

Alamosa, Colorado,
November 30, 1953

Mr. M. C. Hinderlider,
State Engineer,
State Capitol Building,
Denver, Colorado

Herewith is submitted my annual report as Irrigation Division Engineer for Division No. 3 for the year 1953. This report includes tabulated summarized statements of the reports of the water commissioner of the various water districts of the amounts of water diverted from the streams, of reservoir storage and of the number of acres irrigated.

The 1953 irrigation season in this division was considerably below normal. On May 1st. the water content of the snow pack on the west of the Valley was only about 33% of normal and the forecast was about 50% of normal. However, the actual diversions of record to ditches in District No. 20 were about 63% of the past 10 year average. The diversions to ditches in the entire division were 65% of the past 10 year average, ranging from 63% in District No. 20 to 104% in District No. 25. The run off season was favorable to diversions, due to the lack of extended hot weather during the season, and the fact that the mountains were not dry as they were in 1952. The run off did not develop into flood proportions in any of the districts and hence, it was possible to divert a large percentage of the run off to ditches and very little of the run off was stored in reservoirs.

The season opened a bit earlier than usual and several of the water commissioners were called out about 10 days early. However, the weather turned colder and held the run off back. The lack of hot weather during the run off season held up stream flow longer than had been expected. Then there were some rains in the mountains in July which added to the stream flow. However, from about the first of

August until about the last week in October there was practically no precipitation in the Valley. Since that time there have been several storms and snow is already beginning to pile up in the higher elevations.

There were 58025 acre feet of water delivered from Reservoir storage during the season of which about 43000 acre feet were carried over from the 1952 season. Most of the larger reservoirs finished the season empty or practically so, there being only 4321 acre feet in storage on November 1st. of this year. The Trans-mountain diversions into this district were some 700 acre feet less than in 1952. The north end and the east side of the Valley fared better in the diversions to ditches than the west side of the Valley, which is a reversal of the trend for the past several years.

In District No. 21, the diversions to ditches were 74% of the past 10 year average compared to 124% in 1952. In District No. 22 the diversions to ditches were 63% of the previous 10 year average compared in 134% in 1952. The Platora Reservoir was again operated for flood control only, there being no water stored for conservation purposes. As yet there has been no agreement reached between the water users and the Conservancy District for the sale of any water that might be stored in this reservoir. There was considerable work done on the San Antonio River east of Antonito. About 5/8 of a mile of the channel was straightened and virtually a new channel dug, which will greatly aid the flow of water in this area. This work was paid for by the farmers interested. Mr. D. H. Mathias, Special Deputy State Engineer, in charge of the Rio Grande River will give a detailed report for District No. 20.

In District No. 24 the diversions to ditches were 73% of the past 10 year average. However, the run off season held up well and diversions were much better than had been anticipated. The Sanchez

Reservoir had 11114 acre feet in storage June 1st. of which 3652 acre feet were carried over from the previous season. On November 1st there were 2097 acre feet in storage, which has since been run out to the Eastdale # 1 Reservoir in order to make some repairs to the gates in the Sanchez. There were some repairs made to the dam on the Rito Seco Reservoir and permission was granted for storage on a very limited capacity. There have been some artesian wells and also pump wells dug in this district which have added materially to the productiveness of row crops in this area. There is an area of several thousand acres just east of the Rio Grande River and south of the highway from Antonito to Mesita being developed by means of pump wells.

District No. 25 had the best diversions to ditches, percentage wise, of any District in this diversion. The diversions this year were 104% of the past 10 year average. The run off in most of the creeks held up well which made possible the putting up of a good hay crop in this District. Several years ago the Newhall Land and Farming Company, A California Corporation, purchased the Luis Baca Grant an area in this district 12 miles square, and also considerable acreage in District No. 26 on Saguache Creek. This Corporation has done a good deal of land levelling and has put down a number of large pump wells.

In District No. 26, being Saguache Creek, the diversions were 76% of the previous 10 year average. The stream flow held up exceptionally well and the best hay crop was produced on upper Saguache Creek that many of the old timers can remember. In District 27 the diversions were 89% of the previous 10 year average. In this District the stream flow also held up exceptionally well giving this District a very good irrigation year.

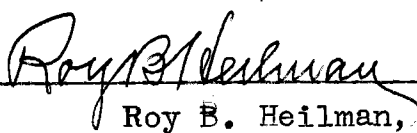
In District No. 35 the diversions were nearly normal, being 95% of the previous 10 year average. There was no big flow at any time permitting most of the water being diverted to ditches, there being only about 2000 acre feet of this seasons run off stored in the Mountain Home Reservoir.

On the whole, crops were good through out the Division. This was a good year for vegetables, the yield was fair and prices good. The prices for livestock and potatoes were down, which condition is reflected very definitely in the economic status of the Valley. Pastures were good and the mountain ranges were good, due to the timely rains.

Large artesian and pump wells are continuing to increase in number in the Valley, giving rise to considerable discussion of the advisability of a law to govern the digging of such wells and the regulation of their use.

Most of the administrative problems which arose were handled satisfactorily by the water commissioners in the various districts.

Respectfully submitted,



Roy B. Heilman,

Irrigation Division Engineer
Division No. 3.

SUMMARY
WATER COMMISSIONERS' DITCH REPORTS
 1953
IRRIGATION DIVISION NO. 3

No. of Water District	Number of Ditches Reporting	First Day Water was carried	Last Day Water was carried	No. Days Water carried	No. of Acre Feet carried by all
20	185	3-6	11-20	259	431918
21	75	3-16	10-31	230	72611
22	97	3-21	10-31	225	191306
24	54	3-21	10-31	225	40773
25	51	3-21	10-31	225	48348
26	60	4-11	10-31	204	35326
27	34	4-15	10-31	200	10470
35	75	3-21	10-31	225	46599
Totals for Division	631				877351

No. of Water District	Total Acres that can be Irrigated	Total Acres Irrigated
20	440169	351835
21	58634	43962
22	107036	98031
24	47353	21433
25	34464	21721
26	37451	18136
27	10540	5605
35	38523	20718
Totals for Division	774170	581441

These figures include Reservoir Water and Trans-Mountain Diversions.

SUMMARY

WATER COMMISSIONERS' RESERVOIR REPORTS

1953

Name of Reservoir	Water District No.	Capacity in Acre Feet	Acre Feet in Storage		Acre Feet available	Total Acre feet deliver
			May 1	Nov. 1		
Rio Grande (Farmers Union)	20	51113	17601	0		15212
Santa Maria	20	43565	9859	482		8209
Continental	20	26716	6324	2015		4153
San Luis (Beaver Park)	20	4758	2535	0		2802
Metroz	20	395			395	72
Regan Lake	20	667		168	379	227
Little Ruby	20	225			140	128
Big Ruby	20				77	70
Sowards No. 1	20	121.5			121	26
Sowards No. 2	20	22.3				
Sowards No. 3	20	18.2				
Meadowlake	20	199.3				
Lock Laven	20	24.3				
Streams	20	40.				
Goose Lake	20	230			180	162
Hunters Lake	20	48				
Humphrey's Lake	20	842				
Mill Creek	20	42.85	Construction in 1953			
Elberta Park	20	599.				
Bristol Head#1	20	151)			109	82
Bristol Head#2	20	804)				
Spruce No. 1	20	111)			216	116
Spruce No. 2	20	105)				
Shaw Lake	20	491		25	491	424
Hermit #1-2-&3	20	200		100	200	90
Fuchs	20	237			209	187
Road Canon	20	1480				Not use
Lost Lakes- Lower	20	966)			1066	925
Lost Lake- Upper	20	100)				
Spring Creek	20	145				
Meadow Lake	20	114				
Trout Lake	20	320		0	320	292
S. U. Dude	20	120			70	64
Poage Lake	20	208			208	190
Squaw Lake	20	140			140	124
Terrace	21	17770	5968	1309		3577
La Jara	21	14052	2946	266		2234
Cove Lake	22	9710	1850	0		2868
Platora	22	60000 (?)	0	0		0
Sanchez	24	103155	6673	2097		8266
Eastdale No. 1	24	3468	634	0		669
Eastdale No. 2	24	3047	0	0		
Salazar No. 1	24	234	234			234

SUMMARY - Continued -
WATER COMMISSIONERS' RESERVOIR REPORTS
 1953

Name of Reservoir	Water District No.	Capacity in Acre Feet	Acre Feet in Storage		Acre Feet available	Total Acre feet delivered
			May 1	Nov. 1		
Salazar No. 2	24	35				
Mountain Home	35	20147	2785	653		3838
Smith	35	5336	3362	648		2784
Totals		372270	60761	7763	4321	58025

SUMMARY

1953 TRANS-MOUNTAIN DIVERSIONS

	Acre Feet
Weninuche	1706
Squaw Pass	192.
Tabor Spring Creek	182.
Treasure Pass	96.
Piedra	42
Total	2218

1953 RESERVOIR STORAGE REPORT - DIVISION NO. 3

AMOUNTS IN STORAGE IN ACRE FEET.

	Rio Grande	Santa Maria	Continental	Sanchez	Terrace
12-1-52	12304	8573	3278	3652	4396
1-1-53	13939	8971	Est. 3878	4410	4496
2-1-53	15335	9373	Est. 4478	4839	4596
3-1-53	16474	9656	5638	5360	4638
4-1-53	17601	9859	6342	6050	5371
5-1-53	17601	9859	6324	6673	5968
6-1-53	21698	10474	7767	11114	6317
7-1-53	0	4619	5796	11078	5917
8-1-53	0	759	1976	7022	4035
9-1-53	0	482	2015	2634	696
10-1-53	0	482	2015	1378	788
11-1-53	0	482	2015	2097	1309

	Mt. Home	Smith	Cove Lake	La Jara	San Luis Beaver Park
12-1-52	1602	1321	---	---	---
1-1-53	1898	1501	---	---	---
2-1-53	2116	1996	---	---	---
3-1-53	2237	2805	---	---	---
4-1-53	2505	3842	1327	---	2535
5-1-53	2785	3362	1850	2946	2535
6-1-53	3705	4191	2420	2836	3052
7-1-53	3508	2805	2090	2452	3052
8-1-53	1898	1591	1043	1859	2226
9-1-53	1136	1141	433	1281	1506
10-1-53	798	871	69	932	736
11-1-53	653	648	0	308	0

DIVIDION NO. 3

COMPARISON FOR PAST 10 YEAR PERIOD

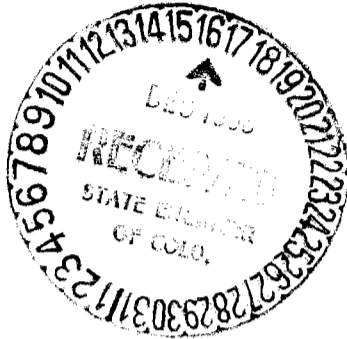
	No. of Acres Irrigated	Acre Feet of Water Delivered to Ditches
1944	749625	1557569
1945	746751	1318180
1946	698431	912394
1947	742289	1351229
1948	757041	1320484
1949	789722	1444440
1950	570392	964516
1951	359228	631136
1952	615338	1626360
1953	581441	877351

VEGETABLE SHIPMENTS

1953 Season to November 25, 1953

Lettuce	408	Railroad Car Loads
Mixed Vegetables	149	" " "
Garden Peas	154	" " "
Cabbage	153	" " "
Carrots	29	" " "
Cauliflower	339	" " "
Potatoes	3303	" " "
Spinach	2	" " "
Total Car Loads - - - - -		4537

These figures include truck shipments of potatoes to date.



Monte Vista, Colorado

December 15, 1953

Mr. M. C. Hinderlider
State Engineer
Denver, Colorado

Dear Mr. Hinderlider: -

Herewith I submit my annual report for the irrigation season of 1953 for Water District No. 20, Division No. 3.

WATER SUPPLY:

Following the irrigation season of 1952 in which the water supply on the upper Rio Grande River was some 200,000 acre feet above normal, the ground or sub-water this spring was up to average or better; a situation just reversed from that experienced in the spring of 1952 when our ground water stood at or near an all time low level.

The situation just referred to concerning the very low water level here in the spring of 1952, it seems to me, merits special consideration in my report to you at this time, for it has much to do in answering the question put to Colorado by the other two Compact States, New Mexico and Texas, namely why such an above normal use of water in the San Luis Valley in 1952. Following two drouth years it simply required heavy use of water to establish somewhat normal conditions in water District 20. As you well know, ground water levels greatly affect our irrigation operations, water demands and finally the total number of acre feet used in any given irrigation season.

Without figures to substantiate it, it would be a reasonable estimate, it seems, that some 200,000 acre feet were required to raise the sub-water to a normal level in the 1952 irrigation season.

Now, back to the 1953 season, the winter of 1952 and 1953 furnished a snow supply far below normal; April Co-operative Snow Survey indicated about 50 percent of normal.

Top moisture in the Valley generally last spring was not good.

Final available reservoir storage was about 40,000 acre feet or about 30 percent of some 132,000 acre feet total storage capacity.

Spring and early summer rains in the Valley were normal or better with the first two weeks in July bringing good rains, with a good boost to crops.

The month of August when we normally are favored with considerable precipitation we experienced perhaps the driest August on record with this drouth condition extending on through the month of September.

The total discharge of the Rio Grande River at the Del Norte Station October 1, 1952 to September 30, 1953 inc. was 415,700 acre feet or about 100,000 acre feet more than for 1951. The river discharge for the irrigation season March 1st to October 31st inc. was 360,900 acre feet.

As was anticipated, the drop in river discharge after June 20, was very sudden; total discharge for June was 146,900 acre feet, July 41,800 ~~acre feet~~ acre feet, August 21,800 acre feet, and September 12,000 acre feet.

DIVERSIONS:

Diversion and delivery to canals and ditches in water District 20 in 1953 in acre feet follows: -

Rio Grande River direct	407,125
Pinos and Frisco Creeks	8,672
Rock and Spring Creeks	8,247
Other misc. small streams	<u>7,847</u>
Total Acre Feet	431,918

Breaking it down thus: -

From river and small streams direct	396,436
From all reservoirs	33,555
From Trans Mountain Diversions	<u>1,927</u>
Total Acre Feet	431,918

It is interesting to observe that with the deliveries to canals and ditches from the river direct was 407,125 acre feet, with 21,425 total diversions to ditches above the Del Norte Gaging Station or a difference of 385,700 acre feet being the total diverted to ditches below the Del Norte Station; now with the river producing 360,900 acre feet at the Del Norte Station March 1st to October 31st - 385,700 minus 360,900 equals 24,800 acre feet the amount to cover error in administration and return flow or about 7 percent.

CROPS:

Damage to crops by hail was very slight, compared with many previous years, any damage that did occur covered very small areas.

Pumping for irrigation was very heavy from the middle of July on to the close of the season, with many new units put in operation.

Crop yields as a whole, were only slightly below normal. Garden truck was good in quality, good yields per acre, with prices much above normal but the acreage was small.

Grain and hay yields were light due, partly, to use of water on potatoes, which on the average, is a better paying crop. Potato yields were fair but prices were very low at harvest time and continue so to date.

IMPROVEMENTS AND REPAIRS - CANALS AND DITCHES:

Considerable improvement and repair work has been carried on with some new structures and rather extensive cleaning and brush removal on canals

The Alberta Park Dam was constructed on Pass Creek some two miles below the summit of Wolf Creek Pass.

The original filing map for the Alberta Park Reservoir was made by Engineer Mark U. Watrus and was accepted for filing in the office of the State Engineer November 3, 1930 Filing No. 15355, total capacity 599 Acre Feet.

The dam was built by the Mackey Construction Company of Monte Vista, Colorado under the direct supervision of Engineer Paul Davis and with only minor changes according to the plans and specifications furnished by Engineer Morris C. Burke and approved in the office of the State Engineer September 15, 1931, Filing No. C-253 - two sheets.

The original plans for the Alberta Park Dam called for an elaborate concrete gate tower, a timber walk-way and an 18" Cast Iron discharge pipe. The new type steel gate with sloping stem was installed with suitable steel trash rack and heavy duty corrugated steel discharge pipe.

The height of the dam was increased three feet, over that called for on plans, with the necessary additional bottom width, maintaining the same front and back slopes, namely 3:1 front and 2:1 back slopes.

The high water line elevation 10,525 or spillway crest level was not changed but the finished top of dam is at elevation 10,533' giving 8' free-board instead of 5' as called for on plans. It is my understanding that it is the desire of the owner to increase the storage capacity later if the water supply seems to justify.

Personal inspection was made of the Alberta Park Reservoir project at various stages of the work and I can state that never before in my experience, have I found more ideal conditions or better co-operation among all concerned.

The materials for the dam were most suitable and located just above the high-water line and adjacent to the left end of the dam. This material contained sufficient stone of proper size so the rip-rap was carried up as the work progressed and thus was practically completed when the earth fill was finished.

The spill-way was constructed according to plans and is situated in a rock cut at the right end of the dam.

All in all, the Alberta Park Dam is a nice piece of work, the only question apparent at this time is that of water supply or ability to fill each year. A feeder ditch may have to be constructed to carry water from another branch of Pass creek some two miles in length.

MILL CREEK RESERVOIR:

A small earth dam was constructed by Ralph Scheels, Contractor, Del Norte, Colorado, in a small basin adjacent to Mill Creek which flows into the South Fork of the Rio Grande a mile or so below the confluence of Beaver Creek and South Fork.

The Plans and Specifications for the Mill Creek Dam was furnished by Engineer Paul Davis, were accepted for filing in the office of the State Engineer January 7, 1952 - Filing No. 18,943.

The overall height of the dam is 20 feet and the capacity of the reservoir is 42.85 acre feet. The reservoir is to be filled by a very short feeder ditch, some 100 feet in length, from Mill Creek. The spill-way is situated in a natural saddle, apparently of ample width to take care of the runoff from a very small watershed.

CONDITION OF DAMS:

The series of small reservoirs on South Clear Creek, namely, Hermit Lakes 1, 2 and 3 Troutvale 1 and 2 and a new ^{one} ~~on~~ a small fish lake constructed this past summer, remain a constant hazard, for improvement and building up of the dams is far from satisfactory. The new small dam mentioned was put in without my knowledge; the owner Mr. Earl Brown of Creede (owner of Troutvale lakes) advised me late this fall of the new venture.

Water was stored in the Beaver Park Reservoir this past season up to gage height 70 feet with very satisfactory results; there being no apparent leakage immediately below the dam as was the case before the blanket fill was placed above. Storage remained in the reservoir at about gage height 70 for many weeks without any appreciable loss.

The new work is apparently in excellent condition except a slight movement of the outer concrete wall of the spillway just above and adjacent to the bridge.

The matter of the displacement of the concrete wall seemed serious enough to warrant frequent visits to the dam by Mr. Scheel and myself to observe any continued movement. Apparently the pressure from the new back fill started the movement but it appears now that it has become stabilized. However after a study with members of the District Board and contractor Scheel, it was agreed that it would be well to place heavy U-bolts and clamps around the rib or pilaster anchoring the wall to this heavy concrete section, pointing out that it might be necessary to remove some or all of the materials back of the wall in order to get the wall back some, thus preventing rupture of the wall near the bottom. As has been our experience with this group in the past nothing was done and the situation remains; only as mentioned, my observation late this fall was that no further movement is indicated but I am concerned as to what may occur again this spring during the freezing and thawing period.

PROSPECTS FOR 1954 - SEASON:

Any statement as to prospects for water for the next season naturally at this time is highly speculative but some actual conditions may be of interest.

Reservoir storage is very low but fall and winter run-off is slightly above that of recent years.

The sub or ground water table level in the Valley is somewhat below normal.

Top moisture on the Valley floor is good and well distributed.

Rain-fall and snow coverage since October 1st has been well above average. Precipitation at the Rio Grande Reservoir for the month of October was 4.25 inches, with similar reports from other areas on our western watershed.

A study of the storm pattern generally in this Rocky Mountain Region for the past two months indicates that the extended drouth period may be broken.

ADMINISTRATION:

No particular or serious difficulties of administration have occurred even though actual water shortage extended over a very long period, which leads me to conclude that water-users generally are coming to understand the tremendous task imposed upon those responsible for the administration of water and that they are thus more tolerant and considerate than some years previous; it has been a fair season with excellent co-operation by all.

Very truly yours,



D. H. Mathias
Special Deputy State Engineer

DHM:rc