In summary, we remain available to further discuss our rationale for the above statements and the content of the Biological Assessment. We express our appreciation to you for the time that you and your staff have dedicated to this priority undertaking by the Department of the Interior, your agreement to an accelerated consultation schedule, and your willingness to meet with the California applicants. We look forward to resolving any continuing issues with you and the applicants. In order to keep the applicants advised as to the status of the consultation, they will be provided a courtesy copy of this memorandum and its attachment.

Please contact me at (702) 293-8414 if you have additional questions or would like to schedule a meeting to discuss further.

WILLIAM E. RINNE

Attachments

cc: Mr. Larry Purcell
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bc: Director, Operations
Attention: W-6333
Field Solicitor, Washington DC
Attention: Robert Snow
Field Solicitor, Phoenix AZ
Attention: Joan Card
Area Manager, Yuma AZ
Attention: YAO-1400, YAO-2200
(w/att to ea)

LC-2011, LC-2311, LC-2312, LC-2316
(w/o att to ea)

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Regional Office
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1102

IN REPLY REFER TO:
UC-720
ENV-7.00

NOV 2 9 2000

MEMORANDUM

To: Field Supervisor, U.S. Fish and Wildlife Service, Ecological Services Office, Region 2, Arizona State Office, 2321 W. Royal Palm Road, Suite 103, Phoenix, AZ 85021-4951

From: Acting for Charles A. Calhoun
Regional Director

Subject: Finding of "May Affect, Not Likely to Adversely Affect" for Listed Species Which May Be Present in the River Corridor Below Glen Canyon Dam Due to Minor Operational Changes Resulting From the Secretary of the Interior's proposed Adoption of Interim Surplus Criteria; Supplemental Information to the August 30, 2000 Biological Assessment

The Secretary of the Department of the Interior (Secretary), acting through the Bureau of Reclamation is considering the adoption of specific interim criteria under which surplus water conditions may be declared in the lower Colorado River Basin during a 15-year period that would extend through 2016. As the agency which is designated to act on the Secretary's behalf with respect to this action, Reclamation is preparing an Environmental Impact Statement to evaluate the potential effects of adopting interim surplus criteria. As a part of this process, the potential effects on listed species from the headwaters of Lake Mead to the Southerly International Boundary with Mexico were evaluated in a biological assessment which was transmitted to the U.S. Fish and Wildlife Service (Service) on August 30, 2000.

Preliminary evaluations of the effects of adopting interim surplus criteria indicated that minor modifications to the operations of Glen Canyon Dam were within the range of operations previously evaluated by the Service in a December 21, 1994, Biological Opinion (FWS, 1994). The proposed minor changes to operations would not preclude the continued implementation of the previously agreed to reasonable and prudent alternative, or the functioning of the Adaptive Management Program. We concluded that these minor changes would have no affect on listed species occurring along the river from Glen Canyon Dam to the headwaters of Lake Mead. For these reasons, that area was not included in the biological assessment.

Since that time we have updated the model used to predict future dam operations and riverflows and determined that there would be a minor change in the frequency with which Beach/Habitat-Building flows and low steady summer flows as recommended in the opinion would be triggered.

It has been determined that this change may affect, but is not likely to adversely affect, listed species in the Colorado River corridor between Glen Canyon Dam and the headwaters of Lake Mead. We have also determined there would be no adverse modification of critical habitat.

This memorandum serves to document the re-evaluation of potential impacts to listed species from Glen Canyon Dam to the headwaters of Lake Mead based on the updated model runs. This data was discussed with your Phoenix, AZ staff on November 8, 2000. We would appreciate your concurrence or response to our finding of 'may affect, not likely to adversely affect' and 'no adverse modification of critical habitat' at your earliest convenience. Should you have additional questions or concerns feel free to contact me or a member of my staff at (801) 524-3600.

Attachment

CC: UC-105, -700, - 438, - 432, - 433
LC-1000, -2011, -2311, -1050
U.S. Department of the Interior, Office of the Solicitor, 1849 C. Street N.W. Washington D.C. 20240 Attention: Robert Snow MS-6412-MIB
U.S. Fish and Wildlife Service, Ecological Services Office, Region 2 Arizona State Office, 2321 Royal Palm Road Suite 103, Phoenix, AZ 85021-4951
Attention: Debra Bills, Leslie Fitzpatrick, Thomas Gatz
U.S. Fish and Wildlife Service, Ecological Services Office, Region 2, PO Box 1306, Albuquerque, NM 87103 Attention: Steve Helfert
Navigant Consulting, 225 W. Broadway, Suite 400, Glendale, CA 91204

Background

The Secretary of the Interior (Secretary) is vested with the responsibility of managing the mainstem waters of the lower Colorado River pursuant to applicable federal law. This responsibility is carried out consistent with a collection of documents known as the *Law of the River*, which includes a combination of federal and state statutes, interstate compacts, court decisions and decrees, an international treaty, contracts with the Secretary, operating criteria, regulations and administrative decisions.

The Colorado River Basin Project Act of 1968 directs the Secretary to adopt criteria for coordinated long-range operation of reservoirs on the Colorado River in order to comply with and carry out the provisions of the Colorado River Compact, the Colorado River Storage Project Act, the Boulder Canyon Project Act of 1928, and the United States-Mexico Water Treaty of 1944. Collectively, these criteria are the Long-Range Operating Criteria (LROC). The 1922 Colorado River Compact apportioned the exclusive beneficial consumptive use of 7.5 million acre feet of water a year to the Upper Basin and 7.5 maf of water a year to the Lower Basin. The LROC define a *normal year* as a year in which annual pumping and release from Lake Mead will be sufficient to satisfy 7.5 maf of consumptive use in accordance with the Decree entered by the United States Supreme Court in 1964 in the case of *Arizona V. California*. If there exists sufficient water available in a single year for pumping or release from Lake Mead to satisfy annual consumptive use in the states of California, Nevada and Arizona in excess of 7.5 million acre-feet, such water may be determined by the Secretary to be available as "surplus" water. The Secretary is authorized to determine the conditions upon which such water may be made available. The Secretary is considering the adoption of specific interim criteria under which surplus water conditions may be declared in the lower Colorado River Basin during a 15-year period that would extend through 2016, in accordance with the LROC. The interim surplus criteria would be used annually to determine the conditions under which the Secretary may declare the availability of surplus water for use within the States of Arizona, California and Nevada.

The LROC are used by the Secretary, on an annual basis, to make determinations with respect to the projected plan of operations of the storage reservoirs in the Colorado River Basin. Reclamation released a Draft Environmental Impact Statement in July, 2000 which evaluated 5 alternatives for interim surplus criteria. The LROC require that, when Upper Basin storage is greater than the storage required under Section 602(a) of the Colorado River Basin Project Act, releases from Lake Powell are governed by the objective to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell. Because of this equalization provision, changes in operations of Lake Mead will, in some years, result in increases in annual release volumes from Lake Powell. It is through this mechanism that delivery of surplus water from Lake Mead can influence the operation of Glen Canyon Dam. The equalization requirement of Section 602(a) is suspended if water stored in the Upper Basin is not sufficient to meet Upper Basin demand during a critical low-runoff period.

Of the five alternatives evaluated, the preferred alternative (proposed action) is the Basin States Alternative. The Basin States Alternative specifies ranges of Lake Mead water surface elevations to be used through 2015 for determining the availability of surplus water through 2016. The elevation ranges are coupled with specific uses of surplus water in such a way that, if Lake Mead's surface elevation were to decline, the permitted uses of surplus water would become more restrictive, thereby reducing the delivery of surplus water. The interim criteria would be reviewed at five-year intervals or as otherwise needed based upon actual operational experience.

The surplus determination elevations under the preferred alternative consist of the tiered Lake Mead water surface elevations, each of which is associated with certain stipulations on the purposes for which surplus water could be used.

In acknowledgment that the operation of Glen Canyon Dam, as authorized, to maximize power production was having a negative impact on downstream resources, the Secretary determined in July 1989 that an Environmental Impact Statement should be prepared. The *Operation of Glen Canyon Dam EIS* developed and analyzed alternative operation scenarios that met statutory responsibilities for protecting downstream resources and achieving other authorized purposes, while protecting Native American interests. The final EIS was completed in March 1995 and the Secretary signed a Record of Decision (ROD) on October 8, 1996. The ROD describes criteria and plans for dam operations and included other measures to ensure Glen Canyon Dam is operated in a manner consistent with the Grand Canyon Protection Act. Reclamation also consulted with the Service under the Endangered Species Act and incorporated the Service's recommendations into the ROD. Also among the provisions of the ROD are an Adaptive Management Program and experimental flows.

The Adaptive Management Program provides a process for assessing the effects of current operations of Glen Canyon Dam on downstream resources and using the results to develop recommendations for modifying operating criteria and other resource management actions. This is accomplished through the Adaptive Management Work Group, of which the Service is a member. The AMP includes long-term monitoring and research activities that provide a continual record of resource conditions and new information to evaluate the effectiveness of operational modifications on downstream resources, including listed species. Through the AMP, testing and evaluation of releases recommended by the Service's biological opinion are being implemented. The releases are designed to verify a program of flows that would improve habitat conditions for listed species. Releases from Glen Canyon Dam for equalization purposes, due to the proposed interim surplus criteria, would affect the range of storage conditions in Lake Powell and alter the flexibility to schedule and conduct such releases or to test other flow patterns. The amount of this reduction in flexibility has been evaluated for the proposed action. Specifically, effects on the frequency of triggering beach/habitat-building flows and of low steady summer flows were estimated through the use of modeling and compared to the baseline conditions for the interim period to 2016, and for an additional period to the year 2050 to evaluate both short and long term effects.

Baseline conditions are the current conditions, or those conditions which would occur if interim surplus criteria were not adopted. If interim surplus criteria is not adopted, determination of surplus would continue to be made on an annual basis as part of developing the Annual Operating Plan, pursuant to the LROC and Decree. Consideration of factors such as end-of-year system storage, potential runoff conditions, and projected water demands of the Basin States would be considered. A specific operating strategy, which could be described mathematically in a computer model that simulates specific operating parameters and constraints, was selected as the baseline. This strategy is the "70R" spill avoidance strategy, which Reclamation has utilized for both planning purposes and studies in past years. The R strategy assumes a particular percentile historical runoff, along with normal 7.5 maf delivery to Lower Division states for the following year. Applying these values to the current reservoir storage, the projected reservoir storage at the end of the next year is calculated. If the calculated space available at the end of the next year is less than the space required by flood control criteria, then a surplus condition is determined to exist. The 70R strategy uses an annual runoff of 17.3 maf.

During preparation of the GCD EIS it was hypothesized that steady flows with a seasonal pattern may have a beneficial effect on the potential recovery of special status species down stream of Glen Canyon Dam. Accordingly, development of an experimental water release strategy was recommended by the Service in the December, 1994 biological opinion to achieve steady flows when compatible with water supply conditions and the requirements of other resources. The biological opinion recommended developing and verifying a program of experimental flows which would include high steady flows in the spring and low steady flows in summer and fall during water years of approximately 8.23 maf. The probability that conditions would occur allowing the testing and verification of these flows, know as low steady flows and beach/habitat-building flows, could be affected by the implementation of interim surplus criteria.

The probabilities that minimum releases of 8.23 maf would occur during the interim period to 2016 and during the subsequent period to 2050, were estimated using a mathematical model. The results indicate that under baseline conditions, the probability of an 8.23 maf annual release would be approximately 38.2 % of the years, during the interim period, and 61.6 % during the subsequent period to 2050. Under the propose d action, this probability would be approximately 36.3 % during the interim period, and 61.9 % during the subsequent period. This is an approximate reduction of 2.9 % in the probability of an 8.23 maf year during the interim period, and an increase in the probability of an 8.23 maf year of 0.3% during the subsequent period. Given the margin of error in forecasting runoff, this decrease of 2.9% in the probability of occurrence of an 8.23 maf year through 2016, and of 0.3 % through 2050 is insignificant, and would have no effect on the amount of take occurring due to ongoing conditions under the existing biological opinion when compared to the baseline condition. The AMP would remain in effect, the 1994 biological opinion would continue to be implemented, and reservoir operations would remain within the historical ranges.

We have therefore concluded that adoption of interim surplus criteria as described in the Basin States Alternative may affect, but is not likely to adversely effect any listed species occurring between Glen Canyon Dam and Separation Rapid, and that no critical habitat would be adversely modified.

The frequency at which BHBF releases from Glen Canyon Dam would occur under baseline conditions and under each of the interim surplus criteria alternatives was also estimated through use of the model. The model was configured to simulate BHBF releases by incorporating the BHBF triggering criteria into the Glen Canyon Dam operating rules. The model was also configured to make no more than one BHBF release in any given year. The effects of the interim surplus criteria alternatives on BHBF releases were analyzed in terms of the yearly frequency at which BHBF releases could be made, as indicated by the occurrence of one or both of the triggering criteria during a calendar year.

Under baseline conditions, the frequency of one or both BHBF flow release triggers occurring would be as follows: during the period through 2016 for which interim surplus criteria are being considered, the probability that BHBF releases could be made in a given year would be approximately 15.9 %, which is equivalent to about 1 year in 6. This yearly probability is an average over that period. During the subsequent period, ending in 2050, the average probability that BHBF releases could be made in any year would be approximately 13.5 %, which is equivalent to about 1 year in 7. The reduction in probability after 2016 under baseline conditions results from the fact that with time, the Lake Powell water level will probably decline because of increased Upper Basin depletions as the states develop their compact entitlements. The concept of BHBF releases developed in the Glen Canyon Dam Operations EIS was based on an estimated frequency of occurrence of 1 in 5 years. The difference occurs due to modeling refinements and changes in the forecasted upper basin depletion schedules received from the upper basin states through the Upper Colorado River Commission. Under the proposed action (the Basin States Alternative) the probability that BHBF releases would be triggered is approximately 14.8 %, and, during the subsequent period ending in 2050, the average probability that BHBF releases would be triggered would be 13.4 %. This is an approximate change in probability of 1.1% during the initial period to 2016, and of 0.1% during the remaining period of analysis, through 2050. Given the margin of error in forecasting runoff, this change is insignificant, and would not change the amount of take occurring due to ongoing conditions under the existing biological opinion when compared to the baseline condition. The AMP would remain in effect, the 1994 biological opinion would continue to be implemented, and reservoir operations would remain within the historical ranges.