

**TABLA I.1**  
**AFLUENTES EMBALSE RALCO - CAUDALES MEDIOS MENSUALES (m3/s)**  
**(FUENTE: ENDESA)**

AÑO	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ENE	FEB	MAR	ΣOC-MR
1950/51													
1951/52													
1952/53													
1953/54													
1954/55													
1955/56													
1956/57													
1957/58													
1958/59													
1959/60													
1960/61													
1961/62													
1962/63													
1963/64	54.6	76.6	169.4	269.1	383.2	477.6	538.8	572.0	411.6	198.2	119.0	76.1	1915.6
1964/65	62.8	84.2	162.5	125.6	170.8	359.2	447.5	395.2	425.4	192.6	145.0	90.7	1696.3
1965/66	160.0	328.0	840.2	520.2	605.6	360.5	451.0	666.5	608.9	232.6	136.0	99.3	2194.3
1966/67	127.6	231.1	299.2	465.9	240.3	294.2	407.7	498.0	518.9	257.7	161.0	100.8	1944.0
1967/68	72.6	174.7	145.9	180.5	281.4	277.6	551.7	514.4	276.4	128.7	112.1	87.6	1670.9
1968/69	63.5	65.9	95.0	126.9	149.4	212.0	202.2	208.2	168.6	116.0	80.2	62.4	837.5
1969/70	75.4	222.1	563.5	356.1	437.6	387.7	356.7	477.5	313.8	148.7	97.6	73.0	1467.3
1970/71	81.6	119.1	288.0	250.4	256.3	254.4	352.7	418.2	339.0	188.4	155.0	87.6	1540.8
1971/72	72.2	264.0	197.8	459.3	395.0	311.9	390.6	382.1	277.9	176.1	108.0	78.5	1413.3
1972/73	68.3	456.3	674.1	381.2	709.3	356.2	390.0	529.5	323.1	174.8	118.0	82.6	1618.0
1973/74	69.1	156.9	259.4	312.6	230.8	230.9	396.6	389.1	207.6	130.0	83.4	65.2	1271.9
1974/75	51.0	93.3	214.7	211.0	271.0	260.8	407.5	372.0	182.0	129.6	134.0	79.1	1304.3
1975/76	113.6	228.8	345.7	372.5	208.3	237.3	391.4	553.7	364.2	173.6	101.0	72.0	1655.7
1976/77	58.3	63.7	403.5	244.9	195.7	246.5	446.2	375.7	233.8	140.1	86.7	66.2	1348.6
1977/78	74.6	337.5	368.7	426.1	318.6	457.5	614.3	580.1	384.6	160.0	101.0	69.7	1909.7
1978/79	55.6	129.6	191.7	768.5	318.2	394.7	553.1	494.1	255.4	123.3	81.5	63.2	1570.6
1979/80	52.9	106.4	100.4	234.7	604.1	488.6	379.5	464.6	424.4	161.2	170.7	135.4	1735.7
1980/81	220.3	662.2	651.6	484.4	461.5	300.1	322.7	269.7	190.6	167.1	107.0	78.9	1135.9
1981/82	90.9	773.3	489.0	453.6	371.8	304.3	305.6	249.6	133.2	83.0	76.9	62.8	911.2
1982/83	53.2	136.6	386.2	692.8	354.2	595.3	585.7	521.6	448.4	239.4	134.0	73.9	2003.1
1983/84	80.0	98.2	261.7	247.5	245.5	264.6	484.1	454.3	184.6	99.2	70.9	59.2	1352.2
1984/85	50.0	198.8	206.1	482.5	229.9	398.0	671.3	700.2	494.7	226.8	119.0	77.8	2289.9
1985/86	116.3	346.3	419.1	440.8	199.7	211.2	261.2	299.0	138.4	77.9	67.5	60.8	904.7
1986/87	101.4	324.5	698.3	342.7	442.6	305.9	392.3	345.7	348.0	125.0	78.6	73.3	1362.9
1987/88	67.7	82.2	270.1	449.3	388.9	338.8	499.7	340.8	161.9	102.7	66.4	68.1	1239.7
1988/89	60.6	78.5	182.1	192.9	286.4	241.1	356.9	400.5	218.5	106.1	67.9	52.2	1202.1
1989/90	39.2	39.1	141.5	203.0	291.4	372.9	421.4	244.0	253.6	109.1	72.8	65.4	1166.3
1990/91	117.8	195.5	322.2	229.0	418.5	509.7	307.6	196.1	114.3	66.6	54.3	45.2	784.1
1991/92	79.6	507.8	410.6	447.4	265.6	368.7	311.7	291.4	211.5	128.5	72.1	62.6	1077.9
1992/93	80.7	428.2	634.2	320.5	219.6	344.3	452.9	535.4	351.5	183.3	101.0	76.1	1700.3
1993/94	124.2	430.5	742.9	703.3	551.5	469.7	441.2	452.7	453.1	174.3	105.0	75.7	1702.0
1994/95	94.9	141.3	390.2	549.6	297.6	486.7	665.1	442.1	426.0	161.1	94.5	73.5	1862.3
1995/96	89.2	94.7	472.8	506.7	365.0	530.8	474.5	516.7	261.1	116.0	84.8	78.6	1531.9
1996/97	109.4	110.9	202.7	136.5	172.6	194.8	184.9	142.5	87.6	66.3	60.8	46.1	588.1
1997/98	134.0	231.1	527.1	458.8	616.4	500.6	396.4	410.8	261.0	129.0	85.2	67.8	1350.1
1998/99	66.2	72.7	82.8	116.1	123.3	132.5	158.5	94.4	60.7	46.1	37.5	32.6	429.8
1999/00	28.9	63.7	191.6	160.1	358.7	490.0	480.6	330.0	150.7	77.5	91.8	61.9	1192.5
2000/01	55.7	70.4	435.6	461.6	335.4	358.9	478.9	409.3	258.2	153.3	92.9	68.4	1460.9
2001/02	56.3	354.3	580.2	847.1	453.2	313.7	358.8	241.7	153.0	80.7	62.1	95.5	991.7
2002/03	103.8	140.0	211.9	186.7	510.3	472.3	826.5	624.1	408.6	190.3	103.0	74.5	2227.1
PROM	83.3471	217.98	355.742	370.461	343.378	352.814	427.898	410.082	287.122	143.514	97.4044	73.0167	1439.04

**TABLA I.2**  
**CUENCA INTERMEDIA ENTRE RALCO Y PANGUE - CAUDALES MEDIOS MENSUALES (m3/s)**  
**(FUENTE: ENDESA)**

AÑO	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ENE	FEB	MAR	ΣOC-MR
1950/51													
1951/52													
1952/53													
1953/54													
1954/55													
1955/56													
1956/57													
1957/58													
1958/59													
1959/60													
1960/61													
1961/62													
1962/63													
1963/64	6.7	5.5	18.4	20.2	63.0	64.1	88.9	83.1	38.8	16.8	11.0	10.7	249.2
1964/65	7.7	9.9	18.0	14.1	17.2	39.0	58.5	36.9	46.3	16.8	14.0	11.4	183.8
1965/66	18.2	43.9	193.0	89.3	109.2	33.9	60.6	108.8	94.0	20.7	13.0	13.6	310.6
1966/67	15.9	21.3	32.3	78.9	24.8	25.0	47.3	51.9	66.5	22.8	13.0	5.6	207.0
1967/68	9.7	9.1	11.9	17.2	31.3	25.1	83.6	56.7	21.8	3.9	5.9	7.4	179.2
1968/69	15.3	26.5	9.0	14.0	14.1	18.3	18.8	14.0	12.1	10.9	8.3	8.6	72.7
1969/70	9.1	16.1	58.1	39.2	42.9	31.0	23.9	32.2	43.7	13.8	10.4	9.6	133.6
1970/71	9.7	5.8	27.9	40.3	25.8	22.0	32.2	33.0	24.0	16.9	18.0	13.9	137.9
1971/72	13.0	13.2	22.2	76.3	46.2	33.0	38.2	35.8	16.0	5.9	5.0	6.7	107.6
1972/73	6.2	39.8	90.7	84.8	98.6	60.7	63.8	46.8	21.8	6.1	10.9	8.0	157.4
1973/74	5.0	17.4	14.3	28.8	19.1	10.7	62.5	45.7	8.4	8.6	12.8	10.4	148.5
1974/75	12.7	15.1	36.1	33.4	28.8	10.3	36.1	23.2	54.9	9.1	10.0	4.2	137.5
1975/76	13.9	27.7	52.5	53.2	31.6	35.1	56.3	62.9	42.5	20.8	13.0	13.6	209.2
1976/77	10.5	10.6	36.1	11.9	9.9	9.9	45.0	17.9	12.1	5.9	8.8	10.0	99.7
1977/78	10.0	18.5	22.8	50.0	20.0	20.4	25.4	36.4	20.5	5.3	10.0	10.1	107.7
1978/79	11.0	15.2	19.4	89.7	15.2	26.9	22.0	26.7	7.9	5.1	8.7	8.4	78.8
1979/80	10.7	11.0	6.1	25.6	45.9	33.4	15.9	33.8	30.9	6.6	7.7	6.9	101.7
1980/81	30.1	102.1	97.9	78.8	76.0	26.9	22.1	12.8	7.0	21.5	11.0	8.9	83.3
1981/82	11.3	80.3	39.5	55.1	31.7	17.9	34.0	8.9	9.1	18.7	16.9	14.6	102.2
1982/83	13.3	32.6	66.6	99.0	49.2	68.9	49.6	27.8	12.5	8.8	9.0	15.8	123.4
1983/84	12.0	15.9	29.8	14.7	13.2	10.5	15.7	16.2	10.9	7.3	11.6	10.0	71.7
1984/85	12.1	29.5	12.0	59.8	9.7	26.6	40.5	35.7	13.6	14.6	7.0	13.0	124.4
1985/86	8.0	38.8	24.5	24.7	14.1	8.2	10.9	10.5	6.2	11.9	11.9	11.7	63.0
1986/87	17.7	55.3	46.9	22.0	45.0	18.7	17.2	16.8	14.4	7.0	16.8	12.8	85.1
1987/88	9.1	14.2	39.8	87.2	65.8	14.2	42.5	10.7	7.2	6.1	12.5	10.3	89.4
1988/89	11.3	11.3	36.1	16.6	40.8	11.9	13.2	21.9	7.9	12.0	14.6	16.9	86.5
1989/90	17.0	14.1	32.5	44.9	52.9	33.9	25.9	28.0	42.6	23.0	22.0	11.8	153.2
1990/91	42.5	43.2	47.9	34.8	48.1	52.6	29.8	25.9	23.0	18.4	6.5	8.1	111.6
1991/92	38.5	68.3	37.0	64.9	17.2	46.6	27.1	14.5	15.3	9.9	20.7	16.4	103.9
1992/93	18.1	83.1	62.5	34.1	21.2	30.8	36.2	45.1	15.1	17.0	12.0	9.9	135.3
1993/94	18.2	68.2	65.2	52.8	31.7	30.2	16.2	13.6	30.9	13.9	9.0	8.6	92.2
1994/95	12.6	25.3	49.8	53.5	15.0	31.5	36.6	15.8	18.1	5.4	6.5	9.1	91.4
1995/96	10.9	11.6	41.4	55.6	44.6	34.1	26.0	22.7	15.9	6.0	4.1	4.8	79.5
1996/97	10.2	12.2	34.4	14.7	20.4	11.1	16.0	12.2	8.3	6.9	6.1	6.6	56.1
1997/98	22.4	26.8	89.6	45.8	118.5	64.5	34.7	44.1	13.3	14.0	14.9	4.4	125.4
1998/99	8.0	6.9	11.2	13.2	15.5	14.2	15.6	16.3	13.1	14.1	10.2	7.3	76.6
1999/00	8.0	12.5	46.0	22.7	64.6	96.7	73.9	36.6	9.5	13.5	17.1	12.1	162.7
2000/01	10.1	13.5	98.4	85.6	57.3	65.1	85.8	62.5	33.6	14.6	13.9	12.0	222.4
2001/02	10.3	89.6	112.5	152.7	85.3	27.7	57.4	28.7	14.4	20.8	20.7	28.4	170.5
2002/03	34.1	34.2	55.1	52.8	75.8	21.6	118.7	62.8	17.6	11.3	9.3	4.8	224.6
PROM	14.2897	29.9026	46.137	48.8212	41.4322	31.5779	40.6055	33.3919	23.0413	12.3254	11.6228	10.4302	131.417

**TABLA I.3**  
**BIOBIO ANTES DE JUNTA CON HUIRI-HUIRI - CAUDALES MEDIOS MENSUALES (m3/s)**  
**(FUENTE: ENDESA)**

AÑO	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ENE	FEB	MAR	ΣOC-MR
1950/51													
1951/52													
1952/53													
1953/54													
1954/55													
1955/56													
1956/57													
1957/58													
1958/59													
1959/60													
1960/61													
1961/62													
1962/63													
1963/64	60.1	94.9	189.5	332.1	447.4	566.5	621.9	610.8	428.4	209.2	129.7	76.1	2076.0
1964/65	72.7	102.2	176.5	142.8	209.8	417.7	484.4	441.5	442.2	206.6	156.4	90.7	1821.7
1965/66	203.9	521.0	929.5	629.4	639.5	421.1	559.8	760.5	629.5	245.6	149.6	99.3	2444.3
1966/67	148.8	263.4	378.2	490.7	265.4	341.4	459.6	564.5	541.7	270.7	166.6	100.8	2103.8
1967/68	81.6	186.6	163.1	211.8	306.5	361.2	608.4	536.1	280.4	134.6	119.4	87.6	1766.5
1968/69	90.0	74.9	109.0	141.0	167.7	230.8	216.2	220.2	179.5	124.3	88.8	62.4	891.4
1969/70	91.5	280.3	602.7	399.0	468.6	411.6	388.9	521.2	327.6	159.1	107.2	73.0	1577.0
1970/71	87.4	147.0	328.3	276.2	278.3	286.6	385.7	442.2	355.9	206.4	168.9	87.6	1646.5
1971/72	85.4	286.2	274.1	505.6	428.0	350.1	426.4	398.1	283.9	181.1	114.7	78.5	1482.7
1972/73	108.1	547.0	758.8	479.8	770.0	420.0	436.9	551.3	329.2	185.7	126.1	82.6	1711.7
1973/74	86.5	171.2	288.1	331.7	241.4	293.5	442.3	397.6	216.2	142.8	93.8	65.2	1357.9
1974/75	66.1	129.4	248.0	239.8	281.2	297.0	430.7	427.0	191.1	139.6	138.2	79.1	1405.7
1975/76	141.3	281.3	398.9	404.0	243.4	293.5	454.3	596.2	385.0	186.6	114.6	72.0	1808.6
1976/77	68.9	99.8	415.3	254.8	205.6	291.5	464.1	387.7	239.7	148.9	96.7	66.2	1403.4
1977/78	93.1	360.3	418.7	446.0	338.9	482.8	650.7	600.7	389.9	170.0	111.1	69.7	1992.0
1978/79	70.8	149.0	281.4	783.7	345.2	416.7	579.8	502.0	260.4	132.0	89.9	63.2	1627.3
1979/80	63.9	112.4	126.0	280.6	637.5	504.5	413.3	495.4	431.0	168.9	177.5	135.4	1821.5
1980/81	322.3	760.1	730.4	560.4	488.4	322.3	335.5	276.6	212.2	178.1	115.9	78.9	1197.2
1981/82	171.2	812.8	544.2	485.3	389.7	338.4	314.5	258.7	151.9	99.9	91.5	62.8	979.4
1982/83	85.8	203.3	485.2	742.0	423.1	644.9	613.5	534.1	457.2	248.4	149.8	73.9	2076.9
1983/84	95.9	128.0	276.4	260.8	256.0	280.3	500.3	465.2	191.9	110.8	80.9	59.2	1408.2
1984/85	79.5	210.8	265.9	492.2	256.5	438.5	707.0	713.8	509.4	233.8	132.0	77.8	2373.8
1985/86	155.0	370.8	443.8	454.9	208.0	222.0	271.6	305.1	150.3	89.8	79.2	60.8	956.8
1986/87	156.8	371.4	720.3	387.7	461.3	323.1	409.1	360.1	355.1	141.8	91.4	73.3	1430.8
1987/88	81.9	122.0	357.3	515.1	403.1	381.3	510.4	348.0	168.0	115.2	76.7	68.1	1286.5
1988/89	72.0	114.6	198.7	233.8	298.3	254.3	378.8	408.4	230.5	120.7	84.8	52.2	1275.4
1989/90	53.3	71.5	186.4	255.9	325.3	398.7	449.3	286.6	276.6	131.1	84.6	65.4	1293.7
1990/91	160.9	243.4	357.0	277.1	471.1	539.5	333.4	219.1	132.7	73.1	62.4	45.2	866.0
1991/92	148.0	544.7	475.4	464.6	312.1	395.8	326.2	306.7	221.5	149.2	88.5	62.6	1154.7
1992/93	163.8	490.7	668.3	341.7	250.3	380.5	498.1	550.5	368.5	195.3	110.9	76.1	1799.4
1993/94	192.5	495.7	795.7	735.0	581.6	486.0	454.8	483.6	467.0	183.3	113.6	75.7	1778.0
1994/95	120.2	191.1	443.7	564.6	329.1	523.3	680.9	460.2	431.4	167.6	103.6	73.5	1917.2
1995/96	100.8	136.1	528.4	551.3	399.1	556.8	497.2	532.7	267.1	120.2	89.6	78.6	1585.4
1996/97	121.6	145.4	217.4	156.9	183.6	210.7	197.1	150.8	94.5	72.4	67.4	46.1	628.2
1997/98	160.8	320.7	572.9	577.3	681.0	535.3	440.5	424.1	274.9	143.9	89.6	67.8	1440.8
1998/99	73.1	83.9	96.0	131.6	137.5	148.1	174.8	107.5	74.8	56.3	44.8	32.6	490.9
1999/00	41.4	109.7	214.4	224.7	455.4	563.9	517.3	339.5	164.2	94.6	103.9	61.9	1281.4
2000/01	69.2	168.8	521.2	518.9	400.5	444.7	541.4	442.9	272.9	167.2	104.9	68.4	1597.6
2001/02	145.8	466.8	732.9	932.4	480.9	371.1	387.5	256.1	173.8	101.4	90.5	95.5	1104.8
2002/03	138.0	195.2	264.6	262.6	531.8	590.9	889.3	641.8	420.0	199.6	107.8	74.5	2333.0
PROM	113.25	264.117	404.563	411.893	374.956	393.419	461.29	433.124	299.447	155.137	107.835	73.0167	1529.85

**TABLA I.4**  
**CENTRAL PANGUE - PRECIPITACIONES MENSUALES (mm)**  
**(FUENTE: ENDESA)**

AÑO	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ENE	FEB	MAR	ANUAL
1950/51													
1951/52													
1952/53													
1953/54													
1954/55													
1955/56													
1956/57													
1957/58													
1958/59													
1959/60													
1960/61	102	196	689	503	217	175	349	61	112	214	16	185	2819
1961/62	123	408	236	784	488	552	208	5	11	0	0	1	2815
1962/63	85	79	452	91	543	117	90	53	0			116	-
1963/64	128	262	432	783	1000	219	287	174	27	149	51	73	3584
1964/65	103	337	636	385	647	183	135	140	398	107	147	32	3248
1965/66	401	641	997	668	632	147	306	377	264	0	34	73	4540
1966/67	195	358	786	694	526	138	204	118	452	266	139	106	3981
1967/68	64	600	364	364	598	235	408	109	75	3	149	114	3080
1968/69	108	162	320	315	273	355	133	208	310	0	66	39	2287
1969/70	403	389	856	653	560	360	259	98	14	67	16	82	3755
1970/71	236	294	676	545	354	209	162	105	304	79	213	50	3230
1971/72	108	662	423	742	236	253	166	58	308	228	17	115	3315
1972/73	98	1138	1209	871	236	641	291	113	11	47	44	102	4801
1973/74	41	605	574	616	335	177	428	11	53	73	4	81	2999
1974/75	0	424	924	701	204	245	63	96	61	3	245	42	3008
1975/76	380	576	595	804	348	185	145	362	112	85	61	85	3737
1976/77	19	241	1311	315	279	287	409	117	78	120	4	72	3251
1977/78	221	753	644	977	268	333	195	387	60	30	21	3	3890
1978/79	10	679	411	1521	187	629	490	295	9	31	27	18	4306
1979/80	130	519	218	610	855	415	183	298	252	8	507	107	4101
1980/81	507	937	855	572	511	137	25	161	160	483	48	138	4533
1981/82	296	1288	455	612	290	230	196	48	59	75	163	77	3789
1982/83	82	634	1072	1019	530	535	560	195	0	167	19	5	4817
1983/84	324	369	779	491	291	201	167	4	30	73	146	90	2963
1984/85	53	1065	672	813	100	372	544	130	38	113	19	90	4008
1985/86	364	821	411	482	188	280	306	139	4	17	93	123	3226
1986/87	388	970	897	307	548	156	198	613	48	0	18	168	4311
1987/88	152	180	497	721	513	267	254	79	63	142	0	106	2974
1988/89	198	234	497	419	650	120	252	44	92	45	27	63	2639
1989/90	30	114	1056	404	432	82	79	60	422	27	129	296	3130
1990/91	314	416	491	330	430	652	109	110	35	42	15	78	3022
1991/92	462	1189	419	801	242	325	133	104	342	9	69	166	4261
1992/93	402	1399	713	429	180	298	308	82	198	81	0	174	4265
1993/94	394	1040	1266	758	747	161	270	165	203	37	26	96	5163
1994/95	385	323	872	857	142	509	328	215	124	30	13	119	3917
1995/96	349	202	1025	903	644	158	185	45	0	10	81	265	3867
1996/97	240	374	525	132	385	131	93	129	22	92	85	6	2215
1997/98	971	317	987	656	391	389	443	198	72	7	35	29	4495
1998/99	170	281	258	273	277	173	2	54	64	23	73	5	1652
1999/00	108	387	916	178	646	599	59	36	86	16	379	69	3479
2000/01	151	172	1435	416	557	583	142	153	117	209	35	82	4052
2001/02	146	1092	738	1296	450	96	46	138	0	25	249	288	4565
2002/03	331	383	464	451	805	321	751	316	131	94	13	31	4090
PROM	227	547	699	611	436	294	241	149	121	79	83	94	3623