

Chadwick Ecological Consultants, Inc., 2005

Aquatic biological data on the Red River, Taos County, New Mexico,  
1906 - 1994

Sections 1.4 – 1.7

Prepared for Molycorp, Inc.

**SECTION 1.4**  
**FISH DATA SUMMARY**

**Historical (1953-1994) fish population data for sites on the Red River, New Mexico. First pass data only.**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>East Fork at Blue Lake Trail</b>													
Aug. 1960	CUT	17	299	186	16.7	407	36.6	176	90	1 (70%)	300	NMDGF (1960)	44
	BRK	3	53	33	2.9	72	6.4	165	89	1 (70%)	300	NMDGF (1960)	44
<b>Just Downstream of the Forks</b>													
Nov. 1975	RBT	32	640	398	46.3	686	80.0	217	116	1	264	Parish (1975a)	55
Nov. 1975	BRK	3	60	37	1.2	64	2.0	154	32	1	264	Parish (1975a)	55
May 1977	RBT	107	1,070	665	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	CUT	2	20	12	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	BRK	1	10	6	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	Hybrid	2	20	12	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
July 1978	RBT	95	950	590	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	1	10	6	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1978	RBT	24	480	298	--	--	--	*	--	1 (70%)	264	Parish (1978b)	68
<b>2.0 Mi. Downstream of the Forks</b>													
Nov. 1975	RBT	16	320	199	--	408	--	186	--	1	264	Parish (1975a)	55
	CUT	4	80	50	2.7	102	5.5	175	54	1	264	Parish (1975a)	55
	BRK	3	60	37	--	76	--	145	--	1	264	Parish (1975a)	55
	BRN	1	20	12	--	26	--	200	--	1	264	Parish (1975a)	55
	UNK	3	60	37	--	76	--	*	--	1	264	Parish (1975a)	55
May 1977	RBT	81	810	503	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	BRK	3	30	19	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	CUT	2	20	12	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
July 1978	RBT	54	540	336	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	2	20	12	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1978	RBT	13	260	162	--	--	--	*	--	1	264	Parish (1978b)	68
<b>2.9 Mi. Downstream of the Forks</b>													
Nov. 1975	RBT	23	460	286	--	426	--	214	--	1	264	Parish (1975a)	55
	CUT	14	280	174	--	259	--	184	--	1	264	Parish (1975a)	55

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>2.9 Mi. Downstream of the Forks (cont.)</b>													
May 1977	RBT	141	1,410	876	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	CUT	7	70	43	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
July 1978	RBT	63	630	391	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	CUT	3	30	19	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
<b>Zwergle Gaging Station</b>													
Nov. 1975	RBT	3	60	37	--	68	--	262	--	1	264	Parish (1975a)	55
	CUT	4	80	50	--	91	--	211	--	1	264	Parish (1975a)	55
May 1977	RBT	38	380	236	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	BRK	5	50	31	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
	CUT	8	80	50	--	--	--	*	--	1 (90%)	528	Parish (1977b)	63
July 1978	RBT	40	400	249	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	CUT	9	90	56	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	BRK	21	210	131	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	3	30	19	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1978	RBT	6	120	75	--	--	--	*	--	1	264	Parish (1978b)	68
	CUT	11	220	137	--	--	--	*	--	1	264	Parish (1978b)	68
	BRK	12	240	149	--	--	--	*	--	1	264	Parish (1978b)	68
	BRN	1	20	12	--	--	--	*	--	1	264	Parish (1978b)	68
Sept. 1980	CUT	13	229	142	8.9	--	--	172	63	n.s.	300	Melancon <i>et al.</i> (1982)	76
	BRK	10	176	109	6.8	--	--	159	62	n.s.	300	Melancon <i>et al.</i> (1982)	76
	RBT	5	88	55	7.9	--	--	237	144	n.s.	300	Melancon <i>et al.</i> (1982)	76
Sept. 1988	RBT	16	258	160	16.3	256	26.1	206	102	3	328	Akroyd (1988)	92
	CUT	7	113	70	3.3	112	5.3	148	47	3	328	Akroyd (1988)	92
<b>Upstream of Bitter Creek</b>													
Sept. 1953	CUT	22	310	193	--	--	--	--	--	1	375	Barker (1953)	43
	BRK	1	14	9	--	--	--	--	--	1	375	Barker (1953)	43

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Upstream of Bitter Creek (cont).</b>													
Sept. 1953	BRN	9	127	79	--	--	--	235	--	1	375	Barker (1953)	43
	BRK	53	746	464	--	--	--	--	--	1	375	Barker (1953)	43
	RBT	1	14	9	--	--	--	241	--	1	375	Barker (1953)	43
	CUT	1	14	9	--	--	--	108	--	1	375	Barker (1953)	43
<b>Downstream of Bitter Creek</b>													
Sept. 1953	BRN	8	166	103	--	--	--	186	--	1	255	Barker (1953)	43
	BRK	5	104	65	--	--	--	154	--	1	255	Barker (1953)	43
	RBT	5	104	65	--	--	--	251	--	1	255	Barker (1953)	43
	CUT	4	83	52	--	--	--	181	--	1	255	Barker (1953)	43
Sept. 1953	BRN	6	106	66	--	--	--	192	--	1	300	Barker (1953)	43
	RBT	1	18	11	--	--	--	203	--	1	300	Barker (1953)	43
	BRK	2	35	22	--	--	--	146	--	1	300	Barker (1953)	43
<b>June Bug Campground</b>													
Oct. 1960	RBT	13	404	251	--	--	--	211	--	1 (50%)	170	NMDGF (1960)	44
	BRN	7	217	135	--	--	--	161	--	1 (50%)	170	NMDGF (1960)	44
Nov. 1975	RBT	2	20	12	0.6	20	0.9	160	45	1	528	Parish (1975a)	55
	BRN	15	150	93	2.9	153	4.7	143	31	1	528	Parish (1975a)	55
	WS	1	10	6	0.6	10	0.9	203	90	1	528	Parish (1975a)	55
May 1977	RBT	47	470	292	--	--	--	*	--	1	528	Parish (1977b)	63
	BRN	3	30	19	--	--	--	*	--	1	528	Parish (1977b)	63
	CUT	1	10	6	--	--	--	*	--	1	528	Parish (1977b)	63
	BRK	2	20	12	--	--	--	*	--	1	528	Parish (1977b)	63
July 1978	RBT	73	730	454	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	BRN	11	110	68	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	BRK	4	40	25	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	8	80	50	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1980	BRN	1	35	22	0.9	--	--	149	41	n.s.	150	Melancon <i>et al.</i> (1982)	76
	RBT	29	1,021	634	78.1	--	--	223	123	n.s.	150	Melancon <i>et al.</i> (1982)	76

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>June Bug Campground (cont.)</b>													
Sept. 1983	RBT	10	200	124	--	--	--	--	--	1	264	Patterson (1983)	127
	BRN	4	80	50	--	--	--	--	--	1	264	Patterson (1983)	127
Sept. 1983	RBT	2	40	25	--	--	--	--	--	1	264	Patterson (1983)	127
<b>Elephant Rock Campground</b>													
Nov. 1975	RBT	4	40	25	2.6	58	5.9	196	102	1	528	Parish (1975a)	55
	BRN	1	10	6	0.2	15	0.5	121	35	1	528	Parish (1975a)	55
May 1977	RBT	22	220	137	--	--	--	*	--	1	528	Parish (1977b)	63
	BRN	1	10	6	--	--	--	*	--	1	528	Parish (1977b)	63
July 1978	RBT	20	200	124	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1980	BRK	1	18	11	1.1	--	--	205	95	n.s.	300	Melancon <i>et al.</i> (1982)	76
	BRN	5	88	55	6.9	--	--	215	126	n.s.	300	Melancon <i>et al.</i> (1982)	76
	RBT	2	35	22	2.1	--	--	217	98	n.s.	300	Melancon <i>et al.</i> (1982)	76
Sept. 1983	no fish	0	0	0	0	0	0	--	--	1	528	Patterson (1983)	127
Sept. 1983	no fish	0	0	0	0	0	0	--	--	1	264-528	Patterson (1983)	127
Sept. 1988	BRN	5	80	50	1.8	93	3.3	144	36	3	328	Akroyd (1988)	92
	RBT	1	16	10	0.7	19	1.4	199	74	3	328	Akroyd (1988)	92
July 1989	BRN	6	195	120	5.4	182	8.2	--	45	3-4 (n.s.)	164	Leiner (1992)	99
	RBT	1	32	20	7.9	30	12.1	--	400	3-4 (n.s.)	164	Leiner (1992)	99
<b>Upstream of Molycorp property boundary</b>													
Nov. 1975	RBT	4	80	50	--	108	--	*	--	1	264	Parish (1975a)	55
May 1977	no fish	0	0	0	0	0	0	--	--	1	528	Parish (1977b)	63
July 1978	RBT	2	20	12	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1980	RBT	4	70	44	6.2	--	--	236	143	n.s.	300	Melancon <i>et al.</i> 1982	76
<b>Upstream of Columbine Creek</b>													
Aug. 1960	RBT	11	194	120	17.0	--	--	234	142	1	300	NMDGF (1960)	44
	BRN	5	88	55	2.8	--	--	165	51	1	300	NMDGF (1960)	44

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Downstream of Columbine Creek</b>													
Sept. 1980	RBT	11	195	121	18.8	--	--	241	156	n.s.	300	Melancon <i>et al.</i> (1982)	76
<b>Goathill Campground</b>													
Nov. 1975	RBT	5	100	62	6.8	88	9.6	216	109	1	264	Parish (1975a)	55
	CUT	5	100	62	1.3	88	1.8	126	21	1	264	Parish (1975a)	55
	UNK	2	40	25	--	36	--	*	--	1	264	Parish (1975a)	55
April 1977	BRN	4	40	25	--	--	--	*	--	1	528	Parish (1977a,b)	62, 63
	RBT	69	690	429	--	--	--	*	--	1	528	Parish (1977a,b)	62, 63
	CUT	1	10	6	--	--	--	*	--	1	528	Parish (1977a,b)	62, 63
July 1978	RBT	11	110	68	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	1	10	6	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
Sept. 1980	RBT	12	422	262	33.3	--	--	229	127	n.s.	150	Melancon <i>et al.</i> (1982)	76
Sept. 1983	RBT	2	40	25	--	--	--	--	--	1	264	Patterson (1983)	127
<b>Near Mouth of Capulin Canyon</b>													
Nov. 1975	RBT	3	60	37	--	42	--	222	--	1	264	Parish (1975a)	55
April 1977	no fish (2 dead RBT)		0	0	0	0	0	--	--	1	528	Parish (1977a,b)	62, 63
July 1978	RBT	13	130	81	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	WS	1	10	6	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
	UNK	1	10	6	--	--	--	*	--	1 (70%)	528	Parish (1978a)	66
<b>Questa Ranger/Gaging Station</b>													
July 1976	RBT	13	173	108	--	--	--	*	--	1	396	Parish (1976a)	57
	BRN	2	27	17	--	--	--	*	--	1	396	Parish (1976a)	57
	UNK	2	27	17	--	--	--	*	--	1	396	Parish (1976a)	57
Sept. 1988	no fish	0	0	0	0	0	0	--	--	3	328	Akroyd (1988)	92

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Head of Eagle Rock Lake</b>													
Nov. 1975	BRN	4	80	50	4.6	56	5.2	224	93	1	264	Parish (1975a)	55
	RBT	5	100	62	9.8	70	11.1	258	158	1	264	Parish (1975a)	55
	WS	8	160	99	--	112	--	--	--	1	264	Parish (1975a)	55
July 1976	RBT	16	320	199	--	--	--	*	--	1	264	Parish (1976a, 1977a)	57, 62
	BRN	5	100	62	--	--	--	*	--	1	264	Parish (1976a, 1977a)	57, 62
	WS	11	220	137	--	--	--	*	--	1	264	Parish (1976a, 1977a)	57, 62
	UNK	3	60	37	--	--	--	*	--	1	264	Parish (1976a, 1977a)	57, 62
April 1977	WS	12	120	74	--	--	--	*	--	1	528	Parish (1977a,b)	62, 63
<b>SH 522 Bridge</b>													
Sept. 1980	RBT	36	634	394	42.6	--	--	212	108	n.s.	300	Melancon <i>et al.</i> (1982)	76
	BRN	8	142	88	7.9	--	--	187	90	n.s.	300	Melancon <i>et al.</i> (1982)	76
	WS	2	35	22	1.6	--	--	185	75	n.s.	300	Melancon <i>et al.</i> (1982)	76
<b>Upstream of hatchery diversion</b>													
Oct. 1960	BRN	6	317	197	--	--	--	311	--	1 (20%)	100	NMDGF (1960)	44
July 1976	RBT	22	440	273	--	--	--	*	--	1	264	Parish (1976a)(conflicting site location)	57
	BRN	10	200	124	--	--	--	*	--	1	264	Parish (1976a)(conflicting site location)	57
Sept. 1980	BRN	17	299	186	16.7	--	--	162	90	n.s.	300	Melancon <i>et al.</i> (1982)	76
	RBT	6	106	66	4.5	--	--	180	68	n.s.	300	Melancon <i>et al.</i> (1982)	76
Nov. 1986	BRN	9	238	148	--	--	--	*	--	1(50%)	200	Akroyd (1987a)	89
	RBT	17	449	279	--	--	--	*	--	1(50%)	200	Akroyd (1987a)	89
Sept. 1987	BRN	11	290	180	--	--	--	*	--	1 (50%)	200	Akroyd (1987b)	90
	RBT	1	26	16	--	--	--	*	--	1 (50%)	200	Akroyd (1987b)	90
Sept. 1988	BRN	36	950	590	--	--	--	*	--	1	200	Akroyd (1988)	92
	RBT	13	343	213	--	--	--	*	--	1	200	Akroyd (1988)	92
<b>Downstream of hatchery diversion</b>													
July 1976	BRN	10	200	124	--	--	--	*	--	1	264	Parish (1976a) (conflicting site location)	57
	RBT	22	440	273	--	--	--	*	--	1	264	Parish (1976a) (conflicting site location)	57
April 1977	BRN	45	450	280	--	--	--	*	--	1	528	Parish (1977a)	62
	RBT	81	810	503	--	--	--	*	--	1	528	Parish (1977a)	62



**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Downstream of hatchery diversion (cont.)</b>													
Nov. 1986	BRN	30	792	492	--	--	--	*	--	1 (50%)	200	Akroyd (1987a)	89
	RBT	17	449	279	--	--	--	*	--	1 (50%)	200	Akroyd (1987a)	89
Sept. 1987	BRN	33	871	541	--	--	--	*	--	1 (50%)	200	Akroyd (1987b)	90
	RBT	3	79	49	--	--	--	*	--	1 (50%)	200	Akroyd (1987b)	90
Sept. 1988	BRN	47	1,241	771	--	--	--	*	--	1 (50%)	200	Akroyd (1988)	92
	RBT	24	634	394	--	--	--	*	--	1 (50%)	200	Akroyd (1988)	92
<b>Downstream of hatchery</b>													
Sept. 1973	RBT	--	1,021	--	--	--	--	--	--	n.s.	n.s.	Patterson (1974)	54
	BRN	--	167	--	--	--	--	--	--	n.s.	n.s.	Patterson (1974)	54
Sept. 1976	RBT	27	540	336	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
	BRN	10	200	124	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
June 1981	BRN	13	130	81	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	16	160	99	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Sept. 1984	BRN	23	230	143	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	14	140	87	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	UNK	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Aug. 1985	BRN	11	110	68	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	RBT	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	UNK	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
Nov. 1986	BRN	122	1,220	758	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
	RBT	108	1,080	671	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
Sept. 1987	BRN	37	370	230	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	RBT	22	220	137	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	UNK	7	70	44	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
Sept. 1988	BRN	108	1,080	671	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	RBT	14	140	87	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	UNK	8	80	50	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
July 1989	BRN	74	1,082	673	114.8	931	186.0	--	172	3-4 (n.s.)	361	Leiner (1992)	99
	RBT	156	2,281	1,417	39.4	1,962	64.2	--	28	3-4 (n.s.)	361	Leiner (1992)	99

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Between hatchery and El Aujae Campground</b>													
Sept. 1973	RBT	--	416	--	--	--	--	<229	--	n.s.	n.s.	Patterson (1974)	54
	BRN	--	520	--	--	--	--	--	--	n.s.	n.s.	Patterson (1974)	54
Oct. 1974	RBT	331	2,207	1,371	--	--	--	*	--	1 (50%)	792	Patterson (1974)	54
	BRN	36	240	149	--	--	--	*	--	1 (50%)	792	Patterson (1974)	54
	WS	4	27	17	--	--	--	*	--	1 (50%)	792	Patterson (1974)	54
Sept. 1976	RBT	18	360	224	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
	BRN	17	340	211	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
Sept. 1976	RBT	18	360	224	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
	BRN	35	700	435	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
Sept. 1976	RBT	27	540	336	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
	BRN	28	560	348	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
Nov. 1979	RBT	8	160	99	--	--	--	*	--	1 (50%)	264	Parish (1979)	71
	BRN	25	500	311	--	--	--	*	--	1 (50%)	264	Parish (1979)	71
	UNK	1	20	12	--	--	--	*	--	1 (50%)	264	Parish (1979)	71
June 1981	BRN	18	180	112	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
June 1981	RBT	20	200	124	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	BRN	28	280	174	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Feb. 1984	BRN	7	70	43	--	--	--	*	--	1	528	Patterson (1984)	83
	UNK	1	10	6	--	--	--	*	--	1	528	Patterson (1984)	83
Sept. 1984	BRN	26	260	162	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	9	90	56	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	UNK	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Sept. 1984	BRN	34	340	211	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	5	50	31	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Aug. 1985	BRN	12	120	75	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	UNK	7	70	44	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
Aug. 1985	BRN	20	200	124	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	RBT	1	1	6	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
Nov. 1986	BRN	98	980	609	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
	RBT	5	50	31	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>Between hatchery and El Aujae Campground (cont.)</b>													
Nov. 1986	BRN	111	1,110	690	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
	RBT	10	100	62	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
Sept. 1987	BRN	42	420	261	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	RBT	7	70	44	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	UNK	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
Sept. 1987	BRN	59	590	367	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	RBT	6	60	37	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	UNK	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
Sept. 1988	BRN	121	1,210	752	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	UNK	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
Sept. 1988	BRN	120	1,200	746	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	UNK	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
<b>El Aujae Campground</b>													
Sept. 1976	RBT	24	480	298	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
	BRN	31	620	385	--	--	--	*	--	1 (75%)	264	Parish (1976b)	58
June 1981	BRN	11	110	68	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	46	460	286	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Sept. 1984	BRN	20	200	124	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	2	20	12	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Aug. 1985	BRN	16	160	99	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	RBT	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
Nov. 1986	BRN	69	690	429	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
	RBT	5	50	31	--	--	--	*	--	1 (50%)	528	Akroyd (1987a)	89
Sept. 1987	BRN	54	540	336	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
	RBT	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1987b)	90
Sept. 1988	BRN	121	1,210	752	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	RBT	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92
	UNK	4	40	25	--	--	--	*	--	1 (50%)	528	Akroyd (1988)	92

**Historical (1953-1994) fish population data (continued).**

Site, Year	Species	# Collected	#/mi	#/km	kg/km	#/ha	kg/ha	Average Length (mm)	Average Weight (g)	# of Passes (efficiency %)	Site Length (ft)	Reference	Page # (this report)
<b>La Junta Point (near confluence at Rio Grande)</b>													
Nov. 1979	RBT	6	120	75	--	--	--	*	--	1 (40%)	264	Parish (1979)	71
	BRN	18	360	224	--	--	--	*	--	1 (40%)	264	Parish (1979)	71
	WS	11	220	137	--	--	--	*	--	1 (40%)	264	Parish (1979)	71
	Chub	2	40	25	--	--	--	*	--	1 (40%)	264	Parish (1979)	71
June 1981	BRN	19	190	118	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	18	180	112	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Sept. 1984	BRN	29	290	180	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	RBT	3	30	19	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
	UNK	2	20	12	--	--	--	*	--	1 (50%)	528	Akroyd (1984)	81
Aug. 1985	BRN	22	220	137	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	RBT	1	10	6	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87
	UNK	5	50	31	--	--	--	*	--	1 (50%)	528	Akroyd (1985)	87

\* Divided into 2-3" size classes.

n.s. = not specified.

Data from Akroyd (1988) includes only 1<sup>st</sup> pass.

**SECTION 1.5**  
**BENTHIC INVERTEBRATES**  
**DATA SUMMARY**

**Historical (1960-1994) benthic invertebrate population data for sites on the Red River, New Mexico.**

Site, Date	# of Taxa	% EPT Taxa	#/m <sup>2</sup>	g/m <sup>2</sup>	Biotic Indices	Reference	Page # (this report)
<b>East Fork at Blue Lake Trail</b>							
June 1960	9	78	542	--	1.47 cm <sup>3</sup> /m <sup>2</sup>	NMDGF (1960)	44
<b>West Fork</b>							
May 1960	4	75	283	--	5.20 cm <sup>3</sup> /m <sup>2</sup>	NMDGF (1960)	44
<b>Zwergle Gaging Station</b>							
Sept. 1980	29	55	K	--	--	Melancon <i>et al.</i> (1982)	76
April 1985	27	63	2,501	--	H' = 3.60 CTQ <sub>a</sub> = 48 BCI = 104	Smolka & Jacobi (1986)	88
Aug. 1986	16	69	1,567	--	H' = 3.03 CTQ <sub>a</sub> = 45 BCI = 112	Smolka & Tague (1987)	91
Sept. 1988	28	61	2,038	--	H' = 3.77 CTQ <sub>a</sub> = 48 BCI = 104	Smolka & Tague (1989)	97
April 1992	31	65	2,765	--	HBI = 2.55 CTQ <sub>a</sub> = 46	Smolka (1993)	100
<b>Upstream of Bitter Creek</b>							
Nov. 1965	22	77	1,044	--	--	USFWPCA (1966)	46
Nov. 1970	17	--	3,548	--	BBI = 30	USEPA (1971)	47
April 1992	29	59	3,090	--	HBI = 2.48 CTQ <sub>a</sub> = 45	Smolka (1993)	100
<b>Downstream of Bitter Creek</b>							
Nov. 1965	20	90	1,274	--	--	USFWPCA (1966)	46
Nov. 1970	16	--	2,971	--	BBI = 31	USEPA (1971)	47
April 1992	26	65	2,551	--	HBI = 2.61 CTQ <sub>a</sub> = 47	Smolka (1993)	100
<b>June Bug Campground</b>							
Sept. 1980	26	65	K	--	--	Melancon <i>et al.</i> (1982)	76
Jan. 1984	22	68	2,071	--	H' = 3.13 CTQ <sub>a</sub> = 36 BCI = 143	Jacobi & Smolka (1984)	86
Aug. 1986	21	71	1,145	--	H' = 3.33 CTQ <sub>a</sub> = 40 BCI = 125	Smolka & Tague (1987)	91
Sept. 1988	14	64	771	--	H' = 2.59 CTQ <sub>a</sub> = 41 BCI = 123	Smolka & Tague (1989)	97
April 1992	20	65	1,835	--	HBI = 2.14 CTQ <sub>a</sub> = 49	Smolka (1993)	100
<b>Elephant Rock Campground</b>							
Nov. 1965	17	71	362	--	--	USFWPCA (1966)	46
Nov. 1970	17	--	1,152	--	BBI = 29	USEPA (1971)	47
Sept. 1980	29	62	K	--	--	Melancon <i>et al.</i> (1982)	76
Jan. 1984	23	70	1,785	--	H' = 3.36 CTQ <sub>a</sub> = 47 BCI = 107	Jacobi & Smolka (1984)	86

**Historical (1960-1994) benthic invertebrate population data (continued).**

Site, Date	# of Taxa	% EPT Taxa	#/m <sup>2</sup>	g/m <sup>2</sup>	Biotic Indices	Reference	Page # (this report)
<b>Elephant Rock Campground (cont.)</b>							
April 1985	21	67	916	--	H' = 3.79 CTQ <sub>a</sub> = 37 BCI = 136	Smolka & Jacobi (1986)	88
Aug. 1986	23	70	2,090	--	H' = 3.15 CTQ <sub>a</sub> = 43 BCI = 118	Smolka & Tague (1987)	91
Sept. 1988	16	63	997	--	H' = 2.92 CTQ <sub>a</sub> = 42 BCI = 135	Smolka & Tague (1989)	97
April 1992	18	72	1,407	--	HBI = 2.48 CTQ <sub>a</sub> = 44	Smolka (1993)	100
<b>Upstream of Molycorp property boundary</b>							
May 1971	5	60	99	1.68	--	Pennak (1972)	49
June 1971	9	78	210	4.20	--	Pennak (1972)	49
July 1971	9	89	109	3.99	--	Pennak (1972)	49
Sept. 1971	9	78	90	2.73	--	Pennak (1972)	49
Oct. 1971	4	100	29	0.84	--	Pennak (1972)	49
Nov. 1971	10	70	160	2.94	--	Pennak (1972)	49
Oct. 1976	--	--	562	6.0	--	Pennak (1976)	59
Mar. 1977	--	--	787 <sup>a</sup>	1.7	--	Pennak (1977a)	61
Oct. 1977	--	--	56	0.7	--	Pennak (1977b)	65
Mar. 1978	--	--	959	7.3	--	Pennak (1978a)	69
Aug. 1979	--	--	--	1.6	--	Pennak (1979a)	72
Sept. 1979	--	--	--	0.4	--	Pennak (1979a)	72
Sept. 1980	19	68	K	--	--	Melancon <i>et al.</i> (1982)	76
July 1981	--	--	--	26.5	--	Pennak (1981)	75
Oct. 1982	--	--	--	4.4	--	Pennak (1983)	79
Oct. 1983	--	--	--	2.7	--	Pennak (1984)	84
Sept. 1988	16	63	1,275	--	H' = 2.82 CTQ <sub>a</sub> = 42 BCI = 119	Smolka & Tague (1989)	97
Oct. 1988	10	90	230	0.50	H' = 2.92 CTQ <sub>a</sub> = 29 BCI = 172	ENSR (1988)	94
April 1992	13	62	1,594	--	HBI = 2.59 CTQ <sub>a</sub> = 52	Smolka (1993)	100
<b>Downstream of Columbine Creek</b>							
Sept. 1980	28	68	K	--	--	Melancon <i>et al.</i> (1982)	76
<b>Upstream of Goathill Gulch</b>							
Nov. 1965	14	71	402	--	--	USFWPCA (1966)	46
Nov. 1970	11	--	933	--	BBI = 21	USEPA (1971)	47
<b>Goathill Campground</b>							
Oct. 1976	--	--	808 <sup>b</sup>	6.5	--	Pennak (1976)	59
Mar. 1977	--	--	211	4.5	--	Pennak (1977a)	61

**Historical (1960-1994) benthic invertebrate population data (continued).**

Site, Date	# of Taxa	% EPT Taxa	#/m <sup>2</sup>	g/m <sup>2</sup>	Biotic Indices	Reference	Page # (this report)
<b>Goathill Campground (cont.)</b>							
Oct. 1977	--	--	43	0.3	--	Pennak (1977b)	65
Mar. 1978	--	--	1,677	32.3	--	Pennak (1978a)	69
July 1978	--	--	443	5.2	--	Pennak (1978b)	70
Aug. 1979	--	--	--	0.6	--	Pennak (1979a)	72
Sept. 1979	--	--	--	0.6	--	Pennak (1979a)	72
Sept. 1980	20	75	K	--	--	Melancon <i>et al.</i> (1982)	76
July 1981	--	--	--	3.0	--	Pennak (1981)	75
Oct. 1982	--	--	--	1.9	--	Pennak (1983)	79
Oct. 1983	--	--	--	1.5	--	Pennak (1984)	84
Oct. 1988	6	83	79	0.11	H' = 1.96 CTQ <sub>a</sub> = 31 BCI = 164	ENSR (1988)	94
<b>Questa Ranger/Gaging Station</b>							
Nov. 1965	9	67	86	--	--	USFWPCA (1966)	46
Nov. 1970	11	--	449	--	BBI = 19	USEPA (1971)	47
Sept. 1988	6	100	171	--	H' = 2.06 CTQ <sub>a</sub> = 32 BCI = 119	Smolka & Tague (1989)	97
Oct. 1988	3	100	108	0.20	H' = 1.30 CTQ <sub>a</sub> = 31 BCI = 161	ENSR (1988)	94
April 1992	10	60	490	--	HBI = 1.26 CTQ <sub>a</sub> = 46	Smolka (1993)	100
<b>Eagle Rock Campground</b>							
May 1971	5	80	32	2.94	--	Pennak (1972)	49
June 1971	5	40	74	1.05	--	Pennak (1972)	49
July 1971	8	50	59	2.94	--	Pennak (1972)	49
Sept. 1971	6	67	50	1.26	--	Pennak (1972)	49
Oct. 1971	8	88	149	3.54	--	Pennak (1972)	49
Nov. 1971	7	71	50	2.31	--	Pennak (1972)	49
Oct. 1976	--	--	170	1.4	--	Pennak (1976)	59
Mar. 1977	--	--	112 <sup>c</sup>	7.8	--	Pennak (1977a)	61
Oct. 1977	--	--	82	2.4	--	Pennak (1977b)	65
Mar. 1978	--	--	52	0.5	--	Pennak (1978a)	69
July 1978	--	--	490	16.3	--	Pennak (1978b)	70
Aug. 1979	--	--	--	0.2	--	Pennak (1979a)	72
Sept. 1979	--	--	--	1.0	--	Pennak (1979a)	72
July 1981	--	--	--	1.5	--	Pennak (1981)	75
Oct. 1982	--	--	--	1.4	--	Pennak (1983)	79
Oct. 1983	--	--	--	2.4	--	Pennak (1984)	84
<b>SH 522 Bridge</b>							
Nov. 1965	6	67	108	--	--	USFWPCA (1966)	46
Nov. 1970	10	--	818	--	BBI = 19	USEPA (1971)	47
Sept. 1980	23	70	K	--	--	Melancon <i>et al.</i> (1982)	76



**Historical (1960-1994) benthic invertebrate population data (continued).**

Site, Date	# of Taxa	% EPT Taxa	#/m <sup>2</sup>	g/m <sup>2</sup>	Biotic Indices	Reference	Page # (this report)
<b>SH 522 Bridge (cont.)</b>							
April 1985	17	59	388	--	H' = 3.48 CTQ <sub>a</sub> = 45 BCI = 112	Smolka & Jacobi (1986)	88
Aug. 1986	17	71	607	--	H' = 3.34 CTQ <sub>a</sub> = 42 BCI = 119	Smolka & Tague (1987)	91
April 1992	13	69	535	--	HBI = 2.60 CTQ <sub>a</sub> = 50	Smolka (1993)	100
<b>Upstream of Pope Creek</b>							
May 1971	11	82	290	7.14	--	Pennak (1972)	49
June 1971	9	67	216	3.78	--	Pennak (1972)	49
July 1971	8	75	326	5.04	--	Pennak (1972)	49
Sept. 1971	8	75	82	0.84	--	Pennak (1972)	49
Oct. 1971	8	88	147	2.10	--	Pennak (1972)	49
Nov. 1971	8	88	617	3.36	--	Pennak (1972)	49
Oct. 1976	--	--	765	6.6	--	Pennak (1976)	59
Mar. 1977	--	--	2,018	17.3	--	Pennak (1977a)	61
Oct. 1977	--	--	159	1.1	--	Pennak (1977b)	65
Mar. 1978	--	--	907	6.2	--	Pennak (1978a)	69
July 1978	--	--	211	1.8	--	Pennak (1978b)	70
Aug. 1979	--	--	--	2.4	--	Pennak (1979a)	72
Sept. 1979	--	--	--	2.0	--	Pennak (1979a)	72
July 1981	--	--	--	6.7	--	Pennak (1981)	75
Oct. 1982	--	--	--	14.0	--	Pennak (1983)	79
Oct. 1983	--	--	--	6.9	--	Pennak (1984)	84
Oct. 1988	11	64	362	0.59	H' = 2.68 CTQ <sub>a</sub> = 61 BCI = 82	ENSR (1988)	94
<b>Upstream of hatchery diversion</b>							
June 1960	12	67	1,650	--	28.6 cm <sup>3</sup> /m <sup>2</sup>	NMDGF (1960)	44
Nov. 1965	10	50	291	--	--	USFWPCA (1966)	46
Nov. 1970	16	--	2,759	--	BBI = 27	USEPA (1971)	47
May 1971	9	78	299	10.9	--	Pennak (1972)	49
June 1971	7	71	479	16.8	--	Pennak (1972)	49
July 1971	8	63	199	13.6	--	Pennak (1972)	49
Sept. 1971	6	50	571	1.6	--	Pennak (1972)	49
Oct. 1971	5	60	479	10.9	--	Pennak (1972)	49
Nov. 1971	7	57	84	1.6	--	Pennak (1972)	49
Oct. 1976	--	--	632	5.8	--	Pennak (1976)	59
Mar. 1977	--	--	1,875	51.6	--	Pennak (1977a)	61
Oct. 1977	--	--	224	2.5	--	Pennak (1977b)	65
Mar. 1978	--	--	1,402	18.5	--	Pennak (1978a)	69
July 1978	--	--	2,207	21.1	--	Pennak (1978b)	70
Aug. 1979	--	--	--	3.4	--	Pennak (1979a)	72
Sept. 1979	--	--	--	1.0	--	Pennak (1979a)	72

**Historical (1960-1994) benthic invertebrate population data (continued).**

Site, Date	# of Taxa	% EPT Taxa	#/m <sup>2</sup>	g/m <sup>2</sup>	Biotic Indices	Reference	Page # (this report)
<b>Upstream of hatchery diversion (cont.)</b>							
July 1981	--	--	--	4.9	--	Pennak (1981)	75
Oct. 1982	--	--	--	2.8	--	Pennak (1983)	79
Oct. 1983	--	--	--	6.9	--	Pennak (1984)	84
Oct. 1988	11	64	495	0.50	H' = 2.56 CTQ <sub>a</sub> = 59 BCI = 85	ENSR (1988)	94
<b>Downstream of hatchery</b>							
Nov. 1965	20	50	344	--	--	USFWPCA (1966)	46
Nov. 1970	19	--	3,523	--	BBI = 26	USEPA (1971)	47
April 1985	20	75	2,047	--	H' = 2.29 CTQ <sub>a</sub> = 51 BCI = 98	Smolka & Jacobi (1986)	88
April 1992	19	63	1,423	--	HBI = 3.30 CTQ <sub>a</sub> = 54	Smolka (1993)	100
<b>Between hatchery and El Aujae Campground</b>							
Aug. 1979	--	--	--	1.7	--	Pennak (1979a)	72
Sept. 1979	--	--	--	1.4	--	Pennak (1979a)	72
July 1981	--	--	--	6.7	--	Pennak (1981)	75
Oct. 1982	--	--	--	9.8	--	Pennak (1983)	79
Oct. 1983	--	--	--	6.0	--	Pennak (1984)	84
Aug. 1986	17	65	1,836	--	H' = 2.70 CTQ <sub>a</sub> = 43 BCI = 117	Smolka & Tague (1987)	91
Oct. 1988	12	58	1,973	1.80	H' = 1.66 CTQ <sub>a</sub> = 50 BCI = 100	ENSR (1988)	94
<b>La Junta Point</b>							
Oct. 1988	10	70	K	--	--	ENSR (1988)	94

HBI = Hilsenhoff Biotic Index

H' = Shannon-Weiner Diversity Index

CTQ<sub>a</sub> = Community Tolerance Quotient (CTQ<sub>p</sub> for all sites = 50)

BCI = Biotic Condition Index

BBI = Beck Biotic Index

K = kick sample (qualitative)

<sup>a</sup> = Published value miscalculated as 112/m<sup>2</sup>

<sup>b</sup> = Published value miscalculated as 763/m<sup>2</sup>

<sup>c</sup> = Published value miscalculated as 555/m<sup>2</sup>

**SECTION 1.6**

**PERIPHYTON**

**DATA SUMMARY**

**Historical (1971-1994) periphyton population data for sites on the Red River, New Mexico.**

Site, Date	Biomass		Dominant Genera	Reference	Page # (this report)
	Wet Weight (mg/5 min.)*	AFDW (g/100 cm <sup>2</sup> )			
<b>Upstream of Molycorp Boundary</b>					
May 1971	1.85	--	--	Pennak (1972)	49
June 1971	0.99	--	<i>Oscillatoria</i>	Pennak (1972)	49
July 1971	0.36	--	--	Pennak (1972)	49
Sept. 1971	0.78	--	--	Pennak (1972)	49
Oct. 1971	3.44	--	--	Pennak (1972)	49
Nov. 1971	1.96	--	--	Pennak (1972)	49
Oct. 1976	112	--	--	Pennak (1976)	59
Mar. 1977	220.9	--	--	Pennak (1977a)	61
Oct. 1977	5.4	--	--	Pennak (1977b)	65
Mar. 1978	112.5	--	--	Pennak (1978a)	69
Aug. 1979	1.1	--	--	Pennak (1979b)	74
Sept. 1979	26.8	--	--	Pennak (1979b)	74
July 1981	414.6	--	--	Pennak (1981)	75
Oct. 1982	45.3	--	--	Pennak (1983)	79
Oct. 1983	21.6	--	--	Pennak (1984)	84
Oct. 1988	--	0.3967	<i>Achnanthes, Oscillatoria, Fragilaria</i>	ENSR (1988)	84
<b>Goat Hill Campground</b>					
Oct. 1976	318.8	--	--	Pennak (1976)	59
Mar. 1977	1,669.3	--	--	Pennak (1977a)	61
Oct. 1977	3.4	--	--	Pennak (1977b)	65
Mar. 1978	3,012.0	--	--	Pennak (1978a)	69
July 1978	0.9	--	--	Pennak (1978b)	70
Aug. 1979	4.0	--	--	Pennak (1979b)	74
Sept. 1979	34.3	--	--	Pennak (1979b)	74
July 1981	57.3	--	--	Pennak (1981)	75
Oct. 1982	168.0	--	--	Pennak (1983)	79
Oct. 1983	38.1	--	--	Pennak (1984)	84
Oct. 1988	--	0.5644	<i>Oscillatoria, Achnanthes, Fragilaria</i>	ENSR (1988)	84
<b>Eagle Rock Campground</b>					
May 1971	69.12	--	<i>Oscillatoria</i>	Pennak (1972)	49
June 1971	2.05	--	<i>Ulothrix, Oscillatoria</i>	Pennak (1972)	49
July 1971	8.33	--	--	Pennak (1972)	49
Sept. 1971	30.02	--	<i>Oscillatoria, "Chroococcus"</i>	Pennak (1972)	49
Oct. 1971	12.78	--	<i>Oscillatoria</i>	Pennak (1972)	49
Nov. 1971	64.12	--	<i>Oscillatoria</i>	Pennak (1972)	49
Oct. 1976	38.3	--	--	Pennak (1976)	59
Mar. 1977	8.4	--	--	Pennak (1977a)	61
Oct. 1977	3.6	--	--	Pennak (1977b)	65
Mar. 1978	34.5	--	--	Pennak (1978a)	69
July 1978	110.8	--	--	Pennak (1978b)	70

**Historical (1971-1994) periphyton population data (continued).**

Site, Date	Biomass		Dominant Genera	Reference	Page # (this report)
	Wet Weight (mg/5 min.)*	AFDW (g/100 cm <sup>2</sup> )			
<b>Eagle Rock Campground (cont.)</b>					
Aug. 1979	6.9	--	--	Pennak (1979b)	74
July 1981	61.5	--	--	Pennak (1981)	75
Oct. 1982	13.7	--	--	Pennak (1983)	79
Oct. 1983	236.8	--	--	Pennak (1984)	84
<b>Questa Ranger/Gaging Station</b>					
Oct. 1988	--	0.0011	<i>Lyngbya, Achnanthes, Oscillatoria</i>	ENSR (1988)	94
<b>Upstream of Pope Creek</b>					
May 1971	12.85	--	<i>Oscillatoria</i>	Pennak (1972)	49
June 1971	0.98	--	--	Pennak (1972)	49
July 1971	0.58	--	--	Pennak (1972)	49
Sept. 1971	10.37	--	<i>Oscillatoria</i>	Pennak (1972)	49
Nov. 1971	23.27	--	<i>Chroococcus, Oscillatoria</i>	Pennak (1972)	49
Oct. 1976	494.2	--	--	Pennak (1976)	59
Mar. 1977	333.1	--	--	Pennak (1977a)	61
Oct. 1977	97.0	--	--	Pennak (1977b)	65
Mar. 1978	560.9	--	--	Pennak (1978a)	69
July 1978	246.3	--	--	Pennak (1978b)	70
Aug. 1979	1.1	--	--	Pennak (1979b)	74
Sept. 1979	234.2	--	--	Pennak (1979b)	74
July 1981	423.6	--	--	Pennak (1981)	75
Oct. 1982	579.8	--	--	Pennak (1983)	79
Oct. 1983	194.7	--	--	Pennak (1984)	84
Oct. 1988	--	0.2225	<i>Achnanthes, Fragilaria, Oscillatoria</i>	ENSR (1988)	94
<b>Upstream of hatchery diversion</b>					
May 1971	4.55	--	<i>Oscillatoria, Synedra, Tabellaria</i>	Pennak (1972)	49
June 1971	0.67	--	<i>Oscillatoria</i>	Pennak (1972)	49
July 1971	95.25	--	<i>Gomphonema, Navicula</i>	Pennak (1972)	49
Sept. 1971	294.82	--	<i>Cladophora, Navicula, Tabellaria</i>	Pennak (1972)	49
Oct. 1971	39.08	--	<i>Navicula, Cladophora, Oscillatoria</i>	Pennak (1972)	49
Nov. 1971	4.90	--	<i>Cladophora, Gomphonema, Chroococcus,</i>	Pennak (1972)	49
Oct. 1976	360.9	--	--	Pennak (1976)	59
Mar. 1977	7,119	--	--	Pennak (1977a)	61
Oct. 1977	553.0	--	--	Pennak (1977b)	65
Mar. 1978	1,792.5	--	--	Pennak (1978a)	69
July 1978	937.5	--	--	Pennak (1978b)	70
Aug. 1979	8.6	--	--	Pennak (1979b)	74

**Historical (1971-1994) periphyton population data (continued).**

Site, Date	Biomass		Dominant Genera	Reference	Page # (this report)
	Wet Weight (mg/5 min.)*	AFDW (100/cm <sup>2</sup> )			
<b>Upstream of hatchery diversion (cont.)</b>					
Sept. 1979	133.4	--	--	Pennak (1979b)	74
July 1981	274.8	--	--	Pennak (1981)	75
Oct. 1982	140.6	--	--	Pennak (1983)	79
Oct. 1983	299.7	--	--	Pennak (1984)	84
Oct. 1988	--	0.0844	<i>Oscillatoria, Achnanthes, Fragilaria</i>	ENSR (1988)	94
<b>Between hatchery and El Aujae Campground</b>					
Aug. 1979	9.0	--	--	Pennak (1979b)	74
Sept. 1979	124.8	--	--	Pennak (1979b)	74
July 1981	499.9	--	--	Pennak (1981)	75
Oct. 1982	204.7	--	--	Pennak (1983)	79
Oct. 1983	804.6	--	--	Pennak (1984)	84
Oct. 1988	--	0.6272	<i>Oscillatoria, Nitzschia</i>	ENSR (1988)	94
<b>La Junta Point</b>					
Oct. 1988	--	0.3148	<i>Oscillatoria, Fragilaria, Lyngbya</i>	ENSR (1988)	94

\* Wet weight biomass is mg/5-minute scraping on substrate.

**SECTION 1.7**  
**CREEL CENSUS**  
**DATA SUMMARY**

**Historical (1959-1995) creel census data for reaches and lakes on the Red River, New Mexico.**

Reach/Date	RBT	BRN	BRK	CUT	Other	Total	Catch/ Man-hour	Reference	Page # (this report)
<b>West Fork Red River</b>									
1961	266	60	1	2	--	329	0.98	Jester (1962)	107
1964	2	--	--	--	--	2	0.09	Harrison (1965)	110
Opening									
1967	3	--	--	--	--	3	1.50	Little (1968)	113
1967	5	--	--	--	--	5	0.28	Little (1968)	113
<b>Middle Fork Red River</b>									
1961	10	--	--	--	--	10	0.30	Jester (1962)	107
1964	20	--	--	--	--	20	1.18	Harrison (1965)	110
<b>East Fork Red River</b>									
1961	--	--	--	--	--	0	0	Jester (1962)	107
Opening									
1967	12	--	--	--	--	12	1.20	Little (1968)	113
1967	12	--	--	--	--	12	1.20	Little (1968)	113
<b>Upper Red River</b>									
1959	298	--	41	10	--	349	1.19	Navarre (1960)	104
1960	116	6	4	11	20	207	0.98	Navarre (1961)	106
1961	540	1	--	3	57	601	0.92	Jester (1962)	107
1962	149	1	--	2	--	152	0.97	Regan (1963)	108
1963	383	--	2	1	--	386	0.86	Little (1964)	109
1964	365	3	1	--	--	369	1.08	Harrison (1965)	110
1965	334	1	16	3	--	354	1.05	Harrison (1966)	111
1966	53	--	6	--	--	59	0.63	Little (1967)	112
Opening									
1967	193	--	--	--	--	193	1.90	Little (1968)	113
1967	275	--	--	--	--	275	1.15	Little (1968)	113
Opening									
1969	142	9	--	--	--	151	2.29	Grasmick (1971)	114
Opening									
1971	35	--	2	1	--	38	0.58	Grasmick (1973)	115
1971	98	--	2	7	--	107	0.70	Grasmick (1973)	115
<b>Middle Red River</b>									
1960	370	3	--	--	--	373	0.98	Navarre (1961)	106
1961	169	1	--	--	--	170	0.42	Jester (1962)	107
1962	1,108	--	1	10	--	1,119	0.69	Regan (1963)	108
1963	1,317	3	3	4	--	1,327	0.88	Little (1964)	109
1964	1,032	--	--	--	--	1,032	0.98	Harrison (1965)	110
1965	1,024	5	5	7	1	1,042	0.83	Harrison (1966)	111
Opening									
1966	154	--	--	--	--	154	1.21	Little (1967)	112
1966	632	2	--	--	--	634	0.75	Little (1967)	112



**Historical (1959-1995) creel census data (continued).**

Reach/Date	RBT	BRN	BRK	CUT	Other	Total	Catch/ Man-hour	Reference	Page # (this report)
<b>Middle Red River (cont.)</b>									
Opening 1967	208	--	--	--	--	208	2.33	Little (1968)	113
1967	293	--	--	--	--	293	1.40	Little (1968)	113
Opening 1969	108	6	--	--	--	114	1.15	Grasmick (1971)	114
Opening 1971	45	1	--	--	--	46	1.15	Grasmick (1973)	115
1971	331	8	1	3	--	343	0.78	Grasmick (1973)	115
Opening 1972	24	--	--	--	--	24	0.32	Grasmick (1974)	116
1972	169	--	--	--	--	169	0.39	Grasmick (1974)	116
<b>Lower Red River</b>									
May 1959	--	--	--	--	--	1,238	0.75	Harrison (1960)	105
June 1959	--	--	--	--	--	639	0.64	Harrison (1960)	105
July 1959	--	--	--	--	--	553	0.42	Harrison (1960)	105
Aug. 1959	--	--	--	--	--	506	0.51	Harrison (1960)	105
Sept. 1959	--	--	--	--	--	334	0.69	Harrison (1960)	105
1959	1,266	53	11	--	--	1,330	1.30	Navarre (1960)	104
1960	980	46	--	--	20	1,046	1.50	Navarre (1961)	106
1961	337	--	--	--	23	360	0.84	Jester (1962)	107
1962	160	3	3	18	--	184	0.94	Regan (1963)	108
1963	176	11	--	--	--	187	1.57	Little (1964)	109
1964	234	13	--	--	--	247	1.18	Harrison (1965)	110
1965	77	1	--	--	--	78	0.51	Harrison (1966)	111
1966	65	--	--	--	--	65	1.69	Little (1967)	112
Opening 1967	856	10	--	--	--	866	2.64	Little (1968)	113
1967	934	10	--	--	--	944	2.40	Little (1968)	113
Opening 1969	122	--	--	--	--	122	0.86	Grasmick (1971)	114
1971	159	12	--	1	--	172	1.62	Grasmick (1973)	115
1972	36	--	--	1	--	37	0.67	Grasmick (1974)	116
<b>Fawn Lakes</b>									
Opening 1971	8	--	--	--	--	8	0.42	Grasmick (1973)	115
1971	83	--	--	--	--	83	0.45	Grasmick (1973)	115
1972	36	--	--	--	--	36	0.25	Grasmick (1974)	116

**Historical (1959-1995) creel census data (continued).**

Reach/Date	RBT	BRN	BRK	CUT	Other	Total	Catch/ Man-hour	Reference	Page # (this report)
<b>Eagle Rock Lake</b>									
Opening									
1971	88	--	1	--	--	89	0.69	Grasmick (1973)	115
1971	114	--	1	--	--	115	0.62	Grasmick (1973)	115
Opening									
1972	18	--	--	--	--	18	0.31	Grasmick (1974)	116
1972	61	--	--	--	--	61	0.27	Grasmick (1974)	116