



FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

Utah

By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Utah Agricultural Experiment Station

in cooperation with

U. S. Forest Service,
U. S. Geological Survey

U. S. National Park Service
State Engineer of Utah

State and Local Irrigation Organizations

As of

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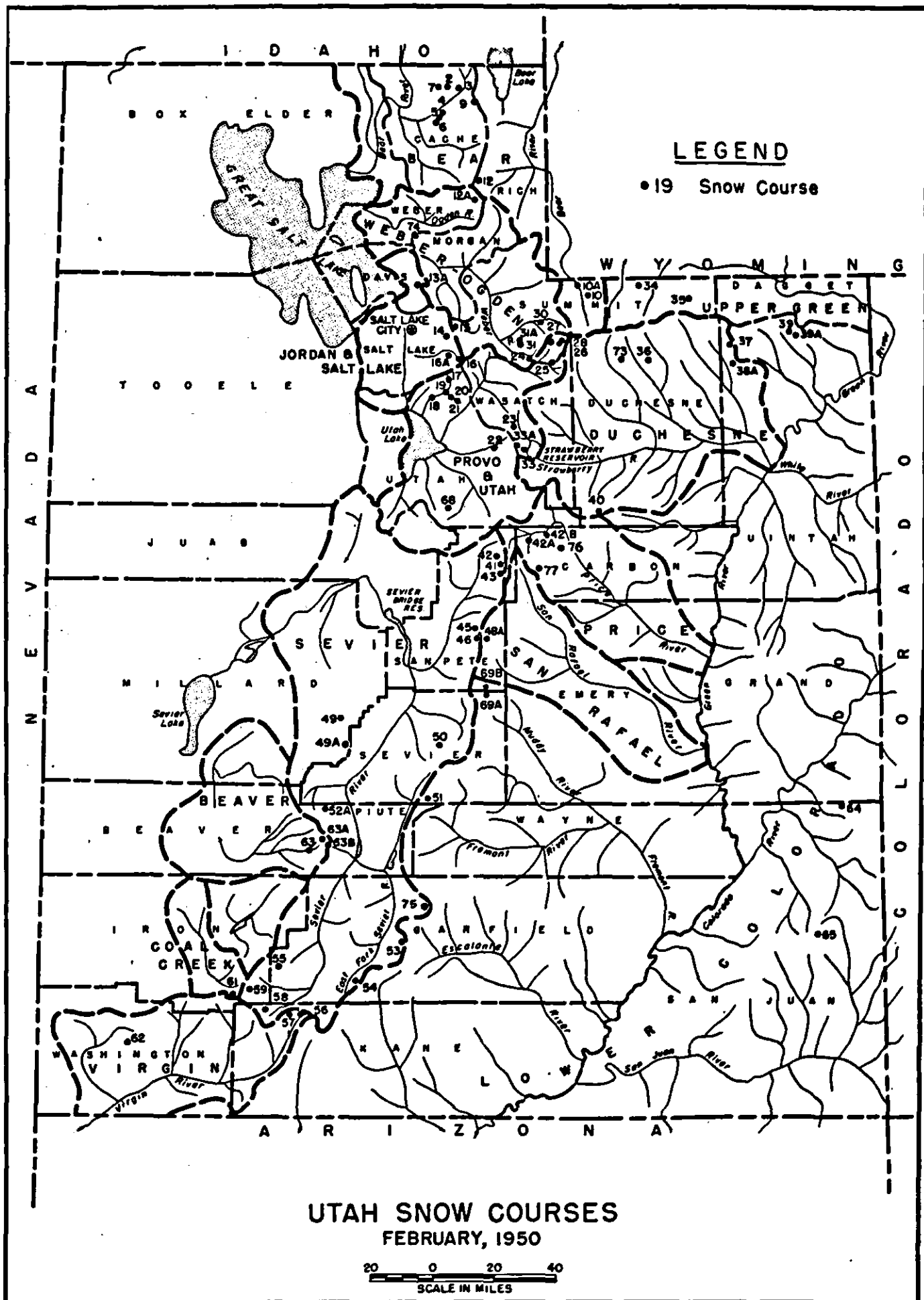
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Division of Irrigation
U. S. Soil Conservation Service
and
Utah Agricultural Experiment Station
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SOIL CONSERVATION SERVICE ALBUQUERQUE, NEW MEXICO
DECEMBER 1949 700 1492-1

INDEX TO UTAH SNOW COURSES

No.	Name	Elev.	No.	Name	Elev.
<u>GREAT BASIN DRAINAGE</u>			<u>GREAT BASIN DRAINAGE (Cont.)</u>		
BEAR RIVER SYSTEM			SEVIER RIVER (Cont.)		
2	Tony Grove Lake	8200	49	Pine Creek-Chalk Creek	8500
3	Tony Grove R. S.	6250	49A	Pine Creek	8700
4	Spring Hollow (Lower)	7000	50	Gooseberry R. S.	8400
5	Spring Hollow (Upper)	8000	51	Fish Lake	8700
6	Mount Logan	9000	52A	Kimberly Mine	8900
7	Smithfield Spring	7000	53	Widtsoc-Escalante Summit	9500
9	Garden City Summit	7900	54	Bryce Canyon	8000
10	Head of Bear River	8600	55	Panguitch Lake	8200
10A	Goodman Ranch	7900	56	Gra vel Springs Junction	7500
12	Monte Cristo	8960	57	Harris Flat R.S.	7700
WEBER-OGDEN RIVERS			58	Duck Creek R.S.	8560
12	Monte Cristo	8960	59	Cedar Breaks	10300
12A	Dry Bread Pond	8230	63B	Big Flat	10000
12B	Geertsen Creek	8200	75	Poison Creek	9100
15	Parley's Canyon Summit	7500	<u>COLORADO RIVER DRAINAGE</u>		
24	Beaver Creek R. S.	7500	UPPER GREEN RIVER		
30	Smith and Morehouse	7600	34	Hewinta R.S.	9500
31	Redden Mine (Upper)	9000	35	HOLE-in-The-Rock	9150
31A	Redden Mine (Lower)	8500	39	Kings Cabin (Upper)	8800
74	Mount Ogden	8600	39A	Kings Cabin (Lower)	8600
JORDAN RIVER & GREAT SALT LAKE			DUCHESNE RIVER		
13A	Barnard Creek	8000	36	Lakefork Mountain	10500
14	Lamb's Canyon	6600	37	Paradise Park	10500
16	Silver Lake	8720	38A	Mosby Mountain (Lower)	9500
16A	Mill D South Fork	7400	73	Brown Duck Lake	10300
PROVO RIVER & UTAH LAKE			40	Indian Canyon	9100
17	Dutchman R. S.	7500	PRICE RIVER		
18	Timpanogos Cave Camp	5500	40	Indian Canyon	9100
19	South Fork R. S.	6100	41	Gooseberry Reservoir	8700
20	Camp Altamont	7300	42A	Staley Ranch	7600
21	Timpanogos Divide	8300	42B	Dry Valley Divide	7800
22	Hobble Creek Summit	7300	43	Huntington-Horseshoe	9800
23	Daniels-Strawberry Summit	8000	76	Schofield Dam	9000
25	Soapstone R. S.	7800	77	Mud Creek	8600
26	Trial Lake	9800	SAN RAFAEL RIVER		
27	Washington-Long Lake	10300	43	Huntington-Horseshoe	9800
28	Lost Lake	9900	48A	Seeley Creek R.S.	10000
33	East Portal	7560	MUDDY RIVER		
33A	Strawberry Divide	8000	69A	Black Fork	9200
68	Payson Ranger Station	8840	69B	Dill's Camp	9200
BEAVER RIVER			VIRGIN RIVER		
63	Merchant's Valley	8200	56	Gravel Springs Junction	7500
63A	Otter Lake	9300	57	Harris Flat R.S.	8560
63B	Big Flat	10000	59	Cedar Breaks	10300
COAL CREEK			61	Webster Flat	9200
59	Cedar Breaks	10300	62	Fine Valley	9150
61	Webster Flat	9200	LOWER COLORADO		
SEVIER RIVER			64	LaSal Mountain	8800
41	Gooseberry Reservoir	8700	65	Buckboard Flat	9000
42	Mammoth R.S.-Cottonwood Crk.	8800			
43	Huntington-horseshoe	9800			
45	G.B.E.S. Headquarters	8700			
46	G.B.E.S. Meadows	10000			
48A	Seeley Creek R.S.	10000			

SUMMARY OF WATER OUTLOOK FOR 1950

Considerable variation is shown in the water supply prospects for Utah during 1950. The water supply is excellent in the northern and northeastern part of the state; good in the central part; and fair in the southern part, with the exception of the east fork of the Sevier River where the expected water supply is poor. The snow blanket in the Cache-Wasatch-Ashley forests is considerably above normal in water content and could produce very heavy spring streamflows if combined with heavy rains and/or above normal temperatures. Reservoir storage supplies are near or considerably above the past ten-year average.

Utah's snow pack is excellent in the northern and northeastern parts of the state as well as on the Price River watersheds. The watersheds of the Bear River system, Weber-Ogden Rivers, Provo River and Utah Lake, Price and Duchesne Rivers are expected to produce record or near-record stream flows during the coming runoff season. These streams are expected to produce an average of 143 percent of the 1939-48 average stream flow. Dependent upon future weather conditions, these streams may produce peak flows which could cause damage to structures and lands along their main channels. Exceptions to this general picture are Big Cottonwood Creek near Salt Lake City, which is expected to produce 112 percent of its 10-year average, and the Ashley Creek near Vernal which should produce about 118 percent.

In Central Utah on the northern part of the Sevier River system, the San Pitch and Salina Creek streams are expected to produce near or slightly above their average flow. The San Rafael River will also yield an average runoff.

In southwestern Utah the water outlook is not so favorable. The Sevier River, the Beaver River, Coal Creek and the Virgin River watersheds will only produce from 75 to 85 percent of their past 10-year average.

The water supply in southeastern Utah should be slightly above normal and adequate for all needs.

Total water stored in all reservoirs on April 1 is nine percent more than last year and 42.5 percent above the average for the last ten years. Storage is 72.6 percent of capacity.

All of the forecasts contained herein are based upon the prevalence of normal weather conditions during the runoff period. Abnormal deviation of precipitation, either above or below normal, will increase or decrease the runoff accordingly.

Table 1 - Streamflow forecasts - April 1, 1950

Basin and stream	April-Sept. streamflow in 1000 acre feet					July-Sept. streamflow in 1000 acre feet				
	Forecast 1950	Measured runoff				Forecast 1950	Measured runoff			
		1949	1948	1947	10-year average 1939-48		1949	1948	1947	10-year average 1939-48
	<u>G R E A T B A S I N D R A I N A G E</u>									
<u>Bear River system</u>										
Bear River at Harer, Idaho	320.0	234.6	290.4	325.0	225.3	55.0	49.6	41.2	78.4	46.6
Blacksmith Fork River near Hyrum, Utah	75.0	64.7	73.6	46.4	44.1	21.0	21.7	22.0	17.2	15.4
Little Bear near Paradise, Utah	55.0	51.7	60.4	30.8	37.0	4.0	4.1	4.1	4.2	3.2
Logan River near Logan, Utah	180.0	136.9	152.4	125.2	116.6	54.0	42.2	45.9	38.8	37.5
<u>Weber-Ogden Rivers</u>										
South Fork of Ogden River near Huntsville	88.0	77.2	74.3	49.2	52.7	9.0	9.9	9.0	9.2	7.8
Weber River near Oakley	155.0	137.6	118.1	133.3	113.9	27.0	24.2	18.2	26.3	21.3
<u>Jordan River & Salt Lake</u>										
Big Cottonwood Creek near Salt Lake City	42.0	39.6	43.2	43.1	37.6	9.5	9.5	9.4	11.1	8.5

Table 1 - Streamflow forecasts - April, 1950 - continued

Basin and stream	April-Sept. streamflow in 1000 acre feet					July-Sept. streamflow in 1000 acre feet				
	Forecast 1950	Measured runoff				Forecast 1950	Measured runoff			
		1949	1948	1947	10-year average 1939-48		1949	1948	1947	10-year average 1939-48
<u>Provo River & Utah Lake</u> American Fork River above power plant	47.0	42.2	38.5	37.3	32.3	12.0	9.7	7.3	9.6	7.9
Provo River below forks ^{xx}	182.5	179.0	133.6	163.4	139.1	45.0	42.0	29.5	43.0	38.7
<u>Sevier River</u> Sevier River at Hatch	55.0	78.8	45.3	64.8	63.2*	16.0	20.5	12.2	16.4	16.8
Sevier River near Kingston	38.0	69.2	30.5	40.5	44.4	6.5	9.1	3.0	7.3	8.2
<u>Beaver River</u> Beaver River near Beaver	22.5	39.1	27.6	42.1	33.6	5.0	8.8	5.8	9.8	7.4
<u>Coal Creek</u> Coal Creek near Cedar City	15.5	24.0	17.9	21.0	19.6	2.8	3.1	1.9	2.8	3.0

^{xx} Corrected for storage and Weber Diversion
 * 9 year average

Table 1 - Streamflow forecasts - April 1, 1950 - continued

Basin and stream	April-Sept. streamflow in 1000 acre feet					July-Sept. streamflow in 1000 acre feet				
	Forecast 1950	Measured runoff				Forecast 1950	Measured runoff			
		1949	1948	1947	10-year average 1939-48		1949	1948	1947	10-year average 1939-48
	C O L O R A D O R I V E R B A S I N									
Upper Green River Ashley Creek near Vernal	70.0	73.2	54.4	78.7	59.5	19.5	19.7	15.4	23.0	17.9
Duchesne River Duchesne River near Tabiona	150.0	146.2	84.8	136.0	104.7	33.0	29.7	16.2	31.8	22.6
Lakefork River below Moon Lake ^x	125.0		54.8	91.3	78.6*	37.0		13.8	26.3	23.6*
Uinta River near Neola	140.0	129.8	72.3	129.5	104.2	5.0	46.7	24.5	49.9	41.5
Whiterocks near Whiterocks	90.0	82.7	54.2	93.5	67.6	27.0	23.0	15.4	31.1	22.0
Strawberry at Duchesne	90.0	110.4	37.9	66.3	59.8	18.5	19.5	6.7	14.0	13.3
Price River Price River near Heiner ^x	82.0	91.2	38.7	62.7	61.4	8.0	6.2	7.6	6.0	6.8
San Rafael River Cottonwood Creek near Orangeville, Utah	66.0	74.4	42.8	60.4	62.5	11.0	14.3	8.8	13.2	10.4
Huntington Creek near Huntington	56.0	68.5	35.8	56.7	55.3	15.0	21.7	11.1	17.5	14.8

^x Corrected for storage

* 7 year average

DETAILS OF WATER FORECAST BY DRAINAGE

Discussions of water supply for each area of the state covered by the Utah Cooperative snow surveys are listed below. The discussions are grouped by drainage basins.

BEAR RIVER DRAINAGE

Bear River at Harer, Idaho:

Snow surveys on the Bear River watershed above Harer show an expected water supply considerably above average. At Goodman Ranch on March 29, surveys measured a water content of 10.3 inches compared to 6.4 inches last year and a 12-year average of 4.2 inches. At the Head of Bear River course, 13.6 inches of water was found. This compares with 10.9 inches last year and a 15-year average of 7.9 inches. On Garden City summit on March 27, 28.9 inches of water were measured compared with 22.7 inches last year and 17.9 inches of a 10-year average. At Emigrant summit a snow water content of 32.7 inches, compared with 28.0 inches last year and a 14-year average of 23.5 inches, was found.

At Trial Lake near Mt. Baldy at the head of the Bear River, the snow survey made on March 26 indicated a water content of 38.0 inches. Last year's measurement was 32.0 inches and the 19-year average is 24.6 inches. Measurements on April 4 at the Monte Cristo Ranger Station near the Bear Lake-Ogden River divide disclosed a water content of 36.0 inches compared with 31.1 inches for last year and a 17-year average of 22.7 inches.

The average April-September runoff of the Bear River at Harer for the 10-year period 1939-48 is 225,300 acre feet, of which 46,600 acre feet is the average runoff for the July-September months. If normal precipitation occurs during the runoff period, it is expected that approximately 320,000 acre feet will run off during the April-September period and 55,000 acre feet during July-September. If the expected runoff occurs, it will be approximately 140 percent of the 10-year average, 1939-48.

Logan River:

Snow surveys on the Logan River watershed indicate that streamflows such as occurred during 1932 and 1936 may be expected. It is expected that some damage may result to irrigation structures and lands adjacent to the main stream channel. The water content of the snow at the Franklin Basin snow course is the highest of the past 26 years of record. The measurement on the Mt. Logan course has been exceeded only once, in 1932 when 0.4 inches more was measured. The Spring Hollow courses were exceeded slightly in 1932 and 1936.

Snow surveys at Franklin Basin on April 2 showed a water content of 41.3 inches compared with 30.5 inches last year and a 26-year

average of 25.5 inches.

The Spring Hollow and Mt. Logan courses have 19.8, 31.7, and 11.9 inches of water at 7000, 8000 and 9000 feet, respectively. These figures compare with a 26-year average of 14.0, 23.9, and 27.9 inches. At Garden City summit the snow contained a water content of 28.9 inches as compared with 22.7 inches last year and the 19-year average of 17.9 inches.

The forecast for the water supply on the Logan River for the coming season is set at 180,000 acre feet for the April-September period and 54,000 acre-feet for the July-September months. This represents a water supply equal to 154 percent of the 10-year, 1939-48, average for April-September and 144 for July-September.

Blacksmith Fork River:

There are three courses located at or near the rim of the Blacksmith Fork watershed -- Mt. Logan, Garden City summit and Monte Cristo Ranger Station. Snow surveys this year at these stations indicate a prospective water supply of 170% of normal, providing precipitation during the runoff season is normal.

The average runoff at the Blacksmith Fork River gaging station near Hyrum for the 10-year period 1939-48 is 44,100 acre feet during the April-September period and 15,400 acre feet during July-September. Last year there were 64,700 and 21,700 acre feet produced by the drainage basin in the respective periods. It is anticipated the runoff during the coming season will be 75,000 and 21,000 acre feet for the April-September and July-September intervals, respectively.

Little Bear River:

The snow course at Monte Cristo Ranger Station furnished an index of the water supply for the Little Bear River. The water content of this snow course this year is 36.0 inches, which is considerably above what it was last year and more than 150% of the long time average. This heavy snow cover indicates an excellent supply of water for the coming season.

Streamflow at the Paradise gaging station is expected to be 55,000 acre feet for April-September and 4,000 acre feet for July-September. The average flow at the station is 37,000 and 3,200 acre feet for the respective periods. Hyrum reservoir is about two-thirds full at present with 10,800 acre feet of storage on April 1. The reservoir will more than fill to capacity, with the possibility that some damage to farm lands below the reservoir may occur from water that may have to be passed through the reservoir.

Cub River, Maple Creek, High Creek and Summit Creek:

The snow cover at Franklin Basin, Emmigrant summit and Smithfield springs snow courses furnish an index for the runoff from these northern streams in Cache valley. The total runoff from these streams

should be higher than last year and about 150 percent of their normal flow. There exists a possibility of damage to farm lands along the streams resulting from high peak flows. Late season stream flow should hold up well.

Providence and Millville Creeks:

The runoff of these streams is reflected in measurement of snow on the Mt. Logan snow course. The snow cover is the highest it has been, with the exception of 1932 when 0.4 inches more water was measured at this course. Stream flow is expected to be about 150 percent of average, which will give near record runoff this year, with the possibility of damage from peak flows near the first part of May.

WEBER-OGDEN RIVER DRAINAGE

Ogden River:

The water content of the two snow courses on Monte Cristo which reflect drainage for the south fork of the Ogden River near Huntsville, is over 150 percent of the long time average. This indicates the prospect of an excellent water supply. The average runoff of the South fork of the Ogden River during the 10-year period of 1939-48 is 52,700 and 7,800 acre feet for April-September and July-September respectively. During the coming season the watershed is expected to yield a runoff of approximately 88,000 and 9,000 acre feet for the two periods.

The Pine View reservoir has been drawn down to 5,800 acre feet which is about 50 percent of the 10-year April 1 average. It is expected that it will fill to capacity, with water having to be passed over the spillway before the season is very far advanced.

Weber River:

The prospective water supply from the Weber River is largely dependent upon the snow cover on the upper regions of the Weber River drainage and is reflected in the snow courses at Parley's Canyon summit, Beaver Creek, Smith and Morehouse and Redden Mine. Snow surveys at these snow courses indicate water supplies only slightly different than last year, and they all have water contents considerably above normal. Late season supplies should be better than last year.

The average runoff of the Weber River near Oakley during the past ten years has been 113,900 and 21,300 acre feet during the April-September and July-September periods respectively. Runoff during the coming season should be about 155,000 and 27,000 acre feet for these respective periods.

Storage in East Canyon reservoir on April 1 amounted to 20,100 acre feet, or about two-thirds of capacity. Available supplies should fill the reservoir to capacity as well as making it necessary to

by-pass considerable water on down the river. Some damage may result from peak flows along the lower reaches of the channel.

At Echo reservoir the storage on April 1 was 43,900 acre feet. This is about 60 percent of capacity. The reservoir will fill, with the necessity of by-passing water during the peak flows.

JORDAN RIVER AND SALT LAKE DRAINAGE

Salt Lake Watersheds:

Streams draining directly into Salt Lake from Farmington south to Murray should produce nearly the same runoff as last year. However, the watershed soils were better primed last fall than they were the preceding year and so should have a slightly higher yield even though the snow cover is approximately the same as it was a year ago.

Big Cottonwood Creek:

On Big Cottonwood Creek the measurement of snow on Silver Lake showed a water content essentially the same as a year ago, while at Mill D South fork it is about 78 percent of last year. The watershed soils were well primed last fall and it is expected that runoff will be about 112 percent of normal. The runoff of Big Cottonwood Creek near Salt Lake City over a 10-year period, 1939-48, was 37,600 and 8,500 acre feet for the April-September and July-September periods. The runoff the coming season is forecast at 42,000 and 9,500 acre feet for the respective periods.

PROVO RIVER AND UTAH LAKE DRAINAGE

Provo River:

Snow surveys on the watersheds of the Provo River indicate considerably more water at the high elevations than last year. Low snows have melted and measurements on the lower courses are less than a year ago. However, the soils were better primed last fall than they were the preceding one, so that yield from the lower elevations should be equal to that of a year ago. High elevation snow courses should produce greater flows than in 1949.

The flow of the Provo River below the forks is affected by storage in Deer Creek reservoir and by diversion from the Weber River through the canal at Woodland. In any forecast of natural stream flow, it is therefore necessary to take these factors into account. The average runoff of the Provo River below the forks, corrected as indicated, for the past ten years shows a yield of 139,100 and 38,700 acre feet for the April-September and July-September periods respectively. From the snow survey data just gathered, it is expected that 182,500 and 45,000 acre feet will be produced from these watersheds.

The Deer Creek reservoir on the Provo River on April 1 had 82 percent of capacity. The reservoir will more than fill, with some water needing to be by-passed through the spillway.

American Fork River:

Snow courses which reflect drainage of the American Fork River are Timpanogas Cave camp, South Fork Ranger Station, Camp Altamont, Timpanogas divide and Dutchman Ranger Station. Measurements this year show less snow than last year at the low altitudes, but the high stations which produce the major part of the flow have more snow than a year are, and are 145 to 155 percent of the long time average. It is expected that the yield from the American Fork River will be 47,000 and 12,000 acre feet for the April-September and July-September periods.

Hobble, Payson and Santaquin Creeks, and Spanish Fork River:

Hobble Creek Summit, Strawberry Divide, and Payson Ranger Station snow courses provide the data for the expected runoff from these watersheds. From measurements made on these courses the water supply for the April-September and July-September periods is expected to be about the same last year, which was from 125 to 130 per cent of average.

Strawberry Reservoir:

The snow cover on the drainage basin of the Strawberry reservoir is about the same as it was at this time last year. The yield of the snow which drains directly into the reservoir should be about 25 percent above average. Hold-over storage in the reservoir at the present time is greater than on April 1 of 1949, with 97,200 acre feet of available water.

Utah Lake:

The storage in Utah Lake as of April 1 was 735,600 acre feet which is 87 percent of capacity as compared to the 1939-48 10-year average storage of 502,400 which is only 59 percent of capacity.

SEVIER RIVER SYSTEM

Sevier River Headwaters:

Supplies of water in storage on the Sevier River watershed are fair on the main fork of the River and poor on the East fork. It is expected that the Sevier River at Hatch will supply 55,000 and 16,000 acre feet as compared to a 10-year average of 63,200 and 16,800 acre feet for the April-September and July-September periods respectively, or about 85 percent of normal.

The snow courses on the East fork of the Sevier at Bryce Canyon

and Poison Creek have no snow. At the Widtsoe-Escalante summit there are 3.0 inches, or about one-third of normal. The Otter Creek reservoir at present is filled to capacity which will help to defray the water deficiency which will occur on this stream. Storage in Piute and Sevier Bridge reservoirs is at approximately the 1939-48 10-year average for April 1.

Salina Creek:

The Gooseberry Ranger Station snow course indicates the water supply of Salina Creek, and this year shows 10.1 inches of water as compared to a 20-year average of 9.9 inches. Supplies from this creek should be adequate to meet all needs.

Clear Creek:

The Kimberly Mine snow course has about 84 percent of the long time average water content, having 14.3 inches of water compared to an average of 17 inches. Supplies from this watershed will be deficient.

San Pitch River:

Snow cover water content measurements on the San Pitch headwaters above Fairview show a total water content somewhat above average but less than last year. Gooseberry reservoir snow course has 22.9 inches compared to a 22-year average of 18.7. Mammoth Ranger Station has 23.8 inches compared to a 21-year average of 20.0 inches. Runoff from the streams of this area should be somewhat above average with late-season supplies holding up well.

Snow cover in Ephraim Canyon is about 10 percent above average this year and gives an indication that water supplies should be good, with late season supplies holding up normally.

INDEPENDENT STREAMS WEST OF THE WASATCH RANGE

Fillmore Drainage:

Snow surveys on the Pine Creek snow course indicate that a below normal supply of water is stored in the watershed. A survey made on April 1 disclosed 9.2 inches of water as compared to a 19-year average of 11.9 inches. *

Beaver River:

The snow courses at Merchant's Valley, Otter Lake and Big Flat Ranger Station furnish the data for the forecast of the flow of the Beaver River at Beaver, and indicate that supplies this year will be about 67 percent of the past 10-year average. The April-September forecast for the Beaver is 22,500 acre feet, compared to an average of 33,600 acre feet for the years 1939-48. The July-September runoff

is expected to be 5,000 acre feet as compared to the 10-year average of 8,200 acre feet.

Coal Creek:

The Cedar Breaks and Webster Flat snow courses on the Coal Creek drainage indicate a water supply of 75 to 80 percent of normal. The runoff from Coal Creek near Cedar City is expected to be below the average of 19,500 and 3,000 acre feet for the respective periods of April-September and July-September. The forecast runoff during the coming irrigation season is 15,500 and 2,800 acre feet.

UPPER GREEN RIVER DRAINAGE

Black's Fork and Henry's Fork:

The snow cover at Hewinta Ranger Station measured 11.6 inches of water. The 17-year average at this course is 9.2 inches. The runoff in this area should be a little higher this year than it usually is, and should hold up well during the summer months.

Beaver Creek and Burnt Fork:

The Hole-in-the-Rock snow course was measured on the first day of April and indicated a normal water supply for the year. It showed a water content of 5.7 inches as compared to an 18-year average of 5.5. Thus, these streams are expected to yield average or slightly above average amounts of water.

Ashley Creek near Vernal:

The snow cover at the King's cabin courses is about 25 percent less than a year ago but still considerably above average. Both upper and lower courses contained 13.1 inches of water on March 30, compared to a 20-year average of 9.7 inches for the upper course and 9.1 for the lower one. Runoff is expected to be 70,000 acre feet for the April-September period and 19,500 acre feet for the July-September period. This is about 118 percent of the average for the past ten years.

DUCHESNE RIVER DRAINAGE

Duchesne River near Tabiona:

Snow surveys made at Trial Lake, Lost Lake, Lake Fork Mountain and Brown Duck Lake give a good indication of the water to be expected during the coming year. The runoff for the April-September period is forecast at 150,000 acre feet as compared with a 10-year average of 104,700 acre feet; and for July-September the forecast is 33,000 acre feet as compared to 22,600, the 10-year average.

Lakefork River below Moon Lake Reservoir:

The flow at this gaging station must be corrected for storage in Moon Lake reservoir before the natural river flow can be forecast. The snow cover at Brown Duck Lake and Lakefork Mountain snow courses provide an index of the natural runoff that can be expected. The measurement at Brown Duck Lake shows a water content of 23.7 inches which is less than last year but more than the six-year average of 17.6 inches. Lakefork Mountain has 16.0 inches of water which is slightly more than last year and considerably more than the 19-year average of 9.9 inches. The forecast flow for April-September is 125,000 acre feet compared to a seven-year average of 78,600; and the July-September runoff is expected to be 37,000 acre feet compared to the average of 23,600.

Strawberry River at Duchesne:

The Indian Canyon snow course provides an index for the runoff of the Strawberry River drainage above Duchesne. April 1 snow surveys indicate that the runoff during the April-September period will be less than last year, but still about 150 per cent of the 10-year average. The forecast flow is 90,000 acre feet. For the July-September period the watershed is expected to produce 18,500 acre feet. The preceding 10-year average is 13,300 acre feet.

Uinta River at Neola:

The snow courses at Mosby Mountain, Paradise Park, and Lakefork Mountain provide information to determine the runoff at this station. Measurement of these courses show that the runoff should be considerably above average this year. The average runoff at the Neola station over the past 10 years has been 104,200 acre feet for April-September and 41,500 acre feet for July-September. This year the forecasted amount is 140,000 and 55,000 acre feet for these periods.

Whiterocks River at Whiterocks:

The snow courses at Paradise Park and Mosby Mountain reflect runoff conditions for the Whiterocks River. As shown by surveys on April 4 the snow cover water content is about 25 percent higher than last year, and is considerably above average. The runoff at the Whiterocks station during the last ten years has averaged 67,600 acre feet during the April-September period and 22,000 during the months of July-September. The forecast for this year is 90,000 and 27,000 acre feet respectively for the two periods.

PRICE RIVER DRAINAGE

Price River near Heiner:

The snow courses at Gooseberry reservoir, Huntington-Horseshoe divide, Staley ranch and Dry Valley divide, indicate a smaller flow than last year, but the measurements are still well above average. The forecasted April-September flow is 82,000 acre feet as compared to 61,000 acre feet for the 1939-48 10-year average. Late season supply is expected to hold up well, with 8,000 acre feet compared to 6,800 average.

On April 1 there were 25,700 acre feet of water in the Scofield reservoir. This is about 240 percent of the average for the past ten years and 40 per cent of capacity. It is expected that the reservoir will be filled and considerable water will go over the spillway.

SAN RAFAEL RIVER DRAINAGE

Huntington Creek at Huntington:

Snow measurements indicate that the runoff from Huntington Creek is expected to be about average. The average runoff at the Huntington gaging station during the past ten years is 55,800 and 14,800 acre feet respectively for the April-September and July-September periods. Forecasted flow this year is 56,000 acre feet for the April-September interval and 15,000 acre feet during the later part of the season.

Cottonwood Creek at Orangeville:

The average April-September runoff from Cottonwood Creek is 62,500 acre feet, and the snow measurement this year indicates that the flow will be 66,000 for the same period. The July-September period has an average of 10,400; and 11,000 acre feet is the forecast for 1950.

VIRGIN RIVER DRAINAGE

Virgin River at Virgin:

The snow courses at Gravel Springs junction, Harris Flat Ranger Station, Duck Creek Ranger Station, Cedar Breaks and Webster Flat furnish an index of the amount of water that will flow out of the Virgin River watershed. The measurement of these courses indicate that the water supply for this year will be considerably below that of 1949. About 65 percent of last year's flow or 80% of the average can be expected.

Santa Clara near Central:

Snow cover on Pine Mountain this season is measured at 14.8 inches. The 13-year average water content is 20.1 inches. This indicates that a water supply of 74 percent of the average flow may be expected this coming season.

LOWER COLORADO DRAINAGELaSal Mountain Area:

Snow cover at the LaSal Mountain snow course is approximately 70 percent of last year's snow measurement, but still 140 percent of the 19-year average water content of 8.9 inches. Water supplies in this area should be very good for the coming season.

Blue Mountain Area:

The Buckboard flat snow course has only 50 percent of the 1949 snow measurement, but it is near normal for this section, being 94 percent of the 20-year average. The March 29 survey disclosed a water content of 13.1 as compared to the average of 13.9 inches.

Table 2 - Status of reservoir storage about April 1, 1950

Basin and stream	Reservoir	Usable capacity (1000 of acre feet)	1000 acre feet in storage April 1				
			1950	1949	1948	1947	10-year average 1939-48
<u>Bear River system</u>							
Bear River	Bear Lake	1420.0	1022.0	984.4	1065.0	1026.0	666.2
Little Bear River	Hyrum	15.3	10.6	10.8	10.7	11.9	11.7
<u>Weber-Ogden Rivers</u>							
Ogden River	Pine View	44.2	5.8	4.8	1.4	14.6	11.1
Weber River	East Canyon	28.7	20.1	9.9	24.1	15.6	20.8
Weber River	Echo	73.9	43.9	14.0	38.6	55.3	33.0
<u>Provo River and Utah Lake</u>							
Provo River	Deer Creek	147.3	120.7	102.3	127.8	73.4	49.7*
Spanish Fork River	Strawberry ^o	270.0	97.2	77.9	92.8	92.8	70.8
Utah Lake	Utah Lake ^o	850.2	735.6	697.9	758.8	733.6	502.4
<u>Sevier River system</u>							
Sevier River	Otter Creek	52.5	53.8	31.4	52.5	39.7	42.4
Sevier River	Piute	84.8	67.1	55.0	70.3	61.0	63.7
Sevier River	Sevier Bridge	236.0	185.4	204.4	221.5	202.6	184.1
<u>Beaver River</u>							
Beaver River	Rocky Ford	23.3	20.5	17.3	19.8	17.2	19.1
<u>Duchesne River</u>							
Lake Fork River	Moon Lake	35.8	20.0	10.2	13.0	9.1	19.6
<u>Price River</u>							
Price River	Scofield	65.0	25.7	6.5	15.6	8.3	10.8

* Five year record

^o Figures for the Strawberry Reservoir obtained from the reports of the Spanish Fork River Commissioner. Utah Lake figures are from the report of the Utah Lake and Jordan River Water Commissioner. All other data contained in this table supplied by U.S.G.S.

Table 3 - Utah snow surveys - about April 1, 1950

Drainage basin and Snow course name	Snow course number	Location			Elev.	S N O W C O V E R M E A S U R E M E N T S						
						Date of survey 1950	Snow depth (inches) 1950	WATER CONTENT (INCHES)			Past record	
		About April 1						years of record	av. water content (inches)			
		1950	1949	1948								
G R E A T B A S I N D R A I N A G E												
Bear River System:												
Franklin Basin (Idaho)	1	1&12	16S ^x	41E ^x	8200	4-2	102.2	41.3	30.5	26.5	26	25.5
Emmigrant summit (Idaho)	1A	21	12S ^x	42E ^x	7700	3-28	97.4	32.7	28.0	21.6	14	23.5
Slug Creek divide (Idaho)	1B	10&15	10S ^x	44E ^x	7300	4-2	63.0	24.2	16.0	13.3	14	15.1
Tony Grove Lake	2	5	13N	3E	8200			N.R.	N.R.	N.R.	24	32.6
Tony Grove R.S.	3	11	13N	3E	6250	3-31	36.1	14.0			21	9.3
Spring Hollow (lower)	4	26	12N	2E	7000	4-1	49.8	19.8	17.3	13.9	25	14.0
Spring Hollow (upper)	5	35	12 N	2E	8000	4-1	96.2	34.7	31.0	22.0	26	23.9
Mt. Logan	6	3	11N	2E	9000	4-1	105.4	41.9	34.6	26.4	26	27.9
Smithfield spring	7	2	13N	2E	7000	3-23	82.3	32.8		25.1	12	22.2
Garden City summit	9	34	14N	4E	8000	3-27	83.2	28.9	22.7	15.4	19	17.9
Head of Bear River	10	15	2N	10E	8600	3-29	43.6	13.6	10.9	6.6	15	7.9
Goodman Ranch	10A	19	3N	10E	7900	3-29	33.4	10.3	6.4	4.2	12	4.2
Monte Cristo	12	3	8N	4E	8960	4-4	89.2	36.0	31.1	22.0	17	22.7
Weber Ogden Rivers:												
Monte Cristo	12	3	8N	4E	8960	4-4	89.2	36.0	31.1	22.0	17	22.7
Dry Bread Pond	12A	3	7N	4E	8230	4-4	68.8	27.0	22.7	N.R.	12	17.3
Parley's Canyon summit	15	9&10	1S	3E	7500	3-31	59.6	21.6	24.8	20.2	16	17.2
Beaver Creek R.S.	24	28	2S	7E	7500	3-25	28.9	11.2	13.1	8.0	18	7.4
Smith & Morehouse	30	25	1N	7E	7600	3-29	55.2	19.5	18.2	11.4	21	12.2
Redden Mine (upper)	31	1	2S	6E	9000	3-30	80.4	30.9	28.8	17.8	20	19.4
Redden Mine (lower)	31A	1	2S	6E	8500	3-30	78.0	29.3	27.0	17.0	20	18.4
Mt. Ogden	74	5	5N	1E	8600	3-29	83.7	30.7	25.4	36.7	New course	

^x Boise Meridian

Table 3 - Utah snow surveys - about April 1, 1950 - continued

Drainage basin and Snow course name	Snow course number	Location			Elev.	SNOW COVER MEASUREMENTS						
		Sec.	Twp.	Range		Date of survey 1950	Snow depth (inches) 1950	WATER CONTENT (INCHES)			Past record	
								About April 1			years of record	av. water content (inches)
								1950	1949	1948		
<u>Jordan River & Great Salt Lake:</u>												
Barnard Creek	13A	34	3N	1E	8000	4-2	75.8	30.3	30.4	28.4	14	27.2
Lamb's Canyon	14	19	1S	3E	6600	3-28	61.1	18.2	19.4	15.4	15	15.2
Silver Lake	16	35	2S	3E	8720	3-27	99.3	32.8	32.7	25.5	19	24.6
Mill D. south fork	16A	18	2S	3E	7400	3-27	71.3	20.7	26.7	21.4	15	19.6
<u>Provo River & Utah Lake:</u>												
Dutchman R.S.	17	27	3S	3E	7500	3-29	62.1	26.6	24.6	19.2	19	17.5
Timpanogas Cave camp	18	27	4S	2E	5500	No Snow			4.5	3.5	15	1.1
South Fork R.S.	19	24	4S	2E	6100		3-29	13.0	5.5	7.8	10.4	15
Camp Altamont	20	29	4S	3E	7300	3-30	59.4	26.8	24.0	18.4	15	17.1
Timpanogas divide	21	33	4S	3E	8200	3-30	94.8	40.0	36.0	25.5	15	24.3
Hobble Creek summit	22	20	7S	5E	7300	3-29	48.7	17.4	18.2	10.9	14	13.2
Daniels-Strawberry summit	23	20	2S ^x	12W ^x	8000	3-31	55.3	20.3	22.4	14.3	20	14.1
Soapstone R.S.	25	9	3S	2E	7800	3-25	60.7	16.0	17.8	10.2	19	11.0
Trial Lake	26	5	2S	9E	9800	3-26	112.2	38.0	32.0	22.7	19	24.6
Washington-Long Lake	27	1	2S	8E	10300	3-26	114.0	39.0	34.1	25.4	17	28.2
Lost Lake	28	33	1S	9E	9900	3-26	103.7	35.7	29.5	19.7	17	22.6
East Portal	33	36	7S	6E	7560	3-30	49.9	17.4	17.4	9.8	16	11.5
Strawberry divide	33A	34-35	7S	6E	8000	3-30	74.5	26.0	26.5	17.2	16	19.8
Payson R.S.	68	30	10S	3E	8840	4-1	55.0	21.9	N.R.	19.8	6	18.2
<u>Sevier River:</u>												
Gooseberry Reservoir	41	25	13S	5E	8700	3-31	60.3	22.9	25.1	17.3	22	18.7
Mammoth R.S. - Cottonwood Creek	42	13& 23	13S	5E	8800	3-31	61.2	23.8	26.2	17.6	21	20.0

^x Uinta special meridian

Table 3 - Utah snow surveys - about April 1, 1950 - continued

Drainage basin and Snow course name	Snow course number	Location			Elev	SNOW COVER MEASUREMENTS						
						Date of survey 1950	Snow depth (inches) 1950	WATER CONTENT (INCHES)			Past record	
		About April 1						years of record	av. water content (inches)			
		Sec	Twp.	Range				1950	1949	1948		
Sevier River (cont'd)												
Huntington-Horseshoe	43	12	14S	5E	9800	3-31	60.4	21.6	27.3	23.0	20	24.1
G.B.E.S. headquarters	45	21	17S	4E	8700	3-31	49.1	18.1	20.1	15.2	20	16.1
G.B.E.S. meadows	46	26-27	17S	4E	10000	3-30	73.3	25.6	31.3	23.2	20	23.9
Seeley Creek R.S. #2	48A	25	17S	42	10000	3-30	33.8	11.6	20.3	13.7	20	15.1
Pine Creek-Chalk Creek	49	14	22S	4W	8500	4-1	28.7	9.2		17.2	19	11.9
Pine Creek	49A	24	22S	4W	8700	4-1	32.6	11.3	16.4	New course		
Gooseberry R.S.	50	32	23S	2E	8400	3-30	33.1	10.1	11.7	14.4	20	9.9
Fish Lake	51	35	26S	1E	8700	3-28	29.5	8.1	9.5	8.8	19	5.8
Kimberly mine	52A	11	27S	5W	8900	4-2	40.6	14.3	20.9	20.9	15	17.0
Widtsoe-Escalante summit	53	22	34S	1W	9500	3-31	8.5	3.0	19.6	10.8	18	9.3
Widtsoe-Escalante # 2	53A	22	34S	1W	9500	3-31	22.6	6.4	New course			
Bryce Canyon	54	36	36S	4W	8000	4-1	No Snow		11.5	7.2	11	7.1
Panguitch Lake	55	4-5	36S	7W	8200	3-31	5.9	2.4	11.3	7.7	15	7.2
Gravel Springs junction	56	22	38S	6W	7500	4-1	No Snow		8.5	2.7	13	6.1
Harris Flat R.S.	57	24	38S	7W	7700	3-24	19.8	8.7	14.8	8.1	19	9.9
Duck Creek R.S.	58	11	38S	8W	8560	3-24	36.9	15.5	21.6	14.4	15	17.3
Cedar Breaks	59	2	37S	9W	10390	3-24	48.4	19.1	28.8	21.2	15	26.0
Big Flat	63B	18	29S	4W	10000	3-30	47.9	15.5	28.4	16.8	14	21.0
Poison Creek	75	20	31S	1W	9100	4-1	No Snow			4.0		
Beaver River:												
Merchant's Valley	63	8-9	29S	5W	8200	3-30	23.7	8.6	18.2	10.4	19	11.3
Otter Lake	63A	1	29S	5W	9300	3-30	37.1	12.3	25.2	13.1	14	17.6
Big Flat	63B	18	29S	4W	10000	3-30	47.9	15.5	28.4	16.8	14	21.0
Coal Creek:												
Cedar Breaks	59	2	37S	9W	10390	3-24	48.4	19.1	28.8	21.2	15	26.0
Webster Flat	61	20	37S	9W	9200	3-23	37.7	14.1	21.7	17.8	23	17.6

Table 3 - Utah snow surveys - about April 1, 1950 - continued

Drainage basin and Snow course	Snow course number	Location			Elev.	S N O W C O V E R M E A S U R E M E N T S						Past record years of record	av. water content (inches)
						WATER CONTENT (INCHES)							
		Sec	Twp.	Range		Date of survey 1950	Snow depth (inches) 1950	About April 1					
								1950	1949	1948			
COLORADO RIVER DRAINAGE													
Upper Green River:													
Hewinta R. S.	34	33	3N	13E	9500	3-25	43.6	11.6	N.R.	12.2	17	9.2	
Hole-In-The-Rock	35	13	2N	15E	9150	4-1	26.0	5.7	8.9	8.1	18	5.5	
Kings cabin (upper)	39	22	1S	21E	8800	3-30	48.4	13.1	16.2	13.0	20	9.7	
Kings cabin (lower)	39A	23-26	1S	21E	8600	3-30	45.3	13.1	15.2	11.1	20	9.1	
Duchesne River:													
Lakefork Mountain	36	2-3	2N ^x	5W ^x	10500	3-29	56.5	16.0	15.6	10.2	19	9.9	
Paradise Park	37	7	3N ^x	1E ^x	10500	4-3	60.1	19.9	14.9	14.4	18	11.7	
Mosby Mountain (lower)	38A	5	2N ^x	1E ^x	9500	4-4	51.8	17.0	14.6	11.8	20	10.2	
Brown Duck Lake	73	2	2N ^x	6W ^x	10300	3-29	73.9	23.7	31.2	13.0	6	17.6	
Indian Canyon	40	2	11S	10E	9100	4-4	43.3	15.6	20.1	10.1	20	9.8	
Price River:													
Indian Canyon	40	2	11S	10E	9100	4-4	43.3	15.6	20.1	10.1	20	9.8	
Gooseberry Reservoir	41	25	13S	5E	8700	3-31	60.3	22.9	25.1	17.3	22	18.7	
Staley Ranch	42A	32	12S	7E	7600	4-2	20.6	8.5	9.7	7.0	14	6.5	
Dry Valley divide	42B	20	12S	8E	7800	4-2	36.8	15.0	17.4	6.3	15	10.1	
Huntington-Horseshoe	43	12	14S	5E	9800	3-31	60.4	21.6	27.3	23.0	20	24.1	
Soofield dam	76	22	12S	11W	9000	4-2	38.8	15.2	14.9	New course			
Mud Creek	77	4	14S	11W	8600	4-2	44.2	18.3	18.3	New course			
San Rafael River:													
Huntington-Horseshoe	43	12	14S	5E	9800	3-31	60.4	21.6	27.3	23.0	20	24.1	
Seeley Creek R.S.	48A	25	17S	4E	10000	3-30	33.8	11.6	20.3	13.7	20	15.1	

^x Uinta special meridian

Table 3 - Utah snow surveys -- about April 1, 1950 - continued

Drainage basin and Snow course name	Snow course number	Location			Elev.	S N O W C O V E R M E A S U R E M E N T S						
						Date of survey 1950	Snow depth (inches) 1950	W A T E R C O N T E N T (I N C H E S)			Past record	
		About April 1						Years of record	av. water content (inches)			
		1950	1949	1948								
<u>Muddy River:</u> Black Fork Dill's Camp	69A 69B	34 27	20S 20S	4E 4E	9200 9200			N.P. N.R.	16.5 16.4	N.R. N.R.	4 3	13.4 12.2
<u>Virgin River:</u> Gravel Springs junction Harris Flat R. S. Cedar Breaks Webster flat Pine Valley	56 57 59 61 62	22 24 2 20 3	38S 38S 37S 37S 40S	6W 7W 9W 9W 15W	7500 7700 10390 9200 9150		No Snow 19.8 48.4 37.7 36.6		8.5 14.8 28.8 21.7 19.3	2.7 8.1 21.2 17.8 19.5	13 19 15 23 13	6.1 9.9 26.0 17.6 20.1
<u>Lower Colorado River:</u> LaSal Mountain Buckboard Flat	64 65	5 36	27S 33S	24E 22E	8800 9000	3-31 3-29	34.5 40.2	12.5 13.1	18.2 26.3	12.7 16.7	19 20	8.9 13.9

AGENCIES COOPERATING IN UTAH SNOW SURVEYS

U. S. Government Agencies:

U. S. Department of Agriculture
Soil Conservation Service
Forest Service

U. S. Department of the Interior
Geological Survey
National Park Service

U. S. Department of Commerce
Weather Bureau

State of Utah:

Utah Agricultural Experiment Station
State Engineer
Little Bear River Commissioner
Price River Commissioner
Provo River Commissioner
Sevier River Commissioner
Spanish Fork River Commissioner
Weber River Commissioner

Municipalities:

Ogden City Corporation
Provo City Corporation
Salt Lake City Corporation

Organized Public Agencies:

Beaver River Water-Users Association
Board of Canal Presidents - Jordan River
Coyote Irrigation Company
Emery Canal and Reservoir Company
Moon Lake Water-Users Association
Ogden River Water-Users Association
Provo River Water-Users Association
Strawberry Water-Users Association
Sevier River Water-Users Association

Public Utilities:

Utah Power and Light Company
Telluride Power and Light Company

Federal - State - Private
COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
domestic and municipal water
supply, hydro-electric power
generation, navigation,
mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"