ANNUAL REPORT

DIVISION NO. I

1977 IRRIGATION YEAR

NOV. 1, 1976 - OCT. 31, 1977

BY

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DIVISION OF WATER RESOURCES

DEPARTMENT OF NATURAL RESOURCES
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January 10, 1977

Mr. C. J. Kuiper, State Engineer
Division of Water Resources
Room 818 - Centennial Building
1313 Sherman Street
Denver, Colorado 80203

Dear Mr. Kuiper:

Please find submitted herewith the annual report of Irrigation Division No. 1 for the 1977 water year. Due to the fact that some of the information presented is based upon preliminary tabulations and calculations, there may be some subsequent modification of such information upon finalizing the basic data. Such modifications are expected to be minor in nature.

The continuing drought in 1977, being in many areas the worst of record, created some very tough administrative problems. The encouragement, guidance, and assistance that we have received from you and your staff as well as the outstanding efforts of my own staff have been greatly appreciated.

In spite of deficient water supplies, agricultural production in Division 1 was very good which is not only a tribute to the agricultural community but also, I would like to believe, is indicative of the judgement and conscientious efforts of our water commissioners in the distribution of our water resource under adverse conditions. Urban water users recognized and accepted the problems associated with drought reduced water supplies and cooperated willingly with the restrictions deemed necessary to meet the circumstances.

Hopefully the water supplies for 1978 and following years will be much greater than those experienced during the past three or four years.

Sincerely,

W. G. Wilkinson

W. G. Wilkinson
Division Engineer

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1977 ANNUAL REPORT

I. INTRODUCTORY STATEMENT

Division 1 covers an area of some 28,068 square miles or approximately the northeast one-fourth of the State of Colorado. Of this, approximately 19,500 square miles is in the South Platte River Basin, 8,165 square miles in the Republican River Basin, and 403 square miles in the Laramie River Basin.

SOUTH PLATTE RIVER

The South Platte River starts at the Continental Divide, flows through South Park, down mountain canyons, out onto the plains in the Denver area, thence northeasterly and into Nebraska near the northeast corner of Colorado. The flow of the South Platte is augmented by a number of tributaries in the South Park area, the principal ones being the Middle and North Forks of the South Platte and Tarryall Creek. After leaving the mountains the South Platte is further augmented by several major tributaries arising at and east of the Continental Divide and flowing to the South Platte from the north and west. These major tributaries entering the South Platte in the Denver to Greeley area are Bear, Clear, Boulder and St. Vrain Creeks, and the Big Thompson and Cache la Poudre Rivers. Only normally minor and intermittent streams supplement the river flow from the south and east. However some of these, such as Plum, Cherry, Boxelder, Kiowa, Bijou, Badger, Beaver as well as Lone Tree, Coal, Wild Cat and Pawnee Creeks from the north and west are each capable of producing a major flood due to the extent and topography of their individual watersheds when subjected to intense precipitation.

In addition to the obvious tributary streams, the South Platte River is further supplemented very extensively, as are the tributaries themselves, by what is commonly referred to as return flow. This is water from springs, waste ditches, drains, seepage, etc., resulting generally from diversions for various uses, precipitation, and high water tables. Although the return flows resulting from the initial use of transmountain water have historically been considered a part of the natural stream subject to distribution under the priority system, the City of Denver continued the operation that they instituted in September of 1976 at which time they invoked the provisions of 37-82-106, CRS 1973, relating to the right of reuse of imported water. Through a detailed accounting system they are able to identify that portion of the effluent from Metro Sewer which is attributable to their current importation of Blue River water through the Roberts Tunnel. Denver then diverts by exchange at their intake as much of this calculated Blue River water return flow as the river flow at intake will support without injury to intervening water rights in that section of the stream between intake and sewer discharge. Denver also continues to study the treatment of wastewater for reuse as potable water through the operation of a pilot treatment plant.

The City of Aurora also claimed the reuse of their Homestake imported water to the extent that it could be identified and exchanged back up to their intake. This exchange was quite limited due to the lack of available stream flows to support the exchange in addition to supplying intervening water rights and the

Denver exchange previously discussed. During those periods when Aurora could not make its own exchange they did realize some monetary benefits from the sale of their transmountain effluent to the Central Colorado Water Conservancy District to be used as augmentation water in support of the Central member wells.

The elevations in the South Platte Basin vary from 14,000 feet at points along the Continental Divide to 3,400 feet at the Colorado-Nebraska line. The western one-third of the basin is mountainous in character and provides the principal source of water as the result of precipitation.

Of the 12,481,000 acres in the South Platte Basin, 9,469,470 acres are in farms and ranches. The balance of the area is owned by federal and state governments, public agencies, or included within municipalities. Within the farm areas are 1,137,000 irrigated acres and 7,557,000 acres of dry land according to the 1974 Agricultural Census.

The principal use of water in the mountain valleys is for meadow irrigation. Large volumes of water are released on meadows adjacent to the streams and, of this volume, a major proportion returns to the stream for reuse at lower elevations. The largest area of mountain valley irrigation is in South Park at elevations up to 11,000 feet. Other uses in the mountain areas include those of small municipalities, domestic, stock, power, mining, commercial and recreation needs.

The greatest use of water, by far, in the South Platte Basin is for agricultural purposes in the plains area at elevations between 3,500 and 5,000 feet. The water here supports a well developed, diversified agricultural economy that ranks high nationally in productivity. Much of the demand for water in areas downstream some 40 - 50 miles from the mountains is supplied from wells and by return flow from uses further upstream.

Stream flows in the South Platte Basin for 1977 were generally the lowest on record as a result of a drastically reduced winter snow pack and approximately 88 percent of normal rainfall during the irrigation season as well as the carryover effect of generally below normal precipitation the previous three years. Water District No. 64 was the only area in the basin which enjoyed above normal precipitation for the irrigation season but that benefit was partially offset by a very destructive hail in the Merino to Iliff area on June 18.

Although basin conditions were excessively dry, a general rain on July 24th and 25th provided some very timely moisture which, together with the judicious use of reservoir and well water, resulted in surprisingly good crop yields. The basin has been extremely fortunate in each of the last four consecutive years in receiving at least one good general rain at a time critical to agricultural production.

CBT project supplies and local reservoir storage have been seriously depleted in the effort to provide adequate water for irrigation.

The following tabulation indicates the total water in storage in the major reservoirs within each water district for the first of each month during the calendar year and the percentage as compared to the average of the previous 10 years. CBT project water storage is not included in this tabulation.

FIRST OF THE MONTH DISTRICT STORAGE IN ACRE FEET

DIST.	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG.	TOTAL STOR.	% AVG
1	97,505	113	99,237	103	105,493	93	127,176	102	135,879	105	126,730	105	86,727	68	60,198	67	23,972	50	13,159	40	24,432	55	69,065	96
2	55,459	109	65,270	117	73,108	122	77,057	119	75,662	113	68,201	106	47,471	74	28,309	62	8,581	39	7,328	34	7,719	23	20,908	45
3	96,095	82	97,711	80	100,160	80	103,087	80	109,160	80	119,608	84	110,997	65	102,243	72	65,881	66	60,886	66	67,482	62	71,332	62
4	73,196	89	72,558	89	72,738	89	71,916	86	74,413	86	72,068	77	51,705	52	50,947	61	43,052	63	40,815	55	54,595	67	55,201	67
5	39,660	94	39,465	92	39,358	92	39,155	90	40,186	88	40,353	84	38,419	77	37,247	89	32,151	101	30,153	84	30,816	80	31,258	81
6	58,217	83	57,316	82	55,759	82	56,190	84	60,652	92	68,885	89	81,234	84	72,917	80	61,373	81	55,357	78	48,565	67	51,443	71
7	25,648	110	27,778	108	28,360	104	29,776	100	30,998	99	28,759	90	26,459	77	23,427	80	18,287	79	15,662	75	16,167	75	16,323	70
8-80	72,175	80	68,334	77	66,498	76	70,283	78	71,615	74	71,938	71	69,190	70	68,108	70	66,653	70	59,571	65	66,289	73	65,019	73
9	8,297	126	8,272	124	7,665	116	7,880	112	8,956	109	9,363	105	8,802	97	6,886	87	6,161	88	5,398	84	4,370	69	4,565	65
23	106,091	95	106,780	96	106,723	96	106,375	96	107,044	97	106,927	96	107,115	92	106,171	91	104,828	92	101,890	90	100,181	89	99,539	88
64	69,235	77	92,677	94	110,146	104	115,874	99	123,373	105	116,892	98	103,142	90	60,345	90	31,677	85	18,904	58	28,596	50	46,139	60

The following tabulation reveals the precentage of the stream flows for 1977 as compared with the previous 10 years, both for the entire water year and for the April through September irrigation season at several of the principal stream gaging stations. Stream flows for 1977 are from preliminary records:

STATION	WATER YEAR 1967 THRU '76 AVERAGE AC.FT.	1977 AC.FT.	1977 % AVG.	APRIL THRU SEPT. '67 THRU '76 AVG.AC.FT.	1977 AC.FT.	1977 % AVG.
SOUTH PLATTE @ DENVER	272,620	119,000	44	220,478	75,790	34
SOUTH PLATTE @ HENDERSON	388,350	186,300	48	284,090	107,660	38
SOUTH PLATTE @ FT. LUPTON	186,132	175,000	94	134,262		
SOUTH PLATTE @ KERSEY	769,320	328,500	43	493,520	106,260	22
SOUTH PLATTE @ WELDONA	530,950	169,210	32	344,600	68,960	20
SOUTH PLATTE @ BALZAC	418,750	72,430	17	301,060	45,300	15
SOUTH PLATTE @ JULESBURG	454,740	111,700	25	274,180	47,000	17
CLEAR CREEK @ GOLDEN	155,480	87,620	56	133,000	67,430	51
CLEAR CREEK @ DERBY	73,080	9,090	12	59,520	5,790	10
BOULDER CREEK @ ORODELL	58,000	30,780	53	47,860	25,190	53
ST. VRAIN CREEK @ LYONS	86,230	20,220	23	79,520	35,860	45
ST. VRAIN CREEK NR. PLATTEVILLE	176,840	84,530	48	121,100	41,400	34
BIG THOMPSON @ CANYON	59,820	59,380	99	48,880	52,393	107
BIG THOMPSON NR. LA SALLE	74,350	49,890	67	47,140	24,140	51
CACHE LA POUDRE @ CANYON	229,320	94,010	41	215,880	83,080	38
CACHE LA POUDRE NR. GREELEY	104,900	49,510	47	62,010	14,350	23

Some 4879 wells operating under augmentation plans and as alternate points of diversion for surface rights withdrew an estimated 550,000 acre feet of water for irrigation from underground sources. Wells operating in approved augmentation did so either by replacing water to the stream to at least partially offset the stream depletion they were causing or by operating under decreed priorities which were legally entitled to be used in that manner. The two major augmentation plans for irrigation wells were G.A.S.P. with a membership of 2907 wells and Central Colorado Conservancy District with a membership of 882 of which 101 wells were members of both plans. Combined membership in these two plans accounts for some 76 percent of the protected wells. Additionally, in the Cache la Poudre Drainage 9 percent of the protected wells operate as alternate points of diversion and 11 percent have been decreed as nontributary.

The amount of replacement water required from plans covering wells diverting out of priority was based upon the anticipated pumping of those wells. The pumping was first distributed on a monthly basis over the irrigation season and a 5 percent replacement of that pumping diversion occurring during periods of senior demand was made on a concurrent basis. A total replacement of 22,045 Ac.Ft. was made to the river. Maximum replacement was at the rate of 175 cfs on August 15.

Wells operating as alternate points of diversion are not regulated as long as the decree to which they are attached is entitled to receive water.

Although several thousand proposed small capacity domestic and in-house use wells have been included in decreed augmentation plans, the actual construction and use of such wells is, as yet, comparatively minimal.

As a result of the inability in the summer of 1976 to move replacement surface water down the South Platte River in the reach between Harmony No. 1 and the South Reservation Ditches, G.A.S.P. constructed three wells upstream from the South Reservation headgate near Ovid with a combined capability to pump 16 cfs. G.A.S.P. reserved the first use of these wells to supply the replacement water for which they were responsible in that area. Any remaining capacity was then made available to those water users in that general area who could make use of the water either directly or by exchange. The right to use the additional capacity was on the basis of priority of ditch rights with the user paying the prorated operation and ownership costs. A problem arose as a result of high transportation losses in the unlined ditch between the wells and the South Reservation headgates. Some type of ditch lining or conduit is being considered prior to next year's operation.

As surface water supplies became abnormally limited in the later part of June, several of the direct flow ditches made written demands for water to fill their priorities. The water commissioners were instructed to issue regulatory orders on those out of priority diversions in an effort to meet those demands. Since wells constituted the bulk of such

out of priority diversions, the administrative efforts were directed toward finding those wells which were operating without the protection of an augmentation or alternate point plan.

In the South Platte tributary area, regulatory orders were issued on 87 wells. The 19 different owners of 48 of those wells failed to comply with those orders and as a consequence the Division of Water Resources has filed complaints with the Water Court against those owners asking for preliminary and permanent injunctions to prevent future violations. The earliest of the two hearings now set on any of those complaints will be on March 24, 1978 with the second one on May 4. Unfortunately, the delay in court action has tended to reduce the impact of any disciplinary action which may eventually result.

A problem which has developed in recent years and which appears to be accelerating in magnitude is that of expanded use. The principal tool for expanding the use of water is the sprinkler system. Due to the greater efficiency of sprinkler application as compared to flood or row irrigation, only some 50 percent to 70 percent as much water per unit area is required by the sprinkler to satisfy crop requirements. Consequently with a given amount of water a farmer can increase his crop acreage 50 percent to 100 percent by converting to sprinklers. Although the individual farmer making this expanded use benefits from increased total yield, the whole river system supply is reduced by the amount of the consumption on the increased acreage. Crop water requirements remain substantially constant regardless of means of application so sprinkler irrigation over increased acreage reduces the net return flows to the stream system thereby depriving downstream users of water upon which they have historically depended for their needs.

The net effect of such expanded use is a reallocation of benefits without an appreciable overall increase in production but with increased production costs mainly due to the energy requirements for operating the sprinklers.

In the absence of formal complaints to the Water Court by water users who may have suffered material injury as a result of the expanded uses of old direct water rights, no administrative regulations have yet been made to control them. It appears that litigation by the affected parties will be necessary to determine the legal limitations of beneficial use which may be made of old water rights.

A recent study made by the Earth Resources Department of Colorado State University compares the numbers of center pivot sprinklers and the irrigated acreages existing in 1973 and 1977. This information was developed through satellite photography and Landsat Mosaics. The following tabulation indicates the phenomenal growth in use of center pivots in the various counties in Division No. 1:

CENTER PIVOT COUNTS IN SELECTED
COLORADO COUNTIES FROM LANDSAT MOSAICS

	1973				1977			
COUNTY	S	M	L	TOTAL ACRES	S	M	L	TOTAL ACRES
NORTH CENTRAL								
ADAMS	9	1	0	1,360 (1,740)	58	1	0	7,520 (9,580)
ARAPAHOE	0	0	0		1	0	0	130 (160)
BOULDER	0	0	0		1	0	0	130 (160)
LARIMER	0	0	0		9	2	0	1,590 (2,030)
MORGAN	14	0	0	1,760 (2,240)	184	7	0	24,750 (31,510)
WELD	90	0	0	11,310 (14,400)	210*	5	0	27,550 (35,080)
NORTHEAST								
KIT CARSON	CLOUDS				171	5	0	22,650 (28,840)
LOGAN	67	0	0	8,420 (10,720)	162	3	1	21,560 (27,450)
PHILLIPS	113	5	0	15,360 (19,560)	182	7	3	26,000 (33,110)
SEDGWICK	22	0	0	2,770 (3,520)	84	0	0	10,560 (13,440)
WASHINGTON	49	2	0	6,620 (8,430)	153	7	2	21,860 (27,830)
YUMA	604	18	0	80,080 (101,950)	698	38	4	98,530 (125,450)

Agriculture continues to feel the bind of depressed commodity prices. The cost of production on wheat, beets and corn exceeds the market value of the crop in many instances. Livestock feeders have taken advantage of the reduced feed prices and are now able to show a little margin of profit. Ranchers however are still suffering from high production costs.

Reports indicate a much greater than normal number of scheduled farm and equipment auctions this winter as farmers are having difficulty obtaining extended credit for another year.

REPUBLICAN RIVER

The Republican River Basin in Eastern Colorado covers 5,226,000 acres. Of this area 4,350,770 acres are in farm and ranch land with 226,109 acres under irrigation and 4,124,661 acres of dry land as reported in the 1969 Agricultural Census.

This area is relatively dry and the surface streams, many of which are intermittent, provide only enough water for some lands adjacent thereto. The normal precipitation in this area is about 17.1 inches of which 13.6 inches or 80 percent falls during the April through September period.

Precipitation in the Republican Drainage was generally higher than normal this year, particularly through the early part of the summer. Crop yields were generally good.

Supplies from surface streams continued to decline in spite of the increased rainfall. This decline is generally attributed to the operation of wells in the designated ground water basins where the regulatory guidelines provide for the 40 percent depletion of available supplies in the Ogallala formation within a 25-year period. Studies indicate that the Ogallala has historically provided a substantial portion of the surface flows and consequently as those aquifer levels drop the normal outflow from them is diminished.

The reduced surface flow resulted in a formal demand or call being placed upstream by the Pioneer Ditch in mid-July. Since no junior surface rights were operating at the time, cease and desist orders were issued on the four wells located in the alluvial aquifer. All four of these wells continued pumping in violation of the orders and consequently complaints have been filed with the Water Court asking for preliminary and permanent injunctions against future violations by the four owners. No hearing date had been set by January 1, 1978.

A hearing on W-8103-75 in which the applicant, Trans-County Water Users, Inc., formerly W.Y. Association, sought to divert water from the South Platte River system to the High Plains Designated Ground Water Basin was held before Tom Aron the Special Master of the Water Court on April 29. Although no order has yet been issued, it appears that a conditional decree will be forthcoming soon with enough stringent conditions to assure diligence over the next four years.

LARAMIE RIVER

The Laramie River Basin in North Central Colorado contains 258,000 acres of which 4,800 acres are irrigated and 15,000 acres are nonirrigated ranch land according to the 1964 Agricultural Census.

This basin is a mountain valley with the principal water use being for meadow irrigation and livestock purposes. There are no municipalities or villages in this basin so the domestic uses are minimal.

The Laramie River and its tributaries did not produce enough water during the 1977 irrigation season to satisfy the allotments in Colorado under the Laramie River Agreement and the 1957 Federal Court Order. The said court order provides that 19,875 acre feet of Laramie River water or its tributaries in Colorado may be annually diverted for use outside of the Laramie River Basin and that an additional 29,500 acre feet may be annually diverted for irrigation use within the Laramie River drainage with not more than 1,800 acre feet of such amount to be used after July 31 of each year. The Laramie River Agreement between the users of water in Colorado, being the meadowland users and the transmountain diverters, further provides for volumetric allotments to designated lands within the basin. This amounts to 6.0887 acre feet per acre for the season of which only 0.3715 acre feet may be diverted after July 31.

The 1977 meadowland diversions totaled 23,574 acre feet and transbasin diversions to Water District No. 3 totaled 18,061 acre feet from those sources subject to the Federal Court Order. Additionally, 47 acre feet were diverted into Water District No. 3 from the Sand Creek Basin.

For the first time since 1956 it was necessary during the month of July to reduce diversions into the Laramie Poudre Tunnel, a transbasin facility, in order to maintain a mutually agreed upon minimum flow of 30 cfs at the Glendevy Gage near the Sholine Ranch. In as much as the meadowlands allotment is reduced to supply mainly stockwater after July 31, it was unnecessary to curtail Tunnel diversions except for 5 cfs of fish flow after that date.

The continuing high cost of agricultural production and reduced income have forced the sale of some ranches in the Laramie River Valley.

At the present time there is consideration being given to the sale of Colorado water rights to interests in Wyoming. Such a sale would, no doubt, require consideration of the federal court decree involving the division of water between the states. Some Colorado users are also considering changes in use from irrigation to storage, recreational, and domestic uses. Such changes might also require some modification of the agreement between various meadowlands and transmountain water users within Colorado.

II. PERSONNEL

NAME	WATER DIST.	CLASSIFICATION POSITION	OCT. 31, 1977 GRADE	STEP	DATE OF LAST STEP CHANGE	MONTHS WORKED	1976 - 1977 BUDGETED	MILEAGE PER.VEH.	STATE VEH.
Dugan Wilkinson		Supv.WRE	72	7	7-73	12	12		23,181
Jim Clark		Sen.WRE	66	7	10-75	12	12		
Ray Liesman		WRE C	61	6	7-77	12	12		
Don Brazelton		Wtr.Comm.C	47	6	9-77	12	12		7,640
George Sievers		Wtr.Comm.B	41	3	9-77	12	12		
Dorothy Neutze		Sec. 1B	37	6	11-77	12	12		
Babette Harman		Typist B	23	6	11-76	12	12		
Bob Samples	1	Sen.Wtr.Comm.	51	7	4-77	12	12	927	20,657
Paul Meehl	2	Sen.Wtr.Comm.	51	7	1-74	12	12	17,662	
Jack Neutze	3	Prin.Wtr.Comm.	55	6	7-76	12	12	1,391	9,831
Lloyd Blewitt	4	Sen.Wtr.Comm.	51	7	12-73	12	12	7,112	
Stix Palmer	5	Wtr.Comm.C	47	7	12-74	12	12	13,534	
Ernie Ward	6	Wtr.Comm.C	47	7	6-76	12	12	16,984	
Dale Anderson	7	Wtr.Comm.C	47	2	8-77	12	12	13,781	
Joe Clayton	8	Sen.Wtr.Comm.	51	7	11-71	12	12	9,896	
Ralph VanGorden	9	Wtr.Comm.B	41	7	7-70	12	12	10,188	
Mark Curry	23	Wtr.Comm.B	41	1	6-77	12	12	15,806	
Carolyn Vannorsdel	48	Wtr.Comm.B	41	2	6-77	5	5	6,226	
Vacant	49-65	Wtr.Comm.B	41			2	4	2,222	
Bob Littler	64	Sen.Wtr.Comm.	51	7	7-70	12	12	18,428	
Terry Covelli	1	Wtr.Comm.A	35	4	6-77	9	8		
Keith Delventhal	2	Wtr.Comm.A	35	2	5-77	7	8	13,981	
Bruce Smith	3	Wtr.Comm.A	35	4	5-77	8	8	12,829	
Wayne Lee	4	Wtr.Comm.A	35	5	10-76	8	8	7,230	
Mel Hodgson	5	Wtr.Comm.A	35	3	4-77	7	8	7,895	
Morgan Bentley	6	Wtr.Comm.A	35	1	6-77	6	8	8,085	
Ken Salser	8	Wtr.Comm.A	35	3	5-77	8	8	16,318	
Teal Burrows	23	Wtr.Comm.A	35	1	7-77	2	4	2,918	
Vacant	23	Wtr.Comm.A	35			0	3		
Carolyn Durand	48	Wtr.Comm.A	35	1	6-76	2	3	1,963	
Kent Swedlund	64	Wtr.Comm.A	35	1	4-76	3	5	2,357	

II. PERSONNEL

NAME	WATER DIST.	CLASSIFICATION POSITION	OCT. 31, 1977 GRADE	OCT. 31, 1977 STEP	DATE OF LAST STEP CHANGE	MONTHS WORKED	1976 - 1977 BUDGETED	MILEAGE PER.VEH.	MILEAGE STATE VEH.
Harold Coffer		WRE C	61	5	7-77	12	12		13,898
Ted Bell		WRE B	56	6	7-75	12	12		12,028
Bob Cooper		WRE B	56	5	1-77	12	12		25,348
Chuck David		WRE A				12	12		16,805
*Bud Walcher		SUP.WRE	72			12	12		6,975
Mike Liuzzi		WRE A				12	12		14,316
Doug Aab		ENGR.AIDE A	33			3	3		
		ENGR.AIDE A	33			3	3		
		ENGR.AIDE A	33			3	3		
Jim McDanold		WRE A				12	12		11,381

*Bud Walcher is not attached to our Division. His name is only listed to show mileage driven in a vehicle that is attached to our Division.

III. WATER SUPPLY

A. SNOW PACK

During the month of March several storms resulted in improving the mountain snowpack about 5 to 10 percent over February. Many courses, however, still measured the minimum of record in the South Platte River Watershed. Reservoir storage was about 90 percent of normal. April storms resulted in the figures tabulated below on May 1st.

WATER SUPPLY OUTLOOK*

STREAM OR AREA	SPRING SEASON	LATE SEASON
Bear Creek	Poor	Poor
Coal Creek	Poor	Poor
N. Fork S. Platte	Poor	Poor
N. Fork Cache la Poudre	Poor	Poor
Ralston Creek	Poor	Poor
Rock Creek	Poor	Poor
South Platte - Greeley to Fort Morgan	Poor	Poor
South Platte - Fort Morgan to Sterling	Poor	Poor
South Platte below Sterling	Poor	Poor

*Expressed as POOR, FAIR, AVERAGE, EXCELLENT, with respect to Usual Supply.

SUMMARY OF SNOW MEASUREMENTS

RIVER BASIN AND/OR SUB-WATERSHED	NO. OF COURSES AVERAGED	THIS YEAR'S SNOW WATER AS PERCENT OF: LAST YEAR	AVERAGE*
Big Thompson	5	38	31
Boulder	3	51	42
Cache la Poudre	7	44	44
Clear Creek	6	70	60
Saint Vrain	3	23	20
South Platte	3	55	49

*1958 - 1972 Period

III.

WATER SUPPLY

1977

B. PRECIPITATION

LOCATION	APRIL PRECIP.	APRIL % OF NORMAL	MAY PRECIP.	MAY % OF NORMAL	JUNE PRECIP.	JUNE % OF NORMAL	JULY PRECIP.	JULY % OF NORMAL	AUGUST PRECIP.	AUGUST % OF NORMAL	SEPTEMBER PRECIP.	SEPTEMBER % OF NORMAL	6 MO. % NORMAL
BOULDER	3.32	144	0.93	29	0.66	29	4.75	271	1.48	88	0.15	12	90
CHEESMAN	1.83	103	0.29	15	1.72	126	3.26	127	3.83	164	0.48	44	103
CHEYENNE WELLS	1.83	140	4.93	184			2.06	72	2.75	109	0.15	10	--
DENVER AP WSFD	2.13	110	0.34	13	1.02	53	2.98	167	1.00	77	0.10	11	72
ESTES PARK	1.13	66	1.37	64	0.21	10	3.19	139	1.64	85	0.28	23	91
FORT COLLINS	2.69	379	1.10	38			5.86	399	1.20	77	0.14	15	--
FORT MORGAN	2.45	193	2.01	138	1.09	51	1.18	62	1.22	84	0.35	32	93
GREELEY	2.21	149	1.91	79	0.70	39	2.16	161	1.48	141	0.14	14	95
KASSLER	2.66	111	0.58	20	1.68	87	4.31	264	1.75	120	0.07	6	96
LAKEWOOD	2.58	131	0.37	15	1.58	86	2.14	133	0.61	50	0.05	4	71
LONGMONT	2.68	174	0.82	32	1.59	84	1.00	83	1.08	105	0.01	1	78
PARKER	2.06	133	1.25	55	1.47	80	1.93	99	2.21	124	0.20	22	89
RED FEATHER LAKE	2.79		1.51		0.69		6.06		3.28		0.12		--
STERLING	3.51	268	3.61	126	4.22	150	3.23	131	2.52	155	0.22	20	142
WRAY	4.49	238	3.88	123	3.08	98	1.64	56	1.82	75	0.35	24	102

III.

C. FLOODS

In this year of near record drought, no wide area flooding was experienced. However, some local thunderstorms did cause localized flooding and heavy damage.

On the afternoon of May 1, approximately three and one-half inches of moisture which included some very destructive hail fell in the area of Ault some twelve miles north of Greeley. Flood waters covered a large portion of the flat farmland east and south of Ault in the Lone Tree and Owl Creek drainages.

A few weeks later on June 13 heavy rains in the dry lands north of Pierce generated some locally high flows in Owl and Lone Tree Creeks resulting in damage to small reservoir spillways on those drainages. An alert by county officials was effective for a few hours that evening due to their concern over the adequacy of the Owl Creek Reservoir spillway. Although that structure did sustain some damage, the reservoir did not fail.

A very destructive hail storm on June 18 ruined most of the crops for a strip about four miles wide between Merino and Iliff. Due to the storm being in mid-season, some of the farmers chose to leave the hailed out land lie idle for the season and concentrate their efforts and remaining water on either undamaged crops or reduced replanted crops in an effort to salvage what they could.

The largest precipitation event of the season started the afternoon of July 24 and continued intermittently into the 26th along the front range area. Although amounts varied widely, some local high intensity thundershowers caused flooded basements and streets. Very little agricultural damage resulted although stream flows on the Poudre, Big Thompson and South Platte Rivers were substantial for a short period. The highest flows were generated on Bijou Creek which delivered a peak of some 4,000 cfs to the South Platte River on July 26. In spite of the fact that most farmers are reluctant to irrigate with Bijou Creek floodwater due to its high sediment load and consequent soil sealing characteristics, the peak discipated rapidly and no water in excess of compact committments flowed out of the state.

Heavy showers south of Littleton in the Sedalia area on August 10 caused some temporary high flows on Plum Creek. The peak inflow to Chatfield Reservoir on the South Platte River was estimated at 4,200 cfs with the major portion being generated in the Plum Creek watershed.

III.

FLOODS

The following tabulation shows the annual flows in acre feet at the major control gaging stations in the Division and the highest instantaneous peak flow during the period.

Most figures are preliminary reports and subject to revision.

STATION	WATER YEAR (A.F.) Oct. 1, 1976 to Oct. 1, 1977	INSTANTANEOUS PEAK FLOWS DATE	C.F.S.
South Platte below Cheesman	65,880	July 11	298
North Fork at South Platte	141,700	May 9	595
South Platte at South Platte	235,900	May 8	766
Bear Creek at Morrison	22,820	May 1	136
Bear Creek at Sheridan	17,320	July 20	218
South Platte at Denver	119,000	July 25	2120
Clear Creek Nr. Golden (Upper Station)	87,620	June 8	903
Clear Creek at Derby	9,090	June 6	561
South Platte at Henderson	186,300	July 25	4210
Middle Boulder Creek at Orodell	30,780	June 9	294
South Boulder Creek at Eldorado	30,160	June 7	318
Coal Creek at Plainview	1,530	July 24	34
St. Vrain Creek at Lyons	40,110	July 24	294
St. Vrain at Platteville	84,530	July 26	715
Big Thompson at Canyon (1)	24,180	July 24	273
Big Thompson at LaSalle	49,890	July 25	1490
Cache la Poudre at Canyon	94,010	June 6	1740
Cache la Poudre at Greeley	49,540	July 26	1450
South Platte at Kersey	328,200	July 26	4480
South Platte at Balzac	72,430	July 27	1160
South Platte at Julesburg	111,700	May 31	1160

(1) Does not include 38,820 A.F. which was diverted via Foothills Canal and Dille Tunnel and returned to the river below station.

III. WATER SUPPLY

E. UNDERGROUND WATER

The Underground Section of the State Engineer's Office has been swamped with permit applications this year. For Division 1 alone the numbers went as follows:

	APPLICATIONS RECEIVED	PERMITS ISSUED	REPLACEMENT PERMITS ISSUED
EXEMPT	3600	3522	564
NON-EXEMPT	333	270	167

These figures are for the period January 1, 1977 to December 31, 1977. The number of permits issued includes the replacement permits issued.

III.

F.

HYDROGRAPHIC REPORT
DIVISION ONE
1977

GENERAL

Flood damage repair work occupied a considerable portion of the hydrographic effort during the 1977 Water Year. The disastrous Big Thompson River flood of July 31, 1976, completely destroyed two stations and caused considerable damage at two others. As reported last year, repair work on the North Fork of the Big Thompson River Station and the Buckhorn Creek Station was completed in the fall and early winter of 1976. Work on the two stations in the Big Thompson River Canyon was delayed until summer awaiting completion of the road in the canyon, as well as availability of construction equipment.

New concrete stations were installed at both locations. Stilling wells were 48" diameter concrete pipe and upper shelters were 6' x 6' precast concrete buildings. These were installed by the fabricator as a part of the total price. The in-place cost was about equal to that of 5' diameter corrugated metal well and shelter.

New cableways were also installed at both locations. At the Big Thompson River Station below the Loveland Power Plant a conventional cableway was utilized. Because of space limitations, conventional A-Frames were not used at the Big Thompson at the Canyon Mouth Station. The cableway was attached to the foundation supports of the Big Thompson Siphon which crosses the river at this point. To protect the siphon structure from floating debris in future floods, the cableway supports were designed with a breakaway strength of 5000 pounds. Use of a safety pin assures full cableway strength while being used for measurement.

Other construction activities included replacement of the wooden stilling well at the St. Vrain at Lyons Station with a 48-inch corrugated steel well. The bank was stabilized with broken rock rip-rap consolidated with concrete. Routine maintenance and minor repairs were performed at other stations.

Extreme drouth conditions also increased the hydrographic field activity load, requiring greater than normal number of measurements for administrative purposes.

III.

HYDROGRAPHIC REPORT
DIVISION ONE
1977

HYDROGRAPHIC ACTIVITY

STREAM FLOW MEASUREMENTS
1977 IRRIGATION WATER YEAR
NOVEMBER 1, 1977 TO OCTOBER 31, 1978

The following measurements were made by Division One Hydrographers:

HYDROGRAPHER	NUMBER OF MONTHS	NUMBER OF MEASUREMENTS
Aab, D.R.	3	
Akers, D.A.	3	
Appelgren, P.S.	3	
Archey, P.J.	8	111
Bell, T.S.	12	151
Coffer, H.R.	12	147
Cooper, R.E.	12	191
David, C.G.	12	356
Largent, G.E.	2 1/2	65
Liuzzi, M.J.	12	288
MacDanold, J.C.	5 1/2	116
Seaholm, D.R.	5 1/2	93
	TOTAL	1518

Total hydrographic mileage was 103,043. Our hydrographic effort was greatly aided by our three summer employees who made some of the above measurements. Measurements or mileage by Glen Brees or Bud Walcher in Division One are not included above.

SUPPLEMENTAL HYDROGRAPHIC REPORTS

ANNUAL REPORT
COLORADO-BIG THOMPSON PROJECT
1977

The Colorado-Big Thompson Project is a cooperative effort between the U.S. Bureau of Reclamation, the Northern Colorado Water Conservancy District and the Division of Water Resources. Water is diverted from the Western Slope through Alva B. Adams Tunnel. Power is generated in a series of five power plants by the Bureau, then the water is distributed to East Slope users by the Conservancy District.

ACTIVE PROJECT STORAGE

Western Slope	Nov. 1, 1976	Nov. 1, 1977	Diff.
Green Mountain	108,300	58,370	- 49,930
Willow Creek	6,080	7,750	1,670
Granby	298,450	138,500	- 159,950
Shadow Mountain-Grand Lake	1,270	1,220	- 50
Total Acre Feet	414,100	205,840	- 208,260
Eastern Slope			
Marys, Estes, Pinewood and Flatiron	4,800	4,950	150
Carter	39,150	13,190	- 25,960
Horsetooth	15,310	20	- 15,290
Boulder	2,240	2,280	40
Total Acre Feet	61,500	20,440	- 41,060

Total active storage (total reservoir storage less dead storage) was 226,280 acre feet on November 1, 1977. This compares with 475,600 acre feet on November 1, 1976 and with 623,350 acre feet total active project storage capacity.

DISTRIBUTION OF PROJECT WATER

WATER DISTRICT	CARRIER	TOTAL ACRE FEET
1	Hansen Feeder Canal via Big Thompson	5,980
3	Hansen Supply Canal via Cache la Poudre	121,500
	Direct Delivery	
4	Hansen Feeder Canal via Big Thompson	61,790
	St. Vrain Supply via Little Thompson	12,780
	Direct Delivery	7,790
5	St. Vrain Supply Canal via St. Vrain	34,330
	Direct Delivery	18,350
6	Boulder Cr. Supply Canal via Boulder Cr.	25,700
	Direct Delivery	7,110
	Total to all districts, including replacement	309,480

Quota water declared available - 100% or 309,780 ac.ft.
Replacement water - 3020 ac.ft.

MATERIAL BALANCE - PROJECT WATER DISTRIBUTION

ESTES PARK AREA

INFLOW	NOV. 1, 1976 - NOV. 1, 1977	TOTAL ACRE FEET
WESTERN SLOPE WATER		
Alva B. Adams Tunnel	284,140	
EASTERN SLOPE WATER		
Wind River	150	
Big Thompson River	46,160	
Fish Creek	510	
Storage November 1, 1976	2,990	333,950

OUTFLOW	NOV. 1, 1976 - NOV. 1, 1977	TOTAL ACRE FEET
Estes Park Water District	280	
Town of Estes Park	430	
Estes-Foothills Canal	325,010	
Big Thompson River	13,940	
Storage Nov. 1, 1977	2,720	342,380

Apparent Gain 8,430 acre feet

CARTER LAKE AREA

INFLOW

Estes-Foothills Canal	325,010	
Storage Pinewood, Flatiron Nov. 1, 1976	1,810	
Storage Carter Nov. 1, 1976	39,150	
Dille Tunnel	4,060	370,030

OUTFLOW

Hansen Feeder Canal	132,240	
Big Thompson River	107,460	
St. Vrain Supply Canal	98,350	
Little Thompson Water District	3,670	
Storage Carter Nov. 1, 1977	16,500	
Storage Pinewood, Flatiron Nov. 1, 1977	2,230	360,450

Apparent Loss 9,580 acre feet

HORSETOOTH AREA

INFLOW

Hansen Feeder Canal	132,240	
Storage Nov. 1, 1976	15,310	147,550

OUTFLOW

Hansen Supply Canal	121,490	
Direct Delivery	14,150	
Storage Nov. 1, 1977	8,290	143,930

Apparent Loss 3,620 acre feet

BOULDER AREA

INFLOW	NOV. 1, 1976 - NOV. 1, 1977	TOTAL ACRE FEET
Boulder Feeder Canal	39,980	
Storage Nov. 1, 1976	2,240	42,220
OUTFLOW		
Boulder Creek Supply Canal	32,820	
Dry Creek Replacement	1,280	
Storage Nov. 1, 1977	2,280	36,380

Apparent loss 5,840 acre feet

SUMMATIONS

Estes Park Area	8,430	
Carter Lake Area	-9,580	
Horsetooth Area	-3,620	
Boulder Area	-5,840	-10,610

Total Apparent Project Loss 10,610 Acre Feet

OPERATION SKIM

In conjunction with the Colorado-Big Thompson Project, Operation Skim diverts Big Thompson River water for power generation purposes and returns it to the river. Upper Big Thompson River water is diverted through Estes Foothills Canal into Olympus Tunnel for power generation at Polehill and Flatiron Power Plants. Near the mouth of Big Thompson Canyon, river water is diverted through Dille Tunnel. River water from both diversions is then returned to the river through the Big Thompson Power Plant.

The entire Big Thompson River was diverted for the first seven months to allow flood repair operations in the Big Thompson Canyon. Skim diversions for the 1977 irrigation water year were as follows:

MONTH	WATER DIVERTED ACRE-FEET
November	1,330
December	620
January	310
February	330
March	660
April	2,810
May	10,370
June	12,120
July	3,080
August	2,470
September	1,080
October	1,040
	36,220

Harold R. Coffer

Harold R. Coffer
Water Resources Engineer

III. WATER SUPPLY

F.

TRANSMOUNTAIN DIVERSIONS

OCTOBER 1, 1976 - SEPTEMBER 30, 1977

DIVERTING STRUCTURE	SOURCE	SOURCE DISTRICT	RECEIVING DISTRICT	CONTROLLING OWNERSHIP	1ST DAY WATER DIVERTED	LAST DAY WATER DIVERTED	NO. OF DAYS WATER DIVERTED	AVG. AMT. DIVERTED C.F.S.	TOTAL AMOUNT DIVERTED AC. FT.
Wilson Supply Ditch	Sand & Deadman Creek	48	3	Divide Canal & Res. Co.	4/29/77	6/29/77	62	4.29	528
*Deadman Ditch (Incl. in Wilson Supply)	Deadman Creek	48	3	Divide Canal & Res. Co.	5/ 1/77	6/29/77	60	4.04	481*
Bob Creek Ditch	Nunn Creek	48	3	City of Greeley			0	0	0
Columbine Ditch	Deadman Creek	48	3	City of Greeley			0	0	0
Laramie Poudre Tunnel	Laramie River	48	3	Water Supply & Storage	4/26/77	9/22/77	150	52.20	15,520
Skyline Ditch	West Fork Laramie River	48	3	Water Supply & Storage	5/11/77	6/17/77	38	27.30	2,060
Cameron Pass Ditch	Michigan River	47	3	Water Supply & Storage	5/12/77	6/30/77	51	2.12	214
Michigan Ditch	Michigan River	47	3	North Poudre Irr. Co.	6/ 9/77	8/12/77	65	3.52	454
Grand River Ditch	Colorado River	51	3	City of Ft. Collins	4/16/77	9/30/77	168	38.90	12,970
Eureka	Colorado River	51	4	City of Loveland			0	0	0
Alva B. Adams Tunnel	Colorado River	51	4	U.S.B.R. - N.C.C.D.	10/ 1/76	9/30/77	365	407.00	294,600
Moffat Tunnel	Fraser River	51	6	City of Denver	10/ 1/76	9/30/77	365	69.90	50,620
Jones Pass Tunnel AKA August P. Gumlich or Williams Fork Tunnel	Williams Fork (Inc. in Moffat Tunnel)	51	6	City of Denver	10/ 1/76	9/30/77	351	12.90	9,000
Berthoud Pass Ditch	Fraser River	51	7	Farmers Res. & Highline	6/ 8/77	8/17/77	71	2.09	295
Vidler Tunnel	Montezuma Creek	36	7	Hebert Young	5/ 4/77	8/31/77	120	1.35	321
Roberts Tunnel	Blue River	36	23-8	City of Denver	10/ 1/76	9/30/77	343	136.00	92,750
Boreas Pass Ditch	Indiana Creek	36	23	City of Aurora	6/ 3/77	7/ 8/77	36	0.21	15
Hoosier Pass Tunnel	Blue River	36	23	City of Colo. Springs	4/21/77	9/15/77	93	12.90	2,380
Aurora Homestake	Homestake Creek	37	23	City of Aurora	11/ 1/76	8/31/77	137	38.80	10,540
						TOTAL			492,267

* INCLUDED IN WILSON SUPPLY DITCH

III.

G. RESERVOIR STORAGE DISTRICT NO. 1

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Empire	South Platte	14815	34930	6155
Riverside	South Platte	21685	61976	8817
Jackson	South Platte	15386	34193	9460
Bijou No. 2	South Platte	4300	1500	0
North Sterling	South Platte	13980	72015	11930
Prewitt	South Platte	11452	27250	6610
Klug	Boxelder Creek	0	0	0
Bootleg	Boxelder Creek	0	0	0
Heart	Little Crow Creek	0	20.87	316
Giffin No. 1	Lone Tree Creek	0	15	23
Giffin No. 2	Lone Tree Creek	0	14.4	0
Adams & Bunker No. 1	Little Crow Creek	51	207	78
Adams & Bunker No. 2	Little Crow Creek	0	84	0
	TOTAL	81669	232205	43389

111.

G. RESERVOIR STORAGE DISTRICT NO. 2

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Barr	South Platte	12331	28934	1396
Horsecreek	South Platte	1338	15171	880
Prospect	South Platte	0	5990	
Lord	South Platte	30	615	0
Milton	South Platte	10427	19731	978
Lower Latham	South Platte	4702	5221	3155
Standley	Clear Creek	21232	30998	16167
Behrns	South Platte	30	17	12
Beulah	South Platte	18	5	7
Bowles No. 1	South Platte	5	7	30
Bowles No. 2	South Platte	70	40	40
Brantner No. 2	Brantner Gulch	11	11	11
Carlin	South Platte	0	20	0
Church Lower Lake	Dry Creek	95	68	35
Coal Ridge	Little Dry Creek	610	426	453
Fulton Waste	South Platte	262	450	420
German No. 2	Big Dry Creek	35	92	28
German No. 3	Big Dry Creek	2	10	22
German No. 4	Big Dry Creek	28	36	32
German No. 6	Big Dry Creek	20	20	14
German No. 8	Big Dry Creek	30	50	27
German No. 9	Big Dry Creek	11	15	9
German No. 12	Big Dry Creek	87	36	83
H.A. Smith	South Platte	20	30	30
Great Western	Clear Creek	1792	1178	1230
Henry	South Platte	2	1	0
J.B. Smith	Todd Creek	143	135	75
Ireland No. 1	South Platte	25	118	5
Ireland No. 5	South Platte	4	30	0
La Dore	Seepage	360	367	360
Loloff	South Platte	145	116	109
Marshall	Brantner Gulch	40	30	30
Maul	First Creek	33	33	33
Meek No. 1	South Platte	35	10	20
Meek No. 2	South Platte	9	0	6
Mose Davis No. 2	South Platte	72	120	92
North Star	Big Dry Creek	52	78	0
Olds	South Platte	0	0	0
Parson-Holms	Second Creek	0	0	0
Thompson	Big Dry Creek	225	25	203

III

G RESERVOIR STORAGE DISTRICT NO. 2 (CONTINUED)

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Matison	Big Dry Creek	5	10	9
Karsh	Big Dry Creek	0	1	2
Hamilton	Seepage	1	1	0
Francis	Gulch	5	5	4
Brunner	Seepage	53	35	0
Burnett-Deisher	Seepage	17	17	17
	TOTAL	54412	110303	26024

111.

G. RESERVOIR STORAGE DISTROCT NO. 3

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Fossil Creek	Cache la Poudre	5786	9821	4776
Halligan	N FK Cache la Poudre	734	5465	571
Clarks Lake	N FK Cache la Poudre	479	871	465
Indian Creek	N FK Cache la Poudre	1906	1778	1339
N. Poudre No. 2	N FK Cache la Poudre	1390	2683	1776
N. Poudre No. 3	N FK Cache la Poudre	1312	1672	881
N. Poudre No. 4	N FK Cache la Poudre	336	728	364
N. Poudre No. 5	Cache la Poudre	5067	1407	0
N. Poudre No. 6	Cache la Poudre	2729	5846	1703
N. Poudre No. 15	N FK Cache la Poudre	3759	3600	2104
Park Creek	N FK Cache la Poudre	6317	6121	4241
N. Poudre Minor	N FK Cache la Poudre	1111	1203	819
Cobb	Cache la Poudre	5135	4745	0
Douglas	Cache la Poudre	6911	6818	3382
Res. No. 8	Cache la Poudre	2983	2878	4752
Res. No. 8 Annex	Cache la Poudre	804	804	1499
Windsor Res.	Cache la Poudre	6019	10743	3121
Chambers	Wright, Trap & Fall	3030	1602	3919
Long Draw	Long Draw	7193	7407	6765
Black Hollow	Cache la Poudre	4253	3253	3197
Curtis	Cache la Poudre	718	596	585
Kluver	Cache la Poudre	687	836	793
Lindenmeier	Cache la Poudre	0	375	0
Long Pond	Cache la Poudre	2757	3089	1948
Richards	Cache la Poudre	606	513	495
Rocky Ridge	Cache la Poudre	3383	3163	3203
W S & S No. 3	Cache la Poudre	3880	3053	0
W S & S NO. 4	Cache la Poudre	790	1021	497
Terry Lake	Cache la Poudre	4721	6046	3477
Worster Res.	Sheep Creek	55	675	0
Timnath Res.	Cache la Poudre	798	0	3302
Windsor Lake	Cache la Poudre	0	1185	866
Barnes Meadow	Barnes Meadow	121	121	1682
Big Beaver	Big Beaver Creek	0	0	0
Comanche	Big Beaver Creek	0	124	0
Peterson	Unnamed Creek		0	0
Seaman	N FK Cache la Poudre	379	1431	1163
Twin Lake	Trib. of Pennock	0	0	0
Claymore	Cache la Poudre	448	843	0
Dowdy	Pine Creek	0	0	34
Joe Wright	Joe Wright Creek	0	0	0
Eaton Law Res.	Cache La Poudre	70	70	0

111.

G. RESERVOIR STORAGE DISTRICT NO. 3 (CONTINUED)

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Gray Lakes	Boxelder Creek	363	1042	509
Panhandle Creek	Panhandle Creek	841	841	841
Portner	Fossil Creek	326	36	69
Seeley	Cache la Poudre	981	1198	865
Warren Lake	Cache la Poudre	1441	1108	1269
Woods Lake	Cache la Poudre	1191	1574	210
Horsetooth	Colo. Big Thompson	23572	100044	8266
	TOTAL	115382	209429	75748

111.

G. RESERVOIR STORAGE DISTRICT NO. 4

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Boulder & Larimer	Little Thompson	2225	2225	2098
Boyd Lake	Big Thompson	34478	33918	16126
Carter	Colo. Big Thompson	42452	109665	16505
Cemetary Lake	Big Thompson	345	285	336
Donath	Big Thompson	519	431	601
Fairport	Big Thompson	161	145	52
Geo. Rist (Buckingham)	Big Thompson	32	0	0
Hertha Res.	Dry Creek	805	1444	577
Horseshoe Res.	Big Thompson	5065	6392	5275
Lake Loveland	Big Thompson	12010	8777	11772
Lawn Lake	Roaring Fork	0	0	0
Lon Hagler	Big Thompson	5069	4835	5108
Lone Tree Res.	Big Thompson	2002	4985	5063
Loveland Lake	Big Thompson	861	1044	369
Mariano	Big Thompson	3040	4842	1977
Oklahoma	Big Thompson	312	227	224
Rist Benson Res.	Big Thompson	450	572	0
Ryan Gulch Res.	Ryan Gulch	479	748	300
South Side Res.	Big Thompson	382	294	271
Welch	Big Thompson	3449	3449	4446
	TOTAL	114136	184078	71100

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111.

G. RESERVOIR STORAGE DISTRICT NO. 5

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Beaver Lake	Beaver Creek	607	695	857
Foothills	St. Vrain	1933	2505	1163
Highland No. 1	St. Vrain	783	783	741
Highland No. 2	St. Vrain	2424	2424	2270
Highland No. 3	St. Vrain	1169	1169	637
McIntosh	St. Vrain	1721	1721	257
Pleasant Valley	St. Vrain	2161	2428	2002
Oligarchy No. 1	St. Vrain	1621	1737	1621
Union	St. Vrain	11693	12715	8864
Left Hand Park	Left Hand	1499	1476	1497
Left Hand Valley	Left Hand	771	1818	225
Button Rock	N. St. Vrain	12319	10715	10680
	TOTAL	38701	40186	30814

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111.

G. RESERVOIR STORAGE DISTRICT NO. 6

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Marshall	South Boulder Creek	1934	4623	60
Great Western	Clear & Coal Creeks	1884	1178	1232
Baseline	S. & M. Boulder Creek	2103	3430	2144
McKay	South Boulder Creek	181	324	125
Albion	Albion Creek	1111	1111	1003
Barker	M. Boulder Creek	6925	4314	4998
Boulder	Big Thompson Project	3539	6200	3584
Goose Lake	North Boulder Creek	1036	1036	1036
Gross	S. & M. Boulder Creek	20058	23195	19219
Hillcrest	S. & M. Boulder Creek	1853	1690	1793
Leggett	S. & M. Boulder Creek	1337	1216	1292
Valmont	S. & M. Boulder Creek	6612	6224	6471
Six Mile	Middle Boulder Creek	840	1088	0
Silver	North Boulder Creek	3527	678	3781
Panama No. 1	Middle Boulder Creek	4064	4345	1826
	TOTAL	57004	60652	48564

111.

G. RESERVOIR STORAGE DISTRICT NO. 7

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Maple Grove	South Clear Creek			530
Ralston	Moffat via Gross	9757	7474	10016
Tucker	Ralston			161
Long Lake	Ralston Creek			1008
Standley	Clear Creek	21232	30998	15953
	TOTAL	30989	38472	27668

111.

G. RESERVOIR STORAGE DISTRICT NO. 8

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Aurora Rampart	South Platte	761	529	766
Chatfield	South Platte	9942	9816	8635
Cherry Creek	Cherry Creek	14078	14699	13236
Marston	South Platte	14668	16783	16377
McLellen	South Platte	4505	4445	3506
Platte Canyon	South Platte	920	917	920
	TOTAL	44874	47189	43440

111.

G. RESERVOIR STORAGE DISTRICT NO. 9

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Soda No. 1 (West)	Bear Creek	230	214	0
Soda No. 2 (East)	Bear Creek	1437	1437	308
Kendrick	Bear Creek	30	168	50
Patrick	Bear Creek	694	847	495
Deane	Turkey Creek	288	520	225
Bergen No. 1 (East)	Turkey Creek	354	415	328
Bergen No. 2 (West)	Turkey Creek	527	605	423
Ward	Bear Creek	650	685	480
Henry Lake	Bear Creek	160	161	100
Harriman	Bear Creek	620	590	435
Bowles	Bear Creek	2000	2100	1194
Johnston	Bear Creek	720	700	120
Tule No. 1 (Upper)	South Platte	84	84	63
Tule No. 2 (Lower)	South Platte	90	90	74
Grant A (West)	Bear Creek	48	48	30
Grant B (South)	Bear Creek	190	155	105
Grant C (East)	Bear Creek	60	35	35
Kingfisher Lake	Turkey Creek	55	100	0
Willow Sp. No. 1	Turkey Creek	70	50	35
	TOTAL	8307	9004	4500

111.

G. RESERVOIR STORAGE DISTRICT NO. 23

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Antero	So.Fk. South Platte	15466	15878	13815
Eleven Mile	So.Fk. South Platte	90693	89730	82300
Jefferson	Jefferson Lake			165
Montgomery	Md.Fk. South Platte and Hoosier Tunnel	3498	1436	4066
	TOTAL	109657	107044	100346

111.

G. RESERVOIR STORAGE DISTRICT NO. 64

NAME	SOURCE	AMOUNT - A.F. 10-31-76	4-30-77	10-31-77
Julesburg Res.	South Platte	5459	24143	9186
North Sterling	South Platte	14590	72010	12910
Prewitt	South Platte	11370	27220	6500
	TOTAL	31419	123373	28596

BARLEY

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1	IRRIGATED ACRES PLANTED	IRRIGATED ACRES HARVESTED	IRRIGATED YIELD bu/acre	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES HARVESTED	NON IRRIGATED YIELD bu/acre	NON IRRIGATED PRODUCTION BUSHELS X 1000	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD bu/acre	1976 PRELIMINARY PRODUCTION BUSHELS X 1000
ADAMS		12000	3900	66.4	258.8	7100	31	219.8	7400	35.3	260.9
ARAPAHOE		4100	100	64	6.4	3300	29	95.7	6100	22.5	137.5
BOULDER		6600	5000	63	315	1500	31	46.5	7000	49.4	346
CHEYENNE	39	300	150	56	8.4	100	25	2.5	200	33.8	6.8
CLEAR CREEK											
DENVER											
DOUGLAS		1800	200	62	12.4	1000	29	29	1100	25.5	28
ELBERT	69	1100	70	62	4.3	1000	29	29	1200	18.4	22.1
GILPIN											
JEFFERSON		800	300	58	17.4	500	32	16	800	37.5	30
KIT CARSON		5000	400	56	22.4	4300	31	133.3	5000	28.1	140.4
LARIMER		13000	11500	64	736	1000	32	32	13000	63.7	828
LINCOLN	26.5	350	30	62	1.9	300	34	10.2	400	20.1	8
LOGAN		3000	1000	56	56	2000	30	60	3200	38	121.7
MORGAN		10500	3400	69	234.6	6200	34	210.8	10000	41.4	414.4
PARK	87.4										
PHILLIPS		1100	100	62	6.2	900	36	32.4	1000	33.9	33.9
SEDGWICK		2600	300	63.3	19	2300	26	59.8	2500	31.3	78.3
TELLER	47.5										
WASHINGTON		2800	200	60	12	2300	28	64.4	2900	27.3	79.3
WELD		35500	18500	63.7	1179	16500	24.4	401.9	31500	49.1	1545.6
YUMA		3300	400	62	24.8	2200	27	59.4	3400	28.8	97.8
TOTALS		103850	45550	64	2914.6	52500	28.6	1502.7	96700	43.2	4178.7

CORN FOR GRAIN

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1	ACRES PLANTED	IRRIGATED ACRES HARVESTED	IRRIGATED YIELD bu/acre	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES HARVESTED	NON IRRIGATED YIELD bu/acre	NON IRRIGATED PRODUCTION BUSHELS X 1000	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD bu/acre	1976 PRELIMINARY PRODUCTION BUSHELS X 1000
ADAMS		9100	5000	99	495				3800	105	399
ARAPAHOE		1600	600	90	54	600	17.5	10.5	500	100	50
BOULDER		11500	5300	88	466.4				5900	96	566.4
CHEYENNE	39	3100	2200	90	198				1800	95	171
CLEAR CREEK											
DENVER											
DOUGLAS											
ELBERT	69	1700									
GILPIN						350	15	5.3	350	83	29
JEFFERSON											
KIT CARSON		500	100	86	8.6						
LARIMER		33500	9600	90	864				200	98	19.6
LINCOLN	26.5	1000	200	90	18				18000	100	1800
LOGAN		57000	34000	115	3910	4000	15	60	250	90	22.5
MORGAN		55000	42000	107	4494	1000	19	19	50000	94.5	4726
PARK	87.4								51000	111.3	5675
PHILLIPS		45500	34000	102	3468	10000	16	160	45000	97.7	4396
SEDGWICK		28500	19000	107	2033	2500	20	50	36400	105.7	3848
TELLER	47.5										
WASHINGTON		17000	13000	80	1040	1000	15.5	15.5	19000	105.2	1999
WELD		171000	77000	103	7931	1500	16	24	98500	111.8	11013
YUMA		134000	119000	102	12137	6000	15	90	124000	107.6	13348
TOTALS		570000	361000	102.8	37117	26950	16.1	434.3	454700	105.7	48062.5

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1	POTATOES ACRES	POTATOES YIELD cwt/acres	POTATOES PRODUCTION CWT X 1000	CORN FOR SILAGE ACRES	CORN FOR SILAGE YIELD tons/acre	CORN FOR SILAGE PRODUCTION TONS X 1000	HAY ACRES	HAY YIELD tons/acre	HAY PRODUCTION TONS X 1000
ADAMS					3800	17.	64.6	18500	2.41	44.5
ARAPAHOE					400	20.	8.	8100	1.86	15.1
BOULDER					6200	15.	93.	15700	2.71	42.5
CHEYENNE	39				600	13.5	8.1	3600	1.11	4.
CLEAR CREEK										
DENVER										
DOUGLAS								12000	1.33	15.9
ELBERT	69				1200	11.	13.2	21000	1.24	26.
GILPIN										
JEFFERSON					400	14.5	5.8	6800	1.56	10.6
KIT CARSON					13500	15.	202.5	27300	1.86	50.8
LARIMER					23000	19.	437.	48000	2.51	120.5
LINCOLN	26.5				450	10.	4.5	3800	1.3	4.9
LOGAN					17500	20.	350.	48500	2.5	121.3
MORGAN		2700	275	742.5	9500	18.	171.	18700	2.75	51.4
PARK	87.4							20000	.8	16.
PHILLIPS					1000	18.	18.	11200	1.63	18.2
SEDGWICK					6400	18.	115.2	9800	2.29	22.4
TELLER	47.5							1300	1.32	1.7
WASHINGTON					2000	12.	24.	26300	1.22	32.1
WELD		3600	261	938	91000	19.9	1808.	100500	2.90	291.3
YUMA					7500	20.	150.	35500	2.46	87.2
TOTALS		6300	266.7	1680.5	184450	18.8	3472.9	436600	2.24	976.4

DRY BEANS

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I	IRRIGATED ACRES PLANTED	IRRIGATED ACRES HARVESTED	IRRIGATED YIELD LBS/ACRE	IRRIGATED PRODUCTION CWT	NON IRRIGATED ACRES HARVESTED	NON IRRIGATED YIELD LBS/ACRE	NON IRRIGATED PRODUCTION CWT	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD LBS/ACRE	1976 PRELIMINARY PRODUCTION CWT
ADAMS		500	400	2000	8000				100	1700	1700
ARAPAHOE											
BOULDER		1400	1400	2200	30800				1100	1982	21800
CHEYENNE	39	200	80	1400	1120	80	200	160			
CLEAR CREEK											
DENVER											
DOUGLAS											
ELBERT	69	1100				1100	113	1243	600	1211	7266
GILPIN											
JEFFERSON											
KIT CARSON		13200	13000	900	117000				8000	1300	104000
LARIMER		3300	3300	2052	67700				4200	1840	77300
LINCOLN	26.5	200				190	200	380	100	1300	1300
LOGAN		5200	4900	1700	83300	300	300	900	5200	1248	64900
MORGAN		8200	7800	1600	124800				8900	1742	155000
PARK	87.4										
PHILLIPS		10000	8900	1900	169100	600	300	1800	8500	1344	114200
SEDGWICK		7400	7100	1820	129200	200	300	600	8600	1436	123500
TELLER	47.5										
WASHINGTON		2700	2500	1660	41500	200	300	600	1900	1700	32300
WELD		22500	21500	1883	395200	500	200	1000	22000	1711	376500
YUMA		6400	5800	1600	92800	600	300	1800	4000	1300	52000
TOTALS		82300	76680	1644	1260520	3770	225	8483	73200	1546	1131766

OATS

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I %	IRRIGATED ACRES	IRRIGATED YIELD BU/ACRE	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES	NON IRRIGATED YIELD BU/ACRE	NON IRRIGATED PRODUCTION BUSHELS X 1000
ADAMS		200	50	10			
ARAPAHOE					200	26	5.2
BOULDER		600	47	28.2	100	27	2.7
CHEYENNE	39	80	57	4.6	40	30	1.2
CLEAR CREEK							
DENVER							
DOUGLAS					500	25	12.5
ELBERT	69	70	51	3.6	760	25	19
GILPIN							
JEFFERSON					200	25	5
KIT CARSON		300	60	18	100	35	3.5
LARIMER		400	65	26	200	28	5.6
LINCOLN	26.5				80	21	1.7
LOGAN		500	60	30	1100	26	28.6
MORGAN		400	60	24	800	28	22.4
PARK	87.4						
PHILLIPS		100	65	6.5	2000	44	88
SEDGWICK		200	69	13.8	1300	49	63.7
TELLER	47.5						
WASHINGTON					400	45	18
WELD		3900	61	238	4300	35.3	152
YUMA		100	60	6	800	40	32
TOTALS		6850	59.7	408.7	12880	35.8	461.1

SORGHAM FOR GRAIN

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1	ACRES PLANTED	IRRIGATED ACRES HARVESTED	IRRIGATED YIELD bu/acre	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES HARVESTED	NON IRRIGATED YIELD bu/acre	NON IRRIGATED PRODUCTION BUSHELS X 1000	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD bu/acre	1976 PRELIMINARY PRODUCTION BUSHELS X 1000
ADAMS		5900	700	65	45.5	1400	16	22.4	1400	37.4	52.4
ARAPAHOE											
BOULDER											
CHEYENNE	39	10300	350	74	25.9	2600	14	36.4	4500	16	72
CLEAR CREEK											
DENVER											
DOUGLAS											
ELBERT	69	4100									
GILPIN						400	15	6	1600	16	25.6
JEFFERSON											
KIT CARSON		24500	1600	85	136	2200	15	33	5500	24	132.2
LARIMER											
LINCOLN	26.5	4800									
LOGAN		5300	100	56	5.6	800	12	9.6	1100	13	14.3
MORGAN		3800	200	56	11.2	900	24	21.6	600	25.7	15.4
PARK	87.4					1000	15	15			
PHILLIPS		4300	300	87	26.1						
SEDGWICK						1600	21	33.6	2000	20	40
TELLER	47.5										
WASHINGTON		15000	100	78	7.8	1800	15	27	1600	20	32
WELD		6400	200	56	11.2	700	20	14			
YUMA		25500	400	80	32	15600	22.5	351	15500	17.9	277.9
TOTALS		109900	3950	76.3	301.3	29000	19.6	569.6	33800	19.6	661.8

SPRING WHEAT

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I %	IRRIGATED ACRES	IRRIGATED YIELD BU/ACRE	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES	NON IRRIGATED YIELD BU/ACRE	NON IRRIGATED PRODUCTION BUSHELS X 1000
ADAMS							
ARAPAHOE							
BOULDER							
CHEYENNE	39						
CLEAR CREEK							
DENVER							
DOUGLAS							
ELBERT	69				350	20	7
GILPIN							
JEFFERSON							
KIT CARSON		100	38	3.8	100	11	1.1
LARIMER		200	43	8.6	100	20	2
LINCOLN	26.5	50	36	1.8			
LOGAN							
MORGAN					200	20	4
PARK	87.4						
PHILLIPS		200	45	9	300	18	5.4
SEDGWICK		200	55	11	400	20	8
TELLER	47.5						
WASHINGTON							
WELD		900	43.3	39	300	20	6
YUMA							
TOTALS		1650	44.4	73.2	1750	19.1	33.5

SUGAR BEETS

COUNTY	PORTION OF COUNTY IN DIVISION I %	1975 FINAL ACRES	1975 FINAL YIELD TONS/ACRE	1975 FINAL PRODUCTION X 1000	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD TONS/ACRE	1976 PRELIMINARY PRODUCTION X 1000
ADAMS		2500	15.3	38.3	1650	16.8	27.8
ARAPAHOE							
BOULDER		2700	17.4	47.1	1350	20.1	27.1
CHEYENNE	39	650	13.2	8.6	550	16.3	9
CLEAR CREEK							
DENVER							
DOUGLAS							
ELBERT	69						
GILPIN							
JEFFERSON							
KIT CARSON		18000	15.8	285	11500	18.6	213.4
LARIMER		8300	17	141	6350	20.7	131.5
LINCOLN	26.5						
LOGAN		12900	16.7	216	9600	16.5	158.7
MORGAN		15400	16.8	258.7	11700	17.6	206.1
PARK	87.4						
PHILLIPS		6000	18.1	108.5	6700	19	127.1
SEDGWICK		3100	17.2	53.2	3000	18.1	54.2
TELLER	47.5						
WASHINGTON		3230	15	48.3	2600	18.4	47.9
WELD		50400	18.7	944	39400	19.8	780.4
YUMA		12800	16.3	208	9400	18.6	175.3
TOTALS		135980	17.3	2356.7	103800	18.9	1958.5

WINTER WHEAT

1975 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1	ACRES PLANTED	IRRIGATED ACRES HARVESTED	IRRIGATED YIELD bu/acre	IRRIGATED PRODUCTION BUSHELS X 1000	NON IRRIGATED ACRES HARVESTED	NON IRRIGATED YIELD bu/acre	NON IRRIGATED PRODUCTION BUSHELS X 1000	1976 PRELIMINARY ACRES	1976 PRELIMINARY YIELD bu/acre	1976 PRELIMINARY PRODUCTION BUSHELS X 1000
ADAMS		175000	4000	37	148	153000	27	4131	170000	23.6	4005
ARAPAHOE		66500				60000	23	1380	71000	21.2	1506
BOULDER		6500	500	32	16	6000	24	144	8000	26.7	213.4
CHEYENNE	39	53820	780	32	25	33150	14	464	26400	11.1	293
CLEAR CREEK											
DENVER		9000				8000	25	200	4900	14	68.6
DOUGLAS	69	44160	345	32	11	34845	20	696.9	28842	14.4	415.3
ELBERT											
GILPIN		4000				4000	29	116	5000	22	110
JEFFERSON		273500	10000	33.2	332	193000	20	3860	171000	21.2	3618.3
KIT CARSON		14500	500	33	16.5	13500	30	405	13000	28.6	371.6
LARIMER	26.5	37100	265	33	8.7	31800	18	572.4	31500	18.1	570.2
LINCOLN		174000	500	47	23.5	158500	26.5	4198	156000	20.3	3166
LOGAN		59000	2500	50	125	43000	24	1032	50000	25.2	1260
MORGAN											
PARK	87.4										
PHILLIPS		118000	1000	41	41	111000	33	3663	120000	27	3246
SEDGWICK		77000	500	45	22.5	72500	36.5	2646	73000	31.1	2272
TELLER	47.5										
WASHINGTON		307500	3000	40	120	253000	25	6325	275000	23.9	6586
WELD		200000	2500	39	97.5	169500	24	4068	155000	22.5	3486
YUMA		131000	5000	39	195	107000	26	2782	121000	24.4	2952
TOTALS		1750580	31390	37.6	1181.7	1451795	25.3	36683.3	1479642	23.1	34139.4

V. COMPACTS

A. SOUTH PLATTE RIVER COMPACT

The Colorado-Nebraska Compact on the South Platte River provides that Colorado shall have the full use of the river water between the fifteenth of October of any year and the first day of April of the succeeding year but that, between the first day of April and the fifteenth of October of each year, Colorado shall not permit diversions from the river below the Washington-Morgan County line to supply water rights having priority dates junior to June 14, 1897 to the extent that they would diminish the flow of the river at the Julesburg gaging station below a daily mean flow of 120 cfs.

Normally it is not necessary to curtail any surface diversions in Colorado to honor the compact because stream flows are inadequate to satisfy all the water rights senior to the compact date.

During the 1977 irrigation season, as in most other years, the flow of the river at Julesburg did drop below the 120 cfs level, however during those periods of low flow many of those water rights with priority dates senior to the June 14, 1897 cut off date were curtailed due to insufficient water in the river.

Preliminary flow data for the Julesburg station indicates that during the 197 day period from April 1 to October 15, 1977 the mean daily flow dropped below 120 cfs on 140 days. The daily flow for the 197 days averaged 243 cfs but only 50.5 cfs for 140 days of subcompact deliveries.

The following tabulation summarized the monthly South Platte River flows at the Julesburg Gage:

PERIOD	TOTAL FLOW FOR PERIOD AC. FT.	DAILY MAX. FLOW CFS	DAILY MIN. FLOW CFS	AVERAGE DAILY FLOW CFS	DAYS LESS THAN 120 CFS	AVG. DAILY FLOW ON COLUMN (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
April	20290	547	220	341	0	-
May	10520	964	32	171	18	48
June	7830	668	35	132	22	69
July	2410	109	28	39	31	39
August	3320	112	25	54	31	54
September	2630	106	28	44	30	44
October 1-14 incl.	936	175	36	112	8	60

REPUBLICAN RIVER COMPACT

The Republican River Compact allocates water to the signatory states, Colorado, Kansas and Nebraska, on the basis of beneficial consumptive use. Colorado's total allocation of 54,100 acre-feet is broken down as follows:

North Fork of the Republican River Drainage Basin	10,000 ac.ft.
Arikaree River Drainage Basin	15,400 ac.ft.
South Fork of the Republican River Drainage Basin	25,400 ac.ft.
Beaver Creek Drainage Basin	3,300 ac.ft.

and IN addition, for beneficial consumptive use in Colorado annually, the entire water supply of the Frenchman Creek (River) Drainage Basin in Colorado and the Red Willow Creek Drainage Basin in Colorado.

Total 54,100 ac.ft.

The computed annual consumptive use in Colorado in the Republican River Basin for the 1975 water year, the last year for which official figures are available, was as follows:

STREAM	CONSUMPTION	% OF ALLOCATION
North Fork of Republican River	5350 Ac.Ft.	53.5%
South Fork of Republican River	7120	28.0
Arikaree River	3680	23.9
Beaver Creek	0	0
	16050 Ac.Ft.	29.7%

LARAMIE RIVER COMPACT

The 1957 decree of the United States Supreme Court limits the diversions from the Laramie River and its tributaries to 49,375 acre feet annually for the State of Colorado. Of that amount 19,875 acre feet are allocated to Transmountain Users and the remaining 29,500 acre feet to the Meadowland Users within the river basin. The Meadowland Users are further restricted to diversions of not more than 1800 acre feet after July 31 of each year. In the event that the Transmountain Users do not divert their full allotment, the Meadowland Users may divert the difference between the 19,875 acre feet and the actual amount so diverted within the same year.

Sand Creek, which arises in Colorado, later becoming tributary to the Laramie River in Wyoming, is not included within the terms of the compact. Instead Colorado and Wyoming have a working agreement whereby senior water rights on Sand Creek in Wyoming are recognized before junior diversions are made in Colorado through the Wilson Supply Canal, a transbasin diversion.

In 1977 the transmountain diversions under the Laramie River Compact totaled 18,061 acre feet or some 91 percent of the Compact allowance. The meadowland diversions totaled 23,574 acre feet or some 80 percent of the allotment. Total Colorado diversions were 41,677 acre feet or 84.4 percent of the total allotment of 49,375 acre feet.

The reduced diversions were more the result of drought shortened streamflows than from lack of need.

V.

B. COURT STIPULATIONS, LITIGATION AND DECREED SUBDIVISION PLANS

The Rules and Regulations governing the use of groundwater as adopted by the Water Court in W-7209 et al., on March 15, 1974, remained in effect. This year, due to the drought, augmentation plans were unable to accept additional members. The result was about twenty-five persons being cited into court for refusal to comply with regulation orders.

The problem now is setting the cases in the Water Court. Only two cases have been set to date, one for a March court date and the other one in May. This means the 1978 irrigation season will be well underway without any relief from the violators.

The most significant litigation for 1977 was the Supreme Court opinion on the Wadsworth case. This opinion has given the State Engineer the right to protest rulings of the referee. While this is certainly a necessity for the State Engineer to have this authority, it is giving a lot of water users a false security in assuming that the State will now protect all water rights by protesting rulings.

Other Supreme Court rulings were the Orr case and the Boulder and Left Hand Ditch Company case. The Orr opinion upholds the previous decisions that "intent" is a necessary element in proving abandonment. If intent cannot be conclusively shown, then there is no abandoment. The Boulder and Left Hand case involves relief against the transportation of water for use in another watershed. Since the complaint filed by the City of Boulder was dismissed, the Supreme Court remanded the case back to the Water Court to consider the complaint and to proceed.

The Water Court is finally finished with most of the cases filed before July 1, 1972. There are still about 300 cases filed before July 1, 1972, that are pending decrees. As is shown on the tables in Section VII B, significant progress is being made with 399 applications filed during water year 1977, and 828 cases being decreed. The Water Court as of October 31, 1977, had about 1500 cases still awaiting adjudication.

The Division 1 Water Court held its first term day in September of 1977, about 400 cases were set for the referee's hearing at this time. Another term day is scheduled for March 1978.

The following augmentation plans have been decreed by the Water Court and are primarily for the purpose of supplying domestic water to homes in subdivisions. Most of the approved wells have not yet been the subject of applications for permits. Many of them will not be constructed for several years, if ever, because of location, lack of need or economic reasons. Problems involved with tabulating individual wells and administering these and previously decreed plans are beginning to consume more time both for the Division and the Groundwater Section in Denver.

SEE FOLLOWING PAGE

V.
B.

DECREED SUBDIVISION AUGMENTATION PLANS

W-NUMBER	APPLICANT	DECREE DATE	NUMBER OF SINGLE FAMILY EQUIVALENT UNITS	SOURCE OF REPLACEMENT	TOTAL ACRES IN SUBDIVISION	ANNUAL ANTICIPATED DEPLETIONS A.F.
7417	Millard Hutcheson (Bartram Park Sub.)	6-30-77	11	Bartram Park Spring Bartram Park Res.	80.6	.154 A.F.
7472	Anderson-Vandemoer	7-19-77	31 (Lawns)	Prewitt (GASP)	320.	4.5
7521	Rainsford Winslow (Morgan Heights)	11-10-76	115 (Lawns)	Riverside Res.	265.	32. A.F.
7646	T-R Development Corp.	3- 8-76	982	Guiraud 3T Lower Sacramento Ck. Res.		15.5 A.F.
7791	Walter Maitland	2-28-77	50	Handy Ditch Maitland Res.	18.	4.2
7797	Western Realty Dev. Co.	10- 4-76	50	E.C. Whitten No. 1 Jefferson Heights G.W. Res.	26.	3.14
8104	Sterling Realty Dev. Co.	2-16-77	24 (Lawns)	Springdale Ditch		6.645
8109	Western Union Realty Corp.	8-26-77	2400 (Lawns) 500 R.V.	Haver No. 3 Guiraud 3-T Buffalo Ck. Res. Spring Ck. Res.	7000.	88.37 A.F.
8185	Stitt and Hildebrand	9-12-77	25 4 Com.	Mountain & Plain Irr. Co.	64	1.69
8259	Brookman et al (Piano Meadows Filing No. 1)	3-10-77	47	Guiraud 3-T	28	1.47
8324	Craig and Mendel	10-18-77	74	Hodgson Ditch Cold Springs Res.	406	11.76

V.

C. LEGISLATION

During the 1977 session of the Legislature only two bills were passed which directly affect water rights and the administration of water rights in Division No. 1. They were Senate Bills 4 and 287. Copies of these bills are included in the appendix of this report.

S.B. 4 This bill changes the method of approval for temporary approval of plans of augmentation and also extends the powers of the water referee to include hearing augmentation plans. Temporary approval can no longer be obtained from the State Engineer but must now be approved by the Water Court. This means a greater time period will be required between proposing a plan and receiving temporary approval. To this date no temporary approvals have been requested from the Water Court.

S.B. 287 This bill requires the State Engineer to provide written notice of a well permit expiration by certified mail. This should provide for more accurate well records since many wells now have completion reports indicating they have been drilled but no beneficial use statements which means the registration has not been completed nor the wells entered into the well tabulation.

Senate Bill 522 and House Bill 1719 will not directly affect Division No. 1. Senate Bill 522 repealed 37-80-102(6)(b). House Bill 1719 deals with receiving credit for water which is used as a vehicle to transport products out of the state (such as slurry pipelines).

Other water legislation in 1977 involved changes in rules governing Water Districts and will not be mentioned here.

VI. DAMS

A. RESERVOIRS

1. PLANS AND SPECIFICATIONS

The following list includes the dams for which plans and specifications have been approved this year. The list is arranged by water district and in order of approval within districts.

PLANS AND SPECIFICATIONS APPROVED

NAME	WD	OWNER	TYPE	DATE APPROVED
Milton Reservoir	2		Repair	
Barr Lake	2		Repair	
Standley Lake	2		Repair	
Niver Creek Reservoir	2		New ?	
College Lake C-1507	3	Colo. State University	Imp.	5-10-77
Joe Wright Reservoir C-1508	3	City of Ft. Collins	New	5-12-77
Batterson Reservoir C-1509	3	Glacier View Meadows	New	5-20-77
Claymore Reservoir C-1518	3	Pleasant Valley & Lake Canal	Repair	9-16-77
Loveland Water Storage Reservoir	4	Loveland	New	2-13-77
Ish Reservoir	4	Ish Reservoir Company	Repair	11-3-77
H Bar G Reservoir	4	Louis Livingston	Repair	7-19-77
Union Reservoir	5	Union Reservoir Company	Imp.	1-27-77
Gross Reservoir	6	City & County of Denver	Repair	2-9-77
Six Mile Reservoir C-628A	6	Boulder & White Rock D & R Company	Repair	10-26-77
Chicago Creek Reservoir C-1514	7	City of Idaho Springs	Repair	7-22-77
Blunn Reservoir C-1520	7	City of Arvada	New	11-15-77
Newton's Pond C-1505	8	Bit-O-Sea Lake Association	Repair	1-27-77
Union Square Pond M-4 C-1506	8	National Western Development Corporation	New	3-30-77

PLANS AND SPECIFICATIONS APPROVED (CONTINUED)

NAME	WD	OWNER	TYPE	DATE APPROVED
Main Reservoir C-568B	8	City of Lakewood	Imp.	5-20-77
Blackmer Reservoir C-302A	8	Kent Denver Country Day School	Imp.	6-10-77
Soda Lakes	9	Soda Lakes Reservoir & Mineral Water Co.	Repair	9-28-77
Jumbo Reservoir C-1131A	64	Julesburg Irrigation Co.	Repair	4-29-77

VI. DAMS

A. RESERVOIRS

2. INSPECTIONS

Our dam inspectors checked a number of structures this past year. A number of these inspections are included in the following list. The men making these inspections were Louis DeGrave, Eric Wilkinson, Clint Huntington, John VanSiver and Lou Reyes.

DISTRICT NO. 1

NAME	DATE
Ireland No. 5	2-17-77
Dover Reservoir Dam	3-14-77
Giffin Reservoir No. 1 (Lower)	3-22-77
Giffin Reservoir No. 2 (Upper)	3-22-77
Heart Reservoir	3-29-77
Booth Reservoir	3-29-77
Riverside Reservoir	4-6-77
Jackson Reservoir	4-6-77
Booth Reservoir	4-13-77
Prospect Reservoir	4-20-77
Horse Creek Reservoir	4-20-77
D.A. Lord No. 4 Reservoir	4-20-77
Jackson Reservoir	5-13-77
Riverside Reservoir	5-13-77
Empire Reservoir	5-16-77
Booth Reservoir	6-9-77
Owl Creek Reservoir	6-20-77
Owl Creek Reservoir	7-11-77
Heart Reservoir	10-7-77
Heart Reservoir	10-25-77
Heart Reservoir	11-4-77
Diver Reservoir	11-2-77

DISTRICT NO. 2

Barr Lake	1-18-77
Milton Reservoir	4-19-77
Standley Lake	4-21-77
Milton Reservoir	5-5-77
Standley Lake	7-27-77
Lower Latham Reservoir	2-27-77
Brunner Reservoir	9-21-77
Wadley Dams 1,2,3	11-8-77

DISTRICT NO. 3

Eaton-Law Reservoir	1-3-77
South Gray Reservoir	1-6-77
Gray No. 3 Reservoir	1-6-77
North Gray Reservoir	1-13-77

DISTRICT NO. 3 (CONTINUED)

NAME	DATE
Gray No. 3 Reservoir	1-20-77
South Gray Reservoir	1-20-77
Gross Reservoir	2-10-77
Lundvall Reservoir	2-3-77
Mattingly Reservoir	3-10-77
Loup Reservoir	3-10-77
Reservoirs in North Poudre System	3-24-77
Reservoirs in North Poudre System	4-27-77
Long Draw Reservoir	6-19-77
Claymore Reservoir	6-3-77
Long Draw Reservoir	6-21-77
Reservoirs in North Poudre System	7-22-77
Timnath Reservoir	8-12-77
Lone Pine Reservoir	8-10-77
Timnath Reservoir	8-16-77
Timnath Reservoir	9-28-77
Roberts Reservoir	9-14-77
Worster Reservoir	9-13-77
North Gray Lake	9-7-77
Warren Lake Reservoir	11-3-77
Timnath Reservoir	11-21-77
Warren Lake Reservoir	12-13-77

DISTRICT NO. 4

Rist Benson Reservoir	1-25-77
Welch Lake	2-14-77
Lonetree Reservoir	3-8-77
Waneka Reservoir	8-5-77
Welch Lake	9-22-77
Loveland Water Storage Reservoir	10-19-77
Rist Benson Reservoir	11-17-77

DISTRICT NO. 5

New Thomas Reservoir	1-4-77
New Thomas Reservoir	2-1-77
McCaslin Reservoir	2-4-77
Diamond Reservoir	2-17-77
Budd Reservoir (AKA Lefthand)	2-18-77
Highland Reservoir	3-7-77
Pleasant Valley Reservoir	4-6-77
Mc Call Reservoir	4-20-77
Beaver Park Reservoir	11-1-77
Union Reservoir	12-6-77

DISTRICT NO. 6

Erie Reservoir	4-12-77
Erie Reservoir	4-21-77
Erie Reservoir	4-27-77
Erie Reservoir	5-31-77

DISTRICT NO. 6 (CONTINUED)

NAME	DATE
Prince No. 1 Reservoir	5-27-77
Erie Reservoir	6-9-77
Silver Lake	7-21-77
Teller No. 2 Reservoir	7-29-77

DISTRICT NO. 7

Fall River Reservoir	6-13-77
Upper Chinn Reservoir	9-21-77
Lower Chinn Reservoir	9-21-77

DISTRICT 8-80

Bacevicius Reservoir	4-25-77
Strontia Springs Reservoir	8-26-77
Waucondah Reservoir	5-17-77
Upper Long Lake	6-14-77
J.O. Hill Reservoir	9-8-77
Lininger Reservoir	9-21-77
Blackmer Reservoir No. 1	9-20-77
J.O. Hill Reservoir	9-27-77
Wellington Reservoir	10-3-77
Blackmer Reservoir No. 1	10-7-77
Main Reservoir	11-2-77

DISTRICT NO. 9

Marston Lake	3-28-77
Rivera Circle Lake (AKA Ward No. 5)	5-16-77
Rivera Circle Lake (AKA Ward No. 5)	6-29-77
Newton Pond	10-7-77
Lake Reservoir	11-14-77
Newton Pond	11-18-77
Soda Lakes	12-15-77

DISTRICT NO. 64

Julesburg Reservoir	3-7-77
North Sterling Reservoir	4-20-77
Prewitt Reservoir	4-20-77
Julesburg Reservoir	8-3-77
Julesburg Reservoir	9-12-77

VI.

B. LIVESTOCK WATER TANKS - EROSION CONTROL DAMS

The total number of livestock water tanks and erosion control dams approved between November 1, 1976 and October 31, 1977 are presented below in tabular form:

DISTRICT	NO. OF LIVESTOCK TANKS	TOTAL CAPACITY (AF)	NO. OF EROSION CONTROL DAMS	TOTAL CAPACITY (AF)
1	16	78.25	8	10.7
2				
3				
4				
5				
6				
7				
8	3	2.9	5	9.7
9				
23				
48				
49	9	41.5		
64			12	24.5
65	1	7		
79				
80				
	29	129.65	25	44.9

VII.

WATER RIGHTS

A. TABULATION AND ABANDONMENT

Approximately 16,000 tabulation cards for new adjudications have been submitted to the Denver data processing section. These will be a part of the new tabulation to be printed in July 1978. An updated abandonment list is also being prepared to be included as a separate supplement to that tabulation, along with corrections to the existing list.

The sections of the statutes dealing with the tabulation and abandonment are 37-92-401 and 37-92-402.

VII. WATER RIGHTS

B. WATER DIVISION NO. 1 - CASES FILED

WATER DIVISION NO. 1 - CASES FILED

1976	FILINGS	AMENDED FILINGS	TOTAL NO. OF STRUCTURES	WELLS & SUMPS	SPRINGS	STORAGE	SURFACE	ALT. POINTS	CHANGE OF WATER RIGHTS	COMPLAINTS	QUADRENNIALS	OTHER
NOVEMBER	41	4	51	16 1 Aug.	0	20 3 Aug.	8	0	3 2 Aug.	1	0	0
DECEMBER	75	3	115	37 14 Aug.	10	42	12	0	16 6 Aug.	0	0	8
1977												
JANUARY	20	1	72	16 48 Aug.	1	1	5	1	0 4 Aug.	1	1	0
FEBRUARY	40	0	14	3 4 Aug.	3	1	3	1	3	0	20	0
MARCH	29	2	21	7	4	2	7	1	12	0	8	0
APRIL	22	5	26	7 7 Aug.	2	0	4	0	7	0	5	1
MAY	31	6	20	11	2	2	0	5	2	0	15	0
JUNE	29	1	1346	8 1328 Aug.	0	3	5	2	0	0	9	0
JULY	32	3	49	12 28 Aug.	3	1	4	1	6	0	1	0
AUGUST	35	4	31	8	10	9	4	0	1	4	6	0
SEPTEMBER	26	4	29	11 4 Aug.	2	3 2 Aug.	1	2	1	1	4	0
OCTOBER	19	2	52	9 5 Aug.	0	4 4 Aug.	26	0	1	1	1	0
TOTAL WATER YEAR	399	35	1826	1584	37	97	79	13	64	8	70	9
TOTAL TO DATE	8798	230	39044	36434	1081	726	696	Not Available From Past Years	459	Not Available From Past Years	144	278

R.H.

VII. WATER RIGHTS

C. WATER DIVISION NO. 1 - CASES

WATER DIVISION NO. 1 - CASES DECREED

	DECREES	WELLS	SURFACE	SPRINGS	SUMPS	STORAGE	OTHER	TOTAL
1976								
November	57 (4-Dism.)	125	3	11	2	3	15	159
December	94 (3-Dism.)	279	6	19	3	8	6	321
1977								
January	34 (4-Dism.)	30	8	28	0	2	3	71
February	132 (3-Dism.)	203	22	9	1	11	39	285
March	66 (3-Dism.)	187	2	15	3	17	1	225
April	61 (4-Dism.)	111	4	11	2	2	3	133
May	142 (12-Dism.)	166	7	31	1	28	6	239
June	56 (4-Dism.)	56	3	20	0	7	2	88
July	35 (7-Dism.)	59	2	0	3	6	2	72
August	57 (4-Dism.)	93	32	1	0	4	1	131
September	9 (2-Dism.)	11	2	0	0	4	2	19
October	28 (7-Dism.)	113	6	5	0	6	10	140
Total Water Year	771 (57-Dism.)	1,433	97	150	15	98	90	

VIII.

A. CONSERVANCY DISTRICTS

Central Colorado Water Conservancy District	John W. Rayburn	Manager	315 Denver Avenue Ft. Lupton 80621 857-4352
Lower South Platte Water Conservancy District	Gary R. Friehauf	Secretary-Treasurer	P.O. Box 1725 Sterling 80751 522-1378
Northern Colorado Water Conservancy District	Earl F. Phipps	Manager	P.O. Box 679 Loveland 80537 667-2437
St. Vrain & Left Hand Water Conservancy District	Verna Sigg	Secretary	1755 North Main Longmont 772-4060
Upper South Platte Water Conservancy District	James Settele	President	Fairplay 80440

VIII

B. ORGANIZATIONS

WATER DISTRICT NO. 1

DITCH AND RESERVOIR COMPANIES

A.A. Smith Irrigating Canal Reservoir, Milling and Pipeline Company	Gene Peterson	Pres.	Snyder 80750
Associated Ditches	Jake Kausman	Chairman	Ft. Morgan 80701
Beaver Creek Ditch Company	John Higgins	Secy.	Brush 80723
Beaver Ditch Company	Charles Henry	Pres.	Brush 80723
Bijou Irrigation Company	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
Bijou Irrigation District	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
Corona Ditch Company	Jack Orr	Owner	Masters 80647
Duel and Snyder	E.L. Caneva	Pres.	Rt. 1 Ft. Morgan 80701
Fort Morgan Canal Company	Lindy Crumley	Supt.	111 East Railroad Ave. Ft. Morgan 80701
Gill and Stevens Ditch Company	Harold Hansen	Pres.	Rt. 1 Brush 80723
Hillrose Irrigation District	Roy Boyles	Secy.	Hillrose 80733
Hoover Ditch Company	Mrs. Pat Peterson	Secy.	Kersey 80644
Iliff Irrigation District	Adam Koehler	Secy.	Sterling 80751
Illinois Ditch Company	George Allard	Pres.	Kersey 80644
Jackson Lake Reservoir Company	Lindy Crumley	Supt.	111 East Railroad Ave. Ft. Morgan 80701
Johnson & Edwards Ditch Company	William Tramp	Pres.	Hillrose 80733
Lower Platte & Beaver Irrigation Company	Roy Boyles	Secy.	Hillrose 80733
Logan Irrigation District	John Eisenach	Pres.	Sterling 80751
Morgan, Prewitt Reservoir Co.	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
North Sterling Irrigation	Alex Michel	Supt.	Foote Building Sterling 80751
Putnam Ditch Company	Harlan Snider	Pres.	Masters 80647
Riverside Irrigation Company	Cecil Osborne	Supt.	Box 455 Ft. Morgan 80701
Riverside Irrigation District	Cecil Osborne	Supt.	Box 455 Ft. Morgan 80701
Snyder Ditch & Reservoir Co.	Gene Peterson	Pres.	Snyder 80750
Tetsel Ditch Company	Ron Taylor	Pres.	Merino 80741
Tremont Ditch Company	Leon Lake	Secy.	Snyder 80750
Trowell Ditch Company	Willis Elson	Pres.	Hillrose 80733
Upper Platte & Beaver Canal Co.	John Higgins	Secy.	Farmers State Bank Brush 80723
Union Ditch Company	B.B. Peterson	Pres.	Snyder 80750
Weldon Valley Ditch Company	Maurice Jones	Pres.	Weldona 80653
Kiowa-Bijou Groundwater Basin	Donald F. McClary	Attorney	231 Main Street Ft. Morgan 80701
	Don Richardson	Pres.	Ft. Morgan 80701

WATER DISTRICT NO. 2

DITCH AND RESERVOIR COMPANIES

Big Dry Creek Ditch & Reservoir Decree	Mrs. G.R. Norden	Secy.	Rt. 1, Box 196 Ft. Lupton 81038
Burlington Ditch & Reservoir Land Company	Adolph Bohlender	Pres.	LaSalle 80645
Brighton Ditch Company	George Stieber	Pres.	Rt. 1, Box 104 Ft. Lupton 81038
Coal Ridge Ditch Company	Harold Bohn	Pres.	Ft. Lupton 81038
Delta Ditch Company	Stanley Davis (352-3496)		712 10th Street Greeley 80631
Denver Water Board	James Ogilvie	Manager	144 W. Colfax Denver
Farmers Independent Ditch Co.	John Briggs	Pres.	17787 Weld County Rd. 25 Platteville 80651
Farmers Reservoir & Irrigation Company	Tom Fisher (659-7373)	Supt.	LaSalle 80645
Fulton Ditch Company	W.W. Gaunt	Secy.	25 South 4th Avenue Brighton 80601
Gardners Ditch Company	Sylvester DiGiacomo	Pres.	6820 York Street Denver
German Ditch Company	Casper Sack	Pres.	Brighton 80601
Godfrey Ditch Company	Jerome Loeffler	Pres.	LaSalle 80645
Henrylyn Irrigation District	Lawrence Gerkin	Manager	Box 141 Hudson 80642
Highland Ditch Company	Mrs. George Jurgens	Pres.	Rt. 4, Box 209B Greeley 80631
Lower Latham Ditch Company	Victor R. Klein	Pres.	Kersey 80644
Lupton Bottom Ditch Company	Roy Miller	Pres.	Platteville 80651
McCanne Ditch & Reservoir Co.	Al Robertson	Pres.	P.O. Box 38 Brighton 80601
Meadow Island No. 1 Irrigation Company	Wm. Mayer	Secy.	Rt. 2, Box 74 Platteville 80601
Meadow Island Irrigation Co.	Ruben Gustafson	Pres.	Rt. 2, Box 145 Ft. Lupton 81038
New Brantner Ditch Company	W.W. Gaunt	Secy.	25 South 4th Ave. Brighton 80601
North Star Reservoir Company	G.R. Norden	Pres.	Rt. 1 Ft. Lupton 81038
Platte Valley Irrigaiton Co.	Delbert Shable	Pres.	Platteville 80651
Platteville Irrigation & Milling Company	John Kunzman	Secy.	Rt. 2, Box 120 Ft. Lupton 81038
Slate Ditch Company	Robert Doughty	Pres.	Ft. Lupton 81038
Union Ditch Company	Mrs. Frances Hill	Secy.	LaSalle 80645
Walter & Roberts Ditch Company	Roy Lunvall	Pres.	Greeley 80631
Western Mutual Ditch Company	Ed. Fritzler	Pres.	LaSalle 80645
Wellington Reservoir Company	Ron Heitman	Pres.	Brighton 80601
Yoxall Ditch Company	Louis Karsh	Pres.	Brighton 80601

WATER DISTRICT NO. 3

DITCH AND RESERVOIR COMPANIES

Arthur Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
B.H. Eaton Ditch Company	Wayne Miller Louise Kane	Pres. Secy.	Kodak - P.O. Box 98 Windsor 80550
Boxelder Ditch Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Boyd Irrigation Company	Rodger Houtchens	Secy.	1007 9th Avenue Greeley 80631
Cache la Poudre Irrigation Company	Greg Jesson	Secy.	Rt. 3 - Box 772 Ft. Collins 80521
Crystal Lakes	Don Weixelman		P.O. Box 2167 3200 E. Mulberry Ft. Collins 80521
Divide Canal & Reservoir Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
Dixon Canyon Ditch & Reservoir Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Greeley, City of	Darryl D. Alleman		Greeley City Hall Greeley 80631
Greeley Irrigation Company	Edgar Bartels	Secy.	1301 9th Street Greeley 80631
Jackson Ditch Company	Vivienne Woodward	Secy.	P.O. Box 1584 2319 E. Mulberry Ft. Collins 80521
Jones Ditch Company	352-2293		
Kern Reservoir and Ditch Company	C.W. Kirby	Pres.	P.O. Box 220 Windsor 80550
Kitchell Reservoir Company	Alice Fisher	Secy.	Rt. 4 Ft. Collins 80521
Lake Canal Company	John Hartman	Secy.	United Bank Building Ft. Collins 80521
Lake Canal Reservoir Company	John Hartman	Secy.	United Bank Building Ft. Collins 80521
Larimer County Canal No. 2 Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Larimer & Weld Irrigation Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
Larimer & Weld Reservoir Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
Mail Creek Ditch Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
New Cache la Poudre Irrigation Company	Jim Muroya	Secy.	708 8th Street, Box 356 Greeley 80631
New Mercer Ditch Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
North Poudre Irrigation Company	Ben Dumler	Secy.	North Poudre Irrigation Office, Box 4 Wellington 80549
No. 10 Ditch Company	Alden Hill	Secy.	160 W. Mountain Avenue Ft. Collins 80521

WATER DISTRICT NO. 3 (Continued)

Ogilvy Land & Irrigation Company	Shirley Wayman	Secy.	1007 9th Avenue Greeley 80631
Pleasant Valley & Lake Canal Company	Ward Fischer	Secy.	1st National Bank Bldg. Ft. Collins 80521
Taylor & Gill Canal Company	Wm. Seaworth	Pres.	2305 N.Taft Hill Road Ft. Collins 80521
Tunnel Water Company	Vivienne Woodward	Secy.	2319 E. Mulberry P.O. Box 1584 Ft. Collins 80521
Warren Lake Reservoir Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Water Supply & Storage Company	Vivienne Woodward	Secy.	2319 E. Mulberry P.O. Box 1584 Ft. Collins 80521
Whitney Irrigation Company	Robert Tigges Carrol Camfield	Pres. Secy.	Box 1146 Windsor 80550
Wm. Jones Irrigation Company	Geo. Firestien	Pres.	Farmers Spur Greeley 80631
Windsor Reservoir & Canal Company	Don Engel	Secy.	106 Elm Box 206 Eaton 80615

DISTRICT 3 SUPERINTENDENTS

Arthur Irrigation Company	John Meyers	482-3175
B.H. Eaton Ditch Company	Allen Lamb	686-2441
Boxelder Ditch Company	Bob Cooper	482-0706
Cache la Poudre Irrigation Company (Little Cache)	Greg Jesson	482-7635
Cache la Poudre Irrigation Company (New Cache)	John Lindenberg (Supt.)	352-0222 352-4025
	George Boraker (Headgate)	482-1632
	Dick Rayburn (Windsor Lake)	686-2807
	Phillip Smith (Timnath Res.)	482-0732
Canal Number 3 Ditch Company	A.G. Brenkle	353-6014
Canon Canal	G.D. McGarvey	484-0541
Chaffee Ditch Company	John Meyers	482-3175
Coy Ditch Company	James Hoffman	482-4356
Fort Collins Filters	Ben Alexander (Supt.)	482-2231
	Vern Mobley (Operator)	
	Terry VanCleave (Operator)	
	Fred Jones (Operator)	
Gray Lakes	Dave Becker	482-3649
Greeley Filters		482-2446
	Verlyn Richardson (Supt.)	484-1592
	Norman Magnuson (Supt.)	482-2446
	Jack Greer (Reservoirs)	
Jackson Ditch Company	Abner Tamlin	482-8100
Jones Ditch Company	Reynold Herbst	352-2293
Lake Canal	Dave Becker	482-3649

DISTRICT 3 SUPERINTENDENTS (CONTINUED)

Larimer County Number 2 Ditch Company	George Hoff	482-8688
Larimer and Weld Irrigation Company	(Eaton)	454-3377
	John A. Johnson (Supt.)	482-7671
	Clarence Hutchinson (Hdgt.)	482-7701
	Dale Simpson Lake Lee	686-2952
Larimer and Weld Reservoir Company	Greg Jesson	482-7635
New Mercer Ditch Company	Dan Wendel	493-8591
North Poudre Irrigation Company		568-3612
	Ben Dumler (Supt.)	482-8398
	Jim Greenacre (Hdgt.)	493-6108
Ogilvy Ditch Company	Bill McMurry	352-4468
Pleasant Valley and Lake	Don Brewster (Supt.)	482-8645
	Art Wendel (Ditch Rider)	221-0335
Taylor and Gill Ditch Company	Greg Jesson	482-7635
Water Supply and Storage		482-3433
	Jim McFall (Supt.)	482-7083
	Kenneth Wolf (Hdgt.)	482-3699
	George Yost (Black Hollow Res.)	
Whitney Ditch Company	Allen Lamb	686-2441
Windsor Reservoir and Canal	(Eaton)	454-3377
	John A. Johnson (Supt.)	482-7671
	Jim Johnson (Hdgt.)	482-3290
	Victor Reynolds (Windsor Res.)	686-2636

WATER DISTRICT NO. 4

DITCH AND RESERVOIR COMPANIES

Arkins Water Association	Mrs. Joy Cross	Secy.	P.O. Box 6 Masonville 80541
Bald Mountain Water Association	Charles McAfee	Secy.	Rt. 2, Box 319N Loveland 80537
Beeline Ditch Company	Guy A. Shable	Secy.	Rt. 1, Box 65 Milliken 80543
Big Thompson Manufacturing Ditch Company	Robert Christensen	Secy.	P.O. Box 642 Loveland 80537
Big Thompson & Platte River Ditch Company	Guy A. Shable	Secy.	Rt. 1, Box 65 Milliken 80543
Blower Ditch Company	Henry Pope, Jr.	Supt.	Rt. 1, Box 138 Longmont 80501
Boulder & Larimer County Irrigation & Manufacturing Ditch Company (Ish)	L.V. French	Secy.	Rt. 2, Box 23 Berthoud 80513
Buckhorn Highline Ditch Company	Mrs. Zella R. Soderburg	Secy.	Star Route, Box 317 Loveland 80537
Buckhorn Water Users Association	Mrs. Helen L. Mettlen	Secy.	Masonville 80541
Central Weld County Water District	Dale D. Olhausen	Secy.	115 18th Street Greeley 80631
Consolidated Hillsborough Ditch Company	Don Davis	Secy.	1st National Bank Bldg Johnstown 80534
Consolidated Home Supply Ditch and Reservoir Company	W.R. Keirnes	Secy.	Star Route, Box 450 Loveland 80537
Culver Irrigation Company	George Landers	Secy.	P.O. Box 209 Longmont 80501
Diagonal Water & Sanitation District	Jim Hudson	Secy.	1200 28th Street Boulder
Eagle Ditch Company	Mrs. Donald H. Lemmon	Secy.	Rt. 2, Box 120 Berthoud 80513
Eglin Ditch Company	Wayne Hicks	Secy.	Rt. 2, Box 127 Berthoud 80513
Evans Ditch Company	Town Clerk of Evans	Secy.	Evans 80620
Fairport Reservoir Company	Nellie VerStraten	Secy.	Rt. 1 Ft. Collins 80521
Farmers Irrigation Ditch and Reservoir Company	F. Ray DeGood	Secy.	P.O. Box 657 Loveland 80537
Greeley-Loveland Irrigation Company	Ron Brinkman	Secy.	803 23rd Avenue Greeley 80631
George Rist Ditch Company	W.R. Keirnes	Secy.	Star Route, Box 450 Loveland 80537
Handy Ditch Company	Louis Bein	Secy.	Box 460 Berthoud 80513
Hill & Brush Ditch Company	Jim Nelson	Secy.	Rt. 1 Milliken 80543
Kershner Ditch Company	Harry Soderberg	Secy.	Star Rt., Box 317 Loveland 80537
Little Thompson Valley Water District	Lovilo Fagan	Mgr.	307 Welch Avenue Berthoud 80513
Longs Peak Water Users Assn.	Mrs. Joanne Macy	Secy.	P.O. Box 714 Longmont 80501

WATER DISTRICT NO. 4 (CONTINUED)

Louden Irrigation Reservoir and Canal Company	Ralph Benson		925 West 29th Loveland 80537
Loveland & Greeley Reservoir Company	Ron Brinkman	Secy.	808 23rd Avenue Greeley 80631
Lykins Ditch	Mrs. Tressie Debuse	Secy.	Rt. 3, Box 211A Longmont 80501
Mariana Water District	Lovilo Fagan	Secy.	307 Welch Avenue Berthoud 80513
Masonville Union Ditch & Reservoir Company	Ben Milner	Secy.	Star Route Loveland 80537
Minor Longdon Ditch Company	Mrs. Elmer Rutt		Rt. 1, Box 3 Berthoud 80513
New Ish Ditch & Reservoir Co.	Horace G. McCarty	Secy.	P.O. Box 658 Longmont 80051
North Carter Lake Water District	Lovilo Fagan	Secy.	307 Welch Avenue Bethoud 80513
Osborn & Caywood Ditch Co.	Donald J. Befus	Secy.	716 S. County Rd. 15 Berthoud 80513
Perkins Ditch Company	Arnold Friend	Owner	Star Route Loveland 80537
Rist & Benson Reservoir Co.	Ralph Benson	Supt.	925 West 29th Loveland 80537
Rockwell Ditch Company	Max H. Schaal	Secy.	Rt. 1, Box 50 Berthoud 80513
Ryan Gulch Reservoir Co.	Lavilo Fagan	Secy	307 Welch Avenue Berthoud 80513
Seven Lakes Reservoir Co.	Ron Brinkman	Secy.	808 23rd Avenue Greeley 80631
South Side Irrigation and Reservoir Company	Robert Ausenhus	Secy.	203 East 5th Street Loveland 80537
Victory Irrigating Canal Co.	Cal Carter	Secy	Star Route Loveland 80537
Wind Cliff Water Association Inc.	Mrs. Vivien Wylene Buser	Secy.	62 Elmhurst Lane, Riverdale Bettendorf, Iowa

WATER DISTRICT NO. 5

DITCH AND RESERVOIR COMPANIES

Allen Lake Reservoir Company	Frank Gould	Supt.	Foothills Highway Boulder (442-2546)
Baker & Weese	Western Paving Co.	Owner	Denver (772-7864)
Weese Pvt.	Western Paving Co.	Owner	Denver (772-7864)
Beckwith	Mark Benson	Secy.	1500 Florida Avenue Longmont 80501 (776-2670)
Bonus Ditch Company	San Tanaka	Secy.	Rt. 2 Longmont 80501 (776-3495)
Boulder & Left Hand Irrigation Company	Nels Jensen	Secy.	436 Coffman Street Longmont 80501
Chapman & McCaslin	Charles Ramey	Secy.	Rt. 3 Longmont 80501 (776-1945)
Clough Private	Friz Bartley	Owner	Rt. 3 Longmont 80501 (776-1437)
Clough & True	Public Service Co.	Owner	Denver
Clover Basin Ditch & Reservoir Company	Wayne Jurgens	Secy.	512 4th Avenue Longmont 80501 (776-5122)
Cushman	Vernon Golden	Owner	12911 Hillcrest Drive Longmont 80501 (776-5880)
Davis & Downing	Gordon Kennedy	Secy.	Rt. 3 Longmont 80501 (776-1161)
Denio & Taylor	Harold Dawson	Secy.	1st National Bank Longmont 80501 (776-5800)
Dickens Pvt.	Lloyd Dickens	Owner	136 S. Main Longmont 80501 (776-0325)
Dixon Mill	G.W. Sugar Company	Owner	Longmont 80501 (776-5070)
Goss Pvt. 1 & 2	Western Paving Co.	Owner	Denver (772-7864)
Hager Meadow	Russell Zweck	Owner	Longmont 80501 (776-5198)
Hayseed	Louis Rademacher	Owner	Longmont 80501 (535-4345)
Highland	George Landers	Secy.	First National Bank Longmont 80501 (776-5800)
Ide & Starbird Reservoir Co.	L.A. Biddle	Secy.	Mead 80542
Independent Reservoir Co.	George Reynolds	Secy.	Longmont 80501
Island	Vernon Golden	Owner	12911 Hillcrest Drive Longmont 80501 (776-5880)

WATER DISTRICT NO. 5 (Continued)

James Ditch Company	Clarence Johnson	Secy.	8090 Nelson Road Longmont 80501 (776-3273)
John Rice	Bob Seewald	Owner	Longmont 80501 (776-0744)
Last Chance Ditch Company	Harold Nelson	Secy.	Longmont 80501 (776-2336)
Left Hand Ditch Company	Frank Gould	SEcy.	Foothills Highway Boulder (442-2546)
Lyons, Town of	Max Hammans	Supt.	Lyons 80540 (823-6085)
Longmont, City of	Frank Humphry		Longmont 80501 (776-6050)
Longmont Supply Ditch Company	George Landers	Secy.	Longmont 80501 (776-5800)
Lower Baldwin Ditch Company	Dean Prieskorn	Secy.	Rt. 2 Longmont 80501 (776-2916)
Mason Meadow	Vernon Golden		12911 Hillcrest Drive Longmont 80501 (776-2135)
Mead, Town of	Harvey Potts	Supt.	Mead 80542 (535-4557)
Montgomery Pvt.	Public Service Co.	Owner	Denver (442-2776)
Nelson	Wayne McGill	Owner	10075 N. 75th Longmont 80501 776-9327
Niwot	Bob Seewald	Secy.	Rt. 2 Longmont 80501 (776-0744)
North Mutual Life Insurance Company	Robert Hazelbush		Longmont 80501 (776-2832)
Oligarchy	Dan Bernard	Secy.	1st National Bank Longmont 80501 (776-5800)
Palmerton Consolidated Ditch Company	James Goss	Secy.	Rt. 3 Longmont 80501 (776-4984)
Peck	George Wagner	Secy.	Longmont 80501 (776-5628)
Pella Ditch Company	Sidney Fredstrom	Secy.	Rt. 3 Longmont 80501 (776-3057)
Pleasant Valley Reservoir and Company	Russell Palmer	Secy.	1264 6th Avenue Longmont 80501 (776-5625)
Rice	Brian Rundle	Owner	Longmont 80501 (776-5098)
Rough and Ready	Russell Palmer	Secy.	1264 6th Avenue Longmont 80501 (776-5625)

WATER DISTRICT NO. 5 (Continued)

Runyon	Willis Marlatt	Owner	Longmont 80501 (776-0791)
Smead Ditch Company	Warren Bashor	Secy.	Rt. 3 Longmont 80501 (823-6474)
South Flat Ditch Company	David Wagner	Secy.	Longmont 80501 (776-0865)
South Ledge Ditch Company	Reinhold Loukonen	Secy.	Lyons 80540 (823-6268)
St. Vrain and Palmerton	William Schell	Supt.	802 Francis Longmont 80501 (776-3475)
Supply Ditch Company	George Landers	Secy.	1st National Bank Longmont 80501
Swede	Charles Bliss	Pres.	Longmont 80501 (776-4865)
True and Webster	Henry Zapf	Secy.	Longmont 80501 (776-4623)
Upper Baldwin	Dean Prieskorn	Secy.	Longmont 80501 (776-2916)
Union Ditch Company	Frances Hill	Secy.	LaSalle 80645
Union Reservoir Company	Frances Hill	Secy.	LaSalle 80645
Webster and McCaslin	Wallace Gage (Mrs.)	Owner	Longmont 80501 (776-9301)
Weese Pvt.	Western Paving Company	Owner	Denver (772-7864)
Zweck and Turner Ditch Company	Russel Zweck	Secy.	Rt. 3 Longmont 80501 (776-5198)

WATER DISTRICT NO. 6

DITCH AND RESERVOIR COMPANIES

Andrews & Farwell Ditch Co.	Forest White	Secy.	2994 North 75th Boulder
Autrey Eggleston	Stanley Medsker		5050 South Emporia Denver
Baseline Land & Reservoir Co.	Margaret Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Boulder Ditch (Town of)	City of Boulder	Owner	City Hall Building Boulder
Boulder & Left Hand Irrigation Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Boulder & Weld County Ditch Company	Ethel Ziegler	Secy.	831-17th Longmont 80501
Boulder & White Rock Ditch & Reservoir Company	Chas. Haley	Secy.	401 Main Street Longmont 80501
Butte Irrigation & Milling Company	Gene Sawhill	Secy.	6967 Valmont Drive Boulder
Carr & Tyler Ditch Company	Milton Nelson	Secy.	2040 West Longs Peak Longmont 80501
Church Ditch Company	Marcus Church	Pres.	Broomfield 80020
City of Lafayette	City Manager		Lafayette 80026
City of Louisville	City Manager		Louisville 80027
Coal Ridge Ditch	Mildred Sarchet	Secy.	Rt. 2, Box 162 Ft. Lupton
Community Ditch	M.L. Sarchet	Pres.	80-South 27th Avenue Brighton 80601
Consolidated Lower Boulder Reservoir and Ditch Company	Mrs. Ray Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Davidson Ditch and Reservoir Company	Helen Domenico	Secy.	10315 Baseline Lafayette 80026
Dry Creek Davidson	Ralph Bixler	Pres.	9849 Isabelle Road Lafayette 80026
Dry Creek No.2 Ditch Company	C.B. Beitelshees	Secy.	Rt. 1, Box 322 Boulder
East Boulder Ditch Company	Public Service Company of Colo. %Leonard Reichwein	Secy	455 South Clay Denver
Eggleston No. 1	Stanley Medsker		5050 South Emporia Denver
Eggleston No. 2	Stanley Medsker		5050 South Emporia Denver
Enterprise Irrigation Ditch Company	Leonard Reichwein	Secy.	455 South Clay Denver
Erie Coal Creek Ditch and Reservoir Company	Dave Oscarson	Pres.	Rt. 1 Erie 80516
Farmers Ditch Company	Boyd Sheets	Secy.	3016 Kalmia Boulder

WATER DISTRICT NO. 6 (CONTINUED)

Goodhue Ditch & Reservoir Company	Mrs. Gale Harmon	Secy.	Lafayette 80026
Godding Daily & Plumb Ditch	Richard Frisk	Secy.	735 Bowen Longmont 80501
Godding Ditch Company Highland South Side	Richard Frisk	Secy.	735 Bowen Longmont 80501
Green Ditch Company	Roger Fell	Secy.	7861 Valmont Boulder
Harden	City of Boulder	Owner	Boulder
Harris	K. Waremburg	Owner	Louisville 80027
Houck No. 2 Ditch	Milton Nelson	Owner	2040 W. Longs Peak Longmont 80501
Howard Ditch Company	Bill Suittes	Secy.	65 Manhattan Drive Boulder
Jones & Donnelly Ditch Company	Gene Sawhill	Secy.	6967 Valmont Boulder
Kerr No. 1 & 2	Mrs.J.D. Mayhoffer	Owner	Louisville 80027
Kinnear Ditch & Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
Last Chance Ditch Company	City of Westminister	P.Owner	Westminister 80030
Leggett Ditch & Reservoir Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Lyner-Cottonwood Consolidated Ditch Company	Walter Wise	Secy.	11587 Jasper Road Canfield, Erie 80516
Lower Boulder Ditch Company	Mrs.Margaret Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Martha M. Mathews	A.F. Bailey	P.Owner	11975 Konosha Road Erie 80516
Marshall Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
Marshallville Ditch Company	Ewalt Anderson	Secy.	Rt. 3, Box 325 Boulder
McGinn Ditch Company	Alice Clyncke	Secy.	7123 Baseline Road Boulder
McKay Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
N.K. Smith & Tyler Ditch	Max Serafina	Owner	Rt. 4 Longmont 80501
New Anderson Ditch Company	Wm. Light	Pres.	City Hall Boulder
North Boulder Farmers Ditch Company	John Reich	Secy.	P.O. Box 227 Boulder
Original Cottonwood No. 2 Ditch Company	Albert Kolb	Secy.	Rt. 3, Box 316
Rural Ditch Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Silver Lake Ditch Company	Everette Long	Secy.	3240 Broadway Boulder
Schearer Ditch Company	L.W. Van Fleet	Owner	Denver
Smith & Emmons Ditch Company	Ward Burrett	Secy.	Rt. 4, Box 54 Longmont 80501
Smith & Goss Ditch Company	City of Boulder	P.Owner	Boulder
South Boulder Canon Ditch Company	Joe Beauprez	Pres.	1042 North 95th Lafayette 80026

WATER DISTRICT NO. 6 (CONTINUED)

South Boulder & Bear Creek Ditch	City Clerk Lafayette	Secy.	201 East Simpson Lafayette 80026
South Boulder & Coal Creek Irrigating Ditch Company	Ruth Bowes	Secy.	9182 Dillon Road Louisville 80027
Tom Delehant Ditch	Milton Nelson	Pres.	2040 W. Longs Peak Longmont 80501
William C. Hake	Mrs.J.D. Mayhoffer	Owner	Louisville 80027

WATER DISTRICT NO. 7

DITCH AND RESERVOIR COMPANIES

Bayou Association of Ditches	Earnest R. Schultz	Secy.	4315 Xenon Street WheatRidge
Boyle	A.T. DeBell		3951 W. 56 Way Denver
Church (Golden City & Ralston Creek) and Croke Canal	Barbara Fulton	Secy.	Farmers Reservoir Irrigation Company 80 South 27th Brighton
Colorado Agricultural	Louis Rullo	Secy.	11621 Riverdale Road Denver
Cort Graves and Hughes	Sam Spano		6640 West 52 Avenue Arvada
Denver View Water Company	Wayne Harkness	Secy.	Rt. 1, Box 590 Golden
Farmers Highline	Mrs. Duran	Secy.	Farmers Highline Canal and Reservoir Company 8889 Washington Avenue Denver
Fisher	Henry Johnson	Secy.	Box 840 Denver
Kershaw	Allan Jones		West 71 & Mariposa Denver
Lee Stewart & Eskins	Albert F. Ervin	Secy.	12703 W. 52nd Avenue Arvada 80002
Lower Clear Creek Company (Clear Creek and Platte River Ditch)	Jim Fukaye	Secy.	Rt. 1, Box 027 Denver
Manhart	George Ditolla		6030 Wolff Arvada 80002
Ouelette	R.C. Lyon		4240 Garland Lakewood
Reno Juchem & Swadley Longan	Ray Gieble	Secy.	Consolidated Juchem Ditch & Reservoir Company 7050 West 61st Avenue Arvada
Rocky Mountain, Miles & Eskins and South Side	Lyle Bush	Secy.	Adolph Coors Company Golden
United Water Company	Henry J. Johnson	Secy.	Box 840 Denver
Wannemaker	Lyle Bush	Secy.	Adolph Coors Company Golden
Welch and Agricultural	Wilson B. Roup	Secy.	Agricultural Ditch and Reservoir Company 10080 West 27th Avenue Denver

CLEAR CREEK DITCHES AND SUPERINTENDENTS

Welch	Eugene Cress	922-2815	
Church	Shorty Holmes	424-6636	278-0755
Agricultural	Eugene Cress	922-2815	
Coors Industrial		279-8060	
Farmers High Line	Bill Baker	422-4658	
Wannemaker	Pete Kramer	279-1848	
Lee Stewart Eskins	J.O. Greenfield	279-2974	
Croke	Shorty Holmes	424-6636	278-0755
Rocky Mountain	Coors	279-8060	
Reno Juchem	John D. Ghilarducci	424-6228	
Slough	Earnie Schultz 4315 Xenon	422-2801	
South Side	Coors	279-8060	
Ouelette	Robert Claxton	455-1231	
Boyles	Vincent DeBell	429-0210	
Kershaw	Allan Jones	429-1881	
Fisher	Giudo Ursine	429-4840	
Clear Creek & Platte	F. Wooley J. Fukaye	452-8238 452-8208	
Colorado Agricultural	Roy McIntosh J. Fukaye	452-8275 452-8208	
*Manhart	George Ditolla	429-0139	429-1839

Standley Reservoir	424-6636
Ralston Reservoir	279-4222
Consolidated Reservoir	233-5945

DITCH RIDERS

Bill Robie	Coors	278-2862
Neil Jaquet	Coors	237-3092
Bob Adams	Farmers High Line	279-3747
Art Morgan	Colorado Agricultural	452-4732
Wade Isham	Rocky Mountain	423-5243
Joe Griggs	Rocky Mountain	278-3870

*Ralston Creek

WATER DISTRICT NO. 8

DITCH AND RESERVOIR COMPANIES

City of Aurora	Tom Griswold 750-5000 Ext. 321		City of Aurora 1470 S. Havana Aurora
City and County of Denver	Gary Bishop 623-2500 Ext. 273		Board of Water Commissioners 144 W. Colfax Denver
City of Englewood	Vince Wertin 761-1140 Ext. 270		City of Englewood 3400 S. Elati Englewood
Last Chance Ditch Company No. 2	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Nevada Ditch Holding Company	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Northern Colorado Irrigation Company	Robert Rosendale 733-4292	Supt.	Board of Water Commissioners 144 W. Colfax Denver
Platte Water Company	Paul JOhnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Tri City Trust	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver

WATER DISTRICT NO. 9

DITCH AND RESERVOIR COMPANIES

Bergen Ditch & Reservoir Company	Wm. Grant	Owner	Western Federal Savings Building Denver
Bowles Ditch Company	Wm. Grant	Owner	Western Federal Savings Building Denver
Colorado Central Power Company	Leonard Reichwein	Engr.	Evergreen
Harriman Ditch Company (AKA Arnett Ditch)			Denver Water Board
Hodgson Ditch Operating Association	B.F. Lowell	Pres.	Mt. Morrison
Independent Highline Ditch Company	Stan Harwood	Owner	Mt. Morrison
Pioneer Union Ditch Company	Jack McCoy	Pres.	Mt. Morrison
Ward Ditch Company	Wm. V. Hodges,Jr.	Secy.	Denver Club Building Denver
Warrior Ditch Company	Gordon Koon		Mt. Morrison

WATER DISTRICT NO. 23

Jefferson Lake Ditch Company	Paul Anschutz	Pres.	Jefferson
Tunnel Water Company	Viviene Woodward	Secy.	P.O. Box 1584 2319 East Mulberry Ft. Collins
Water Supply & Storage Company	Viviene Woodward	Secy.	P.O. Box 1584 2319 East Mulberry Ft. Collins

WATER DISTRICT NO. 49

Hale Ditch Company			Hale

WATER DISTRICT NO. 64

DITCH AND RESERVOIR COMPANIES

Batton Ditch Company	Clifford Sherwin	Owner	P.O. Box 63 Sterling 80751
Bravo Ditch	Ivan Barden	Secy.	Iliff 80736
Carlson Ditch Company	Hulbert Reichelt	Secy.	Julesburg 80737
Chambers Ditch	Wm. Condon	Owner	916 Fairhurst Street Sterling 80751
Davis Brothers Ditch Company	Paris Accomasso	Secy.	Atwood 80722
Farmers Pawnee Ditch Company	Robert Roberts	Secy.	P.O. Box 70 Sterling 80751
Harmony Ditch Company No. 1	Mrs. Howard Hamilton	Secy.	P.O. Box 205 Crook 80726
Henderson & Smith Ditch Company	Scalva Brothers	Owner	R.R. Sterling 80751
Iliff & Platte Valley Ditch Company	Kent Reynolds	Secy.	205 1/2 Main Street Sterling 80751
J.B. Ditch Company	Frank Manuello	Owner	Iliff 80736
Julesburg Irrigation District	Herbert Bonesteel	Secy.	Julesburg 80737 474-3737 474-2189
Liddle Ditch Company	Don Liddle	Pres.	Ovid 80744
Lone Tree Ditch Company	Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Long Island Ditch	State Game, Fish & Parks	Part Owner	Crook 80726
Low Line Ditch Company	Kent Reynolds	Secy.	205 1/2 Main Street Sterling 80751
North Sterling Irrigation District	Alex Michel	Secy.	205 1/2 Main Street Sterling 80751
Peoples Ditch Company	Sam Karg	Secy.	Rt. 2 Sterling 80751
Peterson Canal & Reservoir Company	Jacob Sanger	Pres.	Ovid 80744
Powell & Blair Ditch	Proctor Water Co. Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Prewitt Reservoir Company	Alex Michel	Secy.	205 1/2 Main Street Sterling 80751
Proctor Water	Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Ramsey Ditch Company	Don DeMers	Secy.	708 Elm Street Sterling 80751
Red Lion Ditch Company	Maynard Sonnenberg	Secy.	P.O. Box 1271 Sterling 80751
Schneider Ditch Company	James Williamson	Secy.	Atwood 80722
Settlers Ditch Company	Charles Atkinson		Crook 80726
South Platte Ditch Company	Charles Bartlett	Secy.	Merino 80741
South Reservation Ditch Co.	James Parker	Secy.	Ovid 80744
Springdale Ditch Company	Robert Roberts	Secy.	P.O. Box 70 Sterling 80751
Sterling Hereford Cattle Company Ditch	Cliff Sherwin	Owner	Sterling 80751

WATER DISTRICT NO. 64 (Continued)

Sterling Irrigation Company	Lawrence Giacomini	Secy.	P.O. Box 1013 Sterling 80751
Sterling No. 2 Ditch Company	Maynard Sonnenberg	Secy.	P.O. Box 1271 Sterling 80751
Tamarack Ditch	State Game, Fish & Parks	Owner	Crook 80726
Upper Harmony Ditch Company	Garold Marick	Secy.	Crook 80726

DISTRICT NO. 64 OFFICIALS

BRAVO				
Pres.	Victor Ramey	17340 Co. Rd. 370	Sterling	522-0477
Secy.	Ivan Barden	19679 Co. Rd. 55	Iliff	522-8002
Rider	John Held	17915 Co. Rd. 370	Sterling	522-2416
CARLSON				
Owner	Hub Reichelt		Julesburg	474-4300
DAVIS BROS. DITCH				
Pres.	Justin Jones	4304 Co. Rd. 31	Atwood	522-2706
Secy.	Paris Accomasso	15465 Co. Rd. 12	Atwood	522-6429
Rider	Perry Accomasso	15465 Co. Rd. 12	Atwood	522-6429
FARMERS PAWNEE CANAL				
Pres.	Herb Vandemoer	225 Country Club	Sterling	522-3372
Secy.	Robert Roberts	717 So. 7th Avenue	Sterling	522-4343
Rider	David Littler	13698 Corrine Rd.	Sterling	522-3101
HARMONY NO. 1				
Pres.	James Roberts		Crook	886-3462
Secy.	Mrs. Howard Hamilton		Crook	886-2833
Rider	Lorrin Lowery		Crook	886-3665
HARMONY NO. 2				
Pres.	Alvin Brunkhardt		Crook	886-2682
Secy.	Garold Marick		Crook	886-3641
HENDERSON SMITH				
Scalva Brothers		13407 Co. Rd. 370	Sterling	522-2539 522-4577
ILIFF AND PLATTE VALLEY				
Pres.	Basil Stieb	22782 Co. Rd. 55	Iliff	522-8084
Secy.	Kent Reymolds	209 Main Street	Sterling	522-1015
Rider	William Huey	24081 Highway 138	Iliff	522-8302
JULESBURG IRRIGATION DISTRICT AND PETERSON DITCH				
Julesburg Irrigation Office			Julesburg	474-3737
Pres.	Clarence Jenik		Ovid	463-5732
Supt.	Tom Frame		Sedgwick	563-5737
Coordinator	Bud Bonesteel		Julesburg	474-2189
LIDDLE				
Pres.	Don Liddle		Ovid	474-2300
Secy.	Hub Reichelt		Ovid	474-3400
LONE TREE				
Pres.	Maynard Sonnenberg	406 Highland Drive	Sterling	522-1390
Secy.	Maynard Sonnenberg	406 Highland Drive	Sterling	522-1390
Rider	Ralph Freeman	101 East 1st Avenue	Iliff	522-8088

DISTRICT NO. 64 OFFICIALS (CONTINUED)

LOWLINE				
Pres.	Robert E. Fritzler	21575 Co. Rd. 34	Sterling	522-1376
Secy.	Kent Reynolds	209 West Main Street	Sterling	522-1015
Rider	Albert Workman	13524 Co. Rd. 37	Sterling	522-7198
PEOPLES				
Pres.	Tom DeSoto	24355 Co. Rd. 40	Sterling	522-2609
Secy.	Sam Karg	23690 Co. Rd. 40	Sterling	522-1469
Rider	Tom DeSoto	24355 Co. Rd. 40	Sterling	522-2609
POWELL				
Pres.	Maynard Sonnenberg	406 Highland Dr.	Sterling	522-1390
Secy.	Kent Reynolds	209 Main Street	Sterling	522-1015
Rider	William Huey	24081 Highway 138	Iliff	522-8302
SCHNEIDER				
Pres.	Elmer Rasmussen	8917 Co. Rd. 370	Sterling	522-2322
Secy.	James Williamson	17880 Co. Rd. 16	Atwood	522-1910
Rider	Perry Accomasso	15465 Co. Rd. 12	Atwood	522-6429
SOUTH PLATTE DITCH				
Pres.	Keith Propst	2464 Co. Rd. 25	Merino	522-0090
Secy.	Charles Bartlett	13244 Co. Rd. 6	Merino	522-7586
Rider	Elmer Higgason	419 Park Street	Merino	522-3314
SOUTH RESERVATION				
Pres.	Jim Parker lll		Ovid	463-5382
Rider	Jim Parker lll		Ovid	463-5382
SPRINGDALE				
Pres.	Virgil Rieke	16470 Co. Rd. 41	Sterling	522-2624
Secy.	Robert Roberts	717 South 7th Avenue	Sterling	522-4343
Rider	Alfred Leckler	13614 Co. Rd. 37	Sterling	522-1460
STERLING IRRIGATION COMPNAY 1				
Pres.	Richard Ramey	1005 Co. Rd. 39	Sterling	522-5705
Secy.	Lawrence Giacomini	131 Hamilton Street	Sterling	522-0751
Rider	Glen Meyerholz	13572 Rd. 37	Sterling	522-5719

WATER DISTRICT NO. 80

DITCH AND RESERVOIR COMPANIES

Altura (Duck)			838-5496
	Ron Heitman	President	839-1406
Denver Water Board			
Cheesman Reservoir			647-2213
District Foreman	Hank Bode		838-5314
Asst. District Foreman	Gene Bode		838-4185
Roberts Tunnel East Portal	Bob Woods		838-5921
Lininger Reservoir			838-5684
J. O. Hill Reservoir			687-9067
Wellington Reservoir			838-5496
	Ron Heitman	President	839-1406
Westcreek Reservoir			687-9067

VIII.

C. GROUNDWATER MANAGEMENT DISTRICTS

GROUNDWATER MANAGEMENT DISTRICTS

NORTHERN HIGH PLAINS

Arikaree Groundwater Management District	Francis Wrape	Manager	Cope 80812
Central Yuma Groundwater Management District	Ben Saunders	Manager	Wray 80758 P.O. Box 311 (332-4155)
East Cheyenne Groundwater Management District	Norman Arends	Manager	Cheyenne Wells 80810 P.O. Box 606 (767-5318)
Frenchman Groundwater Management District	Ben Saunders	Manager	Holyoke 80734 P.O. Box 113 (854-3484)
Plains Groundwater Management District	Cliff Hawthorne	Manager	Burlington 1453 Martin Avenue (346-8487)
Sandhills Groundwater Management District	Ben Saunders	Manager	Wray 80758 P.O. Box 311 (332-4155)
W-Y Groundwater Management District	Fred Wurtsmith	Manager	Yuma 80759 220 South Main (848-5333)
Lost Creek Groundwater Management District	George Bush	Secretary	Keenesburg 80643
North Kiowa-Bijou Groundwater Management District	Don McClary	Attny.	Ft. Morgan 80701 231 Main Street (867-5621)
Marks Butte Groundwater Management District	Wayne L. Austin		Ovid 80744 Rural Route, Box 34

VIII.

D. WATER USER ORGANIZATIONS

DISTRICT

1	Irrigationists	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
2	Consolidated Ditches	W.W. Gaunt	Secy.	25 South 4th Avenue Brighton 80601
3	Cache la Poudre Water Users	Harlan Seaworth	Secy.	11801 N Co. Rd. 9 Wellington 80549
4	Big Thompson Water Users	Elmer Stroh	Secy.	23344 Weld County Road 21 3/4 Milliken 80453
6	District 6 Water Users	Milt Nelson	Pres.	2040 Longs Peak Longmont 80501
64	District 64 Protection Assoc.	Alex Michels	Secy.	205 1/2 Main St. Sterling 80751

IX. WATER COMMISSIONER'S SUMMARY

A. DIRECT FLOW DIVERSIONS

B. STORAGE REPORT

WATER TABULATION FOR 1977 BY SOURCE AND USE

ALL FIGURES IN ACRE FEET

WATER DISTRICT	1 - 0	1 - 1	1 - 2	1 - 4	1 - 10	2 - 0	2 - 1	2 - 2	2 - 4	2 - 10	3 - 1	3 - 2	3 - 10	4 - (
1	280570	161469		16751		79	25950	40	174					
2	67853	300938		13884	79								1214	
3	65681	76331	18984		99806	19523	14001	6433	311	440467	64055		64237	6962
4	18782	69710	4514			1782	29771							17543
5	5625	59644		1497		1006	16689			1709				6071
6	7667	69799	8603		8	5809	24192	29944		4				22031
7	14755	83303	2796	30795	21998		2893	93		2744				
8		31278	71872	43423	604		2762	7488		794	9752	2113		
9	2206	11737	2988				4297	434						
23		26027	1281				364	257				339		
48		23574												
49		2279												
64	24643	119764					6819			3437	3958		1776	
65		19307												
80	9627	8063					8			12373				
TOTAL	497409	1063223	111038	106350	122495	28199	127746	44689	485	461528	77765	2452	67227	52607

SOURCE

1. River
2. Reservoir
3. GW
4. TB
5. NS
6. Collective

USE

0. Storage
1. Irr.
2. Mun.
3. Comm.
4. Ind.
6. Fish
10. Other

4 - 1	4 - 2	4 - 4	4 - 10	5 - 0	5 - 1	5 - 3	5 - 4	5 - 5	5 - 10
					176				
					8857	511			440
			22364	1441					265
40659	4029		4691						
33078			1560						
	28405								
584	67	329					117		
	112405		2170						
	11930							1825	958
			109298						
74321	156836	329	140083	1441	9033	511	117	1825	1663

C. 1977 CALLS ON SOUTH PLATTE RIVER

	DATE OF ISSUE	PRIORITY DISTRICT	CALLING NAME	NAME	APPROPRIATION DATE	DISTRICTS AFFECTED 1	2	3	4	5	6	7	8	9	23
1.	2-28-1977	1		Riverside	8- 1-1907		x	x	x	x	x	x	x	x	x
2.	3-14-1977		(No Demand)	Riverside	8- 1-1907		x	x	x	x	x	x	x	x	x
3.	3-18-1977	2	(Ab.St.Vrain)	Barr Lake	1-13-1909								x	x	x
4.	4- 9-1977	2	(Ab.St.Vrain)	Evans No. 2	10- 5-1871							x	x	x	x
5.	4-10-1977	1		Ft. Morgan	10-18-1882		x	x	x	x	x				
6.	4-14-1977	2	(Ab.St.Vrain)	Burlington	11-20-1885								x	x	x
7.	4-14-1977	1		Lower Platte & Beaver	4-15-1888			x	x	x	x	x			
8.	4-15-1977	1		North Sterling	6-15-1908		x	x	x	x	x	x	x	x	x
9.	4-15-1977	2	CALL OFF	Burlington	11-20-1885								x	x	x
10.	4-18-1977	1		Empire Refill	12-31-1929		x	x	x	x	x	x	x	x	x
11.	4-24-1977	1		Riverside Direct	5-31-1907		x	x	x	x	x	x	x	x	x
12.	4-25-1977	1		Riverside Storage	10-25-1910		x	x	x	x	x	x	x	x	x
13.	4-25-1977	2	(Ab.St.Vrain)	Burlington	11-20-1885								x	x	x
14.	5- 2-1977	64		Pawnee	6-22-1882	x	x	x	x	x	x	x	x	x	x
15.	5- 2-1977	1		Empire	12-31-1929		x	x	x	x	x	x			
16.	5- 3-1977	1		N.Sterling Direct	5-27-1914		x	x	x	x	x	x			
17.	5- 3-1977	2	CALL OFF		11-20-1885								x	x	x
18.	5- 6-1977	2	(Ab.St.Vrain)	Burlington	11-20-1885								x	x	x
19.	5-10-1977	64	Written	Harmony No. 1*	4-28-1895										
20.	5-14-1977	2	Ab.St.Vrain	Fulton	7- 8-1876							x	x	x	x
21.	5-14-1977	1		Ft. Morgan	10-18-1882		x	x	x	x	x				
22.	5-17-1977	64	Written	Pawnee	6-22-1882	x	x	x	x	x	x				
22A.	5-17-1977	64	Written	Sterling Irr. Co.**	5-15-1873										
23.	5-18-1977	2	(Ab.St.Vrain)	Brighton	11- 1-1871							x	x	x	x
24.	5-18-1977	2		Lower Latham	12-12-1874				x	x	x				
25.	5-18-1977	64		Schneider	7-15-1875	x	x	x							
26.	5-19-1977	64	CALL OFF	Schneider	7-15-1875	x	x	x							
26A.	5-25-1977	64	Written	Spring Dale*	7-19-1886										
27.	6- 3-1977	2	(Ab.St.Vrain)	Fulton	7- 8-1876							x	x	x	x
28.	6- 3-1977	2	(Bl.St.Vrain)	Lower Latham	11-14-1877				x	x	x				
29.	6- 5-1977	2	(Ab.St.Vrain)	Brighton	11- 1-1871							x	x	x	x
30.	6- 6-1977	2	(Ab.St.Vrain) CALL OFF	Brighton	11- 1-1871							x	x	x	x

C. 1977 CALLS ON SOUTH PLATTE RIVER

	DATE OF ISSUE	PRIORITY DISTRICT	CALLING NAME	APPROPRIATION DATE	DISTRICTS AFFECTED 1	2	3	4	5	6	7	8	9	23
31.	6- 6-1977	64	CALL OFF	Pawnee										
32.	6- 8-1977	2	CALL OFF	Latham										
33.	6- 8-1977	2	(Ab.St.Vrain)	Fulton							x	x	x	x
34.	6-17-1977	2	(Ab.St.Vrain)	Brighton							x	x	x	x
34A.	6-22-1977	1		Weldon Valley				x	x	x				
35.	6-26-1977	2	(Ab.St.Vrain)	Western							x	x	x	x
36.	6-26-1977	2	(Bl.St.Vrain)	Lower Latham				x	x	x				
37.	6-26-1977	64	1 Gasp Well Pumping	South Reservation										
				9-14-1892										
37A.	6-27-1977	64	Written	Liddle Ditch Co.*										
				10-20-1890										
37B.	6-27-1977	64	Written	Peterson Canal*										
				3- 1-1895										
37C.	6-27-1977	64	Written	South Reservation Ditch*										
				9-14-1892										
37D.	6-27-1977	64	Written	Peoples Ditch*										
				7-11-1895										
37E.	6-27-1977	64	Written	Iliff & Platte Valley Ditch Co.**										
				10- 1-1883										
37F.	6-28-1977	64	Written	Low Line**										
				10-14-1882										
37G.	6-30-1977	64	Written	Schneider Ditch Co.**										
				4-10-1873										
37H.	6-30-1977	64	Written	Davis Bros.**										
				4-10-1874										
37I.	7- 5-1977	64	Written	Harmony No. 1*										
				4-28-1895										
38.	7- 6-1977	2	(Ab.St.Vrain)	Brighton							x	x	x	x
				11- 1-1871										
38A.	7- 6-1977	1	Written	Bijou Irr. System**										
				4-20-1873										
39.	7-11-1977	2	(Ab.St.Vrain)	Meadow Island No. 2							x	x	x	x
				5- 3-1866										
40.	7-21-1977	2	(Bl.St.Vrain)	Lower Latham } CALLS OFF										
		2	(Ab.St.Vrain)	Brighton }										
41.	7-22-1977	1		Ft. Morgan		x	x	x	x	x	x	x	x	x
				10-18-1882										
42.	7-23-1977	2	(Ab.St.Vrain)	Brighton							x	x	x	x
				11- 1-1871										
43.	7-25-1977	2	CALL OFF	Brighton										
				11- 1-1871										
44.	7-25-1977	1		Riverside Direct		x	x	x	x	x	x	x	x	x
				5-31-1907										
45.	7-26-1977	1		Empire		x	x	x	x	x	x	x	x	x
				12-13-1929										
46.	7-28-1977	2	(Ab.St.Vrain)	Burlington								x	x	x
				11-20-1885										
47.	7-28-1977	1		Ft. Morgan		x	x	x	x	x	x	x	x	x
				10-18-1882										
48.	7-29-1977	2	(Ab.St.Vrain)	Fulton							x	x	x	x
				7- 8-1876										
49.	7-30-1977	2	(Ab.St.Vrain)	Brighton							x	x	x	x
				11- 1-1871										

C. 1977 CALLS ON SOUTH PLATTE RIVER

	DATE OF ISSUE	PRIORITY DISTRICT	CALLING NAME	APPROPRIATION DATE	DISTRICTS AFFECTED 1	2	3	4	5	6	7	8	9	23
50.	8- 3-1977	2	(Ab.St.Vrain) Western	5- 5-1866							x	x	x	x
51.	8- 3-1977	64	Pawnee	6-22-1882	x	x	x	x	x	x				
52.	8- 5-1977	2	(Ab.St.Vrain) Brighton	11- 1-1871							x	x	x	x
53.	8-10-1977	2	(Ab.St.Vrain) Western	5- 5-1866							x	x	x	x
54.	8-12-1977	2	(Ab.St.Vrain) Brighton	11- 1-1871							x	x	x	x
55.	8-24-1977	1	Lower Platte & Beaver	9- 4-1882			x	x	x	x				
56.	8-30-1977	1	Duel & Snyder	4- 7-1884			x	x	x	x				
57.	9- 5-1977	1		10- 1-1888		x	x	x	x	x				
58.	9-21-1977	64	Pawnee	6-22-1882	x	x	x	x	x	x				
59.	9-22-1977	1	Ft. Morgan	10-18-1882		x	x	x	x	x				
60.	9-28-1977	1	Bijou	10- 1-1888		x	x	x	x	x				
61.	9-29-1977	8	Petersburg	11-30-1861										x
62.	10- 6-1977	1	Jackson Lake	5-18-1901		x	x	x	x	x				
63.	10-11-1977	1	Riverside Direct	5-31-1907		x	x	x	x	x				
64.	10-12-1977	2	(Ab.St.Vrain) Burlington	11-20-1885								x	x	
65.	10-18-1977	8	Last Chance	12-30-1863										x

INITIAL 3 CALLS FOR 1978 IRRIGATION YEAR

1.	11- 1-1977	64	Julesburg Res.+	2-12-1904	x	x	x	x	x	x	x	x	x	x
2.	11- 1-1977	1	North Sterling +	6-15-1908		x	x	x	x	x	x	x	x	x
3.	12- 6-1977	CALL OFF	Burlington	11-20-1885								x	x	x

*Senior Call in Effect
**Satisfied Locally - Anticipatory Call Only
+Reservoir Guaranteed Filling by Upstream Reservoirs

X. SUGGESTIONS AND RECOMMENDATIONS

A. PERSONNEL

1. Office Expenses

The administrative field personnel, namely the water commissioners and their deputies, maintain some type of an office in their own homes since they are on call at all times due to the nature of their work. The size, equipment,and use of that office are, of course, not only related to their administrative responsibilities and functions but also to the availability and convenience of space. Nevertheless the need for office space in the home does exist and is provided by the individual at the expense of a reduction of space for the family. Further, most of those employees rely upon their telephones, a business necessity, for communication with the various water users and other staff members. Since these field people are out checking diversions, streamflow, and water use much of the time, their wives or other members of the family must take and relay calls as necessary. Secretarial help is additionally provided by family members, generally the wife, in the generation of diversion reports and other correspondence.

It is again proposed, as it has been in the past, that the budget include, and approval be granted for the payment of a minimum of $50 per month in addition to the regular salary to each such person maintaining a field office in his own home. To provide some equity, the allowance suggested could be scaled according to the circumstances in each case with the maximum being $100 per month.

Although such allowance would at least be a token payment for a long unrecognized responsibility of field personnel, in most cases it would scarcely cover the capital cost to the individual for space and utilities nor even approximate scale wages for the secretarial help he receives.

2. Additional Staffing

The drought year of 1977 emphasized the problems resulting from a manpower shortage in the field during the irrigation season. Although the present field staff made outstanding use of their time and energies, it was impossible to accomplish everything that some water users expected of them. Further, with the increasing demands being made on the water commissioners and with the problems of holding personnel on part time employment, consideration should be given to full time employment of at least the present part time staff of deputy water commissioners and possibly to such additional staff as might be necessary for better administration. Although we have been very fortunate in finding and holding good part time help, a change to full time employment would no doubt attract well qualified applicants and subsequently lead to greater satisfaction of employment.

B. Enforcement

The enforcement of orders made to water users through the injunctive procedures provided by the statutes is proving to be very slow and quite costly. Too often it is to the water users advantage to ignore orders, take water in violation of others rights and enjoy the benefits of that water use until the court takes action. The fine, if any, would be much less than the benefits gained from the extra water.

It is suggested that the law should be changed in a manner that would get the offender into court for immediate hearing. This could be done through the issuance of a citation for observed offenses similar to the procedures used by traffic control officers.

C. Water Court

Since the recodification of water law in 1969, many thousands of water rights have been adjudicated through the division water court and many more are awaiting such determination whenever the court is able to get to them. Due to the weight of numbers alone, the division staff cannot physically administer these myriad rights. The situation is further complicated by the complexity of many of the decrees, i.e. subdivision augmentation plans and alternate points of diversion.

The continuing application and adjudication process places an excessively expensive burden upon the owners of the old water rights, many of which may have been established and used more than 100 years ago. Although their rights were adjudicated properly in a timely manner, they must remain constantly alert to encroachment upon those rights by others seeking some court action which could conceivably cause injury to them such as some change in water right application. The individual relying upon an old established water right all to often does not recognize the possibility of injury even though he reads the published resumes, which he likely fails to do through oversight or lack of time. Even recognizing the potential danger he cannot afford to hire the legal assistance necessary to defend what is already his. In the absence of an objection the court is likewise unaware of the problems and, unless a strong consultation objection is raised by the division engineer, the court is likely to approve the application to the ultimate injury of existing water rights.

The above discussion upon the water court situation is included merely to point out some of the problems inherent in the present procedures. No remedy is suggested although some may exist.

XI. MISCELLANEOUS

A. Water News

Water News December 1, 1976

Division No. 1, W.G. Wilkinson, Division Engineer

We would like to congratulate the Bureau of Reclamation and the contractors involved in getting the Big-T Siphon replaced so quickly. Horsetooth Reservoir is now able to store for next summer's various water needs.

Reservoirs were used quite heavily this year in the absence of normal rainfall. If winter and spring precipitation are below average again this year, the water supply for next summer could result in some problem areas.

In spite of approximately only 80% normal precipitation, this year's crop production was very good but with prices down, farm income has dropped sharply.

We had a number of underground water users who were discovered diverting in violation of the Rules and Regulations. When orders to stop diverting in these case were ignored, we filed complaints through the Attorney General with the Water Court. All but one of these cases have been dropped as the violators became members of various water augmentation plans. The remaining case has been continued until April and by that time it is expected that the violator will have taken action to bring his diversion into compliance.

The Division Engineer attended the U.S.B.R. Annual Operating Procedure Meeting in Denver on November 4th and 5th. The Denver Water Board conducted a most informative tour of their West Side Control Center and their Marston Reservoir Filter Plant and Laboratories for the participants on Thursday. The briefing by Bureau personnel on Friday included detailed explanation of the operation of Bureau facilities for the past water year, discussion of proposed operating plans for this year and a very interesting report on the July 31 Big Thompson flood with the narrative well illustrated by slides.

The Water Court held pretrial hearings on November 16th on three applications before the Court. These cases involved South Park water rights, transfers from agriculture to municipal uses by the City of Aurora and a comprehensive augmentation plan by Coors on Clear Creek which includes the use of surface stream rights, wells, reservoirs, basin non-tributary water and trans-mountain water and return flows. These cases combined with some other augmentation and change in water rights applications in which objections have been filed are expected to occupy much of the Court's time this winter and next spring and will be most interesting.

At the present time, the Division office is busily occupied compiling information for the annual report.

Water News February 1, 1977

Division No. 1, W.G. Wilkinson, Division Engineer

The South Platte Drainage Area is very dry but not much different than most of the Western United States. Precipitation figures for October, November and December averaged 38% of normal in Division 1. Preliminary snowpack figures from measurements made February 1st indicated 54% normal* west of Denver and 24% west of Fort Collins. The one bright spot in this grim picture is reservoir storage, the amount of water in storage on January 1st was approximately 90% of average.**

The open winter has been an advantage in one way; it has made possible the continuation of repair and construction work on several reservoir dams in our area.

The Aurora-Janitell water transfer from South Park just completed the 4th week of hearing in the Water Court. More time has been reserved in April to continue the case.

At this time of year many staff members and Water Commissioners are kept busy attending ditch company annual meetings. In many cases, this helps to catch and solve problems quickly instead of waiting for them to agitate and surface later.

We would like to congratulate Pat Archey on passing the E.I.T. and P.E. Examinations last fall.

We are happy to report that Ralph VanGorden is doing well with the new hip he received in early January.

* 1958-1972

** Average computed using amounts in storage on January 1st of each year from 1966 to 1976

Water News April 1, 1977

Division No. 1, W.G. Wilkinson, Division Engineer

Division 1 had a good snow in the mountains on February 23rd. Then on March 10th and 11th we had a major winter storm with high winds and very little snow. The storm resulted in 55,000 dead cattle and 800 miles of down power lines in Eastern Colorado.

This report finds us considerably below normal in the mountain areas. Preliminary figures indicate about 40 percent of normal on Boulder Creek Drainage and about 32 percent on Cache la Poudre Drainage.

Our annual division staff meeting was held on March 14th. Bob Berling of the Loveland Office of the Bureau of Reclamation presented a very interesting slide show of the Big Thompson Flood. It is our understanding that this show is available to groups upon request to the Bureau Office. Several members of the Denver Office staff were also in attendance.

Additional Big Thompson Flood damage was discovered this winter in the Home Supply Diversion Dam. This damaged repair was completed by controlling water within the Big Thompson Project System.

A Tri-City meeting was held in Fort Collins recently. The three cities participating were Greeley, Loveland and Fort Collins. This meeting was held primarily to consider the problems the drought is causing and some possible solutions. Cities were encouraged to rent their excess water to agricultural users.

On February 15th and 16th a meeting on Instream uses was held in Fort Collins. This was a very interesting meeting with a number of innovative transfer alternatives and replacement ideas suggested.

Water News June 1, 1977

Division No. 1, W.G. Wilkinson, Division Engineer

The short water supply remains uppermost in our minds. Several proposals have been suggested to alleviate the problem, but it remains to be seen how these may work out. As of May 31st, Fort Collins has had 3.00 inches of moisture this year. This compares with 6.84 inches for normal, and is made more severe by the fact that the last year was also considerably short of normal.

There were a few applications made to the Bureau of Reclamation for non-reimbursable funds to offset pumping costs before the deadline of June 1st. Individual applications can still be made to the ASCS until June 24th. These are all funds made available by the 1977 Federal Drought Act.

Three water transfer applications by Aurora are being opposed in Water Court by the Denver Water Board. The case numbers involved are W-7528 (Augustine), W-7534 (Janitell Bros.) and W-7931 (Cheek). Hearings on Cheek will continue through most of June.

We regret to inform our readers of the resignation of Water Commissioner Wes Hayman on June 1st. Best wishes to Wes and Cindy.

Water News August 1, 1977

Division No. 1, W.G. Wilkinson, Division Engineer

On June 18th a severe hail storm leveled all the crops in a large area around Sterling. A large portion of this damaged area was replanted in beans and corn.

In mid-July a couple of scattered rains helped augment the scarce water supply in Division 1. Then, on the evening of July 24th, a good rain started with most of the division receiving from 1-1/2 to 4 inches over the next two or three days. This was very beneficial and allowed for some reservoir storage under refill decrees. Weld County crops appear to be about two weeks early this year. Maybe we should prepare for an early frost.

Office and field personnel have been out checking for wells pumping without augmentation plans. Quite a few have been discovered and were issued cease and desist orders. These have now been placed in the hands of the State Assistant Attorneys General for complaints to be filed in the Court.

A hearing was held in the Denver Post Office on July 28th to consider the proposed issues concerning national water policy. About 250 were in attendance, including water users and water administration officials from several western states. The speakers were consistently critical of options presented through the Federal Register dated July 15, 1977, which came to the attention of the general public on July 25th.

We extend our sympathy to the family of John Samples who passed away on July 12th. He was a long time water commissioner from Fort Morgan.

Pat Archey, Greeley hydro, transferred to Montrose effective July 1st. We hated to lose him, but wish him well in his new position.

Don Brazelton, Greeley water commissioner, and his wife Carolyn are the proud parents of Kevin Ryan who arrived on July 21st. Congratulations!

Division No. 1, W.G. Wilkinson, Division Engineer

The highlight of the last two months for the Greeley Staff was a field trip to the City of Boulder watershed on August 13th. The trip was led by former Water Commissioner Tom Platt and his son Elwood. It was a beautiful, warm day and we were able to visit quite a few of Boulder's reservoirs.

The Water Court in Greeley has had several changes in the past few months. Just to bring everyone up-to-date, the new clerk of the Water Court is Mac Danford with Nancy Hettinger, Lori Boettcher and Mike Fitzsimmons in the office. Judge Carpenter's new clerk is Norma O'Brien. A referee's term day held September 6, 1977 set over 400 cases for hearings between October 1977 and May 1, 1978. The Court is already planning for a Spring term day to be held March 7, 1978.

Most crops in the Greeley to Sterling reach of the South Platte Valley seem to be a week or ten days ahead of normal maturity dates. Yield appears to be good on crops already harvested. Good precipitation during August was a big help. If the drought continues through this next winter, our water supply will be critical for many water users. The September 1st water level for major Division 1 reservoirs was approximately 67% of average of September 1st readings for the last ten years.

About 20 compalints have been filed against individuals recently by the Attorney General on behalf of the Division Engineer. We are expecting several of these to come up for hearing soon.

Deputy Water Commissioner Bruce Smith and his wife Judy are the proud parents of their first child, Dawn Kathleen. Congratulations!

The last two months have been pretty exciting for our secretary, Babette Harman. Her son Steve was married, her other son, Mike, passed his C.P.A. and two children presented her with grandchildren. On top of this came the trauma of buying and moving into her own home.

Water News October 1, 1977

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B. NEWSPAPER CLIPPINGS

Northglenn offers West pattern to mee federal criteria on wise water policy

To The Denver Post: 12-21-77

THE POST editorial of Dec. 16 regarding the Carter administration's water policy was of great interest to me and to all those who are devoting their efforts to solving the water problems of the West.

The strongest argument which could be used in convincing the president's Water Review Task Force that Colorado's water policy is sound and in keeping with national goals is to implement the Northglenn water and land resources project. Such implementation is worthy of the active support of the citizens of Colorado, of all state and local governmental agencies, because it provides specific answers to the charges made by the task force against the Western states.

Northglenn has developed a program for the re-use of water which is based on borrowing agricultural irrigation water, using it for municipal purposes and returning it to the agricultural community, treated to a safe level, but including nutrients needed as fertilizer. It also includes the treatment of urban runoff.

This concept of recognizing the needs of the agricultural community and its contribution to the economic and environmental welfare of the state has not been duplicated by any other community, nor has any other city been able to establish the same commonality of trust with working farmers.

The specific issues raised by the federal Water Review Task Force are effectively addressed in the Northglenn project, with one exception — minimum stream flows are not affected by a project which does not discharge into streams. The other charges," and Northglenn's answers to them, are as follows:

Charge 1 — Failure to establish water policies protecting the environment.

The Northglenn project will do so in many ways, two of which are to preserve open space and inhibit urban sprawl by keeping metro area farms in production, and to cut the need for petroleum-based fertilizers through the enrichment of irrigation water with natural nutrients.

Charge 2 — Failure to conserve water.

The Northglenn project will use one source of water twice, gaining double benefit from a scarce supply, and it includes scientific studies now being conducted to determine the exact amounts of water and best methods of irrigation needed to control lawn irrigation waste. Enactment of practical conservation measures is an integral part of the program.

Charge 3 — Failure to integrate agricultural and municipal water.

Northglenn's project integrates both uses on the basis of cooperation mutually supported by its citizens and Farmers Reservoir and Irrigation Company; Northglenn was able to gain an agreement with FRICO because of the trust established between the city and the farmers — true integration of resources, goals and interest.

Charge 4 — Failure to adequately plan and develop policies for water use.

Northglenn has developed zoning laws which will limit growth making it possible to plan and develop water use policies to meet its ultimate needs, and to build now to meet them.

Charge 5 — Failure to integrate ground and surface water conservation.

The Northglenn project is the only one in the state which integrates the capture and treatment of urban runoff so that it may be used beneficially instead of being permitted to pollute rivers or streams.

The number one goal of this state, and of all Western states, in the area of water use, should be to get the Northglenn project operational at the earliest possible moment. It is proof of our ability to make the most of scarce resources and to protect the environment in the process. President Carter has praised the project, calling it a vista of the future.

It is evident that the Northglenn project and any others which offer solutions to the problems raised by the president's Water Task Force must be built at the local or regional level or they will be mandated and controlled by federal policy. Northglenn is offering the most convincing evidence possible that the West can and will use its renowned ingenuity to meet the water crisis of the future.

Awareness of the beneficial impact the Northglenn project has would be greatly enhanced if The Post would use its vast resources and circulation to make a thorough study of it and report your findings. We will cooperate in every way in supplying accurate, factual information to you or to any of your readers (tele. 451-8326) who are interested in learning more about our solution to the problems we are facing in the future.

ALVIN B. THOMAS, Mayor,
City of Northglenn

Sparks estimates

'Worst water supply year in history'

Feb 77

DENVER (AP) — Unless drought-stricken western states receive significant precipitation before summer, this year will be the "worst year in recorded history" for water supplies, the director of the Colorado Water Conservation Board said Wednesday.

Felix L. Sparks made his comments to the 19th annual meeting of the Missouri River Basin Commission.

Sparks said the imminent drought is the most immediate problem confronting the 10 Missouri River Basin states.

Sparks said the lack of snow in the mountains this winter will cause serious problems next summer unless something can be done to bring moisture. He said cloud seeding could be a solution to the problem.

"Unless snow amounts can be increased, the runoff is expected to be 25 to 50 per cent of normal in Colorado," he said.

Sparks said a lack of runoff in Colorado could be disastrous, since Colorado contributes to four major river systems in the nation. He said Wyoming and Nebraska would feel the most impact in the form of low flows in the Platte River system.

At a morning session, the commission approved a resolution calling for reinstatement of the U.S. Water Resources Council and federal planning grants to states in the President's recommended budget for the 1978 fiscal year. Another resolution calls for an amendment to the Water Resources Planning Act of 1965 to strenghten the act and foster a greater state-federal partnership in water resources planning and development.

States belonging to the commission are Colorado, Wyoming, Montana, Nebraska, North and South Dakota, Minnesota, Iowa, Kansas and Missouri.

Water district says: plenty of water available

1-27-77 T+C

"Even if the mountain country gets below average snowfall this winter and spring, irrigators in the Northern Colorado Water Conservancy District (NCWCD) territory can look forward to enough water for a good crop year."

Earl Phipps, Secretary-Manager of the NCWCD, reported this to the Directors of the District at their January meeting Friday.

"Carry-over storage in the reservoirs of the CBT system is sufficient to deliver 310,000 acre-feet of water in 1977 if the full allotment is needed," Phipps said. "The warm weather during late fall and early part of the winter enabled local ditch companies on the eastern slope to store more water than usual during this period. The combined storage of the local ditch company reservoirs and the CBT system is already sufficient to assure irrigators of adequate water to supplement below normal stream flows if such occurs."

At this time, the snowpack on the western slope is far below average for this time of year. The statewide snowpack is 31 percent of average, while the Colorado River basin that supplies the Colorado-Big Thompson Project is only 23 percent of the 1958-1972 average.

The heaviest snows and greatest rainfall usually come in late winter and early spring. Whether or not that happens this year is the big question for the irrigated farming industry, but there is no question about the availability of a full quota of supplemental water from the Big-T Project if it is needed.

Gross crop values for the 658,720 acres served by the NCWCD declined in 1976, as compared to 1975, according to Phipps' report to the Directors. Lower prices in the major crop categories accounted for most of the shortage, with sugar beet tonnage being the only crop short of the 1975 production total.

Sugar beet tonnage in 1976 totaled 1,177,000 compared to 1,437,000 in 1975. The estimated price per ton is more than $4 less than the $28.87 received for the 1975 crop.

Barley, selling for 50 cents a bushel less than in 1975, showed a production of 100,000 bushels more than in the previous year.

Colorado snowpack at near-record low

2-3-77

DENVER (AP) — Two more government agencies have warned that a light snowfall in Colorado this year may produce a water shortage for crop irrigation and household use.

The U.S. Soil Conservation Service released figures Wednesday that show Colorado snowpack is at a near-record low, especially along the Arkansas River in southwest Colorado. A Denver Water Department spokesman agreed with the findings.

Jack Washichek, who surveys snowfall for the conservation service, said his measurements suggest that "many Colorado irrigation companies may have shortages this summer."

The companies supply water to farmers through water rights owned on Colorado reservoirs. The conservation service survey shows reservoir water levels are about 87 per cent normal in most places but much lower along the Arkansas.

The snowpack averages about 60 per cent normal along the Front Range, Washichek said. At Durango, it was 73 per cent below normal, and in the San Luis Valley, 75 per cent below, he said.

Urban water departments get much of their water from melted snow in the spring runoff, but Bill Miller, the department's administrative director, said he wouldn't term the water situation a crisis.

"I think we will have ample water for domestic purposes," Miller said. He added, however, there may be some restrictions placed on water usage, such as curtailed lawn watering.

President Carter has declared a drought emergency in 13 Colorado counties to make them eligible for federal aid.

Other warnings about the snowpack level have come from the state Agriculture Department and the Colorado Water Conservation Board. The legislature is considering a proposal to fund a cloud seeding operation over the Rockies to try to produce more snow.

Sweeping state water law changes eyed

1-29-77

By RON TOLLEFSON
Tribune Staff Writer

DENVER — Members of the State Senate Agriculture Committee late this week studied a bill, and a sweeping bill-length amendment, both of which would make major changes in state water law on plans of augmentation.

Among other points, the versions would:

— Alter the state-law definition of "plan of augmentation."

— Possibly, in one version of the bill, require extensive hydrologist-geologist studies to determine "consumptive use" factors under agumentation plans.

— Repeal the section of state law authorizing the state engineer to grant temporary-approval status to augmentation plans pending before water courts.

The measure, Senate Bill 4, is being sponsored by Sen. Kenneth Kinnie, R-Julesburg, the Senate agriculture chairman, and Senate President Fred Anderson, R-Loveland.

After hearing nearly two hours of testimony from two Denver water lawyers and an official of the Fort Lupton-based Central Colorado Water Conservancy District, the committee took no action on the original bill. It did, however, make one amendment to the alternative, bill-length amendment under study, somewhat broadening allowable approaches for augmentation plans.

State water officials have pointed out augmentation plans, required for augmenting and ensuring extensive beneficial use of water in the state, may apply to those using groundwater through wells, or surface water rights, or both.

However, they pointed out, the augmentation-plan standard nowadays is most generally applied in agricultural and related well use, such as for sprinkler irrigation.

Under the bill-length amendment receiving nearly the bulk of the panel's attention, the augmentation plan legal definition would read:

"(Augmentation plan)... means a detailed program to increase the supply of water available for beneficial use in a (state water) division or portion thereof by a pooling of water resources, by water exchange projects, by providing substitute supplies of water, by the development of new sources of water or by any other appropriate means...."

Although the latter phrase was amended in to broaden the bill, Sen. Duane Woodard, R-Fort Collins, an attorney, later expressed some concern that another phrase had been left out. He said the courts might later rule that augmentation-alternative phrasing left out of such a bill showed legislative intent to ban that option.

Augmentation-method language not amended into the definition at that point noted it could be done by "the development of new or alternate means or points of diversion...."

Introducing the bill-length amendment chiefly studied by the committee, Anderson said it made two major changes to the original bill. It would, he said, eliminate in such cases the authority of the state engineer "to inject himself into any litigation."

And, said Anderson, the amendment by requiring hydrologist-geologist studies to determine the consumptive use factor for augmentation plans would eliminate a flat-rate five per cent factor set earlier by the courts.

Testifying on the measure were Denver water lawyers Bob Welborn and John Dickson, and the executive secretary of the Central Colorado Water Conservancy District, John Rayburn.

Welborn pointed out the section repealing the state engineer temporary plan approval powers, though briefly worded, was a key section. He said this system had been adopted in the late 1960s to allow speedier decisions, albeit temporary ones, on such plans.

However he pointed out this tended to place state engineer's officials, who are not judicial officers, in sometimes "tough spots." And Welborn said such decisions, if appealed, were not judicial proceedings and would have to be completely reheard.

However Dickson later argued against the repeal, saying the temporary approval would allow speedier decisions in emergency conditions. Dickson pointed to the current drought conditions that are prevalent.

Dickson later gave some argument against fees set in the bill, saying they could prove initially too costly, especially for subdividers who generally seek one well per lot in their developments.

Fees proposed would be a $25 filing fee for such plans, $15 for filing opposition statements and an initial $5-per-water-right fee in such augmentation plan cases.

Rayburn said the 800 well operations in their district, most supplemental to ditch rights, exist under temporary augmentation plan approval, and have for the past three irrigating seasons.

But, with such legislation, he said, years for future court interpretations their case. With Denver and seve other districts disputing the Rayburn added, "we could have 800 we shut down this summer."

Regarding some "factors of t proposed law changes, Kinnie "at noted, "what we heard about this wa We don't want the state engineer sitti there like a czar."

The committee session shortly a burned, with Kimmie noting the bill an amendment will come unde study on Tuesday afternoon.

Drought chance makes ag outlook bleak

Feb '77

DENVER (UPI) — A predicted summer drought due to lack of mountain snow providing irrigation water in hot months will reduce crops and force ranchers to sell cattle because of poor grazing, according to the state Farm Bureau president.

"Agriculture is in one hell of a mess," said Keith Probst. "The outlook is real bad unless something happens to the weather. Of course, the crisis isn't only drought. It's (market) prices, too.

Probst said lack of an adequate mountain snowpack was serious to growers who depended on groundwater to irrigate. He said it would "mean a lot less crops and ranchers will sell off their herds since they won't have grazing land."

"That will give consumers an immediate break on meat prices, but the prices will go way, way up later because there will be a beef shortage then," Probst said.

Roy Romer, an aide to Gov. Richard Lamm, said a state "drought council" was studying ways of alleviating the expected shortage.

COG seeks people for water planning body

Applications are being sought from citizens interested in serving on the 208 Water Quality Planning Committee to the Larimer-Weld Council of Governments.

Application forms are available by calling 667-3288 in Loveland. Deadline for applications is Jan. 28.

JOURNALISM FRAT

COLUMBIA, Mo. (UPI) — Kappa Tau Alpha, national journalism scholarship society, was founded at the University of Missouri in 1910 and now has 60 chapters nationwide.

Younglund plans bill extending engineer's power on domestic water

By RON TOLLEFSON
Tribune Staff Writer

1-29-77

DENVER — State Rep. Walt Younglund, R-New Raymer, has said he plans to introduce a bill next week which would grant the state engineer's office major authority over uses of domestic water, including the water of both statutory and home rule cities.

Younglund said the bill, while technical, is expected to attract controversy.

He said the state engineer's office would have expanded powers of administration over domestic water rights, which carry the top use-priority under state law. Second and third priorities go to agricultural and industrial uses.

In times of water shortage, Younglund said, the bill would grant the state engineer some authority to restrict uses of domestic water, such as for lawn or garden watering or, as another example, use in car washes.

Also coming under potential controls of the bill, Younglund said, would be instances of cities contracting their domestic water rights to industries.

Conceivably, Younglund said, the state engineer controls in short-water times would apply to all domestic-rights water uses, especially those of cities, except in-the-home uses for consumption and sanitation.

Environmentalist group against cloud seeding

2-3-77

DENVER (AP) — Gov. Richard Lamm's proposed cloud seeding program, which was given final approval by the House on Wednesday, should be rejected by the Colorado Senate as a waste of taxpayer dollars, an environmental organization says.

The proposal was scheduled for a hearing by two Senate committees Wednesday. The governor and officials in the Department of Natural Resources were hopeful the bill, which would spend $189,200 in state dollars for cloud seeding and monitoring, would clear the legislature by the weekend.

The Colorado Open Space Council's Environmental Caucus, formerly a political ally of the governor, said a water conservation program would have long lasting results, but the cloud seeding program doesn't.

"Not only is the State Departmment of Natural Resources unable to give a guarantee of cloud seeding success, it can't even quote us odds," said Kevin Markey, a council spokesman.

He said no independent study of weather modification has ever found conclusive evidence of cloud seeding success.

'76 Raintall Totals 18.32"

2-1-77

Second Lowest Recorded In the Past Five Years

C. M. (Doc) Anderson, local weather recorder for the U. S. Weather Service, this week submitted accumulative totals for the precipitation in 1976. He also gave comparisons for the five years he has been serving in that department.

For the year, 18.32 inches of precipitation was recorded including the moisture from 36½" of snow. During the growing season, March through September, 15.89 inches were received. January, February, October, November and December added 2.43, which isn't much winter moisture.

September was the leader with 3.67 inches, followed by April with 3.16. These have been the traditionally "wet" months in this part of the state, so those amounts are small in comparison with normal-rainfall years.

July added 2.53, May 2.04, March 1.61, August 1.60, and June 1.28. The 36½" of snowfall came with, 11 inches in March, 10 inches in January, 7 inches in December, 6½ inches in February and 2 inches in October.

The year 1974 was drier by comparison with 17.65 total inches of precipitation. Some of this came from 29 inches of snow, which was the least recorded in the five-year period.

The 1975 moisture of 26.28 inches included the heaviest winter snowfall of the span, 73½". That snowfall also had a definite bearing on the crop production the past year which was surprisingly good in view of the dry and hot conditions.

In further comparison, 1972 produced 31.31 inches of moisture; 1973, 32.55". With the exception of the heavy snowfall in November and early winter of 1975, the snows have been running from 29 to 36½ inches.

January of this year is comparatively dry, and has been extremely cold. With the exception of just three days, temperatures have been below the freezing point, and in most cases well below zero. Strong northerly winds and temperatures approaching 20-below have given us a chill factor of 60 to 80 below zero. There is no prospect for improvement in the next 30 days according to weather forecasters.

OPPONENTS INTERPRET KUIPER:

Little Narrows Dam Benefit After Atwood

There would be little benefit from the Narrows Project for water users with diversion points east of Atwood, project opponents claim a letter from State Engineer C.J. Kuiper indicates.

Kuiper wrote the letter in reply to a question from Marvin Etchison, an Orchard farmer and retired teacher, asking how much water he would get from 200 units of Narrows water, using the South Platte River as a common carrier, to a farm that would be under the South Reservation Ditch near Julesburg.

Etchison asked how much water would be available on a day-to-day basis over 120 days, and Kuiper reduced the time period from 120 to 60 days because the Narrows is to be supplemental water.

Kuiper said that anywhere from zero to .47 cubic feet per second of water would be available at the South Reservation Ditch, using information from ditch records from 1950 to 1976 to calculate the flow of Narrows water.

Etchison is a member of the Regional Landowners Group opposing the reservoir proposed near Fort Morgan but listed as a possible victim of proposed funding cuts by the Carter administration. The Orchard man said that if he had t depend on Narrows water for a farm in the South Reservatio area, it would be a bad deal.

"In an average year out of th 200 acre-feet released at th dam, I would get only 54 acr feet at my farm," he said. "In a dry year, when I would reall need the water, I wouldn't ge anything but a bill for the 20 units of water for which I signe up."

He added, "In my opinio anybody signing a contract fo water that left the river east o Atwood would find the water t be too expensive for irrigation."

One unit of water would equa an acre-foot of water at th Narrows with the reservoir' available water at the 133,00 acre-foot level — which is th average estimated to b available from the projec annually for the Lower Sout Platte Water Conservanc District.

Kuiper said that with th average available there woul be 200 acre-feet over 60 days fo Etchison's 200 units, 1.68 cubi feet per second (cfs) a day, a the Narrows.

With minimal base flow in th river at Harmony No. 1 Ditc headgate, the engineer sai there would be none of that 1.(cfs reaching the South Rese vation Ditch headgate.

With a flow of 40 cfs at th Harmony headgate 0.1 c would reach the South Rese vation headgate, he added, s per cent of the 1.68 at Narrow

With a flow of 150 cubic fe per second at Harmony 0.47 c would reach South Reservatio Kuiper said, 28 per cent of th 1.68 at Narrows.

Kuiper told Etchison that h analysis was a simplified o and that more detailed analys would be required wh Narrows becomes operativ

Narrows to Balzac Gag Kuiper said, would entail a per cent loss, making 1.26 cfs the original 1.68 available Balzac.

From Balzac to Harmony N 1 ditch would mean a 50 per ce assessment of the wat available at Balzac, leaving cfs at Harmony, he added.

If a run on the South Platte were made, Kuiper said, there would be an 84 per cent loss on about 40 cfs that a call would make available.

Also, he pointed out, the Harmony to South Reservation loss would be 25 per cent for a base flow of 150 cfs.

WEDNESDAY, MARCH 23, 1977

Engineer: No Need To Panic Over Drought

2-18-77 Loveland Reporter Herald

By RUTHANN LEHMAN

DENVER — State Engineer Clarence Kuiper said Thursday that there is no need to panic over this year's drought because Colorado has gone through drought periods before.

At the present rate of snowfall, Colorado will receive 5 million acre-feet of water this year and virtually all of it should be used to fulfill interstate compacts, he said.

"This is a tough question, but we will cope with it," Kuiper said in a speech before the Colorado Water Congress.

"We will take advantage of every gimmick and you have to conserve and re-use water," he added.

"I don't get too excited when you have a small snowpack or a drought her and there," the engineer added.

"We have good water law designed for the kind of year we're going into now," Kuiper said.

The state will follow the doctrine of prior appropriation. People with senior water rights must keep in mind that junior water right people are trying to make a living also.

"Most people in cities feel that the source of water is the tap," Kuiper commented.

The State Engineer's Office will keep people informed of the situation by issuing a bulletin every two weeks.

Water commissioners will also be able to call a clearinghouse through the State Engineer's Office to find out where water is available.

Water exchange programs will be instituted. Kuiper said there is provision in the law for this measure without designating the situation as an emergency.

Water will be stored in reservoirs at the highest elevations possible so that when the water is released, it can be used and re-used more often.

As a last resort the governor could issue a disaster proclamation, but Kuiper said, "This should be approached with a little caution."

Kuiper confirmed that Gov. Dick Lamm has instructed him to work with the State Attorney General's Office on preparing such a proclamation.

The proclamation may require people with senior water rights to pump water from wells, but junior water right holders might have to pay the pumping costs.

Kuiper may recommend issuing one-year well permits to cities with real water supply problems.

Requiring cities to stop irrigating golf courses, parks and maybe lawns is another measure that could be instituted.

Water in state-owned reservoirs used primarily for recreation and propagation of fish may be used. "I prefer killing of the fish to the humans," Kuiper commented.

"We've heard a lot about people forming councils," Kuiper said. "But the only people who can really take any positive actions are those water commissioners and the division engineers.

"But we'll be most happy to listen to advice," he said. "And we'll issue bullet proof vests to the water commissioners before the irrigation season starts."

Colorado snowpack gone, snow survey chief says

TRIBUNE 6-6-77

DENVER, (AP) — The U.S. Department of Agriculture's snow survey supervisor in Denver, Jack Washichek, says "there's practically no snow left in the state."

The department's June 1 survey checked conditions at about 20 reporting stations scattered across the state. And only six of those stations, all at higher elevations, reported any snow at all.

"For all general purposes, practically all of the snowpack has vanished already," Washichek said.

At the USDA's Berthoud station, where 12.1 inches of snow would be a normal June 1 reading, only 6.2 inches were reported. The reporting station on Fremont Pass had only 3.6 inches of snow at the first of the month when a normal reading would be 8.6 inches. And on Wolf Creek Pass, where 20.6 inches of snow would be a normal reading for June 1, the snowpack totaled 7.8 inches.

Streamflows have increased, according to Washichek, "primarily because of really warm temperatures.

"But we really don't expect it to last too long," he said.

Washichek says the snowpack is definitely less than 50 per cent of normal and more likely in the range of 35-40 per cent of normal.

"It looks like kind of a tough year," he said.

NCWCD OKs 100% water allotments

Fri., April 1, 1977 GREELEY (Colo.) TRIBUNE

After reviewing the 1977 water supply situation, and the probable need for supplemental water, the board of Northern Colorado Water Conservancy District Friday approved a quota of 100 per cent for district allottees this summer.

This means a full 310,000 acre-feet of Colorado-Big Thompson project water will be available for delivery during the year to supplement local water supplies.

The decision was based on snowpack figures which show a continued decline from average in all but one of the watersheds serving the project.

All the percentages were in reference to the 1957-1976 period.

Informal estimates indicate that the increase in the snowpack from March storms might bring up the average by a few percentage points, but the need for a full supply of support quota might jeopardize in the plans for two more years.

Quota certification lists will be mailed to ditch companies as soon as possible.

Consideration was given to a report that the National Center for Atmospheric Research in Boulder is forecasting drought conditions by board members revealed full realization that declaration of the 100 per cent quota might jeopardize in the plans for two more years.

Discussion by board members revealed full realization that the board included a warning to that effect to water users in making its declaration.

Carter firm on water funds

TRIB 3/10/77

WASHINGTON (AP) — President Carter told a congressional delegation today he intends to stand firm on his proposal to cut off funds for 19 water projects in 16 states until they are reviewed. But some of the congressmen said the projects will be funded anyway.

"It seemed to me ... the President was going to pretty much tough it through," said Sen. William Hathaway, DMaine, after he and the other members of Congress met with Carter at the White House. "He had pretty much made up his mind that these projects should be scrapped."

But Sen. Jake Garn, R-Utah, said "the chances are overwhelming that they (a majority of the projects) will be put back in by Congress." Garn said Democratic members of the delegation questioned the cost effectiveness of cutting the projects.

He said the projects would provide jobs — something Carter is trying to do with "make work" measures.

"I don't think that the President gave us any reasons for reassurance," said Rep. Gene Snyder, R-Ky. "I would be surprised if they (members of Congress) didn't reinstate them all."

Members of the delegation said some of the hearings on the projects would be held in the states where they are located.

Reclamation bureau to begin EIS of Windy Gap project

DEC 1976

DENVER — Regional officials of the U.S. Bureau of Reclamation (USBR) have announced they will begin an environmental impact statement (EIS) for the Colorado-Big Thompson-Windy Gap diversion project.

Known as the Six Cities Project, with the cities of Greeley, Fort Collins, Loveland, Estes Park, Longmont and Boulder formed as a municipal sub-district of the Northern Colorado Water Conservancy District (NCWCD), the project would involve the diversion of water near the confluence of the Fraser and Colorado rivers on the Western Slope.

USBR officials pointed out the project would include the collection and transportation of 54,000 acre-feet of water a year through the Colorado-Big Thompson system for municipal and industrial use along Colorado's Front Range.

USBR regional Director Joe D. Hall said the EIS would describe the existing Colorado-Big Thompson Project and its impacts, impacts of the Six Cities Project on the Colorado-Big Thompson system and environmental impacts under the National Environmental Policy Act.

Hall said the draft EIS is to be published next May, with the final EIS due about October. He said work would be done in cooperation with the NCWCD sub-district and its consultants, International Engineering Co. and Dames and Moore Inc.

He said persons or groups who wish to take part in the Six Cities EIS process should contact: Jerry Westbrook, South Platte River Projects, 995 Wilson Ave., Loveland, telephone 667-4410, or Richard B. Eggen, regional environmental officer, Bureau of Reclamation, Lower Missouri Region, P.O. Box 25247, Denver, 80225, telephone 234-3779.

Snow generators set up

2-11-77 Tribune

DENVER (UPI) — Snowmakers today set up generators in the Colorado Rockies, awaiting darkened storm clouds they will try to coax into releasing moisture needed to ease one of the worst droughts in decades.

The snowpack in the Rockies was reported only 30 to 35 per cent of normal as of Feb. 1 because of light snowfall this winter, and the weather has been nothing but sunny since then.

State officials Thursday awarded contracts to three snowmaking firms — Colorado International Corp., and AeroSystems, Inc., both located in Boulder, Colo., and Western Weather Consultants, of Durango, Colo.

Felix Sparks, head of the Colorado Water Conservation Board, said the two Boulder firms will seed the northern area of the Rockies from Denver to the Wyoming border. Western Weather will seed the San Juan Mountains in central and southern Colorado.

Sparks said Colorado State University also got a contract to monitor the effect of seeding and cloud movement.

The water conservation board director said he hopes seeding for the southern and central portions of the state can begin within four days. He said a storm front was expected to move into the state at that time.

Sparks said cloud seeding in the northern mountains will not begin for at least one week because of hearings on the necessary permit. He said some generators were on site and operational in the San Juans with the rest scheduled to be set up within four days.

Sparks said Western Weather will use 16 generators in the San Juans, and has a tentative plan to use 21 generators in the central mountains. Twelve ground generators and one airplane will be used in the north, he said.

State reprimand given for reservoir discharge, fish kill

2-3-77 TRC

The city of Greeley will have to obtain the necessary permits before again discharging large water quantities from Seaman Reservoir according to the State Department of Health Water Quality Control Division.

On Jan. 10, the division sent the city a notice containing a "cease and desist order" regarding the reservoir. The notice of violation stated that discharges on Sept. 6, 7, 19, and 20, 1976 resulted in the death of 25,000 fish.

The city had lowered the water levels in the reservoir in order to repair and remove debris strew in the watershed by last summer's flooding. The notice cited violation of Section 25-8-501 of the Colorado Water Quality Control Act which states that "no person shall discharge any pollutant into any state water from a point source without first having obtained a permit from the division for such a discharge."

City Manager Pete Morrell said the lowering of the water level was coordinated with the state river commissioner and was necessary to preclude another flood from washing the debris into and possibly plugging, the spillway.

Morrell said the bottom of the reservoir had to be exposed in order to allow access to workmen and equipment.

The state's report on the incident shows that only 205 out of the 25,000 fish estimated killed were trout and that almost 19,000 were western white suckers, a scavenger fish.

Lamm asks water conservation

2-11-77 Tribune

DENVER (AP) — Gov. Richard Lamm, in an attempt to soften the effects of a worsening drought in Colorado, on Thursday announced a statewide water conservation program aimed at reducing water consumption by 10 per cent.

"As every day goes by the water situation in Colorado becomes worse," Lamm told reporters at a news conference.

"The drought is going to require special extraordinary efforts on the part of every person in Colorado."

Lamm said he has proclaimed the month of March as Conserve Water Month. He asked that every family in the state voluntarily reduce its water consumption by 10 per cent during the month, which he said would result in a 10 billion gallon savings in water yearly.

The governor urged Coloradans to water their lawns only in the morning and evening, when evaporation is less, and to put bricks in their toilets. He also asked them to take showers rather than baths, which require more water.

"By making some minor changes in the way we conduct daily activities we can make major changes in the way we conserve water," Lamm said.

Lamm said earlier there are no plans for rationing water in the state at the present time.

Lamm also announced on Thursday he had asked for federal disaster designation for 16 southeastern Colorado counties. The counties earlier received federal emergency designation because of the drought, making them eligible for federal assistance.

Water well bill killed

T&R 4/9/77

DENVER (UPI) — The historic level, they could at Colorado House Friday killed a least get their crops in and water well bill one southeastern growing and have a chance. Colorado lawmaker said could "These people are being have saved some drought- foreclosed on; banks and the striken farmers in his district FHA (Farmers Home Adminis- from bankruptcy. tration) are calling in their

Rep. Forrest Burns, D- loans," Burns said. "This one Lamar, said his bill — killed on little thing could have saved a 28-37 vote — would have al- them from possible bankrupt- lowed well owners to pump cy."

water used for irrigation up to But Rep. Robert Shoemaker, their historic level of use; 1950 D-Canon City, said the bill only would be used as a base year. would have been good for

"The farms could use under- farmers in the lower Arkansas ground water to supplement and South Platte River basins their decreed surface rights," where there are large amounts said Burns. "In this time of of underground water. water shortage, the surface "They don't use the priority water isn't coming down river system of water rights as much and the farmers are running as we do," said Shoemaker, out." whose district is upstream from

Burns estimated production Burns' on the Arkansas River. of springs crops in the Lamar- "It's using the annual historic La Junta area would be only 25 right that I have problems per cent of normal this year with," Shoemaker said. "Mr. because of the drought. He said Burns wants to go back 10 his bill might have increased years from 1950 which were a production by as much as 60 group of fairly wet years. If we per cent. go back to the historic right,

"Most people with surface they won't be taking a true rights have wells," said the water based on the annual lawmaker. "If they could pump portion of the water available."

Water shortage may be in the making for 1978

2-17-77 TAC

Despite sufficient water storage in the Colorado-Big Thompson system for 1977 allotments, farmers in the Northern Colorado Water Conservancy District area could be facing, in 1978, the most serious water shortage since 1954.

Bob Smith, operations and maintenance superintendent for the district, told district directors, during a regular monthly meeting last week that current water supply forecasts indicate that even the 1954 level of stream flow could not be expected without average precipitation from now through the irrigation season.

Smith reported there was sufficient storage in the CBT project reservoirs to allow for delivery of 100 percent of this year's allotment (310,000 acre-feet).

However, he did say, it may take above average precipitation next winter to rebuld the western slope storage to a point where similar supplemental water would be available next year.

Current estimated supplemental deliveries for 1977 has been listed at 312,000 acre-feet, according to the NCWCD. This assumes 310,000 acre-feet of allotted water (100 percent quota), plus 2,000 acre-feet of replacement water.

Smith said farmers will have to use their best water management practices this year if they are to achieve the maximum benefit from the water available.

"Even with greater than average precipitation from now on, irrigators and other water users will have to exercise extreme care in the way they manage water."

"Naturally, there is no way we can predict what the precipitation will be this spring and summer," he said, adding, "If we continue with moisture as we have to date, the situation could be worse than in 1954."

Smith explained to the board that 1954 was the lowest water supply on record since the availability of CBT project water. The lowest snowpack in the watersheds supplying CBT was recorded in 1934 before western slope water was available here.

Snowpack on the Blue River watershed above Green Mountain reservoir was 43 percent of the 1959-1976 average as of Feb. 1, Smith said. He said this compares with an 80 percent snowpack in 1954.

Similar figures for the Colorado River watershed above Granby Reservoir are 37 percent this year and 75 percent in 1954. The Willow Creek watershed has 39 percent of average compared with 63 percent in 1954.

The snowpack in the Poudre River watershed is 34 percent of average this year, the Big Thompson 28 percent and St. Vrain 34 percent, according to Smith.

He said NCWCD precipitation this year to date is only 33 percent of average. Based on the snowpack, current streamflow forecasts into the district should average about 51 percent, he said.

CBT project reservoir storage comparisons show 81 percent of the average but only 48 percent full. Smith said storage at this time last year was 69 percent of capacity.

Total available water supply to the district for 1977 based on 51 percent of the average tributary stream flow, near average ditch company storage, and 100 percent quota of CBT water would total only 77 percent of average. Smith said this is 20 percent above the total supply available in 1954.

Actual water use in 1954 was 345,948 acre-feet from direct diversion, 90,609 acre-feet from ditch company storage and 310,486 acre-feet of NCWCD delivery.

By comparison, assuming a 20-year average water use in 1977, it is projected that in addition to approximately 364,000 acre-feet forecast as available for direct diversion, over 200,000 acre-feet of ditch company storage would also have to be called on for delivery assuming delivery of 100 percent by the district.

Smith said the previous maximum annual use from local storage was 173,796 acre-feet in 1969.

"Total water supply projections include current reservoir storage in the Colorado-Big Thompson system and some 70 ditch company reservoirs," Smith said.

Earl Phipps, manager of the water district, said that the water user must understand that the CBT can normally supply from 25 to 30 percent of the total water supply and that its purpose is "to try to make the water supply whole, rather than provide the whole water supply."

NCWCD faces worst water shortage since 1954

Farmers in the Northern Colorado Water Conservancy District (NCWCD) area could be facing the most serious water shortage since 1954.

This was the assessment given the NCWCD Board of Directors Friday at its regular monthly meeting held at district headquarters in Loveland.

Bob Smith, operations and maintenance superintendent for the district told the directors that current water supply forecasts indicate that even the 1954 level of stream flow could not be expected without average precipitation from now through the irrigation season.

"Total water supply projections include current reservoir storage in the Colorado-Big Thompson system and some 70 ditch company reservoirs," Smith said. "Naturally, there is no way we can predict what the precipitation will be this spring and summer."

"If we continue without moisture as we have to date, the situation could be worse than in 1954." (1954 was the lowest water supply year of record since the availability of CBT project water).

The lowest snowpack in the watersheds supplying the CBT was recorded in 1934, but at that time western slope water was not available here. It was during that time that the possibility of bringing water across the mountains began to get serious consideration.

Smith said farmers will have to use their best water management practices this year if they are to achieve the maximum benefit from the water available.

"Even with greater than average precipitation from now on, irrigators and other water users will have to exercise extreme care in the way they manage water," Smith said.

There is sufficient storage in CBI project reservoirs to allow for delivery of a 100 per cent allotment (quota) this year, (310,000 acre-feet.) However, it may take above average precipitation next winter to rebuild the western slope storage to a point where similar supplemental water would be available next year.

Snowpack on the Blue River watershed above Green Mountain reservoir was 43 per cent of the 1959-1976 average as of Feb. 1. By comparison, the 1954 figure was 80 per cent. Similar figures for the Colorado River watershed above Granby Reservoir are 37 per cent this year, and 75 per cent in 1954. The Willow Creek watershed has 39 per cent of average, compared to 63 per cent in 1954.

The snowpack in the Poudre River watershed is 34 per cent of average this year; Big Thompson, 28 per cent; and St. Vrain, 34 per cent.

NCWCD precipitation this year to date is only 33 per cent of average.

Based on the snowpack, current streamflow forecasts into the district should average about 51 per cent.

CBT Project reservoir storage comparisons show 81 per cent of the average, but only 48 per cent full. Storage at this time last year was 69 per cent of capacity.

Total available water supply to the district for 1977, based on 51 per cent of average tributary stream flow, near average ditch company storage, and a 100 per cent quota of CBI water would total only 77 per cent of average. This is 20 per cent above the total supply available in 1954, however.

Actually water use in 1954 was 345,948 acre-feet from direct diversion, 90,609 acre-feet from ditch company storage, and 301,486 acre-feet of NCWCD delivery.

By comparison, assuming a 20 year average use in 1977, it is projected that in addition to approximately 364,000 acre-feet forecast as available for direct diversion more than 200,000 acre-feet of ditch company storage would also have to be called on for delivery assuming delivery of the 100 per cent quota by th district. The previous maximum annual use from local storage was 173,796 acre-feet in 1969.

Current estimated NCWCD supplemental deliveries for 1977 are 312,000 acre-feet. This assumes 310,000 acre-feet of allotted water, (100 per cent of quota), plus 2,000 acre-feet of replacement water.

In discussing projected 1977 supplemental water needs, Earl Phipps, manager of the district, said the water user must understand that the CBI can normally supply only 25 per cent to 30 per cent of the total water supply and that its purpose is "to try to make the water supply whole, rather than provide the whole water supply."

GREELEY (Colo.) TRIBUNE Tues., March 8, 1977

As the state's snow season nears its end

Record low snowpacks seen on 75 per cent of snow courses

Seventy-five per cent of Colorado snow courses indicate a record low snowpack as of March 1, according to Robert Halstead, state conservationist with the USDA Soil Conservation Service in Denver.

The snowpack on Rabbit Ears and La Veta pass areas was improved by month-end storms, he said. "Almost all areas of the state received some snow from the storm and every little bit helps, but the overall snowpack still remains the lowest on record. Some snow courses indicate less than half the minimum on record," Halstead said.

The Sangre de Cristo mountains south from La Veta Pass have the highest percentage snowpack in the state, he said. "This snow extends south into New Mexico and has improved runoff possibilities to some extent," he said.

He noted that Rabbit Ears Pass also received considerable snow from the last storm with up to 30 inches recorded.

Precipitation over the plains of Colorado continued mostly on the "light side" for the first three weeks of the month.

Summer streamflow will be extremely short this summer, he said. "Most forecasts are near the minimum of record. All possible conservation measures must be strictly adhered to, to stretch water supplies," Halstead said.

He said Water users under reservoir systems in the South Platte should have fair summer supplies because of the excellent storage carryovers. "Other water users in the state aren't that fortunate. The Arkansas and Rio Grande basins have poor carryover," he said.

Halstead said the water problems of the state are amplified by generally poor soil moisture conditions: "considerable amounts of snowmelt runoff will be required to wet the dry lands."

Halstead said a number of water conservation brochures are being released by SCS and are available through SCS offices and in many public and business locations.

He noted that about 85 per cent of the snow season is past, but additional snow could fall in the higher elevations of the state through June 1. "It is highly unlikely that we will receive enough moisture to have normal conditions this summer," Halstead said.

Streamflow forecasts are based on normal snowfall and precipitation for the remainder of the year, he noted, "so if either are above normal, some improvement in water supplies may occur."

Supplies flown to blizzard-wracked areas

By GARY GERHARDT
News Staff

Colorado Army National Guard helicopters carrying medical supplies, food and electric generators Monday shuttled into eastern Colorado areas still without power or communications three days after last week's blizzard.

State Education Commissioner Calvin Frazier said some rural schools won't be able to reopen for at least a week because of snowdrifts.

At least 10 persons are known to have died as a result of the storm Thursday and Friday.

The 10th victim was identified Monday as Tony Falcon. Weld County authorities said Falcon apparently ran off the road while driving to his home in rural Dacono Thursday night. His body was found Saturday by road crews alongside the road about a half-mile from his home.

In addition, four highway deaths have been attributed to the storm, three children froze to death in El Paso County when they tried to walk from one farmhouse to another, and two men died when their tow truck became stuck on Colorado 24 near Colorado Springs.

WORKMEN CLEARING THE highways in the Calhan and Ellicott areas east of Colorado Springs have requested metal detectors to find cars buried in some of the 25-foot drifts. Some farmers in that area still are isolated by drifts.

The Army National Guard dispatched helicopters from Buckley Air National Guard Base to the Holyoke, Wray and Sterling areas. They were placed at the disposal of county commissioners for relief missions and emergency transportation.

The Guard also was flying at least 200 electrical generators to isolated areas for livestock producers.

Ray Burke of the Colorado Department of Agriculture Disaster Service said many stockmen are without water for cattle because they have no power for pumps. He said they also need electricity to run feed-grinding machines.

"One of our hardest hit areas is down near Sheridan Lake in the southeastern part of the state. One feedlot down there has between 6,000 and 10,000 head of cattle and no power," Burke said.

"WE GOT TWO 40-foot reefers (refrigerated trailers) and took them to Wray and Yuma because farmers who lost their power are bringing their perishable food into town to store it and the local packing companies and lockers are running out of room.

"Lincoln County is the last county still isola and we have word we won't have power or cc munications into them for another couple days. We're flying medicine, food and whate else they need in there now. It's the last a where we're still worrying about human needs

Burke said retailers in many areas repor they no longer have electrical generators to se

"It would be real premature to say yet wl the loss to livestock is, but we do know it's go to be substantial," Burke said.

"Our range men just got out into the fi (Monday) and they report serious livesto losses in the Rush area. One rancher repor losing 600 head of cattle in the Sheridan La area and another found 200 head of his cat dead.

"A rancher in Yuma told us he lost all of cattle but 2,000 head of strays have wandered on his pastures. He doesn't know who they belo to and will have to wait for the brand inspect to sort out their rightful owners."

BURKE ADDED THAT CATTLE losses feedlots also are expected to be high and ma feedlot operators may have to move herds to l that weren't damaged by the storm.

(Continued on page 22)

MARCH 15, 1977

Helicopters shuttle supplies to Colorado's eastern areas

(Continued from page 5)

"One farmer near Burlington who milks 200 cows lost his power and then lost his emergency generator," Burke said. "He needed a big generator for his milking machines and cooling process and we couldn't get a helicopter big enough to take it out to him.

"He started for Burlington at 7 a.m. one morning to get it himself. It took him until 12:30 a.m. the next morning to get back – and then found out his pump had burned out."

Burke said the snow produced little moisture. "It was a funny storm," Burke said. "Down in Lamar, it took the roof off the Cow Palace Motel and knocked down every large sign in town. It looks like a tornado hit. You go 15 miles south and snows closed the road. But you go 10 miles east of Lamar, and they don't have any snow on the ground."

KEN LOVE, a spokesman for Mountain Bell, said crews are working around the clock to restore telephone service in the Julesburg area.

He said 150 telephone poles were snapped by the wind between Julesburg and Sedgwick, 18 miles to the west.

"Right now Julesburg is cut off from the rest of the world. They can only call within the city itself," Love said.

"We are going to try to set up a microwave system like we used during the recent Big Thompson flood to restore communications outside of the city."

The interstate highways generally were open Monday, but a number of state highways still were closed.

Traffic still was being escorted eastbound from Stratton to Burlington on Interstate 70. Colorado 63 from Akron to Anton was open to one-way and emergency traffic.

Highways still closed as of Monday evening were Colorado 59 north of Yuma to Haxtun because of low-hanging power lines, Colorado 86 from Kiowa east to Limon, U.S. 287 north from Eads, Colorado 94 from Punkin Center to U.S. 40 junction, and U.S. 40 and U.S. 287 from Hugo east to Kansas.

Many passes were reporting snow and winds Monday night, while a few snowshowers were located along the Eastern Slope near Greeley, west and north of Denver, and northwest and northeast of Colorado Springs. The roads were reported wet from snow in the Greeley and Fort Collins areas.

MARCH 15, 1977

Cost of Narrows Dam cannot be justified, economist says

3-16-77

DENVER (AP) — The importance of a number of federal water projects in Colorado has been overstated, and the completion of at least two of them can't be justified, a University of Colorado natural resources economist says.

Other officials, meanwhile, are fearful that if the projects are dumped, water assigned to agriculture might instead go for other uses such as coal development.

President Carter has recommended deleting 19 water-resource projects, including three in Colorado, from his 1978 budget.

The Colorado projects still are in the construction stage, although more than $6 million has been spent on them. They are the Dolores project and the Fruitland-Mesa project, both in the western part of the state, and the Savery-Pothook project, along the Wyoming border. The projects are estimated to cost $186 million, $88 million and $75 million, respectively.

But Dr. Charles Howe of the University of Colorado says at least two of the projects aren't economically justifiable and should be scrapped.

The benefits of the Dolores and the Narrows—another northeastern Colorado project facing a possible funding cutoff—"have been greatly exaggerated," Howe said. He has studied the project costs and benefits for two years.

"Neither comes close to justification," he said. "They're not warranted. They represent a high degree of subsidy to special interest groups who will receive large benefits, while most of the cost is being defrayed by taxpayers at large."

Howe said he has computed the cost-benefit ratio for the Narrows project at .9 and for the Dolores project at .7.

He added that water delivered to farmers in the Lower South Platte and Central Colorado Water Conservancy Districts via the Narrows project will cost more than $40 per acre foot to produce, whereas farmers will pay about $6 per acre foot.

Storm drops .43 of an inch

TRIBUNE 4-4-77

The first major snow of winter 1976-77 came on April 2 after six of the driest months on record for the area.

According to sources around the county, about four to five inches of snow fell generally in most areas, with moisture amounts to about a half-inch recorded.

The University of Northern Colorado weather service said Monday morning that moisture from Saturday's storm amounted to .43 of an inch. The amount nearly doubled the moisture recorded so far in '77, pushing the year's total to one inch. But the vear's total is about a half inch below what's normally expected through March.

The snow in Greeley was measured officially at 4½ inches, although amounts up to six inches were recorded in some areas of the county, mostly southeast.

According to Stan Boyes, Weld County extension director, a network of reporting stations set up to assess the drought damage in the county generally reported around four inches of snow and from ¼ to ½ of an inch of moisture.

"This moisture means that some of the wheat which was set to go with the next wind will get some breathing room. It certainly doesn't mean that we have enough moisture to count on an average crop at this point. We need considerably more.

"But we generally got some good cover and enough moisture to keep the crop going. It also provided cover for the grasslands area—maybe enough moisture to start some of the grass growing—but only enough to hold down the land that is susceptible to blowing," Boyes said.

For the irrigated croplands of the county, Boyes said he doubts whether the moisture will be enough to postpone irrigation. "We may have enough to help sprout sugar beet and onion crops which have been planted. But for the growers who still have land work to do before planting, most of the moisture will be lost.

"A quarter of an inch just doesn't go that far," Boyes said.

For drivers over most of the county, the snow came "perfectly." With a storm throughout most of the day Saturday, most streets were clear by noon Sunday.

But Monday morning brought problems for some drivers as the Colorado State Patrol reported some road closures caused by ground blizzard conditions near the Colorado-Wyoming state line.

Meanwhile, UNC meteorologist Dr. Glenn Cobb said a warming trend should continue through Wednesday when another low pressure system may bring the chance of snow showers to the area. Cobb said that storm doesn't appear to have the general snow potential of Saturday's storm, however.

Tues., March 22, 1977 GREELEY (Colo.) TRIBUNE

While blizzard death, damage figures told

State may face water shortages as snowpack continues low

DENVER (UPI) — A U.S. Agriculture Department study shows record-low snowpack in the Colorado high country, indicating the state could face a serious water shortage this summer.

Department figures, as of March 1, indicated "75 per cent of the snow courses in Colorado have a record low snowpack."

The Agriculture Department study said overall figures showed the state's snowpack levels are "the lowest on record, with some snow courses indicating less than half the minimum of record."

Summer streamflow "will be extremely short this summer," with "most forecasts near the minimum of record," the report said.

The flow of Clear Creek is forecast to be only 40 per cent of normal and the Colorado River only 48 per cent. The Rio Grande is expected to have about 54 per cent of its normal flow.

The Cucharas, with a heavier snowpack, is expected to flow at 80 per cent of normal, the study said.

"Water users under reservoir systems of the South Platte (including Denver) should have fair summer supplies because of the excellent storage carryovers," the study said. "Other water users in the state aren't that fortunate. The Arkansas and Rio Grande Basins have poor carryover."

Meanwhile more than 56,000 animals were killed and 140,000 acres of wheat damaged by a blizzard which swept across Colorado's eastern plains earlier this month, the governor's office said today.

An update on the March 10-11 blizzard, which claimed at least 10 lives, showed 40,000 head of cattle were killd in 12 counties. Also killed by the storm were 13,000 head of hogs, 1,600 sheep and 2,000 poultry.

The report said 140,000 acres of wheat were damaged along with more than 3,000 miles of fence. Machinery, homes and farm buildings were damaged by the hurricane-force winds which accompanied the storm, and some stored grain and feed was either lost or damaged.

The report said the damage occurred in Baca, Cheyenne, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Phillips, Sedgwick, Yuma, Washington and El Paso Counties.

Tues., March 22, 1977 GREELEY (Colo.) TRIBUNE

While blizzard death, damage figures told

State may face water shortages as snowpack continues low

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The report said the damage occurred in Baca, Cheyenne, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Phillips, Sedgwick, Yuma, Washington and El Paso Counties.

Poudre snowpack still low

Coloradoan 3-31-77

The snowpack and water content on the Cache la Poudre River drainage basin has remained well below average this year and March was no exception.

A survey conducted by Tom Bailey of the Soil Conservation Service Office in Fort Collins showed precipitation during March in the high country was from about half to one-fourth what was received as an average from 1958-1972.

Snow, water content on Poudre as of April 1

LOCATION	1976 Inches Snow Depth	1976 Inches water content	1977 Inches snow depth	1977 Inches water content	Average 1958-72 Inches water content
Deadman Pass	49	15.3	30.6	7.15	16.8
Red Feather	24	7.0	8.45	2.08	6.9
Lost Lake	40	11.9	19.5	3.75	11.8
Chambers Lake	29	9.9	7.38	2.06	9.6

Two survey areas, the Big South Fork of the Poudre and Pine Creek, had no measureable amounts of snow on the ground as of April 1.

At Deadman Pass the water content of the 30.6 inches of snow was 7.15 inches; at Red Feather the water content of the 8.45 inches of snow was 2.08 inches; at Lost Lake the 19.5 inches of snow had a water content of 3.75 inches, and, at Chambers Lake, the 7.38 inches of snow had 2.06 inches of water, all as of April 1.

Water district reports adequate storage

The annual report of the Northern Colorado Water Conservancy District is a streamlined "facts and figures" recap of the 1976 season that also highlights the only bright spot in the 1977 water picture.

The significant statement is: "Although less than average, this carryover, (project and ditch company reservoirs,) is still 40 per cent more than the maximum amount of storage water ever used in the district service area."

Drought conditions during the winter and this spring point up the value of this carryover storage.

The report notes that the heavy use of storage reserves to meet the 1976 demand resulted in less than average storage carryover in project and ditch company reservoirs for the first time since 1968.

Distribution of 1976 deliveries was listed as: 248,832 acre-feet for irrigation; 42,412 acre-feet for municipal-domestic and 5,088 acre-feet for multi-purpose uses.

A total of 297,969 acre-feet of project water was delivered during the year, the second highest total use since 1957. This compares to a 1957-1975 average of 217,249 acre-feet.

Carryover storage in the project was 355,072, compared to the 1957-75 average of 442,957 acre-feet.

After noting that a quota of 80 per cent was established in April 1976, the report says that stream flows turned out to be lower than forecast and early season rains were less than average. Record June water deliveries of 40,473 acre-feet and continued warm, dry weather prompted the district's board of directors to increase the quota to 100 per cent on July 9. This made a total of 310,000 acre-feet of project water available for use during the 1976 season.

Crop production in the district area showed an overall increase with the exception of sugar beets, which showed reduced acreage due to lower sugar prices and delayed contract agreements between growers and the company.

Harvest tonnage, by crop, for 1976, showed: sugar beets, 1.2 million tons, (1975 — 1.4 million tons); barley, 3 million bushels, (1975 — 2.9 million); corn for grain, 18.1 million bushels, (1975 — 16.8 million); ensilage, 3.9 million tons, (1975 — 3.6 million tons); hay, 751,000 tons, (1975 — 654,000 tons); dry beans, 1 million cwt., (1975 — 999,000 cwt.); potatoes, 1.6 million cwt., (1975 — 1.6 million cwt); and onions, 2.2 million cwt., (1975 — 2.2 million cwt.).

The financial report of the district showed balances in all reserve accounts slightly in excess of those anticipated in the budget. The balance in the escrow account, for paying the district's share of project construction, continues to run slightly ahead of the level needed to repay the project on schedule.

The current total of $2.2 million is more than the amount scheduled for the account in 1977.

Gordon C. Dyekman of Loveland is president of the district and chairman of the board; Milton H. Nelson of Boulder County is vice president; Earl F. Phipps is secretary-manager; Larry D. Simpson, assistant manager and treasurer. Directors are, in addition to Dyekman and Nelson, W.D. Farr, William E. Bohlender and Samuel S. Telep, Weld County; Everett C. Long and G. Raymond Joyce, Boulder County; John R. Moore and Ward H. Fischer, Larimer County; R. J. Lamborn, Morgan and Washington counties; "Kish" Otsuka, Sedgwick County, and H.H. Vandemoer, Logan County.

Extention-And Other-WISE

By JIM READ, Extension Agent

February 1 water supply report says, "The mountain snowpack is 40 to 70 percent below normal." That's not news, that's a fact.

Present river stream flow is good and the reservoirs are going to fill to capacity. Alex Michel reports that North Sterling is filling right on schedule and that Prewitt is nearing capacity. Bob Littler said that Jumbo is filled to season capacity. This means that there is water going past the head gates that can be used. Bob said there is 500 acre-feet going to waste every day.

So, write yourself some alfalfa crop insurance. The 500 acre-feet of water could insure the first cutting on 1,000 acres. That's 15,000 ton of alfalfa and at today's price — $75,000 a day in potential crop income.

I know all about the problems of opening a ditch at this time of year. It can be a management bugger, but the ground is open enough to take water. Every acre-foot we put on now will make a limited supply stretch that much farther.

If you have small grains, they can be irrigated. If you are going to plant oats or barley, a good irrigation now and another one as the crop goes into the boot will put grain in the bin. Using the water now will help keep the underground aquifer full and help keep the wells pumping next spring.

Remember, 500 acre-feet a day is getting away. When the Prewitt fills it will be more.

Johnson upset with water reviews

WASHINGTON (UPI) — A Colorado congressman said Friday he was disturbed that the state — which already has lost three major water projects — may lose at least a half dozen more water projects because of a federal review initiated by the Carter administration.

Officials said six small watershed projects in the state, which would cost a total of $40 million, now are being reviewed.

Rep. James Johnson, R-Colo., said three of the six projects are in his district, and said he was afraid the administration review on the small water projects would not be any different than what occurred on the larger ones.

"They can forget it," Johnson said. "It was a sham. The President said he was against those projects before they ever had the review. The whole hearing process was nothing but a PR process."

Spokesmen for other members of Colorado's congressional delegation said they were not given any advance notice of the latest action.

Bal Chaves, an aide to Sen. Floyd Haskell, D-Colo., said he was surprised by the announcement.

"They (the projects being reviewed) tend to be small-type flood control projects," Chaves said. 'They're nowhere near the magnitude of any of the dams (which already have been eliminated).

Conservation of water tri-area meeting topic

Home and lawn water conservation, climate and rainfall probabilities, cities' water system practices and status of Colorado-Big Thompson water as well as yields from the Cache la Poudre and Big Thompson rivers.

These will be among the topics covered Monday during a day-long water conservation seminar sponsored by the city governments of Greeley, Fort Collins and Loveland. Event, to begin at 8:30 a.m. Monday, will be held at the Fort Collins Holiday Inn, I-25 at Colo. 14.

City managers from the three cities, Greeley's Pete Morrell, Fort Collins' Robert Brunton and Loveland's Don Hataway, said local, state, Colorado State University and industry spokesmen are to take part in the event, slated to last until mid-afternoon Monday.

Open to the public, the event will include: 9 a.m., Lowell Watts of the Governor's Drought Advisory Council, an overview of the state water situation; 9:20 a.m., State Climatologist Tom McKee of CSU, climate and precipitation probabilities; 9:40 a.m., W.G. Wilkinson, Greeley, Colorado Water Resources Division I engineer, Poudre and Big Thompson river yields.

10 a.m., Northern Colorado Water Conservancy District spokesman, Colorado-Big Thompson water situation; 10:20 a.m., Greeley Water-Sewer Board Chairman W.D. Farr, drought economic effects; 10:55 a.m., remarks from Hataway; 11 a.m., panel on lawn and garden water conservation, Greeley landscape architect Glen Bechtholdt, Fort Collins gardening author Charles Drage and CSU horiculture Prof. Jack Butler.

11:40 a.m., panel on in-home water conservation, spokesmen from industry and the Larimer County Extension Service; 12:10 p.m., no-host lunch; 1 p.m., industry film on water-saving fixtures; 1:15 p.m., introduction by Greeley Water-Sewer Director Darryl Alleman and panel on north-state water system practices, spokesmen from Greeley, Boulder, Estes Park, Fort Collins, Longmont and Loveland.

2:20 p.m., open discussion, and 3 p.m., summary by Morrell.

Last six months were very dry

4-3-77

By LARRY STEWARD
Of the Coloradoan

The six-month period from October to the end of March this winter is the driest on record for any six-month period in recorded history in Fort Collins.

The previous dry-spell record was during the winter of 1907-08 when only .97 of an inch of moisture was recorded.

This winter only .7 of an inch of moisture has been recorded by the weather station at Colorado State University.

Jim Wirshborn, an observer for the station at CSU, said the six-month period this winter "appears to be the driest of any consecutive period ever recorded in Fort Collins."

He said complete records go back until 1887, but records prior to that time were too erratic to permit an accurate comparison.

The weather station is on the main campus at CSU.

Wirshborn's research shows that during the period from October to March in 1953-54, only 1.86 inches of moisture was recorded.

That period is the most recent considered to be a drought.

During the winter of 1934-35, one of the most famous drought eras in American history, there was 1.23 inches of moisture in Fort Collins.

A moisture reading of 4.1 inches for the period is considered normal.

The moisture for this winter is about one-sixth of normal.

Comparative data for the months of March from 1887 and for the high country are to be released Friday and next week, respectively.

SIX-MONTH PRECIPITATION FIGURES FOR FORT COLLINS

	1907-08	1934-35	1953-54	1976-77	Normal
October	.08	0	.12	.25	1.28
November	.44	.06	.45	.08	.54
December	.03	0	.22	.15	.36
January	.11	.07	.11	.04	.45
February	.03	.89	.06	.05	.43
March	.28	.21	.90	.13	1.04
Total	.97	1.23	1.86	.70	4.10

Through Bureau of Reclamation, NCWCD, extension service

Irrigation management information planned for area

By LYNN HEINZE
Tribune Staff Writer

County extension agents gathered at the Northern Colorado Research Demonstration Center north of Greeley Tuesday to discuss an irrigation management service (IMS) slated for use in eight northeastern counties this summer.

The purpose of the service, which will involve the use of Bureau of Reclamation computer programing and research, is to provide area growers with plant consumptive use data which they can use to better plan irrigation water use.

While the extension agents generally agreed that the program would not likely save large amounts of water during the current irrigation season, they hope it will be the first step in a long-range program to increase irrigation efficiency.

Bureau of Reclamation spokesman for the program Larry Dozier, said the agency's research has shown an average irrigation efficiency of about 42 per cent for most areas. This means, he said, that the additional water applied on the farm isn't used by the plants and is therefore wasted.

The purpose of the IMS through the Bureau, Dozier said, is to increase that efficiency by scheduling irrigations to meet the needs of the crops being irrigated.

The computer program to be used will take into consideration five basic climatological factors: solar radiation, maximum and minimum temperatures, humidity, wind and precipitation. Under the plan, this information would be gathered daily at strategically located weather stations along the irrigation corridor of the South Platte River (the area approximates the lands under the Northern Colorado Water Conservancy District).

This daily information would be fed into the computer, averaged for the entire area and be presented for a weekly summary. The information is then also used to project water use (consumptive) requirements of the specific crops.

Although the program to be used includes several other factors, such as soil types, soil capacity, planting and first irrigation dates, maturity and field cover times, and others, the end result will be to compute the daily potential evapotranspiration of the crops.

Evapotranspiration is a combination of the crop's water use including both the amounts of moisture evaporated from the soil and that amount which passes through the leaves of the plant and lost through transpiration. It is this amount, referred to as the plant's ET, which must be replaced through irrigation to maintain maximum growth, Dozier said.

After the climatological data is collected and reported to the Bureau, Dozier said the information would be fed to the computer for analysis and forecasting. This data will then be reported to NCWCD offices, under the plan worked out by the extension agents and district spokesmen, which will then report to extension specialists in each county.

The county extension specialists will then report that data to local newspapers after making local adjustments for their areas. The information will be reported weekly by the media for use by producers under the plan. (The Tribune will carry this information when available, probably in early June through September.)

While this information gathering and dissemination project seems complex, irrigation engineer Dwayne Konrad of the High Plains District (southeastern Colorado) of the Colorado State University Extension Service said a similar program has been used successfully in his area. He said the program was well received by local producers who asked for its continued operation this year.

The workshop session Tuesday called for training of agents in making field analyses of moisture conditions to be used as a check against the computer program information in addition to the IMS organization and planning.

Dozier explained how various soil types hold and release moisture. He noted, as an example, that while a clay soil has a higher field capacity per foot of soil depth compared to a sandy soil, the plant has to expend more energy to remove available moisture.

He also noted that it is important for the producers to "fill the entire soil profile" with water early in the season for maximum plant growth and crop yields. The typical plant, he said, can easily remove water from soil in the first quarter of its root depth, but has an increasingly difficult time extracting moisture in the last three quarters.

A rule of thumb, he said, is that the plant can extract 40 per cent of available moisture in the first quarter, 30 per cent from the second, 20 per cent from the third and only 10 per cent from the fourth. By starting the season with a full soil profile to the estimated depth of the mature root, the irrigator then refills only the top portion during the irrigation season.

He said maximum irrigation efficiency comes when the irrigation water is applied at the "wilt point," which he defines as the point at which soil moisture is too low to permit the plant to withdraw enough water to maintain growth. The irrigation amount would then be just enough to return the field to its capacity where soil voids are filled with water and there is no leaching or drainage.

Increased irrigation efficiency, Dozier said, means increased yields and reduced costs to the grower for labor, water, fertilizer and drainage loss.

Water project land purchases halted

TRIB 4/9/77

DENVER (AP) — Land purchases for five federal water projects in Colorado have been halted pending President Carter's decision whether to include them in the 1978 federal budget.

Bureau of Reclamation officials also said Friday that contracts for further studies on the Dallas Creek, Dolores, Fruitland Mesa, Savery-Pot Hook and Narrows projects will not be let until after next Friday. That is the date on which Carter is to announce his decision on the future of the projects.

"We've been asked not to sign any more contracts," said Roy Holmes, supervisor of water and land operations with the BLM office in Salt Lake City., "Our instructions are not to buy any more land or make any commitments in any way until after the President makes his decision."

The projects are still in the planning stage and construction has not begun on any of the five.

Carter targeted 30 water projects, including the five in Colorado, for deletion after they failed at least a portion of an initial screening for safety, environmental and funding benefits. Review hearings on the five Colorado projects have been held around the state.

Neither Holmes nor Richard Hall, regional director of the BLM's Denver office, would predict whether the projects would pass the presidential review.

Several contracts for geological studies on all five Colorado projects have been issued already, although exact figures were not available immediately.

Holmes said about $1 million has been spent in the last six months to purchase three tracts of land for exploration and surveys in the Dallas Creek project near Montrose, Colo. Negotiations for three other parcels of property were halted by the latest Interior Department order, he said.

If the value of sunlight were figured at the same rate as artificial light — eight cents per kilowatt hour — New Yorkers would have to pay 400,000,000 dollars a day for the light they now get for free.

Bill would tighten permits for wells

5-11-77 Trib

DENVER — A Senate-passed bill placing stricter controls on permits for irrigation wells has passed the House, backed by its chief House sponsor, Rep. W.P. (Wad) Hinman, R-Yampa, and by the House agriculture and water chairman, Rep. Walt Younglund, R-New Raymer.

Younglund told House members the measure, Senate Bill 4, introduced by Sen. Ken Kinnie, R-Julesburg, would control depletion of state water resources now allowed by large-scale issuing of well permits.

He said current law allows well permits with the limited requirement that five per cent of the water taken is assumed to be consumed when used for irrigation and thus must be replaced.

"The result of this policy has been serious injury to other water right holders," added Younglund.

The House also added a Younglund-favored amendment allowing the state engineer to take part in the well permit process. Younglund said this would make well permits even more difficult to get under the act, which also allows those holding water rights to appeal issuing of the permits.

"You have the situation where one

Storm damage assessment goes on

5-3-77

By LYNN HEINZE
Tribune Staff Writer

County road and bridge repair will "conservatively" cost the county more than $750,000 and agricultural officials are still trying to assess crop damages as the result of hail and flooding in north central Weld Sunday.

According to Weld engineer Frank Smith, the three-quarter of a million cost for repair work to roads and bridge structures is considered conservative. Smith surveyed much of the county from the air Monday because many areas were not accessible on the ground.

Another survey is set for Tuesday, according to Smith, who hopes some of the bridge structures still under water Monday will be visible. Some 10 roads or bridges were considered impassable on Monday.

The survey showed that all county roads east bound from U.S. 85 from Weld 62 north to Weld 122 had water across them during the flooding of the Owl and Lone Tree creeks late Sunday. That includes an area starting just north of Greeley and running to a point just south of Carr.

The flooding was the result of devastating hail, reported to a depth of up to six inches and drifting to three feet, and heavy rain with amounts up to four inches reported in the Ault-Carr area.

Smith listed two structures as known to be out, including the first bridge north of Weld 43 on Weld 80 and the first bridge north of Weld 112½ on Weld 27. Several large culverts were also reported lost.

But he noted that the "full extent of damage can not be estimated until all of the bridges can be reached. Some structures on the lower end of Lone Tree and Owl creeks are still under water," Smith said Monday.

He listed 10 roads washed out and impassable, including: Weld 64 between Weld 39 and 49; Weld 76 between 41 and 43; Weld 80 at the intersection of Weld 43; Weld 86 between Weld 41 and 45; Weld 39 at intersection of Weld 94; Weld 104 one mile east of U.S. 85; Weld 108 at U.S. 85; Weld 110 one to two miles west of U.S. 85; Weld 112½ one to two miles west of U.S. 85, and Weld 118 one to two miles west of U.S. 85.

Meanwhile, county agricultural officials are attempting to assess the damage to crops in the area.

Frank Zumbrink, agricultural manager for the Eaton and Greeley districts of the Great Western Sugar Co., said more than 10,000 acres received damage from the hail or flooding.

The amount of damage varies, he said, and most can be blamed on flooding. The crop was in the 2-4-leaf stage and susceptible to damage from hail, although most of the severely damaged fields showed signs of heavy soil erosion, soil acreage figures are rough, he noted, and no attempt had been made to place a dollar loss on the damages.

The county's onion crop may have fared a little better, according to Chuck Urano of the Weld County Extension Service. Urano said Monday that a "windshield survey" indicated that most of the crop would recover from the damages. "But maturity will be delayed as the result of the crushing of the plants which were in the two-leaf stage," he said.

Urano also estimated more damage would result from flood damage than from the hail itself, although heavy. No damage cost could be estimated for the onion crop, he said.

Flooding along the Lone Tree nearly brought severe damage to the Eaton sewer facilities, just east of town. The treatment plant was severely damaged during flooding in 1973, but escaped major damage Sunday, according to Eaton city manager Gary Carsten.

Carsten said dikes were built around the plant after the '73 flooding, "but they could have been about six inches taller." While the dikes prevent major damage, one of the plant's clarifiers and an oxidation ditch were inundated, causing minor damages.

The main sewer line feeding the plant was threatened during the flooding, Carsten said, but held. Minor damages were reported on the line. There was no interuption in service, he said.

Along with the violent thunderstorms which raked the area Sunday, at least one and possibly two tornadoes have been confirmed. The funnel cloud apparently first touched down, according to reports from eyewitnesses, just west of 35th Avenue at the Cache la Poudre River. It then apparently tracked southwest, finally touching down again near the Greeley Country Club.

Damage was reported to a home on F Street, west of 35th Avenue. Damage reportedly included trees, broken windows and some structural breakage, but the residents could not be contacted Tuesday morning.

The potential for afternoon and evening thunderstorms will continue in the area through Thursday or Friday, according to Dr. Glenn Cobb, University of Northern Colorado meteorologist.

And upper air system is expected late Tuesday or early Wednesday which could trigger the potential for severe thunderstorms through Wednesday, with the highest potential for high winds, hail and locally heavy rain Tuesday night and Wednesday morning, Cobb said.

Clear mornings and cloudy afternoons with the chance of scattered thunderstorms will likely be the case through the week, he said.

Rains, hail level Weld County crops

By ANDREW SCHLESINGER
News Staff 5-3-77

Drought was no longer the problem for farmers along Highway 85 in Weld County Monday.

Heavy rains and hailstorms Sunday leveled crops, washed newly planted seeds out of the ground, flooded bridges and houses and left huge lakes of water in fields prepared for irrigation.

In Ault, 11 miles north of Greeley, up to five inches of rain and hail pounded the ground in less than an hour Sunday afternoon.

Damage to roads and bridges in the county was estimated Monday to be at least $750,000. Two sections of county roads were washed out, and up to 13 bridges damaged.

Bill Hutcheson, 58, of Ault planted 63 of his 160 acres in sugar beets March 15. Monday afternoon, 24 hours after the storm, he stood in the middle of his fields at the edge of a huge pond of dirty brown water.

Thirty acres of sugar beets remained flooded by the storm.

"We've never seen water close to this high," he said. "Between the hail and the rain, we probably got five inches. The pump's under water."

His fields were flattened by the storm and looked slick in the sunlight. Sugar beets which he said once stood two to three inches high were torn out of the ground. Only smaller plants survived.

"We'll get very little good out of this," he said. "The crops will be delayed two to three weeks. We've been getting along fine with what f rains we've had."

With the ground so smooth, Hutcheson said, we get wind now, in 30 minutes, it'll kill the beets."

Now, he said, he has to wait for the ground dry before he can return to the fields with tractor and rebuild furrows that protect plants from wind.

Down the road Uhrich Clark, 22, surveyed backyard. Hail and mud, top soil washed off fields, and cornhusks stood two feet high.

"The hail came down like golf balls," he sa "It broke some windows in the house. The floated from one side of the yard to the other."

He said walking in the water was "like walk in ice water."

"We needed a rain, but nothing like this." s George Meyer, 51, who owns a farm north Ault.

He said he lost two calves trying to sv across a swollen ditch and his recently plan cornfield was ruined.

"One thing about this storm was that it early," said Dennis Isakson, 35. "We have opportunity to replant, get going again. storm hurts because of the additional cost of planting, and we'll produce fewer tons per ac

Agricultural officials had already annour 50 to 75 per cent of alfalfa crops in Weld Co were damaged heavily by "winter kill". Farmers could suffer losses up to $5 million.

Senate avoids veto; cuts water projects

6-16-77

WASHINGTON (UPI) — Sen. Alan Cranston said today he thinks President Carter will accept a possible Senate compromise that would deny funds to half of the 16 controversial water projects Carter wants to kill.

But the California Democrat told reporters he had no direct assurance from the White House that Carter would not veto a public works bill with funds for any projects he considers environmentally and economically unsound.

The Senate Public Works Appropriations Subcommittee today went into an unusual closed session to find a compromise between the zero projects Carter wants funded and the 16 voted by the House.

In a move designed to avert a veto showdown with Carter, a Senate panel voted Wednesday to stop work on eight more water projects than the House was willing to abandon in a bill passed earlier in the week.

"I don't have any direct word that he's (Carter's) ready to compromise," said Assistant Democratic Leader Cranston. "But I don't think he's going to demand 100 per cent of what he's after."

For Carter to demand that work stop on all of the projects on his so-caled hit list would be "highly injurious" to his relations with Congress, Cranston said.

The Public Works Appropriations Subcommittee also met in closed session Wednesday.

"Frankly, I don't want to see this bill vetoed," Stennis said.

Just the day before, the House refused by a vote of 214 to 194 to halt funding for 16 of 17 projects.

But because the vote was much closer than expected, it was viewed by some as a victory for Carter by making a veto override impossible.

Stennis said his panel's action was a "good faith effort" to find a common ground, and said the subcommittee was "trying to make some adjustments with some consideration for what the President wants."

Asked why the panel "caved in" on the projects, Stennis replied: "We didn't cave in. We passed judgment on them."

Stennis also denied any advance consultation with the White House.

The projects stricken by the subcommittee were LaFarge Lake, Wis.; Lukfata Lake, Okla.; Meramec Park Lake, Mo.; Yatesville Lake, Ky.; Fruitland Mesa, Colo.; SaveryPot Hook, Colo. and Wyo.; Narrows Unit, Colo., and Oahe, S.D.

All would be funded under the House-passed bill.

A 17th project which Carter wants to stop — the Grove Lake reservoir in Kansas — was abandoned by the House Appropriations Committee. No effort to restore was made either in the House or in the Senate committee.

Projects which Carter wanted to kill but which were approved by both the Senate committee and the House included the Richard B. Russell Dam in Georgia and South Carolina; Applegate Dam, Ore.; Atchafalaya River-Bayous Boeuf, Black and Chene, La.; Cache Basin, Ark.; Hillsdale Lake, Kan.; Tallahalla Creek, Miss.; Columbia Dam, Tenn., and Auburn Dam, Calif.

Waste disposal polluting water

5-17-77

DENVER (AP) — Pollution from waste-disposal landfills in the four major groundwater supplies of the 6,000-square mile Denver Basin could turn the area into "an urban desert," officials say.

"The situation we have horrifies me," said John Romero, state groundwater investigations chief. "Industry is taking advantage of state agencies unable to maintain proper surveillance of their disposal activities. Many have been finding ways and means to avoid the expense of taking proper steps for disposal."

The oval basin — anchored by Denver, Greeley, Limon and Colorado Springs — contains more than 50 public waste disposal landfills and many more private disposal sites.

Surface waters and some shallow underground water sources — or aquifers — and some farm and industrial land have been polluted already, state water resource geologists say.

Bedrock contamination may be underway in the heavily faulted formations just north of metropolitan Denver.

"There's been no mapping yet of posssible pollution of those confined aquifers," said Stan Zawistowski, a senior state water geologist. "They're our reserves when surface waters are low or run dry.

"If they're drained or contaminated, our urban corridor will be turned into a desert. Yet we have no single basinwide water plan."

The bedrock aquifers help supply the residential and industrial needs of a 1.5 million population on the Front Range. They are the sole source of water for at least 20 communities, 20 smaller water agencies and many farms in nine counties.

A new federal law could help, but it is not due to be administered until 1979. It will require amendment of the loosely administered state disposal act of 1971.

The two laws require specific identification of hazardous waste by producers, transporters and owners and operators of treatment, storage and disposal facilities. Violators would be subject to up to $25,000 a day for each day's violation or up to a year in prison or both.

State and federal agencies are now understaffed and dump operators must now take the word of the hauler as to what's being poured into the ground. In the past, authorities have identified cyanide and toxic acids, among other toxic substances, in area water sources close to the dumping sites.

In all cases, the contaminants were identified and controlled, but sometimes not until livestock had died from drinking the water.

Henry Scroeder, federal regional waste-management specialist with the Environmental Protection Agency, says the new laws won't come any too soon.

Too many businessmen "have felt that pollution out of sight is pollution out of mind," he said. "They're wrong. It'll come back to haunt them, or their children."

Water curbs until 1981 held certain

By FRANK MOYA
RM News Staff 6-4-77

Residents of metropolitan Denver will be faced with water restrictions at least until 1981 because of delays in the construction of the Foothills water treatment facility, according to James Ogilvie, manager of the Denver Water Board.

"It won't make any difference whether we get normal snowfalls or not. We're going to have the same kind of restrictions we have in effect right now," said Olgilvie.

According to Ogilvie, the 900,000 customers served by the Denver Water Board can expect continued limits on the hours they may water their lawns and builders can expect continued restrictions on the numbers of new water taps authorize.

The snow drought of the past winter isn't the cause of the situation, according to Ogilvie. Instead, he blamed the "unconscionable" activities of environmental groups, which have delayed construction of the Foothills plant for at least four years.

The groups – notably the Colorado Open Space Council, the Colorado Council of Trout Unlimited, the Wilderness Society and the Colorado Rivers Council – have forced delays by challenging environmental impact statements that must be approved before the project can be built.

Because of the delays, Ogilvie said residents of metropolitan Denver would be faced with water restrictions even if last winter's showfall had been normal.

"I tell you it's unconscionable that the people of the metro area are going to have to put up with the hardship and inconvienence of water restrictions because of the activities of these groups," Ogilvie declared.

But a spokesman for one group said the water board has no one to blame but itself for the current situation, which he claimed is the result of poor long-range planning by the board.

Moreover, the groups have no intention of dropping their objections to the Foothills project, according to Jerry Mallett, Colorado representa-

Construction of the Foothills treatment plant, authorized by Denver voters in 1973, was to begin in 1974 and was scheduled for completion later this year.

It is projected to provide about 125 million gallons of water per day to Denver area users during its initial phase of operation, with the capacity to provide 500 million gallons in later stages. Residents of the Denver area use 300 million gallons a day during some summer months.

Two environmental impact statements on the project have been declared inadequate by the federal government. The projected cost of the facility has mushroomed from $64 million to $134 million because of the resulting delays.

The Bureau of Land Management is preparing another impact statement on the project, with this study scheduled for completion later this summer.

Ogilvie said if the study stands up to the expected fire of the environmentalists, the Foothills could be under construction... then, water restrictions will be a fact of life for area residents.

However, additional challenges to the statement could delay Foothills construction further.

Environmentalists generally oppose construction of Foothills – about 25 miles southwest of Denver – because they claim the project would ruin prime recreational land and reserves for fish and wildlife.

Mallett criticized Ogilvie's "growth-at-any-cost philosophy" and said the water board has failed to consider alternate plans to the Foothills project that could help solve Denver's water problems at less cost to the environment.

The water board has limited its customers to watering lawns three hours every third day. In addition, it has restricted to 5,200 the number of water taps that will be permitted in 1977, an action developers say could stunt the construction industry and cost jobs.

Ogilvie said builders indicated that 9,000 new water taps would be required to meet demand in

Local author sees Fletcher as 'zealot'

While Washington photographers and newsmen look in vain for Kathy Fletcher, alleged to be President Carter's dam project "hatchet person," author Dean Ballenger of Loveland has her picture and life history.

Miss Fletcher has been named repeatedly as the prime mover in President Carter's order to shut down western water and power projects.

Ballenger, who interviewed Miss Fletcher extensively in 1974 for a magazine article, says the young woman is a "very intelligent zealot who really believes she is right.

"Carrying her thinking to the ultimate would mean discontinuing irrigated farming," Ballenger says. "She would probably even recommend shutting down the Colorado-Big Thompson Project, although we didn't get into that during my interviews."

Katherine Fletcher, the tough little lady who guards the West's wealth from rip-offs by powerful energy interests.
Photo Special to the Reporter-Herald

Miss Fletcher was staff scientist for the Environmental Defense Fund in Denver, a Carter campaign worker and is presently an "unavailable" White House staffer. Her secretary reported she will be out of town until "mid-April, at the earliest."

"She is against damming any river at any time and any place," Ballenger says. "It seemed to me she was much more friendly to snakes and gophers than to people.

"Miss Fletcher is formidable because she has researched Colorado's dam projects personally, albeit with the prejudice of an extreme environmentalist. She can substantiate her beliefs with facts and figures against which most congressmen won't have equally strong supporting arguments," he says.

Miss Fletcher's intellectual credits are extensive: a 1971 graduate of Harvard, with high honors, Phi Beta Kappa, first in her high school class of 800 students, (Seattle, Washington).

"The future looks bleak for the West, if the President lets people of this type dictate his policies on water," Ballenger says.

Cloud seeding called success

5-18-77 Rivers

FORT COLLINS, Colo. (UPI) — A state-funded cloud seeding program to increase the snowpack in the Colorado Rockies may have brought an additional 200,000 acre-feet of water to the state, a Colorado State University scientist said Tuesday.

The estimate came from Lewis O. Grant, a professor of atmospheric sciencies, who said cloud seeding in three mountain areas probably increased snowfall by 13 to 19 per cent. The program ended this week.

State lawmakers approved a $251,000 emergency cloud-seeding program earlier this year after being told the snowpack was the lowest in recorded state history. Colorado ski areas lost millions of dollars in revenue this year because of the situation.

Grant, who coordinated the program, said analysis of data still was continuing, but said there was sufficient information to estimate Colorado received an additional 200,000 acre-feet of water because of the

said her organization would urge the legislature not to continue the cloud-seeding program.

He said it also would be a good idea to seed the clouds with silver iodide again next year, although he urged that no such program be done in the summertime.

"In summer cumulus clouds, there is a potential for either increasing it or decreasing it (precipitation) and the technology cannot yet clearly delineate between the two," he said.

Mary Taylor, president of the Colorado Open Space Council, asked. "There would be others who would say that really didn't have anything to do with it.

"We felt if you were going to use money because there was a crisis situation, you should go to something you know is going to be helpful."

"Can they really prove it was the cloud seeding that did that (increase precipitation)?" she

COG views drought aid plans

TRIB 5-19-77

The Larimer-Weld Council of Governments drought council is considering a plan which would include the use of wells along the South Platte to provide irrigation water to irrigators.

"One of the problems was that the council was having a hard time finding a place to hang their hat," with regard to specially allocated drought funds for western states, according Jim Clark of the Greeley office of the Division of Water Resorces.

The funding through the Bureau of Reclamation includes a potential of more than $130 million for special projects relating to drought areas in the West. The funding is available on a no-interest basis to "beneficiaries" of the projects. The term of the loans would run for five years if the benefits of the project are drought-related only, or may be negotiable if long term benefits can be shown.

During a meeting of the council this week, a plan was considered which would provide for the drilling of new wells, or the use of existing wells with excess capacity to provide additional irrigation water along the Platte.

"The real problems of the plans," Clark said, "is determining the beneficiaries of the action. Under the allocation those receiving the benefits would have to pay."

Clark said the proposal would mean well owners with excess capacity might pump water into the river and be paid for the cost of the water and pumping. Another option might be the drilling of wells along the river for direct pumping.

In the latter case, Clark said the proposal would call for well locations a half mile to a mile from the river. "There are a limited number of such locations," Clark noted.

The council will attempt to meet with State Engineer Clarence Kulper and Colorado Water Conservation Board chairman Felix Sparks in an attempt to discuss the feasibility of the plan.

One of the points to be considered would be the effect of current rules and regulations pertaining to the use of wells along the Platte. Under present regulations, well users are required through augmentation plans to make available water for replenishment of the stream flow in the year of the well use.

stream flow in the year of the well use.

This means that the well owner must have water available for flow into the river if there is a senior call on the river. This water is usually surface water, stored in reservoirs along the Platte.

One possible alternative might be the waiving of the augmentation requirements during droughts for the specific wells to be used.

"It is also felt that by locating the wells away from the river that the stream flow effects might be deferred until after the irrigation season is over," Clark said. This would differ from present augmentation plans "which average out the effect on the river and replacement is made through a mass plan."

Specific identification of those benefiting from the plan may be nearly impossible, Clark noted, although some research is being done along that line. One possible alternative is benefits to some kind of umbrella grouping of appropriators and billing handled under the conservation board or other group.

The council faces a June 1 applications deadline under the funding appropriation and must also get the approval of the governor's drought council. Applications under the plan are made directly to the Bureau of Reclamation through ditch companies or water users groups.

The COG drought council will meet weekly through early June in an attempt to resolve some of the issues involved in the funding application.

In South Platte basin

6-8-77 TRIBUNE

Runoff continues below normal

It probably didn't catch anyone by surprise, but the Bureau of Reclamation reported this week that precipitation and run-off continue below normal throughout the South Platte basin.

And, the bureau said, deliveries of irrigation water are above normal because of little rain and low soil moisture.

Precipitation in the Lake Estes and St. Vrain watersheds during May totalled only 1.03 inches, about 50 per cent of the average through the past 17 years.

In Western Slope watersheds, the situation was somewhat better, the bureau reported. In the Lake Granby area, for example, moisture was 130 per cent of the average.

Still, precipitation figures throughout the South Platte and North Platte basins are all below normal, with the Lake Estes, St. Vrain and Poudre areas showing the worst drought.

For October-May precipitation, the Poudre watershed is at only 70 per cent of the 17-year average, the bureau said.

Run-off, too, is below normal.

The bureau said run-off figures during May ranged from 67 per cent of normal at Granby Reservoir to 37 per cent of normal at Wyoming's Buffalo Bill Reservoir.

This meager run-off has been depleted by above-average demand from irrigators, the bureau said.

"Storage water ownerships are presently adequate for all projects," the bureau said. "(But) the Colorado-Big Thompson Project ownership storage is the lowest for this date since 1968."

Deliveries of water through the Colorado-Big Thompson project were 257 per cent of normal, mostly because of low soil moisture on the Front Range.

Water conservation wise?

6-4-77 Tribune

The present so-called "drought" is beginning to parallel the nation's inflation, especially as far as the Poudre River Valley is concerned.

While there is no apparent water shortage in the Greeley water system and most of the irrigation systems in the area, it appears many have voluntarily begun restrictions to conserve water.

Many Greeley residents have yet to sprinkle their lawns this year. The result is immediate — dead lawns. The more far-reaching effect could be that others downstream will not have enough water for drinking or irrigating.

The city's water engineer has said that the underground water in Greeley has receded, thus reducing the seepage flow in the city's sewage treatment plant. That in itself is good news, but, what happens when that same underground water dries up to the point that there is no return flow to the river? It has been estimated that water along the Poudre is used five times before it leaves the state.

Those who have lived for any length of time in Colorado know that there are always cycles of rain and dry weather. But, always before the dry cycle has been broken, sometime.

Just as inflation feeds inflation, conserving water can lead to further shortage. There is little evaporation of there is little irrigation; return flow is reduced and with no return flow direct ditches also will dry up, thus reducing further downstream return flow.

Most of the residents of the area recognize the need for water in our arid climate, but that water does little good if it is left in storage. All the money in the world will not create more wealth if it is left in the mattress.

Water must be circulated and used to provide benefits. If everyone were to store water and let lawns and crops go thirsty, the region would return to the middle 1800s.

As long as we have water let us use it; we can't horde it forever. It might sound risky to make an investment not knowing what next winter will bring in the form of snow in the mountains. But, did we really know what this year had in store for us at this time last year?

Greeley has always prided itself in its green lawns and trees, but this year there are many lawns that are dried up, dead. It won't be long before the trees look the same.

Crude as it may sound, turn on the water, the people in Fort Morgan might like a drink.

Senate water cuts not enough

TRIBUNE 6-17-77

WASHINGTON (UPI) — The White House is sending some strong signals to Congress that President Carter is in no mood to compromise further on his wish to scrub water projects he deems wasteful.

Carter, according to some members of Congress, believes he's given enough ground on the issue, dropping his intial number of nixed projects from 30 to 16. Now the talk is about whether or not to expect a veto.

Rep. Martha Keys, D-Kan., said Carter "certainly implied" at a White House meeting with midwestern members of Congress Thursday that even the proposed dropping of eight more projects from a public works money bill would not be acceptable.

"He implied he would stand fast and that it (the Senate proposal) was not acceptable," she said. "I hope he sticks to it."

Rep. Butler Derrick, D-S.C., a leader in a nearly successful House attempt to cut all 16 projects from the budget, said Carter told southern lawmakers at another White House meeting there was a "strong likelihood" he would veto a public works money bill even if the eight projects were dropped.

When asked about a Senate subcommittee's proposed compromise, Carter, according to Derrick, said he'd already compromised when he reduced his original list of more than 30 projects.

The impressions of Derrick and Miss Keys differed from Assistant Senate Demoratic Leader Alan Cranston's opinion that Carter would accept the compromise.

But even Cranston said he'd won no assurance that Carter would accept the bill with eight dams trimmed from the budget.

West to get drier, scientists declare

BOULDER, Colo. (AP) — Scientists here say they have used tree rings to trace a cycle of droughts back to the 1700s, but they can't be sure of accurate predictions about how much longer the West will be starved for water.

They do, however, think it's going to get drier before it gets wetter.

"It's more likely to be dry than it is wet," said Dr. Murray Mitchell, senior research climatologist for the National Oceanic and Atmospheric Administration. Mitchell pointed out that tree-ring analysis has verified a 20-year drought cycle theory expounded by Dr. Walter Orr Roberts of the National Center for Atmospheric Research.

"It's a highly regular thing," Mitchell said. But, he added, "We do have large droughts in the wrong part of the cycle, a few wet years in the wrong part."

Mitchell said some trends in droughts have become evident as he and his colleagues studied tree rings.

For one thing, earlier droughts sometimes lasted as long as 12 to 14 years. More recent droughts have been more compressed, running from four to eight years.

"The dust bowl period (of the 1930s) lasted just three or four years," Mitchell said. However, he noted, it was an extremely severe three or four years.

Times Call 2/18/77

Farm, Ranch Water Saving Plan Given

DENVER — Citing the state's extreme drought situation, the Colorado Farm Bureau (CFB) Board of Directors today adopted a five-point resolution calling for immediate water conservation measures by all Colorado farmers and ranchers.

Conservation measures specifically spelled out in the CFB resolution included:

— Control of phreatophytes along Colorado water courses;

— Avoiding water contamination through agricultural practices;

— Building new water storage facilities;

— Consider implementing new tillage methods for soil erosion control; and

— Contact Colorado State University for cropping and irrigation alternatives during drought conditions.

The CFB Board stated that Colorado's water supply situation is critical and will become even more so during the summer irrigating season.

According to CFB President Keith Propst, Merino, "We, as farmers and ranchers of this state, must at once initiate water conservation measures, such as Farm Bureau is proposing, if we are to avoid serious repercussions such as cutbacks in BLM grazing permits as the Bureau of Land Management has already discussed."

CFB Board members encourage all Colorado farmers and ranchers to write the Colorado Farm Bureau, P.O. Box 5647, Denver, Colorado 80217 for a list of available water and soil conservation publications, compiled by the Colorado State University Experiment Station, and for a list of telephone numbers for special drought information teams set up by the University's Extension Service.

Most Colorado reservoirs to be dry by August

6-28-77 Tribune

By WILLIAM R. RITZ
Associated Press Writer

DENVER (AP) — Nine out of 10 reservoirs in drought-stricken Colorado will be dry by August, says the director of the State Water Conservation Board. And he says the prospect for relief in the near future is bleak.

Felix Sparks said Monday that few of the several thousand water storage projects in Colorado had a chance to refill because of a sparse winter snowfall in the Rocky Mountains. All of the five reservoirs serving the Denver Water Board remained below normal levels, he said.

"We've exhausted our reserve storage," Sparks said at the opening session of a five-day water survey course here co-sponsored by the University od Colorado at Denver and the Colorado Water Congress.

Sparks, who blamed the low snowfall on a weather system off the coast of California, said he expects the drought to continue through the winter of 1978.

While reservoirs are going dry, the levels of Colorado's rivers and streams also are dropping fast, he said.

Sparks said the Dolores River already is dry, while figures released recently show the Gunnison River is at less than one-third of normal stream flow. The Uncompahgre and San Miguel Rivers are running at less than half of normal.

"The Ute Mountain Utes are hauling water now," Sparks said of the Indian tribe based in Towaoc in southwestern Colorado. "Dove Creek will be hauling water within two or three weeks...if they can find where to haul it from."

Many Colorado communities on both sides of the Continental Divide have instituted water-rationing procedures, steps which local officials say have resulted in substantial water savings.

Sparks told reporters he expects the rationing to continue and by the end of the summer "almost everybody will be on restrictions."

Sparks said Colorado could weather the current drought if it weren't for nine interstate and international compacts that send most of the water collected in the state elsewhere.

About 15 million acre-feet of water is collected each year in the upper basin region of the Colorado River, he said. However, the Colorado River Compact and an agreement with Mexico requires that about 60 per cent of the water be sent out of the state.

"California and Arizona will take every damn drop of water we give them," Sparks said of two of the members of the Colorado River Compact.

Other compacts send water collected in Colorado to Nebraska, Kansas, New Mexico, California and other western states, he said.

"These compacts have been very damaging to us," Sparks said. "But we're stuck with them."

To get Colorado's reservoirs back to normal would require either an abnormally heavy snowfall this winter, he said, or about three straight years of normal snowfall.

He said last year's cloudseeding effort in the Colorado mountains produced some moisture, but was started too late in the winter.

"We're going to try it again this winter," he said. "But it won't work unless you get the storms."

May rains above normal

AG NEWS

FORT COLLINS — Precipitation amounts during the month of May were greater than normal for a large portion of the state except for a band of reporting stations along the Front Range, in the San Luis Valley and in the central mountains.

Dr. Thomas McKee, assistant professor of atmospheric science at Colorado State University who is the state climatologist, noted in his monthly precipitation report that the drought "is still very real for much of the state, with the southwest corner remaining extremely dry." That portion of the state continued to have precipitation values less than 35 per cent of normal, he added.

McKee said the plains of Colorado east of a line from Sterling to Trinidad experienced above normal precipitation.

"Typically eastern Colorado receives most of its precipitation during the months May through July therefore the potential for a good water year is still possible," he noted.

The state's weather in May was highly variable, he reported. Severe thunderstorms and tornadoes were reported in several locations on the eastern plains while other areas of the state received only light to moderate showers.

Temperatures also varied. The Front Range and eastern portion of the state experienced above average May temperatures while the remainder of the state was slightly cooler than average.

In northeast Weld County, May precipitation amounted to 1.22 inches or 46 per cent of the May average for the years 1951 to 1970.

Precipitation for the period extending from October, 1976 through last month was 71 per cent of the average for the same years.

The Greeley area received 1.91 inches — 81 per cent of the 19-year average and, for the last eight months, 86 per cent of the norm.

Southwest Weld County received .82 of an inch of precipitation last month.

Narrow's Dam to cost users of irrigation water for acre-foot

12-23-76 Town + Country

If the proposed Narrows Dam is built, it will cost users of irrigation water $5.45 for each acre-foot at the dam site and cost the American taxpayer and the power users in the Pick-Sloan service area over $40 every year to put it there.

This estimated subsidy was included in a report to the Regional Landowners Group by Dr. Charles W. Howe, a Boulder economist who specializes in computing the cost-benefit ratio of water projects. His computations were based on the Bureau of Reclamation's latest figures which allocate $77,145,000 of the projected $139,000,000 cost of the project to irrigation.

power revenues from other parts of the Pick-Sloan area would pay $40,395,000 of this cost. Irrigators paying $5.45 an acre-foot for the 133,000 acre-feet projected for each year for 50 years would come up with the balance of $36,750,000.

The subsidy was computed using the interest rate of 6 1/8 percent that is currently mandated by the Federal Water Resources Council for the evaluation of water projects currently being authorized.

Using the bureau's estimate of a 15 percent loss in the river and 38 percent in the delivery system, the actual subsidy for each acre-foot delivered at the farm headgate would be about $80. Over a 50 year period, the annual user of an acre-foot of water measured at the dam would be subsidized $2,000.

Responding to Dr. Howe's report, the Regional Landowners Group approved the following statement in a meeting on Dec. 6, 1976:

"Dr. Howe's figures are conservative, based on the Bureau of Reclamation's optimistic projections. If the subsidy were computed using an interest rate of 10 percent which is what most farmers have to pay when they borrow money, if the costs of the dam are higher than now estimated, if there is less than 133,000 acre-feet of water available each year, and if, because of water quality, recreation and fishing benefits do not materialize as planned, the effective subsidy would be many times the amount projected by Dr. Howe."

"Much of the water to be sold from the Narrows is now available for the cost of pumping by running water through irrigation ditches in the off-season and letting it seep into undgerground storage. More of it could be stored in this manner at minimal cost. Pumping costs average $3 an acre-foot, which is one-thirtieth of the projected total of the at-the-farm cost of water from the Narrows."

"When one looks at the subsidies involved, one can understand why a few big farmers are pushing for the project in hopes of getting their hands on somebody elses water. One family corporation which is currently being recommended for an allocation of over 6,000 acre-feet of Narrows water will benefit from a subsidy of $12 million over a 50-year period, based on the bureau's optimistic projections."

"For a family corporation to be able to stick the American taxpayer and the power users of the Pick-Sloan area with this kind of a bill is one of the many reasons Narrows is dam foolishness," his statement read.

Controls for costly evaporation

6-30-77 Tribune

Population growth, and now drought, are making residents of western states, both city and rural dwellers, increasingly aware of the need to conserve all the water possible.

The Western Region Agricultural Research Service, U.S. Department of Agriculture, tells of the development of two ways to control one cause of water loss — evaporation.

Dr. Keith R. Cooley, hydrologist with the USDA Agricultural Research Service, Phoenix, Ariz., has tested several materials that cut evaporation losses.

He found that wax was feasible and easy to work with in hot climates. But he has also tested several other materials, including perlite, styrofoam, butyl rubber and even floating concrete blocks. The aggregate used in the blocks is perlite rather than sand or gravel.

Dr. Cooley pumps the wax directly onto the water, where it forms a layer about one-quarter inch thick. During his study he used a regular roofing heater to heat the wax, but farmers and ranchers, he says, could use any tub or drum to heat the wax and ladle it onto the water. In the hottest climates, the wax can be applied as blocks which melt and form a complete cover. Paraffin wax, the Research Service reports, can be bought from the manufacturer in 11-pound slabs for about 20 cents per pound.

Dr. Cooley's work found that evaporation losses could be eliminated up to 100 per cent of the area of water covered.

Another way to cut evaporation losses was developed by Dr. Allen R. Dedrick, agricultural engineer, who along with Dr. Cooley, works at ARS' U.S. Water Conservation Laboratory in Phoenix.

Dr. Dedrick took three-foot wide strips of foam rubber one-quarter-inch thick, glued them together, cut them to form a cover for a stock tank and floated them on the surface of the water. Small holes were cut in the cover to vent air and let in water. Cost of the foam rubber is reported to be about 25 cents a square foot.

Most stock tanks are supply tanks for watering troughs, ARS points out. In those cases where livestock drink directly from the tank, openings could be provided in the covers, although they may not be necessary.

Another of Dr. Cooley's methods on larger ponds was to sprinkle loose perlite directly from bags onto the surface of the water. On one 53 by 78-foot pond in Arizona the perlite cut evaporation 20 per cent during an eight-month period.

Perlite, like other loose materials, ARS says, has a tendency to stack up on the lee side of a pond when wind velocities are brisk, but redistributes when the wind recedes.

All evaporation cannot or should not be eliminated, of course. In some areas it is absolutely essential to the existence of animal and plant life.

But the significance of the work done by Drs Cooley and Dedrick is better understood when it i realized that in warm areas like Arizona, Nev Mexico and Southern California evaporatio amounts to up to six feet of water each year. It i substantial, although somewhat less, in othe warm areas.

Preventing evaporation is not just a matter saving water, however. Time and energy are al considerations. Where water is hauled, ARS say the cost, depending upon the area and the cost water, ranges from $10 to $30 per 1,000 gallo while evaporation control may cost less than $1. per 1,000 gallons.

Poudre designation suit planned

7-19-77 Tribune

Court review in Larimer District Court will be sought this month over a temporary state-set water quality rating for the lower Cache la Poudre River.

Parties in the case — to be brought over a decision of the Colorado Water Quality Control Commission — will include Fort Collins, Windsor, Cache la Poudre Water Users Association and possibly Greeley and Kodak.

With terms of a "C" agricultural-stream rating for the lower Poudre in question, Greeley Water-Sewer Director Darryl Alleman has said he will recommend to city council Tuesday night that Greeley become a party to the litigation.

Also central to the proposed litigation will be stern controls over levels of ammonia and chlorine which may be introduced into the Poudre from municipal and industrial sewage.

Fort Collins lawyer Ward H. Fischer, serving as a special counsel for the Fort Collins city government, said Monday that court review — in Larimer District Court — will be sought within two weeks. Colorado Water Quality Control Commission (CWQCC) allowed the "C" stream-quality exemption rating for the lower Poudre during a Denver session early this month.

The lower Poudre, from about Fort Collins downstream past Windsor, Kodak and Greeley to its confluence with the South Platte River, earlier carried a state-set "B-2" stream quality rating. This required sewage treatment by those putting effluent in the river sufficient to ultimately allow development of a Poudre warm-water fishery.

However, as the CWQCC granted the "C" stream rating, it limited that to a temporary 18-month period. And the decision required Fort Collins to begin studies which would lead to total use of irrigation ditches, not the river, and land application for disposing of its sewage. That city would be required to come up with a preliminary work plan in 60 days.

Fischer said Fort Collins, and other parties in the litigation, will contend the CWQCC decision went beyond the findings of a hearing officer in an earlier public session as well as the testimony presented in that session. Hearing was conducted by the CWQCC in Fort Collins early in March.

Also, however, pointing to related controls over sewage ammonia and chlorine levels, Fischer, Alleman and Windsor Town Administrator Ken Henschke said current state controls appear extremely inconsistent.

Alleman said a Greeley variance request is pending before the CWQCC on chlorine controls. If that variance isn't allowed, he said, Greeley would be required to spend $150,000 to $200,000 over the next couple of years seeking to achieve a next-to-zero level of chlorine in its Poudre-borne effluent.

Meanwhile, Fischer pointed out that under the "C" stream rating, Fort Collins at least temporarily will not have to meet similar standards for ammonia levels in its sewage. And he said chlorine-level controls were not to be required of Fort Collins.

Henschke, however, noting the potential chlorine-only controls for Greeley, and lack temporarily of either control over Fort Collins sewage, said Windsor must meet the stern standards for both ammonia and chlorine.

Also, said Fischer, if terms of the "C" stream rating remain, and if Fort Collins were to "drop the ball" in its state-required system improvements, the entire lower Poudre area could be affected.

Fischer and Henschke confirmed Fort Collins, Windsor and the multi-member Cache la Poudre Water Users Association are committed to the litigation. Greeley's decision will come Tuesday night. Kodak officials were not immediately available for comment, although Fischer said it appeared likely the corporate unit would join in the litigation.

Drought projects receive extension

7-19-77 Tribune

WASHINGTON (UPI) — The federal government has decided to grant a five-month extension to emergency drought projects throughout the nation, including three in Colorado, Sen. Gary Hart, D-Colo., said Monday.

Hart, who recently toured several Western Slope communities to view the drought, said he discussed the situation last week with Alex Mercure, the Agriculture Department's assistant secretary for rural agriculture.

"I told him that a number of Colorado communities are threatened with a loss of their water supplies this summer or have already dried up," Hart said.

Hart said he also explained the deadline for drought project completions had to be extended. He said under the old deadlines, the communities could not hope to complete the projects "they need so badly."

CROP WATER USE DATA

Weekly ET (inches)

Date	Small grains	Corn	Sugar Beets	Field Beans	Alfalfa
July 12-18	1.87	1.81	1.72	1.67	1.64

The crop water use data for the reported six days shows slightly less evaporation-transpiration than the previous week. If growers received any rainfall in excess of .2 inches, that amount can be subtracted from the amounts listed for each crop, and the balance should be the difference needed to replenish the profile to its base to get you through another week.

Snowpack improved, but still at record low

TRIB. 4-5-1977

DENVER (UPI) — Snowpack increased slightly throughout the Colorado high country last month, but is still at a record low, according to a Conservation Service report.

Spokesman Robert Halstead Monday said 154 snow course measurements taken April 1 were used to evaluate the snowpack in every major drainage in the state.

He said 72 of the 154 courses indicate less snow than at any time since snow surveys began in 1935.

The overall mountain snowpack could increase during April, but it would be very unusual, said Halstead. He said the peak of the snowpack usually occurs near April 1 and then declines.

"We are looking at minimum of record summer flows from many Colorado streams," said Halstead.

The Soil Conservation Service report gave the following breakdown:

— Yampa-White Drainages in the northwestern corner of the state showed a snowpack increase of 10 to 15 per cent in March. Very low summer streamflow is expected this summer.

— Colorado Basin snowpack improved by up to 15 per cent and is now 55 per cent of normal. Low summer streamflow is expected.

— The Front Range snow courses, those on the South Platte and its northern tributaries, indicated only a 5 per cent improvement and range from 30 to 60 per cent of normal. South Platte drainage is reported as poor to fair.

— The Arkansas Drainage had a slightly better than average snowfall in March, contributed mostly by a March 10-12 snowstorm. The Arkansas River is expected to be about half its normal level this summer.

— The San Juan-Animas Basin was the only major basin where the snowpack did not improve last month. Some snow courses

September among driest on record

By KEVIN DOLL
Tribune Staff Writer

You have to go back in the data books to 1956 to find a September drier than last month when a mere .14 of an inch of precipitation was recorded.

Noting that September 1977 was also warmer than normal, meteorologist Dr. Glen Cobb of the University of Northern Colorado says the average precipitation for the month is .97 of an inch and last month's figure is comparable with the drought of the 1950s.

In September of 1956, .10 of an inch was recorded while September 1968 was also .15.

Temperature-wise, records show the average maximum temperature last month of 83.3 degrees Fahrenheit was 3.2 degrees above the 30-year normal while the minimum of 48.2 was 4.2 degrees warmer.

"This was mainly the result of some quite warm temperatures during the first 10 days of the month," Cobb explains, adding, "the last 20 days were more typical of normal conditions."

The highest temperature recorded last month was 97 on Sept. 7 — good enough for a new record for that date. The absolute minimum of 34 degrees Sept. 24 was six degrees above the record minimum for that date.

Cobb says the September figures run contrary to the National Weather Service's prediction in its long-range outlook that this area could expect colder and wetter conditions.

Most of the frontal activity passed to the north of Weld County during the month, he says, although trailing edges of fronts dropped maximum temperatures between 14 and 18 degrees on Sept. 9, 23 and 30.

There were three days on which precipitation was recorded: a trace on Sept. 11; .08 inches on Sept. 12; and .06 inches on Sept. 13.

Looking to the present, Cobb says quite variable weather is characteristic of October, noting that a record maximum temperature of 91 degrees was recorded in 1921 and a low of minus 8 in 1905.

The average daily maximum temperature during October decreases from 74 on the first to 58 degrees on the 31st.

"In general," Cobb explains, "most daily maximums will fall between 54 and 80 degrees, with the minimums falling between 20 and 35 degrees.

"But," he adds, "there will be a few days beyond both ends of the ranges."

Trinidad dam may not be filled

6-10-77

By ED SWARTLEY
Trinidad Chronicle News
Written for The Associated Press

TRINIDAD, Colo. (AP) — The dream of a dam near Trinidad began more than 70 years ago.

Physically, it becomes reality on Saturday when Rep. Frank Evans, D-Colo., addresses a dedication gathering at the dam site.

But when the $48 million dam fills with its billions of gallons of Purgatoire River water remains in the hands of a state water referee.

The dam's flood gates were supposed to close to fill the long-delayed project on Jan. 1 when the city began payments.

But a suit filed by two irrigation ditch companies located bout 90 miles downstream from the project resulted in the granting of a temporary restraining order by Judge John Statler, a state water referee in Pueblo.

Statler is studying briefs filed by attorneys for the Purgatoire River Water Conservancy District and the irrigation firms, Highland and Nine-Mile Ditch Cos. to determine if the river's flow can be held up without consideration of downstream water rights.

If Statler rules in favor of the irrigation firms, the water district could face an estimated $1 million bill to purchase the water rights.

Discussion of a flood-control dam began after the Purgatoire overflowed its banks in 1904.

Former Congressman J. Edgar Chenoweth said the project remained just talk through additional floods in 1925, 1929 and 1934. It wasn't until 1936 that Congress authorized the Army Corps of Engineers to determine the feasibility of a dam on the Purgatoire.

Initial discussion centered on Longs Canyon, slightly southwest of the present site, but cost considerations led to construction at the present location.

After another flood in 1942 and a short-lived $1 million plan by the Army engineers to improve the channel and banks of the river, the House of Representatives in 1945 ordered a restudy of the project.

Promises from the Army and continued discussion by residents occupied the next decade, Chenoweth said, while another flood damaged the city in 1955.

In 1956, 52 years after the project was first discussed, Congress approved construction of a dam. But it was delayed, again, this time by the veto of President Dwight D. Eisenhower.

Funding for a $17 million dam, was approved in 1958. The cost rose through the years, to $20.8 million in 1963 and the eventual price tag of $40.8 million.

The city will have to repay the federal government more than $6 million in irrigation benefits for more than 19,700 acres of farmland.

Though the dam has been completed, only a relative puddle of water has been trapped behind the dam face. Its depth varies with the rains, although officials say it rarely exceeds enough water to cover one acre with a foot of water.

An Act

SENATE BILL NO. 4. BY SENATORS Kinnie, Anderson, McCormick, Cooper, Hatcher, Soash, Woodard, and Wunsch; also REPRESENTATIVES Hinman, Burns, Sears, Spano, Strahle, Younglund, and Zakhem.

AMENDING THE "WATER RIGHT DETERMINATION AND ADMINISTRATION ACT OF 1969".

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. 37-92-301 (2), Colorado Revised Statutes 1973, as amended, is amended to read:

37-92-301. Administration and distribution of waters. (2) In accordance with procedures specified in this article, the referee in each division shall in the first instance have the authority and duty to rule upon determinations of water rights and conditional water rights and the amount and priority thereof, INCLUDING A DETERMINATION THAT A CONDITIONAL WATER RIGHT HAS BECOME A WATER RIGHT BY REASON OF COMPLETION OF THE APPROPRIATION, determinations with respect to changes of water rights, PLANS FOR AUGMENTATION, approvals of reasonable diligence in the development of appropriations under conditional water rights, and determinations of abandonment of water rights or conditional water rights; and he may include in any ruling for a determination of water right or conditional water right any use or combination of uses, any diversion or combination of points or methods of diversion, and any place or alternate places of storage and may approve any change of water right as defined in this article. ~~Plans for augmentation shall be subject to the special provisions of section 37-92-307.~~

SECTION 2. 37-92-302 (1) (d) and (3) (b), Colorado Revised Statutes 1973, are amended to read:

Capital letters indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

37-92-302. Applications for water rights or changes of such rights - plans for augmentation. (1) (d) The fee for filing an application shall be twenty-five dollars; and for filing a statement of opposition, the fee shall be fifteen dollars. If more than one water right is requested in any application OR IF MORE THAN ONE WATER RIGHT IS SOUGHT TO BE APPROVED IN A PLAN FOR AUGMENTATION, a fee of five dollars for each additional right shall be assessed AT THE TIME SUCH APPLICATION OR PLAN FOR AUGMENTATION IS FILED. No fee shall be assessed to the state of Colorado or any agency of its executive department under this subsection (1).

(3) (b) Not later than the end of such month, the water clerk shall cause such publication to be made of each resume or portion thereof in a newspaper or newspapers as is necessary to obtain general circulation once in every county affected, as determined by the water judge. IF AT THE REQUEST OF OR AS THE RESULT OF AMENDMENTS MADE BY AN APPLICANT THE RESUME OF AN APPLICATION IS REPUBLISHED, THE APPLICANT SHALL PAY THE COST OF SUCH REPUBLICATION.

SECTION 3. 37-92-304 (6), Colorado Revised Statutes 1973, is amended to read:

37-92-304. Proceedings by the water judge. (6) Any decision of the water judge as specified in subsection (5) of this section dealing with a change of water right ~~or a plan for augmentation~~ may, AND IN THE CASE OF A PLAN FOR AUGMENTATION SHALL, include the condition that the approval of such change or plan shall be subject to reconsideration by the water judge on the question of injury to the vested rights of others ~~during any hearing commencing in the two calendar years succeeding the year in which the decision is rendered, and such~~ FOR SUCH PERIOD AFTER THE ENTRY OF SUCH DECISION AS IS NECESSARY OR DESIRABLE TO PRECLUDE OR REMEDY ANY SUCH INJURY. THE WATER JUDGE SHALL SPECIFY HIS DETERMINATION AS TO SUCH PERIOD IN HIS DECISION, BUT THE PERIOD MAY BE EXTENDED UPON FURTHER DECISION BY THE WATER JUDGE THAT THE NONOCCURRENCE OF INJURY SHALL NOT HAVE BEEN CONCLUSIVELY ESTABLISHED. ANY decision may contain any other provision which the water judge deems proper in determining the rights and interests of the persons involved. All decisions of the water judge, INCLUDING DECISIONS AS TO THE PERIOD OF RECONSIDERATION AND EXTENSION THEREOF, shall become a judgment and decree as specified in this article AND BE APPEALABLE UPON ENTRY, NOTWITHSTANDING CONDITIONS SUBJECTING THEM TO RECONSIDERATION ON THE QUESTION OF INJURY TO THE VESTED RIGHTS OF OTHERS AS PROVIDED IN THIS SUBSECTION (6).

SECTION 4. 37-92-305, Colorado Revised Statutes 1973, as amended, is amended BY THE ADDITION OF A NEW SUBSECTION to read:

37-92-305. Standards with respect to rulings of the referee and decisions of the water judge. (8) In reviewing a proposed

plan for augmentation and in considering terms and conditions which may be necessary to avoid injury, the referee or the water judge shall consider the depletions from an applicant's use or proposed use of water, in quantity and in time, the amount and timing of augmentation water which would be provided by the applicant, and the existence, if any, of injury to any owner of or persons entitled to use water under a vested water right or a decreed conditional water right. A plan for augmentation shall be sufficient to permit the continuation of diversions when curtailment would otherwise be required to meet a valid senior call for water, to the extent that the applicant shall provide replacement water necessary to meet the lawful requirements of a senior diverter at the time and location and to the extent the senior would be deprived of his lawful entitlement by the applicant's diversion. Decrees approving plans for augmentation shall require that the state engineer curtail all out-of-priority diversions, the depletions from which are not so replaced as to prevent injury to vested water rights.

SECTION 5. Part 5 of article 92 of title 37, Colorado Revised Statutes 1973, is amended BY THE ADDITION OF A NEW SECTION to read:

37-92-501.5. Special procedures with respect to plans for augmentation. Consistent with the decisions of the water judges establishing the basis for approval for plans for augmentation and for the administration of groundwater, the state engineer and division engineers shall exercise the broadest latitude possible in the administration of waters under their jurisdiction to encourage and develop augmentation plans and voluntary exchanges of water and may make such rules and regulations and shall take such other reasonable action as may be necessary in order to allow continuance of existing uses and to assure maximum beneficial utilization of the waters of this state. In so doing, the state engineer shall curtail all out-of-priority diversions, the depletions from which are not so replaced as to prevent injury to vested water rights.

SECTION 6. Repeal. 37-92-307, Colorado Revised Statutes 1973, as amended, is repealed. Notwithstanding the repeal of said section 37-92-307, the provisions thereof shall remain effective as to temporary plans for augmentation submitted to the state engineer prior to the effective date of such repeal, except that the provisions of subsection (5) of said section pertaining to the prima facie effect of the state engineer's findings shall not apply. A hearing on a temporary plan for augmentation approved by the state engineer shall be set by the water judge at the next date specified in section 37-92-304, Colorado Revised Statutes 1973, for the setting of matters for hearing.

SECTION 7. Safety clause. The general assembly hereby

finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.

Fred E. Anderson
PRESIDENT OF
THE SENATE

Ronald H. Strahle
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

Marjorie L. Rutenbeck
SECRETARY OF
THE SENATE

Lorraine F. Lombardi
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

JUL 5 1977 APPROVED June 19, 1977

Richard D. Lamm
GOVERNOR OF THE STATE OF COLORADO

An Act

JUN 27 1977

SENATE BILL NO. 287. BY SENATORS Hatcher and Wham; also REPRESENTATIVES Lillpop, Burns, Dick, Hamlin, Lloyd, Showalter, Spano, Strahle, and Waldow.

CONCERNING TIME LIMITS IMPOSED ON PERMITS ISSUED BY THE STATE ENGINEER TO CONSTRUCT CERTAIN WELLS.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. 37-90-137 (3), Colorado Revised Statutes 1973, is amended BY THE ADDITION OF THE FOLLOWING NEW PARAGRAPHS to read:

37-90-137. Permits to construct wells outside designated areas - fees - permit no ground water right - evidence - time limitation. (3) (c) If evidence that water has been placed to beneficial use as required pursuant to paragraph (a) of this subsection (3) has not been received as of the expiration date of the permit to construct a well, the state engineer shall so notify the applicant by certified mail. The notice shall give the applicant the opportunity to submit proof that the water was put to beneficial use prior to the expiration date, but, due to excusable neglect, inadvertence, or mistake, the applicant failed to submit the evidence on time. The proof must be received by the state engineer within twenty days of receipt of the notice by the applicant and must be accompanied by a filing fee of thirty dollars. If the proof can be given favorable consideration by the state engineer, then, within thirty days, a synopsis of the proof shall be published, specifying that objections shall be filed within thirty days. After the expiration of the time for filing objections, if no such objections have been filed, the state engineer shall, if he finds the proof to be satisfactory, find that the permit should remain in force and effect. If objections have been filed together with a nonrefundable filing

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fee of ten dollars, the state engineer shall set a date for a hearing on the proof and the objections thereto and shall notify the applicant and the objectors of the time and place. The state engineer shall consider all evidence presented at the hearing and all other matters set forth in this section in determining whether the permit should remain in force and effect.

(d) In the case of federally authorized water projects wherein well permits are required by this section and have been secured, the expiration dates thereof may be extended for additional periods based upon a finding of good cause by the state engineer following a review of any such project at least annually by the state engineer.

SECTION 2. Effective date. This act shall take effect July 1, 1977.

SECTION 3. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.

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(d) In the case of federally authorized water projects wherein well permits are required by this section and have been secured, the expiration dates thereof may be extended for additional periods based upon a finding of good cause by the state engineer following a review of any such project at least annually by the state engineer.

SECTION 2. Effective date. This act shall take effect July 1, 1977.

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