Division of Publications,
Utah Agricultural Experiment Station,
Logan, Utah.

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April 1935

U T A H C O O P E R A T I V E S N O W S U R V E Y S

And

W A T E R - S U P P L Y F O R E C A S T S

1935

Cooperators

Utah Agricultural Experiment Station

Utah State Engineer

United States Weather Bureau

United States Forest Service

By

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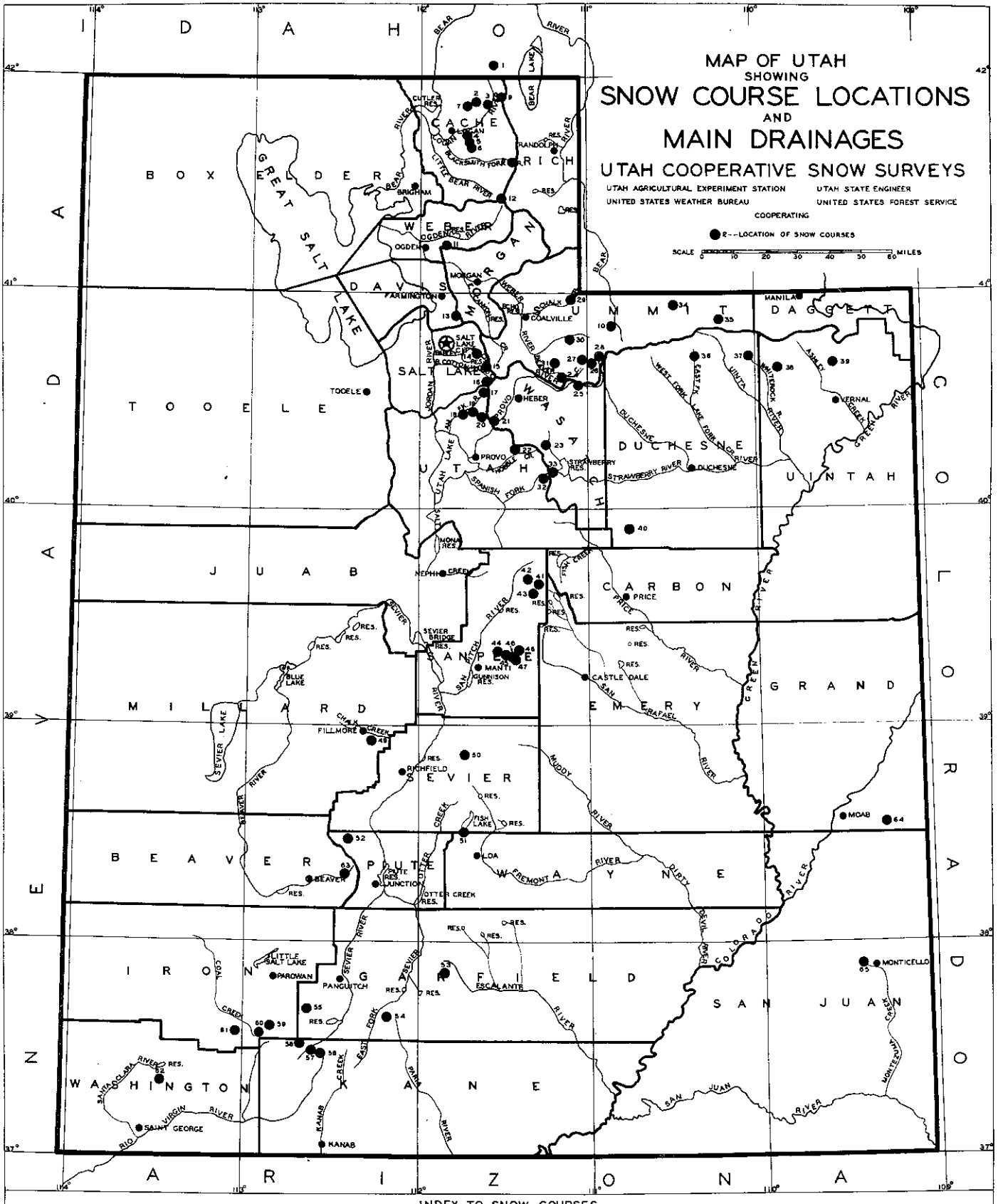
with

Utah State Engineer, Cooperating



INDEX TO SNOW COURSES

NUMBER	NAME	ELEVATION
	CACHE VALLEY STREAMS	
1	FRANKLIN BASIN	6200
2	TONY GROVE LAKE	8300
3	TONY GROVE RANGER STATION	6250
4	SPRING HOLLOW NO. 3	7000
5	SPRING HOLLOW NO. 4	8000
6	MOUNT LOGAN	9000
7	SMITHFIELD SPRING	7500
8	BLACKSMITH FORK	9000
9	GARDEN CITY CREEK	8200
	BEAR RIVER	
9	GARDEN CITY CREEK	8200
10	HEADWATERS OF BEAR RIVER	9000
	OGDEN RIVER	
11	WHEELER BASIN	6000
12	MONTE CRISTO	
	WEBER RIVER	
13	PARLEY'S CANYON SUMMIT	5000
24	BEAVER CREEK NURSERY	7500
27	WASHINGTON LONG LAKE	10300
29	AIRWAY BEACON--CHALK CREEK	9000
30	SMITH AND MOREHOUSE	7600
31	REDDEN MINE	8700
	SALT LAKE WATERSHEDS	
13	PARLEYS CREEK SUMMIT	9000
14	LAMB'S CANYON	6000
15	PARLEY'S CANYON SUMMIT	5000
16	SILVER LAKE	5800
	PROVO RIVER AND UTAH LAKE	
17	DUTCHMAN RANGER STATION	5000
18	CAVE CAMP	5000
19	MUTUAL DELL	9000
20	ALTAMONT	7000
21	TIMPANOGOS DIVIDE	8000
22	HORSE CREEK DIVIDE	8000
23	DANIELS-STRAWBERRY SUMMIT	8100
24	BEAVER CREEK NURSERY	7500
25	SOAPSTONE RANGER STATION	8100
26	LAKE TROY	9800
27	WASHINGTON LONG LAKE	10300
28	LOST LAKE	10000
32	WEST PORTAL--STRAWBERRY TUNNEL	7300
	STRAWBERRY RESERVOIR	
23	DANIELS-STRAWBERRY SUMMIT	8100
33	EAST PORTAL	6500
	NORTH SIDE UINTAH MOUNTAINS	
34	BLACKS FORK	9500
35	HOLE IN THE ROCK	9350
	SOUTH SIDE UINTAH MOUNTAINS	
36	LAKE FORK MOUNTAIN	10500
37	PARADISE PARK	10500
38	MOSBY MOUNTAIN	9500
39	KING'S CABIN	8500
40	INDIAN CANYON	9100
	PRICE RIVER	
40	INDIAN CANYON	9100
41	GOOSEBERRY RESERVOIR	6800
42	MAMMOTH RANGER STATION	9700
43	HUNTINGTON HORSESHOE	9750
	FILLMORE	
49	PINE CREEK--CHALK CREEK	9000
	HUNTINGTON COTTONWOOD & FERRON CREEKS	
43	HUNTINGTON HORSESHOE	9730
47	G.B.E.S. ALPINE	10200
48	SEELEY CREEK RANGER STATION	10000
	SAN PITCH RIVER	
42	MAMMOTH RANGER STATION	8700
44	G.B.E.S. OAKS RANGER STATION	7400
45	G.B.E.S. HEADQUARTERS	8700
46	G.B.E.S. MEADOWS	9500
47	G.B.E.S. ALPINE	10200
	SEVIER RIVER	
50	GOOSEBERRY RANGER STATION	8700
51	FISH LAKE	9000
52	KIMBERLEY MINE	8250
53	WIDSTOE ESCALANTE SUMMIT	9500
54	BRYCE CANYON	8000
55	PANGUITCH LAKE	8400
56	ASA-VIRGIN SUMMIT	
57	HARRIS FLAT RANGER STATION	7500
58	DUCK CREEK SPRINGS	8500
59	CEDAR BREAKS	10000
	BEAVER RIVER	
63	MERCHANTS VALLEY	8600
	COAL CREEK	
59	CEDAR BREAKS	10000
60	CO-OP FLAT	9500
61	WEBSTER FLAT	9200
	VIRGIN RIVER	
56	ASA-VIRGIN SUMMIT	
57	HARRIS FLAT RANGER STATION	7500
58	DUCK CREEK SPRING	8500
59	CEDAR BREAKS	10000
60	CO-OP FLAT	9500
61	WEBSTER FLAT	9200
	SANTA CLARA RIVER	
62	DEER PARK PINE VALLEY	9000
	LA SAL AND BLUE MOUNTAINS	
64	LA SAL MOUNTAIN	9000
65	BUCKBOARD FLAT	9500

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April 1935

WATER-SUPPLY FORECAST FOR UTAH, 1935

George D. Clyde, Irrigation Engineer,
Utah Agricultural Experiment Station,

with

Utah State Engineers, Cooperating

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In Utah, agriculture is dependent on irrigation and the entire economic and social structure of the people is built upon the adequacy and reliability of the water-supply. If there is any truth in the saying that "to be forewarned is to be forearmed", then a knowledge of the probable water-supply in advance of its occurrence is of great value in making the most complete utilization of the water when it comes. Water-supply forecasts provide this advance knowledge and form the basis of the planting program of the farmer, the generating program of the power company, and the water-conservation program of the municipality.

In Utah, approximately 80 per cent of the runoff for April-September, inclusive, is derived from precipitation which falls on the high watersheds in the form of snow. This accumulated precipitation may be measured in advance of its appearance as runoff. For many years the Utah Agricultural Experiment Station has been studying the relationship of the accumulated snow cover to the runoff. Under cooperative agreement between the Utah Agricultural Experiment Station, the Utah State Engineer's Office, the United States Forest Service, and the United States Weather Bureau, the high watersheds of the state of Utah have been covered with a network of snow courses which are measured each spring at the end of the precipitation season. These snow surveys form the basis of the seasonal water-supply forecasts.

During the period from March 26 to April 1, snow surveys were completed at all of the snow courses. The snow-survey data at this time, therefore, may be taken as indicative of the April-September and July-September runoff with, of course, later modification of estimates in accordance with subsequent storms and temperature conditions.

This report presents:

1. Map of state showing location of snow courses.

2. Forecasts of July-September and April-September runoff for the streams on whose drainage areas snow surveys have been conducted for a sufficient number of years to make it possible to forecast stream-flow quantitatively.

3. A brief statement of conditions on other watersheds of the state, based on available records.

The following tabulation shows the total runoff of Bear Lake tributary streams in acre-feet for the period 1930-1934:

1930	77,000 acre feet
1931	36,900 " "
1932	108,00 " "
1933	94,800 " "
1934	31,200 " "

The snow cover at the high elevations is slightly less than in 1933. At the low elevations there is considerably less than in 1933. At least a 50,000 acre-feet runoff from the tributary streams into Bear Lake during 1935 can be expected. Absence of a normal April-May precipitation will materially reduce this quantity.

CACHE VALLEY STREAMS

Cub River Drainage

Measurements on the Franklin Basin snow course are representative of the snow cover on the Cub River watershed. The snow cover at Franklin Basin this year has a water content of 24.4 inches as compared to 12.6 inches in 1934. Little melting has taken place on the high elevations, but the ground is open and fairly dry. The low snow cover has largely melted and has been absorbed. The stream is now beginning to increase. With normal spring temperatures and April-May precipitation, the runoff from Cub River this year will probably exceed that of 1934 by about 80 per cent but will be considerably less than that received in 1933.

Maple High Summit and Providence Creeks

These drainage areas are all on the west side of the Bear River Range and are relatively short and steep. There is a good cover of snow on the east and north slopes down to about 7000 feet. The south and west slopes are bare up to nearly 8000 feet. There has been a noticeable increase in the discharge of springs on these watersheds and the stream flow has practically doubled during the last thirty days. There will be some high water from these streams and the total seasonal flow will probably exceed that in 1934 by 60 per cent.

Logan River Drainage

Light fall rains left the watershed in a dry open conditions when snow began accumulating. The extreme drought of 1934 greatly depleted the ground storage and left the watersheds in a condition conducive to heavy absorption losses during the spring of 1935. Although the snow cover had largely disappeared from the west side of the main range in Cache County by April 1, there was still a fairly heavy snow cover in the canyons and on the higher elevations. At the Tony Grove Ranger Station the south slopes were bare, but the north, east, and west slopes had a good cover. Melting had begun from the bottom of the snow layer, but as yet little of this water has reached the streams.

The snow cover measurements on Mt. Logan, at Franklin Basin, Tony Grove Lake, and the Tony Grove Ranger Station present quite a different picture from that of a year ago. At all of these stations the snow cover was much hoavier than of April 1, 1934, the average water content for the high stations being 69.5 per cent of the long-time average. The low stations averaged 72.5 per cent of their long-time average. This indicated a snow storage approximately twice that

on the watershed on April 1, 1934 and approaches the supply that was available on April 1, 1933. It must be kept in mind, however, that 1933 followed a relatively wet year, while 1935 followed an extremely dry year; therefore, the runoff of the snow cover in 1935 cannot be expected to equal that in 1933. Taking into consideration the depleted ground storage and the receding low snow cover, it is estimated that the yield from the Logan river watershed during the period April-September will not exceed 100,000 acre-feet and may be as low as 80,000 acre-feet. This is approximately 97 per cent greater than in 1934 and about 12,000 acre-feet less than in 1933. The runoff for the period July-September will probably not exceed 34,000 acre-feet maximum and may be as low as 30,000 acre-feet. An abnormally dry spring and a deficient precipitation during April and May can materially reduce the above estimated runoff.

The maximum discharge during the season of 1934 was 330 second-feet. It is expected that a much larger spring flow will be realized during the spring of 1935. It is estimated that during the irrigation season of 1935 the low water will not fall below 100 second-feet.

Blacksmith Fork

The accumulated snow cover on the Blacksmith Fork watershed was less than on the Logan, due to lower precipitation and a higher absorption loss. A measurement of the snow cover at the head of Curtis Creek (9000 feet elevation) shows a water content of 11.7 inches as compared with 5.5 inches on April 1, 1934. There was considerably more snow at the lower elevations than on the same date a year ago. The dry soil under the snow is absorbing the water as fast as it leaves the snow cover. Little of this water has yet reached the streams. Although the snow cover was 100 per cent greater than in 1934, it is still considerably less than that which was available on April 1, 1933. The runoff to be expected from the Blacksmith Fork River during the season of 1935 will be relatively less than that from the Logan River. A discharge from the Blacksmith Fork River during the period April-September 1933 was 47,920 acre-feet. In 1934 it was 18,480 acre-feet. It is estimated that the probable runoff from the Blacksmith Fork River during the period April-September 1935 will not exceed 35,000 acre-feet and may fall as low as 30,000 acre-feet. The July-September discharge was 16,560 acre-feet; in 1934 it was 8060 acre-feet. The July-September discharge for 1935 will probably reach 12,000 acre-feet and, under favorable conditions of summer precipitation, may go as high as 14,000 acre-feet.

Little Bear River

The Little Bear River watershed has a lower average elevation than the Blacksmith Fork. There are no snow courses on this watershed. Conditions on the Blacksmith Fork watershed and on the Ogden watershed immediately to the south indicate a runoff which will probably exceed that in 1934 by approximately 50 per cent. Melting is progressing and the stream is rising but is remaining quite clear. It is expected that some of the spring flow on the Little Bear River will be stored in the Hyrum Dam for use this season.

WEBER RIVER

The major portion of the water in the Weber River comes from four main branches: Chalk Creek, Lost Creek, East Canyon, and the main Weber above Oakley. Snow courses on this watershed are located at Smith and Morehouse, Redden Mine, Beaver Creek Nursery, Parley's Canyon Summit, and Washington Long Lake(on the headwaters of the Provo River). Storms during the past month have materially improved the water prospects on the Weber River. The snow cover, as indicated by the measurements at the Smith and Morehouse, Redden Mine, and Washington Long Lake courses, is approximately 56 per cent of a long-time average. The Parley's Canyon snow course has been measured for only two years and no normal has been established. The snow cover on this course, however, is more than three times what it was on April 1, 1934. It is believed that the runoff from the East fork of the Weber River will bear approximately the same relationship to the runoff in 1934 as that on the main river.

The runoff during the period April-September(1933) at Oakley was 120,280 acre-feet; during 1934, it was 43,340 acre-feet. The July-September runoff for the corresponding years was 17,320 and 6630 acre-feet. Based on a long-time average snow cover alone, the April-September runoff during 1935 should approximate 83,000 acre-feet and during July-September approximately 17,000 acre-feet. Due to the abnormally dry condition of the watershed and the deficiency of a low cover, the foregoing amounts may be somewhat reduced. Deficient spring precipitation and abnormally high temperatures will, of course, further reduce these estimates. Under normal conditions of spring precipitation and temperature, it is believed that the following runoff may be expected from the Weber River at Oakley:

April-September(1935)	Maximum:	83,000 acre-feet
	Minimum:	75,000 " "
July-September(1935)	Maximum:	15,000 acre-feet
	Minimum:	12,000 " "

P.H. Sorenson, Water Commissioner on the Weber River, estimated that the Echo Reservoir will probably fill to 50,000 acre-feet, which is 67.5 per cent of its capacity. He also estimates that the East Canyon Reservoir will probably reach about 14,000 acre-feet, which is approximately 50 per cent of its capacity. On April 1, the Echo Reservoir contained 25,000 acre-feet and the East Canyon reservoir, 7300 acre-feet.

The April-September discharge at Oakley during 1934 was 27.4 per cent of a long-time average. The probable runoff this year will slightly exceed 50 per cent of the long-time average. In spite of this prospective water shortage, it is believed that a careful use and a conservation of the water-supply under the Weber River system, together with cooperation between water users, will make possible the bringing to maturity of at least 75 per cent of a normal crop acreage.

OGDEN RIVER

There are no satisfactory snow courses on the Ogden River, but the snow cover on the Blacksmith Fork and the Weber River watersheds indicates a possible runoff from the Ogden River approximately 50 per cent greater than that in 1934. The April-September runoff in 1934 was 12,300 acre-feet and the July-September runoff was 4320 acre-feet. It is estimated that the April-September runoff in 1935 will be approximately 18,000 acre-feet and that for July-September approximately 6000 acre-feet.

PRICE RIVER

The Price River supplies water for the area in the vicinity of Price, Helper, Wellington, and Cleveland in Carbon and Emery Counties. The Huntington-Horseshoe, Gooseberry Reservoir Site, and Mammoth Ranger Station snow courses are located on the headwaters of this stream. This year two new courses were established in Pleasant Valley -- one at Scofield (Elev. 7600), the other at the Dry Valley Summit between Scofield and Colton. Drainage from all these courses runs into the Pleasant Valley Reservoir. In addition, the snow course on the Indian Canyon Summit represents the snow cover drainage into Willow Creek and the Price River at Castlegate. The snow on the Price River watershed this year is 60 per cent better than for 1934 and slightly less than for 1933. Snow cover above 7500 feet is uniform and continuous. The south and west slopes are bare below 7500 feet. The soil is wet on the surface but quite dry below 12 inches. A rapid, prolonged rise in temperature will yield considerable water for storage. A cold backward spring will reduce storage possibilities by prolonging the natural flow.

The storage in the Scofield Reservoir on April 1, 1934 was 10,000 acre-feet. The spring inflow was 2000 acre-feet, making a total of 12,000 acre-feet in storage at the beginning of the distribution season. In addition to this 12,000 acre-feet, 1000 acre-feet were pumped out below the level of the outlet. On April 1 this year the water level in the reservoir stood at the outlet, indicating no gravity storage. The total yield of the Price River, as recorded at the Heiner Gage near Helper during 1934, was 16,500 acre-feet. The snow cover on the watershed indicates a possible total yield this year of 23,000 acre-feet. If runoff occurs early, some of this can be held in storage for late-season use; if runoff is delayed, it is believed the primary rights will absorb the entire natural flow, leaving none available for the storage rights. Abnormal conditions with respect to spring precipitation and temperatures will materially affect the foregoing estimates of the yield.

HUNTINGTON CREEK, COTTONWOOD CREEK, FERRON CREEK

The Huntington, Cottonwood, and Ferron Creeks furnish water for the major portion of Emery County in the vicinity of Huntington, Castle Dale, Orangeville, Emery, and Ferron. The snow courses representing these watersheds are all high, the Huntington-Horseshoe being 9750, the Great Basin Experiment Station Alpine 10,200, and Seeley Creek Ranger Station 10,200 feet in elevation. The snow cover at these high elevations apparently increased from Huntington Creek on the north to Seeley Creek on the south. A slightly better runoff can, therefore, be expected from Cottonwood and Ferron Creeks per unit of area than from Huntington Creek. The snow cover on these three courses approaches closely to that on April 1, 1933. The low snow cover, however, is markedly deficient and will materially reduce the expected runoff from these watersheds. Due to the deficient low snow cover and the dry condition of the watershed under the snow, it is estimated that the runoff from Huntington, Cottonwood, and Ferron Creeks will exceed by about 60 per cent that received in 1934.

SALT LAKE WATERSHEDS

These watersheds include City Creek, Immigration Creek, Parley's Creek, Big Cottonwood Creek, and Little Cottonwood Creek. The only snow courses on these areas are those located at Lamb's Canyon, Parley's Canyon Summit and Silver Lake in Big Cottonwood Canyon. Only one measurement is available at Lamb's Canyon and

two measurements at Parley's Canyon. The measurements on Brighton Basin snow course indicate a snow cover approximately 30 per cent greater than in 1934 and slightly less than in 1933. The water content of the snow cover increases with elevation to a maximum of 32.75 inches of water at Lake Mary (Elev. 10,000). There are 15.5 inches at Silver Fork and 16.5 inches at Mill D Flat (Elev. 7300). The heavy cover above Brighton Basin and the relatively heavy cover, as indicated by measurements in Lamb's Canyon and on Parley's Canyon Summit, will increase the yield from the Salt Lake City watersheds. It is believed, in spite of the dry condition of the watershed, that the yield during 1935 will approximate 20,000 acre-feet during the April-September period and 4000 acre-feet during the July-September period.

The storage in Mountain Dell Reservoir on April 27 was 2319 acre-feet. The capacity of this reservoir is 3200 acre-feet, and it will probably fill to capacity this year.

In spite of the marked improvement in water prospects over that of 1934, there will still be a water shortage in the area served by the Salt Lake City watersheds. However, with careful conservation and utilization of the available water, this shortage should not be serious.

PROVO RIVER AND UTAH LAKE

Provo River

Snow courses on the Provo River are located at Daniels Creek Summit, Soapstone Ranger Station, Lake Tryol, Lost Lake, Washington Long Lake, and the Beaver Creek Nursery on Beaver Creek. The high snow courses indicate a snow cover 45 per cent greater than on April 1 of 1934. In addition to the high snow cover, there is more low snow on the Provo watershed than there was on the same date a year ago. On April 1, 1934 there was no snow at the Beaver Creek Nursery, and it was patchy at the Soapstone Ranger Station at an elevation of 8100 feet. At the Daniels Creek Summit the snow contained only 3.5 inches of water. This year at the same stations on the same dates, there were 6.2, 8.9, and 12.5 inches of water. Winter-snow-melting has taken place at the lower elevations, and the south and west slopes for the most part are bare up to nearly 8000 feet elevation. It is this deficiency of low snow that will reduce, if not eliminate, spring high water from the Provo River. The snow cover on April 1, together with the abnormally dry condition of the soil under the snow and the deficiency in low snow cover, indicates that the probable runoff from the Provo River for the April-September period will not exceed 100,000 acre-feet; the July-September runoff will probably not exceed 35,000 acre-feet. These estimates are slightly less than the runoff which occurred in 1933 from a lighter snow cover. The deficiency is due to the expected high absorption losses this year. In 1933 probably not more than 5000 acre-feet of flood water was discharged into Utah Lake from the Provo River. The amount of flood water that will reach the Lake this year depends upon the rapidity with which the runoff takes place. If the temperature during April and May remains low, little flood runoff can be expected to reach to the lake. On the other hand, if the April-May temperatures are abnormally high, probably from 10,000 to 15,000 acre-feet may reach the lake.

The tabulation showing the water in storage on April 1, 1935 shows 118,000 acre-feet available to the Pelican Point Pumps. In the absence of abnormally high temperatures, it is doubtful if more than 6000 to 10,000 acre-feet will be available for storage from the Provo River after April 1. It is estimated that a total yield of 76,000 acre-feet may be expected from Utah Lake and Jordan River this year, as compared to 96,000 acre-feet in 1934.

AMERICAN FORK RIVER DRAINAGE

The snow cover at the Dutchman Ranger Station in American Fork Canyon shows an increase of nearly 100 per cent over that on April 1, 1934. The ground is very dry under the snow and the water is being absorbed as rapidly as melting takes place. American Fork River had not increased its flow appreciably on April first. Beginning this year, the snow cover was measured at Mutual Dell (Elev. 6000). Altamont (Elev. 7000), and the Timpanogos Divide (Elev. 8000). Measurements on these courses showed a marked increase in snow cover with elevation, with 4 inches of water at Mutual Dell, 11.6 inches at Altamont, and 16.6 inches at Timpanogos Divide. The south and west slopes were bare up to approximately 8000 feet. This deficiency of low snow will materially reduce the runoff. There will probably be no high water from the American Fork River in 1935 and the total April-September flow will probably not exceed that in 1934 by more than 75 per cent.

HOBBLE CREEK, SPANISH FORK RIVER, PAYSON CREEK

The snow cover on these watersheds is considerably better than in 1934. The high snow is approximately twice that in 1934 and only the south and west slopes are bare at the lower elevations. Based on snow-cover conditions on adjoining watersheds, the April-September runoff from these streams will probably exceed by about 75 per cent that received in 1934.

SAN PITCH RIVER

The snow cover on the west side of the Wasatch Plateau which drains into the San Pitch River is approximately 35 per cent greater than that of 1934 and approaches the snow cover on the watershed on April 1, 1933. Much of the low snow has melted and has been absorbed by the soil. The earth's mantle under the remaining cover is extremely dry and will absorb much of the water. The runoff from this watershed cannot be expected to equal that in 1933 but will probably be from 40 to 50 per cent better than that in 1934. On March 25 the Gunnison Reservoir was still approximately 20 feet below the high-water level. Little additional water for storage in this reservoir can be expected.

SEVIER RIVER

The high snow cover on the Sevier River watershed contains approximately 100 per cent more water than on April 1, 1934. The low cover is spotted and deficient in most sections. At Panguitch Lake where a year ago there was no snow on April 1, the cover now contains 6.5 inches of water; at the Asa-Virgin Summit it contains 6 inches of water as compared to no snow last year; at the Harris Flat Ranger Station, it contains 14.1 inches as compared to 2.5 inches a year ago; at Fish Lake, it contains 5.9 inches of water as compared to no snow a year ago; and at the Gooseberry Ranger Station the water content is practically twice what it was a year ago. The divide between the Sevier and Virgin Rivers received heavy precipitation during March of this year. New snow courses established at Duch Creek Spring, Cedar Breaks, and Bryce Canyon all indicate a relatively heavy snow cover. Measurements of soil moisture under the cover on the high watersheds and in the Sevier River Basin all indicate a dry sub-soil. Considerable melting had taken place prior to April 1, but little of the water from this melting had reached the streams. The absorption losses from the snow cover on the Sevier River watershed can be expected to be abnormally high, in view of the extreme drought of 1934.

There was no hold-over storage in any of the reservoirs on the Sevier River system. The Piute Reservoir on April 1, 1935 contained approximately the same amount of water as it did on April 1, 1934. The Sevier Bridge Reservoir contained 20,000 acre-feet less than it did on the same date in 1934.

Based on snow-cover measurements and watershed conditions under the snow, it is estimated that the primary rights in the Sevier River Basin can expect approximately a 20 per cent delivery with little or no water for secondary rights. Users depending on storage water are in worse condition than they were in 1934. Some additional storage can be expected during the first fifteen days of April, if the temperatures rise sufficiently high to cause widespread melting. After April 15, it is expected that the primary users will utilize the entire flow of the river.

Soil-moisture conditions make it necessary to irrigate before planting or to irrigate the crops up. This unusually dry condition of the soil serves to emphasize the seriousness of the water shortage in Sevier Valley. Careful use of the existing water-supply will be absolutely necessary if the serious effects of a water shortage similar to that in 1934 are to be averted.

COAL CREEK

The high snow cover on the Coal Creek Watershed contains approximately 150 per cent more water than on April 1, 1934. The snow-line on April 1 had receded to approximately 8000 feet on the south and west slopes, but there was still considerable snow in the canyons down as low as 7000 feet elevation. The ground is abnormally dry under the snow cover, and it is expected that high absorption losses will cut down the yield from the snow cover. Measurements show more snow on the watershed than on April 1, 1933, but due to the abnormally dry sub-soil it is estimated that the runoff from Coal Creek this year will be from 40 to 50 per cent greater than for 1934 but less than for 1933.

BEAVER RIVER

The snow cover on the Beaver River watershed on April 1 was approximately 100 per cent greater than on the same date in 1934. In spite of the relatively heavy high cover, for the most part, the lower watersheds are bare and it is estimated that there will be little high water from the Beaver River this year, although the prospects for a primary supply will be considerably better than a year ago. Some melting has taken place and the water is being absorbed by the surface mantle as fast as it leaves the snow. On April 1, the Beaver River had not increased its flow to any extent. It is estimated that the natural flow of beaver river this year will be approximately 75 per cent greater than in 1934. In 1934 the April-September discharge of the Beaver River was 9619 feet; the July-September discharge was 2,669 feet. The April-September runoff in 1935 will probably not exceed 18,000 acre-feet and the July-September runoff, 5000 acre-feet. On March 23, there was in storage in the Rocky Fork reservoir 6100 acre-feet. There were 8500 acre-feet in storage on the same date in 1934. The opinion is expressed by the water commissioner on the Beaver River that there will be no water available for storage in the Rocky Fork Reservoir after April 1, 1935.

STRAWBERRY RESERVOIR

The water content of the snow cover on the Daniels Creek Summit on April 1, 1935 was more than three times that on April 1, 1934. The area of heavy snow extended eastward across the Strawberry Valley about five miles. On the east side of the valley, the snow cover had become quite thin. Measurements at the East Portal of the Strawberry Tunnel showed 9 inches of water this year as against 1.68 inches in 1934. On April 1, 1934 there were 8770 feet of water available in the Strawberry Reservoir. By lowering the outlet during the summer of 1934 an additional 5500 acre-feet was made available, so that the total storage available on April 1, 1935 was 12,660. With the increased snow cover on the Strawberry Watershed and a normal spring precipitation and temperature, the Strawberry Reservoir should yield in 1935 between 25,000 and 35,000 acre-feet.

NORTH SIDE OF THE UINTA MOUNTAINS

The north side of the Uinta Mountains received less snow during the past winter than any other portion of the state. Snow-cover measurements on Blacks Fork and at the Hole-in-the-Rock Ranger Station indicate a water content about equal to that on April 1, 1934. It is therefore believed that the water situation in Daggett County is as bad, if not worse, than that in 1934.

SOUTH SIDE OF THE UINTA MOUNTAINS

Ashley Creek

The snow course on the Ashley Creek is located at King's Cabin (Elev. 8500). The snow cover at this point is approximately 130 per cent greater than in 1934, but there is a marked deficiency of low cover. The snow-line in the vicinity of Vernal has receded to approximately 8000 feet. The ground under the snow is damp to a depth of about 8 inches. Below the 8 inches of damp earth, the soil is hard and dry. There had been no melting at the higher elevations on April 1, but the low cover had all been absorbed by the dry soil. On April 1, the streams had not shown any increase in discharge. In spite of the heavier snow cover at high elevations, it is believed that the absence of low snow and the extremely dry condition of the watershed will reduce the water yield during 1935 to approximately 36,000 acre-feet for the April-September period and 11,000 acre-feet for the July-September period.

Uinta River

The snow cover on April 1 at Paradise Park and Mosby Mountain exceeded that of a year ago by 91 per cent. The snow-line had receded to approximately 8000 feet and soil was dry about 2 inches below the surface. Melting is taking place near the snow-line and the water is all being absorbed by the soil. On April 1, the streams had not yet begun to rise. In spite of the fact that there is a 91 per cent increase in snow cover, the dry soil and the receding snow-line will reduce the estimated yield of the Uinta River at Neola to approximately 45,000 acre-feet for the April-September period and 22,000 acre-feet for the July-September period. This is an increase of approximately 50 per cent over 1934.

LAKE FORK

The snow cover at Lake Fork (Elev. 10,500) is approximately two and one-half times that of 1934. The snow-line had receded to about 7000 feet on the north

and west slopes and 8000 feet on the south and east slopes. The soil under the snow was open and dry. Some melting had taken place and the water was being absorbed by the soil. Below the timber line, more than 50 per cent of the snow cover had disappeared. The snow-line was receding quite rapidly, but the streams had not increased in discharge. The prospects for water from the Lake Fork in 1935 are somewhat better than they were in 1934. The yield this year will depend largely upon the precipitation and temperatures during the spring months. If the melting period is marked by low temperatures, the water situation will be little better than for last year. If abnormally high temperatures occur during the next two months, there will be a considerable amount of early water but a deficiency later in the season. In general, it is estimated that the water-supply from the Lake Fork this year will exceed that of 1934 by approximately 50 per cent.

VIRGIN RIVER

Considerable precipitation has fallen on the Virgin River Watershed during the past season. The ranges in Washington and Kane Counties are in better condition than they have been for years, due to this heavy precipitation. The snow cover as measured at Cedar Breaks, Duck Creek Spring, Webster Flat, and Co-op Flat indicates a much larger amount of water in snow storage than in 1934. It is estimated that the water-supply for the Virgin River during 1935 will equal that in 1933 and will exceed that in 1934 by more than 100 per cent.

SANTA CLARA RIVER

Water prospects for the Santa Clara River during 1935 are considerably better than for 1934. A snow course was established this year in Deer Park above Pine Valley at an elevation of 9000 feet. The water content of the snow cover at this course on April 1 was 15.8 inches. The heavy precipitation during the past season on the Santa Clara Watershed restored the moisture condition to approximately normal condition and the ranges are considered to be in fairly good shape. The water-supply available from the Santa Clara River should be double that for 1934 and should approach that received for 1933.

THE LA SAL AND BLUE MOUNTAIN AREAS

The snow courses on the La Sal and Blue Mountain Areas indicate approximately twice the water in snow storage than was available on the same date in 1934. The valley areas have received considerable precipitation during the last two months and the soil moisture conditions are considered to be satisfactory. The runoff from the La Sal and Blue Mountains this year should approximately double that in 1934.

SUMMARY

The valley precipitation from November 1, 1934 to April 1, 1935 for the state as a whole has been reported by the U.S. Weather Bureau as being about normal with deficiencies and excesses in certain sections of the state. The accumulated snow cover fell on a dry watershed. There has been some winter melting and the ground under the snow has never been frozen at any time during the winter. The high snow cover as measured on April 1 approaches that on the watersheds in the spring of 1933, and except for the unprecedented dry condition of the soil the

water-supply for 1934 might reasonably have been expected to be about equal to that of 1933, which was sufficient, by careful use, to mature most crops.

The annual snow surveys under the state-wide network of snow courses completed on April 1 indicated that the snow cover had disappeared from the south and west slopes and the lower elevations of the watersheds with no appreciable rise in stream-flow. There was a marked deficiency of low snow cover. The ground under the snow was still comparatively dry, and in the valleys, except for the first 12 to 15 inches, the soil was extremely dry.

Due to the deficient low snow cover, together with the abnormally dry condition of the watershed, the 1935 water-supply from April 1 to September 30 will be equal to the water already in existing reservoirs, which is about 40 per cent, plus the runoff from the snow remaining on the watersheds. No one, of course, can forecast with certainty what the water-supply will be, because of the dry ground condition and the absence of low snow. By assuming normal spring precipitation and temperature, it appears that, for the state as a whole, the high water rights will be about the same as in 1934. The storage supply will be less than for 1934, but the supply for primary rights will be considerably more than for 1934 but less than that received in 1933. There are a few areas in the state, particularly in the southern counties, that will approximate a normal water-supply.

The following tabulation is a brief summary of the water supply that may be expected from the principal water-sheds of the state during 1935.

Table 1. Summary tabulation of water-supply forecast for Utah, 1935 (Continued)

Name of Stream or Basin	Runoff by Period (thousands acre-feet)						Percent increase in 1935 Runoff over 1934		1935 Runoff in percent of long-time Average	
	1935*		1934		1933					
	I**	II**	I	II	I	II	I	II	I	II
Bear River										
Above Bear Lake	30,000	--	34,000	--	149,700	--	47	--	--	--
Bear Lake Drainage	50,000	--	31,200	--	94,800	--	140	--	--	--
Cache Valley Streams										
Cub River	--	--	--	--	--	--	80	--	--	--
Maple Hi:h Summit Creek, etc.	--	--	--	--	--	--	60	--	--	--
Logan River	100,000	34,000	50,700	16,500	112,800	40,800	97	103	59	61
Blacksmith Fork River	35,000	14,000	18,480	8,000	47,900	16,500	90	76	45	55
Little Bear River	--	--	--	--	--	--	50	--	--	--
Weber River at Oakley	83,000	15,000	43,300	6,600	120,300	17,300	92	128	56	46
Ogden River at Huntsville	18,000	6,000	12,300	5,400	62,800	7,600	40	46	27	66
Price River at Helper	23,000	--	16,500	--	54,800	--	39	--	22	--
Huntington, Cottonwood Creeks	--	--	--	--	--	--	60	--	--	--
Salt Lake Watersheds										
Big Cottonwood Creek	20,000	4,000	12,800	2,400	38,300	7,800	57	67	42	33
Provo River - Utah Lake										
Provo River at Provo	100,000	35,000	37,200	14,170	115,760	33,990	172	147	52	67
American Fork River	--	--	--	--	--	--	75	--	--	--
Hobble Creek and Sp.Fork River	--	--	--	--	--	--	75	--	--	--

* Forecast only

** I = Period from April to September; II = Period from July to September

Name of Stream or Basin	Runoff by Period (thousands acre-feet)						Percent increase in 1935 Runoff over 1934		1935 Runoff in percent of long-time Average	
	1935*		1934		1933					
	I**	II**	I	II	I	II	I	II	I	II
San Pitch River	—	—	—	—	—	—	50	—	—	—
Sevier River	***	***	10% delivery		—	—	—	—	—	—
Coal Creek	Equal to 1933		—	—	—	—	50	—	—	—
Beaver River	18,000	5,000	9,620	2,660	26,500	6,650	84	88	50	63
North Side Uinta Mts.	Same as 1934		—	—	—	—	—	—	—	—
South Side Uinta Mts.										
Ashley Creek at Vernal	36,000	11,000	23,100	8,000	36,600	10,400	56	34	50	58
Uinta River at Neola	45,000	22,000	31,390	14,840	57,780	25,430	44	49	45	58
Lake Fork	—	—	—	—	—	—	50	—	—	—
Strawberry Reservoir	25,000 to 30,000 during season									
Virgin River	—	—	—	—	—	—	100	—	—	—
Santa Clara River	—	—	—	—	—	—	100	—	—	—
La Sal and Blue Mt. Areas	—	—	—	—	—	—	100	—	—	—

(Concluded)

* Forecast only
** I = Period from April to September; II = Period from July to September
*** Primary 20% delivery storage below 1934

Table 2. Contents of Reservoirs(Acre-feet) on April 1, for 1933, 1934, and 1935[1]

Name	1933	1934	1935	Remarks
Bear Lake	440,000	370,000	30,000	Contents calculated above low point reached in 1934.
East Canyon	19,000	14,700	7,300	Estimated to fill to 14,000 acre-feet.
Echo	25,000	(a) 35,800	25,500	(a) 11,000 acre-feet were held over from 1933 to 1934. Estimated to fill to 50,000 acre-feet.
Rocky Ford	10,000	8,500	6,500	
Otter Creek	21,160	17,600	16,000	
Piute	40,650	27,600	26,600	
Sevier Bridge	59,500	48,200	28,600	
Scofield		10,000	1,000	
Strawberry	13,780	8,770	(b) 12,660	(b) 5500 acre-feet of this amount was made available by lowered outlet.
Utah Lake	(c)200,000	(d) 124,000	118,000	(c) 28,000 acre-feet additional was made available in 1933 by lowering channel. (d) 112,000 acre-feet additional was made available in 1934 by Pelican Point pumps. Net yield in 1934 was 93,000 acre-feet.

[1] Net yield = contents on April 1, plus the summer inflow, less evaporation loss

UTAH COOPERATIVE SNOW SURVEYS - 1934 - 35
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation (Feet)	Date of Survey	Depth Of Snow (Inches)	Water Content Of Snow (Inches)	Density In percent	Corresponding Water Content: 1932	1933	1934	Normal Water Content In Snow To April 1. (Inches)	Water Content of Snow On Date Of Survey (% of Normal)	Corresponding Percent Last Year	Moisture Condition Under Snow
CACHE VALLEY STREAMS:													
Franklin Basin	1	8270	3/28/35	65.6	24.4	37.6	38.6	28.2	12.6	37.8	64.5	33.3	Dry
Tony Grove R. S.	3	6250	3/26/35	24.9	8.6	34.5	16.1	13.1	--	9.9	86.8	--	Dry
Tony Grove Lake	2	8300	3/27/35	75.6	29.1	38.4	54.2	38.4	19.2	46.8	62.1	40.7	Dry
Spring Hollow #3	4	7000	3/28/35	39.8	14.5	36.4	34.3	15.5	--	20.7	70.0	--	Dry
Spring Hollow #4	5	8000	3/28/35	82.0	28.9	35.2	36.5	25.6	12.4	33.1	87.3	37.5	Dry
Mt. Logan	6	9000	3/28/35	78.7	27.9	35.4	42.3	28.4	18.2	41.0	68.5	44.5	Dry
Smithfield Spring	7	7500											
Blacksmith Fork	8	9000	3/28/35	35.3	11.7	33.1	32.3	15.0	5.5	*	--	44.5	Dry
Garden City Creek	9	8200	3/26/35	53.6	16.4	30.6	31.4	17.7	4.9	*	--	--	Dry
OGDEN RIVER:										*			
Wheeler Basin	11	6000					28.2	--	--	*			
Monte Cristo	12												
WEBER RIVER:										*			Dry
Parley's Canyon Sum.	15	8000	3/28/35	41.2	15.0	36.5			4.4				
Beaver Creek Nursery	24	7500	3/23/35	19.9	6.2	31.0	9.8	5.4	--	8.8	70.5	--	Dry
Washington Lake	27	10300	3/26/35	79.3	28.0	35.5	36.8	23.7	18.4	41.4	67.8	44.5	Dry
Chalk Creek Basin	29	7000	3/26/35	3.5	1.8	51.0	--	--	--	*			
Smith & Morehouse	30	7600	3/26/35	33.6	8.8	28.8	17.0	11.8	3.3	16.8	53.0	19.7	Dry
Redden Mine	31	8700	3/26/35	41.1	12.8	31.2	25.4	18.4	10.0	29.5	43.4	33.9	Dry
BEAR RIVER & BEAR LAKE													Dry
Garden City Creek	9	8200	3/26/35	53.6	16.4	30.6	31.4	17.7	4.9	*	--	--	
Headwaters Bear River	10												
PRICE RIVER:													Dry
Indian Canyon	40	9100	3/26/35	40.6	10.0	24.6	15.3	9.9	5.6	*	--	--	Wet
Gooseberry Reservoir	41												

* Not Measured

UTAH COOPERATIVE SNOW SURVEYS - 1934 - 35
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation (Feet)	Date of Survey	Depth Of Snow (Inches)	Water Content Of Snow (Inches)	Density In Percent	Corresponding Water Content: 1932	1933	1934	Normal Water Content In Snow To April 1 (Inches)	Water Content Of Snow On Date Of Survey (% of Normal)	Corresponding Percent Last Year	Moisture Condition Under Snow
PRICE RIVER: (CONT'D)													
Mammoth Ranger Sta.	42	8700	3/29/35	56.4	18.7	33.3	25.5	20.0	10.6	*			Wet
Huntington Horseshoe	43	9750	3/28/35	68.5	23.2	33.8	30.6	22.5	15.3	*			Wet
HUNTINGTON, COTTONWOOD AND FERRON CREEKS:													
Huntington Horseshoe	43	9750	3/28/35	68.5	23.2	33.8	30.6	22.5	15.3	*			Wet
G.B.E.S. Alpine	47	10200	3/26/35	56.2	18.1	32.2	26.5	19.0	14.8	*			
Seeley Creek Ranger S.	48	10000	3/26/35	58.1	19.8	34.1	23.5	17.7	10.5	*			
SALT LAKE WATERSHEDS:													
Parrish Creek Summitt	13	9000	3/28/35	57.0	19.0	33.7	*	*	*	*			Dry
Lambs Canyon	14	6000	3/29/35	41.5	14.1	34.0	*	*	*	*			Dry
Parleys Canyon Summitt	15	8000	3/28/35	41.2	15.0	36.4	*	*	4.4	*			Dry
Silver Lake	16	8900	3/27/35	58.6	21.0	35.8	30.1	25.1	16.1	*		51.5	
PROVO RIVER & UTAH LAKE:													
Dutchman Ranger Sta.	17	8000											Dry
Cave Camp	18	5000	No Snow										Dry
Mutual Dell	19	6000	3/28/35	9.3	4.0	43.0				*			Dry
Altamont	20	7000	3/28/35	34.1	11.6	34.0				*			Dry
Timpanogos Divide	21	8000	3/28/35	48.5	16.6	34.2				*			Dry
Hobble Creek "	22	8000	Not Measured										Wet
Daniels-Strawberry Sum	23	8100	3/27/35	39.3	12.5	31.8	20.7	13.6	3.5	*			Wet
Beaver Creek Nursery	24	7500	3/23/35	19.9	6.2	31.0	9.8	5.4	0	8.8	70.3	*	Dry
Soapstone Ranger Sta.	25	8100	3/24/35	33.6	8.98	26.8	14.1	8.3	2.5	14.4	62.5	16.3	Dry

*Record Too Short To Establish Normal.

UTAH COOPERATIVE SNOW SURVEYS - 1934 - 35
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation (Feet)	Date Of Survey	Depth Of Snow (Inches)	Water Content Of Snow (Inches)	Density In Percent	Corresponding Water Content: 1932	1933	1934	Normal Water Content In Snow To April 1. (Inches)	Water Content Of Snow On Date Of Survey (% of Normal)	Corresponding Percent last Year	Moisture Condition Under Snow
PROVO RIVER AND UTAH LAKE: (CONT'D)													
Lake Tryal	26	9900	3/25/35	72.2	23.5	32.6	29.3	21.0	16.4	31.8	74.0	48.5	Dry
Washington-Long Lake	27	10300	3/26/35	79.3	28.0	35.3	36.0	23.7	18.4	39.2	71.4	44.5	Dry
Lost Lake	28	10000	3/25/35	64.7	21.5	33.2	25.9	18.5	15.2	29.6	72.7	48.5	Dry
SAN PITCH RIVER:													
Mammoth R. S.	42	8700											
G.B.E.S. Oaks R. S.	44	7400	3/25/35	20.4	6.1	29.9	7.8	6.3	None	*			Dry
G.B.E.S. Oaks Hdqtrs.	45	8700	3/25/35	45.5	14.4	31.6	18.2	15.3	10.8	*			Dry
G.B.E.S. Meadows	46	9800	3/26/35	60.4	19.4	32.1	24.0	21.4	13.5	*			Dry
G.B.E.S. Alpine	47	10200	3/26/35	56.2	18.1	32.2	26.5	19.0	14.0	*			Dry
SEVIER RIVER:													
Gooseberry Ranger Sta.	50	8700	3/26/35	34.0	10.0	29.4	12.2	7.0	5.3	*			Dry
Kimberley Mine	52	9250	3/24/35	33.4	8.8	28.9	14.0	10.1	5.5	*			Dry
Fish Lake	51	9000	3/27/35	15.2	5.9	38.8	4.8	3.0	None	*			Dry
Widstoe-Escalante Sum.	53	9500	3/25/35	36.5	9.5	26.0	11.0	6.3	2.1	*			Dry
Bryces Canyon	54	8000	3/25/35	32.0	8.4	26.2				*			Dry
Panguitch Lake	55	8400	3/28/35	25.5	6.5	25.4	10.2	5.4	None	*			Dry
Asa-Virgin Summitt	56	7000	3/25/35	15.0	6.0	40.0	--	-	--	*			Dry
Harris Flat Rng'r Sta.	57	7500	3/27/35	44.0	14.1	32.0	16.4	8.3	2.5	*			Dry
Duck Creek Spring	58	8500	3/27/35	59.8	20.5	34.2	--	--	--	*			Dry
Cedar Breaks	59	10000	3/26/35	68.7	23.1	33.6	--	--	--	*			Dry
COAL CREEK:													
Cedar Breaks	59	10000	3/26/35	68.7	23.1	33.6	--	--	--	*			Dry
Co-op Flat	60	9500	3/27/35	53.3	18.1	33.9	22.7	13.7	7.4	*			Dry
Webster Flat	61	9200	3/26/35	53.0	18.0	33.9	28.7	13.6	8.5	*			Dry

*Record Too Short to Establish Normal.

UTAH COOPERATIVE SNOW SURVEYS - 1934 - 35
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation (Feet)	Date Of Survey	Depth Of Snow (Inches)	Water Content Of Snow (Inches)	Density In Percent	Corresponding Water Content: 1932	1933	1934	Normal Water Content In Snow To April 1. (Inches)	Water Content Of Snow On Date Of Survey. (% of Normal)	Corresponding Percent Last Year	Moisture Condition Under Snow
BEAVER RIVER:													
Merchants Valley	63	8600	3/27/35	38.5	11.1	28.8	10.5	6.2	4.8	*			Dry
VIRGIN RIVER:													
Asa-Virgin Summitt	56	7000	3/25/35	15.[illegible]	6.0	40.0				*			Dry
Harris Flat R. S.	57	7500	3/27/35	44.0	14.1	32.[illegible]	16.4	8.3	2.5	*			Dry
Duck Creek Spring	58	8500	3/27/35	59.8	20.5	34.2				*			Dry
Cedar Breaks	59	10000	3/26/35	68.7	23.1	33.6				*			Dry
Co-op Flat	60	9500	3/27/35	53.3	18.1	33.9	22.7	13.7	7.42	*			Dry
Webster Flat	61	9200	3/26/35	53.0	18.0	33.9	28.7	13.6	8.5	*			Dry
SANTA CLARA RIVER:													
Deer Park Pine Valley	62	9000	3/27/35	61.8	15.8	25.5				*			Dry
LA SAL & BLUE MTN., AREA:													
La Sal Mountain	64	9000	3/25/35	26.7	7.7	28.8	5.6	7.5	None	*			Dry
Buckboard Flat	65	9500	3/26/35	56.9	15.85	27.8	15.9	6.5	6.5	*			Dry
STRAWBERRY RESERVOIR:													
Daniels-Strawberry Sum.	23	8000	3/27/35	39.3	12.5	31.8	20.7	13.6	3.5	*			Wet
East Portal	33	8540											Wet
NORTH SIDE UINTA MTS.:													
Blacks Fork	34	9500	3/23/35	28.4	7.1	25.4	5.5	8.8	6.3	*			Dry
Hole-In-The-Rock	35	9359	3/25/35	15.9	2.8	17.6	5.4	4.0	3.6	*			Dry
SOUTH SIDE UINTA MTS.:													
Lake Fork Mountain	36	10500	3/26/35	36.8	10.1	27.4	11.4	8.4	4.3	*			Dry

*Record Too Short To Establish Normal.

UTAH COOPERATIVE SNOW SURVEYS - 1934 - 35
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation (Feet)	Date of Survey	Depth Of Snow (Inches)	Water Content Of Snow (Inches)	Density In Percent	Corresponding Water Content: 1932	1933	1934	Normal Water Content In Snow To April 1. (Inches)	Water Content Of Snow On Date Of Survey. (% of Normal)	Corresponding Percent Last Year	Moisture Condition Under Snow
SOUTH SIDE UINTA MTS.: (CONT'D)													
Paradise Parks	37	10500	3/27/35	41.8	12.1	29.0	15.3	9.7	7.6	*			
Mosby Mountain	38	9500	3/26/35	41.0	11.5	28.0	13.2	8.5	6.0	*			
Kings Cabin	39	8500	3/27/35	37.8	9.7	25.7	17.1	4.3	4.2	*			
Indian Canyon	40	9100	3/26/35	40.6	10.0	24.6	15.3	9.9	5.6	*			

*Record too short to establish normal.