

Monte Vista, Colorado
December 30, 1946

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

Dear Mr. Hinderlider:

Coming again to my annual report to you for Irrigation District 20; as has been the case frequently, what ^{was} promised by snow survey studies to be most favorable prospects proved not so well, and other years when the early conditions held little promise, the results were beyond expectations; the latter situation seems to apply for the season just passed. Too frequently, it seems, varying climatic conditions during the months of April and May tend to so completely change the forecast data set up by the Snow Survey Studies, the water users are inclined generally to belittle their value.

Due to almost an ideal run-off ^{from} of the small supply of high snow, and to rains from the middle of July on, also mostly in the high country, our irrigation season was far better than early prospects indicated; official Snow Reports showing 50% of normal April 1st, and 25% of normal May 1st.

Pumping.

With the river discharge 55% of the average for the previous five years, pumping was carried on very extensively throughout the district. Figures furnished in their annual report for this season for the Rio Grande Canal indicate that not less than 100,000 acre feet ~~was~~ ^{were} pumped for use on lands under this one system which represents close to 40% of the total amount of water applied. As nearly as could be ascertained, without a comprehensive study, the cost of this pumping was about a half million dollars or roughly, \$5.00 per acre foot. It is reported that 38 new irrigation wells were installed this past season on land under the Rio Grande Canal alone.

Curtailement during the war years of most types of construction left irrigation structures in bad repair. Thus there has been considerable activity on reservoirs, canals and ditches, both in repairs to old structures as well as some new construction.

As you know, a large section of the main dam and the discharge pipe at the Shaw Reservoir went out in July, 1945, and has not yet been rebuilt. The reservoir is so situated that it requires two dams, the north, or main dam, located on a small branch of Lake Fork Creek, and a smaller dam and spillway at the other end of the reservoir with over-flow into Hope Creek, both tributary to South Fork. The reservoir is filled by a feeder ditch from Cat Creek, a tributary of Hope Creek.

Shaw Reservoir Cont'd.

Assisted by Engineers from the Bureau of Reclamation, surveys were made at the Shaw Reservoir looking to raising and enlarging both dams and checking the capacity of the reservoir.

A road suitable for moving in dirt-handling machinery was first built from a point off Wolf Creek highway to the reservoir and the smaller or south dam was widened and raised to take care of the proposed enlargement with suitable spill-ways, one at each end of the dam.

Complete plans and specifications for the repairs and enlargement of the Shaw Reservoir are now being prepared and will soon be submitted to your office. Owners of the reservoir are Leon Raber, Tunis Hanna and Ted Paulson, all of Del Norte.

Trout Lake Reservoir.

Trout Lake Reservoir, owned by Gordon McCraney of Del Norte, is also being repaired and enlarged. A new discharge pipe and gate was installed this past summer and some work done on the old dam. Plans and specifications were submitted to you recently by Don La Fonte, of Creede, which, I am informed, were returned to him for some corrections and additions. This reservoir is located at the head waters of Trout Creek not situated on any definite stream but is fed by springs and melting snow at an altitude well above timber line.

As is the case with so many of the small reservoirs, they are so inaccessible that proper supervision and administration is most difficult. A visit to Trout Lake requires a journey by auto of 150 miles and a horse-back ride of 26 miles.

Troutvale #2 Reservoir.

Repairs have been carried on each year at Troutvale #2 on the spill-way which was all but washed out in the spring of 1941, slowly getting storage back up to original capacity. This is the lower reservoir on South Clear Creek below the Hermit Lakes property and is owned by Earl Brown of Creede.

Hermit Lakes Reservoir #3.

Briefly, I mention (for much discussion and correspondence has been carried on between us) the construction the past summer of a dam on South Clear Creek, known as Hermit #3, which recently in a letter to you, I questioned its stability if filled to capacity. This is not the first difficulty I have encountered with this particular group for they have consistently carried on the building of small dams and reservoirs without any notification to water officials and apparently with little knowledge as to proper design and construction procedure. It is hoped that your very recent letter addressed to Mr. Chas. Sickles (of which I have a copy) enlightening them as to proper procedure, will prevent further difficulty.

Beaver Park Reservoir.

You are familiar with the proposed repairs at Beaver Park dam with some little work started this fall in excavating for the ~~inlet~~ ^{outlet} conduit, required if the long discussed "earth blanket" is to be placed above the present dam. It is understood that work will be carried on this next summer with the steel and cement for the job already provided for.

Continental Reservoir.

A very important transaction was consummated this past season between the Del Norte Irrigation District, owners of the Continental Reservoir and the Rio Grande Canal Water Users Association, in which the Continental Reservoir became the property of the latter company by purchase, and very recently by further negotiations, was purchased by the Santa Maria Reservoir Company; thus the Continental and Santa Maria Reservoirs come under one ownership.

This arrangement, with both reservoirs under one head, has long been desired, greatly simplifying administration and tending to prevent the loss of considerable water during the storage season which has occurred in times past, due to lack of full co-operation between those in charge of the operation of the two reservoirs.

When the Rio Grande Canal Water Users Association took over the Continental Reservoir, they immediately set out to put it in good repair, first by building a new road from the Forest Service road leading to above the top of the dam in order to take in heavy machinery. To straighten out the bank on the south side of the spillway so as to give this steep hillside a proper line of repose and eliminate further sloughing of rock and dirt into the spillway required the removal of some 11,000 cubic yards of earth and rock. The spillway was then cleaned out and holes in the concrete walls of the spillway (damaged by falling rocks) were repaired; the creek channel below the reservoir was cleaned and very minor repairs made on the concrete at the portal of the outlet tunnel all at a cost exceeding \$13,000.00.

Inspection was made of the ^{outlet conduit} ~~tunnel~~ below the gates at the Continental ^{Reservoir} with the result that the concrete was found to be in most excellent condition, indicating that the work was well done in the beginning. New gage equipment must be installed as soon as conditions will permit.

Santa Maria Reservoir.

A new Stevens Type F, recorder has been delivered at the Santa Maria Reservoir awaiting installation when a new concrete wier section is placed in the outlet channel below the dam. Also new float gage equipment furnished by Stevens, to indicate reservoir levels, has been delivered, and ~~an~~ will be installed this spring, in the ~~gate~~ ^{gate} house on the dam.

VB/vz

Farmers Union Reservoir.

You are familiar with the situation relative to the trash rack difficulties encountered in recent years and more particularly this past season at the Farmers Union Reservoir.

With the reservoir emptied before ~~the~~ high water stage in June, there was imposed upon the uncovered trashracks the full flow of the Rio Grande ~~river~~ which records show ~~a discharge~~ on June 11, ~~at~~ 1,660 cu. ft. per sec. With much trash accumulating on the old racks it became impossible apparently to prevent the storage of some 5,000 acre feet of water, thus endangering the structure and placing the reservoir company in a very embarrassing situation, having obstructed the natural flow of a stream in a non-storage period. Had the high run-off period lasted for a considerable length of time, the situation would have been most serious.

1946

Upon my inspection of the trashracks in May, when they were exposed and previous to the usual spring floods, anticipating something of the problems ahead, I recommended, and upon your approval, ~~the removal of~~ every other one of the vertical angles or needles in certain sections of the rack, being much too closely spaced to permit proper operation, *new trashrack*
out With my insisting and pressure upon the officials of the company and those directly in charge, they apparently not realizing the seriousness of the situation, failed to get the job done until after the experience cited above; later the angles were cut out with electric torch.

As you know, the story is a long one, how every effort seemed to be put forth to get a new trashrack installed this past season at the Farmers Union dam, but with so many obstacles to overcome, it has been postponed until next summer; with all the steel fabricated and *now* delivered at Center, it would seem that the new structure would be completed this coming season.

Very recently repairs were made, *to* re-enforcing the old structure in order that it might be made to function with some degree of safety for another storage season. I have not had the opportunity to inspect the repairs but I am informed by Mr. Wills, the superintendent in charge of the work, that a 7" I-beam, itself re-enforced, *was* placed horizontally against the up-stream section of the rack at about mid-point of the exposed area. Welded to this member were three 80 pound rail sections to act as braces, *and transmit the* thrust against the concrete headwall of tunnel; the three rails being cross braced at their centers in form of an A and all joints electrically welded.

Elk Creek project.

A project which will have little to do, perhaps, with irrigation, consists of a series of small dams to be constructed on Elk Creek, a small stream emptying into the Rio Grande just below Masonic Park, the development primarily for fishing and pleasure; your office has recently accepted for filing and approved plans and specifications for two dams known as Elk Creek Reservoirs numbers One and Two.

Work was started this fall on the lower dam and was carried on until freezing temperatures prevented satisfactory compaction of the earth fill. The cut-off trench and back-fill was about 80% completed, the 6" pipe drain placed, the 24" discharge pipe installed and the concrete inlet structure completed; it being understood that work will be continued as soon as weather conditions will permit next spring.

Canals and Ditches.

On the canals and ditches, rather extensive repairs and replacement of old structures were made after the many years of ~~retarded~~ inactivity.

Calco meter gates are being installed quite generally on two of the larger canals, the Rio Grande and the Monte Vista, with rather favorable operation, both from the standpoint of the distributor and the water user.

The Parshall flume has not been generally satisfactory here, due to the excessive frost heaving each winter, ^{which} ~~requires~~ considerable attention each spring in getting the structure leveled and in proper position; this is especially true of the wooden flumes. The one piece steel Parshall measuring flume, in the smaller sizes, now being manufactured by various steel companies, seem to be better suited to our needs as they can be held more nearly in true position.

General observations.

Mention should be made of some misfortunes befalling the farmers here the past season.

Heavy hail storms occurred in the spring when crops were just well started, covering rather wide areas which resulted in lowering the grain yields and injuring potatoes and alfalfa.

As days go by and farmers dig deeper into their potato storage cellars it is evident that the very unusual and abnormally low temperatures on October 11th and 12th last, did untold damage to the potato crop in the valley generally; so much so that it is the ~~consentient~~ ^{general} opinion now that the grower would have been ahead financially had the potatoes ^{which} ~~still~~ ^{were} in the ground at the time of the freeze, been left unharvested. Conservative estimates place the loss to the farmers of the valley to be about one third of the crop raised, ~~worth approximately \$1,000,000~~ ^{or \$1,000,000}. Prospects for sufficient good sound seed for spring planting now offers a very serious problem.

There have been few, if any, serious administrative problems this past season. The problem of covering the district as required is becoming more difficult each year, partly due to the increased demand for more accurate measurement and distribution of the water, partly to much slower and inadequate telephone service and largely due to the very high cost of, and almost impossible repairing and replacing of automobiles. In this connection, the need of the equipment for recording the gage heights, in this office, of the river especially of the Del Norte station becomes more apparent each year.

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Prospect⁴ at this time, for irrigation water for next season are far brighter than they were last year at this date, with drainage areas well soaked with late summer and fall rains and with better than normal snow coverage, unofficially, reported.

Respectfully submitted,

David H. Mathias

Special Deputy State Engineer

DH/hp

Alamosa, Colorado,
November 21, 1946

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

Dear Mr. Hinderlider:

Herewith is submitted the annual report of the Division Engineer for Division No. 3, which report consists of tabulated statements of the reports from the Water Commissioners for the various districts showing diversions, crop and reservoir storage.

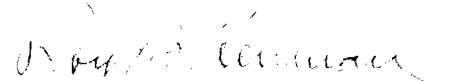
This year the spring season was very early, in some instances the spring run off started some three weeks earlier than usual. The water supply was short and hence, the run off season was also short. A good many ditches received no water from the stream flow. Good rains came early in July over most of the Valley, and continued through most of the growing season. Artesian wells and pumps were used extensively again this year. A large number of new irrigation pumps were installed and so many pumps were used and for so long, that the Public Service Company restricted the use of electricity for other purposes. Pumps were installed in some areas in which they had not been used before.

The reservoir storage was low at the start of the season and the light run off did not furnish any water for storage purposes. All the larger reservoirs finished the season practically empty.

Due to the poor outlook for water at the start of the season, the acreage for most of the row crops was reduced. However, the crop yield for the acreage planted was fair except in the north part of the Valley where the water supply was very short, which resulted in even a shorter crop than in 1945.

During the early part of the season the range in the mountains was poor, but when the rains started the pasture came out in good shape and livestock finished the season in good condition.

Respectfully submitted,



Roy B. Heilman,
Irrigation Division Engineer,
Division No. 3.

WATER COMMISSIONERS' DITCH REPORTS

1946

No. of Water District	No. of Ditches Reporting	First day Water was Carried	Last day Water was Carried	No. of Acre Feet Carried by all
20	150	2-26	10-31	478541
21	62	3-23	11-15	64740
22	115	3-21	10-31	233561
24	52	4-11	10-31	43537
25	35	4- 1	10-31	24119
26	39	4- 1	10-31	35052
27	20	4- 8	10-31	8213
35	43	4- 1	10-31	24631
Totals				912394

These figures include Reservoir water and Trans-Mountain Diversions.

WATER COMMISSIONERS' DITCH REPORTS

1946

Number of Acres

Water District	No. Acres That Can Be Irrigated	Alfalfa	Natural Grass	Cereals	Pasture	Garden Peas
20	495093	60306	44400	51138	94920	3664
21	54449	4525	9996	8066	6158	5317
22	186645	14203	25289	17957	23557	2148
24	49937	3065	2775	6415	2630	380
25	122121	1058	28099	659	91106	
26	58824	2379	32625	858	12673	
27	17955	943	4696	48	4369	28
35	32706	1918	5306	1470	1147	191
Totals:	1017730	88397	153186	86611	236560	11728

Number of Acres

Water District	Potatoes	Sugar Beets	Beans	Field Peas	Cab-bage	Lettuce
20	31235	903	13	9014	265	1285
21	2212		308	1890	92	7
22	1938	243	658	3449	112	13
24	1445		1435	4820	185	155
25						
26	42					
27	40		4	119		2
35	449		52	1341	476	106
Totals:	37361	1146	2470	20633	1130	1568

Number of Acres

Water District	Spinach	Sweet Clover	Summer Plow	Cauli-flower	Other Crops	Total Irrigated
20	139	28848	7800	339	4432	338701
21		1961	859	227	29	41647
22		7244	730	205	604	98350
24		240	105	1155	950	25755
25		363	266			121551
26					10	48587
27	2	10	60		138	10459
35	69	75	113	478	190	13381
Totals:	210	38741	9933	2404	6353	698431

WATER COMMISSIONERS' RESERVOIR REPORTS

1946

Name of Reservoir	District in which Located.	Capacity in Acre Feet	Amount in Storage		Amount of Water Delivered. Acre Feet.
			May 1, 1946. Acre Feet.	Nov. 1, 1946. Acre Feet.	
Rio Grande	20	51113	1962	(silt) 507	6305
Santa Maria	20	43565	6747	641	4601
Continental	20	26716	13145	1258	11813
San Luis Valley	20	4434	227	0	204
Spruce No. 1	20	52	51	0	50
Spruce No. 2	20	105	99	0	105
Fuchs	20	237	237	15	200
Troutvale No.1	20	510			96
Troutvale No.2	20	219			
Squaw	20	140	140		126
Poage	20	76	0		65
Shaw	20	100	100	0	85
Bristol No. 1	20	955	48	0	43
Bristol No. 2	20				
Road Canon	20	395	No Delivery		
Regan Lake	20	975	" "		
Lost Lake	20	966	521	0	434
Goose Lake	20	232	136	0	123
Trout Lake	20	198	198	0	115
Spring Creek	20	145	145		20
Meadow Lake	20	114			
S U Dude	20	120	120	0	73
Hermit No. 1	20	123	No Delivery		
Hermit No. 2	20	74	" "		
Metros	20	188	(162	0	198
Metros-Upper Lake	20		(28	0	
Terrace	21	17700	2438	658	1726
La Jara	21	14052	3056	796	1569
Cove Lake	22	7910	2090	0	1586
Sanchez	24	103155	9043	2604	16220
Eastdale No.1	24	3468	496	0	290
Salazar No. 2	24	142	50	0	292
Mt. Home	35	19150	3470	498	4360
Smith	35	5336	3987	1006	2208
Total for Division		302665	48701	7983	52901

RESERVOIRS STORAGE - 1946 - DIVISION No.3

AMOUNTS IN STORAGE IN ACRE FEET.

	Rio Grande (Farmer's Union) Reservoir	Santa Maria Reservoir	Continental Reservoir	Sanchez Reservoir
12-1-45	2628	3266	13212	4334
1-1-46	3804	4317	13145	5005
2-1-46	4856	4944	13144	6077
3-1-46	5855	5770	13144	6483
4-1-46	7533	6467	13144	7644
5-1-46	1967	6747	13145	9043
6-1-46	0	6611	10027	6857
7-1-46	0	5801	2821	4092
8-1-46	0	2799	0	2182
9-1-46	0	2049	0	2928
10-1-46	0	661	1258	2582
11-1-46	0	641	1258	2604

	Terrace Reservoir	Mt. Home Reservoir	Smith Reservoir	Cove Lake Reservoir	La Jara Reservoir
12-1-45	2780	2003	2911	0	2546
1-1-46	1006	2367	3464	0	2546
2-1-46	1435	2622	4021	0	2546
3-1-46	1647	2871	5336	0	2781
4-1-46	2246	3284	5336	0	3056
5-1-46	2438	3470	3987	2090	3056
6-1-46	2426	3158	2872	1500	2687
7-1-46	2028	1602	1546	464	1881
8-1-46	1589	653	518	0	981
9-1-46	1647	514	0	0	981
10-1-46	517	504	0	0	981
11-1-46	658	498	1006	0	796

VEGETABLE SHIPMENTS

1946 Season

Lettuce	383	carloads
Mixed Vegetables	659	"
Spinach	59	"
Garden Peas	816	"
Cabbage	315	"
Carrots	6	"
Cauliflower	934	"
Potatoes	7350	" - Estimated.
Total	10522	"

SUMMARY
TRANSMOUNTAIN DIVERSIONS

	Acre feet
Wemuche -	
Raber-Lohr	1480.25
Fuchs	471.82
Spring Creek Pass (Tabor)	546.50
Treasure Pass	77.90
Piedra	61.90
Squaw	243.00
Total	2881.37

COMPARISON FOR 10 YEAR PERIOD.

	<u>No. of Acres Irrigated.</u>	<u>Acre Feet of Water Delivered to Ditches.</u>
1937	646082	1110519
1938	702392	1371664
1939	715332	994770
1940	664267	769141
1941	717654	1635840
1942	733996	1398212
1943	769680	1123219
1944	749625	1557569
1945	746751	1318180
1946	698431	912394
<i>Totals</i>	<i>7,144,201</i>	<i>12,191,508</i>
<i>Average</i>	<i>714,420</i>	<i>1,219,151</i>