

THIRTEENTH ANNUAL REPORT

BEAR RIVER
COMMISSION

1970



For the Report Year October 1, 1969 to
September 30, 1970

LOGAN, UTAH

April 1, 1971

BEAR RIVER COMMISSION

P. O. BOX 413
LOGAN, UTAH

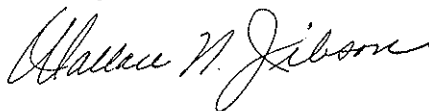
April 1, 1971

Mr. President:

Submitted herewith is the Thirteenth Annual Report of the Bear River Commission, as required by Article III D 2 of the Bear River Compact.

A copy of the report is being transmitted to the Governor of each signatory State to the Bear River Compact.

Very truly yours,

A handwritten signature in cursive script, reading "Wallace N. Jibson".

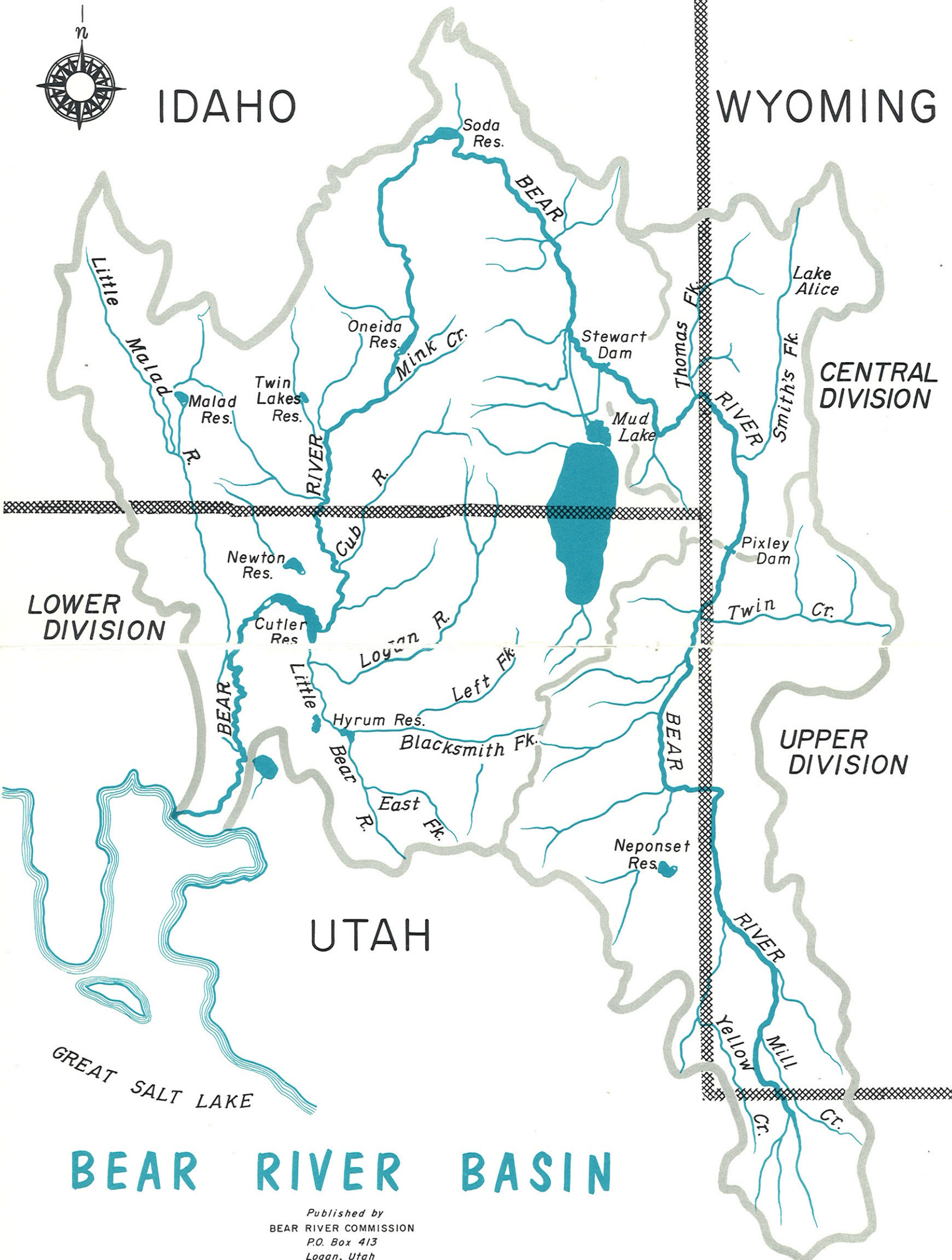
Wallace N. Jibson
Assistant Secretary

The President
The White House
Washington, D. C.



IDAHO

WYOMING



LOWER DIVISION

CENTRAL DIVISION

UPPER DIVISION

UTAH

GREAT SALT LAKE

BEAR RIVER BASIN

Published by
BEAR RIVER COMMISSION
P.O. Box 413
Logan, Utah

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THIRTEENTH ANNUAL REPORT

of the

BEAR RIVER COMMISSION

April 1, 1971

INTRODUCTION

The Bear River Compact determines the rights and obligations of the signatory States of Wyoming, Idaho, and Utah with respect to the waters of Bear River. Federal consent to the Compact was given by the Congress and signed by the President, March 17, 1958. The Bear River Commission was organized as an interstate agency to administer the Compact.

Article III D 2 of the Compact provides that the Bear River Commission shall compile annually a report covering the work of the Commission for the water year ending the previous September 30 and transmit it to the President of the United States and to the Governors of the signatory States on or before April 1 of each year.

Activities of the Bear River Commission during the water year ending September 30, 1970 are summarized in this report. Financial report of the auditors and daily streamflow records are shown in the appendixes.

ORGANIZATION

Ten commissioners, three representing each State and one the United States, constitute the Bear River Commission. The Federal representative serves as Chairman without vote.

S. Paul Holmgren, Bear River City, was appointed to the Commission to replace Grover R. Harper as a Utah delegate and member of the Budget Committee. William G. Jenkins, Malad, replaced Stephen L. Smith as a delegate from Idaho. Gordon H. Peart, Randolph, was elected Vice-Chairman of the Commission to replace Grover R. Harper. The above changes were made effective in Regular Meeting, November 24, 1969.

OFFICERS

ChairmanE. O. Larson, Salt Lake City, Utah
Vice-Chairman.....Gordon H. Peart, Randolph, Utah
Secretary-TreasurerDaniel F. Lawrence, Bountiful, Utah
Assistant SecretaryWallace N. Jibson, Logan, Utah

MEMBERS

Idaho

Cecil FosterWhitney, Idaho
Ferris M. KunzMontpelier, Idaho
William G. JenkinsMalad, Idaho
R. Keith Higginson (Ex officio)Boise, Idaho

Utah

Daniel F. Lawrence.....Bountiful, Utah
Gordon H. PeartRandolph, Utah
S. Paul HolmgrenBear River City, Utah

Wyoming

Floyd A. BishopCheyenne, Wyoming
S. Reed DaytonCokeville, Wyoming
J. W. MyersEvanston, Wyoming

United States

E. O. LarsonSalt Lake City, Utah

Budget Committee

S. Paul HolmgrenBear River City, Utah
J. W. MyersEvanston, Wyoming
Ferris M. KunzMontpelier, Idaho

Operations Committee

Cecil FosterWhitney, Idaho
Gordon H. PeartRandolph, Utah
S. Reed DaytonCokeville, Wyoming

MEETINGS

Two meetings were held during the report year in accordance with the bylaws as follows:

Regular Meeting—November 24, 1969....Salt Lake City, Utah
 Annual Meeting—April 20, 1970.....Salt Lake City, Utah

BUDGET AND FISCAL DISBURSEMENTS

Adopted Budget

	<i>Fiscal Year Ending 6-30-1970</i>	<i>Fiscal Year Ending 6-30-1971</i>	<i>Fiscal Biennium Ending 6-30-1971</i>
Compact Administration			
Personal Services	\$4,111	\$5,600	\$ 9,711
Travel and Subsistence	200	420	620
General Office Expense	400	430	830
Fiscal and Administrative	212	290	502
Washington Office Tech.Charge ..	477	660	1,137
Printing and Reproduction	500	500	1,000
Treasurer (Bond and Audit)	300	300	600
Transcribing Minutes	100	100	200
Legal Retainer Fee	300	300	600
Miscellaneous	0	0	0
Sub-Total	\$6,600*	\$8,600	\$15,200
Stream-Gaging Program			
U.S. Geological Survey	\$68,011	\$64,400	\$132,411
Total	\$74,611	\$73,000	\$147,611

*As revised by \$2,000 decrease.

Allocation of Budget

U.S. Geological Survey	\$35,812	\$32,200	\$ 68,012
State of Idaho	12,933	13,600	26,533
State of Utah	12,933	13,600	26,533
State of Wyoming	12,933	13,600	26,533
Total	\$74,611	\$73,000	\$147,611

All disbursements of Commission funds are made by check on vouchers signed by the Secretary-Treasurer, and approved and countersigned by the Chairman or Vice-Chairman.

The audit of accounts and records, including balance sheet of June 30, 1970 and statement of budget revenue and appropriation accounts for the fiscal year ended June 30, 1970, are included in this report as appendix A.

STREAM-GAGING PROGRAM

A cooperative, basin-wide program of stream gaging is administered by the Geological Survey project engineer at Logan, Utah. The Geological Survey and Bear River Commission contribute equally to finance the collection of daily streamflow records at about 50 gaging stations. An additional eight gaging stations in the basin are operated by Utah Power & Light Company in connection with Federal Power Commission projects. Streamflow records of significance to the Commission are published herein as appendix B.

A record of streamflow at the Idaho-Utah State line has been desirable for hydrologic studies in a proposed division of water between Idaho and Utah. A gaging station near Weston (three miles above State line) was operated from 1919 to 1944, but this record was not equivalent to flow crossing the line because of Weston Creek inflow and Cub River Pump outflow below the station. A new station was installed as of October 1, 1970 one mile above the State line.

A gaging station was installed just below the new Woodruff Creek Dam as of October 1, 1970 and Big Creek near Randolph, Utah gaging station was discontinued as of September 30, 1970 after 21 years of record.

ADMINISTRATION OF BEAR RIVER COMPACT

Provisions of the Compact are administered and enforced by direction of Bear River Commission. However, water rights within each State are adjudicated and administered in accordance with State law subject to limitations provided in the Compact.

Cooperative stream-gaging agreements with the Geological Survey include a program of administrative and technical assistance to the Commission financed without matching Federal funds. This program is directed by the Geological Survey project engineer at Logan where the project office is also the principal office of the Commission.

The project engineer is Assistant Secretary to the Commission with responsibility of providing technical assistance and current streamflow information required to administer the Compact. He establishes operational procedures, conducts hydrologic studies, compiles annual reports, and maintains the records of the Commission.

Seasonal daily records were collected on about 130 diversions above Bear Lake by district water commissioners under the general supervision of the Geological Survey. These records include all of the diversions from Bear River main stem and Smiths Fork, as they are required to administer the Bear River Compact. Daily discharge records for canals in the Central Division (see frontispiece map) are listed in tables 1-5; those in the Upper Division are not published herein but are maintained in the Commission file.

Expenses incurred by the Bear River Commission are paid equally by the signatory States. Compensation and expenses of the Federal representative, each commissioner, and each adviser are paid by the Government which he represents.

WATER SUPPLY

Streamflow in 1970 was near average both for the water year and the irrigation season; however, April-May streamflow was deficient due to delayed snowmelt which in turn increased the June-September flow to above average. Upper basin irrigators gain from delayed runoff from which the supply more nearly satisfies an ideal diversion requirement, while storable supply reaching Bear Lake generally falls short of expectation because of greater upstream depletion.

The bar charts on the opposite page (figure 1) illustrate a comparison of monthly and yearly streamflow in 1970 with a longtime average. Mean flow is shown at three gaging stations representing the Upper, Central, and Lower Divisions of the basin. Streamflow at the two upper stations is the major supply for the Upper and Central Divisions so is shown also on daily hydrographs in figures 2 and 3. Seasonal and water-year flow at these stations is summarized in the following table:

Discharge in Acre-feet May-September

	Average 1943-70	1969	1970
Upper Bear River	114,800	111,600	116,800
Smiths Fork	106,200	99,400	100,300
Logan River	117,900	112,900	127,900

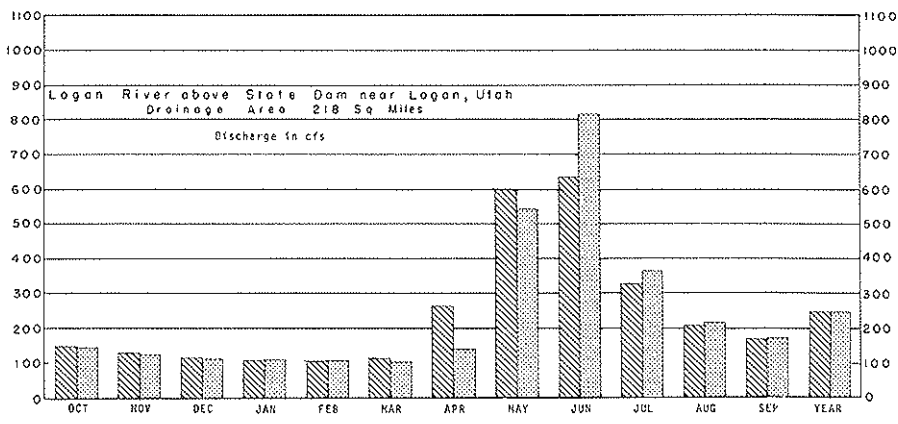
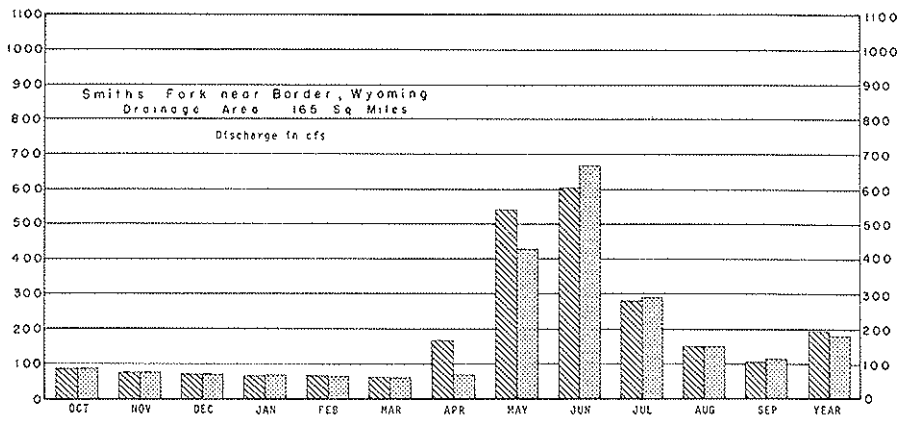
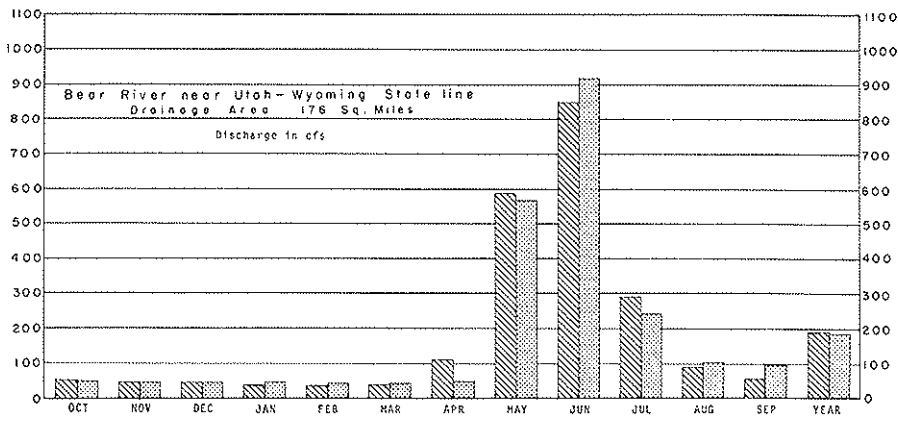
Water Year

	Average 1943-70	1969	1970
Upper Bear River	137,000	142,000	135,700
Smiths Fork	138,400	140,700	130,100
Logan River	177,100	180,200	177,900

Deficiency in storable supply to Bear Lake is illustrated in the bar charts in figure 4 and in the hydrographs of usable content and surface elevation in figure 5. The Lake gained only 100,000 acre-feet after April 1 compared to 231,000 in 1969, even though total supply in each year was about average. The bar charts (figure 4) show the respective amounts that Bear River and peripheral tributaries contributed to the Lake in the current year and as a longtime average. We see that, exclusive of Bear River, the Lake on an average gains about 6,000 acre-feet annually over its evaporation and other losses. In 1970 however, these losses would have exceeded tributary inflow by 36,000 acre-feet. Though Bear River inflow was only 75 percent of average, total outflow also was in this range of average, so the river inflow and outflow about balanced.

Bear Lake Elevation Utah Power & Light Co. Datum

Water Year	Beginning of Water Year	End of Storage Period	End of Water Year
1968	5,920.36	5,921.23	5,920.02
1969	5,920.02	5,921.58	5,919.80
1970	5,919.80	5,921.08	5,919.23





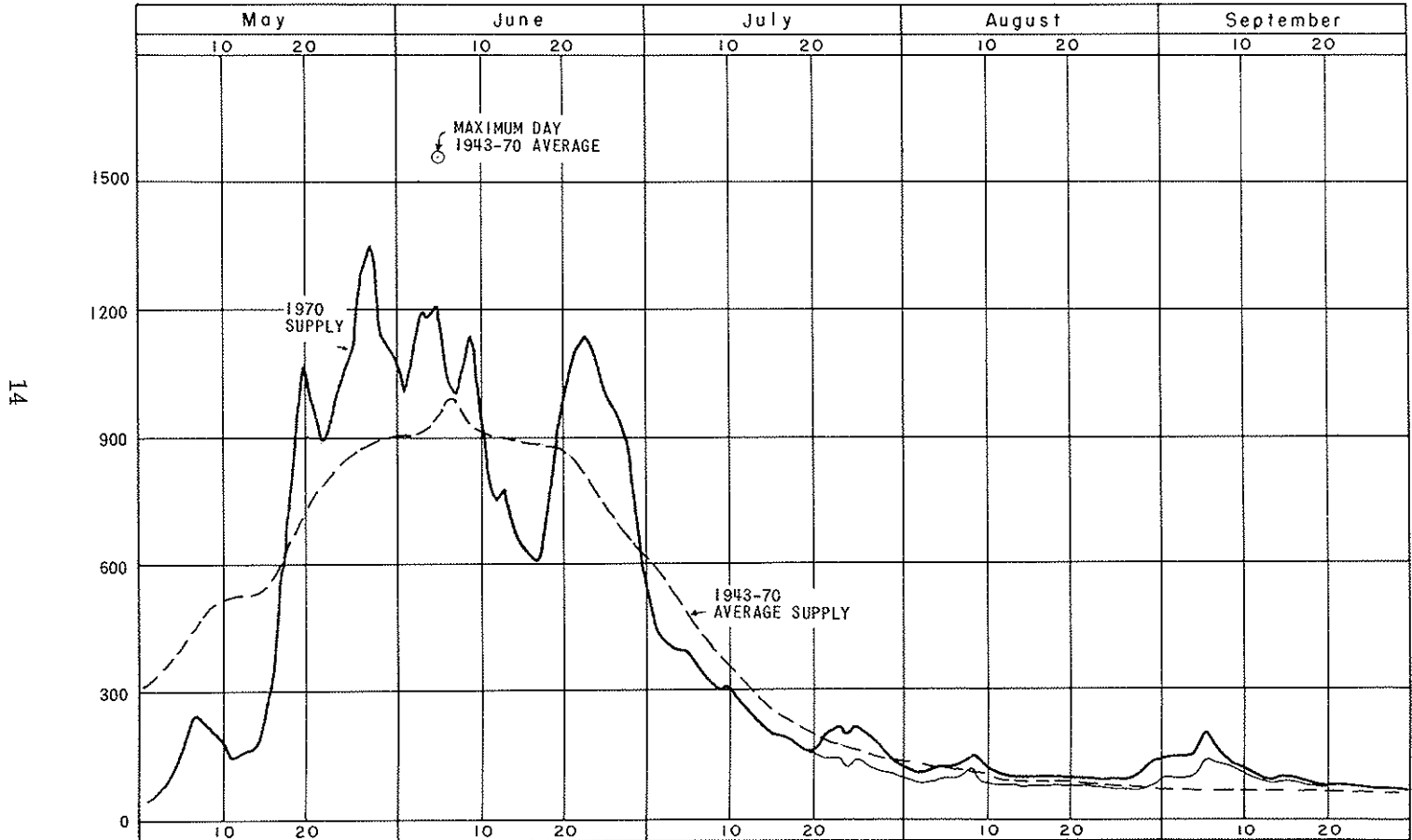
 Monthly and Yearly Mean Discharge for Period 1943-70
 Monthly and Yearly Mean Discharge for 1970 Water Year

Figure 1. Comparison of discharge at three representative gaging stations in 1970 with average discharge for period 1943-70

UPPER DIVISION - BEAR RIVER SUPPLY *

CUBIC FEET PER SECOND



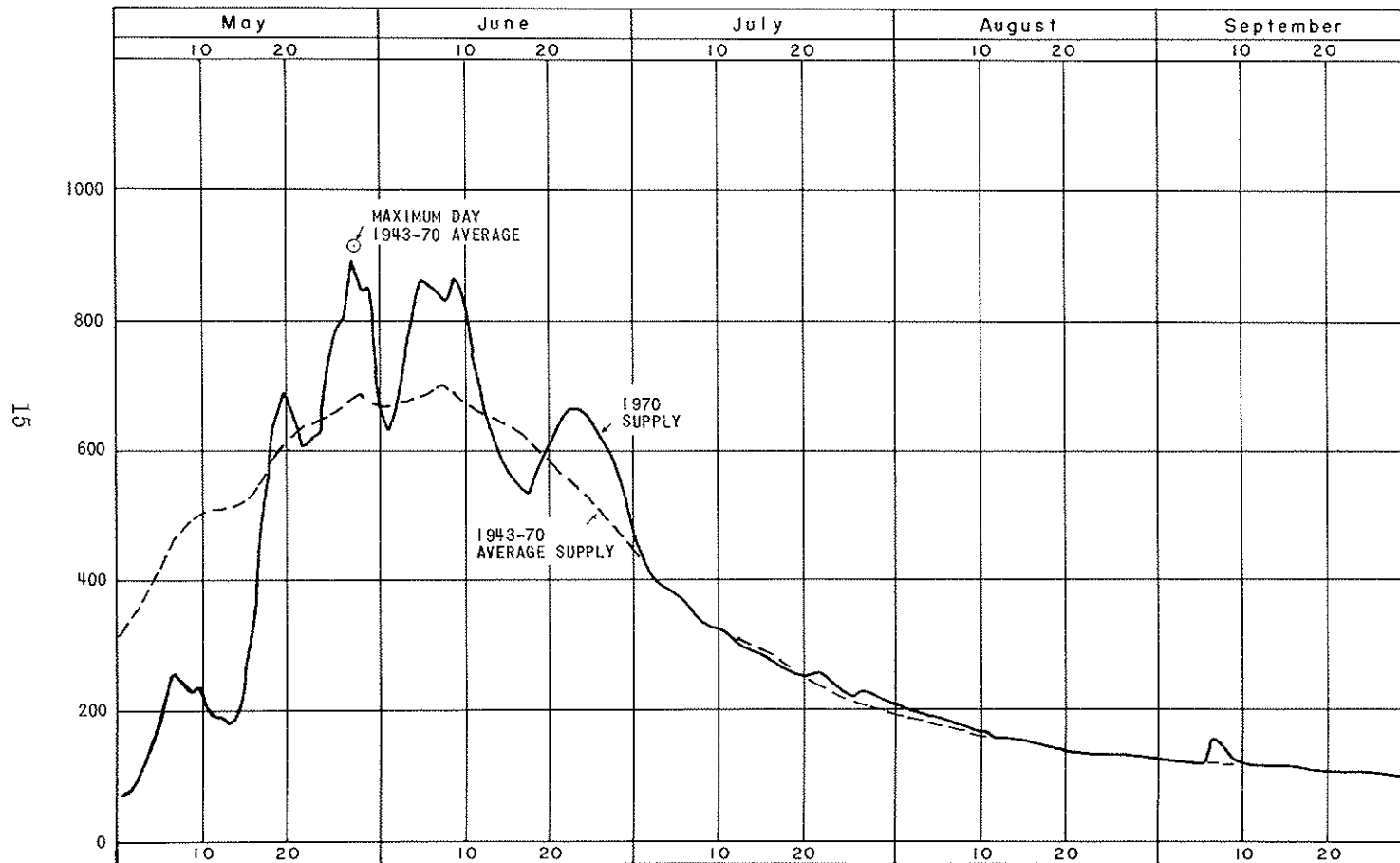
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*Bear River near Utah-Wyoming State line

Figure 2

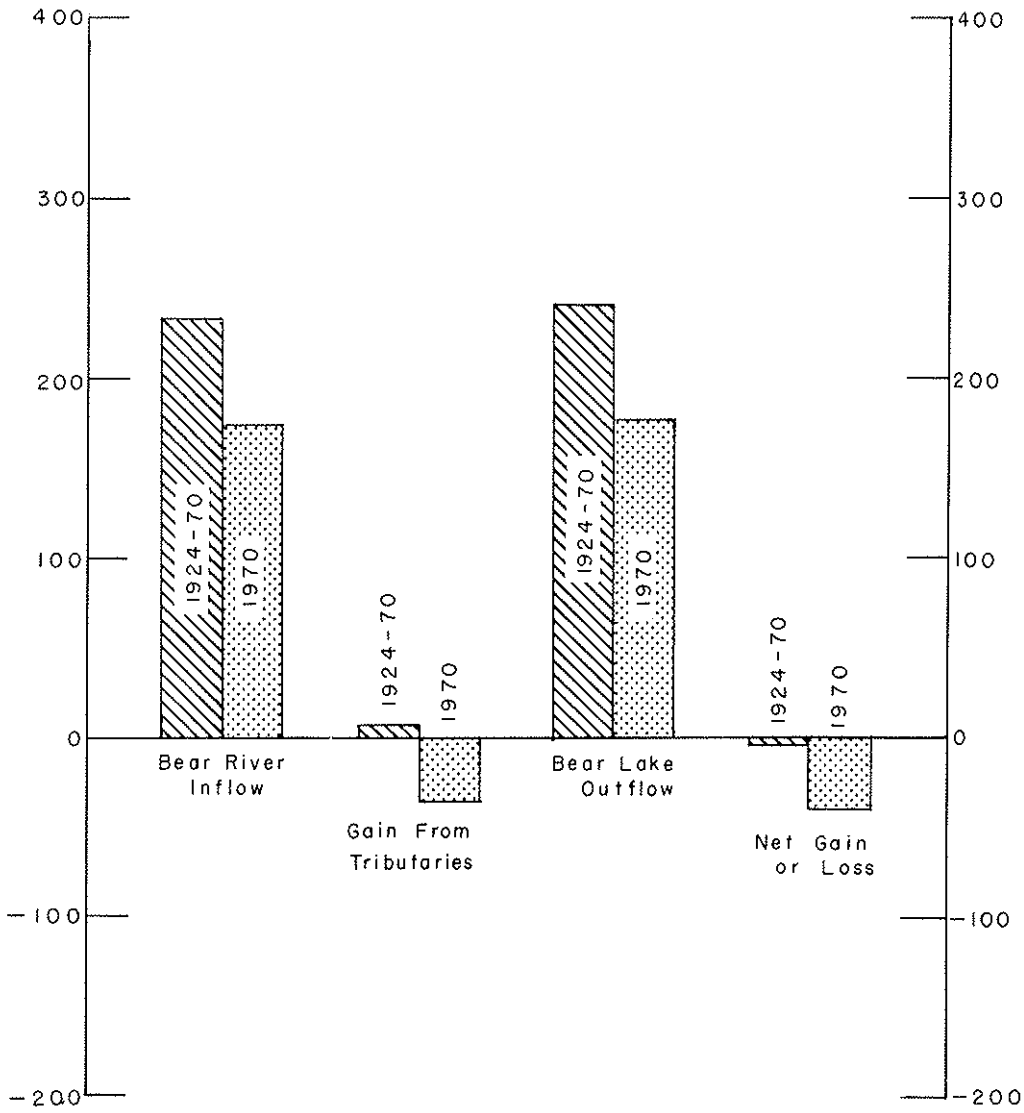
CENTRAL DIVISION - SMITHS FORK SUPPLY *

CUBIC FEET PER SECOND



*Smiths Fork near Border, Wyoming

Figure 3



BEAR LAKE

Annual Quantities in Thousands of Acre-Feet

Figure 4

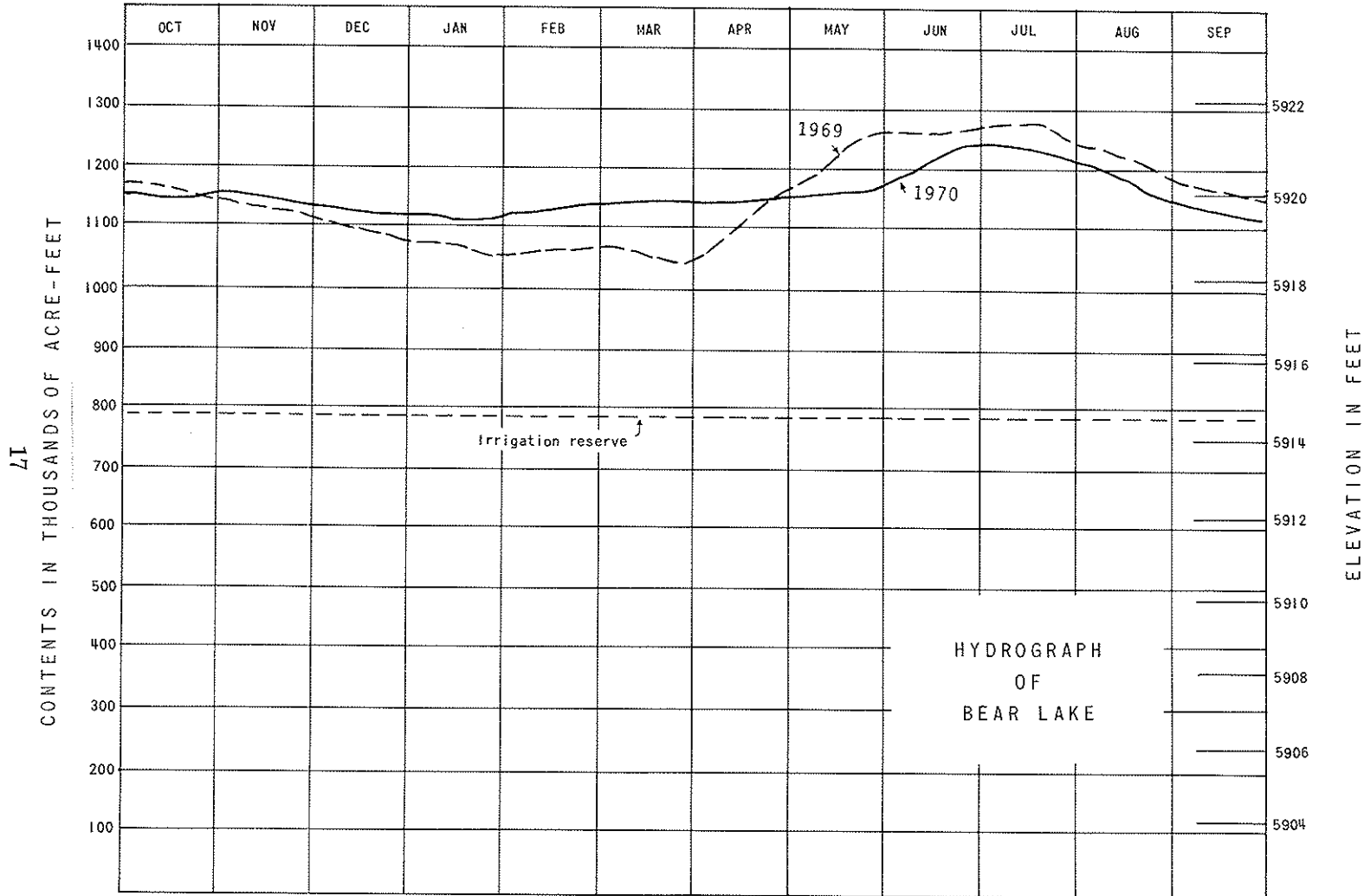


Figure 5

STREAMFLOW DISTRIBUTION

Records of diversions from Bear River main stem above Bear Lake and from Smiths Fork were collected by district water commissioners and submitted weekly to the Assistant Secretary. He computed section diversions and allocations and informed these district commissioners and members of the Commission of the quantities diverted and of State-section allocations, where applicable, for the regulatory action needed to comply with the Compact.

Upper Division

The Upper Division comprises that part of the basin above and including Pixley Dam and includes two sections in Wyoming and two in Utah. The Compact provides that when the total diversions in the division plus the flow passing Pixley Dam is less than 1,250 cfs (divertible flow), a water emergency exists and such divertible flow is allocated to sections as follows:

Upper Utah Section Diversions	0.6 percent
Upper Wyoming Section Diversions	49.3 percent
Lower Utah Section Diversions	40.5 percent
Lower Wyoming Section Diversions	9.6 percent

Interstate regulation in this division in years when water supply is average or better usually is not required during the critical part of the irrigation season in areas where meadow hay is predominant. Also after about July 10, Upper Wyoming Section allocation is increased under terms of the Compact by the unused allocation (9.6 percent) to Lower Wyoming Section.

Hydrographs of water diverted from direct flow and from storage, with compact allocation where applicable, are shown in figures 6, 7, and 8 for the three principal sections in the Upper Division. Upper Wyoming Section (figure 6) diverted natural or direct flow within compact allocation during both periods of water emergency, May 1-20 and July 8 - September 30.

Provisions of Article IV would allocate not only the unused allocation (9.6 percent) of Lower Wyoming to Upper Wyoming but also the unused allocation (40.5 percent) of Lower Utah. Under present practices, therefore, it would be almost impossible for Upper Wyoming to divert in excess of allocation after mid-July. (The plotted allocation includes only the unused portion from Lower Wyoming.) This fact should not be used to infer that direct-flow provisions of the Compact are meaningless in the Upper Division. Benefits of compact regulation in this division will depend on available water supply and the period of regulation. Under the premise and terms of the Compact, the Upper Division is not regulated for the benefit of the Central or Lower Division (except under special declaration of water emergency, Article IV 3B). Thus, it would be of no benefit in this division to regulate a section when neither of the two sections below would utilize the supply made available.

A study of hydrographs in the lower sections of the Upper Division (figures 7 and 8) shows that under present demand, allocation of direct flow has little significance after mid-July. (Note the amount leaving the division past Pixley Dam, figure 8.) Storage water was released from Woodruff Narrows Reservoir (figure 9) in the amount of about 17,000 acre-feet, and combined release from Sulphur and Whitney Reservoirs was about 9,000 acre-feet.

UPPER DIVISION - UPPER WYOMING SECTION

CUBIC FEET PER SECOND

19

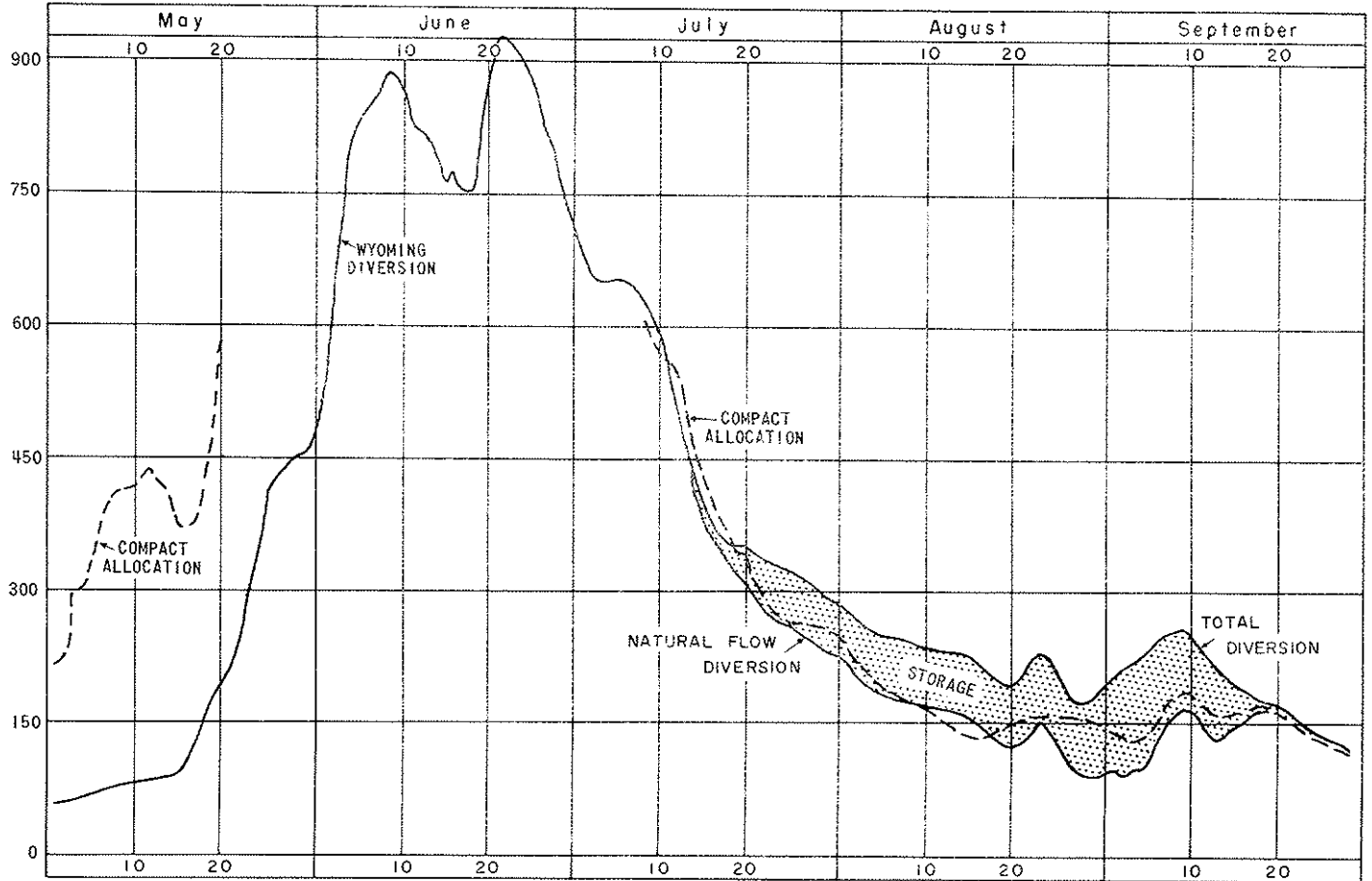


Figure 6

UPPER DIVISION - LOWER UTAH SECTION

CUBIC FEET PER SECOND

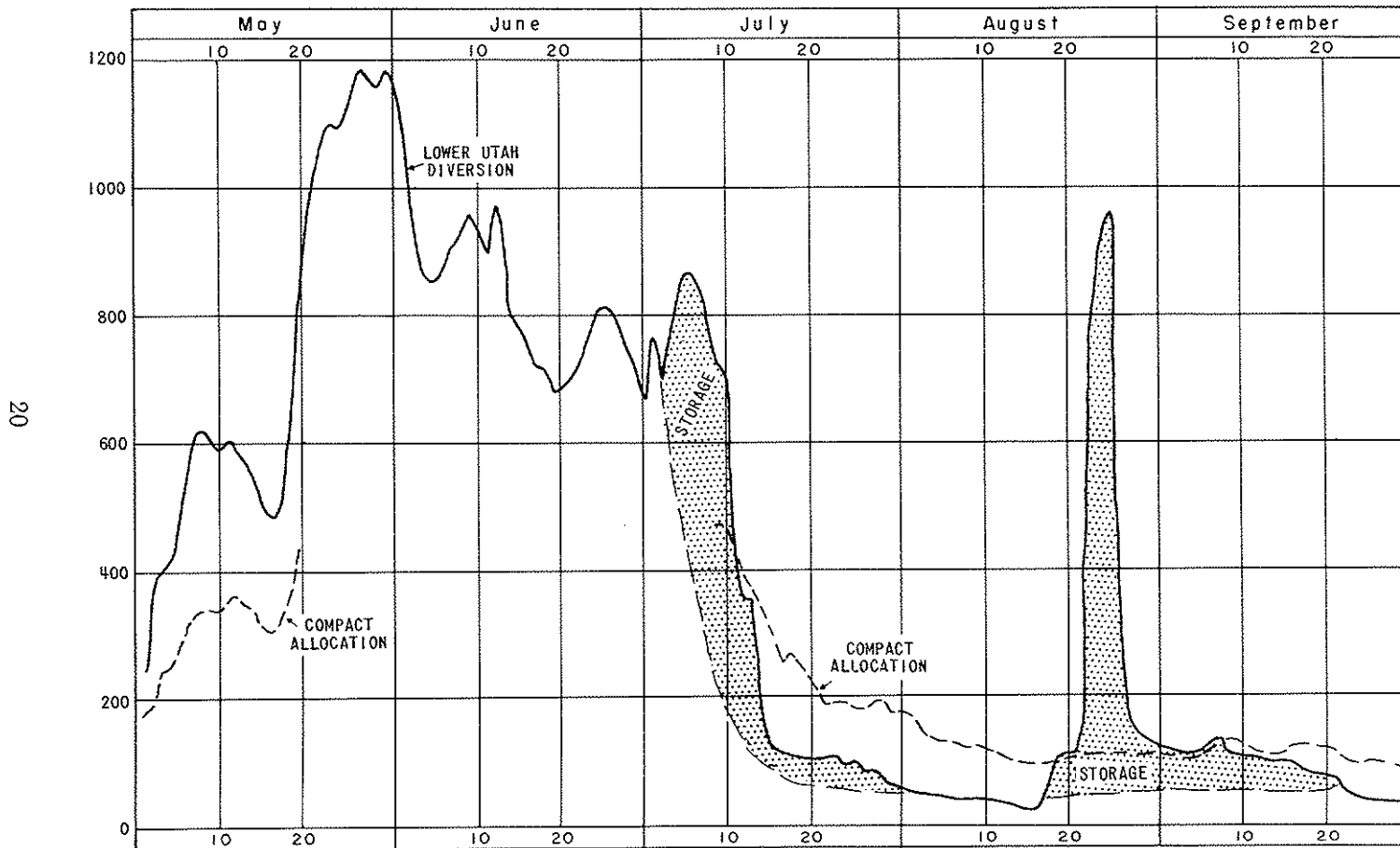


Figure 7

UPPER DIVISION - LOWER WYOMING SECTION

CUBIC FEET PER SECOND

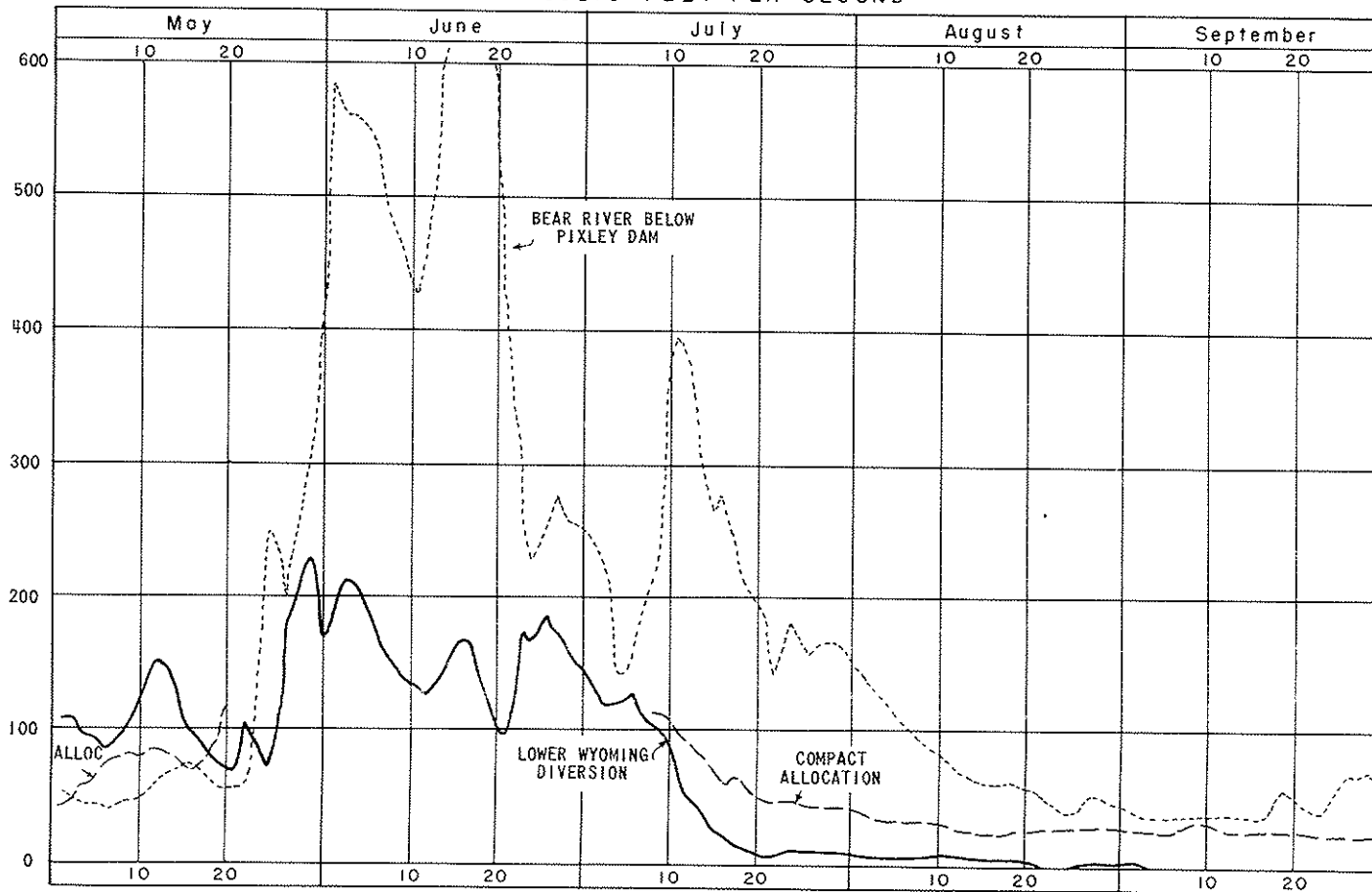


Figure 8

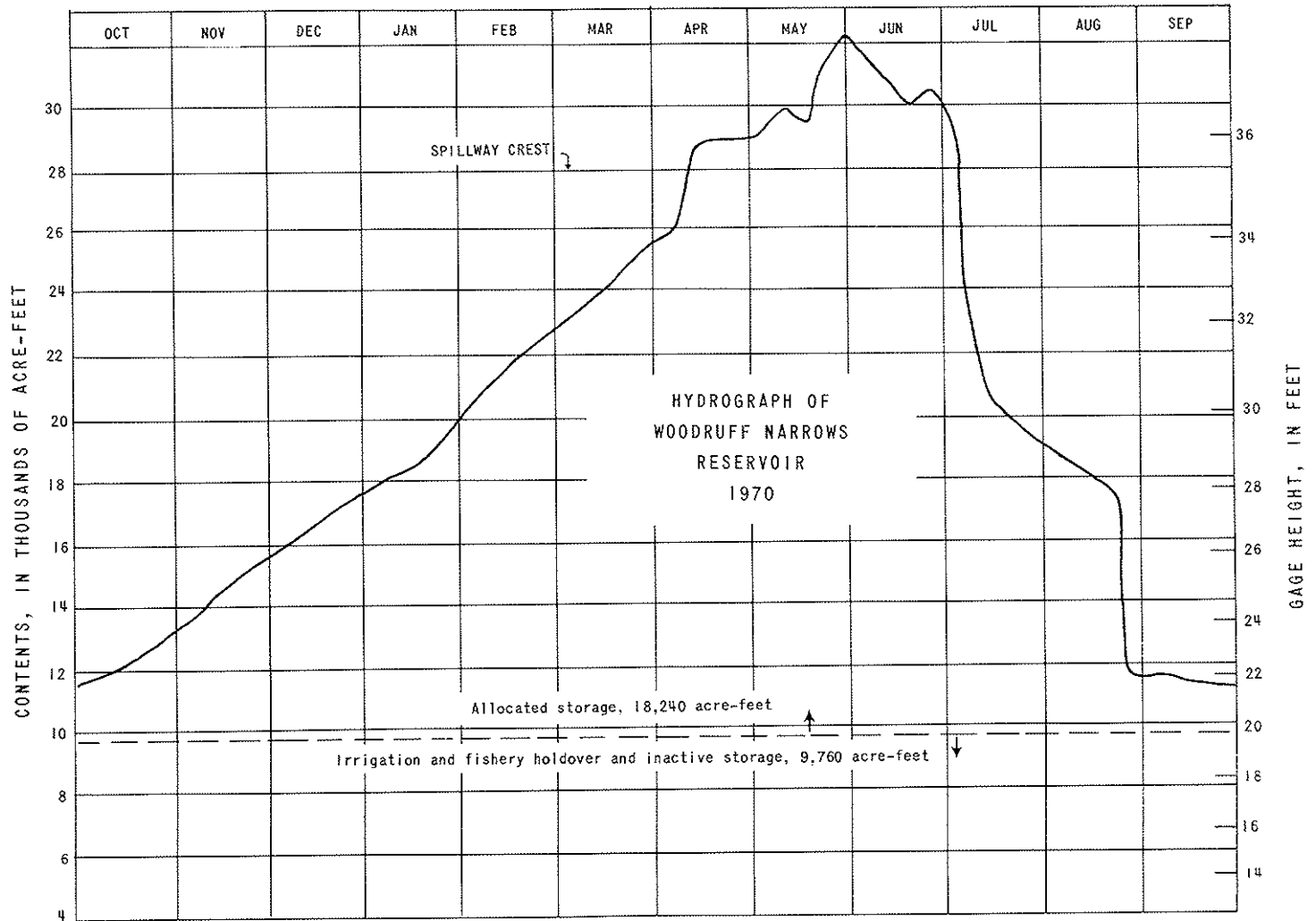


Figure 9

Central Division

The Central Division comprises that part of the basin from Pixley Dam down to and including Stewart Dam (the point of diversion to Bear Lake). It includes a section in Wyoming and one in Idaho.

Divertible flow in the Central Division is the sum of diversions from Smiths Fork and designated tributaries, diversions from Bear River in the division, and flow passing Stewart Dam. A water emergency shall exist when this divertible flow is less than 870 cfs, or when Bear River entering Idaho (gaging station at Border) is discharging less than 350 cfs. Wyoming diversions are limited to 43 percent of the divertible flow during a water emergency.

Hydrographs pertaining to Wyoming Section in the Central Division are shown in Figure 10. A water emergency existed May 1-19 and after July 16, when divertible flow was less than 870 cfs. Bear River flow entering Idaho was less than 350 cfs May 1-16 and after July 21. The effect of delayed snowmelt, mentioned earlier, is shown in the hydrographs of divertible flow and the flow entering Idaho past Bear River at Border gage. High streamflow occurred during the first 20 days in June followed by a rapid decline at a rate that would initiate a water emergency by about July 7. However, storage released from Woodruff Narrows Reservoir levelled off the decline, and the Central Division supply increased as Utah and lower Wyoming sections ceased diverting about July 10. This buildup in supply came directly from the Upper Division and delayed the water emergency condition about 10 days. Wyoming diverted within compact allocation except for a 2-week period in August when the allocation was exceeded by an average of 12 cfs or 7 percent. In the period of regulation just prior to this time, the section diverted less than the allocation by an average of 41 cfs. Similar hydrographs for Idaho are shown in figure 11. Diversion was less than the allocation by approximately the flow in the Rainbow Inlet Canal, which is a part of the total divertible flow and in the same category as water leaving the division.

Effectiveness of interstate regulation in the dry years of 1961 and 1966 is indicated in the following table by the small spread in diversion rate per acre in the two sections. In good years with less restriction, the Wyoming rate is much higher and reflects the greater requirement of gravelly soils.

Diversion in acre-feet per acre May-September

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Wyo.	2.16	5.82	5.06	4.48	4.96	3.32	4.78	4.02	4.24	4.25
Idaho	1.72	3.26	3.28	2.91	2.87	2.95	3.05	3.39	3.48	3.50

Lower Division

Authority is given the Commission upon its own motion to declare a water emergency in any division, and in the Lower Division such a declaration may be made also upon petition of an aggrieved Utah user against an Idaho user. Upon declaration of an emergency, the Commission is required to enforce water-delivery schedules based on priority of rights without regard to State lines.

No petitions were filed with the Commission or water emergencies declared in the Lower Division in 1970.

Interstate Tributaries

An aggrieved user on an interstate tributary may petition for declaration of water emergency and distribution of flow under direction of the Commission. Interstate arbitration on tributaries was not requested in 1970.

STORAGE

New Storage

The Compact defines storage rights in existing reservoirs above Bear Lake and provides for an additional storage allowance of 36,500 acre-feet annually. Idaho users on Thomas Fork are allotted 1,000 acre-feet of this amount and the remainder is divided equally between Wyoming and Utah.

The reservoirs shown below have been constructed under additional storage provisions of the Compact and all were filled to capacity in 1970. A total allocation to Woodruff Narrows Reservoir for storage of 18,240 acre-feet includes 15,240 acre-feet from Utah and 3,000 acre-feet from Wyoming.

<i>Reservoir</i>	<i>Allocation</i>
Sulphur Creek Reservoir (Wyoming).....	4,614 ac-ft
Sulphur Creek Reservoir Enlargement (Wyoming).....	1,100 ac-ft
J. L. Martin Reservoir, Sulphur Creek (Wyoming)	88 ac-ft
A. J. Barker Reservoir, Yellow Creek (Utah)	162 ac-ft
Hatch Brothers Reservoir (Utah)	350 ac-ft
Woodruff Narrows Reservoir (Utah-Wyoming)	18,240 ac-ft
Whitney Reservoir (Wyoming)	4,200 ac-ft
Wyman Reservoir (Wyoming).....	22 ac-ft
Massae Reservoir (Wyoming).....	107 ac-ft
Woodruff Creek Reservoir (Utah)	2,000 ac-ft
Total Allocation	30,883 ac-ft

Bear Lake

Article V of the Compact provides an irrigation reserve level in Bear Lake below which water shall not be released solely for generation of power, except in emergency, but after release for irrigation it may be used in generating power as it is conveyed to irrigation diversion works. The reserve is to be increased by designated amounts as additional storage, under terms of the Compact, is developed above Bear Lake. Construction of Woodruff Creek Dam, which began impounding water in October 1970 raised the allocated storage now constructed to more than 30,000 acre-feet. Accordingly, a resolution was adopted in November, 1970 increasing the irrigation reserve elevation to 5,914.61 feet (794,900 ac-ft.) corresponding to 30,000 acre-feet of additional storage allocation.

APPLICATIONS FOR APPROPRIATION

Article X of the Compact states, "Applications for appropriation, for change of point of diversion, place and nature of use, and for exchange of Bear River water shall be considered and acted upon in

accordance with the law of the State in which the point of diversion is located, but no such application shall be approved if the effect thereof will be to deprive any water user in another State of water to which he is entitled. The official of each State in charge of water administration shall, upon the filing of an application affecting Bear River water, transmit a copy thereof to the Commission."

Copies of filings presented to the Commission in 1970 covered pending or approved applications in the amount of 107.3 cfs which included 56.7 cfs in Utah, 29.5 cfs in Wyoming, and 21.1 cfs in Idaho. About 50 percent of this amount pertained to ground water withdrawal. Wyoming applications included storage rights for 184 acre-feet to be diverted primarily from Mill Creek.

The Commission has not protested any filing that has been presented either in 1970 or in any earlier year. Yet, in the aggregate, these new rights continue to accumulate at a rather high rate, and the possible effect on rights in another State continues to be a problem of concern to the Commission. Eventually, the effect on streamflow and established rights, particularly of additional ground water use, will need to be studied and action taken if necessary to implement the intent of Article X of the Compact.

REVIEW OF COMPACT PROVISIONS

Article XIII, Bear River Compact, requires that the Commission review provisions of the Compact at intervals not exceeding twenty years and may propose amendments to any such provision for consideration of the legislatures of the signatory States. Wyoming commissioners have urged such a review with particular emphasis on their recommendation for an increase in storage allocation to the basin above Bear Lake. Discussion on the subject has continued in the 1970 meetings of the Commission with emphasis on the responsibility of the Bear River Commission and the function of a Bear River Negotiating Commission consisting of members from each State appointed by the respective Governors. An important issue, in addition to the Wyoming recommendation, is the division of unconsumed river flows between Idaho and Utah in the Lower Division. This allocation may or may not be accomplished through modification of the Compact, but it has been the principal consideration of the Negotiating Commission whose membership includes but is not limited to members of the Bear River Commission.

A Committee of the Bear River Commission, consisting of one member from each State and the Chairman and Assistant Secretary as ex-officio members, was appointed in the regular meeting to make recommendations on provisions of the Compact that should be considered for modification. The Committee submitted a report in the next annual meeting that suggested a number of items to be considered for modification.

CENTRAL DIVISION - WYOMING SECTION

CUBIC FEET PER SECOND

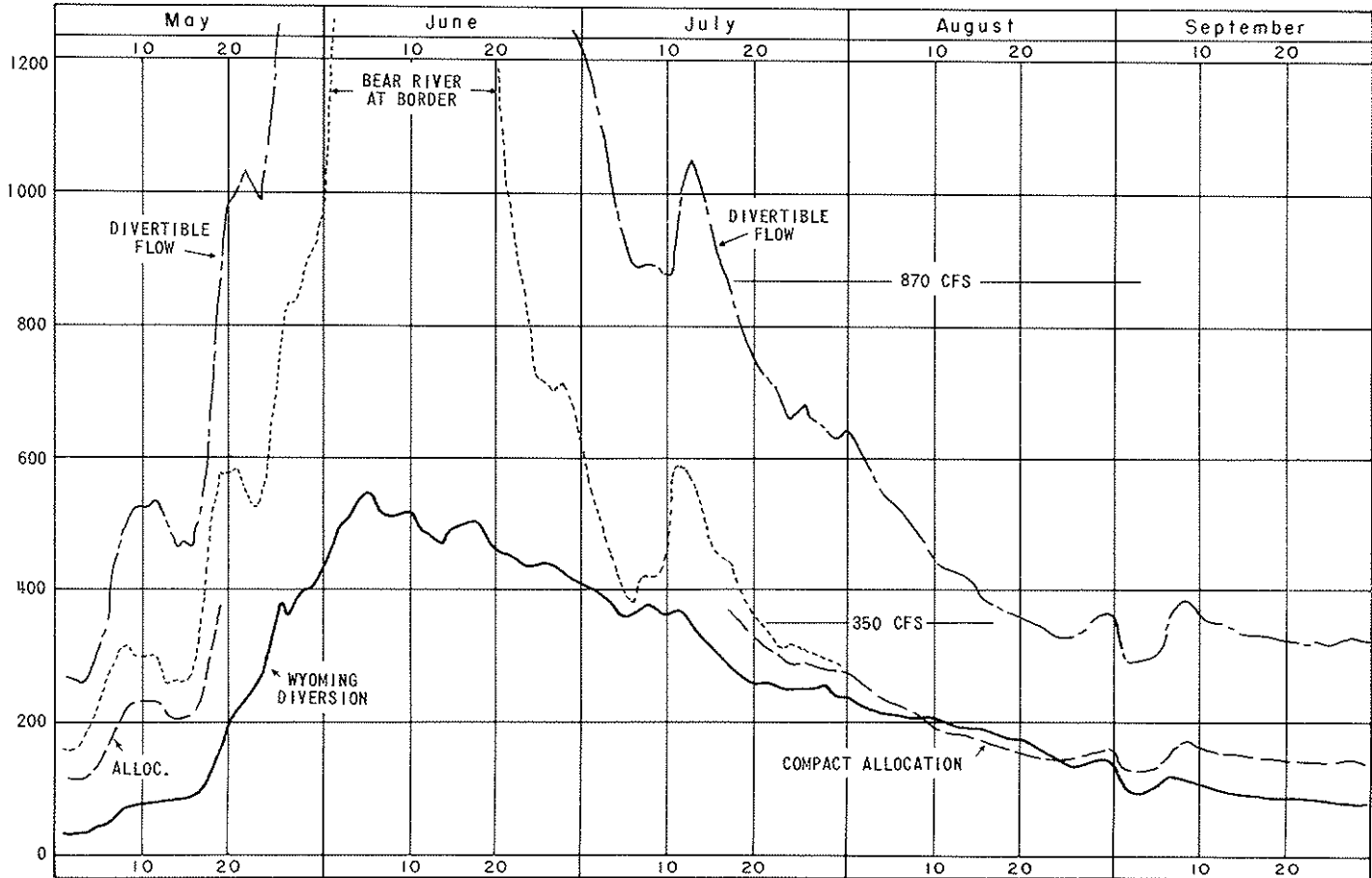
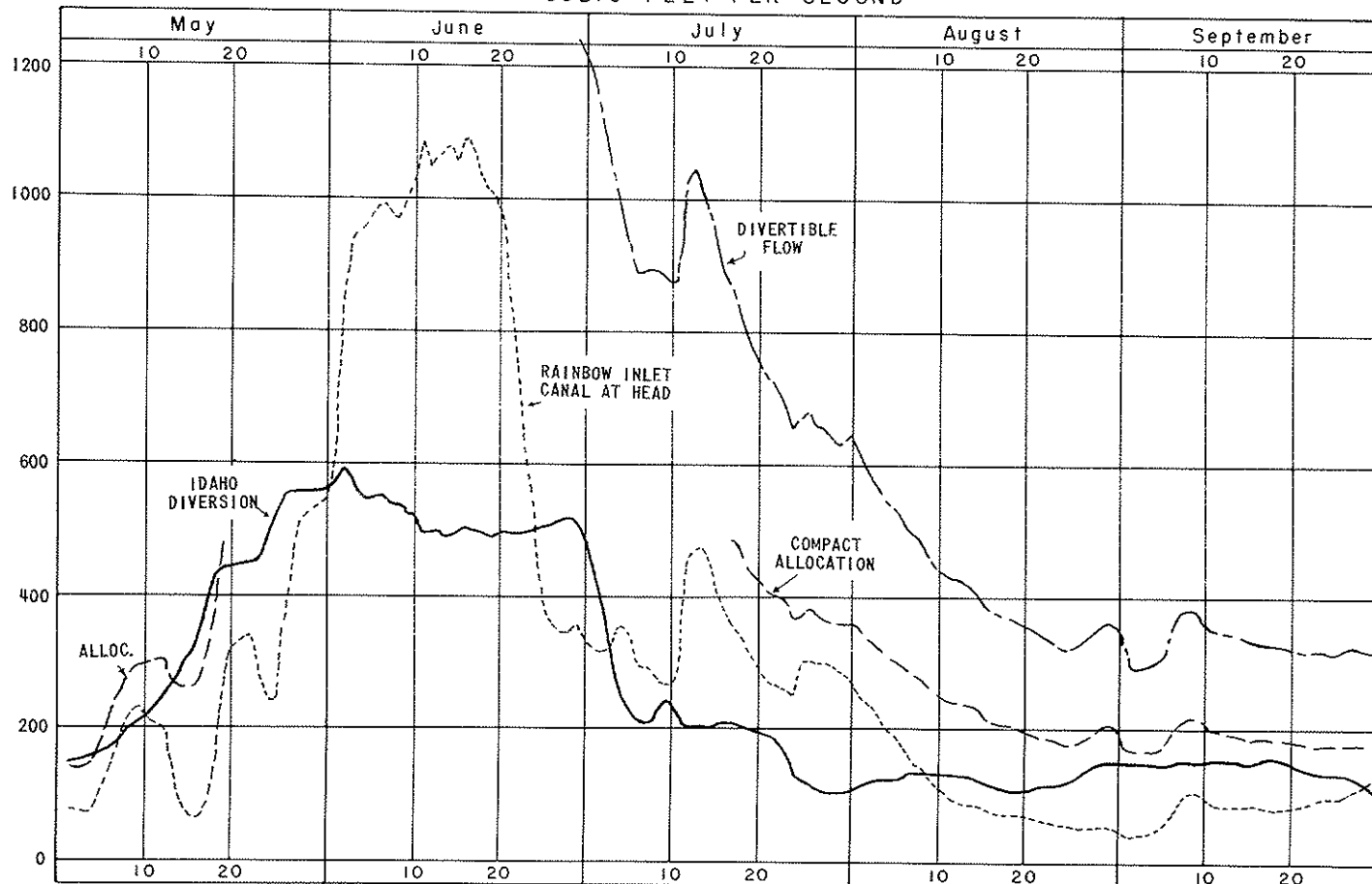


Figure 10

CENTRAL DIVISION - IDAHO SECTION

CUBIC FEET PER SECOND



27

Figure 11

APPENDIX A

WM. DEAN KIMBER CERTIFIED PUBLIC ACCOUNTANT

4315 SOUTH 3720 WEST
SALT LAKE CITY, UTAH 84120

MEMBER
AMERICAN INSTITUTE OF
CERTIFIED PUBLIC ACCOUNTANTS

Bear River Commission
Utah State Capitol
Salt Lake City, Utah

November 23, 1970

Gentlemen:

In accordance with your instructions I have examined the accounting records of the Bear River Commission for the fiscal year ended June 30, 1970 and I submit my report of the examination.

My examination included a review of the financial transactions and an examination of the statement of revenue and expenditures for the year and budget estimates and related expenses as included in the minutes of the Commission meetings. The budget in the audit report is adjusted to reflect a supplemental appropriation of \$3,611 to offset pay raises of Federal employees.

I confirmed the funds available at June 30, 1970 by direct correspondence with the depository. My examination was conducted in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances. All cash receipts have been properly accounted for and all disbursements were duly authorized. Extraneous income arose during the year from the sale of a stream gauge originally purchased with funds from the Bear River Commission Cooperative Account and interest from savings. Expenditures for operations were made directly by the United States Geological Survey and are included in detail in this report. Administrative expenses in the amount of \$1,204.00 were disbursed by the Salt Lake City Office.

The results of my examination are presented herewith and include comments and explanations as appropriate in the following described statements.

Exhibit "A" Statement of Revenue and Expenditures for the fiscal year ended June 30, 1970.

Exhibit "B" Statement of Available Revenue and Appropriations thereof for the fiscal year, showing balances at June 30, 1970.

Schedule "A-1" Statement of Expenditures--Stream-Gauging Program Allocated to the United States Geological Survey and to the Bear River Commission.

GENERAL COMMENTS

The Bear River Compact is a tri-state agreement between Wyoming, Idaho and Utah for the utilization and development of the waters of the Bear River. The Commission was organized April 5, 1958 and the by-laws were adopted April 26, 1958. The Commission is the administrative agency which carries out the provisions of the Bear River Compact. Three Commissioners from each of the three represented states, plus one non-voting Commissioner representing the United States, constitutes the ten member Commission. The United States representative acts as Chairman. All expenses of the Commission are shared by the three states on an equal basis.

The Commission enters into an annual agreement with the United States Geological Survey, Department of the Interior, for the operation and maintenance of gauging stations. Expenses for the gauging station program are shared equally by the Commission and the Geological Survey, except the Geological Survey makes up any budget deficits arising from Federal salary increases. Other expenses attributable to the Commission are paid by the Commission whether the expense is incurred by the Geological Survey or the Salt Lake City Office. Detail of the expenses incurred under the agreement are shown in Schedule "A-1."

In my opinion, the accompanying statements of revenue and expenditures and supplemental statement of budget appropriations and related disbursements present fairly the position of the Bear River Commission at June 30, 1970 and the results of the financial transactions for the period then ended in conformity with generally accepted accounting principles applied on a consistent basis except expenses incurred by the United States Geological Survey during the last six months of the fiscal year ended June 30, 1969 in the amount of \$17,201 were not reimbursed until July 1969. These expenses were deferred pending the maturity of savings certificates. Certificates in the amount of \$16,000 were purchased in January 1969 and certificates in the amount of \$12,000 were redeemed in July 1969. The redemption proceeds were used to pay the United States Geological Survey for expenses incurred during the last six months of fiscal 1969.

Yours very truly,

W. H. Kimber

BEAR RIVER COMMISSION

Statement of Revenue & Expenses
For the Fiscal Year Ended June 30, 1970

(Excluding Expenses in the Amount of \$17,201 Paid in July 1969 Applicable
to Fiscal Year Ended June 30, 1969--See Schedule "A-1")

REVENUE:

Assessments:			
State of Wyoming		\$13,600.00	
State of Idaho		13,600.00	
State of Utah		<u>13,600.00</u>	\$40,800.00
Other Income:			
Sale of stream-gauge		63.45	
Interest		<u>1,295.82</u>	
			<u>1,359.27</u>
Total Revenue			<u>42,159.27</u>

EXPENDITURES:

Commission's portion of direct expenses of the
stream-gauge program, Schedule "A-1"

Personal Services	\$27,984.00	
Travel and Subsistence	2,200.00	
General Office	2,206.00	
Fiscal and Administration	1,572.00	
Washington Office Charges	<u>3,538.00</u>	
Total--Schedule "A-1"		37,500.00
Administrative Expenses		
Auditing Fee	200.00	
Legal Consultant	300.00	
Transcript of Minutes	100.00	
Printing Annual Report	529.00	
Insurance Bond	50.00	
Supplies	<u>25.00</u>	
		<u>1,204.00</u>
		<u>38,704.00</u>

EXCESS OF REVENUES OVER EXPENDITURES FOR
THE FISCAL YEAR ENDED JUNE 30, 1970

3,455.27

EXCESS OF INVESTMENTS IN SAVINGS OVER
FUNDS AVAILABLE JULY 1, 1959

Balance per bank	516.44
Savings Certificates	<u>2,938.83</u>
Funds Available at June 30, 1970	4,000.00
	<u>\$ 6,938.83</u>
Expenditures as above	38,704.00
Expenditures incurred through stream-gauging program allocated to and paid direct by--	
United States Geological Survey	<u>35,811.00</u>
Total expenditures as per Exhibit "B"	<u>\$74,515.00</u>

BEAR RIVER COMMISSION

Statement of Available Revenue and Appropriation Thereof
for the Fiscal Year Ended June 30, 1970

	Expected Revenue & Expenditures as Budgeted*	Actual Revenue & Expenditures	Balance or (Deficit) Budget
<u>CASH REVENUES</u>			
Cash Balance	\$ (516.44)	\$ (516.44)	\$ -0-
Savings Certificates	<u>4,000.00</u>	<u>\$ 4,000.00</u>	<u>-0-</u>
Balance of Funds June 30, 1969	3,483.56	3,483.56	-0-
Revenue:			
Assessments:			
State of Wyoming	13,600.00	13,600.00	-0-
State of Idaho	13,600.00	13,600.00	-0-
State of Utah	13,600.00	13,600.00	-0-
Other Income:			
Sale of stream-gauge	-0-	63.45	63.45
Interest	<u>-0-</u>	<u>1,295.82</u>	<u>1,295.82</u>
	44,283.56	45,642.83	1,359.27
<u>FUNDS FURNISHED BY UNITED STATES</u>			
<u>GEOLOGICAL SURVEY DIRECT</u>	35,811.00	35,811.00	-0-
Total Funds Available	<u>80,094.56</u>	<u>81,453.83</u>	<u>1,359.27</u>
<u>APPROPRIATIONS:</u>			
Stream-gauging--Schedule "A-1"	68,011.00	68,011.00	-0-
Personal Services	4,111.00	4,111.00	-0-
Travel and Subsistence	200.00	200.00	-0-
Fiscal and Administrative	212.00	212.00	-0-
Washington Office Service	477.00	477.00	-0-
Office and Supplies	400.00	325.00	75.00
Annual Report	500.00	529.00	(29.00)
Treasurer's Bond and Audit	300.00	250.00	50.00
Transcript of Minutes	100.00	100.00	-0-
Legal Retainer Fee	<u>300.00</u>	<u>300.00</u>	<u>-0-</u>
Total Appropriations	74,611.00	74,515.00	96.00
Unappropriated Surplus**	2,000.00	-0-	2,000.00
Unappropriated at July 1, 1969	<u>3,483.56</u>	<u>-0-</u>	<u>3,483.56</u>
	<u>80,094.56</u>	<u>74,515.00</u>	<u>5,579.56</u>
	\$ -0-	\$ 5,938.83	\$ 6,938.83
Funds Available at June 30, 1970	<u><u> </u></u>	<u>\$ 6,938.83</u>	<u>\$ 6,938.83</u>

*As revised June 10, 1970.

**The previously approved budget included an estimated pay increase for Federal employees. Two pay increases were made before the end of this fiscal year and the Federal Government made two supplemental allocations totaling \$3,611 to partially offset this increase. Therefore the fiscal year ended with a \$2,000 surplus. This amount will be credited to Compact Assistance in the budget which is unmatched by Federal money, and will revert to the unobligated balance in the Commission bank account.

BEAR RIVER COMMISSION

Statement of Expenditures--Stream-Gauging Program
Allocated to the United States Geological Survey and to the
Bear River Commission for the Fiscal Year Ended June 30, 1970
 (Excluding Expenses in the Amount of \$17,201 Paid in July 1969)**

	<u>Allocable Expenditures</u>			<u>Charged Direct to Bear River Commission**</u>	<u>Total Expenses to Bear River Commission**</u>
	<u>Total</u>	<u>U.S.G.S.</u>	<u>Bear River Commission</u>		
Personal Services	\$51,358.00	\$27,485.00*	\$23,873.00*	\$ 4,111.00	\$27,984.00
Travel and Subsistence	4,000.00	2,000.00	2,000.00	200.00	2,200.00
General Office	3,812.00	1,906.00	1,906.00	300.00	2,206.00
Fiscal and Administration	2,720.00	1,360.00	1,360.00	212.00	1,572.00
Washington Office	<u>6,121.00</u>	<u>3,060.00</u>	<u>3,061.00</u>	<u>477.00</u>	<u>3,538.00</u>
Totals	<u>\$68,011.00</u>	<u>\$35,811.00</u>	<u>\$32,200.00</u>	<u>\$ 5,300.00</u>	<u>\$37,500.00</u>

*Unequal distribution of personal services arose because of a supplemental Federal appropriation for salary increases.

**Excludes the following expenses incurred in the fiscal year ended June 30, 1969 paid in July 1969:

	<u>Bear River Commission</u>	<u>Charged Direct to Bear River Commission</u>	<u>Total</u>
Personal Services	\$12,272.00	\$ 551.00	\$12,823.00
Travel and Subsistence	1,020.00	262.00	1,282.00
General Office	544.00	131.00	675.00
Fiscal and Administrative	510.00	134.00	744.00
Washington Office	<u>1,372.00</u>	<u>305.00</u>	<u>1,677.00</u>
Totals	<u>\$15,818.00</u>	<u>\$ 1,383.00</u>	<u>\$17,201.00</u>

APPENDIX B

GAGING STATION RECORDS

Records of streamflow for State line and other key stations are included herein. The record consists of description of the station and a table showing the daily discharge in cubic feet per second and monthly and yearly runoff in acre-feet for the 1970 water year.

The description of the station gives the location, drainage area, records available, type and history of gage, average discharge, extremes of discharge, general remarks, and a statement of cooperation where applicable. This is essentially the same information published in annual water-supply papers of the Geological Survey.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total second-foot-days for the month. The line headed "Mean" gives the average flow in cubic feet per second (second-feet) during the month. Quantities for the month are expressed in acre-feet (line headed "Ac-ft").

Records included herein have been collected by the U. S. Geological Survey through cooperative agreement with the Bear River Commission and by the Utah Power & Light Company.

BEAR RIVER BASIN

10-112. West Fork Bear River at Whitney Dam near Oakley, Utah

LOCATION.--Lat 40°50'30", long 110°55'20", in NE¼ sec. 9, T.1 N., R.9 E., Summit County, on left bank, 1,380 ft below Whitney Dam, 7 miles upstream from Deer Creek, 21.5 miles northeast of Oakley.

DRAINAGE AREA.--7.5 sq mi, approximately.

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1965 published as, "at Whitney Dam site".

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir since Aug. 4, 1966. Altitude of gage is 9,120 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 71 cfs Sept. 3 (gage height, 2.55 ft); minimum daily, 0.10 cfs Jan. 28 to Feb. 11.
 Period of record: Maximum discharge, 145 cfs June 13, 1965 (gage height, 1.95 ft); maximum gage height, 2.95 ft July 14, 16, 1969; no flow July 24 to Sept. 30, Nov. 16-29, 1966.

REMARKS.--Records good. Flow regulated by Whitney Reservoir. Usable capacity between sill of outlet and spillway crest, 4,200 acre-ft. Dead storage 500 acre-ft. Construction of dam began Aug. 1, 1965 and completed October 1966. Storage began July 24, 1966, and reached sill of outlet Nov. 20, 1966. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	1.4	.96	1.2	.10	1.2	1.4	1.7	3.5	22	22	54
2	.20	1.4	.96	1.2	.10	1.2	1.4	1.7	3.6	19	22	54
3	.49	1.3	.93	1.2	.10	1.3	1.5	1.7	3.7	17	22	62
4	.47	1.2	.94	1.2	.10	1.4	1.5	1.8	3.8	16	21	66
5	.47	1.2	.96	1.2	.10	1.5	1.5	1.8	3.8	14	21	62
6	.44	1.2	1.0	1.2	.10	1.5	1.5	1.8	3.8	13	21	44
7	.35	1.2	1.0	1.2	.10	1.5	1.4	1.8	3.9	12	21	11
8	.21	1.2	1.0	1.2	.10	1.5	1.4	1.9	4.0	10	21	10
9	.16	1.2	1.1	1.2	.10	1.5	1.4	1.9	4.0	6.8	21	11
10	.15	1.3	1.1	1.2	.10	1.5	1.5	1.9	4.0	9.4	20	11
11	.21	1.3	1.1	1.2	.10	1.4	1.5	1.9	4.0	9.0	20	11
12	.27	1.3	1.1	1.2	.90	1.4	1.5	1.9	4.1	8.7	20	11
13	.19	1.3	1.1	1.2	1.8	1.4	1.5	1.9	4.0	7.8	20	10
14	.18	1.3	1.1	1.2	1.8	1.4	1.5	2.0	4.1	6.9	19	10
15	.16	1.3	1.1	1.2	1.8	1.4	1.6	2.0	4.1	6.2	20	10
16	.17	1.3	1.1	1.2	1.8	1.5	1.6	2.1	4.1	5.9	20	10
17	.52	1.3	1.1	1.3	1.8	1.4	1.6	2.1	4.1	5.7	20	10
18	.32	1.3	1.1	1.3	1.5	1.5	1.6	2.2	4.5	5.4	20	9.8
19	.30	1.3	1.1	1.3	1.1	1.4	1.7	2.3	4.9	5.3	20	9.7
20	.30	1.4	1.1	1.3	1.0	1.4	1.7	2.4	4.9	36	20	9.6
21	.31	1.4	1.0	1.3	1.0	1.3	1.7	2.5	5.0	67	20	9.6
22	.33	1.4	1.1	1.3	1.0	1.4	1.7	2.7	5.0	60	20	9.6
23	.78	1.4	1.1	1.3	1.0	1.4	1.7	2.7	5.0	70	20	9.5
24	1.6	1.2	1.1	1.2	1.0	1.4	1.8	2.8	5.0	68	20	9.4
25	1.5	1.2	1.1	1.2	1.0	1.4	1.8	2.9	7.0	67	20	9.4
26	1.4	1.2	1.1	1.2	1.0	1.4	1.8	3.0	24	67	20	9.4
27	1.4	1.1	1.1	.60	.94	1.4	1.9	3.1	31	45	19	9.3
28	1.4	.99	1.1	.10	1.1	1.4	1.6	3.2	32	22	19	9.3
29	1.4	.98	1.1	.10	-----	1.4	1.6	3.3	28	22	40	9.2
30	1.4	.98	1.2	.10	-----	1.4	1.6	3.4	25	27	54	9.2
31	1.4	-----	1.2	.10	-----	1.4	-----	3.4	-----	22	55	-----
TOTAL	20.28	37.55	33.15	32.90	22.64	43.6	47.5	71.8	247.9	768.1	718	580.0
MEAN	.65	1.25	1.07	1.06	.81	1.41	1.58	2.32	8.26	24.8	23.2	19.3
MAX	1.8	1.4	1.2	1.3	1.8	1.5	1.9	3.4	32	70	55	66
MIN	.15	.98	.93	.10	.10	1.2	1.4	1.7	3.5	5.3	19	9.2
AC-FT	40	74	66	65	45	86	94	142	492	1,520	1,420	1,150
CAL YR 1969	TOTAL	3,849.93	MEAN	10.5	MAX	117	MIN	.15	AC-FT	7,640		
WTR YR 1970	TOTAL	2,623.42	MEAN	7.19	MAX	70	MIN	.10	AC-FT	5,200		

BEAR RIVER BASIN 10-115. Bear River near Utah-Wyoming State Line.

LOCATION:--Lat 40°57'58", long 110°51'04", in sec. 30 T.3 N., R.10 E., Summit County, on left bank just downstream from West fork, 2.8 miles upstream from Utah-Wyoming State line.

DRAINAGE AREA.--176 sq mi.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 7,965 ft (from river-profile map).

AVERAGE DISCHARGE.--28 years, 189 cfs (136,900 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,560 cfs May 28 (gage height, 2.87 ft.); maximum gage height, 2.92 ft Jan. 2 (backwater from ice); minimum discharge, 21 cfs Nov. 2.

Period of record: Maximum discharge, 2,980 cfs June 6, 1968 (gage height, 3.79 ft.); maximum gage height, 4.27 ft June 6, 1957; minimum discharge determined, 16 cfs Apr. 11, 1951, Nov. 5, 1954, Nov. 1, 1955, Oct. 30, 1956.

REMARKS.--Records good except those for winter periods and those for period of no gage-height record, which are fair. Two diversions above station for irrigation of about 200 acres above and 2,600 acres below station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	46	46	43	43	40	40	50	1,000	450	420	106
2	42	51	37	46	45	40	40	55	1,090	420	100	135
3	46	41	41	40	45	43	44	36	1,190	396	109	130
4	46	46	41	40	45	46	46	102	1,180	390	114	150
5	40	41	41	44	45	44	44	143	1,200	396	120	200
6	44	41	42	45	45	42	42	204	1,040	362	109	160
7	47	51	45	45	45	44	44	249	1,000	335	125	135
8	46	46	46	45	45	44	44	294	1,070	362	109	160
9	46	46	46	45	45	44	44	204	1,040	362	109	160
10	44	45	47	45	45	45	45	190	1,130	295	114	115
11	40	50	45	45	41	47	61	957	315	104	104	105
12	40	40	44	44	41	46	65	831	276	100	96	96
13	38	45	44	44	42	38	50	750	770	224	93	80
14	38	45	44	44	43	39	52	678	718	212	93	90
15	41	40	45	46	44	47	47	193	666	193	92	92
16	47	50	46	45	46	46	46	143	630	193	92	92
17	58	45	44	44	44	47	47	450	670	190	76	76
18	58	47	44	44	44	46	46	702	670	168	90	90
19	58	47	47	40	45	45	45	822	149	149	72	72
20	48	47	47	42	45	45	41	1,070	984	152	90	65
21	55	47	42	44	45	38	42	957	1,070	196	90	65
22	59	44	44	46	47	38	47	885	1,120	196	90	68
23	59	44	44	46	44	38	44	930	1,140	216	90	66
24	62	47	47	45	42	38	44	1,080	1,080	190	86	86
25	62	47	47	45	42	38	44	1,040	1,010	212	85	85
26	55	46	46	46	40	40	56	1,110	975	200	84	61
27	46	46	46	46	40	40	55	1,290	921	182	82	61
28	51	46	46	45	40	40	50	1,350	849	159	80	58
29	46	46	46	45	40	40	51	1,140	718	133	98	56
30	41	46	45	43	43	38	48	1,110	555	122	135	56
31	44	44	44	43	40	38	48	1,070	549	117	140	-----
TOTAL	1,485	1,361	1,378	1,394	1,199	1,263	1,437	17,639	27,681	7,603	3,135	2,819
MEAN	47.9	45.4	44.5	45.0	42.8	40.7	47.9	569	923	245	101	94.0
MAX	62	51	47	46	47	47	65	1,350	1,200	450	149	200
MIN	38	37	40	40	40	38	38	50	555	80	56	56
AC-Ft	2,950	2,700	2,730	2,770	2,380	2,510	2,850	34,990	54,910	15,080	6,220	5,590
CAL YR 1969	TOTAL 69,211	MEAN 187	MAX 1,290	MIN 37	ACFT 137,300							
MAT YR 1970	TOTAL 68,394	MEAN 187	MAX 1,350	MIN 37	ACFT 135,700							

NOTE.--No gage-height record Aug. 15 to Sept. 16.

PEAK DISCHARGE (BASE, 1,100 CFS)

DATE TIME G.H. DISCHARGE DATE TIME G.H. DISCHARGE

5-28 0430 2.87 1,560 6-23 0200 2.64 1,310

BEAR RIVER BASIN

10-157. Sulphur Creek above reservoir, near Evanston, Wyoming.

LOCATION.--Lat 41°08'39", long 110°48'18", in SE&SW¼ sec.35, T.14 N., R.119 W., Uinta County, on right bank 1.2 miles downstream from Willow Creek, 2 miles upstream from Sulphur Creek Dam, and 11.5 miles southeast of Evanston.

DRAINAGE AREA.--64 sq mi, approximately.

PERIOD OF RECORD.--October 1957 to current year. Monthly discharge only for October and November 1957, published in WSP 1734.

GAGE.--Water-stage recorder. Altitude of gage is 7,180 ft (from topographic map).

AVERAGE DISCHARGE.--13 years, 13.1 cfs (9,490 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 314 cfs May 4 (gage height, 4.55 ft); minimum, 0.26 cfs Aug. 29, 30. Period of record: Maximum discharge, 1,220 cfs Apr. 21, 1965 (gage height, 6.02 ft); no flow at times most of years.

REMARKS.--Records good except those for winter months, which are fair. Several diversions for irrigation above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.8	2.0	2.5	3.5	4.5	4.5	27	57	5.9	2.4	.51
2	2.7	1.7	2.2	2.5	3.5	4.5	4.5	46	55	5.9	2.2	.42
3	3.6	1.4	2.2	2.5	3.5	4.5	4.5	101	47	4.9	2.7	.45
4	3.6	2.5	2.2	2.5	3.5	4.5	4.5	160	37	4.9	2.8	.48
5	3.6	2.8	2.2	2.5	3.5	4.5	7.5	148	35	4.3	3.0	1.2
6	3.4	2.7	2.2	2.5	3.5	4.5	14	110	29	4.5	2.5	6.1
7	3.4	3.0	2.2	2.5	3.5	4.5	25	80	28	4.5	3.2	4.9
8	3.4	4.5	2.2	2.5	3.5	4.5	45	56	29	3.2	4.3	2.0
9	2.7	5.1	2.2	2.5	3.5	4.5	80	42	31	3.4	5.4	1.2
10	2.7	6.1	2.2	2.5	3.5	4.5	120	52	61	16	5.4	1.1
11	3.2	6.1	2.5	3.0	3.5	4.5	111	52	182	14	5.1	.92
12	1.9	6.4	2.5	3.0	3.5	4.5	67	43	133	14	5.1	.76
13	.57	5.9	2.5	3.0	3.5	4.5	45	31	112	10	4.9	.84
14	.60	6.4	2.5	3.0	3.5	4.5	29	29	84	6.9	4.9	.68
15	1.1	6.4	2.5	3.0	3.5	4.5	20	32	67	5.9	4.9	.68
16	3.2	6.9	2.4	3.0	4.0	4.5	22	53	61	5.9	4.9	.68
17	5.6	5.6	2.2	3.0	4.0	4.5	23	94	46	3.6	5.1	.68
18	4.7	3.0	1.7	3.0	4.0	4.5	20	129	37	1.9	5.1	.68
19	3.4	2.2	2.4	3.0	4.0	4.5	20	172	26	1.3	3.8	.60
20	2.7	2.5	2.7	3.0	4.0	4.5	16	178	20	1.3	4.0	.54
21	3.0	3.4	4.3	3.5	4.0	4.5	18	128	17	1.6	2.0	.68
22	3.6	3.8	4.5	3.5	4.0	4.5	18	98	17	2.0	.84	1.2
23	2.2	2.8	2.2	3.5	4.0	4.5	15	84	14	3.0	1.3	1.6
24	1.7	2.5	2.4	3.5	4.0	4.5	16	138	12	5.6	.57	2.4
25	1.2	2.2	2.5	3.5	4.0	4.5	22	113	10	5.6	.42	4.7
26	1.2	1.9	2.5	3.5	4.0	4.5	64	104	9.2	7.4	.39	5.1
27	1.2	1.4	2.5	3.5	4.0	4.5	58	111	9.9	8.9	.33	6.7
28	1.2	1.3	2.5	3.5	4.0	4.5	34	135	9.6	7.7	.30	10
29	1.4	1.4	2.5	3.5	-----	4.5	29	102	8.0	4.0	.28	12
30	1.3	1.7	2.5	3.5	-----	4.5	25	81	6.7	2.8	.30	12
31	2.4	-----	2.5	3.5	-----	4.5	-----	66	-----	2.8	.36	-----
TOTAL	78.47	106.4	76.6	93.5	104.5	139.5	981.5	2,795	1,290.4	174.5	88.79	81.80
MEAN	2.52	3.55	2.47	3.02	3.73	4.50	32.7	90.2	43.0	5.63	2.86	2.73
MAX	5.6	6.9	4.5	3.5	4.0	4.5	120	178	182	16	5.4	12
MIN	.57	1.3	1.7	2.5	3.5	4.5	4.5	27	6.7	1.3	.28	.42
AC-FT	155	211	152	185	207	277	1,950	5,540	2,560	346	176	162
CAL YR 1969	TOTAL 5,440.31	MEAN 14.9	MAX 188	MIN .57	ACFT 10,790							
WAT YR 1970	TOTAL 6,010.56	MEAN 16.5	MAX 182	MIN .28	ACFT 11,920							

BEAR RIVER BASIN

10-159. Sulphur Creek below reservoir, near Evanston, Wyoming.

LOCATION.--Lat 41°09'22", Long 110°50'04", in SE¼SE¼ sec.28, T.14 N., R.119 W., Uinta County, on left bank 400 ft downstream from Sulphur Creek Dam, 6.3 miles upstream from mouth, and 10.5 miles southeast of Evanston.

DRAINAGE AREA.--58 sq mi, approximately.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder and concrete V-notch control. Altitude of gage is 7,120 ft (from topographic map).

AVERAGE DISCHARGE.--6 years (1965-70), 23.8 cfs (17,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 173 cfs June 12 (gage height, 3.90 ft); no flow Oct. 1 to Apr. 6.
Period of record: Maximum discharge, 343 cfs June 11, 1956 (gage height, 4.96 ft); no flow at times each year.

REMARKS.--Records good. Flow regulated by Sulphur Creek Reservoir 900 ft upstream (capacity, 7,100 acre-ft). Enlargement completed November 1964. Prior to enlargement (capacity, 4,600 acre-ft). Records prior to 1965 do not include flow over spillway of the dam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	0	0	0	0	0	95	84	.12	48	70
2	0	0	0	0	0	0	0	95	77	.12	48	70
3	0	0	0	0	0	0	0	95	70	.13	48	69
4	0	0	0	0	0	0	0	77	64	.16	49	73
5	0	0	0	0	0	0	0	27	59	.20	49	84
6	0	0	0	0	0	0	0	27	56	.43	49	84
7	0	0	0	0	0	0	0	27	55	.90	49	83
8	0	0	0	0	0	0	0	27	54	1.5	48	81
9	0	0	0	0	0	0	32	27	53	2.0	49	80
10	0	0	0	0	0	0	61	27	54	5.9	49	79
11	0	0	0	0	0	0	61	27	107	13	49	78
12	0	0	0	0	0	0	61	28	167	21	49	77
13	0	0	0	0	0	0	61	28	159	24	49	76
14	0	0	0	0	0	0	61	28	136	23	49	75
15	0	0	0	0	0	0	61	29	111	21	49	35
16	0	0	0	0	0	0	67	29	98	20	49	6.6
17	0	0	0	0	0	0	93	31	89	17	49	6.9
18	0	0	0	0	0	0	93	32	85	12	49	6.9
19	0	0	0	0	0	0	93	32	83	8.9	49	6.9
20	0	0	0	0	0	0	93	33	72	7.7	49	7.1
21	0	0	0	0	0	0	93	34	38	6.5	52	6.9
22	0	0	0	0	0	0	93	34	38	5.2	59	6.9
23	0	0	0	0	0	0	93	35	38	5.5	59	7.1
24	0	0	0	0	0	0	93	45	35	9.3	59	7.2
25	0	0	0	0	0	0	93	83	.27	15	59	7.1
26	0	0	0	0	0	0	94	116	.12	15	56	7.1
27	0	0	0	0	0	0	95	118	.11	25	59	7.1
28	0	0	0	0	0	0	95	126	.11	37	61	7.0
29	0	0	0	0	-----	0	95	132	.11	33	52	7.1
30	0	0	0	0	-----	0	95	118	.12	32	39	7.1
31	0	-----	0	0	-----	0	-----	96	-----	42	47	-----
TOTAL	0	0	0	0	0	0	1,773	1,758	1,882.84	404.56	1,580	1,219.0
MEAN	0	0	0	0	0	0	59.1	56.7	62.8	13.1	51.0	40.6
MAX	0	0	0	0	0	0	95	132	167	42	61	84
MIN	0	0	0	0	0	0	0	27	.11	.12	39	6.6
AC-FT	0	0	0	0	0	0	3,520	3,490	3,730	802	3,130	2,420

CAL YR 1969 TOTAL 6,026.90
WTR YR 1970 TOTAL 6,617.40

MEAN 22.0
MEAN 23.6

MAX 153
MAX 167

MIN 0
MIN 0

AC-FT 15,920
AC-FT 17,090

BEAR RIVER BASIN

10-195. Chapman Canal at State Line, near Evanston, Wyoming.

LOCATION.--Lat 41°24'24", long 111°02'26", in SE¼ sec.36, T.17 N., R.121 W., Uinta County, on left bank at highway bridge, 6.5 miles downstream from headgates and 10 miles northwest of Evanston.

PERIOD OF RECORD.--April 1942 to current year (prior to October 1944 irrigation seasons only). Monthly discharge only for some periods, published in MSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 6,570 ft (from river-profile map). Prior to Oct. 11, 1946, nonrecording gage and Oct. 11, 1946 to Aug. 2, 1961, water-stage recorder at site 20 ft downstream at same datum.

AVERAGE DISCHARGE.--26 years (1944-70), 19.4 cfs (14,060 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 143 cfs June 24, 1970; no flow at times each year.

REMARKS.--Records fair. Canal diverts water from Bear River in NW¼ sec. 36, T.16 N., R.121 W. Many diversions above station for irrigation in Wyoming. Flow at station is for storage in Neponset Reservoir, Utah, and irrigation in Saleratus basin, Utah.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	56	12			0	30	37	74	58	18	.36
2	3.4	24	11			0	32	39	66	69	15	.85
3	18	20	10			0	34	43	73	53	12	0
4	39	19	10			0	32	55	74	48	11	0
5	34	20	10			0	37	55	79	41	12	.20
6	35	22	10			0	45	48	82	33	14	13
7	35	21	10			0	60	49	81	29	13	37
8	37	22	10			0	72	58	81	21	13	29
9	37	4.3	10			0	70	51	88	15	14	41
10	38	12	10			0	81	48	97	13	12	41
11	44	11	6.0			10	91	46	91	17	11	33
12	47	12	0			20	77	43	116	17	9.7	32
13	45	12	0			20	65	41	126	15	8.1	40
14	44	21	0			20	66	44	125	11	6.8	39
15	48	67	0			25	62	53	115	8.6	5.6	39
16	52	96	0			25	59	56	104	7.4	4.0	17
17	60	60	0			15	63	62	97	6.8	3.5	17
18	73	35	0			35	62	68	52	11	4.3	6.5
19	75	22	0			30	63	86	91	4.5	4.0	0
20	74	22	0			35	62	97	119	2.4	3.0	0
21	69	21	0			20	62	103	140	1.1	.76	0
22	74	20	0			15	64	97	134	.67	.40	0
23	74	20	0			15	64	89	132	.85	.67	0
24	74	18	0			25	51	98	143	2.2	.36	0
25	61	17	0			25	66	96	122	1.2	.76	0
26	61	16	0			25	86	88	97	2.8	3.0	0
27	80	19	0			15	88	92	89	7.8	2.4	0
28	74	14	0			25	79	95	79	15	1.0	0
29	64	13	0			35	70	88	72	17	.67	0
30	62	13	0			35	63	52	51	16	.28	0
31	60	---	0			25	---	48	---	17	0	---
TOTAL	1,704.8	745.3	109.0	0	0	495	1,860	2,025	2,930	562.32	204.30	385.91
MEAN	55.0	24.8	3.52	0	0	16.0	62.0	65.3	97.7	18.1	6.59	12.9
MAX	84	96	12	0	0	35	91	103	143	69	18	41
MIN	7.4	4.3	0	0	0	0	30	37	51	.67	0	0
AC-FT	3,280	1,480	216	0	0	982	3,690	4,020	5,810	1,120	405	765

CAL YR 1969 TOTAL 4,415.26 MEAN 23.1 MAX 139 MIN 0 ACFT 16,690
 WAT YR 1970 TOTAL 11,021.63 MEAN 30.2 MAX 143 MIN 0 ACFT 21,860

BEAR RIVER BASIN

10-201. Bear River above reservoir, near Woodruff, Utah.

LOCATION.--Lat 41°26'05", long 111°01'00", in NW¼NW¼ sec.29, T.17 N., R.120 W., Uinta County, Wyoming, on right bank 9.3 miles upstream from Woodruff Narrows Dam and 10 miles southeast of Woodruff.

DRAINAGE AREA.--780 sq mi, approximately.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 6,455 ft (from river-profile map).

AVERAGE DISCHARGE.--9 years, 234 cfs (169,500 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,750 cfs May 29 (gage height, 4.97 ft); minimum, 2.9 cfs Sept. 5.
 Period of record: Maximum discharge, 3,340 cfs June 13, 14, 1965 (gage height, 5.89 ft); minimum, 0.1 cfs Aug. 24, 1964.

REMARKS.--Records good except those for winter months, which are fair. Diversion for irrigation of about 43,500 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	50	53	72	70	70	55	269	1,320	273	24	5.2
2	8.4	59	54	76	70	70	50	298	1,230	202	22	3.6
3	8.9	44	54	76	70	70	52	398	1,260	158	21	3.4
4	23	36	54	76	70	70	49	554	1,270	140	18	3.4
5	37	38	50	62	70	70	50	620	1,240	130	22	4.5
6	37	38	48	62	80	70	76	638	1,160	120	24	8.9
7	38	37	36	64	80	70	184	650	906	116	27	57
8	41	38	53	68	80	70	290	554	882	93	27	41
9	40	59	41	69	80	70	290	453	930	72	29	49
10	36	53	36	70	80	70	386	423	1,030	60	25	50
11	41	53	41	70	80	63	602	459	978	56	22	46
12	39	56	57	70	80	63	429	392	1,120	56	19	38
13	39	52	69	70	80	68	294	321	1,140	50	18	39
14	30	50	72	70	80	71	250	308	996	50	15	36
15	38	45	71	70	80	76	214	290	831	32	14	33
16	44	45	63	70	80	76	184	345	706	27	12	28
17	59	50	62	70	80	76	205	536	638	21	12	17
18	103	40	56	70	80	56	208	838	554	28	12	17
19	99	34	64	70	80	53	214	1,070	572	21	12	34
20	84	45	71	70	80	54	211	1,260	638	13	13	36
21	68	79	71	70	80	60	193	1,390	693	9.8	14	34
22	72	86	76	70	80	62	202	1,200	793	7.9	15	30
23	76	86	71	70	80	63	208	1,100	805	7.0	18	30
24	71	72	71	70	80	76	202	1,230	812	7.4	18	33
25	66	72	52	70	80	109	228	1,340	712	7.9	20	34
26	60	72	66	70	70	95	316	1,380	620	8.4	26	34
27	57	69	53	70	70	84	441	1,470	548	13	23	36
28	49	57	56	70	70	57	360	1,590	512	23	8.4	36
29	54	52	56	70	-----	56	285	1,710	447	33	12	40
30	54	52	56	70	-----	63	258	1,580	355	32	7.9	41
31	43	-----	62	70	-----	55	-----	1,480	-----	26	5.9	-----
TOTAL	1,523.7	1,619	1,795	2,165	2,160	2,136	6,986	26,146	25,698	1,893.4	556.2	898.0
MEAN	49.2	54.0	57.9	69.8	77.1	68.9	233	843	857	61.1	17.9	29.9
MAX	103	86	76	76	80	109	602	1,710	1,320	273	29	57
MIN	8.4	24	36	62	70	53	49	269	355	7.0	5.9	3.4
AC-FT	3,020	3,210	3,560	4,290	4,280	4,240	13,860	51,860	50,970	3,760	1,100	1,780
CAL YR 1969	TOTAL 77,714.4		MEAN 213	MAX 1,160	MIN 2.4	ACFT 154,100						
WAT YR 1970	TOTAL 73,576.3		MEAN 202	MAX 1,710	MIN 3.4	ACFT 145,900						

BEAR RIVER BASIN

10-202. Woodruff Narrows Reservoir near Woodruff, Utah.

LOCATION.--Lat 41°30'10", long 111°00'55", in sec.32, T.18 N., R.120 W., Uinta County, Wyoming, in gate house on dam, 5.6 miles upstream from Wyoming-Utah State line and 7.7 miles east of Woodruff.

DRAINAGE AREA.--810 sq mi, approximately.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder and mercury manometer. Altitude of the gage is 6,405 ft (from levels by Bureau of Reclamation).

EXTREMES.--Current year: Maximum contents, 32,350 acre-ft May 30, 31 (gage height, 37.9 ft); minimum, 11, 270 acre-ft Sept. 4-7.

Period of record: Maximum contents, 32,520 acre-ft June 23-25, 1967 (gage height, 38.0 ft); minimum, 6,480 acre-ft Sept. 11-13, 1966.

REMARKS.--Reservoir formed by earth-fill, rock faced dam. Lower portion of spillway cut in natural rock. Storage began Jan. 5, 1962. Total capacity 28,000 acre-ft below spillway crest, which includes 18,240 acre-ft of Compact allocation for irrigation, 4,260 acre-ft of irrigation holdover, 4,000 acre-ft for winter release for fish propagation in Utah, and 1,500 acre-ft of storage for fish propagation in Wyoming. Gage height of spillway is 35.3 ft. Figures given herein represent total contents.

Capacity table (gage height, in feet, and total contents, in acre feet)

21	10,760	30	20,180
22	11,600	32	23,040
24	13,360	34	25,800
26	15,570	36	29,000
28	17,770	38	32,520

CONTENTS, IN ACRE-FEET, AT 2400, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	GCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11,440		15,670	17,550	20,270	22,890	25,800	29,180	32,180	29,370	18,880	11,600
2	11,440		15,780	17,550	20,360	22,890	25,800	29,370	31,850	29,370	18,880	11,600
3			15,890	17,770	20,510	23,040	25,800	29,370	31,850	27,830	18,760	11,600
4			16,000	17,770	20,510	23,040	25,800	29,370	31,850	26,140	18,640	11,270
5			16,120	18,000	20,700	23,040	26,320	29,550	31,690	25,170	18,640	11,270
6	11,440		18,240	18,130	20,890	23,040	26,490	29,740	31,690	24,410	18,510	11,270
7	11,440		18,240	18,130	20,890	23,040	26,840	29,930	31,530	23,890	18,510	11,270
8	11,440		18,240	18,130	21,030	23,640	27,370	29,930	31,200	23,410	18,390	11,360
9	11,520		18,240	18,260	21,180	23,640	27,970	29,930	31,030	22,890	18,260	11,360
10	11,520		16,370	18,260	21,180	23,890	28,410	29,930	31,030	22,170	18,260	11,360
11	11,520		16,370	18,390	21,600	23,890	28,710	29,550	30,850	21,600	18,130	11,360
12	11,600		16,370	18,510	21,600	23,890	28,860	29,550	30,850	21,030	18,130	11,360
13	11,690		16,490	18,510	21,600	23,890	28,860	29,550	30,850	20,360	18,130	11,360
14	11,690		16,490	18,510	21,600	24,010	28,860	29,550	30,630	20,360	18,130	11,440
15	11,780		16,600	18,510	21,740	24,010	28,860	29,370	30,630	20,360	17,890	11,440
16	11,870		16,710	18,760	21,740	24,010	28,860	29,180	30,410	20,360	17,770	11,440
17	11,960		16,710	18,760	22,310	24,140	28,860	29,370	30,410	20,360	17,770	11,440
18	12,050	14,700	16,810	19,000	22,590	24,140	28,860	29,930	30,410	20,270	17,770	11,440
19	12,250	14,700	16,920	19,000	22,740	24,260	28,860	30,410	30,080	19,960	17,770	11,440
20	12,410	14,790	16,920	19,120	22,740	24,260	28,710	31,030	30,080	19,960	17,550	11,440
21	12,490	14,800	17,020	19,240	22,740	24,260	28,710	31,370	30,230	19,840	17,550	11,440
22	12,570	14,800	17,020	19,360	22,890	24,260	28,710	31,370	30,230	19,720	17,440	11,440
23	12,660	14,900	17,130	19,360	22,890	24,860	28,710	31,370	30,410	19,600	15,110	11,440
24	12,820	15,000	17,230	19,600	22,890	25,010	28,710	31,370	30,630	19,600	13,090	11,440
25	12,820	15,220	17,330	19,840	22,890	25,170	28,710	31,530	30,630	19,480	11,690	11,440
26	12,900	15,340	17,440	19,840	22,890	25,340	28,710	31,690	30,630	19,480	11,690	11,440
27		15,340	17,440	20,060	22,890	25,340	28,860	31,850	30,410	19,360	11,690	11,520
28		15,450	17,440	20,060	22,890	25,340	29,000	31,850	30,230	19,240	11,690	11,520
29		15,570	17,440	20,180	-----	25,340	29,180	32,180	30,080	19,240	11,690	11,520
30		15,670	17,550	20,180	-----	25,800	29,180	32,350	30,080	19,120	11,690	11,520
31	13,000	-----	17,550	20,270	-----	25,800	-----	32,350	-----	19,000	-----	-----
MAX			17,550	20,270	22,890	25,800	29,180	32,350	32,180	29,370	18,880	11,600
MIN			15,670	17,550	20,270	22,890	25,800	29,180	30,080	19,000	11,600	11,270
{†}	23.6	26.1	27.8	30.1	31.9	34.0	36.1	37.9	38.6	39.0	22.0	21.8
{†}	+1,560	+2,670	+1,880	+2,720	+2,620	+2,910	+3,380	+3,170	-2,270	-11,080	-7,400	+80
CAL YR 1969					-10,280							
WTR YR 1970					+80							

† Gage height, in feet, at 2400 of last day of month.

‡ Change in contents, in acre-feet.

BEAR RIVER BASIN

10-203. Bear River below reservoir, near Woodruff, Utah.

LOCATION.--Lat 41°30'25", long 111°00'50", in NW¼RW¼ sec.32, T.18 N., R.120 W., Uinta County, Wyoming, on right bank, 1,100 ft below Woodruff Narrows Dam, 1.6 miles upstream from Salt Creek, 5.4 miles upstream from Wyoming-Utah State line, and 7.7 miles east of Woodruff.

DRAINAGE AREA.--910 sq mi, approximately.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 6,400 ft (from river-profile map). Prior to Sept. 26, 1962, at site 175 ft upstream at same datum.

AVERAGE DISCHARGE.--9 years, 228 cfs (165,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,630 cfs May 30 (gage height, 6.70 ft); minimum daily, 8.6 cfs Apr. 7, 8.

Period of record: Maximum discharge, 3,000 cfs June 14, 1965 (gage height, 7.88 ft); no flow July 4, 5, 1962.

REMARKS.--Records excellent. Flow regulated by Woodruff Narrows Reservoir beginning January 1962 (see sta 10020200). Diversions for irrigation of about 43,500 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	13	24	23	26	9.3	294	1,440	523	40	26
2	12	12	13	24	23	26	9.3	290	1,300	399	40	26
3	12	12	13	24	23	26	9.7	314	1,250	607	40	25
4	12	12	9.1	24	24	26	9.3	378	1,250	704	40	25
5	12	12	11	24	24	26	9.3	472	1,220	695	40	25
6	12	11	24	24	24	27	8.9	535	1,200	687	40	25
7	12	11	24	24	24	27	8.6	570	1,070	634	40	25
8	12	11	24	24	25	27	8.6	570	945	558	38	25
9	12	11	24	24	25	27	35	526	919	553	38	25
10	12	11	24	24	25	27	130	485	958	400	38	25
11	12	11	24	24	25	27	281	467	964	75	38	25
12	12	11	24	23	25	27	398	440	1,020	74	38	25
13	12	11	24	23	25	27	366	398	1,090	74	38	25
14	12	11	24	23	25	27	314	354	1,070	74	38	25
15	12	11	24	23	25	27	281	328	952	75	38	25
16	12	11	24	23	25	27	239	318	828	74	38	24
17	12	12	24	23	25	27	213	370	732	73	38	24
18	12	12	24	23	26	27	210	508	650	72	38	24
19	12	12	24	23	26	27	213	725	590	72	38	24
20	12	12	24	23	26	27	213	945	587	72	38	24
21	12	12	24	23	26	27	199	1,140	621	72	37	24
22	12	12	24	23	26	27	213	1,190	673	71	404	24
23	12	12	24	23	26	17	216	1,120	729	71	891	24
24	12	12	24	23	26	9.7	213	1,130	759	71	861	24
25	12	12	24	24	26	9.7	210	1,200	738	70	701	24
26	12	12	24	24	26	9.7	244	1,270	684	70	26	24
27	12	12	24	23	26	9.7	307	1,360	621	65	26	24
28	12	12	24	23	26	9.7	370	1,450	558	41	26	24
29	12	12	24	23	-----	9.7	332	1,570	518	41	26	23
30	12	-----	24	23	-----	9.3	311	1,610	498	41	26	23
31	12	-----	24	23	-----	9.3	-----	1,530	-----	41	26	-----
TOTAL	372	349	683.1	726	701	682.8	5,581.0	23,857	26,434	7,149	3,824	735
MEAN	12.0	11.6	22.0	23.4	25.0	22.0	186	776	861	231	123	24.5
MAX	12	12	24	24	26	27	398	1,610	1,440	704	891	26
MIN	12	11	9.1	23	23	9.3	8.6	290	498	41	26	23
AC-FT	738	692	1,350	1,440	1,390	1,350	11,070	47,320	52,430	14,180	7,980	1,460
CAL YR 1969	TOTAL 81,608.1	MEAN 222			MAX 1,110	MIN 9.1			AC-FT 160,700			
WTR YR 1970	TOTAL 71,993.9	MEAN 195			MAX 1,610	MIN 8.6			AC-FT 141,000			

BEAR RIVER BASIN

10-265. Bear River near Randolph, Utah

LOCATION.--Lat 41°48'02", long 111°04'20", in SE¼REK sec.7, T.12 N., R.8 E., Rich County, on left bank 3.5 miles upstream from Twin Creek, 4.8 miles upstream from Utah-Wyoming State line, and 11 miles northeast of Randolph.

DRAINAGE AREA.--1,640 sq mi, approximately.

PERIOD OF RECORD.--October 1943 to current year. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 6,205 ft (from river-profile map).

AVERAGE DISCHARGE.--27 years, 188 cfs (136,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,070 cfs June 3 (gage height, 6.30 ft); minimum daily, 12 cfs Sept. 14-19.
 Period of record: Maximum discharge 2,660 cfs May 8, 1952; maximum gage height, 8.99 ft June 17, 1965; minimum discharge, 1.6 cfs Nov. 12, 1961

REMARKS.--Records good except those for winter months, which are fair. Diversion for irrigation of about 94,500 acres above station. Flow regulated by Woodruff Narrows Reservoir beginning January 1962 (see sta 10020200).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	54	50	60	70	80	65	130	937	198	88	17
2	39	56	50	60	70	80	59	95	1,040	184	81	15
3	40	58	50	60	70	80	59	90	1,050	169	79	14
4	42	56	50	60	73	80	58	79	937	156	80	14
5	43	56	50	60	76	81	58	72	800	186	76	16
6	43	56	50	60	80	80	72	83	761	235	70	18
7	43	56	50	60	80	79	74	107	737	264	68	17
8	43	56	50	60	80	80	60	111	698	268	65	16
9	43	58	54	60	80	80	53	107	612	268	62	17
10	44	58	60	60	80	80	50	117	592	250	61	15
11	47	58	60	60	80	79	51	118	743	260	59	13
12	51	58	60	60	80	79	49	104	833	255	58	13
13	39	58	60	60	80	79	114	83	948	206	55	13
14	60	56	60	60	80	79	181	77	1,030	181	52	12
15	58	55	60	62	80	80	188	70	1,050	212	51	12
16	53	56	56	64	80	80	186	61	1,030	179	50	12
17	53	45	56	66	80	79	178	54	962	161	46	12
18	51	54	56	68	80	78	155	49	722	146	45	12
19	51	60	56	70	80	77	132	56	508	142	39	12
20	53	58	56	71	80	77	136	60	413	146	22	13
21	52	56	60	72	80	77	138	72	362	134	20	13
22	52	52	60	74	80	76	147	134	336	132	18	14
23	52	52	60	76	80	75	147	213	302	128	17	35
24	51	52	60	76	80	81	130	268	273	123	25	38
25	51	52	60	76	80	83	130	299	291	120	34	39
26	51	52	60	76	80	72	102	324	295	124	42	39
27	51	51	60	76	80	66	79	374	260	129	41	44
28	52	50	60	76	80	67	80	475	250	130	27	43
29	52	50	60	73	-----	66	124	662	244	128	21	42
30	52	50	60	71	-----	64	140	761	220	117	19	43
31	53	-----	60	70	-----	65	-----	836	-----	100	17	-----
TOTAL	1,504	1,639	1,754	2,057	2,199	2,379	3,195	6,141	19,236	5,431	1,488	633
MEAN	48.5	54.6	56.6	66.4	78.5	76.7	107	198	641	175	48.0	21.1
MAX	60	60	60	76	80	83	188	836	1,050	268	88	44
MIN	39	45	50	60	70	64	49	49	220	100	17	12
AC-FT	2,980	3,250	3,480	4,080	4,360	4,720	6,340	12,180	38,150	10,770	2,950	1,260
CAL YR 1969	TOTAL 85,367	MEAN 234	MAX 1,920	MIN 19	ACFT 169,300							
WAT YR 1970	TOTAL 47,656	MEAN 131	MAX 1,050	MIN 12	ACFT 94,530							

BEAR RIVER BASIN

10-285. Bear River below Pixley Dam, near Cokeville, Wyo.

LOCATION.--Lat 41°56'20", long 110°59'05", in SE¼SE¼ sec.25, T.23 N., R.120 W., Lincoln County, 800 ft downstream from Pixley Dam, 11 miles south of Cokeville, and 17.5 miles downstream from Twin Creek.

DRAINAGE AREA.--2,040 sq mi, approximately.

PERIOD OF RECORD.--October 1941 to November 1943 (published as Bear River near Cokeville), October 1952 to September 1956, May 1958 to current year (irrigation seasons only). Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 6,185 ft (from river-profile map). Oct. 31, 1941, to Nov. 30, 1943, at site 200 ft downstream at different datum.

EXTREMES.--Current season: Maximum discharge, 861 cfs June 14 (gage height, 6.65 ft); minimum daily, 34 cfs Sept. 4, 5, 15-17.

Period of record: Maximum daily discharge, 2,300 cfs Mar. 25, 1956; minimum daily recorded, 0.3 cfs Aug. 21, 1961.

REMARKS.--Records good. Natural flow of stream affected by diversions for irrigation and return flow from irrigated areas. No diversion between station and Collett Creek Branch of Smiths Fork.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								52	583	243	145	41
2								49	561	232	135	38
3								46	561	205	127	36
4								45	559	141	119	34
5								44	548	141	111	34
6								41	510	163	105	36
7								40	489	192	98	37
8								44	477	208	92	37
9								46	463	226	87	37
10								46	431	364	82	38
11								51	423	398	77	37
12								57	473	386	72	37
13								64	522	346	67	36
14								67	738	286	62	35
15								72	798	264	61	34
16								73	788	279	60	34
17								70	790	255	60	34
18								62	788	230	58	50
19								56	668	207	59	57
20								55	520	199	58	46
21								55	439	187	57	42
22								56	342	138	52	39
23								98	296	163	45	40
24								166	228	180	41	52
25								251	245	163	37	67
26								238	255	155	37	69
27								194	279	159	44	68
28								240	265	164	50	70
29					-----			269	256	164	50	68
30					-----			308	251	161	46	66
31		-----			-----		-----	390	-----	153	44	-----
TOTAL								3,345	14,546	6,752	2,238	1,349
MEAN								108	485	218	72.2	45.0
MAX								390	798	398	145	70
MIN								40	228	138	37	34
AC-FT								6,630	28,650	12,390	4,440	2,680

THE SEASON AC-FT 55,990

BEAR RIVER BASIN

10-320. Smiths Fork near Border, Wyo.

LOCATION.--42°16'52", long 110°52'05", in NW¼ sec.33, T.27 N., R.118 W., Lincoln County, on left bank 4.5 miles upstream from Howland Creek, 6 miles downstream from Hobbie Creek, and 12 miles northeast of Border.

DRAINAGE AREA.--165 sq mi.

PERIOD OF RECORD.--May 1942 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 6,650 ft (from topographic map). Prior to Oct. 16, 1945, at site 0.8 mile downstream at different datum.

AVERAGE DISCHARGE.--28 years, 191 cfs (138,400 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 932 cfs May 28 (gage height, 4.03 ft); minimum, 39 cfs Apr. 1. Period of record: Maximum discharge, 1,500 cfs June 7, 1957 (gage height, 4.56 ft); minimum recorded, 35 cfs Mar. 21, 1955, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. One diversion for irrigation of about 200 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	84	72	70	68	63	56	69	632	433	200	122
2	96	79	72	70	68	61	61	75	660	412	195	120
3	99	79	72	70	68	60	59	96	731	391	190	119
4	97	80	71	70	68	60	58	126	805	387	187	117
5	94	79	72	70	68	59	60	169	860	376	184	134
6	92	79	72	70	68	58	62	218	853	368	179	157
7	91	79	72	70	68	61	66	260	841	357	174	150
8	90	79	72	70	68	60	67	245	823	335	171	128
9	88	78	72	70	68	60	69	227	866	325	169	120
10	88	79	72	70	67	55	77	239	841	325	166	119
11	86	79	72	70	67	59	80	198	762	318	164	115
12	84	79	73	70	66	63	73	190	713	305	157	113
13	82	78	69	70	66	62	72	187	648	295	154	111
14	86	79	68	70	65	60	73	179	610	289	152	109
15	84	77	71	70	64	60	71	206	583	282	150	109
16	88	79	70	70	64	59	67	295	557	279	148	108
17	88	73	69	70	64	59	71	429	536	273	143	106
18	86	79	69	70	63	63	71	567	536	266	141	104
19	88	72	69	70	62	60	73	62	572	257	139	101
20	85	66	69	70	62	57	69	689	604	248	137	102
21	86	74	68	72	62	60	66	654	632	248	137	106
22	86	74	69	69	62	59	69	604	660	260	134	102
23	85	74	69	67	62	59	69	620	666	242	130	101
24	85	74	71	69	62	60	68	626	660	233	128	99
25	85	74	71	67	62	57	69	707	654	227	130	99
26	84	72	70	68	62	61	72	792	632	218	128	97
27	84	72	70	69	62	59	74	805	598	227	128	97
28	86	72	70	69	62	58	73	890	572	224	130	96
29	84	72	70	68	-----	59	69	841	531	215	128	94
30	80	72	70	68	-----	57	69	792	483	212	124	92
31	84	-----	70	68	-----	58	-----	683	-----	209	120	-----
TOTAL	2,712	2,286	2,186	2,154	1,818	1,846	2,053	13,320	20,121	9,036	4,717	3,347
MEAN	87.5	76.2	70.5	69.5	64.9	59.5	68.4	430	671	291	152	112
MAX	99	84	73	72	68	63	80	890	866	433	200	157
MIN	80	66	68	67	62	55	56	69	483	209	120	92
AC-FT	5,380	4,530	4,340	4,270	3,610	3,660	4,070	26,420	39,910	17,920	9,360	6,640
CAL YR 1969	TOTAL	70,156	MEAN	192	MAX	884	MIN	56	ACFT	139,200		
WAT YR 1970	TOTAL	65,596	MEAN	180	MAX	890	MIN	55	ACFT	130,100		

BEAR RIVER BASIN

10-395. Bear River at Border, Wyoming

LOCATION.--Lat 42°12'40", long 111°03'11", in NE¼NE¼ sec.15, T.14 S., R.46 E., Bear Lake County, Idaho, on left bank 0.2 mile west of Wyoming-Idaho State line, 0.5 mile west of Border, and 2.1 miles upstream from Thomas Fork.

DRAINAGE AREA.--2,490 sq mi, approximately.

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,051.63 ft above mean sea level, unadjusted.

AVERAGE DISCHARGE.--33 years, 398 cfs (288,400 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,450 cfs June 15 (gage height, 5.51 ft); minimum, 101 cfs Mar. 31. Period of record: Maximum discharge, 3,680 cfs May 11, 1952 (gage height, 8.89 ft); minimum daily, 30 cfs Aug. 18-22, 1940.

REMARKS.--Records good except those for winter months, which are fair. Diversions for irrigation of about 122,000 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	186	175	165	185	185	157	162	1,280	561	270	129
2	124	186	175	165	180	185	153	162	1,390	514	255	127
3	119	184	175	165	180	185	153	173	1,340	487	234	124
4	139	184	175	155	180	185	158	201	1,390	444	222	132
5	146	184	175	155	180	185	164	232	1,430	392	218	139
6	151	184	165	155	180	185	173	270	1,420	377	216	176
7	157	186	150	155	180	185	197	303	1,360	414	210	201
8	158	184	145	165	180	185	208	317	1,380	419	201	186
9	157	180	150	172	180	180	212	301	1,380	414	178	173
10	158	186	160	180	180	180	212	299	1,420	455	171	166
11	158	186	170	183	175	180	222	305	1,330	590	166	162
12	155	182	170	187	180	180	201	277	1,360	590	162	158
13	134	180	170	190	185	184	190	261	1,380	571	157	155
14	162	182	170	190	185	182	186	268	1,360	536	149	155
15	167	178	170	180	180	184	226	263	1,440	472	144	149
16	178	180	170	178	190	191	259	292	1,380	455	144	149
17	188	175	170	175	190	199	220	384	1,340	449	137	148
18	191	165	170	180	185	184	214	523	1,330	419	136	149
19	195	170	170	180	185	164	220	577	1,330	390	130	155
20	193	170	170	185	185	175	220	577	1,250	362	127	166
21	191	170	170	190	185	171	205	583	1,090	352	127	158
22	193	170	170	200	185	169	201	542	964	333	124	158
23	190	175	170	225	185	175	207	523	900	305	119	169
24	190	175	170	225	185	186	207	561	809	314	113	160
25	188	175	170	220	185	180	195	669	722	314	113	164
26	184	175	170	210	185	193	188	790	715	292	111	178
27	180	175	170	215	185	191	178	832	697	299	114	178
28	182	175	170	220	185	184	182	836	715	299	134	176
29	186	175	165	210	-----	175	171	896	683	290	141	178
30	184	175	165	195	-----	175	162	920	622	283	137	178
31	186	-----	165	190	-----	146	-----	1,000	-----	279	129	-----
TOTAL	5,206	5,352	5,200	5,760	5,125	5,608	5,841	14,299	35,207	12,671	4,989	4,796
MEAN	168	178	168	186	183	181	195	461	1,174	409	161	160
MAX	195	186	175	225	190	199	259	1,000	1,440	590	270	201
MIN	119	165	145	155	175	146	153	162	622	279	111	124
AC-FT	10,330	10,620	10,310	11,420	10,170	11,120	11,590	28,360	69,830	25,130	9,900	9,510
CAL YR 1969	TOTAL 170,834	MEAN 468	MAX 3,600	MIN 104	ACFT 338,800							
WAT YR 1970	TOTAL 110,054	MEAN 302	MAX 1,440	MIN 111	ACFT 218,300							

BEAR RIVER BASIN

10-460. Rainbow inlet canal near Dingle, Idaho

LOCATION.--Lat 42°13'48", long 111°17'43", in SE¼ sec.3, T.14 S., R.44 E., Bear Lake County, on left bank 1.5 miles west of Dingle and 1.8 miles downstream from headworks at Stewart Dam.

PERIOD OF RECORD.--January 1922 to current year. Monthly discharge only prior to October 1945, published in WSP 1314.

GAGE.--Water-stage recorder. Elevation of gage datum is 5,922.0 ft above mean sea level (by topographic survey). Prior to Oct. 1, 1923, at site 300 ft downstream at different datum; Oct. 1, 1923 to Oct. 27, 1944, at site 0.5 mile downstream at different datum.

AVERAGE DISCHARGE.--48 years, 313 cfs (226,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,120 cfs June 16 (gage height, 4.18 ft); minimum, 15 cfs Oct. 1. Period of record: Maximum discharge, 4,180 cfs May 7, 1952 (gage height, 8.62 ft); minimum daily, 1 cfs on several days in 1931, 1934, 1940, 1948.

REMARKS.--Records good. Discharge measurements generally made three to five times a week. Canal diverts from Bear River at Stewart Dam in NE¼ sec.34, T.13 S., R.44 E., for storage in Bear Lake. At times flow in canal is augmented by surplus water from Black Otter Slough entering at the station and by seepage and wastage from irrigation lands on both sides of canal.

COOPERATION.--Records collected by Utah Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	212	128	96	140	171	186	79	625	356	256	39
2	78	233	128	95	145	188	173	72	853	320	243	39
3	101	208	126	92	145	190	180	73	944	322	238	43
4	112	192	124	90	147	192	171	74	968	361	206	48
5	124	182	124	96	148	195	180	96	984	333	188	51
6	143	184	123	86	149	197	197	132	992	296	180	70
7	159	186	95	86	150	184	222	175	884	304	150	89
8	163	180	101	79	150	188	243	203	972	293	147	108
9	167	184	108	82	150	180	252	235	1,000	270	138	108
10	180	182	117	87	151	163	265	231	1,080	267	105	108
11	175	186	121	96	149	157	275	212	1,080	286	94	94
12	178	190	124	97	153	178	262	212	1,040	450	90	92
13	167	180	128	103	169	184	262	167	1,070	484	96	90
14	161	175	126	110	182	188	235	105	1,080	475	94	92
15	169	178	124	121	173	195	252	81	1,060	438	84	94
16	182	182	119	124	171	203	286	64	1,100	381	74	96
17	197	178	119	134	153	217	304	84	1,040	364	76	82
18	212	145	117	138	157	217	247	123	1,020	350	76	81
19	224	141	128	145	159	188	240	240	1,010	325	78	81
20	238	134	135	157	141	173	240	325	984	293	74	79
21	243	145	139	169	130	188	235	333	888	273	70	90
22	238	151	141	173	134	182	188	344	749	270	68	92
23	235	147	149	178	143	184	171	304	622	265	67	97
24	231	134	155	195	161	186	159	255	529	257	64	103
25	222	138	169	203	165	215	165	243	429	299	61	99
26	219	134	151	203	169	208	159	353	367	312	61	103
27	219	132	145	163	165	219	147	447	361	301	53	115
28	222	143	125	146	155	217	119	519	405	304	54	123
29	226	130	110	132	155	208	110	526	364	293	55	134
30	286	126	95	136	155	210	92	549	347	288	61	136
31	233	95	95	130	155	195	92	552	283	283	51	136
TOTAL	5,726	5,012	3,890	3,942	4,304	5,960	6,227	7,408	24,947	10,113	3,352	2,676
MEAN	185	167	125	127	154	192	208	239	832	326	108	89.2
MAX	286	233	169	203	182	219	304	552	1,100	484	256	136
MIN	22	126	95	79	130	157	92	64	347	257	51	39
AC-FT	11,360	9,940	7,720	7,820	8,540	11,820	12,350	14,690	49,480	20,060	6,650	5,310
CAL YR 1969	TOTAL 156,250		MEAN 428		MAX 3,040		MIN 22		AC-FT 309,900			
WTR YR 1970	TOTAL 83,557		MEAN 229		MAX 1,100		MIN 22		AC-FT 165,700			

BEAR RIVER BASIN

10-465. Bear River below Stewart Dam, near Montpelier, Idaho

LOCATION.--Lat 42°15'14", long 111°17'35", in NE½ sec.34, T.13 S., R.44 E., Bear Lake County, on right bank 300 ft downstream from Stewart Dam and 4.5 miles south of Montpelier.

DRAINAGE AREA.--2,820 sq mi, approximately.

PERIOD OF RECORD.--January 1922 to current year. Monthly discharge only January 1922 to September 1945, published in WSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 5,950 ft (from topographic map).

AVERAGE DISCHARGE.--48 years, 51.7 cfs (37,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9.6 cfs June 5 (gage height, 1.08 ft); minimum, 1.9 cfs Aug. 13. Period of record: Maximum daily discharge, 3,050 cfs June 3, 1923; no flow July 15, 1956.

REMARKS.--Records good. Discharge measurements generally made once a week. Water diverted at Stewart Dam through Rainbow inlet canal (see station 10046000) for storage and regulation in Bear Lake. Many diversions above station for irrigation.

COOPERATION.--Records collected by Utah Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	3.0	4.6	3.6	4.8	4.8	5.3	6.2	7.7	7.1	4.4	2.9
2	7.7	4.0	4.0	3.4	4.8	5.3	5.3	5.9	8.0	6.2	4.4	3.0
3	8.4	4.2	4.6	3.0	4.6	5.3	5.3	5.6	8.0	6.5	4.8	3.0
4	8.4	4.0	4.6	3.0	4.6	5.3	5.3	5.6	8.4	7.1	4.4	3.2
5	8.8	4.0	4.2	2.9	4.4	5.6	5.3	6.2	9.2	6.5	4.3	3.4
6	8.6	4.0	3.8	2.9	4.4	5.9	5.6	6.5	8.8	5.6	4.4	3.4
7	8.8	4.0	4.0	2.8	4.2	5.9	5.9	5.9	8.8	5.3	4.6	3.4
8	5.2	3.6	3.9	2.6	4.4	6.2	6.2	6.2	8.8	5.6	6.2	3.4
9	2.4	4.0	3.9	2.6	4.2	5.9	6.2	6.2	5.6	5.3	6.2	3.6
10	2.8	4.0	3.8	2.5	4.2	5.9	6.2	5.9	3.5	5.0	5.9	3.6
11	3.0	3.9	3.6	2.5	4.2	6.2	6.2	5.3	3.8	5.3	5.3	3.6
12	3.0	4.0	3.6	2.4	4.2	6.2	6.2	5.0	4.0	7.4	5.0	3.4
13	3.4	3.8	4.0	2.4	4.4	5.9	6.2	4.7	4.4	7.7	2.9	3.2
14	3.0	4.0	4.0	2.4	4.8	5.9	5.9	5.0	4.6	7.7	1.9	3.2
15	3.0	4.0	4.4	2.6	4.8	5.9	5.9	5.9	4.8	4.8	2.2	3.2
16	3.2	4.0	4.0	2.8	4.8	5.9	6.2	5.6	4.8	4.8	2.4	3.2
17	3.0	4.2	3.8	2.9	4.8	6.2	6.5	5.6	5.0	2.6	3.0	2.9
18	3.0	3.6	4.0	3.2	4.8	6.2	5.6	5.9	5.6	2.8	2.9	2.8
19	2.9	2.9	4.0	3.4	4.8	6.2	5.9	5.6	5.6	2.6	3.0	2.8
20	3.0	3.0	4.0	3.8	4.2	6.2	5.3	5.6	5.9	2.8	2.9	3.0
21	2.9	3.6	4.2	4.0	4.2	6.2	5.0	5.6	6.2	3.0	2.8	3.0
22	3.0	4.0	4.8	4.0	4.4	5.9	5.0	5.9	6.5	3.0	2.8	3.2
23	3.4	4.4	4.8	4.4	4.4	5.9	5.3	5.6	6.5	3.6	2.8	3.4
24	3.6	4.6	4.6	5.0	4.6	5.9	5.6	6.2	7.1	3.8	2.9	3.4
25	3.6	4.6	4.4	5.3	4.8	5.9	5.6	7.1	7.1	4.0	3.0	3.6
26	3.8	4.2	4.8	5.3	4.8	6.2	5.6	7.1	7.4	4.0	3.0	3.4
27	3.8	4.2	4.6	5.6	4.8	6.2	5.6	6.8	7.4	3.8	3.0	3.4
28	3.8	4.2	4.6	5.1	4.8	5.9	5.9	6.8	7.4	4.0	3.0	3.6
29	3.8	4.2	4.2	4.6	---	5.9	6.3	6.5	8.0	3.8	3.2	3.8
30	4.0	4.4	3.8	4.4	---	5.9	6.2	6.8	8.0	4.2	3.4	4.0
31	3.4	---	3.6	4.6	---	5.6	---	7.1	---	4.4	3.2	---
TOTAL	137.2	119.2	129.2	110.2	127.2	182.4	172.6	185.9	196.9	147.9	114.3	99.0
MEAN	4.43	3.97	4.17	3.55	4.54	5.88	5.75	6.00	6.56	4.77	3.69	3.30
MAX	8.8	4.6	4.8	5.6	4.8	6.2	6.5	7.1	9.2	7.7	6.2	4.0
MIN	2.4	2.9	3.6	2.4	4.2	4.8	5.0	4.7	3.5	2.4	1.9	2.8
AC-FT	272	236	256	218	252	362	342	369	391	293	227	196
CAL YR	1969	TOTAL 2,261.7	MEAN 6.20	MAX 16	MIN .40	AC-FT 4,490						
WTR YR	1970	TOTAL 1,722.0	MEAN 4.72	MAX 9.2	MIN 1.9	AC-FT 3,420						

BEAR RIVER BASIN

10-555. Bear Lake at Lifton, near St. Charles, Idaho

LOCATION.--Lat 42°07'16", long 111°18'52", in NE¼ sec.16, T.15 S., R.44 E., Bear Lake County, in Lifton pumping plant of Utah Power & Light Company, 3.5 miles east of St. Charles.

DRAINAGE AREA.--435 sq mi, approximately (does not include Mud Lake drainage).

PERIOD OF RECORD.--October 1903 to June 1906 (gauge heights only), January 1921 to current year. Monthly contents only January 1921 to September 1945 published in WSP 1314. Published as Bear Lake at Fish Haven 1903-06.

GAGE.--Water-stage recorder. Datum of gage is 5,900 ft above mean sea level, unadjusted (levels by Utah Power & Light Company). October 1903 to June 1906, staff gage at different site and datum.

EXTREMES.--Current year: Maximum contents, 1,240,000 acre-ft June 28, 29 (gage height, 21.08 ft); minimum, 1,110,000 acre-ft Jan. 18-21 (gage height, 19.21 ft).
Period of record: Maximum contents, 1,423,000 acre-ft June 10, 1923 (gage height, 23.68 ft); no usable contents Nov. 9-19, 1935 (gage height, 2.00 ft, lower limit of pumps).

REMARKS.--Outflow regulated by gates and pumps at Bear Lake and by gates in dike at north end of Mud Lake. Inflow to lake augmented by water diverted from Bear River through Rainbow inlet canal and Dingle inlet canal, which empty into Mud Lake (see station 10046000). Water from Mud Lake reaches Bear Lake by a sluice at pumping plant or by gates in causeway at south end of Mud Lake. Capacity, 1,421,000 acre-ft between gage heights 2.00 (lower limit of pumps) and 23.65 ft (present feasible upper limit of storage with existing facilities). Storage water used for irrigation and power development. Figures given herein represent usable contents.

COOPERATION.--Gage heights furnished by Utah Power & Light Company, under general supervision of Geological Survey, in connection with a Federal Power Commission project. Contents computed by Geological Survey from capacity table based on data furnished by Utah Power and Light Company.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

5,919.00	1,095,200	5,920.50	1,199,900
5,919.50	1,130,000	5,921.00	1,234,900
5,920.00	1,164,900	5,921.60	1,276,900

CONTENTS, IN THOUSANDS OF UNITS, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,150	1,150	1,132	1,117	1,119	1,135	1,139	1,150	1,174	1,240	1,208	1,141
2	1,149	1,150	1,131	1,117	1,120	1,135	1,139	1,150	1,177	1,239	1,207	1,140
3	1,148	1,151	1,131	1,116	1,120	1,136	1,139	1,150	1,180	1,239	1,206	1,138
4	1,148	1,151	1,131	1,116	1,121	1,136	1,139	1,150	1,183	1,238	1,206	1,136
5	1,148	1,151	1,130	1,115	1,122	1,136	1,139	1,150	1,185	1,238	1,204	1,134
6	1,147	1,151	1,129	1,115	1,122	1,137	1,139	1,150	1,187	1,238	1,203	1,134
7	1,146	1,151	1,129	1,114	1,123	1,138	1,140	1,150	1,189	1,238	1,201	1,134
8	1,145	1,150	1,128	1,113	1,124	1,138	1,140	1,151	1,192	1,237	1,200	1,134
9	1,145	1,150	1,127	1,113	1,124	1,138	1,140	1,151	1,195	1,237	1,198	1,134
10	1,144	1,148	1,127	1,113	1,125	1,138	1,140	1,152	1,198	1,237	1,196	1,133
11	1,144	1,148	1,126	1,112	1,126	1,139	1,141	1,153	1,201	1,236	1,194	1,131
12	1,143	1,146	1,125	1,112	1,127	1,139	1,142	1,154	1,203	1,236	1,189	1,131
13	1,143	1,145	1,124	1,111	1,127	1,140	1,143	1,155	1,207	1,236	1,184	1,129
14	1,142	1,145	1,124	1,111	1,128	1,140	1,143	1,156	1,210	1,235	1,180	1,128
15	1,141	1,144	1,123	1,110	1,129	1,141	1,143	1,157	1,214	1,234	1,177	1,127
16	1,140	1,144	1,122	1,110	1,129	1,141	1,144	1,157	1,217	1,233	1,173	1,126
17	1,140	1,143	1,122	1,110	1,130	1,141	1,145	1,157	1,220	1,231	1,170	1,124
18	1,141	1,143	1,121	1,110	1,131	1,141	1,145	1,157	1,222	1,229	1,168	1,124
19	1,143	1,142	1,120	1,110	1,131	1,141	1,145	1,157	1,225	1,227	1,165	1,122
20	1,143	1,140	1,120	1,110	1,132	1,141	1,146	1,158	1,228	1,224	1,163	1,121
21	1,144	1,140	1,120	1,110	1,132	1,141	1,146	1,158	1,231	1,222	1,161	1,120
22	1,145	1,139	1,120	1,110	1,133	1,141	1,147	1,159	1,234	1,221	1,159	1,118
23	1,145	1,138	1,119	1,111	1,133	1,141	1,148	1,159	1,236	1,219	1,157	1,118
24	1,145	1,137	1,119	1,112	1,134	1,141	1,148	1,161	1,238	1,217	1,154	1,116
25	1,146	1,136	1,118	1,113	1,134	1,140	1,148	1,161	1,239	1,215	1,152	1,115
26	1,147	1,136	1,118	1,114	1,134	1,140	1,148	1,162	1,240	1,212	1,150	1,114
27	1,148	1,135	1,118	1,115	1,134	1,140	1,149	1,164	1,240	1,210	1,148	1,113
28	1,148	1,134	1,118	1,117	1,135	1,140	1,149	1,165	1,240	1,209	1,147	1,113
29	1,149	1,134	1,118	1,118	-----	1,140	1,150	1,167	1,240	1,208	1,145	1,112
30	1,149	1,133	1,118	1,118	-----	1,140	1,150	1,169	1,240	1,208	1,144	1,111
31	1,150	-----	1,117	1,119	-----	1,139	-----	1,171	-----	1,208	1,143	-----

(†)	5,919.78	5,919.54	5,919.31	5,919.34	5,919.57	5,919.63	5,919.78	5,920.09	5,921.07	5,920.61	5,919.68	5,919.23
(‡)	-1.0	-17.0	-16.0	+2.0	+16.0	+4.0	+11.0	+21.0	+69.0	-32.0	-65.0	-40.0
MAX	1,150	1,151	1,132	1,119	1,135	1,141	1,150	1,171	1,240	1,240	1,208	1,141
MIN	1,140	1,133	1,117	1,110	1,119	1,135	1,139	1,150	1,174	1,208	1,143	1,111

CAL YR 1969.....‡ +41.0
WTR YR 1970.....‡ -40.0

† Elevation, in feet, at end of month.
‡ Change in contents, in acre-feet.

BEAR RIVER BASIN

10-595. Bear Lake outlet canal near Paris, Idaho

LOCATION.--Lat 42°13'00", long 111°20'35", in SW¼ sec. 8, T.14 S., R.44 E., Bear Lake County, on right bank 2,000 ft downstream from headgates (at dike) and 3 miles southeast of Paris.

PERIOD OF RECORD.--January 1922 to current year. Monthly discharge only January 1922 to September 1945, published in HSP 1314.

GAGE.--Water-stage recorder. Elevation of gage datum is 5,912.6 ft above mean sea level (from topographic survey).

AVERAGE DISCHARGE.--48 years, 337 cfs (244,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,150 cfs Aug. 19 (gage height, 17.53 ft); minimum daily, 5.0 cfs on many days.
 Period of record: Maximum daily discharge, 1,870 cfs Aug. 8, 1924; minimum daily, 1 cfs for many days in 1937, 1954, 1959, 1961, 1964.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Discharge measurements generally made six times a week during periods of release from Bear Lake.

COOPERATION.--Records collected by Utah Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	8.4	422	406	5.7	5.0	5.3	7.3	7.9	427	420	588
2	17	8.5	422	404	5.7	5.0	5.3	7.4	7.9	418	401	596
3	17	8.5	413	397	5.6	5.0	5.4	7.4	7.9	475	508	613
4	17	8.6	406	397	5.6	5.0	5.4	7.4	7.9	564	700	613
5	17	199	411	399	5.6	5.1	5.4	7.5	7.9	583	783	322
6	17	463	392	397	5.6	5.1	5.4	7.5	7.9	678	780	22
7	16	521	408	401	5.5	5.1	5.4	7.5	7.9	777	759	22
8	16	583	436	404	5.5	5.1	5.4	7.6	7.9	834	756	22
9	15	580	413	399	5.5	5.1	5.5	7.6	7.9	915	741	22
10	15	487	413	394	5.5	5.1	5.6	7.6	7.9	913	781	22
11	14	413	408	397	5.4	5.1	5.7	7.6	7.9	934	896	21
12	13	415	413	397	5.4	5.1	5.8	7.6	7.9	892	964	20
13	13	418	418	401	5.4	5.2	5.9	7.7	7.9	912	1,070	20
14	12	415	413	406	5.4	5.2	6.0	7.7	7.9	980	1,110	19
15	12	411	411	408	5.3	5.2	6.2	7.7	7.9	997	1,120	18
16	11	408	408	401	5.3	5.2	6.3	7.7	7.9	987	1,110	18
17	10	404	408	408	5.2	5.2	6.4	7.7	7.9	974	1,100	18
18	9.8	401	413	413	5.2	5.2	6.5	7.7	7.9	974	1,110	17
19	9.2	410	415	399	5.2	5.2	6.6	7.8	7.9	970	1,140	17
20	8.6	411	420	228	5.2	5.2	6.7	7.8	7.9	957	1,050	17
21	8.0	408	422	6.0	5.2	5.2	6.8	7.8	7.9	967	1,010	17
22	8.0	411	431	6.0	5.1	5.2	6.8	7.8	7.9	957	980	17
23	8.1	404	427	5.9	5.1	5.2	6.9	7.8	7.9	990	987	17
24	8.1	408	415	5.9	5.1	5.2	7.0	7.9	7.9	984	1,000	16
25	8.1	413	399	5.9	5.1	5.3	7.0	7.9	7.9	977	947	16
26	8.2	418	404	5.9	5.0	5.2	7.0	7.9	136	977	830	16
27	8.2	418	397	5.8	5.0	5.1	7.1	7.9	313	876	724	16
28	8.3	422	400	5.8	5.0	5.3	7.2	7.9	446	666	683	16
29	8.3	418	400	5.8	-----	5.3	7.2	7.9	448	572	637	16
30	8.4	413	400	5.8	-----	5.3	7.2	7.9	429	503	580	16
31	8.4	-----	400	5.7	-----	5.3	-----	7.9	-----	427	585	-----
TOTAL	366.7	11,106.0	12,758	7,920.5	149.5	160.3	186.4	238.4	1,969.5	25,057	26,262	3,190
MEAN	11.8	370	412	256	5.34	5.17	6.21	7.69	65.7	808	847	106
MAX	17	583	436	413	5.7	5.3	7.2	7.9	448	997	1,140	613
MIN	8.0	8.4	392	5.7	5.0	5.0	5.3	7.3	7.9	418	401	16
AC-FT	727	22,030	25,310	15,710	297	318	370	473	3,910	49,700	52,090	6,330

CAL YR 1969 TOTAL 135,531.7 MEAN 371 MAX 1,560 MIN 5.0 ACFT 268,800
 WAT YR 1970 TOTAL 89,364.3 MEAN 245 MAX 1,140 MIN 5.0 ACFT 177,300

BEAR RIVER BASIN

10-905. Bear River near Preston, Idaho

LOCATION.--Lat 42°10'05", long 111°50'59", in NW¼ sec.36, T.14 S., R.39 E., Franklin County, on left bank 600 ft downstream from headgates of West Cache Canal, 5 miles downstream from Mink Creek, 5 miles north of Preston, and 5.5 miles upstream from Battle Creek.

DRAINAGE AREA.--4,500 sq mi, approximately.

PERIOD OF RECORD.--October 1889 to December 1916, January to September 1917 (gage heights only, October 1943 to current year. Prior to 1903, published as "at Battlecreek." Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 4,540 ft (from topographic map). October 1889 to September 1917 nonrecording gages at several sites within 5 miles downstream at different datums.

AVERAGE DISCHARGE.--27 years (1943-70), 784 cfs (568,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,770 cfs Jan. 22 (gage height, 4.48 ft); minimum, 1.8 cfs Apr. 22 (gage height, 0.19 ft); minimum daily 27 cfs May 2.

1889-1917: Maximum discharge, about 8,500 cfs June 9, 10, 1907, estimated on basis of records for station near Collinston, Utah; maximum gage height observed, 9.04 ft Jan. 17, 18, 1917 (backwater from ice), site and datum then in use; minimum discharge not determined.

1943-70: Maximum discharge, 4,420 cfs Apr. 17, 1950 (gage height, 5.61 ft); minimum, 0.6 cfs June 14, 1949; minimum daily, 2.0 cfs May 11, 1968.

REMARKS.--Records good. Station is below all irrigation diversions from Bear River in Idaho except Cub River pumps in SE¼ sec.20, T.16 S., R.39 E. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation, and return flow from irrigated areas.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	409	404	537	648	603	300	374	490	661	484	418	799
2	340	409	694	770	822	513	687	27	776	303	553	663
3	350	531	1,030	783	331	543	462	440	729	738	450	481
4	350	378	567	424	715	573	374	398	815	709	506	791
5	279	255	828	922	393	525	331	507	585	658	680	319
6	259	409	750	796	722	561	729	468	414	826	524	320
7	304	880	783	770	446	603	667	648	440	367	419	347
8	350	861	802	936	531	359	783	340	359	818	452	121
9	283	802	609	591	573	531	635	591	615	685	274	242
10	388	978	603	1,080	484	579	567	796	701	531	579	204
11	304	861	880	848	404	615	567	674	609	677	582	236
12	414	783	628	985	715	409	628	736	519	372	779	278
13	331	867	1,120	783	369	484	585	936	597	613	685	239
14	479	880	848	964	398	457	555	854	701	652	861	265
15	369	430	978	1,020	603	641	743	680	597	662	1,070	231
16	603	635	715	828	648	591	531	479	667	843	792	298
17	267	880	915	887	473	567	513	722	543	508	692	307
18	667	579	861	985	513	513	622	750	354	439	824	157
19	208	573	776	1,230	388	549	519	854	340	444	661	212
20	654	635	943	628	573	585	446	971	409	828	716	212
21	404	628	796	1,060	414	750	531	789	331	408	851	199
22	467	597	985	971	457	255	93	1,200	468	836	895	328
23	451	861	950	1,120	295	490	198	887	208	788	729	228
24	419	1,080	1,030	929	435	567	537	1,400	359	776	886	258
25	374	525	822	809	609	473	409	468	112	1,110	757	307
26	374	796	957	743	327	573	519	943	288	318	445	226
27	519	715	783	430	451	641	585	867	101	770	561	307
28	340	809	901	936	750	661	468	874	187	165	504	256
29	440	802	561	680	-----	364	615	1,170	255	620	456	293
30	473	708	462	484	-----	585	322	708	74	439	258	390
31	369	-----	573	490	-----	537	-----	887	-----	253	505	-----
TOTAL	12,233	20,551	24,687	25,530	14,442	16,394	15,595	22,554	13,814	18,640	19,364	9,514
MEAN	395	685	796	824	516	529	520	728	460	601	625	317
MAX	667	1,080	1,120	1,230	822	750	783	1,400	815	1,110	1,070	799
MIN	208	255	462	424	295	255	93	27	74	165	258	121
AC-FT	24,260	40,760	48,970	50,640	28,650	32,520	30,930	44,740	27,400	36,970	38,410	18,870

CAL YR 1969 TOTAL 295,173 MEAN 809 MAX 2,330 MIN 66 AC-FT 585,500
 PTR YR 1970 TOTAL 213,318 MEAN 584 MAX 1,400 MIN 27 AC-FT 423,100

BEAR RIVER BASIN

10-930. Cub River near Preston, Idaho

LOCATION.--Lat 42°08'28", long 111°41'19", in SW¼ sec.5, T.15 S., R.41 E., Franklin County, on right bank 0.2 mile upstream from headgates of Cub River-Worm Creek Canal, 0.7 mile upstream from forest boundary, and 10 miles east of Preston.

DRAINAGE AREA.--19.4 sq mi.

PERIOD OF RECORD.--March 1940 to September 1952, October 1955 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,320 ft (from topographic map).

AVERAGE DISCHARGE.--27 years, 81.9 cfs (59,340 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 719 cfs June 9 (gage height, 2.99 ft); minimum, 18 cfs several days.
 Period of record: Maximum discharge, 719 cfs June 9, 1970 (gage height, 2.99 ft); maximum gage height, 3.83 ft June 2, 1943; no flow for part of Jan. 29, 1965, result of snowslide.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	24	21	18	21	25	23	32	480	181	62	40
2	28	23	21	18	20	25	22	34	500	166	59	40
3	27	23	21	18	20	24	22	40	552	155	58	39
4	27	23	21	18	19	23	22	53	608	149	57	39
5	27	23	21	18	19	22	23	74	672	143	56	40
6	27	23	21	18	19	22	27	98	679	139	56	42
7	26	24	21	18	19	22	33	115	652	130	54	39
8	26	23	21	18	19	23	32	104	679	123	53	38
9	26	23	21	18	20	23	34	101	686	120	52	37
10	26	23	20	18	20	23	39	110	653	115	51	37
11	26	23	20	18	22	22	43	101	546	113	52	37
12	26	23	20	18	23	22	38	94	455	106	51	36
13	26	22	20	18	26	22	35	89	379	101	50	36
14	26	23	20	18	25	22	33	83	346	98	50	35
15	26	23	20	18	24	23	32	81	322	94	49	35
16	26	23	20	18	23	22	32	90	322	89	49	34
17	26	22	20	19	23	23	32	128	334	88	48	34
18	26	22	19	18	22	22	32	205	338	85	47	34
19	26	22	19	18	21	22	32	277	350	82	47	34
20	25	22	20	19	21	21	32	358	354	79	46	34
21	24	22	20	19	21	21	31	366	354	79	47	34
22	24	22	20	26	21	21	31	326	354	79	45	34
23	24	22	20	27	21	21	31	358	338	75	44	34
24	24	22	19	24	21	22	31	402	314	72	43	34
25	24	22	19	22	22	23	32	485	295	71	42	34
26	24	22	19	22	22	23	33	540	280	71	43	34
27	24	22	19	23	23	23	34	577	260	70	42	34
28	25	21	19	22	23	23	33	634	244	66	41	34
29	24	21	18	21	-----	23	32	640	223	65	40	33
30	24	21	18	21	-----	23	32	590	200	65	40	33
31	24	-----	18	21	-----	22	-----	510	-----	63	39	-----
TOTAL	791	674	616	610	600	698	938	7,695	12,809	3,132	1,513	1,078
MEAN	25.5	22.5	19.9	19.7	21.4	22.5	31.3	248	427	101	48.8	35.9
MAX	28	24	21	27	26	25	43	640	692	181	62	42
MIN	24	21	18	18	19	21	22	32	200	63	39	33
AC-FT	1,570	1,340	1,220	1,210	1,190	1,380	1,860	15,260	25,410	6,210	3,000	2,140

CAL YR 1969 TOTAL 27,304 MEAN 74.8 MAX 485 MIN 18 ACFT 54,160
 WAT YR 1970 TOTAL 31,154 MEAN 85.4 MAX 692 MIN 18 ACFT 61,790

BEAR RIVER BASIN

10-1090. Logan River above State dam, near Logan, Utah

LOCATION.--Lat 41°44'40", long 111°47'00", in NE¼ sec.36 T.12 N., R.1 E., Cache County, on right bank at Logan plant of Utah Power & Light Co., 125 ft upstream from tailrace, 0.5 mile upstream from State dam, and 2.5 miles east of Logan.

DRAINAGE AREA.--218 sq mi.

PERIOD OF RECORD.--June 1896 to current year. Published as Logan River near Logan prior to 1913. Records since May 1913 equivalent to earlier records if records for Utah Power & Light Co.'s tailrace near Logan are added. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,680 ft (from topographic map). Prior to May 7, 1913, nonrecording gage at various sites within 0.5 mile downstream, below confluence of tailrace, at different datums. May 7 to Sept. 30, 1913, water-stage recorder at present site at different datums and Oct. 1, 1913, to Sept. 3, 1938, at datum about 2.3 ft lower than present datum.

AVERAGE DISCHARGE.--57 years (1913-70), 105 cfs (76,070 acre-ft per year). Average combined discharge of Logan River above State dam, Utah Power & Light Co.'s tailrace, and Logan, Hyde Park & Smithfield Canal, 74 years (1896-70), 271 cfs (196,300 acre-ft per year).

EXTREMES (River only).--Current year: Maximum discharge, 1,110 cfs May 28 (gage height, 4.67 ft); minimum daily, 37 cfs Dec. 29.
 Period of record: Maximum discharge, 2,000 cfs Mar. 21, 1916 (gage height, 5.6 ft, datum then in use), from rating curve extended above 1,000 cfs; minimum daily, 6 cfs Nov. 7, 1940.
 (Combined flow, Logan River above State dam, Utah Power & Light Co.'s tailrace, and Logan, Hyde Park & Smithfield Canal).--Current year: Maximum discharge, 1,210 cfs May 28; minimum daily, 85 cfs Dec. 29.
 Period of record: Maximum observed discharge, 2,480 cfs May 24, 1907; minimum daily, 50 cfs Jan. 21, 1935.

REMARKS.--Records good. Water diverted from river and springs above station for power, irrigation and municipal supply. Flow regulated by powerplants above station. For records of combined flow of Logan River, Utah Power & Light Co.'s tailrace, and Logan, Hyde Park & Smithfield Canal, see following page. Combined flow record excludes that in Logan City culinary pipe lines and one small irrigation diversion from power flume that siphons canyon 400 ft upstream from station. During 1963 site of gaging station for Logan, Hyde Park & Smithfield Canal was changed; records of combined flow since that time are equivalent to previous records.

COOPERATION.--Records collected in collaboration with Utah Power & Light Co. in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	63	61	54	63	61	48	93	810	430	179	131
2	74	59	59	52	61	63	52	103	822	390	179	128
3	74	61	59	54	61	57	45	149	871	368	176	125
4	74	59	59	57	63	54	45	208	904	357	170	122
5	72	61	59	56	56	59	48	250	939	339	170	131
6	72	61	57	56	63	52	59	297	939	339	167	158
7	72	61	59	56	65	54	83	354	933	322	167	161
8	72	59	57	56	59	54	93	332	951	304	167	146
9	72	54	61	56	61	54	106	318	1,020	294	161	146
10	72	57	61	63	59	52	134	343	1,010	287	164	149
11	72	56	56	63	81	47	176	300	877	283	164	146
12	70	56	57	68	63	52	131	270	778	273	152	146
13	63	57	57	74	86	48	117	253	710	256	158	146
14	68	61	54	76	79	50	114	243	646	246	155	149
15	65	63	54	79	72	56	103	230	618	233	155	146
16	63	65	54	74	72	56	96	256	610	224	152	146
17	68	63	52	86	65	57	93	350	610	220	149	143
18	72	59	52	74	59	52	90	492	623	224	149	140
19	79	56	50	72	50	45	98	600	636	217	143	140
20	70	56	56	72	54	48	93	675	641	208	146	140
21	72	61	54	65	56	50	86	646	632	204	146	140
22	72	63	65	111	57	50	86	569	628	201	143	140
23	70	57	54	125	56	52	83	614	618	195	137	143
24	72	56	52	90	52	52	79	685	610	195	140	140
25	70	59	52	83	54	54	93	756	587	198	137	137
26	65	61	54	76	54	54	108	860	556	195	137	137
27	65	59	52	81	56	57	120	927	536	192	134	134
28	74	59	45	72	57	56	106	1,020	516	189	137	128
29	65	61	37	70	-----	57	100	1,010	496	186	140	128
30	61	59	50	63	-----	54	96	986	464	179	134	128
31	59	-----	56	61	-----	52	-----	860	-----	176	131	-----
TOTAL	2,165	1,782	1,705	2,195	1,734	1,659	2,781	15,049	21,591	7,924	4,739	4,194
MEAN	69.8	59.4	55.0	70.8	61.9	53.6	92.7	465	720	256	153	140
MAX	79	65	65	125	86	63	176	1,020	1,020	430	179	161
MIN	59	54	37	52	50	45	45	93	464	176	131	122
AC-FT	4,290	3,530	3,380	4,350	3,440	3,290	5,520	29,850	42,850	15,720	9,400	8,320

CAL YR 1969 TOTAL 58,425 MEAN 160 MAX 730 MIN 28 ACFT 115,900
 WAT YR 1970 TOTAL 67,518 MEAN 185 MAX 1,020 MIN 37 ACFT 133,900

BEAR RIVER BASIN

10-1090. Logan River above State dam, near Logan, Utah—continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF LOGAN RIVER ABOVE STATE DAM, UTAH POWER & LIGHT CO.'S TAILRACE, AND LOGAN, HYDE PARK & SMITHFIELD CANAL AT HEAD, NEAR LOGAN, UTAH, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	133	119	91	104	108	98	140	897	539	260	184
2	151	127	118	89	102	110	102	150	909	510	257	181
3	151	129	118	91	102	104	95	196	965	491	254	178
4	151	129	117	94	102	100	95	255	1,020	484	247	174
5	149	132	117	93	95	106	98	302	1,050	464	247	184
6	149	131	115	94	102	98	108	355	1,050	463	244	195
7	149	131	117	94	106	101	132	412	1,040	445	241	190
8	149	129	114	94	100	101	142	391	1,060	425	237	174
9	149	125	118	92	102	100	156	376	1,120	414	232	173
10	150	127	118	99	103	98	181	400	1,100	405	232	171
11	150	126	114	96	126	94	223	356	974	399	229	168
12	148	126	114	100	98	99	178	319	874	388	217	168
13	141	123	114	106	115	96	164	302	806	370	223	168
14	147	122	111	108	115	98	161	292	740	361	220	171
15	144	124	111	111	111	104	150	279	703	348	220	168
16	142	126	112	108	111	104	143	305	695	341	217	168
17	146	124	110	122	104	105	140	397	696	340	211	165
18	147	120	110	110	98	100	137	536	710	333	208	162
19	149	115	108	110	91	93	147	642	724	326	202	162
20	140	115	114	113	96	96	142	716	729	315	205	162
21	142	120	112	106	99	98	135	701	719	312	205	162
22	142	122	123	153	100	98	133	632	723	309	202	162
23	140	116	111	166	100	100	130	694	715	300	196	165
24	140	115	110	132	97	100	126	759	702	297	197	161
25	140	118	106	125	98	102	140	822	687	290	192	158
26	133	119	109	118	98	102	155	927	661	285	192	158
27	133	117	108	123	100	105	167	1,010	640	281	189	155
28	142	117	98	114	102	106	153	1,110	621	278	192	149
29	135	119	85	111	-----	107	147	1,100	601	274	195	149
30	131	116	90	102	-----	104	143	1,080	572	267	189	149
31	129	-----	95	102	-----	102	-----	948	-----	265	185	-----
TOTAL	4,462	3,693	3,436	3,367	2,877	3,139	4,221	16,905	24,503	11,319	6,737	5,034
MEAN	144	123	111	109	103	101	141	545	817	365	217	168
MAX	153	133	123	166	126	110	223	1,110	1,120	539	260	195
MIN	129	115	85	89	91	93	95	140	572	265	185	149
AC-FT	8,850	7,330	6,820	6,680	5,710	6,230	8,370	33,530	48,600	22,450	13,360	9,980
CAL YR 1969	TOTAL	89,213	MEAN	244	MAX	846	MIN	85	ACFT	177,000		
WAT YR 1970	TOTAL	89,693	MEAN	246	MAX	1,120	MIN	85	ACFT	177,900		

BEAR RIVER BASIN

10-1170. Hammond (East Side) Canal near Collinston, Utah

LOCATION.--Lat 41°49'51", long 112°03'24", in SE¼ sec.27, T.13 N., R.2 W., Box Elder County, on right bank 3,600 ft downstream from Cutler Dam and 4 miles north of Collinston.

PERIOD OF RECORD.--June 1912 to current year. Prior to 1915, published as Hammond ditch near Collinston. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Prior to May 22, 1914, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--58 years, 51.0 cfs (36,950 acre-ft per year).

EXTREMES.--Maximum daily discharge, 184 cfs June 29, 1963; no flow at times in each year.

REMARKS.--Records good. Canal diverts from east side of Bear River in NW¼SW¼ sec.26, T.13 N., R.2 W., at dam at which West Side Canal and intake of Cutler powerplant also divert. Water from this canal and West Side Canal used for irrigation of about 58,000 acres below station in eastern Box Elder County.

COOPERATION.--Gage-height record and 4 discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	13	3.0				0	80	148	164	148	134
2	64	13	1.5				0	81	148	163	148	130
3	58	13	1.1				0	80	150	164	147	130
4	55	13	.95				0	80	154	165	148	131
5	54	13	.70				0	83	153	165	148	122
6	52	13	.41				0	95	153	165	136	101
7	50	13	.17				0	95	153	149	149	87
8	50	13	0				0	95	145	167	148	83
9	48	13	0				0	92	116	169	150	83
10	47	14	0				0	91	93	169	153	78
11	44	12	0				0	92	86	159	151	75
12	41	12	0				0	87	84	158	152	75
13	38	12	0				0	83	77	159	157	74
14	36	12	0				0	82	71	160	155	74
15	32	12	0				0	83	71	158	155	75
16	29	12	0				0	85	71	159	154	76
17	30	12	0				0	92	68	161	153	76
18	29	12	0				0	108	68	160	154	76
19	29	11	0				0	122	80	159	154	76
20	21	7.3	0				0	129	106	159	154	75
21	16	3.4	0				0	136	116	159	156	72
22	16	3.4	0				0	143	130	159	156	68
23	16	3.6	0				0	145	146	160	156	66
24	16	3.6	0				0	146	150	161	154	63
25	16	3.6	0				0	146	155	159	149	63
26	15	3.6	0				0	146	167	159	145	63
27	13	3.6	0				0	148	165	152	143	63
28	13	3.7	0				0	148	167	148	143	63
29	14	3.4	0				0	145	166	150	139	63
30	13	3.4	0				60	148	167	148	136	63
31	13		0				-----	148	-----	149	138	-----
TOTAL	1,041	280.6	7.83	0	0	0	60	3,434	3,724	4,936	4,629	2,478
MEAN	33.6	9.35	.25	0	0	0	2.00	111	124	159	149	82.6
MAX	73	14	3.0	0	0	0	66	148	167	169	157	134
MIN	13	3.4	0	0	0	0	0	80	68	148	136	63
AC-FT	2,060	557	16	C	0	0	119	6,810	7,390	9,790	9,180	4,920

CAL YR 1969 TOTAL 21,181.43 MEAN 58.0 MAX 169 MIN 0 ACFT 42,610
 WAT YR 1970 TOTAL 20,590.43 MEAN 56.4 MAX 169 MIN 0 ACFT 40,840

BEAR RIVER BASIN

10-1175. West Side Canal near Collinston, Utah

LOCATION.--Lat 41°49'55", long 112°03'36", in SW¼ sec.27, T.13 N., R.2 W., Box Elder County, on left bank 4,200 ft downstream from Cutler Dam and 4 miles north of Collinston.

PERIOD OF RECORD.--June 1912 to current year. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Prior to May 22, 1914, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--58 years, 240 cfs (173,900 acre-ft per year).

EXTREMES.--Period of record; Maximum daily discharge, 763 cfs July 11, 1967; no flow for periods in every year except 1914.

REMARKS.--Records good. Canal diverts from west side of Bear River in NE¼SE¼ sec.27, T.13 N., R.2 W., at dam at which Hammond (East Side) Canal and intake of Cutler powerplant also divert. Water from this canal and Hammond (East Side) Canal used for irrigation of about 58,000 acres below station in eastern Box Elder County.

COOPERATION.--Gage-height record and 6 discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	442	122	88	43	43	33		0	717	739	665	673
2	418	121	85	43	43	32		0	729	739	659	675
3	406	120	86	43	43	19		0	741	737	661	671
4	387	120	75	43	40	0		0	745	731	661	667
5	376	119	67	43	41	0		273	743	733	661	618
6	354	119	65	43	42	0		260	741	733	659	524
7	334	119	64	43	42	0		259	739	719	677	481
8	328	119	58	43	42	0		290	723	721	687	463
9	300	119	49	43	42	0		328	565	713	685	463
10	286	118	50	43	42	0		328	435	701	687	447
11	259	113	49	43	40	0		328	410	651	689	457
12	248	104	49	43	40	0		305	413	645	695	482
13	217	104	49	43	40	0		277	357	645	719	488
14	200	104	49	43	40	0		308	304	667	725	493
15	169	104	49	43	40	0		373	302	705	729	499
16	152	104	48	43	40	0		415	322	713	735	500
17	152	104	48	43	40	0		450	365	715	733	522
18	151	104	48	43	40	0		477	422	713	735	522
19	148	104	47	43	40	0		482	454	711	735	517
20	137	104	46	43	39	0		539	537	699	735	509
21	140	104	45	43	39	0		590	601	677	735	481
22	161	104	43	43	39	0		601	641	671	729	461
23	152	104	41	43	40	0		628	689	667	725	452
24	147	104	41	43	40	0		598	729	649	719	449
25	147	104	42	43	40	0		611	731	639	711	440
26	145	104	42	43	37	0		643	735	632	705	435
27	134	104	41	43	33	0		665	739	603	699	437
28	126	104	41	43	33	0		685	741	607	697	439
29	126	101	41	43	-----	0		681	737	620	697	428
30	124	92	41	43	-----	0		697	739	639	695	411
31	122	-----	42	43	-----	0	-----	711	-----	673	691	-----
TOTAL	6,988	3,270	1,629	1,332	1,120	84	0	12,812	17,846	21,207	21,735	15,104
MEAN	225	109	52.5	43.0	40.0	2.71	0	413	595	684	701	503
MAX	442	122	88	43	43	33	0	711	745	739	735	675
MIN	122	92	41	43	33	0	0	0	302	603	659	411
AC-FT	13,860	6,490	3,230	2,640	2,220	167	0	25,410	35,400	42,060	43,110	29,960

CAL YR 1969 TOTAL 108,879 MEAN 298 MAX 755 MIN 0 ACFT 216,000
WAT YR 1970 TOTAL 163,128 MEAN 283 MAX 745 MIN 0 ACFT 204,600

BEAR RIVER BASIN

10-1180. Bear River near Collinston, Utah

LOCATION.--Lat 41°50'03", long 112°03'16", in NW¼SE¼ sec.27, T.13 N., R.2 W., Box Elder County, on right bank 800 ft downstream from Cutler plant of Utah Power & Light Co., 2,000 ft downstream from Cutler Dam, and 5.5 miles north of Collinston.

DRAINAGE AREA.--6,000 sq mi, approximately.

PERIOD OF RECORD.--July 1889 to current year. Published as "at Collinston" prior to 1900. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Datum of gage is 4,276.13 ft above mean sea level (levels by Bureau of Reclamation). Prior to Nov. 8, 1913, nonrecording gage, and Nov. 8, 1913 to Sept. 10, 1938, water-stage recorder, at site 0.8 mile downstream at different datums.

EXTREMES.--Current year: Maximum discharge, 3,600 cfs Nov. 18 (gage height, 4.58 ft); minimum daily, 22 cfs several days.

Period of record: Maximum discharge observed, 11,600 cfs June 7-10, 1909 (gage height, 7.70 ft, site and datum then in use); minimum daily, 10 cfs Aug. 4-12, 18-23, 1905; practically no flow at 2400 Aug. 5, 1920.

REMARKS.--Records excellent. Natural flow of stream affected by storage reservoir, power developments, diversions for irrigation, and return flow from irrigated areas.

COOPERATION.--Seven discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	816	785	1,320	1,010	1,420	1,250	1,130	1,420	2,330	25	23	22
2	23	1,090	1,010	1,090	1,470	1,000	973	988	2,130	26	24	22
3	187	672	1,050	811	1,450	940	1,070	1,640	1,920	27	24	22
4	852	1,320	1,280	984	1,440	1,450	1,080	1,270	1,550	28	26	22
5	227	1,430	1,330	1,260	1,430	1,120	1,050	442	1,200	28	24	22
6	739	825	1,290	1,410	1,410	1,030	911	897	603	28	24	23
7	548	1,380	1,280	1,000	1,450	902	1,280	1,100	27	24	494	
8	660	888	1,770	1,000	1,290	991	1,150	1,390	355	26	24	344
9	800	1,090	1,030	1,170	920	1,430	1,280	1,670	1,130	26	24	642
10	319	1,470	1,270	1,270	1,170	698	1,450	2,000	2,060	24	25	262
11	660	1,400	1,220	1,300	1,430	1,840	1,120	1,940	2,330	24	24	296
12	1,170	1,270	1,020	1,390	1,300	2,030	1,350	1,440	2,610	24	24	208
13	829	1,200	1,650	1,430	1,050	1,960	1,480	1,260	2,250	24	24	469
14	954	1,610	1,760	1,630	1,430	1,430	858	1,780	2,160	24	24	149
15	924	1,320	1,460	1,950	1,440	1,170	900	1,440	2,310	24	24	442
16	252	1,540	1,560	1,950	1,290	1,260	1,440	1,710	1,880	23	24	253
17	751	1,500	1,540	1,960	1,030	1,140	1,670	1,320	2,100	23	24	142
18	1,450	1,300	1,200	1,970	1,150	1,180	983	1,540	1,640	24	24	174
19	987	1,240	1,490	1,970	1,440	1,210	1,130	1,320	1,340	23	24	263
20	853	1,260	1,510	1,970	1,190	1,030	1,260	1,990	1,510	23	24	26
21	1,320	1,220	1,330	1,970	982	1,140	1,110	2,130	1,420	23	23	25
22	1,150	575	1,680	1,970	1,010	1,230	1,040	2,340	1,260	23	23	452
23	1,150	1,230	1,890	1,970	1,210	1,260	1,400	2,280	1,050	23	23	450
24	705	1,370	1,630	1,980	1,060	860	1,470	2,320	442	23	23	401
25	1,020	1,340	1,570	1,970	929	1,000	1,210	2,370	22	23	24	309
26	1,390	1,730	1,640	1,980	961	1,080	1,400	2,300	22	23	23	601
27	767	1,290	1,550	1,980	1,140	963	1,150	2,460	22	23	23	562
28	1,050	1,540	1,540	1,980	1,250	495	1,580	2,020	23	23	23	348
29	1,110	1,310	1,050	1,960	-----	1,050	1,390	2,850	24	191	23	605
30	1,180	1,240	898	1,580	-----	1,390	1,380	2,620	25	24	22	491
31	653	-----	1,240	1,430	-----	912	-----	2,580	-----	23	22	-----
TOTAL	25,496	37,435	43,058	49,295	34,712	36,989	36,317	55,007	38,818	923	734	8,541
MEAN	822	1,248	1,389	1,590	1,240	1,193	1,211	1,774	1,294	29.8	23.7	285
MAX	1,450	1,730	1,890	1,980	1,470	2,030	1,670	2,850	2,610	191	26	642
MIN	23	575	898	811	920	495	858	442	22	23	22	22
AC-FT	50,570	74,250	85,410	97,780	68,850	73,370	72,030	109,100	77,000	1,830	1,460	16,940
CAL YR 1969	TOTAL	501,668		MEAN	1,374	MAX	4,970	MIN	18	AC-FT	995,100	
CTR YR 1970	TOTAL	367,325		MEAN	1,006	MAX	2,850	MIN	22	AC-FT	728,600	

BEAR RIVER BASIN

10-1260. Bear River near Corinne, Utah

LOCATION.--Lat 41°34'35", long 112°06'00", in SE&NE¼ sec.30, T.10 N., R.2 W., Box Elder County, on right bank 1.2 miles downstream from Salt Creek, 2.0 miles northeast of Corinne, and 2.8 miles downstream from Malad River.

DRAINAGE AREA.--6,800 sq mi, approximately.

PERIOD OF RECORD.--October 1949 to September 1957, October 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,204.6 ft, unadjusted. Auxiliary nonrecording gage 7,800 ft downstream July 27, 1950 to Nov. 21, 1955.

AVERAGE DISCHARGE.--15 years, 1,588 cfs (1,151,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,030 cfs May 30 (gage height, 9.21 ft); minimum daily, 72 cfs July 5.

Period of record: Maximum discharge, 7,200 cfs May 3, 1952 (gage height, 14.69 ft); maximum gage height, 14.83 ft Feb. 11, 1951; minimum daily discharge, 72 cfs Aug. 20, 21, 26, Sept. 8, 1964, July 5, 1970.

REMARKS.--Records good except those for winter months, which are fair. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation, and return flow from irrigated areas. Records are equivalent to flow at Bear River Bird Refuge diversion works.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	955	1,490	1,600	1,840	1,500	1,150	1,650	2,820	90	184	92
2	698	980	1,530	1,500	1,780	1,490	1,270	1,510	2,610	86	149	88
3	510	1,260	1,340	1,500	1,780	1,260	1,130	1,300	2,430	83	123	95
4	319	1,120	1,320	1,200	1,760	1,210	1,200	1,620	2,120	77	99	91
5	794	1,410	1,470	1,400	1,730	1,520	1,230	1,480	1,890	72	109	128
6	658	1,430	1,520	1,600	1,720	1,290	1,190	660	1,490	77	107	176
7	764	1,070	1,530	1,700	1,710	1,380	1,060	942	996	80	107	197
8	811	1,480	1,510	1,400	1,700	1,580	1,060	1,430	1,310	78	100	514
9	867	1,140	1,970	1,300	1,580	1,240	1,270	1,680	776	74	99	578
10	1,000	1,240	1,380	1,500	1,240	1,400	1,420	2,100	1,580	75	97	849
11	662	1,560	1,460	1,600	1,410	1,020	1,440	2,300	2,260	100	112	549
12	798	1,540	1,440	1,600	1,660	1,900	1,260	2,190	2,670	120	101	429
13	1,280	1,490	1,430	1,700	1,570	2,120	1,430	2,010	2,670	119	92	297
14	1,080	1,480	1,820	1,800	1,370	2,100	1,520	2,260	2,550	106	87	541
15	1,130	1,780	1,990	2,000	1,670	1,570	1,100	2,110	2,470	93	82	353
16	1,160	1,560	1,660	2,300	1,700	1,350	1,220	1,850	2,500	90	84	374
17	690	1,720	1,760	2,400	1,570	1,390	1,560	1,940	2,240	95	85	397
18	931	1,600	1,700	2,400	1,310	1,320	1,600	1,790	2,280	100	87	416
19	1,480	1,520	1,520	2,400	1,420	1,370	1,230	1,780	1,810	101	86	264
20	1,250	1,420	1,710	2,400	1,680	1,320	1,280	1,760	1,700	100	91	337
21	1,160	1,490	1,740	2,400	1,470	1,260	1,360	2,130	1,740	106	92	349
22	1,480	1,410	1,650	2,360	1,170	1,350	1,320	2,470	1,600	104	95	298
23	1,390	869	1,950	2,380	1,320	1,410	1,250	2,670	1,460	106	98	391
24	1,390	1,320	2,030	2,400	1,430	1,350	1,610	2,610	1,190	117	100	673
25	1,110	1,550	1,880	2,390	1,220	1,090	1,510	2,600	638	129	99	581
26	1,290	1,610	1,860	2,380	1,220	1,190	1,380	2,610	294	133	97	502
27	1,410	1,820	1,890	2,380	1,170	1,210	1,530	2,630	106	137	94	696
28	1,030	1,560	1,880	2,380	1,350	1,020	1,400	2,690	83	145	105	770
29	1,210	1,720	1,800	2,360	-----	604	1,580	2,590	82	144	102	529
30	1,270	1,570	1,600	2,330	-----	1,210	1,640	2,960	88	154	100	666
31	1,360	-----	1,300	1,970	-----	1,390	-----	2,880	-----	261	96	-----
TOTAL	31,203	42,674	51,130	61,030	42,550	42,414	40,200	63,201	48,453	3,352	3,159	12,130
MEAN	1,007	1,422	1,649	1,969	1,520	1,368	1,340	2,039	1,615	108	102	404
MAX	1,480	1,820	2,030	2,400	1,840	2,120	1,640	2,960	2,820	261	184	849
MIN	221	869	1,300	1,200	1,170	604	1,060	660	82	72	82	88
AC-FT	61,890	84,640	101,400	121,100	84,400	84,130	79,740	125,400	96,110	6,650	6,270	24,060
CAL YR 1969	TOTAL 589,023		MEAN 1,614		MAX 5,420		MIN 90		AC-FT 1,168,000			
WTR YR 1970	TOTAL 441,496		MEAN 1,210		MAX 2,960		MIN 72		AC-FT 875,700			