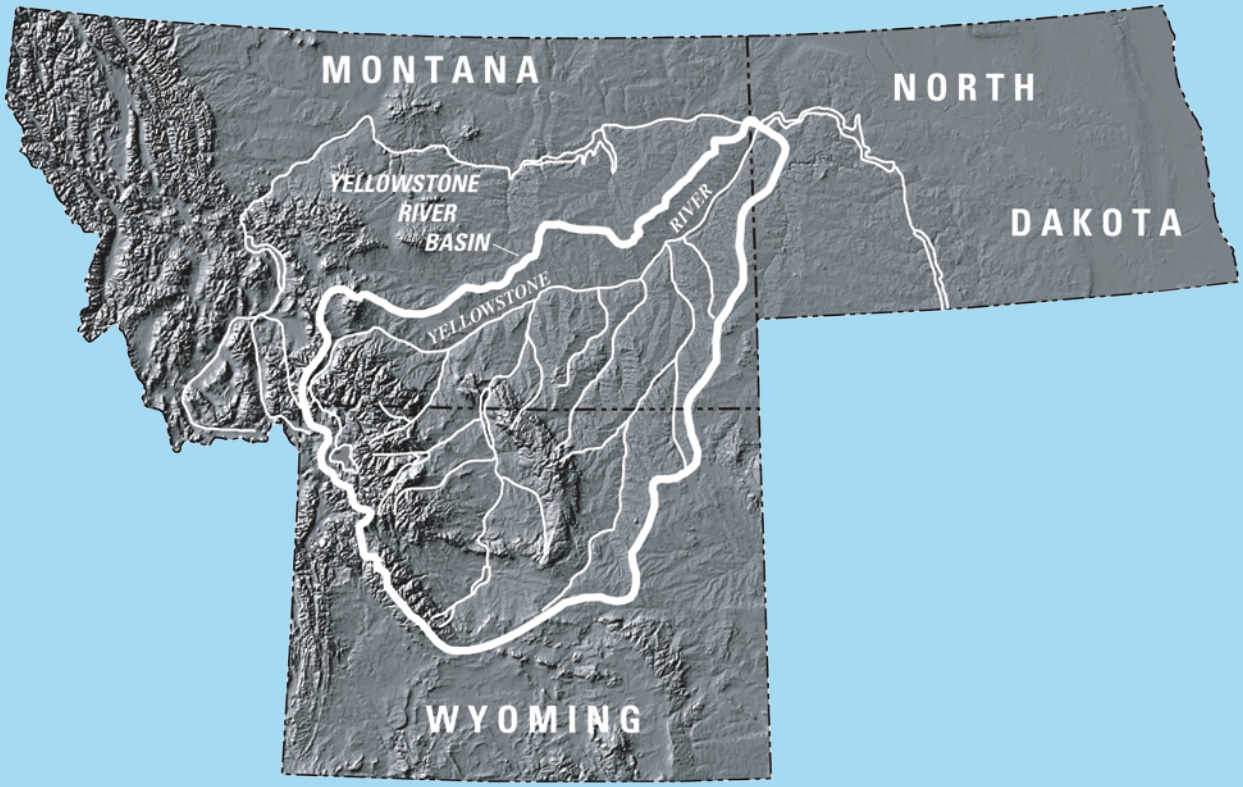
YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING **MONTANA** **NORTH DAKOTA**



FIFTY-SEVENTH ANNUAL REPORT
2008

Yellowstone River

Compact Commission

Fifty-Seventh Annual Report

2008

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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	
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)
barrel (bbl, for water, 50 gallons)	0.1892	cubic meter (m^3)
cubic foot per second per day [(ft^3/s)/d)]	2,447	cubic meter (m^3)
cubic foot per second per day [(ft^3/s)/d)]	0.0002447	cubic hectometer (hm^3)
cubic foot (ft^3)	0.02832	cubic meter (m^3)
million cubic feet (mcf)	0.02832	million cubic meters
	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

[1] The 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://physic.nist.gov/Pubs/SP330.pdf.*

YELLOWSTONE RIVER COMPACT COMMISSION
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Bismarck, North Dakota 58501

Dear Governors:

Pursuant to Article III of the Yellowstone River Compact, the Commission submits the following fifty-seventh annual report of activities for the period ending September 30, 2008.

Minutes of April 17, 2008

Members of the Yellowstone River Compact Commission convened the first of two meetings in 2008 on April 17 at 8:30 a.m. in Cody, Wyoming. In attendance were Mr. William Horak, U.S. Geological Survey (USGS), Chairman and Federal Representative; Ms. Mary Sexton, Director, Montana Department of Natural Resources and Conservation (DNRC) and Commissioner for Montana; and Mr. Patrick Tyrrell, Wyoming State Engineer and Commissioner for Wyoming. Also in attendance were Ms. Candice West, Mr. Chuck Dalby, Mr. Keith Kerbel, Ms. Jen Wilson, and Mr. Rich Moy, DNRC; Ms. Sue Lowry, Mr. Loren Smith, Mr. Mike Whitaker, and Ms. Jodee Pring, Wyoming State Engineer's Office (SEO); Mr. David Willms, Wyoming Attorney General's Office; Mr. Art Compton, Montana Department of Environmental Quality (DEQ); Mr. Patrick Erger and Mr. Lenny Duberstein, Bureau of Reclamation (BOR); Mr. Douglas Davis, Bureau of Indian Affairs (BIA); Mr. Joe Walks Along, Jr., Northern Cheyenne Tribe; Mr. Art Hayes, Jr., Tongue River Water Users Association; and Mr. Kirk Miller, Mr. John Kilpatrick, and Mr. Wayne Berkas, USGS.

Mr. Horak called the meeting to order and presented the agenda. He added that topics not covered in the Yellowstone River Compact Commission Technical Committee meeting yesterday could be covered during today's meeting. He then asked the Commissioners to approve the agenda.

The two Commissioners approved the agenda, but Mr. Tyrrell asked that future agendas note who is responsible for the agenda topic. Ms. Sexton agreed.

Mr. Horak said that beginning with the December 2008 meeting, the agenda topics will note who is responsible for the discussion of the agenda topic.

Mr. Horak asked that the minutes for the December 6, 2007 meeting be accepted and approved. After some discussion and clarification, the Commissioners agreed to approve the revised minutes dated April 8, 2008. Mr. Berkas said that the April 8, 2008 version would be in the 2007 annual report.

Mr. Horak invited discussion for the budget in 2009 and 2010. According to the operating procedures: 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. Thus, we will consider and approve a budget beginning on July 1, 2009, through June 30, 2010.

Mr. Berkas supplied a handout showing the budget for 2009, 2010, and 2011. Mr. Berkas stated that the budget for 2009, 2010, and 2011 will be $89,000, $109,000, and 128,000, respectively. Each State will be responsible for one-fourth of the budget and the USGS is responsible for one-half.

Mr. Tyrrell said that Wyoming has already submitted their budget that ends on June 30, 2010. Wyoming did not request as large an increase between 2009 and 2011 as is currently presented by USGS.

Mr. Horak asked when Wyoming's biennium begins.

Mr. Tyrrell replied that the budget approved in February of 2008 begins on July 1, 2008, and goes through June 30, 2010.

Mr. Horak then asked when Montana's biennium begins.

Ms. Sexton replied that they are preparing their budget for the legislative session for a biennium beginning July 1, 2010, through June 30, 2012.

Ms. Sexton suggested that money could be saved if the Commission only met once a year.

Mr. Berkas replied that she was correct.

Ms. Sexton asked that the difference between one meeting per year versus two meetings per year be presented at the December 2008 meeting.

Mr. Berkas replied that he would provide a cost difference for the December meeting. He continued that the 2009, 2010, and 2011 costs cannot be changed because Montana is using the 2010 and 2011 costs for budgeting their upcoming biennium. In December 2008, Wyoming will need the budget for 2012 to plan for their biennium budget.

Ms. Sexton replied that knowing the 2011 cost at the December 2008 meeting would be sufficient time to incorporate the cost into the biennium budget for 2010–11.

Mr. Tyrrell replied that Wyoming needed the cost of 2012 at the December 2008 meeting.

Ms. Sexton said that she would like to make a motion, for clarification, that the budget for 2010, 2011, and 2012 will be approved during the December 2008 meeting. Mr. Tyrrell seconded the motion.

Mr. Horak asked Ms. Lowry to summarize the discussions during the previous day's Yellowstone River Compact Commission Technical Advisory Committee meeting (the agenda for the Yellowstone River Compact Commission Technical Advisory Committee are appended after these minutes).

Ms. Lowry said the meeting began with a discussion of past streamflow conditions. All of the major tributaries appear to be near normal conditions.

The Committee discussed representative gages in the headwaters of the drainages. Mr. Miller provided some presentations of information at long-term gages. An indexing approach was used that allowed easy comparisons across basins. An item that has not yet been resolved is comparing the volume of water and magnitude of flow.

Mr. Roy Kaiser and Mr. Lee Hackleman, from the National Resources Conservation Service (NRCS) National Water and Climate Center, projected the runoff in the Tongue, Powder, and Bighorn Rivers to be normal for 2008. It was noted that the Bureau of Reclamation forecasts runoff into Boysen and Buffalo Bill Reservoirs, and those forecasts can be different than the NRCS forecasts.

The Shoshone River Basin has good snowpack this year and Buffalo Bill Reservoir is expected to fill and spill this year. The snowpack in the Wind River Basin is not as good and Boysen Reservoir is not expected to fill. The snowpack in the Tongue River Basin is good and the reservoirs in the Tongue River Basin, including Tongue River Reservoir, likely will fill.

Mr. Keith Kerbel provided information about Cooney and Glacier Reservoirs in Montana. For the December meeting, Montana was asked to summarize all State and private reservoirs in the Yellowstone River Basin that are used for irrigation and municipal supply that have a storage capacity greater than 100 acre-ft.

Mr. Art Compton, DEQ, updated the committee on coal-bed methane activities in Montana. Fidelity and Pinnacle are the two main companies operating in Montana. Mr. Compton updated the committee on water-quality litigation. Settlement discussions have ceased and the litigation will proceed to the court.

Mr. John Wheaton, Montana Bureau of Mines and Geology (MBMG), updated the committee on the groundwater network in Montana in the Powder River structural basin. He provided some interesting information regarding specific wells that were influenced by traditional coal development (mining) and by coal-bed methane development. MBMG is looking at how groundwater levels have recovered after coal-bed methane development has ceased.

Mr. Jeff Herbert, Montana Fish, Wildlife and Parks (FWP), provided information regarding listing the sage grouse as an endangered species. He said that in December 2007, a judge ruled that the U.S. Fish and Wildlife Service (USFWS) had not utilized all current and pertinent scientific information. Thus, USFWS were given a year to go back and take a look at whether the sage grouse warranted being listed under the Endangered Species Act.

Mr. Patrick Tyrrell, Wyoming State Engineer, provided a spreadsheet documenting the number and size of coal-bed methane reservoirs and number of coal-bed methane related groundwater applications received by the SEO. In general, the number of reservoirs is increasing in some basins and decreasing in other basins. The number of groundwater applications has decreased.

Mr. Tyrrell described the process that the reservoir inspector goes through when inspecting and approving reservoir permits for the SEO. First, aerial photographs are reviewed to locate possible reservoirs. Then SEO records are reviewed to determine if a permit or an application exists for the reservoir. Lastly, the site is visited to determine if differences exist between what is described in the permit and what is occurring on the ground.

Mr. Tyrrell reported on the Wyoming Coal-Bed Methane Task Force. Three main recommendations came from the task force. The first recommendation dealt with the ability and the authority of the SEO to determine channel capacity in some of the ephemeral streams that are impacted or potentially impacted by discharge from coal-bed methane wells. The second recommendation dealt with regulating wells where there is excess water production and little or no gas. The third recommendation dealt with the authority of the Wyoming Department of Environmental Quality to do watershed-scale permitting.

Mr. Ron Surdam, Wyoming State Geologist, gave a presentation regarding gas production versus water production in coal-bed methane production. The data show that the ratio of gas to water stays constant across the Powder River structural basin, with two exceptions in the Clear Creek and Crazy Woman Creek drainages.

Mr. Chris Tweeten, Montana Attorney General's Office, updated the Committee, over the telephone, about progress on the Crow Compact. Montana representatives and the Crow Tribe are working on finalizing language. The next step is to work with the Federal congressional offices for final language for the congressional ratification.

The final committee discussion involved proposed 2009 funding for a monitoring network on the Tongue and Powder Rivers.

Mr. Dalby asked if the presentations made at the Yellowstone River Compact Commission Technical Committee meeting would be posted on the Yellowstone River Compact Commission Web page.

Mr. Horak replied that the USGS would post the minutes from the last three committee meetings on the Web page. He asked that those responsible for the technical committee minutes place those minutes on a FTP site so he could retrieve them and put them on the Web page, once he has indentified who, at the USGS, will post the information.

Mr. Duberstien presented the current status of Bighorn Lake. Releases from Yellowtail Dam continue to be at 1,900 ft^3/s and has been at that rate since November. Snowpack in the drainage is at about average and the BOR estimates inflows into the lake to be 10 to 15 percent more than last year. Presently, inflows are less than normal, and releases from the dam will remain at 1,900 ft^3/s until more runoff comes into the lake and they get a better feel on lake filling.

Ms. Sexton asked if the current release (1,900 ft^3/s) is less than past releases at this date.

Mr. Duberstien replied that the current release is not less than recent past releases, but it is less than the average flow over the period of dam operation. The BOR intends to increase releases by the end of April but may hold off until inflow into the lake increases.

Ms. Sexton replied that the BOR is anticipating near-normal inflows into the lake this year. Last year, with below-normal releases during the spring spawn, the rainbow trout took a hit. Montana is hoping, with near-normal inflows, the spring releases would be near normal.

Mr. Duberstien replied that the BOR understands the ramifications of flow on spawning, and they are in constant discussion with all involved.

Mr. Dalby asked if all the facilities (boat landings) were accessible last year.

Mr. Duberstien replied that all the facilities were accessible.

Mr. Dalby asked if the runoff last year was below normal.

Mr. Duberstien replied that the runoff from the snowpack was below normal and there was a wet spring. Still, the total runoff was less than normal, the sixth lowest on record.

Mr. Horak asked Ms. Sexton if she would continue the discussion from yesterday about a Yellowstone River Compact Commission letter requesting Federal support for a data-collection network on the Tongue and Powder Rivers.

Ms. Sexton replied that Montana has drafted a letter requesting Federal support for a data-collection network on the Tongue and Powder River similar to the network previously funded by an earmark from Senator Burns. They would like the letter to be sent as a letter supported by the Yellowstone River Compact Commission.

Montana feels there is an ongoing need to continue the network and would welcome support and advice from both the SEO and the Wyoming Department of Environmental Quality. Hopefully, both States could work with their Federal delegation to support future funding or earmarks to support a network beneficial to both States.

Montana would gladly rephrase or finesse the language in the letter in order to get Wyoming's support.

Mr. Tyrrell replied that he would not support the Commission letter today. He felt that the States should pursue Federal support, but not necessarily the Commission. Mr. Tyrrell indicated that he and Mr. John Wagner (Wyoming Department of Environmental Quality) would confer to see if they could develop a letter of support for portions of the funding request germane to their mission.

Ms. Sexton thanked Mr. Tyrrell and added that monitoring involves water quantity and water quality, and involves the water quantity and water quality departments in both States (Montana Department of Natural Resources and Conservation, Montana Department of Environmental Quality, Wyoming State Engineer's Office, and Wyoming Department of Environmental Quality). In the coal-bed methane issue, both areas are intertwined. In Montana, in permitting for beneficial use, water quality is a part of the issue and responsibility. Ms. Sexton indicated that the USGS monitoring on the Tongue and Powder Rivers has evolved in a piecemeal fashion over the years, with each State focusing largely on its own area. She suggested that future funding requests would benefit from basin-wide coordination and participation by both States.

Mr. Horak asked if there were additional questions or needed clarifications regarding 2008 streamflow conditions and reservoir contents.

Mr. Tyrrell responded that the Yellowstone River Technical Committee suggested that information about all reservoirs with a capacity of more than 100 acre-ft be included in the annual report. Currently, Wyoming has two reservoirs with less than 100 acre-ft in the Yellowstone River Compact Commission annual report. Should these reservoirs continue to be in the annual report?

Mr. Whitaker replied that the two reservoirs in question are included because they are used by NRCS in predicting streamflows from snowmelt runoff each year. Wyoming would have to include additional reservoirs if all reservoirs with a capacity greater than 100 acre-ft were included in the report.

A prior issue, raised by Mr. Tyrrell at the December 2007 Yellowstone River Compact Technical Committee meeting regarding reporting of reservoirs in the Compact report, was discussed and it was agreed that Montana would develop a list of ponds and reservoirs with storage capacity greater than 100 acre-ft. Mr. Horak suggested that this list be developed for consideration by the Technical Committee and presented at the next Commission meeting. Mr. Dalby suggested that the Technical Committee develop reporting criteria for both Montana and Wyoming (such as location, size, use, and water rights) prior to compilation of the list. Mr. Kerbel stated that he would take the lead to develop the list for Montana and coordinate with Ms. Wilson, Ms. Lowry, and Mr. Whitaker. A tentative list will be presented to the Commission during the December 2008 meeting.

Mr. Horak asked Mr. Tyrrell to discuss water administration in Wyoming.

Mr. Tyrrell said that at this time little administration was occurring.

Mr. Smith said that two calls for water on Owl Creek occurred in the last week.

Mr. Whitaker replied that typically, ditches in the Sheridan area turn on between the 5th and 10th of May. Measuring devices have been ordered for the Tongue River drainage, and they received good compliance on getting the equipment installed.

Mr. Tyrrell added that Wyoming was able to obtain about $1.6 million for automating (transmitting real-time data) about 250 gages on streams and ditches. The data will be available to the public on a Wyoming Web page.

Mr. Moy asked if the intent of automating gages was to improve administration.

Mr. Tyrell replied that administration was one reason. Another reason is that now the field people can see if a gage is working instead of traveling 3 hours to a location and discovering the gage was not working. With real-time information, they can be more efficient.

Mr. Smith commented that with real-time information, daily administration can be performed, rather than administration based on when someone visited the gage.

Mr. Moy commented that he felt the way Wyoming administers water is very good. He wished he could convince Montana's legislature that automation is the way to go.

Mr. Whitaker said that Wyoming envisions that as more gages become automated and the data become available, more users will want this type of installation. Currently, the user purchases the recorder and Wyoming operates the recorder. With automated gages, the user will know when the water goes into their head gate, and saves them from going up the ditch in the middle of the night to make sure the water is there.

Mr. Smith added that they also can see when someone is taking water they are not entitled to take. The user can better account for their storage. By knowing what is in the canal, they can take the natural flow amount and save the stored amount for a later date.

Mr. Smith commented that the bulk of the gages on the Shoshone River canals will be automated and many in the upper Wind River Basin will also be automated.

Mr. Whitaker said that the gages that are operated for administration will be automated first. After that is completed, an assessment will be made to determine where additional gages are needed.

Mr. Tyrrell added that the original appropriation request to the Governor was about twice as large as the final amount received from the legislature. The SEO received money in this first phase to automate the existing gages, and additional funding will be requested in future bienniums for equipping new sites, depending on the results of the first phase of automation.

Mr. Horak asked what period of time will be served and after that time will the data be archived?

Mr. Smith said that all the data will be archived in the SEO annual hydrographer report. They are not yet sure how much real-time data will be archived on the Web page.

Mr. Moy asked what was the projected cost to automate the gages.

Mr. Smith replied that the cost depended upon what currently was at the gage. The cost of the equipment has been between $3,500 and $7,000. Operational cost has not changed because the gages existed before the automation. Typically, it takes between 24 to 40 hours per gage to finalize a record at the end of the year.

Mr. Tyrrell replied that most of the equipment that is being replaced is analog strip-chart recorders that required a fair amount of time to process. The money they received will be used to purchase electronic data loggers and transmitters, a downlink, and a software package that helps compute the record.

Colorado has invested many dollars in the Colorado River Decision Support System that helps them determine where administration should occur should there ever be a consumptive use curtailment under the Colorado River Compacts. They can calculate down to the ditch how much water is being consumed. New Mexico is doing similar things. Idaho is utilizing Landsat-based data for calculating consumptive use. Wyoming looked at what its neighbors were doing and went to its legislature and said that Wyoming needed to keep up with downstream States. The electronic mode of collecting and transmitting flow data is becoming the standard. This helps agency field people be more productive and to keep up with the needs of the public. The more real-time data you make available, the more is wanted by the public.

Mr. Dalby asked if the automated gages provided any savings of fuel and time.

Mr. Smith replied that they discovered the field people are now spending their time servicing the constituents rather than running out to service a gage. Also, the automated gages improve water efficiency and conservation. Now, releases can be timed out of Boysen Reservoir to coincide with need. They can see the bump at the head gate of a canal 20 miles upstream from where that water was to be delivered. Now they can tell the user to expect the water at 9:00 tomorrow morning. Users are not picking water up too early and shorting a down-canal user.

Mr. Tyrrell pointed out that users provide good testimony and call their legislators about doing more of a good thing.

Mr. Horak asked Ms. Sexton to discuss water administration in Montana.

Ms. Sexton replied that Montana's Legislature has a water policy committee that is looking at enforcing administrative issues. The water policy committee also has been helpful in educating legislators on water administration and water enforcement. As more temporary and preliminary decrees occur, DNRC works with the Water Court to provide information so that objections can be settled and enforcement can occur. Then the Court can put Commissioners on the stream and administration can begin. DNRC is working to get enforceable decrees to the Water Court and District Courts. Montana is working on their data base to make the electronic transfer of information more seamless to the Water Courts. When Montana begins to have enforceable decrees, they will look into automating their many gages on streams and ditches.

Montana has been working with the U.S. Army Corps of Engineers and the BOR on a diversion structure on the Yellowstone River at Intake. The three agencies are working to modify the structure for fish passage, primarily pallid sturgeon.

Mr. Kerbel reported that at this time there was no administration on the Powder and Tongue Rivers. Based on the snowmelt forecast, there may not be any administration on either river this year.

Mr. Horak asked Wyoming to update the Commission on the Weather Modification Project in Wyoming.

Ms. Pring reported that another data-collection site has been added to the Weather Modification Project. She had the detailed information of the past aerial runs and those interested should contact her.

Mr. Erger asked if there were any interim reports.

Mr. Tyrrell replied that the Wyoming Water Development Commission (WWDC) is being cautious. They do not want to make a definitive statement until it is backed by good science. Many are interested in the results, but it may be 3 or 4 years before results will be published.

Mr. Moy asked if Wyoming also is looking at summer-time seeding.

Mr. Tyrrell replied that the WWDC only was looking at winter-time seeding.

Mr. Horak asked if there were additional questions or comments regarding coal-bed methane development.

Ms. Sexton replied that yesterday, Mr. Tyrrell talked about reclaiming ponds. She wondered if Wyoming has established any criteria to determine if reclamation is complete.

Mr. Tyrrell replied that the primary criterion is that the pond or reservoir can no longer store water. There is language in the permit that states the site must be reclaimed, but there is no booklet of acceptable reclamation practices. The reclamation requirements are left to the landowner, such as reseeding and spreading topsoil. After the reclamation is complete, the inspector will visit the site, take a picture, and report back to the SEO Office that the pond was reclaimed, and then the permit is cancelled.

Mr. Whitaker added that for larger reservoirs, the developer is required to submit a reclamation plan and the plan details the reclaimed slopes and the material planted on the reclaimed area.

Mr. Compton asked if there have been problems with revegetating the reclaimed ponds or reservoirs.

Mr. Whitaker replied that it has been too early to tell. There was an instance of a lined pond, where the operator put 6 ft of dirt over the liner rather than removing the liner. It is too early to tell if this worked.

Ms. Sexton asked how many ponds or reservoirs have been reclaimed and how many eventually will be reclaimed.

Mr. Whitaker replied that he has been involved with about six reclamation efforts. When coal-bed methane development ceases, the SEO will need to make a determination as to what ponds and reservoirs are necessary

and which are a liability. Those that are a liability will have their permits canceled and the pond or reservoir will be reclaimed. The Wyoming Oil and Gas Conservation Commission requires bonding, so money is available to reclaim most of the ponds. Clearly, some of the ponds will have to be removed after coal-bed methane development is over.

Mr. Tyrrell added the SEO was concerned about what will happen when coal-bed methane production goes away. In some basins, little water pumping is occurring. They are concerned with the reservoirs after coal-bed methane development is finished because the reservoirs can reduce runoff and affect water administration. Beginning in 2004, the SEO began adding reclamation as a condition in the reservoir permits. The landowner can keep the reservoir after coal-bed methane development ends, providing the reservoir is less than 20 acre-ft. If the size is greater than 20 acre-ft, the reservoir has to be reduced to less than 20 acre-ft. There may be exceptions depending on current storage in the basin. The permits are time limited; for example, the permit may say that the permit will be canceled after 15 years or at the end of coal-bed methane production.

Mr. Tyrrell commented that there are pits on the landscape that are permitted by the Wyoming Oil and Gas Conservation Commission, not the SEO. These pits are not blocking natural runoff. They essentially are an excavation pit in a hillside or a flat area, and there is no additional beneficial use applied to the stored water. The reclamation for these pits is covered under the Wyoming's Oil and Gas Conservation Commission as part of the facility's reclamation.

Mr. Horak asked Montana to comment on Montana's statewide adjudication efforts.

Ms. Sexton replied that Montana is continuing its adjudication efforts. Montana has over $25 million set aside in a trust fund for adjudication. They have examined about 25,000 water rights, way ahead of their bench mark of 19,000. Their biggest endeavor is working with the Water Court on enforcement actions so that the decrees are at a point where they can be enforced. More and more basins are in a temporary or preliminary decree status.

As DNRC examines the water right claim, they note if they see issues with flow, flow rate, or acres irrigated. Even when nobody objects to these issues, the Water Court has to address these issues. DNRC, the Water Court, and the legislature are working through how these issue remarks are going to be addressed when there is no official objection relevant to the issue remark.

Also, the State is working to see if the water-right claim holder needs an attorney. The Montana Supreme Court ruled that up to when a case number is assigned, the claimant can represent themselves or use a consultant. Currently, there are many consultants helping claimants with the adjudication process that are not attorneys.

Ms. West added that not requiring an attorney has been a unique sort of controversy within the State. The majority of the water bar (State Bar of Montana) attorneys have great respect for the Water Court's undertaking and felt that, along with the Montana Supreme Court, it was critical to come into absolute compliance with the requirements that prohibit the unauthorized practice of law before the courts in Montana.

In the case of the Water Court, there is a very distinct and unique administrative process. The DNRC serves as the claims examination arm of the Water Court under the direction of the Montana Supreme Court, and also serves to work informally with claimants to review factual information and data and to try to identify, for claimants and the Water Court, what some of the factual issues might be in any particular water-right claim. Currently, claimants can proceed either pro se or with representation of family farms, and even partnerships, without attorneys. There is a distinction, however, that once there is controversy and a case is actually assigned by the Water Court, before any hearings or any other pleadings before the court are done, claimants will require standard representation by a lawyer for entities other than individuals pro se. Pro se claimants can still go forward with their claim. But it is just another issue that I think is finally clarified by our supreme court and it will now allow us to go through without any further controversy.

Ms. Sexton handed out a map that showed the adjudication status in the State. The various statuses are: not yet examined, currently examining, summary report issued, temporary decree, preliminary decree, and final decree. Preliminary decrees and final decrees are enforceable. Some temporary decrees are enforceable. DNRC is working with the Water Court to get enforceable temporary decrees.

The Powder River Basin has a final decree, and the Tongue River has a preliminary decree. DNRC has another 8 years to complete their examination. The Water Court has about 15 years to come up with a preliminary decree. Obtaining final decrees may take longer as the objections are resolved through the courts.

Ms. West added that Montana's adjudication was undertaken to meet the requirements of the McCarran Amendment adjudication. Because of the significant and expansive geography and extensive quantity of Tribal and Federal claims in the State, it was critical for Montana to do a statewide adjudication in order to incorporate those federal rights into earlier State decreed water rights.

On the Tongue River, there is a 1914 water right decree (often referred to as the Miles City Decree) that is currently enforceable and administered.

Mr. Kerbel added that the preliminary decree on the Tongue was issued in February 2008, and the objection period will end in August. The examination for Prior Creek (43E), Bighorn River (43P), and Little Bighorn River (43O) has been completed, and they are preparing the summary report. They still have about 250 claims to examine on Rosebud Creek (42A) on the Northern Cheyenne Reservation.

Ms. Lowry asked how many Water Courts are in Montana.

Ms. Sexton replied that there is one Water Court that deals with adjudication. There are two District Courts that deal with enforcement in the Tongue and Powder Rivers.

Ms. West added that the Water Court has four different districts within Montana, but it is one court. It is a unique court. The Chief Water Judge assigns numbers to the cases and the cases go to any one of the four judges. He bases his decisions on recommendations from either the Water Masters, who review factual matters, or on legal issues that need to be directed to the Water Court.

Mr. Horak asked Wyoming to discuss adjudication in Wyoming.

Mr. Tyrrell replied that the Wyoming adjudication process is different from the Montana adjudication. Wyoming has a Board of Control that does adjudication. Typically, water rights are done on an individual basis. However, Wyoming is doing a general adjudication in the Big Horn area (Division 3). They are down to a few remaining objections and hope to complete the process this year.

Ms. Sexton asked if Wyoming has dealt with Tribal rights.

Mr. Tyrrell replied that general adjudication has three phases: Tribal rights, State rights, and Federal rights. Tribal and Federal rights are completed, and they are finishing up State rights.

Mr. Moy asked if the U.S. Forest Service had any water rights.

Mr. Tyrrell replied that the U.S. Forest Service have a few reserved instream-flow rights that are point rights. They do not have any reach rights. In many cases, they are treated as a State water-right holder for things like campgrounds and stock reservoirs.

Mr. Smith added that the U.S. Forest Service water rights do not have an early priority date. Most of their reserved rights have a 1983 date, the date when the right was filed.

Ms. Sexton inquired if the U.S. Forest Service had to go through a negotiation or court settlement.

Mr. Smith replied that the U.S. Forest Service made numerous filings and each was examined.

Mr. Dalby asked if the U.S. Forest Service applied for channel-maintenance flows or for fire-water supply.

Mr. Tyrrell replied that the U.S. Forest Service did not apply for channel-maintenance flows or for fire-water supply.

Mr. Horak asked Montana to update the Commission on progress toward a Montana–Crow Compact.

Ms. West said that Montana has negotiated the Compact that was completed in 1999. The Montana Legislature has ratified the Compact. The Crow Tribe and Congress have not ratified the Compact, but Montana currently is in the process of finalizing Federal legislation in order to settle the final issues in the compact negotiation. As between the State and the Tribe, Montana did reach an agreement that is already codified and in Montana statute. The negotiated settlement with the Crow Tribe did not attempt to alter or amend any provision in the Yellowstone River Compact, and it did not adopt or preclude any interpretation of that compact.

Mr. Horak noted that Ms. Sexton requested a discussion on the frequency of Commission meetings. In the past few years, the Commission has met in the spring and the fall, and those meetings were preceded by a technical committee meeting. The rules and regulations for the administration of the Compact state that there will be an annual meeting in the fall (Article V). Other meetings can be held when necessary.

After considerable discussion, Mr. Tyrrell made a motion that the Yellowstone River Compact Commission Technical Committee not meet the day before the Yellowstone River Compact Commission meeting in the fall. Ms. Sexton seconded the motion.

The Commissioners then discussed if the Commission needed to meet in the spring. Mr. Horak asked the Commissioners to consider revising the meeting section (Article V) of the "Rules and Regulations for Administration of the Yellowstone River Compact." Mr. Tyrrell said he would have his staff look into providing an amendment stating that the technical meeting would be held in the spring and the Commission meeting would be held in the fall. This topic would be discussed during the fall 2008 Commission meeting.

The Commission agreed to hold the next Yellowstone River Compact Commission meeting at Chico Hot Springs Resort, Montana on Thursday, December 4, 2008.

Mr. Horak adjourned the meeting.

Minutes of December 4, 2008

Members of the Yellowstone River Compact Commission convened the second of two meetings in 2008 on December 4 at 8:30 a.m. at Chico Hot Springs Resort, Montana. In attendance were Mr. William Horak, U.S. Geological Survey (USGS), Chairman and Federal Representative; Ms. Mary Sexton, Director, Montana Department of Natural Resources and Conservation (DNRC) and Commissioner for Montana; and Mr. Patrick Tyrrell, Wyoming State Engineer and Commissioner for Wyoming. Also in attendance were Ms. Sue Lowry, Mr. Loren Smith, Mr. Mike Whitaker, and Ms. Jodee Pring, Wyoming State Engineer's Office (SEO); Mr. Peter Michael, Wyoming Attorney General's Office; Mr. Chuck Dalby, Mr. Keith Kerbel, and Ms. Jennifer Wilson, DNRC; Ms. Sarah Bond, Montana Attorney General's Office; Mr. Art Compton, Montana Department of Environmental Quality (DEQ); Mr. Patrick Erger, Bureau of Reclamation (BOR); Mr. Art Hayes, Jr., Tongue River Water Users Association; Mr. John Kilpatrick and Mr. Wayne Berkas, USGS.

Mr. Horak called the meeting to order and presented the agenda. He asked if anyone had any additions to the agenda. There were no additions so Mr. Horak asked the Commissioners to approve the agenda.

The two Commissioners approved the agenda.

Mr. Horak asked that the minutes for the April 17, 2008 meeting be accepted and approved. After some discussion and clarification, the Commissioners agreed to approve minutes.

Mr. Horak reminded the Commissioners that during the April 17 meeting, the USGS agreed to provide budgets for the next three years (2010, 2011, and 2012).

Mr. Berkas supplied a handout showing the budget for 2009, 2010, 2011, and 2012. Mr. Berkas stated that the budget for 2009, 2010, 2011, and 2012 will be $89,000, $109,000, $128,000, and $134,000 respectively. Each State will be responsible for one-fourth of the budget and the USGS is responsible for one-half.

Ms. Sexton asked if the budget costs reflect changing from two meetings to one meeting per year?

Mr. Berkas replied that the proposed budget does not reflect a cost savings because the USGS projected cost for 3 years prior to switching to two meetings per year; thus, did not start recovering the cost increase until 3 years after the switch. The budget will continue to reflect two meetings per year until 2013, 3 years after the switch back to one meeting per year.

Both Ms. Sexton and Mr. Tyrrell asked Mr. Berkas to clarify what the money is funding.

Mr. Berkas replied that the annual cost pays for the operation of the five streamflow gages, attending and preparing the minutes on the Commission meetings, and preparing the annual report.

Ms. Sexton asked Mr. Berkas how much cost savings will occur by changing from two meetings to one meeting per year.

Mr. Berkas replied that the cost savings is $8,400. The 2013 budget will decrease by $8,400 to reflect the change to one meeting per year.

Ms. Sexton asked for the percentage of increase for the gages.

Mr. Berkas replied that the gage cost increased from $14,600 to $15,000 per gage, approximately a 3-percent increase.

Ms. Sexton asked what percentage increase was used to project future costs.

Mr. Berkas replied that he used a 5-percent annual increase.

Ms. Bond asked where the money went if it was not spent.

A discussion ensued regarding the USGS policy of having a standard cost for all stream gages in the State. Mr. Berkas replied that all the money collected for streamgaging goes into a general fund for streamgaging, and that money pays for salary, travel, equipment, and other expenses. If there is a shortfall in the fund, less equipment is purchased. When there is a surplus, equipment is purchased.

Mr. Horak pointed out that in the past, the USGS Center Director was responsible for the minutes and the Center Director's salary was covered by the USGS, but the production of the annual report was covered by the two States and the USGS. Now, because the production of the minutes is more detailed, the responsibility of the minutes has been delegated to the Montana Data Section Chief (Mr. Berkas). In 2009, the budgeted cost for Mr. Berkas to process the minutes, with help from Ms. Patterson (Soteria Scoping), and produce the annual report is $14,000. The report cost in 2009 still reflects the less detailed minutes and one meeting per year.

Ms. Sexton asked when the cost reflects more detailed minutes and two meetings per year.

Mr. Berkas replied that the 2010 cost reflect the change. The cost increase from 2009 to 2010 is $20,000.

Ms. Sexton asked if the funding agreement between DNRC and USGS identifies the gaging stations and the report.

Mr. Berkas replied that the agreement with Montana identifies the stations and report separately. Currently, the agreement between the Wyoming State Engineer does not separate out streamgaging and report preparation, but future agreements will.

Mr. Horak asked Mr. Kilpatrick to update the Commissioners on the status of the proposed and current data-collection effort on the Tongue and Powder Rivers.

Mr. Kilpatrick said that most of the effort this year (water year 2008) was on the Tongue River in Montana. He was not aware of any USGS work in the basin in Wyoming. Compared to last year (water year 2007), there was less money available, although the DEQ and DNRC each provided $25,000. As a result, much of the real-time SAR estimations were discontinued.

Mr. Kilpatrick said that he was aware that the DNRC went through a grant process with the intention of funding data collection in the Powder and Tongue Rivers. They were hoping to add sites on the Powder River and bring the data-collection effort on the Tongue River back to the level when the USGS received a Congressional earmark for monitoring on the Tongue River.

Ms. Lowry asked if Montana was seeking State or Federal money.

Ms. Sexton replied that Montana is hopeful to receive both types of money. In August, they asked their Federal congressional delegation for support, but it is doubtful that support will occur with the current Continuing Resolution. They also went through a grant request with the State for $300,000 (reduced to $200,000). The funds would be separate from the general fund. The outlook for these funds is promising.

Mr. Kilpatrick said that it is important to note that some of the items identified in the grant were to be matched with USGS funds. Because the Department of Interior budget is under a Continuing Resolution, the USGS is unsure how much money will be available to match with the grant money. Also, the grant money probably will not be available until late 2009 or in 2010, meaning much of the coming year will have reduced funding.

Mr. Tyrrell stated that during the April 2008 meeting, he had said that he would ask Wyoming DEQ to consider funding some data collection on the Wyoming side of the Powder and Tongue Rivers. He made that contact but is unsure of Wyoming DEQ's intentions. Mr. Tyrrell said that the Wyoming Governor has informed all agencies that the national economic slowdown may eventually get to Wyoming. Typically, Wyoming experiences most national trends a year or two later than the rest of the country. Thus, the Governor asked all State agencies to plan for a future potential 5-percent reduction in funds. As gas and oil prices decrease, revenues to the State will decrease.

Mr. Horak asked should the 5-percent reduction occur, when will the reduction occur?

Mr. Tyrrell replied that Wyoming is operating under a biennium budget that started July 1, 2008, and will run for 2 years. Agencies may be asked to give 5 percent of that budget back for the 2nd year of the biennium. If an agency receives a supplemental budget (additional money in off years) that money will be scrutinized. The Wyoming DEQ is focused on air-quality concerns and needs to increase staff. As a result, they will have a supplemental budget in 2009. If revenues are less than anticipated, State agencies' funding may be reduced.

Ms. Sexton added that the Montana Legislature will meet this winter. The October revenue forecast was for a surplus of a billion dollars. The current revised forecast is a surplus of nearly $300 million, a substantial reduction. Given both States' situations, there is a need for both States to work closely for Federal funding, such as an earmark.

Mr. Horak asked the USGS to address streamflow conditions during the 2008 water year.

Mr. Berkas reported that streamflows during the 2008 water year were above normal at three sites and near normal (within 80 and 120 percent of average) at one site monitored for the Commission. Annual streamflow at Clarks Fork Yellowstone River at Edgar was 123 percent of average and ranked 59th lowest of 70 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 109 percent of average and ranked 17th lowest of 42 years. The annual streamflow at Tongue River at Miles City was 124 percent of average and ranked 46th lowest of 65 years. The annual streamflow at Powder River near Locate was 134 percent of average and ranked 54th lowest of 70 years. Total-adjusted streamflow of the four rivers in water year 2008 was 4,445,400 acre-ft, compared to 2,723,000 acre-ft in water year 2007 and 2,237,000 acre-ft in water year 2006.

Reservoir storage increased in all of the reservoirs historically monitored and reported for the Commission (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 annual report. The total usable contents of these reservoirs at the end of water year 2008 was 2,265,000 acre-ft, compared to 1,808,000 acre-ft in water year 2007 and 1,689,100 acre-ft in water year 2006. Additional reservoir storage at the end of water year 2008 was 314,800 acre-ft, an increase of 85,200 acre-ft from the end of water year 2007. The total usable contents of these other reservoirs are listed in the annual report.

Ms. Sexton asked when Boysen Reservoir was created and when did it fill?

Mr. Smith replied that the dam was completed in 1951 and filled shortly after completion.

Mr. Berkas presented graphs of 2008 annual discharges at selected gaging stations within the Yellowstone River Basin and summarized the information as follows:

The annual discharge at Yellowstone River at Corwin Springs, Montana, was above average and ranked 81st lowest of 102 years. The annual discharge at Clarks Fork of the Yellowstone River below Belfry, Montana, was above average and ranked 73rd lowest of 87 years. The annual discharge at Clarks Fork of the Yellowstone River near Edgar, Montana, was above average and ranked 59th lowest of 70 years. The annual discharge at Bull Creek above Bull Lake, Wyoming, was below average and ranked 18th lowest of 54 years. The annual discharge at Shell Creek above Shell Creek Reservoir, Wyoming, was above average and ranked 39th lowest of 52 years. The annual discharge at South Fork Shoshone River near Valley, Wyoming, was above average and ranked 42nd lowest of 51 years. The annual discharge at Bighorn River above Tullock Creek, near Bighorn, Montana (minus Little Bighorn River near Hardin, Montana, and adjusted for change in contents in Bighorn Lake), was above average and ranked 17th lowest of 42 years. The annual discharge at Tongue River near Dayton, Wyoming, was above average and ranked 65th lowest of 77 years. The annual discharge at the Tongue River at State line, near Decker, Montana, was above average and ranked 42nd lowest of 48 years. The annual discharge at Tongue River at Miles City, Montana, was above average and ranked 46th lowest of 65 years. The annual discharge at the Powder River near Barnum, Wyoming, was above average and ranked 36th lowest of 47 years. The annual discharge at Little Powder River near Dry Creek, near Weston, Wyoming, was above average and ranked 31st lowest of 36 years. The annual discharge at Powder River at Moorhead, Montana, was above average and ranked 71st lowest of 77 years. The annual discharge at Powder River near Locate, Montana, was above average and ranked 54th lowest of 70 years.

Mr. Tyrrell asked if he could address issues with the small reservoirs listed in table 10 of the draft 2008 Yellowstone River Compact Commission annual report. He noted that most of the reservoirs listed there fill during the year and the contents are used by the end of the year. If this is the intent of the table, fine, but it does not indicate how much water was used during the year. Also, there is a footnote (2) that identifies reservoirs as being managed by the State of Wyoming. All of these reservoirs are private reservoirs and are not managed by the State of Wyoming. The footnote should be changed to identify these reservoirs as private reservoirs.

Ms. Sexton asked if Wyoming permitted those reservoirs.

Mr. Tyrrell replied that Wyoming permitted the reservoirs but Wyoming does not tell the owners how to use their water. The only time the State would be involved is when there would be a call, and the State would not allow the user to fill the reservoir because a senior user had a right to the water.

Mr. Berkas stated that he would change the footnote in future reports to "Private reservoirs permitted and accounted by the State of Wyoming."

Mr. Tyrell agreed with that change. Again, Mr. Tyrrell brought up that table 10 shows change of usable contents. This actually is the change of the reservoir contents from September 30 of the previous year (water year 2007) to the reservoir contents of the current year (water year 2008). He suggested that the columns be numbered and then show the math as to how the change in usable contents was determined (4–5). This way, the reader would not be confused regarding what is being displayed. Another option would be to assume that the reservoir filled, and the total amount of water used from the reservoir would be the usable capacity of the reservoir minus the change of reservoir contents on September 30 from the previous year to the current year.

There was considerable discussion among participants at the meeting as to how to determine the amount of water used from the reservoir because not all reservoirs fill; and as the reservoir fills, water could be released from the reservoir. In the end, all agreed that the columns should be numbered and the column entitled "Change in usable contents" should show how it was determined.

Mr. Horak asked Wyoming to address 2008 water administration.

Mr. Tyrrell replied that 2008 was an above-average streamflow year. Also, the streams that rely on mountain snowpack had peaks that lasted into July. These conditions were much different then the last few years during the drought when peaks only lasted into early June.

Mr. Whitaker replied that, in 2008, administration in the Tongue River Basin was more normal with restrictions back to 1883 and tapering back to 1881 near the end of the season. Most people had plenty of water.

Mr. Smith said that administration in the Bighorn River Basin also was near normal. High flows in the rivers were prolonged, so users were satisfied well into July. Usually in the Owl Creek drainage, users only get one turn. This year users were able to get three turns.

In 2008, there was enough water in Boysen Reservoir to satisfy the accounts between Wyoming and the BOR such that they were able to make releases to satisfy downstream users and not have to charge back to storage. Also, BOR was able to generate power with both generators.

Boysen Reservoir is expected to release 800 ft^3/s, and Buffalo Bill Reservoir is expected to release 350 ft^3/s through the winter.

Mr. Tyrrell added that regarding administration, Wyoming has been having problems with the funding of critical gages on the Wind River Indian Reservation for about the last 3 years. The Bureau of Indian Affairs (BIA) pulled funding for streamgages that are critical for assuring proper delivery of the Tribal awards (an annual volume they are entitled to divert).

The Wyoming State Engineer wrote letters to BIA and the Department of the Interior requesting that BIA again fund the USGS to operate those gages. Wyoming feels that there is a Trust responsibility on the part of BIA to keep those gages operating. The gages are needed in order to determine when the awards have been met so that Wyoming can properly administer the water. Without the gages, the system is essentially unregulated. For the past couple of years, the State of Wyoming has backfilled the funding for the gages, but they will not fund the gages anymore. Wyoming is hoping to get BIA's attention and hopes BIA will restore funding so that the Tribal obligations are met.

Mr. Tyrrell described a bit of a disagreement in the Bighorn River Basin between the Midvale, Riverton Valley, and LeClair Irrigation Districts, the BOR and the Wyoming State Engineer. An agreement between the parties, called the Tripartite Agreement, directs the flow and storage of Permit 7300. Riverton Valley and LeClair Irrigation Districts opted to not become part of the Federal storage project. The Tripartite Agreement in essence says, because they are all operating under the same agreement, the two irrigation districts who do not get storage

will get a preference to the natural flow. For example, when Midvale Irrigation District is taking storage water, the other two can get more out of what is left of the natural flow. The Tripartite Agreement has operated from 1917 until 2004 when it was challenged. After the challenge, the parties have operated under an order from the Wyoming State Engineer. A new Tripartite Agreement was executed in May 2008.

Ms. Sexton asked if the streamgages previously funded by BIA are currently operating.

Mr. Tyrrell replied that the gages only operate during the irrigation season. For the past 3 years (after BIA pulled funding) the State of Wyoming funded the gages. Wyoming told BIA they will no longer fund those gages. For about 20 years previous to that, BIA funded the gages. Wyoming feels BIA should again fund those gages.

Mr. Horak asked Montana to address 2008 water administration.

Ms. Sexton replied that Montana also was fortunate to have above-average streamflow with a few pockets of drought. On the mainstem Yellowstone River, the Intake Project is moving forward with design of a structure that will pass pallid sturgeon and a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) is in progress. Regarding legislation in 2007, House Bill 831 was passed that dealt with groundwater/surface-water interactions in administratively closed basins. DNRC is working through the banking rule. There are several bills that will further clarify the water-banking rule in closed basins. They are looking to streamline the permitting process so that the DNRC decisions will come earlier in the process and proponents and objectors will have more time to post their objections.

Mr. Tyrrell asked if this new statute allows Montana to administer groundwater as connected to surface water as the language states in some of Montana's Compacts.

Ms. Sexton replied that the Montana Supreme Court directed the DNRC to acknowledge and permit the connection of the stream to groundwater and surface water.

Mr. Tyrrell replied that Wyoming has a statute that allows the Wyoming State Engineer to regulate groundwater in conjunction with surface-water priorities where there is a known connection. The statute was used in 2007 and in 2008 to regulate some wells in the Bates Creek drainage (Platte River Basin). Wyoming law provides that water users may appeal a Water Commissioner's action to the Division Superintendent and then to the State Engineer. After these appeals are exhausted, appeal of the State Engineer's decision can be made to the District Court. This appeal is currently awaiting a decision by the District Court.

Mr. Kerbel went on to describe Montana's water administration. He stated that above-average snowpack and cool temperatures into May delayed runoff and prolonged high flows into July. For example, early spring releases from Yellowtail Dam (Bighorn Lake) into the Bighorn River were 1,500 ft^3/s. Those low flows negatively affected rainbow trout spawning. Then at the end of May, releases increased to over 9,600 ft^3/s as the lake filled. On the Tongue and Powder Rivers, flows in early spring were low and then rain in late May created above-average flows into the summer. As a result of the good flows in the rivers and streams, there was no call for water.

Ms. Lowry asked that considering the good flow conditions in the Tongue and Powder Rivers, were the appointed Commissioners in place to check for stored water?

Mr. Kerbel replied that they were in place, but they did not have to do any administration.

Mr. Horak asked Mr. Kerbel to address the issue of what reservoirs need to be included in the annual report.

Mr. Kerbel replied that he and Ms. Lowry started putting together lists of reservoirs and then questions began to arise. Such as, should they include stock reservoirs, industrial reservoirs, irrigation ponds, and wetlands? Also, should they only include permitted reservoirs? The initial cut included more than 500 reservoirs.

Mr. Kerbel was not sure if this list is what the Commissioners envisioned, so he asked for direction from the Commissioners.

Mr. Tyrrell replied that his office also discovered numerous small reservoirs in Wyoming. Perhaps they should only be concerned with reservoirs with a storage capacity greater than 500 or 1,000 acre-ft.

Mr. Tyrrell made a motion that at the spring technical meeting, the Technical Committee should agree on a list of reservoirs within the Yellowstone River drainage with a storage capacity greater than 1,000 acre ft that are permitted for consumptive uses. At that meeting, they would decide what reservoirs would be included in the 2009 annual report. The motion was seconded by Ms. Sexton.

Mr. Horak asked Wyoming to discuss coal-bed methane (CBM) activities.

Mr. Tyrrell stated that generally, the number of permit applications for wells and reservoirs decreased from last year. This was probably due to the dropping price of gas and the economy in general. The total number of permitted CBM wells in Wyoming by September 2008 was 43,239. Approximately 95 percent of those permits are within the Powder River structural basin. The total number of permits for CBM reservoirs in 2008 was 3,083. The average size of CMB reservoirs is between 10 and 12 acre-ft.

Wyoming has entered round two of their "show-cause" effort. They are attempting to find the permitted wells that are more than 5 years old that have some record of producing water, but no gas. In other words, show the cause for the permit. Their first effort in December 2008 affected about 200 wells and 10 operators. The focus was in Clear Creek and Crazy Woman Creek drainages, an area identified by the State Geologist as producing water and little gas. The majority of the wells were either voluntarily plugged and abandoned, or a settlement was reached with the operator to suspend the well. In August 2008, the SEO started the process again (round two) in other drainages. It will be interesting to see how many wells are found and how many of those wells will be plugged and abandoned. Of the current 33,000 or so CBM wells, the SEO believes there are only about 15,000 producing gas. Of the approximate 43,000 permits, about 10,000 wells have either been plugged and abandoned or never were drilled.

Ms. Sexton asked Mr. Tyrrell how long gas production usually continued in the wells.

Mr. Tyrell said he did not know. Some wells are no longer producing water, but they continue to produce gas. Other wells have vacuums that aid in gas production and that procedure tends to extend the life of the well. The producers are finding as wells get deeper and coal seams become thicker, more water needs to be removed before the gas breaks from the coal. The early fields broke gas within 2 years. Some studies indicate the more complex fields are taking up to 4 years to break gas. Some of the smaller operators pump and hope. One of the questions within the SEO is how long should they wait before a well produces gas. They are concerned that some producers may feel compelled to pump water to hold a lease. In some cases, wells on the periphery of a gas field may be producing water and no gas. But, the effect of the well on the whole gas field is to hold down the water table so the interior wells produce gas. If the entire field is producing nothing but water, that's a different story and that is the story of Clear Creek and Crazy Woman Creek. The SEO considers all the wells in the gas field when considering suspending a well permit.

Mr. Horak asked Mr. Tyrrell if Wyoming would allow conversion from a CBM well to a well for another use.

Mr. Tyrrell replied that the owner would have to re-permit the well for the new use, such as stock or irrigation. Sometimes a CBM well will be permitted with two or three beneficial uses. In these cases, the SEO may discover that the well is not producing gas and the owner may reply that they are using the well for stock watering, essentially holding the CBM permit. The SEO is working on crafting conditions where the primary use is CBM and the other uses are subordinate. Then the owner of the CBM permit could request other uses (excluding CBM). It is not uncommon for a well or reservoir to be turned over to a rancher providing the rancher gets the correct permits.

Mr. Horak asked Mr. Tyrrell to describe the procedure to get a permit on a well for stock watering.

Mr. Tyrrell replied that a stock well is almost a perfunctory operation. If someone were to want a stock well and they think they can get stock water on their property, the SEO will issue the permit. The permit allows up to 25 gal/min, but the average stock well produces 4 to 5 gal/min.

Wyoming's permitting process is intended to maximize the beneficial use of the water. Generally, one does not need a reason to get a permit, rather there needs to be a reason to deny the permit. In other words, the default is to grant the permit. This practice and the fact that Wyoming does not adjudicate coal-bed wells or reservoirs is the subject of the West/Turner lawsuit that will be argued in front of the Wyoming Supreme Court on December 18, 2008.

Wyoming is now looking more strongly at overall effects on coal aquifers of permitting CBM wells for water supply. A study by University of Wyoming (Dr. Fred Ogden) is examining recharge to the coal aquifers and should be available soon.

Mr. Michael added that a couple of landowners in the Powder River structural basin have brought a case that was dismissed in the District Court in Cheyenne based on lack of standing. The landowners allege that the Wyoming State Engineer and the Board of Control are not acting in the public's interest, and they are not following the Wyoming State Constitution. Much of this is directed at CBM operations regarding reservoirs and well permitting. Wyoming's statute on well permitting says the Wyoming State Engineer shall issue permits as a matter of course unless he finds it is against public interest.

None of the issues have gotten out of the blocks. In reality, it is a public-interest lawsuit. The plaintiffs admit they are trying to make policy for the entire State on how CBM is run by the SEO, the permitting process by the SEO, and how the permits are adjudicated by the Board of Control.

Mr. Horak asked what is the typical rate of production of water from the 43,000 plus CBM wells?

Mr. Tyrrell replied that the wells may start out at 50 gal/min, but there is a rapid decay rate as gas is produced. The average water production of all of the wells is about 3 gal/min. Mr. Tyrrell also pointed out that the number (43,000) is permits issued, and is substantially higher than the number of wells that actually have been drilled.

Mr. Horak asked if there is a limit to the amount of water produced from the well.

Mr. Tyrrell replied that they allow the producer to request the amount needed to get the job done. The SEO may get concerned if a lot of water is produced with little or no gas. Generally, new wells start out with 50 gal/min and production declines rapidly.

Ms. Sexton asked if permitting a CBM well is the same process as permitting for a domestic or industrial well?

Mr. Tyrrell replied yes, the same form is used for all uses.

Ms. Sexton asked if there was a 25 gal/min exemption?

Mr. Tyrrell replied that for CBM well permits, the applicant would estimate the production, such as 50 gal/min.

Ms. Sexton asked if there was a point in the permitting process where someone could issue an objection?

Mr. Tyrrell replied that this goes to the West/Turner case. The SEO can issue permits without public notice. Typically, the open and notorious recording of the water right is at the adjudication stage. The Wyoming State Engineer can hold notice on controversial permits, but, not on every stock, domestic, and CBM well. Typically, the public is notified when the permit goes through adjudication.

Mr. Kerbel asked what beneficial uses are assigned to CBM wells?

Mr. Tyrrell replied that any uses, other than gas production, would be subsequent. Other uses are not discouraged, but the mere fact that gas is produced is the beneficial-use test for that well. Essentially, the water is a byproduct.

This is similar to issuing a permit to dewater ahead of a gravel pit or a coal mine. You have to dewater to get to the resource, and in this case, the resource is methane.

Regarding beneficial use, Wyoming incorporated into their groundwater permits a condition stating that after 3 years of completing a CBM well, the producer needs to achieve less than 10 barrels of water per million cubic feet (bbl/mcf) of gas, otherwise, the producer may fall under show cause action. Currently, about 80 percent of all the wells in the Powder River structural basin are producing gas at a ratio less than 10 bbl/mcf.

Mr. Michael added that the State of Colorado had taken a position where producing natural gas from a well is not a beneficial use; thus, they do not have to permit it and deal with the administrative headaches of permitting thousands of wells. The Water Court in Colorado has ruled that Colorado has to permit those wells, much like Wyoming. Currently, the case is on appeal to the Colorado Supreme Court. This will be a significant case to Colorado. Because Wyoming has taken the position that extracting coal-bed methane is a beneficial use, the SEO can permit and keep track of the wells.

Mr. Tyrrell added that a well has to be permitted by the SEO or the Oil and Gas Conservation Commission supervisor will shut down the operation. The producers have to operate under the terms of the permit. Wyoming has shut down operations and sought penalties from those who have pumped wells without permits. The show-cause action is a tool the SEO can use to keep owners from pumping with impunity and not producing gas.

Mr. Horak asked if there have been complaints from ranchers that CBM production has interfered with their normal access to water.

Mr. Tyrrell replied that there have been some complaints. There have been about 70 complaints in the past 9 years: 2 were formal complaints. One of the two settled out of court and the other was found in favor of the complainant (rancher). Usually, the producer provides a replacement well while the area is being developed. The area of CBM development is not a heavily populated area so the occasional conflict is easily mitigated, or the producer and the land owner will make arrangements to leave the two or three wells and reservoir to the land owner when the producer leaves.

Mr. Horak asked if abandoned wells have been converted to observation or monitoring wells?

Mr. Tyrrell replied that the State has a budget to install monitoring wells statewide. About two-thirds of the money will go toward the Powder River structural basin.

Ms. Bond asked if CBM wells go to adjudication?

Mr. Tyrrell said they do not. They are temporary wells. When the gas ceases, the permit is terminated and the well is plugged and abandoned. If the well is converted to another use, such as irrigation or domestic, a new permit will be applied and that might be adjudicated. Stock or domestic use is needed and that use may not be adjudicated.

Mr. Horak asked what is the typical construction of CBM wells?

Mr. Tyrrell replied they typically are 6-inch PVC wells that are open to the coal seam.

Mr. Horak recalled from the Wyoming State Geologist's presentation a couple of meetings back, that as CBM production moved westward closer to the Big Horns, the resource became deeper, and inquired as to the maximum depth of drilling and production.

Commissioner Tyrell responded that it could be 2,000 to 3,000 ft.

Mr. Horak asked if producing methane and water from multiple seams affected ranchers' water supply and wondered why Wyoming was not inundated with claims of injury.

Commissioner Tyrell said that there is not much irrigated agriculture in 90 percent of the Powder River Basin, so there is not a swath of deep irrigation wells that are impacted by drilling of CBM wells.

Mr. Horak stated he was thinking more of farm household wells. He asked Montana to discuss CBM activities.

Mr. Compton stated that Montana is managing water production through three discharge permits. One has an annual average of between 1,200 and 1,300 gal/min (about 2.5 ft^3/s). This is a treated discharge to the Tongue River and the permit is with Fidelity Exploration. The second also has an annual average of between 1,200 and 1,300 gal/min. This is an untreated discharge to the Tongue River and the permit is with Fidelity Exploration. The third has been inactive this year. Pinnacle Gas Resources intends to inject produced water into four wells completed in shallow sands. They have used one well and intend to rotate to the other wells through the year.

About a year ago, the Bureau of Land Management (BLM) was directed to go back and look at the development phase of their oil and gas EIS. That document is now out and is between the final EIS and the Record of Decision stage. The EIS is under the Governor's consistency review, a procedural step in the Federal resource-plan amendment process. The review should be completed by December 22, 2008.

There will be a meeting in Helena next week to address concerns about the final EIS. The concerns are mainly air-quality issues–mainly emissions from diesel-run compressor stations. Actually, those issues drove the supplemental EIS.

The EIS concluded that that there will be no untreated discharges to the Tongue River in Montana. This conclusion is due to the first discharge permit using up most of the assimilative capacity of the river. Also, the EIS concludes that there will not be any untreated discharges to the Powder River in Montana because there is no ability of the Powder River to assimilate untreated water. This is primarily because CBM discharges in Wyoming have brought the quality of water in the Powder River at the State line to the level of the Montana water-quality standard.

Mr. Dalby asked if Montana and Wyoming have agreed to the allocation of the assimilative capacity of the Powder River between the two states?

Mr. Compton replied that the issue of dividing the assimilative capacity between the two States is in litigation. The two States have worked for about a year to resolve the issues. Unfortunately, they have not been able to resolve all issues, but the two States now have a better understanding of the need and desires of each State. Currently, the two States are operating under a "gentlemen's agreement."

Mr. Compton stated that the (Wyoming) DEQ was developing watershed permits for several Tongue River tributaries: Prairie Dog Creek, Hanging Woman Creek, and Badger Creek. CBM water is discharged to these tributaries in Wyoming and these are now ephemeral. If CBM discharge converts these creeks to perennial streams then there will be a conduit for produced water to the Tongue that does not currently exist. The (Montana) DEQ has been working with the Wyoming DEQ on a permit in the Powder River Basin on another ephemeral drainage discussing some of the same issues that led to the current water-quality litigation before Judge Brimmer.

Ms. Bond added that question before the Federal court regarding water-quality issues on the Powder River is whether the U.S. Environmental Protection Agency (EPA) violated the Federal Administrative Procedure Act (APA) in approving the Montana water-quality standards of 2003 and a non-degradation component of those standards in 2006. Also, there were issues before the State court as to whether a number of claims made strictly under State statutory law were sufficient to obtain a declaratory judgment that the regulations were invalid under State law. The District Court in Montana upheld the regulations against all five claims. That decision is before the Montana Supreme Court and a decision is expected soon. The question of whether EPA's approval of regulations violated the Clean Water Act is pending, and EPA has transmitted the Federal Record of Decision. They are waiting for some negotiations to be completed and some amendments to the complaints before the case can resume.

Mr. Horak asked if there is a requirement for permitting CBM wells in Montana?

Ms. Sexton replied that CBM discharge is not considered a beneficial use. If there is a beneficial use, such as irrigation, dust abatement, or stock watering, a permit is issued.

Mr. Horak asked for the number of CBM wells in Montana.

Ms. Sexton replied that they have about 950, and about 850 of these wells discharge under a untreated- or treated-discharge permit.

Mr. Horak asked Ms. Sexton to address the Montana statewide adjudication.

Ms. Sexton replied that little has changed from the last meeting. DNRC is ahead of their bench marks. They reviewed or examined over 7,000 claims in 2008. They are helping the Water Court digest the summary reports as they go through the objection process. The objection process is taking longer than the review or examination process.

Mr. Tyrrell asked what is shown on the Montana adjudication Web site?

Mr. Kerbel replied that each decreed water right includes the claimed acres and the claimed amount of water. Also, there is a place for DNRC to interject an issue remark if the examiner discovers something different than what was claimed.

Ms. Sexton added that during the water-court process, the issue remarks will be addressed.

Ms. Lowry asked Montana when they thought the adjudication process would be complete?

Ms. Sexton replied that DNRC should meet the bench mark for claims examination outlined in House Bill 22. The Water Court process may take longer. They will probably get out an enforceable decree, but the final decree may take longer.

Ms. Bond added that there are enforceable decrees on the Tongue and Powder Rivers.

Mr. Horak asked Mr. Tyrrell to address Wyoming statewide adjudication.

Mr. Tyrrell replied that Wyoming's basin-wide adjudication has been ongoing for the past 31 years. The Bighorn Basin General Adjudication is essentially complete. In the Tongue and Powder River Basins, the adjudication is on individual permits. Each quarter, the Board of Control (a quasi-judicial constitutional panel) meets and adjudicates the water rights brought before them. Large, older water rights have been adjudicated. The smaller rights, such as stock ponds and irrigation-pipe lines are adjudicated at each board meeting.

Mr. Smith added, that in the Bighorn River Basin, the SEO has one file left to go to the court. There are between 40 and 50 files in the court waiting to be processed, and most of the files have an objection. Most objections have been solved prior to the hearings. One hearing is scheduled and a couple more are forthcoming.

Mr. Whitaker added that in the Tongue and Powder River Basins, SEO technicians send the completion statement for the permit to the Board of Control and that triggers the issuance of a final inspection form. Then the field offices complete the final inspection.

Mr. Horak asked Montana to update the Commission on the Montana–Crow Compact.

Ms. Sexton said that Compact was introduced to the U.S. Senate in July and there was a hearing with the BIA in September. There were some concerns from Senator Barrasso (Wyoming), so now they are waiting for the concerns to be addressed between Wyoming and the Crow Tribe. Montana is hoping the concerns will be resolved in time to be reintroduced into the next congressional session.

Ms. Bond added that the Federal government, the Crow Tribe, and Montana negotiated the settlement, which includes the water-right quantification. To be enacted, the Compact needs Federal legislation and Crow Tribe ratification after Congress acts.

Ms. Sexton reported that the compact with the Blackfeet Tribe is nearing completion. The DNRC hopes to send it to the next State legislative session and to the Federal congressional session. The Blackfeet Compact is in the Milk River drainage, a part of the Missouri River system. The only compact remaining would be with the Confederated Salish and Kootenai Tribes in the Columbia River system.

Mr. Horak asked the BOR to talk about the storage condition of Bighorn Lake (Yellowtail Dam).

Mr. Erger replied that on December 2, Bighorn Lake was storing 1,043,447 acre-ft of water (total contents). On December 2, Boysen Reservoir was storing 625,725 acre-ft, 84 percent full. Buffalo Bill Reservoir was storing 459,643 acre-ft and 71 percent full. Boysen Reservoir will release 700 ft^3/s and Buffalo Bill Reservoir will release 750 ft^3/s through the winter. Releases from Bighorn Lake (Yellowtail Dam) will remain at 2,450 ft^3/s throughout the winter unless snowfall and runoff condition necessitate a change.

Ms. Bond asked Mr. Erger if BOR managed Boysen Reservoir, Buffalo Bill Reservoir, and Bighorn Lake together?

Mr. Erger replied that Boysen Reservoir and Buffalo Bill Reservoir were managed out of the Wyoming Area Office in Mills, Wyoming. Bighorn Lake is managed out of the Montana Area Office in Billings, Montana. The Montana Area Office uses the Boysen Reservoir and Buffalo Bill Reservoir information from the Wyoming Area Office to plan and forecast releases from Bighorn Lake. Both offices communicate closely with each other.

Mr. Horak asked the Commissioners to discuss the date and location of the next Commission meeting.

Mr. Tyrrell replied that because meetings are now being organized such that the technical meeting is in the spring and the full Commission meeting is in the fall, the Commission should consider rotating meetings between States on a yearly basis instead of on a meeting basis. He proposed that Wyoming host the technical meeting in the spring and the Commission meeting in the fall. Mr. Tyrrell made a motion that Wyoming host the two meetings in 2009 and that Montana host the two meetings in 2010, and that the meeting rotate from year to year. Ms. Sexton seconded the motion.

The Commissioners set the date for the Yellowstone River Technical Committee for May 19, 2009.

Minutes of Teleconference Call—September 3, 2009

Members of the Yellowstone River Compact Commission convened by telephone on September 3, 2009, to approve the Yellowstone River Compact Commission meeting minutes from December 4, 2008. Those in attendance were Mr. William Horak, U.S. Geological Survey (USGS), Chairman and Federal Representative; Ms. Mary Sexton, Director, Montana Department of Natural Resources and Conservation (DNRC) and Commissioner for Montana; and Mr. Patrick Tyrrell, Wyoming State Engineer and Commissioner for Wyoming. Also in attendance were Ms. Sue Lowry and Mr. Carmine LoGuidice, Wyoming State Engineer's Office; Mr. Patrick Erger and Mr. Gordon Aycock, Bureau of Reclamation; and Mr. Wayne Berkas, USGS.

Mr. Horak called the meeting to order at 2:05 p.m. and asked that those participating in the meeting introduce themselves.

Mr. Horak asked Mr. Berkas to give a brief history on preparing and reviewing the minutes from the Yellowstone River Compact Commission meeting of December 4, 2008.

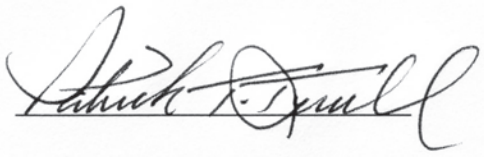
Mr. Berkas replied that on April 7, 2009, he e-mailed the verbatim transcript and paraphrased minutes to the Commissioners for review. By July 2, 2009, he received all comments and suggested corrections. On July 7, 2009, he sent out the revised minutes entitled "YRCC minutes 12-04-08–USGS 7-7-09." All comments were returned by August 7, 2009, and Mr. Berkas made the requested corrections. Because those corrections were mostly editorial changes, Mr. Berkas set up a teleconference for the Commissioners to approve the minutes. The teleconfer-

ence was announced on August 27, and the final minutes were sent to the Commissioners entitled "YRCC minutes 12-04-08 – final for approval."

Mr. Horak asked for discussion.

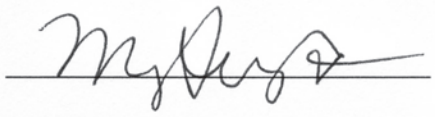
Mr. Tyrrell made a motion to approve the December 4, 2008 minutes and Ms. Sexton seconded the motion.

Mr. Horak announced that the minutes were approved and ended the teleconference at 2:15 p.m.



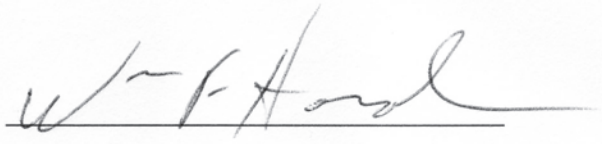
Patrick T. Tyrrell

Commissioner for Wyoming



Mary Sexton

Commissioner for Montana



William F. Horak, Jr.

Chairman and Federal Representative

Appended Agenda, Technical Advisory Committee–April 16, 2008:

Yellowstone River Compact Commission
Technical Advisory Committee
Park County Courthouse
Cody, WY

1. Introductions
2. Hydrologic update from various sources
   a. Montana and Wyoming U.S. Geological Survey (USGS)
   b. Update on indicator gages
3. 2008 runoff forecasts and estimates
4. Reservoir operations and storage (Montana and Wyoming)
5. Coal-bed natural gas (CBNG) update
   a. Montana
   b. Wyoming
6. USGS Tongue River monitoring network
7. State adjudications and water rights
8. Discussion of Web site for the Commission and archiving of meeting minutes and PowerPoint presentations
9. Public comment

General Report

Cost of operation and budget

Work funded by the Yellowstone River Compact Commission, which 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 one-fourth of the cost, and the remaining one-half 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 2008 were $84,000, in accordance with the budget adopted for the year.

Estimated budgets for Federal fiscal years 2009, 2010, 2011, and 2012 were tentatively adopted subject to the availability of appropriations. The increase from 2009–10 is based on increasing the number of meetings and an increase in publication costs for the annual report. The increase from 2011 to 2012 is based on an approximate 5-percent increase. The budgets for the four fiscal years are summarized as follows:

October 1, 2008, to September 30, 2009 (fiscal year 2009):
Estimate for continuation of existing streamflow-gaging programs $89,000

October 1, 2009, to September 30, 2010 (fiscal year 2010):
Estimate for continuation of existing streamflow-gaging programs $109,000

October 1, 2010, to September 30, 2011 (fiscal year 2011):
Estimate for continuation of existing streamflow-gaging programs $128,000

October 1, 2011, to September 30, 2012 (fiscal year 2012):
Estimate for continuation of existing streamflow-gaging programs $134,000

Streamflow-gaging station operation

Operation of streamflow-gaging stations at the measuring sites specified in the Yellowstone River Compact continued in water year 2008 and satisfactory records were 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.

For measurement sites, horizontal coordinate information (latitude and longitude) is referenced to the North American Datum of 1927 (NAD 27). The gage datums and elevations listed in this report are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

During water year 2008, annual streamflow was normal[2] at one streamflow-gaging station and above normal at three 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 2008[1]	Rank of annual streamflow		Year of lowest annual streamflow (rank equals 1)	Number of years of annual record
			2008 water year	2007 water year		
06208500	Clarks Fork Yellowstone River at Edgar, Mont., minus diversions to White Horse Canal	123	59	7	2001	70
06294500	Bighorn River above Tullock Creek, near Bighorn, Mont., minus Little Bighorn River near Hardin, Mont., adjusted for change in contents in Bighorn Lake	109	17	7	2002	42
06308500	Tongue River at Miles City, Mont.	124	46	48	1961	65
06326500	Powder River near Locate, Mont.	134	54	34	2004	70

[1]Average is based on period of record at station.

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

Tabulation of streamflow records for water year 2008, graphical comparisons of statistical distribution of monthly and annual streamflow, and annual departures from mean annual streamflow 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 2008.

Reservoir contents

Reservoirs completed after January 1, 1950

Month-end and year-end usable contents and a description 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 349,600 acre-ft in usable contents and ended the water year with 588,800 acre-ft. Anchor Reservoir began the water year with 254 acre-ft in usable contents and ended the water year with 346 acre-ft. Bighorn Lake, a Bureau of Reclamation storage project on the Bighorn River that is the largest in the Yellowstone River Basin, contained 940,700 acre-ft of usable contents at the beginning of the water year and 1,052,000 acre-ft at the end of the water year. Daily usable contents of Bighorn Lake ranged from 1,087,000 acre-ft on July 13, to 772,000 acre-ft on May 8.

Reservoirs existing on January 1, 1950

As a matter of record and general information, month-end usable contents data are given in table 9 of the report for four reservoirs in existence on January 1, l950, upstream from the points of measurement. The reservoirs are Bull Lake, Pilot Butte Reservoir, Buffalo Bill Reservoir, and Tongue River Reservoir. These data are pertinent to allocation under Article V, Section C, Item 3 of the Compact. Month-end and year-end usable contents of these reservoirs are given in the section "Month-End Contents for Yellowstone River Compact Reservoirs Existing on January 1, 1950."

The storage capacity of Buffalo Bill Reservoir was increased in 1992 from 456,600 acre-ft to 644,540 acre-ft (listed as 646,565 acre-ft by Bureau of Reclamation). The usable contents of Tongue River Reservoir was increased in 1999 from 68,000 acre-ft to 79,070 acre-ft.

Annual contents of reservoirs

Information on reservoir contents at the end of the current (2008) and previous water years for the 7 reservoirs listed above plus 23 additional reservoirs 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 Aug. 31, 1953, nonrecording gage located at same site and elevation.

REMARKS.--Records are good except those for the estimated daily discharges, which are poor. Diversions for irrigation of about 41,500 acres occur upstream from the station. About 840 of the irrigated 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. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year. Discharge values and summary statistics given herein have the diversions to White Horse Canal subtracted.

Table 1. Daily mean discharge for the Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, October 2007 through September 2008.

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	344	720	466	e360	e300	367	331	490	3,870	7,840	1,430	445
2	334	670	350	e360	e300	367	341	484	4,320	7,400	1,290	672
3	329	651	510	e370	e300	357	330	410	5,020	7,040	1,220	667
4	344	629	611	e390	e300	341	328	329	5,090	7,110	1,070	626
5	396	606	550	e400	e300	336	331	358	4,750	7,230	1,000	618
6	560	598	516	e430	e300	355	335	376	4,570	7,160	867	618
7	675	576	502	e420	e310	333	338	638	4,360	6,360	789	631
8	678	575	482	e380	e320	352	329	838	3,590	5,710	761	626
9	612	558	e400	e350	e300	348	331	669	2,970	5,250	778	569
10	606	545	e400	e350	e300	347	330	704	2,580	4,880	823	582
11	646	533	e400	e370	e310	341	331	598	3,180	4,690	825	696
12	654	542	e420	e340	e320	344	335	597	2,740	4,330	781	681
13	610	532	e420	e330	e330	343	328	658	2,320	3,500	701	643
14	587	501	e400	e320	e330	347	328	591	2,020	3,050	624	605
15	583	518	e400	e310	e330	342	362	583	2,240	2,900	596	589
16	581	457	e410	e300	e350	342	459	580	3,030	2,780	595	565
17	587	496	e420	e280	e360	332	482	947	4,000	2,800	525	542
18	586	537	e430	e310	e370	318	403	1,960	5,230	2,770	490	510
19	602	543	e440	e310	e360	328	365	2,970	6,020	2,660	438	490
20	596	581	e440	e310	e360	339	392	4,220	6,050	2,530	427	485
21	891	570	e400	e300	e350	334	455	4,960	5,860	2,330	413	483
22	827	524	e370	e300	e350	329	421	5,780	6,280	2,340	378	489
23	769	e400	e350	e310	e340	326	374	5,220	7,050	2,400	365	499
24	749	e420	e340	e320	e330	318	350	4,380	7,530	2,480	338	490
25	761	502	e350	e330	379	319	347	3,710	7,750	2,350	303	477
26	803	582	e380	e350	367	334	343	3,380	7,910	2,100	280	495
27	828	527	e360	e350	359	336	285	3,270	7,840	1,970	255	505
28	769	511	e350	e400	359	333	278	2,870	7,700	1,800	246	489
29	737	486	e340	e350	366	324	226	3,060	7,180	1,660	261	480
30	753	478	e360	e300	--	336	265	3,100	7,360	1,490	251	480
31	752	--	e360	e300	--	339	--	3,400	--	1,370	262	--
Total	19,549	16,368	12,927	10,600	9,650	10,507	10,453	62,130	150,410	120,280	19,382	16,747
Mean	631	546	417	342	333	339	348	2,004	5,014	3,880	625	558
Max	891	720	611	430	379	367	482	5,780	7,910	7,840	1,430	696
Min	329	400	340	280	300	318	226	329	2,020	1,370	246	445
Ac-ft	38,780	32,470	25,640	21,030	19,140	20,840	20,730	123,200	298,300	238,600	38,440	33,220

Table 1. Daily mean discharge for the Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, October 2007 through September 2008.—Continued

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921–2008, BY WATER YEAR (WY)*												
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Mean	535	503	408	351	349	364	553	2,108	4,010	1,993	590	467
Max	1,010	777	593	512	584	554	1,398	5,578	7,256	4,771	1,541	1,395
(WY)	(1942)	(1928)	(1996)	(1997)	(1963)	(1943)	(1943)	(1928)	(1996)	(1943)	(1951)	(1941)
Min	298	310	217	200	180	220	123	757	1,768	290	49.5	156
(WY)	(1956)	(1936)	(1937)	(1922)	(1922)	(1924)	(1961)	(1968)	(1987)	(1988)	(1988)	(1988)

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

SUMMARY STATISTICS						
	Calendar Year 2007		**Water Year 2008**		**Water Years 1921–2008***	
Annual total	282,058		459,003			
Annual mean	773		1,254		1,020	
Highest annual mean					1,623	1997
Lowest annual mean					644	2001
Highest daily mean	6,780	Jun 7	7,910	Jun 26	10,600	Jun 2, 1936
Lowest daily mean	96	Sep 2	226	Apr 29	37	May 11, 1961
Annual seven-day minimum	101	Aug 28	265	Aug 25	43	Apr 18, 1961
Maximum peak flow			8,280	Jun 26	11,100	Jun 12, 1997
Maximum peak stage			8.11	Jun 26	9.30	Jun 12, 1997
Instantaneous low flow					36	Apr 22, 1961
Annual runoff (ac-ft)	559,500		910,400		739,200	
10 percent exceeds	2,180		4,070		2,810	
50 percent exceeds	420		490		466	
90 percent exceeds	180		320		270	

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

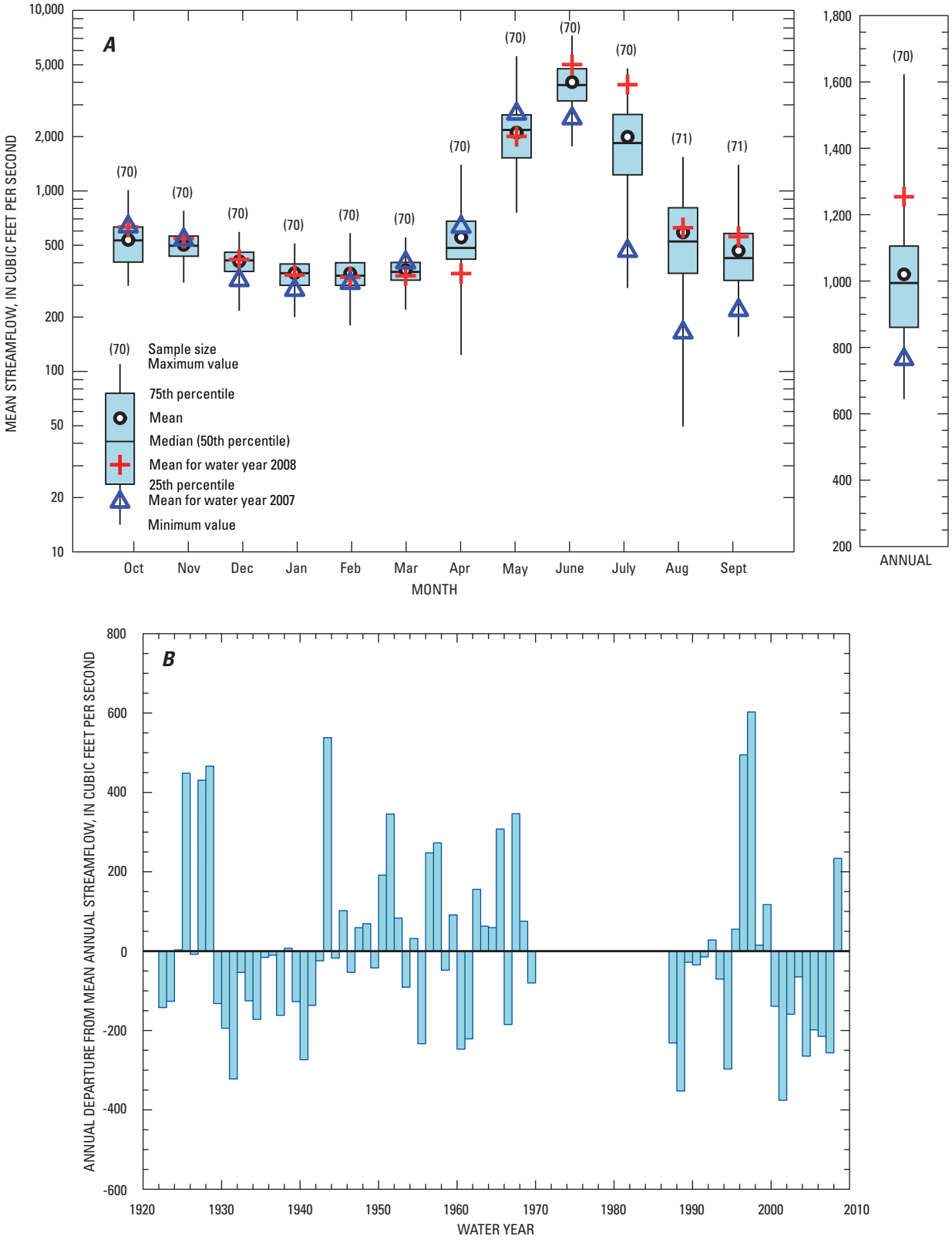


Figure 1. Streamflow data for the Clarks Fork Yellowstone River at Edgar, Mont. (06208500), minus diversions to White Horse Canal, water years 1922–2008: *A*, Statistical distribution of monthly and annual streamflow; *B*, Annual departure from the mean annual streamflow.

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 September 2008.

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 Oct. 7, 1953, nonrecording gage located at site 0.4 mi downstream. Oct. 7, 1953 to May 6, 1963, water-stage recorder located at site 0.3 mi downstream. May 6, 1963 to Nov. 6, 1963, nonrecording gage located at site 0.4 mi downstream. All locations had different elevations. Nov. 7, 1963 to Aug. 15, 1976, water-stage recorder located at site 35 ft downstream at present elevation. Aug. 15, 1976 to Sept. 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 those for estimated daily discharges, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft). Diversions for irrigation of about 20,980 acres occur upstream from station. Discharge values and summary statistics given herein include the flow of terminal wasteway of Agency Canal. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

Table 2. Daily mean discharge for the Little Bighorn River near Hardin, Mont. (06294000), October 2007 through September 2008.

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	140	154	e100	e110	e140	e190	146	138	992	935	174	126
2	148	152	e90	e120	e150	e200	146	167	1,050	883	178	145
3	137	150	e100	e120	e150	e200	145	177	1,350	914	175	170
4	127	144	e100	e130	e150	e200	143	191	1,340	881	171	173
5	141	138	e110	e120	e140	e200	146	208	1,400	784	169	170
6	154	138	e120	e120	e150	e200	149	214	1,310	732	166	166
7	160	141	e110	e130	e160	e200	149	196	1,330	671	162	176
8	168	139	e110	e130	e160	e210	150	188	1,280	599	158	195
9	168	140	e100	e120	e170	e220	154	202	1,150	554	162	195
10	168	139	e100	e120	e160	231	163	218	995	518	166	191
11	163	137	e100	e120	e150	231	154	244	944	464	161	206
12	164	135	e100	e130	e150	243	152	287	964	416	155	221
13	168	131	e110	e130	e160	252	154	296	900	389	156	240
14	159	125	e110	e130	e170	257	153	384	836	366	155	223
15	167	125	e100	e130	e180	228	150	366	780	334	158	195
16	166	125	e110	e120	e190	215	156	294	788	300	157	184
17	168	124	e110	e130	e180	209	176	262	873	283	170	182
18	184	130	e110	e130	e180	186	185	276	1,050	241	171	162
19	204	126	e120	e130	e190	182	175	358	1,290	233	160	155
20	212	128	e130	e120	e180	175	166	451	1,430	216	153	150
21	184	134	e130	e110	e180	174	164	574	1,450	205	139	141
22	170	130	e120	e120	e180	176	164	827	1,420	196	132	140
23	162	e80	e110	e130	e170	175	159	1,160	1,410	186	125	140
24	151	e70	e110	e130	e180	172	154	1,490	1,460	181	121	142
25	150	e90	e120	e150	e180	166	153	2,060	1,460	201	123	145
26	151	e110	e130	e140	e190	166	156	2,270	1,460	195	126	148
27	152	e120	e120	e130	e180	169	156	1,510	1,440	187	123	145
28	151	e100	e110	e130	e170	170	152	1,210	1,320	184	114	143
29	146	e110	e120	e140	e180	166	145	1,070	1,180	173	112	142
30	145	e120	e120	e150	--	155	138	981	1,040	162	119	140
31	154	--	e120	e160	--	153	--	974	--	153	119	--
Total	4,982	3,785	3,450	3,980	4,870	6,071	4,653	19,243	35,692	12,736	4,630	5,051
Mean	161	126	111	128	168	196	155	621	1,190	411	149	168
Max	212	154	130	160	190	257	185	2,270	1,460	935	178	240
Min	127	70	90	110	140	153	138	138	780	153	112	126
Ac-ft	9,880	7,510	6,840	7,890	9,660	12,040	9,230	38,170	70,800	25,260	9,180	10,020

Table 2. Daily mean discharge for the Little Bighorn River near Hardin, Mont. (06294000), October 2007 through September 2008.—Continued

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954–2008, BY WATER YEAR (WY)												
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Mean	151	148	132	136	193	301	301	599	814	256	115	125
Max	276	248	223	366	610	987	748	2,852	1,981	1,333	382	267
(WY)	(1979)	(1979)	(1979)	(1975)	(1971)	(1972)	(1965)	(1978)	(1968)	(1975)	(1975)	(1978)
Min	60.7	82.6	65.6	50.5	68.5	71.1	54.8	71.9	117	8.50	2.46	19.1
(WY)	(2002)	(2002)	(2002)	(2005)	(2005)	(2002)	(1961)	(1961)	(1961)	(1961)	(1961)	(1960)

SUMMARY STATISTICS						
	Calendar Year 2007		**Water Year 2008**		**Water Years 1954–2008**	
Annual total	141,118		109,143			
Annual mean	387		298		272	
Highest annual mean					6761975	
Lowest annual mean					70.41961	
Highest daily mean	4,320	Jun 10	2,270	May 26	15,800	May 20, 1978
Lowest daily mean	60	Jan 12	70	Nov 24	0.30	Aug 5, 1961
Annual seven-day minimum	71	Jan 29	97	Nov 23	0.40	Aug 3, 1961
Maximum peak flow			[a]2,410	May 26	[b]22,600	May 19, 1978
Maximum peak stage			5.96	May 26	[c]11.78	Mar 20, 1960
Instantaneous low flow					[d]0.20	Aug 7, 1961
Annual runoff (ac-ft)	279,900		216,500		197,200	
10 percent exceeds	1,020		904		592	
50 percent exceeds	152		162		160	
90 percent exceeds	90		120		71	

[a] Includes Agency Canal.

[b] Gage height, 11.20 ft.

[c] Site and datum then in use.

[d] Result of discharge measurement.

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 Oct. 7, 1955, to Sept. 30, 1981, 22,885 mi².

PERIOD OF RECORD.--October 1981 to September 2008. Previously published as "06294700 Bighorn River at Bighorn, MT" from 1956–81, and as "06294700 Bighorn River near Custer" from 1945-55. Flows 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 Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945 to Oct. 6, 1955, water-stage recorder located 1.7 mi upstream at different elevation. Oct. 7, 1955 to Sept. 30, 1981, located at site 2.3 mi downstream at different elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Since November 1965, flow 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 a combined usable contents of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres occurs upstream from the station. U.S. Army Corps of Engineers satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

Table 3. Daily mean discharge for the Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), October 2007 through September 2008.

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,760	1,770	2,000	2,580	e2,200	2,290	2,090	1,960	7,150	7,140	2,770	2,580
2	1,720	1,920	e2,000	e2,500	e2,200	2,360	2,080	2,230	7,030	6,860	2,620	2,770
3	1,620	1,880	2,040	2,520	e2,200	2,400	2,080	2,250	7,320	6,890	2,610	2,940
4	1,560	1,870	2,110	2,530	e2,200	2,420	2,080	2,200	8,100	6,830	2,660	3,080
5	1,590	1,850	2,150	2,560	e2,200	2,340	2,090	2,220	8,190	6,690	2,610	3,030
6	1,870	1,910	2,130	2,610	e2,300	2,310	2,100	2,180	8,260	6,600	2,580	2,990
7	1,810	2,120	2,110	2,630	e2,300	2,260	2,090	2,130	8,150	6,490	2,580	3,000
8	1,790	2,120	2,100	2,380	e2,300	2,260	2,100	1,930	8,100	6,340	2,630	2,990
9	1,770	2,110	2,080	2,280	e2,200	2,260	2,090	1,800	7,980	6,240	2,640	2,940
10	1,740	2,090	2,080	2,280	e2,100	2,260	2,020	1,840	7,800	6,180	2,640	2,900
11	1,690	2,080	2,070	2,300	e2,100	2,280	2,070	1,870	7,870	6,080	2,610	3,050
12	1,660	2,060	2,080	2,260	e2,100	2,300	2,060	1,960	8,190	6,000	2,540	3,230
13	1,650	2,050	2,090	2,110	e2,100	2,280	2,020	1,990	8,480	5,940	2,480	3,350
14	1,620	2,040	2,130	2,120	e2,100	2,310	1,980	2,010	9,460	5,960	2,460	3,300
15	1,590	2,030	2,130	2,140	e2,100	2,280	1,980	2,080	9,480	5,680	2,490	3,160
16	1,580	2,040	2,160	2,050	e2,100	2,270	1,990	2,010	9,490	4,790	2,490	3,090
17	1,580	2,020	2,190	2,140	e2,100	2,240	1,960	1,910	9,460	4,230	2,490	3,040
18	1,670	2,020	2,190	2,090	e2,200	2,230	1,980	1,860	9,900	3,610	2,480	3,120
19	1,650	2,020	2,220	2,100	e2,200	2,220	1,980	1,890	10,700	3,320	2,340	3,170
20	1,920	2,050	2,250	2,130	e2,200	2,220	1,970	1,920	10,800	3,210	2,400	3,170
21	1,860	2,030	2,310	e2,100	e2,200	2,220	2,050	1,970	10,800	3,170	2,590	3,100
22	1,880	2,010	2,280	e2,100	2,220	2,200	1,950	2,570	10,700	3,090	2,620	3,040
23	1,860	1,960	2,300	e2,100	2,150	2,130	1,910	3,150	10,700	3,110	2,510	3,030
24	1,820	1,940	2,340	e2,200	2,170	2,120	1,890	4,030	10,400	3,050	2,500	3,000
25	1,790	1,990	2,400	e2,200	2,180	2,120	1,890	5,690	9,630	3,050	2,470	2,980
26	1,780	2,010	2,400	e2,200	2,180	2,110	1,940	6,580	8,770	2,990	2,460	2,960
27	1,770	2,030	2,400	e2,200	2,200	2,120	2,040	6,780	8,520	3,000	2,420	2,950
28	1,750	2,020	2,400	e2,200	2,220	2,120	2,020	6,350	7,960	2,970	2,420	2,940
29	1,740	2,010	2,450	e2,200	2,260	2,110	1,960	6,640	7,620	2,990	2,410	2,940
30	1,740	2,000	2,440	e2,200	--	2,100	2,000	7,410	7,510	3,110	2,380	2,980
31	1,750	--	2,480	e2,200	--	2,090	--	7,300	--	3,060	2,400	--
Total	53,580	60,050	68,510	70,210	63,280	69,230	60,460	98,710	264,520	148,670	78,300	90,820
Mean	1,728	2,002	2,210	2,265	2,182	2,233	2,015	3,184	8,817	4,796	2,526	3,027
Max	1,920	2,120	2,480	2,630	2,300	2,420	2,100	7,410	10,800	7,140	2,770	3,350
Min	1,560	1,770	2,000	2,050	2,100	2,090	1,890	1,800	7,030	2,970	2,340	2,580
Ac-ft	106,300	119,100	135,900	139,300	125,500	137,300	119,900	195,800	524,700	294,900	155,300	180,100

Table 3. Daily mean discharge for the Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), October 2007 through September 2008.—Continued

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945–2008, BY WATER YEAR (WY)												
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Mean	3,093	3,171	3,042	2,940	3,088	3,544	3,412	4,205	6,705	5,102	2,767	2,768
Max	5,546	5,599	4,907	5,478	5,314	6,580	7,881	9,102	15,180	19,090	6,972	4,952
(WY)	(1972)	(1974)	(1968)	(1968)	(1971)	(1972)	(1997)	(1947)	(1948)	(1967)	(1997)	(1973)
Min	1,103	1,223	1,280	1,382	1,544	908	1,063	1,304	1,050	707	868	1,009
(WY)	(2003)	(1978)	(1961)	(1961)	(2003)	(1966)	(1966)	(1966)	(1966)	(1960)	(1961)	(1966)

SUMMARY STATISTICS						
	Calendar Year 2007		**Water Year 2008**		**Water Years 1945–2008**	
Annual total	813,700		1,126,340			
Annual mean	2,229		3,077		3,636	
Highest annual mean					5,5941997	
Lowest annual mean					1,4742003	
Highest daily mean	7,130	Jun 9	10,800	Jun 20	50,000	May 20, 1978
Lowest daily mean	1,560	Oct 4	1,560	Oct 4	400	Apr 4, 1967
Annual seven-day minimum	1,620	Oct 13	1,620	Oct 13	528	May 6, 1961
Maximum peak flow			11,100	Jun 20	[b]59,200	May 20, 1978
Maximum peak stage			6.12	Jun 20	[c]14.21	Apr 2, 1965
Instantaneous low flow			[a]1,500	Oct 5	[d]275	Nov 15, 1959
Annual runoff (ac-ft)	1,614,000		2,234,000		2,634,000	
10 percent exceeds	2,770		6,800		6,150	
50 percent exceeds	2,030		2,220		3,040	
90 percent exceeds	1,790		1,880		1,600	

	Water Years 1946–1961*		**Water Years 1967–2008****	
Annual mean	3,358		3,622	
Highest annual mean	5,501	1947	5,594	1997
Lowest annual mean	1,623	1961	1,474	2003
Highest daily mean	25,700	Jun 23, 1947	50,000	May 20, 1978
Lowest daily mean	462	May 12, 1962	400	Apr 4, 1967
Annual seven-day minimum	528	May 6, 1961	843	Nov 18, 1977
Maximum peak flow	e26,200	Jun 24, 1947	59,200	May 20, 1978
Maximum peak stage	10.65	May 24, 1947	14.15	May 20, 1978
Instantaneous low flow	d275	Nov 15, 1959		
Annual runoff (ac-ft)	2,578,000			
10 percent exceeds	6,200			
50 percent exceeds	2,810			
90 percent exceeds	1,500			

***** Prior to construction of Yellowtail Dam.

****** After completion of Yellowtail Dam.

[a] Gage height, 0.78 ft.

[b] Gage height, 14.15 ft, at different site and datum.

[c] Ice jam, at different site and datum.

[d] Estimated flow caused by backwater from ice.

[e] Gage height, 8.79 ft, at different site and datum.

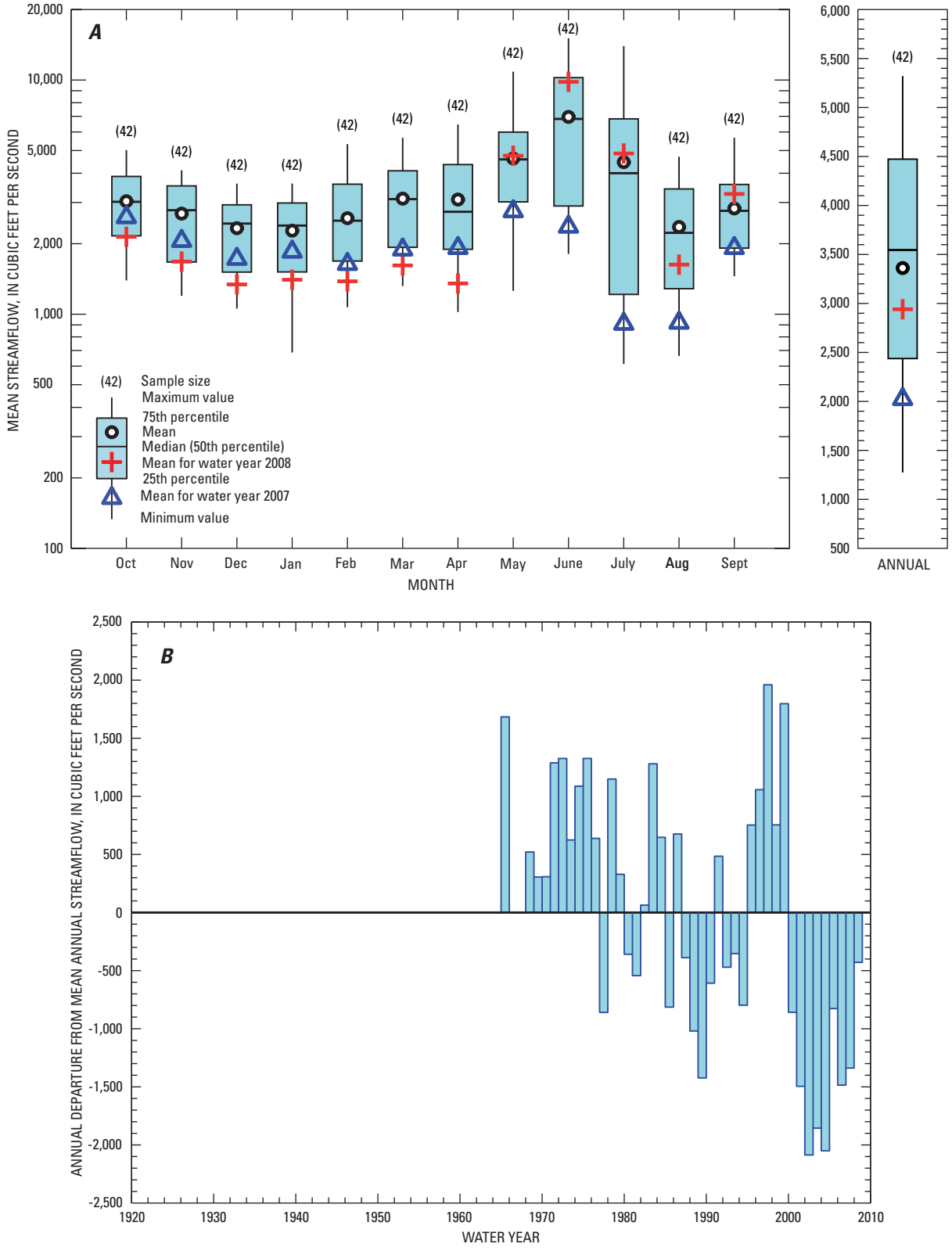


Figure 2. Streamflow data for the Bighorn River above Tullock Creek, near Bighorn, Mont. (06294500), minus Little Bighorn River near Hardin, Mont. (06294000); adjusted for change in contents in Bighorn Lake, water years 1965–2008: *A*, Statistical distribution of monthly and annual streamflow; *B*, Annual 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 Oct. 4, 1995, 5,379 mi².

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to September 2008. 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 Oct. 4, 1995, at site 2.5 mi upstream from present site. Flows at present site are equivalent with flows 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 Sept. 30, 1963, located at elevation 1.00 ft higher than present site. Oct. 4, 1995, gage was moved 2.5 mi downstream.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Flow 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 of about 100,800 acres occur upstream from station. U.S. Army Corps of Engineers satellite telemeter is located at the station.

Table 4. Daily mean discharge for the Tongue River at Miles City, Mont. (06308500), October 2007 through September 2008.

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	112	223	e220	e160	e160	e170	372	381	2,050	2,460	193	155
2	76	220	e200	e170	e160	e170	394	605	2,150	2,200	190	174
3	80	218	e210	e190	e160	e170	407	939	2,260	1,950	175	204
4	85	218	e240	e190	e160	e170	414	889	2,320	1,780	197	194
5	100	217	e220	e180	e160	e170	433	655	2,470	1,810	221	192
6	109	216	e190	e170	e160	e170	452	439	2,750	1,810	215	186
7	179	217	e180	e160	e160	e170	470	331	2,860	1,770	207	195
8	185	217	e180	e160	e160	e170	471	305	2,830	1,710	186	190
9	171	214	e180	e160	e150	e170	474	299	2,780	1,500	174	182
10	174	216	e180	e160	e150	e170	486	292	2,740	1,340	161	181
11	177	219	e180	e160	e160	e170	486	281	2,590	1,200	166	192
12	185	218	e180	e160	e160	e180	484	279	2,400	1,100	152	196
13	186	218	e180	e160	e170	e210	478	272	2,350	1,000	133	203
14	184	215	e180	e160	e170	e230	477	269	2,350	902	136	214
15	172	214	e180	e160	e170	e260	476	269	2,150	834	138	217
16	184	215	e180	e160	e170	e300	467	260	1,940	799	170	231
17	194	215	e170	e160	e170	e330	434	253	1,800	756	187	237
18	198	218	e170	e160	e170	e340	426	250	1,800	752	167	236
19	204	219	e190	e150	e170	e340	423	271	1,880	775	131	237
20	205	221	e180	e150	e170	e330	420	224	2,010	813	140	235
21	214	220	e160	e150	e170	e310	414	148	2,300	760	142	237
22	223	e180	e160	e160	e170	315	380	160	2,530	666	157	241
23	224	e130	e170	e160	e170	308	367	257	2,700	634	157	215
24	223	e80	e170	e160	e170	304	361	487	2,720	569	149	188
25	217	e100	e170	e170	e170	298	345	1,120	2,730	497	137	179
26	215	e110	e170	e180	e170	292	340	890	2,730	450	140	164
27	214	e140	e170	e190	e170	292	342	785	3,010	370	121	148
28	216	e210	e170	e180	e170	e300	331	820	2,930	321	117	144
29	217	e250	e170	e160	e170	322	327	829	2,820	282	111	140
30	218	e240	e160	e150	--	341	323	1,310	2,670	242	130	136
31	221	--	e160	e150	--	359	--	1,810	--	204	130	--
Total	5,562	6,008	5,620	5,090	4,790	7,831	12,474	16,379	73,620	32,256	4,930	5,843
Mean	179	200	181	164	165	253	416	528	2,454	1,041	159	195
Max	224	250	240	190	170	359	486	1,810	3,010	2,460	221	241
Min	76	80	160	150	150	170	323	148	1,800	204	111	136
Ac-ft	11,030	11,920	11,150	10,100	9,500	15,530	24,740	32,490	146,000	63,980	9,780	11,590

Table 4. Daily mean discharge for the Tongue River at Miles City, Mont. (06308500), October 2007 through September 2008.—Continued

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938–2008, BY WATER YEAR (WY)*												
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Mean	236	245	186	190	266	507	427	687	1,268	454	175	193
Max	694	585	423	529	1,794	1,783	1,693	2,983	3,825	2,207	700	599
(WY)	(1972)	(1942)	(1950)	(1999)	(1971)	(1971)	(1965)	(1978)	(1978)	(1975)	(1975)	(1968)
Min	10.3	60.9	68.0	65.3	74.5	74.5	12.5	29.2	41.9	12.6	6.08	2.40
(WY)	(1961)	(1989)	(1990)	(2005)	(2003)	(2002)	(1961)	(1961)	(2002)	(1960)	(1949)	(1938)

SUMMARY STATISTICS						
	Calendar Year 2007		**Water Year 2008**		**Water Years 1938–2008***	
Annual total	191,031		180,403			
Annual mean	523		493		399	
Highest annual mean					9861978	
Lowest annual mean					57.21961	
Highest daily mean	6,130	Jun 8	3,010	Jun 27	9,290	Jun 15, 1962
Lowest daily mean	40	Jan 12	76	Oct 2	0.00	Jul 9, 1940
Annual seven-day minimum	55	Jan 10	106	Oct 1	0.00	Jul 9, 1940
Maximum peak flow			3,240	Jun 27	[a]13,300	Jun 15, 1962
Maximum peak stage			7.06	Jun 27	[b]13.27	Mar 19, 1960
Annual runoff (ac-ft)	378,900		357,800		289,400	
10 percent exceeds	1,750		1,790		906	
50 percent exceeds	208		214		216	
90 percent exceeds	96		150		64	

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

[a] Gage height, 11.33 ft, at previous site and datum.

[b] Ice jam, at previous site and datum used from 1963 to 1995.

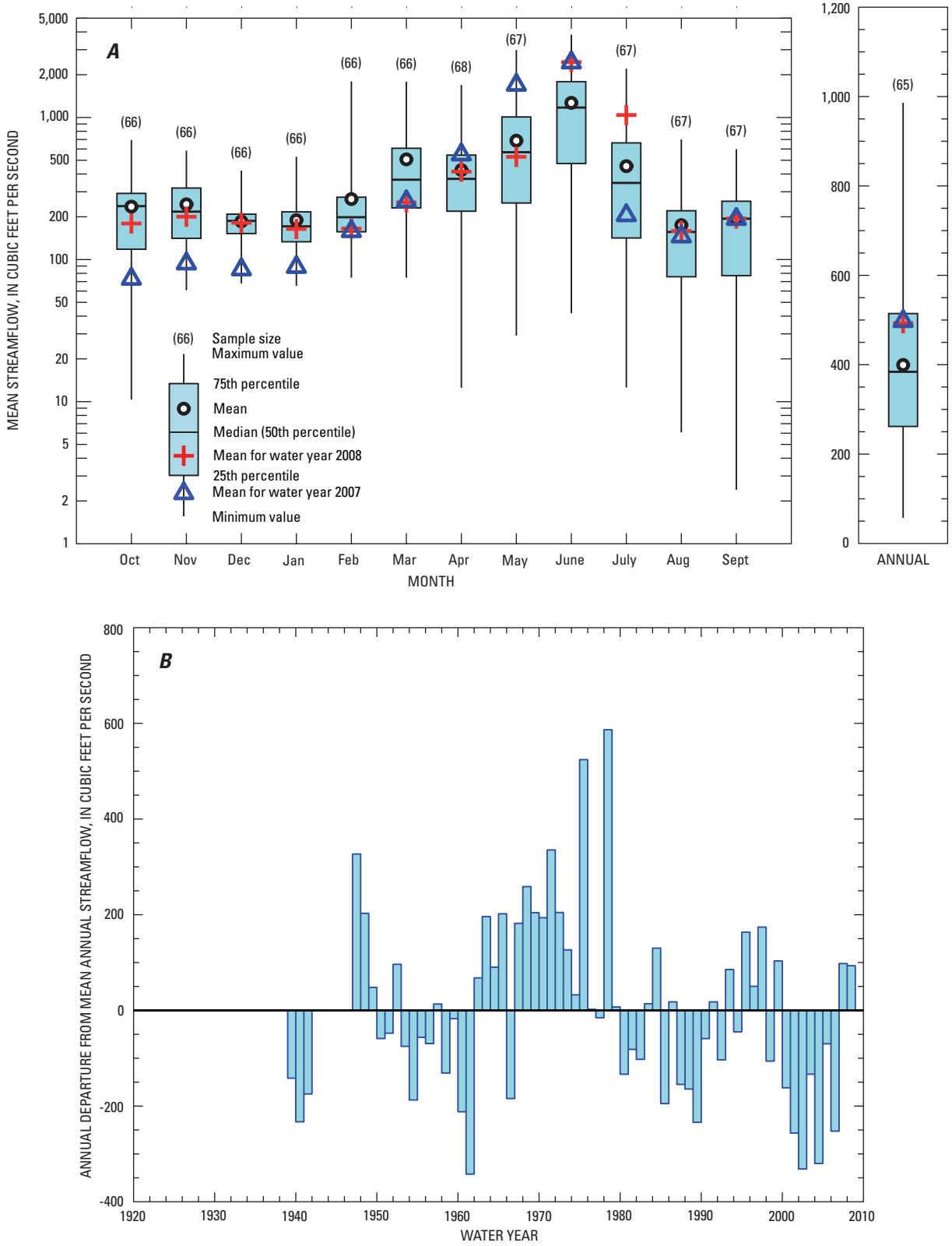


Figure 3. Streamflow data for the Tongue River at Miles City, Mont. (06308500), water years 1939–2008: *A*, Statistical distribution of monthly and annual streamflow; *B*, Annual departure from the mean annual streamflow.

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 September 2008.

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 Sept. 30, 1965, water-stage recorder located at site near upstream bridge at different elevation. Oct. 1, 1965 to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966 to Mar. 21, 1978, water-stage recorder located at present site and elevation. Mar. 22, 1978 to Apr. 23, 1981, water-stage recorder located 1.5 mi upstream at different elevation, Apr. 24 to Aug. 20, 1981, water-stage recorder located at present site and elevation, and Aug. 21, 1981 to Sept. 30, 1981, water-stage recorder located 1.5 mi upstream at different elevation. Oct. 1, 1981 to Apr. 5, 1995 water-stage recorder located at site 1.5 mi downstream at different elevation. Apr. 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.

REMARKS.--Records are fair except those for estimated daily discharges, which are poor. Some regulation occurs from three reservoirs in Wyoming with combined usable contents of 36,800 acre-ft. Diversions for irrigation of about 101,800 acres occur upstream from station. U.S. Army Corps of Engineers satellite telemeter is located at the station.

Table 5. Daily mean discharge for the Powder River near Locate, Mont. (06326500), October 2007 through September 2008.

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	145	235	e140	e100	e50	e250	530	511	5,280	2,270	403	105
2	135	228	e140	e100	e50	e330	511	931	4,730	2,090	370	121
3	147	221	e170	e110	e50	e300	506	1,180	4,300	1,980	357	125
4	157	220	e190	e110	e60	e260	493	1,080	4,370	2,000	333	109
5	180	218	e190	e110	e60	e350	489	1,160	4,570	2,060	313	108
6	208	221	e190	e100	e70	e560	498	1,090	4,740	2,010	262	106
7	192	215	e170	e90	e70	e840	537	1,440	5,370	2,020	241	105
8	148	220	e150	e80	e80	e1,200	501	1,200	5,060	2,030	208	111
9	133	222	e140	e80	e60	e1,680	495	1,030	4,500	2,020	177	109
10	133	222	e140	e80	e60	e1,400	509	843	4,200	1,850	177	105
11	128	223	e140	e90	e70	e1,090	485	842	3,620	1,540	165	122
12	126	216	e160	e90	e80	e900	477	915	3,130	1,370	159	124
13	146	227	e180	e90	e80	e1,200	478	827	2,920	1,280	133	123
14	169	233	e180	e90	e90	e1,300	471	809	2,640	1,230	164	158
15	175	222	e160	e90	e90	e1,400	448	873	2,450	1,190	178	200
16	178	226	e160	e80	e90	1,610	438	949	2,280	1,090	162	207
17	184	229	e160	e70	e90	1,290	458	909	2,150	1,020	148	206
18	188	231	e160	e50	e90	1,170	438	843	2,090	1,000	148	209
19	185	228	e170	e40	e80	1,070	398	839	2,100	901	138	220
20	190	232	e170	e30	e80	853	359	785	2,180	851	127	213
21	195	251	e150	e30	e80	746	363	753	2,310	740	114	218
22	192	223	e140	e30	e90	685	359	920	2,320	815	101	219
23	200	e160	e150	e30	e100	663	343	1,440	2,410	1,040	105	197
24	200	e130	e160	e40	e110	620	342	2,310	2,450	933	108	199
25	212	e50	e160	e50	e120	588	388	3,580	2,430	748	112	198
26	226	e40	e140	e50	e130	585	396	4,700	2,400	691	106	198
27	224	e30	e120	e50	e140	575	359	5,600	2,460	735	104	192
28	226	e210	e120	e50	e150	567	350	7,000	2,450	583	101	173
29	229	e180	e120	e30	e200	546	371	8,010	2,450	517	112	168
30	235	e160	e120	e30	--	555	351	8,030	2,360	457	117	165
31	238	--	e120	e50	--	550	--	6,020	--	427	100	--
Total	5,624	5,923	4,760	2,120	2,570	25,733	13,141	67,419	96,720	39,488	5,543	4,813
Mean	181	197	154	68.4	88.6	830	438	2,175	3,224	1,274	179	160
Max	238	251	190	110	200	1,680	537	8,030	5,370	2,270	403	220
Min	126	30	120	30	50	250	342	511	2,090	427	100	105
Ac-ft	11,160	11,750	9,440	4,210	5,100	51,040	26,070	133,700	191,800	78,320	10,990	9,550

Table 5. Daily mean discharge for the Powder River near Locate, Mont. (06326500), October 2007 through September 2008.—Continued

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939–2008, BY WATER YEAR (WY)												
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Mean	243	214	147	141	408	1,176	721	1,145	1,585	552	205	162
Max	921	790	417	476	3,850	4,627	3,062	5,970	8,045	2,015	1,096	898
(WY)	(1941)	(1999)	(1942)	(1981)	(1943)	(1972)	(1965)	(1978)	(1944)	(1993)	(1941)	(1941)
Min	1.77	12.5	12.5	4.53	2.82	80.2	109	51.2	25.9	9.34	1.30	0.19
(WY)	(1961)	(1961)	(1961)	(1950)	(1950)	(1950)	(1961)	(2004)	(2004)	(2004)	(1988)	(1960)

SUMMARY STATISTICS						
	Calendar Year 2007		**Water Year 2008**		**Water Years 1939–2008**	
Annual total	181,513		273,854			
Annual mean	497		748		558	
Highest annual mean					1,6221944	
Lowest annual mean					79.12004	
Highest daily mean	4,840	May 8	8,030	May 30	26,000	Feb 19, 1943
Lowest daily mean	30	Nov 27	30	Nov 27	0.00	Jan 16, 1950
Annual seven-day minimum	43	Jul 23	36	Jan 18	0.00	Jan 16, 1950
Maximum peak flow			9,160	May 30	[a]31,000	Feb 19, 1943
Maximum peak stage			7.44	May 30	[b]12.20	Mar 16, 1978
Instantaneous low flow					0.00	Many days[c]
Annual runoff (ac-ft)	360,000		543,200		404,400	
10 percent exceeds	1,240		2,160		1,300	
50 percent exceeds	190		220		226	
90 percent exceeds	60		80		40	

[a] Gage height, 11.23 ft, observed.

[b] Backwater from ice.

[c] On many days in 1950, 1960–61, 1998, and 2006.

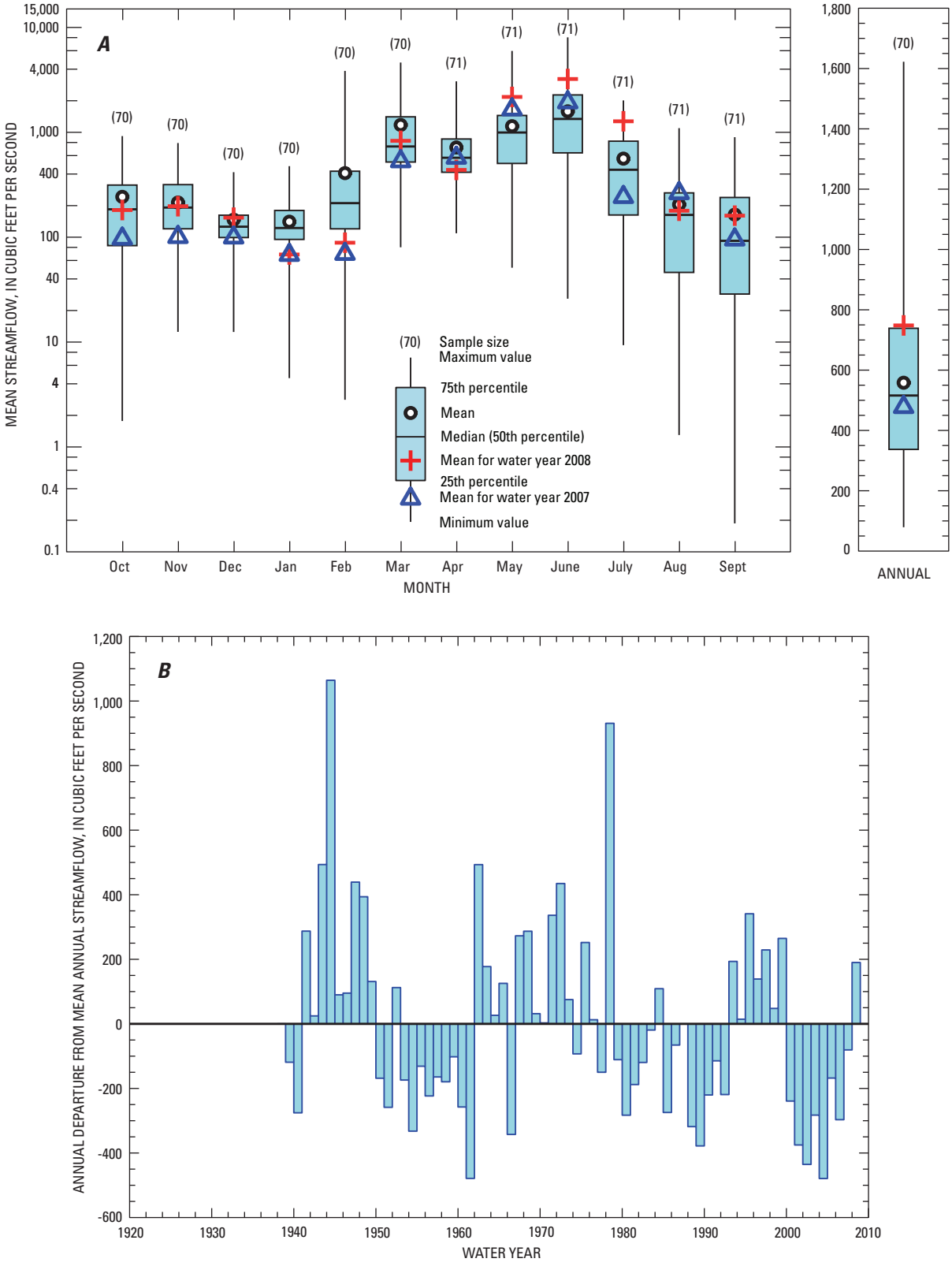


Figure 4. Streamflow data for the Powder River near Locate, Mont. (06326500), water years 1939–2008: *A*, Statistical distribution of monthly and annual streamflow; *B*, Annual departure from the mean annual streamflow.

Month-End Contents for Yellowstone River Compact Reservoirs[1] Completed after January 1, 1950

06258900 Boysen Reservoir, Wyo.

LOCATION.--Lat 43°25′00″, long 108°10′37″ (NAD 27), 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 mi^2.

PERIOD OF RECORD.--October 1951 to September 2008 (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by rock-fill dam completed in October 1951. Storage began Oct. 11, 1951. Usable contents is 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 Jan. 1, 1966, usable contents was 757,800 acre-ft and dead storage was 62,000 acre-ft at same elevations. Between January 1966 and October 1996, usable contents was 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, Mar. 18, 19, 1956, elevation, 4,684.18 ft, capacity table then in use.

EXTREMES FOR WATER YEAR 2008.--Maximum daily contents, 641,500 acre-ft, June 14, elevation, 4,721.84 ft; minimum daily contents, 349,600 acre-ft, Oct. 1, elevation, 4,701.87 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, 2007	4,701.87	349,600	--
October 31	4,702.57	357,800	8,200
November 30	4,703.80	372,500	14,700
December 31	4,704.37	379,400	6,900
January 31, 2008	4,704.63	382,600	3,200
February 29	4,705.27	390,500	7,900
March 31	4,706.62	407,600	17,100
April 30	4,706.47	405,700	-1,900
May 31	4,711.45	473,000	67,300
June 30	4,718.37	580,100	107,100
July 31	4,720.80	622,600	42,500
August 31	4,719.02	591,200	-31,400
September 30, 2008	4,718.88	588,800	-2,400
2008 water year			239,200

[1]Wyoming 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″ (NAD 27), 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 mi^2.

PERIOD OF RECORD.--November 1960 to September 2008 (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Reservoir is formed by concrete-arch dam completed in 1960. Usable contents, 17,410 acre-ft (revised) between elevation 6,343.75 ft, invert of river outlet, and 6,441.00 ft, spillway crest, including 68 acre-ft below elevation 6,343.75 ft. Prior to Oct. 1, 1971, usable contents was 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 2008.--Maximum daily contents, 9154,650 acre-ft, May 5, elevation, 6,401.03 ft; minimum daily contents, 254 acre-ft, many days, elevation, 6,355.00 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, 2007	6,355.50	254	--
October 31	6,356.00	283	29
November 30	6,355.00	254	-29
December 31	6,359.20	386	132
January 31, 2008	6,359.20	386	0
February 29	6,361.00	452	66
March 31	6,356.00	283	-169
April 30	6,355.50	268	-15
May 31	6,360.30	425	157
June 30	6,400.39	4,540	4,115
July 31	6,379.91	1,710	-2,830
August 31	6,357.95	343	-1,367
September 30, 2008	6,358.04	346	3
2008 water year			92

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 September 2008 (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 (NGVD 29) (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 Nov. 3, 1965. Usable contents is 1,312,000 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. Normal maximum operating level is 1,097,000 acre-ft, between elevations, 3,640.00 ft and 3,657.00 ft. Minimum operating level is 483,400 acre-ft, elevation, 3,547.00 ft. Dead storage is 16,010 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, Mar. 11, 2003, elevation 3,572.81 ft.

EXTREMES FOR WATER YEAR 2008.--Maximum contents, 1,087,000 acre-ft, July 13, elevation, 3,642.5 ft; minimum, 772,000 acre-ft, May 8, elevation, 3,607.54 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, 2007	3,629.71	940,700	--
October 31	3,633.22	975,900	35,200
November 30	3,632.08	964,100	-11,800
December 31	3,627.20	917,400	-46,700
January 31, 2008	3,621.87	872,300	-45,100
February 29	3,617.13	836,000	-36,300
March 31	3,613.47	810,000	-26,000
April 30	3,608.81	779,800	-30,200
May 31	3,626.85	914,300	134,500
June 30	3,629.29	1,045,000	130,700
July 31	3,641.56	1,074,000	29,000
August 31	3,637.89	1,028,000	-46,000
September 30, 2008	3,639.82	1,052,000	24,000
2008 water year			111,300

Month-End Contents for Yellowstone River Compact Reservoirs[1] 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. The first three reservoirs are in the Bighorn River Basin, Wyoming, and data on contents were furnished by the 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, which furnished the water-level data and the reservoir-contents table.

Table 9. Month-end contents for Yellowstone River Compact reservoirs[1] 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, 2007	47,000	6,120	417,800	46,890
October 31	52,500	24,800	424,400	50,270
November 30	54,600	24,500	438,200	50,530
December 31	55,700	24,500	443,400	50,430
January 31, 2008	56,400	24,400	447,300	50,530
February 29	56,900	24,300	452,200	50,530
March 31	56,800	24,200	455,200	51,100
April 30	52,800	24,000	438,300	40,160
May 31	63,400	23,400	477,300	81,470
June 30	116,000	27,100	578,600	81,470
July 31	147,000	24,900	628,800	67,780
August 31	109,000	17,800	559,200	51,400
September 30, 2008	83,800	8,430	484,400	47,670
Change in contents during water year	36,800	2,310	66,600	780

[1] Wyoming 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 Reservoirs[1] or Lakes

Table 10. Water-year-end contents for Yellowstone River Compact reservoirs[1] or lakes.

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

Reservoir or lake name	Pre-compact 1950 water right	Post-compact 1950 water right	Usable capacity	Usable contents on Sept. 30, 2008	Usable contents on Sept. 30, 2007	Change in usable contents[7]
Bighorn River Basin						
(Lake) Adelaide Reservoir[2]	1,450	4,760	6,210	6,010	1,100	4,910
Anchor Reservoir[3]	17,410	0	17,410	346	254	92
Bighorn Lake[3]	--	1,116,000	1,312,000	1,052,000	940,700	111,300
Boysen Reservoir[3]	757,851	0	701,500	588,800	349,600	239,200
Buffalo Bill Reservoir[3]	456,600	190,00	646,600	484,400	417,800	66,600
Bull Lake[3]	152,000	0	152,000	83,800	47,000	36,800
Greybull Valley Reservoir[2]	0	33,170	33,170	7,940	2,800	5,140
Pilot Butte Reservoir[3]	34,600	0	34,600	8,430	6,120	2,310
Sunshine Reservoir[2]	52,990	0	52,990	45,560	5,700	39,860
Lower Sunshine Reservoir[2]	42,640	42,300	84,940	33,920	5,130	28,790
Powder River Basin						
Cloud Peak Reservoir[2]	3,400	172	3,570	3,380	185	3,195
Dull Knife Reservoir[2]	--	4,320	4,320	1,420	818	602
Healy Reservoir[2]	--	5,140	5,140	3,540	1,340	2,200
Kearney Reservoir[2]	1,850	4,470	6,320	2,550	2,900	-350
Lake DeSmet[2]	37,520	197,500	235,000	195,900	197,500	-1,600
Muddy Guard Reservoir[2]	--	2,340	2,340	1,260	500	760
Tie Hack Reservoir[2]	1,650	2,440	2,440	2,440	1,920	520
Willow Park Reservoir[2]	4,460	--	4,460	516	765	-249
Tongue River Basin						
Bighorn Reservoir[2]	2,750	1,880	4,630	1,290	1,040	250
Cross Creek Reservoir	--	798	798	109	237	-128
Dome Reservoir[2,4]	1,840	188	2,030	1,450	856	594
Granger Reservoir[2]	146	--	146	0	0	0
Last Chance Reservoir[2]	90	--	90	0	0	0
Martin Reservoir[2]	561	--	561	0	0	0
Park Reservoir[2]	7,350	3,020	10,360	4,110	3,310	800
Sawmill Lakes Reservoir[2]	--	1,280	1,280	842	1,060	-218
Tongue River Reservoir[5]	79,070	--	79,070	47,670	46,890	780
Twin Lakes Reservoir[2,6]	1,180	2,220	3,400	2,540	2,410	130
Weston Reservoir[2]	370	--	370	0	0	0
Willits Reservoir[2]	79	--	79	0	0	0

[1] Wyoming 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] Private reservoirs permitted and accounted by the State of Wyoming.

[3] Reservoirs managed by Bureau of Reclamation.

[4] Data are combined contents of Dome Lake and Dome Lake Reservoir.

[5] Reservoir managed by the State of Montana.

[6] Data are combined contents of Twin Lakes Number 1 and Twin Lakes Number 2.

[7] Change in usable contents is derived from subtracting "Usable contents on Sept. 30, 2007," from "Usable contents on Sept. 30, 2008."

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. Christopulos
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

July 22, 1996
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) 7777354

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 ___¼ ___¼, Section ____, T.___R.____

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

   _____

   _____

(b) Describe water measuring device: _____

_____

_____

(c) If the point of diversion is in Montana:

1. What flow rate has been claimed?

_____ ☐ cubic feet per second

☐ gallons per minute

☐ miner's inches

2. What volume of water has been claimed?

_____ acre-feet

7. Dimensions of ditch at headgate: Width at top (at waterline) _____ feet; width at bottom _____ feet; side slopes (vertical:horizontal) _____:_____; depth of water _____ feet; grade _____ feet per mile.

8. Place of use and acres irrigated: County_____ State ____ Give legal subdivisions of land owned by you on which water is being used (acres claimed): An example field is shown in the first line.

T.	R.	SEC.	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	MW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
58N	95W	18			25.1											10.2			35.3

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: _____

_____

_____

16. Describe ordinary annual period of use: _____ to _____
(mo/day) (mo/day)

_____.

17. Attach copies of aerial photographs, U. S. Geological Survey maps or other such documents showing the ditch and lands irrigated that give evidence to this claim and may be useful to the Commission.

* * * * * * * * * *

State of _____)
) SS
State of _____)

I, _____, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim for a water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are correct.

_____

_____

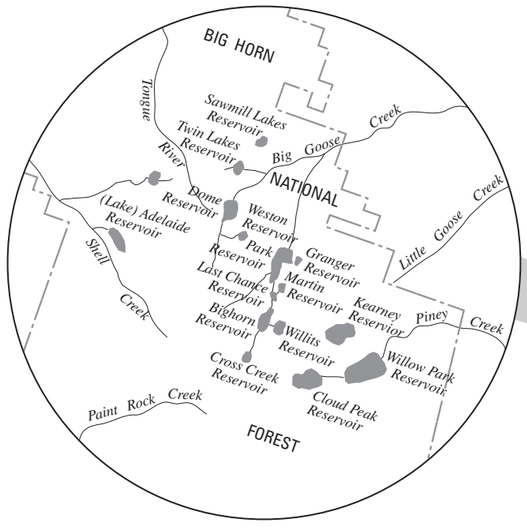
Subscribed and sworn before me, this ____day of _____, 19__.

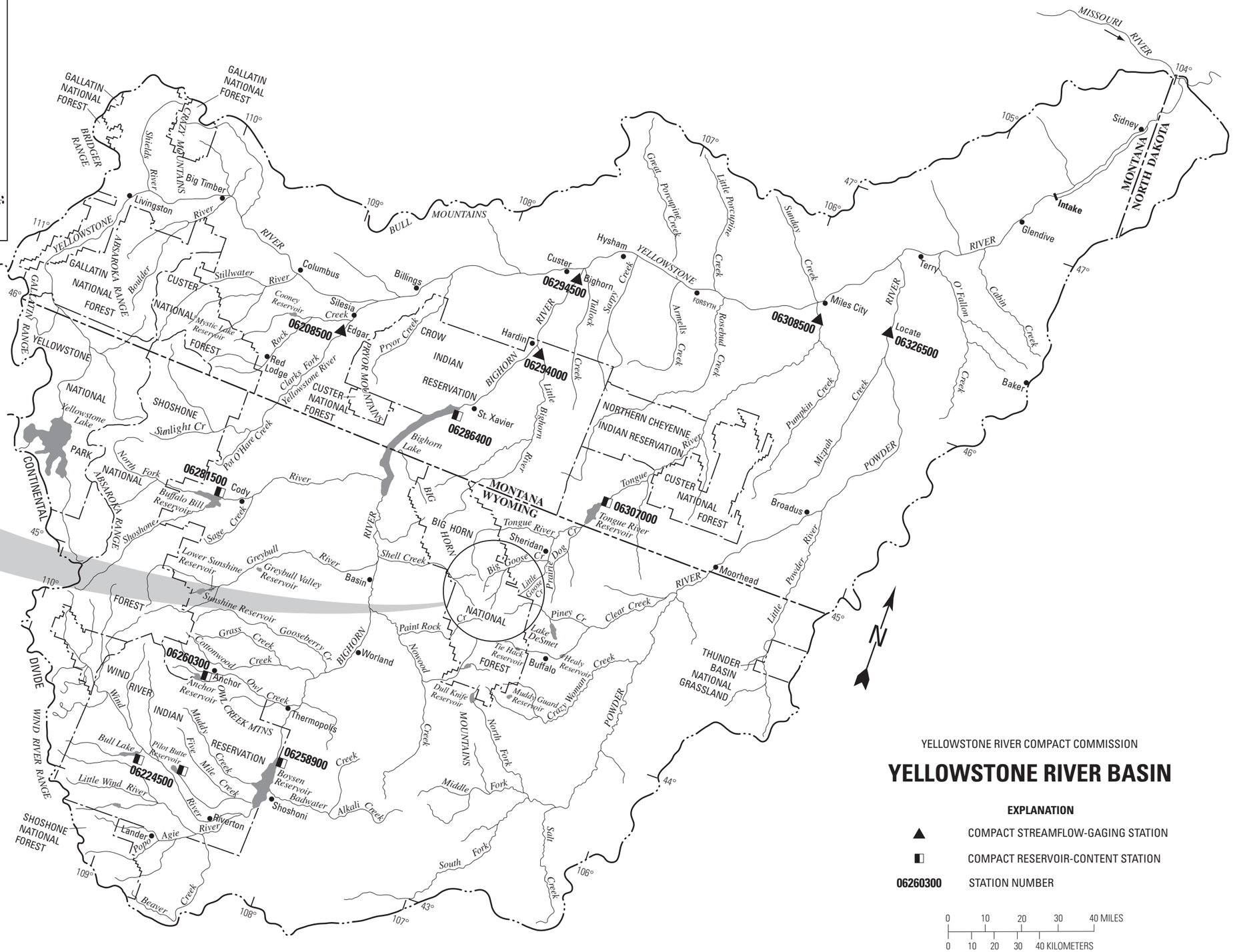
_____
Notary Public

Residing at: _____

My commission expires: _____

LOCATION MAP





YELLOWSTONE RIVER COMPACT COMMISSION

YELLOWSTONE RIVER BASIN

EXPLANATION

▲ COMPACT STREAMFLOW-GAGING STATION

◧ COMPACT RESERVOIR-CONTENT STATION

06260300 STATION NUMBER

0 10 20 30 40 MILES

0 10 20 30 40 KILOMETERS

LOCATIONS OF YELLOWSTONE RIVER COMPACT STREAMFLOW-GAGING AND RESERVOIR-CONTENT STATIONS