1949

Durango, Colorado.
February 25, 1950.

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

Dear Sir:

This is to submit the annual report of Irrigation Division Seven for the year 1949.

Respectfully yours,

J. R. Williams
Division Engineer.

ANNUAL REPORT OF DIVISION ENGINEER

IRRIGATION DIVISION 7

----- 1949 -----

Water Supply

The accumulated snow cover on the San Juan and Dolores Rivers at high elevations as of April 1st. was an average of sixty percent in excess of the mean in water content for the period of record or 13 years. The greatest amount at any station was at Upper San Juan on the west side of Wolf Creek Pass at elevation of ten thousand feet where the snow depth was 124.5 inches with water content of 47.2 inches.

The entire drainage areas were snow covered above the locations of principal recording stations on the streams. It was expected that there would be excessive early runoff but the weather during April and May was not such as to cause rapid melting. The snow gradually disappeared from the lower areas in April with rapid ground absorption and no apparent increase of surface runoff which was about average. On May 1st. the estimates made on streams on the basis of existing snow cover and water ccontent were: San Juan 132 percent, Dolores 134, Animas 28. Although the snow surveys on the Animas at Cascade and at Silverton showed a depreciation of all but 28 percent of the average supply by May 1st. this was not a true picture of existing conditions at that time. There remained great depths of snow at higher elevations and in unexposed areas.

The forecasts of stream discharge as of April 1st. for the Animas at Durango was 650,000 acre feet. The approximate discharge was 643,000 acre feet.

There occurred excessive precipitation during May and June. Heavy rains on the remaining snow fell on June 17, 18 and 19th. causing floods on all streams. Flood peaks reached the recording stations either on night of the 18th. or early on the 19th. and approximated the flood stages of May 1941 but

far under the maximum floods of 1911 and of 1927. The maximum stage at Durango 8.30 feet. Estimated peak flow was 12,000 second feet. At Dolores the maximum flow was ~~about 7,500~~ 8,000 second feet.

Total monthly precipitation was deficient at most weather bureau stations during April, July, August and September. Ground water tables became depleted in late summer and surface flow was below normal.

Precipitation Table

U. S. Weather Station	April		May		June		July		August		Sept.		Total	
	Ins.	Dep.	Ins.	Dep.	Ins.	Dep.	Ins.	Dep.	Ins.	Dep.	Ins.	Dep.	Ins.	Dep.
Silverton	0.86	-0.94	1.92	+0.54	3.47	+1.90	1.93	-0.86	2.09	-1.07	2.17	-0.67	12.44	-1.10
Cascade	1.52	-0.94	2.77	+1.34	2.76	+1.51	1.31	-1.41	0.94	-2.03	2.07	-0.75	11.37	-2.28
Durango	1.06	-0.43	2.20	+1.08	2.73	+1.93	1.96	-0.00	0.93	-1.24	2.01	+0.08	10.89	+1.42
Rico	2.84	+0.50	2.25	+0.63	3.55	+2.35	2.65	-0.07	2.45	-0.30	2.10	-0.68	15.84	+2.33
Ft.Lewis	1.81	+0.40	2.24	+1.18	2.94	+2.17	2.72	-0.57	0.30	-1.99	1.00	-0.92	11.01	+1.41
Cortez	0.78	-0.67	1.51	+0.60	1.94	+1.34	0.91	-0.66	0.93	-0.82	0.48	-1.25	6.55	-1.46
Vallecito Dam	2.10	+0.08	2.81	+1.47	2.10	+1.27	2.10	+0.25	1.09	-2.10	2.28	+0.11	12.48	+1.08
Wolf Creek Pass	2.70	-2.07	4.40	+1.92	4.53	+2.61	3.90	+1.20	1.21	-3.40	3.96	+0.63	20.70	+0.89

Flood Damage

Heavy flood damages were caused by the flood June 18-19 to railroad tracks and bridges in Animas Canon north of Durango, to track and bridges of Rio Grande Southern near Mancos and along the Dolores River upstream from Dolores. Dams and headgates were badly damaged or washed away in some instances along the Dolores and Mancos Rivers. There was prolonged flooding of the Animas Valley with attendant losses of crops and the use of bottom land pasture.

The U. S. Engineers expended funds in early spring at Dolores in channel correction and raising of the river bank to prevent flooding of the Town of

Dolores. This was done as preventitive work from flood damage in anticipation of an extreme flood based on the snow surveys. The anticipated flood stage was much larger than that which actually occurred. The same group made a later study of flood damages on the river above Dolores.

Use of Water.

Direct flow use and diversions from storage were greater than usual. The total diversions from the streams amounted to 546,070 acre feet. A total of 91,770 acre feet was used from storage. A total of 157,304 acres was reported as irrigated. There remained a total of 64,140 acre feet in storage as of November 1.

Two new storage reservoirs were in operation this year. The Jackson Gulch Reservoir with a storable capacity of 10,000 ac. ft. and the John Stephen Reservoir near Pagosa Springs with a capacity of 600 acre feet. Water was stored at Jackson Gulch to a depth of 106 ft., when on May 16th., a bad leak thru the westerly abutting hill developed which necessitated the release of water from 6,400 ac. ft. to 5,760., 2,760 a.f. was released to the stream (West Mancos) for irrigation.

New Structures.

In the Mancos area, for the accurate measurement and recording of flow, there was placed measuring and recording devices at the inlet and outlet canals to and from Jackson Gulch Reservoir. About thirty new headgate and measuring devices were ordered installed on canals taking water from the streams in that locality. Seven ditch companies complied with the order during 1949. It is expected that there will be full compliance. Plans and specifications were furnished by this office. Grade and layout determinations were also made. Supervision of construction and inspection was performed by the water commissioner or deputy. The U. S. Soil Service made some installations for the ditch owners.

Crops.

Hay and small grain crops were generally good. The natural flow for

irrigation lasted until well along in July which was generally adequate for supply for small grain and the first cutting of hay. Late water from storage in most areas was used for the second crop of hay. The growing season between killing frost over most of the area was from May 23d. to October 9th., a period of 140 days. Water was used for irrigation of crops from April 15th. to Nov. 30th, a period of 230 days. Many areas produced three crops of alfalfa.

Administration.

There were no serious controversies during the year about water or the administration of the decreed rights.

Tabulation of Water Commissioners Annual Ditch Reports.

1949

Dist. No.	Amount Appropriated in Sec. Ft.	Capacity of Canals in .S.F.	First Day Water Was Used From Natural Stream	Last Day Water Was Used From Natural Stream	Number of Days Water Was Used	Average Daily Amount Used in Sec. Ft.
29	* 589	* 639				
30	589	936	April 20	Nov. 15	210	269
31	773	927	May 1	Oct. 31	184	493
33	274	524	April 15	Nov. 30	230	66
34	823	940	April 3	Oct. 11	216	329
69	137	78	April 1	Aug. 23	145	14
Total	3,185	4,044	April 1	Nov. 30	245	1,114

* Estimated by Division Engineer.

Continued.

Dist. No.	Number of Acre Feet Used From Natural Stream	Number of Acres That Can Be Irrigated	Crops Irrigated (Acres) Alfalfa	Natural Grass & Timothy	Cereals	Orchards
29	* 75,000	* 37,000				
30	113,120	60,670	9,968	5,991	11,171	639
31	181,410	64,700	12,303	24,398	13,310	333
33	30,600	22,670	5,113	1,099	8,256	41
34	141,980	65,610	15,401	7,305	14,332	954
69	3,960	2,530	695	610	910	
Total	546,070	219,880	43,480	39,403	47,979	1,967

Continued.

Dist. No.	Crops Irrigated (Acres) Gardens	Potatoes	Sweet Beans	Clover	Other Crops	Total Acres
29						* 15,000
30	4	322	690			28,785
31	82	53	30	1,008	2,063	53,680
33	68	16			40	14.633
34	6	402	4,186		293	42,879
69					112	2,327
Other	160	793	4.906	1,008	2,508	157,304

* Estimated by Division Engineer.

Water Commissioners Annual Reservoir Reports

---- 1949 ----

Dist. No.	Number of Reservoirs in District	Area of High Water Line in Acres	Capacity in Acre Feet	Amount in Storage on May 1st. in Ac.Ft.	Amount in Storage on Nov. 1st. in Ac. Ft.	First Day Was Used From Storage
29	5	* 670	* 1,500	* 1,500		
30	3	899	** 16,740	** 3,390	** 8,650	Aug. 8
31	2	3,077	128,050	32,340	43,500	Aug. 1
33	1	56	1,200	1,200	200	July 9
34	9	1,209	25,690	16,060	4,840	May 1
69	2	664	21,800	9,200	6,950	July 17
Total	22	6,575	191,980	63,690	64,140	May 1

* Estimated by Division Engineer. ** Includes 12,960 acre feet capacity of Electra Lake and the use of water for hydroelectric purposes from it.

Continued.

Dist. No.	Last Day Water Was Used From Storage	Number of Days Water Was Used	Average Daily Amount Used	Number of Acre Feet Used From Storage	Crops Irrigated (Acres): Alfalfa	Natural Grass & Timothy	Cereals
29			* 1,500	* 1,500			
30	Sept. 10	14	8.0	220	290	5	40
31	Oct. 31	92	298	54,840	12,083	23,814	13,171
33	Oct. 19	102	5.1	1,070	429	21	390
34	Oct. 6	159	64.8	20,620	2,228	988	2,071
69	Oct. 9	77	87.8	** 13,520	205		
Total	Oct. 31	184	249	91,770	15,235	24,828	15,672

* Estimated by Division Engineer. ** Includes 12,420 acre feet released to the stream and used in District No. 34.

Reservoir Reports Continued.

Dist. No.	Crops Irrigated (Acres)						
	Orchards	Gardens	Potatoes	Beans	Sweet Clover	Other Crops	Total
29							* 1,500
30	5						340
31	41	68	53	30	1,008	2,063	(a)52,331
33	25		3				868
34	101		26	718			(b)40,670
69							205
Total	172	68	82	748	1,008	2,063	102,046

* Estimated by Division Engineer.

(a) Total acreage irrigated in Pine River District to which supplemental water from storage was applied.

(b) Includes 6,132 acres irrigated solely from storage and 34,730 acres to which supplemental water was applied in Mancos and Montezuma Valley areas.

November 19-1949
Irr. Division 7- Durango, Colo.

Mr. M. C. Hinderlider,
State Engineer.

Dear Sir:

From the meager data thus far assembled for the 1949 season it is impossible to write a complete report.

Some general information is available from which this short report is given.

Water Supply: As of April 1st. the snow cover on the San Juan and Dolores River watersheds was about eighty percent above the average for the period of snow study reports by the U. S. D. A.

The entire drainage area was snow covered at elevations above the principal measuring stations on the several streams. Because of this condition it was expected that there would be excessive runoff during the early part of the season. Weather conditions did not develop to cause early or excessive runoff. Practically all of the snow cover at lower elevations was absorbed by the ground. Flow for the months of April and May was about average. In June it was 80 percent in excess of the longtime mean and in July the excess was 70 percent. Dry weather during July, August and September saw the last of the snow melt and depletion of ground water tables. Late summer stream flow was extremely low.

Excessive rain on the high snow area occurred on June 18, 19 which caused floods approximating in discharge those of May, 1941 but still a long way below the flood peaks of 1911 and 1927. The maximum flood peak at Durango was at stage of 8.30 feet with discharge of about 12,000 c.f.s. At Dolores the maximum was about 7,500 c.f.s.

There was heavy flood damage to railroad structure, particularly bridges in Animas Canon above Tacoma, on the Dolores below Rico and on the Mancos near the Town of Mancos. Diversion dams and headgates were cleaned on the Dolores and Mancos Rivers with the exception of of Main Canals which have a permanent structure near Dolores and which take water to the Montezuma Valley. The Army Engineers have been involved in a study of flood control on the Dolores River for the Town of Dolores and for the river channel above that point.

Use of Water: Direct flow use and diversions from storage were more than average. Total use from storage was approximately as follows:

Pine River- Vallecito Reservoir-----	55,000	a.f.
Dolores River- Ground Hog " -----	12,460	"
" Narraguinepp " -----	7,850	"
" Summit System -----	8, 500	"
Mancos " Jackson Gulch -----	2,760	"
" Bauer Lakes -----	1,250	"
" " Webber and Others ----	350	"
La Plata " Red Mesa ----	1,000	"
San Juan " All storage (est) ----	5,000	"
Total	94,170	"

There were two new reservoirs in operation which were completed late last year, viz: The Jackson Gulch Reservoir near Mancos and the Stephens Reservoir near Pagosa Springs. The latter has a capacity of only 600 acre feet all of which was used on the ranch of John Stephens. This dam was built under the direction of the U. S. Soil Service. Storage in Jackson Gulch was commenced on March 18th. On May 16th. storage depth had reached 106 feet. Total depth is 180 feet with capacity of 10,000 acre feet. On May 16th. a bad leak developed thru the westerly abutting hillside . Storage was reduced about four feet and from 6400 a.f. to 5760 a.f. Extensive cement grouting was done thru out the summer to seal the leak. Results will be known when storage is again increased. Release for irrigation of lands near Mancos commenced on July 31st. and continued to October 4th. A total of 2760 a.f. was released from storage to the stream for irrigation. 3000 a.f. remains in storage.

Amounts of Water Remaining in Storage: As of Nov. 1st. the several reservoirs had the followings amounts remaining:-

Vallecito Reservoir---------- 43,500 a.f.
Ground Hog " ---------- 6,950 "
Small amounts left in other reservoirs.

New Structures: In the Mancos area there were placed measuring and recording stations on the inlet and outlet canals at Jackson Dam. About thirty new headgates and measuring flumes were ordered installed on the ditches taking water from the Rio Mancos. Seven of such orders were fully complied with. The orders specified steel gates of standard design set in concrete structures. Measuring flumes were specified to be of steel as manufactured by Thompson or by Hardesty. Such flumes to be set on concrete sills and with concrete wings into the banks of the ditch. Plans and specifications were furnished by this office, grades and layout were established also by the writer. Supervision was by the Water Commissioner and / or Deputy. Some of the complete installations were made by the U. S. Soil Crews by contract with the ditch owners and under the authority of Case Wheeler Act.

Administration: There were no serious controversies during the year over the administration of water rights, either among local users or with New Mexico as related to the La Plata Compact. There is an administrative problem which is contemplated or visulaized and which will arise in the Mancos area unless the Court renders a decree soon in respect to the several claimants of flood water. For any number of years several ditches have claimed by filings and have diverted considerable amounts of water in excess of the decreed amounts. Now comes diversion of flood water to Jackson Gulch Reservoir. The question is: who shall be restricted in the diversion of flood water by water officials in the abscence of a decree.

A great amount of water was measured during the season in the streams and into the canals. Fishing and hunting was good. A tragic loss to all was suffered by the accidental drowning of Lee Reddert, Commissioner of Dist. 34 in late September.

Respectfully yours,

J. R. Williams

Division Engineer.