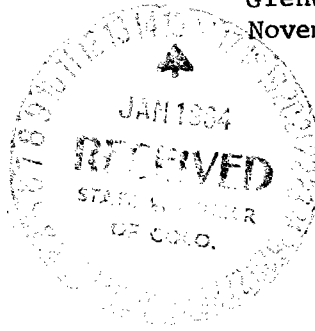


Glenwood Springs, Colorado
November 30, 1963



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, 1963.

On May 1, snow reports showed that snowfall had been much below normal during March and April. Some of the snow courses showed the lowest April 1 measurements on record. The snowpack was about equal to the snowpack on May 1, 1954, the lowest year of record.

The cumulative runoff for the 1963 water year was far below the yearly medians and the totals for the 1962 water year. Also, the runoff for the water year was below the predictions of the Weather Bureau. The predictions were based on the assumption that precipitation would be normal from May through September. Moisture was below normal in most of the division throughout May, June, part of July, and the latter part of September.

U. S. Geological Survey data for the Roaring Fork River at Glenwood Springs for September: mean flow - 579 second-feet, 103 percent of the median; September runoff - 34,430 acre-feet; water year runoff - 557,290 acre-feet, 63 percent of median. Comparative figures for September, 1962 and 1962 water year: September mean - 585 second feet; total September runoff - 34,800 acre-feet; water year total - 1,135,000 acre-feet.

Following is a table showing the forecast flow and the actual flow, at Glenwood Springs of the Colorado and Roaring Fork Rivers as predicted on May 1, 1963, by the U. S. Weather Service and as measured by the U. S. Geological Survey:

	Water Year Flow			Actual Flow <u>A.F.</u>
	Oct. 1962 through Sept. 1963		% of 15-year Average	
	<u>Forecast</u> A.F.	<u>15-year Average</u> A.F. 1943 - 1957		
Colorado River Glenwood Springs	1,240,000	1,900,000	65	<u>1,069,000</u>
Roaring Fork River	700,000	958,000	73	<u>554,200</u>

On June 4, 1963, I met with representatives of the Northern Colorado Water Conservancy District and the Bureau of Reclamation at the Granby Pumping Plant to discuss operation of the Western Slope features of the Colorado-Big Thompson Project. It was felt by those present that Green Mountain Reservoir would not fill, but storage would be about 90,000 acre#feet by the time the snow#melt runoff was over. If this were true, ~~it meant that~~ there would only be 30,500 acre#feet stored in the Power Pool, which is the water that can be used for irrigation in Western Colorado. If the drouth continued, 30,500 acre#feet would not be sufficient for Western Colorado. It was agreed that we should have another meeting at a later date.

On June 18, I met with L. B. Card, Superintendent for Hydroelectric Production, and Ralph Wood, Superintendent of the Shoshone Power Plant for Public Service Company of Colorado. They agreed to cut the use of water at the Shoshone Hydroelectric Plant from 1,250 second#feet to 950 second#feet temporarily, the difference of 300 second#feet, or 600 acre#feet, per day to be withheld and stored in Green Mountain Reservoir and the City of Denver's Williams Fork Reservoir and to be released at a time when the water could be used for both power at Shoshone and irrigation on the lower Colorado River.

On June 24, I met again with the Northern Colorado Water Conservancy District and the Bureau of Reclamation representatives and later the same day with representatives of the Denver Water Board. It was agreed by all that they would store the water in Green Mountain and Williams Fork Reservoirs.

Because of the above arrangement, about 20,000 acre#feet of water that otherwise would have run on down the Colorado River and been lost was saved for later use.

The Colorado River dropped below 1,250 cubic feet per second at Dotsero on June 28, making it necessary to close transmountain diversions except those having replacement water.

Colorado Springs was badly in need of water for Domestic use and made a deal with the City of Denver to purchase 2,000 acre#feet of water from Williams Fork Reservoir for replacement water at \$60 an acre#foot, a total of \$120,000 for the 2,000 acre#feet. Under this contract, we allowed Colorado Springs to again turn on its transmountain diversion and we started releasing water from the Williams Fork Reservoir to compensate for that being taken by Colorado Springs. When the 2,000 acre#feet had been diverted, Colorado Springs made a new contract with Denver and continued to divert until October 22. The sale price was \$60 an acre#foot, the same charge specified in the earlier contract.

Despite the fact that water was released from Green Mountain Reservoir on the Blue River throughout most of August for irrigation in Western Colorado, almost 8,000 acre#feet of water was stored in the Reservoir during the month. Storage on July 31 was 101,000 acre#feet and storage August 31 was 109,000 acre-feet. Rainfall was more than three times normal in August on the Green Mountain watershed, and the agreement with Public Service Company, City of Denver, and Northern Colorado Water Conservancy District was responsible for this increase in storage.

Denver started storing water in the Dillon Reservoir on September 3, 1963. The reservoir capacity is 262,000 acre#feet. The Dillon Reservoir is a unit in Denver's Transmountain Diversion Project to bring water from the Blue River through the Roberts Tunnel to Denver. Water was diverted around Dillon Dam through an old Public Service Company power canal that once served a hydroelectric plant below Dillon. This water, plus inflow from Straight Creek and other tributaries, took care of senior rights on the Blue River between Dillon Dam and Green Mountain Reservoir. At the same time,

water was released from Denver's Williams Fork Reservoir into the Colorado River to compensate for water being withheld in Dillon Reservoir. This water took care of senior rights on the lower Colorado River.

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

	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>Capacity of Each</u>
Granby Reservoir	385,040	504,801	457,400	539,758
Green Mountain Reservoir	95,283	131,909	152,616	154,645
Williams Fork Reservoir	37,553	85,833	69,972	93,000
Dillon Reservoir	8,200	0	0	<u>262,000</u>
			Total	1,049,403

During May, June, July, and the first part of August, both farmers and stockmen were hard hit by the effects of the long drouth. Crops, range, and livestock conditions all improved after the rains the latter part of August and early September.

Fruit

Warm weather last fall which encouraged fruit buds to form was followed by the severe winter and late spring frost in the Palisade area and resulted in one of the smallest peach crops of record.

The cherry crop was almost a complete failure. One large cherry orchard that has over 5,000 trees and considers 100 tons a good crop and 70 tons a fair crop had just a few cherries on some trees this year.

The apple crop was good this year, being not quite as large, but of very good quality. This seems to be mostly due to the long, warm fall weather.

34 degrees below zero in January, plus a hard freeze on May 12 were the causes of the poor peach and cherry crops.

Crops, etc.

Range feed improved greatly during August as a result of the drouth-breaking rains and cooler temperatures. Livestock were grazing on new grass growth on the best range grazing of the season.

Sugar beet tonnages are down this season. Yields as low as 15 tons to the acre have been reported by growers who figure a minimum of 18 tons as the break-even point.

Potatoes are of good quality this year, but acreage is down considerably from last year.

Hay and grain yields have been about average this season despite the drouth.

The outlook for next year is not good at this time. September and October have been very dry and temperatures have been above normal which ~~has~~ resulted in below-normal flow in streams. The Roaring Fork River at Glenwood Springs for October had a mean flow of 362 cubic feet per second, a new minimum for the stream at that station for October, 62 percent of median; total runoff - 22,260 acre-feet, 62 percent of median. October, 1962: mean flow was 998 cubic feet per second. Snowfall in the mountains up to November 1 has been very light.

Yours truly,

R. L. Finley

Irrigation Division Engineer
Irrigation Division No.5

District No.	No. of Ditches Reported	First Day Water Was Used	Last Day Water Was Used	Average Daily Amount Diverted Sec. Ft.	No. of Acre Feet Used from Stream	No. of Acres Irrigated
36	17	5-1	10-31	45.30	11,316	2,532
37	199	5-1	10-4	440.50	132,237	21,762
38	100	4-1	10-24	428.37	130,146	30,085
39	125	11-1	10-31	333.42	144,234	20,899
45	105	2-6	10-31	249.66	61,018	23,708
50	107	4-1	10-1	358.55	68,571	18,838
51	197	4-11	9-10	821.20	155,077	38,065
52	107	4-15	10-31	226.50	32,098	7,215
53	217	4-1	10-31	617.80	75,259	22,721
70	63	2-15	10-31	82.81	16,182	8,880
Totals 1237				<u>3,604.11</u>	<u>826,138</u>	<u>194,705</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 Irrigation season.

	<u>Acre-feet</u>
To Division No.1	
Adams Tunnel	<u>285,240</u>
Grand River	<u>15,600</u>
Berthoud	<u>384</u>
Eureka	<u>86</u>
Williams Fork	<u>5,200</u>
Moffat Tunnel	<u>45,140</u>
Colorado Springs - Hoosier Pass	<u>9,850</u>
Boreas Pass	<u>985</u>
Total Acre-Feet	<u><u>362,485</u></u>

To Division No.2	
Twin Lakes Tunnel	<u>31,940</u>
Busk*Ivanhoe Tunnel	<u>3,700</u>
Ewing Ditch)	<u>290</u>
Wurtz)	
) City of Pueblo	<u>1,300</u>
Columbine Ditch)	<u>803</u>
Fremont Pass Ditch	<u>0</u>
Total Acre-Feet	<u>38,033</u>
Grand Total Acre-Feet	<u><u>400,518</u></u>

The following are the U. S. Geological Survey data for
the Roaring Fork River at Glenwood Springs:

1 9 6 3

September Mean Flow, 579 second feet, 103% of median.

September Runoff, 34,430 acre feet.

Water Year Runoff, 557,290 acre feet, 63% of median.

1 9 6 2

September Mean Flow, 585 second feet.

Total September Runoff, 34,800 acre feet.

Water Year Total, 1,135,000 acre feet.

The Roaring Fork River at Glenwood Springs for October had a mean flow of 362 cubic feet per second, which was 62% of the median and was a new minimum for the stream at that station for October. The total runoff was 22,260 acre feet, which was 62% of the median. In October, 1962, the mean flow was 998 cubic feet per second. Snowfall in the mountains up to November 1 has been very light.