CHAPTER 6

Trout Creek

6.1. GENERAL DESCRIPTION

Reference is made to the Key Map, Figure 6.1 and the Schematic on Figure 6.2. Trout Creek, with an area of 289 square miles, has the third largest watershed of the eight tributaries under study in this chapter. It is also the driest in terms of runoff per unit area with an average of 3.5 Inches per year over the whole watershed.

In 1970, the area served a population of 596 persons and an irrigated area of 4306 acres. Most of the population is situated, near Okanagan Lake in the District of Summerland. Both population and irrigated areas cross the natural boundaries of the tributary.

The headwaters of Trout Creek are located about 35 miles northwest of Summerland at Culmination Point, elevation 6116 feet. This point Is at the junction of the Simi1kameen, Nicola and Okanagan watersheds. Drainage fills the Crescent (CP2) and Headwaters (CP1) lakes, and their outflows join to form Trout Creek. Drainage from Whitehead Lake (CP3) joins the others and flow continues to Thirsk Reservoir (CP4) which is situated on Trout Creek itself. This is a man-made reservoir at elevation 3361 feet. Flows are increased, in order, by Chapman Lake (CP5) issuing from Camp Creek, Lost Chain Creek, Bearpaw Creek, Ball Creek and Isintok Lake. The most important tributary in the system is Darke Creek, in whose valley a considerable amount of irrigable land is located. This creek has its headwaters at Munro Lake and drains through Darke Lake before joining Trout Creek. Because natural flows in Darke Creek are insufficient to meet the local needs for irrigation, diversion is made from adjoining Eneas Creek.

As shown on the area-elevation curves in Figure 14.2 (Chapter 14) the median elevation of Trout Creek is 4,450 feet. With the minor exceptions of some valley floors and benches, the land tends to rise steeply from Okanagan Lake to an elevation of around 4,000 feet. Between 4,000 feet and 6,000 feet lies an irregular upland plateau incised by many small creeks.

Reference to Figure 14.3 (Chapter 14) will show that the course of Trout Creek itself rises at a fairly constant gradient to its headwaters. For the first six miles upstream from its mouth, the creek gradient is 133 feet per mile. Thereafter, to its source at Headwaters Lakes, the creek gradient is remarkably stable at an average of 61 feet per mile over 40 miles.

There are a number of hydrometric, meteorological and snow course stations within the Trout Creek system and these are located on Figure 6.1. Many of the hydrometric records are of short duration and often cover only the summer months.

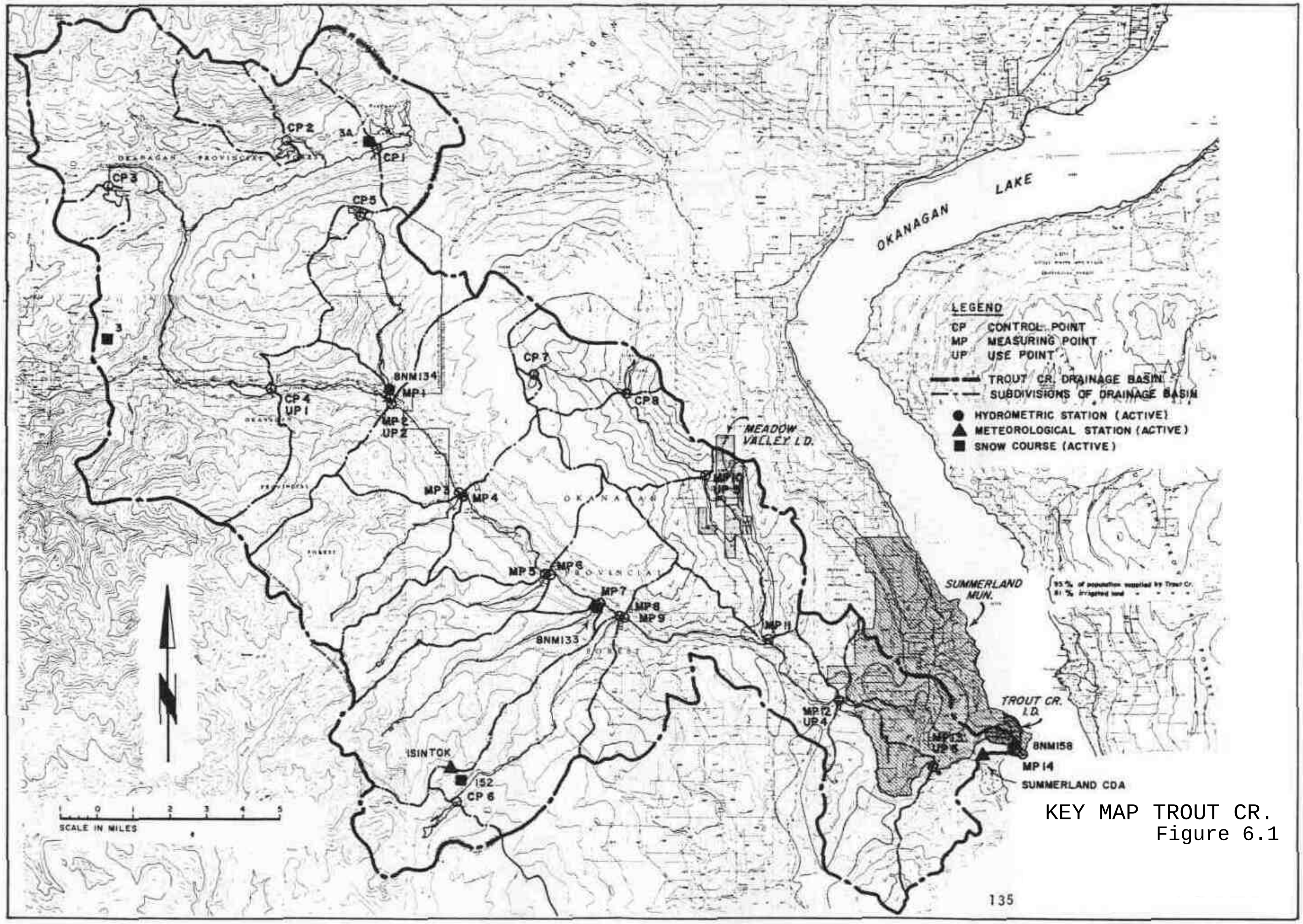
The most significant hydrometric stations is 8NM158 located near the creek mouth. Hydrographs of mean monthly flows passing this station have been plotted on Figure 14.4 (Chapter 14).

6.2 HISTORICAL BACKGROUND

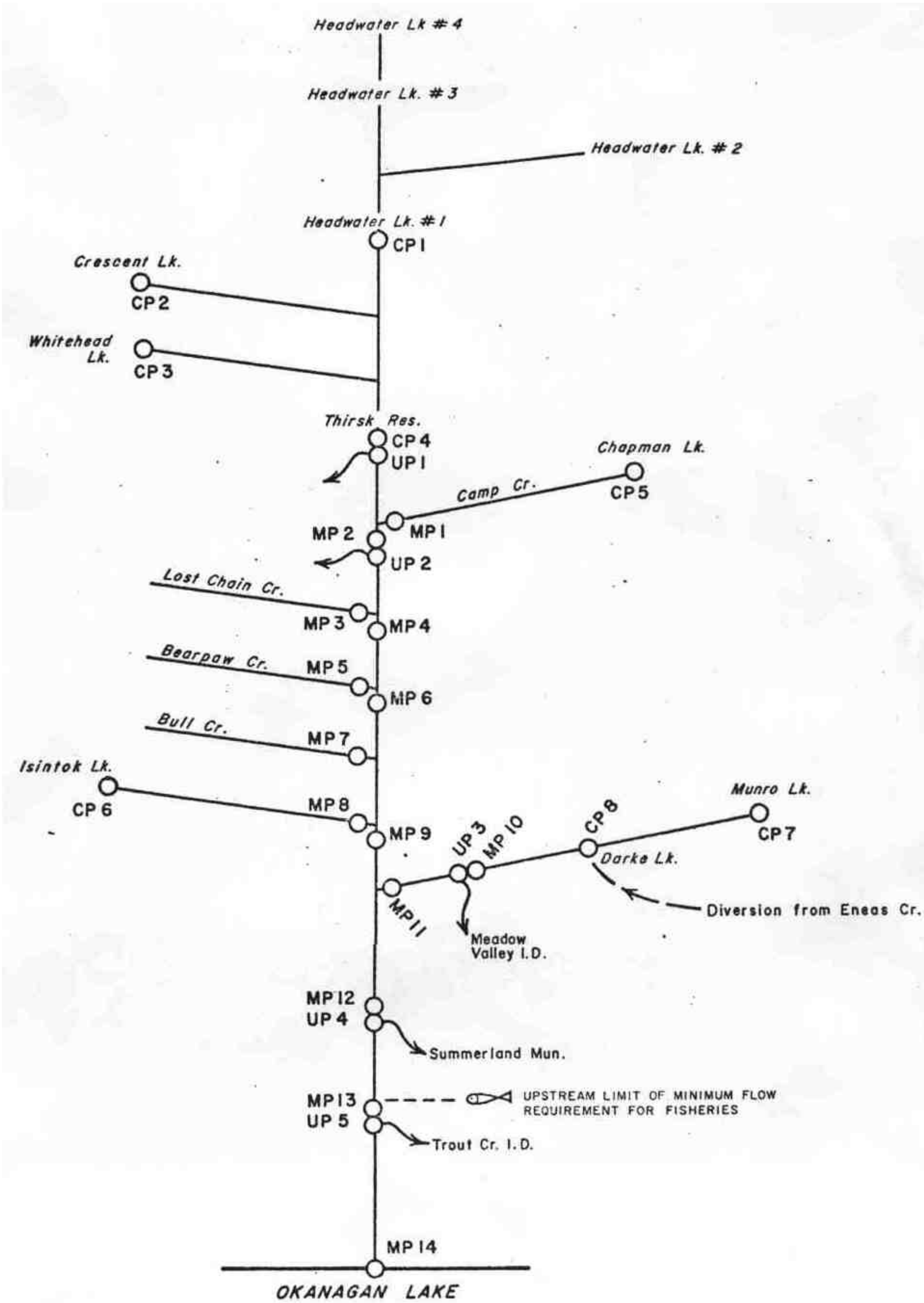
The District of Summerland is the largest user of Trout Creek water, both for Irrigation and domestic purposes. Its history dates back to the 1880's with the formation of the Summerland Development Company Limited. This company constructed irrigation and domestic water supply systems and was responsible for the clearing and cultivation of most of the arable land in the area. When the District of Summerland became incorporated in 1906, it purchased both the irrigation and water supply systems from the old Summerland Development Company. Although additions and improvements have been made, particularly with assistance under the Agricultural and Rural Development Act (ARDA), the system is still essentially that constructed by the Summerland Development Company.

The history of the Trout Creek Irrigation District began near the turn of the century when an early settler bought about 100 acres of land near the mouth of Trout Creek. He subdivided the land into 5 and 10 acre lots, installed a flume to supply each with water and then sold the lots to individual farmers. In 1915, the new owners formed themselves into a partnership for the purpose of sharing responsibility for water supply. Although the term of the parternship expired after 3 years it carried on, in effect, until 1922. In that year the Trout Creek Mater Users Community came into being as a more suitable vehicle to meet the needs of the group. In 1932, the Trout Creek Irrigation District formed and assumed the function and responsibilities of the old Mater Users Community.

By 1945, some problems due a high ground water table, are recorded. In 1946-47, drainage difficulties In the Trout Creek Point area resulted in a community effort for the Construction of tile drains. The pipe was supplied by Trout Creek Irrigation District and the District of Summerland. The drainage system was installed by local residents and appears to have been very loosely co-ordinated. By 1953, drainage problems returned with clogging of the tile by tree roots and by new construction which accidentally excavated the tile.



KEY MAP TROUT CR.
Figure 6.1



TROUT CR. SCHEMATIC Figure 6.2

Problems of seepage and high water table continue to the present time throughout many parts of the Trout Creek delta. Basement flooding on Croil Avenue was investigated in 1971 and it was shown that houses which suffered the most were situated within 500 feet of Trout Creek, and had been built with floor slab levels approximately equal to that of the creek bottom. Conversely, observation wells installed in 1969 within the Trout Creek delta recorded their highest water table readings in August when creek flows were near their annual minimum. This may be due to natural delayed upland groundwater seepage or irrigation seepage from Trout Creek Irrigation District or both. A general raising of the phreatic line due to high lake levels could be a contributing cause also.

In 1972, exceptionally heavy snowpacks resulted in high runoff and in the Trout Creek delta returns from a canvas of 176 houses in the fan indicated that 79 had experienced problems resulting from high groundwater levels in 1972. In a normal year, similar problems exist, but are much less acute.

Aggradation of the bed of Trout Creek within the fan is a continuing problem which was well pronounced in 1972. In a report by Thurbur Consultants Ltd., entitled "Trout Creek Groundwater Study" 1973, it was noted that the creek requires regular maintenance work to be carried out if it is to be contained within its banks.

The most important tributary to Trout Creek is Darke Creek, called after Mr. Bob Darke who became the first settler and landowner in Meadow Valley around the turn of the century. As the Meadow Valley grew, it became a group of four known as the Meadow Valley Licencees. Primarily to facilitate financing of their dam at Darke Lake, this group formed itself into the Meadow Valley Irrigation District in February, 1964. With assistance under ARDA, diversion of flow from Lapsley Creek to an improved Darke Lake reservoir was achieved. In this way, the natural flow of Darke Creek was enhanced and the irrigation of otherwise dry hay land made possible.

6.3 LAND USE AND WATER REQUIREMENTS

The Trout Creek watershed serves an agricultural area including a number of small water users and one large user (Summerland Municipality) almost all of which are situated partially outside the natural watershed boundary.

Water for the Summerland irrigation system is diverted from three main sources, namely Trout Creek, Eneas Creek and Prairie Creek. In addition, small springs supply irrigation water to some 14 acres on the south side of Peach Orchard Road.

The diversion on Trout Creek consists of a low gravity section weir-type intake located aporoximately three-quarters of a mile west of the District's boundary. A combination of unlined ditch and concrete flume. Trout Creek Main Flume, conveys the water 4,000 feet to a diversion box from which point approximately half the flow continues in a concrete flume and steel pipe to a natural depression known as the "Reservoir", which serves as a settling basin and balancing reservoir, the other half of the flow continues in a concrete flume, South Main Flume, along the hillside to the south of Prairie Valley, to a point 1,000 feet west of Simpson Road. Here the flume divides with a concrete flume running south to supply the Simpson Road and Paradise Flats areas, and a metal flume continues along the south side of Fyffe Road, changing to a steel inverted syphon which crosses Simpson Road and Victoria Road South and terminates at a diversion box at the south end of Cedar Avenue. From this box, one flume runs north and serves the area to the west of Giant's Head and the main flume continues in concrete around the south end of Giant's Head and serves the whole of this area with a smaller flume, the Tomlin Flume, continuing north on the east side of Giant's Head. The area served by South Main Flume is approximately 1,113 acres.

From the reservoir a concrete flume North Main Flume, runs along the hillside to the north of Prairie Valley, then turns north and parallels Cart-wright Avenue to a point 1,200 feet west of the Garnet Valley/Jones Flat Road intersection, ending at an overflow-diversion box. The overflow from this box spills into Eneas Creek and a 4-inch gate valve on the woodstave pipe running east along Jones Flat Road from the box permits water to be diverted from the Trout Creek system into Eneas Creek for use further downstream.

The District of Summerland Operates a domestic system which supplies domestic water to most areas in the District, including the Trout Creek Irrigation District, exceptions being Garnet Valley and the Simpson Road and Fyffe Road areas which have no community system. Total population served is approximately 5,300 and there are 1,731 residential connections and 150 industrial and commercial connections. The largest individual consumers are the canneries, the packing houses, the schools and the Department of Agriculture Research Station (September to May only). Residential connections are unmetered although meter by-passes are being installed on new connections. A total of 16 meters are installed on some of the larger industrial and commercial connections but others remain unmetered.

In addition to supplying domestic water for residential, industrial and commercial use, this system also supplies irrigation water to a total assessed acreage of 453 acres. This total comprises 354 acres in lots one acre and under, located throughout the District, excluding lots under one-third acre with a residential connection, and 99 acres in lots over one acre located Mainly in the North Prairie Valley Road and Front Bench Road areas.

The bulk of the water supplied by this system is diverted from Trout Creek, but a small pumping station on Okanagan Lake near the Fish Hatchery is used to supply 400 U.S. Gallons per minute to the Lower Town area during periods of high demand.

Water users in terms of population and areas irrigated are shown on Table 6.1.

TABLE 6.1

WATER USERS IN THE TROUT CREEK WATERSHED (1970)

Area Served	Area Irrigated (acres)	Population (Approx) (persons)	Diversion		
			Irrigation (ac.ft)	Domestic (ac.ft)	Total (ac.ft)
Meadow Valley I.D.	456	0	1380	0	1380
Summerland Municipality	3482	5300	10532	360	10892
Trout Creek I.D.	304	0	920	0	920
Other	64	0	192	0	192
TOTAL	4306	5300	13024	360	13384

Consumptive use diversions as listed above are assumed to result in no return flow within the Trout Creek sub-basin. However, consumptive use diversions are expected to provide a return flow to Okanagan Lake. The amount of return flow varies with the type of use and is estimated as follows:

a) For "Irrigation" return flow = 50% of diversion.

b) For "Domestic and Waterworks", return flow = 65% of diversion.

c) For "Industry", return flow = 90% of diversion.

From the above, water utilization in terms of the amounts of consumed water and return flow within the Okanagan Lake Basin may be tabulated as follows: (Table 6.2):

TABLE 6.2

WATER UTILIZATION IN TROUT CREEK (1970).

Requirements	Diversion for Consumptive Use (acre-feet)	Consumed Water (acre-feet)	Return flow to Okanagan Lake (acre-feet)
Irrigation	13024	6512	6512
Domestic and Waterworks	360	126	234
Industry	0	0	0
TOTALS	13384	6638	6746

A detailed breakdown of diversion requirements for the various organized areas at the 1970 stage of development is as shown on Table 6.3.

TABLE 6.3

DIVERSION REQUIREMENTS ON TROUT CREEK (1970)

(given in acre-feet)

Month	Type	Meadow Valley I.D.	Summerland Municipality	Trout Creek I.D.	Other	Total
J	Agric.	0	0	0	0	0
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
F	Agric.	0	0	0	0	0
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
M	Agric.	0	0	0	0	0
	Dom.	0	32	0	0	32
	Ind.	0	0	0	0	0
A	Agric.	0	0	0	0	0
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
M	Agric.	207	1580	138	28	1953
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
J	Agric.	345	2631	230	50	3256
	Dom.	0	32	0	0	32
	Ind.	0	0	0	0	0
J	Agric.	345	2631	230	50	3256
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
A	Agric.	345	2631	230	50	3256
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
S	Agric.	138	1053	92	20	1303
	Dom.	0	32	0	0	32
	Ind.	0	0	0	0	0
O	Agric.	0	0	0	0	0
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
N	Agric.	0	0	0	0	0
	Dom.	0	29	0	0	29
	Ind.	0	0	0	0	0
D	Agric.	0	0	0	0	0
	Dom.	0	32	0	0	32
	Ind.	0	0	0	0	0
	TOTAL	1380	10886	920	198	13384

In order to acquire rights over the use of water, most users, acting either individually or collectively in an irrigation district, have maintained water licenses for storage and diversion granted by the Crown, In right of the Province. Licenses provide their holder with rights over the stated amount of water and, in cases of shortage, the older license takes precedence over the newer.

Current water licenses in 1970 for both storage and consumptive use are as listed on Table 6.4

TABLE 6.4

WATER LICENSES ON TROUT CREEK (1970)

Area Served	Total Licensed Storage (ac.ft.)	Licensed Diversion				Computed Diversion Requirement (ac.ft.)
		Agriculture (ac.ft.)	Domestic (ac.ft.)	Industry (ac.ft.)	Total (ac.ft.)	
Meadow Valley I.D.	725	793	0	0	793	1380
Summerland Municipality	10455	9170	395	0	9565	10892
Trout Creek I.D.	0	702	0	0	702	920
Other	760	388	0	3370	3758	192
TOTAL	11940	11053	395	3370	14818	13384

The large industrial licence noted in the above table is held by Brenda Mines. In 1970 however, no actual use was made of the licence.

6.4 ESTIMATED NATURAL WATER SUPPLY

Estimated natural water yields for the area are shown on computer printout sheets, reproduced on Figure 6.3 (Dry Year), Figure 6.4 (Average Year), and Figure 6.5 (Wet Year).

In summary, the annual precipitation and natural runoff of the Trout Creek Basin under the three types of year is as follows:

TABLE 6.5

NATURAL WATER YIELDS FOR TROUT CREEK SUB-BASIN

Type of Year	Annual Runoff		Average Precipitation (Inches)	Remarks
	Kilo acre feet	Inches Over Basin		
Dry	23.7	1.5		Area - 289.2 Square Miles
Average	54.4	3.5	22.4	
Wet	122.0	7.9		

Note: Abstracted from Computer Print-Out Data

Date Of Print-out:
Dec. 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K.AC.	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	6.1	11.	14.	17.	33.	448.	269.	36.	17.	15.	15.	14.	14.	894.
CPDA 2	3.7	6.	8.	8.	18.	464.	320.	22.	13.	10.	10.	8.	8.	875.
CPDA 3	1.5	3.	4.	5.	8.	103.	54.	9.	4.	4.	4.	4.	4.	208.
CPDA 4	60.7	107.	134.	160.	310.	5159.	3187.	355.	180.	151.	151.	134.	134.	10153.
CPDA 5	0.4	1.	1.	1.	2.	65.	47.	2.	2.	1.	1.	1.	1.	123.
NPDA 1	8.1	13.	17.	20.	40.	616.	375.	44.	22.	18.	18.	16.	16.	1218.
NPDA 2	75.8	129.	162.	192.	380.	6226.	3851.	431.	216.	182.	182.	160.	160.	12272.
NPDA 3	9.7	18.	24.	27.	50.	949.	596.	61.	33.	27.	27.	24.	24.	1860.
NPDA 4	97.4	167.	213.	250.	487.	7972.	4905.	558.	280.	236.	236.	210.	210.	15723.
NPDA 5	5.6	10.	14.	16.	29.	439.	256.	34.	17.	14.	14.	14.	14.	871.
NPDA 6	110.3	187.	239.	281.	547.	8719.	5323.	624.	310.	261.	261.	236.	236.	17223.
NPDA 7	11.3	19.	25.	28.	55.	1005.	635.	65.	34.	28.	28.	24.	24.	1970.
CPDA 6	3.4	4.	5.	5.	14.	579.	434.	18.	13.	10.	10.	5.	5.	1099.
NPDA 8	11.3	17.	21.	24.	52.	1280.	882.	62.	36.	29.	29.	21.	21.	2473.
NPDA 9	138.1	230.	293.	343.	675.	11182.	6927.	771.	388.	325.	325.	289.	289.	22035.
CPDA 7	0.3	1.	1.	1.	2.	33.	20.	2.	1.	1.	1.	1.	1.	64.
CPDA 8	4.4	6.	8.	10.	19.	285.	170.	22.	11.	9.	9.	8.	8.	555.
NPDA 10	9.9	13.	17.	20.	41.	498.	282.	44.	19.	17.	17.	16.	16.	1000.
NPDA 11	18.8	16.	21.	25.	53.	575.	318.	55.	23.	20.	20.	20.	20.	1166.
NPDA 12	169.0	253.	323.	379.	756.	11969.	7356.	852.	419.	354.	354.	317.	317.	23644.
NPDA 13	177.4	255.	325.	381.	762.	11997.	7363.	857.	421.	355.	355.	318.	318.	23707.
NPDA 14	185.1	255.	325.	382.	765.	12008.	7368.	858.	421.	356.	356.	319.	319.	23731.

TROUT CR. DRY YEAR (NATURAL FLOW)

Figure 6.3

Date Of Print-out:
Dec 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K. AC.	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	6.1	27.	33.	41.	79.	1034.	591.	86.	39.	35.	35.	33.	33.	2065.
CPDA 2	3.7	14.	17.	19.	39.	978.	666.	49.	29.	23.	23.	17.	17.	1890.
CPDA 3	1.5	7.	10.	12.	20.	244.	128.	22.	10.	10.	10.	10.	10.	494.
CPDA 4	60.7	253.	316.	380.	739.	11549.	7023.	834.	410.	350.	350.	313.	313.	22831.
CPDA 5	0.4	1.	1.	1.	4.	132.	96.	5.	4.	3.	3.	1.	1.	252.
NPDA 1	8.1	32.	40.	48.	100.	1402.	843.	108.	50.	43.	43.	39.	39.	2787.
NPDA 2	75.8	308.	385.	461.	918.	13980.	8499.	1021.	495.	423.	423.	379.	379.	27670.
NPDA 3	9.7	41.	55.	63.	115.	2090.	1297.	139.	74.	61.	61.	55.	55.	4105.
NPDA 4	97.4	397.	504.	597.	1176.	17922.	10848.	1319.	641.	546.	546.	495.	495.	35487.
NPDA 5	5.6	24.	32.	37.	69.	1003.	581.	81.	39.	33.	33.	32.	32.	1996.
NPDA 6	110.3	446.	568.	673.	1329.	19696.	11828.	1483.	712.	609.	609.	557.	557.	39069.
NPDA 7	11.3	45.	57.	65.	132.	2225.	1365.	152.	78.	64.	64.	56.	56.	4380.
CPDA 6	3.4	8.	10.	10.	29.	1167.	870.	37.	27.	20.	20.	10.	10.	2215.
NPDA 8	11.3	39.	49.	55.	119.	2716.	1843.	140.	79.	63.	63.	48.	48.	5263.
NPDA 9	138.1	547.	695.	821.	1640.	25104.	15283.	1831.	888.	755.	755.	681.	681.	49686.
CPDA 7	0.3	1.	2.	2.	4.	72.	44.	5.	3.	2.	2.	2.	2.	141.
CPDA 8	4.4	16.	21.	23.	49.	656.	386.	54.	25.	21.	21.	20.	20.	1310.
NPDA 10	9.9	33.	43.	51.	107.	1190.	662.	111.	47.	42.	42.	41.	41.	2410.
NPDA 11	18.8	44.	57.	67.	157.	1448.	780.	153.	58.	53.	53.	52.	52.	2975.
NPDA 12	169.0	615.	781.	926.	1890.	27156.	16357.	2067.	972.	834.	834.	758.	758.	53945.
NPDA 13	177.4	621.	789.	931.	1922.	27289.	16415.	2093.	978.	840.	840.	764.	764.	54250.
NPDA 14	185.1	626.	795.	939.	1944.	27371.	16451.	2111.	982.	844.	844.	768.	768.	54443.

TROUT CR. AVERAGE YEAR (NATURAL FLOW))

Figure 6.4

Date Of Print-out:
Dec. 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K. AC.	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	6.1	67.	75.	95.	162.	2287.	1290.	197.	88.	78.	78.	73.	75.	4587.
CPDA 2	3.7	29.	36.	41.	84.	1991.	1742.	103.	60.	48.	48.	36.	36.	3853.
CPDA 3	1.5	17.	22.	28.	45.	555.	292.	50.	22.	22.	22.	22.	22.	1121.
CPDA 4	60.7	572.	713.	964.	1695.	24875.	14902.	1975.	898.	775.	775.	704.	704.	49344.
CPDA 5	0.4	2.	2.	2.	7.	253.	188.	10.	7.	5.	5.	2.	2.	494.
NPDA 1	8.1	73.	92.	111.	234.	3051.	1807.	246.	111.	97.	97.	89.	59.	6093.
NPDA 2	75.8	701.	873.	1056.	2124.	30207.	18068.	2315.	1087.	942.	942.	855.	855.	60024.
NPDA 3	9.7	91.	121.	138.	253.	4416.	2712.	304.	157.	131.	131.	120.	120.	8693.
NPDA 4	97.4	902.	1141.	1364.	2720.	38750.	23095.	2990.	1408.	1215.	1215.	1116.	1116.	77030.
NPDA 5	5.6	55.	72.	83.	159.	2185.	1254.	187.	88.	72.	72.	71.	71.	4362.
NPDA 6	110.3	1020.	1292.	1544.	3099.	42790.	25296.	3383.	1571.	1361.	1351.	1260.	1260.	85237.
NPDA 7	11.3	100.	129.	149.	302.	4740.	2908.	340.	168.	140.	140.	125.	128.	9368.
CPDA 6	3.4	17.	20.	20.	56.	2278.	1694.	73.	53.	39.	39.	20.	20.	4328.
NPDA 8	11.3	86.	108.	123.	266.	5577.	3732.	307.	187.	135.	135.	109.	106.	10948.
NPDA 9	138.1	1251.	1582.	1885.	3828.	54278.	32502.	4177.	1955.	1685.	1685.	1540.	1540.	107908.
CPDA 7	0.3	3.	4.	4.	7.	150.	91.	19.	6.	4.	4.	4.	4.	294.
CPDA 8	4.4	37.	48.	55.	123.	1458.	841.	129.	56.	48.	48.	45.	45.	2934.
NPDA 10	9.9	82.	106.	125.	281.	3785.	1505.	281.	111.	100.	100.	98.	98.	5052.
NPDA 11	18.8	125.	160.	185.	484.	3569.	1911.	450.	151.	141.	141.	139.	139.	7697.
NPDA 12	169.0	1448.	1833.	2176.	4623.	59881.	35775.	4897.	2182.	1900.	1906.	1753.	1753.	119379.
NPDA 13	177.4	1482.	1876.	2229.	4792.	60308.	35506.	5336.	2211.	1930.	1930.	1783.	1783.	120854.
NPDA 14	185.1	1510.	1510.	2255.	4937.	60798.	35717.	5153.	2234.	1953.	1953.	1806.	1806.	122027.

TROUT CR. WET YEAR (NATURAL FLOW)

Figure 6.5

6.5 STORAGE (Reference Figure 6.2)

In a climate of spring floods and summer droughts it Is necessary to store a high proportion of total available water so that it may be used when needed. To this end, the Trout Creek water users have developed a system of eight reservoirs with a total live storage of 10,322 acre-feet. Each is operated largely independently and as required by their owner.

a) Headwaters Lakes

Headwaters is really a system of four lakes each with their own control, numbers 1, 2, 3, and 4, but it is operated as a unit with primary control at No. 1 dam. This dam was built of earth fill in 1965 with a spillway at elevation 4217.5 feet. Control is by means of a 30 inch diameter culvert with its outlet invert set at elevation 4201.3 feet. This is the largest reservoir in the Trout Creek watershed with a total live storage of 4003 acre feet. It is operated by the District of Summerland.

b) Crescent lake

Like Headwaters, this dam was built in 1965 and is operated by the District of Summerland. The dam is of earth fill and its control is by means of a 20 inch culvert with invert set at elevation 4435.5 feet. The spillway is at elevation 4446.6 feet. Flow from this lake may be diverted into the Peachland Creek watershed.

c) Whitehead lake

This dam also was built in 1965 and is operated by Summerland District. The dam is of earth fill with a spillway at elevation 4723.1 feet. Control Is by means of an 18 inch culvert at invert 4710.1 feet.

d) Thirsk Reservoir

Thirsk is an entirely man-made reservoir on the main stem of Trout Creek. Its dam is of reinforced concrete arch construction and was completed in 1940. Live storage is currently 2628 acre feet and natural inflows suggest that this could be increased considerably. The concrete spillway is at elevation 3361.0 feet while control is achieved by gate valves on three pipes at elevations 3314.4, 3315.6 and 3316.6 feet. Operation is by the District of Summerland. It will be noted that this reservoir is normally emptied during the late summer and remains that way until the following spring, when it is refilled.

e) Chapman Lake

This is a small earth fill dam of 131 acre feet capacity built in 1943.

The dam is remote and situated at an elevation in excess of 5500 feet. The District of Summerland is responsible for its operation.

f) Isintok Lake

This is a small, but significant reservoir of 870 acre feet live storage which was built of earth fill in 1965. The District of Summerland operates the dam by means of a 30 inch culvert whose outlet invert is at elevation 5375.7 feet. The spillway for this dam is placed at elevation 5399.1 feet.

g) Munro Lake

Situated at the head of the Darke Creek system, Munro Lake has a very small live storage of only 80 acre feet. The dam was built of earth fill in 1945. Control consists of an 18 inch culvert operated by District of Summerland.

h) Darke Lake

This reservoir was built of earth fill in 1945 and enlarged and improved in the mid 1960's in order to contain diversions to it from Lapsley Creek. Live storage is now 935 acre feet which is very significant for the water-short Meadow Valley. It is a low level reservoir, with its spillway elevation at 2805.3 feet. Control works consist of an 18 inch culvert set at invert 2891.7 feet which is operated by Meadow Valley Irrigation District.

Hydrologic information on the eight reservoirs described above is given in Table 6.6.

Storages are currently operated in a manner which seems best to the owners for the purposes of irrigation or other consumptive use.

A comparison of the live storage with the dry year inflow in Table 6.6 indicates that with the exception of Thirsk Reservoir, these reservoirs might be considered fully developed and it is obvious that such storages as Headwaters 1, 2, 3, and 4 and Whitehead, must be operated cyclicly (that is, filled in wet years only). Methods of operation are by no means rigid, but generally follow the pattern outlined in Table 6.7.

TABLE 6.6

1970 STORAGES IN THE TROUT CREEK SYSTEM

Reservoir	Drainage Area (acres)	Live Storage (acre-feet)	Surface Area (acres)	Estimated Annual Natural Runoff (acre-feet)		
				Dry Year	Average Year	Wet Year
Headwaters, No. 1, 2, 3, 4.	6100	4003	215	894	2065	4582
Crescent	3700	755	80	895	1890	3853
Whitehead	1500	920	107	208	494	1121
Thirsk	60700	2628	270	10163	22831	29344
Chapman	400	131	25	123	252	494
Isintok	3400	870	97	1099	2215	4328
Munro	300	80	20	64	141	294
Darke	4400	935	72	565	1310	2934
TOTAL	80500	10322	886	14011	31198	66950

TABLE 6.7

RULE CURVE VALUES FOR TROUT CREEK RESERVOIRS

Reservoir Name	Reservoir Capacity	Rule Curve Values Expressed as a Percentage of Reservoir Capacity											
		J	F	M	A	M	J	J	A	S	O	N	D
Headwaters	4003	50	50	50	80	100	100	83	67	50	50	50	50
Crescent	755	40	40	40	70	100	100	80	60	40	40	40	40
Whitehead	920	0	0	0	40	100	100	67	33	0	0	0	0
Thirsk	2628	20	20	20	30	100	100	73	47	20	20	20	20
Chapman	131	0	0	0	40	100	100	67	33	0	0	0	0
Isintok	870	30	30	30	50	100	100	77	53	30	30	30	30
Munro	80	0	0	0	40	80	100	67	33	0	0	0	0
Darke	935	60	60	60	80	90	100	87	73	60	60	60	60
TOTAL	10322												

EXPLANATION: For any given month -

a) Percentages shown refer to active storage occupied by water at end of month. e.g. 30% storage occupied by water at end of March.
b) When rule curve value is exceeded, all excess water is released.
c) When rule curve value is not achieved, only stated water requirements are released.
d) Information based on local records of water users.

The above rule curve values have been used in computer programming for the production of print-outs showing regulated flows.

At the 1970 stage of development, little or no consideration is given to the operation of storage for Fisheries or other non-consumptive use.

6.5.1 Residual Flows

When natural flow is affected by storage changes, diversions to or from the area and withdrawals for irrigation,, domestic or industrial purposes, the resulting creek flow is called the "residual flow". These residual flows, for various selected points and three types of weather year at 1970 development, are shown on computer print-outs. They are reproduced as Figure 6.6 (Dry Year), Figure 6.7 (Average Year), and Figure 6.8 (Wet Year).

Reference to these figures will show that residual flows immediately upstream and immediately downstream from the selected point are given. The difference is the amount diverted at the point for consumptive use. It will be noted that there are no "demand deficiencies" at the 1970 stage of development, even in a "dry" year.

Reference to Figures 6.7 and 6.6 will show that, based on Department of Fisheries estimates of need, there would be a considerable shortage of water for non-consumptive use. Even In the winter of a "dry" year, when no diversions for irrigation are being made, it appears that Fisheries water shortages range up to 80% of their stated requirements.

In an "average" year, severe non-consumptive water deficiencies appear only in August. This is due primarily, to water withdrawals from the creek for irrigation purposes.

The water deficiencies described above are the product of storage operation based on present or historic methods. Using the model for modified operation of storage (described earlier) it becomes possible to approach elimination of all deficiencies. This is shown graphically on Figure 6.9

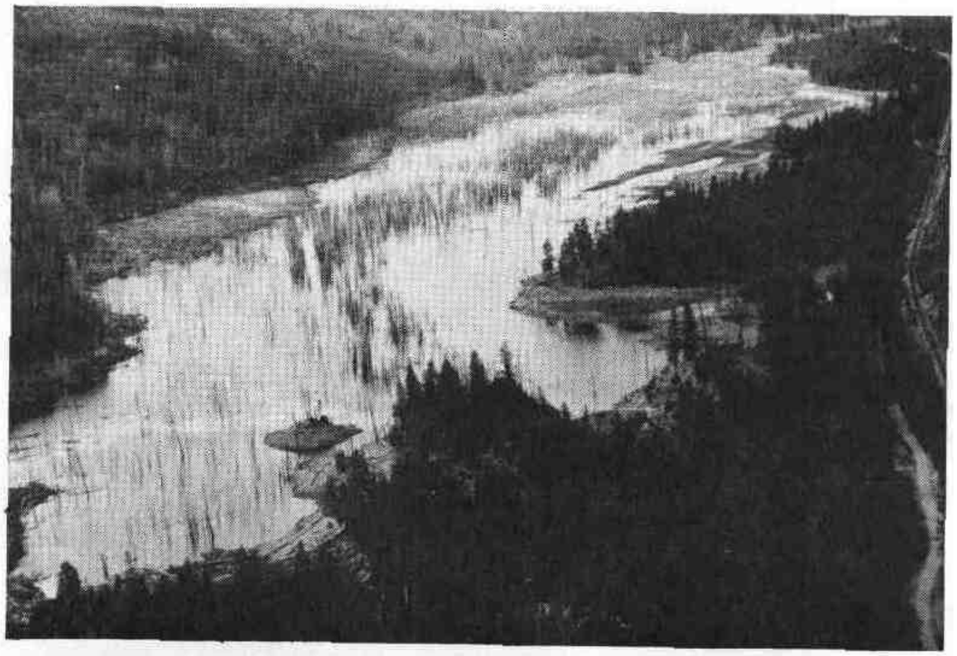


Photo 27 THIRSK RESERVOIR - Looking West (Sept. 12, 1973)
Trout Creek System

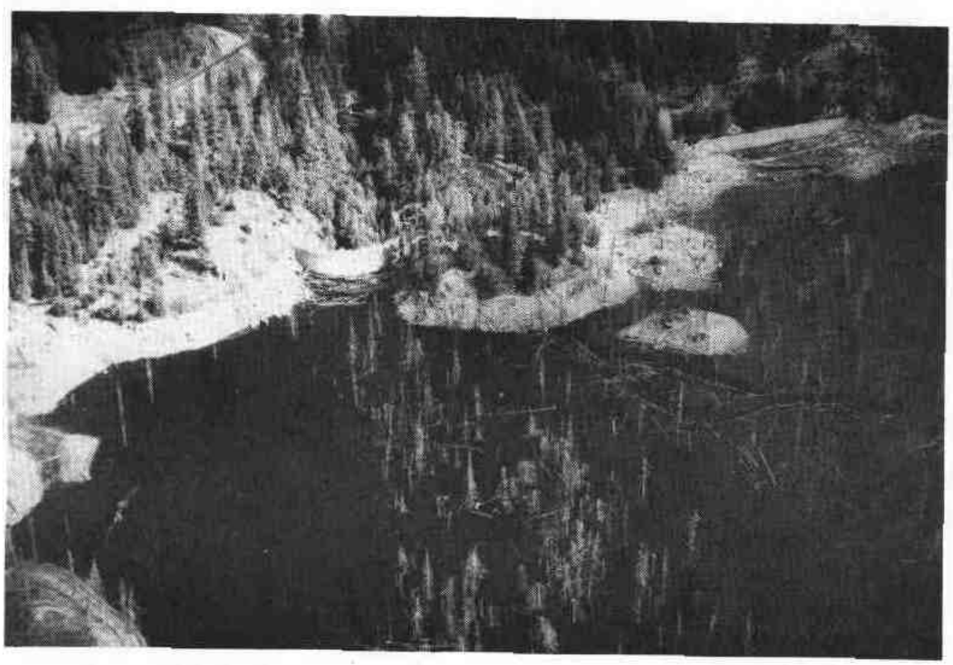


Photo 28 THIRSK RESERVOIR - Looking East (Sept. 12, 1973)
Trout Creek System

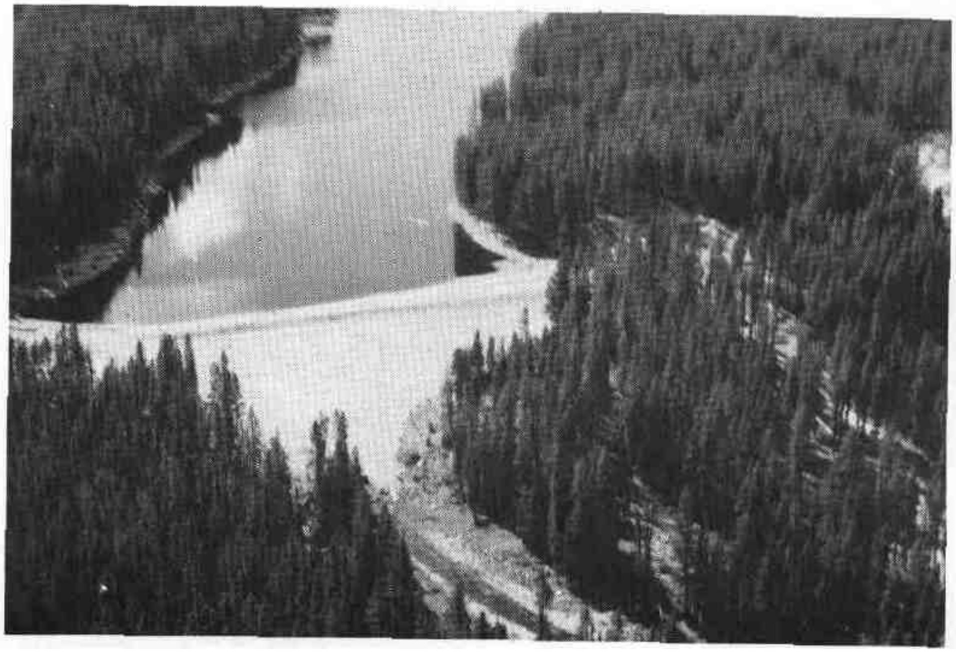


Photo 29 ISINTOK LAKE - Looking Southwest (Sept. 12, 1973)
Trout Creek System

Photo 30 HEADWATERS LAKES - No. 3 in foreground
Looking South (Sept. 12, 1973)
Trout Creek System

Date of Print-out:
Oct. 24, 1972

STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
STORAGE		2001.	2001.	2001.	2034.	2482.	2742.	2778.	2563.	1748.	1763.	1777.	1791.	
CONTROL POINT	2													
STORAGE		307.	307.	307.	320.	755.	755.	604.	0.	0.	10.	18.	25.	
CONTROL POINT	3													
STORAGE		0.	0.	0.	8.	111.	165.	174.	0.	0.	3.	0.	0.	
CONTROL POINT	4													
STORAGE		526.	526.	526.	777.	2628.	2624.	1502.	0.	0.	122.	230.	338.	
CONTROL POINT	5													
STORAGE		0.	0.	0.	2.	57.	114.	88.	43.	0.	2.	0.	0.	
CONTROL POINT	6													
STORAGE		261.	261.	261.	275.	854.	879.	0.	0.	0.	10.	15.	20.	
CONTROL POINT	7													
STORAGE		0.	0.	0.	2.	35.	55.	54.	26.	0.	3.	0.	0.	
CONTROL POINT	8													
STORAGE		561.	561.	561.	579.	811.	742.	487.	149.	54.	63.	71.	79.	
MEASURING POINT	1													
FLOW		14.	17.	20.	38.	551.	331.	70.	67.	51.	18.	17.	17.	1221.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	4													
FLOW		169.	213.	249.	175.	5040.	4497.	1767.	2772.	1074.	89.	81.	81.	16205.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	6													
FLOW		159.	239.	280.	235.	5787.	4915.	1832.	2802.	1100.	114.	107.	107.	17706.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	8													
FLOW		17.	22.	24.	38.	701.	866.	932.	36.	29.	19.	16.	16.	2716.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	9													
FLOW		232.	294.	342.	350.	7671.	4503.	2850.	2879.	1164.	169.	154.	154.	22760.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	11													
FLOW		17.	21.	26.	34.	83.	36.	11.	3.	3.	11.	11.	11.	267.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	14													
FLOW		277.	299.	351.	391.	6258.	3768.	3.	0.	0.	162.	145.	143.	11796.
DEFICIENCY (FISH)		371.	301.	249.	209.	0.	0.	598.	600.	600.	740.	454.	457.	4580.
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
FLOW, UPSTREAM		109.	135.	159.	0.	2321.	2874.	1587.	2674.	966.	4.	4.	4.	10835.
FLOW, DOWNSTREAM		109.	135.	159.	0.	2312.	2859.	1572.	2659.	960.	4.	4.	4.	10775.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	20.	33.	33.	33.	13.	0.	0.	0.	132.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	20.	33.	33.	33.	13.	0.	0.	0.	132.
FLOW, UPSTREAM		131.	163.	192.	68.	3314.	3476.	1673.	2741.	1077.	34.	31.	31.	12986.
FLOW, DOWNSTREAM		111.	163.	192.	68.	3294.	3443.	1640.	2708.	1020.	34.	31.	31.	12754.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	3													
DEMAND, IRRIGATION		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
FLOW, UPSTREAM		14.	17.	21.	21.	213.	345.	345.	345.	138.	8.	8.	8.	1483.
FLOW, DOWNSTREAM		14.	17.	21.	21.	6.	0.	0.	0.	0.	8.	8.	8.	103.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	4													
DEMAND, IRRIGATION		0.	0.	0.	0.	1580.	2633.	2633.	2633.	1053.	0.	0.	0.	10532.
DEMAND, DOMESTIC		29.	29.	32.	29.	29.	32.	29.	29.	32.	29.	29.	32.	360.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1609.	2665.	2662.	2662.	1085.	29.	29.	32.	10892.
FLOW, UPSTREAM		257.	325.	390.	412.	7966.	6045.	2887.	2871.	1178.	188.	174.	174.	21876.
FLOW, DOWNSTREAM		228.	296.	358.	383.	6357.	3980.	225.	229.	91.	159.	145.	142.	12592.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	5													
DEMAND, IRRIGATION		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
FLOW, UPSTREAM		229.	296.	350.	389.	6345.	3993.	230.	230.	92.	163.	146.	143.	12544.
FLOW, DOWNSTREAM		223.	296.	350.	389.	6247.	3763.	0.	0.	0.	160.	146.	143.	11774.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	0.	0.	0.
DEFICIENCY (FISH)		371.	302.	250.	211.	0.	0.	600.	600.	600.	740.	454.	457.	4585.
GRAND TOTALS FOR ALL THE USE POINTS														
DEMAND, IRRIGATION		0.	0.	0.	0.	1954.	3256.	3256.	3256.	1302.	0.	0.	0.	13024.
DEMAND, DOMESTIC		29.	29.	32.	29.	29.	32.	29.	29.	32.	29.	29.	32.	360.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1983.	3288.	3285.	3285.	1334.	29.	29.	32.	13384.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

TROUT CR. DRY YEAR (1970) Figure 6.6

Date of Print-out:
Oct. 24, 1972

STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
STORAGE		2001.	2001.	2001.	2040.	3114.	3705.	3327.	2682.	2001.	2001.	2001.	2001.	
CONTROL POINT	2													
STORAGE		302.	302.	302.	341.	755.	755.	604.	453.	302.	302.	302.	302.	
CONTROL POINT	3													
STORAGE		0.	0.	0.	20.	264.	392.	414.	304.	0.	0.	0.	0.	
CONTROL POINT	4													
STORAGE		526.	526.	526.	788.	2626.	2626.	1918.	1235.	526.	526.	526.	526.	
CONTROL POINT	5													
STORAGE		0.	0.	0.	4.	131.	131.	88.	43.	4.	0.	0.	0.	
CONTROL POINT	6													
STORAGE		261.	261.	261.	289.	870.	870.	870.	792.	261.	261.	261.	261.	
CONTROL POINT	7													
STORAGE		0.	0.	0.	4.	64.	80.	54.	26.	8.	0.	0.	0.	
CONTROL POINT	8													
STORAGE		561.	561.	561.	607.	841.	935.	728.	458.	388.	409.	428.	447.	
MEASURING POINT	1													
FLOW		32.	40.	48.	96.	1275.	843.	151.	95.	87.	44.	70.	59.	2769.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	4													
FLOW		395.	503.	596.	772.	14234.	10081.	2536.	2224.	2417.	548.	498.	496.	35303.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	6													
FLOW		447.	567.	672.	925.	16008.	11061.	2700.	2295.	2460.	611.	560.	558.	38884.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	8													
FLOW		38.	49.	55.	91.	2135.	1843.	341.	457.	95.	64.	48.	48.	5264.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	9													
FLOW		548.	694.	820.	1208.	20835.	14516.	3749.	2849.	2457.	758.	683.	681.	49499.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	11													
FLOW		44.	56.	67.	108.	948.	326.	42.	11.	11.	32.	32.	32.	1708.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	14													
FLOW		597.	761.	905.	1435.	20855.	12335.	526.	4.	1526.	798.	721.	714.	41179.
DEFICIENCY (FISH)		3.	0.	0.	0.	0.	0.	74.	596.	0.	104.	0.	0.	777
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
FLOW, UPSTREAM		254.	317.	379.	339.	8017.	6304.	2056.	1995.	2195.	350.	315.	314.	22836.
FLOW, DOWNSTREAM		254.	317.	379.	339.	8008.	6289.	2041.	1980.	2189.	350.	316.	314.	22776.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	20.	33.	33.	33.	13.	0.	0.	0.	132.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	20.	33.	33.	33.	13.	0.	0.	0.	132.
FLOW, UPSTREAM		309.	385.	460.	514.	10312.	7765.	2271.	2310.	2306.	474.	381.	379.	27616.
FLOW, DOWNSTREAM		309.	385.	460.	514.	10292.	7732.	2238.	2277.	2293.	474.	381.	378.	27494.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	3													
DEMAND, IRRIGATION		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
FLOW, UPSTREAM		33.	42.	51.	58.	897.	553.	345.	345.	138.	21.	21.	21.	2524.
FLOW, DOWNSTREAM		33.	42.	51.	58.	690.	208.	0.	0.	0.	21.	21.	21.	1144.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	4													
DEMAND, IRRIGATION		0.	0.	0.	0.	1580.	2633.	2633.	2633.	1053.	0.	0.	0.	10532.
DEMAND, DOMESTIC		29.	29.	32.	29.	29.	32.	29.	29.	32.	29.	29.	32.	350.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1609.	2665.	2662.	2662.	1085.	29.	29.	32.	10892.
FLOW, UPSTREAM		615.	779.	922.	1409.	22357.	15136.	1373.	2896.	2093.	815.	740.	739.	57433.
FLOW, DOWNSTREAM		586.	750.	890.	1380.	20775.	12471.	711.	224.	1608.	786.	711.	706.	41601.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	5													
DEMAND, IRRIGATION		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
FLOW, UPSTREAM		593.	758.	899.	1413.	20911.	13529.	230.	230.	1614.	792.	717.	712.	41906.
FLOW, DOWNSTREAM		593.	758.	899.	1413.	20773.	13294.	508.	0.	1522.	792.	717.	712.	40996.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY (FISH)		7.	0.	0.	0.	0.	0.	92.	600.	0.	108.	0.	0.	807.
GRAND TOTALS FOR ALL THE USE POINTS:														
DEMAND, IRRIGATION		0.	0.	0.	0.	1954.	3256.	3256.	3256.	1302.	0.	0.	0.	13024.
DEMAND, DOMESTIC		29.	29.	32.	29.	29.	32.	29.	29.	32.	29.	29.	32.	360.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1983.	3288.	3285.	3285.	1334.	29.	29.	32.	13384.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

TROUT CR.   AVERAGE YEAR   (1970)   Figure 6.7

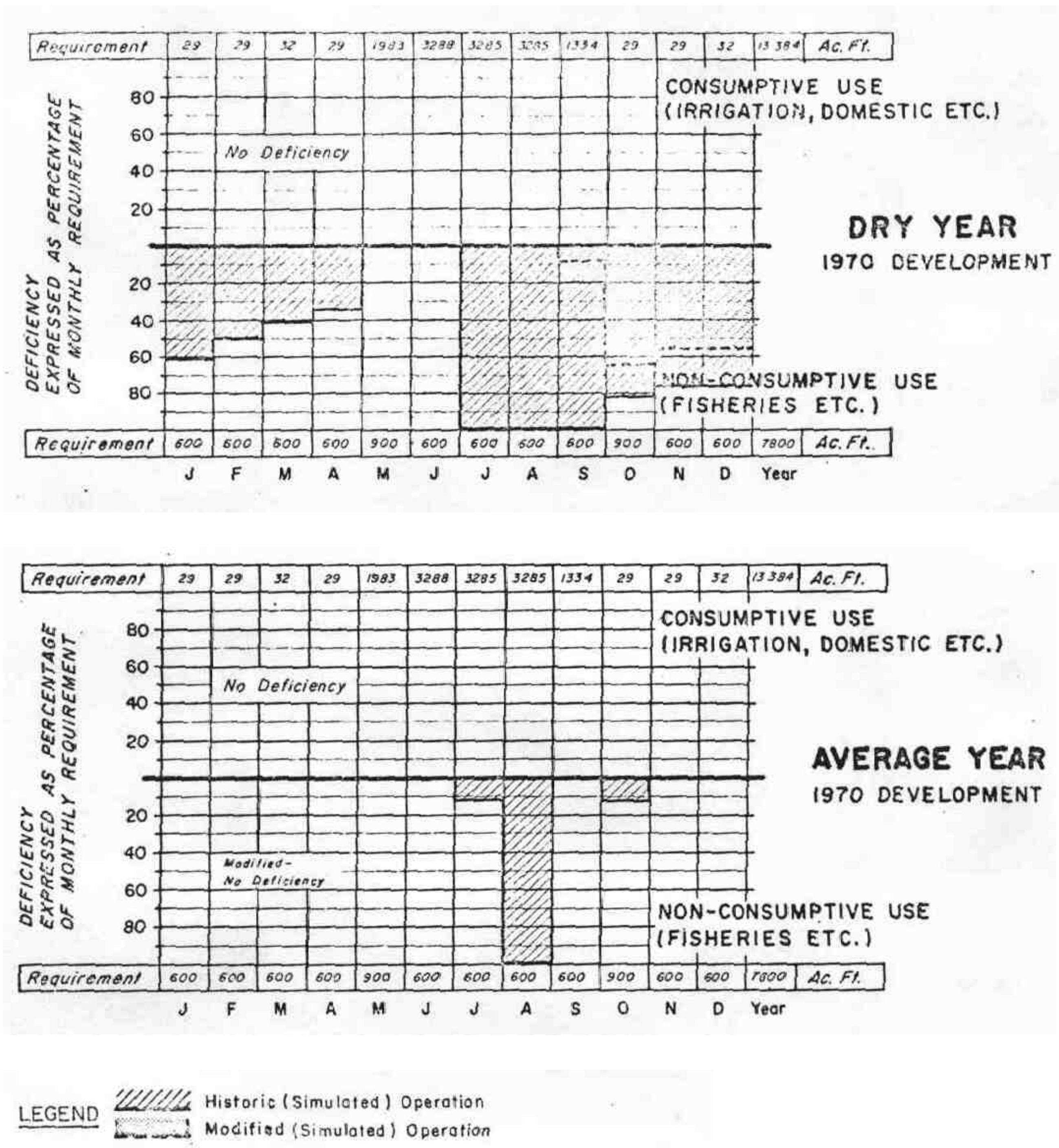
Date of Print-out:
Oct. 24, 1972

STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
STORAGE		2001.	2091.	2001.	2103.	4033.	4033.	3322.	2682.	2001.	2001.	2001.	2001.	
CONTROL POINT	2													
STORAGE		302.	302.	302.	380.	755.	755.	604.	453.	302.	302.	302.	302.	
CONTROL POINT	3													
STORAGE		0.	0.	0.	45.	600.	892.	616.	304.	0.	0.	0.	0.	
CONTROL POINT	4													
STORAGE		526.	526.	526.	788.	2628.	2628.	1918.	1235.	526.	526.	526.	526.	
CONTROL POINT	5													
STORAGE		0.	0.	0.	7.	131.	131.	88.	43.	0.	0.	0.	0.	
CONTROL POINT	6													
STORAGE		261.	261.	261.	317.	870.	870.	670.	461.	261.	261.	261.	251.	
CONTROL POINT	7													
STORAGE		0.	0.	0.	7.	64.	80.	54.	26.	0.	0.	0.	0.	
CONTROL POINT	8													
STORAGE		561.	561.	561.	676.	841.	935.	813.	606.	551.	561.	551.	561.	
MEASURING POINT	1													
FLOW		73.	92.	110.	226.	2927.	1803.	290.	156.	140.	97.	88.	88.	6090.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	4													
FLOW		902.	1139.	1364.	2139.	34014.	27757.	4803.	3191.	3084.	1215.	1116.	1114.	76836.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	6													
FLOW		1020.	1291.	1545.	2518.	38054.	24958.	5196.	3354.	3229.	1360.	1258.	1258.	85041.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	8													
FLOW		96.	108.	123.	210.	5024.	3732.	507.	376.	335.	135.	106.	106.	10848.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	9													
FLOW		1251.	1581.	1886.	3193.	48789.	32163.	6191.	3947.	3753.	1684.	1539.	1539.	107714.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	11													
FLOW		125.	159.	185.	362.	3240.	1457.	253.	41.	73.	140.	138.	138.	6310.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	14													
FLOW		1481.	1878.	2223.	4144.	53332.	32026.	4078.	1723.	2775.	1921.	1774.	1771.	108629.
DEFICIENCY (FISH)		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	9.	15.	15.	15.	6.	0.	0.	0.	60.
FLOW, UPSTREAM		573.	712.	868.	1117.	20292.	14610.	3692.	2684.	2619.	774.	781.	707.	49342.
FLOW, DOWNSTREAM		571.	712.	868.	1117.	20283.	14595.	3677.	2669.	2613.	774.	781.	703.	49282.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	20.	33.	33.	33.	13.	0.	0.	0.	132.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	27.	33.	33.	33.	13.	0.	0.	0.	132.
FLOW, UPSTREAM		701.	872.	1056.	1543.	25491.	17763.	4161.	2903.	2823.	941.	854.	854.	59962.
FLOW, DOWNSTREAM		701.	872.	1056.	1543.	25471.	17733.	4128.	2870.	2810.	941.	854.	854.	59830.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	3													
DEMAND, IRRIGATION		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	207.	345.	345.	345.	138.	0.	0.	0.	1380.
FLOW, UPSTREAM		87.	105.	125.	159.	2543.	1396.	426.	345.	170.	99.	97.	97.	5665.
FLOW, DOWNSTREAM		87.	105.	125.	159.	2336.	1051.	81.	0.	32.	99.	97.	97.	4285.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	4													
DEMAND, IRRIGATION		0.	0.	0.	0.	1530.	2633.	2633.	2633.	1053.	0.	0.	0.	13512.
DEMAND, DOMESTIC		29.	27.	32.	29.	[illegible]	32.	29.	29.	32.	29.	29.	32.	363.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1559.	2665.	2662.	2662.	1085.	29.	29.	32.	10877.
FLOW, UPSTREAM		1443.	1831.	2176.	3864.	5370.	34441.	6711.	4063.	3930.	1895.	1751.	1751.	117739.
FLOW, DOWNSTREAM		1414.	1802.	2144.	3835.	5731.	31775.	4051.	1401.	2815.	1862.	1722.	1719.	104907.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	5													
DEMAND, IRRIGATION		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
DEMAND, DOMESTIC		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		0.	0.	0.	0.	138.	230.	230.	230.	92.	0.	0.	0.	920.
FLOW, UPSTREAM		1453.	1844.	2150.	4024.	5233.	32047.	4101.	1430.	2844.	1894.	1751.	1748.	109173.
FLOW, DOWNSTREAM		1453.	1844.	2188.	4004.	52842.	31817.	3961.	1200.	2752.	1894.	1751.	1748.	107459.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY (FISH)		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GRAND TOTALS FOR ALL THE USE POINTS:														
DEMAND, IRRIGATION		0.	0.	0.	0.	1954.	3256.	3256.	3256.	1302.	0.	0.	0.	13024.
DEMAND, DOMESTIC		29.	29.	32.	29.	29.	32.	29.	29.	32.	29.	29.	32.	350.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		29.	29.	32.	29.	1983.	3285.	3285.	3285.	1334.	29.	29.	32.	13384.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

END OF TABLE

TROUT CR. WET YEAR (1970) Figure 6.8



NOTES: 1. Consumptive Use deficiencies are totals for whole basin.
2. Non-Consumptive deficiencies are those extant at creek mouth.
3. In a Wet Year, a fisheries deficiency of 0 ac. ft. exists at mouth.

TROUT CR. (1970) DEFICIENCY DIAGRAM Figure 6.9

and suggests that refinements to the historic method of operating storage would result in a more advantageous use of the water resource.

In conclusion, the contribution which Trout Creek makes to the gross inflow to Okanagan Lake may be evaluated for various types of year as shown on Table 6.8.

TABLE 6.8

COMPARISON BETWEEN INFLOWS TO TROUT CREEK AND OKANAGAN LAKE

Type of Year	Estimated Inflow to Okanagan Lake from Trout Creek* (acre-feet)	Gross Inflow to Okanagan Lake from All Sources* (acre-feet)	Percentage Contribution by Trout Creek to Okanagan Lake Inflow
Dry	11,700	279,200	4.2
Average	41,200	516,000	8.0
Wet	108,600	796,700	13.6

* Regulated flows at 1970 development.