



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

MEMORANDUM

To: Larry Walkoviak, Regional Director
Upper Colorado Region, Bureau of Reclamation

From: Anne Castle, Chair, Glen Canyon Leadership Team
Assistant Secretary – Water & Science

Anne Castle NOV 7 2012

Subject: Approval of Recommendation for Experimental High-Flow Release from Glen Canyon Dam, November 2012

On October 31, 2012, the Glen Canyon Technical Committee (Technical Committee) recommended a high-flow experimental (HFE) release from Glen Canyon Dam (Attachment 1, Glen Canyon Leadership Team Recommendation to Implement a fall 2012 High Flow Experiment at Glen Canyon Dam) in accordance with the Development and Implementation of a Protocol for High-Flow Experimental Releases from Glen Canyon Dam, Arizona, 2011 through 2020 (HFE Protocol) Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) recently completed by the Bureau of Reclamation (Reclamation). The Glen Canyon Leadership Team (Leadership Team) has carefully reviewed and considered the Technical Committee's recommendation. After a thorough discussion, the Leadership Team has unanimously decided to proceed with the recommended HFE release. Please take the appropriate actions to implement the HFE release as described in the Technical Committee recommendation.

The Leadership Team would like to highlight several important aspects of the recommendation that have led to this decision.

First, this HFE recommendation incorporates the best scientific information concerning a variety of resource areas. The process to determine the availability and type of HFE release is based on modeling information that accounts for water and sediment resources. But because more than water and sediment resources are implicated, the HFE decision process calls for resource experts to review the model output, consider the potential effects on other resources, and adjust the model's HFE release recommendation to account for other key resource areas.¹

The model that the HFE Protocol uses to assess different duration and magnitude HFEs called for an HFE Release of 42,300 cubic feet per second (cfs) with a peak flow duration of 72 hours, based only on sediment and water resources. In reviewing this model output and the status and trends of key resources, however, resource experts at the various agencies reached a consensus

¹ Another important aspect of the review by resource experts is to ensure that the anticipated effects of the proposed HFE are within the range of impacts analyzed in the environmental documentation prepared for implementation of the HFE Protocol.

recommendation for a revised HFE Release of 42,300 cfs with a peak flow duration of 24 hours in order to maximize benefits to resources and reduce costs associated with the HFE release. For example, the shorter duration of peak flows is designed to maximize the potential for deposition of large sand bars compared to a longer duration of peak volume. (Attachment 1, page 6). Similarly, the down-ramp rate² for the HFE Release has been slowed to further improve the potential for deposition of large sand bars (Attachment 1, page 6). Based on these changes, the proposed HFE, in comparison to the HFE model output, should better redistribute sand from the channel bed to the channel margins, while also resulting in a reduction in the overall volume of water to be released during the HFE, meaning that less water will need to be rescheduled from later months in the water year. The recommended HFE release also reduces the amount of water released in excess of powerplant capacity by approximately 29,000 acre feet, reducing the cost of purchasing replacement power by approximately \$164,000.

The Leadership Team notes that the adjustments to the model output are fully consistent with the HFE framework that was considered in preparation of the HFE Protocol EA.³ The HFE Protocol EA expressly indicates that resource experts will have the discretion to propose minor refinements and adjustments to the HFE design from that produced by the model output in order to more favorably affect resource conditions, so long as the changes are within the range analyzed by the NEPA process. As stated in the HFE Protocol EA: "Because this [EA] has considered the effects of 45,000 cfs HFEs for 1 to 96 hours, it also serves to assess the effects of HFEs at lower magnitudes and equivalent durations" (HFE Protocol EA, page 40). The overall volume of this HFE Release will be 42,300 cfs, within the 31,500 cfs-45,000 cfs range analyzed in the HFE EA (HFE Protocol EA, page 27). Likewise, the 24-hour peak flow duration of the HFE Release is within the 1-96 hour range analyzed in the HFE Protocol EA (HFE Protocol EA, pages 27-28). The ramp rates are also consistent with what was analyzed in the EA because the HFE Protocol EA contemplates that releases will operate within the framework of the Modified Low Fluctuating Flow Releases (MLFF) ramp rates (HFE Protocol EA, page 51), specified as "maximum" up-ramp rates of 4,000 cfs/hour and down-ramp rates of 1,500 cfs/hour in the Operating Criteria and 1997 Annual Plan of Operations for Glen Canyon Dam (62 FR 9447-9448).

While operating within these parameters, the resource experts on the Technical Committee have been able to use their scientific knowledge to recommend an HFE release that provides improved benefits to the sediment resource and is also more advantageous to water and power resources than the model output. The Leadership Team appreciates this effort to design an experimental release that better improves resource conditions and does so at a reduced cost. The Technical Committee recommendation is a conservative refinement to the model output that is more protective of resources, consistent with the overall conservative approach to experimental actions as part of the Glen Canyon Dam Adaptive Management Program (GCDAMP). This conservative approach was previously taken by proposing limited periods of steady flows and postponing spring high flows for the first two years of the HFE Protocol.

² Ramp rates are the rates at which the release rate through the Dam changes over time. Ramp rates are measured in cubic feet per second per hour.

³ The HFE Protocol EA and related NEPA documents are available at:
<http://www.usbr.gov/uc/envdocs/ea/gc/HFEProtocol/index.html>

While it is important to consider adjustments to the model output that may benefit resources in addition to sediment, the Leadership Team notes that its discretion to select model adjustments is not unlimited. The primary bounds of this discretion are found in flow parameters before, during, and after HFE releases, such as those described above. These parameters are more fully described in the HFE Protocol NEPA analysis. Additionally, the Leadership Team's view is that it would be inappropriate to adjust the model output in a way that would increase the amount of water to be released or increase power costs associated with an HFE release. It is appropriate, however, to consider HFE releases that benefit sediment resources and also benefit other resources over the model output. The Leadership Team's decision here is an example of appropriate use of available discretion because it is more beneficial to sediment resources and more beneficial to other resources, namely water and power resources.

Second, the HFE release approved in this decision is the result of thorough public and stakeholder involvement over the past six months. The HFE Protocol EA and FONSI addressed involvement from the GCDAMP Adaptive Management Work Group (HFE Protocol EA, page 41). This outreach was extended to include various meetings, conference calls, and webinars with the Indian Tribes, the Colorado River Basin States, and the Adaptive Management Work Group, including its Technical Work Group. A list of these meetings is attached to this decision (Attachment 2, Key Dates for Consultation and Coordination on a 2012 fall HFE at Glen Canyon Dam). Many of the concerns raised during development of the HFE recommendation were raised by the Pueblo of Zuni. Reclamation representatives met with the Pueblo of Zuni on November 5 and were able to largely address many of these concerns, and committed to working towards a more collaborative process for planning future HFEs with the Pueblo of Zuni and all interested stakeholders.

This extensive public and stakeholder involvement has enabled the Technical Committee to refine the recommendation to address matters raised in these discussions. What the Leadership Team considers to be key topics are listed below.

- **Experimental Nature of Releases:** Representatives from the Colorado River Basin States expressed concern that HFE Releases be described as experimental. As stated throughout the HFE Protocol EA and FONSI, the HFE releases are experimental actions.
- **Baseline Operations:** Representatives from the Colorado River Basin States expressed a concern that releases both before and after the HFE Release should follow the MLFF framework. As stated throughout the HFE Protocol EA and FONSI, MLFF operations will continue to be the baseline operations for Glen Canyon Dam until 2020, unless a different operation is ultimately selected at the conclusion of the Long-Term Experimental and Management Plan (LTEMP) NEPA process. Releases will fluctuate between 7,000 and 9,000 cfs during the month of November.
- **Flow Levels:** Pre- and post-HFE flows were originally proposed to fluctuate between 5,000-8,000 cfs. Angling interests expressed concerns regarding potential food base effects and whitewater interests expressed concerns regarding safety at these low flows. The Technical Committee addressed these concerns by recommending higher pre- and post-HFE flow levels to fluctuate between 7,000 and 9,000 cfs.

- **Whirling Disease Information:** The Pueblo of Zuni expressed concerns about the effects of an HFE Release on the downstream transmission of whirling disease, based on the recent discovery of the whirling disease parasite in areas immediately below Glen Canyon Dam. Reclamation has worked closely with the U.S. Fish and Wildlife Service, the Arizona Game and Fish Department, and other interested agencies to consider this concern. Based on this review, the agencies determined that whirling disease is already present in the Colorado River from Glen Canyon Dam to Lake Mead and not likely to be spread further by HFE releases. Instead, whirling disease is likely to be suppressed by HFE releases (Attachment 3, Whirling Disease concerns raised in September 20, 2012 Pueblo of Zuni letter).
- **Impacts to Archaeological Sites:** Reclamation completed a Memorandum of Agreement (MOA) for the HFE Protocol for National Historic Preservation Act compliance. The Pueblo of Zuni and other parties to that agreement are concerned about how HFEs will affect sites, directly from erosion and deposition of sediment, and indirectly through increased visitor use by boaters, and how these effects will be monitored. Reclamation is working closely with the parties to the MOA to coordinate monitoring of these effects and plan mitigation if appropriate, and tribal monitoring will be very important in evaluating these effects.
- **Impacts to Electric Rates of Economically Disadvantaged Minority Communities:** The Pueblo of Zuni expressed a concern that HFEs could increase their utility rate for electricity over time because they use Colorado River Storage Project Act electricity. Western Area Power Administration has indicated that electricity rates will not increase as a result of a 2012 HFE in the short term. Reclamation and Western will carefully monitor the long-term effect of HFEs on electricity rates of economically disadvantaged minority communities and will use this information in the decision process to conduct future HFEs under the HFE Protocol, and will coordinate closely with the Zuni on their findings.

Third, the HFE release will continue the adaptive management process of taking experimental actions that will inform future experiments and potential management decisions. This HFE includes a thorough monitoring and research process to collect data on various resource conditions. This information will be analyzed by resource experts in the various agencies and will be reported at a number of meetings following the HFE. This information will be used to inform decision making for future HFE releases and management actions, and will also be valuable as the Department continues the NEPA process for the LTEMP, allowing the best available scientific information to inform future decision making for Glen Canyon Dam Operations.

Overall, the Leadership Team's conclusion is that the recommended HFE release will provide resource benefits in the near term and will also provide scientific information to be used in future decision making. The HFE release will satisfy Secretary Salazar's goal to ensure effective and coordinated implementation of important research that the Department of the Interior is undertaking through the GCDAMP.

The Leadership Team would like to thank the Technical Committee for the sustained hard work that has led to this recommendation. The individual efforts from members of the Technical

Committee and coordination of the team as a whole has made this process a success that will ensure benefits to the incomparable resources of Grand Canyon National Park and Glen Canyon National Recreation Area and effective and coordinated research to benefit the adaptive management process.

Attachments

cc: Glen Canyon Leadership Team

Lori Caramanian, Department of the Interior
Jane Lyder, Department of the Interior

Fritz Holleman, Office of the Solicitor
Bob Snow, Office of the Solicitor

Larry Walkoviak, Bureau of Reclamation
Ann Gold, Bureau of Reclamation

Bert Frost, National Park Service
John Wessels, National Park Service
Dave Uberuaga, National Park Service

Dave Lytle, U.S. Geological Survey
Mark Sogge, U.S. Geological Survey
Jack Schmidt, U.S. Geological Survey

Benjamin Tuggle, U.S. Fish and Wildlife Service
Janet Bair, U.S. Fish and Wildlife Service
Steve Spangle, U.S. Fish and Wildlife Service

Bryan Bowker, Bureau of Indian Affairs
Amy Heuslein, Bureau of Indian Affairs

Laverne Kyriss, Western Area Power Administration
Darren Buck, Western Area Power Administration

Glen Canyon Technical Team

Lori Caramanian, Department of the Interior
Bob Snow, Office of the Solicitor
Jane Blair, Bureau of Reclamation
Rick Clayton, Bureau of Reclamation
Katrina Grantz, Bureau of Reclamation
Lisa Iams, Bureau of Reclamation
Glen Knowles, Bureau of Reclamation
Dennis Kubly, Bureau of Reclamation
Deborah Lawler, Bureau of Reclamation

Dave Trueman, Bureau of Reclamation
Bart Vanderhoof, Bureau of Reclamation
Mike Ward, Bureau of Reclamation
Nick Williams, Bureau of Reclamation
Malcolm Wilson, Bureau of Reclamation
Barry Wirth, Bureau of Reclamation
Ron Anderson, Bureau of Reclamation
Jason Tucker, Bureau of Reclamation
Roger Williams, Bureau of Reclamation
Hunter Bailey, National Park Service
Jan Balsom, National Park Service
Rob Billerbeck, National Park Service
Todd Brindle, National Park Service
Brian Carey, National Park Service
Martha Hahn, National Park Service
Chris Hughes, National Park Service
Denise Shultz, National Park Service
Rosemary Sucec, National Park Service
Mark Wondzell, National Park Service
Jack Schmidt, U.S. Geological Survey
Scott Vanderkooi, U.S. Geological Survey
Lesley Fitzpatrick, U.S. Fish and Wildlife Service
Amy Heuslein, Bureau of Indian Affairs
Sam Loftin, Western Area Power Administration
Nancy Scheid, Western Area Power Administration