Experimental Flow Ad Hoc Group Meeting Draft Minutes
(in conjunction with the native fish work group and sediment ad hoc group)
October 22, 2001, Phoenix AZ

Attendees: Bill Persons, Norm Henderson, Melissa Trammel, Nancy Hornewer, Steve Gloss, Kurt Dongoske, Mike Yeatts, Robert Winfree, Steve Albert, Bill Davis, Gary Burton, Paul Barrett, Dennis Kubly, Rick Johnson, Wayne Cook, Randy Seaholm, Barry Gold, Randy Peterson

(Agenda is included as attachment #1)

Hydrology presentation - Andrew Gilmore

Andrew presented results of a Riverware computer model run to show potential future conditions relating to dam release experiments during 8.23 maf years as required by the 1995 Biological Opinion. His handout is included as attachment #2. Key conclusions from this presentation include:

- the likelihood of 8.23 maf release years in the near term (through 2016) is about 33 percent; for back-to-back occurrences, the probability is about 25 percent. The probability increases with time due to increasing depletions in the Upper Basin. Over the long term, the probability of 8.23 maf release years exceeds 60 percent.

- the probability of 8.23 maf release years varies dramatically with Lake Powell elevation at the start of the water year. When this elevation is less than 3600 feet, the probability of an 8.23 maf release year is nearly 100 percent.

- there is some correlation between the probability of 8.23 maf release years and the difference between Lakes Mead and Powell storage. When this calculation is positive, there is a slight increase in probability due to the lack of equalization releases above the 8.23 maf minimum.

- monthly release patterns are more predictable and therefore more controllable in 8.23 maf release years. This is particularly true when Lake Powell elevation is low and the annual release volume is likely known at the start of the water year. Greater variability in monthly releases exists when the annual release volume increases, and is especially high when Lake Powell is near full. Under this latter scenario, little flexibility exists in situations where the reservoir is expected to fill, as criteria for reservoir filling, spill avoidance and dam safety considerations control releases.

- the Riverware model output is based on a default monthly release pattern in 8.23 maf release years. Model variations in monthly releases results from individual monthly release decisions made by the model using runoff forecasts. If the experimental flow ad hoc group desires to experiment with an alternative monthly release pattern to benefit the endangered fish, the default pattern could be changed and the model rerun.

Purpose of Experimental Flows for Endangered Fish

The ad hoc group listed the following purposes for conducting experimental flows:

- disadvantage non-native fish
- increase food drift
- increase chub recruitment
- four alternative hypotheses for important chub population limiting factors:
    habitat limitations
    nonnative-native interactions
    age structure (natural cycle) phenomenon
    relative importance of tributaries compared to mainstream

Ideas for Required Monitoring

An obvious requirement for complying with the Biological Opinion RPA regarding a program of experimental flows is a strong monitoring and research effort to determine the effect of such flows. These were broad ideas for that science work:

- spawning success
- first year survival
- 3-year age-class recruitment
- early life stages
- habitat
- over winter survival

General Concepts for Experiments

<u>Common Elements or Ideas</u>

- successive year's treatment should be identical, test hydrography 3 years in a row (goal is to strengthen cause and effect detection)
- bundle most promising parts of experimental ideas into a "most favorable" experiment, then attempt that hydrography several times
- need consistent flow regime
-need contingency plans for experiments when desired hydrology is not realized
- desire a control environment for experiment
- tributary monitoring should be sufficient in and of itself
- non-native predator control
- stocking

Alternative Ideas for Experimental Flows during 8.23 maf Release Years

- bimodal operation (high fluctuations during Oct - May, steady Jun - Sep [potentially at a higher level than 8,000 cfs]). Goal is to disadvantage non-native (trout) spawning in fall/winter, then advantaging natives during the summer

- repetition of ROD flows. This proposal stems from the premise that it will take many years of releasing according to ROD constraints to understand the effects. This is in part because of the inherent interannual variation in ROD flows.

- alternating "good" and "bad" treatments (decadal scale). Concept here is to structure releases to alternately help and hurt the fishery, with the assumption that the native fish would be better able to cope with the harsher environment thus created.

- steady flows, or the SWCA hydrograph. The SWCA proposal called for 1 year of ROD constraints followed by 2 years of steady flows. LCR ponding for at least 15 days was viewed by the group as an important part of this proposal.

- year-round moderate fluctuating flows. This proposal uses greater fluctuations to disadvantage the non-native fish.

Next Steps

Dennis Kubly is in the process of scheduling a native fish workgroup meeting for the week of the November TWG meeting. Key agenda items will be work on a non-native control strategy and development of the program of experimental flows called for in the 1995 Biological Opinion. The following structure will be used in that discussion:

- knowledge assessment. What do we think we know?
- core hypotheses. What flow pattern or other management action do we think will benefit the chub? How can they be tested?
- flow pattern. What series of flow patterns will adequately address our hypotheses? How do the flows of non-8.23 release years affect this test? How can the high flow experiments of the sediment ad hoc group be integrated with the Biological Opinion flows as a complete program of experimentation?
- required science activities. What monitoring and research will be required as part of this program? In the absence of funding in FY 2002, what activities are included in our ongoing science program that can address these questions and hypotheses if WY 2002 turns out to be an 8.23 maf release year?
- other resources. Are there other resources for which experimental flows need to be designed as part of the complete program?

Following the NFWG meeting, the experimental flow ad hoc group will reconvene to begin preparing an integrated program of experimental flows for consideration by the TWG.

Experimental Flow ad hoc meeting
October 22, 2001

Agenda

1 - Hydrology presentation - Probabilities, sequences, and characteristics of 8.23 maf release years - Andrew Gilmore [30 min]

2 - What is the purpose of experimental flows for endangered / native fish? [15 min]

2a - What monitoring would be required to answer the question of the effectiveness of such flows? [15 min]

2b - What specific elements of the current monitoring program would meet the these requirements? [15 min]

3 - What general concepts do you have for these experiments? [30 min]

4 - What are (or are there?) specific times of the year that have the most critical research need, and are there specific short-term, partial-year experiments that can answer these research needs? [15 min]