ANNUAL FWP DROUGHT SUMMARY

2002

Prepared for:

Governor's Drought Advisory Committee

Submitted by:

Montana Fish, Wildlife & Parks

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(available on-line at http://nris.state.mt.us/drought/Agencies/StateAgencies.html or http://nris.state.mt.us/drought/meeting.html)

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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 12. The entire Plan is available on the World Wide Web at http://nris.state.mt.us/wis/swsi/MTDroughtPlan.html. The section of the Plan relevant to the annual reporting requirement is reproduced below:

> **Annual Report**
>
> An annual report summarizing the year's drought activities will be prepared. This report will include the annual summary submitted by each participating state agency. Agency reports will include assessment and response activities taken by that agency over the preceding months, a list of drought management objectives for the year, actions taken to mitigate drought impacts, and a summary of the problems encountered and successes realized by the agency.
>
> DNRC staff will combine state agency summaries with federal agency reports into a final report of (Governor's Drought Advisory Committee) activities for the year. This report will be used to review and evaluate agency responses, draft suggestions for legislative initiatives, and amend the state drought plan as needed. The final report will be used to plan agency response during future droughts. Recommendations for improving agency response will be presented and discussed at the October DAC meeting. (Montana Drought Response Plan, 1995, p.12)

This report is the fulfillment of FWP's responsibilities under the above Plan requirement to provide FWP's "participating agency" annual report to the Committee for 2001. The remainder of the report is organized as follows, based on the elements of the reporting requirements from the Plan and the apparent intent that these reports be used to improve drought "response" in Montana:

Section II (and Appendix A) – a summary of FWP's drought assessment and response activities, both those that are ongoing, and those necessitated as drought conditions changed over the year;
Section III – FWP's drought management objectives from the Plan, and those informal objectives that arose from conditions in 2002;
Section IV – actions taken to "mitigate" drought impacts, including long-term agency actions, as well as those undertaken as drought conditions changed over the year;
Section V – successes and challenges in FWP's drought response, from our perspective; and
Section VI – suggestions, based on our experience from 2002.

Appendix A is a compilation of FWP's monthly and weekly drought updates to the Committee (and other interested parties) from 2002.
Appendix B – is FWP's chronological compilation of relevant drought headlines from newspapers across the state, as selected and forwarded from the Fisheries Division clipping service.
Appendix C contains FWP's Drought-Related Fishing Closure Policy from 2002, an example of FWP's attempts to balance scientific management of Montana's fisheries, provision of recreation opportunities, and promotion of self-regulation of fishing to preserve the resource.
Appendix D is a compilation of biologist conclusions regarding observed drought impacts on Montana fisheries. (Note that many impacts are not evidenced until several years after low-flow periods.)

As background, the Montana Drought Response Plan defines "drought" as:

> . . . an extended period of below normal precipitation which causes damage to crops and other ground cover; diminishes natural stream flow; depletes soil and subsoil moisture; and because of these effects, causes social, environmental, and economic impacts to Montana. (ibid, p.1)

We at FWP feel that the only way to manage Montana's susceptibility to the above-described effects is a combination of effective long-term habitat (including streamflow) protection and enhancement efforts, complemented by effective and locally-tailored emergency response strategies and actions. Many aspects of this Report and our activities embody this conclusion.

We do not intend in this report to repeat any of the specific climatic data and reporting presented to the Committee in 2002. That information continues to be available on the Committee's website at http://nris.state.mt.us/drought/data.html. This Report will focus on FWP's specific responses to these reported (and other) conditions, our evaluation of those responses, and suggestions for improvement.

As a final note, this is the third year-end drought report in a lengthy drought cycle. References provided in previous drought reports, and that may be useful to readers, are not repeated here. FWP's Annual Drought Summary for 2001 is posted online at http://nris.state.mt.us/drought2001/reports/FWPDroughtsum01.pdf; the 2000 Summary is at http://nris.state.mt.us/drought2001/reports/DACFWP2000summ.html. These reports contain appendix information that may be valuable to others experiencing interested in drought response, but that would make the 2002 Summary overly voluminous if included.

II. FWP DROUGHT ASSESSMENT AND RESPONSE ACTIVITIES

We feel the best way to describe FWP's drought response during 2002 is to divide it 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 2002.

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 our 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 2002

As noted in the Introduction, under dry conditions, and with limited resources, FWP's efforts in long-term drought susceptibility reduction shift to a more short-term (i.e., emergency) response mode, based on the severity of the situation and the needs it creates. Some responses can be planned; others have to be invented in the heat (literally) of the moment. A running summary of our specific response activities for year 2002 is provided in Appendix A, which provides a copy of each of FWP's drought updates that were presented to the Committee, FWP Commission, FWP staff, and posted for public viewing on the Committee's website.

III. FWP DROUGHT MANAGEMENT OBJECTIVES, 2002

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 feels we are 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 and allocation of water in certain areas.

Some limitations exist in achieving these objectives. For example, regarding Objective 1, FWP can only protect our instream rights to a certain point. We can issue a call for our senior water, but due to staffing constraints and the reality of water allocation, we can often not determine whether junior water users are heeding the call. Nor can we (with current resources) determine flows on streams that are ungauged. Regarding Objective 4, there are limitations to using only monitoring to "ensure" carry over of wild stream fisheries.

In addition to the above standard objectives from the Plan, FWP's Fisheries Division had some informal objectives that guided us through the drought of 2002, including:

a. Be proactive where possible
b. Minimize damage with what few tools we have; develop new tools where possible
c. Consider risks to potential long-term gains
d. Be consistent and science-based
e. Learn from this
f. Enhance public understanding of issues and long-term opportunities

IV. FWP ACTIONS TAKEN TO MITIGATE DROUGHT IMPACTS

This topic overlaps the assessment and response topic above, but we will reiterate, in list form, the actions we feel help the most in "mitigating" 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 wild cold-water fisheries have been impacted by the flow conditions of 2002 (Appendix D). The extent of these impacts will be determined over time, as additional fish population information is gathered in future years. We suggest that our response to this topic be interpreted as "actions taken to reduce drought impacts" on Montana's fish, wildlife, and recreational resources.

- 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)

- Distributing information to field offices, CDs, and upon request on how irrigators can close irrigation ditches in a manner that encourages entrained fish to move out of ditches into streams, rather than perishing in the canal

- 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.

- 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.

  In 2002, a total of 500 junior water user warning letters were sent to holders of water permits/claims within (and in a few cases, beyond) reaches where FWP holds instream flow reservations or rights. FWP's Murphy right was also referenced in a letter to a selection of junior users in the entire Blackfoot basin, as an incentive to conserve water and participate in the local Drought Committee's voluntary Drought Response Plan. Calls for FWP's senior water were evaluated in the Smith, Tobacco, Big Hole, Sun, Tongue, Yellowstone, Red Rock rivers and Young and Big Spring creeks. Call for FWP's senior water, however, was only made in the Smith (to 7 junior users). A potential call in the Blackfoot was replaced by implementation of the local Drought Response Plan, which includes a provision that FWP will consider the recommendations of the local Drought Response Committee when considering making a call. The Committee recommended a call not be made, despite flows somewhat below FWP's rights. FWP heeded that recommendation.

- 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. In 2002, voluntary fishing restrictions or mandatory closures occurred per FWP's Drought Closure Policy (initiated in 2000, formalized in 2001, revised in 2002; see Appendix C). Non-voluntary drought-related restrictions were implemented on Bynum (winter closure due to unsafe ice conditions due to aeration project), Red Rock and Beaverhead Rivers and Clark Canyon reservoir (bag limit reductions), upper reach of Big Hole (North Fork upstream to Rock Creek closed to all angling per Drought Plan), Red Rock and Beaverhead rivers (fall spawning-related closure to all angling).

- 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 (see Appendix A).

- Bringing purchased water down 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.

- Initiated a special drought-related Future Fisheries funding cycle to specifically fund water enhancement projects.

- FWP improved its water rights database to allow instantaneous gauge data to be compared to

applicable water right levels for an immediate statewide picture of the status of streamflows in relation to FWP instream rights and reservations. Database issues exist, however, and it will require additional time to fully upgrade.

- The three individual drought plans, two of which were new in 2000, were again successfully implemented and refined in 2002 (Big Hole, Jefferson and Blackfoot).

- Compiled information on known and suspected impacts of drought on specific fisheries, as reported by FWP fisheries field staff (Appendix D).

V. SUCCESSES AND CHALLENGES

The following is an abbreviated list of successes and challenges noted by FWP staff, primarily in the Fisheries Division. Many successes and challenges from previous years continued into 2002, so the reader is again referred to previous year-end FWP drought reports for additional information.

Successes

- Due to previous experience in drought assessment and response, the approaches invented in 1999, 2000, and 2001 were refined and applied again in 2002. Although unfortunate to experience so many low-flow years, back-to-back, one advantage is the smoothness and regularity brought by "practice." (We look forward to getting out of practice with drought response as soon as possible, however.)

- Also likely due to the years of drought experience, FWP staff in 2002 were able to more broadly assign centralized responsibilities for drought preparedness and response. This meant less severe impact on the Water Resources Program, as other FWP staff handled procedures for closures and public information.

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

- NRIS and FWP GIS staff assisted in further automating FWP's water rights information. Although placed on the Web in 2000, improvements allowed instantaneous gauge data to be compared to applicable water right levels for an immediate statewide picture of the status of streamflows in relation to FWP instream rights and reservations. The system is not perfect, and the data is still quite rough, but with additional investment and refinement, FWP will be able to improve our communication with our junior water users.

- The three individual drought plans, two of which were new in 2000, were again successfully implemented in 2002 (Big Hole, Jefferson and Blackfoot).

- The Committee website continued as a success in 2002. As in the two preceding drought years, the Internet proved to be an invaluable and easily updateable communication tool.

- FWP assisted in funding ditch sealing along 22 miles of 2 major ditches that carry Jefferson River water. The project was considered a success for both the water users (many who received water more reliably) and the River (because less had to be diverted).

- Due to the existence of FWP documentation (through Committee Updates and previous year-end summaries) of Montana's drought experience and response tools and policies, FWP's Water Resource Program was able to provide information to representatives of Colorado when they

called with assignments from their Governor for drought response suggestions within the week. Though difficult to watch another state go through similar conditions and issues as Montana has experienced over the last three years (at least), Montana successfully shared experiences with Colorado, and continues to provide leadership in drought response at the national level. I'm sure we would all gladly give up the conditions that have created the need for this leadership, but it speaks well for the Committee, the Plan, and Committee member coordination with others that we can serve as a resource so that others may not have to suffer the extent of struggle we have, and that we can learn from other states as well.

- The aeration project at Bynum Reservoir near Valier, funded in part through the Governor's Environmental Contingency Account, was likely a major factor in the survival of this popular fishery when winter depths were no more than 6 feet. Usually 12 feet of depth is a minimum for a fishery to survive the reduced oxygen conditions that occur in ponds and lakes in winter.

- The regular drought conference calls with Fisheries Division administrators and staff, initiated in 2000, continued to be a successful way to communicate and coordinate drought assessment and response activities and related public information.

- As in 2000 and 2001, FWP field staff greatly appreciated the flow measurement and analysis assistance provided by DNRC field staff.

- Internally at FWP, we felt we had another successful year in our relationship with our Commission in the delegation of drought-related fishing closure authority. The trust they have for the Department staff and local Commissioner to make those decisions in the "heat of the moment" made for a relatively smooth response in multiple crisis conditions.

- Although odd to call a success, in a way, the drought likely indirectly caused solution to a 20+-year problem on the Yellowstone with a subdivision with an inadequate water supply. Their continued problems, plus the added difficulty of being a junior user to FWP, encouraged the community to (as has been suggested for many years) sign on for future City water. Although this does not benefit the stream, as they will still be diverting water, it does remove a compliance problem, as they had extreme difficulty in adhering to the prior appropriation doctrine of Montana water law.

- Drought-related media coverage appeared has also been benefiting from experience. Articles are in-depth, explore complicated water-related issues, and drought conditions are more regularly included on local news broadcasts.

- 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.

- We appreciate the challenges and difficulties reservoir operators have in balancing demands in low-flow conditions (especially in consecutive low-flow years), and appreciate the communication and support of fishery needs that these people and facilities provide.

- The Future Fisheries Improvement program's emergency streamflow-related funding cycle funded the lining of two lengthy (and leaky) canals that carry water from the Jefferson River. Another project funded in the special drought response cycle was an water delivery enhancement project on Trail Creek in the Clearwater drainage, which will save at least 2 cfs in an important bull trout stream.

- A list of successes must include the helpful information FWP staff obtain from NRCS, USGS, NWS, and others that help us predict and track climate and streamflow conditions. These are critical and valued resources that significantly aid in our limited ability to manage fisheries resources and warn the recreation community of potential resource and safety conditions later in the season.

- Several entities took advantage of near-record (or record) low conditions in lakes and reservoirs (e.g., Beaver Creek Reservoir, Yellowtail Reservoir) to extend boat ramps, which will likely be of benefit in future low flow years.

- Though less success, and more luck, the so-called "Perfect Storm" in early June was a life-saver for north central Montana (though it created some problems for cattle, communications, power delivery, and antelope and bighorn sheep young survival).

- Flows in the upper Marias system were so good this year that Tiber reservoir operators (BuRec) were able to release flows adequate for recreational boating, along with pulse flow that likely benefited late-season-spawning warm- and cool-water fish species in the Marias and Missouri Rivers.

- Consecutive low-flow years have also likely benefited the recent attempts to implement some of the first Water Court decrees on a test basis (Gallatin and Musselshell), but maintaining the incentive for more formal administration in these areas. Water users, commissioners, and the Court are all likely learning from this, and refining the approach based on these experiences. These will create the models, then, for eventual broad implementation of long-awaited Water Court decrees.

Challenges

- FWP staff are frequently asked during periods of low flow to help mediate polarized groups. We will help where we can, where solutions may help priority fisheries, but the demand for this greatly outstrips our ability to assist. Historically, and into the future, there have been and will continue to be water disputes, but this aspect certainly qualifies as "challenging". There is a misconception that FWP has some authority over low flows in the western portion of the state where we do not have many instream water rights.

- FWP's instream flow leases on Mill Creek failed to provide much in the way of fisheries benefits, despite more diligent water administration than in 2001. These leases may not be renewed upon their expiration.

- We continue to receive phone calls from citizens who are incredulous that streams in Montana can legally be dewatered.

- Drought is a time of sacrifice for many. The three watershed drought plans (Big Hole, Jefferson, and Blackfoot) are all built on a concept of "shared sacrifice". We understand that in 2002 there was an egregious lack of shared sacrifice in the Beaverhead River system. Some had plenty of water, others half the amount, and the reservoir and river fisheries are now experiencing record low storage and flows, respectively, since construction of the reservoir. The Bureau of Reclamation should have authority to require at least a somewhat more balanced sacrifice, than what was reported to have occurred in 2002 in this area, if some water users choose not to conserve for the benefit of others.

- Back-to-back drought years provides a variety of challenges to many Montanans. For FWP, it is extremely challenging to ask for voluntary water conservation in multiple drought years, knowing that there can be very little additional that can be sacrificed. This begs the question as to whether voluntary water conservation should be relied on in the long-term for low-flow years, and encourages us all to pursue long-term solutions with greater vigor. Consecutive drought years also lead to forgetfulness of not-so-low-flow years, with citizens and developments becoming lax with respect to flood planning, and a rush to structural controls when flows rise to even normal spring flow levels.

- A continued frustration in 2002 was the lack of drought planning in critical fishery basins (e.g., the Smith).

- Back-to-back drought years have brought yet another challenge to a specific species. As discussed further in Appendix D, restoration efforts for Montana's fluvial (river-dwelling) arctic grayling has been hampered by low flow conditions. This has occurred for a long enough period that the ability to keep this species off the Endangered Species List has also been hampered. Interested parties are doubling their efforts to find creative ways to enhance streamflows in the Big Hole River, but another drought year could exacerbate this difficult situation.

- With many impacts to Montana's fisheries documentable only after low flows occur (except in severe events causing fish kills that FWP is able to respond to quickly enough to document), it is difficult to show the effects of immediate drought in time to motivate non-fisheries advocates to conserve water. This is the nature of the science associated with fisheries biology, but it proves challenging in the throes of drought, to not be able to show immediate impacts.

- 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.

- Drought response in Montana should focus on reducing drought susceptibility in the long run, not solely on emergency response and opportunities for compensation for losses. The Montana Drought Response Plan envisions a proactive approach to drought, but long-term fixes need long-term work, continued incentives and resources to accomplish that work, a variety of tools to undertake such fixes, and the commitment of multiple agencies to work together for common goals. All of this takes much more work on everyone's part, rather than going about our own business until the drought cycle returns, then frantically trying to respond. The "fixes" are often complicated, requiring varied study and cross-jurisdictional collaboration, and patience on the part of water right holders as the wheels of evaluation and funding assistance processes roll forward. Again, these win-win projects often take years to develop, and are difficult to implement successfully under "emergency" conditions.

VI. SUGGESTIONS

As much of our suggestions in previous year-end reports remain relevant, the reader is referred to similar sections in previous FWP Annual Summaries. We have dedicated this section in this year's report to a review of the state Drought Plan. The Plan is almost 10 years old now, and has served the state well. There are some elements that are outdated or not being performed, and the recent drought cycle has provided some learning opportunities. FWP staff have been collating these suggestions for three years, and have summarized them in Table 1 on the following pages.

FWP staff appreciate the opportunity to make these suggestions. They are provided from the perspective of a Committee member responsible for participating with other members in creating and communicating the best statewide drought response strategy possible. We hope other Committee members, and the Plan author, take our comments and suggestions in that context.

Please contact Kathleen Williams with any questions regarding the information in this report.

Summary of Suggested Updates to the 1995 Montana Drought Response Plan

Plan Page #	Plan Section(s)	Suggestion(s)/Rationale
Ix+, 20	Varied	Use by the Committee of the Palmer Drought Severity Index appears to have changed from what is envisioned in the Plan. We are not clear as to whether this index has been replaced with a cumulative precipitation index 9as was once proposed), or is just obsolete. The Plan could be updated based on the current status of these information tools.
11	Reporting Conditions	Please delete DFWP from the reference to agencies supplying "water supply and moisture" condition reports.
12	"	The section on the State Electronic BB System could be deleted or replaced with a description of the Committee Website. Note that the sentence committing state agencies assessments of anticipated natural resource and economic impacts by region and industry is not being fulfilled, and may be overly ambitious. The next section on "Press" should be updated – FWP was actively involved in drought-related media relations, without working through DNRC to do so.
14	Drought Assessment	Delete "which begins each spring", as drought impacts can occur any time of year and persist through multiple years.
15	"	I do not believe that agencies are providing <u>all</u> the written impact assessment reports noted.
17	"	The fish and wildlife section needs to be updated. FWP staff will provide suggested replacement text. Suggested changes will likely be more procedural than substantive.
18	"	Do the listed federal agencies report to the DAC as envisioned here? Also, under Energy Production, do toll-free reservoir information phone numbers still exist? Does Commerce currently fulfill the expectations of the Plan? (pp.18-19)
19	"	Does Commerce conduct the surveys of licensed guides as mentioned under "Recreation"? Commerce staff should review this, as it appears Commerce is the agency envisioned to deal with recreation assessments here. Is there still a toll-free tourism phone line? It would seem the written assessment by Commerce envisioned on pp. 18-19 would be helpful in overall state drought response.
20+	Drought Response	I suggest a phrase be added to match the long-term, proactive element of the Committee's responsibilities, to complement the "Alert" and "Severe" modes. Title it "Ongoing" or "Vulnerability Reduction", or something of the sort. Rather than a "triggering" mechanism, these activities/roles should be continually triggered. Page 20 refers to timing of responses being "preemptive in nature". It would be helpful to note that much of Montana is considered "semi-arid", and localities should presume drought will occur in varying degrees on a regular basis. Again, the reference to the PDSI should be updated. It is no longer available for over 140 stations, statewide. Or, the DAC should coordinate the continued calculation of it at this scale.
22	", State Response, (2)	(2) may be overly ambitious in its expectation that an impact assessment can actually be done, a worst-case scenario defined and commensurate written response strategies can be developed an, if presented to the DAC, implemented.
	(4)	This section could be updated with respect to Internet information provided; its focus could also be broadened.

	", County Response, 3)	This seems to connote that Counties may need to monitor some discharge permits. If that is correct, I am curious whether that is happening, or if Counties know of this responsibility or role envisioned by the Plan.
	", ", 7)?	It might be helpful to add another entry, in the vein of: "upon lifting of status, the LDAC should recommend to the Commission and DAC long-term drought vulnerability measures that could reduce impacts to water uses and resources, upon return of similar climatic conditions." This would implement an automatic feedback mechanism for suggestions based on local experience, and the opportunity to do something about it.
24	"Severe" Drought, State Response	I don't recall DEQ's Water Quality staff reporting on discharge permit non-compliance contacts and the related reporting to the Committee that is referenced here. Similar to a preceding comment, this information would be helpful.
	", County Response	It is inclear if "river basin planning committee" is a specific entity. Might this mean "watershed group"? This term is used on p. 23, 6), also. These elements might benefit from some reference to Conservation Districts too.
25	Response Actions, State Agencies, 2)	It is an important responsibility to review "committee membership each year…, to determine if (Committee)membership is comprehensive with respect to interests affected by drought." A more active discussion with the existing Committee membership at the beginning of the year would be helpful in realizing this Plan element.
27	DNRC, 9)	We would appreciate receiving copies of the drought contingency plans for state-owned reservoirs so wed can make our field staff aware of local response plans. These are to identify minimum pool levels and minimum instream flows required downstream of the reservoir – we would appreciate knowing what mechanisms are in place to ensure these minimum levels, for the stated purposes, including "protect(ing) fish and wildlife habitat." Page 28, item (6) requires "close monitoring" of compliance with the plans.
	DNRC, 12)	Without further clarification this sentence implies a hierarchy of values of water use in Montana, which is not the case. Being able to move rights around may allow more flexibility in responding to drought.
28	DNRC, Severe, 4)	We suggest the other types of changes in water use that require a Change Authorization from DNRC be added to this section.
29		It would be helpful to add relevant information to "ongoing activities" actions related to DNRC management of water rights/permits for lessees. (What was learned from the Blackfoot situation in 2000 could be used as an example.) Staff could likely draft text to accurately reflect these responsibilities and opportunities. Also, we suggest there be a drought response element under Alert, that State Lands staff should inform lessees using Land Board water rights (or their own permits) of their status (and implications of in the relevant priority system, and provide water conservation information. Under "Severe", there would seem to reasonably be a heightened responsibility to conserve the State's water in drought conditions by those using State land for personal use. Lands staff should evaluate this entire section to ensure it reflects their water users, not just the fire and forestry elements of State Lands' responsibilities.
30	Introduction	Please add Yellowstone cutthroat trout and sauger to the species listed as being of "special concern".
	", (4)	This portion should probably be broadened, and updated regarding the Internet information that is provided.
33	", DEQ	The elements related to water supply are well covered, but water quality does not seem to get the same level of coverage from the agency, or may not be reported to the DAC as noted. The situation with the Corette stream plant in 2001 is an example. It would be helpful to include a section on how DEQ's instream water reservations for water quality will be/are administered, similar to FWP's related information.
	Introduction,	Please delete, "also known as Murphy rights,"; we hold instream rights other than those created under the "Murphy" law. On

	1)	page 31(1), please replace “Murphy Rights” with “FWP rights”.
	Introduction, 4) and 8)	Please Insert, “when invited”, into this sentence. There are times when we are provided very little opportunity to participate in how small reservoirs are managed under drought conditions.
31	Alert	It would be helpful to incorporate in (2) that FWP hasn’t done weekly reports on a continuing basis in drought. More likely we do informal reporting to the DAC in the winter months, weekly reporting in the summer emergency period, and monthly or bi-weekly reporting in-between.
	(4)	Please move this text to “ongoing”, this is done on an annual basis.
	Severe, (2)	Please eliminate the parenthetical phrase.
30 and 31		Please incorporate relevant elements of FWP’s Wildlife Drought Response Plan here. (See Appendix D of FWP’s 2001 Annual Drought Report.
32 and 33	DEQ	We suggest the ongoing activities list include program changes since 1995 (e.g., TMDL water quality planning efforts, etc.). Also, we are unclear about the reference to 3A authorizations and low-flow conditions. Does DEQ grant 3A authorizations in periods of flow that are less than 7Q10 flows (upon which discharge permits are based)? What is the process and criteria for this? Might there be other actions that would be attempted before violations are authorized? How does DEQ enforce their instream water quality flow reservations, when flows fall below their reservation levels? These questions, authorities and procedures could be included in the DEQ section, as they might be helpful in drought response. The Committee should be kept informed of the scale and location of discharge permits that fall into (or are approaching) violation status and actions taken to address related water quality concerns. This comment also applies to pp. 50-51 (DEQ’s “Annex”). Also, I believe these are now referred to as “318” permits.
33	Alert, (1) and (2)	The reporting provided from DEQ typically focuses on municipal water supply issues and efforts. The reporting referenced in these Plan entries should also be included. It would appear that this entire section needs to be reviewed and updated.
34		This section refers to the Montana Drought Relief Assistance Reference Guide. This publication was very valuable, but has likely become quite out of date. It would be helpful to update it and thereby keep this reference relevant.
	2)	Does the Montana Department of Agriculture generate the Crop Weather Report? Doesn’t the federal Agricultural Statistics Service do this? There may be other updates necessary in this section.
36		Phone number reference may be outdated.
37	NRIS, 1) and 2)	This entire section likely needs to be updated; including references to who provides maps, the use of the PDSI, phone numbers and internet sites. Plus, they have taken on the responsibility of managing the Committee’s website, which should be formalized, along with any necessary funding to do so.
38		The Montana Bureau of Mines and Geology does not seem to be as active in the Committee, or drought response in general, as is envisioned here. Should this section be updated, or the Bureau involvement upgraded? The reference to the State Climate Center should probably be deleted, correct? (Center was eliminated?)
39		We again suggest that the Montana Drought Relief Assistance Guide be updated to maintain its relevance, and the relevance of the reference to it on this page.
	Bureau of Reclamation	The information on the referenced 1-800 phone number appears outdated. Upon reviewing this reference, FWP staff dialed the number, and heard a recording that Nelson reservoir was at 118% of normal storage and releases were being maintained at 30 cfs. It seems unlikely these conditions could have been current at the time (November, 2001), but the recording refers to its information as “current”. This resource should either be updated or interested parties referred to the Bureau Internet site for reservoir information. If the information on the phone line is updated, it could refer not to “currently,” but “conditions as of (date/time) were”, or the like.

40		The US Geological Survey section may need to be modified regarding references to USGS reporting of groundwater levels. The Internet address also likely needs to be updated.
41	Bureau of Land Management	I'm not familiar with the references RAWS/OMNI soil moisture monitoring stations reference, and do not recall the referenced reporting to the DAC. If this is a current and valuable resource, the reporting would be helpful. If not, the section should be revised.
42		I don't recall the NWS producing weekly PDSI and soil moisture index values for seven regions of the state. Are these provided on their website, or is this section in need of updating? Also, is the reference to the phone service in Maryland relevant? Maybe reference to a website(s) would be more useful?
		The NRCS section should probably be updated as well. Some of the activity descriptions are outdated. Also, many of the programs that could assist in long-term drought vulnerability reduction for Montanans are not described (e.g., ECP, EQIP, WHIP, etc.). Also, it seems too narrow a description to state that NRCS assists with "diversion or irrigation water". Maybe a more descriptive term would be "development of water sources and irrigation efficiency improvements", or something similar.
46		It may be advisable to remove the number of local drought committees included here. In drought conditions, all "Alert" counties are encouraged to form committees (and the number of such counties can change every year). In 2001, <u>all</u> Montana counties were assigned "Alert" status or worse, so only 30 county committees would not be considered fully responsive.
46	(or where appropriate)	I suggest that Soil and Water Conservation Districts should have a section in the Plan to delineate their on-going drought vulnerability reductions activities and specific actions under drought conditions. Although there is discussion of CD responsibilities within DNRC's Plan Annex, CDs should have their own section under local agencies and develop their own entries for issues and roles for Plan participation. It's possible that MACD could assist with a statewide perspective for this section. (They are, after all "soil and <u>water</u> conservation" districts!). On a related topic, there were not likely many (any?) local water quality districts in existence when the Plan was drafted. Now that there are several, it may be appropriate to include a section for them too.
51		Again, this section does not seem to adequately disclose authorities (or at least creative response mechanisms) for low-flow effects on water quality.
62	FWP Annex	Delete the following sentence from the "streamflow monitoring" section: "Currently, none of the streams where we have instream rights have gauges installed on them." This is incorrect.
60-69		Some additional updates are needed in FWP's Plan "Annex". When a full revision of the Plan is to be implemented, FWP staff will provide edits to Committee staff, including updates of out-of-date references or information.
69-end	Other agency annexes	Other agencies should review their annexes for items that need updating or revision, or potential additions of creative drought response resources and/or activities. It would be helpful for Drought Committee members to review Annex revisions, to ensure that coordination between agencies and programs is effectively incorporated into the plan. FWP would also appreciate any suggestions others have for updates or changes to the FWP Annex.
Varied	Varied	"Montana Power Company" needs replacing with "PPL Montana", where applicable.
Varied	Varied	Typos: "proceedure" (p.vi); "onsoil", "developingand", and "arenot" (p.27); need an "as" after "such" in last paragraph (p.21); "a", not "an" (p.23); need comma after "purchase of stored water" (p.60); "meeting" should be "meetings" (p. 53); "swater" (p.28(5)); misplaced comma on p.48;

APPENDICES