Map ID	Waterbody	HAS	Sample Location Description	Location ID	Latitude	Longitude	Parameter Name	Std.	Std. Unit	Std. Ref	Type	Samples Dates	No. Taken	Exceedance No.	Exceedance %	Reference
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Conductivity	900	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	9	82%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	TDS	750	mg/L	Basin Plan	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	9	82%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Fe	0.3	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	2	18%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Pb	0.015	mg/L	MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99, 12/6/99, 3/7/00, 6/2/00	10	2	20%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Mn	0.05	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	1	9%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Nitrates	45	mg/L	MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	1	9%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Nitrate+Nitrite	10	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	4	36%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	total phosphorous	0.1	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99	7	7	100%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
8	Rainbow Creek	902.23	Rainbow Creek near Fallbrook (1 mi us of SMR confluence)	USGS 11044250	332427	1171200	Sulfate	250	mg/L	Secondary MCL	water chemistry	12/9/97, 3/3/98, 5/26/98, 8/4/98, 11/9/98, 2/10/99, 5/11/99, 9/28/99,12/6/99, 3/7/00, 6/2/00	11	6	55%	*Final Report of Water Quality Studies & Proposed Watershed Monitoring Program for portions of San Mateo & Santa Margarita River Watershed.* Marine Corps Base, Camp Pendleton, CA. Contract No. N68711-95-D-7573, D.O. 0021.
9	Rainbow Creek	902.23	Rainbow Creek at Willow Glen	DFG-978-321			TDS	500	mg/L	Basin Plan	water chemistry	6/9/98	1	1	100%	SDRWQCB (L. Perdy)
9	Rainbow Creek	902.23	Rainbow Creek at Willow Glen	DFG-978-321			total phoshorous	0.1	mg/L	Basin Plan	water chemistry	6/9/98	1	1	100%	SDRWQCB (L. Perdy)

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
05	03	surface water	Zinc	ND	mg/L	0.01	11/9/98	11
11	03	surface water	Zinc	ND	mg/L	0.01	6/1/00	6
07	03	surface water	Zinc	ND	mg/L	0.02	5/11/99	5
03	03	surface water	Zinc	ND	mg/L	0.01	5/26/98	5
01	03	surface water	Zinc	0.015	mg/L	0.0100	12/9/97	12
02	03	surface water	Zinc	ND	mg/L	0.03	3/3/98	3
04	03	surface water	Zinc	ND	mg/L	0.01	8/4/98	8
10	03	surface water	Zinc	0.019J	mg/L	0.01	3/7/00	3
06	03	surface water	Zinc	NS	mg/L	0.01	2/10/99	2
09	03	surface water	Zinc	ND	mg/L	0.03	12/6/99	12
08	03	surface water	Zinc	ND	mg/L	0.03	9/28/99	9
10	03	surface water	Total Organic Carbon	8.1	mg/L	0.1	3/7/00	3
01	03	surface water	Total Organic Carbon	11.1	mg/L	1.00	12/9/97	12
11	03	surface water	Total Organic Carbon	13	mg/L	0.5	6/1/00	6
05	03	surface water	Total Organic Carbon	58.9	mg/L	1	11/9/98	11
07	03	surface water	Total Organic Carbon	5.77	mg/L	1	5/11/99	5
06	03	surface water	Total Organic Carbon	7.31	mg/L	1	2/10/99	2
04	03	surface water	Total Organic Carbon	3.42	mg/L	1	8/4/98	8
02	03	surface water	Total Organic Carbon	8.45	mg/L	1	3/3/98	3
09	03	surface water	Total Organic Carbon	1.4	mg/L	0.5	12/6/99	12
03	03	surface water	Total Organic Carbon	10.3	mg/L	1	5/26/98	5
08	03	surface water	Total Organic Carbon	7.0	mg/L	0.5	9/28/99	9
11	03	surface water	Total Dissolved Solids	1,190	mg/L	5	6/1/00	6
09	03	surface water	Total Dissolved Solids	879	mg/L	10	12/6/99	12
10	03	surface water	Total Dissolved Solids	1,060	mg/L	5	3/7/00	3
08	03	surface water	Total Dissolved Solids	964	mg/L	10	9/28/99	9
02	03	surface water	Total Dissolved Solids	453	mg/L	10	3/3/98	3
05	03	surface water	Total Dissolved Solids	1010	mg/L	10	11/9/98	11
01	03	surface water	Total Dissolved Solids	910	mg/L	10.0	12/9/97	12
07	03	surface water	Total Dissolved Solids	848	mg/L	10	5/11/99	5
03	03	surface water	Total Dissolved Solids	662	mg/L	10	5/26/98	5
04	03	surface water	Total Dissolved Solids	884	mg/L	10	8/4/98	8
06	03	surface water	Total Dissolved Solids	806	mg/L	10	2/10/99	2
01	03	surface water	Total Coliform	>1600	mpn/100ml	2	12/9/97	12
08	03	surface water	Total Coliform	300	mpn/100ml	2	9/28/99	9
09	03	surface water	Total Coliform	1600	mpn/100ml	2	12/6/99	12
05	03	surface water	Total Coliform	>1600	mpn/100ml	2	11/9/98	11
06	03	surface water	Total Coliform	>1600	mpn/100ml	2	2/10/99	2

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
07	03	surface water	Total Coliform	>23	mpn/100ml	2	5/11/99	5
02	03	surface water	Total Coliform	>1600	mpn/100ml	2	3/3/98	3
04	03	surface water	Total Coliform	>1600	mpn/100ml	2	8/4/98	8
03	03	surface water	Total Coliform	>1600	mpn/100ml	2	5/26/98	5
11	03	surface water	Total Coliform	>1,600	MPN/100 m	2	6/1/00	6
10	03	surface water	Total Coliform	>1,600	MPN/100 m	3.0	3/7/00	3
05	03	surface water	Surfactants (MBAS)	0.113	mg/L	0.1	11/9/98	11
07	03	surface water	Surfactants (MBAS)	ND	mg/L	0.1	5/11/99	5
04	03	surface water	Surfactants (MBAS)	ND	mg/L	0.1	8/4/98	8
02	03	surface water	Surfactants (MBAS)	ND	mg/L	0.1	3/3/98	3
03	03	surface water	Surfactants (MBAS)	ND	mg/L	0.1	5/26/98	5
01	03	surface water	Surfactants (MBAS)	ND	mg/L	0.100	12/9/97	12
10	03	surface water	Surfactants (MBAS)	0.06	mg/L	0.03	3/7/00	3
09	03	surface water	Surfactants (MBAS)	ND	mg/L	0.05	12/6/99	12
11	03	surface water	Surfactants (MBAS)	ND	mg/L	0.03	6/1/00	6
08	03	surface water	Surfactants (MBAS)	ND	mg/L	0.05	9/28/99	9
06	03	surface water	Surfactants (MBAS)	NS	mg/L	0.1	2/10/99	2
07	03	surface water	Sulfate	254	mg/L	50	5/11/99	5
11	03	surface water	Sulfate	314	mg/L	5	6/1/00	6
05	03	surface water	Sulfate	326	mg/L	5	11/9/98	11
06	03	surface water	Sulfate	250	mg/L	5	2/10/99	2
04	03	surface water	Sulfate	252	mg/L	50	8/4/98	8
09	03	surface water	Sulfate	187	mg/L	10	12/6/99	12
10	03	surface water	Sulfate	290	mg/L	5	3/7/00	3
03	03	surface water	Sulfate	134	mg/L	50	5/26/98	5
08	03	surface water	Sulfate	196	mg/L	10	9/28/99	9
02	03	surface water	Sulfate	108	mg/L	4	3/3/98	3
01	03	surface water	Sulfate	269	mg/L	10.0	12/9/97	12
05	03	surface water	Sodium	120	mg/L	0.3	11/9/98	11
02	03	surface water	Sodium	69	mg/L	4	3/3/98	3
11	03	surface water	Sodium	125	mg/L	0.25	6/1/00	6
03	03	surface water	Sodium	83.2	mg/L	0.3	5/26/98	5
08	03	surface water	Sodium	91.9	mg/L	0.5	9/28/99	9
01	03	surface water	Sodium	103	mg/L	0.300	12/9/97	12
09	03	surface water	Sodium	85.6	mg/L	0.5	12/6/99	12
07	03	surface water	Sodium	96	mg/L	0.3	5/11/99	5
10	03	surface water	Sodium	122	mg/L	0.25	3/7/00	3
06	03	surface water	Sodium	102	mg/L	0.3	2/10/99	2

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
01	03	surface water	Potassium	10.8	mg/L	0.300	12/9/97	12
10	03	surface water	Potassium	9.8	mg/L	0.5	3/7/00	3
06	03	surface water	Potassium	7.56	mg/L	1	2/10/99	2
02	03	surface water	Potassium	3	mg/L	2	3/3/98	3
03	03	surface water	Potassium	7.21	mg/L	0.3	5/26/98	5
05	03	surface water	Potassium	9.35	mg/L	0.3	11/9/98	11
04	03	surface water	Potassium	5.38	mg/L	0.3	8/4/98	8
11	03	surface water	Potassium	7.9	mg/L	0.5	6/1/00	6
07	03	surface water	Potassium	5.06	mg/L	1	5/11/99	5
08	03	surface water	Potassium	4.6	mg/L	1.0	9/28/99	9
09	03	surface water	Potassium	3.4	mg/L	1.0	12/6/99	12
07	03	surface water	Phosphorus	0.446	mg/L	0.01	5/11/99	5
03	03	surface water	Phosphorus	1.14	mg/L	0.02	5/26/98	5
06	03	surface water	Phosphorus	0.713	mg/L	0.01	2/10/99	2
01	03	surface water	Phosphorus	1.13	mg/L	0.02	12/9/97	12
02	03	surface water	Phosphorus	0.612	mg/L	0.01	3/3/98	3
04	03	surface water	Phosphorus	0.48	mg/L	0.01	8/4/98	8
05	03	surface water	Phosphorus	0.917	mg/L	0.01	11/9/98	11
05	03	surface water	Phosphate	NS	mg/L	0.3	11/9/98	11
07	03	surface water	Phosphate	NS	mg/L	0.3	5/11/99	5
06	03	surface water	Phosphate	NS	mg/L	0.3	2/10/99	2
03	03	surface water	Phosphate	NS	mg/L	0.3	5/26/98	5
04	03	surface water	Phosphate	NS	mg/L	0.3	8/4/98	8
10	03	surface water	Phosphate	2.0	mg/L	0.30	3/7/00	3
09	03	surface water	Phosphate	1.1	mg/L	0.3	12/6/99	12
01	03	surface water	Phosphate	NS	mg/L	0.3	12/9/97	12
02	03	surface water	Phosphate	NS	mg/L	0.3	3/3/98	3
11	03	surface water	Phosphate	1.1	mg/L	0.30	6/1/00	6
08	03	surface water	Phosphate	1.3	mg/L	0.3	9/28/99	9
02	03	surface water	pH	8.12	pH units	2.0-12.5	3/3/98	3
03	03	surface water	pH	7.78	pH units	2.5-12.0	5/26/98	5
01	03	surface water	pH	7.98	pH units	2.0-12.5	12/9/97	12
08	03	surface water	pH	7.91	pH units	1.00	9/28/99	9
04	03	surface water	pH	7.93	pH units	2.5-12.0	8/4/98	8
11	03	surface water	pH	7.39	mg/L	0.01	6/1/00	6
07	03	surface water	pH	7.98	pH units	2.5-12.0	5/11/99	5
10	03	surface water	pH	8.25	mg/L	0.01	3/7/00	3
08	03	surface water	pH	7.91	pH units	1.00	9/28/99	9

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
09	03	surface water	pH	7.62	pH units	1.00	12/6/99	12
09	03	surface water	pH	7.62	pH units	1.00	12/6/99	12
10	03	surface water	pH	8.25	mg/L	0.01	3/7/00	3
11	03	surface water	pH	7.39	mg/L	0.01	6/1/00	6
06	03	surface water	pH	8.06	pH units		2/10/99	2
07	03	surface water	Oil and Grease	0.962	mg/L	0.962	5/11/99	5
08	03	surface water	Oil and Grease	ND	mg/L	1.0	9/28/99	9
10	03	surface water	Oil and Grease	ND	mg/L	0.5	3/7/00	3
11	03	surface water	Oil and Grease	ND	mg/L	0.5	6/1/00	6
03	03	surface water	Oil and Grease	ND	mg/L	0.99	5/26/98	5
11	03	surface water	Oil and Grease	ND	mg/L	0.5	6/1/00	6
05	03	surface water	Oil and Grease	ND	mg/L	1	11/9/98	11
06	03	surface water	Oil and Grease	0.98	mg/L	1	2/10/99	2
08	03	surface water	Oil and Grease	ND	mg/L	1.0	9/28/99	9
09	03	surface water	Oil and Grease	ND	mg/L	1.0	12/6/99	12
04	03	surface water	Oil and Grease	ND	mg/L	1.12	8/4/98	8
09	03	surface water	Oil and Grease	ND	mg/L	1.0	12/6/99	12
10	03	surface water	Oil and Grease	ND	mg/L	0.5	3/7/00	3
01	03	surface water	Oil and Grease	ND	mg/L	1.18	12/9/97	12
02	03	surface water	Oil and Grease	ND	mg/L	1.05	3/3/98	3
06	03	surface water	Nitrogen	NS	mg/L	0.1	2/10/99	2
10	03	surface water	Nitrogen	0.1	mg/L	0.05	3/7/00	3
05	03	surface water	Nitrogen	1.66	mg/L	0.1	11/9/98	11
08	03	surface water	Nitrogen	0.5	mg/L	0.1	9/28/99	9
02	03	surface water	Nitrogen	NS	mg/L	0.1	3/3/98	3
04	03	surface water	Nitrogen	NS	mg/L	0.1	8/4/98	8
03	03	surface water	Nitrogen	2.7	mg/Kg	0.5	5/26/98	5
02	03	surface water	Nitrogen	NS	mg/L	0.1	3/3/98	3
04	03	surface water	Nitrogen	NS	mg/L	0.1	8/4/98	8
06	03	surface water	Nitrogen	NS	mg/L	0.1	2/10/99	2
02	03	surface water	Nitrogen	NS	mg/L	0.1	3/3/98	3
09	03	surface water	Nitrogen	NS	mg/L	0.1	12/6/99	12
04	03	surface water	Nitrogen	NS	mg/L	0.1	8/4/98	8
09	03	surface water	Nitrogen	NS	mg/L	0.1	12/6/99	12
01	03	surface water	Nitrogen	0.483	mg/L	0.100	12/9/97	12
06	03	surface water	Nitrogen	NS	mg/L	0.1	2/10/99	2
07	03	surface water	Nitrogen	0.535	mg/L	0.4	5/11/99	5
08	03	surface water	Nitrite	ND	mg/L	0.02	9/28/99	9

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
09	03	surface water	Nitrite	ND	mg/L	0.02	12/6/99	12
06	03	surface water	Nitrate-N	9.34	mg/L	0.05	2/10/99	2
03	03	surface water	Nitrate-N	10.3	mg/L	5	5/26/98	5
01	03	surface water	Nitrate-N	1.3	mg/L	0.100	12/9/97	12
09	03	surface water	Nitrate-N	4.8	mg/L	0.1	12/6/99	12
10	03	surface water	Nitrate-N	62.9	mg/L	0.05	3/7/00	3
07	03	surface water	Nitrate-N	8.6	mg/L	0.5	5/11/99	5
08	03	surface water	Nitrate-N	4.1	mg/L	0.1	9/28/99	9
02	03	surface water	Nitrate-N	4.95	mg/L	2	3/3/98	3
11	03	surface water	Nitrate-N	15.0	mg/L	0.05	6/1/00	6
04	03	surface water	Nitrate-N	4.54	mg/L	0.25	8/4/98	8
05	03	surface water	Nitrate-N	13.2	mg/L	0.05	11/9/98	11
06	03	surface water	Mercury	NS	mg/L	0.0002	2/10/99	2
11	03	surface water	Mercury	NS	mg/L	0.0002	6/1/00	6
10	03	surface water	Mercury	ND	mg/L	0.0002	3/7/00	3
01	03	surface water	Mercury	ND	mg/L	0.000200	12/9/97	12
05	03	surface water	Mercury	ND	mg/L	0.0002	11/9/98	11
08	03	surface water	Mercury	ND	mg/L	0.0002	9/28/99	9
09	03	surface water	Mercury	NS	mg/L	0.0002	12/6/99	12
04	03	surface water	Mercury	NS	mg/L	0.0002	8/4/98	8
02	03	surface water	Mercury	NS	mg/L	0.0002	3/3/98	3
03	03	surface water	Mercury	ND	mg/L	0.0002	5/26/98	5
07	03	surface water	Mercury	ND	mg/L	0.0002	5/11/99	5
03	03	surface water	Mercury	ND	mg/L	0.0002	5/26/98	5
09	03	surface water	Manganese	0.03	mg/L	0.01	12/6/99	12
08	03	surface water	Manganese	ND	mg/L	0.01	9/28/99	9
01	03	surface water	Manganese	0.027	mg/L	0.0100	12/9/97	12
04	03	surface water	Manganese	0.0329	mg/L	0.01	8/4/98	8
05	03	surface water	Manganese	0.048	mg/L	0.01	11/9/98	11
10	03	surface water	Manganese	0.01	mg/L	0.005	3/7/00	3
06	03	surface water	Manganese	0.0168	mg/L	0.01	2/10/99	2
03	03	surface water	Manganese	0.055	mg/L	0.01	5/26/98	5
07	03	surface water	Manganese	ND	mg/L	0.01	5/11/99	5
11	03	surface water	Manganese	ND	mg/L	0.005	6/1/00	6
02	03	surface water	Manganese	0.05	mg/L	0.01	3/3/98	3
04	03	surface water	Magnesium	55.4	mg/L	0.2	8/4/98	8
09	03	surface water	Magnesium	56.1	mg/L	0.5	12/6/99	12
08	03	surface water	Magnesium	56.2	mg/L	0.5	9/28/99	9

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
01	03	surface water	Magnesium	51.1	mg/L	0.200	12/9/97	12
06	03	surface water	Magnesium	43.8	mg/L	0.2	2/10/99	2
11	03	surface water	Magnesium	64.2	mg/L	0.2	6/1/00	6
03	03	surface water	Magnesium	29.1	mg/L	0.2	5/26/98	5
05	03	surface water	Magnesium	51.5	mg/L	0.2	11/9/98	11
02	03	surface water	Magnesium	20	mg/L	0.1	3/3/98	3
10	03	surface water	Magnesium	54.0	mg/L	0.20	3/7/00	3
07	03	surface water	Magnesium	53.6	mg/L	0.2	5/11/99	5
10	03	surface water	Lead	0.018	mg/L	0.005	3/7/00	3
11	03	surface water	Lead	ND	mg/L	0.005	6/1/00	6
02	03	surface water	Lead	ND	mg/L	0.015	3/3/98	3
07	03	surface water	Lead	ND	mg/L	0.001	5/11/99	5
01	03	surface water	Lead	0.027	mg/L	0.0200	12/9/97	12
03	03	surface water	Lead	0.00106	mg/L	0.001	5/26/98	5
05	03	surface water	Lead	ND	mg/L	0.001	11/9/98	11
06	03	surface water	Lead	NS	mg/L	0.001	2/10/99	2
09	03	surface water	Lead	ND	mg/L	0.05	12/6/99	12
08	03	surface water	Lead	ND	mg/L	0.1	9/28/99	9
04	03	surface water	Lead	ND	mg/L	0.001	8/4/98	8
10	03	surface water	Iron	ND	mg/L	0.03	3/7/00	3
07	03	surface water	Iron	ND	mg/L	0.05	5/11/99	5
02	03	surface water	Iron	0.7	mg/L	0.1	3/3/98	3
05	03	surface water	Iron	0.156	mg/L	0.05	11/9/98	11
11	03	surface water	Iron	ND	mg/L	0.03	6/1/00	6
06	03	surface water	Iron	0.214	mg/L	0.05	2/10/99	2
03	03	surface water	Iron	0.486	mg/L	0.05	5/26/98	5
01	03	surface water	Iron	0.047	mg/L	0.0500	12/9/97	12
09	03	surface water	Iron	0.06	mg/L	0.05	12/6/99	12
04	03	surface water	Iron	ND	mg/L	0.05	8/4/98	8
08	03	surface water	Iron	ND	mg/L	0.05	9/28/99	9
05	03	surface water	Hydroxide	ND	mg/L	0.5	11/9/98	11
11	03	surface water	Hydroxide	ND	mg/L	0.5	6/1/00	6
09	03	surface water	Hydroxide	ND	mg/L	2	12/6/99	12
03	03	surface water	Hydroxide	ND	mg/L	0.5	5/26/98	5
10	03	surface water	Hydroxide	ND	mg/L	0.5	3/7/00	3
04	03	surface water	Hydroxide	ND	mg/L	0.5	8/4/98	8
01	03	surface water	Hydroxide	ND	mg/L	1.00	12/9/97	12
02	03	surface water	Hydroxide	ND	mg/L	0.5	3/3/98	3

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
06	03	surface water	Hydroxide	NS	mg/L	0.5	2/10/99	2
07	03	surface water	Hydroxide	ND	mg/L	0.5	5/11/99	5
08	03	surface water	Hydroxide	ND	mg/L	0.5	9/28/99	9
07	03	surface water	Hardness (CaCO3)	492	mg/L	2	5/11/99	5
06	03	surface water	Hardness (CaCO3)	445	mg/L	1	2/10/99	2
05	03	surface water	Hardness (CaCO3)	562	mg/L	1	11/9/98	11
02	03	surface water	Hardness (CaCO3)	208	mg/L	10	3/3/98	3
01	03	surface water	Hardness (CaCO3)	515	mg/L	10.0	12/9/97	12
03	03	surface water	Hardness (CaCO3)	354	mg/L	5	5/26/98	5
04	03	surface water	Hardness (CaCO3)	564	mg/L	5	8/4/98	8
10	03	surface water	Hardness (CaCO3)	568	mg/L	1	3/7/00	3
08	03	surface water	Hardness (CaCO3)	532	mg/L	2	9/28/99	9
09	03	surface water	Hardness (CaCO3)	530	mg/L	2	12/6/99	12
11	03	surface water	Hardness (CaCO3)	600	mg/L	1	6/1/00	6
09	03	surface water	Fluoride	0.3	mg/L	0.2	12/6/99	12
10	03	surface water	Fluoride	0.4	mg/L	0.1	3/7/00	3
03	03	surface water	Fluoride	0.325	mg/L	0.2	5/26/98	5
04	03	surface water	Fluoride	0.239	mg/L	0.1	8/4/98	8
11	03	surface water	Fluoride	0.5	mg/L	0.1	6/1/00	6
08	03	surface water	Fluoride	0.3	mg/L	0.1	9/28/99	9
07	03	surface water	Fluoride	0.242	mg/L	0.1	5/11/99	5
06	03	surface water	Fluoride	0.294	mg/L	0.1	2/10/99	2
05	03	surface water	Fluoride	0.35	mg/L	0.1	11/9/98	11
01	03	surface water	Fluoride	ND	mg/L	0.200	12/9/97	12
02	03	surface water	Fluoride	0.203	mg/L	0.2	3/3/98	3
02	03	surface water	Fecal Coliform	220	mpn/100ml	2	3/3/98	3
08	03	surface water	Fecal Coliform	80	mpn/100ml	2	9/28/99	9
06	03	surface water	Fecal Coliform	>1600	mpn/100ml	2	2/10/99	2
03	03	surface water	Fecal Coliform	1600	mpn/100ml	2	5/26/98	5
09	03	surface water	Fecal Coliform	900	mpn/100ml	2	12/6/99	12
05	03	surface water	Fecal Coliform	>1600	mpn/100ml	2	11/9/98	11
01	03	surface water	Fecal Coliform	1600	mpn/100ml	2	12/9/97	12
11	03	surface water	Fecal Coliform	130	MPN/mL	2	6/1/00	6
10	03	surface water	Fecal Coliform	1,600	MPN/100 m	2	3/7/00	3
07	03	surface water	Fecal Coliform	>23	mpn/100ml	2	5/11/99	5
04	03	surface water	Fecal Coliform	900	mpn/100ml	2	8/4/98	8
02	03	surface water	Cyanide (Total)	NS	mg/L	0.005	3/3/98	3
09	03	surface water	Cyanide (Total)	NS	mg/L	0.005	12/6/99	12

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
06	03	surface water	Cyanide (Total)	NS	mg/L	0.005	2/10/99	2
04	03	surface water	Cyanide (Total)	NS	mg/L	0.005	8/4/98	8
02	03	surface water	Cyanide (Total)	NS	mg/L	0.005	3/3/98	3
03	03	surface water	Cyanide (Total)	ND	mg/L	0.005	5/26/98	5
11	03	surface water	Cyanide (Total)	NS	mg/L	0.01	6/1/00	6
01	03	surface water	Cyanide (Total)	ND	mg/L	0.00500	12/9/97	12
09	03	surface water	Cyanide (Total)	NS	mg/L	0.005	12/6/99	12
04	03	surface water	Cyanide (Total)	NS	mg/L	0.005	8/4/98	8
07	03	surface water	Cyanide (Total)	ND	mg/L	0.005	5/11/99	5
05	03	surface water	Cyanide (Total)	ND	mg/L	0.005	11/9/98	11
08	03	surface water	Cyanide (Total)	ND	mg/L	0.01	9/28/99	9
06	03	surface water	Cyanide (Total)	NS	mg/L	0.005	2/10/99	2
10	03	surface water	Cyanide (Total)	ND	mg/L	0.01	3/7/00	3
05	03	surface water	Copper	0.0058	mg/L	0.005	11/9/98	11
08	03	surface water	Copper	ND	mg/L	0.02	9/28/99	9
09	03	surface water	Copper	0.03	mg/L	0.02	12/6/99	12
06	03	surface water	Copper	0.00511	mg/L	0.005	2/10/99	2
02	03	surface water	Copper	ND	mg/L	0.02	3/3/98	3
04	03	surface water	Copper	0.0063	mg/L	0.005	8/4/98	8
07	03	surface water	Copper	ND	mg/L	0.005	5/11/99	5
03	03	surface water	Copper	0.008	mg/L	0.005	5/26/98	5
11	03	surface water	Copper	ND	mg/L	0.005	6/1/00	6
10	03	surface water	Copper	ND	mg/L	0.005	3/7/00	3
01	03	surface water	Copper	ND	mg/L	0.00500	12/9/97	12
08	03	surface water	Conductivity	1420	umhos/cm	10	9/28/99	9
09	03	surface water	Conductivity	1390	umhos/cm	10	12/6/99	12
10	03	surface water	Conductivity	1,610	mg/L	5	3/7/00	3
11	03	surface water	Conductivity	1,650	mg/L	5	6/1/00	6
07	03	surface water	Conductivity	1420	umhos/cm	1	5/11/99	5
05	03	surface water	Conductivity	1460	umhos/cm	1	11/9/98	11
06	03	surface water	Conductivity	1240	umhos/cm	1	2/10/99	2
01	03	surface water	Conductivity	1470	umhos/cm	1.00	12/9/97	12
04	03	surface water	Conductivity	1400	umhos/cm	1	8/4/98	8
03	03	surface water	Conductivity	848	umhos/cm	1	5/26/98	5
02	03	surface water	Conductivity	641	umhos/cm	1	3/3/98	3
08	03	surface water	Chloride	188	mg/L	1	9/28/99	9
07	03	surface water	Chloride	166	mg/L	1	5/11/99	5
06	03	surface water	Chloride	136	mg/L	1	2/10/99	2

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
05	03	surface water	Chloride	169	mg/L	1	11/9/98	11
11	03	surface water	Chloride	208	mg/L	0.5	6/1/00	6
10	03	surface water	Chloride	197	mg/L	0.5	3/7/00	3
03	03	surface water	Chloride	128	mg/L	50	5/26/98	5
08	03	surface water	Chloride	188	mg/L	1	9/28/99	9
09	03	surface water	Chloride	192	mg/L	1	12/6/99	12
10	03	surface water	Chloride	197	mg/L	0.5	3/7/00	3
09	03	surface water	Chloride	192	mg/L	1	12/6/99	12
04	03	surface water	Chloride	189	mg/L	1	8/4/98	8
01	03	surface water	Chloride	213	mg/L	20.0	12/9/97	12
11	03	surface water	Chloride	208	mg/L	0.5	6/1/00	6
02	03	surface water	Chloride	70.7	mg/L	20	3/3/98	3
04	03	surface water	Carbonate	1.92	mg/L	0.5	8/4/98	8
02	03	surface water	Carbonate	0.757	mg/L	0.5	3/3/98	3
03	03	surface water	Carbonate	0.642	mg/L	0.5	5/26/98	5
07	03	surface water	Carbonate	1.04	mg/L	0.5	5/11/99	5
06	03	surface water	Carbonate	2.18	mg/L	0.5	2/10/99	2
09	03	surface water	Carbonate	ND	mg/L	2	12/6/99	12
10	03	surface water	Carbonate	4	mg/L	0.5	3/7/00	3
11	03	surface water	Carbonate	12	mg/L	0.5	6/1/00	6
08	03	surface water	Carbonate	ND	mg/L	0.5	9/28/99	9
01	03	surface water	Carbonate	1.73	mg/L	1.00	12/9/97	12
05	03	surface water	Carbonate	1.13	mg/L	0.5	11/9/98	11
09	03	surface water	Calcium	113	mg/L	0.5	12/6/99	12
08	03	surface water	Calcium	114	mg/L	0.5	9/28/99	9
05	03	surface water	Calcium	112	mg/L	0.1	11/9/98	11
03	03	surface water	Calcium	65.6	mg/L	0.1	5/26/98	5
10	03	surface water	Calcium	116	mg/L	0.10	3/7/00	3
06	03	surface water	Calcium	91	mg/L	0.1	2/10/99	2
02	03	surface water	Calcium	46	mg/L	0.2	3/3/98	3
11	03	surface water	Calcium	141	mg/L	0.1	6/1/00	6
01	03	surface water	Calcium	122	mg/L	0.100	12/9/97	12
07	03	surface water	Calcium	112	mg/L	0.1	5/11/99	5
04	03	surface water	Calcium	114	mg/L	0.1	8/4/98	8
02	03	surface water	Boron	ND	mg/L	0.5	3/3/98	3
03	03	surface water	Boron	ND	mg/L	0.5	5/26/98	5
11	03	surface water	Boron	0.2	mg/L	0.1	6/1/00	6
01	03	surface water	Boron	ND	mg/L	0.5	12/9/97	12

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
)6	03	surface water	Boron	0.173	mg/L	0.1	2/10/99	2
)7	03	surface water	Boron	ND	mg/L	0.1	5/11/99	5
)9	03	surface water	Boron	ND	mg/L	0.2	12/6/99	12
)8	03	surface water	Boron	0.1	mg/L	0.2	9/28/99	9
)4	03	surface water	Boron	0.125	mg/L	0.1	8/4/98	8
)5	03	surface water	Boron	0.2	mg/L	0.1	11/9/98	11
10	03	surface water	Boron	0.1	mg/L	0.1	3/7/00	3
)1	03	surface water	Biochemical Oxygen Dem	ND	mg/L	2.00	12/9/97	12
10	03	surface water	Biochemical Oxygen Dem	ND	mg/L	2	3/7/00	3
)4	03	surface water	Biochemical Oxygen Dem	NS	mg/L	2	8/4/98	8
11	03	surface water	Biochemical Oxygen Dem	NS	mg/L	2	6/1/00	6
)5	03	surface water	Biochemical Oxygen Dem	ND	mg/L	2	11/9/98	11
)9	03	surface water	Biochemical Oxygen Dem	NS	mg/L	2	12/6/99	12
)8	03	surface water	Biochemical Oxygen Dem	ND	mg/L	2	9/28/99	9
)3	03	surface water	Biochemical Oxygen Dem	4.02	mg/L	2	5/26/98	5
)6	03	surface water	Biochemical Oxygen Dem	NS	mg/L	2	2/10/99	2
)7	03	surface water	Biochemical Oxygen Dem	ND	mg/L	2	5/11/99	5
)2	03	surface water	Biochemical Oxygen Dem	NS	mg/L	2	3/3/98	3
)2	03	surface water	Bicarbonate	78.7	mg/L	1	3/3/98	3
)6	03	surface water	Bicarbonate	172	mg/L	1	2/10/99	2
)3	03	surface water	Bicarbonate	104	mg/L	1	5/26/98	5
)9	03	surface water	Bicarbonate	238	mg/L	2	12/6/99	12
)1	03	surface water	Bicarbonate	160	mg/L	1.00	12/9/97	12
)7	03	surface water	Bicarbonate	221	mg/L	1	5/11/99	5
)4	03	surface water	Bicarbonate	240	mg/L	1	8/4/98	8
10	03	surface water	Bicarbonate	168	mg/L	1	3/7/00	3
11	03	surface water	Bicarbonate	204	mg/L	1	6/1/00	6
)8	03	surface water	Bicarbonate	234	mg/L	1	9/28/99	9
)5	03	surface water	Bicarbonate	162	mg/L	1	11/9/98	11
)4	03	surface water	Arsenic	ND	mg/L	0.025	8/4/98	8
11	03	surface water	Arsenic	ND	mg/L	0.025	6/1/00	6
)3	03	surface water	Arsenic	ND	mg/L	0.025	5/26/98	5
)7	03	surface water	Arsenic	ND	mg/L	0.025	5/11/99	5
10	03	surface water	Arsenic	ND	mg/L	0.025	3/7/00	3
)8	03	surface water	Arsenic	ND	mg/L	0.005	9/28/99	9
)9	03	surface water	Arsenic	ND	mg/L	0.005	12/6/99	12
)1	03	surface water	Arsenic	ND	mg/L	0.0250	12/9/97	12
)5	03	surface water	Arsenic	ND	mg/L	0.025	11/9/98	11

fldRound	fldWell	fldMatrix	fldNewName	fldWell3	fldUnits	fldDL	fldSampleDate	fldSampleMont
)6	03	surface water	Arsenic	NS	mg/L	0.025	2/10/99	2
)2	03	surface water	Arsenic	ND	mg/L	0.01	3/3/98	3
)9	03	surface water	Aluminum	0.2	mg/L	0.1	12/6/99	12
)1	03	surface water	Alkalinity (CaCO3)	162	mg/L	1.00	12/9/97	12
)2	03	surface water	Alkalinity (CaCO3)	79.5	mg/L	1	3/3/98	3
)3	03	surface water	Alkalinity (CaCO3)	114	mg/L	1	5/26/98	5
)4	03	surface water	Alkalinity (CaCO3)	242	mg/L	1	8/4/98	8
11	03	surface water	Alkalinity (CaCO3)	216	mg/L	1	6/1/00	6
)6	03	surface water	Alkalinity (CaCO3)	174	mg/L	1	2/10/99	2
)5	03	surface water	Alkalinity (CaCO3)	163	mg/L	1	11/9/98	11
)7	03	surface water	Alkalinity (CaCO3)	222	mg/L	1	5/11/99	5
)8	03	surface water	Alkalinity (CaCO3)	234	mg/L	1	9/28/99	9
)9	03	surface water	Alkalinity (CaCO3)	238	mg/L	2	12/6/99	12
10	03	surface water	Alkalinity (CaCO3)	172	mg/L	1	3/7/00	3

Table 1

Toxic Substances Monitoring Program

Preliminary Summary of 1999 Data: Trace Elements in Fish and Clams (ppm, wet weight)

Station Number	Station Name	Species Code	Tissue	Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
801.11.89	Lower Newport Bay/Rhine Ch	YFC	L	08/10/99	NA	NA	0.089	5.3300	0.1290	NA	NA	NA	0.0060	23.90
801.11.96	Peters Canyon Channel	PRS	W	08/05/99	0.179	0.0350	0.121	1.2300	0.0300	0.048	0.1370	4.110	<0.0020	45.80
801.11.96	Peters Canyon Channel	PRS	W	08/05/99	0.190	0.0360	0.171	1.2900	0.0380	0.040	0.1390	4.240	0.0030	44.70
801.11.99	Upper Newport Bay/Newport Dunes	ORC	F	08/04/99	1.300	<0.0020	NA	NA	NA	0.050	0.0170	0.760	NA	NA
801.11.99	Upper Newport Bay/Newport Dunes	ORC	L	08/04/99	NA	NA	0.088	6.2600	0.0080	NA	NA	NA	<0.0020	18.40
901.12.##	Aliso Cr/Pacific Park Dr	PRS	W	08/27/99	0.245	0.2240	0.110	1.3000	0.0710	<0.015	0.1950	1.610	<0.0020	32.50
902.11.01	Santa Margarita R/Stuart Mesa Rd	CKF	W	08/25/99	0.221	0.0050	0.050	1.1200	0.0320	<0.015	0.1900	0.248	0.0270	28.30
902.22.03	Rainbow Creek	GSF	F	08/26/99	0.031	<0.0020	NA	NA	NA	0.051	0.0080	0.388	NA	NA
902.22.03	Rainbow Creek	GSF	L	08/26/99	NA	NA	0.067	2.4500	0.0100	NA	NA	NA	<0.0020	16.70
902.32.##	Murrietta Cr/u/s Temecula Cr	BLB	F	08/26/99	0.036	<0.0020	NA	NA	NA	0.059	0.0370	0.287	NA	NA
902.32.##	Murrietta Cr/u/s Temecula Cr	BLB	L	08/26/99	NA	NA	0.100	9.2500	0.0070	NA	NA	NA	0.0290	19.20
904.10.##	Loma Alta Cr/College Blvd	GAM	W	08/26/99	0.217	0.0220	0.236	3.6900	0.0770	0.061	0.1990	0.371	0.0340	37.70
904.21.02	Buena Vista Lagoon	LMB	F	08/25/99	0.072	<0.0020	NA	NA	NA	0.054	0.0100	0.392	NA	NA
904.21.02	Buena Vista Lagoon	LMB	L	08/25/99	NA	NA	0.122	3.8300	0.0210	NA	NA	NA	0.0060	21.90
904.31.##	Agua Hedionda Cr/El Camino Real	GAM	W	08/24/99	0.386	0.0250	0.220	1.3400	0.0380	<0.015	0.1520	0.461	0.0050	25.90
904.51.03	San Marcos Cr	LMB	F	08/24/99	0.045	<0.0020	NA	NA	NA	0.046	0.0230	0.335	NA	NA
904.51.03	San Marcos Cr	LMB	L	08/24/99	NA	NA	0.193	3.0800	<0.0020	NA	NA	NA	<0.0020	16.00
904.61.07	Escondido Cr/Elfin Forest Park	GSF	F	08/24/99	0.064	0.0010	NA	NA	NA	0.050	0.3410	0.496	NA	NA
904.61.07	Escondido Cr/Elfin Forest Park	GSF	L	08/24/99	NA	NA	0.070	2.4400	0.0100	NA	NA	NA	0.0050	17.30
907.11.03	San Diego R/u/s Taylor St	LMB	F	08/23/99	0.096	<0.0020	NA	NA	NA	0.035	0.0150	0.854	NA	NA
907.11.03	San Diego R/u/s Taylor St	LMB	L	08/23/99	NA	NA	0.112	5.9400	0.0130	NA	NA	NA	0.0130	23.10

L = Liver. F = Filet. W = Whole Body. < = Below Indicated Detection Limit. NA = Not Analyzed.

Species codes are listed in Table 3.

TABLE 2

Toxic Substances Monitoring Program

Preliminary Summary of 1999 Data: Organic Chemicals in Fish and Clams (ppb, wet weight)

Station Number	Station Name	Species Code	Tissue Type	Sample Date	Aldrin	alpha-Chlordene	cis-Chlordane	gamma-Chlordene	trans-Chlordane	cis-Nonachlor	trans-Nonachlor	Oxychlordane	Total Chlordane	Chlorpyrifos	Dacthal
801.11.09	San Diego Cr/Barranca Pkwy	PRS	W	08/05/99	<1.0	<1.0	4.2	<1.0	2.3	2.3	5.7	2.1	16.6	<2.0	<2.0
801.11.89	Lower Newport Bay/Rhine Ch	YFC	F	08/10/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
801.11.96	Peters Canyon Channel	PRS	W	08/05/99	<1.0	<1.0	3.2	<1.0	2.6	2.9	9.1	1.4	19.3	4.2	<2.0
801.11.96	Peters Canyon Channel	PRS	W	08/05/99	<1.0	<1.0	3.3	<1.0	2.8	3.2	9.8	1.5	20.7	5.2	<2.0
801.11.99	Upper Newport Bay/Newport Dunes	ORC	F	08/04/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	1.9	<1.0	1.9	<2.0	<2.0
901.12.##	Aliso Cr/Pacific Park Dr ✓	PRS	W	08/27/99	<1.0	<1.0	5.4	1.2	2.0	<2.0	5.3	3.6	17.5	4.3	4.1
902.11.01	Santa Margarita R/Stuart Mesa Rd ✓	CKF	W	08/25/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
902.22.03	Rainbow Creek ✓	GSF	F	08/26/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
902.32.##	Murrietta Cr/u/s Temecula Cr ✓	BLB	F	08/26/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	2.0	<1.0	2.0	<2.0	<2.0
904.10.##	Loma Alta Cr/College Blvd ✓	GAM	W	08/26/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	1.6	<1.0	1.6	<2.0	<2.0

Station Number	Dieldrin	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMU	p,p' DDMS	Total DDT	Dicofol	Diazinon	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Total Endosulfan	Endrin	Ethion
801.11.09	4.1	3.2	27.0	<2.0	139.0	<3.0	<5.0	8.9	NA	178.1	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
801.11.89	<2.0	<2.0	<2.0	<2.0	22.8	<3.0	<5.0	<3.0	NA	22.8	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
801.11.96	3.3	5.8	24.4	2.7	503.0	<3.0	<5.0	10.9	NA	546.8	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
801.11.96	3.4	5.8	25.8	2.8	516.0	3.1	<5.0	11.4	NA	564.9	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
801.11.99	<2.0	<2.0	6.0	<2.0	54.5	<3.0	<5.0	3.3	NA	63.9	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
901.12.##	8.8	<2.0	<2.0	<2.0	9.4	<3.0	<5.0	<3.0	NA	9.4	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
902.11.01	<2.0	2.6	4.8	<2.0	15.2	<3.0	<5.0	<3.0	NA	22.5	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
902.22.03	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0	<5.0	<3.0	NA	ND	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
902.32.##	<2.0	<2.0	<2.0	<2.0	2.9	<3.0	<5.0	<3.0	NA	2.9	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
904.10.##	<2.0	<2.0	<2.0	<2.0	7.6	<3.0	<5.0	<3.0	NA	7.6	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0

Station Number	alpha-HCH	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Total HCH	Heptachlor	Heptachlor-epoxide	Hexachlorobenzene	Methoxychlor	Oxadiazon	Ethyl Parathion	Methyl Parathion	PCB 1248	PCB 1254	PCB 1260	Total PCB	Toxaphene	Chemical Group A
801.11.09	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	0.7	<5.0	329.0	<2.0	<4.0	<25.0	71.0	14.0	85.0	81.4	102.1
801.11.89	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	39.0	<10.0	39.0	<20.0	ND
801.11.96	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	0.6	<5.0	59.6	<2.0	<4.0	<25.0	26.0	15.0	41.0	72.0	94.6
801.11.96	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	0.6	<5.0	62.7	<2.0	<4.0	<25.0	29.0	15.0	44.0	80.5	104.6
801.11.99	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	21.0	<10.0	21.0	<20.0	1.9
901.12.##	<1.0	<2.0	<2.0	<1.0	ND	<2.0	2.9	0.4	<5.0	41.9	<2.0	<4.0	<25.0	22.0	<10.0	22.0	<20.0	29.2
902.11.01	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	5.2	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	ND
902.22.03	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	ND
902.32.##	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	2.0
904.10.##	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	4.9	<2.0	<4.0	<25.0	21.0	<10.0	21.0	<20.0	1.6

NA Means that the sample was not analyzed for the chemical.
ND Means that the chemical was not detected.
< Means that the chemical was not detected above the indicated limit of detection.

F = Filet.
W = Whole Body.
Species codes are listed in Table 3.

TABLE 2

Toxic Substances Monitoring Program

Preliminary Summary of 1999 Data: Organic Chemicals in Fish and Clams (ppb, wet weight)

Station Number	Station Name	Species Code	Tissue Type	Sample Date	Aldrin	alpha-Chlordene	cis-Chlordane	gamma-Chlordene	trans-Chlordane	cis-Nonachlor	trans-Nonachlor	Oxychlordane	Total Chlordane	Chlorpyrifos	Dacthal
904.21.02	Buena Vista Lagoon	LMB	F	08/25/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
904.31.##	Agua Hedionda Cr/El Camino Real	GAM	W	08/24/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	4.7	2.6	7.2	<2.0	<2.0
904.51.03	San Marcos Cr	LMB	F	08/24/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
904.61.07	Escondido Cr/Elfin Forest Park	GSF	F	08/24/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	<1.0	<1.0	ND	<2.0	<2.0
907.11.03	San Diego R/u/s Taylor St	LMB	F	08/23/99	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0	3.0	<1.0	3.0	<2.0	<2.0

Station Number	Dieldrin	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMU	p,p' DDMS	Total DDT	Dicofol	Diazinon	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Total Endosulfan	Endrin	Ethion
904.21.02	<2.0	<2.0	<2.0	<2.0	2.2	<3.0	<5.0	<3.0	NA	2.2	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
904.31.##	<2.0	<2.0	3.3	<2.0	42.8	<3.0	<5.0	<3.0	NA	46.1	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
904.51.03	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0	<5.0	<3.0	NA	ND	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
904.61.07	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0	<5.0	<3.0	NA	ND	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0
907.11.03	<2.0	<2.0	<2.0	<2.0	4.8	<3.0	<5.0	<3.0	NA	4.8	NA	<20.0	<2.0	NA	NA	ND	<2.0	<6.0

Station Number	alpha-HCH	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Total HCH	Heptachlor	Heptachlor-epoxide	Hexachlorobenzene	Methoxychlor	Oxadiazon	Ethyl Parathion	Methyl Parathion	PCB 1248	PCB 1254	PCB 1260	Total PCB	Toxaphene	Chemical Group A
904.21.02	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	ND
904.31.##	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	7.2
904.51.03	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	ND
904.61.07	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	<10.0	<10.0	ND	<20.0	ND
907.11.03	<1.0	<2.0	<2.0	<1.0	ND	<2.0	<1.0	<0.3	<5.0	<3.0	<2.0	<4.0	<25.0	18.0	<10.0	18.0	<20.0	3.0

NA Means that the sample was not analyzed for the chemical.
ND Means that the chemical was not detected.
< Means that the chemical was not detected above the indicated limit of detection.

F = Filet.
W = Whole Body.
Species codes are listed in Table 3.

TABLE 3

Toxic Substances Monitoring Program
1999 Species Code List

Freshwater Fish *

Species Code	Common Name	Species Name	Family Name
AC	Arroyo Chub	*Gila orcutti*	Cyprinidae
BB	Brown Bullhead	*Ameiurus nebulosus*	Ictaluridae
BCR	Black Crappie	*Pomoxis nigromaculatus*	Centrarchidae
BG	Bluegill	*Lepomis macrochirus*	Centrarchidae
BK	Brook Trout	*Salvelinus fontinalis*	Salmonidae
BLB	Black Bullhead	*Ameiurus melas*	Ictaluridae
BN	Brown Trout	*Salmo trutta*	Salmonidae
CCF	Channel Catfish	*Ictalurus punctatus*	Ictaluridae
CP	Carp	*Cyprinus carpio*	Cyprinidae
GAM	Mosquitofish	*Gambusia affinis*	Poeciliidae
GSF	Green Sunfish	*Lepomis cyanellus*	Centrarchidae
LMB	Largemouth Bass	*Micropterus salmoides*	Centrarchidae
PCP	Prickly Sculpin	*Cottus asper*	Cottidae
PRS	Red Shiner	*Cyprinella lutrensis*	Cyprinidae
RBT	Rainbow Trout	*Oncorhynchus mykiss*	Salmonidae
RCH	California Roach	*Hesperoleucus symmetricus*	Cyprinidae
SKR	Sucker	*Catostomus sp.*	Catostomidae
SPM	Sacramento Pike Minnow	*Ptychocheilus grandis*	Cyprinidae
STB	Threespine Stickleback	*Gasterosteus aculeatus*	Gasterosteidae
TL	Tilapia	*Tilapia sp.*	Cichlidae

Marine Fish *

Species Code	Common Name	Species Name	Family Name
CKF	California Killifish	*Fundulus parvipinnis*	Cyprindontidae
ORC	Orangemouth Corvina	*Cynoscion xanthulus*	Sciaenidae
SSP	Shiner Perch	*Cymatogaster aggregata*	Embiotocidae
STF	Starry Flounder	*Platichthys stellatus*	Pleuronectidae
YFC	Yellowfin Croaker	*Umbrina roncador*	Sciaenidae

Non-Fish

Species Code	Common Name	Species Name	Family Name
TFC	Asiatic Clam (transplant)	*Corbicula manilensis*	Corbiculidae

* Common and scientific fish names were obtained from Robins, C.R., R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea, and W.B. Scott. 1991. Common and Scientific Names of Fishes from the United States and Canada. American Fisheries Society Special Publication 20, Bethesda, Maryland.

Oxadiazon in the San Diego Region

Use Patterns

Oxadiazon [3-{2,4-Dichloro-5-(methyl-ethoxy)phenyl}-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3H)-one] is a herbicide manufactured by the Societe Rhone-Poulenc, France. It is sold as Ronstar®. It has been used since the early 1970's (Crane, D.B. and C. Younghans-Haug, 1992) as a pre-emergent and post-emergent herbicide on annual grasses and broad-leaved weeds (Farm Chemicals, 1994).

It is registered for use on woody ornamental vines, shrubs, and trees, and turf areas to control annual grasses and broadleaf weeds. The two formulations currently available for weed control are the wettable powder 50% active ingredient (ai) and the granular material (1-2% ai). Of the five products containing oxadiazon, two are used strictly on turfgrass and the remaining three products can be applied to both turfgrass and woody ornamentals. (State Dept. of Pesticide Regulation, letter of Oct 24, 1991).

Depending on the type of weed to be controlled, herbicide application to turfgrass can occur in early Spring (January - April) or late summer to early fall. Applications to wood ornamentals may be made anytime throughout the year. Recommended application rates generally range from 2-4 lb ai per acre on both turfgrass and woody ornamentals (State Dept. of Pesticide Regulation, letter of Oct 24, 1991).

Historical Application in the Region

The reported use of oxadiazon in California has increased steadily since 1979 (table 1).

Table 1. Oxadiazon Use in California 1979-88 reported by the California Department of Food and Agriculture (CDFA).

Year	Total Pounds
1979	600.96
1980	704.06
1981	1173.95
1982	1666.5
1983	2991
1984	2286.6
1985	2945.6
1986	3702.4
1987	7728
1988	10995.1

Table 2. Amount of Chipco Ronstar G Herbicide (EPA Code 264-445-AA-0) used by nurseries in the San Diego Region.

Permit	Permittee	Twn Rng Sec	Date Applied	Quantity	Amount Used
301004	Oda Nursery	07S 07W 35	1/31/95 2/28/95 3/13/95	33.00 acres 48.00 acres 43.50 acres	1650 lbs 2400 lbs 2175 lbs

Environmental Fate of Oxadiazon

Oxadiazon (water solubility approximately 0.7 mg/l) appears to be a very persistent compound in soil (Department of Pesticide Regulation, letter of October 24, 1991). "Its half-life in a clay loam soil under aerobic conditions was given as 561 to 604 days, while in the same soil type, under anaerobic conditions, the half-life increased to 1111 to 2018 days (Rhone-Poulenc, 1988). It has a strong affinity to soil organic matter (Carringer et al., 1975). In addition, losses in soil through volatilization (Ambrosi et al., 1977), photodegradation (Rhone-Poulenc, 1988), and leaching (Ambrosi and Helling, 1977) are not considered significant routes."

Ambrosi et al. (1978) found that oxadiazon absorbed to soil and placed in a model ecosystem slowly partitioned to water over a 48 day period, never attaining equilibrium. Bioaccumulation ratios for organisms (mosquito fish, daphnids, snails, and algae) introduced into the system were found to be strongly associated witht he oxadiazon concentrations in solution, not on sediment. Imanaka et al (1981) reported that oxadiazon appeared to have a long persistence in carp (*Cyprinus carpio*) collected in Japan, 9 months after herbicide application."

In a Department of Pesticide, Environmental Hazards Assessment Program runoff water study conducted in cooperation with the Orange County Agricultural Commissioner, Department of Agriculture in 1991, oxadiazon detected in soil was documented to move off-site from application areas in discharge and irrigation runoff water. The study concluded that the presence of oxadiazon in soil may serve as a continual source for future off-site movement from outdoor nurseries, landscaped areas, and other use situations where rainfall, irrigation, or discharge water cannot be controlled from entering waterways. Once in the waterways, oxadiazon adsorbed to organic matter may be continually released into the aquatic environment (State Department of Pesticide Regulation, October 24, 1991 letter).

Risk Assessment

According to Ambrosi, D. et al, (1978), algae growth is severely reduced by oxadiazon, however daphnia and fish were unaffected. The study suggests that the magnitude of accumulation is low and nearly the same for algae, snails and daphnids, but about five times higher for fish. The desorption rate from soil was rapid for the first 7 days, then decreased with time, but never reached equilibrium. Oxadiazon is strongly adsorbed to soil and released slowly.

It is insoluble in water but soluble in solvents. It is considered toxic to fish (Farm Chemicals Handbook, 1991)(Hashimoto and Nishiuchi, 1982). Environmental guidelines warns of toxicity to fish and bees (Farm Chemicals Handbook, 1994).

The Department of Pesticide Regulation's October 24, 1991 letter states that:

> Risk assessment of oxadiazon in the aquatic environment has shown certain organisms to be very sensitive to the herbicide at low concentrations. Rhone-Poulenc (1990a) reported 60-100% mortality for crustaceans *Dapnia magna* exposed to six levels of oxadiazon (0.5-16.0 ppm). Low survival rates were also reported in a preliminary study conducted by Rhone-Poulenc (1990b) involving rainbow trout eggs exposed to three rates of oxadiazon (0.005 - 0.5ppm). At 29 days post-fertilization, mortality ranged form 61.5 to 66.5 to 95.5%. Adult bluegill sunfish (Lepomis macrochirus) and adult rainbow trout (*Oncorhynchus mykiss*) were less sensitive to oxadiazon with the LC50 determined to be 12.5 and 2.0 ppm, respectively (Rhone-Poulenc, 1990a).

Regional Board Concerns

The San Diego Regional Water Quality Control Board is concerned that the increasing use of the preemergent herbicide oxadiazon in southern California is affecting water quality in watersheds where nurseries apply great quantities of the herbicide. Contamination of the aquatic environment may occur thorough erosion of the pesticide treated soil into stream channels. The contamination may adversely effect aquatic organisims and results in biological accumulation in higher trophic organisms (eg., fish).

Nonpoint Source Concerns in Rainbow Valley

The Rainbow watershed is about 4,382 acres in northern San Diego Couny. Since 1960, the area has shown rapid development, including increases in single family residences and nursery operations. Water quality studies starting in 1975 began to show that non-point sources were causing increase in nitrate levels in Rainbow Creek and susequently the Santa Margarita River and the lagoon. Rainbow Creek is also a major contributor of total phosphate to the Santa Margarita river system. There is a marked rise in both nitrates and total phosphate in the Santa Margarita River between Willow Glen and Fallbrook PUD.

Nurseries of Rainbow Valley are major contributors of nitrate pollution within Rainbow Creek, and hence the surface and groundwaters of the Santa Margarita River to which it is tributary. Rainbow Creek has many avocado and citrus orchards, nurseries, turf farms and wineries within the watershed. Runoff of irrigation water used on these crops can carry nutrients and fertilizers into ground and surface water. Excess nutrients can cause eutrophication of surface waters, eliminating the oxygen necessary for a variety of plants and animals. Irrigation water which percolates into ground water may contaminate sources of drinking water.

There has also been increases in the number of single family residences and nursery operations. Water quality studies starting in 1975 began to show that non-point sources were causing increase in nitrate levels in Rainbow Creek and subsequently to the Santa Margarita River and its lagoon. The order of change ranges from the historical residual background of less than 5 mg/l before the mid-1970's and surpassed 300 mg/l by 1985 and 1987. Thus, the Santa Margarita River was placed on the list of impaired water bodies by the Regional Board.

To increase public awareness about agricultural non-point source pollution the Mission Resource Conservation District received a grant from USEPA to do a demonstration project and public awareness program on the Rainbow Creek tributary of the Santa Margarita River, entitled, "*Rainbow Creek Non-Point Source Nitrate Reduction: A Community Participation Project*" (The Cadmus Group, Inc. 1992).

Municipal Water Supplies

USMC Camp Pendleton has historically obtained its entire domestic and agricultural water supply from groundwater basins within the Camp boundaries. These include the Upper, Chappo, and Ysidora subbasins for the Santa Margarita River Basin, which are recharged by the Santa Margarita River. Camp Pendleton has no connection to an imported water supply.

Watershed Impacts

The Santa Margarita River washes into the Santa Margarita River Estuary, one of the few viable wetland habitats remaining in southern California. The estuary is approximately 235 acres and consists of beach dunes, upland areas, salt marsh, brackish marsh, open flats, mudflats and open water areas.

Methods

Map

See Appendix A.

Freshwater amphipod (*Hyalella azteca*) bioassays

Bioassays were conducted on the freshwater amphipod (*Hyalella azteca*) in accordance with "*Standard Guide for Conducting Sediment Toxicity Tests with Freshwater Invertebrates*" ASTM Designation: E 1383-93. (See Appendix ___). Animals were exposed to test sediments for ten days to determine the effects of site sediment on amphipod survival. Laboratory control water was Culligan charcoal fitered and dechlorinated water. The overlying water collected by the Regional Board at each site was used as dilution water.

One-liter glass jars were used as test chambers. Each site was assigned test chambers which contained about 800 ml overlying water (site water) and 200 ml (2 cm) of test sediment and test chambers contained only site water. Twenty organisms were randomly assigned to each of five replicate test chambers. Animals were fed a mixture of TetraMin and control water upon initiation.

The test was performed under static conditions. Temperature, dissolved oxygen, pH, and conductivity were monitored in a selected test chamber for each sediment daily. All water quality results were within the ranges specified in the test protocol indicating adequate test conditions.

Sediment and overlying water was transported to the laboratory in one-gallon cubitainers and one-liter glass jars respectively for each sample site. All of the samples containers were transported to the laboratory in a cooler equipped with frozen blue ice packs. Upon arrival at the laboratory samples were placed in a refrigerator at 4° C until needed. Samples were collected on 6/17/96 from each of the following three test sites at Rainbow Creek (HSA 902.22):

- *Station LLP-956-015* = Rainbow creek at Rainbow Glen Road;
- *Station LLP-956-016* = Rainbow creek at Willow Glen Road; and
- *Station LLP-956-017* = Rainbow creek at junction of Stage Coach Lane and Willow Glen Road, follow trail crossing, upstream of confluence with Santa Margarita River.

Table 3. Station Location

902.11.02	Santa Margarita Ri/ Oceanside	33°14'40"	117°22'50"	Station located on the Marine Corps Base at Camp Pendleton.
902.13.02	O'Neill Lake	33°19'45"	117°19'15"	Station located along the west end of the lake.
902.21.01	Santa Margarita Ri/ Sandia Ck Dr	32°39'27"	117°04'12"	Station located downstream from Sandia Creek Drive bridge.
902.22.03	Rainbow Ck	33°24'09"	117°12'28"	Station located at Water District road crossing about 1/2 mile upstream of the Santa Margarita River.
902.22.04	Santa Margarita Ri/ Willow Glen Rd	33°24'28"	117°12'45"	Station located about 3/4 mile upstream of Rainbow Creek.
902.23.01	Rainbow Ck/Highway 15	33°24'49"	117°09'24"	Station located at 5th Street east of Highway 15, near culvert at crossing.

Table 4. Oxadiazon levels found in fish tissue.

Station # and Bottle #	Name	Date	Species	Oxadiazon
901.20.00 340.001.W.93	San Juan Creek/ Doheny State Park	17-Jun-93	Red Shiner	320 ng/g
901.20.00 340.001.W.94	San Juan Creek/ Doheny State Park	12-Jun-94	Red Shiner	180 ng/g
901.20.00 340.002.F.94	San Juan Creek/ Doheny State Park	12-Jun-94	LMB	56 ng/g
901.20.04 350.001.W.94	Trabuco Creek	12-Jun-94	Red Shiner	30 ng/g
902.13.02 226.001.F.89	O'Neill Lk	16-Jun-89	LMB	Not Detected
902.21.01 025.001.F.94	Santa Margarita Ri/ Sandia Ck	11-Jun-94	BBH	25 ng/g
902.22.03 298.001.F.91	Rainbow Ck	14-Jun-91	BBH	530 ng/g
902.22.03 298.001.W.92	Rainbow Ck	24-Jun-92	AC	1000 ng/g
902.22.04 025.001.F.91	Santa Margarita Ri/ Willow Glen Rd	14-Jun-91	GSF	Not Detected
902.23.01 298.001.W.93	Rainbow Ck/ Hwy 15	15-Jun-93	GAM	540 ng/g
902.23.01 298.001.F.94	Rainbow Ck	09-Jun-94	BBH	34 ng/g
903.11.05 083.001.F.91	San Luis Rey	13-Jun-91	LMB	Not Detected
903.11.08 225.001.F.89	Guajome Lk	17-Jun 89	BBH	20 ng/g
903.12.06 083.003.F.91	Keys Ck.	13-Jun-91	GSF	Not Detected
907.11.00 263.001.W.90	Famosa Sl.	22-Jun 90	Calif. killifish	5.2 ng/g
907.11.09 028.001.W.90	Alvarado Ck.	27-Jun 90	GAM	22 ng/g

Sediment chemistry

Results of TSMP Organics Analysis for Sediment Samples

Table 5. shows the results of oxadiazon analyses performed on sediment samples. All oxadiazon results greater than 10 ng/g were confirmed by GC-MS. The data was reviewed for accuracy and precision based on criteria used by EPA SW-846 Method 8080 and Laboratory Quality Control for EMAP-Estuaries chemical analyses. (See Appendix __).

Table 5. Results of oxadiazon analyses performed on sediment samples.

Station Number & Date Sampled	Location	Oxadiazon	Other Constituent
LLP-945-001 5/30/95	Tributary to McGonigle Canyon Ck.	<10 ng/g	
LLP-945-002 5/30/95	McGonigle Canyon Ck.	<10 ng/g	p,p'-DDE = 1.7 ng/g
LLP-945-003 5/30/95	McGonigle Canyon Ck near Carmel Country Rd xing downstream of LLP-945-001 and LLP-945-002	48 ng/g	chlorpyrifos = 38 ng/g dacthal = 3.4 ng/g beta HCH = 2.3 ng/g p,p'DDE = 1.4 ng/g
LLP-945-004 5/30/95	Drainage to Batiquitos Lagoon, along Caudor St. Downstream of G & G Growers.	56 ng/g	
LLP-945-005 5/30/95	Storm drain to Batiquitos Lagoon, adjacent to Piraeus and La Costa Ave.	8.6 ng/g	
LLP-945-006 6/1/95	Rainbow Valley Blvd xing, adj to Rainbow Flynn Nursery and in watershed of Rainbow Creek in Fallbrook Oxadiazon 551 ng/g (ppb) Uses 2500 pounds of oxadiazon.	320 ng/g	trans-chlordane = 1.3 ng/g trans-nonachlor = 1.6 ng/g chlorpyrifos = 120 ng/g dichlorobenzophenone = 3.8 ng/g beta HCH = 3.1 ng/g delta HCH = 1.1 ng/g p,p'DDE = 4.0 ng/g hexachlorobenzene = 0.47 ng/g
LLP-945-008 6/1/95	Rainbow creek at Willow Glen Road xing.	40 ng/g	
LLP-945-009 6/1/95	Santa Margarita River at Sandia Creek Drive crossing.	3.1 ng/g	p,p'-DDE = 3.6 ng/g

LLP-945-010	Moosa Canyon Ck., near Old Castle Rd.	N.D.	
LLP-945-011 6/5/95	Walker Vice Nursery, near 11055 and 11050 Mystery Mtn. Rd.	38 ng/g	
LLP-945-012 6/5/95	Horakh Nursery 30661 Valley Center Road, Valley Center. Tributary to Keys Canyon Ck, hence San Luis Rey River. Used 250 lbs oxadiazon.	7400 ng/g	tcis-chlordane = 3.1 ng/g trans-chlordane = 3.2 ng/g trans-nonachlor = 2.4 ng/g endosulfan I = 2.9 p,p'DDE = 3.9 ng/g
LLP-945-013 6/5/95	Unamed tributary to Escondido Creek, Sediment downstream of 8810 Detwiler Rd, Escondido	5.1 ng/g	
LLPL-945-014 6/5/95	Tributary to Lake Hodges. Near Mount Isreal Rd at Del Dios Hwy also near Toyon Cyn Rd	<10 ng/g	
LLP-945-015 6/6/95	Oda Tributary to San Juan Ck downstream of Oda Nursery at 31101 Ortega Hwy, San Juan Capistrano	890 ng/g	
LLP-945-016 6/6/95	San Juan Ck, La Novia Ave xing. Sandy substrate with gravel.	3.5 ng/g	
LLP-945-017 6/6/95	Buena Ck, South Santa Fe xing.	3.8 ng/g	
LLP-945-018 6/6/95	Tributary to San Marcos Ck, hence Agua Hedionda Ck. Briggs Tree Nursery, 1111 Poinsettia Ave, Vista. Used 150 lbs oxadiazon	11 ng/g	
LLP-945-019	Agua Hedionda Ck, upstream of El Camino Real hwy xing.	<10 ng/g	

LLP-945-020 6/13/95	Tributary to San Dieguito River, hence Lake Hodges, drainage from Mount Royal Nursery, 14225 Highland Valley Rd, Escondido. Used 510 lbs oxadiazon.	<10 ng/g	
LLP-945-021 6/13/95	Drainage from Pinery Tree Farm	10 ng/g	
RLS-945-022 6/26/95	Buena Vista Lagoon at Mall	4.8 ng/g	
RLS-945-024 6/26/95	Buena Vista Lagoon, north side	3.1 ng/g	
RLS-945-025 6/26/95	San Clemente Ck	6.4 ng/g	
RLS-945-026 6/26/95	San Dieguito Ri	N.D.	
RLS-945-027 6/26/95	San Marcos Ck	N.D.	
RLS-945-028 6/27/95	Forrester Ck	10 ng/g	
RLS-945-029 6/27/95	Alvarado Ck at Car Wash	40 ng/g	
RLS-945-030 6/27/95	San Diego River at I-805	39 ng/g	
RLS-945-031 6/27/95	San Diego River at Sea World	3.7 ng/g	
RLS-945-032 6/27/95	Otay River at Otay Valley Rd	N.D.	
RLS-945-033 6/27/95	Otay River at Industrial	N.D.	
RLS-945-034 6/29/95	Sycamore Ck at 9120 Carlton Oaks	N.D.	
RLS-945-035 6/29/95	Sweetwater Ri at Mall	N.D.	
RLS-945-036 6/29/95	Rose Ck at Garnet	11 ng/g	
RLS-945-037 6/29/95	Tecolote Ck, east of Morena	N.D.	

LLP-956-012 6/13/96	Santa Margarita River, Camp Pendleton, *upstream of Stuart Mesa* Road. (June 13, 1996) Results pending due possibly mid Sept 1996.	Pending	
LLP-956-013 6/13/96	Santa Margarita River, Camp Pendleton, near Naval Rehab hospital, where road crosses stream, upstream of Lake O'Neill (June 13, 1996) Results pending due possibly mid Sept 1996.	Pending	
LLP-956-015 6/17/96	Rainbow creek at Rainbow Glen Road (June 17, 1996) Results pending due possibly mid Sept 1996.	Pending	
LLP-956-016 6/17/96	Rainbow creek at Willow Glen Road (June 17, 1996) Results pending due possibly mid Sept 1996.	Pending	
LLP-956-017 6/17/96	Rainbow creek, near junction with Santa Margarita River (June 17, 1996) Results pending due possibly mid Sept 1996.	Pending	
LLP-956-023 6/27/96	Escondido Ck at Encinitas Rd Fathead Minnow and Ceriodaphnia bioassay	Survived in 100% creek water	

Stream survey of Rainbow Creek

The following were observed on 6/17/96 at *Station LLP-956-015* in Rainbow creek at Rainbow Glen Road; *Station LLP-956-016* in Rainbow creek at Willow Glen Road; and *Station LLP-956-017* in Rainbow creek upstream of confluence with Santa Margarita River, and by trail crossing at Rainbow creek reachable from the junction of Stage Coach Lane and Willow Glen Road.

Table 6. Wildlife observed at sample sites.

LLP-945-001 Mosquito larvae	*LLP-945-002* Gambusia frog crayfish daphnia larger fish	*LLP-945-003* Gambusia tadpoles snails
LLP-945-004	*LLP-945-005*	
LLP-945-006	*LLP-945-008* Arroyo chubs tadpoles aquatic insects	*LLP-945-009* Mayflies Blackflies caddis flies ostracods
LLP-945-010	*LLP-945-011*	*LLP-945-012*
LLP-945-013	*LLP-945-014*	
LLP-945-015	*LLP-945-016* Tadpoles snails mosquito larvae small fish	
LLP-945-017 Black fly larvae	*LLP-945-018*	*LLP-945-019*
LLP-945-020	*LLP-945-021*	*RLS-945-022*
RLS-945-024	*RLS-945-025*	
LLP-956-015 mosquitofish California tree frog adult dragonfly leeches snails	*LLP-956-016* mosquitofish arroyo chub California tree frog Pacific tree frog caddisfly larvae adult damselfly leeches	*LLP-956-017* arroyo chub caddisfly larvae mayfly nymphs adult damselfly adult dragonfly Pacific tree frog

Toxicity of sediment in Rainbow Creek - AMPHIPOD BIOASSAY

Table 7. Amphipod bioassay (from Appendix ___).

Amphipod bioassay 1996	Lab Control	Site LLP-956-15		Site LLP-956-16		Site LLP-956-17	
	Water	Sediment	Water	Sediment	Water	Sediment	Water
Mean Percent Survival	93	2	97	1	93	12	92
NH3 (mg/l)	1.88	0.055	2.52	0.037	11	0.034	6.54

Discussion

Sediment

Understanding the fate and transport of these contaminants is important because of the potential for these contaminants to alter wetland habitat. For instance, some of these chemicals may adhere to soil or sediment particles and prevent the normal development of vegetation; others may bioaccumulate and impact wildlife that inhabit the Santa Margarita River wetlands and estuary.

Water Quality

Aquatic Insects

1. Surveys on Santa Margarita

According to Hunsacker (1992), EPA bioassessment of macroinvertebrate biological integrity indicates the river has a rating of "very good".

2. Rainbow Creek

Fish and Wildlife

A California Species of Special Concern, the arroyo chub, *Gila orcutti*, is native to the Santa Margarita river system and is found along Rainbow creek.

The endangered tidewater goby, *Eucyclogobius newberryi*, is native to the Santa Margarita River mouth.

Other fish found within the Santa Margarita River watershed include largemouth bass, bluegill, green sunfish, black bullhead, golden shiners and mosquitofish.

Amphibians which inhabitat the Santa Margarita River watershed include:
Arroyo Southwestern Toad, and California Red Legged Frog.

Endangered Birds known to reside in Santa Margarita River watershed.
Light-footed Clapper Rail

Plants

Nursery Management Practices

Conclusion

Rainbow Creek Nonpoint Source Nitrate project - improve water quality of creek by establishing demonstration projects and public education programs. These include introduction of "*Adopt a Watershed*" program to the elementary school; RCD's mobile Irrigation Lab Program to demonstrate important irrigation practices; providing the public with training and literature on the proper application of fertilizers, herbicides, and pesticides and proper septic system operation; and providing ongoing nitrate monitoring along Rainbow Creek.

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d:\admin\reports\oxadiazo\rainbow.ck

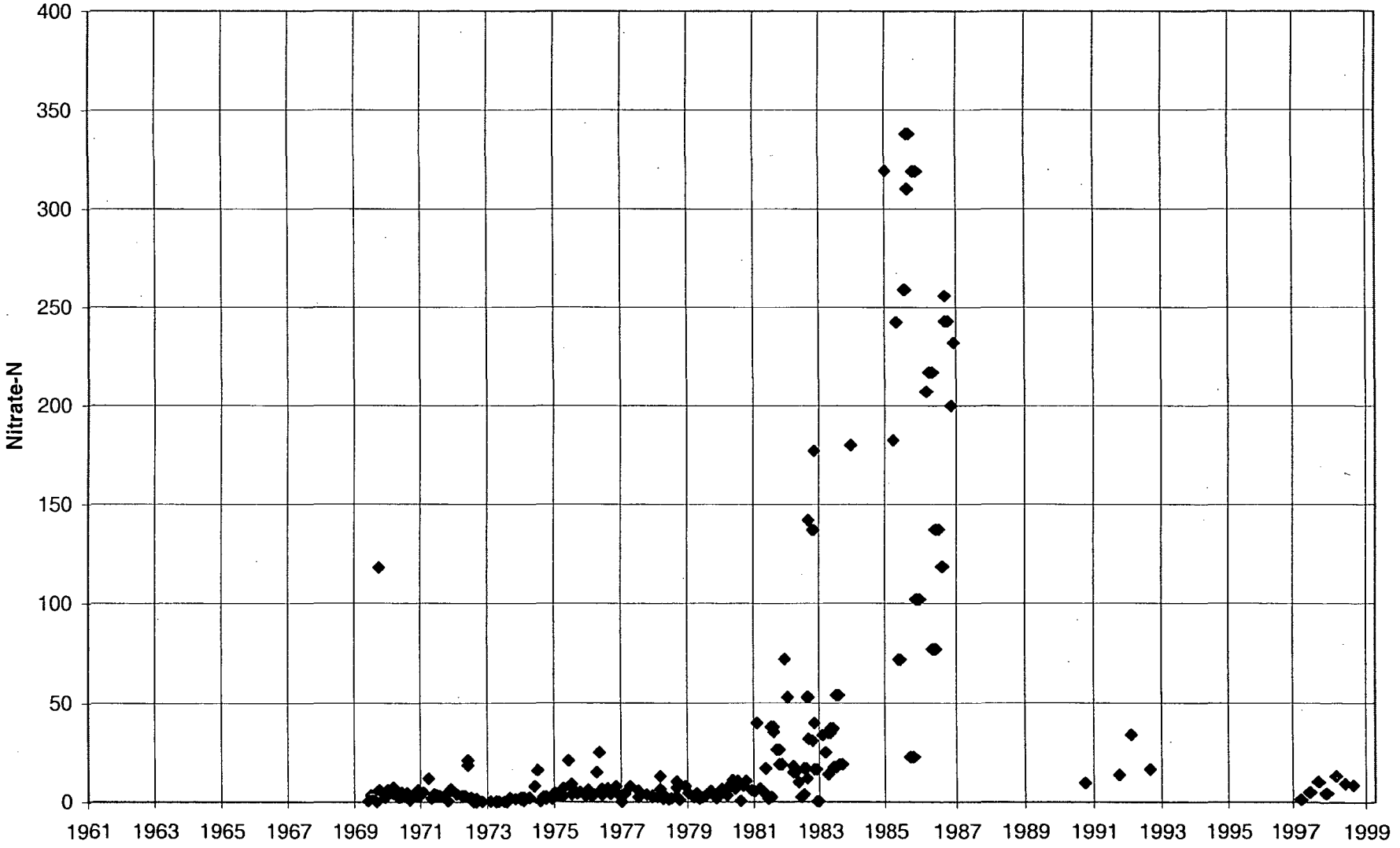
OXADIAZON STUDY

The San Diego Regional Water Quality Control Board is concerned that the increasing use of the preemergent herbicide oxadiazon in Southern California could be affecting water quality in watersheds where there are a considerable number of nurseries and/or golf courses. In order to determine whether oxadiazon is entering surface waters in the San Diego Region and if this contaminant is accumulating in the sediments and aquatic life in those water bodies, the RWQCB will conduct a study in Rainbow Creek - the drainage basin for several nurseries - within the Santa Margarita Watershed. The RWQCB will attempt to characterize the fate and transport of oxadiazon by determining what concentrations of oxadiazon are in the soil on site and the concentrations in the sediments of the creek, as well as concentrations in the tissue of fish collected from the creek.

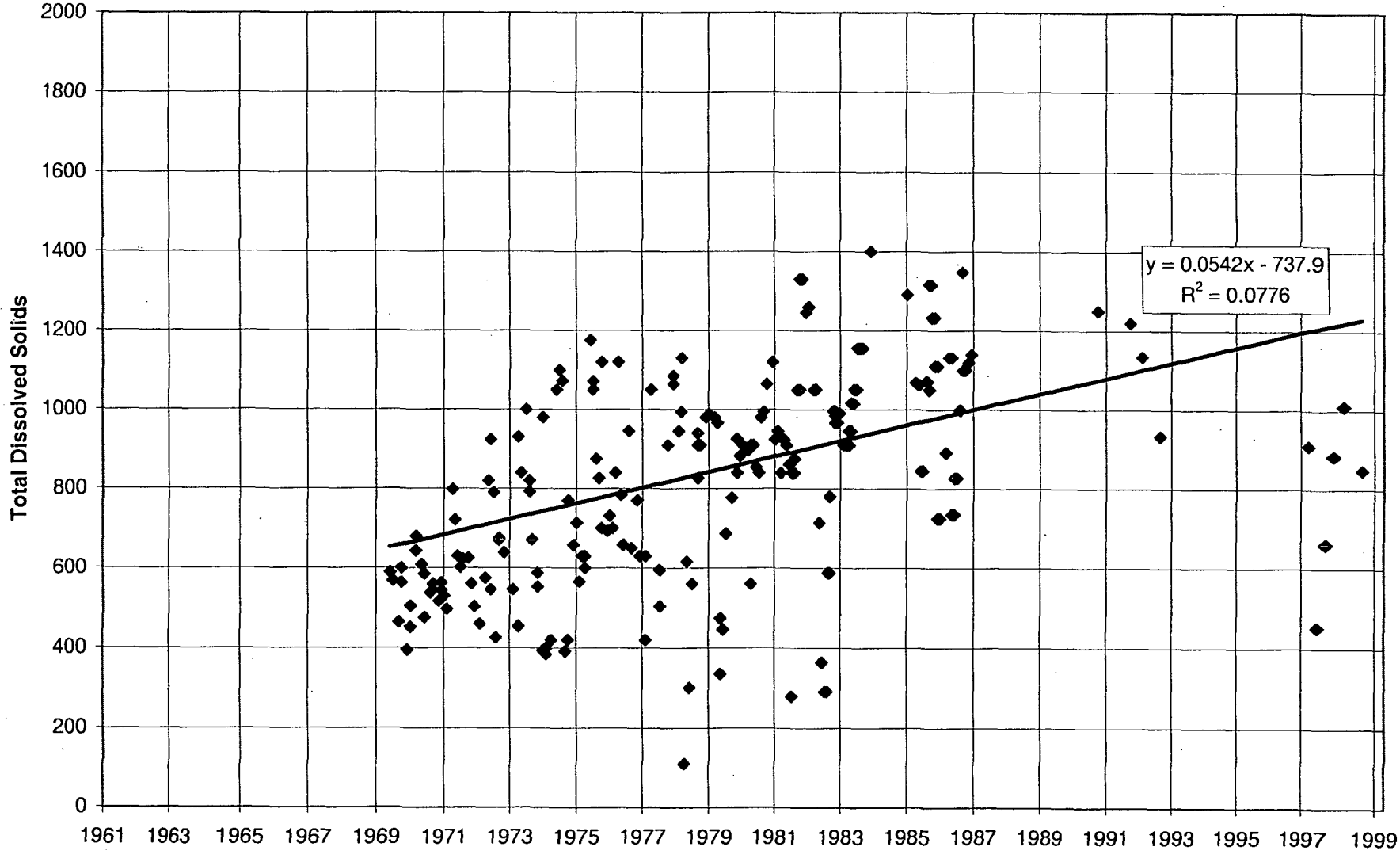
All analyses will be conducted by the Department of Fish and Game's Water Pollution Control Laboratory. Fish tissue analyses will be conducted on the fish collected from Rainbow Creek in June 1994 by personnel from the Department of Fish and Game. Surficial sediments will be collected from Rainbow Creek by RWQCB staff in the same regions from which the fish were collected. Five Regions of the Creek will be studied. Sediments drawn from different areas within each region will be composited, and each regional composite will be analyzed for a full range of organic contaminants. Soil samples from the oxadiazon distribution area at the Nurseries will also be composited and tested. Soil/sediment samples will also be collected from retention basins (if applicable) and a region downstream of the oxadiazon application area. Samples from each of these regions will also be composited and analyzed. At least one composite sample will be submitted and analyzed in triplicate. The

triplicate analysis will help identify the accuracy of the laboratory procedures and the heterogeneity of the original substrate.

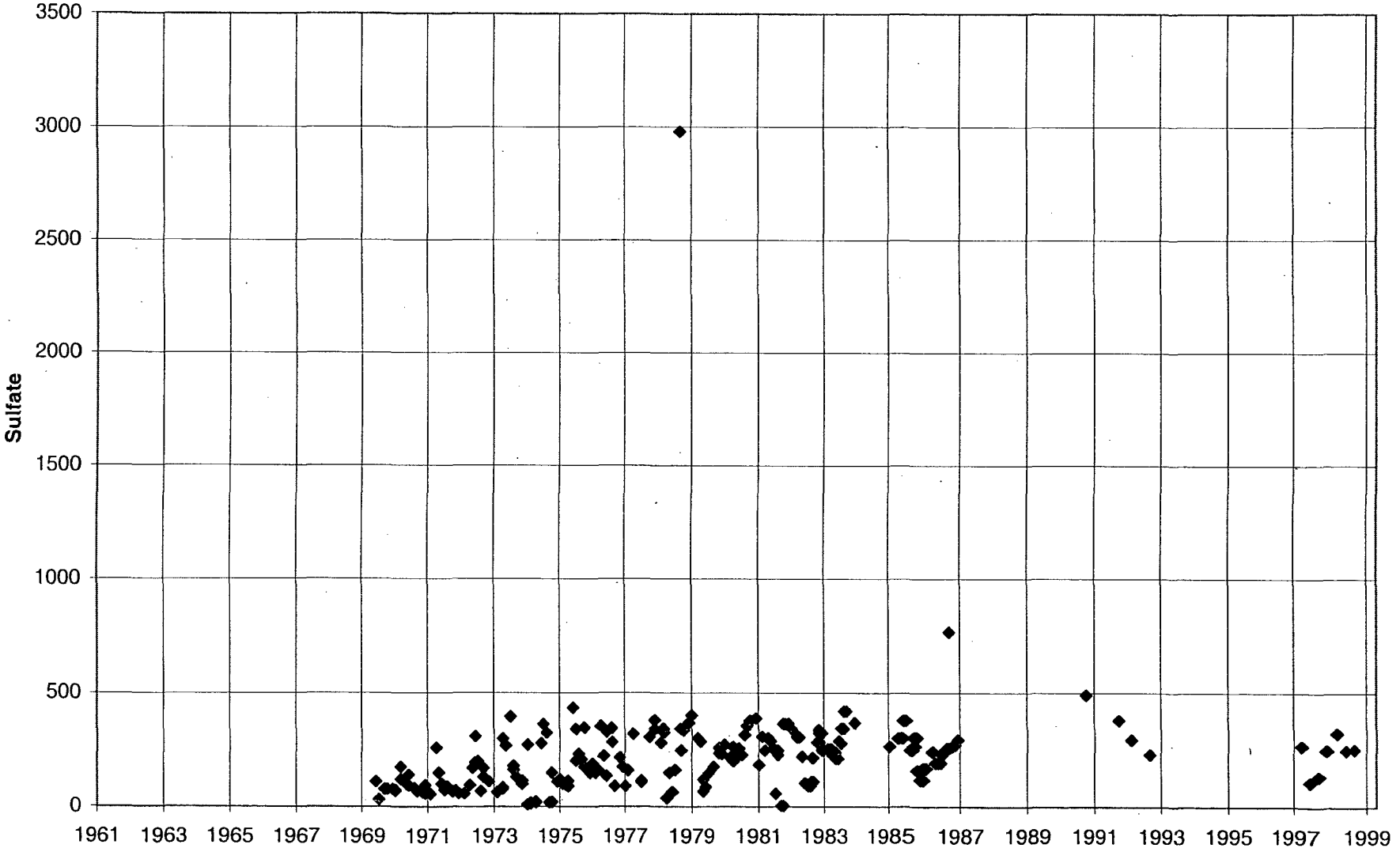
Rainbow Creek near Fallbrook



Rainbow Creek near Fallbrook



Rainbow Creek near Fallbrook



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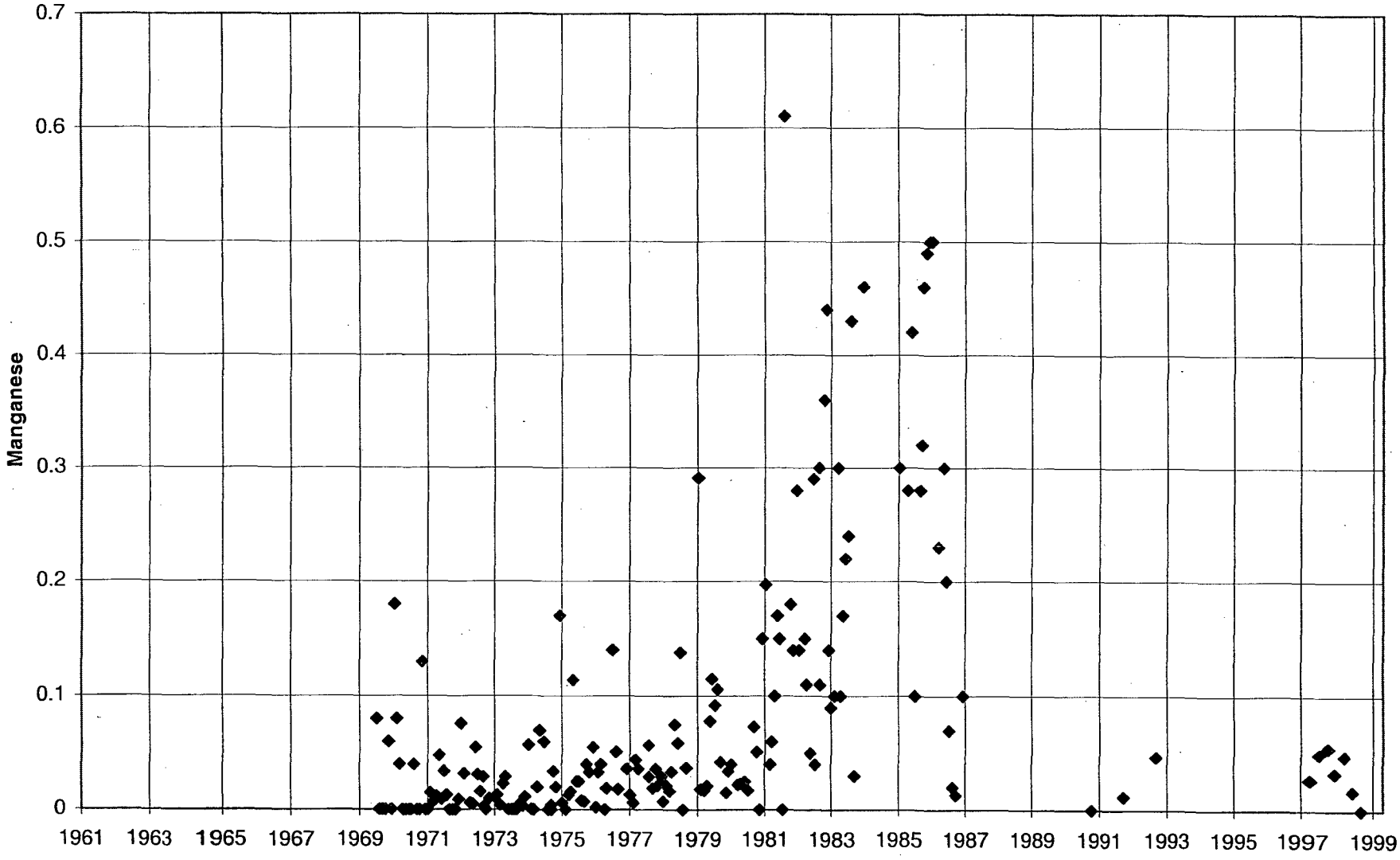
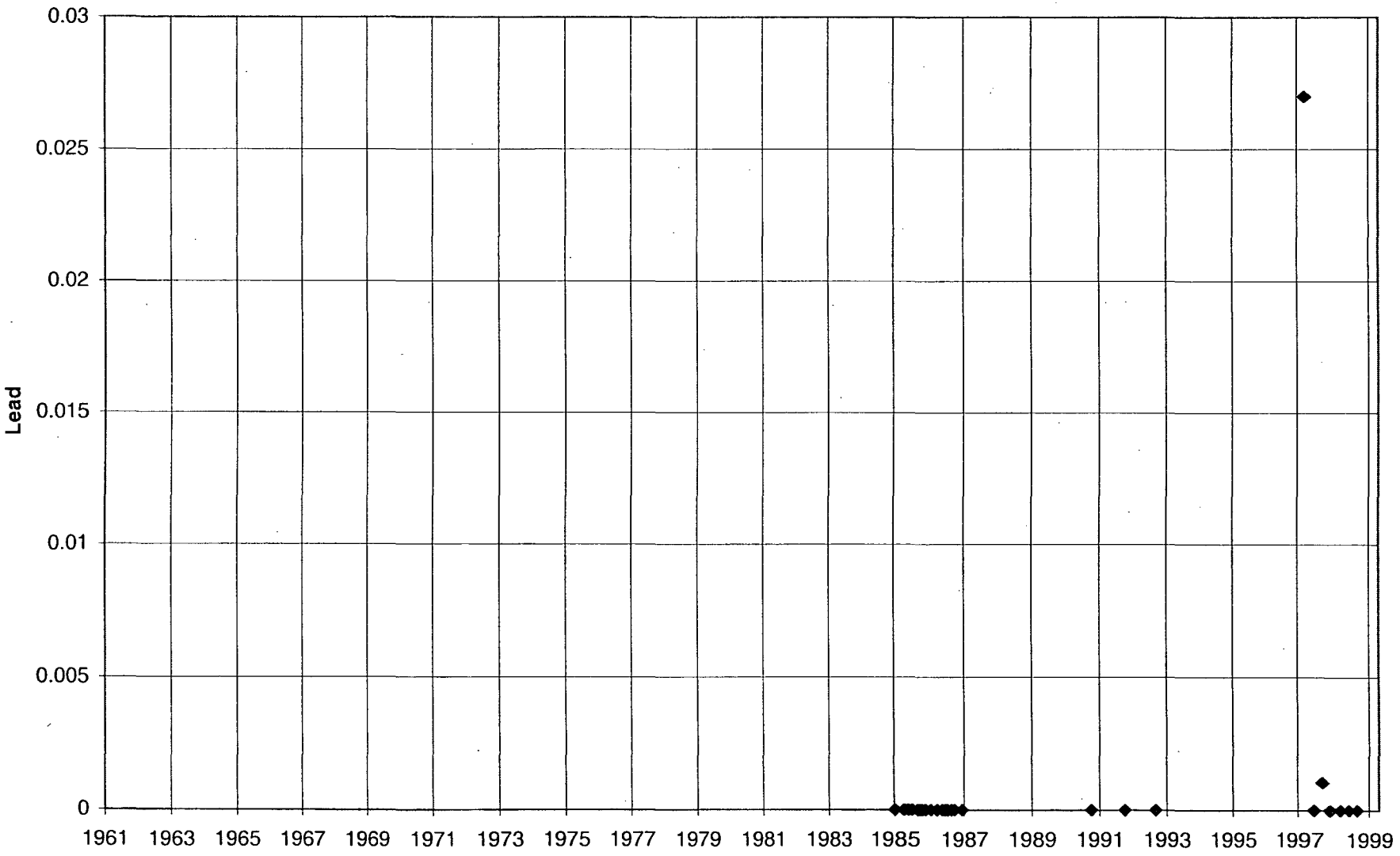
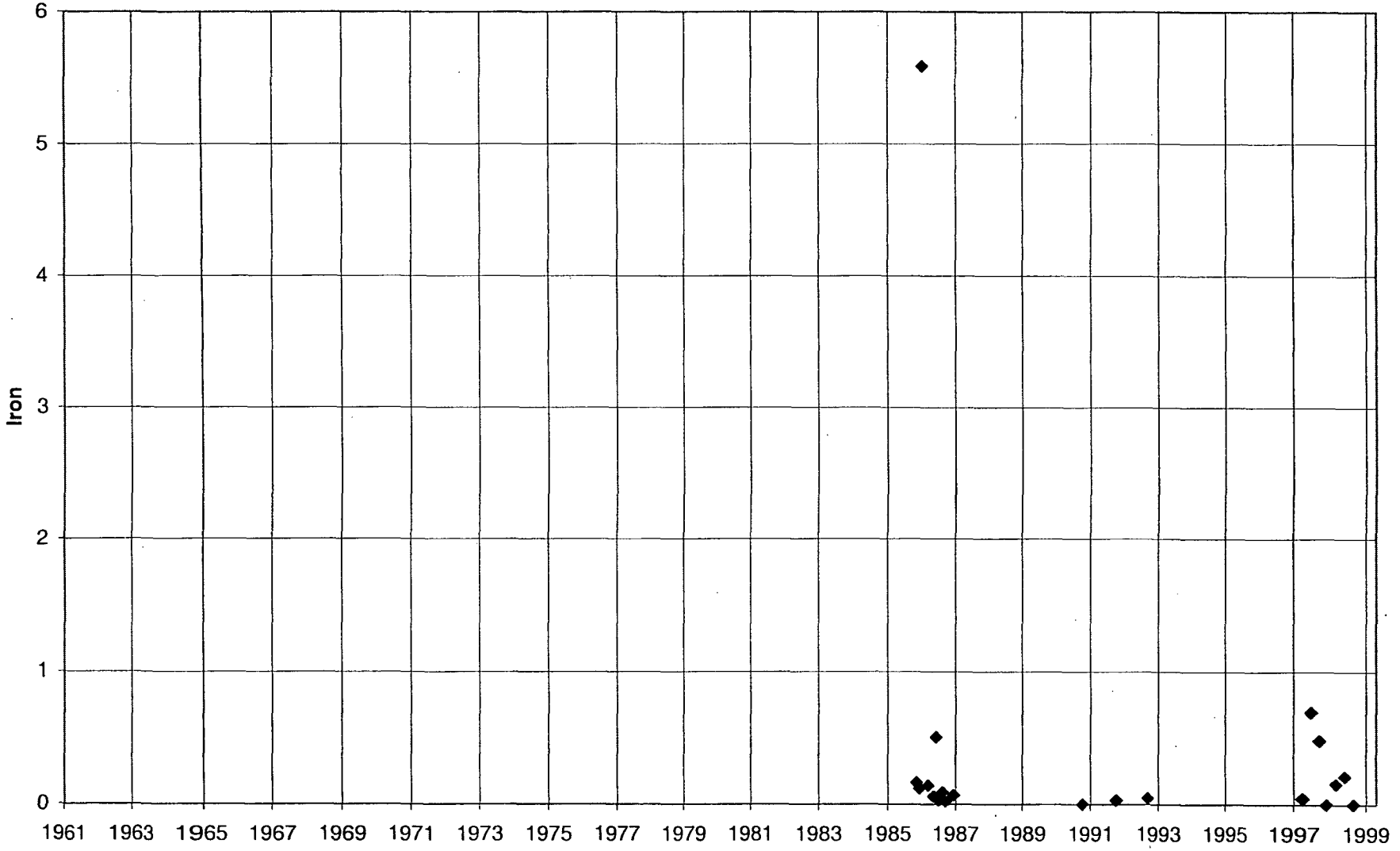


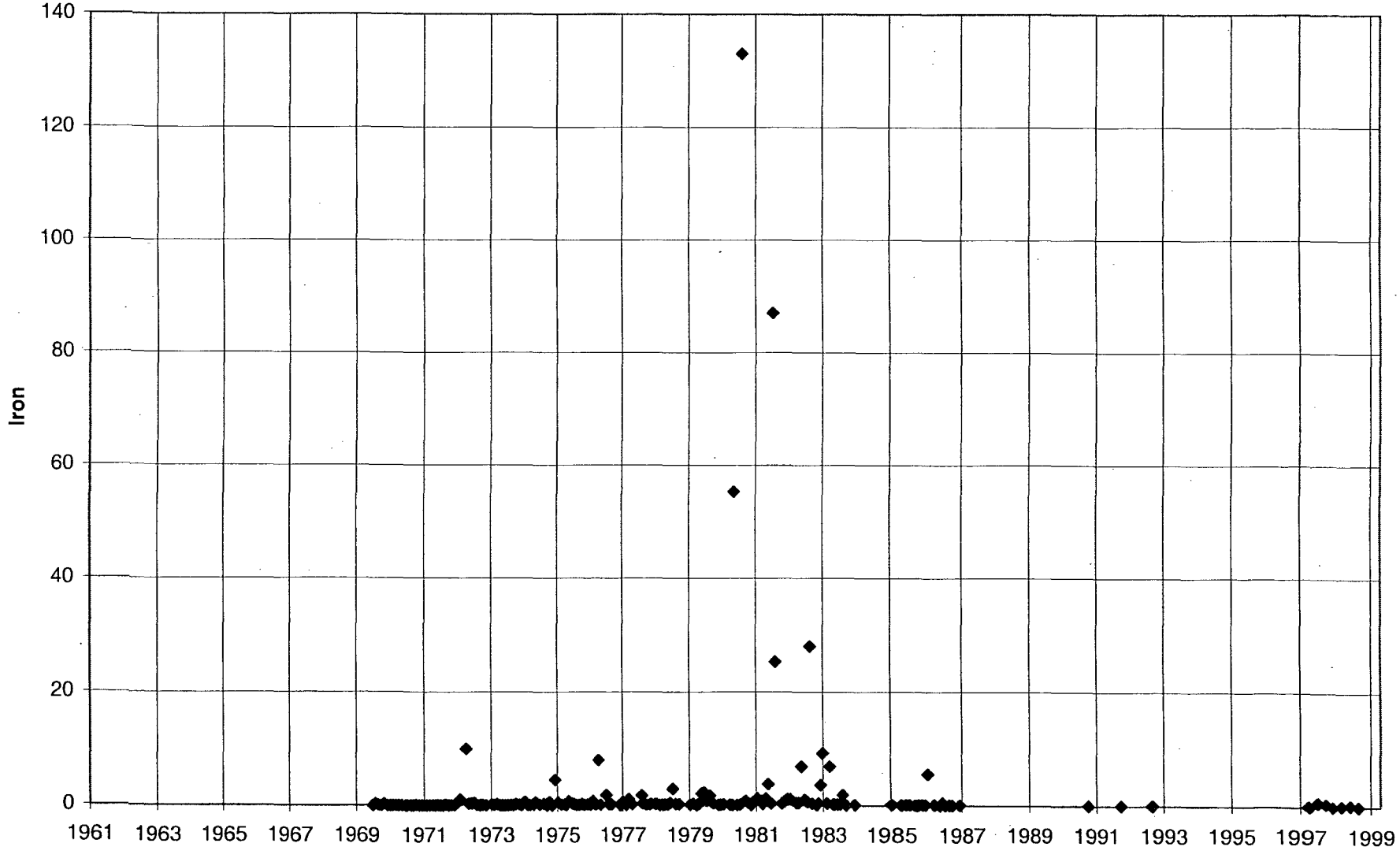
Rainbow Creek near Fallbrook



Rainbow Creek near Fallbrook



Rainbow Creek near Fallbrook



Rainbow Creek
See Santa Marg. File for data

DATA SUMMARY
Disc 1 of 2 (submitted by Camp Pendleton)

LAW-Crandall

11043000	Daily Mean Discharge Data, "Murrieta C A Temecula, CA", 1930 to 1997, discharge as ft^3 / s
11044250	Daily Mean Discharge Data, Rainbow Cr near Fallbrook, CA, 1989 – 1998
11044800	Daily Mean Discharge Data, De Luz Cr near De Luz, CA, 1992 – 1997
11045300	Daily Mean Discharge Data, Fallbrook Cr, near Fallbrook, CA, 1993 – 1998
11046360	Daily Mean Discharge Data, Cristianitos C Ab San Mateo C Nr San Clemente, CA, 1993 – 1997
CADMaps	Southern California Road Map, San Mateo and Santa Margarita Watersheds, Monitoring Locations (San Mateo), Monitoring Locations (Santa Margarita)
Cover	2 pg cover = Final "Water Quality Studies and Proposed Watershed Monitoring Program for Portions of San Mateo and Santa Margarita River Watersheds (Vol. 2 of 2)
Cover2	2 pg cover = Final "Water Quality Studies and Proposed Watershed Monitoring Program for Portions of San Mateo and Santa Margarita River Watersheds (Vol. 1 of 2)
precip	trouble opening document, but appears to be rainfall data for 1942 – 1999 SC Dam, Oceanside, Escondido, Escondido 2
precip1	Graph with rainfall data from 1942 – 1999 SC Dam, Oceanside, Escondido, Escondido 2
precip10	San Clemente Dam 1942 – 1997 data = ?
precip11	Sam Clemente Dam Rainfall data 1942 – 1997
precip12	San Clemente Dam Precipitation Record 1940 – 1998
precip13	Oceanside & Oceanside Harbor Station Precipitation Record 1940 - 1998
precip14	Oceanside 1942 – 1997 data = ?
precip15	Oceanside Harbor Rainfall data 1943 – 1997
precip2	Combined Precipitation Record 1940 – 1998, location=?
precip3	Escondido, CA 1979 – 1997 data = ?
precip4	Escondido 2 Rainfall data 1979 – 1997
precip5	Escondido 2 Precipitation Record 1979 – 1997
precip6	Escondido 1931 – 1979 data = ?
precip7	Escondido Rainfall Record 1934 – 1979
precip8	Escondido Precipitation Record, 1940 – 1979
precip9	San Clem 1931 – 1979 data = ?
Report	Final Report of Water Quality Studies and Proposed Watershed Monitoring Program for Portions of San Mateo and Santa Margarita River Watershed Marine Corps Base, Camp Pendleton, California. Contract No. N68711-95-D-7573, D.O. 0021
table10	San Mateo Watershed 1998-1999 data on alkalinity, arsenic, bicarbonate, BOD, boron, calcium, carbonate, chloride, conductivity, copper, cyanide, fecal coliform, fluoride, hardness, hydroxide, iron, lead, magnesium, manganese, mercury, nitrate, nitrogen, oil & grease, pH, phosphorus, potassium, sodium, sulfate, surfactants, total coliform, TDS, TOC and zinc.

table11	Santa Margarita Watershed1997-1999 data on alkalinity, arsenic, bicarbonate, BOD, boron, calcium, carbonate, chloride, conductivity, copper, cyanide, fecal coliform, fluoride, hardness, hydroxide, iron, lead, magnesium, manganese, mercury, nitrate, nitrogen, oil & grease, pH, phosphorus, potassium, sodium, sulfate, surfactants, total coliform, TDS, TOC and zinc.
Table8PDF	Water Quality Evaluation Summary, San Mateo Watershed
WQ	Microsoft Access Database: Many reports and tables (try reports on pollutant loading and surface waters)

SWR West Study

These GIS files require ArcView software before they can be opened. Some files also require the spatial analyst and 3-D analyst extensions to be loaded. Please see "Read me" file on disc. Some topo maps are .tif files.

SMRWQM-Group

SMR Figure3_41	Figure 3-4 = Proposed Water Quality Sampling Locations
SMRWQM-Draft Plan	Framework Monitoring Plan for the Santa Margarita River Watershed California
SMRWQM-Group Presentation	Powerpoint Presentation: Water Quality Monitoring and Water Management

Disc 2 of 2

LAW-Crandall

chart	Alkalinity Chart Fallbrook Cr near Fallbrook, CA
chart1	De Luz Cr, Fallbrook Cr, Murrieta Cr, Rainbow Cr, San Mateo Cr (x2), Sandia Cr, Santa Margarita River (x3) for alkalinity (2 types), aluminum, antimony and arsenic
chart10	Cristianitos Cr, De Luz Cr, Fallbrook Cr, Murrieta Cr, Rainbow Cr, San Mateo Cr, Sandia Cr, Santa Margarita Rvr for sodium, sulfate, surfactants, thallium, tin,
chart11	Santa Margarita Rvr, De Luz Cr, Cristianitos Cr, Murrieta Cr, Rainbow Cr, Sandia Cr, San Mateo Cr, Fallbrook Cr for TOC, vanadium and zinc
chart12	same creeks for fluoride
chart13	same creeks for oil & grease, pH, phosphate, phosphorus
chart14	same creeks for nitrate, nitrite
chart15	same creeks for historical data
chart16	same creeks for phosphate, potassium, selenium, silica, silicon
chart17	same creeks for TDS, TOC, vanadium, zinc
chart2	same creeks for arsenic, barium, beryllium, bicarbonate, BOD, boron
chart3	could not be opened
chart4	opens as gibberish
chart5	opens as gibberish
chart6	same creeks for fluoride, hardness, hydroxide, iron, lead
chart7	same creeks for lead, lithium, magnesium, manganese, mercury
chart8	could not open
chart9	same creeks for phosphorus, potassium, selenium, silica, silicon, silver
Piper Diagrams	diagrams for 1997 – 1998 for magnesium, sodium + potassium, carbonate + bicarbonate, sulfate, chloride, calcium, sulfate + chloride, calcium + magnesium

SMR West Study

Final West Project

Appendix A	literature review
Appendix B	Plot of computed hydrograph with observed hydrograph
Appendix C	Plot of computed lake storage with observed storage
Appendix D	Plot of precipitation during and preceding Jan 1995 event
Appendix E	Cross section locations and flood plain delineations
Appendix F	Water surface profile plots
Appendix G	Water surface profile tables
Appendix H	Cross section plots
Appendix J	Plot of sub basin frequency flows
Appendix I	Plot of sediment frequency yield by LA Corps method
SMR Final	Final Report Santa Margarita River Hydrology, Hydraulics and Sedimentation Study

West Project Files

All supporting files and documents are included on this disc as word, excel and other file formats that are not .pdf.

Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Beryllium	Cadmium	Chromium, Total	Chromium, Dissolved	Copper	Lead, Total	Lead, Dissolved	Mercury	Nickel	Selenium	Silver	Thallium	Zinc, Total	Zinc, Dissolved	Ceriodaphnia-survival	Ceriodaphnia-reproduction	Pimephales-survival	Pimephales-growth
	Detection Limit				0.0005	0.0005	0.4	0.01	0.01	0.001	0.001	0.0005	0.01	0.002	0.01	0.001	0.01	0.01				
6/9/98	RC-WGR	DFG-978-321		Rainbow Creek at Willow Glen Rd																		
6/9/98	SMR-WGR	DFG-978-322		Santa Margarita at Willow Glen Rd (Stage Coach Ln).																		
6/9/98	SMR-SCD	DFG-978-323		SMR at DeLuz/ Pico Rd near Sandia Ck																		
6/9/98	SC-SCR	DFG-978-324		Sandia Ck at Sandia Ck Rd, 0.5 to 1 mile above confluence	ND	ND	17.0		20.0	1.7		ND	7.7	ND	ND	ND	26.2					
6/9/98	SMR-CP	DFG-978-325		Santa Margarita River below diversion weir on Camp Pendleton	ND	ND	5.7		4.0	6.7		ND	2.8	ND	ND	1.5	24.3					
6/9/98	SMR-SMB	DFG-978-326		SMR at Stuart Mesa Rd bridge on Camp Pendleton	ND	0.44	14.7		9.1	12.3		ND	5.5	ND	ND	ND	81.1					
6/10/98	BVR-ED	DFG-978-327		San Marcos Creek at Rancheros Drive																		
6/10/98	AHC-SA	DFG-978-328		Agua Hedionda Ck at Sycamore Ave																		
6/10/98	SMC-SP	DFG-978-329		Buena Vista Ck at Wildwood Park																		
6/10/98	AC-CCR	DFG-978-330		Aliso Ck along Country Club Rd	ND	ND	7.6		2.2	ND		ND	3.4	ND	ND	1.2	16.0					
6/10/98	AC-PPD	DFG-978-331		Aliso Ck at Pacific Park Dr/ Oso Pkwy																		
6/10/98	AHC-ECR	DFG-978-332		Agua Hedionda Ck at El Camino Real																		
6/11/98	SLRR-395	DFG-978-333		San Luis Rey River at old Hwy 395 (Couser Canyon Rd)																		
6/29/98		LLP-978-405-BUV		Buena Vista Creek	ND	ND	0.0	0.01	ND	ND	ND	ND	ND	ND	ND	ND	0.04	0.02	No Difference			
6/29/98		LLP-978-405-AGH		Agua Hedionda Creek	ND	ND	0.0	0.01	ND	ND	ND	ND	ND	ND	ND	ND	0.03	0.02	No Difference			
6/29/98		LLP-978-405-ESC		Escondido Creek	ND	ND	0.0	0.01	ND	ND	0.002	ND	ND	ND	ND	ND	0.06	0.04	No Difference			

are in units of milligrams per liter.

			Detection Limit		0.0005	0.0005	0.4	0.01	0.01	0.001	0.001	0.0005	0.01	0.002	0.01	0.001	0.01	0.01				
Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Beryllium	Cadmium	Chromium, Total	Chromium, Dissolved	Copper	Lead, Total	Lead, Dissolved	Mercury	Nickel	Selenium	Silver	Thallium	Zinc, Total	Zinc, Dissolved	Ceriodaphnia-survival	Ceriodaphnia-reproduction	Pimephales-survival	Pimephales-growth
5/20/98	LAC-CB-T1	DFG-978-300		Loma Alta Creek at College Blvd																		
5/20/98	BVC-SVW-T3	DFG-978-301		Buena Vista Creek at South Vista Way																		
5/20/98	SLRR-FR-T1	DFG-978-302		San Luis Rey River at Foussat Road																		
5/20/98	LAC-ECR-A	DFG-978-303		Loma Alta Creek at El Camino Real																		
6/2/98	SR-79	DFG-978-304		Sweetwater River at Hwy 79 near Interstate 8																		
6/2/98	SR-94	DFG-978-305		Sweetwater River upstream of Hwy 94 (Campo Road)																		
6/2/98	SR-WS	DFG-978-306		Sweetwater River downstream of Willow Street																		
6/2/98	SDR-MD	DFG-978-307	7.11	San Diego River up stream of Mission Dam																		
6/2/98	SDR-MT	DFG-978-308	7.11	San Diego River at Mission Trails Regional Park																		
6/2/98	SDR-FVR	DFG-978-309	7.11	San Diego River at Fashion Valley Road																		
6/3/98	LPC-BMR	DFG-978-310		Los Penasquitos Creek upstream of Black Mountain Road																		
6/3/98	LPC-CCR	DFG-978-311		Los Penasquitos Creek at Cobblestone Creek Road.																		
6/3/98	RC-HP	DFG-978-312	6.20	Rattlesnake Creek at Hilleary Park, off Community Road																		
6/3/98	EC-HRB	DFG-978-313	4.60	Escondido Creek below Harmony Grove Bridge.																		
6/3/98	EC-EF	DFG-978-314	4.60	Escondido Creek at intersection Elfin Forest and Harmony Grove (end of Elfin Forest Resort).	ND	ND	11.0		13.7	150		ND	2.4	ND	ND	ND	72.8					
6/3/98	EC-LCA	DFG-978-315		Encinitas Creek at Green Valley Road																		
6/3/98	SMC-RSFR	DFG-978-316	4.51	San Marcos Creek at Rancho Santa Fe Road																		

Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Ammonia-N	Nitrate, as N	Nitrite-N	Total Kjeldahl Nitrogen	Orthophosphate-P	Total Phosphate as P (revised)	Total Phosphate as PO_4	Total Dissolved Solids	Turbidity, NTU	Calcium	Sodium	Magnesium	Potassium	Chloride	Sulfate	Total Hardness	EC, umhos	Antimony	Arsenic
Detection Limit					0.14	0.20	0.01	0.1	0.02	5.0		10.0		0.10	0.25	0.15	0.56	1.0	40.0	1.0		0.005	0.0
6/9/98	RC-WGR	DFG-978-321		Rainbow Creek at Willow Glen Rd	<.14	11.47	0.02	0.44	0.95	0.77		810	0.30											
6/9/98	SMR-WGR	DFG-978-322		Santa Margarita at Willow Glen Rd (Stage Coach Ln).	<.14	3.76	0.02	0.47	0.11	0.62		913	0.46											
6/9/98	SMR-SCD	DFG-978-323		SMR at DeLuz/ Pico Rd near Sandia Ck	<.14	4.69	0.01	0.34	0.18	0.35		923	0.50											
6/9/98	SC-SCR	DFG-978-324		Sandia Ck at Sandia Ck Rd, 0.5 to 1 mile above confluence	<.14	5.83	0.01	0.17	0.24	0.30		817	1.80										ND	7.8
6/9/98	SMR-CP	DFG-978-325		Santa Margarita River below diversion weir on Camp Pendleton	<.14	2.71	0.01	0.34	0.23	0.41		667	3.77										ND	5.9
6/9/98	SMR-SMB	DFG-978-326		SMR at Stuart Mesa Rd bridge on Camp Pendleton	<.14	1.63	0.01	0.28	0.23	0.35		713	3.60										ND	2.3
6/10/98	BVR-ED	DFG-978-327		San Marcos Creek at Rancheros Drive	<.14	14.70	0.05	0.53	0.14	0.95		1372	0.49											
6/10/98	AHC-SA	DFG-978-328		Agua Hedionda Ck at Sycamore Ave	0.17	15.30	0.08	0.58	1.00	0.90		1144	1.10											
6/10/98	SMC-SP	DFG-978-329		Buena Vista Ck at Wildwood Park	0.23	3.40	0.09	0.62	0.12	0.75		1360	1.70											
6/10/98	AC-CCR	DFG-978-330		Aliso Ck along Country Club Rd	3.30	3.10	1.00	0.81	1.10	0.93		1712	4.10										ND	1.2
6/10/98	AC-PPD	DFG-978-331		Aliso Ck at Pacific Park Dr/ Oso Pkwy	0.18	1.00	0.03	0.56	0.15	0.81		1961	1.10											
6/10/98	AHC-ECR	DFG-978-332		Agua Hedionda Ck at El Camino Real	<.14	5.80	0.02	0.53	0.44	0.61		1716	0.55											
6/11/98	SLRR-395	DFG-978-333		San Luis Rey River at old Hwy 395 (Couser Canyon Rd)	<.14	4.20	0.03	0.42	0.75	0.99		970	3.73											
6/29/98		LLP-978-405-BUV		Buena Vista Creek	<.14	1.20	0.02	0.64	0.83		7.1	1133	1.3	120	254	80.7	3.6	454	281	570	1965	ND	ND
6/29/98		LLP-978-405-AGH		Agua Hedionda Creek	<.14	4.50	0.03	0.76	0.25		4.2	1624	0.6	168	255	97.9	3.3	465	363	745	2300	ND	ND
6/29/98		LLP-978-405-ESC		Escondido Creek	<.14	3.60.	0.01	0.76	0.25		4.6	1382	4.4	109	251	87.5	3.4	322	342	570	1969	ND	ND

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Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Ammonia-N	Nitrate, as N	Nitrite-N	Total Kjeldahl Nitrogen	Orthophosphate-P	Total Phosphate as P (revised)	Total Phosphate as PO_4	Total Dissolved Solids	Turbidity, NTU	Calcium	Sodium	Magnesium	Potassium	Chloride	Sulfate	Total Hardness	Ec, Umhos	Antimony	Arsenic
Detection Limit					0.14	0.20	0.01	0.1	0.02	5.0		10.0		0.10	0.25	0.15	0.56	1.0	40.0	1.0		0.005	0.0
5/20/98	LAC-CB-T1	DFG-978-300		Loma Alta Creek at College Blvd	0.23	0.61	0.04	0.70	0.12	0.40		2800	0.98										
5/20/98	BVC-SVW-T3	DFG-978-301		Buena Vista Creek at South Vista Way	<.14	2.50	0.02	0.42	0.22	0.22		1378	0.79										
5/20/98	SLRR-FR-T1	DFG-978-302		San Luis Rey River at Foussat Road	<.14	2.40	0.01	0.39	0.58	0.24		850	5.10										
5/20/98	LAC-ECR-A	DFG-978-303		Loma Alta Creek at El Camino Real	<.14	0.27	0.00	0.36	0.44	0.14		2459	0.58										
6/2/98	SR-79	DFG-978-304		Sweetwater River at Hwy 79 near Interstate 8	<.14	0.33	0.00	0.29	0.13	0.13		224	1.90										
6/2/98	SR-94	DFG-978-305		Sweetwater River upstream of Hwy 94 (Campo Road)	<.14	0.36	0.01	0.16	0.07	0.06		397	2.80										
6/2/98	SR-WS	DFG-978-306		Sweetwater River downstream of Willow Street	<.14	0.35	0.01	0.40	0.05	0.20		825	0.76										
6/2/98	SDR-MD	DFG-978-307	7.11	San Diego River up stream of Mission Dam	0.19	0.35	0.02	0.38	0.22	0.09		1038	3.70										
6/2/98	SDR-MT	DFG-978-308	7.11	San Diego River at Mission Trails Regional Park	<.14	0.28	0.01	0.49	0.14	0.05		1046	0.77										
6/2/98	SDR-FVR	DFG-978-309	7.11	San Diego River at Fashion Valley Road	<.14	0.23	0.00	0.42	0.23	0.06		1217	5.00										
6/3/98	LPC-BMR	DFG-978-310		Los Penasquitos Creek upstream of Black Mountain Road	<.14	0.34	0.01	0.76	0.30	0.55		1678	0.67										
6/3/98	LPC-CCR	DFG-978-311		Los Penasquitos Creek at Cobblestone Creek Road.	<.14	1.10	0.03	1.90	0.17	0.55		1633	3.80										
6/3/98	RC-HP	DFG-978-312	6.20	Rattlesnake Creek at Hilleary Park, off Community Road	<.14	1.50	0.02	1.50	0.46	0.67		1412	0.54										
6/3/98	EC-HRB	DFG-978-313	4.60	Escondido Creek below Harmony Grove Bridge.	<.14	7.20	0.07	0.46	0.46	0.37		1196	0.99										
6/3/98	EC-EF	DFG-978-314	4.60	Escondido Creek at intersection Elfin Forest and Harmony Grove (end of Elfin Forest Resort).	<.14	6.90	0.02	0.55	0.77	0.29		1145	0.38									ND	3.8
6/3/98	EC-LCA	DFG-978-315		Encinitas Creek at Green Valley Road	<.14	0.34	<.01	0.54	0.34	0.32		2082	3.70										
6/3/98	SMC-RSFR	DFG-978-316	4.51	San Marcos Creek at Rancho Santa Fe Road	<.14	0.00	0.01	0.60	0.42	0.52		780	0.99										
6/3/98	SMC-M	DFG-978-317	4.51																				