.25	74	62							100		
	MED	875	0.35	130	72							131		
	MAX	1350	0.45	160	130							232		
	#DATA	8	8	8	6							6		
TOTAL	MIN	250	0.15	16	26							60		
	MED	800	0.37	110	71							116		
	MAX	1350	0.65	160	130							290		
	#DATA	18	18	18	10							10		

MINERAL WATER QUALITY DATA

MAP INDEX STC017 FREITAS ROAD DRAIN

LOCATION .....Latitude 37 22′ 39", Longitude 120 59′ 42"
SE 1/4, SE 1/4, SE 1/4, Sec. 29, T.6S., R.9E.,
River Road crossing of Freitas Road at
mile 113.4 of the San Joaquin River.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
05/20/86	1125		200	0.11	14	27							40		
06/18/86	955		500	0.49	52	100	30	13	42	7.2	0	70	70	130	310
07/16/86	1025	7.8	650	0.22	80	79							90		
08/19/86	1120		600	0.43	74	70							82		
09/18/86	1130		550	0.37	66	65							100		
11/20/86	1055		450	0.4	48	50							78		
12/19/86	1410		550	0.26	40	42							100		
04/20/87	1205		700	0.4	90										
05/20/87	1130		650	0.21	71										
06/18/87	1055		700	0.4	86										
07/16/87	1120		850		110										
08/20/87	1220		850	0.45	120										
09/21/87	1225		650	0.17	120										
02/23/88	1435	8.1	1350	0.42	140										
04/22/88	1305	8.1	700	0.3	81										
05/25/88	1125	8.0	650	0.27	82	69					<1	89	89		
06/23/88	1255	7.5	750	0.34	93	78					<1	96	96		
07/20/88	1215	8.1	800	0.24	120	72					<1	74	74		
08/22/88	1100	7.7	800	0.36	130	87					80	12	92		
09/20/88	1400		950	0.28	130	82					<1	140	140		

FREITAS ROAD DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	200	0.11	14	27							40		
	MED	550	0.37	66	70							82		
	MAX	650	0.49	80	100							100		
	#DATA	5	5	5	5							5		
87 WY	MIN	450	0.17	40										
	MED	675	0.4	88										
	MAX	850	0.45	120										
	#DATA	8	7	8										
88 WY	MIN	650	0.24	81	69							74		
	MED	800	0.3	120	78							92		
	MAX	1350	0.42	140	87							140		
	#DATA	7	7	7	5							5		
TOTAL	MIN	200	0.11	14	27							40		
	MED	675	0.35	84	71							90		
	MAX	1350	0.49	140	100							140		
	#DATA	20	19	20	12							12		

MINERAL WATER QUALITY DATA

MAP INDEX STC019 ORESTIMBA CREEK AT RIVER ROAD

LOCATION .....Latitude 37 24′ 50", Longitude 121 00′ 51",
SE 1/4, SE 1/4, NE 1/4, Sec. 18, T.6S., R.9E.,
River Road crossing of Orestimba Creek between the two bridges.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L.....											
				Total Recoverable											
04/02/85			600	0.45	67	90									
10/30/85	1025	7.4	600	0.35	85	63	31	17			0	97			363
11/26/85		7.0	900	0.41	87	110	57	34	48	4.8		210			553
02/11/86	1000	8.0	800	0.33	92	100	37	17	71	4.6	8	250	258	160	410
03/05/86	1030	6.7	650	0.33	40	130	42	21	57	4.3	0	100	100	210	400
04/09/86	950	7.9	350	0.11	15	68	23	14	25	2.6	0	68	68	120	240
05/20/86	1145		250	0.12	18	45							60		
06/18/86	1010		500	0.15	36	100	31	13	44	3.3	0	70	70	130	320
07/16/86	1040	8.0	550	0.13	62	71							110		
08/19/86	1140		550	0.35	64	65							74		
09/18/86	1200		500	0.3	55	55							88		
10/16/86			500	0.22	46	60							130		
11/20/86	1010		500	0.39	61	65							82		
12/19/86	1350	8.0	850	0.41	57	91							160		
02/20/87	1105	7.4	700	0.4	100										
04/20/87	1125	4.0	700	0.33	70										
05/20/87	1200		650	0.25	71										
06/18/87	1130		700	0.35	79										
07/16/87	1155		650		95										
08/20/87	1300		800	0.26	100										
09/21/87	1255		800	0.21	135										

ORESTIMBA CREEK AT RIVER ROAD

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/20/87	1440	7.6	850	0.20	150	61					8	96	104		
12/21/87	1435	8.4	1100	0.34											
02/23/88	1410	8.3	1200	0.38	110										
04/22/88	1335	8.0	750	0.29	78										
05/25/88	1200	8.0	600	0.24	76	67					<1	94	94		
06/23/88	1330	7.5	700	0.28	91	75					<1	110	110		
07/20/88	1245	8.1	750	0.2	100	57					<1	100	100		
08/22/88	1140	7.9	850	0.39	130	100					99	10	109		
09/20/88	1425		800	0.25	120	67					<1	105	105		
86 WY	MIN		250	0.11	15	45	23	13	25	2.6		68	60		240
	MED		550	0.32	59	70	34	17	48	4.3		99	81		382
	MAX		900	0.41	92	130	57	34	71	4.8		250	258		553
	#DATA		10	10	10	7	6	6	5	5		6	8		6
87 WY	MIN		500	0.21	46										
	MED		700	0.34	75										
	MAX		850	0.41	135										
	#DATA		10	9	10										
88 WY	MIN		600	0.2	76	57						10	94		
	MED		800	0.28	105	67						98	105		
	MAX		1200	0.39	150	100						110	110		
	#DATA		9	9	8	6						6	6		
TOTAL	MIN		250	0.11	15	45	23	13	25	2.6		10	60		240
	MED		700	0.32	78	68	34	17	48	4.3		99	100		382
	MAX		1200	0.41	150	130	57	34	71	4.8		250	258		553
	#DATA		30	29	29	20	6	6	5	5		12	17		6

MINERAL WATER QUALITY DATA

MAP INDEX STC020 NEWMAN WASTEWATER TREATMENT PLANT

LOCATION .....Latitude 37 20′ 00", Longitude 120 58′ 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
South side of Hills Ferry Road on the south side of the Newman Wasteway.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85			3700	1.2	650	220	129	86			0	670			2100
11/26/85		8.2	3400	1.2	620	240	88	70	380	50		560			2030
02/04/86	1045	7.7	2800	0.74	520	160	93	62	392	95	0	450	450	480	1700
06/18/86	850		3100	1.0	570	140	61	70	410	64	0	580	580	410	1900
07/16/86	925	8.0	3800	1.1	810	260							630		
08/19/86	1020		4300	1.9	800	220							700		
09/18/86	1010		3700	1.2	640	260							720		
12/19/86	1500	8.6	4200	1.5	400	120							680		
02/20/87	1225	7.6	4300	1.8	750										
04/20/87	1310		4950	1.1	990										
05/20/87	1010		4650	0.9	923										
06/18/87	950		4550	1.0	904										
07/16/87	1020		4900	1.6	1100										
08/20/87	1120		4900	1.2	760										
09/21/87	1120		5100	1.1	860										
10/20/87	1610	7.0	5100	1.2	910	220					130	480	610		
12/21/87	1545	7.9	4750	0.89											

NEWMAN WASTEWATER TREATMENT PLANT

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	2800	0.74	520	140							450		
	MED	3700	1.2	640	220							630		
	MAX	4300	1.9	810	260							720		
	#DATA	7	7	7	7							5		
87 WY	MIN	4200	0.9	400										
	MED	4775	1.2	882										
	MAX	5100	1.8	1100										
	#DATA	8	8	8										
TOTAL	MIN	2800	0.74	400	120							450		
	MED	4300	1.2	780	220							630		
	MAX	5100	1.9	1100	260							720		
	#DATA	17	17	16	9							7		

MINERAL WATER QUALITY DATA

MAP INDEX STC021 MARSHAL RD / SPANISH GRANT

LOCATION .....Latitude 37 26′ 08", Longitude 121 01′ 59",
S 1/2, SE 1/4, SE 1/4, Sec. 1, T.6S., R.8E.,
river side of the levee east of the intersection of
Marshall Road and River Road.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
04/02/85			1250	0.95	130	250									
10/30/85	0945	8.2	1650	0.66	150	380	126	56			10	190			1100
11/26/85		7.2	850	0.39	87	170									
01/07/86	1510	8.3	1800	1.1	190	430						260	260		
02/11/86	1025		1700	1.0	160	410	88	55	182	1.2	8	180	188	320	1100
05/20/86	1220		600	0.32	55	100							80		
06/18/86	1040		600	0.18	48	140	43	19	50	4.7		60	60	150	400
07/16/86	1100	7.8	650	0.19	68	110							100		
08/19/86	1210		450	0.4	48	55							76		
09/18/86	1220		600	0.35	62	76							100		
11/20/86	0930		850	0.36	81	170							110		
12/19/86	1330	8.2	550	0.24	42	49							85		
02/20/87	1030		1200	0.6	110										
04/20/87	1355	7.6	750	0.48	85										
05/20/87	1215		800	0.35	72										
06/18/87	1150		1000	0.54	106										
07/16/87	1220		900		110										
08/20/87	1335		900	0.37	120										
09/21/87	1325		850	0.27	140										
10/20/87	1405	7.4	900	0.27	150	88					16	92	108		
12/21/87	1420	8.4	1400	0.64											
02/23/88	1350	8.2	900	0.44	93										
05/25/88	1235	7.8	950	0.46	120	130					7	120	127		
06/23/88	1420	7.6	650	0.25	84	68					<1	100	100		
07/20/88	1335	7.1	950	0.36	110	120					4	130	134		
09/20/88	1505		900	0.31	130	88					<1	130	130		

MARSHAL RD / SPANISH GRANT

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	450	0.18	55	55							60		
	MED	650	0.39	140	140							100		
	MAX	1800	1.1	430	430							260		
	#DATA	9	9	9	9							7		
87 WY	MIN	550	0.24	42										
	MED	850	0.36	106										
	MAX	1200	0.6	140										
	#DATA	9	8	9										
88 WY	MIN	650	0.25	84	68							100		
	MED	900	0.36	115	88							127		
	MAX	1400	0.64	150	130							134		
	#DATA	7	7	6	5							5		
TOTAL	MIN	450	0.18	42	49						60	60		
	MED	900	0.38	106	120						130	104		
	MAX	1800	1.1	190	430						260	260		
	#DATA	26	25	25	17						9	14		

MINERAL WATER QUALITY DATA

MAP INDEX STC022 RAMONA LAKE MAIN DRAIN OUTFALL

LOCATION .....Latitude 37 28′ 43", Longitude 121 04′ 04",
NE 1/4, NE 1/4, NE 1/4, Sec. 23, T.5S., R.8E.,
approximately 3/8 miles south of Fig Avenue along the flood levee.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
05/20/86	1350		1800	0.54	150	240							150		
06/18/86	1150		1000	0.47	100	180	56	27	92	5.4		130	130	130	630
07/16/86	1200	7.6	1300	0.75	170	250							180		
08/19/86	1330		1200	0.71	140	240							140		
09/18/86	1315		1100	0.62	120	160							170		
11/22/86	1315		1600	0.88	240	280						230			
12/19/86	1250	7.9	1500	0.84	180	200							130		
02/20/87	1615	8.0	1800	0.43	200										
05/20/87	1320		1500	0.78	178										
06/18/87	1240		1500	1.1	168										
07/16/87	1600		1500	1.3	220										
08/20/87	1430		1400	0.9	170										
09/21/87	1410		1250	0.69	160										
06/23/88	1510	7.6	1600	1.0	190	260					14	160	174		
07/20/88	1425	7.9	1800	1.1	220	350					7	160	167		
08/22/88	1300	7.8	1450	0.94	200	260					170	14	184		
09/20/88	1545		1300	0.64	170	160					6	160	166		

RAMONA LAKE MAIN DRAIN OUTFALL

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	1000	0.47	100	160							130		
	MED	1200	0.62	140	240							150		
	MAX	1800	0.75	170	250							180		
	#DATA	5	5	5	5							5		
87 WY	MIN	1250	0.43	160										
	MED	1500	0.86	179										
	MAX	1800	1.3	240										
	#DATA	8	8	8										
88 WY	MIN	1300	0.64	170	160					6	14	166		
	MED	1525	0.97	195	260					11	160	171		
	MAX	1800	1.1	220	350					170	160	184		
	#DATA	4	4	4	4					4	4	4		
TOTAL	MIN	1000	.43	100	160							130		
	MED	1500	.78	170	240							167		
	MAX	1800	1.3	240	350							184		
	#DATA	17	17	17	11							10		

MINERAL WATER QUALITY DATA

MAP INDEX STC023 PATTERSON WATER DISTRICT MAIN DRAIN

LOCATION .....Latitude 37 29′ 50", Longitude 121 04′ 54",
NW 1/4, SW 1/4, SW 1/4, Sec. 15, T.5S., R.8E.,
where the drain discharges into the San Joaquin River on the
north side of the Patterson Water District Main Lift Canal.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
04/02/85			1100	1.1	130	210									
01/07/86	1640	8.6	1800	0.8	270	440					0	200	200		
03/05/86	1330	7.6	3000	1.7	390	750	138	109	344	2	0	250	250	770	2000
04/09/86	1045	7.8	900	0.4	97	190	48	27	94	2.0	0	110	110	240	530
05/20/86	1415		1700	0.91	200	410							180		
06/18/86	1230		1700	0.83	190	400	89	53	180	2.8	12	210	222	290	1150
07/16/86	1305	8.2	1350	0.71	190	270							180		
08/19/86	1350		2100	1.3	140	460							218		
09/18/86	1340		700	0.4	81	120							110		
10/16/86			1000	0.51	110	150							128		
11/22/86	1255		1600	0.94	5	3						180			
12/19/86	1230	8.6	550	0.28	66	77							76		
04/20/87	1720	7.5	2300	1.2	300										
05/19/87	1430		2400	1.4	281										
06/18/87	1425		1450	1.1	172										
07/16/87	1535		1700	1.2	280										
08/20/87	1450		1400	0.9	170										
09/21/87	1425	8.3	850	0.25	140										
10/20/87	1310	7.8	850	0.21	160	71					8	84	92		
02/23/88	1535	8.4	850	0.41	89										
04/22/88	1600	8.4	1600	1	170										
05/25/88	1340	8.0	1750	0.99	200	310					22	210	232		
06/23/88	1525	7.5	2200	1.2	240	380					20	230	250		
07/20/88	1435	8.2	1850	1.3	250	340					2	190	192		
08/22/88	1310	8.1	1350	1.1	200	230					160	16	176		
09/20/88	1605		1900	0.82	240	330					8	220	228		

PATTERSON WATER DISTRICT MAIN DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	700	0.4	81	120							110		
	MED	1700	0.82	190	405							190		
	MAX	3000	1.7	390	750							250		
	#DATA	8	8	8	8							8		
87 WY	MIN	550	0.25	5										
	MED	1450	0.94	170										
	MAX	2400	1.4	300										
	#DATA	9	9	9										
88 WY	MIN	850	0.21	89	71									
	MED	1675	1	200	320									
	MAX	2200	1.3	250	380									
	#DATA	8	8	8	6									
TOTAL	MIN	550	0.21	5	3							76		
	MED	1600	0.93	181	390							186		
	MAX	3000	1.7	390	750							250		
	#DATA	26	26	26	26							16		

MINERAL WATER QUALITY DATA

MAP INDEX STC024 OLIVE AVENUE DRAIN

LOCATION .....Latitude 37 30′ 27", Longitude 121 05′ 15",
NW 1/4, NE 1/4, NE 1/4, Sec. 16, T.5S, R.8E.,
250 feet north of a direct line with the end of
Olive Ave. at the San Joaquin River.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
04/02/85			1300	1.1	140	220									
10/30/85	1425	7.3	600	0.3	87	66					8	77			360
05/20/86	1430		600	0.35	71	105							90		
06/18/86	1400		400	0.25	32	71	23	12	33	2.8	0	60	60	120	240
07/16/86	1350	8.4	500	0.14	58	95							120		
08/18/86	1645		650	0.53	62	120							86		
09/18/86	1415		550	0.29	42	86							84		
10/16/86	1435		1500	1.0	73								230		
11/22/86	1220		1400	0.69	62							180			
12/19/86	1205	8.1	550	0.24	58	100							72		
02/19/87	1535	7.9		0.45	150										
04/20/87	1300	7.4	650	0.34	80										
05/19/87	1350		650	0.31	69										
06/18/87	1345		650	0.35	83										
07/16/87	1455		650		190										
08/20/87	1520		800	0.36	90										
09/21/87	1400	8.2	1300	0.61	160										
10/20/87	1245	7.7	1500	0.54	160						16	150	166		
12/21/87	1245	8.5	2200	0.94											
02/23/88	1500	8.0	900	0.38	71										
04/22/88	1620	8.3	500	0.2	57										
05/25/88	1400	8.1	550	0.25	75	62					<1	84	84		
06/23/88	1335	7.8	700	0.3	95	86					<1	88	88		
07/20/88	1515	8.3	1050	0.53	150	140					<1	100	100		
08/22/88	1330	7.9	750	0.35	130	96					92	4	96		
09/20/88	1620		1300	0.57	175	150					<1	145	145		

OLIVE AVENUE DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	400	0.14	32	66							60		
	MED	575	0.3	60	95							86		
	MAX	650	0.53	87	220							120		
	#DATA	6	6	6	7							5		
87 WY	MIN	550	0.24	58										
	MED	650	0.41	82										
	MAX	1500	1.0	190										
	#DATA	9	9	10										
88 WY	MIN	500	0.2	57	62							84		
	MED	900	0.38	113	96							98		
	MAX	2200	0.94	175	150							166		
	#DATA	9	9	8	5							6		
TOTAL	MIN	400	0.14	32	62							60		
	MED	650	0.36	80	96							90		
	MAX	2200	1.0	190	220							230		
	#DATA	25	25	25	13							13		

MINERAL WATER QUALITY DATA

MAP INDEX STC025 EUCALYPTUS AVENUE DRAIN

LOCATION .....Latitude 37 31′ 51", Longitude 121 06′ 43",
SE 1/4, NE 1/4, SW 1/4, Sec. 9, T.4S., R.8E.,
the end of Eucalyptus Avenue at the San Joaquin River.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
05/01/86	1305	7.9	400	0.34	17	79	20	9	40	3		40	40	110	250
06/18/86	1420		850	0.36	89	130	46	23	76	15		120	120	210	540
07/16/86	1415	7.8	800	0.43	98	120							120		
08/18/86	1620		700	0.71	86	110							84		
04/20/87	1240	6.3	1550	0.91	210										
05/19/87	1335		1250	0.79	157										
06/18/87	1320		1400	1.1	180										
07/16/87	1435		1400	1.2	230										
08/20/87	1525		1300	0.93	160										
02/23/88	1445	7.9	700	0.37	76										
04/22/88	1640	8.0	600	0.33	59										
05/25/88	1415	7.8	1250	0.81	160	180					8	130	138		
06/23/88	1325	7.7	1650	1.2	220	280					8	160	168		
07/20/88	1530	7.8	1750	1.3	240	300					6	140	146		
08/22/88	1345	8.1	1400	1.1	200	230					9	4	97		

EUCALYPTUS AVENUE DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	400	0.34	17	79							40		
	MED	750	0.40	88	115							102		
	MAX	850	0.71	98	130							120		
	#DATA	4	4	4	4							4		
87 WY	MIN	1250	0.79	157										
	MED	1400	0.93	180										
	MAX	1550	1.2	230										
	#DATA	5	5	5										
88 WY	MIN	600	0.33	59	180					6	4	97		
	MED	1325	0.95	180	255					8	135	142		
	MAX	1750	1.3	240	300					9	160	168		
	#DATA	6	6	6	4					4	4	4		
TOTAL	MIN	400	.33	17	79							40		
	MED	1250	.81	160	155							120		
	MAX	1750	1.3	240	300							168		
	#DATA	15	15	15	8							8		

MINERAL WATER QUALITY DATA

MAP INDEX STC026 DEL PUERTO CREEK

LOCATION .....Latitude 37 32′ 20", Longitude 121 07′ 22",
SE 1/4, SE 1/4, Sec. 31, T.4S., R.8E.,
Del Puerto Creek at the end of Cottonwood Road.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
02/05/86	1430	8.6	1100	0.74	37	180	32	92	68	4.0	56	340	396	480	630
03/05/86	1545	7.9	950	0.64	22	25	35	91	54	3	40	330	370	480	550
04/09/86	1140	8.6	850	0.43	55	170	36	64	62	2.6	8	240	248	360	550
05/20/86	1605		850	0.34	110	115							120		
06/18/86	1450		700	0.1	89	88	34	33	47	5.2	0	100	100	210	390
07/16/86	1500	8.2	600	0.29	72	76							110		
08/18/86	1530		500	0.3	68	65							84		
09/18/86	1500		450	0.26	61	46							72		
10/16/86	1325		650	0.46	72	84							120		
11/22/86	1145		350	0.2	49	42						68			
12/19/86	1140	8.4	700	0.24	90	76							90		
02/19/87	1455	8.2	950	0.49	69										
04/20/87	1200	6.8	1000	0.45	120										
05/19/87	1305		950	0.46	107										
06/18/87	1305		800	0.36	107										
07/16/87	1405		750		130										
08/20/87	1315		850	0.31	170										
09/21/87	1315	8.1	1200	0.45	180										
10/20/87	1200	7.4	1100	0.30	190	100					4	120	124		
02/23/88	1415	8.0	900	0.42	99										
04/22/88	1310	8.6	1150	0.38	130										
05/25/88	1440	8.3	1200	0.72	149	180					4	130	134		
06/23/88	1245	7.9	850	0.43	110	99					2	110	112		
07/20/88	1405	8.3	1250	0.69	180	170					6	120	126		
08/22/88	1135	7.8	1150	0.28	160	140					110	4	114		
09/20/88	1700		1250	0.41	190	130					<1	130	130		

DEL PUERTO CREEK

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	450	0.1	22	25							72		
	MED	775	0.32	65	82							115		
	MAX	1100	0.74	110	180							396		
	#DATA	8	8	8	8							8		
87 WY	MIN	350	0.2	49										
	MED	825	0.45	107										
	MAX	1200	0.49	180										
	#DATA	10	9	10										
88 WY	MIN	850	0.28	99	99							112		
	MED	1150	0.42	155	135							125		
	MAX	1250	0.72	190	180							134		
	#DATA	8	8	8	6							6		
TOTAL	MIN	350	0.1	22	25							72		
	MED	925	0.42	107	99							120		
	MAX	1250	0.74	190	180							396		
	#DATA	26	25	26	17							16		

MINERAL WATER QUALITY DATA

MAP INDEX STC027 HOUK RANCH DRAIN

LOCATION .....Latitude 37 33′ 00", Longitude 121 08′ 09",
NE 1/4, NW 1/4, NW 1/4, Sec. 31, T.4S., R.8E.,
1 mi E of Cox Rd turnoff to the Houk Ranch, 0.7 mi N of
the intersection of Cox Rd and Conduit Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
01/09/86	1300	9.0	2300	1.6	390	430					24	210	234		
03/06/86	830		2900	1.5	440	510	113	174	274	2.3	16	450	466	1080	2000
04/09/86	1200	8.6	1000	0.32	180	120	41	65	95	3.1		140	140	370	640
05/20/86	1630		1400	0.56	200	180							200		
06/18/86	1530		850	0.14	100	92	43	44	100	3.6		110	110	310	470
07/16/86	1525	8.2	1500	0.55	240	160							190		
08/18/86	1500		1100	0.47	160	130							160		
09/18/86	1525		950	0.57	130	100							136		
10/16/86	1340		1700	0.69	260	190							168		
12/19/86	1125	8.2	1800	0.52	350	200							160		
04/20/87	1615	8.4	1000	0.36	140										
05/19/87	1240		1200	0.49	163										
06/18/87	1235		1350	0.49	195										
07/16/87	1325		1400	1.9	250										
08/20/87	1255		1400	0.74	170										
09/21/87	1255	8.8	1300	0.67	170										
02/23/88	1355	8.0	1050	0.6	130										
04/22/88	1555		1450	0.88	170										
05/25/88	1405	8.1	1400	0.51	210	160					8	150	158		
06/23/88	1225	7.9	1700	0.74	260	210					14	160	174		
07/20/88	1345	8.2	1650	0.44	290	200					12	180	192		
08/22/88	1225	8.2	1450	0.89	210	210					24	18	42		
09/20/88	1715		1600	0.69	220	180					15	230	245		

HOUK RANCH DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	850	0.14	100	92						110	110		
	MED	1250	0.56	190	145						175	175		
	MAX	2900	1.6	440	510						450	466		
	#DATA	8	8	8	8						4	8		
87 WY	MIN	1000	0.36	140										
	MED	1375	0.6	178										
	MAX	1800	1.9	350										
	#DATA	8	8	8										
88 WY	MIN	1050	0.44	130	160					8	18	42		
	MED	1450	0.69	210	200					14	160	174		
	MAX	1700	0.89	290	210					24	230	245		
	#DATA	7	7	7	5					5	5	5		
TOTAL	MIN	850	0.14	100	92							42		
	MED	1400	0.57	200	180							168		
	MAX	2900	1.9	440	510							466		
	#DATA	23	23	23	15							15		

MINERAL WATER QUALITY DATA

MAP INDEX STC028 DEL MAR DRAIN

LOCATION .....Latitude 37 33′ 23", Longitude 121 09′ 30",
NE 1/4, NE 1/4, SE 1/4, Sec. 26, T.4S., R.7E.,
0.35 mi E of Cox Rd, 0.3 mi S of the Westley Wasteway.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
04/09/86	1225	8.1	1500	1.0	270	170	59	82	136	3.9		180	180	460	880
05/20/86	1650		1100	0.53	160	135							140		
07/16/86	1545	8.4	1300	0.71	200	170							190		
08/18/86	1420		1250	0.41	210	120							160		
09/18/86	1545		1700	0.53	260	190							80		
10/16/86	1355		1800	0.62	310	210							200		
04/20/87	1545	7.9	1700	0.92	260										
05/19/87	1230		1550	0.74	221										
06/18/87	1220		1550	0.72	236										
07/16/87	1315		1700		340										
08/20/87	1240		1700	0.7	190										
09/21/87	1240	8.0	2300	0.59	290										
10/20/87	1135	7.2	1800	0.49	280	180					8	250	258		
02/23/88	1335	8.4	900	0.53	120										
05/25/88	1350	8.3	1450	0.77	200	200					24	160	184		
06/23/88	1210	7.9	1650	0.94	230	240					7	150	157		
07/20/88	1330	8.8	1750	0.74	250	230					6	150	156		
08/22/88	1235	7.8	1650	0.59	260	200					210	17	227		
09/20/88	1730		1700	0.57	250	190					15	230	245		

DEL MAR DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
		mg/L Total Recoverable												
86 WY	MIN	1100	0.41	160	120							80		
	MED	1700	0.53	210	170							160		
	MAX	2300	1.0	270	190							190		
	#DATA	5	5	5	5							5		
87 WY	MIN	1550	0.59	190										
	MED	1700	0.72	260										
	MAX	2300	0.92	340										
	#DATA	7	6	7										
88 WY	MIN	900	0.49	120	180					6	17	156		
	MED	1650	0.59	250	200					12	155	206		
	MAX	1800	0.94	280	240					210	250	258		
	#DATA	7	7	7	6					6	6	6		
TOTAL	MIN	900	0.41	120	120							80		
	MED	1650	0.7	250	190							182		
	MAX	2300	1.0	340	240							258		
	#DATA	19	18	19	12							12		

MINERAL WATER QUALITY DATA

MAP INDEX STC029 WESTLEY WASTEWAY AT COX ROAD

LOCATION .....Latitude 37 33′ 17", Longitude 121 10′ 02",
SE 1/4, NE 1/4, SW 1/4, Sec. 26, T.4S, R.7E.,
Westley Wasteway at Cox Rd, 0.65 mi S of Grayson Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L.....											
				Total Recoverable											
04/02/85			700	0.56	73	90									
04/09/86	1245	9.3	550	0.25	94	54	26	17	61	3.3		56	56	160	330
05/20/86	1715		650	0.21	77	95							90		
06/18/86	1600		300	0.24	35	40	17	8	27	2.7		50	50	92	200
07/16/86	1600	8.6	550	0.48	64	69							200		
08/18/86	1415		350	0.48	39	35							66		
09/18/86	1600		500	0.62	60	53							76		
10/16/86	1410		700	0.61	70	96							160		
11/22/86	1115		550	0.26	68	60						82			
12/19/86	1110	9.0	500	0.46	74	66							70		
02/19/87	1430	9.8	800	0.43	92										
04/20/87	1135	7.0	800	0.42	95										
05/19/87	1215		650	0.31	81										
06/18/87	1200		450	0.20	67										
07/16/87	1255		750		130										
08/20/87	1225		1200	0.62	150										
09/21/87	1225	9.2	1150	0.48	150										
10/20/87	1125	8.1	950	0.43	120	120					7	170	177		
02/23/88	1315	9.6	450	0.24	51										
04/22/88	1530	9.0	450	0.22	54										
05/25/88	1335	8.8	850	0.37	110	120					<1	72	72		
06/23/88	1205	7.8	1000	0.51	140	150					3	110	113		
07/20/88	1320	8.0	800	0.24	160	63					<1	57	57		
08/22/88	1245	8.3	750	0.31	110	70					81	<1	81		
09/22/88	1405		1500	0.80	110	100					8	180	188		

WESTLEY WASTEWAY AT COX ROAD

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	300	0.21	35	35							50		
	MED	525	0.37	62	54							71		
	MAX	650	0.62	94	95							200		
	#DATA	6	6	6	6							6		
87 WY	MIN	450	0.20	67										
	MED	725	0.45	87										
	MAX	1200	0.62	150										
	#DATA	10	9	10										
88 WY	MIN	450	0.22	51	63					<1	<1	57		
	MED	825	0.34	110	110					5	91	97		
	MAX	1500	0.80	160	150					81	180	188		
	#DATA	8	8	8	6					6	6	6		
TOTAL	MIN	30	0.20	35	35							50		
	MED	700	0.43	81	70							79		
	MAX	1500	0.80	160	150							200		
	#DATA	25	24	25	16							14		

MINERAL WATER QUALITY DATA

MAP INDEX STC030 GRAYSON ROAD DRAIN

LOCATION .....Latitude 37 33′ 43", Longitude 121 10′ 27",
NW 1/4, SW 1/4, NW 1/4, Sec. 26, T.4S., R.7E.,
Grayson Rd Bridge 0.15 mi W of the intersection
of Grayson Rd and Cox Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1635	8.2	1550	1.1	250	230	68	61			0	180			929
02/04/86	1450	8.2	2000	2.1	290	270	76	74	224	3.7	8	200	208	540	1200
04/09/86	1330	8.2	750	0.36	120	84	36	24	77	4.6	0	76	76	200	430
05/20/86	1730		800	0.39	110	105							100		
06/18/86	1615		800	0.5	110	100	41	27	67	4.4	0	90	90	260	480
07/16/86	1620	8.4	850	0.58	120	130							100		
08/18/86	1345		500	0.55	64	66							48		
09/19/86	1115		950	0.54	130	100							130		
10/16/86	1145		350	0.52	110	42							80		
12/19/86	1100	8.2	800	0.58	94	100							130		
02/19/87	1410	7.6	500	0.25	74										
04/20/87	1115	6.6	500	0.26	50										
05/19/87	1200		800	0.43	95										
06/18/87	1145		1000	0.58	143										
07/16/87	1245		1000		170										
08/20/87	1210		850	0.43	110										
09/21/87	1210	8.3	1300	0.66	170										
10/20/87	1115	8.1	1250	0.45	190	150					12	180	192		
02/23/88	1300	8.4	1100	0.71	140										
04/22/88	1515	8.9	1250	0.77	150										
05/25/88	1320	9.1	950	0.42	120	130					<1	72	72		
06/23/88	1150	7.7	1200	0.72	160	180					7	120	127		
07/20/88	1305	8.3	1450	0.91	190	190					10	150	160		
08/22/88	1300	7.7	1000	0.55	150	110					130	5	135		
09/22/88	1355		1600	0.92	240	210					6	190	196		

GRAYSON ROAD DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	500	0.36	64	66							48		
	MED	825	0.55	120	103							100		
	MAX	2000	2.1	290	270							208		
	#DATA	8	8	8	8							7		
87 WY	MIN	350	0.25	50										
	MED	800	0.52	110										
	MAX	1300	0.66	170										
	#DATA	9	8	9										
88 WY	MIN	950	0.42	120	110						5	72		
	MED	1225	0.72	155	165						135	148		
	MAX	1600	0.92	240	210						190	196		
	#DATA	8	8	8	6						6	6		
TOTAL	MIN	350	0.25	50	42						5	48		
	MED	950	0.55	130	100						135	127		
	MAX	2000	2.1	290	270						200	208		
	#DATA	25	24	25	10						10	15		

MINERAL WATER QUALITY DATA

MAP INDEX STC031 MINNIE ROAD DRAIN

LOCATION .....Latitude 37 33′ 59", Longitude 121 10′ 35",
SE 1/4, SE 1/4, SE 1/4, Sec. 22, T.4S., R.7E.,
E end of Minnie Rd, 0.45 mi N of Grayson Rd on River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
02/04/86	1510	8.4	1200	2.1	300	280	77	76	215	3.6		190	190	190	560
04/15/86	1120	7.4	800	0.45	90	79	31	24	65	7.3		92	92	180	410
05/21/86	1310		850	0.58	130	131							100		
06/18/86	1630		850	0.66	100	110	40	25	78	6.2		90	90	240	520
07/17/86	0845	6.4	950	0.54	130	130							230		
08/18/86	1250		950	0.73	140	130							140		
12/19/86	1050	8.0	1800	1.5	300	250							190		
04/20/87	1100	6.6	1250	0.75	180										
05/19/87	1135		1250	0.77	154										
06/18/87	1130		1700	0.98	262										
07/16/87	1225		1100		210										
08/20/87	1150		1400	0.88	160										
02/23/88	1250	8.0	1450	0.99	190										
04/22/88	1500	8.2	1600	0.97	200										
05/25/88	1305	8.1	1500	0.88	200	200					2	160	162		
06/23/88	1140	7.8	1200	0.79	160	170					2	130	132		
07/20/88	1250	8.3	1450	0.91	200	200					6	130	136		
08/22/88	1305	7.8	1500	1.0	220	230					150	14	164		

MINNIE ROAD DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	800	0.45	90	79							90		
	MED	900	0.62	130	130							120		
	MAX	1200	2.1	300	280							230		
	#DATA	6	6	6	6							6		
87 WY	MIN	1100	0.75	154										
	MED	1325	0.93	195										
	MAX	1800	1.5	300										
	#DATA	6	5	6										
88 WY	MIN	1200	0.79	160	170					2	14	132		
	MED	1475	0.94	200	200					4	130	149		
	MAX	1600	1.0	220	230					150	160	164		
	#DATA	6	6	6	4					4	4	4		
TOTAL	MIN	800	0.45	90	79							90		
	MED	1250	0.88	185	170							140		
	MAX	1800	2.1	300	280							230		
	#DATA	18	17	18	11							11		

MINERAL WATER QUALITY DATA

MAP INDEX STC032 TOSTA TILE DRAIN

LOCATION .....Latitude 37 35′ 45", Longitude 121 13′ 12",
S 1/2, SW 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
S bank of a drain that passes under River Rd, 100 ft E of
the bridge, 0.35 mi S of Ingram Creek undercrossing of River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
10/30/85	1725	7.2	2400	2.1	380	300	157	62			0	230			1460
11/04/85	1540	7.0	2400	2.2	390	320	155	63	288	2.3		280			1470
12/04/85	1415	7.7	2300	2.3	390	320									
01/09/86	1440	7.6	2200	1.9	390	320					0	210	210		
02/05/86	1225	7.9	2300	1.9	430	300	114	62	260	2.4	0	200	200	200	560
03/06/86	1050	7.1	2200	1.8	390	330	125	63	244	2.0	0	220	220	640	1400
04/09/86	1430	7.3	2300	1.8	340	330	140	65	268	2.0	0	240	240	570	1400
86 WY	MIN		2200	1.8	340	300	114	62	244	2.0		200	200		560
	MED		2300	1.9	390	320	140	63	264	2.2		225	215		1400
	MAX		2400	2.3	430	330	157	65	288	2.4		280	240		1470
	#DATA		7	7	7	7	5	5	4	4		6	4		5

MINERAL WATER QUALITY DATA

MAP INDEX STC034 KELNER RANCH DRAIN

LOCATION .....Latitude 37 35′ 14", Longitude 121 10′ 34",
NE 1/4, NE 1/4, SE 1/4, Sec. 15, T.4S., R.7E.,
1.4 mi E of River Rd, 0.85 mi N of Minnie Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
04/09/86	1350	8.5	1100	0.48	200	110	52	38	111	5.1	0	100	100	320	620
06/18/86	1645		1500	0.69	270	230	75	71	100	5.6	0	130	130	520	940
07/17/86	905	7.8	950	0.55	130	140							230		
08/18/86	1230		1200	1.0	160	190							140		
12/19/86	1035	8.1	1900	1.1	310	270							190		
05/19/87	1120		1450	0.78	181										
06/18/87	1115		1450	1.0	204										
07/16/87	1205		1300		220										
05/25/88	1250	8.2	1650	0.59	280	220					24	150	174		
06/23/88	1125	7.8	1650	1.1	220	250					6	140	146		
07/20/88	1235	8.4	1550	0.7	220	200					6	150	156		
86 WY	MIN		950	0.48	130	110							100		
	MED		1150	0.62	180	165							135		
	MAX		1500	1.0	270	230							230		
	#DATA		4	4	4	4							4		
87 WY	MIN		1300	0.78	181										
	MED		1450	1.1	212										
	MAX		1900	1.1	310										
	#DATA		4	3	4										
TOTAL	MIN		950	0.48	130	110						100	100		
	MED		1450	0.78	220	210						140	151		
	MAX		1900	1.1	310	270						150	230		
	#DATA		11	10	11	8						5	8		

MINERAL WATER QUALITY DATA

MAP INDEX STC036 HAGGERMAN RANCH DRAIN

LOCATION .....Latitude 37 36′ 49″, Longitude 121 11′ 53″,
SW 1/4, NE 1/4, SE 1/4, Sec. 4, T.4S., R.7E.,
main pumping station on levee road 1.7 mi N of Main Canal
Rd, 3.7 mi E of River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/04/85	1505	8.2	2700	2.0	490	380	122	115	315	2.6		240			1670
12/04/85	1240	8.0	2800	2.2	520	390									
01/09/86	1400	8.0	2600	1.9	430	460					0	260	260		
02/05/86	1330	8.2	2400	1.9	500	460	107	101	266	2.7	16	240	256	560	1600
06/18/86	1710		1450	1.4	175	260	76	51	160	3.9	0	170	170	420	980
07/17/86	930	7.6	1700	1.4	240	270							300		
08/18/86	1145		1700	1.6	250	260							180		
09/19/86	1030		2000	1.8	290	280							220		
10/16/86	1105		2000	1.8	320	290							250		
11/22/86	1030		2500	1.6	530	360						260			
12/19/86	1015	7.7	2800	2.6	420	440							250		
02/19/87	1350	7.5	2700	2.1	380										
04/20/87	1025	6.8	1900	1.3	260										
05/19/87	1055		1900	1.6	250										
06/18/87	1050		1700	1.4	256										
07/16/87	1140		1900		360										
08/20/87	1115		1800	1.3	240										
09/21/87	1135	8.0	2450	2.2	400										
10/20/87	1040	7.0	2400	2.0	370	360					<1	150	150		
12/21/87	1130	7.9	2450	2.0											
02/23/88	1230	7.6	2150	1.5	300										
04/22/88	1420	8.2	2000	1.7	230										
05/25/88	1225	7.8	1900	1.5	250	310					3	200	203		
06/23/88	1110	7.6	1850	1.4	270	290					20	180	200		
07/20/88	1205	8.0	2050	1.7	300	370					2	210	212		
08/22/88	1400	7.4	2000	1.6	300	320					220	40	260		
09/22/88	1325		2600	2.1	390	380					<1	250	250		

HAGGERMAN RANCH DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	1450	1.4	175	260							170		
	MED	2200	1.9	360	330							238		
	MAX	2800	2.2	520	460							300		
	#DATA	8	8	8	8							6		
87 WY	MIN	1700	1.3	240										
	MED	1950	1.7	340										
	MAX	2800	2.6	530										
	#DATA	10	9	10										
88 WY	MIN	1850	1.4	230	290							150		
	MED	2050	1.7	300	340							208		
	MAX	2600	2.1	390	380							260		
	#DATA	9	9	8	6							6		
TOTAL	MIN	1450	1.3	175	260							150		
	MED	2000	1.7	300	360							235		
	MAX	2800	2.6	530	460							300		
	#DATA	27	26	26	17							14		

MINERAL WATER QUALITY DATA

MAP INDEX STC037 HOSPITAL-INGRAM AT VIERRA DAIRY

LOCATION .....Latitude 37 37′ 05", Longitude 121 12′ 08",
SW 1/4, SW 1/4, NE 1/4, Sec. 4, T.4S., R.7E.,
northern levee of combined Ingram and Hospital Creek, 1/2 mi E of
Dairy, 1/4 mi S of Dairy Rd, E of River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/04/85	1220	7.1	600	0.35	98	58	28	16	67	4.0		88			340
01/09/86	1525	8.4	2200	1.6	370	330					8	260	268		
02/05/86	1115	7.9	2000	1.4	290	240	115	55	192	16.0	16	210	226	520	1200
05/21/86	1225		1000	0.17	120	174							120		
07/17/86	945	8.0	850	0.61	120	130							120		
08/18/86	1200		900	0.66	110	110							110		
86 WY	MIN		600	0.17	98	58							110		
	MED		950	0.64	120	152							120		
	MAX		2200	1.6	370	330							268		
	#DATA		6	6	6	6							5		

MINERAL WATER QUALITY DATA

MAP INDEX STC040 INGRAM CREEK AT RIVER ROAD

LOCATION .....Latitude 37 36′ 01", Longitude 121 13′ 27",
SE 1/4, NE 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
Ingram Creek at River Rd, 0.55 mi S of Oaklea Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/04/85	1305	9.0	1700	1.4	290	260	66	71	190	4.4	33	150			1040
12/04/85	1315	8.6	2150	2.1	370	320	109	54	212	1.4		230			1230
01/09/86	1500	8.4	2000	1.6	440	320					0	210	210		
02/05/86	1210	8.1	2300	1.6	430	280	120	62	234	1.9	16	190	206	620	1300
03/06/86	1110	8.1	2000	1.7	350	290	116	58	224	1.6	0	210	210	620	1300
04/15/86	1135	7.6	350	0.45	49	48	22	11	38	2.4	0	60	60	110	250
09/19/86	1005		500	0.42	56	53							80		
10/16/86	1045		500	0.55	80	58							90		
11/22/86	1010		1300	0.91	37	35						170			
12/19/86	1000	7.5	1200	0.96	210	200							160		
02/19/87	1335	7.8	2200	1.6	300										
04/20/87	1445	8.2	1450	0.91	210										
05/19/87	1035		1300	0.9	172										
06/18/87	1030		1100	0.73	160										
07/16/87	1120		1200		225										
08/20/87	1100		1000	0.6	140										
09/21/87	1120	7.9	1900	1.4	290										
10/20/87	1025	7.1	1400	0.69	210	170					14	195	209		
12/21/87	1110	8.3	2200	1.6											
02/23/88	1205	7.9	700	0.38	82										
04/22/88	1400	8.1	1250	0.76	150										
05/25/88	1210	8.1	1200	0.67	160	170					8	130	138		
06/23/88	1050	7.7	1250	0.8	170	170					6	120	126		
07/20/88	1145	8.2	1250	0.8	170	150					4	120	124		
08/22/88	1435		1550	1.1	230	240					175	12	187		
09/22/88	1305		2000	1.3	300	270					14	200	214		

INGRAM CREEK AT RIVER ROAD

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	350	0.42	49	48	22	11	38	1.4	0	60	60		250
	MED	2000	1.6	350	280	109	58	212	1.9	0	200	206		1230
	MAX	2300	2.1	440	320	120	71	234	4.4	33	230	210		1300
	#DATA	7	7	7	7	5	5	5	5	5	6	5		5
87 WY	MIN	500	0.55	37	35									
	MED	1250	0.91	191	58									
	MAX	2200	1.6	300	200									
	#DATA	10	9	10	3									
88 WY	MIN	700	0.38	82	150					4	12	124		
	MED	1250	0.8	170	170					11	125	163		
	MAX	2200	1.6	300	270					175	200	214		
	#DATA	9	9	8	6					6	6	6		
TOTAL	MIN	350	0.38	37	35	22	11	38	1.4	0	12	60	110	250
	MED	1300	0.91	210	185	109	58	212	1.9	8	170	160	620	1230
	MAX	2300	2.1	440	320	120	71	234	4.4	175	230	214	620	1300
	#DATA	26	25	25	16	5	5	5	5	11	13	13	3	5

MINERAL WATER QUALITY DATA

MAP INDEX STC042 HOSPITAL CREEK AT RIVER ROAD

LOCATION .....Latitude 37 36′ 38", Longitude, 121 13′ 43",
SW 1/4, SW 1/4, SW 1/4, Sec. 5, T.4S., R.7E.,
Hospital Creek just downstream of its crossing of River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
04/15/86	1220	7.9	300	0.18	30	45	22	7	28	4.6	0	52	52	110	190
05/21/86	1200		350	0.19	37	51							60		
09/19/86	955		350	0.36	37	30							72		
10/16/86	1030		300	0.37	44	31							64		
12/19/86	950	7.6	450	0.44	70	54							66		
02/19/87	1330	7.6	400	0.3	43										
04/20/87	1005	6.4	1000	0.55	140										
05/19/87	1020		900	0.5	107										
06/18/87	1015		1200	0.8	179										
07/16/87	1105		1100		205										
08/20/87	1040		800	0.35	110										
09/21/87	1100	8.3	1250	0.65	170						8	150	158		
10/20/87	1010	7.1	1100	0.41	170	130									
02/23/88	1150	8.0	1150	0.89	160										
04/22/88	1345	8.2	1100	0.71	110						8	140	148		
05/25/88	1150	8.2	1350	0.86	190	190					<1	33	33		
06/23/88	1040	7.8	1050	0.55	130	125					<1	120	120		
07/20/88	1140	8.1	1400	0.77	200	180					110	6	116		
08/22/88	1445	8.0	1000	0.61	160	140					8	150	158		
09/22/88	1300		1500	0.82	220	200									

HOSPITAL CREEK AT RIVER ROAD

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
87 WY	MIN	300	0.3	43										
	MED	900	0.5	110										
	MAX	1250	0.8	205										
	#DATA	9	8	9										
88 WY	MIN	1000	0.41	110	125							33		
	MED	1125	0.74	165	135							134		
	MAX	1500	0.89	220	200							158		
	#DATA	8	8	8	6							6		
TOTAL	MIN	300	0.18	30	30							33		
	MED	1025	0.55	135	125							72		
	MAX	1500	0.89	220	200							158		
	#DATA	20	19	20	11							11		

MINERAL WATER QUALITY DATA

MAP INDEX STC043 CENTER ROAD DRAIN

LOCATION .....Latitude 37 37′ 36", Longitude 121 13′ 07",
NE 1/4, SW 1/4, SE 1/4, Sec. 32, T.3S., R.7E.,
NE corner of the intersection of Center Rd and Pelican Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/04/85	1100	7.6	2100	2.5	270	270	98	65	272	6.5		350			1240
12/04/85	1515	7.8	2100	2.4	290	280	76	61	224	12.0		350			1290
05/21/86	1145		650	0.44	90	88							60		
06/18/86	1750		1100	0.99	180	130	66	37	110	9.1	0	170	170	310	730
07/17/86	1030	8.0	1000	0.77	130	130							260		
08/18/86	1100		1500	1.1	220	160							260		
09/19/86	0940		750	0.72	77	78							172		
10/16/86	1020		1800	2.1	240	220							360		
11/22/86	0945		3600	1.8	220	210						830			
12/19/86	0940	7.0	2800	2.2	330	250							470		
02/19/87	1220	7.4	2900	2.2	260										
04/20/87	0945	6.2	1150	0.69	160										
05/19/87	1005		1600	1.2	194										
06/18/87	1000		1350	1.0	212										
07/16/87	1050		1300	1.4	210										
08/20/87	1025		1600	0.97	160										
09/21/87	1040	7.8	1200	0.68	160										
10/20/87	0955	7.0	1150	0.53	170	130					8	150	158		
12/21/87	1045	7.8	2350	1.8											
02/23/88	1135	7.9	2150	2.0	270										
04/22/88	1330	8.0	1450	1.0	150										
05/25/88	1135	8.0	1400	0.87	200	190					50	150	200		
06/23/88	1030	7.7	1600	1.2	220	240					16	190	206		
07/20/88	1120	8.1	1650	1.1	240	260					2	170	172		
08/22/88	1515	8.0	1500	1.0	240	240					170	10	180		
09/22/88	1250		1500	0.91	200	190					10	180	190		

CENTER ROAD DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
		mg/L Total Recoverable												
86 WY	MIN	650	0.44	77	78							60		
	MED	1100	0.99	180	130							172		
	MAX	2100	2.5	290	280							260		
	#DATA	7	7	7	7							5		
87 WY	MIN	1150	0.68	160										
	MED	1600	1.3	211										
	MAX	3600	2.2	330										
	#DATA	10	10	10										
88 WY	MIN	1150	0.53	150	130					2	10	158		
	MED	1500	1.0	210	215					13	160	185		
	MAX	2350	2.0	270	260					170	190	206		
	#DATA	9	9	8	6					6	6	6		
TOTAL	MIN	650	.44	77	78							60		
	MED	1500	1.1	210	200							190		
	MAX	3600	2.5	330	280							470		
	#DATA	26	26	25	16							13		

MINERAL WATER QUALITY DATA

MAP INDEX STC044 EL SOLYO WATER DISTRICT MAIN DRAIN

LOCATION .....Latitude 37 38′ 20", Longitude 121 13′ 39",
SE 1/4, SW 1/4, SW 1/4, Sec. 29, T.3S., R.7E.,
on levee 0.6 mi N of end of Orchard Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/04/85	1025	8.0	2150	3.5	240	360	83	52	385	2.7		430			1430
01/07/86	1015	7.5	2000	2.7	250	340					24	400	424		
07/17/86	1100	7.8	1300	1.5	160	210							210		
08/18/86	1040		1050	0.99	120	150							170		
09/19/86	920		650	0.66	71	87							110		
11/22/86	925		2100	2.7	220	300						390			
02/19/87	1200	7.4	1950	2.5	190										
04/20/87	920	5.1	1200	1.0	140										
05/19/87	940		1250	1.1	142										
06/18/87	940		1300	0.97	188										
07/16/87	1025		1200	1.4	200										
08/20/87	1000		1100	0.76	140										
09/21/87	1015	7.7	1800	2.0	210										
10/20/87	935	6.6	1800	2.0	210	280					12	260	272		
12/21/87	1030	7.7	1850	2.1											
02/23/88	1115	7.6	1850	2.2	200										
04/22/88	1315	7.8	1350	1.0	140										
05/25/88	1115	7.6	1650	1.3	200	240					17	220	237		
06/23/88	1010	7.7	1550	1.1	190	230					24	170	194		
07/20/88	1100	8.4	1600	1.2	230	250					<1	190	190		
08/22/88	1540	7.6	1450	1.2	190	210					190	12	202		
09/22/88	1235		1600	1.0	220	210					12	220	232		

EL SOLYO WATER DISTRICT MAIN DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	650	0.66	71	87									
	MED	1300	1.5	160	210									
	MAX	2150	3.5	250	360									
	#DATA	5	5	5	5									
87 WY	MIN	1100	0.76	140										
	MED	1275	1.3	189										
	MAX	2100	2.7	220										
	#DATA	8	8	8										
88 WY	MIN	1350	1.0	140	210							190		
	MED	1600	1.2	200	235							217		
	MAX	1850	2.2	230	280							272		
	#DATA	9	9	8	6							6		
TOTAL	MIN	650	0.66	71	87							110		
	MED	1575	1.3	190	235							206		
	MAX	2150	3.5	250	360							424		
	#DATA	22	22	21	12							10		

MINERAL WATER QUALITY DATA

MAP INDEX STC047 PATTERSON WASTEWATER TREATMENT PLANT

LOCATION .....Latitude 37 29′ 54", Longitude 120 05′ 27",
SW 1/4, NW 1/4, SE 1/4, Sec. 16, T.5S., R.8E.,
on Poplar Ave, 1/2 mi S of Las Palmas Ave.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....	.....	.....	.....	mg/L	.....	.....	.....	.....	.....	.....	.....
								Total Recoverable							
11/26/85		7.1	2400	0.86	360	370	70	64	240	11		172			1430
02/05/86	1510	7.5	2200	0.71	290	380	85	68	240	14	0	160	160	440	1200
03/05/86	1430	6.7	2500	0.75	420	390	98	73	306	15	0	160	160	600	1600
04/09/86	1110	7.4	2400	0.79	340	390	110	86	302	14	0	190	190	540	1500
06/18/86	1350		1900	0.51	220	414	88	70	180	9	0	70	70	470	1200
07/16/86	1320	9.0	1900	0.6	220	400							220		
08/19/86	1425		2300	0.91	360	370							200		
09/18/86	1400		1900	0.93	220	400							240		
10/16/86			2300	0.78	350	320							220		
11/22/86	1235		1300	0.8	230	370						280			
12/19/86	1220	7.6	2100	0.84	270	390							290		
02/19/87	1555	7.4	1900	1.2	210										
04/20/87	1315	7.5	2050	0.67	250										
05/19/87	1410		2100	0.72	247										
06/18/87	1405		1950	0.76	220										
07/16/87	1515		2000	1.0	300										
08/20/87	1510		2100	0.81	260										
09/21/87	1410	8.9	1950	0.7	210										
10/20/87	1300	7.4	1950	0.67	340	430					9	190	199		

PATTERSON WASTEWATER TREATMENT PLANT

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	1900	0.51	220	370	70	64	180	9			70		1200
	MED	2250	0.77	315	390	88	70	240	14			190		1430
	MAX	2500	0.93	420	414	110	86	306	15			240		1600
	#DATA	8	8	8	8	5	5	5	5			7		5
87 WY	MIN	1300	0.67	210										
	MED	2025	0.79	249										
	MAX	2300	1.2	350										
	#DATA	10	10	10										
TOTAL	MIN	1300	0.51	210	320							70		
	MED	2050	0.78	265	390							200		
	MAX	2500	1.2	420	430							290		
	#DATA	21	21	20	12							10		

MINERAL WATER QUALITY DATA

MAP INDEX STC050 MAGNOLIA AVENUE DRAIN

LOCATION .....Latitude 37 31′ 23", Longitude 121 06′ 33",
SE 1/4, SW 1/4, SE 1/4, Sec. 5, T.5S., R.8E.,
end of Magnolia Ave, 0.6 mi E of Elm Ave.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
05/20/86	1515		1500	0.62	210	280							200		
06/18/86	1440		850	0.19	100	130	45	33	74	4.0		130	130	250	530
07/16/86	1430	8.4	1400	0.62	190	46							680		
08/18/86	1555		750	0.41	94	100							110		
09/18/86	1445		350	0.26	44	41							66		
04/20/87	1220	6.9	1500	0.86	210										
05/19/87	1320		400	0.18	49										
06/18/87	1310		1450	1.1	182										
07/16/87	1420		1400	1.3	230										
08/20/87	1330		1500	0.88	120										
09/21/87	1335	8.6	700	0.21	99										
10/20/87	1220	7.6	800	0.22	170	58					<1	100	100		
04/22/88	1625	8.4	1050	0.49	120										
05/25/88	1510	7.7	1650	0.72	200	290					7	230	237		
06/23/88	1300	7.7	1550	1.1	200	240					4	160	164		
07/20/88	1420	8.4	1800	1.4	270	360					9	150	159		
08/22/88	1425	8.2	1300	1.0	160	220					140	4	144		
09/20/88	1645		850	0.36	120	91					<1	100	100		

MAGNOLIA AVENUE DRAIN

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
86 WY	MIN		350	0.19	44	41							66		
	MED		850	0.41	100	100							130		
	MAX		1500	0.62	210	280							680		
	#DATA		5	5	5	5							5		
87 WY	MIN		400	0.18	49										
	MED		1425	0.87	151										
	MAX		1500	1.3	230										
	#DATA		6	6	6										
88 WY	MIN		800	0.22	120	58					<1	4	100		
	MED		1300	0.72	170	230					6	125	152		
	MAX		1800	1.4	270	360					140	230	237		
	#DATA		7	7	7	6					6	6	6		
TOTAL	MIN		350	0.18	44	41							66		
	MED		1350	0.62	165	130							144		
	MAX		180	1.4	270	360							680		
	#DATA		18	18	18	11							11		

MINERAL WATER QUALITY DATA

MAP INDEX STC051 BLEWETT DRAIN

LOCATION .....Latitude 37 38′ 25", Longitude 121 13′ 40",
SE 1/4, SW 1/4, SW 1/4, Sec. 29, T.3S., R.7E.,
between El Solyo and Blewett pumping stations.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
05/21/86	1110		350	0.19	41	53							80		
06/18/86	1810		750	0.53	80	190	47	17	68	4.3	0	60	60	180	470
07/17/86	1110	8.2	400	0.36	43	48							180		
08/18/86	1025		450	0.33	55	52							72		
09/19/86	900		450	0.32	52	48							80		
10/16/86	955		350	0.36	58	48							84		
11/22/86	915		1100	0.66	31	30						140			
12/19/86	920	7.2	400	0.2	46	34							70		
02/19/87	1145	8.3	750	0.5	110										
04/20/87	1330	7.8	900	0.53	120										
05/19/87	920		450	0.19	50										
06/18/87	920		1100	0.72	170										
07/16/87	1010		900		160										
08/20/87	945		800	0.4	120										
09/21/87	1005	7.8	1250	0.61	170										
10/20/87	925	8	1250	0.49	190	150					8	150	158		
02/23/88	1050	8.1	550	0.23	50										
04/22/88	1305	8.1	850	0.47	90										
05/25/88	1100	8.1	900	0.38	120	130					<1	82	82		
06/23/88	1005	7.9	900	0.46	120	110					<1	110	110		
07/20/88	1050	8.5	1550	1.0	230	240					7	160	167		
08/22/88	1600	8.1	1250	0.81	180	190					130	4	134		
09/22/88	1220		1650	0.9	260	240					4	190	194		

BLEWETT DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
86 WY	MIN	350	0.19	41	48							60		
	MED	450	0.33	52	52							80		
	MAX	750	0.53	80	190							180		
	#DATA	5	5	5	5							5		
87 WY	MIN	350	0.19	31										
	MED	850	0.5	115										
	MAX	1250	0.72	170										
	#DATA	10	9	10										
88 WY	MIN	550	0.23	50	110									
	MED	1075	0.48	150	170									
	MAX	1650	1.0	260	240									
	#DATA	8	8	8	6									
TOTAL	MIN	350	0.19	31	30							82		
	MED	850	0.47	110	82							146		
	MAX	1650	1.0	260	240							194		
	#DATA	23	22	23	14							6		

MINERAL WATER QUALITY DATA

MAP INDEX STC052 GONSALVES AREA DRAIN

LOCATION .....Latitude 37 24′ 09", Longitude 120 59′ 43",
SE 1/4, SE 1/4, Sec. 9, T.2S., R.5E.,
1.4 mi S of Orestimba Creek and
0.7 mi E of River Rd.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				mg/L Total Recoverable											
11/20/86	1030		500	0.33	54	55							83		
12/19/86	1400	8.2	800	0.28	48	56							160		
02/20/87	1315	7.8	700	0.43	84										
04/20/87	1145	5.4	700	0.39	60										
05/20/87	1150		850	0.33	95										
06/18/87	1110		700	0.4	86										
07/16/87	1140		850		110										
08/20/87	1245		950	0.5	120										
09/21/87	1240		700	0.18	97										
10/20/87	1450	6.1	850	0.21	150	68					<1	99	99		
02/23/88	1420	8.3	1300	0.44	140										
04/22/88	1320	7.8	300	0.18	16										
05/25/88	1140	8.1	760	0.29	88	86					24	110	134		
06/23/88	1315	7.5	750	0.31	92	80					<1	110	110		
07/20/88	1230	8.1	800	0.24	110	67					<1	73	73		
08/22/88	1120	8.0	850	0.4	130	92					98	8	106		
09/20/88	1410		900	0.25	130	76					<1	140	140		

GONSALVES AREA DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
87 WY	MIN	500	0.18	48										
	MED	700	0.33	86										
	MAX	950	0.5	120										
	#DATA	9	8	9										
88 WY	MIN	300	0.18	16	67					<1	8	73		
	MED	825	0.27	120	78					<1	105	108		
	MAX	1300	0.44	150	92					98	140	140		
	#DATA	8	8	8	6					6	6	6		
TOTAL	MIN	300	0.18	16	55							73		
	MED	800	0.32	95	72							108		
	MAX	1300	0.5	150	92							160		
	#DATA	17	16	17	8							8		

MINERAL WATER QUALITY DATA

MAP INDEX STC053 BERNARD / CARVALHO DRAIN

LOCATION .....Latitude 37 26′ 00", Longitude 121 01′ 17",
NE 1/4, NE 1/4, NW 1/4, Sec. 7, T.6S., R.9E.,
in a concrete box 30 ft from the river, on a farm rd, E of a farm,
0.4 mi N of the Marshall Rd-Crows Landing intersection.

DATE	TIME	pH	EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
				.....mg/L..... Total Recoverable											
08/19/86	1230		1000	0.67	160	110							92		
02/20/87	1050	8.4	650	1.6	76										
04/20/87	1415	7.2	700	0.43	75										
05/20/87	1230		450	0.19	54										
06/18/87	1205		650	0.37	77										
07/16/87	1240		800	0.55	100										
08/20/87	1315		850	0.32	130										
09/21/87	1310		750	0.22	150										
10/20/87	1425	7.5	800	0.22	140	67					<1	110	110		
02/23/88	1330	8.2	1200	0.46	130										
04/22/88	1445	8.1	750	0.3	81										
05/25/88	1220	8.1	650	0.26	80	72					2	490	492		
06/23/88	1400	7.7	650	0.23	81	61					<1	98	98		
07/20/88	1315	8.3	750	0.23	110	70					<1	97	97		
08/22/88	1150	8.2	800	0.35	130	87					86	12	98		
09/20/88	1450		1100	0.35	140	120					8	170	178		

BERNARD / CARVALHO DRAIN

DATE		EC (umhos/cm)	B	Cl	SO4	Ca	Mg	Na	K	CO3	HCO3	TALK	HDNS	TDS
			mg/L Total Recoverable											
87 WY	MIN	450	0.19	54										
	MED	700	0.37	77										
	MAX	850	1.6	150										
	#DATA	7	7	7										
88 WY	MIN	650	0.22	80	61							97		
	MED	775	0.28	120	71							104		
	MAX	1200	0.46	140	120							492		
	#DATA	8	8	8	6							6		
TOTAL	MIN	450	0.19	54	61							92		
	MED	750	0.34	105	72							98		
	MAX	1200	1.6	160	120							492		
	#DATA	16	16	16	7							7		

APPENDIX B

Trace Element Water Quality Data for the Sampling Sites Within the Western Portion of Stanislaus County

TRACE ELEMENT WATER QUALITY DATA

MISCELLANEOUS SITES

SITE	CODE	DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
				ug/L Total Recoverable							
GEORGE SILVA TILE DRAIN SUMP	STC007	03/05/86	1120	2.0	6	9	5	<5	<5		<0.5
GEORGE SILVA TILE DRAIN SUMP	STC007	04/15/86	850		<5	1	4	<5	<5		<0.5
HOSPITAL CREEK COLLECTOR TILE	STC038	03/06/86	1240	1.0	<5	2	24	<5	<5		<0.5
HOSPITAL CREEK COLLECTOR TILE	STC038	04/09/86	1450	1.4	<5	<1	20	10	<5		<0.5
HOUK RANCH TILE DRAIN	STC046	06/18/87	1245	9.3							
HOUK RANCH TILE DRAIN	STC046	07/16/87	1340	7.7							
HOUK RANCH TILE DRAIN	STC046	08/20/87	1300	7.9							
INGRAM CREEK TILE DRAIN	STC039	11/04/85	1625	1.0	<10	14	18	34	<10	<1	
INGRAM CREEK TILE DRAIN	STC039	03/06/86	1135	1.0	<5	2	30	<5	<5		<0.5
INGRAM CREEK TILE DRAIN	STC039	04/15/86	1205	<1	<5	<1	20	<5	<5		<0.5
INGRAM CRK TILE AT RIVER ROAD	STC041	12/04/85	1325	3.0	12	5	8	10	<5	97	1.1
INGRAM CRK TILE AT RIVER ROAD	STC041	01/09/86	1450	3.0	<5	3	2	<5	5	1	<0.5
INGRAM CRK TILE AT RIVER ROAD	STC041	03/06/86	1120	3.0	7	5	7	<5	<5		<0.5
NO TILE DRAIN AT PATTERSON WDC	STC003	03/05/86	1300	3.0	<5	6	15	12	<5		<0.5
NO TILE DRAIN AT PATTERSON WDC	STC003	04/09/86	1030	3.6	9	2	17	12	<5		<0.5
PERRY & FIAHLO TILE DRAIN SUMP	STC008	03/05/86	1110	2.0	6	7	6	6	<5		<0.5
POVERTY FLAT DRAIN	STC048	03/05/86	850	43.0	33	27	5	27	11		<0.5
POVERTY FLAT DRAIN	STC048	04/09/86	900		24	17	3	<5	<5		<0.5
SO INGRAM CREEK TILE DRAIN	STC033	11/04/85	1605	0.0	10	6	25	<5	<10	<1	
SO INGRAM CREEK TILE DRAIN	STC033	03/06/86	1200	1.0	11	2	35	6	<5		<0.5
SO INGRAM CREEK TILE DRAIN	STC033	04/15/86	1150	<1	<5	<1	27	<5	<5		<0.5
SO TILE DRAIN AT HAGERMANN RAN	STC035	11/04/85	1445	0.0	30	14	1	<5	<10	<1	
SO TILE DRAIN AT HAGERMANN RAN	STC035	12/04/85	1155	0.0	12	<1	6	<5	<5	6	0.8
SO TILE DRAIN AT HAGERMANN RAN	STC035	01/09/86	1345	0.0	<5	<1	1	<5	<5	1	<0.5
SO TILE DRAIN AT HAGERMANN RAN	STC035	02/05/86	1345	0.0	<5	<1	1	<5	5	<1	<0.5
UPPER INGRAM CREEK TILE DRAIN	STCW39	03/06/86	1215	1.0	5	3	25	<5	<5		<0.5
UPPER INGRAM CREEK TILE DRAIN	STC049	04/15/86	1210		<5	<1	21	<5	<5		<0.5
LEMON AVENUE DRAIN	STC055	05/25/88	1440	5.3							
LEMON AVENUE DRAIN	STC055	06/23/88	1320	5.4							
LEMON AVENUE DRAIN	STC055	08/22/88	1410	7.5							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC002 CHUNN TILE DRAIN

LOCATION .....Latitude 37 35' 45", Longitude 121 13' 13",
S 1/2, SW 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
east side of River Rd, 0.35 mi S of the Ingram Creek
undercrossing, 1.1 mi N of Buckhard Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1730	2.0	<10	24	25	<5	<10	10	
12/04/85	1400	1.0	25	<1	21	9	<5	21	0.6
01/09/86	1425	2.0	<5	1	24	<5	6	2	<0.5
02/05/86	1230	1.0	<5	1	24	<5	6	2	<0.5
03/06/86	1030	2.0	<5			<5	<5		<0.5
04/09/86	1430	2.1	<5	3	29	7	<5		<0.5

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC004 SOUTH TILE DRAIN AT PATTERSON WATER DISTRICT CANAL

LOCATION .....Latitude 37 29' 35", Longitude 121 05' 53",
NE 1/4, NE 1/4, SW 1/4, Sec. 21, T.5S., R.8E.,
south bank of open canal, 500 ft E of Elm Ave.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1405	4.0	<10	8	4	<5	<10	<10	
11/26/85		4.0	24	<1	9	12	<5	61	1.2
01/07/86	1625	4.0	<5	1	2	<5	<5	1	<0.5
02/05/86	1540	4.0	<5	1	2	<5	7	<1	<0.5
03/05/86	1245	8.0	<5	7	8	8	<5		<0.5

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC005 POMELLO AVENUE DRAIN

LOCATION .....Latitude 37 28' 30", Longitude 121 04' 20",
SE 1/4, NW 1/4, SE 1/4, Sec. 27, T.5S., R.8E.,
1/2 mi E of Elm Ave and 1/4 mi N of Pomello Ave,
through farm on Pomello Ave.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
01/07/86	1550	6.0	<5	1	1	<5	<5	<1	<0.5
02/05/86	1625	4.0	<5	1	2	<5	<5	1	<0.5
03/05/86	1215	6.0	<5	6	9	<5	<5		<0.5
05/20/86	1310	4.5							
06/18/86	1130	5.1	<5	1	7	<5	<5	1	<0.5
07/16/86	1145	5.4	<5	1	2	<5	<5	3	<0.5
08/19/86	1305	4.8	<5	<1	<1	<5	<5	3	1.7
09/18/86	1300	3.6	<5	1	4	<5	<5	<1	<0.5
10/16/86		5.9	<5	<1	<1	<5	<5	<1	<0.5
11/22/86	1345	4.8	<5	<1	<1	<5	<5	1	<0.5
12/19/86	1310	5.4	<5	<1	1	<5	<5	1	<0.5
02/20/87	1655	7.6							
04/20/87	1330	4.3							
05/20/87	1305	4.6							
06/18/87	1445	4.7							
07/16/87	1620	3.8							
08/20/87	1355	5.6							
09/21/87	1345	4.9							
10/20/87	1340	4.2							
12/21/87	1350	5.2							
02/23/88	1300	3.2							
04/22/88	1515	3.8							
05/25/88	1300	3.6							
06/23/88	1440	3.3							
07/20/88	1355	3.2							
08/22/88	1235	4.3							
09/20/88	1525	2.2							

POMELLO AVENUE DRAIN

DATE		Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
86 WY	MIN	3.6			<1				
	MED	5.0			2				
	MAX	6.0			9				
	#DATA	8			7				
87 WY	MIN	3.8							
	MED	4.9							
	MAX	7.6							
	#DATA	10							
88 WY	MIN	2.2							
	MED	3.6							
	MAX	5.2							
	#DATA	9							
TOTAL	MIN	2.2			<1				
	MED	4.6			2				
	MAX	7.6			9				
	#DATA	27			10				

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC006 APRICOT AVENUE DRAIN

LOCATION .....Latitude 37 27' 02", Longitude 121 05' 01",
SE 1/4, NE 1/4, SE 1/4, Sec. 33, T.5S., R.8E.,
0.4 mi E of Sycamore Ave, 0.2 mi N of Apricot Ave,
and 0.3 mi S of Pomelo Ave.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
01/07/86	1530	2	<5	2	5	<5	<5	2	<0.5
02/11/86	1045	2	<5	1	4	<5	5	1	<0.5
03/05/86	1140	2	<5	5	8	<5	<5		<0.5
04/15/86			<5	3	6	<5	<5		<0.5

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC009 NEWMAN DRAINAGE DISTRICT COLLECTOR "I" LINE

LOCATION .....Latitude 37 21' 27", Longitude 120 58' 42",
NW 1/4, SE 1/4, NE 1/4, Sec. 4, T.7S., R.9E.,
1/4 mi E of River Rd and 0.6 mi N of Hills Ferry Rd,
at mile 117.6 of San Joaquin River.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/26/85		2.0	10	2	11	9	<5	41	0.8
01/07/86	1430	2.0	<5	1	6	15	6	1	<0.5
02/04/86	1125	2.0	5	1	8	<5	6	1	<0.5
06/18/86	930	2.5	<5	1	15	<5	<5	2	<0.5
07/16/86	1000	2.3	<5	1	4	<5	<5	2	<0.5
08/19/86	1040	1.5	<5	2	2	<5	<5	2	<0.5
09/18/86	1045	1.8	<5	1	12	<5	<5	<1	<0.5
10/16/86		1.9	<5	<1	18	<5	<5	<1	<0.5
11/20/86	1130	2.2	<5	1	<1	<5	<1	<1	<0.5
12/19/86	1440	1.9	<5	<1	13	2	<5	<1	<0.5
02/20/87	1250	2.3							
04/20/87	1245	2.2							
05/20/87	1055	2.0							
06/18/87	1015	2.7							
07/16/87	1045	2.2							
08/20/87	1140	1.9							
09/21/87	1145	2.2							
10/20/87	1525	1.9							
12/21/87	1515	1.8							
02/23/88	1510	2.0							
04/22/88	1230	1.9							
05/25/88	1050	1.9							
06/23/88	1220	2.2							
07/20/88	1140	1.8							
08/22/88	1030	2.3							
09/20/88	1335	2.2							

NEWMAN DRAINAGE DISTRICT COLLECTOR "I" LINE

DATE		Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
86 WY	MIN	1.5			2				
	MED	2.0			8				
	MAX	2.5			15				
	#DATA	7			7				
87 WY	MIN	1.9							
	MED	2.2							
	MAX	2.7							
	#DATA	10							
88 WY	MIN	1.8							
	MED	1.9							
	MAX	2.3							
	#DATA	9							
TOTAL	MIN	1.5			<1				
	MED	2.0			10				
	MAX	2.7			18				
	#DATA	26			10				

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC010 NEWMAN DRAINAGE DISTRICT COLLECTOR "A" LINE

LOCATION .....Latitude 37 20' 00", Longitude 120 58' 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
100 ft N of Newman Wastewater Treatment Plant
at an unnamed slough.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1215	2.0	<10	3	9	<5	<10	<10	
11/26/85		2.0	9	1	11	8	<5	18	1.2
01/07/86	1330	3.0	<5	2	8	<5	6	1	<0.5
05/20/86	945	2.2							
06/18/86	910	2.4	<5	2	8	5	<5	3	<0.5
07/16/86	940	1.7	5	1	3	5	<5	1	<0.5
08/19/86	1005	1.7	7	1	1	<5	<5	<1	<0.5
09/18/86	1025	1.5	<5	1	7	<5	<5	1	<0.5
10/16/86		1.7	<5	<1	<1	<5	<5	<1	<0.5
12/19/86	1510	2.7	<5	<1	8	<5	<5	3	<0.5
04/20/87	1325	2.5							
05/20/87	1035	2.4							
06/18/87	910	2.2							
07/16/87	1000	1.8							
08/20/87	1050	2.3							
09/21/87	1100	1.7							
10/20/87	1545	2.0							
12/21/87	1530	2.4							
02/23/88	1525	2.2							
04/22/88	1405	2.0							
05/25/88	1030	1.6							
06/23/88	1135	1.5							
07/20/88	1055	1.8							
08/22/88	945	2.4							
09/20/88	1300	2.5							
86 WY	MIN	1.5							
	MED	2.0							
	MAX	3.0							
	#DATA	8							
87 WY	MIN	1.7							
	MED	2.3							
	MAX	2.7							
	#DATA	8							
88 WY	MIN	1.5							
	MED	2.0							
	MAX	2.5							
	#DATA	9							
TOTAL	MIN	1.5							
	MED	2.0							
	MAX	3.0							
	#DATA	25							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC011 DAVIS TILE DRAIN

LOCATION .....Latitude 37 16' 30", Longitude 121 04' 37",
SE 1/4, SE 1/4, SW 1/4, Sec. 34, T.7S., R.8E.,
N side of Pete Miller Rd, 1/2 mi W of Eastin Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
11/26/85			16	7	8	16	<5	81	0.8
01/07/86	1400		<5	3	1	<5	9	6	<0.5
02/11/86	910	4.0	<5	1	1	5	5	2	<0.5
03/05/86	910	4.0	<5	2	3	7	<5		<0.5
04/09/86	910	6.2	9	1	2	18	<5		<0.7

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC014 HILLS FERRY ROAD DRAIN

LOCATION .....Latitude 37 20' 00", Longitude 120 58' 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
200 yds E of the flood levee protecting the Newman WWTP,
50-100 ft N of the WWTP discharge into the same slough.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
05/20/86	910	2.7							
06/18/86	845	1.2	<5	3	12	7	<5	6	<0.5
07/16/86	915	1.8	<5	5	6	15	<5	13	<0.5
08/19/86	945	0.5	<5	3	<1	6	<5	6	<0.5
04/20/87	1300	2.1							
05/20/87	1015	1.7							
06/18/87	930	2.0							
07/16/87	1010	1.1							
08/20/87	1105	1.1							
10/20/87	1600	0.6							
04/22/88	1355	1.0							
05/25/88	1015	1.6							
06/23/88	1140	1.7							
07/20/88	1105	0.6							
08/22/88	930	2.0							
09/20/88	1310	1.7							
87 WY	MIN	1.1							
	MED	1.7							
	MAX	2.1							
	#DATA	5							
88 WY	MIN	0.6							
	MED	1.7							
	MAX	2.0							
	#DATA	7							
TOTAL	MIN	0.5							
	MED	1.7							
	MAX	2.7							
	#DATA	16							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC015 AZEVEDO ROAD DRAIN

LOCATION .....Latitude 37 21' 37", Longitude 120 59' 06",
NE 1/4, NE 1/4, NW 1/4, Sec. 4, T.7S., R.9E.,
San Joaquin River at mile 117 at River Rd, S of Azevado Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1145	1	<10	4	1	5	<10	10	
11/26/85		0	13	7	6	10	<5	42	0.6
01/07/86	1440	1	<5	10	10	<5	<5	30	<0.5
05/20/86	1055	1							
06/18/86	0940	3	<5	5	7	17	<5	13	<0.5
07/16/86	1015	1.1	<5	5	3	16	<5	19	<0.5
08/19/86	1055	1.9	<5	4	<1	<5	<5	16	<0.5
09/18/86	1100	0.7	<5	2	3	8	<5	7	<0.5
11/20/86	1115	0.4	<5	<1	<1	6	<1	<1	<0.5
12/19/86	1420	0.7	<5	1	1	2	<5	<1	<0.5
04/20/87	1230	2.5							
05/20/87	1105	1.1							
06/18/87	1030	2.1							
07/16/87	1100	0.5							
08/20/87	1150	0.9							
09/21/87	1155	0.4							
05/25/88	1105	1.3							
06/23/88	1235	0.6							
07/20/88	1150	0.9							
08/22/88	1040	2.0							
09/20/88	1345	1.6							
86 WY	MIN	0	<5	2	<1	<5		7	
	MED	1	<5	5	3	8		16	
	MAX	3	13	10	10	17		42	
	#DATA	8	7	7	7	7		7	
87 WY	MIN	0.4							
	MED	0.8							
	MAX	2.5							
	#DATA	8							
88 WY	MIN	0.6							
	MED	1.3							
	MAX	2.0							
	#DATA	5							
TOTAL	MIN	0							
	MED	1							
	MAX	3							
	#DATA	21							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC016 DRAIN 1/2 MI. S. OF FREITAS ROAD AT RIVER ROAD

LOCATION .....Latitude 37 22' 17", Longitude 120 39' 28",
NW 1/4, SW 1/4, NW 1/4, Sec. 33, T.6S., R.9E.,
River Rd crossing of San Joaquin River at mile 113.4,
1/2 mile S of Freitas Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
05/20/86	1110	0.8							
06/18/86	950	3.8	<5	6	7	12	<5	9	<0.5
08/19/86	1100	1.5	<5	7	4	12	<5	28	<0.5
09/18/86	1115	1.1	<5	5	7	12	<5	14	<0.5
04/20/87	1220	2.6							
05/20/87	1120	1.5							
06/18/87	1040	2.4							
07/16/87	1110	1.6							
08/20/87	1205	2.1							
09/21/87	1210	0.1							
10/20/87	1510	0.5							
02/23/88	1445	1.7							
04/22/88	1255	1.1							
05/25/88	1115	1.6							
06/23/88	1245	0.6							
07/20/88	1200	0.6							
08/22/88	1050	1.7							
09/20/88	1350	1.6							
87 WY	MIN	0.1							
	MED	1.9							
	MAX	2.6							
	#DATA	6							
88 WY	MIN	0.5							
	MED	1.4							
	MAX	1.7							
	#DATA	8							
TOTAL	MIN	0.1							
	MED	1.6							
	MAX	3.8							
	#DATA	18							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC017 FREITAS ROAD DRAIN

LOCATION .....Latitude 37 22' 39", Longitude 120 59' 42",
SE 1/4, SE 1/4, SE 1/4, Sec. 29, T.6S., R.9E.,
River Road crossing of Freitas Road at
mile 113.4 of the San Joaquin River.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
05/20/86	1125	1.1							
06/18/86	955	4.0	<5	9	13	31	<5	22	<0.5
07/16/86	1025	1.9	<5	12	9	43	<5	38	<0.5
08/19/86	1120	1.2	<5	15	5	24	<5	34	<0.5
09/18/86	1130	1.1	<5	4	2	5	<5	4	<0.5
11/20/86	1055	1.2	<5	4	6	15	<5	12	<0.5
12/19/86	1410	1.5	<5	1	3	2	<5	<1	<0.5
04/20/87	1205	3.0							
05/20/87	1130	0.8							
06/18/87	1055	2.6							
07/16/87	1120	1.7							
08/20/87	1220	2.3							
09/21/87	1225	0.3							
02/23/88	1435	1.2							
04/22/88	1305	1.5							
05/25/88	1125	2.1							
06/23/88	1255	2.2							
07/20/88	1215	1.1							
08/22/88	1100	2.0							
09/20/88	1400	1.5							
86 WY	MIN	1.1							
	MED	1.2							
	MAX	4.0							
	#DATA	5							
87 WY	MIN	0.3							
	MED	1.6							
	MAX	3.0							
	#DATA	8							
88 WY	MIN	1.1							
	MED	1.5							
	MAX	2.2							
	#DATA	7							
TOTAL	MIN	0.3							
	MED	1.5							
	MAX	4.0							
	#DATA	20							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC019 ORESTIMBA CREEK AT RIVER ROAD

LOCATION .....Latitude 37 24' 50", Longitude 121 00' 51",
SE 1/4, SE 1/4, NE 1/4, Sec. 18, T.6S., R.9E.,
River Road crossing of Orestimba Creek between the two bridges.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
04/02/85		0.0							
10/30/85	1025	1.0	<10	5	2	6	<10	10	
11/26/85		1.0	8	2	8	<5	<5	80	0.6
02/11/86	1000	1.0	<5	4	4	6	<5	6	<0.5
03/05/86	1030	2.0	<5	6	6	13	<5		<0.5
04/09/86	950	2.4	<5	12	7	18	<5		<0.5
05/20/86	1145	1.1							
06/18/86	1010	4.0	<5	8	10	18	<5	20	<0.5
07/16/86	1040	2.1	<5	12	8	28	5	40	<0.5
08/19/86	1140	1.3	<5	8	3	14	<5	27	<0.5
09/18/86	1200	1.0	<5	6	7	8	<5	16	<0.5
10/16/86		0.6	<5	<1	<1	<5	<5	35	<0.5
11/20/86	1010	1.4	<5	<1	<1	10	<5	<1	<0.5
12/19/86	1350	1.4	<5	2	6	5	<5	3	<0.5
02/20/87	1105	1.8							
04/20/87	1125	1.9							
05/20/87	1200	1.5							
06/18/87	1130	2.6							
07/16/87	1155	1.1							
08/20/87	1300	1.5							
09/21/87	1255	0.4							
02/23/88	1410	2.0							
04/22/88	1335	1.4							
05/25/88	1200	2.0							
06/23/88	1330	1.3							
07/20/88	1245	1.1							
08/22/88	1140	2.5							
09/20/88	1425	1.0							

ORESTIMBA CREEK AT RIVER ROAD

DATE		Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
86 WY	MIN	1.0		2	2	<5		6	
	MED	1.2		6	7	13		20	
	MAX	4.0		12	10	28		80	
	#DATA	10		9	9	9		7	
87 WY	MIN	0.4							
	MED	1.5							
	MAX	2.6							
	#DATA	10							
88 WY	MIN	0.6							
	MED	1.3							
	MAX	2.5							
	#DATA	9							
TOTAL	MIN	0.0		<1	<1	<5		<1	
	MED	1.4		6	6	9		18	
	MAX	4.0		12	10	28		80	
	#DATA	30		12	12	12		10	

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC020 NEWMAN WASTEWATER TREATMENT PLANT

LOCATION .....Latitude 37 20' 00", Longitude 120 58' 47",
SW 1/4, SE 1/4, Sec. 9, T.7S., R.9E.,
South side of Hills Ferry Road on the south side of the Newman

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85		1.0	<10	4	4	5	<10	10	
11/26/85		1.0	10	3	3	5	10	40	<0.5
02/04/86	1045		<5	1	<1	<5	5	3	<0.5
06/18/86	850	0.6	<5	<1	3	5	<5	5	<0.5
07/16/86	925	0.4	<5	4	<1	6	<5	5	<0.5
08/19/86	1020	0.5	<5	7	<1	7	<5	7	<0.5
09/18/86	1010	0.2	<5	1	1	<5	<5	3	<0.5
12/19/86	1500	0.7	<5	2	3	5	<5	9	<0.5
02/20/87	1225	0.8							
04/20/87	1310	0.7							
05/20/87	1010	0.3							
06/18/87	950	0.7							
07/16/87	1020	0.8							
08/20/87	1120	0.2							
09/21/87	1120	0.6							
10/20/87	1610	0.4							
12/21/87	1545	0.7							
86 WY	MIN	0.2							
	MED	0.6							
	MAX	1.0							
	#DATA	6							
87 WY	MIN	0.2							
	MED	0.7							
	MAX	0.8							
	#DATA	8							
TOTAL	MIN	0.2							
	MED	0.7							
	MAX	1.0							
	#DATA	16							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC021 MARSHAL RD / SPANISH GRANT

LOCATION .....Latitude 37 26' 08", Longitude 121 01' 59",
S 1/2, SE 1/4, SE 1/4, Sec. 1, T.6S., R.8E.,
river side of the levee east of the intersection of
Marshall Road and River Road.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	0945	3.0	<10	3	5	<5	<10	<10	
11/26/85		1.0	8	2	7	<5	<5	46	<0.50
01/07/86	1510	3.0	<5	2	3	<5	<5	4	<0.50
02/11/86	1025	2.0	<5	1	2	<5	<5	1	<0.50
05/20/86	1220	2.8							
06/18/86	1040	3.3	<5	8	10	16	<5	20	<0.50
07/16/86	1100	2.9	<5	12	8	26	6	41	<0.50
08/19/86	1210	1.3	<5	14	25	47	7	80	<0.50
09/18/86	1220	0.8	<5	4	4	6	<5	13	<0.50
11/20/86	0930	5.3	<5	10	16	11	<5	12	<0.50
12/19/86	1330	1.4	<5	2	2	<5	<5	4	<0.50
02/20/87	1030	2.7							
04/20/87	1355	3.8							
05/20/87	1215	2.2							
06/18/87	1150	3.2							
07/16/87	1220	3.1							
08/20/87	1335	2.0							
09/21/87	1325	0.3							
10/20/87	1405	0.8							
12/21/87	1420	1.7							
02/23/88	1350	2.5							
05/25/88	1235	3.3							
06/23/88	1420	1.5							
07/20/88	1335	2.4							
09/20/88	1505	1.8							

86 WY	MIN	0.8
	MED	2.8
	MAX	3.3
	#DATA	9
87 WY	MIN	0.3
	MED	2.7
	MAX	5.3
	#DATA	9
88 WY	MIN	0.8
	MED	1.8
	MAX	3.3
	#DATA	7
TOTAL	MIN	0.3
	MED	2.4
	MAX	5.3
	#DATA	25

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC022 RAMONA LAKE MAIN DRAIN OUTFALL

LOCATION .....Latitude 37 28' 43", Longitude 121 04' 04",
NE 1/4, NE 1/4, NE 1/4, Sec. 23, T.5S., R.8E.,
approximately 3/8 miles south of Fig Avenue along the flood lev

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
05/20/86	1350	2.2							
06/18/86	1150	2.3	<5	8	8	15	<5	18	<0.5
07/16/86	1200	3.4	<5	4	2	8	<5	16	<0.5
08/19/86	1330	3.0	<5	4	<1	6	<5	13	0.8
09/18/86	1315	1.2	<5	5	5	8	<5	13	<0.5
11/22/86	1315	1.5	<5	<1	<1	10	<5	11	<0.5
12/19/86	1250	5.1	<5	2	3	6	<5	11	<0.5
02/20/87	1615	5.4							
05/20/87	1320	3.0							
06/18/87	1240	6.5							
07/16/87	1600	4.9							
08/20/87	1430	4.8							
09/21/87	1410	1.8							
06/23/88	1510	5.0							
07/20/88	1425	5.4							
08/22/88	1300	4.4							
09/20/88	1545	2.8							
86 WY	MIN	1.2		4	<1	6		13	
	MED	2.3		5	4	8		15	
	MAX	3.4		8	8	15		18	
	#DATA	5		4	4	4		4	
87 WY	MIN	1.5							
	MED	4.9							
	MAX	6.5							
	#DATA	8							
88 WY	MIN	2.8							
	MED	4.7							
	MAX	5.4							
	#DATA	4							
TOTAL	MIN	1.2							
	MED	3.4							
	MAX	6.5							
	#DATA	17							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC023 PATTERSON WATER DISTRICT MAIN DRAIN

LOCATION .....Latitude 37 29' 50", Longitude 121 04' 54",
NW 1/4, SW 1/4, SW 1/4, Sec. 15, T.5S., R.8E.,
where the drain discharges into the San Joaquin River on the
north side of the Patterson Water District Main Lift Canal.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
01/07/86	1640	2.0	<5	3	1	<5	<5	3	<0.5
03/05/86	1330	4.0	11	13	9	11	<5		<0.5
04/09/86	1045	1.3	<5	8	4	15	<5		<0.5
05/20/86	1415	4.4							
06/18/86	1230	3.8	<5	5	9	10	<5	11	<0.5
07/16/86	1305	3.3	<5	2	1	5	<5	7	<0.5
08/19/86	1350	3.8	<5	5	<1	<5	<5	3	<0.5
09/18/86	1340	0.9	<5	3	4	5	<5	8	<0.5
10/16/86		1.2	<5	<1	<1	<5	<5	20	<0.5
11/22/86	1255	3.0	<5	<1	<1	<5	<5	4	<0.5
12/19/86	1230	2.2	<5	1	3	<5	<5	3	<0.5
04/20/87	1720	4.8							
05/19/87	1430	4.8							
06/18/87	1425	6.3							
07/16/87	1535	5.1							
08/20/87	1450	4.1							
09/21/87	1425	0.4							
10/20/87	1310	0.4							
02/23/88	1535	1.6							
04/22/88	1600	5.8							
05/25/88	1340	5.4							
06/23/88	1525	5.7							
07/20/88	1435	6.5							
08/22/88	1310	6.8							
09/20/88	1605	2.5							

PATTERSON WATER DISTRICT MAIN DRAIN

DATE		Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
86 WY	MIN	0.9							
	MED	3.6							
	MAX	4.4							
	#DATA	8							
87 WY	MIN	0.4							
	MED	4.1							
	MAX	6.3							
	#DATA	9							
88 WY	MIN	0.4							
	MED	5.6							
	MAX	6.8							
	#DATA	8							
TOTAL	MIN	0.4							
	MED	3.8							
	MAX	6.8							
	#DATA	25							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC024 OLIVE AVENUE DRAIN

LOCATION .....Latitude 37 30' 27", Longitude 121 05' 15",
NW 1/4, NE 1/4, NE 1/4, Sec. 16, T.5S, R.8E.,
250 feet north of a direct line with the end of
Olive Ave. at the San Joaquin River.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1425	1.0							
05/20/86	1430	3.7							
06/18/86	1400	1.4	<5	13	13	34	5	32	<0.5
07/16/86	1350	2.2	<5	18	11	49	8	90	<0.5
08/18/86	1645	1.7	<5	24	23	51	14	165	<0.5
09/18/86	1415	0.7	<5	11	8	25	<5	21	<0.5
10/16/86	1435	4.9	<5	<1	<1	<5	<5	<1	<0.5
11/22/86	1220	3.7	<5	<1	<1	<5	<5	1	<0.5
12/19/86	1205	1.9	<5	9	16	49	<5	34	<0.5
02/19/87	1535	7.4							
04/20/87	1300	1.7							
05/19/87	1350	2.5							
06/18/87	1345	3.6							
07/16/87	1455	2.1							
08/20/87	1520	2.3							
09/21/87	1400	4.0							
10/20/87	1245	4.9							
12/21/87	1245	7.8							
02/23/88	1500	2.7							
04/22/88	1620	1.0							
05/25/88	1400	1.5							
06/23/88	1335	5.2							
07/20/88	1515	4.0							
08/22/88	1330	3.5							
09/20/88	1620	6.8							
86 WY	MIN	0.7							
	MED	1.6							
	MAX	3.7							
	#DATA	6							
87 WY	MIN	1.7							
	MED	3.1							
	MAX	7.4							
	#DATA	10							
88 WY	MIN	1.0							
	MED	4.0							
	MAX	7.8							
	#DATA	9							
TOTAL	MIN	0.7							
	MED	2.7							
	MAX	7.8							
	#DATA	25							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC025 EUCALYPTUS AVENUE DRAIN

LOCATION .....Latitude 37 31' 51", Longitude 121 06' 43",
SE 1/4, NE 1/4, SW 1/4, Sec. 9, T.4S., R.8E.,
the end of Eucalyptus Avenue at the San Joaquin River.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
05/01/86	1305	2.0	<5	22	9	108	6		<0.2
06/18/86	1420	2.9	<5	15	19	63	5	35	<0.5
07/16/86	1415	3.0	<5	38	39	230	11	130	<0.5
08/18/86	1620	2.2	<5	25	15	59	8	56	<0.5
04/20/87	1240	4.2							
05/19/87	1335	4.4							
06/18/87	1320	6.6							
07/16/87	1435	5.4							
08/20/87	1525	5.4							
02/23/88	1445	1.8							
04/22/88	1640	0.8							
05/25/88	1415	4.4							
06/23/88	1325	6.4							
07/20/88	1530	7.2							
08/22/88	1345	7.2							
86 WY	MIN	2.0		15	9	59			
	MED	2.6		24	17	86			
	MAX	3.0		38	39	230			
	#DATA	4		4	4	4			
87 WY	MIN	4.2							
	MED	5.4							
	MAX	6.6							
	#DATA	5							
88 WY	MIN	0.8							
	MED	5.4							
	MAX	7.2							
	#DATA	6							
TOTAL	MIN	.8							
	MED	4.4							
	MAX	7.2							
	#DATA	15							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC026 DEL PUERTO CREEK

LOCATION .....Latitude 37 32' 20", Longitude 121 07' 22",
SE 1/4, SE 1/4, Sec. 31, T.4S., R.8E.,
Del Puerto Creek at the end of Cottonwood Road.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
02/05/86	1430	1.0	<5	4	2	<5	<5	2	<0.5
03/05/86	1545	1.0	<5	4	4	11	<5		<0.5
04/09/86	1140	2.0	<5	4	6	8	<5		<0.5
05/20/86	1605	3.7							
06/18/86	1450	1.8	<5	12	17	28	<5	27	<0.5
07/16/86	1500	1.8	<5	24	10	90	7	80	<0.5
08/18/86	1530	1.4	<5	5	4	24	<5	14	<0.5
09/18/86	1500	0.3	<5	5	5	12	<5	11	<0.5
10/16/86	1325	1.1	<5	<1	<1	<5	<5	<1	<0.5
11/22/86	1145	0.6	<5	6	<1	9	<5	5	<0.5
12/19/86	1140	2.7	<5	8	14	32	<5	21	<0.5
02/19/87	1455	1.7							
04/20/87	1200	2.4							
05/19/87	1305	2.4							
06/18/87	1305	2.1							
07/16/87	1405	1.5							
08/20/87	1315	1.7							
09/21/87	1315	2.6							
10/20/87	1200	0.5							
02/23/88	1415	2.3							
04/22/88	1310	1.8							
05/25/88	1440	3.9							
06/23/88	1245	2.3							
07/20/88	1405	4.0							
08/22/88	1135	1.6							
09/20/88	1700	2.1							
86 WY	MIN	0.3				<5			
	MED	1.6				12			
	MAX	3.7				90			
	#DATA	8				7			
87 WY	MIN	0.6							
	MED	1.9							
	MAX	2.7							
	#DATA	10							
88 WY	MIN	0.5							
	MED	2.2							
	MAX	4.0							
	#DATA	8							
TOTAL	MIN	0.3				<5			
	MED	1.8				12			
	MAX	4				90			
	#DATA	26				10			

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC027 HOUK RANCH DRAIN

LOCATION .....Latitude 37 33' 00", Longitude 121 08' 09",
NE 1/4, NW 1/4, NW 1/4, Sec. 31, T.4S., R.8E.,
1 mi E of Cox Rd turnoff to the Houk Ranch, 0.7 mi N of
the intersection of Cox Rd and Conduit Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
01/09/86	1300	4.0							
03/06/86	830	11.0	<5	5	15	<5	<5		<0.5
04/09/86	1200	1.4	<5	31	56	89	<5		<0.5
05/20/86	1630	3.4							
06/18/86	1530	1.3	<5	15	30	89	6	38	<0.5
07/16/86	1525	2.8	<5	45	43	170	10	140	<0.5
08/18/86	1500	2.4	<5	5	17	23	<5	24	<0.5
09/18/86	1525	1.5	<5	4	5	11	<5	9	<0.5
10/16/86	1340	5.6	<5	<1	<1	<5	<5	<1	<0.5
12/19/86	1125	0.8	<5	3	8	8	<5	6	<0.5
04/20/87	1615	1.6							
05/19/87	1240	2.1							
06/18/87	1235	3.4							
07/16/87	1325	3.6							
08/20/87	1255	3.4							
09/21/87	1255	2.5							
02/23/88	1355	3.7							
04/22/88	1555	4.7							
05/25/88	1405	2.8							
06/23/88	1225	3.7							
07/20/88	1345	2.6							
08/22/88	1225	4.9							
09/20/88	1715	3.8							
86 WY	MIN	1.3		4	5	<5		9	
	MED	2.6		10	24	56		31	
	MAX	11		45	56	170		140	
	#DATA	8		6	6	6		4	
87 WY	MIN	0.8							
	MED	2.9							
	MAX	5.6							
	#DATA	8							
88 WY	MIN	2.6							
	MED	3.7							
	MAX	4.9							
	#DATA	7							
TOTAL	MIN	0.8							
	MED	3.4							
	MAX	11							
	#DATA	23							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC028 DEL MAR DRAIN

LOCATION .....Latitude 37 33' 23", Longitude 121 09' 30",
NE 1/4, NE 1/4, SE 1/4, Sec. 26, T.4S., R.7E.,
0.35 mi E of Cox Rd, 0.3 mi S of the Westley Wasteway.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
04/09/86	1225	2.0	<5	17	36	85	<5		<0.5
05/20/86	1650	3.3							
07/16/86	1545	4.3	<5	46	79	480	14	170	<0.5
08/18/86	1420	1.6	<5	31	62	240	16	160	<0.5
09/18/86	1545	6.3	<5	6	25	460	<5	22	<0.5
10/16/86	1355	8.7	<5	13	34	63	<5	38	<0.5
04/20/87	1545	3.9							
05/19/87	1230	4.5							
06/18/87	1220	5.8							
07/16/87	1315	4.1							
08/20/87	1240	3.2							
09/21/87	1240	2.7							
10/20/87	1135	1.1							
02/23/88	1335	3.1							
05/25/88	1350	4.5							
06/23/88	1210	5.0							
07/20/88	1330	5.2							
08/22/88	1235	4.6							
09/20/88	1730	3.0							
86 WY	MIN	1.6		6	25	85			
	MED	3.3		24	49	350			
	MAX	6.3		46	79	480			
	#DATA	5		4	4	4			
87 WY	MIN	2.7							
	MED	4.0							
	MAX	8.7							
	#DATA	6							
88 WY	MIN	1.1							
	MED	4.5							
	MAX	5.2							
	#DATA	7							
TOTAL	MIN	1.1							
	MED	4.1							
	MAX	8.7							
	#DATA	19							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC029 WESTLEY WASTEWAY AT COX ROAD

LOCATION .....Latitude 37 33' 17", Longitude 121 10' 02",
SE 1/4, NE 1/4, SW 1/4, Sec. 26, T.4S, R.7E.,
Westley Wasteway at Cox Rd, 0.65 mi S of Grayson Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
04/09/86	1245	1.5	<5	9	10	35	<5		<0.5
05/20/86	1715	1.8							
06/18/86	1600	1.4	<5	13	15	26	6	38	<0.5
07/16/86	1600	2.0	<5	34	30	110	12	100	<0.5
08/18/86	1415	0.4	<5	23	23	62	16	145	<0.5
09/18/86	1600	0.8	<5	10	1	<5	<5	1	<0.5
10/16/86	1410	1.1	<5	7	16	28	<5	36	<0.5
11/22/86	1115	1.0	<5	<1	<1	7	<5	4	<0.5
12/19/86	1110	1.7	<5	4	4	6	<5	6	<0.5
02/19/87	1430	2.5							
04/20/87	1135	1.9							
05/19/87	1215	1.6							
06/18/87	1200	1.4							
07/16/87	1255	3.2							
08/20/87	1225	3.9							
09/21/87	1225	1.8							
10/20/87	1125	0.8							
02/23/88	1315	0.9							
04/22/88	1530	0.7							
05/25/88	1335	3.5							
06/23/88	1205	3.5							
07/20/88	1320	3.0							
08/22/88	1245	2.2							
09/22/88	1405	5.5							
86 WY	MIN	0.4		9	1	<5		1	
	MED	1.5		13	15	35		69	
	MAX	2.0		34	30	110		145	
	#DATA	6		5	5	5		4	
87 WY	MIN	1.0							
	MED	1.8							
	MAX	3.9							
	#DATA	10							
88 WY	MIN	0.7							
	MED	2.6							
	MAX	5.5							
	#DATA	8							
TOTAL	MIN	0.4							
	MED	1.8							
	MAX	5.5							
	#DATA	24							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC030 GRAYSON ROAD DRAIN

LOCATION .....Latitude 37 33' 43", Longitude 121 10' 27",
NW 1/4, SW 1/4, NW 1/4, Sec. 26, T.4S., R.7E.,
Grayson Rd Bridge 0.15 mi W of the intersection
of Grayson Rd and Cox Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
10/30/85	1635	2.0	10	2	2	51	<10	10	
02/04/86	1450	3.0	<5	3	6	<5	5	5	<0.5
04/09/86	1330	2.4	<5	28	38	57	10		<0.5
05/20/86	1730	2.6							
06/18/86	1615	2.5	<5	38	46	110	13	150	<0.5
07/16/86	1620	2.3	<5	41	43	130	15	150	<0.5
08/18/86	1345	0.9	<5	32	36	98	21	190	<0.5
09/19/86	1115	1.4	<5	6	6	13	<5	16	<0.5
10/16/86	1145	0.7	<5	33	28	47	10	68	<0.5
12/19/86	1100	1.8	<5	6	6	9	<5	14	<0.5
02/19/87	1410	1.7							
04/20/87	1115	1.0							
05/19/87	1200	4.1							
06/18/87	1145	3.7							
07/16/87	1245	3.4							
08/20/87	1210	2.7							
09/21/87	1210	3.8							
10/20/87	1115	0.9							
02/23/88	1300	3.2							
04/22/88	1515	4.5							
05/25/88	1320	3.6							
06/23/88	1150	5.0							
07/20/88	1305	5.1							
08/22/88	1300	3.4							
09/22/88	1355	5.6							
86 WY	MIN	0.9		2	2	<5			
	MED	2.4		28	36	57			
	MAX	3.0		41	46	130			
	#DATA	8		7	7	7			
87 WY	MIN	0.7							
	MED	2.7							
	MAX	4.1							
	#DATA	9							
88 WY	MIN	0.9							
	MED	4.1							
	MAX	5.6							
	#DATA	8							
TOTAL	MIN	0.7		2	2	<5			
	MED	2.7		28	28	51			
	MAX	5.6		41	46	130			
	#DATA	25		9	9	9			

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC031 MINNIE ROAD DRAIN

LOCATION .....Latitude 37 33' 59", Longitude 121 10' 35",
SE 1/4, SE 1/4, SE 1/4, Sec. 22, T.4S., R.7E.,
E end of Minnie Rd, 0.45 mi N of Grayson Rd on River Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
02/04/86	1510	3.0	<5	3	7	<5	5	7	<0.5
04/15/86	1120	2.0	<5	54	98	160	15		<0.5
05/21/86	1310	2.8							
06/18/86	1630	2.9	<5	24	38	57	7	70	<0.5
07/17/86	0845	3.2	<5	35	41	110	12	110	<0.5
08/18/86	1250	4.2	<5	70	68	270	29	300	<0.5
12/19/86	1050	6.2	<5	15	29	27	<5	31	<0.5
04/20/87	1100	3.3							
05/19/87	1135	5.1							
06/18/87	1130	5.8							
07/16/87	1225	4.8							
08/20/87	1150	5.1							
02/23/88	1250	3.8							
04/22/88	1500	6.4							
05/25/88	1305	5.1							
06/23/88	1140	5.3							
07/20/88	1250	5.9							
08/22/88	1305	6.2							
86 WY	MIN	2.0		3	7	<5		7	
	MED	3.0		35	41	110		90	
	MAX	4.2		70	98	270		300	
	#DATA	6		5	5	5		4	
87 WY	MIN	3.3							
	MED	5.1							
	MAX	6.2							
	#DATA	6							
88 WY	MIN	3.8							
	MED	5.6							
	MAX	6.4							
	#DATA	6							
TOTAL	MIN	2.0							
	MED	5.0							
	MAX	6.4							
	#DATA	18							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC032 TOSTA TILE DRAIN

LOCATION .....Latitude 37 35' 45", Longitude 121 13' 12",
S 1/2, SW 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
S bank of a drain that passes under River Rd, 100 ft E of
the bridge, 0.35 mi S of Ingram Creek undercrossing of River Rd

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
03/06/86	1050	2.0	5	2	36	5	<5		<0.5
10/30/85	1725	2.0	<10	1	33	5	<10	10	
12/04/85	1415	1.0	16	<1	23	<5	<5	<1	1.1
01/09/86	1440	1.0	<5	<1	3	<5	<5	1	<0.5
02/05/86	1225	2.0	<5	<1	32	<5	5	<1	<0.5
04/09/86	1430	1.6	<5	2	36	5	<5		<0.5
86 WY	MIN	1.0			3				
	MED	1.8			33				
	MAX	2.0			36				
	#DATA	6			6				

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC034 KELNER RANCH DRAIN

LOCATION .....Latitude 37 35' 14", Longitude 121 10' 34",
NE 1/4, NE 1/4, SE 1/4, Sec. 15, T.4S., R.7E.,
1.4 mi E of River Rd, 0.85 mi N of Minnie Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
04/09/86	1350	2.7	<4	34	54	46	10		<0.5
06/18/86	1645	8.2	<5	70	10	220	10	130	<0.5
07/17/86	905	3.6	<5	33	28	81	8	80	<0.5
08/18/86	1230	3.5	<5	28	33	60	13	110	<0.5
12/19/86	1035	6.1	<5	1	14	<5	<5	1	<0.5
05/19/87	1120	6.3							
06/18/87	1115	6.1							
07/16/87	1205	5.1							
05/25/88	1250	4.7							
06/23/88	1125	6.3							
07/20/88	1235	6.4							
86 WY	MIN	2.7	<4	28	10	46			
	MED	3.6	<5	34	31	71			
	MAX	8.2	<5	70	54	220			
	#DATA	4	4	4	4	4			
87 WY	MIN	5.1							
	MED	6.1							
	MAX	6.3							
	#DATA	4							
TOTAL	MIN	2.7	<4	1	10	<5		1	
	MED	6.1	<5	33	28	60		95	
	MAX	8.2	<5	70	54	220		130	
	#DATA	11	5	5	5	5		4	

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC036 HAGGERMAN RANCH DRAIN

LOCATION .....Latitude 37 36' 49", Longitude 121 11' 53",
SW 1/4, NE 1/4, SE 1/4, Sec. 4, T.4S., R.7E.,
main pumping station on levee road 1.7 mi N of Main Canal
Rd, 3.7 mi E of River Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
11/04/85	1505	5.0	10	11	7	<5	<10	<1	
12/04/85	1240	5.0	13	2	9	7	<5	34	
01/09/86	1400	6.0	<5	3	12	9	7	5	<0.50
02/05/86	1330	9.0	<5	2	11	<5	7	4	<0.50
06/18/86	1710	3.1	<5	13	26	22	<5	32	<0.50
07/17/86	930	4.2	<5	13	18	31	<5	38	<0.50
08/18/86	1145	2.9	<5	5	6	15	<5	22	<0.50
09/19/86	1030	3.6	<5	10	21	29	<5	37	<0.50
10/16/86	1105	4.1	<5	<1	<1	6	<5	14	<0.50
11/22/86	1030	5.2	<5	13	23	20	<5	21	<0.50
12/19/86	1015	6.3	6	8	18	16	<5	22	<0.50
02/19/87	1350	6.8							
04/20/87	1025	4.1							
05/19/87	1055	5.6							
06/18/87	1050	5.5							
07/16/87	1140	5.0							
08/20/87	1115	5.3							
09/21/87	1135	4.9							
10/20/87	1040	4.9							
32132.00	1130	5.8							
02/23/88	1230	7.5							
04/22/88	1420	5.5							
06/23/88	1110	5.4							
07/20/88	1205	6.2							
08/22/88	1400	6.0							
09/22/88	1325	5.1							
86 WY	MIN	2.9		2	6				
	MED	4.6		8	12				
	MAX	9.0		13	26				
	#DATA	8		8	8				
87 WY	MIN	4.1							
	MED	5.3							
	MAX	6.8							
	#DATA	10							
88 WY	MIN	4.9							
	MED	5.7							
	MAX	7.5							
	#DATA	8							
TOTAL	MIN	2.9		<1	<1				
	MED	5.3		8	12				
	MAX	9.0		13	26				
	#DATA	26		11	11				

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC037 HOSPITAL-INGRAM AT VIERRA DAIRY

LOCATION .....Latitude 37 37' 05", Longitude 121 12' 08",
SW 1/4, SW 1/4, NE 1/4, Sec. 4, T.4S., R.7E.,
northern levee of combined Ingram and Hospital Creek, 1/2 mi E
Dairy, 1/4 mi S of Dairy Rd, E of River Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/04/85	1220		10	10	2	<5	<10	<1	
12/04/85	1450	4.0	13	7	12	23	<5	170	1.1
01/09/86	1525	1.0	<5	2	12	<5	<5	1	<0.5
02/05/86	1115	1.0	<5	5	11	5	<5	9	<0.5
05/21/86	1225	1.2							
07/17/86	945	3.1	<5	25	26	69	9	80	<0.5
08/18/86	1200	2.2	<5	13	15	33	8	60	<0.5
86 WY	MIN	1.0		2	2	<5		<1	
	MED	1.7		9	12	14		35	
	MAX	4.0		25	26	69		170	
	#DATA	6		6	6	6		6	

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC040 INGRAM CREEK AT RIVER ROAD

LOCATION .....Latitude 37 36' 01", Longitude 121 13' 27",
SE 1/4, NE 1/4, SW 1/4, Sec. 8, T.4S., R.7E.,
Ingram Creek at River Rd, 0.55 mi S of Oaklea Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/04/85	1305	3.0	10	20	3	<5	<10	<1	
12/04/85	1315	1.0	10	2	15	6	<5	13	1.6
01/09/86	1500	1.0	<5	1	20	<5	<5	<1	<0.5
02/05/86	1210	1.0	<5	1	19	<5	5	1	<0.5
03/06/86	1110	1.0	5	4	26	<5	<5		1.2
04/15/86	1135	1.0	<5	27	46	71	10		<0.5
09/19/86	1005	0.8	<5	20	18	36	6	70	<0.5
10/16/86	1045	0.7	<5	26	31	40	5	64	<0.5
11/22/86	1010	2.9	<5	9	13	14	<5	16	<0.5
12/19/86	1000	0.9	<5	2	10	<5	<5	3	0.6
02/19/87	1335	1.4							
04/20/87	1445	4.1							
05/19/87	1035	4.3							
06/18/87	1030	3.8							
07/16/87	1120	5.5							
08/20/87	1100	3.2							
09/21/87	1120	1.3							
10/20/87	1025	1.0							
12/21/87	1110	1.9							
02/23/88	1205	1.5							
04/22/88	1400	2.6							
06/23/88	1050	4.1							
07/20/88	1145	4.8							
08/22/88	1435	5.8							
09/22/88	1305	3.0							
86 WY	MIN	0.8	<5	1	3	<5		<1	
	MED	1.0	<5	4	19	<5		1	
	MAX	3.0	10	27	46	71		70	
	#DATA	7	7	7	7	7		5	
87 WY	MIN	0.7							
	MED	3.1							
	MAX	5.5							
	#DATA	10							
88 WY	MIN	1.0							
	MED	2.8							
	MAX	5.8							
	#DATA	8							
TOTAL	MIN	0.7	<5	1	3	<5		<1	
	MED	1.9	<5	7	19	5		8	
	MAX	5.8	10	27	46	71		70	
	#DATA	25	10	10	10	10		8	

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC042 HOSPITAL CREEK AT RIVER ROAD

LOCATION .....Latitude 37 36' 38", Longitude, 121 13' 43",
SW 1/4, SW 1/4, SW 1/4, Sec. 5, T.4S., R.7E.,
Hospital Creek just downstream of its crossing of River Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
04/15/86	1220	1.0	<5	12	17	22	<5		<0.5
05/21/86	1200	0.9							
09/19/86	955	0.4	<5	9	14	21	<5	31	<0.5
10/16/86	1030	0.2	<5	8	<1	6	<5	25	<0.5
12/19/86	950	1.6	<5	14	22	30	5	38	<0.5
02/19/87	1330	1.0							
04/20/87	1005	3.0							
05/19/87	1020	3.6							
06/18/87	1015	4.5							
07/16/87	1105	3.9							
08/20/87	1040	1.8							
09/21/87	1100	2.7							
10/20/87	1010	0.9							
02/23/88	1150	2.0							
04/22/88	1345	4.0							
06/23/88	1040	3.5							
07/20/88	1140	4.3							
08/22/88	1445	3.6							
09/22/88	1300	3.9							
87 WY	MIN	0.2							
	MED	2.7							
	MAX	4.5							
	#DATA	9							
88 WY	MIN	0.9							
	MED	3.6							
	MAX	4.3							
	#DATA	7							
TOTAL	MIN	0.2							
	MED	2.7							
	MAX	4.5							
	#DATA	19							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC043 CENTER ROAD DRAIN

LOCATION .....Latitude 37 37' 36", Longitude 121 13' 07",
NE 1/4, SW 1/4, SE 1/4, Sec. 32, T.3S., R.7E.,
NE corner of the intersection of Center Rd and Pelican Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/04/85	1100	2.0	30	13	4	5	<10	2	
12/04/85	1515	2.0	10	2	8	9	<5	32	0.8
01/07/86	1040	2.0	<5	20	10	8	5	140	<0.5
05/21/86	1145	2.0							
06/18/86	1750	2.2	<5	5	1	6	<5	9	<0.5
07/17/86	1030	2.9	<5	60	38	91	22	180	<0.5
08/18/86	1100	2.3	<5	28	10	22	10	260	<0.5
09/19/86	0940	1.0	<5	7	11	17	<5	23	<0.5
10/16/86	1020	1.8	<5	<1	<1	<5	<5	<1	<0.5
11/22/86	0945	6.9							<0.5
12/19/86	0940	2.5	<5	5	3	<5	<5	12	<0.5
02/19/87	1220	3.2							
04/20/87	0945	2.3							
05/19/87	1005	3.6							
06/18/87	1000	4.3							
07/16/87	1050	3.6							
08/20/87	1025	3.5							
09/21/87	1040	3.2							
10/20/87	0955	1.2							
12/21/87	1045	1.9							
02/23/88	1135	1.9							
04/22/88	1330	4.0							
05/25/88	1135	4.0							
06/23/88	1030	4.3							
07/20/88	1120	5.5							
08/22/88	1515	5.5							
09/22/88	1250	4.4							

CENTER ROAD DRAIN

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
86 WY	MIN	1.0		2	1	5		2	
	MED	2.0		13	10	9		32	
	MAX	2.9		60	38	91		260	
	#DATA	8		7	7	7		7	
87 WY	MIN	1.8							
	MED	3.4							
	MAX	6.9							
	#DATA	10							
88 WY	MIN	1.2							
	MED	4.0							
	MAX	5.5							
	#DATA	9							
TOTAL	MIN	1.0							
	MED	2.9							
	MAX	6.9							
	#DATA	27							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC044 EL SOLYO WATER DISTRICT MAIN DRAIN

LOCATION .....Latitude 37 38' 20", Longitude 121 13' 39",
SE 1/4, SW 1/4, SW 1/4, Sec. 29, T.3S., R.7E.,
on levee 0.6 mi N of end of Orchard Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/04/85	1025	3.0	50	28	3	7	<10	<1	
01/07/86	1015	2.0	<5	3	3	<5	<5	2	<0.5
07/17/86	1100	3.0	<5	19	25	48	7	50	<0.5
08/18/86	1040	2.2	<5	6	4	12	<5	19	<0.5
09/19/86	920	1.1	<5	2	1	<5	<5	3	<0.5
11/22/86	925	3.0	<5	<1	<1	5	<5	3	<0.5
02/19/87	1200	4.1							
04/20/87	920	2.5							
05/19/87	940	3.4							
06/18/87	940	4.0							
07/16/87	1025	3.6							
08/20/87	1000	3.4							
09/21/87	1015	2.6							
10/20/87	935	2.8							
12/21/87	1030	2.8							
02/23/88	1115	2.7							
04/22/88	1315	3.8							
05/25/88	1115	3.3							
06/23/88	1010	4.4							
07/20/88	1100	5.1							
08/22/88	1540	4.6							
09/22/88	1235	3.5							
86 WY	MIN	1.1							
	MED	2.2							
	MAX	3.0							
	#DATA	5							
87 WY	MIN	2.5							
	MED	3.4							
	MAX	4.1							
	#DATA	8							
88 WY	MIN	2.7							
	MED	3.5							
	MAX	5.1							
	#DATA	9							
TOTAL	MIN	1.1							
	MED	3.2							
	MAX	5.1							
	#DATA	22							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC047 PATTERSON WASTEWATER TREATMENT PLANT

LOCATION .....Latitude 37 29' 54", Longitude 120 05' 27",
SW 1/4, NW 1/4, SE 1/4, Sec. 16, T.5S., R.8E.,
on Poplar Ave, 1/2 mi S of Las Palmas Ave.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
11/26/85		3.0	9	3	7	9	<10	20	<0.5
02/05/86	1510	4.0	<5	3	4	<5	<5	20	<0.5
03/05/86	1430	4.0	6	11	7	9	<5		<0.5
04/09/86	1110	2.5	5	3	6	8	<5		<0.5
06/18/86	1350	3.5	50	3	4	<5	<5	17	<0.5
07/16/86	1320	3.1	89	1	<1	<5	<5	12	<0.5
08/19/86	1425	2.5	<5	1	<1	<5	<5	27	<0.5
09/18/86	1400	3.2	91	4	3	<5	<5	18	<0.5
10/16/86		3.1	<5	<1	<1	<5	<5	28	<0.5
11/22/86	1235	4.5	77	<1	<1	<5	<5	20	<0.5
12/19/86	1220	4.6	39	5	5	<5	<5	25	<0.5
02/19/87	1555	4.7							
04/20/87	1315	5.2							
05/19/87	1410	3.2							
06/18/87	1405	3.9							
07/16/87	1515	4.7							
08/20/87	1510	3.8							
09/21/87	1410	4.5							
10/20/87	1300	3.6							
12/21/87	1300	3.9							
02/23/88	1515	1.9							
86 WY	MIN	2.5	<5	1	<1				
	MED	3.2	8	3	4				
	MAX	4.0	91	11	7				
	#DATA	8	8	8	8				
87 WY	MIN	3.1							
	MED	4.5							
	MAX	5.2							
	#DATA	10							
TOTAL	MIN	1.9	<5	<1	<1				
	MED	3.8	9	3	4				
	MAX	5.2	91	11	7				
	#DATA	21	11	11	11				

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC050 MAGNOLIA AVENUE DRAIN

LOCATION .....Latitude 37 31' 23", Longitude 121 06' 33",
SE 1/4, SW 1/4, SE 1/4, Sec. 5, T.5S., R.8E.,
end of Magnolia Ave, 0.6 mi E of Elm Ave.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
05/20/86	1515	7.4							
06/18/86	1440	3.1	<5	3	8	5	<5	6	<0.5
07/16/86	1430	4.2	<5	7	5	30	<5	20	<0.5
08/18/86	1555	1.6	<5	60	75	430	23	270	<0.5
09/18/86	1445	0.4	<5	3	2	5	<5	7	<0.5
04/20/87	1220	4.0							
05/19/87	1320	2.1							
06/18/87	1310	6.1							
07/16/87	1420	5.8							
08/20/87	1330	4.5							
09/21/87	1335	0.2							
10/20/87	1220	0.7							
04/22/88	1625	2.9							
05/25/88	1510	7.3							
06/23/88	1300	6.2							
07/20/88	1420	8.8							
08/22/88	1425	7.2							
09/20/88	1645	2.7							
86 WY	MIN	0.4		3	2	5		6	
	MED	3.1		5	7	18		14	
	MAX	7.4		60	75	43		270	
	#DATA	5		4	4	4		4	
87 WY	MIN	0.2							
	MED	4.3							
	MAX	6.1							
	#DATA	6							
88 WY	MIN	0.7							
	MED	6.2							
	MAX	8.8							
	#DATA	7							
TOTAL	MIN	0.2							
	MED	4.1							
	MAX	8.8							
	#DATA	18							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC051 BLEWETT DRAIN

LOCATION .....Latitude 37 38' 25", Longitude 121 13' 40",
SE 1/4, SW 1/4, SW 1/4, Sec. 29, T.3S., R.7E.,
between El Solyo and Blewett pumping stations.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
05/21/86	1110	1.1							
06/18/86	1810	1.2	<5	10	7	8	<5	10	<0.5
07/17/86	1110	1.7	<5	32	35	56	11	70	<0.5
08/18/86	1025	1.1	<5	5	4	10	<5	16	<0.5
09/19/86	900	0.8	<5	11	8	11	<5	18	<0.5
10/16/86	955	0.4	<5	<1	<1	<5	<5	<1	<0.5
11/22/86	915	2.4	<5	<1	<1	<5	<5	2	<0.5
12/19/86	920	1.3	<5	9	11	14	<5	16	<0.5
02/19/87	1145	2.1							
04/20/87	1330	2.1							
05/19/87	920	2.1							
06/18/87	920	4.1							
07/16/87	1010	3.3							
08/20/87	945	2.3							
09/21/87	1005	2.7							
10/20/87	925	1.1							
02/23/88	1050	1.7							
04/22/88	1305	2.3							
05/25/88	1100	2.1							
06/23/88	1005	2.8							
07/20/88	1050	5.5							
08/22/88	1600	4.6							
09/22/88	1220	5.0							
86 WY	MIN	0.8							
	MED	1.1							
	MAX	1.7							
	#DATA	5							
87 WY	MIN	0.4							
	MED	2.2							
	MAX	4.1							
	#DATA	10							
88 WY	MIN	1.1							
	MED	2.6							
	MAX	5.5							
	#DATA	8							
TOTAL	MIN	0.4							
	MED	2.1							
	MAX	5.5							
	#DATA	23							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC052 GONSALVES AREA DRAIN

LOCATION .....Latitude 37 24' 09", Longitude 120 59' 43",
SE 1/4, SE 1/4, Sec. 9, T.2S., R.5E.,
1.4 mi S of Orestimba Creek and
0.7 mi E of River Rd.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L							
		Total Recoverable							
11/20/86	1030	1.8	<5	<1	<1	6	<5	<1	<0.5
12/19/86	1400	1.3	<5	12	24	29	<5	23	<0.5
02/20/87	1315	2.0							
04/20/87	1145	2.9							
05/20/87	1150	1.8							
06/18/87	1110	2.7							
07/16/87	1140	1.8							
08/20/87	1245	2.8							
09/21/87	1240	0.4							
10/20/87	1450	0.9							
02/23/88	1420	1.5							
04/22/88	1320	0.8							
05/25/88	1140	2.2							
06/23/88	1315	1.3							
07/20/88	1230	1.4							
08/22/88	1120	2.6							
09/20/88	1410	1.7							
87 WY	MIN	0.4							
	MED	1.8							
	MAX	2.9							
	#DATA	9							
88 WY	MIN	0.8							
	MED	1.5							
	MAX	2.6							
	#DATA	8							
TOTAL	MIN	0.4							
	MED	1.8							
	MAX	2.9							
	#DATA	17							

TRACE ELEMENT WATER QUALITY DATA

MAP INDEX STC053 BERNARD / CARVALHO DRAIN

LOCATION .....Latitude 37 26' 00", Longitude 121 01' 17",
NE 1/4, NE 1/4, NW 1/4, Sec. 7, T.6S., R.9E.,
in a concrete box 30 ft from the river, on a farm rd, E of a fa
0.4 mi N of the Marshall Rd-Crows Landing intersection.

DATE	TIME	Se	Mo	Cu	Cr	Ni	Pb	Zn	Hg
		ug/L Total Recoverable							
08/19/86	1230	0.7	<5	2	<1	5	<5	9	0.9
02/20/87	1050	1.5							
04/20/87	1415	3.4							
05/20/87	1230	0.9							
06/18/87	1205	2.5							
07/16/87	1240	2.1							
08/20/87	1315	2.0							
09/21/87	1310	0.3							
10/20/87	1425	0.8							
02/23/88	1330	2.1							
04/22/88	1445	1.3							
05/25/88	1220	2.3							
06/23/88	1400	1.1							
07/20/88	1315	1.6							
08/22/88	1150	2.3							
09/20/88	1450	1.4							
87 WY	MIN	0.3							
	MED	2.0							
	MAX	3.4							
	#DATA	7							
88 WY	MIN	0.8							
	MED	1.5							
	MAX	2.3							
	#DATA	8							
TOTAL	MIN	0.3							
	MED	1.6							
	MAX	3.4							
	#DATA	16							