



SELECTED DATA FOR STREAMFLOW-GAGING STATIONS IN THE NEPHI 30 x 60-MINUTE QUADRANGLE

Site No.	Station No.	Station name	Drainage area (square miles)	Period of record (water years)	Average annual discharge		Recorded extremes (cubic feet per second)			Remarks		
					Cubic feet per second	Acre-feet per year	Maximum	Date	Minimum		Date	
COLORADO RIVER BASIN												
1	09309800	Gooseberry Creek near Fairview	7.9	1959-69	9.38	6,790	8	263	June 2, 1968	0.40	Oct. 22, 26, 1961; Nov. 16, 1962	Transmountain diversion to Great Basin upstream from station.
2	09310000	Gooseberry Creek near Scofield	16.8	1930-31, 1941-81, 1938-81	18.2	13,190	42	414	May 30, 1952	0	Nov. 11, 1964	
3	09310500	Fish Creek above reservoir, near Scofield	60.1	1931-32, 1938-81	46.8	33,900	43	1,160	May 20, 1973	.60	Oct. 31, 1960	Small transmountain diversion upstream from station.
4	09310550	Pendown Creek near Scofield	78.6	1979-80	-	-	-	108	May 23, 1980	.62	Nov. 14, 16, 1979	
5	09310600	Escalante Canyon near Scofield	5.5	1979-81	-	-	-	46	June 11, 1980	.62	Jan. 10, 1980	
6	09310700	Mud Creek below Winter Quarters Canyon, at Scofield	29.1	1978-81	-	-	-	145	May 23, 1980	1.4	Sept. 8, 1979	
7	09311500	Pice River (Fish Creek) near Scofield	155	1917-21, 1923-31, 1938-60, 1979-80	60.8	44,000	36	1,060	May 31-June 1, 1952	-	-	Regulated at upstream reservoir to practically no flow at times in winter.
8	09311700	Pice River near Soldier Summit	180	1961-63	-	-	-	351	Aug. 4, 1963	1.2	Apr. 2, 1963	Flow regulated at Scofield Reservoir.
9	09312000	North Fork White River near Summit	23.3	1942-47	6.27	4,640	5	121	May 9, 1944	-	-	A small diversion upstream from station for irrigation.
10	09312500	White River near Soldier Summit	53	1938-67	19.4	14,050	28	1,120	May 5, 1952	(1)	-	
11	09312600	White River below Tabbyrne Creek, near Soldier Summit	75.6	1967-81	27.3	19,780	14	458	May 14, 1973	0	May days Aug.-Sept. 1977	
12	09317000	Boulder Creek near Fairview	1.9	1938-49	3.86	2,800	9	85	May 10, 1948	-	-	Same diversion upstream from station.

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					Cubic feet per second	Acre-feet per year	Maximum	Date	Minimum		Date	
GREAT BASIN												
13	10145500	Salt Creek near Nephi	95	1929-38	25.2	18,260	12	800	July 17, 1932	3.0	Nov. 30-Dec. 5, 1934	Several small diversions upstream from station.
14	10146000	Salt Creek at Nephi	95.6	1950-80	27.0	19,560	29	832	Aug. 1, 1968	1.1	Dec. 13, 1951; Dec. 11, 1951	
15	10146400	Current Creek near Mona	73.8	1978-81	-	-	-	345	Jan. 15, 1980	3.4	Aug. 1-4, 1981	
16	10146500	Current Creek near Goshen	303	1963-60	21.8	15,780	7	78	May 13, 14, 1969	0	Sept.-Oct. 1969	Flow affected by upstream regulation.
17	10147000	Summit Creek near Santaquin	14.6	1910-16, 1954-66	12.4	8,980	18	215	June 3, 1957	1.3	Jan. 21, 1955	
18	10147500	Payson Creek above diversions, near Payson	18.8	1947-62	12.6	9,120	15	465	May 4, 1952	1.5	Jan. 8, 1957	Flow affected by several small upstream reservoirs.
19	10148200	The Fork near Soldier Summit	19.4	1963-61	4.98	3,610	18	422	July 16, 1975	.20	Nov. 17-Dec. 7, 1964	
20	10148300	Daily Fork near Thistle	11	1959-72	-	-	-	980	Aug. 10, 1965	-	-	Crest-stage gage.
21	10148400	Nephi Creek near Thistle	36.7	1963-73	15.3	11,080	10	478	May 10, 1973	2.6	July 26, 1965; Jan. 18, 1965	
22	10148500	Spanish Fork at Thistle	490	1909-25, 1933-74	89.0	64,480	59	1,800	May 4, 1952	9.2	Sept. 28, 1959	Small diversions for irrigation upstream from station.
23	10208000	Oak Creek near Fairview	11.8	1964-81	10.7	7,750	17	262	May 20, 1973	.78	Nov. 29, 1974	Records include some transmountain diversions from Colorado River Basin.
24	10210000	Pleasant Creek near Mount Pleasant	21.4	1957-75	17.7	12,820	21	(2)	Aug. 16, 1955	.80	-	
25	10215500	Big Hollow at Fountain Green	1.2	1961-68	-	-	-	279	July 24, 1962	-	-	Crest-stage 1961-64; continuous record 1965-68.
26	10219200	Chicken Creek near Levan	27.9	1963-81	6.49	4,700	19	390	Sept. 8, 1981	0	Feb. 11, 14, 1966	
27	10219300	Deep Creek near Levan	8.8	1961-68	-	-	-	75	May 2, 1964	-	-	Crest-stage gage.

CONVERSION TABLE

MULTIPLY INCH POUND UNIT	BY	TO OBTAIN SI UNIT
acre-foot	0.001233	cubic hectometer
acre-foot per square mile	0.00047	cubic hectometer per square kilometer
cubic foot per second	0.02832	cubic meter per second
centimeter	2.540	millimeter
inch	25.40	centimeter
mile	1,609	kilometer
square mile	2.590	square kilometer

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**INTRODUCTION**

This is one of a series of maps that describes the geology and related natural resources of the Nephi 30 x 60-minute quadrangle, Utah. Streamflow records used to compile this map were collected by the U.S. Geological Survey in cooperation with the Utah Department of Natural Resources, Division of Water Rights, and the Utah Department of Transportation. The principal runoff-producing areas shown on the map were delineated from a work map (scale 1:250,000) compiled to estimate water yields in Utah (Bagley and others, 1964). Sources of information about recorded floods resulting from cloudbursts included Woolley (1946) and Butler and Mansell (1972); sources of information about the chemical quality of streamflow included Hahl and Cabell (1965), Mundorf (1972 and 1974), and Waddell and others (1962).

**DRAINAGE BASINS**

The Nephi 30 x 60-minute quadrangle comprises 1,840 square miles. About 75 percent of the area is in the Great Basin, and drains to Great Salt Lake and Sevier Lake (respectively about 70 miles northwest and 80 miles southwest of Nephi). The remaining 25 percent of the area is in the Colorado River Basin. The principal streams in the area include Spanish Fork, which drains to Great Salt Lake via Utah Lake and the Jordan River; the San Pitch River, which drains to Sevier Lake via the Sevier River; and the Pice and White Rivers, which drain to the Colorado River via the Green River. Two small transmountain diversions (the Fairview Tunnel and Candland Ditch) on the drainage divide between the Great Basin and Colorado River Basin divert water from headwater tributaries of the Colorado River to headwater tributaries of the San Pitch River. According to Eakin and others (1971, table 6), the annual diversions generally total less than 1,500 acre-feet.

**RUNOFF**

Estimated mean annual runoff in the area ranges from less than 1 inch (less than 54 acre-feet per square mile) in valley areas, to about 20 inches (about 1,065 acre-feet per square mile) along the drainage divide between the Great Basin and Colorado River Basin (Bagley and others, 1964, fig. 16). This agrees closely with available records of gaged runoff in the area. For example, average annual gaged runoff at sites with 5 or more years of record following table ranged from about 52 acre-feet per square mile in Current Creek at site 16 to about 1,500 acre-feet per square mile in Boulder Creek at site 12.

Runoff in the area varies considerably from year to year depending on annual variability of precipitation. As shown for Fish Creek at site 3, for example, total annual runoff ranged from less than 8,000 acre-feet during water year 1977 to almost 80,000 acre-feet during water year 1952. Most runoff is during May and June as indicated by the graphs showing mean monthly discharge at the indicated sites. This seasonal peak runoff is due chiefly to the melting of the winter snowpack, which usually accumulates to depths of more than 100 inches each year at the highest altitudes.

Most discharges in the intermittent and ephemeral streams, and a significant volume of discharge in the perennial streams, result from summer cloudbursts. Although these storms usually are localized and generally last less than an hour, the rainfall intensity is great enough to produce discharges of more than 1,000 cubic feet per second from small drainage basins. As shown in the following table (footnote 2), for example, an estimated discharge of more than 2,000 cubic feet per second occurred in Pleasant Creek at site 24 on July 24, 1946. The drainage area upstream from site 24 is only 16.4 square miles, and the cloudburst that caused the flood may have passed over only a part of that drainage area.

Floods resulting from cloudbursts have occurred or will occur in most drainages in the map area at one time or another. Because of their large volume of water, rapid velocities, and intense erosive power, they commonly cause damage to the natural environment. They also can cause considerable property damage in populated areas. As shown on this map, at least one flood resulting from cloudbursts has been recorded in virtually every community center in the area since 1850.

The small scale of this map precludes delineation of flood-prone areas within the communities; however, large-scale maps showing such areas are published and distributed by the U.S. Department of Housing and Urban Development. Readers are referred to that agency for the most recent information about flood-prone areas in the communities shown on this map. Alluvial plains and channels of most streams (including dry washes) may be considered as flood-prone areas subject to flooding during cloudbursts. Because of this, travelers, especially, should avoid deep, narrow canyons during and shortly after cloudbursts.

Several reservoirs in the area provide flood control as well as storage of runoff for irrigation and other uses. The largest of these reservoirs is Scofield Reservoir in the upper Pice River drainage basin. Scofield Reservoir has a usable storage capacity of 65,780 acre-feet and stores water chiefly for municipal and irrigation use in the lower Pice River basin (east of the map area).

The U.S. Geological Survey, under its cooperative program with the Utah Department of Natural Resources, collects continuous records of the contents of Scofield Reservoir as well as continuous streamflow records at many of the gaging stations listed in the following table. These records are available in the files of the U.S. Geological Survey, Salt Lake City, Utah, and in the U.S. Geological Survey report series "Water Resources Data for Utah", of which the most recent edition (1982) 4 is included in the list of references cited.

**SURFACE-WATER QUALITY**

Surface water in the area ranges from fresh to slightly saline according to the following classification commonly used by the U.S. Geological Survey:

Class	Dissolved-solids concentration (milligrams per liter)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Briny	More than 35,000

As indicated on the map, most of the runoff is fresh, generally containing less than 500 milligrams per liter of dissolved solids. The San Pitch River at Moroni and Current Creek downstream from Mona (Mount Nebo) Reservoir range from fresh to slightly saline. Principal causes of the slightly saline water in those streams are irrigation-return flows and inflow of saline ground water that had been in contact with rocks containing salt and gypsum. Evaporation from Mona Reservoir probably also contributes slightly to the salinity of Current Creek.

Considerably more water-quality data for the area are available than is shown on this map. Readers interested in more detailed information about the chemical quality of surface water in that part of the area that drains to the Great Basin are referred to Hahl and Cabell (1965), Hahl and Mundorf (1968), and Mundorf (1974). Readers interested in more detailed information about surface-water quality (including biological quality and sediment) in that part of the area that drains to the Colorado River are referred to Mundorf (1972) and Waddell and others (1982).

**EXPLANATION**

MILLIGRAMS PER LITER

MINIMUM	MAXIMUM	GENERAL CHEMICAL QUALITY OF STREAMFLOW—Minimum and maximum concentrations of dissolved solids in streamflow at the designated sites generally are in the ranges shown
<250	250-500	
500-1000	1000-3000	

INCHES

MINIMUM	MAXIMUM	PRINCIPAL RUNOFF-PRODUCING AREAS—Theoretical mean annual runoff is in the ranges indicated. (Adapted from Bagley and others, 1964)
<1	1-8	
8-20	20-50	

AREA OF RECORDED FLOOD RESULTING FROM CLOUDBURSTS—General area in which at least one flood resulting from a cloudburst has been recorded since 1850. (After Woolley, 1946, and Butler and Mansell, 1972)

EXISTING OR DISCONTINUED STREAMFLOW-GAGING STATION—Number corresponds to site number in table

SURFACE-WATER QUALITY SAMPLING SITE—See References cited for additional and more detailed water-quality data

DRAINAGE DIVIDE—Approximately located between the Great Basin and the Colorado River Basin

MAP SHOWING SELECTED SURFACE-WATER DATA FOR THE NEPHI 30 x 60-MINUTE QUADRANGLE, UTAH

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