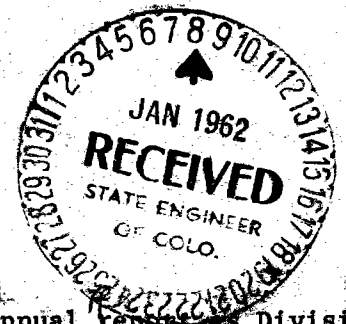


P 112

Glenwood Springs, Colorado
November 30, 1961

J. E. Whitten
State Engineer
Denver, Colorado



Dear Sir:

In compliance with the provisions of law I transmit herewith my annual report as Division Engineer for Irrigation Division No. 5 for the year ending November 30, 1961.

On May 1, the water supply forecasts for the Colorado and Roaring Fork Rivers above Glenwood Springs, as reported by the Soil Conservation Service, were from 80 to 90 percent of normal. Snowfall during April was about normal, but was spotty throughout the division. The following is a table showing the forecast flow and the actual flow at Glenwood Springs as predicted by the U. S. Weather Service and as measured by the U. S. Geological Survey:

WATER-YEAR FLOW
Oct. 1960 thru Sept. 1961

	<u>Forecast</u> A.F.	<u>15-Year Average</u> A.F.	<u>% of</u> <u>16-Year</u> <u>Average</u>	<u>Actual</u> <u>Flow</u> A.F.
Colorado River - Glenwood Springs	1,420,000	1,900,000	75%	1,101,000
Roaring Fork River - Glenwood Springs	<u>680,000</u>	<u>958,000</u>	71%	<u>630,200</u>
	2,100,000	2,858,000		1,731,200

Temperatures were below normal and precipitation was about normal, but was spotty throughout the division during most of the month of April and rainfall had improved soil conditions in the irrigated areas. Thus, prospects for a normal irrigation

season in the Irrigation Division were good.

The Roaring Fork River dropped to 57 percent of median in April after being 92 and 91 percent of medians in February and March. The Roaring Fork measured at Glenwood Springs: 393 second/feet mean, compared to 688 median; total flow for the month was 23,400 acre/feet, the lowest flow on record for the Roaring Fork, starting in 1905; highest flow, 600 second/feet, April 30; lowest 311 second/feet April 15 and 17; cumulative flow for the water year starting October 1, 1960, 162,700 acre/feet, 85 percent of the median, 192,000 acre-feet.

Because of the short supply in the Colorado River, it was necessary to check tailrace water from the Orchard Mesa Irrigation District pumping plant and the Grand Valley Project Hydro-electric plant back into the Colorado River above the diversion dam of the Grand Valley Irrigation Co. This is the first time this has been necessary in the spring for a number of years.

The Colorado River Peak flow occurred at Glenwood Springs on May 31 with a flow of 7,680 second/feet. The Roaring Fork River peak flow was on June 10 with 5,660 second/feet. These flows were far below normal flows.

On July 5th, stream flow at Shoshone had dropped to 1,250 second feet. Colorado Springs diversion was closed down and replacement was started at Green Mountain Reservoir and the City of Denver's Williams Fork Reservoir. In making the replacements, the Green Mountain Power Plant was run 24 hours per day, 7 days per week; the City of Denver's Power Plant was run from 8 A.M. to 9 P.M., 7 days per week. By adjusting the above schedule from time to time the stream flow at Shoshone was held near 1,250 second/feet. Because of the rains and snow the first few days in September, streamflow began to rise at Shoshone, and on September 8th was 1,880 second/feet. Colorado Springs diversion was turned on and was allowed to flow until November 6, 1961. Green Mountain Reservoir and the City of Denver's Williams Fork Reservoir were allowed to store.

Minimum storage of 61,975 acre-feet was reached in Green Mountain Reservoir on April 18. On July 13 storage had reached 147,248 acre-feet, and on September 5 storage had dropped to 143,293 acre-feet; by September 30 storage had reached 152,616 acre-feet.

Storage in the three larger reservoirs as of September 30th was as follows:

	<u>1961 A.F.</u>	<u>1960 A.F.</u>	<u>1951-1960 Average</u>
Granby Reservoir	457,400	436,139	388,400
Green Mountain Reservoir	152,616	127,962	122,800
Williams Fork Reservoir	69,972	85,731	

September inflow to Granby Reservoir was the maximum of record and 525 percent of normal. Runoff above Willow Creek and Green Mountain Reservoirs was also the maximum of record.

The Colorado Public Service Company's Shoshone Plant produced 10,721,300 K.W. during September and 11,255,400 K.W. during October; this is the largest production for these months in the history of the plant. This was made possible by the high stream flow during these months.

Frost on April 15 and again on April 25 did some damage to fruit in the Grand Junction and Palisade areas and some individual growers were hit hard; however, the fruit industry as a whole was not seriously damaged in that area. There was much more smudging than in previous years, and more wind machines were used. Many peach blossoms were not out far enough to be hurt. In the Silt and New Castle areas apples, apricots, and berries were hard hit. Fruit men have reported about 1/4 crop of apples, almost a total loss of apricots, and about 3/4 crop of berries. Potatoes, sugar beets, and small grains were very good, but alfalfa yield was much below normal due to the freezing weather in April.

Drouth conditions prevailed during June and July. Glenwood Springs had a total of .60 of precipitation and Rifle a total of .33 during these months. Precipitation during August was about normal. September was one of the coldest and wettest of record. Heavy snow fell on the 2nd through the 4th and a second snowstorm on the 20th through the 24th was the heaviest on record for September in many areas in the division. Snowfall totals for the month far exceeded previous records and precipitation totals exceeded previous September records. ^{7.1} Following is a tabulation showing precipitation during the summer months:

PRECIPITATION 1961

	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
Glenwood Springs	1.86	.40	.20	1.89	5.38
Rifle	1.01	.07	.26	1.15	2.87
Green Mountain Dam	2.13	.33	2.26	1.93	5.95

On March 13, 1961, I was advised by the Bureau of Reclamation that Fred A. Seaton, Secretary of the Interior, had established a schedule for the minimum flows required below Granby Dam to maintain a live stream as provided for in Senate Document No. 80. Although the specified flows under most conditions are identical to the release schedule we have been following, the control point was changed to a point immediately below the Coffee-McQueary Ditch. Consequently, the releases from Granby Reservoir had to be varied to compensate for changes in the rate of diversions by the Spitzer Highline and the Coffee-McQueary Ditches. In order to maintain the specified flows as accurately as possible, we made arrangements with the irrigators in the two ditches to call the Granby Pumping Plant when changes were going to be made in diversions, the Granby Plant to accept collect charges for phone calls from the irrigators.

The following is a schedule of releases from Granby Reservoir as the Secretary's final determination:

<u>Month</u>	<u>Flows gaged at Granby Dam</u> (c.f.s.)	<u>Flows gaged immediately below Coffee - McQueary Ditch</u> (c.f.s.)
October	20.0	
November	20.0	
December	20.0	
January	20.0	
February	20.0	
March	20.0	
April	20.0	
May		75.0
June		75.0
July		75.0
August		40.0
September		20.0

The Secretary also established a schedule of releases to be followed by the Willow Creek Reservoir, as follows: During the non-irrigation season (October 1 to April 30), approximately 7 cubic feet per second, or the inflow to the Willow Creek Reservoir, whichever is less, will be bypassed at Willow Creek Dam for augmentation of the fishery flows in the Colorado River. During the remainder of the year no flows will be bypassed at Willow Creek Dam for this purpose.

Until the above schedule was established, a minimum of 7 cubic feet per second had been maintained the year around.

TRANS-MOUNTAIN DIVERSIONS

The following is a report of the Trans-Mountain Diversions from Division No. 5 to Division No. 1 and Division No. 2 for the ~~Irrigation season~~ Water Year, October 1, 1960, to September 30, 1961.

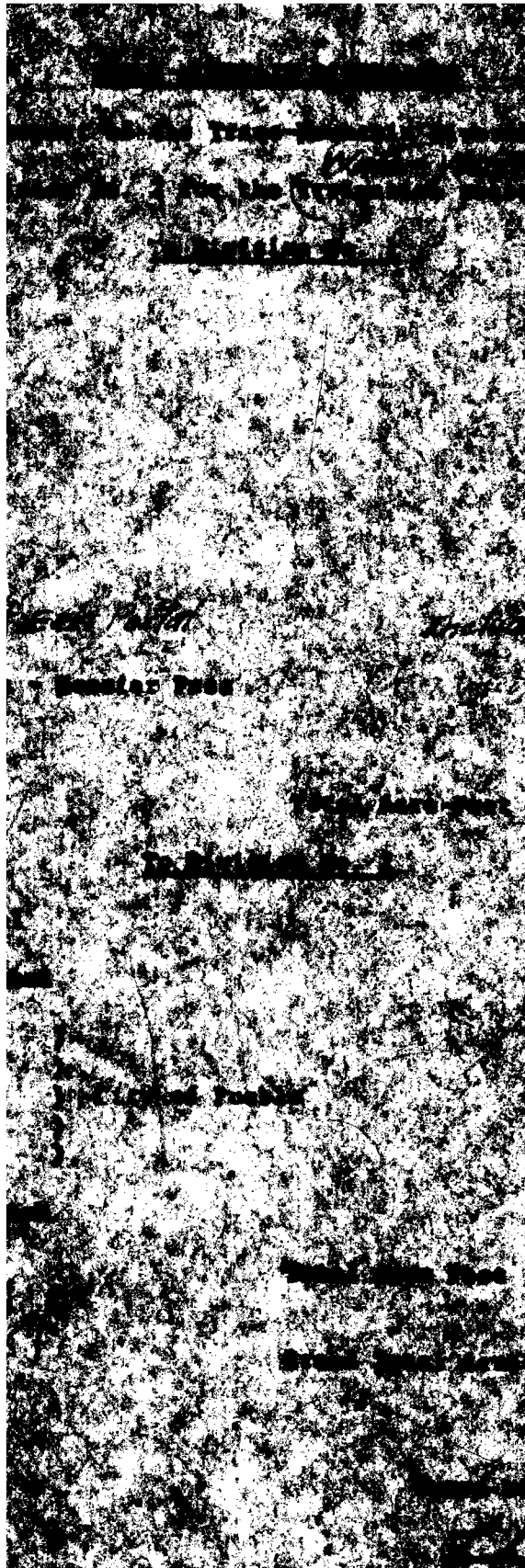
	<u>To Division No. 1</u>	<u>Acre-feet</u>
Adams Tunnel		<u>208,700</u>
Grand River		<u>9,880</u>
Berthoud		<u>311</u>
Eureka		<u>39</u>
Williams Fork		<u>*4,250</u>
Moffat Tunnel* at East Portal	(Includes Wms. Fk. Tunnel)	<u>54,000</u>
Colorado Springs - Hoosier Pass		<u>6,200</u>
Boreas Pass		<u>-</u>
	Total Acre-Feet	<u><u>279,130</u></u>
	<u>To Division No. 2</u>	
Twin Lakes Tunnel		<u>36,050</u>
Busk-Ivanhoe Tunnel		<u>4,590</u>
Ewing Ditch)		<u>665</u>
Wurtz Ditch)	City of Pueblo	<u>1,420</u>
Columbine Ditch)		<u>1,090</u>
Fremont Pass Ditch		<u>0</u>
	Total Acre Feet	<u><u>43,815</u></u>
	Grand Total Acre-Feet	<u><u>322,945</u></u>

Yours very truly,

L. L. Finley
 Division Engineer
 Division No. 5

* Moffat Tunnel At East Portal Includes Williams Fork Tunnel Water of 4250 A.F.

District No.	No. of Ditches Reported	First Day Water Was Used	Last Day Water Was Used	Average Daily Amount Diverted in Sec.Ft.	No. of Acre Feet Used from Stream	No. of Acres that are Irrigated
36
37	204	5 - 1-61	10-11-61	431.1	120,572	19,924
38	74	4 - 1-61	10- 1-61	480.1	95,440	23,455
39	125	4 - 1-61	10-31-61	307.2	115,535	22,410
45	107	4 - 1-61	10-31-61	392.9	76,372	30,020
50	20	4- 16-61	8- 8-61	144.9	24,433	6,345
51	71	4 - 1-61	10-31-61	652.0	119,781	23,496
52	72	4 - 1-61	10-31-61	232.4	24,207	4,950
53	145	4 - 1-61	10-31-61	745.5	70,764	19,692
70	62	11- 1-60	10-31-61	54.1	13,847	8,920
Totals	<u>880</u>			<u>3,440.3</u>	<u>660,951</u>	<u>159,212</u>



TRANS-MOUNTAIN DIVERSIONS

Following is a report of the Trans-Mountain Diversions from Division No. 5 to Division No. 1 and Division No. 2 for the *Water year Oct. 1, 1960 to Sept. 30, 1961* (Irrigation season).

To Division No. 1

	<u>Acre-feet</u>
Adams Tunnel	<u>208,700</u>
Grand River	<u>9880</u>
Berthoud	<u>311</u>
Eureka	<u>39</u>
Williams Fork	<u>* (4250)</u>
* Moffat Tunnel at East Portal	<i>Includes Wms Fork Tunnel</i> <u>54,000</u>
Colorado Springs - Hoosier Pass	<u>6200</u>
Boreas Pass	<u>126?</u>
Total Acre-Feet	<u><u>279,130</u></u>

To Division No. 2

Twin Lakes Tunnel	<u>36,050</u>
Busk-Ivanhoe Tunnel	<u>4590</u>
Bwing Ditch)	<u>665</u>
Wurtz Ditch) - City of Pueblo	<u>1420</u>
Columbine Ditch)	<u>1090</u>
Fremont Pass Ditch	<u>0</u>
Total Acre Feet	<u><u>43815</u></u>

Grand Total Acre-Feet 322,945

Les: Boreas Pass diverted a few acre ft but no credit was given during year 61.

Sours very truly,

[Signature]
Division Engineer
Division No. 5

** Moffat Tunnel @ East Portal includes Wms Fork Tunnel Water of 4250 A.F.*

