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by

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Irrigation Division
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Soil Conservation Service
United States Weather Bureau

Utah State Engineer
United States Forest Service
United States Park Service

United States Geological Survey
Cooperating

WATER SUPPLY FORECAST FOR UTAH, 1943

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During the period from March 28 to April 1, snow surveys were completed on all of the Utah cooperative snow courses. The water content in snow storage at this time may be taken as indicative of the April-September and July-September runoff with, of course, later modification of estimates in accordance with subsequent precipitation and temperature conditions.

This report presents:

1. Forecasts of April-September and July-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 streamflow quantitatively.
2. A brief statement of conditions on other watersheds of the state, based on available reports.
3. A water forecast summary by drainage basins.
4. A comparison of runoff from principal Utah streams.
5. Storage in reservoirs as of April 1.
6. Results of annual snow surveys grouped according to stream basins.

Bear River at Harer, Idaho.

There is a United States Geological Survey gaging station at Harer, Idaho. This station is about 10 miles above the Stewart Dam at which the intake to the Rainbow feeder canal is located. The record shows the 24-year average April - September runoff at Harer to be 286,000 acre feet, with 59,700 acre feet of this running off during the July-September period. During 1942 the runoff for these periods was 191,800 and 26,700 acre feet respectively.

The water content of the snow cover measured at the Goodman Ranch and on the west of Bear River shows an increase of 52 percent on the lower area around the Goodman Ranch, and an increase of 15 percent on the higher areas, over 1942. With normal spring precipitation and temperature the runoff at Harer during the April-September period will probably not exceed 280,000 acre feet with not more than 55,000 acre feet running off during the July-September period.

Bear River at Stewart Dam:

The discharge at Stewart Dam is an approximate measure of the water available for storage in Bear Lake. It is diverted through the Rainbow canal. From April 1, 1942 to April 1, 1943 approximately 172,500 acre feet were available at Stewart Dam. Of this 124,609 acre feet were available during the period April-June inclusive. During this period the level of Bear Lake arose from 5908.08 to a

maximum of 5910.23 representing a net gain of approximately 137,600 acre feet. Part of this rise was due to inflow from streams tributary to Bear Lake. The low snow cover above Evanston, Wyoming this year is 52% greater than in 1942 and the high cover is 15 percent greater. With normal precipitation and temperature during the year April, 1943 to April, 1944 there should be available for storage in Bear Lake at Stewart Dam a total of approximately 260,000 acre feet of which approximately 180,000 acre feet should run off during the period April, May and June, 1943.

Streams Tributary to Bear Lake:

The snow cover at Garden City Summit, Emigrant Summit and Monte Cristo is 93 percent greater than in 1942. It is estimated that the yield to Bear Lake from tributary streams for the period April, 1943 to April, 1944 will be approximately 60,000 acre feet. All of the low snow in Bear Lake and Upper Bear River Valleys melted during March causing a rise of nearly one foot in the level of the Lake during that month.

Probable Maximum Elevation of Bear Lake:

On April 1, 1943 the elevation of Bear Lake was 5907.86 feet. This is .24 feet lower than on the same date in 1942. The maximum elevation in 1942 was 5910.23 feet representing a maximum storage of 507,200 acre feet. Under normal melting conditions the probable maximum elevation of Bear Lake this year will not exceed 5911.0 feet, which represents a storage capacity of 556,500 acre feet.

Logan River Drainage:

The April-September yield of the Logan River in 1942 was 89,800 acre feet with 30,800 acre feet running off during the July-September period. The 1924-42 average April-September and July-September runoff is 115,700 and 36,350 acre feet, respectively. The river was discharging on September 30, 1942, 115 c.f.s. as compared to a predicted flow of 100 c.f.s. The maximum discharge occurred on May 25 in the amount of 635 c.f.s.

The high and low snow cover this year contains over 200 percent more water than in 1942. The heavy fall rains of 1942 filled the soil storage and the runoff yield during 1942 per unit of water in snow storage should be greater than in 1942. There will be more spring high water in 1943, and the flood stage will reach considerably higher peak. The total April-September runoff will probably reach 190,000 acre feet with approximately 56,000 acre feet running off during the July-September period. The maximum discharge will probably reach 1,500 c.f.s. with a minimum September flow of 150-175 c.f.s. Under normal melting conditions there should be in the Logan River on July 1 at least 500 c.f.s.

Cub River Drainage:

The snow cover at Franklin Basin is representative of the conditions on the Cub River watershed. This year that cover is 217 percent of 1942 and 150 percent of the 1924-42 average. The snow cover at low elevations is much heavier than in 1942. The soil under the snow is wet but to date there has been little rise in streamflow. The spring flow will be much higher than in 1942 and the late season flow will hold up better.

Maple, High, Summit and Providence Creeks:

These drainages are all on the west side of the Bear River Range and are relatively short and steep. There is still considerable snow on the lower slopes and the cover is much heavier at the higher elevations. The late season flow from these streams can be expected to be much better than in 1942. The spring runoff will reach high stages and provision should be made to prevent damage.

Blacksmith Fork Drainage:

The snow cover on the Blacksmith Fork drainage this year is much heavier than in 1942, particularly at the lower elevations. On the high levels the cover is about 93 percent greater than in 1942. The soil is moist under the snow, the result of heavy fall precipitation. The April-September yield of the Blacksmith Fork River in 1942 was 28,500 acre feet with 10,700 acre feet running off during July-September. The soil priming losses this year will be less than in 1942 and the April-September yield should be approximately 75,000 acre feet and the July-September yield 24,000 acre feet. There was no high water on the Blacksmith Fork during 1942 and the minimum flow was 50 c.f.s. There will be considerable high water this year and the maximum spring flood discharge may go as high as 1000 c.f.s.

Little Bear River Drainage:

The Little Bear River has an average elevation lower than the Blacksmith Fork. The high snow cover is 85 per cent more than in 1942, and the low cover is nearly as high. There will be considerable high water this year. The Hyrum Reservoir is full and spilling over the waste way.

Ogden River Drainage:

The April-September yield of the Ogden River above Huntsville in 1942 was 49,400 acre feet of which 6,600 acre feet ran off during the July-September period. The snow cover at Monte Cristo this year averages 180 percent of that in 1941. There is still much snow on the lower slopes. The South Fork of the Ogden above Huntsville will yield during April-September of 1943 not to exceed 90,000 acre feet of which probably 9,000 acre feet will run off during July-September. On April 1 of this year the Pine View Reservoir contained 22,800 acre feet out of a 41,000 acre foot capacity. The Pine View Reservoir will fill to capacity and much water will waste into Great Salt Lake. With normal melting temperatures the spring flood flow can be expected to go as high as 1500 c.f.s.

Weber River Drainage:

The major portion of the water in Weber River comes from four main tributaries; Chalk Creek, Lost Creek, East Canyon, and the main Weber above Oakley. Snow courses are located on each of these tributaries. The snow cover on the higher areas in East Canyon is 114 percent of that in 1942. Moisture in the earth mantle is high. The East Canyon Reservoir contained on April 1, 22,000 out of a capacity of 28,000 acre feet. The east Canyon Reservoir will fill to capacity.

The Weber River above Oakley last year yielded 124,000 acre feet of which 20,900 acre feet ran off during the July-September period. The snow cover on the upper Weber River this year averages 129 percent of that in 1942. The low snow cover is heavier than in 1942 and the soil is moist under the snow. The Weber River will yield during the April-September period this year not to exceed 156,000 acre feet of which probably 26,000 acre feet will run off during the July-September period.

The Echo Reservoir contained on April 1, 1942 a total of 33,840 acre feet. Its capacity is 74,000 acre feet. With normal precipitation and temperature conditions, the Echo Reservoir will fill this year.

Salt Lake Watersheds:

These watersheds include City, Emigration, Parley's, Big Cottonwood, and Little Cottonwood Creeks. The snow cover on these areas is represented by snow courses at Parley's Canyon Summit, Silver Lake, and Mill "D" South Fork. The average water content of the snow cover on these watersheds this year is 107 percent of that in 1942. The April-September yield of Big Cottonwood Creek in 1942 was 43,300 acre feet of which 9,500 acre feet ran off during the July-September period. With a normal April-June precipitation, the yield in 1943 for the April-September period should reach 50,000 acre feet with 9,400 acre feet running off during the July-September period.

Provo River and Utah Lake Drainage

The April-September yield of the Provo River at Provo in 1942 was 158,100 acre feet of which 50,600 acre feet ran off during the July-September period. The snow cover on the Provo River, as indicated by the April 1 surveys, has a water content equal to 154 percent of that in 1942. The earth mantle is wet. The yield per unit of water in snow storage will be greater than in 1942. With normal spring temperatures and relatively heavy low snow cover considerable spring flood water can be expected. The probable April-September yield of the Provo River at the Forks will not exceed 200,000 acre feet of which approximately 75,000 acre feet will run off during the July-September period.

There are at present 423,000 acre feet of water in Utah Lake. The heavier low snow cover this year will increase the amount of water available for storage in Utah Lake and Deer Creek. Regardless of the spring runoff there is sufficient water in Utah Lake now to provide a full irrigation water supply during the 1943 season. Rigid conservation should be practiced, however, so that a reserve may be built up in Utah Lake to protect the users against future dry years.

American Fork River Drainage:

The snow storage on the American Fork River this year is very little heavier than last year. The low cover is less than 50 percent of last year, there being no snow at Cave Camp, elevation 5,000 feet, patches at South Fork R. S. elevation 6,100 feet and 8.6 inches of water at the Y. L. M. I. A. Camps.

The high stations show an average increase over last year of 13 percent. The runoff from the American Fork River Watershed this year will probably not exceed 80 percent of that in 1942.

Hobble, Payson, Santacuin Creeks and Spanish Fork River:

The runoff to be expected from these watersheds is indicated by the snow cover at the Hobble Creek Divide, East Portal and the Mammoth Ranger Station. The average water content at these three courses is 15 percent higher than in 1942. The low snow cover is about the same. There will be little high spring runoff from these watersheds unless unusually high melting temperatures occur.

Strawberry Reservoir:

The snow cover on the Strawberry watershed above the Strawberry Reservoir is 128 percent of that in 1942. The storage in the Strawberry Reservoir on the first of April this year was 72,250 acre feet as compared to 47,000 acre feet in 1942. The ground under the snow is well saturated. Little melting has taken place. The yield to the reservoir during the spring runoff this year should equal 25,000 acre feet. The maximum storage available this year should therefore be about 97,250 acre feet.

Note: 22,320 acre feet of this storage is below the reservoir outlet and therefore not available for irrigation.

San Pitch Drainage:

The snow cover on the west side of the Wasatch Plateau which drains into San Pitch River contains approximately 75 percent as much water as in 1942. The low snow cover in this area is relatively heavier than the high snow and the cover gets lighter from Sampete on the north to Manti on the south. No high water from any of these streams can be expected unless unusually high melting temperatures prevail. With normal spring precipitation it is estimated that the seasonal runoff from the tributaries to the San Pitch River will not exceed 75 percent of that in 1942.

Salina Creek Drainage:

The snow storage on the Salina Creek Watershed as measured at the Gooseberry Ranger Station snow course, is 110 percent of that in 1942. The low snow cover has melted with slight rise in streamflow. The ground moisture conditions are better than in 1942 and a seasonal discharge about equal to that in 1942 can be expected.

Clear Creek Drainage:

The snow storage on this watershed is only 74 percent of that in 1942. The earth mantle is moist. With normal spring precipitation, a seasonal runoff not to exceed 75 percent of that in 1942 can be expected.

Maine Sevier River Drainage:

The East Fork of the Sevier is represented by the snow courses at Fish Lake, Widtsoc-Escalante Summit and Bryce Canyon. The snow cover at Fish Lake is only 69 percent of that in 1942 while at the Widtsoc-Escalante Summit the cover is only 19 percent of that in 1942 and there is now snow at Bryce Canyon, at Fanguitch Lake and Cedar Breaks it is about equal to that in 1942.

At the Harris Flat Ranger Station and the Duck Creek Ranger Station it is 147 percent and 105 percent of 1942, respectively. There is an unusually heavy cover at the Gravel Springs Junction where last year there were only patches. This area of heavy snow cover appears to be local, however.

The main fork of the Sevier River can be expected to discharge approximately the same quantity of water during the April-September period as in 1942. The East fork of the Sevier River will probably not exceed 40 percent of that in 1942 and there will be no high spring runoff.

The Otter Creek Reservoir contains 42,600 acre feet. This reservoir will not fill to capacity. The Piute Reservoir contained on April 1, 1943 73,500 acre feet out of a total capacity of 90,000 acre feet. Rapid melting on the headwaters of the Main Fork of the Sevier during the first twenty days in April will probably fill this reservoir to capacity.

The Sevier Bridge Reservoir on April 1, 1942 contained 211,500 acre feet. On April 1, 1943 it contained 220,000 acre feet. Under normal melting conditions and with normal spring precipitation, this reservoir should fill to its capacity of 236,000 acre feet.

The Gunnison Reservoir is filled to capacity.

The natural flow rights on the Sevier River face a shortage which varies from 60 percent on the East fork of the Sevier River to 25 percent on the San Pitch Branch of the Sevier River to a supply equal to that available in 1942 on the main fork of the Sevier River. There will be no high water on any of these tributaries.

Fillmore Drainage:

The snow cover on the Fillmore watersheds this year is 66 percent of that in 1942. The low snow has disappeared but the ground is moist under the high cover. No high water can be expected this year on any of the streams draining the west side of the Pavant Range. The seasonal flow of these streams can be expected to be not more than 60 percent of that in 1942.

Coal Creek Drainage:

The high snow cover on the Coal Creek watershed this year contains 103 percent as much water as in 1942. The earth mantle was well primed by the fall rains and this should increase the water yield from the snow cover over that in 1942. The April-September yield of Coal Creek in 1942 was 27,100 acre feet of which 3,300 acre feet ran off during the July-September period. It is estimated that the April-September yield in 1943 from Coal Creek will not exceed 30,000 acre feet, of which 3,500 acre feet may be expected to run off during the July-September period.

Beaver River Drainage:

The snow cover on the Beaver River watershed this year is approximately 113 percent of that in 1942. The low snow cover is relatively heavier than the high snow cover. It is estimated that the April-September yield of the Beaver River during 1943 will be approximately 40,000 acre feet as compared to 36,900 acre feet in 1942. Of this 40,000 acre feet, approximately 8,000 acre feet can be expected to run off during the July-September period. With normal spring precipitation and temperatures the maximum flow will probably not exceed 500 s.f. and the minimum may go as low as 30 s.f. Rocky Ford Reservoir will probably not fill this year, although there is a good holdover from last year.

Virgin River Watershed:

The high snow cover on the Virgin River watershed this year is 109 percent of that in 1942. The low cover is only 147 percent of that in 1942. The runoff during 1942 was less than that indicated by the April 1, 1942 snow cover. This decrease in runoff resulted from difficient precipitation on the high watersheds during April, May and June of 1942. Assuming a normal spring precipitation for 1943 the main fork of the Virgin River can be expected to yield approximately 115,000 acre feet during the April-September period and 22,000 acre feet during the July-September period.

The Santa Clara Creek will probably yield 15 percent more water than in 1942.

Salt Creek at Nephi and Payson Creek at Payson:

The Payson Ranger Station snow course has been measured only 2 years. The snow cover on this course is only 81 percent of that in 1942.

This snow course represents the conditions on both Salt Creek and Payson Creek watersheds. The runoff from these watersheds in 1943 will probably not exceed 80 percent of that in 1942.

Price River Drainage:

The Price River at Helper is affected by the releases from the Scofield Reservoir, as well as by the snow cover on the upper Price River watersheds. On April 1, 1943, the snow courses on the headwaters of Fish Creek showed a water content 85 percent of that in 1942. The low snow cover is somewhat heavier, averaging 24 percent more than in 1942. The storage in the Scofield Reservoir on April 1, 1943 was 9400 acre feet as compared with 22,400 acre feet on the same day of 1942.

Based on the snow cover on April 1, 1943, it is estimated that the runoff above the Scofield reservoir during the April-September period this year will not exceed 85 percent of that in 1942. The hold over storage this year was relatively low. The snow cover is light at the high elevations. The reservoirs gates should be closed at once and a close check made of the remaining snow cover at frequent time intervals. It is believed that it will take all the water available from the snow cover this year to fill the available storage in the Scofield Reservoir.

The discharge of the Price River at Helper is dependent upon the releases of stored water from the Scofield Reservoir as well as the precipitation on the watershed. The snow cover on the headwaters of Price River on April 1, 1943, was 85 percent of that in 1942. Assuming a normal precipitation during April-June, the runoff will be considerably less than that in 1942. It is estimated that 60,000 acre feet will pass Helper during the April-September period of which 25,000 will runoff during the July-September period.

Huntington Creek:

The discharge of Huntington Creek at Huntington this year will probably reach 65,000 acre feet for the April-September period and 14,000 acre feet during July-September. No high water is to be expected.

Cottonwood Creek:

The snow cover on the headwaters of Cottonwood Creek is very light being only 60 percent of that in 1942.

The discharge of Cottonwood Creek at Orangeville this year may reach 40,000 acre feet for the April-September period and as much as 7,000 acre feet during July-September. No high water is to be expected.

Ashley Creek:

The April-September yield of Ashley Creek during 1942 was 75,000 acre feet, of which 21,400 acre feet ran off during the July-September period. The snow cover, as measured at Lake Fork Mountain and King's Cabin, indicates a potential water supply 33 percent greater than in 1942. It is estimated that the April-September yield of Ashley Creek in 1943 will not exceed 100,000 acre feet of which probably not more than 25,000 acre feet will run off during the July-September period,

Uinta River and Whiterocks Creek:

Water in snow storage on these watersheds this year is approximately 38 percent greater than that in 1942. The April-September yield of Whiterocks Creek at Whiterocks for 1942 was 83,000 acre feet of which 23,700 acre feet ran off during the July-September period. Assuming normal precipitation during April-June, the yield for the same period in 1943 will probably not exceed 90,000 and 25,000 acre feet, respectively.

The yield of the Uinta River at Neola during the April-September period of 1942 was 129,000 acre feet of which 47,000 acre feet ran off during the July-September period. In 1943 the yields for the same respective periods can not be expected to exceed 130,000 and 50,000 acre feet.

Lake Fork Drainage:

The snow cover on the high areas at the head of Lake Fork this year is 112 percent of that in 1942. The low snow cover is light but the ground is moist. There will be no high spring runoff and the seasonal yield with normal precipitation will probably not exceed 110 percent of that in 1942.

Duchesne River Drainage:

This stream head near the west end of the Uinta Mountains. There are no snow courses directly on the area, but the Lost Lake snow course on the Provo River is fairly representative of the conditions on the headwaters of the Duchesne. The snow cover at Lost Lake this year is 160 percent of that in 1942. In 1943 the April-September yield will probably not exceed 140,000 acre feet during the April-September period of which probably 28,000 acre feet will run off during the July-September period.

North Side of the Uinta Mountains:

The snow cover on the watersheds, located on the north side of the Uinta Mountains, is represented by snow measurements at the Howinta, and Hole-in-the-Rock Ranger Stations. The snow cover at the Hole-in-Rock snow course is 105 percent of that in 1942, while at the Howinta Ranger Station it is 120 of that in 1942. There will be no high spring flow but the seasonal yield will probably be 15 percent greater than in 1942.

Blue Mountain Area:

The snow cover in this area is only 91 percent of that in 1942. The seasonal yield with a normal spring precipitation will probably not exceed 85 percent of that in 1942.

La Sal Mountain Area:

The snow cover on the LaSal Mountain this year is only 68 percent of that in 1942. With normal spring precipitation, the runoff will probably not exceed 60 percent of that in 1942.

- SUMMARY -

The Utah cooperative snow surveys show that there will be ample water to meet all needs in Northern Utah but that the potential supplies decrease rapidly toward the South.

NORTHERN UTAH STREAMS:

The Northern Utah streams including the Bear River and its tributaries, the Ogden and the Weber have a potential runoff for the April-September periods 1943 varying from 126 per cent of 1942 on the Weber to 262 per cent of 1942 on the Blacksmith Fork. The July-September runoff in per cent of that in 1943 is nearly as high. The percentages for the Bear River at Harer are 146 and 131 respectively for the April-September and July-September periods. For the April-September period this represents almost a normal runoff on the Bear River at Harer, 116 per cent of normal on the Logan, 103 per cent on the Blacksmith Fork, 140 per cent on the Ogden and 105 per cent on the Weber at Oaklay.

With normal spring and summer precipitation there will be no water shortages on any of the streams in Northern Utah during 1943. The relatively heavy snow cover can produce high spring discharges on all streams in this area if unreasonable high temperatures prevail during April and May. Precautions should be taken at once to prevent flood damage on these streams.

SALT LAKE WATERSHED AREA:

This area includes all streams south of the Weber River and north of the Sevier River. The streams between Layton and American Fork which drain the west face of the Wasatch range will discharge more water than in 1942 by about 15 per cent and will approach a normal long time runoff. Some high water is to be expected in this area.

UTAH LAKE DRAINAGE AREAS:

This area includes the American Fork and Provo River and all small tributaries to Utah Lake. The absence of low snow on the American Fork water shed will reduce the seasonal runoff from that area to not more than 80 per cent of that in 1942. Payson and Salt Creeks are below that in 1942 and Hobbie Creek and Spanish Fork River are slightly above that in 1942. Heavy snows fell on the upper reaches of the Provo River and the runoff from this watershed will be 25 per cent greater than that in 1942 and will approach the long time normal.

There will be no serious water shortages on any of the streams in this area but water conservation should be put into effect early.

Except for the Provo River high spring runoff is not to be expected although abnormally high melting temperatures could cause some damage.

SEVIER RIVER DRAINAGE AREAS:

This area includes all streams tributary to the Snow River except for one small area on Salina Creek the snow cover on the Sevier River drainage this year is very deficient. The deficiency varies from 60 per cent on the East Fork of the Sevier to 25 per cent on the San Pitch and Clear Creek areas. The main Fork of the Sevier above Ciral ville will probably yield as much as it did in 1942. With normal spring precipitation and temperatures no unusually high water is to be expected this spring on any of the tributaries to the Sevier River.

FILLMORE, BEAVER AND CEDAR CITY AREAS:

These areas include the streams draining the west side of the Pavant Range, the Beaver River and the streams in the vicinity of Paragonah, Parowan and Cedar City. The Fillmore watersheds will not yield more than 60 per cent of that in 1942 and water shortages can, therefore, be expected in this area.

The Beaver River and Coal Creek will yield approximately 110 per cent of that in 1942. No unusual water shortage is to be expected this year on either of these streams. The normal late season water shortage in this part of the state makes it mandatory that water conservation be practiced.

In the absence of unusually high melting temperatures little high spring flow is to be expected from any of these streams.

UINTA BASIN STREAMS:

These streams include the Duchesne, Uinta and Lake Fork Rivers and Whitetails and Ashley Creeks. The snow cover on the Uinta mountains this year was somewhat heavier than in 1942. The runoff to be expected this year will vary from 125 to 135 per cent of that in 1942 and will in every case greatly exceed the long time average runoff. There should be no abnormal water shortage in this area this year. Normal spring high water is to be expected.

NORTH SIDE OF THE UINTA MOUNTAINS:

The streams draining this area will yield about 15 per cent more water than they did in 1942 and no serious water shortages should develop.

PRICE RIVER AREAS:

This area includes the Price River and its principle tributaries, the Huntington and Cottonwood Creeks. The snow cover over this entire area is considerably less than in 1942. The expected runoff varies from 55 per cent of 1942 on the Price River, Cottonwood Creek to 92 per cent on the Huntington. It will take all the water available on Fish Creek to fill the Scofield Reservoir to capacity. In the absence of abnormal melting temperatures little high water is to be expected. Water conservation should be put into effect immediately in these areas.

VIRGIN RIVER WATERSHED:

The water contents of the snow cover on this area is about 15 per cent greater than in 1942. The runoff from Santa Clara Creek and the Virgin River at Virgin will exceed that in 1942 by 15 per cent and the long time average runoff by 20 per cent. There will be no abnormal water shortages on these areas this year. No storage is available, however, and strict water conservation must be practiced if the late summer shortages are to be minimized.

STORAGE RESERVOIRS:

Except for Bear Lake, Utah Lake and Strawberry Reservoir where the maximum capacity are unusually large all reservoirs in the state will fill to capacity. These three will contain at the beginning of the irrigation season more than enough water for 1943.

The shortages in runoff in the central, southern and eastern parts of the state will in most cases be neutralized by the full storage reservoirs so that in none of the major irrigated areas of the state are serious irrigation water shortages expected to develop.

In spite of the quite satisfactory outlook for irrigation water supplies in the state this year, water conservation should be practiced by all users. The use of storage water should be limited to the absolute irrigation needs in order that hold over storage may be built up to cover future dry years.

All water users should clean their canals immediately in order that they may take advantage of the early spring runoff where storage reservoirs are not available.

-- FORECAST SUMMARY --

Table I

NAME OF STREAM OR BASIN	Run-off in 1000' of Acre-Feet												Expected Run-off in 1943 in per- cent of 1942			
	1943*				1942				1941				1940		I	II
	I	II	I	II	I	II	I	II	I	II	I	II				
BEAR RIVER Bear River at Harer, Idaho Bear Lake Drainage	280.0	35.0	191.8	26.7	139.4	45.2	39.5	13.2	146	131						
CACHE VALLEY STREAMS Logan River Blacksmith Fork River	190.0 75.0	56.0 24.0	89.8 28.6	30.8 10.7	66.8 20.6	23.0 8.2	77.0 23.9	24.5 9.1	212 262	182 224						
WEBER RIVER South Fork of Ogden River Weber River at Oakley	90.0 156.0	9.0 26.0	49.4 124.0	6.6 20.9	30.5 100.9	5.7 20.1	28.0 72.6	5.2 11.7	182 126	136 124						
SALT LAKE CITY WATERSHEDS Big Cottonwood Creek PROVO RIVER Provo River	50.0 200.0	9.4 75.0	43.3 158.1	9.5 50.6	40.4 137.2	9.3 50.2	24.6 76.4	3.6 28.3	115 126	99 148						
SEVIER RIVER San Pitch Tributaries Salina Creek Sevier River at Kingston									75 100							
INDEPENDENT STREAMS Fillmore Watersheds Beaver River Coal Creek near Cedar City	40.0 30.0	8.0 3.5	36.9 27.1	7.3 3.3	54.7 36.9	11.1 4.3	30.3 13.1	5.1 3.0	108 111	110 106						
UINTA BASIN STREAMS Duchesne River at Tabiona Whiterocks River at Whiterocks Ashley Creek at Vernal	140.0 90.0 100.0	28.0 25.0 25.0	103.7 80.3 75.2	20.1 23.9 21.4	113.0 96.5 76.8	23.0 26.4 22.6	62.3 53.4 38.3	14.4 11.6 9.3	135 112 133	139 105 117						
PRICE RIVER Price River Huntington Creek Cottonwood Creek	60.0 65.0 40.0	25.0 14.0 7.0	109.6 70.3 74.2	29.3 16.7 11.1	99.3 75.6 76.7	29.0 18.8 13.0	48.1 47.2 24.6	18.3 10.5 3.6	55 92 54	85 84 64						
VIRGIN RIVER Virgin River	115.0	22.0	99.8	19.7	172.5	27.9	61.5	24.4	115	112						

I - April to September, inclusive. II - July to September, inclusive. * - Forecasted Flow

COMPARISON OF RUN-OFF FROM PRINCIPAL UTAH STREAMS
In 1000's of Acre-Feet

Table II

NAME OF STREAMS	April-September Run-off				July-September Run-off				Average	Area in 1943	1942	1941	1940	1941	1942	1943
	Average	1939	1940	1941	1942	1943	1939	1940								
Alloy Creek near Vernal	64.0	45.1	38.3	76.8	75.0	100.0	15.9	12.5	9.3	22.6	21.4	25.0				
Bear River at Hazel	206.0	148.6	39.5	139.4	191.8	280.0	59.7	25.2	13.2	45.2	26.7	35.0				
Beaver River at Beaver	33.3	16.6	30.3	54.7	36.9	40.0	7.9	4.4	5.1	11.1	7.2	8.0				
Big Cottonwood Creek near Salt Lake City	45.0	27.5	24.6	40.4	43.3	50.0	11.5	5.0	3.6	9.3	9.5	9.4				
Blacksouth Fork at Lyman	72.5	33.7	23.9	20.6	28.5	75.0	24.2	11.9	9.1	8.2	10.7	24.0				
Coal Creek near Cedar City		11.8	13.1	36.9	27.1	30.0		3.2	3.0	4.3	3.3	3.5				
Bottomwood Creek at Orangeville	72.1	48.0	24.6	76.7	74.2	40.0	15.5	6.9	3.6	13.0	11.1	7.0				
Duchesne River at Tablona	114.3	74.7	62.3	113.0	103.0	140.0	28.0	15.0	14.4	23.0	20.0	28.0				
Huntington Creek near Huntington	62.4	39.8	47.2	75.6	70.3	65.0	15.6	10.7	10.5	18.8	16.7	14.0				
Logan River at Logan	164.7	92.5	77.0	66.8	98.2	190.0	54.0	28.7	24.5	23.0	30.8	56.0				
Coyden River, S. Fork near Huntsville	64.7	26.4	28.0	30.5	49.4	90.0	8.6	6.2	5.2	5.7	6.6	9.0				
Price River near Helper	85.2	47.4	48.1	99.3	109.6	60.0	16.7	14.2	18.3	29.0	29.3	25.0				
Provo River at Provo	185.9	110.2	87.4	137.2	158.1	200.00	50.1	32.9	28.3	50.2	50.6	25.0				
Sevier River near Kingston	57.6	29.6	18.1	103.7	81.7		15.5	13.5	9.7	17.8	8.5					
Uinta River near Neola	89.4	77.9	58.3	156.0	124.0	130.0	38.4	33.3	22.3	57.2	47.0	50.0				
Virgin River at Virgin	95.8	69.3	61.5	172.5	99.8	115.0	31.0	33.6	24.4	27.9	19.7	22.0				
Weber River at Oakley	148.7	83.7	72.6	100.9	124.0	156.0	30.5	14.3	11.7	20.1	20.9	26.0				
Whiterocks River near Whiterocks	52.7	50.0	33.4	96.5	80.3	90.0	19.1	17.9	11.6	26.4	23.0	25.0				

AVAILABLE STORAGE IN PRINCIPAL RESERVOIRS

ACRE-FEET - APRIL 1

Reservoir	Maximum Capacity	Contents on April 1, in Acre-feet					Percent filled in 1943	
		1938	1939	1940	1941	1942		1943
Bear Lake	1,420,000	582,700	794,000	578,000	406,500	370,000	463700	32.5
Last Canyon	28,000	10,640	19,700	21,000	12,650	22,000	22000*	78.5
Echo Reservoir	74,000	55,470	37,150	19,000	18,140	20,500	33840	45.7
Gunnison	20,000	18,500	16,500	11,000	11,000	20,000	18500	92.5
Hyrum	14,600	10,430	9,950	13,200	10,000	13,200	Full	100.0
Moan Lake	30,100	5,900	29,900	15,700	21,500	30,100	21271	70.6
Otter Creek	52,600	40,000	44,800	30,400	24,780	52,600	42600	80.1
Pine View	41,000	26,100	10,650	17,955	6,620	8,500	22837	55.7
Piute	90,000	78,000	67,000	59,000	51,740	64,570	73508	81.7
Rocky Ford	25,070	19,600	18,600	10,130	12,300	21,880		
Scofield	30,000	8,000	15,500	6,000	5,000	22,400	9400	31.3
Sevier Bridge	236,000	89,500	150,000	122,820	94,000	211,500	220000	93.2
Strawberry	278,000	81,580	88,180	54,280	33,200	44,400	72254	26.0
Utah Lake	830,000	392,900	463,000	372,000	279,000	391,000	423000	51.0

* Spilling to provide storage to prevent floods.

Table IV-continued: (a)

UTAH COOPERATIVE SNOW SURVEYS
(Data for all Snow Courses)

1943

SNOW COURSES BY DRAINAGE AREAS	Course Number	Eleva- tion in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per- cent	Corresponding Water Content			REMARKS
							1940	1941	1942	
WEBER RIVER (cont.)										
Redden Mine (Upper)	31	9000	3/26/43	68.2	26.0	38.0	15.9	15.6	21.2	
Redden Mine (Lower)	31-A	8500	3/25/43	65.3	24.2	37.1	14.8	15.0	20.6	
SALT LAKE WATERSHEDS				Abandoned						
Parrish Creek Summit	13	8000								
Barnard Creek	13-A	8000	3/29/43	62.8	26.1	41.6	26.1	28.0	30.8	
Lamb's Canyon	14	6600	3/21/43	44.2	15.0	33.9	11.5	14.6	16.2	
Parley's Canyon Summit	15	7500	3/27/43	56.4	21.9	38.8	14.4	16.8	19.2	
Silver Lake	16	8725	3/29/43	79.5	35.2	44.3	18.4	19.9	26.4	
Mill D South Fork	16-A	7400	3/30/43	58.2	19.4	33.3	17.3	15.7	22.4	
South Willow Creek	66	8000		No record			13.2	19.2	No snow	
PROVO RIVER & UT. LAKE										
Dutchman Ranger Station	17	7500					11.0	18.1	18.9	
Timpanogos Cave Camp	18	5500					No Snow	No Snow	3.4	
South Fork Ranger Sta.	19	6100					Patchy	4.9	11.4	
Camp Altamont	20	7300	3/28/43	50.3	20.6	41.0	8.4	16.0	19.2	
Timpanogos Loop Road Div.	21	8200	3/28/43	78.1	30.7	39.3	13.3	21.5	25.7	
Aspen Grove	21-A	6900	3/28/43	45.9	20.6	44.9	7.5	17.8	18.3	
Y.L.M.I.A. Site	21-B	6000	3/28/43	19.5	8.6	44.1	Patchy	11.5	12.2	
Hobble Creek Summit	22	7300	3/26/43	45.8	16.4	35.8	10.3	10.2	12.7	
Daniels-Strawberry Sum.	23	8000	3/30/43	50.8	18.2	35.8	10.5	11.1	13.4	
Beaver Creek Ranger Sta.	24	7500	3/26/43	36.7	13.0	35.4	3.3	4.9	7.7	
Soapstone Ranger Sta.	25	7800	3/26/43	55.2	19.2	34.8	8.1	8.7	11.7	
Trial Lake	26	9800	3/26/43	101.9	36.6	35.9	19.9	18.5	23.9	
Washington Long Lake	27	10300	3/26/43	107.7	40.4	37.5	23.6	19.8	28.2	
Lost Lake	28	9900	3/26/43	91.2	34.7	38.0	18.4	17.7	21.6	
STRAWBERRY RESERVOIR										
Daniels-Strawberry Sum.	23	8000	3/30/43	50.8	18.2	35.8	10.3	11.1	13.4	

UTAH COOPERATIVE SNOW SURVEYS
(Data for all Snow Courses) - 1943

SNOW COURSES BY DRAINAGE AREAS	Station Number	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in per cent	Corresponding Water Content			REMARKS
							1940	1941	1942	
STRAWBERRY RES. (cont) East Portal	33	7560	3/29/43	42.4	14.1	33.5	10.0	10.3	11.8	
	33-A	8000	3/29/43	68.0	23.2	34.1	17.4	16.9	18.1	
NORTH SIDE UINTAH MT. Hewinta Ranger Station Hole-in-the-Rock Beaver Meadows	34	9500	3/30/43	36.5	12.9	33.5	N.Rep.	N.Rep.	10.7	
	35	9150	3/23/43	27.5	6.1	22.2	3.8	5.0	5.8	
	37	8500					6.1	7.3	N.S.	
	36	10500	3/27/43	50.3	12.8	25.4	4.1	9.1	11.4	
SOUTH SIDE UINTA MT. Lake Fork Mountain Paradise Park Mossy Mountain No. 1 Mosby Mountain No. 2 King's Cabin No. 1 King's Cabin No. 2 Indian Canyon	37	10500	3/25/43	45.4	14.8	32.6	3.8	9.6	11.7	
	38	9700	3/26/43	40.0	13.2	33.0	5.1	9.9	8.5	
	38-A	9500	3/26/43	42.9	13.9	32.4	5.3	8.7	8.7	
	39	8600	3/27/43	32.1	10.5	32.7	3.3	6.9	7.1	
	39-A	8600	3/27/43	31.0	10.7	34.5	3.3	8.9	7.1	
	40	9100	3/27/43	35.9	10.6	29.5	4.2	8.7	9.2	
	40	9100	3/7/43	35.86	10.61	29.6	4.2	8.7	9.2	
	41	8700	3/28/43	50.8	16.8	33.1	20.6	20.3	20.3	
PRICE RIVER Indian Canyon Gooseberry Reservoir Mammoth Ranger Station Staley Ranch Dry Valley Divide Clear Creek Huntington Horseshoe	42	8800	3/28/43	52.9	19.5	36.9	21.0	21.7	22.1	
	42-A	7600	3/27/43	24.0	6.5	27.1	3.2	3.9	5.3	
	42-B	7800	3/27/43	31.5	9.0	28.6	9.2	7.3	8.3	
	42-C	8150	3/27/43	24.5	9.7	39.6	4.6	7.7	6.8	
	43	9800	3/28/43	64.2	22.7	35.4	28.1	26.9	27.1	
FILLMORE Pine Creek-Chalk Creek	49	8500	3/29/43	19.6	8.5	43.4	15.3	11.2	12.8	

Table IV (Cont.) (C)

UTAH COOPERATIVE SNOW SURVEYS
(Data for all Snow Courses) - 194

SNOW COURSES BY DRAINAGE AREAS	Controlling Elevation	Elevation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Density in per cent	Corresponding Water Content			REMARKS
							1940	1941	1942	
HUNTINGTON, COTTONWOOD AND FERRON CREEKS										
G.B.E.S. Alpine	47	10240	3/29/43	47.1	16.4	34.8	24.6	22.4	25.2	
Huntington Horseshoe	43	9800	3/28/43	64.2	22.7	35.4	28.1	26.9	27.1	
Seeley Cr. R.S. No. 1	48	10000	3/28/43	47.5	17.3	36.4	21.0	21.6	25.8	
Seeley Cr. R.S. No. 2	48-A	10000	3/29/43	29.3	9.5	32.4	19.4	18.1	20.0	
SAN PITCH RIVER										
Mammoth Ranger Station	42	8800	3/28/43	52.9	19.5	36.9	21.0	21.7	22.1	
G.B.E.S. Oaks Ran. Sta.	44	7550	3/30/43	13.3	4.6	34.6	9.1	5.9	7.7	
G.B.E.S. Headquarters	45	8700	3/29/43	40.0	11.7	29.2	20.7	16.1	17.0	
G.B.E.S. Meadows	46	10000	3/28/43	53.1	18.4	34.6	22.9	21.0	25.2	
G.B.E.S. Alpine	47	10240	3/29/43	47.1	16.4	34.8	24.6	22.4	25.2	
SEVIER RIVER										
Gooseberry Ranger Sta.	50	8400	3/27/43	39.5	11.8	29.9	9.7	11.2	10.7	
Fish Lake	51	8700	3/29/43	13.8	4.6	33.3	7.6	8.2	6.7	
Kimberly Mine (Lower)	52	8300	3/31/43	29.1	10.6	36.4	11.5	10.8	14.7	
Kimberly Mine (Upper)	52-A	8900	3/31/43	42.1	14.1	33.5	14.0	14.6	18.9	
Widstoe-Escalante Sum.	53	9500	3/29/43	11.3	3.3	29.2	4.5	13.3	12.2	
Bryce Canyon	54	8000					N.S.	7.4	6.6	
Panguitch Lake	55	8200	3/27/43	16.9	8.2	48.5	3.1	7.6	7.9	
Gravel Springs Junction	56	7500	3/26/43	17.9	11.0	61.4	N.S.	8.1	P.	
Harris Flat Ranger Sta.	57	7700	3/26/43	26.5	13.3	50.1	P.	14.2	9.1	
Duck Creek Spring	58	8560	3/26/43	48.3	18.3	37.9	7.0	22.8	17.4	
Cedar Breaks	59	10200	3/28/43	66.3	25.3	38.1	15.0	25.1	24.8	
BEAVER RIVER										
Merchants Valley	63	8200	4/1/43	35.9	13.0	36.2	12.5	16.2	10.8	
Otter Lake	63-A	9300	3/31/43	49.3	17.6	35.7	17.8	19.7	15.1	
Big Flat	63-B	10000	3/31/43	59.8	20.0	33.4	20.7	23.6	19.3	

