ANNUAL FWP DROUGHT SUMMARY

2004

Prepared for:

Governor's Drought Advisory Committee

Submitted by:

Montana Fish, Wildlife & Parks

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I. INTRODUCTION

This Report is provided 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 is Montana Fish, Wildlife and Parks' "participating agency" annual report for 2004 to the Governor's Drought Advisory Committee.

It is not the intent of this report to repeat any of the specific climatic data and reporting presented to the Committee in 2004 by other participating agencies. That information continues to be available on the Committee's website at http://nris.state.mt.us/drought/committee/meeting.html. This 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 is best divided into: (1) ongoing activities (i.e., relevant activities we do on a regular basis, whether drought conditions exist or not), and (2) emergency response under drought conditions. These types of assessment and response activities are described below for 2004.

Regular and Ongoing Assessment and Response Activities

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

- Checking snowpack and precipitation reports and forecasts to help determine what the needs and issues of the upcoming seasons will be, both for Montana's fish, wildlife and recreational resources, as well as to the local communities and businesses associated with those resources.
- Tracking streamflow 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.
- Observing in the field and noting anecdotal information regarding actual species' (including human!) response to changing moisture conditions; e.g., location of bull trout relative to flows and/or water temperatures in a stream, reported groundwater conditions (e.g., flows from springs and wells), comments from canoeists of Smith River conditions, or movement of deer and elk into or away from irrigated pastures.
- Communicating within divisions, with local communities, and with businesses to respond appropriately to impacts of unusual moisture conditions in a consistent and science-based manner.
- Participating in 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.

- Increasing the scientific understanding of the relationships between fish, wildlife, and recreation resources and climatic conditions, and working to make that information available and usable to decision-makers at various levels. Examples include: 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, sponsoring research into specific factors (e.g., whirling disease) affecting species capability to withstand climate-related stresses, etc.

- Funding (through grant programs or direct expenditures) and conducting 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, streamflow restoration through instream flow leasing, conservation easements to meet habitat and landowner objectives, native species conservation and restoration, coordination with DNRC on water allocation policy and issues, etc.

Specific Fisheries Assessment and Response Activities in 2004

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. While some areas of Montana saw relief this past year, drought impacts to fisheries may not be evident until several years after the low flow events. Effects can 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 2004 follows. The monthly drought updates provided by FWP to the Committee that are the basis for this summary can be found at http://fwp.state.mt.us/drought/default.asp under the heading **Regional Drought Reports.**

REGION 1 – KALISPELL

Snowpacks in northwest Montana were approaching average levels in early January, and then precipitation basically stalled. Some early warm weather started snowmelt early and due to the dry soils much of the early melt went into the ground. As a result streamflows stayed below average in the spring. Peak flows occurred about 3-4 weeks early. Continued below normal precipitation couple with the early snowmelt depressed streamflows until precipitation improved dramatically in August and September. Some of the higher elevation sites recorded record-breaking rainfall of 10" to 12" in a short period in late August. This caused streams to flow 2-3 times normal for a while and some streamflows were running about 125% of median in early October. The late rains helped restore some ground moisture improving the outlook for next year.

LAKES AND RESERVOIRS

Both Flathead Lake and Hungry Horse reservoir filled completely while Lake Koocanusa only filled to within 10 feet of normal full pool. Even with conservative spring releases Ashley Lake only filled to within 1.5 feet or 75 percent of full. On the Little Bitterroot River, Hubbart Reseroir was completely drained due to a combination of drought conditions and a need for a dam safety inspection. The FWP Commission lifted limits to allow anglers to salvage as many rainbows and kokanee as possible. Upstream, Little Bitteroot Lake remains low causing added

concern for the Little Bitterroot basin next year as water demand to refill these two reservoirs will be greater than normal.

A blue-green algae bloom started to form on Lake Mary Ronan in July but dissipated due to a cold front. There was a minor fish kill in Noxon Rapids Reservoir due to low flows. Hatchery production has been low at several state fish hatcheries that depend on spring flows. This has shown up in reduced plants to some waters that will show a dip in fishing opportunity as a result.

POTHOLE LAKES

Many pothole lakes are down 5 to 10 feet due to low groundwater. Cliff Lake northwest of Kalispell winterkilled in 2003-2004 and several lakes are at risk this winter due to low lake levels. Whether or not fish kills occur depends on the severity of the winter.

STREAMS AND RIVERS

In August FWP issued a voluntary restriction asking anglers to not fish the Thompson River from noon on as flows dropped to about 2/3 normal and water temperatures climbed into the 70's. Even with drought conditions greatly abated in Region 1, future impacts will continue to be observed in poor trout reproduction in streams due to poor spawning and rearing conditions. This will show up for several years as weak year classes. However, Bull trout runs were generally good this fall due to improved streamflows.

REGION 2 - MISSOULA

As in Region 1, Region 2 entered 2004 with a fairly positive drought outlook that quickly deteriorated in late winter and into spring and then improved considerably in the late summer. In July drought conditions and streamflows began to improve but were dependent on week-to-week weather. By September, drought concerns had been alleviated at least for the short-term. However, concern remains for next year particularly in the Upper Clark Fork basin due to the continuing hydrologic drought.

BLACKFOOT RIVER

By mid-summer flows in the Blackfoot River were better than expected. The cool, wet weather allowed many producers to irrigate for a second cutting. Even with better than expected streamflows on August 14th, FWP issued voluntary, morning only fishing recommendations on the Blackfoot River and voluntary, no fishing recommendations on the Blackfoot River's bull trout tributaries. This was in response to the Blackfoot Drought Plan that calls for voluntary angling restrictions when flows reach 600 cfs at Bonner. Under the plan, irrigators cut back on water taken from the rivers and streams in order to maintain higher flows. Fortunately, temperatures in the Blackfoot drainage were, for the most part, below critical levels. Anglers were notified through a newspaper article on the Blackfoot that hot days can see temperatures rise to above critical levels for short times in some places. The article also included recommendations for how to lessen impact to trout on these warmer days.

GEORGETOWN LAKE

Water releases increased from 30 cfs (the normal outflow) to near 50 cfs from Georgetown Lake. It is estimated that this increase would result in 328 fewer acre-feet of water in the lake this winter. The lake's level is an important factor in maintaining the trout fishery through the winter.

REGION 3 - BOZEMAN

By March 2004 snowpack in Region 3 was below average and was particularly low at 59%in the Yellowstone River basin. Cooler temperatures and timely rains helped to mitigate drought impacts. However, the Jefferson River and its tributaries continued to be substantially impacted by the drought.

CLARK CANYON RESERVOIR

Continued record low reservoir levels and inflows at Clark Canyon Reservoir in April prompted the appointment of a water commissioner for the Beaverhead below the reservoir even before the beginning of irrigation season. In May Clark Canyon Reservoir was at record low pool and already releasing water from storage to keep flows above 25 cfs in the Beaverhead River below Dillon. The reservoir continued at record low levels with record low inflows throughout much of the summer. It ended the irrigation season in a slightly improved condition over last year due to somewhat improved rainfall and cool temperatures. No irrigation water was delivered to East Bench project in 2004. The Clark Canyon Water Supply (Decreed Water Users) received their full base allotment of four feet per acre but this allotment was measured at the river diversion rather than the field, canal pump, etc. For the fourth consecutive year, southwestern Montana's water deficit forced early reductions in flow releases from Clark Canyon Dam to winter minimums. These flows range between 25-30 cubic feet per second and result in 40-85 cfs stream flows in the Beaverhead River between the dam and Dillon. FWP recommends 200 cfs minimum flows to maintain fisheries through the reach. The flow reduction coincides with the fall spawning period for brown trout and native mountain whitefish that populate the upper river reach and those populations are showing declines related to four years of drought and low flows.

On October 4th fishing bag limits were reduced on Clark Canyon Reservoir to protect the native burbot population, and trophy rainbow trout and wild brown trout. The emergency daily and possession limit for trout is two fish, down from five; and for burbot (or ling) the daily and possession limit is two fish down from 5. No fertilized Eagle Lake rainbow trout eggs were collected by FWP. Clark Canyon Reservoir serves as an important brood source for the wild Eagle Lake strain of rainbow trout and usually provides about 500,000 fertilized eggs for the FWP hatchery system.

RED ROCK RIVER

Fishing seasons were closed on May 15th (the day it was to open) on the Red Rock River due to extremely low flows. As of May 7th, only about 25,000 acre feet remained in storage in Lima reservoir (capacity about 60,000) and the Red Rock River was dry at Kidd. It remained closed to fishing through November 30, the normal season end. By September some reaches were nearly dry while others were maintaining refugia with 20 to 30 cfs. Water users did not release any stored water from Lima Reservoir. Red Rock Creek in the extreme upper part of the basin was at or above long-term median flows all summer due to timely rains. Overall by fall conditions on the Red Rock River improved relative to the past five years although this slight improvement still leaves the Red Rock in a deep drought.

BEAVERHEAD RIVER

In the spring low flows were of concern on the Beaverhead River due primarily to low releases from Clark Canyon Reservoir. Related water bodies such as Poindexter Slough were also being

monitored closely due to the anticipated reduced irrigation diversions. Flows in Poindexter Slough are dependent on irrigation diversions. Water is diverted into the Poindexter Slough from the Beaverhead River and then diverted from Poindexter into the Dillon Canal. In the past the water commissioner measured the Dillon Canal diversion at the Poindexter headgate, but in 2004 the diversions were measured at the Beaverhead headgate instead, reducing the flow diverted into the Poindexter Slough. Water diverted into Poindexter and not diverted for irrigation returns to the Beaverhead River. At the end of July, flows in Poindexter Slough were measured at only 6 cfs below the Dillon Canal diversion and 16 cfs at the confluence with the Beaverhead. This compares very poorly with the instream water reservation of 57.9 cfs.

Throughout the summer flows in the Beaverhead River remained critically low. By September the Beaverhead River remained very low but better than the last couple of years north of Dillon. Flows in Poindexter Slough were extremely low due to limited diversion at the river headgate and heavy withdrawals by the Dillon Canal. On October 4th the Beaverhead River from Clark Canyon Dam to the Selway Bridge in Dillon was closed to fishing through November 30th, the normal end of the fishing season. This closure was necessary due to reduction in releases from Clark Canyon Reservoir to 25-30 cfs.

RUBY RIVER

Similar to 2003, flows in the Ruby River fared better than those in other rivers in the Dillon area. Runoff occurred early, as did the start of irrigation releases from Ruby River Reservoir. By May 7th, the Reservoir had not filled and was being drafted with releases at 323 cfs while the flow in the Ruby River above the reservoir was at 202 cfs. By August flows in the Ruby River basin remained good, but the Reservoir was being drafted heavily so supply irrigation demand. By September 16th the Reservoir was at 7,500 acre-feet or 20 percent of capacity. By the end of November water levels had risen to 13,360 acre-feet or 36 percent of capacity and 84 percent of average for the date. This increased storage has come at the expense of river flows below the Reservoir, which have run at 60 to 80 percent of the long-term average since the reservoir began to refill. In November, releases were slightly less than the 40 cfs recommended minimum for the fishery.

BIG HOLE RIVER

As of 5/7 Big Hole River flows were beginning to rise in characteristic runoff pattern at Mudd Creek (581 cfs, 63% of long-term median (LTM)), Melrose (1080cfs, 54%LTM), and Glen Gage Sites. This was the second runoff event, as a lowland runoff generating about 1,500 cfs occurred in late March, and was about one month early. Flows at the Wisdom Gage in later April and early May were dismal at best. The flow on 5/7 was 15 cfs (4.6% of normal) with no sign of runoff pattern occurring. As of 5/7 flows were between 13 and 20 cfs for the previous 2 weeks, while water temperatures exceeded 50 degrees F up to about 64 degrees over the same time. Arctic grayling generally receive their spawning trigger at about 50 degrees. The last time an event like this was observed two years ago in Red Rock Creek where temperatures remained above the spawning trigger for two weeks without a runoff flow trigger grayling spawned actively and several hundred thousand eggs were collected but none of their eggs were viable. Fishing seasons were closed on May 15th (the day they were to open) on the Upper Big Hole River due to unusually low flows. Streamflow in the upper Big Hole at Wisdom had dropped to 8.5 cfs (3% of median for the date) by May 17th.

In the Upper Big Hole this past summer, the Natural Resource Conservation Service's EQIP program paid ranchers to abstain from irrigating some lands and for other activities and improvements that result in less surface water use. Flows in the upper Big Hole at Wisdom exceeded the period of record (POR) median from June 28th-July 12th. As of July 12th, flows were 87 cfs compared to a long-term median of 91 cfs. Flows at the Mudd Creek gauge also exceeded and remained above the POR median due to precipitation and the EQIP program. July 12th flows at Mudd Creek were 296 cfs, which exceeded the POR median of 215 cfs. In contrast, the 629 cfs July 12th flow at Melrose was 49% of the POR median 1295 cfs.

All of the NRCS EQIP program participants shut down their diversions as agreed. By mid July, stream temperatures at Wisdom were peaking around 68° F. With air temperatures in the low 80's at Wisdom, water temperature at one point in time had climbed to 73°F. Without the rains beginning in July and the overall cooler weather combined with the EQIP program, the Big Hole would be much worse off in 2004.

JEFFERSON RIVER

The Jefferson Watershed Council amended the Drought Management Plan to be more responsive to low flow conditions. Potential fishing closures and initiation of water user meetings to facilitate voluntary contributions of irrigation water will be triggered by a flow of 280 cfs at the Twin Bridges Gage rather than 250 cfs. At the 250 cfs trigger, the plan did not adequately respond to rapid reductions in flow during drought conditions. Consequently, water users did not receive adequate notice that flow was approaching and angling restrictions may not have been implemented soon enough or often enough during drought conditions.

As of 3/9, the Jefferson at Twin Bridges had a discharge of about 800 cfs. By mid-May, the Jefferson and Upper Missouri rivers were flowing about 1/4 to 1/3 of their normal flow levels. Short-term canal sealant projects were implemented in the Jefferson Canal and in the Creeklyn Ditch after July shutdown. Ditch loss during times of water abundance (May/June) is not as great a concern for river health. The change in sealant application timing allows for better evaluation of results and targets ditch seepage during the most water-short periods. The short-term sealant improved ditch efficiency, which in turn, helped with voluntary contributions of water during critical flow periods of summer 2004. This project was funded by Bureau of Reclamation Drought Contingency funds rather than through FWP's Future Fisheries Improvement Program as in the previous two years.

The mean annual flow and summer mean monthly flows have both been well below normal for the Jefferson River over the past four years. Estimates of Brown Trout abundance show declines related to these low flows. Survey of other fish species have also shown declines during this period.

GALLATIN RIVER

According to a Gallatin Gateway rancher, Gateway area irrigators began taking West Gallatin River water a full month earlier than normal. Overall streamflow in the West Gallatin was improved over 2003 conditions as was streamflow in the Gallatin downstream of the confluence of the East and West Gallatins.

MADISON RIVER
Early season streamflow was substantially below normal with an even lower runoff peak than 2003. However, flows were improved from August on by about 100 cfs over 2003 levels.

UPPER YELLOWSTONE RIVER (SPRINGDALE-YNP)
With a dismal snowpack, early season flows in the upper Yellowstone River basin were well below normal. Of specific concern was the Shields River, flowing only 10% of normal at its mouth on 5/17. Throughout the basin streamflow rebounded in late August and were approaching normal throughout the fall.

OTHER RESERVOIRS
Over the winter, a minor winterkill occurred in Hebgen Lake likely due in part to drought conditions. By May releases had been reduced out of Canyon Ferry and Hebgen Reservoirs to save volume for flows the summer and beyond. Both of these reservoirs were very low for that time of year, much lower than levels needed to accommodate runoff. Boat access was more difficult than usual at Canyon Ferry due to low lake levels. Hyalite Reservoir was free of ice by the last week of April and cutthroat trout began spawning about a month earlier than usual.

SMALL LAKES AND PONDS
A major winter kill occurred in Rat Lake in the Gallatin drainage due in part to drought. In May water levels in Beaverhead/Big Hole valley floor ponds and wetlands were lower than the local biologist had ever (over the past ~25 years) seen them.

REGION 4 – GREAT FALLS
Streamflows were generally improved in Region 4 over 2003 levels. With some streams such as the Smith River substantially improved. However, drought lingers particularly on the Missouri River, which is substantially controlled by upstream reservoir conditions.

SMITH RIVER
The Smith River saw considerable improvement over 2003 despite early season concerns. As of April 15th, stream flows in the Smith River basin were nearly 140% of normal, reflecting the early runoff caused by higher than normal temperatures in the region. By May 18th, flow in the Smith River was 206 cfs (76% of the long-term median flow). Despite the early runoff flows rebounded in late May and remained near the long-term median flows (based on 7 years of record) during the entire summer and fall of 2004 because of generally cool temperatures and good precipitation. Summer and early fall water temperatures in the Smith River were lower than in recent years due to the cool weather, precipitation events, and improved flows. The cool summer and scattered precipitation events in the Smith River Basin prevented FWP from enacting any fishing closures during the summer of 2004, but the drought has resulted in negative impacts to the rainbow trout fishery. For example, as of fall 2003, the number of rainbow trout per mile in the Eagle Creek section of the Smith River reached a 30-year low of 170 (30% of the long-term average) 8 inch and longer rainbow trout per mile. More specific and detailed information of long-term drought impacts to the rainbow trout fishery in the upper Smith River can be found in the Northcentral Montana Coldwater Stream Ecosystem 2001 Annual Report authored by Travis B. Horton, Anne E. Tews, George A. Liknes, William Hill,

and Dave Yerk.

MISSOURI RIVER

Due to an early runoff and poor springtime precipitation (causing low water levels in Canyon Ferry Reservoir) flows in the Missouri River below Holter Dam were reduced to 2,800 cfs (65% of the long-term median) through the summer of 2004. Beginning in the last half of October, flows in the Missouri River downstream of Holter Dam were increased to 3,500 cfs or more. Flow forecasts conducted by the USBOR indicated that higher flows could be sustained throughout the winter. However, by the end of November flows were nearer 3000 cfs. Due to the cool temperatures FWP did not enact any fishing closures on the Missouri River during 2004, but the extended drought has been a factor (along with whirling disease) in reduced recruitment of rainbow trout to the Missouri River fishery. For example, recruitment of yearling rainbow trout has been below the long-term average for the past 4 years in the Craig area of the Missouri River.

Flows in the major tributaries to this reach of the Missouri River are also reduced. For example, Little Prickly Pear Creek is currently flowing at 42% of the long-term median flow, and the Dearborn River is flowing at 27% of the long-term median flow. Flows in the major tributaries to the Missouri River have improved relative to long-term flows throughout the summer. By mid-October Little Prickly Pear Creek was flowing at 75% of the long-term median flow, and the Dearborn River was flowing at 78% of the long-term median flow.

SUN RIVER

In the Sun River drainage by mid-June storage in the major reservoirs was above 100% compared to normal for this time this year. Willow Creek Reservoir was full at 32,199 acre-feet (112.2% of average). No water was being released from Willow Creek Reservoir to the main-stem Sun River. Inflows into Gibson Reservoir from the North and South Forks (Sun) combined was 1,498 cfs, approximately 47% of the 10 and 30 year average inflow for 6/15/2004 and 56% of the mean over the last 4 years. The estimated flow below Fort Shaw Irrigation Diversion was 15 cfs. Further downstream at the USGS gage on the Sun River near Simms, instantaneous flow was 185 cfs at 14:45 on 16 June 2004. During late April, this gage site showed a prolonged period when the flows were 20-35 cfs, resulting in damage to the invertebrate population and continuing to suppress the fishery.

In July flows continue to be critically low in the Sun River near Simms. Problems associated with an erroneous shift adjustment of the gage at Simms contributed to prolonged periods of extremely low flows that damage the fishery. The mean daily discharge of Muddy Creek at Vaughn and the Sun River near Vaughn was 314 cfs and 622 cfs, respectively on July 12th. The maximum water temperature recorded at the Sun River near the Vaughn gage site on July 12th was 68 F.

By mid-August Gibson Reservoir was substantially below average for the date. As expected, inflows to Gibson Reservoir from the North and South Forks declined over the summer to 293 cfs on 16 August. (Inflows were 1,541 cfs on 1 June, 1,270 cfs on 1 July, and 393 cfs on 1 August). The mid-August inflows were approximately 70% of the 30-year average inflows, 83% of the 10-year average inflow, and 111% of the mean inflows for 16 August for the last 4 years. The estimated river flow below Fort Shaw Irrigation Diversion was 0 cfs or essentially a dry

streambed. Flows also appeared to continue to be critically low in the Sun River near Simms; instantaneous flow was 39 cfs at the USGS gage on the Sun River near Simms on August 17. Downstream in the Vaughn area, flows were critically low as well.

Sun River fish population sampling on three sections show that the most dewatered section, the Simms section continues to have substantially lower trout densities than both upstream and downstream sections. Even the Augusta-287 section, the section with the highest population levels, shows much lower population densities than other regional waters that have not been subjected to chronic dewatering.

TETON & MARIAS WATERSHEDS AND EAST FRONT RESERVOIRS

In April Bean Lake, a natural pothole, continued to suffer from low water resulting in poor water quality (very high alkalinity). By May runoff in the Teton began early with irrigators using water early in preparation for an abbreviated irrigation season. Bean Lake's pool elevation remained static at 8 feet below full pool and continued alkaline conditions.

By mid-July rains had helped flow conditions in the Teton and Marias watersheds, but flows were dropping quickly as more summer-like weather settled in. Streamflows in the upper Teton drainage were considerably lower than the 10-year median (141 cfs versus 219 cfs). Irrigation demands resulted in much lower flows in the lower half of the Teton with flows at Dutton (mid-drainage) at just 12 cfs, and a mere 7.4 cfs making it to the Teton's mouth at Loma. Flow in the upper Marias River near Shelby was 619 cfs, which is slightly less than the 10-year median of 883 cfs. However, the outlook for the Marias was relatively good as the headwater streams in the drainage (Cut Bank Cr., Two Medicine River, Badger Cr., and Birch Cr.) were sustaining flows similar to historic levels for this time of year.

In July the water elevation at Lake Frances was dropping due to irrigation demands and The City of Conrad's municipal needs. Boaters had to use the ramp on the east end of the reservoir for launching, as the ramp at Valier is not useable. Bynum Reservoir was near dead storage with and irrigation withdrawal soon to end. Walleye plants were canceled in Bynum this year and the fishery probably will not over-winter without the installation of windmills to provide aeration. Eureka Reservoir, a popular fishing and recreation spot just outside Choteau, was dropping quickly to meet irrigation demands.

In August streamflows continue to drop along the Rocky Mountain Front as water supplies diminish and irrigation demands persist. Adequate flow (79 cfs) remained in the upper 15 miles of the mainstem Teton River, but 180 miles of river below Eldorado Diversion was too dewatered to sustain healthy fisheries. Flow in the middle reach of the drainage was just 4.5 cfs at Dutton on August 16th, and no water was reaching the mouth of the Teton at Loma. Fishery and recreational values of this once important Marias River tributary are greatly reduced due to chronic dewatering. Flows in the upper Marias River dropped considerably by August. Inflows to Tiber Reservoir are just 163 cfs, but remain adequate to sustain the river's fisheries. Streamflow in major tributaries (Cut Bank Cr., Two Medicine River, Badger Cr., and Birch Cr.) were much reduced. Dupuyer Creek flow just upstream of the town of Dupuyer had dropped to 5 cfs.

Tiber Reservoir peaked at around 7 ft. below full in July and by August Tiber's elevation was

8.6 ft. from full pool and was gradually dropping as the reservoir's discharge exceeds the inflow from the Marias River. However, good access remained available for boaters and anglers at most recreational sites. In August the water level at Lake Frances continued to drop to meet irrigation demands and Conrad's municipal needs. Boaters were forced to use what used to be an island (out from Valier's city ramp) as a launching point. Irrigation withdrawal from Bynum Reservoir was shut down on July 15. Eureka Reservoir was approaching dead storage and boat anglers and recreational boaters can no longer access the water. Large numbers of pelicans had moved into the shallow pools on the west half of the remaining reservoir to feed on the water-starved rainbow trout and suckers.

In October streamflows along the Rocky Mountain Front remained diminished. Adequate flow (67 cfs) remains in the upper 15 miles of the mainstem Teton River, but efforts to refill irrigation storage reservoirs in the upper drainage contribute to depletion of flows in the middle and lower reaches of this river. Flow in the middle portion of the drainage was 29 cfs at Dutton on October 18th, and just 21 cfs was reaching the mouth of the Teton at Loma.

Flows in the upper Marias River were low relative to historic data. Inflows to Tiber Reservoir were just 236 cfs, but remain adequate to sustain the river's fisheries. Streamflows in the major tributaries (Cut Bank Cr., Two Medicine River, Badger Cr., and Birch Cr.) of the Marias are near normal for this time of year, and should improve as irrigation demands decrease. Tiber's elevation was down 11.2 feet from full pool and continued to drop as the reservoir's discharge exceeds the inflow from the Marias River. However, good access was still available for boaters and anglers at most recreational sites.

The water level at Lake Frances was quite low by October, but should maintain throughout the winter months as the irrigation season concludes. Water levels at Bynum Reservoir had not improved. Although water levels improved in Eureka Reservoir, water was again being released to recharge wells. This release likely resulted in further entrainment losses of stocked rainbow trout from this popular fishery.

JUDITH RIVER INCLUDING BIG SPRING CREEK

A newly established FWP continuous gauging site on the Judith River several miles upstream of Big Spring Creek recorded low flows during the spring. Flows were 7.5 cfs on April 5th and had dropped to 2.8 cfs by May 3rd. As of 5/17 there spring runoff had not yet occurred and snowpack reports did not look good. Ackley Lake was just over 2000 acre-feet, which is 34% of capacity. lower Judith River flows were lower than the average of the last two drought years for most of the spring and were as low as 155 cfs on May 10th (the instream reservation amount is 160 cfs) at the gauging station about 7 miles upstream from the mouth. Big Spring Creek by May 4th was flowing only 79 cfs below Lewistown where the instream flow water right is 110 cfs.

Rains throughout north-central Montana in early June increased stream flows substantially. Big Spring Creek and its major tributaries were near bank-full and the lower Judith River briefly reached about 1400 cfs. Ackley Lake has filled and remained full through the end of June when concerns with the dam required drafting of the reservoir to begin.

By fall, most of the small ponds in the Breaks still had reasonable water levels. Yellow Water Reservoir did not receive much run-off this year and had a maximum depth of about 2 feet in

early September. Petrolia was about 20 feet deep on September 3rd and flooded vegetation appears to have benefited the fishery. Yellow perch have rebounded from the record low numbers found in 2003. Many 2 – 6 inch yellow perch were captured in gill nets and seine hauls in 2004. Northern pike are also doing well with many around 3 pounds captured in gill nets. Walleye numbers declined in September gill netting from previous years but several around 2 pounds were captured.

SOUTH AND NORTH FORKS MUSSELSHELL RIVER
Fairly high flows were observed in the South Fork Musselshell in early June. However, Martinsdale Reservoir supplied by the South Fork and Bair Reservoir on the North Fork were never close to filling and again were drafted to minimum pool by the end of the summer. Even though Bair and Martinsdale Reservoirs were low, still provided some good fishing opportunities.

REGION 5 - BILLINGS
During March 2004, Region 5 had generally below average streamflow and snowpack. As with much of the rest of Montana, cooler temperatures and improved precipitation late in the spring and continuing into the summer improved conditions substantially. Unfortunately, the drought continues to persist in Region 5.

MUSSELSHELL RIVER
The one exception to the low snowpack situation was the Musselshell River basin where snowpack was above normal, but streamflow was still well below average. As of March 17th, the Musselshell River at Harlowton was flowing at 33 cfs (44% of median), but downstream at Roundup the flows dropped to 16 cfs (15% of median). Water was being diverted to fill Deadmans Basin Reservoir, which was at 20% of capacity (34% of average) and ice-free. Bair and Martinsdale reservoirs, the other major reservoirs in the basin were also well below normal for the time of year. Flows in the Musselshell continued to decline into April. As of 4/20 the Musselshell River was flowing at 9.9 cfs near Harlowton instead of the long-term median of 128 cfs. Flows declined downstream to 0.7 cfs at the Musselshell gage. The snow pack feeding the Musselshell Basin had declined 35% within the preceding 2 weeks, with little of this melt appearing in the streams. Deadmans Basin Reservoir was at 29% of capacity and no longer filling.

By mid-May, flows in the Musselshell had increased due to irrigation-water releases from the major reservoirs. These higher flows continued through June due both to reservoir releases and snowmelt. Streamflow in the lower river, however, was extremely low as water commissioners distributed all water to irrigators in the river above Mosby. On June 11th, the flow at Mosby was only 9 cfs, reaching 0 cfs shortly thereafter. Once stored water was depleted in later summer, flows dropped but were improved over those observed in past droughts. Low flows are a chronic condition in the Musselshell because irrigation demands are high. More water has been distributed lower in the drainage for the past three years since water commissioners were appointed to ensure water is available to senior water-right holders. Consequently, the fishery has persisted at a reduced level. The Musselshell River sampling indicates that brown trout spawning resulted in good numbers of young-of-the-year, although the yearling fish were absent.

DEADMANS BASIN RESERVOIR

The fishery in Deadmans Basin Reservoir has survived because the outlet structure requires retention of at least a 17-ft depth. In this reduced pool, the tiger muskies have effectively preyed upon the larger suckers. Sampling indicated that the number of 7 to 9 in suckers was increasing, and that healthy populations of rainbow trout and kokanee salmon would be available for ice fishermen this winter. During the drought, FWP had been stocking both species at half the normal amount to adjust for the smaller reservoir pool. Last year, FWP increased stocking of both species to ¾ of the normal plant to compensate for the likely increase in tiger muskie predation with the larger suckers disappearing.

BIGHORN RIVER & RESERVOIR

The Bighorn River had been held at or below our absolute minimum fisheries flow of 1,500 cfs for nearly 950 consecutive days (since September 2001). Flows were dropped to 1,300 cfs on May 8, but were increased for irrigation purposes throughout most of the summer, again dropping below 1,500 cfs in the fall. During October, releases were increased to 1,500 cfs. At this time, inflows to Bighorn Lake had exceeded outflows for 90 days, allowing lake elevations to rise nearly 17 ft above the end of the extended boat ramps. The most noticeable effect of extended drought on the lake has been the reduction in forage fish (particularly emerald shiners), because their vital shoreline vegetation habitat has not been flooded for years. Wyoming intends to release an additional 50 cfs each from Boysen and Buffalo Bill reservoirs this winter, which may improve the outlook for Bighorn River and Lake. The US Bureau of Reclamation has agreed to hold the winter flow at 1,500 cfs as long as possible, with this goal still being achieved as of early December 2004.

October sampling on the Bighorn River near Mallards Landing indicated that spawning was successful, producing a good year class, especially of young-of-the-year rainbow trout. Larger rainbow and brown trout appear to be dying of old age, so predation on these younger fish is decreasing. Trout populations are holding at roughly 1,000 to 1,500 fish per mile compared with 5,000 to 6,000 before the drought began. By the time this drought ends, rainbow trout may, for the first time since the dam was completed in 1965, outnumber the brown trout. Some river anglers are complaining about the effects that increased sediments (in the absence of normal flushing flows) are having on wading and insect hatches.

YELLOWSTONE RIVER AND MAJOR TRIBUTARIES UPSTREAM OF BILLINGS

As of May 17th , flows in the Yellowstone and Boulder rivers were 72% and 77% of median, respectively. The Stillwater and Clarks Fork rivers were slightly above median, reflecting some valley runoff. By April 20th, flows in the Boulder, Stillwater, and Clarks Fork rivers were near median. By mid-May, however, flows in the Yellowstone, Stillwater, and Clarks Fork (including Rock Creek) rivers were all around 40% of median. The Boulder River flows were only 30% of median.

The previous day's storm made Region 5's June 11th drought report deceptively bright. Nearly one inch of rain fell in the Billings area bringing all of the streams in south central Montana close to median levels for the date. The Yellowstone River at Billings was presumed to have peaked at 9,000 cfs on May 9th, but on 6/11 it reached almost 28,000 cfs. This boost from record low flows was very welcome, though short-lived. The 6/11 increase in the Boulder and Stillwater rivers represented an extension of the otherwise very short rafting and floating season

forecasted.

The rain received during June and early July in south-central Montana upheld stream flows better than a dry May portended. By mid-July, the Boulder, Stillwater, and Clarks Fork (at Belfry) rivers were all near median flows. The Yellowstone River at Billings was at 2/3 of median (9,000 cfs) and dropping steadily. Cooler summer temperatures allowed us to avoid the closure to afternoon angling on the Yellowstone that was imposed last year.

While the cool weather and precipitation of late summer 2004 were very welcome, the area remained deep in the throes of drought. Stream flows and temperatures responded positively, but system discharges remained well below normal. Sampling on the Yellowstone River near Billings was hampered by low flows and also by poor visibility. Rains in the upper Clarks Fork significantly increased turbidity in the Yellowstone. Sauger were noticeably absent from the Yellowstone in this region even though they appeared to be increasing downstream. Whether reduced flows increased the barrier effect of irrigation diversions is unknown. Otherwise, the trout populations in major tributaries, such as the Boulder and Stillwater rivers, retained several year classes, though at reduced levels.

REGION 6 – GLASGOW

Overall a tremendous prairie snowpack and good precipitation resulted in much improved conditions in Region 6. However, while the drought abated locally, river systems such as the Milk and Missouri, which are dependent on conditions outside of Region 6, were still stricken by drought. Drought did impact Region 6 despite the much improve local precipitation conditions.

MILK RIVER

In March, runoff from prairie snow was limited despite the good snowpack due to dry soil conditions going into the winter. Much of the water was soaking in as opposed to running off. Even though streams in the Bear Paw's were running bank full flows, much water appeared to soaking in rather than running off. Bear Paw Dam was originally a concern with it's thick ice cover but by diverting flows out the bottom gate and the spillway FWP was able to handle the runoff of existing snow cover. Some flooding was occurring from drainages entering the Milk from the north around Harlem. Above average snow pack in the Bear Paw Mountains is not translating into flooding as yet.

As of 5/17, mountain runoff in the upper Milk River drainage was steadily increasing with flows at the eastern boundary at 666 cfs, near median flow for this time of year. The Fresno Reservoir active conservation pool was 44% full and declining due to outflow exceeding inflows. Nelson Reservoir active conservation pool was 76% full, and increasing. Milk River flows at the confluence with the Missouri were approximately 232 cfs, which is below the median flow of 333 cfs.

By mid-July the Milk River at the Eastern River Boundary Crossing was near the median flow and the conservation pool for Fresno Reservoir was nearly 74% ful. Nelson Reservoir was at or near its conservation pool. The Milk River near its confluence with the Missouri River was below the median flow by approximately 100cfs, flowing 236cfs at Nashua. Small streams originating in the Bear Paw Mountains are running slightly above median flows for this time of

year.

In mid-August flows in the Milk River near the Canadian border are near normal at approximately 566cfs at the Eastern Crossing. The water elevation in Fresno Reservoir was declining with the active conservation pool at about 48% full. Further downstream, Nelson Reservoir was fairing a little better with its conservation pool at 74% full. Streams in the Havre area were flowing near normal. By mid-September flows in the Milk River near the Canadian border were above normal at approximately 621cfs near the Eastern Crossing, the median flow for this time of year is 464cfs. The water elevation in Fresno Reservoir appeared to be increasing with the active conservation pool at nearly 43% full. Recent rains in the Havre area brought most streams and small reservoirs up to near normal flows and water levels. Further downstream, Nelson Reservoir was still fairing a little better than Fresno with its conservation pool near 70% full.

In October flows in the Milk River were below normal for the time of year. At the Eastern Crossing near the Canadian border, the flow was 38cfs, with the mean being 130cfs. The Milk River flow at Havre was 68cfs (mean = 164cfs). Continued drought and low flows into the spring could negatively impact recruitment of many fishes including sauger and channel catfish in upper reaches, plus paddlefish, shovelnose and pallid sturgeon in the lower reaches. Significant recruitment has not been documented for most native fish species in the last two years.

While water levels were declining in October in the Milk River, irrigation withdrawals had been reduced, resulting in rising water elevations in the major Milk River reservoirs. Fresno Reservoir appeared to be increasing, with the active conservation pool at nearly 45%. Nelson Reservoir was still fairing a little better with a conservation pool near 75%. Increased water levels in the spring and summer allowed forage fish, such as yellow perch and spottail shiners, to take advantage of flooded shoreline vegetation. However, recruitment of walleye remains low, most likely due to reduced availability of spawning substrate and low survival of fry.

Into October streams and small reservoirs in the Havre area continued to have near normal flows and elevations as a result of increased moisture in the late summer and early fall. Flows in Beaver Creek were currently 2.3 cfs (mean = 4.6 cfs) at the Rocky Boy Reservation boundary. Bear Paw Lake and Beaver Creek Reservoir were full and Bear Paw Lake continues to overflow the spillway. The fisheries in these reservoirs seem to be doing well. Tributary streams a little further downstream in the Milk River drainage appeared to be below normal; Battle Creek, near Chinook, was currently at 13 cfs (mean = 21.1 cfs), Clear Creek near Chinook was at 2.7 cfs (mean = 15.1), and Little Peoples Creek was at 1.3 cfs (mean = 2.32 cfs). On the lower end of the Milk River near Nashua, the flow was 130cfs, (mean =146cfs).

PRAIRIE RESERVOIRS

In March, the state of prairie reservoirs was somewhat mixed. Bailey Reservoir was close to filling for the first time in six years. Most small reservoirs in the eastern half of Region 6 are filling with water from prairie snow runoff. By mid-May, the majority of small reservoirs throughout the western and eastern halves of Region 6 were near or at full due to spring runoff and mid-May snow.

Late June and early July rains kept most streams and small reservoirs in Region 6 in good condition well into the summer. By the middle of August small reservoirs and streams appeared to be at normal levels in through September into October.

MISSOURI RIVER AND FORT PECK RESERVOIR
As of 3/15, inflows from the Missouri River were 10,000 cfs and outflows from the dam were 5,300 cfs. In mid-May the flow in the Missouri River above Fort Peck Reservoir was increasing due to mountain runoff, but was still well below normal. Paddlefish migration above Ft. Peck was minimal due to low flows. Even with increasing inflow to the reservoir the water level was expected to continue to decline due to high dam discharge of nearly 11,000 cfs.

The Missouri River above Fort Peck Reservoir was approximately 5,000cfs in mid-July, with discharges from the reservoir at 7,500cfs as the lake level continued its downward trend. The Corps of Engineers reported boat ramps at North Fork of Rock Creek, Spillway Bay, Ft. Peck Marina, Duck Creek, Pines, Hell Creek, Bone Trail and Devils Creek would remain usable through August.

As of the middle of August the Missouri River above Ft. Peck Reservoir was at 3,820cfs, which was below the median flow of 6,475cfs. The Reservoir level continued to decline, with a water level near 2202' above mean sea level. The discharge below the dam was at a daily average of 7,500cfs. Flows in the lower Missouri River below Fort Peck were approximately 3,000cfs below normal.

By mid-September the Missouri River above Ft. Peck Reservoir was flowing 4,650cfs, which was below the median flow of 5,785cfs for this time of year. Paddlefish production was minimal to nonexistent this year due to low stream flows. Ft. Peck last year at the same time the Reservoir was ten feet higher. Lower lake elevations in the spring and summer of 2004 resulted in a reduced shoreline forage fish populations. Flows at the time in the lower Missouri River near Culbertson were approximately 6,720cfs, which was below the median flow for this time of year of 9,180cfs.

Above Ft. Peck Reservoir, in October the Missouri River flow was near 4,000cfs, and the lake elevation was steady (2199'msl) through the end of November. Releases were increased on November 29 to 5,500 cfs and may increase further in January 2005 to 6,000 cfs. Continued declines in Ft. Peck water levels will negatively impact abundance of forage fish such as yellow perch and some game fish species like northern pike and lake trout. Ultimately condition and abundance of other game fish, such as walleye and smallmouth bass will also decline

REGION 7 – MILES CITY
Severe to extreme drought conditions persisted in most of Region 7 throughout 2004. The northern part of the Region was somewhat better than the rest as the vastly better conditions in Region 6 spread slightly across the regional boundary. However, overall Region 7 continues to suffer from widespread extreme drought conditions.

LOWER YELLOWSTONE RIVER
Ice flow on the Yellowstone River was minimal for the upper portion of the system in Region 7.

The ice went out around the Miles City area in the first part of March without incident. Flows in the Yellowstone were ½ of normal. Most of the small tributaries on the South side of the Yellowstone had delivered all of the prairie snowmelt runoff by mid-March. These small streams ran for a short time and at low flows, which may have been due to minimal prairie snow levels and/or, dry soil conditions.

Poor snowpack levels and low reservoir elevations in the Bighorn River drainage led to lower than normal flows in the lower Yellowstone River. Releases from Yellowtail Reservoir on the Big Horn River represent a substantial portion of the Yellowstone River's total flow during summer months and is vital during drought years. Reduced releases from Yellowtail Reservoir have an impact on river species spawning success and recruitment of juvenile fishes. At low flows, backwater and side-channel nursery areas are eliminated. This habitat limitation combined with the irrigation demand on the little water remaining equates to poor fisheries health.

In the second week of June the hydrograph for the lower Yellowstone River spiked briefly with flows approaching average for the period of the water year. Rain events had increased flows, flooding side channels and backwater habitats. An additional benefit of the rise in the Yellowstone hydrograph was the arrival of paddlefish at the Intake Diversion fishing access site. Low flows in the River combined with increased releases from Fort Peck Dam into the Missouri River have moved the distribution of paddlefish primarily up the Missouri system providing a poor spawning run up the Yellowstone River and subsequently a poor start to the Montana paddlefish angling season. Although the paddlefish harvest continued to be relatively minor compared to previous years, the increased hydrograph in the Yellowstone provided some angling opportunity for these fish.

The Yellowstone was flowing approximately 1/2 of average in mid-September. Flows in the Sidney area were at 3700 cfs. These low flows impact up and downstream fish migrations in this large system. The usual fall run of sauger from lake Sakakawea seemed to be minimal in 2004.

TONGUE RIVER & TONGUE RIVER RESERVOIR

The Tongue River system appeared to be in better condition in the early spring than in past years. Snowpack in the Bighorn drainage improved with late winter snowstorms and the Tongue River Reservoir elevation began winter relatively high and remained so throughout the winter. However, by April the Tongue River flow both into and out of the Reservoir was very low. The Reservoir elevation came out of winter in fair condition but did not gain much during the early spring. Snow pack in the upper Tongue drainage had deteriorated considerably. By this point low flows in the lower Tongue below the T&Y Diversion were already of concern. The lack of connectivity to the Yellowstone is minimal during these conditions and has had a heavy impact on the Tongue and Yellowstone fisheries.

Into June the Tongue River remained very low in spite of rain events in the drainage. Small, short-duration spikes in the hydrograph occurred, but no long-term improvement occurred. Minimal snowmelt run-off left the Tongue River Reservoir with little hope for much recharge for this year. Irrigators dependent upon the Reservoir had been using stored water from the system since the beginning of the irrigation season (May 1).

The Tongue River was in very poor shape as by the end of the summer. Flows into the Tongue River Reservoir are around 70 cfs and outflows from the dam were at 100 cfs by mid-September. Flows at Miles City were less than 15 cfs and declining. These low flows on the river were impacting the survival of the fish population in the system. With less than 25% of the stream bed in the Miles City section wetted, the lower 20 miles of this river was essentially dead as far as invertebrates and fish were concerned. By early November the Tongue River had rebounded to just over 100 cfs, however the mediam flow for this time of year is closer to 250 cfs.

In mid-September, the Tongue River Reservoir was at 26,000 acre-feet of storage (capacity is 82,000). Low reservoir elevations concentrated fish in the remaining available water and reduced or eliminated any vegetative cover used by juvenile fish. Sampling in August indicated that recruitment of young of the year fish was very minimal, most likely due to predation by other fish, caused by the loss of habitat through reservoir drawdown. Over-winter survival of the 2004 year class of fish may be minimal as well due to the loss of juvenile habitats.

POWDER RIVER

As of 3/15, prairie snowmelt had the Powder River running high and muddy for a few days. However by September the Powder River system was very dry from the Wyoming boarder to the confluence. Some water could be found in the upper reaches near Moorhead but the system was dry as one traveled down the river. There was no connectivity with the Yellowstone River at this time.

PRAIRIE PONDS

Snowpack in the Northern-most part of the region was above average for the winter and had a positive impact on prairie pond recharge. Snowpack in the southern portion of the region was low this past winter, so ponds did not recharge. By April dry spring conditions left the southeastern corner of Montana looking towards a dismal summer for fisheries. Small prairie ponds were stocked with fingerling rainbow trout but remained dependant upon spring precipitation events to recharge these systems. Many of the ponds that have winter- or summer-killed during the past few years of drought were not stocked. At this point in time over 80% of the Region's prairie pond fisheries had failed. These systems are relatively easy to re-establish once precipitation charges the ponds, but continued summer rains are needed to keep pond elevations to an adequate level to avoid summer-kills.

By mid-June precipitation events had helped to sustain stocked fish in some of these small ponds in the short-term. The extended drought has decimated the majority of these small pond systems. Restoration of these fisheries is possible once the drought is over. Of the 120 ponds managed by this Region, the past few years of drought have eliminated the majority of these systems. By September, stocked fish in these systems were surviving but additional moisture is needed to help these fisheries survive the coming winter. The few ponds that remain are providing some fishing opportunities.

III. FWP DROUGHT MANAGEMENT OBJECTIVES, 2004

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 streamflows 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 streamflow, 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/or Disaster Advisory Council and the Fish, Wildlife and Parks Commission as required.
7. Develop and implement water conservation practices within the agency.

FWP is continually 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 certain areas.

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 below-listed actions, many of Montana's fisheries have been 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.

Stream-Related Actions

- Working with water users, communities, and other agencies to implement long-term flow and habitat protection and enhancement projects (e.g., instream flow leasing) that reduce drought susceptibility in priority fishery areas (statewide)

- Where appropriate, advocating for voluntary reductions in water diversions from priority streams; providing information when requested on flow needs of fisheries

- 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.

- Obtaining instream flow increases by "calling" for water from users junior to FWP's instream rights. FWP has instream flow reservations and/or instream water rights in the Yellowstone, Missouri, and Little Missouri basins (reservations), and "Murphy" (after the legislator creating the instream claim authority) on segments of the Big Spring and Rock creeks, Blackfoot, Flathead (and its middle, north and south forks), Gallatin, Madison, Missouri, Smith, and Yellowstone Rivers. In some locations, water reservations and other instream claims overlap. FWP also has instream

flow water rights for Young Creek, the Tobacco River, and Ashley Creek.

In 2004, warning letters were sent on May 27 with 319 letters to water users junior to FWP Murphy Rights, 166 letters to users junior to the Missouri Reservations and 177 letters to users junior to the Yellowstone Reservations. On July 13 seven letters were sent to juniors on the Tobacco River and twenty warning letters were sent to junior water users on Young Creek. No warning or call letters were sent to juniors on the Blackfoot River as the drought response plan effectively voluntarily curbed water use so that a warning or call was not necessary. Ultimately FWP sent call letters on August 4 to junior water users on the Bighorn, Missouri (between Toston and Canyon Ferry and between Holter Dam and the mouth of the Smith), and the Tongue Rivers. Call letters were sent to juniors on August 20 on the Clarks Fork Yellowstone, Rock Creek (near Red Lodge), Shields, East Gallatin and Smith River. A total of 160 call letters were sent.

- Closing waters to fishing where such fishing could put already-stressed fisheries into lethal stress levels or where resource management may create safety hazards to the fishing public. Voluntary fishing restrictions or mandatory closures occurred per FWP's Drought Closure Policy.

- Providing 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.

- Bringing purchased water down-river from reservoirs, with assistance from water commissioner (Bitterroot). DNRC delivers the in-stream fisheries flow contract water. 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.

- Through information management, redirecting fishing use from impacted areas to others, to both reduce impacts on stressed fisheries, and reduce impacts to the fishing public from reductions in opportunities

- Compiling information on known and suspected impacts of drought on specific fisheries, as reported by FWP fisheries field staff.

V. SUCCESSES AND CHALLENGES

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

Successes

- The availability and delivery of Painted Rocks water down the Bitterroot was once again critical to this important fishery surviving drought conditions.

- The Bureau of Land Management continued providing funds to keep the Mudd Creek real-time stream gauge operating on the Big Hole for several more years, and to provide for a new gauge on the Judith River (the largest formerly-ungauged basin in the state).

- Drought Plans in the Jefferson and Blackfoot again successfully mitigated drought impacts. In the Big Hole, federal EQUIP funds paid some irrigators not to irrigate in order to maintain streamflows. This program coupled with timely rains resulted in much improved conditions on the Big Hole.

- The use of water commissioners in some areas seemed to greatly increase the efficiency of water deliveries, in some places benefiting stream flows as well. One particularly bright area is the Musselshell River where water commissioners have successfully enforced water rights since 2002. This enforcement project has resulted in considerably more water reaching downstream senior rights and benefits to the fishery at the same time.

- FWP instream leases continue overall to show very positive results. These leases have helped to maintain and in some cases improved the fishery in previously de-watered streams.

Challenges

- FWP's instream flow leases on Mill Creek were allowed to expire. These leases had limited success due to problems with the enforcement and administration of the leases. However, some local water users on Mill Creek are still interested in leasing and FWP staff will continue to explore leasing on Mill Creek under modified circumstances.

- 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 reduce water use continue to grow. Permanent solutions need to be explored.

- 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 a lot of assistance from other agencies and water users, there really are 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. Some water conservation measures may actually increase the long-term drought susceptibility due to the associated increased financial burdens on water users. No longer do they have the luxury of choosing whether or not to use water, they must in order to meet their financial obligations. Current statute provides for no permanent change to instream flow. Without this tool, a permanent reduction in the fishery drought susceptibility is nearly impossible to obtain.