

YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

MONTANA

NORTH DAKOTA



SIXTY-THIRD ANNUAL REPORT
2014

Yellowstone River

Compact Commission

Sixty-Third Annual Report

2014

Contents

Minutes of December 4, 2014.....	vii
General Report	1
Operation and Budget.....	1
Gaging Station and Operation	1
Diversions.....	2
Reservoir Contents	2
Reservoirs Completed After January 1, 1950	2
Reservoirs Existing on January 1, 1950.....	2
Annual Contents of Reservoirs	2
Summary of Discharge for Yellowstone River Compact Streamflow-Gaging Stations.....	3
06208500 Clarks Fork Yellowstone River at Edgar, Mont.	3
06294000 Little Bighorn River near Hardin, Mont.	6
06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.....	8
06308500 Tongue River at Miles City, Mont.....	11
06326500 Powder River near Locate, Mont.	14
Month-End Contents for Yellowstone River Compact Reservoirs ¹ Completed after January 1, 1950.....	17
06258900 Boysen Reservoir, Wyo.	17
06260300 Anchor Reservoir, Wyo.	18
06286400 Bighorn Lake near St. Xavier, Mont.	19
Month-End Contents for Yellowstone River Compact Reservoirs ¹ Existing on January 1, 1950.....	20
Water-Year-End Contents for Yellowstone River Compact Reservoirs ¹ or Lakes	21
Rules and Regulations for Administration of the Yellowstone River Compact.....	23
Rules for the Resolution of Disputes over the Administration of the Yellowstone River Compact	27
Rules for Adjudicating Water Rights on Interstate Ditches.....	30
Claim Form for Interstate Ditches	35

¹Wyoming disagrees with the term “Compact Reservoirs” as used throughout this annual report. Wyoming’s acceptance of this annual report should not be construed as Wyoming’s acceptance of the use of that term.

Figures

Map showing locations of Yellowstone River Compact streamflow-gaging stations and reservoir-content stations.....	in back
1. Streamflow data for Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, water years 1921–2014. <i>A</i> , Statistical distribution of monthly and annual streamflow. <i>B</i> , Annual departure from the mean annual streamflow.....	5
2. Streamflow data for Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), minus Little Bighorn River near Hardin, Mont. (06294000); adjusted for change in contents in Bighorn Lake, water years 1954–2014. <i>A</i> , Statistical distribution of monthly and annual streamflow. <i>B</i> , Annual departure from the mean annual streamflow.....	10
3. Streamflow data for Tongue River at Miles City, Mont. (06308500), water years 1938–2014. <i>A</i> , Statistical distribution of monthly and annual streamflow. <i>B</i> , Annual departure from the mean annual streamflow.....	13
4. Streamflow data for Powder River near Locate, Mont. (06326500), water years 1939–2014. <i>A</i> , Statistical distribution of monthly and annual streamflow. <i>B</i> , Annual departure from the mean annual streamflow.....	16

Tables

1. Daily mean discharge for Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, October 2013 through September 2014.....	4
2. Daily mean discharge for Little Bighorn River near Hardin, Mont. (06294000), October 2013 through September 2014.....	7
3. Daily mean discharge for Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), October 2013 through September 2014.....	9
4. Daily mean discharge for Tongue River at Miles City, Mont. (06308500), October 2013 through September 2014.....	12
5. Daily mean discharge for Powder River near Locate, Mont. (06326500), October 2013 through September 2014.....	15
6. Month-end contents for Boysen Reservoir, Wyo.	17
7. Month-end contents for Anchor Reservoir, Wyo.	18
8. Month-end contents for Bighorn Lake, Mont.	19
9. Month-end contents for Yellowstone River Compact reservoirs ¹ existing on January 1, 1950.....	20
10. Water-year-end contents for Yellowstone River Compact reservoirs ¹ or lakes	21

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Conversion Factors

Multiply	By	To obtain
Length		
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
Area		
acre	4,047	square meter (m ²)
acre	0.4047	hectare (ha) ¹
acre	0.4047	square hectometer (hm ²)
acre	0.004047	square kilometer (km ²)
square mile (mi ²)	2.590	square kilometer (km ²)
Volume		
cubic foot per second per day (ft ³ /s-day)	2,447	cubic meter (m ³)
cubic foot per second per day (ft ³ /s-day)	0.0002447	cubic hectometer (hm ³)
cubic foot (ft ³)	0.02832	cubic meter (m ³)
acre-foot (acre-ft)	1,233	cubic meter (m ³)
acre-foot (acre-ft)	0.001233	cubic hectometer (hm ³)
acre-foot (acre-ft)	0.000001233	cubic kilometer (km ³)
Flow rate		
acre-foot per year (acre-ft/yr)	1,233	cubic meter per year (m ³ /yr)
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometer per year (hm ³ /yr)
acre-foot per year (acre-ft/yr)	0.000001233	cubic kilometer per year (km ³ /yr)
cubic foot per second (ft ³ /s)	28.32	liter per second (L/s)
cubic foot per second (ft ³ /s)	28.32	cubic decimeter per second (dm ³ /s)
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)
feet per year (ft/yr)	0.3048	meter per year
gallons per minute (gal/min)	0.06309	liter per second

¹The unit hectare is used with the International System of Units (SI), which is in common everyday use throughout the world. See: Taylor, B.E., and Thompson, Ambler, eds., 2008, *The International System of Units (SI)*: U.S. Department of Commerce, NIST Special Publication 330, 92 p., available online at <http://www.nist.gov/pml/pubs/sp330/>.

**YELLOWSTONE RIVER COMPACT COMMISSION
1608 MOUNTAIN VIEW ROAD
RAPID CITY, SOUTH DAKOTA 57702**

Honorable Matthew Mead
Governor of the State of Wyoming
Cheyenne, Wyoming 82002

Honorable Steve Bullock
Governor of the State of Montana
Helena, Montana 59620

Honorable Jack Dalrymple
Governor of the State of North Dakota
Bismarck, North Dakota 58501

Dear Governors:

Pursuant to Article III of the Yellowstone River Compact, the Commission submits the following sixty-second annual report of activities for the period ending September 30, 2014.

Minutes of December 4, 2014

Members of the Yellowstone River Compact Commission convened on December 4, 2014 at 8:30 am at the conference room of the Bighorn Resort in Billings, MT. In attendance were Mr. Mark Anderson, U.S. Geological Survey (USGS), Chairman and Federal Representative; Ms. Sue Lowry, Wyoming State Engineer's Office (WSEO) and Commissioner for Wyoming; and Mr. Tim Davis, Montana Department of Natural Resources and Conservation (DNRC) and Commissioner for Montana. Also in attendance were Mr. Chris Brown, Wyoming Attorney General's Office; Mr. Loren Smith, and Mr. Carmine LoGuidice, WSEO; Mr. Chuck Dalby, Mr. Kevin Peterson, and Ms. Kim Overcast, DNRC; Ms. Amy Steinmetz, Montana Department of Environmental Quality; Mr. Jon Patch and Bill Schuh, North Dakota State Water Commission; Mr. Brent Esplin, Mr. Tim Felchle and Mr. Clayton Jordon, Bureau of Reclamation; Mr. Shaun Stump and Mr. Joe Walksalong, Jr. and Mr. Joe Limberhand, Northern Cheyenne Tribe; Mr. Titus Takes Gun, Crow Tribal Water Resources Department; Mr. Art Hayes, Jr., Tongue River Water Users Association; Mr. Tosh Sagar, Department of the Interior Solicitor's Office (via phone), and Mr. John Kilpatrick, Mr. Kirk Miller and Mr. Wayne Berkas, USGS.

Mr. Anderson called the meeting to order and presented the agenda. He asked if there were any additions or corrections to the agenda. Mr. Berkas replied that Mr. Steve Sando, from the USGS could not attend, thus he will not be able to make a presentation on water-quality trends in the Tongue and Powder River basins. There were no additions.

Ms. Lowry made a motion to approve the agenda. It was seconded.

Mr. Berkas distributed a handout showing the operational cost for Fiscal Year (FY) 2015 and the estimated budgets for FY 2016 through 2018. The handout shows the cost for each streamgage in FY2015 is \$15,400 and

the cost to prepare the annual report is \$37,000. The total cost for FY2015 is \$114,000. The breakout of this cost is:

\$31,050 for WSEO,
\$31,050 for DNRC, and
\$51,800 for USGS.

The contributions estimated for FY2016 through FY2018 by agency are as follows:

Year	WSE	DNRC	USGS	Total
FY2016	\$31,980	\$31,980	\$53,350	\$117,310
FY2017	\$32,940	\$32,940	\$54,950	\$120,830
FY2018	\$33,930	\$33,930	\$56,600	\$124,460

The estimated cost increases from FY2016 through FY2018 assume an increase of 3 percent each year. The cost for each FY will not exceed those listed, but the cost might be less.

Mr. Davis made a motion to accept the budget and the motion was seconded by Ms. Lowry.

Mr. Anderson asked Mr. Brown to update the Commission on the legal proceedings of Montana vs Wyoming (Special Masters Report).

Mr. Brown reported that the trial took place 1 year ago. Since then, each State made closing arguments to the Special Master on May 1, 2014. The Special Master indicated the report would go to the printer on November 24, 2014.

Mr. Anderson asked Mr. Berkas to present streamflow and reservoir conditions.

Mr. Berkas distributed a handout on streamflow and reservoir conditions through the 2014 water year. Streamflow was above normal (normal is within 80 and 120 percent of average) for all four gage sites monitored by the Commission. Annual streamflow at Clarks Fork Yellowstone River at Edgar was 151 percent of average, and ranked 74th lowest of 76 years. The annual streamflow at Bighorn River near Bighorn (adjusted for the flow of the Little Bighorn River and change of contents in Bighorn Lake) was 129 percent of average and ranked 48th lowest of 61 years. The annual streamflow at Tongue River at Miles City was 155 percent of average and ranked 65th lowest of 72 years. The annual streamflow at Powder River near Locate was 141 percent of average and ranked 61st lowest of 76 years. Total adjusted streamflow of the four rivers in water year 2014 was 5,300,900 acre-ft, compared to 2,440,700 acre-ft in water year 2013, and 3,092,600 acre-ft in water year 2012.

Reservoir storage, historically monitored and reported for the Commission, increased in all seven reservoirs (Bighorn Lake, Boysen Reservoir, Anchor Reservoir, Bull Lake, Pilot Butte Reservoir, Buffalo Bill Reservoir, and Tongue River Reservoir). The contents and the amounts of increase are listed in the 2014 annual report. The total usable contents of these reservoirs at the end of water year 2014 was 2,324,000 acre-ft, compared to 1,993,000 acre-ft, in water year 2013 and 1,921,000 acre-ft in water year 2012. Storage in other reservoirs in the four river basins at the end of water year 2014 was 392,800 acre-ft, compared to 364,300 acre-ft in water year 2013, and 258,600 acre-ft in water year 2012.

Mr. Miller presented 2-year duration hydrographs for selected sites in the Yellowstone River basin. These hydrographs can be created using the utility at: <http://waterwatch.usgs.gov/index.php?id=sitedur>.

Mr. Berkas stated that he gave Montana and Wyoming representatives draft copies of the 2014 annual report. He asked that each State review the report and provide him comments and corrections. The 2013 annual report is with the USGS publications unit and is ready to be printed.

Mr. Anderson reminded the Commissioners that the Compact states that the annual report is to be completed by December 31 of the year of the meeting. The recent report contained detailed minutes. Those minutes need to be reviewed making it difficult to meet the December 31 deadline. Do the Commissioners have an issue with the tardiness of the annual report?

Ms. Lowry replied that 20 years ago the report was published close to the deadline. Because the Commissioners are requesting verbatim transcripts, the deadline is harder to meet. She did not have any issues with missing the deadline. It will be very difficult to have detailed transcripts and meet the December 31 deadline.

Mr. Davis replied that he would like to see the decision of the Special Master and conversations between the States before we decide the role of the report. Perhaps at the next meeting we can have a discussion about how to operate as a result of the Supreme Court decision.

Mr. Anderson asked if the Technical Committee should address issues about finalizing data.

Ms. Lowry replied that her first reaction would be that the Technical Committee probably will not be the first response to the Special Master's Report. She thought the Commission should wait until next year and look at a lot of different things, such as the minutes and the report.

Mr. Davis agreed that a topic for next year would be how would the Commission show some fidelity to the language of the compact and discuss how the Commission would do things differently.

Ms. Lowry reminded everyone that in 1950, the technology was different. The internet was not available and real-time flows were not available. Streamflow data is more accessible now.

Mr. Anderson asked Wyoming to address water-year administration.

Mr. LoGuidice replied that 2014 was a good year for water administration. In the Powder River basin, administration occurred on July 25 on Clear Creek and French Creek, and occurred on August 1 on Rock Creek. The Crazy Woman Creek system and Piney Creek never went into administration. In the Tongue River basin, administration occurred on July 18 on Little Goose Creek, and occurred on August 18 on Wolf Creek. Big Goose Creek and the mainstem of the Tongue River never went into administration.

Mr. Smith replied that the Bighorn River basin had a good year. For the west-side tributaries, the upper end of Owl Creek requested regulation prior to snow-melt runoff because the creek was dry. Administration in the Greybull River system started at the end of April. Administration in the Greybull River is common and the whole system tends to work better if the Wyoming State Engineer's Office stays involved. Administration started on all of Owl Creek and Gooseberry Creek at the end of April. For the east-side tributaries, administration on Beaver Creek (a tributary to Shell Creek) and Shell Creek began in July. An administrative call occurred on Green Creek (a tributary to North Fork Shoshone River) in late August. Administration also occurred on the Medicine Lodge Creek and Paint Rock Creek in late August.

The lowest snowpack in the basin occurred in the Little Popo Agie River area and the irrigators went into administration but they never pulled storage from Christina Lake, so they got by with direct flow from the river system. The Middle Fork Popo Agie didn't go into State administration, but the irrigators self-regulate themselves and take care of water issues without intervention from the Wyoming State Engineer's Office.

Overall, flow in the rivers and creeks were much above average and most of the reservoirs increased storage from last year. The biggest gains occurred in the Upper Sunshine, Lower Sunshine, and Greybull Valley Reservoirs. All of the reservoirs are in great shape for 2015.

Mr. Dalby asked if there was anything special in Wyoming water law that enabled water users to share shortages and administer themselves.

Mr. Smith replied that the Wyoming State Engineer's Office works with all water users to move water around so they all benefit. When administration occurs, a good tool to use to assure that numerous users get water is to pool their water rights and rotate the timing of the use. Rotation works well when all of the users in the rotation have priority dates earlier than the administration date.

Ms. Lowry advised the Commission that the Wyoming Governor's water strategy has received some press by holding listening sessions around the state. No publications have occurred yet, but something may come out before the legislative session in mid-January. One topic receiving notice is a "10 in 10" plan where the goal is to complete 10 small reservoir projects in the next 10 years. The way the process will work is a promising level 1 reservoir reconnaissance assessment study (probably more than 100 have been completed around the state) will go to level 2. Level 2 projects will receive some design work and geological study before moving to level 3. Level 3 projects will receive full design and a construction appropriation. The sponsors then have to show financial support and how they intend to meet their loan-grant mix payments. The projects that have made it through the level 1, 2, and 3 efforts are in old reports and online with the Water Development Commission. At the moment, the full list for the 10 in 10 projects have not been identified.

Mr. Davis asked if Ms. Lowry would update the Commission on the progress plan at the 2015 Yellowstone River Compact Commission Meeting.

Ms. Lowry said she would mail the list of the 10 in 10 projects to the Commissioners when it becomes public.

Mr. Smith said that on September 5, 2014, Judge Skar signed a final decree on the Bighorn General Adjudication. The signing gave a 30-day appeal period to November 1. Then Judge Skar issued another set of letters notifying all who ever filed an appeal in the case that they have until December 12 to weigh in. After December 12, 2014 the Bighorn River Basin should have a final adjudication decree. Currently there is one appeal pending.

Mr. Anderson asked Montana to address water-year administration.

Mr. Davis replied that Montana also had a good water year. The Tongue River Reservoir filled and spilled and water users received adequate water.

Mr. Davis also mentioned that Montana's State Water Plan went to the printer wrapping up a 2-year state water-planning process. The report is just in time for the legislature in January.

An issue on the Yellowstone River is at Intake, Montana. The U.S. Army Corps of Engineers is constructing a bypass around a diversion structure to address Endangered Species Act issues for pallid sturgeon. A notice of intent to sue was sent to the Corps of Engineers. There will be a meeting with interested parties to resolve issues so the project can continue.

Although there have been some “bumps” in the Intake project, it was recorded that for the first time some pallid sturgeon used the bypass during high flow this year. That information is keeping interested parties engaged and the project moving along.

Mr. Hays reported that the Tongue River Water Users put 2 Water Commissioners on in July to measure individual usage of water. No orders were made for water in the Tongue River reservoir. All users received enough water by operating the dam as pass through. At the end of the year, the Tongue River Dam had to release about 10,000 acre-ft of water from the reservoir to prepare for winter storage.

Mr. Davis stated the Montana did not make a call on Wyoming for water in 2014.

Mr. Anderson said that each meeting, reports are given on the amount of flow and the conditions of reservoirs in the Yellowstone River Basin. Article V of the Compact discusses the unused and unappropriated waters after 1950. There has never been a report on unappropriated water. We have information on streamflows but we do not address unappropriated water in terms of the compact. Is there something in the compact we are not addressing?

Ms. Lowry replied this issue was discussed during the Supreme Court deliberations. The difficulty is knowing which pre and post 1950 users are on each year. It is doable, but it will take some effort to accomplish.

Mr. Davis asked what is considered unappropriated? Is it only in context of the Compact, post 1950?

Mr. Brown replied that in the context of the compact it is the unused portion after 1950. The difficulty is that from year to year, there may not be enough water for pre 1950 and in others years there will be plenty of water for post 1950 users. Dale Book looked at irrigated acreages in Montana and discovered the irrigated acreages varied greatly from year to year. It would take a lot of work to determine the irrigated acreages and amount of water applied each year.

Mr. Anderson replied that Article V, Part C states “The quantity of water subject to the percentage allocations, in paragraph (b) (i), (ii), (iii) and iv) of this Article V, shall be determined on an annual water year basis measured from October 1st of any year through September 30th of the succeeding year. The quantity to which the percentage factors shall be applied through a given date in any water year shall be, in acre-ft, equal to the algebraic sum of: ...” The commission has never reported annual water amounts in the manner described in the Compact. Perhaps the Commission should revisit how annual water amounts are reported.

Mr. Davis replied that maybe the Special Master’s report will address how the Commission should report on annual water amounts.

Ms. Lowry replied that Wyoming has other Compacts with rigorous accounting of natural flows, storage of water, and what belongs to the various States. It takes a significant amount of time, much more time and resources than are currently being devoted in the Yellowstone Basin.

Mr. Brown replied that the interpretation of the Compact by the Special Master and the Supreme Court will have grown out of specific issues for the Tongue River basin. So the accounting and rules may be different for each tributary.

Mr. Anderson asked Montana to give an overview of the Yellowstone River Compact Technical Advisory Committee meeting held in April, 2014.

Ms. Overcast reported that the minutes will be compiled and given to Mr. Berkas (USGS) to post on the Yellowstone River Compact Commission web page.

Mr. Schuh (North Dakota Water Commission) asked if someone would explain the role of the Yellowstone River Compact Technical Advisory Committee.

Ms. Lowry replied that the Technical Committee meetings are scheduled to occur in the spring where the group could discuss water forecasts, primarily from SNOTEL and snow course information. They would discuss what water supply is in the rivers and streams, how much water is still in the mountain snow pack, and what is projected in the rivers and streams. Typically attendees are hydrologists from State, local, tribal, and Federal agencies. It is also a forum where coalbed methane development is discussed. Occasionally the Yellowstone River Compact Commissioners will direct the Technical Committee to look into an issue and report back to the Commissioners at the annual meeting in December.

Mr. Anderson asked Wyoming to address coal bed methane (CBM) development.

Ms. Lowry replied that so far in 2014, Wyoming has received and approved 76 new CBM well permits. The number of permitted CBM reservoirs in the Tongue River drainage decreased from 131 to 100, decreased from 381 to 375 in the Little Powder River drainage, and decreased from 1,763 to 1,606 in the Powder River drainage.

There is interest in converting CBM wells to water supply wells. The Wyoming State Engineer and the Wyoming Oil and Gas Conservation Commission developed a letter, dated March 20, 2014, that outlines the process to shut in a CBM well or convert it to another use. There was an article in the Casper Star Tribune on November 18, 2014 that described that High Plains Gas Inc. failed to post a bond to cover the company's 3,000 idle CBM wells. The Wyoming Oil and Gas Conservation Commission will take over the plugging of those wells. It is estimated that 400 wells will be plugged this year. It has become obvious the posted bond is not sufficient to pay for the plugging of the wells.

Mr. LoGuidice stated that many CBM reservoirs are being removed or converted to stock watering. Most are being removed or the size is being greatly reduced because there isn't the drainage area to fill the reservoir. Removing the reservoir will require tearing up the land again, so in many cases, the outlet structure (such as a pipe) is lowered so the reservoir won't hold much water and the ground won't have to be disturbed. A reservoir permit for stock water is then issued for the new reduced stored volume.

Mr. Dalby recalled that a CBM well had a life expectancy of 20 to 30 years. Is the reduction in the number of wells reflective of the wells life coming to an end?

Mr. LoGuidice replied that during the hey-day of CBM development, the market was paying about \$8 per cubic foot of gas. Now the market is paying about \$3 per cubic foot. There probably is plenty of gas, but it probably is not economical to continue. The produced water quantities also are a factor in the cost of developing CBM versus more traditional natural gas extraction.

Mr. Anderson asked if the total number of producing wells was known.

Ms. Lowry replied that those numbers could be found at the Wyoming Oil and Gas Conservation Commission web page: <http://wogcc.state.wy.us/>

Mr. Anderson asked Montana to address CBM development in Montana.

Ms. Steinmetz replied that there are three CBM permits for produced water in Montana, and none of the permittees are discharging to surface water. The produced water is injected into ground-water wells.

Mr. Schuh asked if a permit is required for CBM produced water.

Mr. Brown replied that a permit is required in Wyoming but not in Montana.

Mr. Schuh asked if a person chose to transfer the permit, would the transfer need to be for a different beneficial use.

Mr. Brown replied yes.

Mr. Schuh asked about the quality of the CBM produced water.

Mr. LoGuidice replied that the quality varies. Generally, the deeper the well and coal, the more the dissolved salts, and the poorer the water.

Mr. Anderson asked Montana to address their efforts in statewide adjudication.

Mr. Davis replied that Montana completed examining all of the unexamined water-right claims. In 2005, there were 57,000 water right claims and those were completed in 2014. Montana DNRC will be working on summary reports to be sent to the Water Court so the court can issue decrees and proceed through the objection period. The Department of State will be doing a limited reexamination of verified basins, estimated to be about 90,000 claims. The reexamination is planned for the next 8 years. The Water Court has provided guidance as to what can be reexamined.

Ms. Lowry asked if all of the Federal Tribal Water rights have been resolved.

Mr. Davis replied that Montana has been able to compact all of the Federal Reserve Water Rights and Federal Tribal Water Rights except for the Salish and Kootenai. The Compact with the Salish and Kootenai will be brought forward to the 2015 legislative session. If the Compact is not adopted, the deadline for filing is July 1, 2015. The Salish and Kootenai is a Stevens Treaty, so it is treated differently than the other Compacts within the State. Also, there are off-reservation rights that complicate the Compact.

Mr. Anderson asked Wyoming to address adjudication activities in Wyoming.

Mr. LoGuidice replied that water rights are adjudicated every quarter in Wyoming. In the Powder and Tongue River basins, 80 CBM reservoirs were inspected by the Wyoming State Engineer's Office and only 27 were approved. The Board of Control adjudicated 41 reservoirs, 13 pumps and pipelines, and 43 groundwater wells. They finalized 22 surface-water petitions and 2 groundwater petitions.

Mr. Smith reported in the Bighorn basin, the Board of Control adjudicated 38 reservoirs and 1 instream flow water right. The board granted 25 surface-water petitions.

Mr. Davis asked who held the instream flow water right.

Mr. Smith replied the Wyoming Game and Fish does the preliminary study and makes a recommendation, and the State Water Development Commission applies for the water right in the name of the State of Wyoming.

Mr. Anderson asked for an update on the Crow Compact.

Mr. Davis replied that Crow Compact is between the Crow Tribe, Montana, and the Federal Government; and the Water Court has not yet issued a final decree.

Mr. Takes Gun (Crow Nation) replied that there are two construction projects under the Compact; rehabilitation of the existing irrigation system and design and development of a water distribution for the entire tribe.

Mr. Anderson asked the Bureau of Reclamation to provide status on the water supply in Bighorn Lake.

Mr. Jordan replied that currently the storage in Bighorn Lake is approximately 110 percent of average. Winter flow releases from Yellowtail Dam are scheduled to be 2,830 cubic feet per second. Adjustment will be considered in February when as snowpack information become available.

Mr. Anderson asked if the Bureau of Reclamation is considering increasing the storage of Bighorn Lake.

Mr. Jordan replied that after the high flows in the Yellowstone and Missouri Rivers in 2011, increasing storage in Bighorn Lake was considered. Increasing storage would be accomplished by reallocating storage space within the lake, not by physically increasing the size of the dam.

Mr. Dalby asked if the users of Bighorn Lake were happy with the lake elevations during the 2014 recreational season.

Mr. Esplin replied that generally users were happy. The Bureau of Reclamation did a lot of outreach in 2014 explaining the reasons for reservoir levels. There is interest in adjusting the operating guidelines and criteria and the Bureau is looking for public comment. The operating guidelines are a balance between downstream anglers and recreation in the lake.

Ms. Lowry reported the U.S. Congress passed the Water Resources Reform and Development Act. There is a section in the act that grew out of the problems of predicting the runoff that occurred in the Yellowstone and Missouri River drainages in 2011 that caused major flooding problems. The U.S. Army Corps of Engineers was criticized for how they managed the dams on the Missouri River. The act provided funding for increasing monitoring networks that would help with predicting rainfall and snowmelt runoff in the plains.

The Act passed in 2014 authorizes the U.S. Army Corps of Engineers to add to and expand the existing hydrologic data collection networks. The Corps held listening sessions and solicited comments regarding how to proceed. So far the Corps has not indicated how they intend to implement the Act.

After much discussion, the Commissioners directed the Technical Committee look over the proposed network plan and suggest new scan sites, SNOTEL sites, and streamgage sites for the U.S. Army Corps of Engineers to consider in the network. The Commissioners would look over the proposed network and share it with the Missouri River Association of States and Tribes (MoRAST) and other interested groups.

Ms. Lowry made a motion that the Commissioners send a letter to the U.S. Army Corps of Engineers stating the Yellowstone River Compact Commissioners feel that section 4003 of the Water Resources Reform and Development Act is very important for management of the upper Missouri River basin.

Mr. Anderson asked Mr. Kilpatrick to talk about the USGS Water Census Project.

Mr. Kilpatrick said that beginning in 1955, Congress has mandated the USGS to estimate water use in the nation every 5 years. The effort was mostly a tabulation effort, not requiring much science. Through WaterSmart, Congress has funded the National Water Census where new techniques and science would be used to improve water use estimates. The National Water Census set up some Focus Area Studies and Topical Studies. Focus Area Studies are intended to improve scientific understanding of water availability and use in areas of the country with known conflicts over, or shortages of, water. Topical Studies are intended to improve estimation methods for

different, specific water-use categories such as thermoelectric power generation or irrigation consumptive water use. The Wyoming-Montana, North Dakota, and South Dakota USGS Water Science Centers recently received funding to plan a Topical Study of water use related to unconventional oil and gas development. The study will initially focus on developing methods to estimate this kind of water use in the Williston Structural Basin with an eye toward eventually applying the same methods to similar use in other parts of the county. The study will look at all water-use related to unconventional oil and gas development, such as developing the well, fracking the well, dust abatement, urbanization, waste disposal, etc. The Williston Basin will be a good study area because unconventional oil and gas development is the primary driver behind most of the economic boom in the area, thus, it will be easier to separate out what is attributable to oil and gas development. A detailed study plan will be prepared by the end of 2015. Typically, these types of studies run for about 10 years.

Mr. Anderson asked Mr. Davis to discuss the National Drought Resiliency Program.

Mr. Davis replied that the National Drought Resiliency Program is part of the White House's Climate Action Plan. There is a demonstration project in Montana where the State has been working closely with the U.S. Bureau of Reclamation and other Federal partners. The project area is in the Missouri Headwaters and involves bringing together Federal and State resources so that local watershed groups can do drought planning. The plan would be formulated with the local water users such that conservation measures would help the watershed plan for and withstand a drought. It is intended as a demonstration project that would be shared with other watersheds throughout the country.

Mr. Anderson asked if there were any other questions or comments before the end of the meeting.

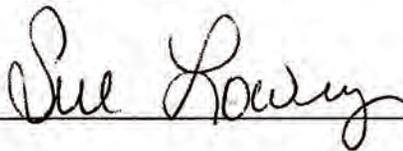
Mr. LoGuidice replied that he recalled Montana has adopted a way to temporarily change the use of water, and wondered if temporary changes have been issued.

Mr. Davis replied that there has been some interest, but only one temporary change has been issued to date. The statute sunsets in 2019 and Montana will be talking to water users to determine if the statute can be changed to make it more useful. Most of the questions that have occurred are related to expanding the period of use or adding new storage through the leasing process, and neither of those are allowed.

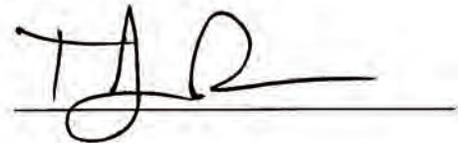
Mr. Walksalong reported that the Northern Cheyenne Tribe is restructuring their Natural Resources Department into the Environmental Protection Department. A new Water Resource Administrator will be named soon.

The Commissioners agreed to hold the next Yellowstone River Compact Commission on December 3, 2015 in Wyoming.

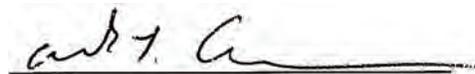
The meeting was adjourned at 12:00.



Sue Lowry
Commissioner for Wyoming



Timothy K. Davis
Commissioner for Montana



Mark T. Anderson
Chairman and Federal Representative

General Report

Operation and Budget

Work funded by the Yellowstone River Compact Commission, that to date has been primarily concerned with the collection of required hydrologic data, has been financed through cooperative arrangements whereby Montana and Wyoming each bear an equal share of the cost, and the remaining cost is borne by the United States. Salaries and necessary expenses of the State and U.S. Geological Survey representatives to the Commission and the cost to other agencies of collecting hydrologic data are not considered as expenses of the Commission.

The expenses of the Commission during Federal fiscal year 2014 were \$111,750, in accordance with the budget adopted for the year.

Estimated budgets for Federal fiscal years 2015, 2016, 2017, and 2018 were tentatively adopted subject to the availability of appropriations. The budgets for the four fiscal years are summarized as follows:

Year	Wyoming State Engineer	Montana Department of Natural Resources and Conservation	U.S. Geological Survey	Total
FY2015	\$31,050	\$31,050	\$51,800	\$114,000
FY2016	\$31,980	\$31,980	\$53,350	\$117,310
FY2017	\$32,940	\$32,940	\$54,950	\$120,830
FY2018	\$33,930	\$33,930	\$56,600	\$124,460

Gaging Station and Operation

Operation of five streamflow-gaging stations at the measuring sites specified in the Yellowstone River Compact continued in water year 2014 with satisfactory records collected at each station. Locations of streamflow-gaging stations, along with reservoir-content stations, are shown on a map of the Yellowstone River Basin at the end of this report.

The Commission is primarily interested in the streamflow near the mouths of the Clarks Fork Yellowstone River, Bighorn River, Tongue River, and Powder River. Even though the Little Bighorn River is not covered by the Yellowstone River Compact, the compact covers the water in the Bighorn River minus the Little Bighorn River. Thus, the streamflow from the Little Bighorn River is subtracted from the streamflow of the Bighorn River. In addition, the Bighorn River streamflow is adjusted monthly with change in storage of Bighorn Lake. During water year 2014, annual streamflow was above normal² at all of the streamflow-gaging stations. The rank of the annual streamflow, with the lowest annual streamflow having a rank of 1, is displayed in the following table:

Station number	Streamflow-gaging station	Percent of average streamflow for water year 2014 ¹	Rank of annual streamflow		Year of lowest annual streamflow (rank equals 1)	Number of years of annual record
			2014 water year	2013 water year		
06208500	Clarks Fork Yellowstone River at Edgar, Mont., minus diversions to White Horse Canal	151	74	15	2001	76
06294500	Bighorn River above Tullock Creek, near Bighorn, Mont., minus Little Bighorn River near Hardin, Mont. (06294000), adjusted for change in contents in Bighorn Lake	129	48	9	2002	61
06308500	Tongue River at Miles City, Mont.	155	65	12	1961	71
06326500	Powder River near Locate, Mont.	141	61	12	2004	76

¹Average is based on period of record at each station.

²The "normal" range defined in this report is 80 to 120 percent of average.

Tabulation of streamflow records for water year 2014 (tables 1–5) and graphical comparisons of statistical distribution of monthly and annual streamflow, and annual departures from mean annual streamflow (figures 1–4) are provided in the section “Summary of Discharge for Yellowstone River Compact Streamflow-Gaging Stations.” The tabulated streamflow records do not account for depletions for irrigation and other uses unless otherwise noted.

Diversions

No diversions were regulated by the Commission during water year 2014.

Reservoir Contents

Reservoirs Completed After January 1, 1950

As a matter of record and general information, month-end usable contents data (tables 6–8) and descriptions of these reservoirs are given in the section “Month-end Contents for Yellowstone River Compact Reservoirs Completed after January 1, 1950.” Boysen Reservoir, located on the Wind River and operated by the Bureau of Reclamation, began the water year with 441,400 acre-ft in usable contents and ended the water year with 626,700 acre-ft. Anchor Reservoir, located on South Fork Owl Creek and operated by the Bureau of Reclamation, began the water year with an estimated 354 acre-ft in usable contents and ended the water year with 564 acre-ft. Bighorn Lake, a Bureau of Reclamation storage project on the Bighorn River that is the largest in the Yellowstone River Basin, contained 951,500 acre-ft of usable contents at the beginning of the water year and 1,006,000 acre-ft at the end of the water year.

Reservoirs Existing on January 1, 1950

As a matter of record and general information, month-end usable contents data for the four reservoirs in existence on January 1, 1950, upstream from the points of measurement, are given in table 9 in the section “Month-End Contents for Yellowstone River Compact Reservoirs Existing on January 1, 1950.” The reservoirs are Bull Lake, Pilot Butte Reservoir, and Buffalo Bill Reservoir operated by the Bureau of Reclamation; and Tongue River Reservoir, operated under the supervision of the Water Resources Division of the Montana Department of Natural Resources and Conservation. These data are pertinent to allocation under Article V, Section C, Item 3 of the Compact.

Annual Contents of Reservoirs

Information on reservoir contents at the end of the current (2014) and previous water years for the 7 reservoirs listed above plus 38 additional reservoirs that have usable contents greater than 1,000 acre-ft was compiled at the request of the Commission. The information is provided in table 10 in the section “Water-Year-End Contents for Yellowstone River Compact Reservoirs or Lakes.”

Summary of Discharge for Yellowstone River Compact Streamflow-Gaging Stations

06208500 Clarks Fork Yellowstone River at Edgar, Mont.

LOCATION.--Lat 45°27'58", long 108°50'35" referenced to North American Datum of 1927, in SE ¼ SE ¼ SE ¼ sec.23, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft downstream from county bridge, 0.5 mi east of Edgar, 6 mi upstream from Rock Creek, and at river mile 22.1.

DRAINAGE AREA.--2,022 mi².

PERIOD OF RECORD.--July 1921 to September 1969, October 1986 to present.

REVISED RECORDS.--Water Supply Paper (WSP) 1509: 1924; 1932, maximum discharge. WSP 1729: Drainage area. Water Data Report MT-04-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to August 31, 1953, nonrecording gage located at same site and elevation.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Diversions for irrigation include about 41,500 acres, of which about 840 acres lie downstream from the station. In addition, about 6,300 acres of land upstream from the station are irrigated by diversions from the adjoining Rock Creek Basin. **Discharge values and summary statistics given herein have the diversions to White Horse Canal subtracted.**

Table 1. Daily mean discharge for Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, October 2013 through September 2014.

[Discharge is in cubic feet per second. Abbreviations: acre-ft, acre-feet; e, estimated; Max, maximum; Min, minimum. Symbol: ---, no data]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	974	670	521	e320	e320	e310	519	916	8,320	5,050	1,100	1,360
2	1,140	643	532	e310	e320	e280	474	956	7,400	4,760	1,040	1,400
3	1,090	630	546	e310	e310	e350	466	1,450	6,800	5,030	1,000	1,250
4	1,150	630	341	e300	e270	e420	504	2,220	6,690	5,470	995	1,120
5	1,070	607	312	e290	e260	e500	501	2,300	6,350	5,740	1,020	982
6	983	573	322	e300	e250	e1,200	474	2,370	5,930	5,910	1,100	895
7	1,030	565	310	e320	e260	e1,500	471	2,450	5,990	5,780	1,110	821
8	1,040	623	e310	e330	e270	1,460	470	2,060	6,170	5,520	1,070	737
9	1,010	620	e320	e340	e290	1,860	487	1,820	6,050	5,150	1,030	690
10	930	607	e330	e340	e300	1,360	580	1,770	5,870	4,730	1,020	733
11	883	602	e380	e330	e310	1,090	679	1,690	6,130	4,590	905	874
12	856	602	e410	e340	e310	829	646	1,500	6,070	4,550	828	922
13	836	597	e420	e320	e320	658	738	1,350	6,230	4,130	772	912
14	842	593	e420	e310	e340	617	652	1,250	6,820	3,890	761	894
15	841	595	e410	e310	e370	613	560	1,250	6,170	3,410	818	828
16	794	576	e410	e310	e390	589	563	1,580	4,840	3,250	821	766
17	769	559	e410	e320	e370	532	536	2,290	4,360	2,900	792	714
18	771	540	e420	e320	e350	537	502	3,100	4,140	2,660	742	688
19	735	542	e360	e320	e340	520	559	3,620	3,570	2,490	723	702
20	737	556	e340	e320	e320	472	726	3,640	3,070	2,390	673	1,070
21	729	561	e320	e310	e320	453	790	3,590	3,080	2,370	669	992
22	714	492	e310	e300	e310	432	986	4,570	3,720	2,420	786	1,000
23	703	433	e310	e290	e310	421	1,240	5,810	4,450	2,500	849	957
24	697	453	e330	e290	e290	414	1,330	6,500	4,670	2,280	1,020	890
25	691	504	e310	e310	e290	428	1,020	6,960	5,220	2,070	1,060	824
26	679	568	e310	e320	e300	408	948	7,610	5,940	1,880	1,060	775
27	681	585	e330	e310	e330	446	1,670	8,210	6,680	1,600	976	730
28	708	623	e320	e310	e320	461	1,600	8,700	6,920	1,370	881	743
29	695	530	e320	e340	---	440	1,210	9,120	6,260	1,200	827	847
30	674	536	e310	e330	---	462	1,010	9,270	5,510	1,190	794	897
31	675	---	e320	e330	---	581	---	8,610	---	1,150	829	---
Total	26,127	17,215	11,314	9,800	8,740	20,643	22,911	118,532	169,420	107,430	28,071	27,013
Mean	843	574	365	316	312	666	764	3,824	5,647	3,465	906	900
Max	1,150	670	546	340	390	1,860	1,670	9,270	8,320	5,910	1,110	1,400
Min	674	433	310	290	250	280	466	916	3,070	1,150	669	688
Acre-ft	51,820	34,150	22,440	19,440	17,340	40,950	45,440	235,100	336,000	213,100	55,680	53,580

SUMMARY STATISTICS

	Water Year 2014	Water Years 1921–2014*
Annual total	567,216	
Annual mean	1,554	1,032
Annual runoff (acre-ft)	1,125,000	747,500

*During periods of operation (water years 1921–69, 1987 to current year).

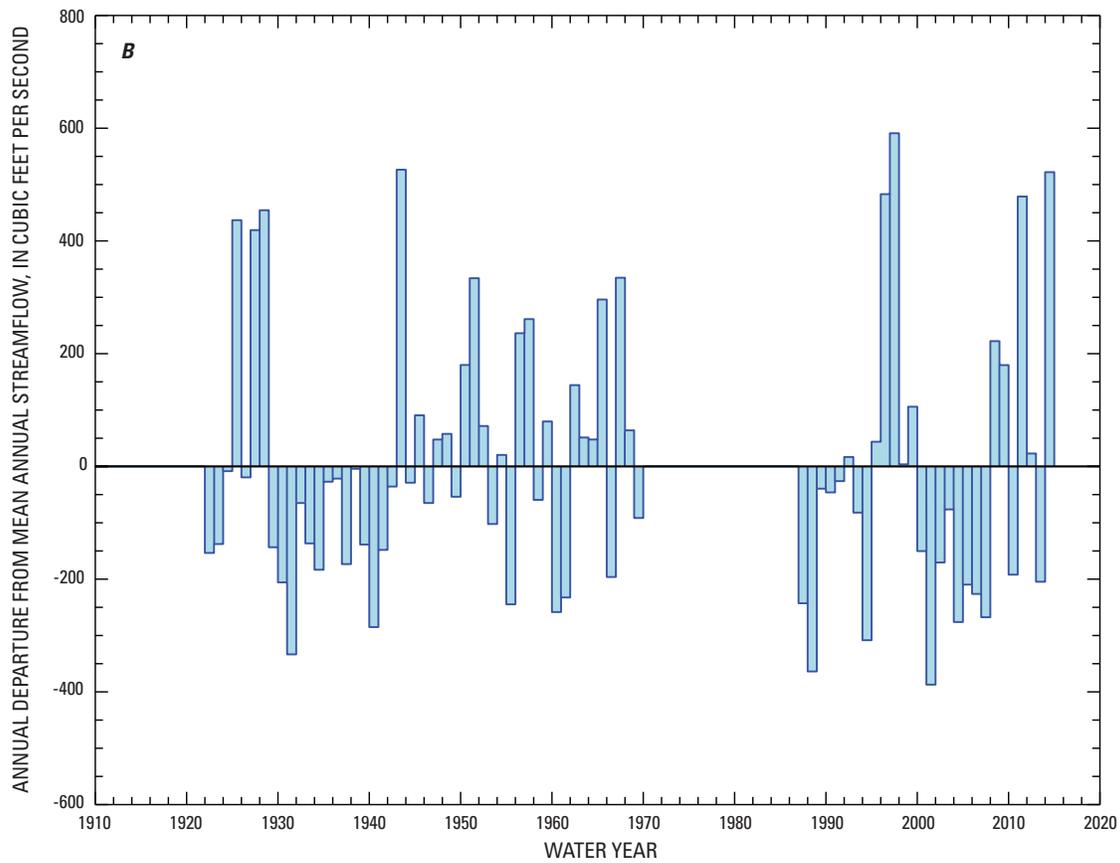
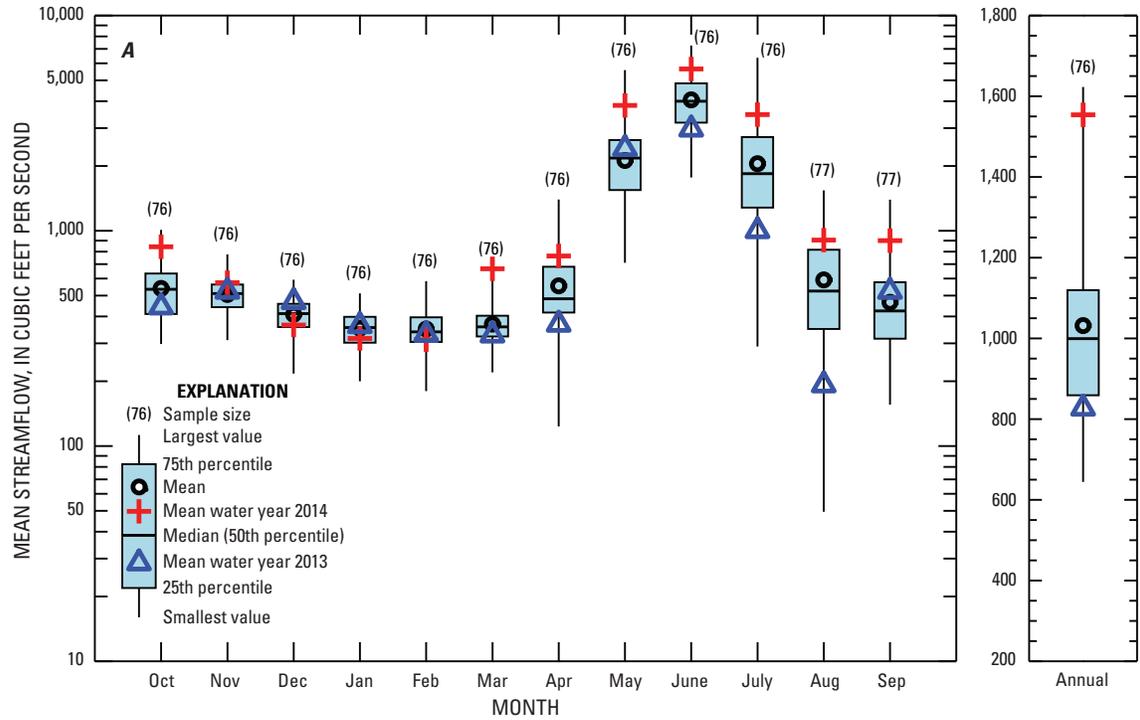


Figure 1. Streamflow data for Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, water years 1921–2014. *A*, Statistical distribution of monthly and annual streamflow. *B*, Annual departure from the mean annual streamflow.

06294000 Little Bighorn River near Hardin, Mont.

LOCATION.--Lat 45°44'09", long 107°33'24" referenced to North American Datum of 1927, in SE ¼ NE ¼ NE ¼ sec.19, T.1 S., R.34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mi upstream from terminal wasteway of Agency Canal, 0.6 mi upstream from mouth, and 2.3 mi east of Hardin.

DRAINAGE AREA.--1,294 mi².

PERIOD OF RECORD.--June 1953 to present.

REVISED RECORDS.--Water Data Report MT-86-1: 1978.

GAGE.--Water-stage recorder. Elevation of gage is 2,882.29 ft, referenced to the National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to October 7, 1953, nonrecording gage located at site 0.4 mi downstream. October 7, 1953 to May 6, 1963, water-stage recorder located at site 0.3 mi downstream. May 6, 1963 to November 6, 1963, nonrecording gage located at site 0.4 mi downstream. All locations had different elevations. November 7, 1963 to August 15, 1976, water-stage recorder located at site 35 ft downstream at present elevation. August 15, 1976 to September 30, 1979, water-stage recorders were located on each bank downstream from Sarpy Road Bridge and were used depending on control conditions.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Streamflow partly regulated by Lodge Grass Reservoir (capacity 23,000 acre-ft). Diversions for irrigation include 20,980 acres upstream from station. **Discharge values and summary statistics given herein include the streamflow of terminal wasteway of Agency Canal.**

Table 2. Daily mean discharge for Little Bighorn River near Hardin, Mont. (06294000), October 2013 through September 2014.

[Discharge is in cubic feet per second. Abbreviations: acre-ft, acre-feet; e, estimated; Max, maximum; Min, minimum. Symbol: ---, no data]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	106	144	158	e100	e90	e100	638	494	3,020	649	142	194
2	107	144	165	e100	e90	e110	580	466	2,980	608	141	198
3	118	146	122	e100	e80	e110	519	443	2,390	552	138	205
4	143	144	e90	e100	e90	e150	477	440	1,840	494	140	208
5	159	153	e70	e100	e90	e171	505	466	1,690	486	148	190
6	179	155	e50	e70	e80	e503	578	514	1,620	454	151	177
7	154	149	e40	e80	e80	e907	594	583	1,530	428	165	177
8	168	146	e40	e100	e90	e1,510	592	778	1,520	411	162	172
9	187	147	e50	e100	e90	e2,720	588	990	1,410	403	156	174
10	181	142	e70	e100	e90	e2,310	528	879	1,270	378	144	181
11	172	146	e90	e100	e100	1,710	496	796	1,260	363	134	204
12	156	145	e90	e100	e110	1,310	484	715	1,280	360	132	238
13	152	146	e90	e100	e130	1010	462	645	1,180	363	130	268
14	169	144	e90	e100	e150	806	493	597	1,110	346	132	240
15	188	144	e90	e100	e180	671	527	559	1,130	318	140	229
16	247	144	e90	e100	e180	630	579	541	1,100	305	146	220
17	226	145	e90	e100	e190	566	716	554	994	291	161	210
18	207	144	e90	e100	e180	523	723	624	922	262	154	207
19	200	144	e90	e100	e180	547	586	649	901	240	144	201
20	194	139	e80	e100	e170	531	512	719	856	224	141	200
21	188	120	e100	e100	e160	467	477	812	777	216	139	195
22	192	114	e100	e100	e150	432	458	808	738	213	146	191
23	191	122	e100	e90	e140	405	457	831	740	186	184	189
24	178	142	e90	e100	e130	374	477	966	735	185	254	193
25	168	147	e90	e100	e120	354	531	1,160	708	180	278	188
26	158	150	e100	e100	e120	349	528	1,330	678	182	244	188
27	154	155	e100	e100	e110	351	520	1,480	843	171	217	184
28	155	152	e100	e90	e110	393	530	1,610	752	161	203	165
29	159	152	e100	e80	---	500	570	1,770	756	159	191	176
30	160	161	e100	e90	---	456	527	2,030	721	151	187	187
31	153	---	e100	e100	---	506	---	2,590	---	144	193	---
Total	5,269	4,326	2,825	3,000	3,480	21,482	16,252	27,839	37,451	9,883	5,137	5,949
Mean	170	144	91.1	96.8	124	693	542	898	1,248	319	166	198
Max	247	161	165	100	190	2,720	723	2,590	3,020	649	278	268
Min	106	114	40	70	80	100	457	440	678	144	130	165
Acre-ft	10,450	8,580	5,600	5,950	6,900	42,610	32,240	55,220	74,280	19,600	10,190	11,800
SUMMARY STATISTICS												
Water Year 2014						Water Years 1954–2014						
Annual total						142,685						
Annual mean						391					276	
Annual runoff (acre-ft)						283,400					200,000	

06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.

LOCATION.--Lat 46°07'29", long 107°28'06" referenced to North American Datum of 1927, in SE ¼ SE ¼ NE ¼ sec.3, T.4 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank 1.9 mi upstream from Tullock Creek, 3.6 mi southwest of Bighorn, 4.5 mi southeast of Custer, and at river mile 3.0.

DRAINAGE AREA.--22,414 mi². Area at site used October 7, 1955 to September 30, 1981, 22,885 mi².

PERIOD OF RECORD.--October 1981 to present. Previously published as "06294700 Bighorn River at Bighorn, MT" from 1956–81, and as "06294700 Bighorn River near Custer" from 1945–55. Streamflows are equivalent at all sites.

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft, referenced to the National Geodetic Vertical Datum of 1929. May 11, 1945 to December 6, 1945, nonrecording gage, and December 7, 1945 to October 6, 1955, water-stage recorder located 1.7 mi upstream at different elevation. October 7, 1955 to September 30, 1981, located at site 2.3 mi downstream at different elevation.

REMARKS.--Records are good except for estimated daily discharges, which are poor. After November 1965, streamflow has been regulated by Bighorn Lake (usable contents, 1,312,000 acre-ft). Major regulation prior to November 1965 occurred from 14 reservoirs in Wyoming and 1 in Montana with combined usable contents of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres occurs upstream from the station.

Table 3. Daily mean discharge for Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), October 2013 through September 2014.

[Discharge is in cubic feet per second. Abbreviations: acre-ft, acre-feet; e, estimated; Max, maximum; Min, minimum. Symbol: ---, no data]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2,270	2,300	2,660	3,020	2,790	e2,800	7,780	8,410	11,100	4,100	2,520	3,350
2	2,240	2,360	2,740	2,940	e2,750	e2,700	7,720	8,340	11,000	4,780	2,570	3,290
3	2,240	2,360	2,860	2,960	2,770	e2,800	7,880	8,300	10,700	5,310	2,610	3,360
4	2,510	2,330	2,680	3,020	2,670	e4,000	7,560	8,260	10,100	5,450	2,610	3,660
5	2,740	2,320	2,690	3,030	e2,600	e5,000	7,710	8,280	9,330	5,520	2,610	3,870
6	2,650	2,320	2,430	2,900	e2,600	e6,000	7,940	8,390	8,700	5,540	2,570	3,820
7	2,420	2,290	2,320	e2,900	e2,600	e7,000	7,780	8,580	8,340	5,530	2,600	3,780
8	2,330	2,280	e2,500	2,950	e2,600	6,370	7,620	9,210	8,280	5,760	2,680	3,740
9	2,180	2,260	e2,600	2,930	e2,600	7,710	7,470	9,820	8,160	6,860	2,660	3,700
10	2,090	2,250	e2,600	2,950	e2,600	7,580	7,360	9,370	7,690	8,080	2,650	3,930
11	2,050	2,250	e2,600	3,010	e2,600	6,150	7,270	9,010	7,400	8,580	2,560	4,190
12	2,010	2,240	e2,600	3,060	e2,600	6,590	7,270	8,870	6,970	8,560	2,670	4,250
13	2,030	2,250	e2,700	3,110	e2,600	6,310	7,240	8,660	6,440	8,530	2,570	4,260
14	2,030	2,320	e2,700	3,270	e2,600	6,360	7,280	8,750	6,010	8,540	1,820	4,230
15	2,210	2,350	e2,800	3,300	e3,000	6,210	7,410	9,260	6,010	8,460	2,530	4,150
16	2,670	2,350	2,840	3,350	e3,500	6,110	7,530	9,540	5,890	8,300	2,740	4,110
17	2,540	2,360	2,880	3,320	e3,800	6,040	7,590	9,520	5,760	8,250	2,730	4,090
18	2,380	2,340	2,810	2,980	e3,700	6,050	7,720	9,660	5,500	7,770	2,680	4,260
19	2,320	2,340	2,840	2,830	3,520	6,110	7,950	9,850	4,850	6,960	2,590	4,400
20	2,280	2,370	2,830	2,820	3,220	6,110	8,260	9,720	4,300	6,770	2,540	4,360
21	2,250	2,380	e2,800	2,790	3,110	6,430	8,290	9,790	3,920	6,700	2,520	4,340
22	2,400	2,340	2,820	2,790	2,970	6,390	8,280	9,800	3,760	5,850	2,780	4,330
23	2,450	2,360	2,810	2,760	2,870	6,310	8,310	9,780	3,690	4,620	3,090	4,380
24	2,320	2,400	2,880	2,750	2,850	6,290	8,280	9,840	3,620	3,630	3,570	4,420
25	2,280	2,430	2,860	2,790	2,870	6,250	8,350	10,100	3,500	3,160	3,310	4,440
26	2,260	2,470	2,890	2,860	2,930	6,700	8,390	10,200	3,440	3,100	3,440	4,800
27	2,230	2,520	2,930	2,860	2,940	6,810	8,580	10,300	3,630	3,050	3,670	5,030
28	2,220	2,560	2,970	e2,800	2,840	6,900	8,800	10,400	3,810	2,990	3,590	4,970
29	2,200	2,610	2,990	e2,750	---	7,070	8,860	10,500	3,810	2,860	3,520	5,060
30	2,220	2,640	3,050	2,700	---	7,140	8,540	10,600	3,830	2,690	3,420	5,100
31	2,270	---	3,030	2,740	---	7,320	---	10,900	---	2,500	3,390	---
Total	71,290	70,950	85,710	91,240	81,100	187,610	237,020	292,010	189,540	178,800	87,810	125,670
Mean	2,300	2,365	2,765	2,943	2,896	6,052	7,901	9,420	6,318	5,768	2,833	4,189
Max	2,740	2,640	3,050	3,350	3,800	7,710	8,860	10,900	11,100	8,580	3,670	5,100
Min	2,010	2,240	2,320	2,700	2,600	2,700	7,240	8,260	3,440	2,500	1,820	3,290
Acre-ft	141,400	140,700	170,000	181,000	160,900	372,100	470,100	579,200	376,000	354,600	174,200	249,300

SUMMARY STATISTICS

	Water Year 2014	Water Years 1945–2014
Annual total	1,698,750	
Annual mean	4,654	3,669
Annual runoff (acre-ft)	3,369,000	2,658,000

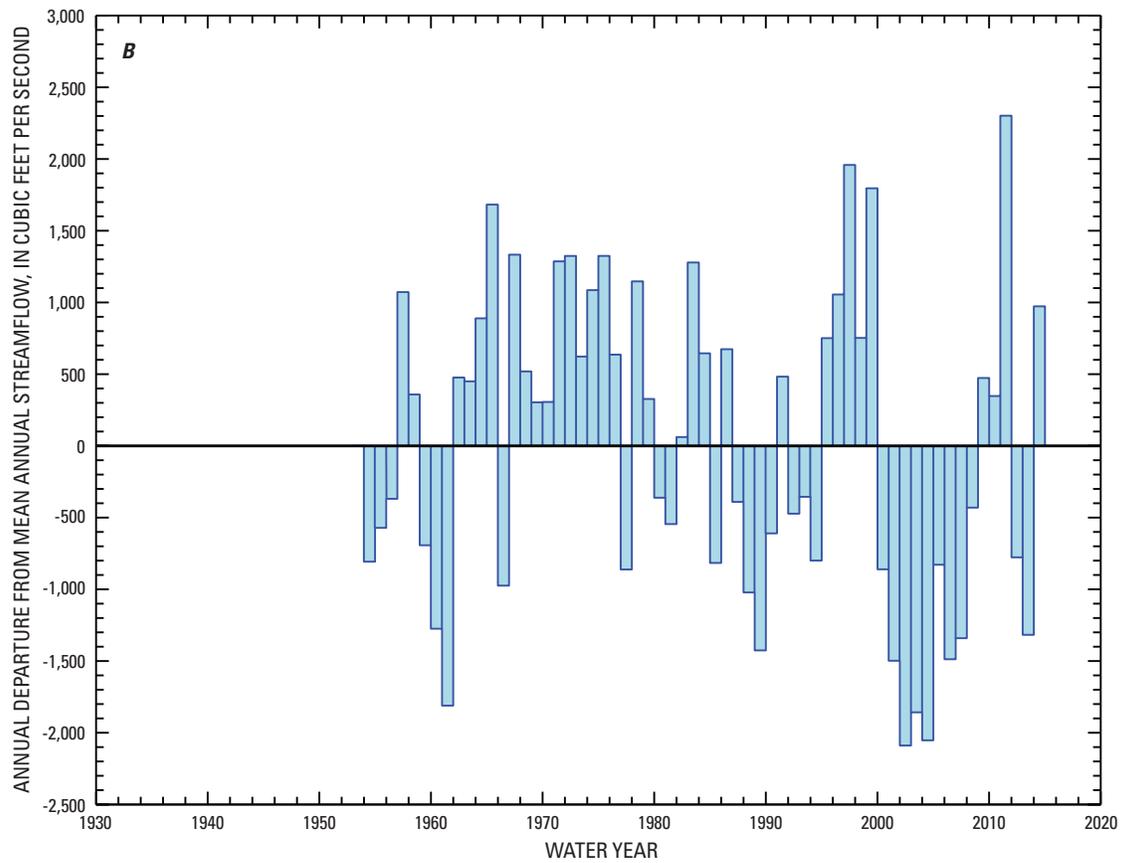
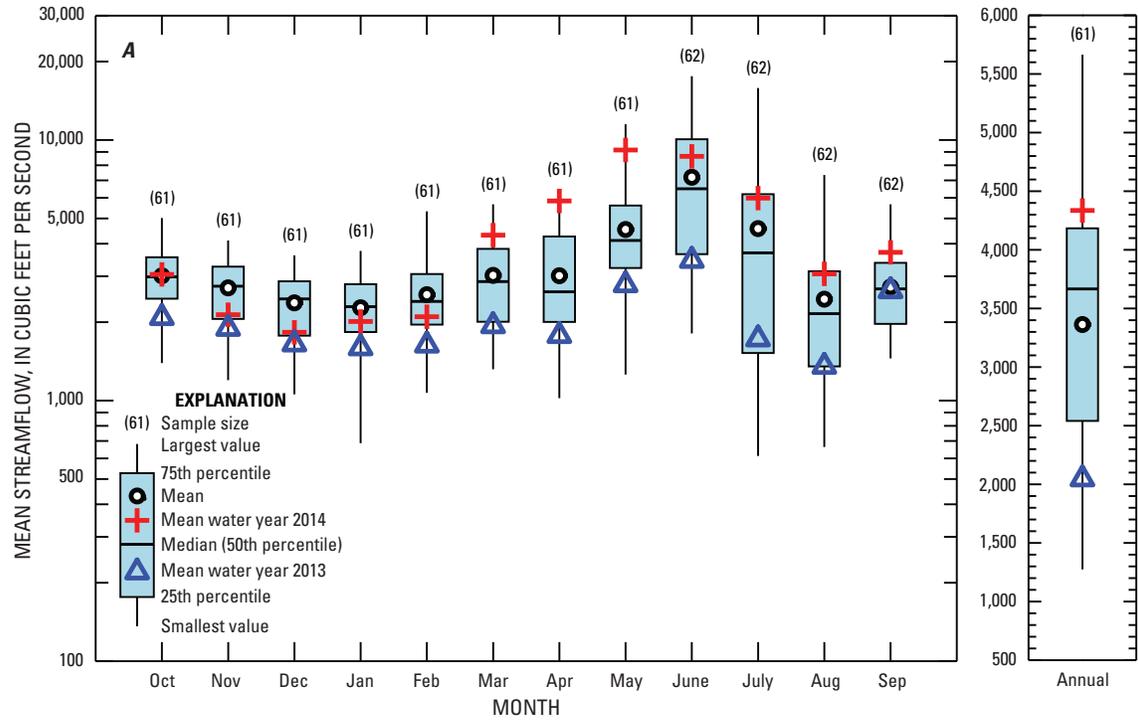


Figure 2. Streamflow data for Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), minus Little Bighorn River near Hardin, Mont. (06294000); adjusted for change in contents in Bighorn Lake, water years 1954–2014. *A*, Statistical distribution of monthly and annual streamflow. *B*, Annual departure from the mean annual streamflow.

06308500 Tongue River at Miles City, Mont.

LOCATION.--Lat 46°23'05", long 105°50'41" referenced to North American Datum of 1927, in SE ¼ SE ¼ SE ¼ sec.4, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 1.5 mi south of Miles City and at river mile 2.3.

DRAINAGE AREA.--5,397 mi². Area at site used prior to October 4, 1995, 5,379 mi².

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to present. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. April 1946 to October 4, 1995, at site 2.5 mi upstream from present site. Streamflows at present site are equivalent with streamflows at site operated from 1946. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,360 ft, referenced to the National Geodetic Vertical Datum of 1929. April 1938 to April 1942, nonrecording gage located at site 8 mi upstream from present site at different elevation. April 1946 to September 30, 1963, located at elevation 1.00 ft higher than present site. October 4, 1995, gage was moved 2.5 mi downstream.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Streamflow is regulated by Tongue River Reservoir (station 06307000) with usable contents of 79,070 acre-ft, and many small reservoirs in Wyoming with combined capacity about 15,000 acre-ft. Diversions for irrigation include about 100,800 acres upstream from station.

Table 4. Daily mean discharge for Tongue River at Miles City, Mont. (06308500), October 2013 through September 2014.

[Discharge is in cubic feet per second. Abbreviations: acre-ft, acre-feet; e, estimated; Max, maximum; Min, minimum. Symbol: ---, no data]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	128	361	e350	e200	e230	e340	882	843	2,430	1,570	184	388
2	120	371	e360	e200	e220	e350	882	853	3,200	1,500	172	387
3	122	375	e260	e210	e210	e350	857	840	3,480	1,310	165	385
4	148	373	e170	e200	e200	e340	941	839	3,500	1,200	174	386
5	187	373	e120	e190	e190	e450	1,150	809	3,440	1,090	173	385
6	205	376	e100	e190	e180	e800	1,080	818	3,260	975	171	334
7	206	376	e130	e190	e170	e1,100	993	840	3,020	891	164	322
8	194	380	e160	e190	e170	e1,500	952	839	2,810	813	168	339
9	190	384	e180	e190	e170	e2,200	957	791	2,550	767	174	351
10	189	406	e200	e190	e170	3,700	935	871	2,460	712	150	367
11	198	427	e220	e190	e180	e2,400	923	1,290	2,450	637	157	383
12	221	420	e240	e190	e190	e2,000	910	867	2,420	557	182	397
13	225	417	e260	e200	e200	1,810	859	756	2,250	511	179	406
14	262	418	e270	e210	e230	1,340	844	725	2,140	446	164	406
15	311	417	e290	e210	e260	1,080	864	708	2,080	398	195	400
16	337	416	e300	e230	e340	961	852	704	2,020	319	211	401
17	353	420	e290	e240	e450	965	853	702	2,090	298	207	415
18	341	421	e290	e250	e490	1,000	865	707	2,730	280	213	404
19	332	419	e260	e250	e460	1,000	868	738	2,590	262	232	338
20	333	419	e230	e250	e430	983	870	634	1,990	284	226	347
21	345	e350	e200	e250	e420	931	863	561	1,780	266	237	373
22	349	e200	e180	e240	e400	871	880	575	1,630	252	284	386
23	351	e220	e150	e230	e390	844	876	594	1,490	216	327	394
24	349	e230	e150	e220	e380	823	861	600	1,370	218	444	402
25	348	e250	e160	e320	e370	811	856	630	1,310	220	512	404
26	348	e290	e180	e430	e360	824	854	689	1,360	222	484	363
27	348	e340	e200	e370	e350	826	847	679	1,520	209	408	355
28	351	e400	e190	e280	e350	835	839	690	1,580	228	394	379
29	360	e370	e190	e240	---	841	840	775	1,640	219	383	385
30	359	e350	e200	e240	---	852	834	870	1,520	195	380	367
31	361	---	e200	e240	---	934	---	1,310	---	188	381	---
Total	8,471	10,969	6,680	7,230	8,160	34,061	26,887	24,147	68,110	17,253	7,895	11,349
Mean	273	366	215	233	291	1,099	896	779	2,270	557	255	378
Max	361	427	360	430	490	3,700	1,150	1,310	3,500	1,570	512	415
Min	120	200	100	190	170	340	834	561	1,310	188	150	322
Acre-ft	16,800	21,760	13,250	14,340	16,190	67,560	53,330	47,900	135,100	34,220	15,660	22,510

SUMMARY STATISTICS

	Water Year 2014	Water Years 1938–2014*
Annual total	231,212	
Annual mean	633	408
Annual runoff (acre-ft)	458,600	295,600

*During periods of operation (April 1938 to April 1942, April 1946 to water year 2014).

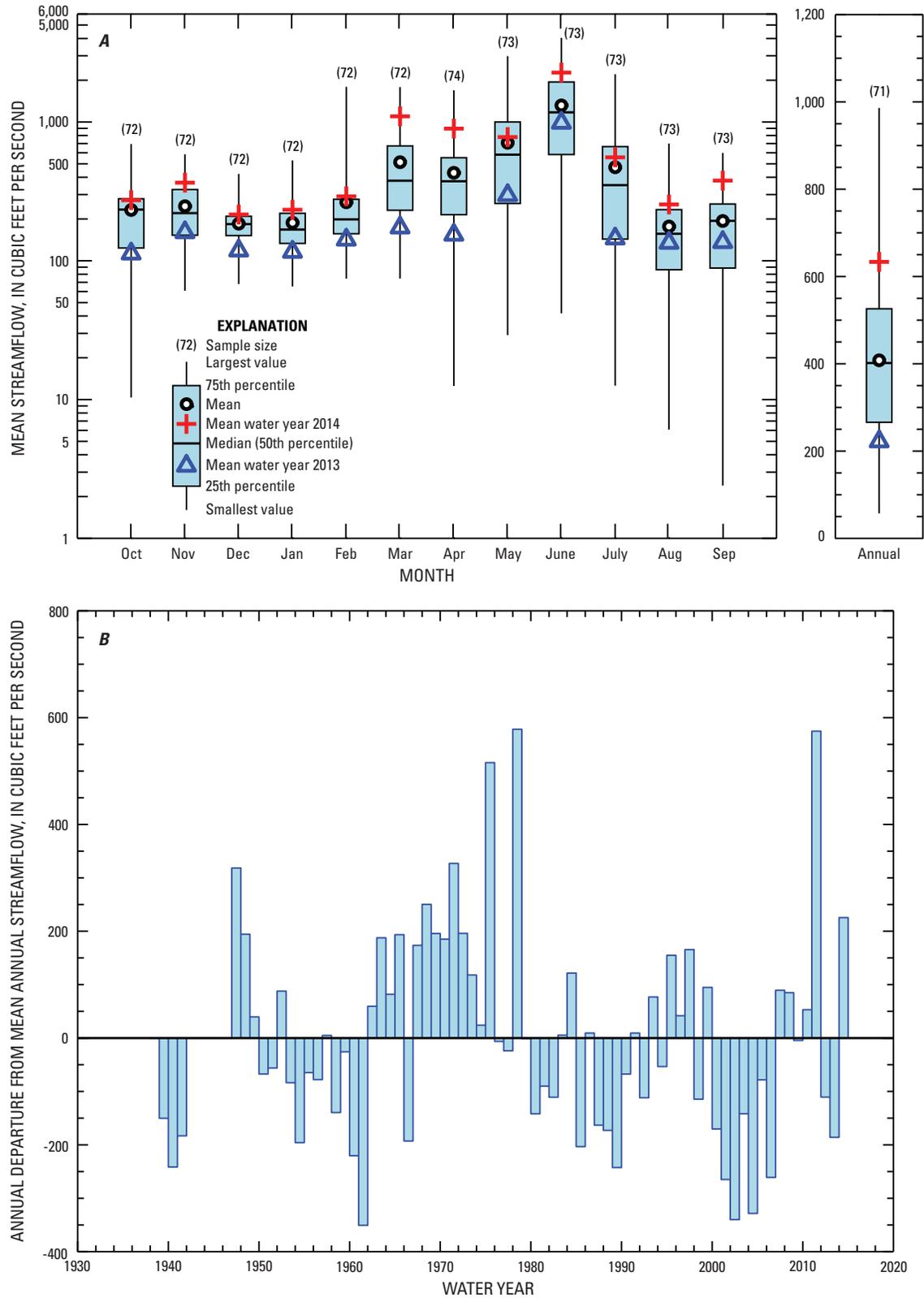


Figure 3. Streamflow data for Tongue River at Miles City, Mont. (06308500), water years 1938–2014. *A*, Statistical distribution of monthly and annual streamflow. *B*, Annual departure from the mean annual streamflow.

06326500 Powder River near Locate, Mont.

LOCATION.--Lat 46°25'48", long 105°18'34" referenced to North American Datum of 1927, in SW ¼ SW ¼ SE ¼ sec.23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on left bank at downstream side of bridge on U.S. Highway 12, 0.1 mi west of Locate, and 25 mi east of Miles City, and at river mile 29.4.

DRAINAGE AREA.--13,068 mi².

PERIOD OF RECORD.--March 1938 to present.

REVISED RECORDS.--Water Supply Paper (WSP) 926: 1939. WSP 1309: 1938–39, maximum discharge. WSP 1729: Drainage area. Water Data Report MT-04-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,384.79 ft, referenced to the National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage located at bridge 1.5 mi upstream, and July 11, 1947 to September 30, 1965, water-stage recorder located at site near upstream bridge at different elevation. October 1, 1965 to October 4, 1966, nonrecording gage, and October 5, 1966 to March 21, 1978, water-stage recorder located at present site and elevation. March 22, 1978 to April 23, 1981, water-stage recorder located 1.5 mi upstream at different elevation, April 24 to August 20, 1981, water-stage recorder located at present site and elevation, and August 21, 1981 to September 30, 1981, water-stage recorder located 1.5 mi upstream at different elevation. October 1, 1981 to April 5, 1995 water-stage recorder located at site 1.5 mi downstream at different elevation. April 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.

REMARKS.--Records are fair except for estimated daily discharges, which are poor. Some regulation occurs by three reservoirs in Wyoming with combined usable contents of 36,800 acre-ft. Diversions for irrigation include about 101,800 acres upstream from station.

Table 5. Daily mean discharge for Powder River near Locate, Mont. (06326500), October 2013 through September 2014.

[Discharge is in cubic feet per second. Abbreviations: acre-ft, acre-feet; e, estimated; Max, maximum; Min, minimum. Symbol: ---, no data]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	207	491	e340	e200	e310	e450	788	1,070	3,530	2,020	166	358
2	210	516	e340	e200	e300	e400	762	1,060	3,210	1,750	159	359
3	231	497	e330	e210	e300	e400	734	1,110	3,210	1,640	140	335
4	226	491	e310	e200	e300	e400	806	1,060	3,080	1,500	122	325
5	262	493	e280	e180	e270	e450	1,070	970	2,620	1,310	111	322
6	372	479	e250	e180	e260	e1,000	924	928	2,500	1,140	96	306
7	415	476	e230	e170	e260	e2,200	817	989	2,410	1,020	99	307
8	480	460	e210	e180	e260	e3,800	798	1,090	2,180	903	95	311
9	887	465	e220	e190	e260	e4,500	688	1,200	2,010	833	112	319
10	821	450	e220	e200	e260	e4,300	658	2,190	1,980	767	111	318
11	803	450	e210	e210	e270	e4,100	636	2,280	2,120	693	101	328
12	1,460	428	e220	e210	e290	e3,800	593	1,940	2,060	621	591	341
13	1,420	412	e220	e220	e310	e3,500	573	1,820	1,830	522	759	338
14	1,250	397	e230	e240	e320	e3,200	572	1,690	1,770	434	592	332
15	1,040	392	e230	e240	e340	2,880	638	1,550	1,720	358	571	313
16	857	395	e230	e250	e450	2,460	646	1,430	1,590	352	491	333
17	753	391	e220	e250	e900	2,090	679	1,410	1,600	351	428	358
18	711	395	e220	e260	e1,050	1,770	692	1,410	1,640	341	376	362
19	747	385	e210	e260	e1,000	1,560	693	1,410	1,580	297	336	374
20	755	378	e200	e270	e950	1,390	687	1,450	1,460	331	261	381
21	692	e330	e190	e270	e900	1,250	673	1,420	1,390	335	218	401
22	670	e250	e190	e270	e750	1,130	642	1,610	1,280	307	198	394
23	626	e260	e180	e280	e650	1,020	638	1,860	1,220	296	216	367
24	591	e280	e190	e280	e600	923	742	2,090	1,160	301	303	351
25	567	e280	e200	e340	e550	848	732	2,270	1,140	329	332	331
26	550	e300	e220	e460	e550	806	769	2,600	1,640	321	276	301
27	534	e310	e230	e410	e550	754	936	2,990	1,700	318	231	255
28	521	e320	e230	e380	e550	735	1,100	3,260	1,440	270	308	240
29	533	e330	e210	e340	---	706	1,050	3,090	1,460	225	390	231
30	517	e330	e210	e320	---	722	1,060	3,060	1,640	208	409	229
31	491	---	e210	e310	---	820	---	3,130	---	189	369	---
Total	20,199	11,831	7,180	7,980	13,710	54,364	22,796	55,437	58,170	20,282	8,967	9,820
Mean	652	394	232	257	490	1,754	760	1,788	1,939	654	289	327
Max	1,406	516	340	460	1,050	4,500	1,100	3,260	3,530	2,020	759	401
Min	207	250	180	170	260	400	572	928	1,140	189	95	229
Acre-ft	40,060	23,470	14,240	15,830	27,190	107,800	45,220	110,000	115,400	40,230	17,790	19,480

SUMMARY STATISTICS

	Water Year 2014	Water Years 1939–2014
Annual total	290,736	
Annual mean	797	566
Annual runoff (acre-ft)	576,700	409,900

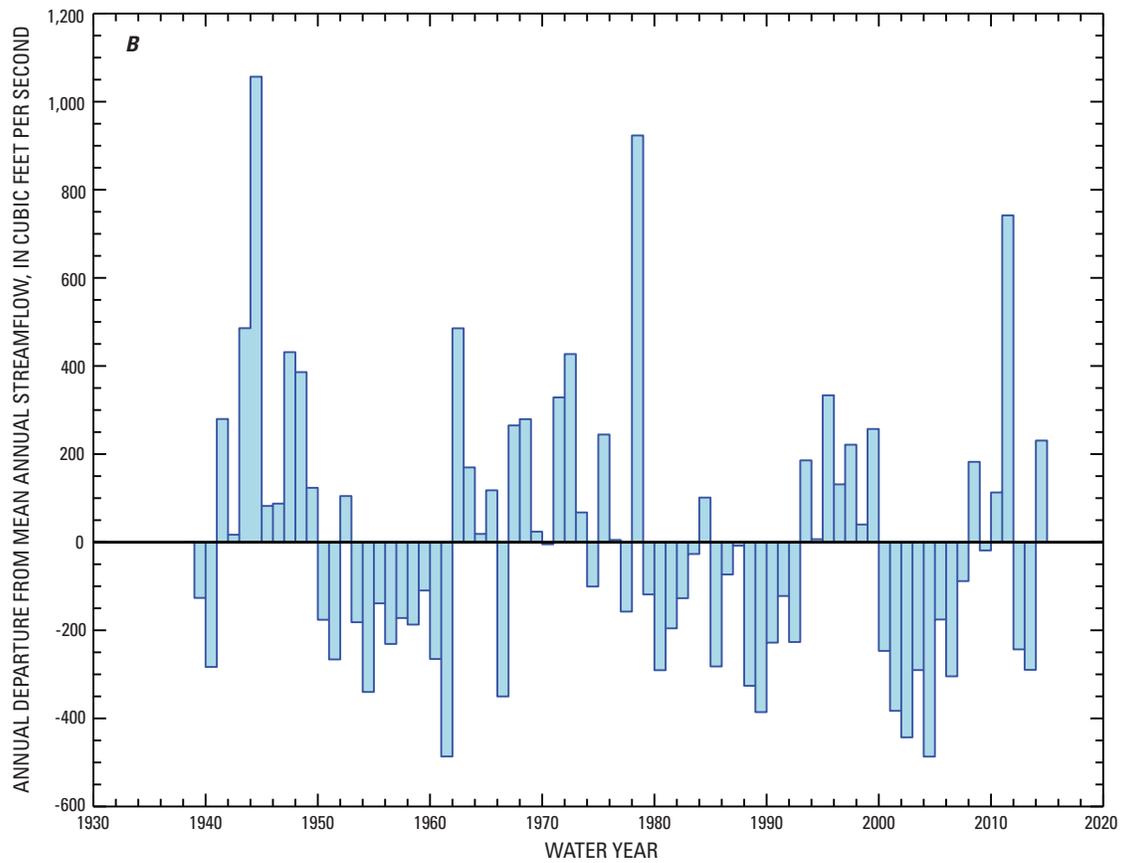
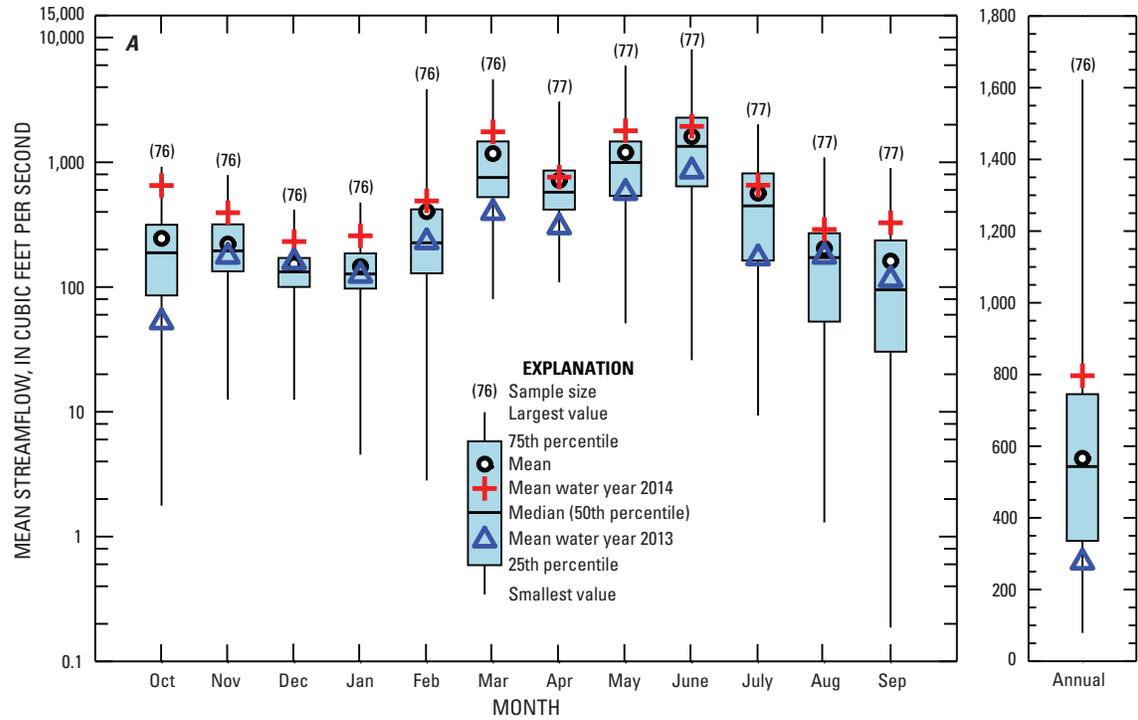


Figure 4. Streamflow data for Powder River near Locate, Mont. (06326500), water years 1939–2014. *A*, Statistical distribution of monthly and annual streamflow. *B*, Annual departure from the mean annual streamflow.

Month-End Contents for Yellowstone River Compact Reservoirs¹ Completed after January 1, 1950

06258900 Boysen Reservoir, Wyo.

LOCATION.--Lat 43°25'00", long 108°10'37" referenced to North American Datum of 1927, in NW¹/₄NW¹/₄ sec. 16, T.5 N., R.6 E., Fremont County, Hydrologic Unit 10080005, at dam on Wind River and 13 mi north of Shoshoni, Wyo.

DRAINAGE AREA.--7,700 mi².

PERIOD OF RECORD.--October 1951 to present (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is referenced to the National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by rock-fill dam completed in October 1951. Storage began October 11, 1951. Usable contents are 701,500 acre-ft between elevation 4,657.00 ft, invert of penstock pipe, and 4,725.00 ft, top of spillway gate. Dead storage is 40,080 acre-ft below elevation 4,657.00 ft. Prior to January 1, 1966, usable contents were 757,900 acre-ft and dead storage was 62,000 acre-ft at same elevations. Between January 1966 and October 1996, usable contents were 742,100 acre-ft and dead storage was 59,880 acre-ft, at same elevations. Crest of dam is at elevation 4,758.00 ft. Water used for irrigation, flood control, and power generation.

COOPERATION.--Elevations and contents table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 862,500 acre-ft, July 6, 7, 1967, elevation, 4,730.83 ft; minimum daily contents since normal use of water started, 191,900 acre-ft, March 18, 19, 1956, elevation, 4,684.18 ft, capacity table then in use.

EXTREMES FOR WATER YEAR 2014.--Maximum daily contents, 695,700 acre-ft, July 12, elevation, 4,724.70 ft; minimum daily contents, 443,700 acre-ft, Oct. 1, elevation, 4,709.35 ft.

Table 6. Month-end contents for Boysen Reservoir, Wyo.

[Symbol: --, no data]

Date	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 2013	4,709.18	441,400	--
October 31	4,713.41	501,600	60,200
November 30	4,715.28	529,900	28,300
December 31	4,715.99	541,100	11,200
January 31, 2013	4,716.62	551,100	10,000
February 28	4,716.98	557,000	5,900
March 31	4,717.60	567,200	10,200
April 30	4,714.63	519,900	-47,300
May 31	4,716.83	554,500	34,600
June 30	4,724.22	686,300	131,800
July 31	4,723.79	678,100	-8,200
August 31	4,722.79	659,100	-19,000
September 30, 2014	4,721.03	626,700	-32,400
2014 water year			185,300

¹Wyoming disagrees with the term "Compact Reservoirs" as used throughout this annual report. Wyoming's acceptance of this annual report should not be construed as Wyoming's acceptance of the use of that term.

06260300 Anchor Reservoir, Wyo.

LOCATION.--Lat 43°39'50", long 108°49'27" referenced to North American Datum of 1927, in sec. 26, T.43 N., R.100 W., Hot Springs County, Hydrologic Unit 10080007, at dam on South Fork Owl Creek, 2 mi downstream from Middle Fork, 3 mi southeast of Anchor, and 32 mi west of Thermopolis, Wyo.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--November 1960 to present (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is referenced to the National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Reservoir is formed by concrete-arch dam completed in 1960. Usable contents are 17,410 acre-ft (revised) between elevation 6,343.75 ft, invert of river outlet, and 6,441.00 ft, spillway crest, including 66 acre-ft below elevation 6,343.75 ft. Prior to October 1, 1971, usable contents were 17,280 acre-ft, including 149 acre-ft below the invert. Water is used for irrigation of land in Owl Creek Basin.

COOPERATION.--Elevations and contents table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 9,250 acre-ft, July 4, 1967, elevation, 6,418.52 ft; no usable contents on many days some years.

EXTREMES FOR WATER YEAR 2014.--Maximum daily contents, 3,480 acre-ft, June 14, elevation, 6,394.14 ft; minimum daily content, 218 acre-ft, Oct 16, elevation, 6,353.28 ft.

Table 7. Month-end contents for Anchor Reservoir, Wyo.

[Symbol: --, no data]

Date	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 2013	6,358.27	354	--
October 31	6,354.19	237	-117
November 30	6,355.15	258	21
December 31	6,356.14	287	29
January 31, 2014	6,357.13	318	31
February 28	6,358.03	346	28
March 31	6,359.02	380	34
April 30	6,358.86	374	-6
May 31	6,388.46	2,673	2,299
June 30	6,391.55	3,097	424
July 31	6,377.78	1,516	-1,581
August 31	6,355.81	277	-1,239
September 30, 2014	6,363.64	564	287
2014 water year			210

06286400 Bighorn Lake near St. Xavier, Mont.

LOCATION.--Lat 45°18'27", long 107°57'26" referenced to North American Datum of 1927, in SW ¼ SE ¼ sec.18, T.6 S., R.30 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi upstream from Grapevine Creek, 15.5 mi southwest of St. Xavier, and at river mile 86.6.

DRAINAGE AREA.--19,626 mi².

PERIOD OF RECORD.--November 1965 to present (month-end contents only). Prior to October 1969, published as "Yellowtail Reservoir." Records of daily elevations and contents on file at the U.S. Geological Survey, Montana Water Science Center in Helena, Mont.

GAGE.--Water-stage recorder located in powerhouse control room. Elevation of gage is 3,296.5 ft, referenced to the National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

COOPERATION.--Elevations and contents table furnished by Bureau of Reclamation.

REMARKS.--Reservoir is formed by thin concrete-arch dam; construction began in 1961 and was completed in 1967. Storage began November 3, 1965. Usable contents are 1,261,000 acre-ft, between elevation 3,296.50 ft, river outlet invert, and 3,657.00 ft, top of flood control. Elevation of spillway crest is 3,593.00 ft. Minimum operating level is 452,200 acre-ft, elevation, 3,547.00 ft. Dead storage is 17,720 acre-ft, below elevation 3,296.50 ft. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,346,000 acre-ft, July 6, 1967, elevation, 3,656.43 ft; minimum since first filling, 519,400 acre-ft, March 11, 2003, elevation 3,572.81 ft.

EXTREMES FOR WATER YEAR 2014.--Maximum contents, 1,026,000 acre-ft, Sept 17, elevation, 3,641.77 ft; minimum, 704,600 acre-ft, May 22, elevation, 3,602.38 ft.

Table 8. Month-end contents for Bighorn Lake, Mont.

[Symbol: --, no data]

Date	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 2013	3,635.53	951,500	--
October 31	3,640.41	1,008,000	56,500
November 30	3,640.05	1,003,000	-5,000
December 31	3,635.64	951,000	-52,000
January 31, 2014	3,630.66	899,700	-51,300
February 28	3,626.92	866,400	-33,300
March 31	3,618.72	802,200	-64,200
April 30	3,603.69	711,500	-90,600
May 31	3,610.73	750,500	38,900
June 30	3,636.77	963,800	213,400
July 31	3,639.52	996,800	33,000
August 31	3,641.40	1,021,000	24,400
September 30, 2014	3,640.08	1,004,000	-17,000
2014 water year			52,800

Month-End Contents for Yellowstone River Compact Reservoirs¹ Existing on January 1, 1950

The extent, if any, to which the use of reservoirs in this section may be subject to Compact allocations was not determined. As a matter of hydrologic interest, the month-end usable contents in acre-ft of four reservoirs are given in table 9. Three of the reservoirs (Bull Lake, Pilot Butte Reservoir, and Buffalo Bill Reservoir) are in the Bighorn River Basin, Wyoming, and data on contents were furnished by the Bureau of Reclamation. The usable contents of Buffalo Bill Reservoir was increased in 1992 from 456,600 acre-ft to 644,500 acre-ft (listed as 646,565 acre-ft by Bureau of Reclamation). The Tongue River Reservoir in Montana is operated under the supervision of the Water Resources Division of the Montana Department of Natural Resources and Conservation, who furnished the water-level data and the reservoir-contents table. The usable contents of Tongue River Reservoir increased from 68,000 acre-ft to 79,070 acre-ft in 1999.

Table 9. Month-end contents for Yellowstone River Compact reservoirs¹ existing on January 1, 1950.

Date	Usable contents, in acre-feet ²			
	06224500 Bull Lake	Pilot Butte Reservoir	06281500 Buffalo Bill Reservoir	06307000 Tongue River Reservoir
September 30, 2013	88,450	16,700	466,400	47,640
October 31	99,050	25,150	482,200	55,840
November 30	99,350	24,810	477,700	49,860
December 31	99,380	24,690	470,900	49,230
January 31, 2014	99,110	24,640	464,000	52,020
February 28	99,030	24,560	456,200	54,290
March 31	99,430	24,430	450,900	59,850
April 30	101,100	26,060	391,700	44,800
May 31	119,400	20,540	452,900	82,780
June 30	144,900	26,060	606,000	80,070
July 31	149,100	26,120	625,600	70,770
August 31	131,800	22,360	581,900	60,470
September 30, 2014	104,000	21,910	510,200	54,980
Change in contents during water year	15,550	5,210	43,800	7,340

¹Wyoming disagrees with the term "Compact Reservoirs" as used throughout this annual report. Wyoming's acceptance of this annual report should not be construed as Wyoming's acceptance of the use of that term.

² Pre-Compact water rights and post-Compact water rights for these reservoirs are presented in the table, "Water-year-end contents for Yellowstone River Compact reservoirs or lakes."

Water-Year-End Contents for Yellowstone River Compact Reservoirs¹ or Lakes

Month-end usable contents for additional reservoirs of interest to the Yellowstone River Compact are listed in table 10. Anchor Reservoir was built to have a usable contents of 17,410 acre-ft, but sinkholes within the area contained by the dam prevent filling the reservoir to the designed volume, and at present, only 9,250 acre-ft has been adjudicated with an extension to December 31, 2013, for the remaining 8,150 acre-ft.

Table 10. Water-year-end contents for Yellowstone River Compact reservoirs¹ or lakes.

[Contents are in acre-feet. Reservoirs or lakes are listed in alphabetical order by drainage basin. Abbreviation: e, estimated. Symbol: --, no data or not available]

Reservoir or lake name	Pre-compact 1950 water right	Post-compact 1950 water right	Usable contents	Usable contents on Sept. 30, 2014	Usable contents on Sept. 30, 2013	Change in usable contents ²
Clarks Fork Yellowstone River Basin						
Cooney Reservoir ³	28,230	0	28,230	16,613	17,480	-867
Glacier Lake ³	4,200	0	4,200	--	--	--
Bighorn River Basin						
(Lake) Adelaide Reservoir ⁴	1,450	3,320	4,770	3,480	753	2,727
Anchor Reservoir ⁵	0	9,250	17,410	564	354	210
Bighorn Lake ⁵	0	1,312,000	1,312,000	1,006,000	951,500	54,500
Boysen Reservoir ⁵	757,900	0	701,500	626,700	441,400	185,300
Buffalo Bill Reservoir ⁵	456,600	187,900	644,500	510,200	466,400	43,800
Bull Lake ⁵	77,040	0	77,040	104,000	88,450	15,550
Christina Reservoir ⁴	3,860	0	3,860	3,860	400	3,460
Corral Reservoir ⁴	0	1,030	1,030	764	528	236
Diamond Creek Dike Reservoir ⁴	0	18,380	18,380	345	310	35
Enterprise Reservoir ⁴	1,490	204	1,700	352	700	-348
Fairview Extension Reservoir ⁴	791	620	1,410	1,320	1,190	-590
Greybull Valley Reservoir ⁴	0	33,170	33,170	17,490	5,610	11,880
Harrington Reservoir ⁴	315	887	1,200	800	400	400
Lake Cameahwait Reservoir ⁴	0	6,690	6,680	6,680	6,680	0
Lake Creek Reservoir ⁴	1,370	0	1,370	655	655	0
Lodge Grass Reservoir ⁶	--	22,900	22,900	20,000	15,000	5,000
Lower Sunshine Reservoir ⁴	0	58,750	58,750	48,520	4,650	43,870
Newton Reservoir ⁴	4,520	0	4,520	347	543	-196
Perkins and Kinney Reservoir ⁴	1,200	0	1,200	1,200	1,200	0
Pilot Butte Reservoir ⁵	34,600	0	34,600	21,910	16,700	5,210
Sage Creek Reservoir ⁴	440	2,340	2,780	2,780	2,370	410
Shell Reservoir ⁴	1,950	0	1,950	640	658	-18
Shoshone Lake Reservoir ⁴	39,740	0	9,740	1,500	1,250	250
Sunshine Reservoir ⁴	52,990	0	52,990	46,550	8,490	38,060
Teapot Reservoir ⁴	1,580	0	1,580	0	0	0
Tensleep Reservoir ⁴	3,510	0	3,510	3,510	3,510	0
Wiley Reservoir ⁴	689	331	1,020	1,020	1,020	0
Worthen Meadow Reservoir ⁴	0	1,500	1,500	1,230	1,070	160

Table 10. Water-year-end contents for Yellowstone River Compact reservoirs¹ or lakes.—Continued

[Contents are in acre-feet. Reservoirs or lakes are listed in alphabetical order by drainage basin. Abbreviation: e, estimated. Symbol: --, no data or not available]

Reservoir or lake name	Pre-compact 1950 water right	Post-compact 1950 water right	Usable contents	Usable contents on Sept. 30, 2014	Usable contents on Sept. 30, 2013	Change in usable contents ²
Powder River Basin						
Cloud Peak Reservoir ⁴	3,400	172	3,570	3,570	178	3,392
Dull Knife Reservoir ⁴	--	4,320	4,350	1,240	872	368
Healy Reservoir ⁴	--	5,140	5,140	4,920	3,250	1,670
Kearney Reservoir ⁴	1,850	4,470	6,320	1,300	3,300	-2,000
Lake DeSmet ⁴	37,520	197,500	235,000	206,600	199,100	7,500
Muddy Guard Reservoir ⁴	--	2,340	2,340	1,240	593	647
Posy No. 1 Reservoir ⁴	--	1,540	1,540	962	0	962
Tie Hack Reservoir ⁴	1,650	788	2,440	2,440	2,370	70
Willow Park Reservoir ⁴	4,460	--	4,460	646	3,470	-2,824
Tongue River Basin						
Bighorn Reservoir ⁴	2,750	1,880	4,630	1,440	573	867
Dome Reservoir ^{4,7}	1,840	188	2,030	1,320	1,610	-290
Park Reservoir ⁴	7,350	3,020	10,360	4,570	0	4,570
Sawmill Lakes Reservoir ⁴	--	1,280	1,280	645	371	274
Tongue River Reservoir ³	79,070	--	79,070	54,980	47,640	7,340
Twin Lakes Reservoir ^{4,8}	1,180	2,220	3,400	2,280	2,800	-520

¹Wyoming disagrees with the term "Compact Reservoirs" as used throughout this annual report. Wyoming's acceptance of this annual report should not be construed as Wyoming's acceptance of the use of that term.

²Change in usable contents is derived from subtracting the 2013 usable contents from the 2014 usable contents.

³Reservoir managed by the State of Montana.

⁴Private reservoirs permitted and accounted by the State of Wyoming.

⁵Reservoirs managed by Bureau of Reclamation.

⁶Lodge Grass Reservoir, managed by Bureau of Indian Affairs.

⁷Data are combined contents of Dome Lake and Dome Lake Reservoir.

⁸Data are combined contents of Twin Lakes Number 1 and Twin Lakes Number 2.

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, is administered under the following rules and regulations 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 streamflow 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 near Silesia, Montana and located in NW1/4 SE1/4 sec. 1, T. 4 S., R. 23 E., shall be the point of measurement for the Clarks Fork.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River above Tullock Creek, near Bighorn, Montana, and located in SE1/4 SE1/4 NE1/4 sec. 3, 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 SE1/4 NE1/4 NE1/4 sec. 19, 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 NE1/4 NE1/4 SE1/4 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 NW1/4 SW1/4 sec. 14, 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 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 are 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 at the office of the Chairman of the Commission.
- 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, shall enter into cooperative agreements with the U.S. Geological Survey for such engineering and clerical services as may reasonably be necessary for the administration of the Compact. Said agreements 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.
- B. The Geological Survey shall 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.

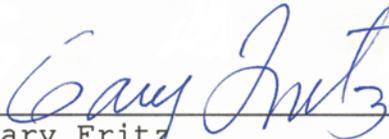
Article V. Meetings

An annual meeting of the Commission shall be held 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.



Gary Fritz
Commissioner for Montana



George L. Christopoulos
Commissioner for Wyoming

ATTESTED:



L. Grady Moore
Federal Representative

Adopted November 17, 1953
Amended December 16, 1986

**RULES FOR THE RESOLUTION OF DISPUTES
OVER THE ADMINISTRATION OF THE
YELLOWSTONE RIVER COMPACT**

December 19, 1995

Section I. General Framework

According to Article III(F) of the Yellowstone River Compact.

"In case of the failure of the representatives of Wyoming and Montana to unanimously agree on any matter necessary to the proper administration of this compact, then the member selected by the director of the United States Geological Survey shall have the right to vote upon the matters in disagreement and such points of disagreement shall then be decided by a majority vote of the representatives of the states of Wyoming and Montana and said member selected by the director of the United States geological survey, each being entitled to one vote."

Section II. Purpose and Goal

- A. The purpose of these rules is to clarify and more fully develop the dispute resolution process outlined in Section I.
- B. The goal of the dispute resolution process outlined in these rules is to encourage joint problem solving and consensus building. It consists of three phases -- unassisted negotiation, facilitation, and voting.
- C. Any agreement reached through this process is binding on Montana, Wyoming, and the United States Geological Survey (USGS).
- D. Either state can initiate the dispute resolution process defined in Sections IV, V, and VI, and the other state is obligated to participate in good faith. The states agree that the issues pursued under this dispute resolution process shall be both substantive and require timely resolution.

Section III. Consensus

- A. In the process of administering the Yellowstone River Compact, the representatives from Montana and Wyoming agree to seek consensus.
- B. For purposes of this rule, consensus is defined as an agreement that is reached by identifying the interests of Montana and Wyoming and then building an integrative solution that maximizes the satisfaction of as many of the interests as possible. The process of seeking consensus does not involve voting, but a synthesis and blending of alternative solutions.

Section IV. Unassisted Negotiation

- A. In all situations, the representatives from Montana and Wyoming shall first attempt to seek consensus through unassisted negotiation. The federal representative will not serve as chairperson in the unassisted negotiation process.
- B. During a negotiation process, the representatives from Montana and Wyoming shall identify issues about which they differ, educate each other about their needs and interests, generate possible resolution options, and collaboratively seek a mutually acceptable solution.
- C. To help facilitate negotiations, the representatives from Montana and Wyoming in cooperation with the USGS agree to share technical information and develop joint data bases. Other data sources may also be used.
- D. The USGS shall serve as technical advisor in the two-state negotiations.

Section V. Facilitation

- A. If the representatives from Montana and Wyoming are not able to reach consensus through unassisted negotiation, they shall each identify, articulate, and exchange, in writing, the unresolved issues.
- B. The representatives from Montana and Wyoming shall then jointly appoint a facilitator to assist in resolving the outstanding dispute. If the representatives from Montana and Wyoming cannot identify a mutually acceptable facilitator, the representative appointed by the USGS shall appoint a facilitator.
- C. A facilitator, for purposes of this rule, is defined as a neutral third party that shall help the representatives from Montana and Wyoming communicate, negotiate, and reach agreements voluntarily. The facilitator is not empowered to vote or render a decision.
- D. The facilitator shall assist the representatives from Montana and Wyoming in developing appropriate ground rules for each facilitated session including establishing a deadline for completion of the facilitation process, setting an appropriate agenda, identifying issues, collecting and analyzing technical information, developing options, packaging agreements, and preparing a written agreement. The facilitator reserves the right to meet privately with each representative during the facilitation process.

Section VI. Voting

- A. If, and only if, the representatives from Montana and Wyoming are unable to reach consensus with the assistance of a facilitator, then a dispute may be settled by voting.
- B. The representatives from Montana and Wyoming, along with the representative appointed by the director of the USGS, are each entitled to one vote.
- C. If the USGS representative does not vote in accordance with Article III, then the director of the USGS will select, with concurrence from Wyoming and Montana, a neutral third party to vote.

D. If the representative appointed by the director of the USGS is not involved in the steps outlined in Sections IV and V, each state shall have the opportunity to present appropriate information to that representative. This information may be presented through both oral presentations and written documents. All information will be shared with the other state.

The representative of the USGS may also consult the facilitator referenced in Section V in an attempt to resolve any disputes.

E. The USGS shall pay the expenses of the representative appointed by the director of the USGS.

F. Points of disagreement shall be resolved by a majority vote.

Section VII. Funding

A. The USGS will pay one-half and the states of Montana and Wyoming shall each pay one-quarter of the expenses of the facilitator, which shall not exceed \$10,000, unless agreed to by both states and the USGS.

Section VIII. Amendments

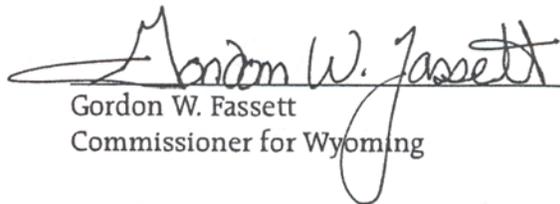
A. These rules may be amended or revised by a unanimous vote of the Commission.

Section IX. Execution

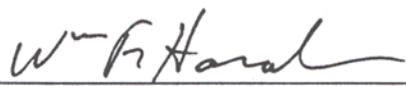
These rules for the resolution of disputes over the administration of the Yellowstone River Compact are hereby executed on the date indicated below.



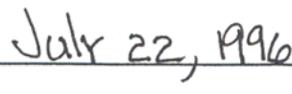
Gary Fritz
Commissioner for Montana



Gordon W. Fassett
Commissioner for Wyoming



William F. Horak
Federal Representative



Date

RULES FOR ADJUDICATING WATER RIGHTS ON INTERSTATE DITCHES

Article I. Purpose

The purpose of this rule is to determine and adjudicate, in accordance with the laws of Montana and Wyoming, those pre-Compact (January 1, 1950) water rights diverting from the Powder, Tongue, Bighorn and Clarks Fork Rivers and their tributaries where the point of diversion is in one State and the place of use is in the other State which have not yet been adjudicated.

Article II. Authority

In accordance with the Yellowstone River Compact, the State of Montana and the State of Wyoming, being moved by consideration of interstate comity, desire to remove all causes of present and future controversy between the States and between persons in one State and persons in another State with respect to these interstate ditches. Article III (E) of the Compact provides the Yellowstone River Compact Commission with the authority "...to formulate rules and regulations and to perform any act which they may find necessary to carry out the provisions of this Compact...."

Article III. Definitions

The terms defined in the Yellowstone River Compact apply as well as the following definitions:

1. "Acre-feet" means the volume of water that would cover 1 acre of land to a depth of 1 foot.
2. "Cfs" means a flow of water equivalent to a volume of 1 cubic foot that passes a point in 1 second of time and is equal to 40 miners inches in Montana.
3. "Interstate Ditches" shall include ditches and canals which convey waters of the Bighorn, Tongue, Powder, and Clarks Fork Rivers and their tributaries across the Wyoming-Montana State line where the water is diverted in one State and the place of use is in the other State.
4. "Department of Natural Resources and Conservation," hereafter called the "Department," means the administrative agency and Department of the Executive Branch of the Government of Montana created under Title II, Chapter 15, MCA which has the responsibility for water administration in that State.

5. "Water Court" means a Montana District Court presided over by a water judge, as provided for in Title III, Chapter 7, MCA.
6. "State Engineer" shall be the current holder of the position created by the Wyoming Constitution as Chief Water Administration Official for the State of Wyoming.
7. "Board of Control," hereinafter called the "Board," is defined as the constitutionally created water management agency in Wyoming composed of the four Water Division Superintendents and the State Engineer.
8. "Superintendent" is the member of the Board who is the water administration official for the Water Division where the interstate ditch is located. (The two Water Divisions in the Yellowstone River drainage are Water Division Numbers Two and Three.)
9. "Date of Priority" shall mean the earliest date of actual beneficial use of water, unless evidence and circumstances pertaining to a particular claim establish an earlier date.
10. "Point of Diversion" is defined to be the legal land description by legal subdivision, section, township, and range of the location of the diversion structure for an interstate ditch from a natural stream channel.
11. "Place of Use" is defined to be the legal land description (legal subdivision, section, township, and range) of the lands irrigated by an interstate ditch.
12. "Person" is defined as an individual, a partnership, a corporation, a municipality or any other legal entity, public or private.
13. "Claimant" is defined as any person claiming the use of water from an interstate ditch as herein defined.

Article IV. Procedures

The procedures for determining and adjudicating water rights associated with interstate ditches shall be categorized as follows: (A) Where the point of diversion is in Wyoming and place of use in Montana, and (B) Where the point of diversion is in Montana and place of use in Wyoming.

A. Wyoming Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim. (A sample form for this purpose is attached.)
2. The Yellowstone River Compact Commission will send the claim form to water users on the interstate ditches.
3. Water users will complete the claim form and file it with the Yellowstone Compact Commission, which, when found to be correct and complete, will be forwarded to the Board for verification.
4. Upon receipt of the form, the Board shall forward it to the appropriate Superintendent, who, in cooperation with the Department, will validate the information including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The Superintendent and the Department will utilize aerial photography and other information to have prepared a reproducible map showing the location of the ditch system, lands irrigated, point of diversion, etc., of the claim.
5. After the validation procedure, the Superintendent will hold a hearing, after appropriate notice and advertisement, at which time the claimant shall describe, in detail, the use that has been made of the water and the lands that are being irrigated, establish a priority date, etc. Costs incurred in advertising shall be paid by the claimant. If a single hearing is held to consider several claims, the costs of advertising shall be shared equally among the claimants. Anyone who opposes the claim shall appear and state the reasons, if any, for opposition to the claim. If there is no opposition to the claim, cost incurred in holding the hearing shall be paid by the claimant. If protestants do appear and oppose the claim, hearing costs will be paid 50 percent by the claimant and 50 percent by the protestant, or if there is more than one protestant, the remaining 50 percent shall be shared equally among the protestants.
6. At the conclusion of the hearing, the Superintendent shall forward the record to the Yellowstone River Compact Commission with his findings and recommendations. The Yellowstone River Compact Commission will make the

determination of the amount of the right, the location, and the priority date, and then send the record to the Board.

7. The Board shall review the record and integrate it into its water rights system. Upon entry of the record by the Board, the information shall be forwarded to the Department and the Chairman of the Yellowstone River Compact Commission.
8. Upon the entry of the right into the Board's records, it will have the following attributes:
 - a. The right will be a Wyoming water right with a priority date as established by this procedure.
 - b. The amount of the right will be determined as provided by Wyoming law.

B. Montana Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim.
2. The Commission will send the claim form to water users on the interstate ditches.
3. Water users will complete the claim form and file it with the Yellowstone River Compact Commission, which, when found to be correct and complete, will be forwarded to the Department for verification.
4. Upon receipt of the form, the Department, in cooperation with the Wyoming State Engineer's Office, will validate the information, including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The appropriate Superintendent and the Department will utilize aerial photographs and other information to have prepared a reproducible map showing the location of the ditch system, land irrigated, point of diversion, etc., of the claim.

5. The Department will then forward the record to the Yellowstone River Compact Commission with its findings and recommendations. Upon approval by the Commission, the record shall be submitted to the Montana Water Court for adjudication. A duplicate record will be forwarded to the Wyoming State Engineer's Office, the Board, and the Chairman of the Yellowstone River Compact Commission upon adjudication.
6. Upon adjudication of the right by the Montana Water Court, it will have the following attributes:
 - a) The right will be a Montana water right with a priority date as established by this procedure.
 - b) The amount of the right will be determined as provided by Montana law.

Article V. Exclusions

- A. These rules recognize the limitation in Article VI of the Yellowstone River Compact regarding Indian water rights.
- B. These rules shall not be construed to determine or interpret the rights of the States of Wyoming and Montana to the waters of the Little Bighorn River.

Article VI. Claim Form Submission Period

All claims must be submitted to the Yellowstone River Compact Commission, c/o District Chief, United States Geological Survey, 821 E. Interstate, Bismarck, ND 58501, within 90 calendar days after the claimant has received the claim form from the Commission. The blank claim form will be sent certified mail to the water user and the submission period of 90 calendar days will begin with the next day following receipt of the form, as evidenced by the certified mail receipt card. For good cause shown in writing, an extension of time beyond the 90 days for submittal may be obtained from the Commission.

YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

GORDON W. FASSETT
STATE ENGINEER
HERSCHLER BUILDING
4TH FLOOR EAST
CHEYENNE, WYOMING 82002
(307) 777-354

UNITED STATES

WILLIAM F. HORAK
CHAIRMAN
U.S. GEOLOGICAL SURVEY
821 E. INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501
(701) 250-4601

MONTANA

GARY FRITZ
ADMINISTRATOR, WATER RESOURCES DIVISION
DEPT. OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE
HELENA, MONTANA 59620
(406) 444-6603

YELLOWSTONE RIVER COMPACT COMMISSION

CLAIM FORM FOR INTERSTATE DITCHES

1. Name of ditch or canal: _____

2. Source of water supply: _____

Tributary of _____

3. Name of claimant: _____

Address _____

City _____ State _____ Zip Code _____

Home Phone No. _____ Business Phone No. _____

4. Person completing form: _____

Address _____

City _____ State _____ Zip Code _____

Home Phone No. _____ Business Phone No. _____

5. Method of irrigation: _____

6. Point of diversion: County _____ State _____

Headgate located in the $\frac{1}{4}$ $\frac{1}{4}$, Section _____, T. _____ R. _____

(a) Description of headgate: (Briefly describe the materials and general features, date constructed or last known work, general condition.) _____

9. Describe any additional uses of water claimed from the ditch:

10. Date of first beneficial use of water (priority date) on lands described above for _____ Ditch is _____
(mo/day/yr)
and shall be the same for all lands claimed on this form.
11. Has irrigation water been diverted onto all lands shown in the above tabulation each year since completion of works?__
If not, state exceptions and reasons therefore: _____

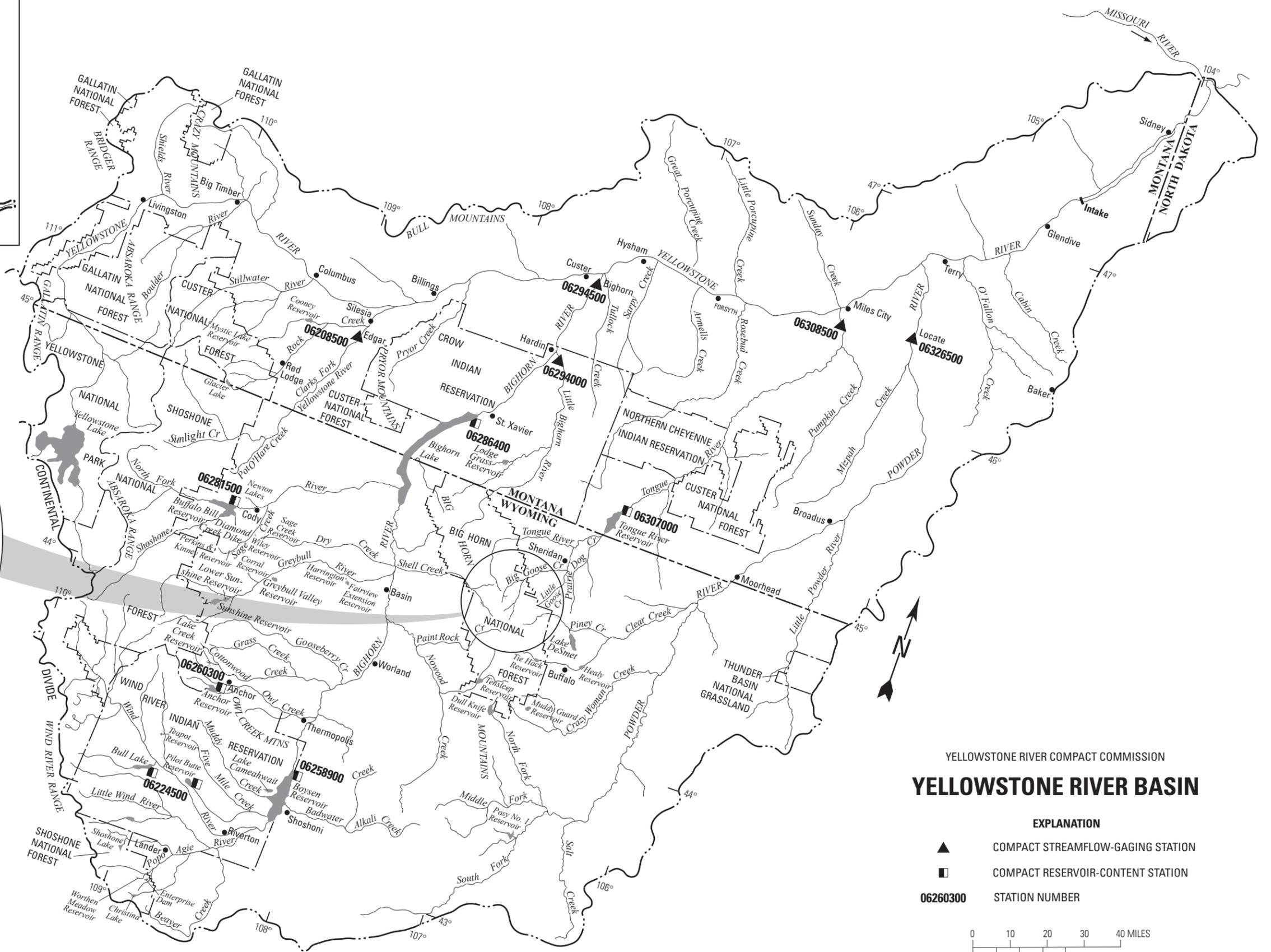
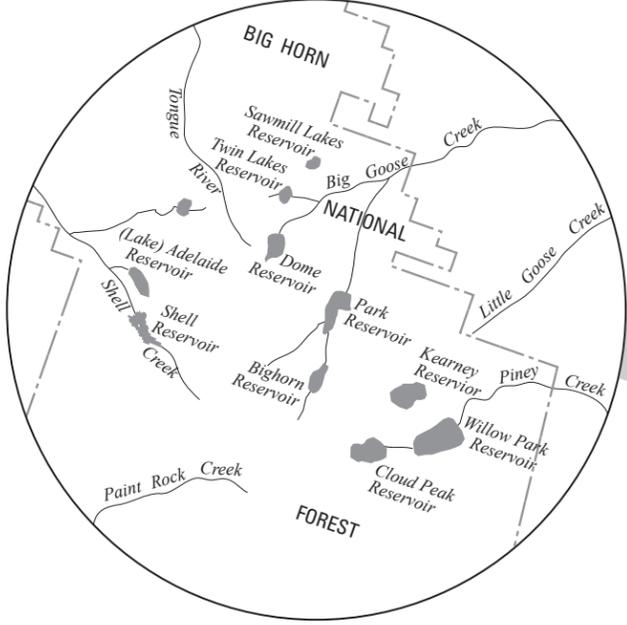
12. Attach documentary evidence or affidavits showing your ownership or control of the above lands, as well as the historic use of water on these lands. _____

13. What permit or claim numbers have been assigned to known records filed with either the Wyoming State Engineer's Office or the Montana Department (DNRC) for irrigating the above lands? _____

14. Have personnel in the Wyoming State Engineer's Office or the Montana Department (DNRC) been contacted to obtain the information given in No. 13? () Yes () No
15. Describe any flumes or pipelines in the ditch conveyance system: _____



LOCATION MAP



YELLOWSTONE RIVER COMPACT COMMISSION
YELLOWSTONE RIVER BASIN

- EXPLANATION**
- ▲ COMPACT STREAMFLOW-GAGING STATION
 - COMPACT RESERVOIR-CONTENT STATION
 - 06260300 STATION NUMBER

