

YELLOWSTONE RIVER COMPACT COMMISSION

408 Federal Building  
Helena, Montana

December 24, 1952

His Excellency, Frank A. Barrett  
Governor of the State of Wyoming  
Cheyenne, Wyoming

His Excellency, John W. Bonner  
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 by the terms of said Compact makes the following report for the period ending September 30, 1952.

The Yellowstone River Compact was made effective on October 30, 1951 upon approval of the Congress of the United States. The Governor of Wyoming appointed Mr. L. C. Bishop, Wyoming State Engineer as the representative of the State of Wyoming. The Governor of Montana appointed Mr. F. E. Buck, Montana State Engineer as the representative of the State of Montana. In mid-May 1952, the Governors of the States of Wyoming and Montana separately notified the Director of the United States Geological Survey of their selections and requested the appointment of a third party. The Director appointed Mr. Frank Stermitz on June 9, 1952, to sit with the Commission and act as Chairman. The Yellowstone River Compact Commission so constituted met at Helena, Montana on July 15, 16, 1952, and at Sheridan, Wyoming on November 25, 1952.

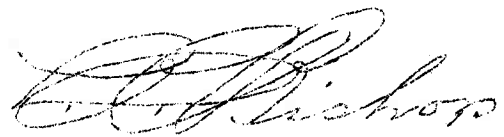
The Commission being satisfied that the allocations of the upstream state or states were not approached for the period ending September 30, 1952, did not factually determine the extent of allocable use.

The expenses of the Commission are being borne as stipulated in Article III (B) of the Compact. The sum of \$1200 has been made available for the period ending June 30, 1953.

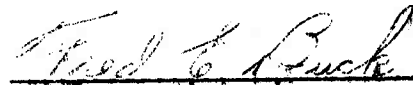
Pertinent data and records are available in the files of the Commission in the office of the District Engineer, U. S. Geological Survey, Helena, Montana.

The Yellowstone River Compact 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 therefor are also supplied. Your attention is called to the need for the enactment of regulations or laws in Wyoming and Montana which will make it feasible to maintain reliable records of the appropriative water rights and water use subject to allocation by this Compact. This matter is discussed in greater detail in the accompanying report under the heading of Diversions.

Respectfully Submitted,



L. C. Bishop  
Commissioner for Wyoming



Fred E. Buck  
Commissioner for Montana

Attest

  
Frank Stermitz, Chairman

## GENERAL REPORT

### Effective date:

The Yellowstone River Compact became effective on October 30, 1951 upon approval of the Congress of the United States of America.

### Organization of the Commission:

As provided in Article III (A) of the Compact, Mr. L. C. Bishop, State Engineer of Wyoming was selected to represent the State of Wyoming and Mr. F. E. Buck, State Engineer of Montana was selected to represent that state. Upon the request of the Governors of those two states, the Director of the United States Geological Survey selected Frank Stermitz, District Engineer, Surface Water Branch, United States Geological Survey of Helena, Montana on June 9, 1952 to sit with the Commission and act as Chairman, without vote except as specifically provided.

The Commission met at Helena, Montana on July 15, 16, 1952, and at Sheridan, Wyoming on November 25, 1952.

The office of the Commission was designated as the business office of the Chairman, namely, 408 Federal Building, Helena, Montana. The Chairman was requested to make provisions for secretarial service as required.

The Commission has under advisement the formulation of rules and regulations as authorized in Article III (E) of the Compact.

### Cost:

The work of the Commission is being financed by cooperative arrangements between the States of Wyoming and Montana and the United States of America. For the period ending June 30, 1953 the total sum of \$1200 is being made available for that purpose. The following is a tentative budget for the collection of basic records and other expense of administration which may be incurred by the Commission during the fiscal year ending June 30, 1954:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by Wyoming</u>	<u>Montana</u>
Gaging station operations --	\$1800	\$ 900	\$ 450	\$ 450
Replacement or improvement of gaging stations -----	3200	1600	800	800
Collection and assembly of miscellaneous data and administrative expense -----	1000	500	250	250
Annual Total -----	<u>\$6000</u>	<u>\$3000</u>	<u>\$1500</u>	<u>\$1500</u>

The above budget does not include the salaries and necessary expenses of the State representatives which are to be borne by the respective states, nor the cost of collection of hydrologic data now being made available from the records of state and federal agencies.

#### Acknowledgements:

The Commission gratefully acknowledges the assistance and data furnished by various state and federal agencies.

#### Gaging stations:

The Commission considered the appropriateness of existing gaging stations for the determination of stream flows as required by Article IV and has under study future improvements or modifications. No critical error was considered to result from the use of data collected at existing gaging stations during the period ending September 30, 1952. The descriptions of the gaging stations and the summaries of monthly discharge are given in Appendix A.

#### Clarks Fork, Yellowstone River.-

Records of discharge collected at a gaging station operated on the Clarks Fork at Edgar, Montana, have been accepted as being satisfactory for the designated point of measurement without adjustment for the time being. The effect of upstream diversions into the basin from Rock Creek was considered to be a balancing factor to diversions from the Clarks Fork between Edgar and the mouth of Rock Creek. Improvements of the existing station by the installation of a recording gage or the establishment of a gaging station further downstream are to be investigated further.

Bighorn River (Exclusive of Little Bighorn River).-

Discharge records of the Bighorn River as collected at the gaging station four and one half miles upstream from the mouth known as the Bighorn River near Custer, Montana, excluding the discharge records of the Little Bighorn River as collected at the gaging station fourteen miles upstream from its mouth and known as the Little Bighorn River near Crow Agency, Montana, were considered as sufficiently indicative of Compact requirements to be used for this first Annual report. No records of the quantities diverted from the Little Bighorn River below the gage by the Agency Ditch are available. More suitable means of determining the flow past the point of measurement designated in the Compact will be investigated promptly.

Tongue River.-

The existing gaging station, four miles south of Miles City, Montana, eight miles upstream from the mouth, and which is known as the Tongue River at Miles City, Montana, is considered the acceptable point of measurement on this stream.

Powder River (Including the Little Powder River).-

The existing station three miles upstream from Locate Creek and known as the Powder River near Locate, Montana, has been temporarily designated as the point of measurement. Location of a new gage nearer the mouth of the Powder River was not considered justifiable since the present extent of allocable water use is minor.

Diversions:

No records of the quantities of water subject to percentage allocation by this Compact were available to this Commission. The two state representatives assured the Commission that diversions subject to allocation in their states had been minor during the report period. The lack of information must be remedied if the Compact is to be properly administered.

The laws of Wyoming provide for the filing of all applications for water use with the State Engineer and the issuance of permits and certificates

of appropriation upon proof of beneficial use of water. This centralized system is a distinct advantage, however, some modification would facilitate the work of the Commission.

In Montana the right to use water can be established by making a filing with the County Clerk and Recorder or by diversion without filing. The State Engineer has no jurisdiction over the issuance of water rights, nor information on rights acquired, nor the quantities of water used.

The States of Wyoming and Montana by entering into the Yellowstone River Compact have assumed a responsibility which cannot be properly discharged until information on water rights acquired since January 1, 1950 and the quantities of water diverted under those rights, can be made a matter of ready record. The Commission recommends to applicable authorities in Wyoming and Montana that the grant, adjudication or establishment of water rights or use which is subject to Compact allocation be upon condition that the user install satisfactory headgates or measuring devices in order that accurate data on diversions be made available to the Commission. The Commission further suggests that legislation be enacted in Montana which will make available to the State Engineer information on water rights whose enjoyment is subject to allocation under this Compact.

#### Storage:

##### In reservoirs completed after January 1, 1950:

Information available to the Commission indicated that Boysen Reservoir on the Bighorn River was the only reservoir of consequence coming under this category. Storage therein began October 11, 1951. The quantities in storage at given dates are shown in Appendix B.

##### In reservoirs existing on January 1, 1950:

Information available to the Commission indicated quantities of water stored therein and subject to Compact allocation was nil or inconsequential during the report period. No records of quantity stored will be incorporated in this report. Tabulation of reservoirs in this category and the summary by states are given in Appendix C.

## 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., near center of span on downstream side of highway bridge half a mile east of Edgar and 6 miles upstream from Rock Creek.

Records available.--July 1921 to September 1952.

Gage.--Wire-weight gage read twice daily.

Average discharge.--19 years (1930-31, 1934-52), 1,031 cfs.

Extremes.--Maximum discharge observed during year ending September 30, 1952, 7,990 cfs June 7 (gage height, 7.52 ft); minimum daily, 200 cfs Dec. 15. 1921-52; Maximum discharge observed, 10,900 cfs June 2, 1936 (gage height, 8.62 ft); minimum observed, 41 cfs July 25, 1931; minimum gage height observed, 1.13 ft Mar. 11, 1950.

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
January 1950	11,570	410	350	373	22,950
February	10,640	410	370	380	21,100
March	11,600	590	186	374	23,010
April	14,216	759	341	474	28,200
May	35,950	2,960	359	1,160	71,310
June	136,720	7,310	2,070	4,557	271,200
July	119,760	7,110	1,840	3,863	237,500
August	32,093	1,640	609	1,035	63,660
September 1950	23,727	1,100	510	791	47,060
Period	396,276	7,310	186	1,452	786,000

## Clarks Fork at Edgar, Montana

## Water Year 1951

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1950	27,772	1,080	658	896	55,080
November	21,837	881	626	728	43,310
December	18,068	760	300	583	35,840
January 1951	14,600	530	380	471	28,960
February	14,380	600	440	514	28,520
March	15,429	800	381	498	30,600
April	17,225	1,040	393	574	34,170
May	82,637	7,190	711	2,666	163,900
June	102,610	7,710	1,500	3,420	203,500
July	114,440	4,810	2,310	3,692	227,000
August	47,776	2,960	783	1,541	94,760
September 1951	21,721	819	620	724	43,080
<b>Water Year 1951</b>	<b>498,495</b>	<b>7,710</b>	<b>300</b>	<b>1,366</b>	<b>988,700</b>

## Water Year 1952

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1951	22,976	934	664	741	45,570
November	18,458	741	520	615	36,610
December	12,784	587	200	412	25,360
January 1952	14,120	550	340	455	28,010
February	13,920	620	340	480	27,610
March	12,564	540	342	405	24,920
April	25,382	2,440	384	846	50,340
May	75,880	3,770	1,370	2,448	150,500
June	119,420	7,860	1,810	3,981	236,900
July	50,520	2,960	753	1,630	100,200
August	25,852	1,330	423	834	51,280
September 1952	12,001	826	288	400	23,800
<b>Water Year 1952</b>	<b>403,877</b>	<b>7,860</b>	<b>200</b>	<b>1,103</b>	<b>801,100</b>



## 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 1952.

Gage.--Water-stage recorder. Prior to December 7, 1945, wire-weight gage at different datum.

Average discharge.--7 years, 4,267 cfs.

Extremes.--Maximum discharge during year ending September 30, 1952, 14,800 cfs May 23 (gage height, 6.65 ft); minimum daily, 800 cfs Dec. 16, 1945-52; 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, 1950 (gage height, 0.89 ft).

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
January 1950	51,480	1,850	1,300	1,661	102,100
February	74,230	6,000	1,740	2,651	147,230
March	150,190	6,400	3,200	4,845	297,900
April	90,620	3,530	2,320	3,021	179,700
May	114,390	6,120	2,000	3,690	226,900
June	315,350	13,700	5,940	10,510	625,500
July	272,550	12,800	4,610	8,792	540,600
August	100,660	5,610	2,030	3,247	199,700
September 1950	98,830	5,430	1,510	3,294	196,000
Period	1,268,300	13,700	1,300	4,646	2,510,000

MONTHLY SUMMARY OF DISCHARGE

Appendix A

Bighorn River near Custer, Montana

Water Year 1951

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1950	125,860	4,860	3,210	4,060	249,600
November	107,780	3,860	2,940	3,593	213,800
December	86,080	3,800	950	2,777	170,700
January 1951	67,200	2,700	1,100	2,168	133,300
February	73,100	3,000	1,900	2,611	145,000
March	96,910	6,000	1,700	3,126	192,200
April	109,640	5,170	2,530	3,655	217,500
May	208,030	14,800	4,180	6,711	412,600
June	372,870	18,300	8,400	12,430	739,600
July	293,160	13,700	6,400	9,457	581,500
August	150,830	8,740	2,620	4,865	299,200
September 1951	94,830	3,510	2,750	3,161	188,100
Water Year 1951	1,786,290	18,300	950	4,894	3,543,000

Water Year 1952

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1951	99,470	4,740	2,600	3,209	197,300
November	81,570	2,990	2,500	2,719	161,800
December	63,560	2,670	800	2,050	126,100
January 1952	65,590	2,440	1,900	2,116	130,100
February	66,130	2,540	1,750	2,280	131,200
March	98,870	5,330	2,100	3,189	196,100
April	107,120	7,080	2,200	3,571	212,500
May	190,670	11,900	3,480	6,151	378,200
June	174,190	10,500	2,650	5,806	345,500
July	85,650	6,310	1,400	2,763	169,900
August	70,910	2,990	1,840	2,287	140,600
September 1952	76,040	2,830	2,040	2,535	150,800
Water Year 1952	1,179,770	11,900	800	3,223	2,340,000

## 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.

Records available.--September 1911 to September 1924, August 1928 to December 1932, April 1938 to September 1952 (few winter records in earlier years). March 1905 to June 1906 at site at Crow Agency, 2 miles downstream; records not equivalent owing to Crow Agency ditch which diverts water between the two sites.

Gage.--Water-stage recorder. March 1905 to June 1906, chain gage 2 miles downstream at different datum. Prior to May 7, 1947, recorder, staff or chain gage used for extensive intermittent periods.

Average discharge.--16 years (1928-29, 1931-32, 1938-52), 280 cfs.

Extremes.-- Maximum discharge during year ending September 30, 1952, 1,550 cfs Mar. 30 (gage height, 7.67 ft); minimum daily, 35 cfs Jan. 24, 25. 1912-24, 1928-32, 1938-52; 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>
January 1950	2,030	85	40	65.5	4,030
February	2,750	250	68	98.2	5,450
March	5,151	300	90	166	10,220
April	6,456	305	157	215	12,810
May	5,976	298	108	193	11,850
June	11,931	605	200	398	23,660
July	5,260	288	91	170	10,430
August	2,147	137	39	69.3	4,260
September 1950	2,010	115	28	67.0	3,990
Period	43,711	605	28	160	86,700

MONTHLY SUMMARY OF DISCHARGE

Appendix A

Little Bighorn River near Crow Agency, Montana

Water Year 1951

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1950	3,842	137	113	124	7,620
November	3,716	150	103	124	7,370
December	4,440	180	95	143	8,810
January 1951	3,760	140	105	121	7,460
February	3,520	150	100	126	6,980
March	7,575	650	110	244	15,020
April	6,560	430	149	219	13,010
May	8,089	510	168	261	16,040
June	13,017	565	325	434	25,820
July	8,382	515	146	270	16,630
August	4,394	225	83	142	8,720
September 1951	3,730	280	77	124	7,400
Water Year 1951	71,025	650	77	195	140,900

Water Year 1952

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1951	5,475	235	160	177	10,860
November	4,499	187	125	150	8,920
December	3,358	150	75	108	6,660
January 1952	2,140	95	35	69.0	4,240
February	3,090	140	90	107	6,130
March	7,990	1,490	110	258	15,850
April	11,748	1,060	246	392	23,300
May	16,956	805	305	547	33,630
June	11,558	670	177	385	22,920
July	5,426	490	49	175	10,760
August	3,251	184	44	105	6,450
September 1952	2,611	115	65	87.0	5,180
Water Year 1952	78,102	1,490	35	213	154,900

## MONTHLY SUMMARY OF DISCHARGE

## Tongue River at Miles City, Montana

Location.--Lat 46°21', long. 105°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, April 1946 to September 1952. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to September 1932.

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

Average discharge.--8 years (1939, 1941, 1946-52), 431 cfs.

Extremes.--Maximum discharge during year ending September 30, 1952, 7,520 cfs Mar. 30 (gage height, 7.93 ft); minimum, 58 cfs Aug. 2. 1938-42, 1946-52: Maximum discharge, 12,000 cfs Mar. 6, 1949 (float measurement during ice breakup); maximum gage height, 11.80 ft (corrected) Mar. 6, 1949 (ice jam); no flow at various times July to September 1940.

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
January 1950	5,185	270	115	167	10,280
February	4,395	300	120	157	8,720
March	10,975	500	305	354	21,770
April	12,378	1,000	186	413	24,550
May	17,213	1,100	260	555	34,140
June	20,400	1,290	330	680	40,460
July	10,737	1,290	126	346	21,300
August	3,816	650	11	123	7,570
September 1950	7,437	532	67	248	14,750
Period	92,536	1,290	11	339	183,500

MONTHLY SUMMARY OF DISCHARGE  
Tongue River at Miles City, Montana

Appendix A

Water Year 1951

<u>Month</u>	<u>Second- foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1950	10,713	568	129	346	21,250
November	12,227	530	360	408	24,250
December	6,630	360	135	214	13,150
January 1951	6,425	270	150	207	12,740
February	6,260	240	180	224	12,420
March	7,200	320	200	232	14,280
April	7,363	466	61	245	14,600
May	15,285	867	38	493	30,320
June	18,106	1,170	135	604	35,910
July	15,282	790	238	493	30,310
August	8,297	1,310	42	268	16,460
September 1951	14,617	1,630	234	487	28,990
<b>Water Year 1951</b>	<b>128,405</b>	<b>1,630</b>	<b>38</b>	<b>352</b>	<b>254,700</b>

Water Year 1952

<u>Month</u>	<u>Second- foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1951	10,178	466	170	328	20,190
November	15,930	900	163	531	31,600
December	5,895	350	140	190	11,690
January 1952	4,255	145	130	137	8,440
February	4,740	180	140	163	9,400
March	15,880	5,420	160	512	31,500
April	43,987	4,350	270	1,466	87,250
May	33,436	1,960	335	1,079	66,320
June	31,653	2,090	250	1,055	62,780
July	8,722	741	76	281	17,300
August	3,182	214	69	103	6,310
September 1952	3,616	182	80	121	7,170
<b>Water Year 1952</b>	<b>181,474</b>	<b>5,420</b>	<b>69</b>	<b>496</b>	<b>360,000</b>

## 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 1952.

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

Average discharge.--14 years, 723 cfs.

Extremes.--Maximum discharge during year ending September 30, 1952, 23,900 cfs (gage height, 9.53 ft); minimum daily, 40 cfs Sept. 23, 24.  
1938-52: 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.

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
January 1950	140.5	20	0	4.53	279
February	78.9	40	0	2.82	156
March	2,485	200	25	80.2	4,930
April	37,077	3,000	673	1,236	73,540
May	44,862	2,190	829	1,447	88,980
June	31,478	1,590	630	1,049	62,440
July	9,316	558	84	301	18,480
August	2,946	330	17	95.0	5,840
September 1950	837.2	98	3.4	27.9	1,660
Period	129,220.6	3,000	0	473	256,300

## MONTHLY SUMMARY OF DISCHARGE

Appendix A

Powder River near Locate, Montana

Water Year 1951

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1950	5,488	259	100	177	10,890
November	3,666	210	58	122	7,270
December	4,015	150	80	130	7,960
January 1951	2,580	120	60	83.2	5,120
February	3,329	180	54	119	6,600
March	14,614	3,680	150	471	28,990
April	13,448	1,410	241	448	26,670
May	14,975	657	265	483	29,700
June	10,066	878	107	336	19,970
July	7,056	526	38	228	14,000
August	11,215	2,640	58	362	22,240
September 1951	18,940	1,600	185	631	37,570
Water Year 1951	109,392	3,680	38	300	217,000

Water Year 1952

<u>Month</u>	<u>Second-foot-days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1951	8,292	429	225	271	16,650
November	9,772	1,560	75	326	19,380
December	11,897	2,500	100	384	23,600
January 1952	2,525	110	70	81.4	5,010
February	6,245	400	120	215	12,390
March	53,960	22,100	160	1,741	107,000
April	56,872	12,800	566	1,893	112,600
May	49,899	7,010	550	1,610	98,970
June	26,808	1,900	222	894	53,170
July	13,922	1,690	124	449	27,610
August	3,538	330	44	114	7,020
September 1952	1,687	105	40	56.2	3,650
Water Year 1952	245,427	22,100	40	671	486,800



RESERVOIRS COMPLETED AFTER JANUARY 1, 1950  
YELLOWSTONE RIVER BASIN

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.

The filling of dead storage was aided by the release of about 53,000 acre-feet of water from Bull Lake Reservoir. Until April 1952 releases from Boysen Reservoir were made for municipal and industrial use, sewage dilution and maintenance of fish life. Releases thereafter were also made to meet irrigation requirements and beginning in July 1952 for the generation of electrical power. Data furnished by U. S. Bureau of Reclamation.

<u>Month</u>	<u>Usable contents in acre-feet</u>	<u>Change in contents during month (acre-feet)</u>
September 30, 1951	0	-
October 31	25,200	* + 25,200
November 30	58,800	+ 33,600
December 31, 1951	71,400	+ 12,600
January 31	92,400	+ 21,000
February 29	122,000	+ 29,600
March 31	152,400	+ 30,400
April 30	233,400	+ 81,000
May 31	429,900	+196,500
June 30	656,500	+226,600
July 31	678,200	+ 21,700
August 31	668,500	- 9,700
September 30, 1952	647,800	- 20,700
Water year 1951-52	-	* +647,800

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

RESERVOIRS COMPLETED PRIOR TO JANUARY 1, 1950  
YELLOWSTONE RIVER BASIN

Appendix C

List of existing reservoirs submitted by the Engineering Committee in a report to the commission negotiating the Yellowstone River Compact on February 1, 1950. Boysen Reservoir has been deleted from the list as information available indicates that completion thereof was not prior to January 1, 1950. Details regarding Boysen Reservoir will be found in Appendix B.

<u>Reservoir</u>	<u>State</u>	<u>Stream</u>	<u>Capacity Acre-feet</u>
<b>Sweetgrass Creek Basin</b>			
Wolvoord	Mont.	Sweetgrass Cr.	9,700
Adam	Mont.	Sweetgrass Cr.	5,700
<b>Stillwater River Basin</b>			
Mystic Lake	Mont.	W. Rosebud Cr.	20,300
<b>Clarks Fork Basin</b>			
Cooney	Mont.	Red Lodge Cr.	27,500
Glacier Lake	Mont.	Rock Cr.	4,200
<b>Bighorn River Basin</b>			
Bull Lake	Wyo.	Bull Lake Cr.	152,000
Pilot Butte	Wyo.	Wind R.	31,500
Washakie	Wyo.	S.Fk.Little Wind R.	8,000
Ray Lake	Wyo.	N.&S.Fk.Little Wind R.	7,000
Christine Lake	Wyo.	Little Popo Agie R.	3,900
Frye Lake	Wyo.	M.Fk. Popo Agie R.	1,500
Shoshone	Wyo.	Shoshone R.	380,450
Sunshine	Wyo.	Greybull R.	50,000
Meadow Lark Lake	Wyo.	Trib. Tensleep Cr.	3,400
Ralston	Wyo.	Shoshone	1,490
Lake Adelaide	Wyo.	Adelaide Cr.	1,400
Lake Creek	Wyo.	Cottonwood Cr.	1,400
Deaver	Wyo.		600
Willow Creek	Mont.	Willow Cr.	23,000
<b>Tongue River Basin</b>			
Park	Wyo.	E.Fk.Goose Cr.	7,350
Weston	Wyo.	Mill Cr.	370
Big Horn	Wyo.	Cross Cr.	2,600
Last Chance	Wyo.	Little Goose Cr.	210
Farmers	Wyo.	Little Goose Cr.	570
Willetts	Wyo.	Little Goose Cr.	80
Twin Lake	Wyo.	W.Fk. Goose Cr.	1,200
Dome Lake	Wyo.	W.Fk. Goose Cr.	1,800
Tongue River	Mont.	Tongue R.	69,440
<b>Powder River Basin</b>			
Lake DeSmet	Wyo.	Piney Cr.	32,250
Cloud Peak	Wyo.	S.Fk.Piney Cr.	2,720
Kearney Lake	Wyo.	S.Fk.Piney Cr.	1,860

(Summary by states on the following page.)

RESERVOIRS COMPLETED PRIOR TO JANUARY 1, 1950  
YELLOWSTONE RIVER BASIN

- SUMMARY -

(From Engineering Committee Report of February 1, 1950,  
excluding Boysen Reservoir)

	<u>Storage Capacity in Acre-Feet</u>		
	<u>Total</u>	<u>Wyoming</u>	<u>Montana</u>
Yellowstone Main Stream.....	0	0	0
Shields River Basin.....	0	0	0
Sweetgrass Creek Basin.....	15,400	0	15,400
Stillwater River Basin.....	20,300	0	20,300
Bighorn River Basin.....	665,600	642,600	23,000
Tongue River Basin.....	83,600	14,200	69,400
Powder River Basin.....	36,800	36,800	0
	<hr/>	<hr/>	<hr/>
T O T A L .....	821,700	693,600	128,100