

No.	Comment
1	Consider separating the sediment portion of the experimental flow design from the proposed action.
1	The proposed action has been constructed and consistently described by USGS scientists as an integrated ecosystem experiment. Each part or piece of the experiment works in conjunction with other pieces to accomplish the overall goal, an improvement in the HBC and sediment resources. While an extended period of time for testing each individual piece of the experiment might allow for easier determination of cause and effect relationships (taking many years), the current condition of both the chub and sediment resources requires urgent maximization of both the intended effect on the resources of concern and the learning that accompanies experimentation.
2	Reduce time between sediment input and the trigger of high flow.
2	Sediment scientists have recommended high flow tests during or immediately following tributary sediment inputs as potentially the best means of conserving sediment. However, such scientists have also hypothesized that the great majority of fall tributary sediment input volumes can be retained in the main channel if dam releases are lowered sufficiently to reduce main channel velocities. This latter approach also could provide important habitat stability benefits for the HBC. The conducting of high flow tests in January provides decision makers with the best available and most relevant information on how to conserve sediment and protect the HBC after completion of the experiment when dam operations are returned to ROD operations.
3	Mechanical removal creates significant adverse effect on sacred place and Hopi Tribal values.
3	This identification of a significant effect on the human environment was included in the environmental assessment. To mitigate these effects, the federal action agencies have agreed to include: 1) no electrofishing of non-native fish will occur within 50 feet of the confluence of the Little Colorado River and the Colorado River, and 2) Remains of non-native fish will be removed from the Grand Canyon and used as fertilizer in gardens by the Hualapai Tribe.
4	Find a beneficial use for RBT.
4	See Response #3.
5	Invite experimental experts into briefings.
5	The proposed action was formulated with assistance from the GCMRC, in conjunction with members of the Glen Canyon Dam Technical Work Group and many of the cooperating scientists who are conducting research on the Colorado River below Grand Canyon Dam. All individuals, including environmental experts, were invited to the public meetings held in Flagstaff and Phoenix, Arizona, as part of the NEPA process.
6	Place briefings on web site.
6	Announcements for the public meetings and notes from meetings wherein this proposal was discussed and have been and will continue to be placed on the Upper Colorado Region Bureau of Reclamation web site http://www.uc.usbr.gov .
7	Fishing quality has changed significantly.
7	Agree. Results from the monitoring program conducted by the Arizona Game and Fish Department suggest that the abundance of RBT in the Lees Ferry reach has increased as much as 2 fold from 1992 to present. Accompanying this increase has been a dramatic reduction in the average size of RBT caught in the Lees Ferry reach.
8	Proposed flow program would decimate large number of fish.

No.	Comment
8	The experiment is designed to primarily impact the RBT fishery by reducing the survival of eggs and newly emerged young-of-year trout. Secondary impacts may include stranding spawning trout in pools. It is likely that some proportion of stranded trout will die. However, this population already appears too numerous for available resources given the changes observed in size composition between 1992 and 2001. It is hoped that the abundance of large trophy fish will increase.
9	Change the timing of non-native fish suppression releases or better yet don't do it.
9	Analyses by the Arizona Game and Fish Department suggest that fluctuations during the months of January, February, and March are most highly correlated with poor recruitment of RBT in the Lees Ferry reach; accordingly the decision was made to retain the Jan-Mar. timeframe for this component of the experiment.
10	Mechanical trout killing and reduction of trout population through fluctuating flows would be duplication.
10	Mechanical removal of trout will largely impact larger trout, whereas the experimental fluctuating flows will impact early life stages.
11	No evidence the RBT are competing with or eating the HBC.
11	RBT in Grand Canyon have been found to be piscivorous and have been documented consuming HBC and other native fishes (Marsh and Douglas 1997). Although the encounter rate of HBC in the stomachs of RBT is extremely low, the very large population of RBT could have a very significant impact on HBC.
12	Concentrate HBC recovery efforts below the LCR.
12	HBC critical habitat designated by the Fish and Wildlife Service extends from approximately 50 miles below Glen Canyon Dam, which is 26 miles above the LCR, to 225 miles below the dam, and includes the lower 8 miles of the LCR (pp. A-7 to A-8 EA/BA). The Glen Canyon Dam Adaptive Management Program has identified a goal of maintaining a wild reproducing population of RBT in the Colorado River above the confluence of the Paria River, but the remainder of the river in Grand Canyon is being managed with a native fish emphasis (p. 3 EA/BA).
13	Peak flows won't have a lasting effect on beaches unless they're also injected with sediment from tributaries.
13	Agree. The current experimental design requires that at a minimum, sediment inputs from the Paria river equal historical average annual inputs in order to initiate implementation of the experimental releases. This requirement is intended to ensure that any experimental controlled floods will benefit sand-bar resources to the greatest extent possible under limited sediment-supply conditions below the dam.
14	Expend more effort to determine the specifics of HBC decline below the LCR.
14	Based on more than 20 years of monitoring and research, the only substantial reproduction and recruitment of HBC in Grand Canyon presently occurs in the LCR. Mainstem aggregations of HBC are small and contribute little, if any, to the population. Extensive research on HBC has been conducted throughout the Colorado River and its tributaries below Glen Canyon Dam. Several potential and documented causes of decline have been established. One of the established sources of mortality of HBC and other native fishes is predation by BNT and RBT (pp. A-7 to A-10 BA).
15	The best option for sediment conservation is an above peak power plant release immediately after tributary input.

No.	Comment
15	Agree. The sediment scientists concurred with this statement in their findings and recommendations for future experimental releases. Testing this strategy immediately following January through July tributary inputs is part of the proposed action (winter sediment input scenario on p. 18 of the EA, experimental scenario #3). Under this proposed action, an experimental high flow may be released immediately following winter/spring Paria River floods that meet or exceed the sediment triggering threshold. See Response #2.
16	No scientifically supported justification for exceeding upramp and downramp rates were specified in the ROD.
16	The winter non-native fish suppression releases were included in the proposed action by the USGS scientists as a means to control trout recruitment, even though the exact flow mechanism that historically accomplished this effect is unknown. The primary purpose of exceeding ROD ramp rates was not to test the effect on sediment transport (though this is an ancillary outcome) but to test the effectiveness of this flow regime on reducing trout recruitment. From page 11 of the March 25, 2002 "Treatment Scenarios", GCMRC states "The Experimental Flow Scenarios proposed in this document call for ramping rates and daily fluctuations that are outside the preferred alternative." Mimicking historic daily fluctuations while attempting to limit adverse consequences to downstream resources was the goal of USGS scientists in proposing the fluctuating flow characteristics.
17	Determine which aspects of the fluctuation on non-native fish suppression releases had desired effect on RBT.
17	Research conducted during Phase I of the Glen Canyon Environmental Studies included controlled experiments on the effects of dewatering on RBT embryos and aelvins. These studies showed that 10 hours of daily dewatering produced almost complete mortality in developing embryos and aelvins. The proposed action was designed to approximate this duration of dewatering subject to constraints on upramp and downramp rates (p. 18 EA).
18	Try to refine fluctuating non-native fish suppression releases in future years to limit their negative ancillary impacts.
18	The concept of fine tuning such releases in future years fits well into the adaptive management framework of the GCDAMP and the proposed action. This comment is consistent with the GCDAMP objectives of protecting a viable population of HBC and improving sediment conservation.
19	Questions whether the declines in sediment and HBC were unexpected at the signing of the ROD.
19	In Table 2-7 of the 1996 GCDEIS, the preferred alternative was expected to produce positive sediment conservation over the long term and a "potential minor increase" in the HBC population. An adaptive management program was established to monitor the effects of the preferred alternative and propose changes in dam operations and other management actions to accomplish the management objectives for these downstream resources if they did not respond as the ROD expected. The proposed action responds to monitoring data to achieve the resource management objectives of the GCDEIS and the GCDAMP.
20	Typos on page 26 and 86; Southwest Rivers was left off the distribution list.
20	The typographical and omission errors noted in this comment will be corrected in an errata sheet. We apologize for the omission of Southwest Rivers, an GCDAMP representative, from the list of interested parties.

No.	Comment
21	Sediment trigger for a high flow test underestimates ungauged tributary inputs above the LCR.
21	<p>The sand production from all drainages between the confluences of the Paria and Little Colorado Rivers was estimated by Webb and others (2001) to be approximately 20% of the historical annual sand contribution of the Paria River. Since summer 2000, the largest of these "lesser" tributaries draining into Marble Canyon have been gaged for runoff and sediment transport. Data collected in the past 2 years suggests that House Rock Wash, and other smaller drainages in upper Marble Canyon, may occasionally produce significant sand contributions to the Colorado River. Current data suggest the estimate provided by Webb and others (2001) may be on the high side, and that occasionally, individual larger tributaries in Upper Marble Canyon will be significant providers of new sand supplies. However, none are deemed to be anywhere near as significant as the Paria River in consistently resupplying the Colorado River with new sand supplies. While flash floods appear to be very impressive, their short duration greatly limits the total volume of sand added to the river channel in any given season.</p>
22	Gauge the smaller tributaries or incorporate river runner observations into modeling.
22	<p>The following lesser tributaries within Glen and Marble Canyon have been instrumented with monitoring equipment for streamflow runoff and sediment production since summer 2000, as a means of verifying or refuting the average sand-production estimates reported by Webb and others (2001): Water Holes Canyon, Badger Creek, House Rock Wash, North Canyon, Tanner Wash, and Shinumo Wash. Data from these monitoring efforts have been included in estimates of the Colorado River ecosystem's fine-sediment mass balance recently reported to the Glen Canyon Dam Adaptive Management Work Group.</p>
23	Limit the number of parameters being tested to determine cause and effect relationships.
23	<p>The proposed action is designed to achieve objectives of the Department of the Interior action agencies for conservation of the endangered HBC in conjunction with GCDAMP goals for sediment conservation. Department of the Interior agencies are required to direct efforts of their actions at preventing risk to endangered species as an obligation under the Endangered Species Act. Experiments being conducted as part of that effort are admittedly more complex than would be necessary if management of natural resources in the Colorado River was directed at only a single resource, such as fine sediment. The GCDAMP, however, is ecosystem-based and seeks to achieve health and improvement for a wide variety of resources and their uses, as evidenced by the breadth of goals in its strategic plan (p. 3 EA).</p>
24	A final science plan for the experimental flows is needed.
24	The science plan will be finalized pending budget decisions.
25	The failed experiment over the past 12 years is just being repeated.
25	<p>The functioning of the Colorado River ecosystem is extraordinarily complex and the decisions made in 1995 with the GCDEIS were intended to benefit the ecosystem by stabilizing an extent the fluctuating dam releases. However, as the EA points out in the Executive Summary, it was those changes that allowed the trout population to increase dramatically, with potentially negative consequences on the HBC. The proposed action is not a repeat of past actions, but a proactive attempt to benefit two key resources that have not responded as the GCDEIS expected they would.</p>

No.	Comment
26	Barring a 100 year event, the Paria River will not produce the 500,000 tons of sediment.
26	A Paria River peak discharge of approximately 2,500 to 3,000 cfs is needed to produce a sediment input sufficient to trigger a high flow test. This magnitude of peak flow occurs on average every 2 to 3 years, not the 100-year return period cited in the comment.
27	The beaches created in the 1996 test were completely eroded in 6-8 weeks.
27	Beaches created by the 1996 BHBF test were impacted by the natural processes of wind and water erosion, but it took about 6 years for these deposits to erode back to the sand volume present before the test flow. A key factor in this erosion was the large magnitude of the releases following the BHBF test. Because of the current drought and the draw down of Lake Powell, the proposed action schedules much lower average daily releases following a high flow test. As described on pages 43 and 44 of the EA, the sandbars and beaches thus created are expected to endure longer than following the 1996 test.
28	The federal agencies have overestimated the trout population size in the Lees Ferry reach.
28	The abundance estimates in the Lees Ferry reach have been conducted by Arizona Game and Fish Department. Recent analyses by the Arizona Game and Fish Department suggest that earlier methods may have tended to overestimate the abundance. However, the data used to justify the need to reduce the abundance of RBT rely not on estimates of absolute abundance, but on trends in catch rate and size composition.
29	Past experiments have destroyed the fish foodbase.
29	Research on the fish foodbase in the Colorado River does not substantiate this claim. The foodbase was temporarily reduced due to scouring during the week-long 45,000 cfs experimental flow in 1996. Recovery to biomass levels comparable to those of the pre-flood period occurred in 2-3 months (Blinn, D.W. and others. 1999. Geophysical Monograph 110, American Geophysical Union). Fluctuating flows with lows at 5,000 cfs will negatively impact the fish foodbase above that stage, as demonstrated by past research (Benenati, P. and others. 1998. Regulated Rivers 14:519-542). Overpopulation of rainbow trout is likely already negatively impacting the foodbase, thus reduction of the trout population by use of these experimental flows would offset the reduction of foodbase from the fluctuating flows. Since the 5,000 cfs low flows persist from January through March, foodbase algae and invertebrates will be able to colonize levels above 5,000 cfs during the ensuing 9 months.
30	The August 2000 steady flows produced abnormally high survival rates of young-of-year.
30	Agree.
31	Channel catfish and black bullhead present a larger threat to HBC survival than RBT.
31	We have no data to prove or disprove this statement. However, even though ictalurids such as catfish and bullheads may prey more heavily on HBC, it is not clear which predator may be causing the highest HBC mortality. This ambiguity is due chiefly to the locales (tributary versus mainstem) and relative abundances of these non-native species. The removal experiment is designed, in part, to address this question.
32	The FWS has not been consulted throughout the development of the Proposed Action.

No.	Comment
32	The FWS is a member of the GCDAMP and their representatives were involved in the development of the proposed action at both the Technical Work Group and Adaptive Management Work Group levels. The federal action agencies prepared the biological assessment with affect determinations for use by the FWS in writing their biological opinion on the proposed action.
33	There is no recovery plan and no recovery team for the HBC.
33	The revised recovery plan for HBC was written in 1990 by the Colorado River Fishes Recovery Team (p. 96 EA/BA).
34	Timing of the high flow test would be more effective if conducted in the late summer or fall.
34	Agree. See Response to Comment #2.
35	How were the downramp rates devised?
35	ROD downramping rate (1,500 cfs/hr) was established through a numerical modeling research project done by the U of AZ during GCDEIS. The study identified a downramping rate that mitigated sandbar erosion caused by beach drainage, or seepage forces. The model suggested seepage forces on bar faces could be limited with a downramping rate of 1,500 cfs/hr, but these simulation results were never verified through field studies and experimentation. The proposed downramping rate of 2,500 cfs/hr (in conjunction with the fluctuating-flow treatment) provides an opportunity to field test the idea that model-simulation downramping rates associated with onset of seepage erosion in fact result in such erosional beach-face processes within the Colorado River ecosystem. This investigation is warranted by the fact that despite the 1,500 cfs/hr downramp rate implemented since 1991 (and subsequent elimination of seepage-forced bar erosion), the sandbar resources below the dam have continued to decline. The consensus of the sediment scientists is that the primary source of bar loss and sand export is tied to tractive rather than seepage-forced erosion.
36	Questions why decommissioning wasn't an alternative.
36	Congress has mandated that no federal funds be expended on studies to decommission Glen Canyon Dam.
37	Questions the evidence for competition and predation between trout and HBC.
37	See Response #11.
38	Questions if the experiment will result in an increased average fish size.
38	The monitoring data in the Lees Ferry reach since 1990 are consistent with the hypothesis that this population has outstripped its food resources and is experiencing density dependent growth. Additionally, if concerns raised by the angling public are true that non-experimental releases during fall 2001 and 2002 have further reduced food resources for RBT, density dependent growth can be expected to result in further reduction in fish size. The proposed action is expected to reduce the RBT population and thus decrease the demand on existing food resources.
39	Get input from fishing guides, anglers, and angling clubs for means to accomplish the objective.
39	The action agencies have contacted anglers to present and discuss the Lees Ferry monitoring data and solicit opinions concerning beneficial management strategies.
40	Reduce flows later in the year or implement a slot limit with an increased take to reduce the trout population.

No.	Comment
40	Regulatory changes were recently instituted by the Arizona Game and Fish Department. However, analyses done by the Arizona Game and Fish Department suggest that unless there is a substantial increase in the fishing effort with corresponding changes in the character of the fishery, angling alone cannot effect the necessary reductions in RBT abundance and would do little to reduce trout downstream.
41	Questions the estimated financial costs to the power customers.
41	The estimated total cost of the experiment is a combination of the costs of the autumn and habitat maintenance flow sediment input scenarios. The individual costs of these scenarios are found on pp. 77-83 of the EA. References to these stated impacts as being a percentage of total forecasted revenue were included to give the reader a sense of the relative additional purchase power costs or losses in sales compared to the no-action alternative revenue stream over the test period.
42	Descriptions of the purposes should be limited to that contained in the CRSP Act of 1956.
42	While the text on page viii of the EA summarizes rather than quotes language in the 1956 CRSP Act, we believe that it adequately captures the intent of the CRSP Act. See, e.g. S. Rep. No. 102-267, at 132-136 (1992). The text in the EA is not a legal interpretation of the CRSP Act.
43	What basis will be used to justify December steady flows of the autumn sediment scenario?
43	The alternating 2-week periods of steady and low fluctuating flows in the fall of the autumn sediment input scenario have been designed by the USGS scientists to both conserve Paria River sediment inputs and test whether there are significant differences between the sediment transport capability of these two types of releases. The intent of the proposed action is to conserve autumn sediment inputs for a January high flow test; therefore, steady flows would be selected if monitoring demonstrates that the low fluctuating flows are transporting or eroding significantly more sediment than the steady flows.
44	Reclamation, not the action agencies, should decide whether steady or low fluctuating flows are most effective.
44	The three Department of the Interior agencies share joint lead for the proposed action. While Reclamation has the delegated authority for dam operations, the action agencies will make the final determination on December release patterns, under the guidance and direction of the Secretary of the Interior.
45	What is the hydropower impact if steady flows are implemented?
45	The estimated hydropower impact for the autumn sediment input scenario includes the higher cost to the power customer by modeling steady flows at 8,000 cfs in the month of December. If it is decided to continue to fluctuate 6,500 to 9,000 cfs during this month the impact would be less (i.e., there would be a reduced need for acquisition of replacement power). The precise amount in this circumstance has not been estimated.
46	If sediment triggers are not achieved, could load following non-native suppression releases begin in December?
46	The proposed action would implement non-native fish suppression releases during January through March of 2003 and 2004. While future actions might consider December for this type of flow treatment to reduce non-native fish spawning and recruitment, this suggestion to expand the time period of this treatment is outside the proposed action currently being evaluated.

No.	Comment
47	Find a cost-effective method for long-term control of non-native fish to give endangered fish better chance for survival.
47	The initial step is to determine whether non-native fish are significantly affecting the population dynamics of HBC. If the experiment suggests that non-native fishes are a significant mortality source, then attempting to find a cost-effective control strategy is the next logical step.
48	Consider other means to alleviate adverse effects on chub.
48	The proposed action presently under consideration is looked upon as one in a series of experiments under an adaptive management approach to better understand ecological relationships in the Colorado River and to achieve GCDAMP objectives. The action agencies and other GCDAMP stakeholders are presently considering other mechanisms. For example, the Bureau of Reclamation is evaluating the feasibility of a temperature control device for Glen Canyon Dam and the National Park Service is evaluating the removal of trout from Bright Angel Creek.
49	Hydropower is omitted from the resource comparison Table 3-1.
49	Agree. However, the analysis and the results are in the text. See pages 77-83 of the EA.
50	Enhance the existing data set regarding up and downramp effects on beaches.
50	The current experimental design includes plans for field studies to identify differences in seepage forces along sand-bar faces that result from the downramp rates being increased from 1,500 to 2,500 cfs/hr during the fluctuating-flow portion of the experimental treatment. Field verification of the numerical simulation model results that identified the current downramp rate in the ROD will be the primary objective of these studies if the fluctuating flows are released.
51	Page 48, Section 3.5.1, third paragraph: should be "marketing."
51	This paragraph is correct as stated. It is electrical generation not marketing that is at issue here.
52	Page 48, Section 3.5.2, last paragraph: What is intended by the reference to a "least-cost mix" of hydropower?
52	Under the autumn sediment input scenario, during the months of October – December, electrical generation at Glen Canyon Dam will be reduced as compared to the no-action alternative. Western, given its fixed contractual obligations will have to make added purchases from the regional utilities and other electrical generators to make up for this reduced electrical production. Since Western seeks to purchase replacement electricity cheaply, it will prepare a portfolio of replacement power contracts which are "least cost."
53	Table 3.5 should be an "estimate" and questions adequacy of Basin Fund to support the test under the Proposed Action.
53	Table 3.5 is an estimate for future power prices and is based on best available information. As they are forecasts, such information is properly considered an "estimate." Under these estimated prices, the Basin Fund would be able to support the test.
54	Any expenditure of funds from the Basin Fund will affect rates.
54	Experiments at Glen Canyon Dam can result in a rate increase if the Basin Fund is substantially depleted. However, based on currently available information we do not believe this will occur.
55	Market prices quoted in the EA may be understated.

No.	Comment
55	Market prices used to calculate impacts for the EA were forecasted market prices according to futures markets and Western's price forecasting model which represent the best available information. As they are forecasts, such information is properly considered an "estimate."
56	Was lost capacity related to spills or bypasses included in the analysis?
56	Yes, although no individual assessment of the bypassed water was portrayed in the EA. Water bypassed was not used for generation during the test modeling runs, so the total generation was less in the test cases that included bypasses. In this way the impact of the bypassed water was included in the impact analysis.
57	Page 86, Power. The last sentence of this paragraph should be deleted.
57	See Response #41.
58	Questions adequacy of cumulative impact analysis with respect to hydropower.
58	Reduced hydropower revenues caused by change in dam operations pursuant to the ROD are part of the baseline for the no action alternative.
59	Need an alternative to address sediment retention by the dam.
59	The proposed action is an important step in the process of understanding how sediment deposition and conservation occurs in the Grand Canyon. GCDAMP research over the last 5 years has fundamentally changed the understanding of how these processes work, and the experiment serves to test whether sediment can be conserved through techniques proposed by sediment scientists. The concept of timing high flows from the dam with tributary inputs directly addresses the results of sediment retention by the dam by attempting to more effectively and efficiently manage the remaining sediment inputs below the dam. If this attempt fails, other measures would then be investigated to achieve the sediment resource management objectives of the 1995 GCDEIS and the GCDAMP.
60	Need an EIS to address HBC decline, sediment retention and augmentation, include temperature, nutrients, flow conditions, non-native impacts and decommissioning GCD.
60	The issues cited in this comment are broader in scope than the proposed action. Many of these issues are currently being addressed by the GCDAMP, both through this proposed action and separate consideration of a selective withdrawal structure to warm dam releases and the formulation of a program of experimental flows to benefit the HBC. As explained in the Response to #36, decommissioning is outside the scope of the GCDAMP, and therefore outside the scope of the proposed experiment recommended by the GCDAMP to the Secretary of the Interior; accordingly this suggestion is not part of the ongoing GCDAMP analysis.
61	Expected sediment inflows are insufficient to allow for the proposed experiment and thus will not benefit the chub.
61	Recent sediment inflows are no predictor of the future. See Response #26. If the Paria River produces sufficient inputs in 2003, the sediment portion of the experiment would be conducted at that time.
62	The EA ignores climatic factors that will affect the proposed experimental releases. Without sediment augmentation, the necessary sediment inputs to conduct the experiment may not be available.

No.	Comment
62	The experiment was designed to most effectively utilize Paria River sediment inputs. See page 23 of the EA which acknowledges the indeterminate period necessary to conduct the experiment. See also response to comment #59. Lake Powell will refill under expected future inflows, but even under current conditions, dam releases can be made as described in the proposed action. With respect to the magnitude of dam releases following the experiment, see also the response to comment #27.
63	Current Lake Powell elevation does not permit use of the spillway to provide for experimental flows above 45,000 cfs. If the drought continues, maximum discharge capacity could be reduced an additional 50 percent or more.
63	The experiment does not propose flows above 45,000 cfs. Even at the current Lake Powell elevation, experimental releases can be made.
64	High flows test should be timed to coincide with Lake Powell inflows.
64	The proposed action was formulated by scientists using the results of monitoring and research conducted over the last two decades. The timing of the high flow test was made to best take advantage of Paria River sediment inputs in restoring sand deposits in the Grand Canyon. If the high flow test were delayed until spring, dam releases would need to be low and steady throughout the winter months to preserve Paria River sediment inputs for the high flow test. This would then produce the adverse effect of encouraging trout reproduction and recruitment, negatively affecting the HBC, which is compatible with neither the purpose and need statement of the EA nor the resource management objectives of the GCDAMP.
65	Much of the HBC habitat disappeared within 6 months of the 1996 BHBF test.
65	We assume the comment refers to nearshore HBC habitat in the mainstem Colorado River since these habitats are formed from the fine sediments most affected by the BHBF. We lack specific data on changes in HBC habitat following the 1996 BHBF test. With respect to sandbars and beaches, a key element of future experimental high flows is to ensure that both sand and silt supplies in the river channel are enriched beyond the antecedent supply conditions that existed prior to the 1996 experiment. The idea here is to attempt to restore sand bars with a different grain-size distribution than was associated with the 1996 deposits. One hypothesis to be tested is that new bars that contain a mixture of both sand and silt will be more cohesive and therefore will persist longer under ROD operations than post-dam bars that have occurred previously.
66	The non-native fish suppression releases would disrupt the food supply for the native fish species.
66	Non-native fish suppression releases will likely have some negative effect on the bottom-dwelling foodbase organisms in the nearshore zone of fluctuations. The additional area impacted by fluctuations above that already affected by no action operations would be small, however, and it may well be compensated by an increased amount of organic drift made available to the fish from the higher fluctuations.
67	The EA does not sufficiently analyze impacts to other habitats, species, caused by experimental releases.
67	No indication was given in the comment of which other habitats or species should have been addressed. Table 3.1 provides a summary of 25 different resource categories that were analyzed in the EA/BA.
68	There was insufficient public notice of the open houses and the availability of the EA.

No.	Comment
68	While not required by applicable regulations, public review of the EA is important to the GCDAMP process. Each entity of the 25 member entities of the GCDAMP FACA Committee, representing various members of the public, were involved in the development and recommendation regarding the proposed action. Additionally, the press release and internet web site notices of the availability of the environmental assessment and the two open houses was issued on Sept. 24, 2002. The EA was distributed and open houses were held on Oct. 2-3, 2002. A public comment period was held between October 2, 2002 and October 30, 2002, and the agencies received 20 comment letters during this period. There were also five public meetings of the GCDAMP over the past 9 months that were noticed in the Federal Register during which public input on this proposal was considered.
69	The AMP needs to improve its public process.
69	The Adaptive Management Work Group and Technical Work Group are working to improve their public outreach. Suggestions for improvement are welcome. It should be noted that the public and interested parties are encouraged to attend all AMP-related meetings and to submit comments to any of the AMP stakeholders. The federal agencies in the AMP are committed to taking into consideration all comments received from the public and other parties.
70	Given insufficient sediment inputs this fall, the proposed action of the EA can no longer be accomplished and there is no basis for presenting to the Secretary of the Interior a proposed decision that would include a "spill."
70	As described in the purpose and need statement (p. 1) and the description of the proposed action on p. 13-23 in the EA, the proposed action has 2 components, protection of the HBC and conservation of sediment. The former would be accomplished during WY 2003-2004 through mechanical removal of non-native fish and non-native fish suppression releases. The latter would be tested by comparing the relative effectiveness of low, stable autumn flows and fall habitat maintenance flows to conserve sediment prior to a high flow test. As noted on p. 23 of the EA, the time period for accomplishing the sediment conservation portion of the proposed action is indeterminate, since this part of the proposed action depends on minimum Paria River sediment inputs as an antecedent condition. While the flow chart on pp. 15-16 shows the high flow tests occurring in water years 2003 and 2004, this is meant to be illustrative and this part of the proposed action could occur in future years instead, as described above on p. 23 of the EA.
71	Mechanical removal would be a taking of HBC and should be eliminated from the Proposed Action.
71	As described in the EA (and incorporated BA), the action agencies believe that some incidental take of HBC will likely occur during the proposed action. Section 7 consultation with the FWS was conducted and a take statement will be incorporated as part of the Biological Opinion on the proposed action.
72	The high flow test in February or March would interfere with the experiment to measure the value of fluctuating flows in decreasing trout spawn.
72	Agree. There is little hope of disentangling the effects of these treatments on RBT recruitment. However, the effects of the fluctuating flows and the high spring flow on small RBT are expected to be complementary and meet the objectives of the proposed action.
73	Begin future compliance earlier.

No.	Comment
73	Future federal undertakings or actions requiring compliance will be accomplished by the appropriate federal action agencies in cooperation with stakeholders in the GCDAMP. The public can begin earlier participation in future compliance efforts by participating in all aspects of the GCDAMP. The public has the opportunity to provide input on what issues the GCDAMP should address or what actions the agencies should undertake through the GCDAMP process. Formal scoping on many issues and actions has partially been subsumed in the discussions of the Technical Work Group and Adaptive Management Work Group of the GCDAMP. The public is encouraged to participate in these open meetings.
74	Are mechanical and other man-made changes to the riverine environment being explored?
74	We know of no mechanical changes being explored. However, modifications in dam releases are man-made changes that are being explored through the proposed action.
75	The reasoning behind the experimental release is not linked to the GCDAMP goals.
75	Page 3 of the EA identifies all goals of the GCDAMP and states that the proposed action is designed to help achieve goals 2, 4, and 8. The relationship between the proposed experimental releases and the resources identified in these goals is in the Affected Environment and Environmental Consequences sections of Chapter 3 of the EA and in the Impacts of the Proposed Action: Experimental Test Flows sections in the BA. The role of the GCDAMP members in developing the proposed action is provided in Section 1.4.1, on pp. 7-8, of the EA.
76	The impact that cold sediment free water has on Grand Canyon resources is not addressed in the EA.
76	References to effects of cold, sediment-free water are found on pp. 50, 52, 54, 57, 59, 62, 72, 73, A-8, A-9, A-10, A-12 and A-20 in the EA and BA.
77	Without fixing the mainstem habitat, problems of temperature, turbidity, and habitat, removing the trout will only provide a limited opportunity for the HBC populations to improve.
77	The federal action agencies and the GCDAMP stakeholders recognize that achieving management objectives for the endangered HBC would require a combination of actions that addresses predation and habitat conditions. Previous experimental flows were directed at improving physical habitat for native fish. The proposed action takes an important step in addressing an additional impact on the endangered fish: predation by trout. Successful achievement of management objectives for the endangered HBC will require management actions directed at improving habitat conditions and reducing negative biological interactions.
78	No effort has been made to link the recently developed recovery goals in the Upper Basin with the Glen Canyon Dam Operations EIS or to address how the proposed activities fit into the FWS biological opinions that were developed.
78	The recently developed recovery goals for HBC include the population in Grand Canyon. Threats to HBC identified in the recovery goal document include negative impacts from non-native fish and adverse modification of physical habitats. Both of these impacts are being addressed in the proposed action. The relationship of the proposed action to the flows recommended by FWS in their 1994 biological opinion on Glen Canyon Dam is identified on p. 13 of the EA.
79	The document should state how the proposed actions are going to accomplish the purpose and need statement.

No.	Comment
79	Sections 2.2.1 and 2.2.2 describe the proposed action and relate it to purpose and need. The environmental consequences sections also describe these relationships.
80	The EA should include a risk assessment on how the proposed actions will be assessed during the experiment to determine their impact on the HBC.
80	As a result of the 3 year lag time for assessing HBC recruitment inherent in the current monitoring program, there will be no assessment of the proposed action on the ultimate recruitment during the 2 year treatment. However, utilizing the periodic estimates of non-native species abundance and piscivory rates produced during the mechanical removal efforts, estimates of juvenile HBC consumption by non-native species will be produced. Additionally, estimates of annual mortality/dispersal rates of juvenile HBC in the mainstem Colorado River will be constructed using hoopnet catch rate data and compared with non-native abundance estimates and available pre-treatment mortality/dispersion rates.
81	What will be done to protect the leopard frog population that exists downstream of Glen Canyon Dam?
81	Some loss to the leopard frog population may occur from the high experimental flows and this has been acknowledged in the EA. Based on monitoring conducted before and after the 1996 high experimental flow, however, the loss of animals will be small. At a flow of approximately 45,000 cfs, the area in which the frogs are located becomes a large backwater. It accumulates some debris carried by the flood, but there is little scouring or high current velocity to displace and transport the frogs.
82	Specific environmental commitments identified by the FWS for the EA should be articulated in the EA.
82	Specific requirements identified by FWS are contained in a Biological Opinion on the proposed action and will be carried out as part of the experiment.
83	Specific environmental commitments identified by the tribes for the EA should be articulated in the EA.
83	Government-to-government consultation with Indian tribes was conducted during the development of the proposed action, while the EA was being prepared, and subsequent to the EA release. The Hualapai Tribe, Hopi Tribe, and Kaibab and Shivwits Bands of Paiute Indians have identified concerns with the mechanical removal of non-native fish and they requested that the agencies seek beneficial human uses for any fish that might be killed as a result of the proposal. See response to comment #3.
84	Specific environmental commitments identified by the NPS for the EA should be articulated in the EA.
84	The NPS is a joint lead agency in this EA/BA; NPS has not identified specific environmental commitments related to the proposal outside of the provisions of the proposed action.
85	How is the total cost of the experiment factored into the EA decision?
85	The decision on whether or not to conduct the experiment is being made after careful review of the substantive comments on the EA and consideration of the expected effects of the proposed action. One of the factors being considered is the total cost of the experiment, both the impacts to power customers and the cost of conducting necessary monitoring and research. A decision to proceed with the experiment would require sufficient funds to conduct this scientific work; otherwise, the experiment would have little scientific value.
86	A specific table of decision logic and thresholds should be included in the EA.

No.	Comment
86	The environmental consequences sections in Chapter 3 explain the thresholds of impact significance as required for decision-making in compliance with NEPA. The thresholds for triggering the experimental flows are in Fig. 2.2 and accompanying text.
87	How will the efficacy of the proposed action be evaluated in April 2004?
87	During spring of high-flow experimental treatment years, sand bars restored through the sediment/flow portion of the experiment will be evaluated for abundance and distribution, as well as grain-size characteristics relative to sand deposits that resulted from the 1996 experiment. The hypothesis being tested is that new bar characteristics will be fundamentally different than 1996 bars, with improved volume, cohesion, nutrient content and stability/durability. This result would be attributed to the enrichment of the fine-sediment supply prior to release of the experimental high flow. Continued monitoring in the Lees Ferry and downstream reaches of the Colorado River mainstem will provide data to assess whether experimental flows or mechanical removal were effective in reducing RBT abundance and increasing young-of-year native fish abundance. Because HBC do not recruit until age 3, it will take a minimum of 2-4 years beyond 2004 to determine whether a suppression in trout abundance has occurred in conjunction with an increase in HBC recruitment.
88	How will the continuation of current drought conditions impact the decision to conduct experimental flow releases?
88	The annual water release from Lake Powell will be the same under both alternatives as required by provisions of applicable law. The current drought has reduced the level of Lake Powell below the spillway sill elevation, precluding the use of the spillways in releasing water from the dam. However, since the proposed high flow tests do not exceed the combined capacity of the powerplant and outlet works, this portion of the proposed action could proceed as proposed.
89	Each category addressed in the EA should be summarized in the cumulative impacts section with linkages to decisions and flow regimes.
89	The CEQ requirement for assessment of cumulative effects is that known and foreseeable future actions by federal and non-federal agencies are considered for their effects as added to those of the proposed action. In the present proposed action, no non-federal actions were identified, largely because the proposed action occurs in a national recreation area and a national park. Several federal actions, either completed or in the planning stages, were identified and analyzed (see sections 1.2 and 3.15 EA). None of those actions were judged to have more than a minor impact on the human environment when added to the effects of the proposed action. Therefore, it was not deemed necessary to develop a complete resource by resource portrayal of effects beyond those of the proposed action presented in Table 3.1.
90	How were the results from the 1996 experiment integrated into the decisions on the proposed alternative?

No.	Comment
90	<p>The proposal was designed based on what was learned from the 1996 flow. One of the biggest differences in this proposal, as opposed to that in 1996, is the antecedent conditions. Sand bar responses from the 1996 BHBF evidenced that the antecedent sediment supply was already depleted, rather than enriched as predicted on the basis of EIS assumptions. The proposed action is to test two strategies for improving downstream resources; first, limit dam releases below 10,000 cfs following tributary inputs until an experimental high flow can be released to redistribute and conserve inputs. This differs from 1996 in that there was no prior modification of dam releases used to conserve antecedent sediment. Two, in contrast to 1996, we are coupling closely in time the sediment input and the subsequent dam release. The mechanical removal of non-native fish is justified based on the insufficient response of non-native fish from the 1996 flow. We need to do more than was done in 1996. This is an important acknowledgement that modifying dam operations may not be sufficient to protect the HBC.</p>
91	<p>Flow releases should coincide with the natural hydrograph prior to Glen Canyon Dam.</p>
91	<p>There is potential for the experimental high flow to occur during the spring season under the winter sediment input scenario if tributary enrichment occurs in association with late winter or snowmelt runoff events from the Paria River.</p>
92	<p>How will the financial liquidity of the Basin Fund affect decision thresholds of the experiment?</p>
92	<p>The experiment will likely not be affected by the financial liquidity of the Basin Fund, nor do we believe the experiment will affect the financial liquidity of the Basin Fund. See Responses #53 & 54.</p>
93	<p>Will the automatic generator control fluctuations meet WSCC requirements or negatively affect the experiment? How would GCD respond if an electrical emergency occurred during the experiment?</p>
93	<p>As under the ROD, exceptions to the operating constraints are allowed in emergencies including: insufficient generating capacity, transmission system overload, voltage and frequency control, system restoration, and humanitarian reasons. These fluctuations would affect the planned release pattern for all test scenarios. Glen Canyon Dam deviates by 1,000 cfs above or below targeted releases to respond to regulation. Flows from 7,000 to 9,000 cfs could be seen during a prescribed 8,000 cfs flow within a one hour time frame. The average release over the course of any given hour is almost always the target flow (in this example: 8,000 cfs).</p>
94	<p>What decision has been made on disposal of non-native fish mechanically removed?</p>
94	<p>A range of beneficial uses for the removed rainbow trout has been discussed with Native American Tribes. The Hualapai have indicated an interest in using the fish as mulch in a community garden on the Hualapai Reservation. See Response #3.</p>
95	<p>How will moving sediment with a 45,000 cfs flow achieve any more benefits than the 1996 event?</p>

No.	Comment
95	The main idea of the proposed sediment-conservation action is to fundamentally alter two components of the 1996 experimental flood, those being the duration (shorter) and the antecedent sediment supply (greater enrichment). By leaving the high-flow magnitude unchanged, there is an opportunity to test hypotheses related to sand-bar depositional rates under varied sand-supply conditions, as well as bar nutrient content, cohesion and stability related to grain-size distributions that are quite different from the bars deposited in the 1996 experiment.
96	Utilize a real-time approach to take advantage of a Paria event to release a high flow test of 60,000 cfs for a period of 6-24 hours.
96	This is basically the approach taken in testing the "winter enrichment" scenario, except that the duration of the flow is set for 60 hours and the magnitude remains 45,000 cfs (for reasons stated above in response to comment #95). Releases above 45,000 cfs are not possible unless the spillways can be used. Expected reservoir elevations during the period of this proposed action would be too low for spillway use.
97	How will rearing habitats for native fish around the LCR be impacted by the proposed action?
97	See pages 52-57 and 61-65 in the EA.
98	How does the proposed action support the 1994 FWS Biological Opinion?
98	Evaluations of a second population of HBC in Grand Canyon and of a temperature control device, both of which are elements of the 1994 FWS biological opinion, have emphasized the importance of achieving control of non-native fishes before moving forward with those elements. The Science Advisors to the GCDAMP also agree with this prioritization of actions. Finally, the FWS has agreed that it may not be wise to implement their recommended endangered fish flows until non-native fish populations are suppressed and a temperature control device is in place (p. 13 EA).
99	The EA should evaluate the establishment of a second population of HBC similar to the Hualapai's efforts of reestablishing the RBS in the lower Grand Canyon.
99	We are unaware of any Hualapai tribal effort to reestablish RBS in lower Grand Canyon.
100	Disruption of RBT spawning in the Lees Ferry reach should be consistent with the life span of the RBT.
100	Experimental flows are considered a system-wide treatment rather than a treatment directed solely at the Lees Ferry trout fishery. The flows are designed to target specific life histories that are more sensitive to variable flow, by reducing successful recruitment of young-of-year fish into the reproducing adult population. Adult fish are insensitive to direct effects from flow fluctuations other than spawning. Survivorship of young-of-year fish is influenced by destabilizing near shoreline habitat, which increases the likelihood of displacement and predation.
101	What steps are being taken to ensure that HBC are not negatively impacted during non-native fish removal?
101	The HBC population is being monitored in both the LCR and Colorado River mainstem to assess changes in abundance and distribution as a result of the proposed action.
102	How are potential changes in Glen Canyon Dam release water temperature integrated into the proposed action?
102	There are no anticipated changes in Glen Canyon Dam release water temperatures from those that would be realized under the no action alternative.
103	What steps will be taken if the desired number of RBT are not harvested during non-native fish removal?

No.	Comment
103	The most desirable result of non-native fish removal is to demonstrate a significant decline in the abundance of RBT; thus, it is the relative effect of mechanical removal that is the most important objective. There is no pre-established number of RBT to be removed.
104	What is the expected level of take of HBC during non-native fish removal?
104	See Table A-2 for estimated capture rates which equate with take as being to harass, harm, or kill.
105	What is going to be the review process to evaluate the results from this proposed action?
105	All scientific investigations of this proposed action will be under the auspices of the GCMRC. Reports produced from those investigations will be subject to external peer review. Publication in peer-reviewed scientific journals is encouraged for all work as part of the GCDAMP. Presentations of results will be made to the Technical Work Group and the Adaptive Management Work Group by GCMRC program managers and cooperating researchers. In addition, all terms and conditions for federally listed species will be reviewed in sufficient progress documents submitted to the FWS.
106	The proposed action will not substantially further the cause of learning and doesn't meet biological needs of HBC.
106	The experimental hypothesis proposed to be tested "trout predation negatively influences survivorship and recruitment of young-of-year HBC" is specific to understanding certain life history requirements and sources of mortality for this species. Although physical habitat requirements are not being considered as part of this experiment, it does not imply that they are not important. However, understanding sources of mortality is considered essential to understanding biological needs for the HBC. Information gained from this and other experiments would provide scientists and managers with greater understanding of the biological needs and requirements for this species. The knowledge gained from this experiment will guide the future decision making process and management actions used in conserving this species.
107	Questions the estimated financial costs to the power customers.
107	See Response #41.
108	Questions the interpretation of CRSP.
108	See Response #42.
109	What justifies steady flows of the autumn sediment scenario? Reclamation should decide which flow is most effective.
109	See Responses #43 and #44.
110	What is the hydropower impact if steady flows are implemented?
110	The estimated impact for the autumn sediment input scenario includes steady flows at 8,000 cfs in the month of December. If it is decided to continue to fluctuate 6,500 to 9,000 cfs during this month the impact would be less – how much less has not been determined. This information will be included in the decision making for the autumn sediment input scenario.
111	Hydropower is omitted from the resource comparison table.
111	See Response #49.
112	The cumulative impact section should note hydropower generation has been reduced by approximately 1/3 since implementation of ROD flows in 1996.
112	See Response #58.
113	A two-year experiment may be inadequate to address the impacts of the proposed action.

No.	Comment
113	Although the EA is written with emphasis on the proposed action occurring during 2003-2004, it is recognized that a longer period may be necessary. Therefore, it is stated on p. 13 of the EA that the "efficacy of the Proposed Action will be evaluated in April 2004, after two years of dam operations and mechanical removal of non-native fish." It also is identified on page 23 "it could take an indeterminate number of years to implement the sediment conservation portion of the Proposed Action due to the necessary sediment input triggering involved."
114	Meaningful assessment of the response of the HBC population may require recruitment to the age-3 cohort.
114	The most proximate response to the proposed action, which can be measured in the next two years, is anticipated to be a reduction in the number of trout predators in the Colorado River in Glen and Grand canyons. As part of the science plan for the proposed action, and as part of monitoring by the GCMRC, we expect that collections of young-of-year HBC will be made as an early indicator of reproductive output and survivorship by the population. Determination of survivorship to recruitment will have to wait until these HBC reach the age-3 cohort, because that is the age at which they recruit to the adult population.
115	The experiment should involve replicated planned comparisons between years with and without mechanical removal treatments and with and without experimental flow treatments.
115	The experiment has been designed to determine whether recruitment differences are observed in the HBC population once trout abundance in the Colorado River has been suppressed. This experimental design is considered a titration experiment that requires a large enough effect to be measurable in the field. An effect that is too small may not allow us to test whether or not trout predation is a viable hypothesis. In an ideal experimental design it would be useful to separate and control for different treatment effects. However, since all treatment combinations lack independence between years it requires a substantially large sample size, or considerable amount of time to allow for the system to return to similar conditions. Unfortunately, this is an intractable problem because there is only one Colorado River and the recent trends indicating HBC decline requires a more expeditious approach. However, the design will allow for us to determine if trout predation is a possible causal factor in the decline of HBC after a 6-year period.
116	Density of wild age 0 rainbow trout (2002 year class) is already reduced to levels not observed since 1991.
116	Because of the high densities of rainbow trout < 200 mm in total length, some degree of hydrological disturbance may actually benefit the upstream trout population in the Lees Ferry fishery. Yet, this density dependent response observed for this year's cohort has not been observed in the lower downstream reaches. This downstream region is the area of particular concern regarding trout abundance and its influence on HBC recruitment.
117	It may be difficult to separate the effects of the autumn low steady flow from the winter fluctuating flows during the evaluation of the other two treatments.
117	The concern is that the contrasting effects on trout of low steady autumn flows and high fluctuating winter flows will confound our ability to separate their effects. However, RBT reproduction during winter months far exceeds that in summer months and the ages of surviving fish should be sufficiently different to separate them during monitoring.
118	Concern that electrofishing may result in cumulative impacts to HBC.

No.	Comment
118	Injuries related to electrofishing are associated with larger sized fish. Adult HBC typically occupy deeper pool habitats that are not effectively sampled by electrofishing equipment, whereas, young-of-year HBC occupy nearshore habitats. However, these young fish usually exhibit low abundance except during the fall period when substantial numbers are dispersed into the Colorado River mainstem by floods from the LCR. These same young-of-year HBC show a rapid decline in abundance due to increased mortality. The source of this overwintering mortality is unknown. The negative effects attributed to electrofishing are considered minimal when compared to other factors contributing to their mortality in the Colorado River mainstem.
119	We feel the proposed moving of HBC to an unoccupied reach in the lower LCR will not alleviate adverse effects or reduce incidental take, and may constitute a treatment effect on HBC.
119	The proposed translocation of HBC would take young-of-year fish that would likely suffer high mortality from predation and cold water to a warm water reach of the LCR that does not contain predators. This action was first suggested by AGFD researchers in a published scientific journal article. The number of HBC to be translocated would be sufficiently small not to have a measurable effect on the outcome of the proposed action.
120	Trout in the Grand Canyon should not be transported live to other bodies of water without proper permitting.
120	If the decision is made to transport trout out of Grand Canyon, the process will comply with all jurisdictional authorities and the requirements to obtain and abide by the stipulations stated within the different permits. There is no intent as part of this experiment to translocate live non-native fish into other parts of the Colorado River or its adjoining drainage system.
121	Proposed dam releases combined with mechanical removal of trout could result in a bigger threat to HBC.
121	An increase in dispersal, growth or a shift in frequency toward a larger size-class of RBT are possible outcomes from this experiment. However, findings from the higher flows in the early 1980s and greater flow variation during the late 1980s do not indicate that RBT increased in emigration, growth or predation. As part of this experiment, the critical region of the Colorado River mainstem encompassing the LCR confluence area (RM58 to RM65) will be monitored to evaluate and assess changes in population dynamics exhibited by RBT.
122	Disagree with prediction that "the 8,000 cfs steady flows may slightly increase spawning success and thus increase overall fish numbers and if so, decrease angler satisfaction."
122	The disagreement may well be related to the time frame of the anticipated response. The 8,000 cfs steady flows are anticipated to increase angler satisfaction in the short-term but if they were to result in an even greater abundance of trout, could reduce angler satisfaction over the long-term.
123	DOI agencies should work closely with Glen Canyon National Recreation Area and AGFD to inform anglers about the risk of high fluctuating flows.
123	Agree. The action agencies intend to work together to educate anglers and river users within both Grand Canyon National Park and Glen Canyon National Recreation Area of how the experiment may affect their use.

No.	Comment
124	Disagree with the statement "abundances of both species (brown and rainbow trout) beyond the 15-mile Glen Canyon reach are greatest between RM 60 and 72 near the confluence of the Little Colorado River."
124	We defer to the statistics of the AGFD. The intent of the statement was to emphasize that increases in both species have occurred in the reach between RM 60 and RM 72.
125	Little or no attention has been given to potential stranding of trout in the Lees Ferry fishery.
125	The action agencies are concerned with stranding and have committed to evaluate the degree of the problem. If necessary, mitigative efforts to alleviate stranding may be taken.
126	There is no definite proof that RBT are feeding on native HBC .
126	Both anecdotal observations and information in published reports document predation of HBC by RBT and BNT. Although BNT are known to be more piscivorous, RBT are considerably more abundant. This experiment is to determine whether predation by trout is a causal factor in the recent decline observed in HBC.
127	Investigate alternative ways to protect native fish that do not impact trout populations (20 anglers).
127	We're exploring a range of actions to improve conditions for the HBC. There is no intention to negatively impact the RBT sport fishery in the Lees Ferry reach.
128	The proposed action plans the relocation of the entire population of trout in the area between Lees Ferry and GCD.
128	The experiment does not intend to relocate rainbow trout from the Lees Ferry area to other regions of the Grand Canyon.
129	The 1996 BHBF test failed to restore the beaches for any length of time.
129	While there is still a greater volume of sand above the 25,000 cfs stage in September 2002 than existed in March 1996, this comment is mostly true. However, two reasons why the 1996 sand bars eroded so quickly are: 1) operations following the 1996 flood experiment were relatively high, reflecting the wet upper basin hydrology of that period, and 2) the sand bars were created mostly from highly winnowed sand deposits derived from lower elevations within eddies rather than new sediment supplies from tributaries that had varied grain-size characteristics. One main objective of the proposed experimental sediment action is to intentionally enrich the system with various sizes of fine sediment so as to create sand bars with much different cohesion, water retention, nutrient and stability characteristics than the bars that eroded rapidly following the 1996 experiment.
130	It has not been established that trout feed on the chub so trout removal may help but it may not.
130	See Response #126.
131	This is not an experiment, it is a shot in the dark with dire consequences.
131	The experimental design could allow evaluation of multiple "working hypotheses" related to both sediment and HBC.
132	Suggested alternative proposed action of 1) determine HBC viability in hatchery maintaining a water temperature of 45 F and 2) explore the stomach contents of a statistically significant number of Lees Ferry trout for the presence of HBC.

No.	Comment
132	Existing publications in peer-reviewed scientific journals demonstrate that successful reproduction of HBC cannot occur at 45 F (see e.g., Marsh, P.C. 1985. Southwest Naturalist 30:129-140). No HBC have been sampled in the Lees Ferry reach since approximately 1968, which was 5 years after closure of Glen Canyon Dam. Therefore, there is virtually no possibility that they could occur in stomachs of RBT from that reach.
133	The experimental flow proposal will provide equivocal results.
133	This is possible, but we believe unlikely outcome.
134	The DOI agencies should prepare a DEIS to expand on the analysis in the EA.
134	Based on the analysis in the EA and BA, and after consideration of all comments received during the public comment period, the action agencies do not believe the significant adverse effect threshold mandating preparation of an EIS has been met with respect to the proposed action. While limited, yet specific potential adverse effects of the proposed action have been identified in the EA, these would be minimized or avoided through the identified mitigating measures.
135	DEIS should consider the alternative of seasonally adjusted steady flows.
135	The concept of seasonally adjusted steady flows was proposed by the FWS during discussions on the 1995 GCDEIS. That same viewpoint was reflected to some degree in the FWS 1994 Biological Opinion, wherein a program of experimental flows was listed as an element of the reasonable and prudent alternative. As described in Reclamation's April 6, 1995 response on the FWS Biological Opinion, this program of experimental flows would be developed through the GCDAMP using results gained from the adaptive management process. That commitment still stands. The proposed action results from conclusions by native fish scientists from the USGS and SWCA, Inc. that control of non-native fish should occur prior to the conducting of a program of experimental flows as envisioned in the 1994 Biological Opinion. See also response to comment #98.
136	DEIS should consider the alternative of decommissioning.
136	See Response #36.
137	DEIS should address the compliance responsibilities of the agencies under ESA.
137	The proposed action addresses the status of the HBC and includes actions that the USGS scientists believes are the first step in improving conditions for the chub. The action agencies consulted with the FWS regarding the proposed action under ESA regulations resulting in a Biological Opinion on the proposed action.
138	Agencies should allow for full public involvement in the DEIS.
138	The joint lead agencies made diligent efforts to invite and solicit comments from interested and affected members of the public in the process of designing the experiment as part of the adaptive management process; in the release of the EA over the internet, in holding public open houses, and in distributing the EA. A similar public outreach effort will be made in all future compliance actions.
139	The EA mentioned two additional alternatives, but these alternatives made no mention of impacts to imperiled species.
139	As stated on page 25 of the EA, "...no unique alternatives were considered but eliminated during the development of the Proposed Action...". There were three permutations of the proposed action which were rejected for the reasons stated in that section of the EA.
140	The DEIS should explore the alternative of acting in accordance with the FWS' recommendations in "Monitoring and Research: the aquatic food base in the Colorado River, AZ, during 1991 - 2001."

No.	Comment
140	The referenced report was authored by research scientists from Northern Arizona University with assistance from personnel of the Research Branch of the Arizona Game and Fish Department and the Fisheries Resources Office of the FWS. It has been submitted to GCMRC as a draft report for review, but it has not yet been accepted as a final report. When it is finalized it will be reviewed by the federal action agencies and other stakeholders in the GCDAMP to consider recommendations contained therein.
141	Agencies should review and analyze the FWS recommendations in the above report.
141	The FWS recommendations contained in the 1994 Biological Opinion on the Operation of Glen Canyon Dam EIS were carefully considered during the formulation of the proposed experimental flow by USGS scientists and by the GCDAMP stakeholders in an experimental flow ad hoc group. In proposing this experiment, those scientists did not discount the relevance of those recommendations, rather, they stated that the reduction of the non-native fish population should occur first.
142	Release of the EA was never published in the Federal Register.
142	Correct. A "notice of intent to prepare" is usually only published in the Federal Register for an EIS. At this stage in the NEPA compliance process, a Federal Register notice is not required, nor is it the policy of the joint lead agencies to publish a NOI for an EA.
143	Comment deadline was extended from 18 to 30 days after the EA's release.
143	The comment deadline was not technically extended, rather, the initial press release specifying 18 days was incorrect; in the EA, the comment deadline was issued as October 30, 2002. See also response to comment #68.
144	Agencies are asked to publish notice of all actions in the Federal Register in a timely manner.
144	Federal Register "notices of intent to prepare" are only published for environmental impact statements, not for environmental assessments or categorical exclusions. See Response #142.
145	Allow at least 30 to 60 days for public comments on the DEIS.
145	Should an environmental impact statement be determined the correct level of NEPA compliance for the proposed action, then 30 days would be the minimum public comment period on the NEPA document. However, the goal of the AMP is to have the public participate more fully in the overall adaptive management process, not just in the formal commenting on NEPA documents.
146	Navajo Nation requests no electrofishing within 50 feet of the Colorado and LCR confluence.
146	Agree. This will be a mitigation measure for the tribal concerns.
147	Questions the description of the Navajo Reservation boundary along Colorado River.
147	The history of the western Navajo Reservation boundary is complicated and it would be inappropriate to fully describe this history in this particular EA.
148	Navajo Nation should be a consenting party rather than a consulting party to the proposed action.

No.	Comment
148	The joint lead agencies recognize and respect the sovereignty of the Navajo Nation. Before and during the preparation of this EA, the federal agencies maintained government-to-government relationships with Navajo Nation and other Indian tribes. Institutional roles defined under 40 CFR 1500-1508 are for lead and cooperating agencies; consenting and consulting parties are not defined by NEPA regulations. The Navajo Nation's desire to give or withhold consent, rather than simply be consulted, with respect to all actions or proposals involving Navajo Nation land and resources is understood by the joint lead agencies.
149	Adverse effects of all dam operations on the five prehistoric sites were not all mitigated prior to the 1996 flow.
149	Correct. Archeological information that would be lost during a 45,000 cfs flow was retrieved, not all information was retrieved or values mitigated.
150	Remaining portions of 3 sites (AZ C:13:221, AZ C:13:365, AZ C:13:371), not impacted by the 1996 releases, still retain their archeological significance.
150	The agencies accept the Hopi Tribe's expert opinion on the retention of archeological value at these properties; when writing the EA, it was assumed that previous impacts had resulted in complete loss of integrity and eligibility under Criterion D for the sites as a whole.
151	There does not appear to be a need to conduct additional mitigative work at these sites with respect to the proposed flows.
151	The agencies agree with the Hopi Tribe that additional treatment or mitigation is not necessary for the proposal.
152	Previous compliance was only completed up to the 45,000 cfs level for the 1996 experimental flow and there has been no mitigation of potential adverse effects beyond this level.
152	Correct. Adverse effects of dam operations on properties below the 45,000 cfs level have been mitigated, and while not relevant to the proposed action, to some degree, effects of flows up to 60,000 cfs have also been mitigated.
153	The Hopi Tribe has not been involved in discussions with the Arizona State Historic Preservation Officer, Advisory Council on Historic Preservation, other tribes, and agencies regarding the proposed action.
153	Tribes, agencies and stakeholders of the GCDAMP have been consulting and discussing the proposed action. In addition, government-to-government consultation with individual Indian tribes was conducted for the proposed action. The Advisory Council on Historic Preservation and the Arizona State Historic Preservation Officer were consulted regarding the proposed action separately because they are not members of the GCDAMP.
154	To the best of our knowledge, there has not been a meeting of the PA signatories on the proposed flow.
154	Correct. A Programmatic Agreement signatory meeting has not been held specifically to discuss the proposal. Input of each signatory has been sought during the meetings of the Technical Work Group, Adaptive Management Work Group, through individual consultations while the EA was being prepared, and in subsequent consultations.