

1959
ANNUAL REPORT
Irrigation Division No. 1
A. Ralph Owens, Division Engineer

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Mr. J. E. Whitten
State Engineer
State of Colorado
State Capitol Building
Denver, Colorado

Dear Mr. Whitten:

I hereby submit the Annual Report of the Office of
Division Engineer, Irrigation Division No. 1, for the year ending
October 31, 1959.

SNOW PACK

Snow reports May 1st indicated considerably above
normal run-off, water content being as high as 159% of normal. Cool
weather retarded the melt and considerable water was lost in evapora-
tion. Since these reports have such a wide circulation and are studied
by so many interests, it is believed that more snow courses would in-
crease the accuracy and scope of our information and should be establish-
ed. It is further suggested that pictures of the back range would be of
some value in run-off predications. These could be either aerial or
ground, the essential requirement being that the same general area be in-
cluded in each photo.

RESERVOIR STORAGE

Reservoir storage reached its maximum on June 1st and minimum occurred October 1st. The actual figures are:

	<u>June 1st</u>	<u>October 1st</u>
Irrigation	700,464	213,524
Colorado Big Thompson Project	232,465	82,740
Municipal	<u>235,692</u>	<u>225,371</u>
Total	1,168,621	521,635

PRECIPITATION

Precipitation at Denver is above normal, but that is not true of the valley below Denver where deficiencies of more than two inches are recorded. Precipitation during the summer period was very short, requiring heavy use of supplemental supplies.

WATER SUPPLY

For three days during the normal irrigation season, there was "no demand". A call was made July 6th to supply 1871 water in District No. 2 (about normal) and August 25th call was made to supply 1866 water in District No. 2. The only call from District No. 1 was made June 29th to supply 1882 water. There was insufficient water in District No. 8 to supply 1865 priorities after September 2nd and during the next several weeks, even 1863 priorities were shorted. Rain and wet snow that fell September 29th-October 1st, relieved the tense situation irrigation-wise, and storage started.

Supplemental irrigation water was needed in early June, and from that time until late September, reservoir and trans-mountain water was used when numerous reservoirs were drained dry. This points out the very important role reservoir and trans-mountain water take in the agricultural economy of

the Valley.

CROPS

Crops were probably average to above. This is true, also, of the dry lands where good yields of wheat are reported. Native grass made a good growth in the spring and although brown and dry from June on, all livestock have made good weight increases.

Meadow hay in the mountain parks is average to above in tonnage and appears of good quality. There was some concern during September in District No. 2 about the sugar beets; ground was dry and hard, and beets were shrinking. This condition was completely changed by the storms that occurred at the turn of the month. Since that time many fields through the entire Valley have been too wet to support equipment and, at the present time, the harvest is about 75% complete. There were no wide spread serious hail storms.

TRANS-MOUNTAIN DIVERSION

At present, the only trans-mountain diversion that can be operated on a "year round" basis, is the Colorado Big Thompson Project. The City of Denver is proceeding with revisions on the Moffat Tunnel facilities to enable 'round the year diversions. This office acts as a clearing house for the City of Colorado Springs on its diversions from the Blue River.

RETURN FLOW AND RESERVOIR OUTLOOK

It is believed that seepage return flow from the Big Thompson Project water has about reached its ultimate and that additional reservoir

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RETURN FLOW AND RESERVOIR OUTLOOK (Continued)

storage capacity may be desirable. Whether by enlarging existing "off channel" reservoirs, or constructing new storage on the main stem of the South Platte River, is largely a matter of economics. This additional supply would firm up rights in Districts No's. 1 and 64. Some benefit would accrue to upstream areas as releases from additional storage might be used to supply ditches that normally call water to supply their priorities.

INSPECTION OF RESERVOIR DAMS

In accord with policy, reservoir dams were inspected at every opportunity, and owners have complied quite well with requests for repairs. A cast-iron outlet gate controlling the flow from Point of Rocks Reservoir, broke during the irrigation season. A heavy sheet of steel was placed in front of the outlet tube to reduce the flow to normal irrigation needs. Irrigation requirements drained the reservoir and a thorough inspection was made. Irrigation District officials and the State Engineer found other gates contained structural flaws so an entire set of gates was obtained and the reservoir is now being filled.

COMPACTS AND U. S. SUPREME COURT RULINGS

The administration of the waters of the Laramie River was carried on in compliance with the ruling of the U. S. Supreme Court. No complaints were received from water officials of Wyoming on this, or the agreement concerning Sand Creek. Ranchers in North Park are gradually increasing their storage facilities on the North Platte River system and, in the not too distant future, we will have to regulate storage to stay within the limit of 17,000 acre feet per year. No difficulty was experienced in complying with the pro-

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visions of the South Platte River Compact.

STOCK WATER DAMS

Stock Water Dams are being built at an accelerated rate. - Most of these are on the head waters of intermittent streams that are potential irrigation supplies of the South Platte River and their interference with irrigation rights is gradually worsening; however, no specific complaints were received this season, largely due to short rainfall and lack of flow to the major streams.

PUMPING FROM UNDERGROUND SUPPLIES

Development of sub-surface water is continuing for both irrigation and domestic supplies, though at a slower rate than during the drouth years of 1954, 1955 and 1956. No specific complaints were received this season, probably because return flows were better and interference less noticeable.

URBAN DEVELOPMENT

Urban development is continuing and there seems no let-up in the rate; the domestic water supplies being utilized, although generally adequate in quantity, are not considered of good quality. This is particularly true of Clear Creek Valley between Golden and Denver. Clear Creek and the gravels adjacent to it, contain considerable detergents.

For sometime there has been agitations regarding the amount and quality of the effluent from the several sewage systems in the Denver metropolitan area. This has led to a proposal that a single Master plant be built to treat all of the sewage wastes in the area. If this consolidation of in-

terests can be affected, very likely a similar consolidation can be made to supply domestic water.

MEASURING DEVICES

The long established policy of the State Engineer to constantly improve the facilities for measuring water diverted from our streams, has been continued. A number of measuring flumes requested in South Park last fall were ready for service this spring. The City of Colorado Springs has completed a new installation below Montgomery Reservoir and is proceeding with improvements to the measuring flume at the east portal of the Hoosier Pass Tunnel. Several replacements have been requested for ditches on the Laramie River.

CHERRY CREEK RESERVOIR

During the months of February to May, there was an intermittent small flow reaching this reservoir. As it appeared that other reservoirs would fill, the available flow was retained. This increased the amount in the reservoir from approximately 7,500 acre feet to approximately 10,600. Evaporation and seepage losses have reduced this to approximately 9,100. Only one rain produced enough run-off to appear worth releasing. The reservoir gained 174 acre feet June 2nd, which was released the following day.

The administration of the Colorado Big Thompson Project waters, the amounts delivered to the several stream systems and the particular problems encountered therewith, are contained in the report of Special Deputy State Engineer C. E. Schnurr.

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Tabulations of the Water Commissioners Annual Reports, Amounts of Water in Storage, Amounts Diverted by Trans-mountain Projects, the Amounts Diverted by Individual Users from the Laramie River and others, accompany and are a part of this report.

Respectfully submitted,



Division Engineer
Irrigation Division No. 1

1959 SNOW REPORT — May 1stUpper South PlatteWATER CONTENT IN INCHES

	<u>1959</u>	<u>Avg.</u>	<u>% of Avg.</u>	
Hoosier Pass	15.8	12.0	132	}
Jefferson Creek	9.9	7.5	132	
Geneva Park	3.6	1.7	<u>212</u>	
			476	159%

Clear Creek

Loveland Pass	20.1	16.0	126	}
Grizzly Peak	21.2	20.3	104	
Empire	7.3	6.3	116	
Berthoud Falls	19.1	12.4	154	
Clear Creek	21.2	17.0	<u>125</u>	
			625	

Boulder Creek

University Camp	31.6	23.7	133	}
Moffat	15.5	8.5	<u>182</u>	
			315	158%

Saint Vrain

Wild Basin	14.4	14.9	97	}
Copeland Lake	0.5	6.3	08	
Ward	8.6	5.8	<u>148</u>	
			253	

Overall Average 127%

Big Thompson

Lake Irene	23.4	24.5	95	}
Hidden Valley	14.2	13.8	103	
Deer Ridge	5.1	4.1	124	
Long's Peak	13.9	12.5	<u>111</u>	
			433	

Poudre

Cameron Pass	29.7	24.3	122	}
Chambers Lake	8.1	4.4	184	
Big South	.4	0.7	57	
Deadman Hill	18.6	17.6	106	
Lake Irene	23.4	24.5	95	
Hour Glass Lake	7.4	8.2	90	
Red Feather	9.1	4.1	222	
Lost Lake	14.2	9.0	<u>158</u>	
			1034	

Laramie River

Chambers Lake	8.1	4.4	184	}
Deadman Hill	18.6	17.6	106	
McIntyre	10.8	8.9	122	
Roach	19.3	21.1	<u>91</u>	
			503	

North Platte

Cameron Pass	29.7	24.3	122	}
Park View	5.3	7.9	67	
Columbine Lodge	28.1	20.6	136	
Willow Creek Pass	9.9	13.5	<u>73</u>	
			398	

WATER IN STORAGE SOUTH PLATTE RIVER SYSTEM

Irrigation Only -- Figures in Acre Feet

<u>Year</u>	<u>May 1</u>	<u>November 1</u>	<u>May 1 in % of Normal</u>	<u>November 1% of Normal</u>
1938	314,019	345,829	64	176
1939	579,578	41,842	117	21
1940	242,892	45,075	49	22
1941	311,425	155,188	63	79
1942	533,002	350,255	108	179
1943	628,397	161,921	127	88
1944	563,588	132,258	114	68
1945	456,907	348,079	97	178
1946	509,884	162,197	103	88
1947	522,501	307,760	106	157
1948	598,680	151,688	121	78
1949	435,006	259,855	88	132
1950	507,847	117,058	103	60
1951	404,734	286,460	82	141
1952	674,975	244,932	136	125
1953	637,992	198,884	129	101
1954	541,842	90,554	110	49
1955	413,533	118,939	84	60
1956	295,334	44,039	60	22
1957	362,082	469,742	74	240
1958	659,070	312,026	136	151
1959	651,021	341,148	132	160

TRANS-MOUNTAIN DIVERSIONS

Name of Diversion	From Dist.	To Dist.	Source of Supply	Ac. Ft. Diverted	1st Day	Last Day
Boreas Pass	36	8	Blue River	298	6-7	8-10 *
Hoosier Pass	36	10	Blue River	8,331	5-12	8-18
Berthoud Pass	51	7	Colo. River	961	6-7	8-30
Moffat Tunnel	51	6-7-8	Colo. River	60,797	4-17	10-31 +
Williams Fork T.	51	6-7-8	Colo. River (Incl. in Moffat T.)			
Adams Tunnel	51	1-6 Incl.	Colo. River	268,580	11-1-58	10-31-59
Eureka Ditch	51	4	Colo. River	266,350		
Grand River D.	51	3	Colo. River	18,901	6-5	8-26
Cameron Pass D.	47	3	Michigan River	126	6-20	7-2
Michigan D.	47	3	Michigan River	1,445	6-12	7-25
Wilson Supply	48	3	Sand Creek	1,230	5-11	7-8
Deadman Ditch	48	3	Laramie River	871	5-16	7-9
Laramie Poudre T.	48	3	Laramie River	17,556	6-5	8-20
Skyline Ditch	48	3	Laramie River	1,427	6-12	7-5
Columbine Ditch	48	3	Laramie River	0		
Bob Creek Ditch	48	3	Laramie River	0		
Lost Lake	48	3	Laramie River	0		

Total Diverted from Colorado River	349,239
" " " Blue River	8,629
" " " Michigan "	1,571
" " " Sand Creek	1,230
" " " Laramie River	<u>19,854</u>
	380,523

* Diversions continued after this date - Too small to measure.

+ Total includes water diverted November 1958

Acre Feet in Storage 1st of Month

Use	1959					Division No. 1	
	Dec. '58	Jan. '59	Feb. '59	March '59	April '59	May '59	
1 Dist. Irrig.	45,344	70,112	93,814	114,100	129,538	130,942	
2 Dist. Irrig.	23,875	37,034	46,634	52,265	62,828	72,414	
3 Dist. Irrig.	110,703	118,619	125,974	130,381	134,962	146,547	
Big Thomp.	50,438	66,259	86,399	93,237	105,707	126,388	
Municipal	5,220	5,220	5,220	5,220	5,220	5,220	
Total	166,361	190,098	217,593	228,838	245,889	278,155	
4 Dist. Irrig.	77,559	77,626	77,685	79,936	81,008	91,982	
Big Thomp.	38,223	55,592	61,731	74,827	84,757	86,194	
Total	115,782	133,218	139,416	154,763	165,765	178,176	
5 Dist. Irrig.	16,625	17,666	19,542	20,704	22,198	31,424	
6 Dist. Irrig.	17,220	16,831	16,493	15,039	15,007	18,554	
Big Thomp.	3,107	3,161	3,258	3,360	3,445	3,625	
Municipal	26,859	23,936	23,256	23,053	22,315	16,887	
Total	47,186	43,928	43,007	41,452	40,767	39,066	
7 Dist. Irrig.	3,815	6,214	7,675	9,639	10,430	25,121	
Municipal	11,766	11,746	9,429	7,078	4,235	8,641	
Total	15,581	17,960	17,104	16,717	14,665	33,762	
8 Municipal	16,469	16,210	16,035	15,772	16,280	17,836	
9 Dist. Irrig.	3,937	4,319	5,023	5,232	6,168	9,089	
23 Dist. Irrig.	2,427	2,427	2,427	2,427	2,456	2,725	
Municipal	164,594	165,589	166,156	167,502	170,525	177,440	
Total	167,021	168,016	168,583	169,929	172,981	180,165	
64 Dist. Irrig.	73,436	86,608	98,886	110,080	120,411	121,610	

Totals:

Irrigation	374,941	437,456	494,153	539,803	585,006	650,408
Big Thomp.	91,768	125,012	151,388	171,424	193,909	216,207
Municipal	224,908	222,701	220,096	218,625	218,575	226,024
Grand Total:	691,617	785,169	865,637	929,852	997,490	1,092,639

Acre Feet in Storage 1st of Month

		1959				Division No. 1	
Use	June '59	July '59	Aug. '59	Sept. '59	Oct. '59	Nov. '59	
1 Dist. Irrig.	137,032	114,476	70,195	34,958	15,504	38,500	
2 Dist. Irrig.	73,616	55,416	35,124	16,939	8,701	34,817	
3 Dist. Irrig.	161,143	168,790	132,764	97,615	78,893	102,481	
Big Thomp.	138,460	129,995	104,160	61,236	51,713	56,763	
Municipal	5,376	6,596	6,218	4,967	4,952	5,209	
Total	304,979	305,381	243,142	163,818	135,558	164,453	
4 Dist. Irrig.	100,844	96,047	76,357	69,313	63,343	72,482	
Big Thompson	89,168	86,000	71,137	44,138	28,694	26,639	
Total	190,012	182,047	147,494	113,451	92,037	99,121	
5 Dist. Irrig.	35,607	34,560	27,436	16,457	15,935	22,682	
6 Dist. Irrig.	25,734	34,447	28,144	20,619	16,523	22,848	
Big Thomp.	4,837	4,768	3,145	2,754	2,333	1,752	
Municipal	22,835	47,510	42,313	45,169	38,189	41,241	
Total	53,406	86,725	73,606	68,542	57,045	65,841	
7 Dist. Irrig.	29,650	25,212	14,046	4,513	1,939	4,567	
Municipal	9,946	5,742	10,295	5,034	8,589	5,128	
Total	39,596	30,954	24,341	9,547	10,528	9,695	
8 Municipal	17,035	17,271	16,846	16,615	16,926	17,316	
9 Dist. Irrig.	9,359	8,893	5,590	4,745	4,389	4,779	
23 Dist. Irrig.	4,000 Est.	4,000 E.	3,000 E.	2,000 E.	2,000 E.	2,200 E	
Municipal	180,500	178,579	172,912	163,499	156,715	162,668	
Total	184,500	182,579	175,912	165,499	158,715	164,868	
64 Dist. Irrig.	123,479	101,267	57,274	24,712	6,297	35,438	
Totals:							
Irrigation	700,464	643,108	449,930	291,871	213,524	340,794	
Big Thomp.	232,465	220,763	178,442	108,128	82,740	85,154	
Municipal	235,692	255,698	248,584	235,284	225,371	231,562	
Grand Total:	1,168,621	1,119,569	876,956	635,283	521,635	657,510	

1952

PRECIPITATION DATA -- DIVISION NO. 1

Station	Av. Ann.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	58-Sept.	Total
Boulder	18.29	0.56	0.63	0.75	1.01	1.29	1.91	2.08	3.73	0.64	0.82	1.35	3.01			17.78
Denver	14.20	0.37	0.74	0.64	1.24	1.31	2.85	1.35	3.33	0.44	0.83	0.25	1.82			15.17
Ft. Collins	14.74	0.85	0.57	0.98	0.46	0.58	1.36	2.71	3.54	0.39	0.31	0.60	1.97			14.32
Ft. Lupton	12.51	0.38	0.25	0.75	0.79	1.06	2.53	1.22	2.38	0.41	0.17	0.89	2.03			12.86
Ft. Morgan	13.43	0.34	0.22	0.35	0.54	0.36	1.18	0.46	4.46	0.41	1.02	0.55	.99			10.88
Greeley	12.30	0.28	0.33	0.88	0.15	0.26	1.56	1.39	2.34	0.93	0.60	0.21	2.00			10.93
Longmont	13.66	0.61	0.39	0.51	0.50	0.70	1.11	1.62	3.08	0.57	0.47	0.29	2.18			12.03
Julesburg	16.51	0.76	0.23	1.00	0.56	0.27	2.81	0.42	3.26	1.71	0.26	1.25	2.09			14.62
Sterling	14.78	0.11	0.13	0.55	0.44	0.25	1.15	0.28	4.91	2.25	0.75	1.09	1.36			13.27

OFFICE OF STATE ENGINEER OF COLORADO
 Diversions from Laramie River and Tributaries
 - 1959 -
 Recapitulation - Totals for Season

Name of Ditch	Amount Diverted Day Second Feet to July 31st	Amount Diverted Day Second Feet After July 31st
Bliler - Boswell Stuck Warren	816.26	0
Mansfield & Enlg. Mansfield No. 2	1,089.66	0
Forrester No. 1 Grace Cr. & Enlg.	1,095.28	3.51
Detro No. 1 Detro No. 2 Lower La Garde	359.96	0
Jimmy Cr. (Net) La Garde minus Lower L. G. La Garde No. 1 Schnitger	1,027.62	0
Yelton	378.59	0
Homestead No. 1 (Big Jenkins) Homestead No. 2 (Little Jenkins) Pache Nellie	873.51	26.46
Martin No. 1 Martin No. 2 & Enlg. Wright	2,333.21	240.05
Brown - Nun Cr. Cabin Davy Forrester - Brown Cr. Stubb	960.24	14.65
Link No. 1 Link No. 2 Smith - Brown Cr. Upper Hills	947.20	12.52
Brown - Porter Cr.	27.54	5.00
Lamb	854.69	84.82

Laramie River Diversions - Continued

Name of Ditch	Amount Diverted Day Second Feet to July 31st	Amount Diverted Day Second Feet After July 31st
British Cr.		
Comet		
Homestead - McIntyre Cr.		
Lower Grant		
Upper Grant		
Stuart No. 1		
Stuart No. 2	691.60	24.20
Brinker		
McIntyre		
Pine Creek & Enlg.	318.08	4.39
Glendevey		
Talmadge	86.04	37.07
Lower Jim		
Trollope		
Ward No. 1		
Ward No. 2	79.41	0
Jim minus Lower Jim		
Jim No. 2		
Lone Tree		
Ollie		
Timothy	<u>901.37</u>	<u>127.91</u>
Total Meadow Land Diversion	12,840.76	580.60

Summary through July 31 - Allotment		27,700 A.F.
Total Diverted	12,840.76 or	<u>25,270</u>
Total Unused Balance		2,430
Summary after July 31 - Allotment		1,800 A.F.
Total Diverted	580.60 day s.f.	1,800 A.F.
Total Unused Balance		or <u>1,152</u> A.F. 648 A.F.

SUMMARY OF WATER COMMISSIONERS ANNUAL REPORTS

1959

ACRE FEET WATER USED

Dist. No.	Direct Flow	Reservoir	Big Thompson Project	Other	Total	Acres Irrigated	First Day Used	Last Day Used
1	143,578	84,828	7,792		236,198	158,734	May 3	Oct. 17
2	286,773	67,565	9,208		363,546	204,790	May 1	Oct. 31
3	253,590	98,613	97,482	41,327	491,012	265,740	May 11	Oct. 3
4	132,471	20,364	62,675		215,510	144,700	May 7	Oct. 31
5	78,662	31,972	25,911		136,545	111,960	May 11	Oct. 13
6	106,232	27,863	17,040		151,135	174,690	May 5	Oct. 14
7	113,161	22,570			135,171	122,895	Feb. 1	Oct. 31
8	111,191	25,410		3,942	25,370	25,370	March 1	Oct. 31
9	19,858	5,446			25,304	15,471	April 1	Oct. 31
23	82,037				82,037	41,311	April 4	Aug. 7
64	143,382	107,811			251,193	176,780	April 22	Oct. 31
65	22,580				22,580	8,140	April 25	Oct. 30
47	325,000				325,000	128,000		
48	<u>26,422</u>	<u>492,442</u>	<u>220,108</u>	<u>45,269</u>	<u>26,422</u>	<u>4,845</u>	May 1	Oct. 15
	1,844,937				2,487,023	1,583,426		