

November 30, 1968

Mr. A. Ralph Owens
State Engineer
Denver, Colorado

Dear Sir:

In compliance with provisions of law, here is my first annual report as Division Engineer for Irrigation Division Number 5 for the year ending November 30, 1968.

I started work with the Division of Water Resources on May 13, 1968, as assistant to Division Engineer, L. L. Finley. During the balance of this water year I have been understudying Mr. Finley in order to take over the position of Division Engineer subsequent to his retirement.

Time passed very swiftly this summer as I was very busy becoming familiar with the duties of Division Engineer. I was able to visit most of each water district in a general way but time did not allow a visit to every ditch or reservoir facility.

Les Finley's ample direction and assistance has been most adequate in familiarizing me with the problems of water administration.

Of all the problems in this Division, the complications involved in trans-mountain diversions seemed most perplexing in the beginning. As the year progressed a better understanding evolved from direct contact with these problems.

I look forward to the forthcoming irrigation season and anticipate it will contain an abundance of experiences for me.

As of mid-May, mountain snow pack remained excellent. Amounts on May 1st varied from 169 per cent of 18 year average to 86 per cent of average.

The above average normal snow pack was primarily due to cool temperatures

and scattered snow storms during the first part of May. Cool climatic conditions delayed the start of runoff in the spring. In fact, unseasonably cold weather and scattered May snow storms resulted in near record snow pack measurements on June 1st.

As of May 1st, above normal water supplies were forecast. These forecasts ranged from a low of 91 per cent on the Blue to a high of 112 per cent on the Roaring Fork. Mountain soils were wet and this condition contributed to good stream flow.

Generally, above normal stream flows occurred during the water year as predicted. Below normal precipitation in March and cold weather in early May delayed normal runoff thru April and late May. Total June precipitation, however, was above normal.

Following is a table showing the forecast flow and actual flow at Glenwood Springs of the Colorado and Roaring Fork Rivers as forecast on May 1, 1968, by the U. S. Weather Service and as measured by the U. S. Geological Survey:

Water Year Flow October 1967 thru September 1968

	<u>Forecast</u> <u>A. F.</u>	<u>15 yr. Average</u> <u>A. F.</u>	<u>Per cent</u> <u>15 yr. Average</u>	<u>Actual Flow</u> <u>A. F.</u>
Colorado River	2,000,000	1,930,000	103	<u>2,131,000</u>
Roaring Fork River	890,000	925,000	96	<u>804,000</u>

Storage in the Seven larger reservoirs as of September 30, 1968, was as follows:

	<u>1968</u>	<u>1967m</u>	<u>1966</u>	<u>Capacity</u>
Granby Reservoir	300,262	277,348	293,632	539,758
Green Mountain Reservoir	140,781	127,962	109,502	154,645
Williams Fork Reservoir	57,730	43,658	----	93,000
Willow Creek Reservoir	9,776	9,678	8,186	10,553
Dillon Reservoir	248,543	239,226	235,151	255,514
Homestake Reservoir	33,657	25,108	1,256	43,000
Ruedi Reservoir	<u>45,142</u>	----	----	<u>100,000</u>
Totals	835,891	722,980	647,727	1,196,470

Temperature averages were among the lowest in the records for April in the western portion of the Division. At Grand Junction this was the coldest April since 1920. Below average temperatures again occurred on the western slope during the month of August. Minimum temperatures on the 23rd, 24th and 31st equalled or exceeded previous record lows for August at several stations on the western slope.

Mesa County's peach crop received very little damage from early freezing. The crop fell short of early expectations but was still close to four times last year's shipments.

The early estimate was constantly revised downward as cool weather developed this summer which did not allow peaches to reach the size they would have otherwise.

The western Colorado apple crop was good and did not suffer from spring freeze or summer slow down.

Generally other crops were about average. Reports from the Colorado Crop and Livestock Reporting Service indicated that crop growth and development were slowed by cool temperatures during August.

Severe thunder storms in August caused property and crop damage from hail, flash flooding, and wind on the Western Slope near Grand Junction. Some damage to roads, bridges and ditches occurred on the Roan Creek Drainage in Water District 70.

The Silt Water Conservancy District assumed operation of the Bureau of Reclamation's Silt Project. They began pumping water from their pumping plant on the Colorado River, east of Silt, on May 4th. They continued to pump thru September 28th. The pumping plant is supplied

water from Green Mountain Reservoir during periods of shortages.

4,307 A. F. were pumped by the plant this season. The natural flows in the Colorado River sufficed for Silt's pumping operation without specific releases from Green Mountain Reservoir. Storage in Rifle Gap reservoir on September 30th was 2,347 A. F.

The Bureau of Reclamation's Frying Pan Arkansas Project on the western slope has been partially completed. Ruedi Reservoir was completed this spring and work is still in progress on the Chapman, South Fork and Divide Tunnels.

Storage was started late in May in Ruedi Reservoir. Early storage was delayed because the outlet gates were not complete and some of the contractor's machinery and other things were still in the reservoir bottom.

The reservoir has been built primarily to furnish replacement water to the western slope so as to permit diversions to the eastern slope at times when such diversions could not otherwise be made because of simultaneous demands of senior divertors downstream. Water not needed for replacement will be available for sale for municipal and industrial purposes, particularly for future oil shale uses and irrigation.

Trans-mountain diversions are expected to begin on a limited basis in 1970. Studies are being conducted by the Bureau of Reclamation to determine the quantity of replacement water required in regard to the future exercise of existing Colorado River Basin water rights for West and East Slope uses. Studies are also being made to determine the uses of Ruedi water in excess of replacement water.

The Southeastern Colorado Water Conservancy District is the legal source

of repayment to the Federal Government for the \$203 million needed to complete the project. They are currently determining the allocations of the East slope water.

Homestake Reservoir and diversion facilities shared by Colorado Springs and Aurora operated on a full scale this season. Diversions continued from April 24th until September 8th. They experienced some delay in earlier diversions this year because of a malfunction in the diversion tunnel outlet gates. This was corrected after investigations made by divers and revealed that one gate had been installed incorrectly. The mechanism for opening and closing the gate had been reversed.

A sizable leakage has occurred in the right or east abutment of the dam. Investigations so far have not revealed the exact location or nature of the leak. Further investigations are planned by Bechtel Corporation to determine the nature of the leakage and the necessary repairs required to correct it.

On September 13th, the Grand Valley Water users requested releases from Green Mountain Reservoir. Compared to last year this request came one month later this year.

A total of **19,800** A.F. was released from Green Mtn. Reservoir for the Grand Valley Project. Releases continued until **October 31st.**

In conclusion, according to Mr. Finley, this has been an unusually easy water year. There were no outstanding problems involving water administration because of the adequate water supply. I am sure that future drier years will reveal many varied problems to broaden my experience.

Mr. A. Ralph Owens

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I would like to thank you, Mr. Finley, and all those in the Office of the State Engineer for the help and advice extended to me this first season as Division Engineer.

Yours very truly,

Donald L. Smith

Donald L. Smith
Irrigation Division Engineer

TRANS-MOUNTAIN DIVERSIONS

Following is a report of the Trans-Mountain Diversions from Division Number 5 to Diversion Number 1 and Diversion Number 2 for the 1968 water year.

Name	<u>To Division NO. 1</u>	Acre Feet
Adams Tunnel		
Grand River Ditch		
Berthoud		
Eureka		
Williams Fork		
Moffat		
Colorado Springs - Hoosier Pass		
Boreas Pass		
Harold Roberts Tunnel		

Total Diversion

	<u>To Division No. 2</u>	
Twin Lakes Tunnel		
Busk Ivanhoe Tunnel		
Larkspur Ditch		
Ewing Ditch)	
)	
Wurtz Ditch)	City of Pueblo
)	
Columbine Ditch)	
Fremont Pass Ditch		
Homestake Tunnel - Colorado Springs		

Total Diversion

GRAND TOTAL DIVERSION

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DISTRICT NO.	NO. OF DITCHES REPORTED	FIRST DAY WATER WAS USED	LAST DAY WATER WAS USED	AVERAGE DAILY AMOUNT DIVERTED c.f.s.	NO OF ACRE FEET USED FROM STREAM	NO. OF ACRES IRRIGATED
36	164	5/24/68	9/6/68	609.4	116,562	15,157
37	202	5/19/68	10/12/68	540.3	166,987	21,479
38	76	4/18/68	10/31/68	659.9	177,447	28,840
39	104	11/1/67	10/31/68	310.6	115,339	21,868
45	108	4/10/68	10/31/68	400.0	54,526	120,004
50	107	4/3/68	9/21/68	421.9	52,217	18,763
51	205	1/1/68	10/31/68	1036.7	189,854	38,151
52	81	5/1/68	10/31/68	135.2	29,584	6,565
53	173	11/1/67	10/31/68	459.3	81,782	23,720
70	48	11/1/67	10/31/68	176.7	36,767	7,747
TOTALS	1,268			4,750.1	1,012,065	302,294

December 18m 1968

Bill Smith:

Here is my account of irrigation water
use totals to be included in my annual report.

Don Smith