

ANNUAL FWP DROUGHT SUMMARY

2006

Prepared for:

Governor's Drought Advisory Committee

Submitted by:

Montana Fish, Wildlife & Parks

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I. INTRODUCTION

Montana Fish, Wildlife and Parks provides this report in fulfillment of the annual reporting requirement of the 1995 Montana Drought Response Plan. The specifics of the annual reporting requirement can be found in Chapter IV (Drought Monitoring) of the Plan, on page 14. The entire Plan is available online at <http://nris.state.mt.us/drought/committee/DroughtP.pdf>. This report constitutes Montana Fish, Wildlife and Park's (FWP) "participating agency" annual report for 2006 to the Governor's Drought Advisory Committee.

This report is not intended to repeat any of the specific climatic data and reporting presented to the Committee in 2006 by other participating agencies. Drought information including reports by other agencies can be found at Montana's official drought website: <http://drought.mt.gov/default.asp> The following report focuses on FWP's analysis of local drought conditions and responses to those conditions.

II. FWP DROUGHT ASSESSMENT AND RESPONSE ACTIVITIES

FWP's drought response consists of ongoing activities performed on a regular basis, regardless of the existence or absence of drought conditions, as well as specific activities undertaken in response to drought conditions. The following describes FWP's assessment and response activities in 2006.

Regular and Ongoing Assessment and Response Activities

FWP administrators and field staff regularly assess the relationships between climatic/hydrologic conditions and habitat, whether such conditions are overly dry, overly wet, or near normal. These assessments include the following activities:

- By monitoring snow pack and precipitation reports and forecasts FWP staff anticipate the needs and issues of the upcoming seasons, both for Montana's fish, wildlife and recreational resources, as well as to the local communities and businesses associated with those resources.
- FWP tracks stream flow and water temperature conditions in Montana's priority streams and tributaries to determine relative conditions for fish and wildlife, and recreational activities, dependent on certain flow minimums, maximums, pulses, or timing.
- FWP staff makes field observations and notes anecdotal information regarding actual species' response to changing moisture conditions. This includes activities such as noting location of bull trout relative to flows and/or water temperatures in a stream, reporting groundwater conditions (e.g., flows from springs and wells), logging comments from river recreationalists regarding conditions, or noting movement of deer and elk into or away from irrigated pastures.
- Through communication between agency divisions, with local communities, and with businesses FWP endeavors to respond appropriately to impacts of unusual moisture conditions in a consistent and science-based manner.
- FWP participates in and facilitates ongoing policy, planning, and informational efforts related to how the fish, wildlife, and recreational resources of Montana and the habitats critical to these resources are perceived, managed, and allocated, both now and in the future.

- FWP strives to increase the scientific understanding of the relationships between fish, wildlife, and recreation resources and climatic conditions, and works to make that information available and usable to decision-makers at various levels. Examples include the field determination of appropriate instream flows for various fish species, participating in development of water quality restoration or drought management plans at the local level and sponsoring research into specific factors such as whirling disease and hooking mortality that may affect a species capability to withstand climate-related stresses.
- FWP funds (through grant programs or direct expenditures) and conducts specific long-term projects to increase Montana's capability to sustain dry climatic conditions while also maintaining habitat quality, resource productivity, and management flexibility. Examples include stream restoration grants, stream flow restoration through instream flow leasing, conservation easements to meet habitat and landowner objectives, native species conservation and restoration, as well as coordination with Montana Department of Natural Resources and Conservation on water allocation policy and issues.

Specific Fisheries Assessment and Response Activities in 2006

Under drought conditions and with limited resources, FWP's efforts in long-term drought susceptibility reduction shift to a more short-term assessment and response mode, based on the severity of the situation and the needs it creates. Despite normal precipitation in the 2006 water year (October 2005 - September 2006) early snowmelt and lack of summer precipitation lead to very low stream flows across much of Montana. While no fish kills due to low stream flow and high water temperature were documented, drought impacts to fisheries may not be evident until several years after the low flow events. Effects may include missing age/size classes, reduced growth rates, reduced fish densities, poor fish condition (e.g. parasitism), etc. A summary of FWP's specific assessment and response activities by Region for year 2006 follows. The monthly drought updates provided by FWP to the Committee that are the basis for this summary can be found at <http://fwp.mt.gov/drought/default.html> under the heading **Regional Drought Reports**.

FWP Regional Reports

Region 1 – Kalispell

Snow pack in northwest Montana came out of winter at or above average. Warm weather and rain in April brought stream flows up quicker than normal. By mid-May stream flows were slightly below average to average. Warm weather in the following weeks led to a continuing early runoff. June and July had little rain with temperatures in July approaching record levels.

Previous years of drought took many lakes into the winter at low pool levels. Even though the winter and snow/ice levels were average, some lakes did not have sufficient pool depths to avoid oxygen depletion. Banana Lake near Happys Inn, Timber Lake near Eureka and Cliff Lake near Kalispell all had low oxygen levels and reported fish kills. By mid-May many lakes were showing water levels increasing already as groundwater continued to recharge. Echo Lake filled (actually above normal high pool) for the first time in nearly 10 years.

Many rivers were near bank-full discharge in the spring. This cleaned out a lot of accumulated sediment in river gravels to provide better fish spawning and rearing habitat. It also caused a lot of bank erosion, particularly around Hungry Horse Reservoir with damage to stream channels and road crossings. Despite good runoff, by mid-July water temperature in Thompson River was nearing 70 degrees but flows remained just high enough to avoid any drought-related fishing restrictions. Hubbart Reservoir had refilled after several dry years but experienced significant

drawn down for irrigation, which will slow recovery of this popular rainbow/kokanee fishery. This fishery was chemically rehabilitated during a dam safety inspection 2 years ago. Region 1 again experienced high rainfall in the fall in some areas with Glacier Park reporting more than 7" of rain over 24 hours in one location. Streams across the region ran bankfull and parts of Glacier Park and the Kootenai drainage experienced flood damage. Higher flows and clean gravels produced good bull trout spawning runs in most areas. Beaver dams had accumulated in some streams during drought years but bull trout were able to access most spawning tributaries. Bull trout spawning beds or redd counts were at record levels in the South Fork Flathead, up 25% in the Swan drainage, and up 50% in the Middle and North forks of the Flathead. Redd counts in the U.S. portions of the Kootenai were about average but the Wigwam River, primary spawning tributary to Lake Koocanusa in Canada, showed record high counts.

Ashley Lake

In May outflows from Ashley were at 70 cubic feet per second or higher, the highest in 5 or more years and considerable flooding occurred in the Smith Lake area downstream. By mid-July Ashley Lake levels were down only about 0.7', the best mid-summer level in 5 or more years while Ashley Creek flows remained satisfactory. Rounding out the summer in September Ashley Lake was down about 4,000 acre-feet (out of 11,000 AF storage) or about 1.5'. This lake level is the highest late-summer level in the last 4-5 years despite the hot, dry summer, which took a lot of evaporation off the lake.

Flathead Lake

Flathead Lake hit low pool (- 10 feet) about April 10th and then came up rapidly over 2 feet due to runoff, catching a lot of lakeshore construction by surprise. Flathead Lake easily refilled and Kerr dam was forced to draft water to avoid overflowing.

In September the Bureau of Indian Affairs and Confederated Salish and Kootenai Tribe released a draft drought management plan for Flathead Lake. The southern half of the lake is on the Flathead Reservation and the Confederated Salish and Kootenai Tribe co-manages Kerr Dam with PPL Montana. For more than 50 years, Flathead Lake has been managed for full pool from June 15 through the summer and most docks, marinas, etc. are built for that level. The drought plan attempts to balance lake levels with downstream minimum flow levels in the Flathead River. One alternative gives precedence to downstream flows. That may drop Flathead Lake levels one foot below full pool in some drought years. Another alternative is to release water from Hungry Horse Reservoir upstream to maintain Flathead Lake levels.

Hungry Horse Reservoir

In mid-May Hungry Horse Reservoir was 42.5' down and refilling ahead of schedule. Ultimately Hungry Horse had to draft water to avoid overflowing.

Lake Koocanusa - Kootenai River

On May 16th outflows from Libby Dam (Lake Koocanusa - Kootenai River) were increased to "sturgeon flows" to try to stimulate white sturgeon spawning. The dam went to full generation at 26,000 cfs, which coupled with lowland runoff was intended to increase river flows to 42,000 cfs in the Bonner's Ferry area. Libby Dam is supposed to operate under a variable flow regime called VARQ that balances flood control, power generation and fish needs. The Army Corps operates Libby Dam and chose to hold the lake above VARQ levels to cover sturgeon flows. A sudden surge of runoff in late May led Libby Dam to experience an uncontrolled spill up to

31,000 cfs over 19 days to avoid overfilling. Rainbow and bull trout and mountain whitefish downstream in the Kootenai River all showed the effects of nitrogen supersaturation or gas bubble disease. Flows exceeded 80,000 cfs around Bonners Ferry with considerable damage. Montana is now lobbying for closer adherence to VARQ in the future.

Region 2 – Missoula

Bitterroot River

Painted Rocks Reservoir (West Fork Bitterroot) filled by May 2nd, ahead of normal. The full 15,000 acre-feet contracted by FWP for fishery use later in the summer was available to support flows in the Bitterroot River. Water releases from Painted Rocks Reservoir to supplement flows in the Bitterroot River began on July 15th at a rate of 32 cfs. Flows in support of the fishery were increased to as high as 156 cfs later during the summer. Despite these supplemental flows, FWP implemented fishing restrictions on the lower Bitterroot River from Jul 27th -Aug 25th due to high water temperatures.

Upper Clark Fork Basin

By mid-July water temperatures on the Clark Fork and Little Blackfoot Rivers exceeded 73 degrees for three consecutive days, triggering a mandatory closure for anglers in order to reduce stress on the trout fisheries. The affected reaches of the Clark Fork were from the outlet of Pond 2 at Warm Springs Wildlife Management Area to the confluence with the Flathead River, approximately 10 miles southeast of Plains. The entire main stem of the Little Blackfoot River to the confluence with the Clark Fork near Garrison was also under restrictions.

Region 3 – Bozeman

Big Hole River

In July high temperatures and lack of precipitation in the Big Hole Valley increased water temperatures in the Big Hole River's upper and middle reaches. By July 21st water temperatures exceeded 70 degrees Fahrenheit for more than eight hours per day for more than three consecutive days, triggering a request for anglers to voluntarily limit their fishing to reduce stress on the trout fishery. In addition to fishing restrictions, irrigators reduced water diversion to maintain flows in the Big Hole River. Ultimately full fishing restrictions were implemented on all reaches of the Big Hole with the last of the restrictions not being lifted until early October.

Beaverhead & Redrock River – Clark Canyon Reservoir

Stream flow in the Red Rock River remained strong in comparison to previous years. Trout populations are recovering and fall spawning period angling restrictions were not necessary unlike most recent years.

In mid-July Clark Canyon was holding at nearly 59,000 acre-feet but starting to decline. The FWP-recommended minimum storage pool to promote rainbow trout plant survival is 60,000 acre-feet, which translates to about 3,000 surface acres of lake. In response to improved storage, FWP stocked a record 323,000 young of the year Eagle Lake rainbow fry in June (normal plant would be about 200,000). The plant appears to be surviving well.

By fall it was clear releases from Clark Canyon Dam would be improved over the past 6 years to, at a minimum matching inflows into the reservoir throughout September and perhaps into the 1st week of October. Late season irrigation demand did not deplete a river as had been the case following the Labor Day weekend over the past 5-6 years. Base over-winter flows should be in

the 35 to 50 cfs range. This is much improved over the 25 cfs release of the recent past although it is far short of our 200 cfs desired minimum. As a result of improved stream flow, FWP has decided to forego the fall spawning fishing restrictions between Clark Canyon Dam and Dillon that has been in place for about the past 5 years.

Ruby River

Stream flows above and below the Ruby Dam were near normal in 2006. Improved flows in the lower Ruby last winter have resulted in strong survival of Age III and Age IV cohorts of brown trout. Strongly recovering numbers of the 18 inch and larger component (Age V+) brown trout are anticipated beginning next year.

Jefferson River

On July 18th Flow declined below 600 cfs in the Jefferson River at Twin Bridges. Temperature exceeded 73 F for at least 3 consecutive days, triggering the mandatory afternoon fishing restriction effective Monday July 24th. The drop in flows also triggered an alert to enlist voluntary contributions by water users to improve streamflow and reduce stress on the trout fishery. Water temperatures were extreme in the Jefferson with daily maximum temperatures of 81 F at Three Forks and 79 F at Twin Bridges. In 2004 significant whitefish mortality occurred in July under similar conditions.

Gallatin and Madison Rivers

In early September stream flow in the Gallatin and Madison Rivers remained below the long-term median. Maximum water temperatures were cooling as days grew shorter and nighttime air temperatures decrease. More water is always desirable, but the outlook for the fishery is good.

Yellowstone River Basin

By early September stream flow in the Yellowstone River at Corwin Springs remained below the long-term average and about 300 cfs above minimum flows for the period of record. At Livingston flows continued running well below the long-term median and were within 150 cfs of minimum flows for the period of record. Maximum daily temperatures at Corwin Springs and Livingston had declined over preceding 3 weeks. The Shields River stream flow remained below long-term median while maximum daily temperatures moderated as well. Irrigation withdrawal was still taking place in both drainages. Tributaries to the Yellowstone and the Shields Rivers were flowing at rates lower than normal for this time of year and irrigation is continuing to have significant impact on some of these waters. The most prominent is Mill Creek. Significant dewatering and low flows in tributaries may be negatively impacting recruitment of fry back to the Yellowstone and Shields Rivers.

Region 4- Great Falls

Missouri River Basin

With Canyon Ferry Reservoir filling in 2006 the Missouri River downstream from Holter Dam flowed near the recommended minimum of 4,100 cfs into August when reservoir releases were decreased to accommodate below normal inflow. High spring flows occurred in the major tributaries to the Missouri River below Holter Dam, particularly in Sheep Creek, but subsequent flows receded to below average levels. Summer heat and low flows likely stressed fish populations in these tributaries.

Smith River Basin

Although the Smith River Basin snow pack was above average last winter, stream flows declined steeply in July. The Eden Bridge USGS gage was re-established in 2005 where flow data was previously collected from the early 1950s through the 1970s. By mid-July stream flow was only 65% of the long-term median for this site. Hot weather has caused stressful conditions on the Smith River, and FWP received unconfirmed reports of dead fish in early July.

Sun River Basin

The minimum instream flows necessary to maintain aquatic life in the Sun River are 100 cfs in the upper reach from Diversion Dam to the mouth of Elk Creek and 130 cfs from the mouth of Elk Creek to the mouth. At Diversion Dam, flows were below the 100 cfs minimum flow all but 4 days during the first three months of 2006. From April through November, mean daily flows over Diversion Dam remained above 100 cfs. In December, however, mean daily flows over Diversion varied from 90-128 cfs and 21 days were lower than 100 cfs.

Downstream at the US 287 highway bridge, intermittent flow data was available for parts of July – November 2006. Except for August, flows typically averaged 142-160 cfs. Flows in August dropped to about 100 cfs in the middle of August and mean daily flow on 20 August was 98.5 cfs.

A gauge site maintained by the Bureau Of Reclamation is located below the mouth of Elk Creek. Although rating may not be complete for this gage site and ice influence has produced errors in measurements, this site shows relatively good flows with all monthly mean flows above the 130 cfs instream flow in 2006. However, mean daily flows dropped to 98 cfs in May, 78 cfs in June, and varied from 113-119 cfs for four consecutive days in August 2006. Further downstream at the Sun River at Simms gauge site, mean monthly flows in July, August and September all were below the 130 cfs instream flow. The lowest flow recorded by the USGS at this gage was 27 cfs, which was recorded on 27 May 2006. These low flows prevent the establishment of a viable fishery in this reach of the river.

Water temperatures on the Sun River were measured at thirteen sites in the reach from Gibson Dam to Simms Bridge in 2006. The site at Lowry Bridge recorded the highest maximum at 83F on 7/22/2006. Water temperatures above 80F were recorded on eleven days at the Lowry Bridge Site and on three days at the Simms Bridge site. All days where water temperatures exceeded 80 F occurred in the last two weeks of July.

Teton River Basin

What was looking to be a promising water year in the Teton drainage quickly changed as summer progressed. Warm spring temperatures caused a near-average snowpack to come off several weeks earlier than normal; spring run-off peaked on the upper Teton at 490 cfs on May 19th. Once again, the upper Teton River was diverted dry during the entire run-off period as irrigators filled all of the basin's storage reservoirs except for Bynum Reservoir. It is now over four years that the Teton River above Choteau has been diverted dry year-round. The fishery implications resulting from this dewatering are obvious. No water was flowing at the Teton's mouth at Loma from July 10th on.

The water level in Eureka Reservoir again hit dead storage by mid-August, and as the reservoir drops to this level, fish entrainment losses into the outflow canal increased substantially. Bynum

Reservoir received little storage water (reaching only 19% of capacity) during the past year and only had a minimum amount to release to irrigators this spring. For the third consecutive year, FWP cancelled scheduled walleye plants for this once popular reservoir.

Spring Creek, a small stream that bisects Choteau, was completely dry during the town's popular July 4th festivities. This stream has been running intermittently for about the past three years, but flowed last year during the July 4th week as irrigators diverted water into Spring Creek from the Teton River. Although water was diverted again this year, and substantial rainfall occurred in the area during June, it apparently was not adequate to recharge the stream's alluvial aquifer. Many local residents and visitors continue to comment on the loss of this local resource. In addition, a popular fishery for local youths as been lost, as FWP annually stocked catchable rainbow trout into this stream.

Marias River Basin

As in the Teton Basin 2006 was looking to be a promising water year in the Marias drainage but conditions changed quickly as summer progressed. Flows in the upper Marias River near Shelby declined dramatically since peaking at 3,580 cfs in mid-June. Stream flow in the Marias' headwater streams including Cut Bank Creek, Badger Creek, and the Two Medicine River were all much lower than historic averages. Although Marias River inflows were low, Tiber Reservoir's water elevation was within normal operational guidelines. Adequate boating access was available at all major recreation sites.

Lake Frances, an off-stream storage reservoir that receives water from Dupuyer and Birch Creeks did not fill this spring. Due to low lake levels, boaters were forced to launch from the low water ramp on the former island out from the Valier city campground. Access to this ramp has been beneficial as it relieved launching congestion at the small ramp on the east end of this popular reservoir.

Judith River Basin

Flows in the Judith River dropped substantially starting in mid-June. At the USGS gauge near the mouth of the Judith River flows in 2006 were generally been higher than the 5- year period of record. Farther upstream is a different story. FWP has been monitoring flow for several years on the Judith River near Hobson. On July 13th the flow was about 9 cfs at this site and flow continued to decline. The FWP instream flow reservation is 25 cfs in this vicinity.

Big Spring Creek flows are monitored above and below Lewistown by FWP. Data collected in 2006 continues to indicate that the 110 cfs Murphy Instream Water Right is often not met on this stream in summer. In 2006 flows were excellent throughout the creek until late June. As in 2004 – 2005, flows below Lewistown dropped well below the FWP's instream water right by mid-July. On July 13th flow was 51 cfs below Lewistown. Above Lewistown, at the Ash Street Bridge flows were better than they have typically been during the last 5 years. FWP has started monitoring a second site above Lewistown, further upstream near the hatchery. This site is at the same location as a USGS site operated from 1932 – 1957. Flow was 90 cfs at this site on July 17, 2006. During the historical period of record less than 10% of the mean daily flows were this low and they all occurred prior to 1942.

Warm Spring Creek flows were well below FWP instream flow of 110 cfs since early July and were 72 cfs on July 17th. Flows were about 70 cfs during mid-May as well. As in 2004 – 2005

base flows continue to be lower than the base flows of 99 – 159 cfs measured from 1968 – 1971 by the USGS. Maximum run-off flow was about 250 cfs in mid-April.

Most small reservoirs filled in the Lewistown area in 2006. Petrolia Reservoir spilled and is the fullest it has been in several years. Yellow Water Reservoir did not receive sufficient run-off this year to fill and remains very low.

Musselshell River Basin

Stream flow in the Musselshell River at Mosby fell to zero from late July through mid-August but rebounded to 20 cfs on September 15th.

Martinsdale Reservoir was drained to allow for repairs. Unfortunately these repairs did not occur as planned and the reservoir will need to be drained again most likely in 2007. Bair reservoir was only at 15% capacity (33% of average) by August 30th.

Region 5 – Billings

Bighorn River - Reservoir

In May, Bighorn River anglers were reporting a resurgence of both rainbow and brown trout following a year of flows at or above the preferred minimum of 2,500 cfs. The formula is simple for the Bighorn: just add water and the fish will respond rapidly and dramatically.

Bighorn Lake's forage base rebounded quickly last year when water flooded the shallow areas that had become overgrown with vegetation. Smallmouth bass are abundant, and walleyes are in good condition. The boat ramps at Ok-a-Beh and Barry's Landing were functional throughout the summer.

The Bighorn River was returned to its absolute minimum recommended flow of 1,500 cfs on July 14th in response to lower than anticipated inflows. Trout populations in the river that had been recovering from the extended drought after last years' improved flows will again be forced into severely reduced habitat. The Lovell Chamber of Commerce, Wyoming Governor's Office, Wyoming congressional offices, and National Park Service have been pressuring the US Bureau of Reclamation to provide higher elevations in Bighorn Lake at the expense of releases to the river. They cite economic hardships associated with the facilities being closed at Horseshoe Bend at the southern end of the reservoir.

Musselshell River Basin

In mid-May, stream flow in the Musselshell River was near normal at Harlowton and Shawmut, but well below normal farther downstream. In July, the Musselshell was the only river in Region 5 with near normal flows. Hopefully these flows were adequate to support the improvements to last year's fishery caused by flushing flows and good flows all summer.

For the first time since 2001, water began flowing into Broadview Pond. However, more water is needed before the pond can support fish. FWP took advantage of this water and stocked largemouth bass. Once the pond fills completely, they would again like to plant trout at this popular location.

Yellowstone River and Tributaries

By mid-July, the Yellowstone River was flowing at about half the median, and water

temperatures were nearing critical levels for trout. The FWP Yellowstone River crew ceased trapping for burbot because these fish are more difficult to catch at higher temperatures, and they are more stressed by tag-implantation surgery. The Boulder and Stillwater rivers were flowing at half the median, and the Clarks Fork was at one-third the median.

The Derby Fire in the Stillwater and Boulder drainages has had and will have significant impacts upon the fishery in those drainages. Bad Canyon Creek, where FWP recently replaced a brown trout population with native Yellowstone cutthroats, was completely engulfed, as were nearby drainages with cutthroats. The fires have completely altered FWP's planned sampling in the Boulder. FWP's emphasis will likely turn to evaluating fire impacts and predictions of ash and soil runoff later.

Region 6 – Glasgow

Milk River Basin

In mid-May precipitation increased stream flow in the Milk River near the Canadian border to near normal despite the snowpack in the headwaters of Milk River drainage being nearly depleted. Lake elevations in Fresno Reservoir were excellent with the active conservation pool at nearly 100% full. It is expected that forage and game fishery in Fresno Reservoir should benefit from inundated shoreline vegetation.

May precipitation in the Havre area brought most streams and small reservoirs up to near normal flows and water levels. Further downstream, water levels in Nelson Reservoir were also good with its conservation pool near 92.5% full setting the stage for enhanced forage fish spawning and cover.

Mid-July found the water elevation in Fresno Reservoir steady and relatively high compared to past years due to high spring inflows. Unfortunately, the high and stable water levels throughout the spring, which should have benefited forage fish production, declined sharply from July on due to decreased precipitation, high temperatures, and increased call for irrigation waters. The active conservation pool was at 34% full and increasing since September 5th when irrigation water was shut off from Fresno.

Nelson Reservoir water elevations also declined sharply beginning in July due to irrigation demand and lack of precipitation. Reservoir levels were at 53.9% full and were increasing once irrigation water was shut down September 5th. Inflows into Nelson Reservoir were at 209 cfs with zero outflow in mid-September.

Missouri River Basin including Fort Peck Reservoir

Inflow to Fort Peck was expected to be above average given the good snow pack runoff and the augmentation of flows from Tiber Reservoir. Flows in the Missouri River above Fort Peck Reservoir peaked around 22,000cfs in mid-June but fell off quickly. Paddlefish likely successfully reproduced this year due to the high peak flows that were sustained in May. Significant aquatic vegetation along the reservoir's shoreline should have helped to provide cover for forage fish species and stocked walleye into August. However, fall spawning cisco in the reservoir had less than ideal egg incubating conditions due to declining pool through the '05 –'06 winter and abbreviated ice-cover. Record low lake levels are predicted to occur in February 2007.

As of July 24th stream flow in the lower Missouri River near Culbertson was approximately 7,280cfs, below the long-term median flow for that time of year of 8,980cfs. Even with slightly below normal discharge, native fish species in the lower Missouri River should be able to maintain status quo.

Ponds and Small Reservoirs

In the spring most ponds in the eastern portion of Region Six were in good condition due to spring snow runoff and rain. By mid-July high ambient temperatures and declining water levels caused concern for possible fish kills in some reservoirs. By September a lack of rain and high temperatures caused sharp declines in reservoir levels throughout Hill, Blaine, and Phillips counties. Many reservoirs are as low as they've been in 10 years and winter fish kills may become a problem.

Region 7 – Miles City

Overall the Yellowstone River basin of Montana and Wyoming saw a much poorer mountain snow pack than the rest of Montana. This coupled with an early snowmelt contributed to generally dismal stream flow conditions throughout all of Region 7. However, good spring precipitation filled many of the ponds and small reservoirs in southeastern Montana.

Prairie Ponds

Most of the ponds in the region filled and are sustaining stocked fish populations. Good fish growth was been observed on these ponds. Ponds in the Ekalaka area are doing very well due to the volume of water related to late spring storms and subsequent pond recharge. Ponds in the Forsyth area remain low and are not sustaining fisheries as well as other areas of the Region.

Many of the prairie ponds that re-charged during the 2005 season and remained relatively full through the 2006 season have produced excellent fisheries. These productive pond systems have maintained fisheries in-spite of continued drought conditions. Once stocked with fingerling bass or trout, these ponds produce high growth rates and provide angling opportunities for catchable fish by late July and through the fall months. Due to the extremely dry conditions during August, many of these ponds evaporated to very low levels. Winterkill may be an issue in some ponds this winter.

Yellowstone River

By mid-July Yellowstone River flows continued to plummet as intense heat combined with continued water withdrawal reduced the water volume of this system. Impacts to fish and amphibian populations are difficult to specify but the loss of water from the system severely limits habitat availability and therefore fish populations. Flows in the Yellowstone River remained extremely low level into September with flows of 2500 cfs relative to a long-term average of 7500 cfs.

Powder River

By mid-July stream flow in the Powder River was at 4 cfs. The Powder had essentially lost connectivity with the Yellowstone River and was dry. This situation persisted for most of the July-September period. Any resident fish populations in the Powder were lost.

Tongue River

Inflows to the Tongue River Reservoir set new historic lows during extended period in 2006. Due to extremely low inflows into Montana, the T&Y Irrigation District, which normally relies mostly on natural flow, was forced to rely on contract water from Tongue River Reservoir much earlier than normal. These contracts were depleted about the end of July. In order to provide critical irrigation to maturing crops, T&Y purchased additional water from the Northern Cheyenne Tribe's allocation from Tongue River Reservoir. Montana DNRC also purchased water from the Northern Cheyenne to prevent the Tongue River from drying up. The river fishery has been impacted through the past few years of drought with average flows during the summer months being very limiting and again during winter months as storage of inflowing water is retained.

The valuable crappie fishery found in the Tongue River Reservoir will need to be monitored as we approach winter months with low inflows into the system. Low input combined with a high proportion of CBM effluent could cause water qualities that may be stressful to the Reservoir's fishery.

III. FWP DROUGHT MANAGEMENT OBJECTIVES

The Montana Drought Response Plan (1995) includes the following objectives for FWP drought response in general:

1. Protect FWP's existing instream rights.
2. Supplement stream flows through purchase of stored water, leasing of consumptive rights, and other innovative methods.
3. Obtain reservoir operations, which minimize impacts to fish, wildlife and recreation.
4. Monitor stream flow, fish populations and fishing use and harvest to ensure carry-over of wild stream fisheries while maintaining reasonable opportunity for harvest in all streams and lakes. Implement emergency regulations on streams and lakes as needed.
5. Develop and implement an Information and Education Program, which informs the public and maintains consistency in the Department's programs.
6. Coordinate an updated Department Drought Summary for presentation to the Governor's Drought Advisory Committee and the Fish, Wildlife and Parks Commission as required.
7. Develop and implement water conservation practices within the agency.

FWP continues working toward achieving these objectives, both in the short and long-term, though several are difficult to attain under existing water allocation patterns and increasing competition for water in many areas of Montana.

IV. FWP ACTIONS TAKEN TO MITIGATE DROUGHT IMPACTS

It should be noted that under existing law and water administration patterns, there is a fairly significant limit to the ability to mitigate impacts of low flows on Montana's fisheries. Despite the actions listed below, many of Montana's fisheries continue to be impacted by the drought conditions. The extent of these impacts will continue to be determined over time, as additional fish population information is gathered in future years.

FWP Drought Mitigation Actions

- Again in 2006 FWP sent call warning letters to water users junior in priority to FWP instream water rights. FWP relied upon two primary tools to determine which streams would potentially drop below FWP's instream flow water rights. The first is the Surface Water Supply Index (SWSI),

published by the USDA-NRCS. The SWSI ranks Montana river basins on a scale from “extremely wet” to “extremely dry”. It accounts for snowpack, mountain precipitation, streamflow, reservoir storage and soil moisture. The second tool was the Low Flow Forecast also produced by the USDA-NRCS.

Warning letters were sent to junior water users in river basins classified as either “extremely dry” or “moderately dry” by the SWSI or if a river was forecasted to have a low flow below the FWP instream right. These warning letters must be sent by June 15th in accordance with the State Drought Plan. The letter informed juniors that FWP might call their water right if low flow conditions occur. In 2006 warning letters were not sent to water users on streams without stream gauges.

Call letters requesting junior water rights to cease diverting were sent when flows at USGS gauging stations drop below FWP instream right levels and were expected to remain below these levels for an extended period. In The following table summarizes the FWP’s water right warning and call activities for 2006.

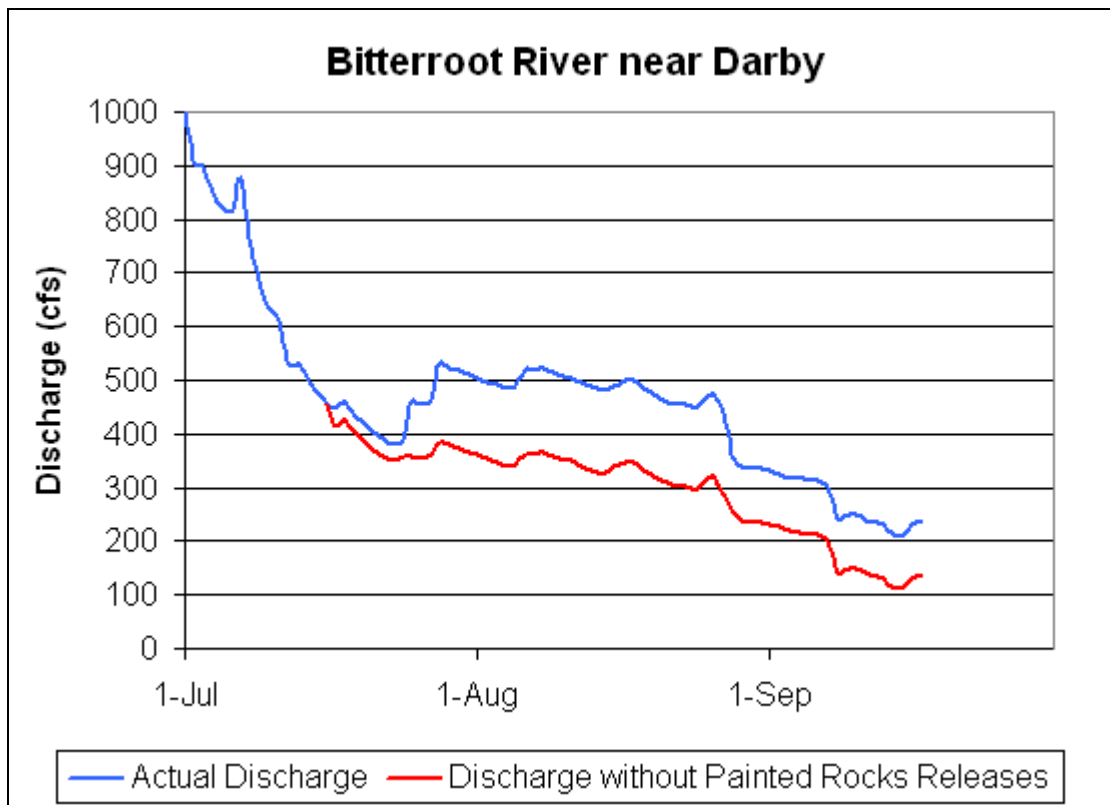
Stream	Number of Warnings Sent and Date		Number of Calls Sent (if any) and Date	
	No.	Date	No.	Date
Region Four				
Marias above Tiber Dam	1	6/9	None	
Smith	12	6/9	12	7/28
Region Four Totals	13		12	
Region Five				
Stillwater River	27	6/9	None	
Clark’s Fork Yellowstone	8	6/9	8	7/28
Region Five Totals	35		8	
Region Seven				
Tongue River	7	6/9	7	6/23
Region Seven Totals	7		7	
State Totals	55		27	

No warning or call letters were sent in Regions 1, 2, 3 and 6 in 2006.
(FWP Drought Management Objective 1)

- FWP participated in the enforcement of water rights as a water user where Water Court decrees are enforced by water commissioners. *(FWP Drought Management Objective 1)*
- FWP in cooperation with other governmental agencies and private parties continued to cost-share with the U.S. Geological Survey in funding stream gauges and thermographs throughout Montana. For the 2006 water year this included 18 real-time stream gauges and 13 thermographs. Additional FWP staff measured stream flow throughout the state at various locations and collected continuous stream flow information at several sites.
(FWP Drought Management Objectives 1 & 4)
- FWP continued working with local communities to develop and implement emergency low flow/drought response plans (Big Hole, Jefferson, and Blackfoot). FWP staff are active members of the drought response committee efforts, coordinating with DNRC staff in their measurement of flows, monitoring fishery condition and water temperature, informing committees of problem areas, and generally encouraging collaborative and effective water conservation to address current and

projected problem areas. The Blackfoot Drought Plan incorporates a creative alternative to FWP's traditional call for senior water, whereby senior water users contributed conserved water to conceptual "water bank", which juniors that are valid Plan participants can draw against in emergency conditions if certain conditions are met. This plan continues to work successfully without FWP needing to make call. *(FWP Drought Management Objective 2)*

- FWP continued to work with water users, communities, and other agencies to implement long-term flow and habitat protection and enhancement projects such as water right leasing for instream flow. FWP continues to maintain existing instream flow leases while searching for additional leasing opportunities. *(FWP Drought Management Objective 2)*
- FWP continued to purchase 15,000 acre-feet of water from DNRC's West Fork Bitterroot Project (Painted Rocks). DNRC releases the in-stream flow contract water, which is protected from diversion by the Bitterroot water commissioner. The flows vary as needed, with adjustments called for by the Bitterroot water commissioner and FWP local fisheries biologist, based upon flow and fishery conditions at Bell Crossing. The following hydrograph demonstrates the impact of this purchase water on the Bitterroot River during the critical low-flow part of the year: *(FWP Drought Management Objective 2)*



- FWP provided comment and guidance regarding the operation of Federally owned reservoirs aimed at mitigating the impacts of drought on the associated fisheries and recreation opportunities. In 2006 FWP recommendations for stream flow below Yellowtail Dam on the Bighorn River came under fire from recreational interests in Wyoming concerned with low lake levels. As a result the Bureau of Reclamation modified its operating plan for the 2007 water year. Governor Schweitzer expressed Montana's displeasure with this modification. A copy of his letter is found in appendix A. FWP also provided comment on operation of several state-owned reservoirs. *(FWP Drought Management Objective 3)*
- Beginning in late July and continuing through August emergency fishing restrictions were

implemented on many Montana rivers including the Clark Fork, Bitterroot, Little Blackfoot, Gallatin, East Gallatin, Madison, Big Hole, Jefferson, Sun, Dearborn, Smith and Middle Yellowstone. Beginning in early September restrictions began to be lifted as flows increased and/or water temperatures decreased. (*FWP Drought Management Objective 4*)

- FWP collected information on known and suspected impacts of drought on specific fisheries, as reported by FWP fisheries field staff. (*FWP Drought Management Objective 4*)
- FWP provided drought updates, fishery condition information, and related angling restrictions to interested parties via the Internet and dissemination of regular FWP drought updates, prepared through the year. FWP also disseminates drought educational information. FWP continues to maintain a drought webpage at: <http://fwp.mt.gov/drought/default.html> (*FWP Drought Management Objectives 5 & 6*)
- FWP participates as a voting member of the Governor's Drought Advisory Committee and regular reports to the Committee on drought impacts to the State's fish and wildlife. (*FWP Drought Management Objective 6*)
- FWP works between its various divisions to ensure water conservation is considered an implemented. Water rights acquired with Wildlife Management Areas are reviewed both in terms of how benefits to wildlife can be maintained or enhanced while at the same time evaluating the possibility of improving stream flow by changing acquired water rights to instream flow. (*FWP Drought Management Objective 7*)

V. SUCCESSES AND CHALLENGES

The following is an abbreviated list of successes and challenges noted by FWP staff in the Fisheries Division.

Successes

- The continued purchase and delivery of water from Painted Rocks Reservoir to the Bitterroot River was once again critical to this important fishery surviving drought conditions.
- Drought Plans in the Jefferson, Blackfoot and Big Hole River basins again helped successfully mitigated drought impacts.
- FWP received approval for a Candidate Conservation Agreement with Assurances (CCAA) for the Big Hole watershed upstream of the Dickey Bridge. Big Hole grayling are classified as candidates for listing as threatened or endangered under the Endangered Species Act, and are currently the subject of litigation to list them. It appears that federal listing of grayling is imminent, and there is the possibility that they could be emergency listed at any time. If federally listed, then grayling would be subject to the regulatory requirements of the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service. In the case of the Big Hole the Candidate Conservation Agreement with Assurances (CCAA) is an agreement between the U.S. Fish and Wildlife Service (USFWS) and FWP. FWP in turn is enrolling non-federal property owners who voluntarily agree to manage their lands or waters to remove threats to species at risk of becoming threatened or endangered. In exchange for proactive conservation activities benefiting the imperiled species, the USFWS will provide regulatory certainty and assurances to the participating property owners in case the covered species is subsequently listed under the Endangered Species Act (ESA). FWP is pursuing this course of action to protect both the arctic grayling as well as the agricultural production of the Big Hole Valley.
- The appointment of water commissioners to enforce all-encompassing Water Court decrees has greatly increase the efficiency of water deliveries, in some places benefiting stream flows as well. The largest water right enforcement project in Montana is on the Musselshell River where water commissioners administer water delivery on the main-stem Musselshell upstream of Mosby including the North and South Forks. In 2006 FWP was billed for instream flow 3,735 acre-feet

that flowed past Mosby. This compares to 6,195 acre-feet that was billed to FWP for instream flow in 2005.

- FWP instream leases continue overall to show very positive results. These leases effectively maintained and in several cases improved the fishery in previously de-watered streams.
- In addition to providing ongoing input regarding the regular operation of Federal reservoirs, FWP provided comment on the renewal of long-term water contracts from Bureau of Reclamation's Clark Canyon Reservoir. The extended severe drought in southwest Montana coupled with corresponding reservoir operations along with the expansion of acres irrigated by the project has severely negatively impacted fishery in the Beaverhead River with impacts extending into the Jefferson River. The Bureau of Reclamation and the water users have entered into a memorandum of understanding with FWP that commits the parties to development of measures to improve enhance the environmental health of the Reservoir and the Beaverhead River.
- FWP over the years has provided comments regarding the adjudication rules. One key area of comment has been the implementation of Bean Lake Decision by the Water Court. The Water Court contended that every fish and wildlife claim would require a hearing while FWP owning many such claims disagreed. In December 2006 the Supreme Court agreed with FWP in that fish and wildlife claims do not necessarily require a hearing and ordered the Water Court to adopt rules to that effect. This will save FWP staff considerable time that can be devoted to other water related issues such as drought.

Challenges

- The passage of House Bill 22 by the 2005 Montana Legislature, which provides funding for expedited water rights adjudication undoubtedly benefits FWP's drought mitigation efforts as the extent of existing water rights will be determined in a more timely fashion. A side benefit of this legislation is the billing of all existing water rights, which requires that the rightful owners be identified. It was hoped that this would greatly assist FWP in easily identify the rightful owners of water rights junior in priority to instream flow rights. FWP has maintained an independent database of junior water right owners that was considerably more accurate and up to date than the DNRC records but required significant time and effort on the part of FWP staff. In 2006 instead of relying on its own database, FWP used DNRC water right owner information. This resulted in a considerable amount of return mail due to incorrect owners or addresses. It is uncertain whether the DNRC database will be sufficiently corrected to allow its use instead of the FWP maintained database in the future.
- While FWP continues to pursue instream flow leases, affordable and functional leases continue to be difficult to obtain. The slow pace and inaccuracies of the ongoing water rights adjudication present stumbling blocks to leasing that are difficult to overcome. The recently increased pace of the general adjudication and the requirement that the Water Court address all issue remarks will hopefully facilitate more water leasing.
- The continuing multi-year drought puts extreme pressure on voluntary water conservation measures. Voluntary water conservation measures may be compatible with water users needs for short periods of time, but may not be feasible over the long-term as the cumulative impacts of reduced water use continue to grow.
- There is a broad expectation that FWP staff and tools actually can solve low-flow impacts on fisheries, and that such impacts actually can be fully mitigated. Although Montana's fisheries received considerable assistance from other agencies and water users, there exist very few tools to deal with low-flow concerns on a broad scale in Montana.
- Long-term drought response continues to be difficult to obtain. Emergency, short-term responses maybe becoming more difficult to administer as the drought lingers. Most drought mitigation efforts are temporary and do not provide for long-term solutions that reduce drought susceptibility.
- Current statute provides for no permanent change of water rights to instream flow. Without this

tool, a permanent reduction in the fishery drought susceptibility is nearly impossible to obtain in many streams and rivers. FWP is pursuing Legislative authority to allow for permanent changes of water rights to instream flow

Appendix A

OFFICE OF THE GOVERNOR STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR



JOHN BOHLINGER
LT. GOVERNOR

October 30, 2006

Mr. Dan Jewell, Area Manager
US Bureau of Reclamation
PO Box 30137
Billings MT 59107-0137

RE: PROPOSED FALL/WINTER OPERATING PLAN FOR YELLOWTAIL DAM

Dear Mr. Jewell:

I write to inform you that the State of Montana is opposed to the US Bureau of Reclamation's (USBR) proposed operating plan for Yellowtail Dam dated October 26, 2006.

The plan does not provide, under the most probable scenario, for a spring rise to facilitate rainbow spawning and to water critical side channels for the rearing of both rainbow and brown trout. Watering these side channels is critical to the continued biological health of this great river. In addition, Montana cannot condone even the possibility of allowing the river to reach 1300 cfs under the low flow scenario. In the spirit of compromise, we have acquiesced to this emergency low flow for short periods in the past. However, given the unwillingness of our neighbors to the south to compromise in a reciprocal manner, we are no longer willing to accept this level of impact for what amounts to very little benefit to the reservoir.

As you know, Montana's Big Horn River is an internationally renowned trout fishery. During the late 1990s when flows were at or above our recommended levels, fish populations were very good. The Big Horn experienced 94,000 angler days in 1999, of which over 57,000 were attributed to non-residents who contributed greatly to Montana's economy. We have long considered Bighorn River flows as the single greatest influence on trout numbers in the river, and the effects of low flows have been obvious during the current extended drought. In the past seven years, flows have been well below our recommended 2,500 cfs, and have even dropped below the absolute minimum of 1,500 cfs. Fish populations have suffered. In 2005 angler days dipped to 68,000 days, with 43,000 of those attributed to non-residents. This situation represents a significant blow to the local economy.

Side-channel habitat is important not only for spawning, but also as the key rearing area for juvenile trout. At the target minimum flow of 2,500 cfs, most important side-channel habitat in the Bighorn is available to both adult and younger trout. Once flows drop below our standard minimum flow of 2,000 cfs, side-channel habitat is lost at an accelerated rate. At 1,500 cfs, most important side-channel habitat is unavailable to all trout.

In the 1990s when Bighorn flows were generally very good, trout populations averaged around 5,000 to 6,000 trout per mile. Populations in the upper river reached record highs of 2,300 rainbow trout per mile in 1997, and over 8,800 brown trout per mile in 1998. Current drought conditions first started to affect the river in 1999. Due to conservative operations by the USBR, however, Bighorn River flows did not drop below the target minimum flow of 2,500 cfs until the spring of 2000. Flows dropped to 2,000 cfs by September 2000 and to the absolute minimum flow of 1,500 cfs by September 2001. River flows remained at or below 1,500 cfs until June of 2005. Flows were actually reduced to 1,300 cfs during parts of 2003 and 2004.

Appendix A

I recognize that your proposed plan is based upon anticipated inflows equivalent to 80% of those experienced during the current drought, during which five of the six lowest inflows on record occurred. Raising flows to 2,000 cfs in mid-April will allow spawning rainbow trout to use at least some of the side-channel habitat, and will provide a conservative base flow to keep redds wetted until fry emerge in mid-July.

I emphasize that our preferred minimum flow is 2,500 cfs. If snow packs and reservoir levels allow, I would ask that river flows be adjusted upward to reflect improved conditions and forecasts. At the same time, in light of the social and economic values of the Bighorn River fishery, it is unacceptable to allow flows below the absolute minimum of 1,500 cfs.

Again, in the spirit of compromise, Montana would support a plan that provides for a rise in mid-April to 2,500 cfs and extends through the growing season. In addition, the low flow scenario minimum must be adjusted from 1300 cfs to 1500 cfs.

Sincerely,



BRIAN SCHWEITZER
Governor

cc: Senator Max Baucus
Senator Conrad Burns
Representative Dennis Rehberg
Jeff Hagener, Director, Montana Department of Fish, Wildlife and Parks
Shane Colton, Fish, Wildlife and Parks Commission