

YELLOWSTONE RIVER COMPACT COMMISSION

408 Federal Building

Helena, Montana

December 15, 1954

His Excellency C. J. Rogers
Governor of the State of Wyoming
Cheyenne, Wyoming

His Excellency J. Hugo Aronson
Governor of the State of Montana
Helena, Montana

His Excellency Norman Brunsdale
Governor of the State of North Dakota
Bismarck, North Dakota

Sirs:

Pursuant to Article III of the Yellowstone River Compact, the Commission created according to the terms of said Compact makes the following third annual report.

The Third Annual Meeting of the Yellowstone River Compact Commission was held at Sheridan, Wyoming on November 22, 1954. The duly constituted members were in attendance.

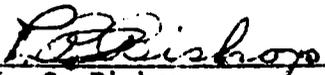
The administrative expenses of the Commission during the fiscal year ending June 30, 1954 were \$7450, of which \$3725 was borne by the federal government. The State of Montana bore \$2225 and the State of Wyoming bore \$1500. A budget of \$4550 has been arranged for the fiscal year ending June 30, 1955 with an unequal sharing of non-federal cost by Montana and Wyoming to balance expenditures by the two states in the current biennium. Budgets of \$6000 for each year of the coming biennium were recommended and tentatively approved.

No questions of allocation of waters came before the Commission during the report period ending September 30, 1954. Your Commissioners feel satisfied that water use on the several streams by the upstream State, or States, did not exceed allocations during the water year and therefore did not determine allocable use.

Records of discharge at the designated points of measurement were collected and are summarized in this report.

Pertinent data and records are available in the files of the Commission maintained in the office of the U. S. Geological Survey at Helena, Montana.

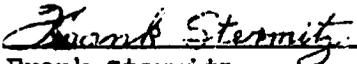
Respectfully submitted,



L. C. Bishop
Commissioner for Wyoming



Fred E. Buck
Commissioner for Montana



Frank Sternitz
Federal Representative

GENERAL REPORT

Cost:

The work of the Commission continues to be financed by cooperative arrangements between the States of Wyoming and Montana and the United States of America.

The expense of the Commission during the fiscal year ending June 30, 1954 is given:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by</u>	
			Wyoming	Montana
Gaging station operation	\$3000	\$1500	\$750	\$750
Improvement or installation of gaging stations	\$3450	\$1725	\$500	\$1225
Collection and assembly of data and administration	<u>\$1000</u>	<u>\$ 500</u>	<u>\$250</u>	<u>\$ 250</u>
	\$7450	\$3725	\$1500	a/\$2225

a/ The greater contribution by the State of Montana for gaging station improvement is being adjusted in the current fiscal year.

The budget for the current fiscal year ending June 30, 1955 is given:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by</u>	
			Wyoming	Montana
Gaging station operation	\$3000	\$1500	\$975	\$525
Improvement or installation of gaging stations	\$ 550	\$ 275	\$275	0
Collection and assembly of data and administration ,...	<u>\$1000</u>	<u>\$ 500</u>	<u>\$250</u>	<u>\$250</u>
	\$4550	\$2275	\$1500	a/\$775

a/ Unequal expenditures to balance shares of prior fiscal year.

The above tabulation of incurred and contemplated cost do not include the salaries and necessary expenses of the State representatives which are borne by the respective states, nor the cost of collection of hydrologic data now being made available from other sources.

Gaging stations:

The completion of gaging station improvements described in the previous annual report was accomplished prior to the close of this report period. To better understand the movements of waters in the Little Bighorn River Basin in the likely event of backwater conditions at the gaging station on the Little Bighorn River near Hardin and the substitution of records for the Little Bighorn River near Crow Agency, discharge records were collected on the Crow Agency canal near the point of diversion during this report period and are included in this report. The effect of canal checks precluded the collection of a highly reliable record. The continued collection of records at this point was approved.

To avoid the silt deposits which interfere with the collection of a satisfactory discharge record on the Bighorn River near Custer, Montana the Commission favored the relocation of this station to the point of measurement designated in the Compact, namely the mouth at Bighorn, Montana. Provision for this move in the fiscal year ending June 30, 1956 is being advocated.

The records of discharge collected at the points of measurement approved by the Commission are given in Appendix B. Supplementary records of the Little Bighorn River near Crow Agency and the Crow Agency Canal at Crow Agency, Montana are also tabulated therein.

A few minor changes in the discharge record for the Powder River near Locate, Mont. for the water year ending September 30, 1953 were made by the U. S. Geological Survey subsequent to presentation in the last annual report of the Commission. The final record appears in the Water Supply Papers of the U. S. Geological Survey. The revisions for 1953 are noted in the records presented in Appendix B.

Diversions:

The Commissioners for Wyoming and Montana were in mutual agreement that allocable uses in either state did not approach the pro rata share. These opinions were based on water-right filings in their respective states and general knowledge of developments completed since January 1, 1950. Because of the major expense involved in the collection of detailed diversion records the Commission did not deem it necessary to require that information in the report period. The low runoff at most of the designated points of stream measurement accentuated the possible early need for data on allocable use.

The federal representative was instructed to assemble general data on allocable use and storage on federal projects through contacts with federal agencies. The Commissioners agreed to pursue further the collection and cataloging of water-right filings and permits in their respective states. It was planned to have such data available for presentation in the next annual report.

Storage:

In reservoirs completed after January 1, 1950:

Boysen Reservoir on the Bighorn River is the principal reservoir in this category, records for which are tabulated in Appendix C. The remaining reservoirs in this category are in the aggregate relatively small and details of their operation have not been collected.

In reservoirs existing on January 1, 1950:

Compact allocations are affected by storage in these reservoirs only in so far as utilized for new developments. The extent of that use is known to be minor or relatively negligible. As a matter of information the quantities in storage on month-ends in the larger reservoirs in this category, namely Bull Lake, Pilot Butte, Buffalo Bill and Tongue River Reservoirs are tabulated in Appendix D.

RULES AND REGULATIONS FOR ADMINISTRATION OF
THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact between the States of Wyoming, Montana and North Dakota, having become effective on October 30, 1951 upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the states of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, the following rules and regulations are adopted subject to the provisions for amendment, revision or abrogation as provided herein.

Article I. Collection of Water Records.

- A. It shall be the joint and equal responsibility of the members of the states of Wyoming and Montana to collect, cause to be collected or otherwise furnish records of tributary stream flow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

1. Clarks Fork

The gaging station known as Clarks Fork at Edgar, Montana and which is located in SW $\frac{1}{4}$ sec. 24, T. 4 S., R. 24 E., shall temporarily be the point of measurement for the Clarks Fork, subject to whatever mutually agreeable corrections to the stream-flow records at this point as may be deemed practical to meet the terms of the Compact.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River near Custer, Montana and located near the center of sec. 10, T. 4 N., R. 34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana and located in S $\frac{1}{2}$, SE $\frac{1}{4}$ sec. 18, T. 1 S., R. 34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana and located in SE $\frac{1}{4}$ sec. 23, T. 7 N., R. 47 E., shall temporarily be the point of measurement for that stream.

4. Powder River

The gaging station known as the Powder River near Locate, Montana and located in NE $\frac{1}{4}$ sec. 26, T. 8 N., R. 51 E., shall temporarily be the designated point of measurement for that stream.

- B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal and industrial uses developed after January 1, 1950 shall be furnished by the members of the Commission for their respective states, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.
- C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the specified point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose state such works are located; providing, such data is not furnished by federal agencies under the provisions of Article III (D) of the Compact, or, collected by the Commission.

Article II. Office and Officers.

- A. The office of the Commission shall be located, and be that of the United States Geological Survey in Helena, Montana.
- B. The Chairman of the Commission shall be the federal representative as provided in the Compact.
- C. The Secretary of the Commission shall be as provided for in Article III of these rules.
- D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

Article III. Secretary

- A. The Commission, subject to the approval of the Director of the United States Geological Survey to cooperative agreements for such purpose, shall employ the U. S. Geological Survey on a yearly basis to render such engineering and clerical aid as may reasonably be necessary for the administration of the Compact. Said agreement shall provide that the Geological Survey shall:
1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.
 2. Assemble factual information on stream flow, diversion and reservoir storage for the preparation of an annual report to the Governors of the signatory states.
 3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.
 4. Act as Secretary to the Commission.

Article IV. Budget.

- A. At the annual meeting of each even numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.
- B. It shall be the obligation of the Commissioners of the States of Montana and Wyoming to endeavor to secure from the Legislature of their respective states sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the federal government.

Article V. Meetings.

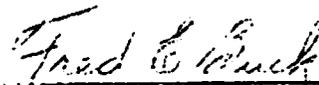
An annual meeting of the Commission shall be held on the third Tuesday of each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for

the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the date and place of the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

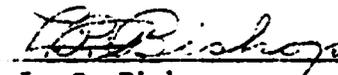
No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.

Article VI. Amendments, Revisions and Abrogations.

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.

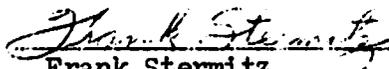


Fred E. Buck
Commissioner for Montana



L. C. Bishop
Commissioner for Wyoming

Attested:



Frank Stermitz
Federal Representative

MONTHLY SUMMARY OF DISCHARGE

Clarks Fork at Edgar, Montana

Location--Lat $45^{\circ}28'$, long. $108^{\circ}51'$, in SW $\frac{1}{4}$ sec. 24, T. 4 S., R. 23 E., on right bank just downstream from highway bridge half a mile east of Edgar and 6 miles upstream from Rock Creek.

Records available--July 1921 to September 1954.

Gage--Water-stage recorder. Prior to Sept. 1, 1953, wire-weight gage read twice daily. Prior to Sept. 18, 1940, chain gage at same site and datum.

Average discharge--21 years (1930-31, 1934-54), 1,028 cfs.

Extremes--Maximum discharge during year, 8,090 cfs June 27 (gage height, 7.54 ft); minimum daily, 216 cfs Oct. 14; minimum gage height, 1.10 ft (Mar. 3).

1921-54: Maximum discharge observed, 10,900 cfs June 2, 1936 (gage height, 8.62 ft); minimum observed, 41 cfs July 25, 1931; minimum gage height, that of Mar. 3, 1954.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	9,427	535	216	304	18,700
November	13,714	494	415	457	27,200
December	13,667	500	375	441	27,110
January 1954	12,420	490	300	401	24,630
February	11,534	510	357	412	22,880
March	11,141	420	250	359	22,100
April	14,743	760	354	491	29,240
May	84,517	6,530	575	2,726	167,600
June	92,760	7,470	1,240	3,092	184,000
July	90,816	4,230	950	2,930	180,100
August	17,598	928	255	568	34,910
September 1954	11,693	540	242	390	23,190
Water year 1953-54	384,032	7,470	216	1,052	761,700

MONTHLY SUMMARY OF DISCHARGE

Little Bighorn River near Crow Agency, Montana

Location.--Lat $45^{\circ}34'$, long. $107^{\circ}27'$, in $E\frac{1}{2}$ $SE\frac{1}{4}$ sec. 13, T. 3 S., R. 34 E., on right bank at Chicago, Burlington, and Quincy Railroad bridge, 2 miles south of Crow Agency and 14 miles upstream from mouth.

Drainage area.-- $1,190$ sq mi, approximately.

Records available.--April 1912 to September 1924, August 1928 to December 1932. April 1938 to September 1954 (few winter records in earlier years). March 1905 to June 1906 at site at Crow Agency, 2 miles downstream, records not equivalent because Crow Agency ditch diverts water between the two sites. October 1915 to September 1940, published as Little Horn near Crow Agency.

Gage (corrected).--Water-stage recorder. April 11, 1912 to Sept. 30, 1918, staff or chain gages; Oct. 1, 1918, to Sept. 30, 1924, Aug. 26, 1928, to Sept. 30, 1930, water stage recorder; Oct. 1, 1931, to Dec. 5, 1932, Apr. 1, 1938 to May 6, 1947, wire-weight or chain gages; all at same site and datum.

Average discharge.--18 years (1928-29, 1931-32, 1938-54), 266 cfs.

Extremes.--Maximum discharge during year, 765 cfs May 23 (gage height, 6.00 ft); minimum discharge, 35 cfs Sept. 3 (gage height, 3.92 ft). 1912-24, 1928-32, 1938-54: Maximum discharge observed, about 8,200 cfs July 23, 1923 (gage height, 14.0 ft); no flow July 28 to Aug. 6, 1921.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	2,531	207	41	81.6	5,020
November	3,651	143	95	122	7,240
December	3,989	140	115	129	7,910
January 1954	3,245	125	80	105	6,440
February	3,600	155	100	129	7,140
March	4,021	170	80	130	7,980
April	5,403	440	124	180	10,720
May	11,462	740	179	370	22,730
June	9,888	435	258	330	19,610
July	4,096	261	54	132	8,120
August	2,486	105	56	80.2	4,930
September 1954	1,616	73	39	53.9	3,210
Water year 1953-54	55,988	740	39	153	111,000

MONTHLY SUMMARY OF DISCHARGE

Agency Canal at Crow Agency, Montana

Location.--Lat 45°35'55", long. 107°27'15", near center of sec. 1, T. 3 S., R. 34 E., on downstream right abutment of bridge at intersection of U. S. Highway No. 87 and the main street of Crow Agency, a third of a mile downstream from headgate.

Records available.--Fragmentary records for 1953 and 1954.

Gage.--Staff gage read twice daily during canal operation. Some recorder record during 1953.

Extremes.--Maximum daily discharge during year, 132 cfs July 8; no flow Oct. 16 to May 12.

Remarks.--Canal operated Oct. 1-16 and May 13 to Sept. 30 for irrigation of about 3500 acres of land. Records poor due to operation of check gates downstream from gage.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	450	-	-	-	893
May	1,091	75	-	-	2,160
June	1,598	76	38	53.3	3,170
July	3,116	132	79	101	6,180
August	2,195	-	-	70.8	4,350
September 1954	1,168	53	34	38.9	2,320
Water year 1953-54	9,618	132	0	-	19,070

MONTHLY SUMMARY OF DISCHARGE

Little Bighorn River near Hardin, Montana

Location.--Lat $45^{\circ}44'20''$, long. $107^{\circ}33'20''$, on line between $S\frac{1}{2}$ $SE\frac{1}{4}$ sec. 18 and $NE\frac{1}{4}$ sec. 19, T. 1 S., R. 34 E., on right bank 425 ft upstream from county road bridge, about a quarter of a mile upstream from mouth and 2.4 miles east of Hardin.

Records available.--June 1953 to September 1954.

Gage.--Water-stage recorder. June 4, 1953, to Oct. 6, 1953, wire-weight gage on bridge 425 ft downstream at different datum.

Extremes.--Maximum discharge during year, 698 cfs May 24 (gage height, 5.23 ft); maximum gage height, 6.81 ft Mar. 3 (backwater from ice); minimum discharge, 22 cfs Sept. 4 (gage height, 2.95 ft).

1953-54: Maximum daily discharge, 1,310 cfs June 17, 1953 (former site); maximum gage height, that of Mar. 3, 1954; minimum daily discharge, that of Sept. 4, 1954.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	2,951	266	28	95.2	5,850
November	4,105	155	75	137	8,140
December	3,769	150	80	122	7,480
January 1954	3,415	125	90	110	6,770
February	3,735	160	100	133	7,410
March	4,124	178	100	133	8,180
April	5,597	446	117	187	11,100
May	10,738	667	172	346	21,300
June	10,238	442	227	341	20,310
July	2,587	231	37	83.5	5,130
August	1,801	82	32	58.1	3,570
September 1954	1,204	55	25	40.1	2,390
Water year 1953-54	54,264	667	25	149	107,600

MONTHLY SUMMARY OF DISCHARGE

Bighorn River near Custer, Montana

Location.--Lat $46^{\circ}07'$, long. $107^{\circ}28'$, near center of sec. 10, T. 4 N., R. 34 E., on left bank just downstream from Manning diversion dam, 3 miles upstream from Tullock Creek, 4 miles southeast of Custer and $4\frac{1}{2}$ miles upstream from mouth.

Records available.--May 1945 to September 1954.

Gage.--Water-stage recorder. Prior to Dec. 7, 1945, wire-weight gage at same datum. Auxiliary wire-weight gage on highway bridge 4 miles downstream at different datum.

Average discharge.--9 years, 3,931 cfs.

Extremes.--Maximum discharge during year, 6,500 cfs May 24 (gage height, 4.48 ft); maximum gage height, 5.25 ft Jan. 26 (backwater from ice); minimum daily discharge, 900 cfs Jan. 20; minimum gage height, 1.27 ft Mar. 4 (backwater from ice).

1945-54: Maximum discharge, 26,200 cfs June 24, 1947 (gage height, 8.79 ft), from rating curve extended above 12,500 cfs by logarithmic plotting; maximum gage height recorded, 10.65 ft Mar. 20, 1947 (ice jam); minimum discharge, 756 cfs Dec. 13, 1949 (gage height, 0.89 ft).

Remarks.--Discharge records based on observed readings of auxiliary gage Apr. 21 to May 2, and August 1 to September 30 because of faulty intake operation at recording gage.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	78,410	3,560	2,060	2,529	155,500
November	94,600	3,470	2,980	3,153	187,600
December	87,580	3,030	2,500	2,825	173,700
January 1954	65,150	2,950	900	2,102	129,200
February	55,060	2,800	1,600	1,966	109,200
March	58,560	2,460	950	1,889	116,200
April	70,880	3,030	1,840	2,363	140,600
May	126,420	6,120	2,590	4,078	250,800
June	116,100	6,180	3,000	3,870	230,300
July	113,820	5,200	2,410	3,672	225,800
August	59,860	2,440	1,600	1,931	118,700
September 1954	60,690	2,280	1,480	2,023	120,400
Water year 1953-54	987,130	6,180	900	2,704	1,958,000

MONTHLY SUMMARY OF DISCHARGE

Tongue River at Miles City, Montana

Location.--Lat $46^{\circ}21'$, long. $105^{\circ}48'$, in $SE\frac{1}{4}$ sec. 23, T. 7 N., R. 47 E., on right bank 4 miles south of Miles City and 8 miles upstream from mouth.

Records available.--April 1938 to April 1942 (published as "near Miles City"). April 1946 to September 1954. Records published as "near Miles City" May 1929 to September 1932 are not equivalent.

Gage.--Water-stage recorder. April 1938 to April 1942, wire-weight gage at site 8 miles upstream at different datum.

Average discharge.--10 years (1939, 1941, 1946-54), 398 cfs.

Extremes.--Maximum discharge during year, 2,780 cfs Aug. 17 (gage height, 4.92 ft); minimum daily discharge, 4.7 cfs Aug. 31; minimum gage height, .02 ft July 29 to Aug. 3 from graph based on gage readings.

1938-42, 1946-54: Maximum discharge, 12,000 cfs Mar. 6, 1949 (gage height, 10.6 ft), (float measurements), maximum gage height, 11.80 ft Mar. 6, 1949 (ice jam); no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1953	7,842.0	1,510	6.0	253	15,550
November	11,848	430	300	395	23,500
December	6,166	375	70	199	12,230
January 1954	5,485	290	120	177	10,880
February	7,260	300	190	259	14,400
March	7,173	330	130	231	14,230
April	6,918	361	130	231	13,720
May	8,570	662	97	276	17,000
June	9,422	823	97	314	18,690
July	1,579.4	146	6.6	50.9	3,130
August	3,556.5	1,740	4.7	115	7,050
September 1954	1,269.0	305	6.0	42.3	2,520
Water year 1953-54	77,088.9	1,740	4.7	211	152,900

MONTHLY SUMMARY OF DISCHARGE

Powder River near Locate, Montana

Location.--Lat $46^{\circ}26'$, long. $105^{\circ}18'$, in NE $\frac{1}{4}$ sec. 26, T. 8 N., R. 51 E., on right bank 50 ft downstream from bridge on U. S. Highway 12, 3 miles upstream from Locate Creek, 5 miles west of former site of Locate, and 25 miles east of Miles City.

Records available.--March 1938 to September 1954.

Gage.--Water-stage recorder. Prior to July 11, 1947, wire-weight gage at bridge 50 ft upstream at same datum.

Average discharge.--16 years, 671 cfs.

Extremes.--Maximum discharge observed during year, 6,130 cfs Sept. 6 (gage height, 5.75 ft); minimum daily discharge, 2.1 cfs July 13.
1938-54: Maximum discharge observed, 31,000 cfs Feb. 19, 1943 (gage height, 11.23 ft), from rating curve extended above 14,000 cfs; no flow Jan. 16 to Feb. 12, Feb. 22-24, 1950.

Revisions.--Revised figures of discharge, superseding those presented in the annual report for 1953 are given herewith:

Month	Cfs-days	Minimum	Mean	Runoff in Acre-feet
August	14,683	-	474	29,120
September	704.4	8.2	23.5	1,400
Water year 1952-53	140,219.4	8.2	384	278,100

Month	Second-foot days	Maximum	Minimum	Mean	Runoff in Acre-feet
October 1953	2,281.6	1,020	7.0	73.6	4,530
November	2,156	169	31	71.9	4,280
December	3,942	220	13	127	7,820
January 1954	3,695	170	50	119	7,330
February	10,170	1,250	100	363	20,170
March	14,192	1,000	220	458	28,150
April	9,554	560	217	318	18,950
May	15,640	950	276	505	31,020
June	3,909	580	28	130	7,750
July	1,125.1	197	2.1	36.3	2,230
August	9,809.0	1,780	7.0	316	19,460
September 1954	5,968.3	3,430	4.7	199	11,840
Water year 1953-54	82,442.0	3,430	2.1	226	163,500

RESERVOIRS COMPLETED AFTER JANUARY 1, 1950

BOYSEN RESERVOIR

Water-stage recorder at dam on Bighorn River, about 21 miles south of Thermopolis, Wyoming. Reservoir formed by earth-fill dam, construction of which began in 1947. Storage began on October 11, 1951. Dead storage, 62,000 acre-feet at elevation 4657.0. Usable contents, 758,000 acre-feet at elevation 4725.0 (top of gates). Crest of dam at elevation 4758.

Records given herein represent usable contents. Water is used for irrigation and power development. Allocation for flood control provided. Data collected by U. S. Bureau of Reclamation and furnished by Corps of Engineers, U. S. Army.

<u>Month</u>	<u>Water-Surface elevation in feet</u>	<u>*Contents in Acre-feet</u>	<u>Change in contents during month in acre-feet</u>
September 30, 1953	4716.74	606,600	
October 31	4715.57	586,900	-19,700
November 30	4714.52	569,500	-17,400
December 31	4712.78	541,400	-28,100
January 31, 1954	4712.42	535,700	- 5,700
February 28	4713.93	559,900	+ 24,200
March 31	4715.16	580,100	+ 20,200
April 30	4713.83	558,300	-21,800
May 31	4719.40	652,900	+ 94,600
June 30	4721.92	698,800	+ 45,900
July 31	4724.58	749,600	+ 50,800
August 31	4723.00	719,100	-30,500
September 30, 1954	4721.43	689,700	-29,400
Water year 1953-54			+ 83,100

* Does not include dead storage of 62,000 acre-feet

RESERVOIRS IN EXISTENCE ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this category which may be subject to Compact allocations was not determined. As a matter of hydrologic interest, the month-end contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River Basin in Wyoming and data on contents was furnished by the U. S. Bureau of Reclamation. Tongue River Reservoir in Montana is operated under the supervision of the Montana State Water Conservation Board which agency furnished operating data.

Contents in Acre-feet

	<u>Bull Lake</u>	<u>Pilot Butte Reservoir</u>	<u>Buffalo Bill Reservoir</u>	<u>Tongue River a/Reservoir</u>
September 30, 1953	128,000	3,900	300,500	32,800
October 31	115,900	6,600	270,400	19,900
November 30	109,000	4,600	250,200	b/8,500
December 31	100,200	7,500	225,500	b/7,300
January 31, 1954	84,900	8,900	216,300	6,000
February 28	76,800	12,000	212,700	7,100
March 31	69,300	17,700	207,300	8,100
April 30	62,300	25,300	215,900	8,500
May 31	103,900	23,900	342,700	26,000
June 30	126,200	25,500	449,500	30,500
July 31	146,700	19,000	433,200	26,300
August 31	115,500	10,600	352,300	21,300
September 30, 1954	94,000	5,800	289,200	b/15,400

a/ Contents based upon sedimentation surveys of October, 1948.

b/ Contents determined within one day of month-end or interpolated from weekly readings.