

RATIONALE FOR REFINING THE HIGH FLOW EXPERIMENT PROTOCOL TO HELP ENSURE TESTING OF SPRINGTIME HIGH FLOW EXPERIMENTS

Grand Canyon Wildlands Council and several other AMP representatives delivered a letter to the Secretary's Designee at the February 24-25, 2016 Adaptive Management Program meeting in Phoenix regarding the limited likelihood of occurrence of springtime HFEs due to incomplete consideration of sediment accounting periods. The body of that letter follows:

"The language surrounding the conduct of springtime high flows from Glen Canyon Dam, as described in the Glen Canyon Dam High Flow Experiment (HFE) Protocol (HFEP) Environmental Assessment (EA) severely limits the potential for experimental testing of HFEs during the March-April springtime period. In comparison with autumn (November) high flows, springtime HFEs are more naturally timed and provide substantially improved sediment and habitat benefits to native fish, the aquatic food base, and river recreation. However, the winter sediment accounting period from 1 December through March is a time when Paria River sediment delivery is normally low, and therefore the HFEP significantly reduces the likelihood of triggering a springtime HFE. Modification of the HFEP is needed to account for the actual sediment mass balance available for springtime HFEs. Here we provide the Secretary's Designee and the Co-Lead LTEMP Agencies with the rationale, and a request for modification of the HFEP to permit testing of springtime HFEs during the LTEMP period. Such modification prior to approval of the LTEMP Preferred Alternative will better ensure the opportunity to test and evaluate springtime HFEs, and is in keeping both with the intent of the Grand Canyon Protection Act (1992) and the experimental focus of adaptive management under the LTEMP. The rationale for and constraints on this request for experimental testing of springtime HFEs are as follows:

WHEREAS: Planned high flows (above contemporary power plant capacity) are needed to conserve and manage sediment mass balance in the Colorado River ecosystem (CRE) downstream from Glen Canyon Dam (the dam), and

WHEREAS: Late autumn (November) high flows are unnatural in the pre-dam record, while springtime high flows in late March and early April occur at the beginning of the period of the natural time for high flows in the CRE downstream from the dam, and

WHEREAS: Delivery of sufficient wintertime Paria River sediment to trigger a springtime HFE is very rare, and

WHEREAS: The sandbar campsite benefits of sediment storing late autumn (November) HFEs are largely lost within 6 months of normal dam operations, while springtime HFE sandbar rejuvenation effects would last well into the summer months when such resources are most needed, and

WHEREAS: The nearshore aquatic habitat benefits of sediment storing autumn (November) HFEs are largely lost within 6 months of normal dam operations, while springtime HFE shoreline habitat rejuvenation effects would last well into the springtime and summer native fish breeding period, when such resources are most needed, and

WHEREAS: Results of the 2008 spring HFE suggest that spring HFEs may be a useful tool for enhancing the aquatic food base and stimulating rainbow trout recruitment if needed, and

WHEREAS: The spring HFE in 2008 suppressed invasive New Zealand mudsnails, and

WHEREAS: The concern that springtime HFEs differentially promote nonnative tamarisk recruitment has been largely mitigated by the introduction of the tamarisk leaf beetle, and

WHEREAS: Springtime HFEs that contribute to sandbar building between the Paria and Little Colorado Rivers further enhance sandbar rejuvenation in western Grand Canyon due to complementary springtime sediment inputs from the Little Colorado River, and

WHEREAS: Only two HFEs (1996 and 2008) have been conducted during the springtime period, and do not provide sufficient information to evaluate the resource impacts, benefits, and tradeoffs associated with springtime HFEs, and

WHEREAS: We recognize that the uncertainties over resource trade-offs need to be experimentally tested and evaluated before adoption of springtime HFEs becomes an accepted management practice, and

WHEREAS: We recognize that legal authorizations, policies, and caveats regarding the approval and conduct of HFEs still obtain, and

WHEREAS: The present language of the HFEP resets the CRE sediment mass balance accounting period on 1 December, regardless of whether sufficient sand supplied by the Paria River still exists on the channel bed between Colorado River miles 2 and 61 following an autumn HFE (i.e., the absence of “roll-over” sediment accounting across periods), and regardless of whether an autumn HFE has been conducted, and

WHEREAS: The decision to begin sediment accounting on 1 December was made based on insufficient consideration of both CRE sedimentology and natural resource consequences, and

WHEREAS: The present language of the HFEP does not allow for a springtime flow in the event that resource conflicts prevent a fall high flow (e.g., the sudden expansion of an undesirable non-native fish, such as green sunfish in 2015).

THUS: Although springtime HFEs are unlikely to be triggered under the present HFEP, modification on the HFEP language to allow accounting for the actual amount of sand available for experimental testing of such flows would greatly enhance understanding the benefits,

trade-offs, and adaptive management options for Glen Canyon Dam in relation to the guidance and intent of the Grand Canyon Protection Act (1992).

THEREFORE: The language on the conduct of springtime high flows from Glen Canyon Dam, as described in the Glen Canyon Dam HFEP Environmental Assessment (EA) limits the potential for testing HFEs during the March-April springtime period. HFE benefits to conservation of sediment mass balance, nearshore native fish habitats, the aquatic food base, and recreational sandbar camping area are largely lost within 6 months of an HFE. Springtime HFEs are more naturally timed than autumn HFEs, and may provide substantially improved resource benefits during the springtime and summer months than do autumn (November) high flows, in keeping with the intent of the Grand Canyon Protection Act (1992).

We request that the Secretary and LTEMP Co-Lead Agencies modify the HFEP in the LTEMP to allow for testing of springtime HFEs by: 1) including consideration of unused sediment supplies following autumn HFEs, or 2) in the case in which an autumn HFE is not conducted and sufficient sand exists on the channel bed. Under such sediment conditions, the HFEP language should be modified to relax accounting period constraints and permit conduct of springtime HFEs. We recognize that the existing legal authorizations and caveats regarding HFEs still obtain. We also recognize that uncertainties exist regarding resource trade-offs, and those uncertainties need to be experimentally tested and evaluated before springtime HFEs are suggested as a regular management practice. We recommend that springtime HFE testing and evaluation be conducted during any year when sediment conditions are favorable because such conditions are likely to be rare. This clarification of the HFEP is in keeping with the intent of the Grand Canyon Protection Act (1992) and the mission and vision of the Glen Canyon Dam Adaptive Management Program.”

Subsequently, on March 10 2016 the U.S. Geological Survey’s Grand Canyon Monitoring and Research Center convened a webinar to elucidate the rationale behind the accounting period definitions, a discussion that justified to us the concerns raised in the above letter. Given the above issues, we submit that the LTEMP EIS is the appropriate place to correct this policy oversight, and we suggest the following text changes. On page 2-4, lines 29-35 the DEIS states:

Implementation of high-flow 29 experiments (HFEs) under all alternatives are patterned after the current HFE 30 protocol (Reclamation 2011b), but each alternative includes specific 31 modifications related to the frequency of spring and fall HFEs, the triggers for 32 HFEs, and the overall process for implementation of HFEs, including 33 implementation considerations and conditions that would result in 34 discontinuing specific experiments.

Given the above concerns, we request that this language be changed to read (**bold** text has been added):

*Implementation high-flow experiments (HFEs) under all alternatives are patterned after the current HFE 30 protocol (Reclamation 2011b), but **include as additional triggering criteria the total accumulated sediment available for springtime HFEs (winter-springtime inputs plus rollover from unexpended***

sediment from the previous summer-autumn period). Each alternative includes specific modifications related to the frequency of spring and fall HFEs, the triggers for HFEs, and the overall process for implementation of HFEs, including implementation considerations and conditions that would result in discontinuing specific experiments.

These changes in text also should be noted on: page ES-23, Table 2-3; on Table 2-2 on page 2-11; and in the text on page 2-16, lines 16-23 through page 2-18, lines 7-10. As discussed in the GCMRC webinar on March 20, 2016, we also recommend adding text to the HFE triggering criteria to weight sediment inputs from tributaries other than the Paria based on their distance downstream from the dam.