

Appendix IIc. Bioassessment metrics calculated for macroinvertebrate samples collected November 1998 from sites within watersheds of the San Diego Region, California.

Site: <i>Transect Number:</i> <i>ABL Laboratory Number:</i>	Aliso Creek AC-PPD			Aliso Creek AC-CCR			Arroyo Trabuco Cr. ATC-AP			San Juan Ceek SJC-74			Murrieta Creek MC-GS			Temecula Creek TC-I-15			Santa Margarita SMR-WGR			Rai I
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1
	2978	2979	2980	2975	2976	2977	2972	2973	2974	2969	2970	2971	2963	2964	2965	2966	2967	2968	2948	2949	2950	2960
Taxa Richness	26	10	18	14	9	20	22	13	18	25	15	17	17	24	32	24	22	25	20	30	29	23
Percent Dominant Taxon	23	39	44	45	64	44	28	24	32	47	67	36	63	33	21	45	67	41	48	30	30	28
Ephemeropteran Taxa	2	3	2	2	2	2	4	3	3	3	3	3	3	4	3	3	3	3	2	2	3	3
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	3	1	1	0	2	0	4	4	4	6	3	4	4	5	4	2	2	1	3	3	3	1
EPT Taxa	5	4	3	2	4	2	8	7	7	9	6	7	7	9	7	5	5	4	5	5	6	4
EPT Index (%)	48	80	56	42	73	47	57	62	49	60	78	66	28	28	27	51	72	22	63	34	51	30
Sensitive EPT Index	1	0	0	0	0	0	1	1	0	2	2	6	0	2	0	0	0	0	2	0	4	0
Percent Baetidae	41	74	45	42	69	47	36	23	24	50	69	40	16	13	17	3	4	7	13	3	14	4
Percent Hydropsychidae	1	0	0	0	0	0	16	36	22	4	3	16	4	3	2	45	67	10	48	30	30	25
Dipteran Taxa	10	3	5	5	3	11	4	2	4	7	6	4	3	7	12	7	7	9	4	5	6	9
Percent Dipteran	39	10	36	11	24	27	3	4	3	16	5	6	69	53	30	30	13	69	5	4	11	20
Non-Insect Taxa	8	2	7	6	1	4	7	4	5	6	3	4	3	5	8	5	4	5	5	9	7	7
Percent Non-Insect	12	9	7	47	3	25	33	34	42	23	17	24	2	18	42	10	9	3	16	40	19	46
Percent Chironomidae	8	10	4	8	20	8	1	0	1	3	2	1	4	10	10	23	9	25	1	2	8	9
Shannon Diversity	2.4	1.6	1.6	1.4	1.2	1.8	2.2	2.0	2.1	2.0	1.3	2.1	1.5	2.3	2.5	2.0	1.5	2.0	1.8	2.2	2.5	2.3
Tolerance Value	5.7	4.9	5.5	6.1	5.1	5.5	4.7	4.6	4.3	4.6	4.2	4.6	5.6	5.2	5.1	4.8	4.5	5.5	4.1	4.2	4.5	4.7
Percent Intolerant (0-2)	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	14	15	10	0
Percent Tolerant (8-10)	8	8	6	46	3	24	5	0	1	2	0	2	1	9	26	2	2	2	1	3	3	10
Percent Collectors	77	90	82	95	92	78	46	28	32	67	77	52	26	48	74	29	15	37	33	27	32	21
Percent Filterers	4	0	0	1	3	14	17	36	23	8	4	16	68	35	10	55	71	53	49	30	40	36
Percent Grazers	8	5	12	0	3	0	7	1	6	2	2	6	1	3	1	0	0	0	3	2	8	1
Percent Predators	11	5	6	4	2	7	30	35	38	22	17	26	4	12	14	15	13	9	16	40	21	40
Percent Shredders	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	1	1	1
Abundance (#/ sample)	185	80	1842	1053	272	637	1781	1320	1820	1956	3010	4153	5983	2472	1131	6938	1661	13860	1505	2736	5337	817

Appendix IIc. Bioassessment metrics calculated for macroinvertebrate samples collected November 1998 from sites within watersheds of the San Diego Region, California.

	nbow Creek			Sandia Creek			Santa Margarita			Santa Margarita			San Luis Rey R.			San Luis Rey R.			San Luis Rey R.			San Luis Re	
	Site: RC-WGR			SC-SCR			SMR-DP			SMR-CP			SLRR-PG			SLRR-395			SLRR-MR			SLRR-FI	
<i>Transect Number:</i>	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	
<i>ABL Laboratory Number:</i>	2961	2962	2957	2958	2959	2954	2955	2956	2951	2952	2953	2945	2946	2947	2939	2940	2941	2936	2937	2938	2933	2934	
Taxa Richness	24	26	23	28	22	22	20	15	20	21	16	22	19	16	28	22	25	24	21	26	27	24	
Percent Dominant Taxon	32	40	46	32	33	40	60	51	31	19	41	23	26	33	26	26	48	17	28	18	29	23	
Ephemeropteran Taxa	3	2	3	3	2	3	3	3	4	4	3	2	2	2	3	3	3	2	3	2	2	2	
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	
Trichopteran Taxa	1	1	4	5	4	2	2	2	2	2	2	4	2	3	3	1	3	3	2	4	2	0	
EPT Taxa	4	3	7	8	6	5	5	5	6	6	5	6	5	6	6	4	6	5	5	6	4	2	
EPT Index (%)	4	26	75	69	58	62	73	78	47	27	25	49	59	70	16	25	22	23	39	33	1	1	
Sensitive EPT Index	0	0	6	24	8	0	0	1	1	2	0	0	0	1	0	0	0	1	0	0	0	0	
Percent Baetidae	2	4	22	10	17	17	12	21	42	21	18	24	27	42	10	20	16	5	16	10	0	1	
Percent Hydropsychidae	2	21	46	32	33	40	60	51	1	2	6	25	32	27	1	0	2	5	17	10	0	0	
Dipteran Taxa	8	9	4	5	6	6	7	4	7	7	6	5	5	4	11	7	9	8	8	9	9	8	
Percent Dipteran	12	13	10	7	19	14	9	10	39	38	51	24	16	7	73	61	57	32	48	30	11	25	
Non-Insect Taxa	10	10	3	5	2	7	4	3	6	5	4	6	6	4	9	11	10	10	8	9	12	11	
Percent Non-Insect	80	56	3	6	6	20	12	8	13	29	16	22	24	23	10	14	21	43	13	37	85	67	
Percent Chironomidae	7	6	2	3	4	12	6	8	9	12	6	20	15	6	26	26	5	11	15	15	7	17	
Shannon Diversity	2.4	2.2	1.9	2.4	2.1	2.2	1.6	1.7	2.3	2.6	2.1	2.1	2.1	1.8	2.2	2.3	2.0	2.8	2.3	2.6	2.3	2.3	
Tolerance Value	5.1	4.5	4.3	3.8	4.3	4.6	4.4	4.3	5.2	5.5	5.4	4.9	5.1	5.7	5.8	5.5	5.9	5.6	5.2	5.0	4.6	6.7	
Percent Intolerant (0-2)	0	0	3	17	8	2	1	4	1	4	0	2	1	1	0	0	0	0	0	0	0	0	
Percent Tolerant (8-10)	23	6	0	1	0	5	1	2	8	12	4	5	12	20	9	9	19	17	4	13	22	43	
Percent Collectors	35	17	35	27	31	37	23	41	59	40	22	52	53	67	51	62	42	44	42	48	42	33	
Percent Filterers	9	28	52	35	48	44	61	52	27	29	49	29	33	28	29	22	51	22	46	29	6	22	
Percent Grazers	8	6	10	32	15	3	0	1	0	0	10	0	0	0	1	1	4	0	0	0	2	3	
Percent Predators	47	48	3	6	6	15	16	6	8	27	16	19	13	5	3	2	1	30	10	22	50	43	
Percent Shredders	0	1	0	1	0	0	0	0	6	4	4	0	0	0	16	12	2	4	2	1	0	0	
Abundance (#/ sample)	496	454	743	1522	739	1195	6092	2046	100	52	51	4032	2822	2199	1003	1200	1579	253	620	716	273	232	

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	γ R. Site: τ	Keys Creek			Loma Alta Cr.			Loma Alta Cr.			Buena Vista Cr.			Buena Vista Cr.			Agua Hedionda Cr.			San Marcos	
		KC-LR			LAC-CB			LAC-ECR			BVR-ED			BVR-SVW			AHC-ECR			SMC-SP	
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2
<i>Transect Number:</i>	T3																				
<i>ABL Laboratory Number:</i>	2935	2942	2943	2944	2930	2931	2932	2927	2928	2929	2924	2925	2926	2921	2922	2923	2918	2919	2920	2909	2910
Taxa Richness	21	20	23	20	16	16	17	24	23	21	7	10	4	19	16	17	29	39	23	16	12
Percent Dominant Taxon	34	51	47	34	43	24	43	28	51	54	67	47	43	59	35	37	20	15	16	39	31
Ephemeropteran Taxa	0	1	1	1	0	0	0	1	0	1	2	2	2	0	1	2	3	3	3	2	2
Plecopteran Taxa	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	0	4	5	5	1	1	0	0	0	2	0	0	0	1	1	2	2	2	2	2	0
EPT Taxa	0	6	6	6	1	1	0	1	0	3	2	2	2	1	2	4	5	5	5	4	2
EPT Index (%)	0	29	28	47	0	0	0	0	0	3	29	76	52	0	3	2	13	15	12	24	34
Sensitive EPT Index	0	4	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Percent Baetidae	0	7	9	21	0	0	0	0	0	0	29	76	52	0	2	1	11	12	10	23	34
Percent Hydropsychidae	0	18	16	23	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
Dipteran Taxa	10	5	7	7	7	9	8	12	12	8	4	5	1	5	4	4	8	16	8	4	2
Percent Dipteran	21	56	56	40	22	47	38	29	12	63	70	15	43	14	24	16	24	40	37	40	32
Non-Insect Taxa	9	6	7	5	8	5	7	11	10	9	1	3	1	12	9	8	14	14	10	6	6
Percent Non-Insect	78	10	9	6	77	52	61	71	88	34	1	9	5	85	73	82	61	43	52	29	25
Percent Chironomidae	10	4	5	4	16	40	36	23	9	55	67	13	43	13	23	15	9	16	8	40	31
Shannon Diversity	2.1	1.9	2.0	2.0	1.9	2.1	1.8	2.0	1.7	1.6	1.0	1.4	1.2	1.5	1.6	1.8	2.8	2.9	2.6	1.8	1.9
Tolerance Value	6.5	5.4	5.6	5.3	7.6	7.1	7.9	7.3	7.9	6.4	4.9	5.0	4.7	7.4	7.1	6.8	6.4	5.9	6.5	5.5	5.6
Percent Intolerant (0-2)	0	4	2	2	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Percent Tolerant (8-10)	51	5	7	3	75	50	57	69	81	32	0	8	0	80	68	65	36	25	32	16	14
Percent Collectors	46	15	18	24	77	64	59	91	89	86	96	97	95	92	92	80	43	64	54	83	79
Percent Filterers	7	69	65	59	6	17	25	5	1	5	0	1	0	1	2	1	27	8	27	1	0
Percent Grazers	9	1	5	2	13	12	8	0	1	3	0	0	0	2	2	2	6	5	2	1	1
Percent Predators	38	11	11	13	3	7	7	3	10	4	3	2	5	5	5	16	25	22	17	16	20
Percent Shredders	0	4	2	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Abundance (#/ sample)	452	659	777	969	3658	3208	6283	10930	4026	4534	132	146	122	1317	3679	1282	682	512	414	427	150

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	Cr. Site: Transect Number: ABL Laboratory Number:	San Marcos Cr.			San Marcos Cr.			San Marcos Cr.			Encinitas Creek			Escondido Creek			Escondido Creek			Rattlesnake C		
		SMC-M			SMC-RSFR			SMC-LCCC			EC-GVR			EC-HRB			EC-EF			RC-HP		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	
		2911	2906	2907	2908	2912	2913	2914	2903	2904	2905	2915	2916	2917	2900	2901	2902	2897	2898	2899	2894	2895
Taxa Richness	17	17	14	15	17	26	22	22	21	19	18	18	14	20	24	15	12	11	11	16	16	
Percent Dominant Taxon	54	28	60	55	33	24	42	28	26	29	33	35	54	63	45	61	56	58	46	36	63	
Ephemeropteran Taxa	2	2	2	2	2	2	2	2	2	2	2	2	0	2	1	3	2	2	2	2	1	
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Trichopteran Taxa	1	0	1	2	2	5	3	3	3	2	0	1	1	2	2	1	2	2	3	1	1	
EPT Taxa	3	2	3	4	4	7	5	5	5	4	2	3	1	4	3	4	4	4	5	3	2	
EPT Index (%)	30	36	66	69	23	47	7	31	24	21	9	4	0	68	48	63	97	95	92	9	7	
Sensitive EPT Index	0	0	0	1	0	3	0	4	0	0	0	0	0	1	1	0	0	0	0	0	0	
Percent Baetidae	29	36	66	68	17	33	5	25	18	15	9	4	0	63	45	62	28	2	22	7	7	
Percent Hydropsychidae	0	0	0	0	2	3	2	0	4	0	0	0	0	0	0	0	68	93	70	0	0	
Dipteran Taxa	6	4	3	2	5	6	6	8	6	6	6	7	6	6	10	6	3	1	2	7	7	
Percent Dipteran	60	29	22	14	50	36	27	36	19	57	65	66	67	18	20	5	1	1	1	44	15	
Non-Insect Taxa	6	10	7	8	7	11	10	8	7	8	10	8	7	7	9	5	4	4	4	5	7	
Percent Non-Insect	6	35	12	16	26	15	64	33	52	21	26	29	33	13	32	32	2	4	7	46	77	
Percent Chironomidae	54	28	9	9	18	21	9	31	10	30	30	37	54	6	8	5	1	1	1	40	10	
Shannon Diversity	1.5	2.0	1.5	1.7	2.0	2.4	2.0	2.0	2.2	2.2	1.8	1.9	1.4	1.5	1.9	1.1	1.2	1.0	1.5	1.9	1.5	
Tolerance Value	5.0	5.6	5.1	5.2	6.1	5.5	6.8	4.7	6.3	5.5	6.0	6.2	6.1	4.9	5.6	5.4	4.4	4.5	4.5	5.0	7.4	
Percent Intolerant (0-2)	0	0	0	0	0	3	0	4	0	0	0	0	0	1	1	0	0	0	0	0	0	
Percent Tolerant (8-10)	3	26	5	11	25	11	52	4	32	7	23	26	30	8	26	32	0	1	1	6	75	
Percent Collectors	87	87	79	89	59	62	60	63	35	60	62	66	84	88	85	97	29	4	23	53	90	
Percent Filterers	0	11	17	5	36	20	26	1	37	18	34	28	10	0	2	1	68	93	71	0	1	
Percent Grazers	1	0	0	4	4	9	1	2	2	5	0	1	0	6	4	1	0	0	0	3	1	
Percent Predators	12	3	3	3	2	6	13	29	26	16	3	6	6	6	9	2	2	3	6	43	9	
Percent Shredders	0	0	1	0	0	3	0	4	0	0	0	0	0	1	1	0	0	0	0	0	0	
Abundance (#/ sample)	1240	216	717	148	614	777	4677	1233	1269	610	451	250	1321	6741	6172	5912	403	4958	5099	2143	3189	

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	'reek Site: Transect Number: ABL Laboratory Number:	Los Penasquitos Cr. LPC-CCR			Los Penasquitos Cr. LPC-BMR			Carroll Canyon Cr. CCC-805			San Diego River SDR-MD			San Diego River SDR-MT			San Diego River SDR-1			Tecolote Cr TC-TCNI	
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2
		T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1
	2896	2891	2892	2893	2888	2889	2890	2885	2886	2887	2878	2879	2880	2875	2876	2877	2872	2873	2874	2881	2882
Taxa Richness	22	21	21	21	24	24	22	18	19	18	21	29	18	20	26	16	14	16	14	22	26
Percent Dominant Taxon	32	35	32	49	21	36	27	63	70	66	26	16	54	47	35	56	81	38	51	20	21
Ephemeropteran Taxa	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	1	0	1	1	2	1
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	1	3	4	3	3	2	2	2	2	2	1	2	1	3	3	3	0	0	0	1	3
EPT Taxa	2	5	6	4	5	4	4	4	4	4	2	3	2	5	5	4	0	1	1	3	4
EPT Index (%)	33	78	53	6	32	31	47	72	79	73	1	3	1	65	63	70	0	1	2	2	4
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Baetidae	32	48	17	3	21	28	34	70	78	71	1	2	1	15	24	6	0	0	0	0	0
Percent Hydropsychidae	0	27	35	3	10	4	13	1	1	2	0	1	0	50	39	64	0	0	0	0	1
Dipteran Taxa	8	7	5	4	6	6	6	7	8	6	5	8	4	4	8	4	5	5	5	11	10
Percent Dipteran	19	9	9	17	11	19	19	10	12	12	24	34	15	5	9	2	83	42	59	42	58
Non-Insect Taxa	11	7	7	10	11	11	9	6	6	6	13	18	12	8	11	8	9	8	8	7	9
Percent Non-Insect	48	11	32	69	50	47	30	17	7	12	74	64	84	29	26	28	17	52	39	54	18
Percent Chironomidae	15	4	5	3	9	13	15	6	6	7	10	17	9	2	6	1	1	2	7	30	40
Shannon Diversity	2.0	2.0	2.2	1.9	2.5	2.1	2.3	1.5	1.3	1.5	2.3	2.6	1.5	2.0	2.3	1.6	0.8	1.8	1.5	2.4	2.5
Tolerance Value	6.1	4.8	5.3	8.0	6.1	6.8	5.8	4.8	4.5	4.7	7.8	7.2	8.8	4.7	5.3	4.8	6.0	6.2	6.8	6.6	6.5
Percent Intolerant (0-2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Tolerant (8-10)	38	7	16	60	33	41	22	13	4	7	70	55	79	7	17	11	7	27	29	34	18
Percent Collectors	75	54	26	14	45	44	52	89	87	86	54	67	69	26	35	11	5	12	14	60	49
Percent Filterers	3	34	48	64	30	45	34	3	4	3	40	24	27	55	53	71	87	62	78	6	8
Percent Grazers	1	3	1	0	2	3	2	0	0	0	1	3	0	7	2	1	0	5	1	1	3
Percent Predators	21	9	24	22	22	8	12	7	9	10	5	6	4	13	9	17	8	21	7	32	38
Percent Shredders	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Abundance (#/ sample)	2447	6608	1949	861	1169	1962	1306	437	1861	642	3540	2580	4093	1410	1693	2820	1970	1454	1587	1575	795

Appendix IIc. Bioassessment metrics calculated for macroinvertebrate samples collected November 1998 from sites within watersheds of the San Diego Region, California.

Week	Site: ?	Sweetwater River			Sweetwater River			Sweetwater River		
		SR-79	SR-94	SR-WS						
Transect Number:	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
ABL Laboratory Number:	2883	2869	2870	2871	2866	2867	2868	2863	2864	2865
Taxa Richness	27	34	43	30	28	25	32	11	13	11
Percent Dominant Taxon	23	13	19	15	24	27	19	56	58	81
Ephemeropteran Taxa	0	5	3	3	2	2	3	1	1	0
Plecopteran Taxa	2	3	3	4	0	0	0	0	0	0
Trichopteran Taxa	1	7	7	4	1	0	1	0	0	0
EPT Taxa	3	15	13	11	3	2	4	1	1	0
EPT Index (%)	7	55	50	48	6	5	5	1	1	0
Sensitive EPT Index	1	23	21	28	0	0	0	0	0	0
Percent Baetidae	0	17	5	1	5	5	4	1	1	0
Percent Hydropsychidae	0	7	5	5	2	0	0	0	0	0
Dipteran Taxa	11	6	10	9	12	9	13	3	3	2
Percent Dipteran	46	16	19	28	22	26	22	70	68	90
Non-Insect Taxa	10	7	13	7	8	8	9	7	9	7
Percent Non-Insect	19	20	27	23	68	67	68	29	31	7
Percent Chironomidae	35	4	6	14	9	16	14	13	9	9
Shannon Diversity	2.5	3.0	2.9	2.8	2.3	2.4	2.6	1.4	1.4	0.8
Tolerance Value	6.6	4.6	4.9	4.2	5.8	5.0	5.0	5.6	5.8	6.0
Percent Intolerant (0-2)	1	22	22	31	0	0	0	0	0	0
Percent Tolerant (8-10)	22	15	21	15	22	16	25	5	8	6
Percent Collectors	47	37	45	39	37	53	59	21	19	11
Percent Filterers	7	19	14	14	12	6	3	57	59	81
Percent Grazers	7	22	17	24	2	1	0	0	0	0
Percent Predators	37	13	17	11	48	40	35	23	21	7
Percent Shredders	2	8	6	13	2	0	3	0	0	0
Abundance (#/ sample)	1380	399	1027	458	543	670	1188	1328	1913	6032