Henry's Fork
Drought Management Plan

Harriman State Park

Prepared by
Joint Committee
Made up of Representatives from
Fremont-Madison Irrigation District
Henry's Fork Foundation
North Fork Reservoir Company
Trout Unlimited
The Nature Conservancy
Bureau of Reclamation

Executive Summary

This report sets forth the results of the Henry's Fork of the Snake River drought management planning process that was set into motion by the Fremont-Madison Conveyance Act (Public Law No. 108-85). That act directed the transfer of title of the Cross-Cut (Chester) Diversion Dam, the Cross-Cut Canal, and the Teton Exchange Wells from the Bureau of Reclamation to the Fremont-Madison Irrigation District, on September 30, 2003. The Act also authorized additional Teton Project lands to receive Minidoka Project water.

Section 9 of the Act, "Drought Management Planning," reads thus:

"Within 60 days of the enactment of this Act, in collaboration with stakeholders in the Henry's Fork watershed, the Secretary shall initiate a drought management planning process to address all water uses, including irrigation and the wild trout fishery, in the Henry's Fork watershed. Within 18 months of the enactment of this Act, the Secretary shall report to Congress with a final drought management plan."

For the past 18 months, advisory members representing the Fremont-Madison Irrigation District, Bureau of Reclamation, Henry's Fork Foundation, The Nature Conservancy, Trout Unlimited, and the North Fork Reservoir Company, with technical support from Idaho State University, have met at regular intervals to fulfil this obligation. This process has taken place in the larger context of an ongoing drought, and meetings have focused on both current water management needs and the larger planning effort. The winters of 2003-04 and 2004-05 have been noteworthy because flows out of Island Park Dam on the Henry's Fork reflected a willingness to be inclusive of "all water uses, including irrigation and the wild trout fishery," to a significantly greater degree than has been the case in previous drought years.

With this in mind, it is the intention of those who prepared this plan, to make formal the adaptive management process that has been created over the past 18 months and the system of regular stakeholder meetings to discuss what operations will be the Henry's Fork Drought Management Plan. The effectiveness of this plan will be evaluated in five years (January 2009).

Mission

The mission of the Henry's Fork Drought Management Plan is to maintain or enhance watershed health and ecology, even in years of below-average precipitation, in balance with agricultural needs through flexible and adaptive water management within the context of Idaho water law.

Goals and Objectives

1. Continue to manage water out of Island Park Reservoir to optimize irrigation, fish and wildlife populations, aquatic processes, hydropower production, and long-term dam maintenance.
2. Maintain or enhance water supply for all of the above purposes.
3. Maintain functioning hydrologic regimes where they currently exist.

4. Minimize hydrologic alteration in the Henry's Fork system-wide within the bounds of existing water rights, including the storage rights for Island Park Reservoir and Henry's Lake.
5. Improve the hydrograph in the Henry's Lake outlet to ensure functioning ecological processes while respecting the water rights of NFRC.
6. In all water management, place a high priority on native species.

Drought Management Plan

The Henry's Fork Drought Management Plan, which is perhaps better and more simply described as a "water management plan," will consist of four or five meetings annually. The meetings will correspond with the major cycles in a typical irrigation season, and allow for planning based on both existing/prior conditions and predicted conditions. Those meetings will include the following:

January:
- Strategic planning meeting to discuss the coming year, Upper Snake River basin-wide precipitation levels and forecasts, Upper Snake River basin-wide reservoir levels and forecasts, and potential management scenarios for the coming year.
- Assessment of current flow/snowpack situation in Henry's Fork and whether or not adjustments need to be made to existing winter flows.

July: Meeting to discuss the ongoing irrigation season, current and predicted water supply based on current/predicted demand, and to formulate a recommended summer delivery scenario for Henry's Lake and the Henry's Lake outlet.

September: Meeting to discuss the close of the irrigation season, begin to formulate the plan for winter flows, based on current reservoir levels, predicted demand for the remainder of the current irrigation season, and various winter precipitation scenarios.

November: Meeting to discuss setting the winter flows based on reservoir carryover and current and predicted precipitation.

These meetings will be open to the public. The larger watershed public will be kept abreast of water management plans through the Henry's Fork Watershed Council, the open stakeholder group co-chaired by Fremont-Madison Irrigation District and Henry's Fork Foundation.

The planning group also commits to continued investigation and research in the Henry's Fork watershed. Two reports on hydrologic alteration are included as appendices with this plan **(Appendices C and D)**, both being the result of watershed stakeholder initiatives. A third study, which will complete the Henry's Fork watershed inquiry into hydrologic analysis, is currently underway. These are examples of the aggressive pursuit of information that the drought management planning process has fostered and encouraged.

Jeff Raybould, Chairman
Fremont-Madison Irrigation District

Steve Trafton, Executive Director
Henry's Fork Foundation

~~David Rydalch, President~~ Ray W Rigby, Sec.-Treas,
North Fork Reservoir Company

Scott Yates, Director Idaho Water Office
Trout Unlimited

Allen May, Conservation Manager, Eastern Idaho
The Nature Conservancy

Jerrold Gregg, Area Manager
Snake River Area Office
Bureau of Reclamation

TABLE OF CONTENTS

Appendices

Introduction

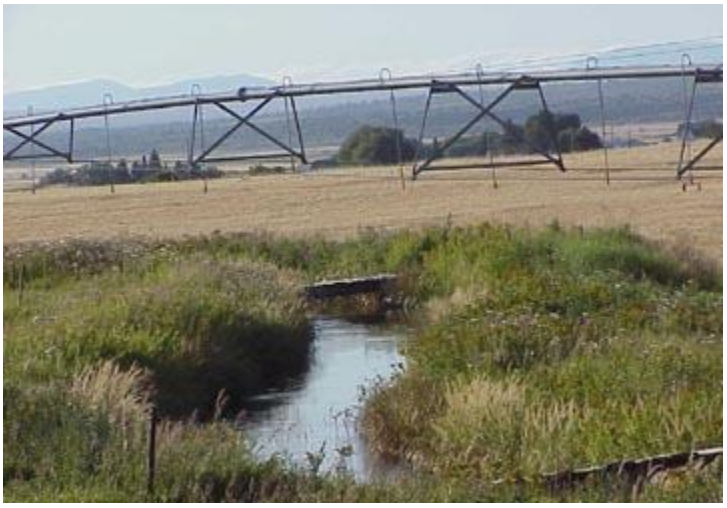
The purpose of the Drought Plan is to provide the policy and system for monitoring, assessing, and preparing for drought conditions, while supporting Fremont-Madison Irrigation District (FMID) water users and the ecological resources of the Henry's Fork of the Snake River.

The following document sets forth the results of the Henry's Fork of the Snake River drought management planning process that was set into motion by the Fremont-Madison Conveyance Act (Public Law No. 108-85). That act directed the transfer of title of the Cross-Cut (Chester) Diversion Dam, the Cross-Cut Canal, and the Teton Exchange Wells from Bureau of Reclamation (Reclamation) to FMID, on September 30, 2003. The Act also legitimized Teton Project land that receives Minidoka Project water.

For the past 18 months, advisory members representing the FMID, Reclamation, Henry's Fork Foundation (HFF), The Nature Conservancy (TNC), Trout Unlimited (TU), and the North Fork Reservoir Company (NFRC), with technical support from Idaho State University (ISU), have met at regular intervals to fulfill Congressional stipulation to provide a Drought Plan. This process has taken place in the larger context of an ongoing drought, and meetings have focused on both current water management needs and the larger planning effort. The winters of 2003-04 and 2004-05 have been noteworthy because flows out of Island Park Dam on the Henry's Fork reflected a willingness to be inclusive of "all water uses, including irrigation and the wild trout fishery," to a significantly greater degree than has been the case in previous drought years.

Background

The Henry's Fork of the Snake River is one of the most prominent watersheds in the West. It is situated at the top of the Snake River system, a vital and heavily scrutinized headwater drainage whose water is used to irrigate a quarter of a million acres of southeastern Idaho cropland. The Henry's Fork is also one of the world's most famous trout streams, attracting tens of thousands of anglers and other river recreationists each year, and in doing so generating millions of dollars of business for both the local economy and that of Idaho. Few rivers work as hard, and perform as well, as the Henry's Fork to serve such a diverse group of users.



As interest in outdoor recreation grows, particularly trout fishing, traditional water management practices have increasingly been called into question by sportsmen and conservation organizations. Wildlife management concerns, especially those involving species listed under the federal Endangered Species Act (ESA) intensify the debate. The Henry's Fork constitutes important habitat, or historic habitat, for two species of concern, the ESA-petitioned trumpeter swan and the ESA-petitioned Yellowstone cutthroat trout. Finally, the explosive growth of many areas in the intermountain West, both locally (the town of Rexburg, which is within the Henry's Fork watershed, is one of the fastest-growing communities in Idaho) and farther afield (especially the greater Salt Lake City area, which is fewer than four hours away from the Henry's Fork by car), ensures that pressure on the Henry's Fork and its water will only continue to grow. At no time is that pressure more evident than in periods of prolonged drought.

"Drought" is defined here generally as conditions dry enough that FMID will lose some of its water allocation, and in which watershed hydrologic alteration is high. Statistical analysis of all water years since 1972 has shown that these conditions occur in one-third of years.

Drought exposes two fundamental problems with the existing water management scenarios and infrastructure in the Henry's Fork watershed. Water in the Henry's Fork is fully appropriated. In years of below-average precipitation some junior water-rights holders—among them many of the 1,700 irrigators served by the FMID—typically lose some or all of their storage or surface water allocations. Much of the water stored in Island Park Reservoir (more than half of it in dry years) is simply delivered through the Henry's Fork to meet senior obligations downstream, leaving the FMID to distribute their share. At the same time, from a fisheries standpoint (not to mention a more general ecological context), storing water in the winter as high in the watershed as possible for as long as possible means, in drought years, that flows in the critical winter and early spring months are lower than they should be to optimize the survival of juvenile rainbow trout and to enhance the ability of adult rainbow trout to spawn. Thus, drought has a negative impact on the productivity of the Henry's Fork watershed, both agriculturally and ecologically.

Thankfully, the Henry's Fork is also a watershed in which a wide range of stakeholders have come together to form cooperative bonds that are unheard of throughout most of the West. In 1992, HFF, a conservation organization dedicated to the protection, restoration, and conservation of the Henry's Fork watershed and its fishery, and FMID co-founded the Henry's Fork Watershed Council (HFWC, or Council), a forum to which all watershed stakeholders are welcome to come, hear ideas, screen proposals, and discuss management questions. In the decade since HFWC was founded it has been involved in more than 40 watershed projects,

ranging from irrigation efficiency to trout habitat restoration, which brought together an amazing 80-plus cooperators.

In 1997, FMID began discussions with Idaho's federal legislators, Reclamation, and the public regarding the possible transfer of Reclamation facilities in the Henry's Fork drainage from federal to FMID ownership. Specifically, the initial proposal included Island Park, Grassy Lake, Cross-Cut Diversion Dam and correlative lands, Crosscut Canal, and the Teton Exchange Wells. The scale of the transfer was eventually reduced and in 2001 FMID, in partnership with Reclamation, began a process to transfer title to Cross-Cut Diversion Dam, Cross-Cut Canal, and the Teton Exchange Wells from the federal government to the irrigation district. At the same time, they began working with the Idaho congressional delegation to write proposed legislation in both the federal House and Senate that would mandate the transfer.

The initial Senate (S.2556) and House (H.R.4708) versions of the title transfer legislation focused purely on the transfer. The HFF and TU, a national coldwater fisheries conservation organization, worked with FMID throughout the summer of 2002 to include language in the legislation to benefit the river's fishery as well as the agricultural community. After numerous meetings and discussions, the focus turned to the inclusion of language that would mandate drought management planning in the Henry's Fork watershed. Both irrigation and conservation interests felt that such a planning effort could benefit stakeholders throughout the watershed. These discussions resulted in an amendment to the original legislation that included a specific section directing the Secretary of the Interior to work with stakeholders in the Henry's Fork watershed to develop a drought management plan. The provision included a specific directive to address all water issues, including irrigation and the wild trout fishery.

History

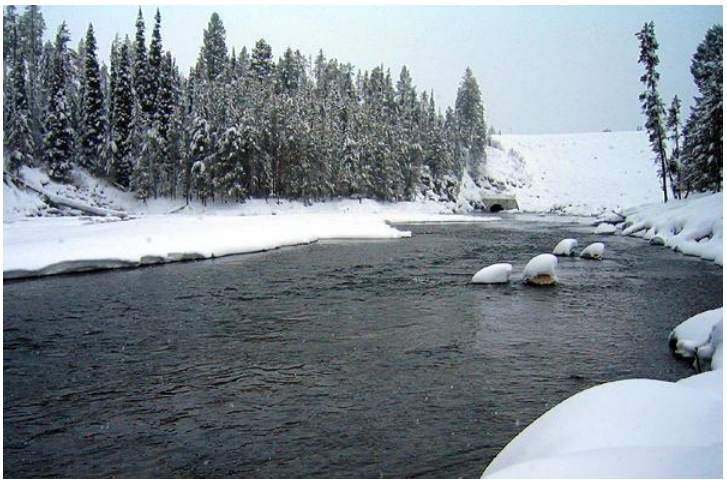
Brief history of Henry's Fork water management and the trout fishery below Island Park Dam

Dams have been used to control flows in the Henry's Fork watershed since the early 1920s. The control of flows has led to changes in the river's hydrologic regime, a term defined as the magnitude, timing, frequency, duration, and rate of change of stream flow. This change to the hydrologic regime is known as hydrologic alteration, and it in turn can lead to impacts to ecological values. The impacts of two dams in particular are relevant to this drought management planning process.

Flows from Henry's Lake, in the headwaters of the Henry's Fork, have been controlled since 1923 by a dam constructed by NFRC on the Henry's Lake outlet. This dam dramatically increased the surface area and capacity of Henry's Lake. Dr. Rob Van Kirk and Boyd Burnett of ISU showed in a 2004 study that hydrologic alteration in the Henry's Lake outlet in water years between 1972 and 2002 was extreme, with high alteration in more than half of the measured years, resulting in the elimination of normal base flows, excessive sedimentation, and loss of wetland function. Alteration in this reach is the highest of any reach in the watershed. This is due to the fact that water is typically stored in Henry's Lake through the natural spring runoff period and then released in mid to late summer, when the outlet would have historically carried

relatively little flow, effectively reversing the normal hydrograph. This situation is exacerbated by the fact that Henry's Lake's storage capacity is roughly twice the average runoff from the lake's small catchment basin, making the lake difficult to fill, and by the fact that the lake's biologically and recreationally important fishery (in particular Yellowstone cutthroat trout) makes the maintenance of high lake levels a priority for resource managers. Because Henry Lake is operated as part of the federal Upper Snake River Reservoir system, and the stockholders in the NFRC have space in Island Park Reservoir, Henrys Lake management has varied little since Island Park Dam began to operate in 1938. This management has allowed Henrys Lake to be maintained typically at or near full pool, creating in the process a world-famous recreational trout fishery while significantly limiting the ability to provide ecological base flows in the outlet. In 1997, NFRC, Reclamation, and the Snake River Water master signed a ten year agreement **(Appendix A)** that would allow for 2,200 acre feet of Reclamation water to be exchanged by the water district during the irrigation season for winter flows in the Henrys Lake outlet. Additionally, a 1998 Memorandum of Understanding **(Appendix B)** between Reclamation, Idaho Department of Fish and Game (IDFG) and TNC, provide a framework for making recommendations to Reclamation for the release of the 2,200 acre feet of the Henrys Lake exchange water when Reclamation exchange water is available. Unfortunately this exchange agreement has not provided benefit during recent drought years and has not been implemented the last 4 storage seasons.

The second dam, the next dam downstream from Henry's Lake, is Island Park Dam, which first stored water in 1938. Van Kirk and Burnett showed that hydrologic alteration in the river reach from the dam downstream to the confluence of the Warm River with the Henry's Fork was high (although not as high as it was in the Henry's Lake outlet). That said, water management below Island Park Dam has improved dramatically in recent years. For example, in 76% of the years between 1939 and 1971, winter flows below Island Park Dam were reduced to little more than seepage from the dam for thirty days or more in the critical (to juvenile trout survival) winter months. That figure has been reduced to only 6% of the years since 1972. Clearly, irrigators and dam operators have realized that there is room for flexible water management at Island Park Dam, and they have acted accordingly.



Changes in water management at Island Park Dam in the early 1970s were followed shortly by changes in fishery management. Prior to 1972 flow fluctuations limited the river's potential to support a self-sustaining, or "wild," native trout fishery, and the trout fishery in that reach was heavily augmented with hatchery trout and with fish (of a variety of species) that washed through the dam out of Island Park Reservoir and into the river below. In 1978, however, the IDFG ceased its stocking program in this reach. The subsequent installation of a hydropower generating facility on Island Park Dam, complete with a screened intake, limited the number of fish that are inadvertently "stocked" into the Henry's Fork below Island Park Dam. Although the original dam intake is still unscreened, the fish rescue effort undertaken in the fall of 2003 when Island Park Dam was shut down for repairs suggests that relatively few fish enter the river this way. The IDFG estimates that at least 90% of the fish biomass in Island Park Reservoir consists of "rough" fish. Observers collecting fish below the dam in 2003 saw very few non-salmonid fish species below the dam in the course of an intensive fish rescue. The rescue effort including one very large, confined pool immediately below the dam outlet that contained at least one thousand fish, almost all of them trout. If large numbers of reservoir fish were entering the river via the outlet tunnel many more rough fish should have been observed by fish rescuers. Thus, since 1978 the Henry's Fork below Island Park Dam has been managed as a wild, self-sustaining trout fishery.

Goals and Objectives

The stakeholders set forth the following general goals and objectives as part of the drought management planning process, recognizing the rights of the FMID spaceholders:

1. Continue to manage water out of Island Park Reservoir to optimize irrigation, fish and wildlife populations, aquatic processes, hydropower production, and long-term dam maintenance.
2. Maintain or enhance water supply for all of the above purposes.
3. Maintain functioning hydrologic regimes where they currently exist.
4. Minimize hydrologic alteration in the Henry's Fork system-wide within the bounds of existing water rights, including the storage rights for Island Park Reservoir and Henry's Lake.
5. Improve the hydrograph in the Henry's Lake outlet to ensure functioning ecological processes while respecting the water rights of NFRC.
6. In all water management, place a high priority on native species.

Within this framework, the stakeholders screened the following potential drought management alternatives:

Alternative 1–Pumping and pipeline system for Henry's Lake outlet

This idea would enable water to be moved through the Henry's Lake Outlet, only to be pumped back up through the pipe from a site below the outlet/Big Springs confluence to Henry's Lake. This would allow Henry's Lake to be maintained at the fullest possible storage level while simultaneously providing for a natural hydrograph in the Henry's Lake outlet. In addition, a delivery system is needed to get excess water—that is, water above the normal volume at any given time of year—out of the outlet and to Island Park Reservoir (or a similarly stable point in the Mack's Inn reach of the Henry's Fork) during periods of peak irrigation demand. That delivery system could use the same pipe as the re-circulation system, or it could be an entirely separate project such as a ditch, canal, or pipe system from the outlet down to the Henry's Fork near Mack's Inn.

A possible solution to the problem of excess flows in the outlet could be to use overflow channels in the Henry's Lake outlet to move above-normal flows to the Henry's Fork. This solution does not address the need for a stabilized hydrograph outside periods of heavy irrigation demand.

A basic feasibility and cost analysis led to this alternative being rejected due to very high construction costs, maintenance costs, and the potential difficulty of acquiring land or landowner permission on which to site the infrastructure needed to make this alternative work.

Alternative 2–Construct a new storage facility on the Teton River

This would, in theory, provide sufficient flexibility to allow for less conservative management at Island Park Reservoir and Henry's Lake. The FMID has studied the feasibility of this scenario.

The reconstruction of Teton Dam has been explored on two different occasions, once by Reclamation (1991) and once by FMID (1995). On both occasions, the idea was rejected due to the high cost, both financially and to the resource, in particular the native Yellowstone cutthroat trout fishery that would be inundated. Also, under the current water rights system the resulting storage facility would only provide water to FMID users in an estimated 30% of water years (based on historical data). For these reasons, this process rejected this alternative again.

Alternative 3–Stock trout into the Henry's Fork below Island Park Dam to mitigate losses of juvenile trout in drought years

This alternative would artificially augment trout populations below Island Park Dam, thereby, arguably, eliminating the need for winter flows sufficient to provide over wintering habitat for juvenile trout. Some stakeholders support this idea as a management alternative to hold in reserve for use in extraordinary circumstances. The idea is opposed by other stakeholders (notably the HFF, TU, and by current IDFG policy), who argue that fisheries management should emphasize wild, self-sustaining trout populations in systems that are capable of maintaining wild populations. The IDFG's current management plan for the Henry's Fork below Island Park Dam designates the reach as a wild trout (no stocking) fishery. A stocking program

would require a major revision of the Henry's Fork management program (the current plan is in force through 2006). Current IDFG managers, HFF, TU, and IDFG all note that stocking the Henry's Fork below Island Park Dam would result in considerable public outcry, given the worldwide fame of the river's wild trout fishery and the fact that it has not been stocked (intentionally) for over 25 years and even through drought cycles, the wild trout fishery remains intact.

Alternative 4–Mitigation Fund A

Create a mitigation fund to reimburse willing upper valley renters of water who lose some or all of their storage allocation. This fund would likely be crafted to address drought year—or drought cycle—realities related to operating Island Park Reservoir (and/or Henry's Lake) to provide additional fishery and ecological benefits without knowing how a specific water year is going to be; in other words, allocating flows for fishery purposes (i.e., 180-200 cfs winter base flow) and then backfilling to cover water user impacts once water year dynamics become clear during the July – October time period.

This alternative is being explored by the stakeholders. Questions that need to be answered include (but are not limited to): What would be the source for such a fund (i.e., individual donors, foundations, the federal government, etc.)? How would the fund be managed? How can storage flows be used to enhance winter base flows below Henry's Lake and Island Park Dam in light of IDWR and Reclamation Upper Snake River flow management and accounting procedures, the District One rental pool procedures, and the fact that much of the storage during drought years is owned by downstream users in the middle Snake River Basin? Who would be included as a legitimate claimant in the event of a loss of water? How frequently, according to the historical record, would a loss of water to upper valley irrigators be likely to occur? Would the fund focus on temporary or permanent transactions?

Alternative 5–Mitigation Fund B

Create a mitigation fund that deals with reducing overall irrigation demand in a manner that restores tributary flows in the Henry's Fork watershed. This fund would be a long-term mechanism to address tributary stream flow restoration issues in priority areas and could provide (a) incentives for on-farm improvements that reduce water use (projects that keep land in production but have a conserved water component that translates to stream flow and fishery benefits) and/or (b) taking land either temporarily or permanently out of production with the water use being transferred to instream fish and wildlife benefits. It could also include a federal Farm Bill ("CREP for water" as an example) type of program like that being discussed in the Mid-Snake River Groundwater negotiations. Unlike Mitigation Fund A, this fund would focus primarily on dealing with natural flow rights in high priority fishery restoration areas such as the remaining cutthroat trout spawning and rearing tributaries in the upper portion of the Teton River drainage.

This alternative is being explored by the stakeholders. Questions include many of the same issues highlighted above, including the source and management authority specifics. Further, the fund would have to be designed to dovetail with the state water supply bank and other water laws

and administrative procedures to ensure that both landowner and fishery needs are addressed. The group will be cautious in pursuing either or both Mitigation Fund A and/or B because of the complexities of institutionalizing either plan and the unknown economic impacts of taking land out of production.

Alternative 6–Marysville pipeline

The Marysville pipeline is a proposal to put an existing earthen canal into a gravity pipeline to enhance water management flexibility. This alternative was not explored in any particular detail due to the same construction and maintenance costs and legal issues that led to the rejection of the Henry's Lake outlet pipeline or canal alternative.

Alternative 7–Move the confluence of the Buffalo River, or some flows from the Buffalo River, to keep the upper quarter mile of the Henry's Fork below Island Park Dam wetted during maintenance or late-fall/early-winter storage season operations

This alternative was rejected because it does not provide any significant fishery resource or water delivery benefits.

Alternative 8–Adaptive management of Island Park Dam

This alternative focuses on different approaches to moving and accounting for water out of Island Park Dam. One possible component of adaptive management includes institutionalizing last year's approach: increasing flows out of Island Park and storing the water in American Falls when there is a minimal risk that American Falls Reservoir will fill (so that FMID's proportional share on April 1 is not reduced or at risk).

This alternative is already being put into practice. In the winter of 2003-04, following a sixty day period from late October through Christmas during which flows below Island Park Dam were reduced to zero (not counting seepage) in order to allow the FMID to repair the outlet tunnel, flows were then set at 200 cfs. Although this is still lower than what historic flows would have been in this reach it represented a significant improvement over the three previous winters, in which flows had been set at 80 cfs for the duration of the winter. Those flows were also delivered in the late winter months, which studies have shown to be more critical to juvenile trout survival than the late fall and early winter months. In the current winter (2004-05), flows were set at 200 cfs for the duration of the storage season (October 1 through the start of irrigation delivery in 2005). These flows have been possible in part due to favorable circumstances (the dam closure in 2003 and a wet summer and fall in 2004 combined with low system-wide reservoir levels that necessitate the delivery of predictable amounts of water to users downstream of the Henry's Fork), but they have occurred above all because the FMID and Reclamation have been willing to take water management action outside the traditional scenario of storing all water as high in the system as possible and allowing for adaptive management of winter flows.

The winter flow regimes for 2003 and 2004 prompt a closer examination of the current management scenario as a long-term drought management strategy. How definitive are Reclamation's in-year water forecasts? Based on those forecasts, will the FMID feel comfortable enough with risk allocation to agree to move additional flows downstream of Island Park during drought years? Analysis of the historical record shows that a policy of winter flows of 200 cfs below Island Park Dam would result in a loss of water to FMID in 7-9% of years. Is it possible to manage that risk, and, if so, how do we do it? One project that could yield a very useful tool would be the development, based on the historical record, of a set of flexible, water-year based management parameters to guide the determination of flow regimes based on system-wide precipitation and reservoir levels and known downstream demand based on water rights; an integrated accounting-physical model for the upper Snake River system. Additionally, adaptive management goals and objectives could be combined with other alternatives such as the aforementioned mitigation fund to help manage the risk to irrigators caused by a more aggressive winter flow regime. Although this alternative addresses Island Park Dam it does not directly address adaptive management of flows below Henry's Lake.

Finally, questions at a watershed scale have been raised by this process, and require careful consideration. The stakeholders agree that, if possible, this process should not be limited to an examination of flows below Island Park Dam, but that it should instead address hydrologic alteration in the Henry's Fork watershed as a whole. First, stakeholders have explored, and rejected, one alternative that could have improved flow regimes in the Henry's Lake outlet (upper watershed). What other alternatives may be available or possible is a question that remains to be answered. Second, the Henry's Fork's tributaries, in particular the Teton River, are significant watersheds in their own right, and water management should be examined (insofar as water is managed in those tributaries) not only for its potential to be improved for the benefit of the Henry's Fork watershed and its users in general, but also for the sake of those individual tributaries themselves. For instance, there may be alternatives in the Upper Teton River Basin that use collaborative approaches and market-based mechanisms to ease water consumption and increase critical tributary stream flows thereby reducing the use of water exchanges in the Henry's Fork (Island Park storage water delivered via the Cross-Cut Canal to lower Teton River Valley water users).

Two studies of hydrologic alteration in the Henry's Fork watershed have been included with this report: "Hydrologic Alteration and its Ecological Effects in the Henry's Fork Watershed Upstream of St. Anthony" (Van Kirk and Burnett, ISU) and "Hydrologic Alteration in the Upper Teton Watershed and its Implications for Cutthroat Trout Restoration" (Van Kirk, ISU, and Jenkins, Idaho Association of Soil Conservation Districts). These studies illustrate the commitment of the drought management-planning group to understanding the implications and complexities of water management in the Henry's Fork, and they have been extremely useful to the process itself.

Risk

The course of events leading up to a drought is going to underscore the fact that the resource is limited. Therefore, during those events everyone is affected. Certain agreements are in place that allow for the opportunity to identify and evaluate the total short-term and the long-term effects.

The greatest risk occurs when situations like the Henry's Fork are not addressed in a cooperative and collaborative manner. Adaptive management is the key to the success of sustained environment. It is through the cooperative effort of the parties involved in drafting this plan that adaptive management is fostered and used to protect this valuable resource. Due to the unique structure and collaborative involvement within the Henry's Fork community, assessment and preemptive measures are part of ongoing operations.

Drought Monitoring

The purpose of this Plan component is to establish a drought monitoring system using existing and proposed data collection efforts for collecting, analyzing, and disseminating information to decision makers and the community in order to declare the appropriate stage of drought.

This component is addressed through the current collaborative and cooperative efforts throughout the advisory members and the respective communities they represent. These efforts provide a forum in which drought conditions are monitored and assessment and response measures are openly discussed.

Impact Assessment

The purpose of this Plan component is to establish a drought impact assessment system using existing resources for collecting, analyzing, and disseminating information to decision makers and for determining appropriate response actions.

Identifying impacts primarily involve inspecting the particular resource and communicating with the water users and community. Direct impacts may be straightforward to quantify while indirect impacts may require a more thorough evaluation. Nonetheless, assessing the type and extent of impacts is important to determine the appropriate response actions.

This component is addressed by the commitment of the group to continued communication and involvement. Due to the unique structure and collaborative involvement within the Henry's Fork community, assessment and preemptive measures are part of ongoing operations.

Drought Response

The purpose of this Plan component is to develop a response system for providing emergency short-term assistance to relieve identified impacts. As in dealing with any type of disaster situation this type of emergency response may be referred to as crisis management.

Response priorities are part of the ongoing communication and collaborative efforts of the Henry's Fork community. This component is addressed through the unique structure as well as the long-term commitment within the Henry's Fork community to utilize adaptive management measures to provide sustainability to the resource. As a result of this commitment, drought response and preemptive measures are part of ongoing operations. Further clarification of this effort continues under "Implementation"

Drought Mitigation

The intent of this Plan component is to develop mitigation strategies for implementing long-term measures to reduce drought risk. As in dealing with any type of disaster, this type of strategic approach is referred to as risk management.

This component is addressed as a result of the unique structure as well as the long-term commitment within the Henry's Fork community to utilize adaptive management measures to provide sustainability to the resource. As a result of this commitment, assessment and preemptive measures are part of ongoing operations. Further clarification of this effort continues under "Implementation"

Implementation

Two main factors for the successful implementation of a Drought Management Plan are 1) involvement of all appropriate organizations and the community, and 2) the ongoing evaluation and revision of the Plan to meet changing needs.

Involving the appropriate organizations and the community includes proper coordination of key organizations for drought related actions. Other programs identified in the plan may also provide support.

The Henry's Fork Drought Management plan, which is perhaps better and more simply described as a "water management plan," will consist of four or five meetings annually. The meetings will correspond with the major cycles in a typical irrigation season, and allow for planning based on both existing/prior conditions and predicted conditions. Those meetings will include the following:

January:
- Strategic planning meeting to discuss the coming year, Upper Snake River basin-wide precipitation levels and forecasts, Upper Snake River basin-wide reservoir levels and forecasts, and potential management scenarios for the coming year.
- Assessment of current flow/snowpack situation in Henry's Fork and whether or not adjustments need to be made to existing winter flows.

July: Meeting to discuss the ongoing irrigation season, current and predicted water supply based on current/predicted demand, and to formulate a recommended summer delivery scenario for Henry's Lake and the Henry's Lake outlet.

September: Meeting to discuss the close of the irrigation season, begin to formulate the plan for winter flows, based on current reservoir levels, predicted demand for the remainder of the current irrigation season, and various winter precipitation scenarios.

November: Meeting to discuss setting the winter flows based on reservoir carryover and current and predicted precipitation.

All the aforementioned meetings will be open to the public. The larger watershed public will be kept abreast of water management plans through the HFWC, the open stakeholder group co-chaired by FMID and HFF.

The planning group also commits to continued investigation and research in the Henry's Fork watershed. Two reports on hydrologic alteration are included as appendices with this plan, both being the result of watershed stakeholder initiatives. A third study, which will complete the Henry's Fork watershed inquiry into hydrologic analysis, is currently underway. These are examples of the aggressive pursuit of information that the drought management planning process has fostered and encouraged.

It is recommended that the Plan be reviewed and updated every five years. Furthermore, the plan should continue to be evaluated for effectiveness following drought events.

Overall responsibility and point of contact for the Drought Management Plan resides with FMID.

Appendix A

Water Exchange Agreement

Appendix B

Memorandum of Understanding

Appendix C

Hydrologic Alteration and its Ecological Effects in the Henry's Fork Watershed Upstream of St. Anthony, June 16, 2004

Appendix D

Hydrologic Alteration in the Upper Teton Watershed and its Implications for Cutthroat Trout Restoration, January 10, 2005