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In Reply Refer To:
AESO/SE

September 6, 2000

BOR '00

Memorandum

To: Regional Director, Lower Colorado Region, Bureau of Reclamation, Boulder City, Nevada (Attn: Jayne Harkins LC-4600)

From: Field Supervisor

Subject: Comments on Draft Environmental Impact Statement for Colorado River Interim Surplus Criteria, July 2000

The Fish and Wildlife Service has reviewed the draft Environmental Impact Statement (DEIS) for Colorado Interim Surplus Criteria and we have the following comments for your consideration in finalizing this document. General comments on the document are followed by specific comments relevant to each section of the document.

General Comments

The Service appreciates the efforts made to model the future water surface elevations, river flows and flood releases that have been made in this document. Discussions with Bureau of Reclamation personnel have assisted the Service in understanding the modeling assumptions and constraints and we thank the BOR for providing this opportunity. Future reservoir elevations, and thus the opportunity for declaration of surplus conditions over the interim 15 year period, are largely dependent upon inflows to the system, which in turn are dependent upon precipitation patterns that cannot be predicted. The models must therefore look back over the inflow records for the last 85 years to provide a potential view into the future. The effects to water supply and distribution that result from the application of the surplus alternatives to the model are thus entirely hypothetical and may never be realized under actual conditions. We suggest that this fact be stressed to assist the reader in understanding the implications of the action. Additionally, we have some other suggestions for improving the use of modeling. 1

The analysis results from using the models are not clearly articulated, and often the results are not connected or integrated to other sections where they are used. For example, Arizona depletions in Figure 3.4-5 show a very large median decline that is not reflected in Lake Mead elevations for the same time period. The relationship is unclear. Another example is in the river flow section, 3.3-32, where the relationship between the two analyses and the graphs and tables is not clear and is difficult to follow. Table 3.3-13 is especially confusing since water levels appear to be going 2 cont'd below

1: Comment noted.

2: Additional explanation has been added to Section 3.3.and Section 3.4 with respect to the interpretation of the figures in these sections and the meaning of the analysis results. Mean monthly flows between Hoover and Parker Dams would increase during the interim surplus criteria period as a result of more frequent surplus deliveries (compared to baseline conditions).

2 cont'd — up when they should not logically do so. There are also several places in the various figures and tables where different colors or scales or patterns are used than in others of the same type and this is confusing. For clarity we recommend graphing figures that show percent of time levels are likely to occur as either "greater than or equal to" or "less than or equal to" and not use both in different places.

3 — There are also many subsections titled "baseline" that actually have all the graphs and tables that contain the surplus alternatives along with the baseline. This is helpful to provide side by side analysis. However, the text supporting the figures and tables does not always confine the observations to the baseline condition, and often there is no discussion anywhere later of the effects from the surplus alternatives. Please provide a discussion of all results in the appropriate places.

4 — In Section 3, there are many graphs in which the various percentile lines suddenly join, for example, when the 50th and 10th percentiles become the same level. It would be helpful to the reader if the reason why this occurs was more fully explained. It may not be intuitively obvious why the 50th percentile (50% above and below) should suddenly be equal to the 10th percentile (90% above and 10% below).

5 — At several places in the DEIS, the purpose and need for the adoption of interim surplus criteria are stated to be to increase the "predictability" and reduce the "uncertainty" of a surplus being declared by the Secretary. This is not exactly correct. The predictability of the 75R no action or Flood Control alternatives is based on the same water information as the more liberal alternatives. What is actually different is the probability that a surplus would be declared under the more liberal alternatives. The point of this exercise is to provide a way for California to be able to take more than its 4.4 maf apportionment while it implements the 4.4 Plan. This requires that the chance of a surplus being declared be increased from the baseline/no action.

6 — We question the separation of NEPA compliance for interim surplus criteria from that for the California Colorado River Water Use Plan (the 4.4 Plan) appears to be questionable. The DEIS and the 4.4 Plan clearly state that without the water provided by some form of interim surplus criteria, the 4.4 Plan cannot be implemented, thus the reason why the criteria are being proposed is clear. The California and Six States alternatives analyzed in the DEIS are very clear on that point as well.

7 — We are also concerned that the Flood Control alternative does not have the same inclusion of the water transfers from 4.4 Plan that are in the California, Six States and Shortage Protection alternatives. This suggests that the Flood Control alternative is not meeting the goal of the designation of interim criteria and its validity as an alternative is then questionable. Please explain why this alternative is treated differently.

8 cont'd below — We have other questions regarding alternatives. Given that this project is being done to provide California with a "soft landing" in bringing its actual water use in line with its allocation, we do not see any alternative that only provides exactly the amount of water each year over the 15 year period to keep Metropolitan Water District's aqueduct full. Additional water sources, such as

3: Comment noted. Additional explanation has been added to Section 3.3 and Section 3.4.

4: Specifically, changes in deliveries are often due to a "discrete" condition, such as the change from normal to shortage conditions. This can result in a sudden change in the 50th percentile line, as seen in Figure 3.4-5.

5: The purpose and need of the action is stated correctly. If surplus water is available all Lower Basin States may benefit as their water use needs approach and exceed their allocation. Nevada currently is using surplus water in calendar year 2000 and Arizona will benefit in the future when their need exceeds 2.8 maf. Reclamation's stated purpose to provide greater predictability allows Reclamation and users to project reservoir conditions and uses several years ahead. This allows users advance knowledge of when surplus will and more importantly will NOT be available. The current AOP decision making does not give basin users predictability regarding surplus designations. The Secretary may use the increased probability of surplus, given certain hydrologic assumptions, in making his decision regarding the choice of interim surplus criteria.

6: See response to Comment 13-5

7: The water transfers are in the Flood Control Alternative operational modeling used for the FEIS.

8: The proposed interim surplus criteria are not intended to provide California only with the amount of water to keep the Colorado river Aqueduct full. As is currently the case, when the Secretary determines that surplus water is avilable in the lower Colorado River Basin, the surplus water is available to the three Lower Division states as discussed in the Decree in Arizona v. California. Under the proposed interim surplus criteria, all three states may avail themselves of surplus water. Although, all use schedules may not have included unused apportionment available from other states . Certainly, the Secretary, each year when he develops the AOP and approves water orders, would consider Article II(B)6 of the Decree.

8 cont'd unused allocation from Arizona and Nevada, should be factored into the amount actually needed by California This concept is mentioned in the Six States Plan, but the analysis on that plan does not appear to include this point. If this idea was rejected early on, it should be mentioned as is the Pacific Institute's proposed alternative.

9 The descriptions of the alternatives in the Attachments contain ideas and concepts that do not appear to be reflected in the models or analyses done on the results. This includes requirements for California to meet at intervals during the 15 years, commitments to offset increased risks to Arizona that result from increasing supplies of water to California and other issues. It may be appropriate to include in the main part of the DEIS a discussion of these other issues to provide a fuller picture of each alternative.

10 We are concerned about the inclusion of the approximately 1.2 million acre foot increase in Upper Basin water depletions between 2000 and 2050 being considered part of the baseline for running the models. Environmental compliance under the National Environmental Policy Act and Endangered Species Act may not have been completed for all 1.2 million acre feet. Future water depletions should be considered under cumulative effects for NEPA, not as baseline unless compliance has been completed. Under the ESA, future Federal actions cannot be considered as cumulative because they must undergo their own section 7 consultation, so they do not factor into the analysis at all. It is important to provide for accurate analysis in both the NEPA and ESA forum. It may be useful to provide an explanation of why this increase in depletions is considered as it is in the document.

11 The DEIS could be more clear on which criteria, the 75R or Flood Control, has been used since 1998 to declare surplus conditions on the river. Our impression was that Flood Control criteria devised by the BOR and Corps of Engineers to provide for adequate space in Lake Mead was the governing factor. However, there is mention in the Attachments of the development of the 75R criteria to address surplus determinations. Please clarify which is correct for use as the no action alternative and which would be the default post 2015.

12 The effects analysis concentrates on the river section in the Grand Canyon and often does not include the river sections from Davis Dam to Lake Havasu or the Parker to Imperial reach. Since there will be effects to these reaches, they should be included in the effects sections.

13 There are many words and phrases in the text that could benefit from being placed in the Glossary such as the difference between water allocations, allotments and entitlements. Perhaps it would also be helpful to the reader if all words and phrases in the Glossary were highlighted somehow when they appear in the text.

Specific Comments

Note: Specific comments are grouped by the section of the document. Where there are comments common to several parts of the section, for example, models and results for Arizona,

9: The alternatives based on proposals by the states do not necessarily contain all the provisions of the state's proposals.

10: Reclamation did not structure the alternatives precisely as described in the attached proposals, but made some changes for consistency with Reclamation policy and operational procedures.

11: The 75R strategy was used for the baseline to represent the operation that has occurred in the recent past. In Reclamation's judgement the results of modeling the operation of Lake Mead with the 75R strategy provided a suitable representation of the past conditions. The choice between 75R and 70R was a "close call"; however, and as the result of public comment of the DEIS, Reclamation used the 70R strategy for operational modeling of the alternatives in this FEIS. While it is correct that the flood control operating rules have played a major role in operating the system and determining surplus water in the last few years, the flood control rules have not always been used so the average operation is not strictly consistent with the flood control rules. Moreover, in the future when flood control operation does not occur, surplus determinations will be made using the AOP process which considers a dynamic range of factors that may not involve flood control operations.

12: Additional discussion of potential effects below Lake Mead have been incorporated into Section 3.5, Water Quality; Section 3.8, Special-Status Species; and Section 3.7, Aquatics (potential effects of changes in Hoover Dam release water temperature on fisheries below Hoover Dam to Lake Mohave).

13: The FEIS includes definitions in the glossary for water allocations, water allotments, and water entitlements. Words cited in the glossary will not be highlighted in the text of the document due to concern that it would be confusing and detract from the flow and readability of the document.

Nevada and California, they are provided once with the understanding they apply to all times the issue is presented.

Summary

Most of the comments in this section reflect ones that will be made in the appropriate DEIS section, but are provided here for completeness.

14 Page S-2, S.1.4
The purpose and need for the action should more clearly focus on the need for California to have additional water in order to implement the 4.4 Plan, and that "predictability" is not a driving force for the interim criteria.

15 Page S-3, S.1.5
Please explain why the California Colorado River Water Use Plan is not considered to be a part of this action since the interim surplus criteria are essential to its success.

16 Also, under "Actions Related...", reasonable and prudent alternatives are not conservation actions. The latter are voluntary and the former are mandatory.

17 Page S-4, S.2.1
Please clarify whether the 75R or the Flood Control alternative should be correctly considered the baseline condition.

18 Page S-5, S.2.2.
Please clarify how this is different from the way past surpluses were declared. Also, please explain whether or not this alternative provides all the water anyone wants to request, or if it is limited to the amount of water over the 1211 elevation that can be given out to contract holders.

19 Page S-6, S.2.4
Please explain what would be meant by adjustments to the tiers based on demand projections and other factors. Does this mean the tiers could be made more liberal or only more conservative? If more liberal, would additional compliance be needed?

20 Page S-6, S.2.6.
Which option, the 75R or the Flood Control, would become the default criteria in 2016?

21 cont'd below Page S-7, S.3.3.
Under Reservoir levels, it should also be noted that the lowest reservoir levels do not occur in January, which is when the value for the models is taken. Thus, reservoir levels in July, which for Lake Mead is the lowest month, will be lower than the analysis assumes. This difference has effects to the analysis. Also, although monthly fluctuations may be within the

14: The form and content of the summary has changed to reflect the FEIS. All Lower Basin States will benefit from the purpose and need for the action with the predictability of surplus triggers and deliveries that are dependable over the 15 year period. The surplus water that California will receive is replacement water for declining unused apportionment of the other Lower Basin States. Without the proposed action, under the No Action Alternative surplus determinations would be made by the Secretary through the AOP process. Under the Law of the River, California would still be entitled to 50% of any surplus determination and any basic or surplus apportionment unused by the other Lower Basin States. The purpose and need for this action will firm up water supplies for the next 15 years for water management purposes for all Lower Basin States.

15: The California Colorado River Water Use Plan is not part of the federal action because the Plan contains purely California state actions. Reclamation's only federal action is to develop and implement interim surplus criteria which has independant utility in Colorado River management. The Secretary can and has delivered surplus without these criteria as noted under the No Action Alternative. California could be sucessful in reducing its excessive use of Colorado River Water through the Seven Party agreement if the parties could resolve their differences. The Plan will augment the Seven Party agreement for future water needs and uses.

16: Comment noted

17: The 70R strategy has been used for the baseline in this FEIS.

18: Under this alternative, surplus water would be determined to be available using the same procedure that has been used in the past when flood control releases have been made. Surplus water determinations would be limited to years when flood control releases are needed. Once a surplus determination has been made, the Lower Division States would be allowed to divert as much surplus water as they can put to beneficial use. The estimated amounts of surplus water they would divert in specific future years are contained in the States surplus water demand schedules, as discussed in Section 3.4.

19: The elevations of the tiers in the California Alternative were selected so as to control the depletion of storage in Lake Mead and Lake Powell year by year in the light of the growing Upper Basin depletion schedules. The provision for adjustment is to compensate for shifts in Upper Basin water use and thus keep total Basin depletions in future years as presently projected under this alternative. The direction (up or down) in which the Upper Basin depletion schedule may change is conjectural. No additional NEPA compliance would be made in the event of such change.

20: After the 15-year interim period, the operation of Lake Mead would revert back to the AOL process, which is represented in the operation model by the 70R strategy for the FEIS.

21: The distinction between the summer low and the end-of-year level is noted in Section 3.3.4.2.3 of the FEIS. The summary has been rewritten.

21 cont'd range of 15-20 feet, over the course of the year it may be as much as 75 feet. The point about reservoir levels not having gradual changes, but changing in very discrete ways each year, is well made.

Page S-8, S.3.4.

22a How often would the 75R or Flood Control alternatives provide for a surplus declaration?

22b There is also the question of when the entire allocation of a State is being used. Some Indian Tribes on the river are not using all of their water and the implication given here is that full allocations are being used by 2004.

23 The issue of flood flows to Mexico is also raised. Mexico can only get its 200,000 acre feet of "excess" flood water under the Flood Control alternative, and then only after all beneficial uses under surplus water contracts in the U.S. are filled. The conditions under the more liberal alternatives that would provide Mexico with this water should be mentioned in this summary.

Page S-10, S.3.6.

24 Flood releases should not just be reviewed in terms of damaging flows, but in terms of lower releases that may provide biological benefits to groundwater, backwater and marsh freshening and sediment transport. The Service recognizes that predicting these lower flows is more difficult, but the effects of losing these due to the liberal criteria may be important.

Page S-10, S.3.7.

25 It is surprising to us that no effects to the fisheries in Lake Mead are predicted to occur. Data on effects of severe fluctuations, long-term reduced water levels and other factors is available in the literature on reservoir management (for example, see Ploskey 1983 and Hall 1971).

Page S-11, S.3.8.

26 Special status plant species may also lose existing habitat if receding lake levels dries it out of usable condition. Also, new habitats may be colonized by other species and not provide habitat for the species of interest.

27 Fluctuating water levels also have adverse effects to nesting of both Yuma clapper rails and black rails. While marsh habitat may be formed, water level fluctuations may render it less suitable.

Page S-12, S.3.8.

28 There may be effects to razorback sucker reproduction and recruitment in Lake Mead that are not adequately addressed in the DEIS.

Page S-13, S.3.10.

29 It should be noted that power contract renewals will have an effect on the amount of power generation lost and the amount of mitigation needed. Power generation is dependent upon the available water and is subservient to it.

22a: The probabilities of surplus water for the Lower Division states are shown on Tables 3.4-1, 3.4-2, and 3.4-3.

22b: Tribal water allocations are included in the state apportionments. If a Tribe is not using part of its water allocation, the unused part is available for other users within the state.

23: A surplus for Mexico is only made under flood control conditions.

24: Comment noted. Flow variations up to the level of damaging flows are inherent in the analysis of habitat along the river, as analyzed in this FEIS.

25: The analysis recognized that fluctuations anticipated for the action alternatives are within historical ranges under which native species have diminished in the reservoirs. Populations of non-native sportfish species have, in general, become well established in the reservoirs, and the interim surplus criteria alternatives are not expected to result in any change to this trend.

26: The summary has been changed to include the observation that new habitats could be colonized by other species, in particular non-native weedy species. This is also discussed in Section 3.8 in the Environmental Consequences subsection.

27: The following statement has been added to the FEIS "In addition, fluctuations in water levels may potentially disrupt nesting of Yuma clapper rail and California black rail".

28: Revisions were made to Sections 3.8.2.3.3 and 3.8.2.3.3.5

29: This analysis does not make any assumptions related to contract renewals. However, it is possible that Western Area Power Administration would only make contract commitments when the current contracts terminate based on the foreseeable amounts of capacity and energy during the next contract term.

6

30 Page S-15, S.4.3.
It might be helpful for readers to mention here that the models are not predictive, and thus the actual costs and benefits realized are not known. An explanation of the increased opportunities for more efficient use of river water supplies is also appropriate, since no real conservation program that would free up river water for other beneficial uses is proposed in the plans.

31 Page S-16, S.4.4.
A statement on the need for California to show sufficient progress in meeting the 4.4 Plan as essential to the continuation of use of interim surplus criteria should be included here.

Chapter 1: Introduction and Background

32 Page 1-1, 1.1
Please cite the source of the management objectives provided in the 2nd paragraph.

33 Page 1-3, 1.1.2
Paragraph 2: Please include information on how many surplus years have been declared to date.

34 Page 1-3, 1.1.3
paragraph 1: Please note that the LROC is provided in Attachment A. Also, please include here that the reason why the current surplus criteria are inadequate is because of California's need for extra water while the 4.4 Plan is implemented.

35 paragraph 2: Please explain whether Arizona or Nevada can get flood surplus water (or indeed, any surplus water), if they are not already using their entire normal allocation.

36 Page 1-4, 1.1.4
please explain more fully how and when Mexico can obtain the 200,000 af of water under the existing conditions. Do all potential U.S. uses have to be met first?

37 Page 1-8, 1.3.1
paragraph 1: Although it is noted in item 7 on page 1-9, please explain here why the Gila River inflow is not counted as Colorado River water. This section is somewhat confusing to the reader on the issue of what water counts and what does not.

38 Page 1-12, 1.3.2.2.1
paragraph 1: In the depletion schedules, the Upper Basin depletions reach approximately 5.2 million af. This paragraph indicates a use of 6 maf. Please address this discrepancy.

30: Reclamation believes that the current discussion in this section is adequate.

31: As discussed in Section S.4.4, continuation of interim surplus criteria would be at the discretion of the Secretary. The Secretary's decision to continue or terminate interim surplus criteria would be based on a number of factors which may include California's progress in meeting the goals of the California Colorado River Water Use Plan.

32: See Table 1-1, "Documents Included in the Law of the River" for the complete reference. The specific documents to note as sources are: The Boulder Canyon Project Act of 1928, the 1964 Supreme Court Decree in Arizona v. California, and the Colorado River Basin Project Act of 1968, the Long Range Operating Criteria of 1970, and 43 CFR 417, "Procedural Methods for Implementing Colorado River Water Conservation Measures with Lower Basin Contractors and Others."

33: Section 1.3.4.1 provides data on how many surplus years have been determined.

34: See response to Comment 57-5. Currently, there is no specific surplus criteria. The surplus determination is made annually using the Annual Operating Plan process and dynamic factors. This does not allow the Lower Division States the ability to plan their internal water management as well as they might.

35: Under the terms of the Decree, when a Lower Division State needs more than its apportionment of consumptive use, the Secretary may make unused apportionment from another state available to it. If the total Lower Division consumptive uses do not exceed 7.5 maf, surplus water is not needed by the Lower Division States. Surplus water may be made available to entities in Arizona, California and Nevada who have entered into surplus water contracts with the Secretary. Surplus water, when made available, is shared as specified in the Decree--50 percent for use in California, 46 percent for use in Arizona and 4 percent for use in Nevada. Unused surplus water by one state may also be made available for use in another state.

36: Section 3.3.3.3, General Modeling Assumptions describes the assumptions made in regards to when deliveries of Treaty surplus are available to Mexico.

37: We have revised paragraph 1.3.1 in the FEIS to make this clarification.

38: The discrepancy is due to the fact that the depletion schedule in Attachment J of the DEIS does not account for evaporation from Upper Basin storage units. This evaporation is shared by the Upper Basin States and should be accounted for as an Upper Basin depletion. After allowing for evaporation, the projected Upper Basin depletions will be very close to 6.0 maf in year 2050. We have updated Attachment K in the FEIS to show a column for evaporation from Upper Basin storage units.

39 Page 1-12, 1.3.2.2.2
paragraph 2: Is it appropriate here to note how much of the state allocations are not being used (this would include Tribal Rights) that is currently being used by California, and how that amount of water should be first considered before any surplus is provided?

40 Page 1-14, 1.3.2.2.2
paragraph 1: Could a reference be made here to where the listing of PPRs and amounts is given in the DEIS?

41 Page 1-14, 1.3.2.2.3
paragraph 1: In the event of Gila River flows, are normal deliveries to Mexico suspended, under the concept that they can take their apportionment out of the excess water in the river?

42 Page 1-15, 1.3.3
paragraph 2: Please describe the type of NEPA and ESA compliance done for the LROC reviews and modifications.

43 Page 1-15, 1.3.4.1
paragraph 2: The Secretary retains the discretion to give unused allocation to another State. Is there any situation where he would not give the water to a potential beneficial use? For example, if reservoir levels were depressed by several years of drought? The contracts for such use are always temporary, are they not?

44 paragraph 3: Can a State that is not using its whole allocation get any surplus water under the present criteria or any of the potential interim surplus criteria?

45 Page 1-16, 1.3.5
paragraph 1: This paragraph is confusing. We suggest the storage amounts for Mead and Powell be specifically mentioned here instead of in the 2nd paragraph. If Lake Powell also contains upper and lower basin storage, that should be broken out.

46 Page 1-18, Table 1-2
Please note where the AAC contribution mentioned in the preceding paragraph is included in this Table. How does the AAC contribute to Mexico deliveries?

47 cont'd below Page 1-19, 1.3.6
paragraph 3: The issue of how much space in Lake Mead is dedicated to flood storage is not completely clear. The 1.5 maf of space for rainfall floods is clear, however, the amount of space needed for snowmelt is not provided. The total storage space needed is defined on page 1-20, but it is still unclear how much is needed in Mead. If this space requirement is flexible based on the amount of storage in other reservoirs, the amount of snowpack predicted, or other factors, these should be provided in the explanation. Perhaps a table of storage space provided in Mead over time would be helpful. Since the availability of flood storage space is an important factor in

39: Consumptive use of Colorado River water in Arizona reported in the Article V Decree accounting records was 2,853.9 kaf in calendar year 1997. Annual consumptive use in Arizona has been less than 2.8 maf in calendar years 1998 (2,566.7 kaf) and 1999 (2,728.0 kaf), and has been projected to be about 2.7 maf for 2000. Consumptive use of Colorado River water in Nevada is projected to exceed that state's 300 kaf apportionment during calendar year 2000. To the extent that all water apportioned to any Lower Division state is not used in that state during any year, the Secretary may release that unused apportionment water under Article II (B) (6) of the Decree for consumptive use in another Lower Division state. Any unused apportionment so released for use in another state will be accounted for as such, effectively reducing a state's use of surplus water.

40: The listing of PPRs and amounts is not in this FEIS but may be found in the supplemental Decree in Arizona v. California, entered by the United States Supreme Court on January 9, 1979 (439 U.S. 419).

41: In the event that the Gila River flows, normal deliveries to Mexico are not suspended. Any Gila River water that flows into the Colorado River becomes Colorado River System water that can be delivered to Mexico in satisfaction of the Mexican Water Treaty. If any Gila River flows result in more water being delivered to Mexico than Mexico scheduled, such excess deliveries do not count against the quantity of water delivered under the Treaty.

42: No NEPA or ESA compliance is required for ongoing operations, such as the LROC reviews under the criteria. However, a categorical exclusion checklist, dated October 31, 1997, was completed for the most recent LROC review that was initiated on August 14, 1996. In the event a review of the LROC identifies a need for a revision of the LROC, appropriate environmental compliance will be completed.

43: Article II(B)(6) of the Decree does not preclude the Secretary from releasing a Lower Division State's unused apportionment for consumptive use in the other Lower Division States. This article of the Decree further stipulates that the users of another state's unused apportionment do not accrue rights to repeated use of this water. This means the Secretary has discretion as to whether to release this water. The Secretary will consider many factors, including but not limited to current and projected reservoir storage, hydrologic conditions, and requests for water deliveries for beneficial use in determining whether to release a state's unused apportionment for use in another state. Section 5 of the Boulder Canyon Project Act requires contracts for delivery of Colorado River water to be for permanent service. Although a Colorado River water delivery contract is for permanent service, unused apportionment is available only when a state does not use all its apportionment and the Secretary releases that water for consumption in another state.

44: During a surplus year, an individual entitlement holder's schedule, diversion, and use of Colorado River water may include both a basic entitlement and surplus water. At the end of the year, the total consumptive use in the entitlement holder's state that year may be less than the apportionment that otherwise would have been available for use in that state in a normal year (basic apportionment). Therefore, even though Colorado River water may be scheduled, diverted, and used as surplus by individual entitlement holders, when Reclamation compiles the annual Article V Decree accounting records after the end of the year, Reclamation would account for this water as basic apportionment. Reclamation accounts for all water use in a Lower Division State as basic apportionment until the consumptive use in that state equals the basic apportionment for that state. This method of accounting is possible because any Colorado River water not used by an entitlement holder in any year passes to another entitlement holder in that state through existing contracts under the water-use priority system for that state.

45: We have modified the section for clarification. Section 1.3.5 describes the facilities on the Colorado River system and their respective storages, not the allocation of water to the Upper and Lower Divisions.

46: A portion of the water delivered to Mexico at the NIB is diverted in to the All American Canal and is delivered through the Pilot Knob and Siphon Drop powerplants into the Colorado River above the NIB.

47 cont'd | the analysis, this additional information would be useful to the reader. Also, if there is flexibility on where the water is stored, this could provide a method to prevent Mead elevations from declining as much if flood storage was available upstream and Mead allowed to stay at a higher elevation.

47: The paragraph has been modified for clarification. For more detail regarding flood control releases, we would refer you to the COE Water Control Manual for Hoover Dam, Lake Mead.

48 | Page 1-20, 1.3.6
paragraph 3: Please describe the relationship between rainfall and snowmelt storage space in Lake Mead.

48: Clarification has been made in Section 1.3.6.

49 | paragraph 4: Since other parts of the DEIS evaluate the effects of having 40,000 cubic feet per second flows, and we know that there are portions of the channel that cannot safely pass those flows, please discuss how the floodway program will be implemented to provide for such capacity.

49: Details of the responsibility of the various federal agencies is outlined in the "Final Report of the Secretary of the Interior to the Congress of the United States on the Colorado River Floodway Protection Act", dated October 1992. Some of the major implementation methods have been the incorporation of the floodway maps into the National Flood Insurance Program and the Department ensuring that leases and uses of federal lands adjacent to the river are consistent with the operation and maintenance of the floodway.

50 | Page 1-21, 1.4
1.4.1: There is no extant NEPA or ESA on this action. We still have concerns about the lack of integration in this DEIS of portions of the 4.4 Plan that require the surplus criteria to be in place. That the section 7 consultation on the interim surplus criteria will also include portions of the 4.4 Plan indicates the degree of linkage between these actions.

50: See response to Comment 13-5.

51 | Page 1-23, 1.4
1.4.3: As noted in the summary, reasonable and prudent alternatives are mandatory, and do not qualify as voluntary conservation actions.

51: Comment noted.

52 | Page 1-26, 1.4
1.4.4: The 2nd sentence of the 2nd paragraph addressing surplus criteria in the 1997 BCO is out of place in this paragraph. In the 4th paragraph, it should be noted that non-Federal partners in the LCRMSCP will obtain ESA coverage along with the Federal partners.

52: The text has been revised as noted.

Chapter 2: Description of Alternatives

53 | Page 2-1, 2-2-1-1
paragraph 2: Are the total runoff figures for the 70R and 75R based on runoff in the entire Colorado River basin? If so, perhaps it would be helpful to include the average runoff amount for reference purposes. Additional information on why the 75R and not the Flood Control alternative was selected to represent the baseline is needed here. It is important to be clear on what method was used to determine if surpluses in the past did or did not exist.

53: The "R" strategies are based on the runoff in the Upper Basin, measured at Lees Ferry, which is described in Section 3.3. Please See the response to Comment 57-11 regarding the selection of the 70R strategy.

54 | Page 2-2, 2.2.1.2
The "R" strategy is based on the yearly availability of storage space. Is the "P" strategy based on a yearly Lake Mead storage, or is it computed using more than one year to project the risk of shortage?

54: The "P" strategy is computed using more than one year to project the risk of shortage. See Section 2.2.13 for additional information.

55 Page 2-2, 2.2.1.4
If the Flood Control Strategy is what was used to determine surpluses in 1998-2000, then why was the 75R chosen as the baseline and no-action alternative? Also, how does the Flood Control Alternative differ, if at all, from the criteria used in 1998-2000?

56 Page 2-3, 2.2.2
paragraph 1: What is a "conjunctive use program?" This section should also look at why a program that only provided enough extra water to meet California's needs after all other available sources had been tapped is not considered in this DEIS. The California alternative does not have this direction.

57 Page 2-3, 2.2.3
paragraph 2: Although the increase in water deliveries to Mexico is not in the purpose and need of the interim surplus criteria, other features of the Pacific Institute proposal do meet the purpose and need and should be reviewed for how they would meet the needs of California.

58 Page 2-4, 2.2.4
paragraph 3: If the DEIS does not contain the full complement of items in the California and Six States alternatives, how can a decision be made on implementing the entire plan from the analysis in the DEIS? What actually is being covered, and how does the lack of coverage for other parts of the alternatives affect the analysis? Please explain more fully.

59 Page 2-4, 2.2.5
paragraph 1: The designation of a surplus condition under the no action and baseline condition is not less predictable or more uncertain than under the more liberal alternatives. The probability of a surplus being declared is less, because the criteria under these two alternatives are more conservative in retaining water in Lake Mead. The same information used to determine water levels in the reservoir over time apply to all alternatives. The more liberal alternatives provide for a higher probability that the analysis will enable a surplus to be declared over the no action and baseline condition.

60 Page 2-5, 2.2.5
paragraph 2: Please clarify why the 75R was selected as the baseline condition and not the Flood Control criteria actually used in 1998-2000 or the 70R used in planning. Use of the more liberal 75R to represent the baseline when it was not used as such is inappropriate. The discussion here of the choices made needs clarification.

61 Page 2-5, 2.3
paragraph 1: Do we include in the alternatives a written policy on exactly what California has to accomplish each year or set of years in order to justify the continuation of interim surplus criteria?

62 cont'd below
paragraph 2: Flood Control is an alternative for discussion even though it may actually be the no action alternative, and 75R, which is not the actual baseline, is not an alternative. This

55: See the response to Comment 57-11 regarding the selection of the 70R strategy as the baseline. The determination of surplus conditions under the Flood Control Alternative would be the same procedure as was used in 1998-2000.

56: A conjunctive use is a state authorized program based on the use of a rechargeable groundwater aquifer to supplement surface water supply during periods of shortage. Groundwater pumped at such times would be replaced by artificial recharge when recharge water is available. See the response to Comment 57-8 regarding the formulation of an alternative to meet only California's needs.

57: See the response to Comment 11-6 and 11-8.

58: The Six States and California Alternatives are derived from the triggers and other operational provisions described in the respective proposals from the states, but the alternatives evaluated do not necessarily contain all the provisions of those proposals. Thus what is actually covered and proposed for implementation is the specific provisions of the alternatives described in Chapter 2 and in the detailed Guidelines in Attachment I. The operational modeling results, expressed in terms of river flows, reservoir levels, and the associated environmental impacts for each alternative are unique to the specific provisions of each alternative.

59: While it is true that the alternatives having lower trigger elevations than the baseline increase the probability of surplus water determinations during the interim period, the predictability aspect is critical to the integrated management of available water resources by the Lower Division States. Each of the Lower Division States currently manages surface and groundwater sources to meet its water delivery commitments. The establishment of triggering elevations on Lake Mead or flood control rules as the criteria for determining surplus water availability would enable water planners of the Basin States to forecast Colorado River water availability in advance with a reasonable degree of certainty and thereby avoid unpredictable water supply shortfalls that could result from year-to-year determinations under the AOP process.

60: Section 2.2.5 has been revised.

61: Please see response to Comment 33-3.

62: Section 2.3 has been revised for clarification.

62 cont'd issue should be clarified. Also, exactly what method of surplus determination that will be used in 2016 and beyond should be clearly stated here.

63 Page 2-6, 2.3.1.1
In the last sentence of this paragraph, please add the word "only" between "would" and "be." Since the 75R is a conservative plan, surpluses would only be achieved when lake levels are very high.

64 Page 2-6, 2.3.1.2
The data set of past inflows used to run the 75R models should be the same as for the other models. The first sentence of this paragraph implies otherwise. Although there is no trigger elevation because the yearly storage need is variable (due to projected inflows), is there some elevation below which water would not be removed? Are the 1194 and 1196 feet elevations minimums that would not be compromised? Is there likely to always be enough water in the system when this criteria is met to meet all the States desired depletions? How does Mexico qualify for its 200,000 af under this alternative?

65 Page 2-7, 2.3.2.1
The baseline/no action alternative can declare a surplus in any month through to the end of the water year. Does the Flood Control alternative operate like this, or is it like the other alternatives that determine a surplus in January? Should there be a 5 year review associated with this alternative?

66 Page 2-8, 2.3.2.2
paragraph 1: Where was the 1211 elevation figure derived from? This is less than the 1.5 maf flood pool defined earlier. Is this the average elevation needed for snowmelt flood control? Should there be a 5 year review associated with this alternative?

67 Page 2-9, 2.3.3.2
paragraph 1: The tier lines on the Six States alternative do not increase over time to account for increased future depletions from the system. How does this change the effects from those that would be seen in the 75R or California alternatives where there is an increase? We also suggest that the section provide brief information on the allowed uses of water in each tier without having to reference Attachment G. The amount of water generated should also be mentioned.

68 Page 2-10, 2.3.3.2.1
paragraph 2: Why did the modeling not use the 70R trigger called for in the alternative? If this alternative was selected, would this change be made to the alternative description? How does this change the results of the analysis that might favor or dis-favor the alternative?

69 Page 2-11, 2.3.3.2.4
How would Mexico receive surplus water under this alternative?

63: The change has been made.

64: The same runoff data is used for the Baseline and all the alternatives. This point was clarified in the section cited. The elevations of the triggering line during the interim period are based on a statistical analysis of required reservoir space for runoff in relation to the cited percentage of runoff (i.e., 70R). If a surplus is determined based on that line, it is possible for the level of Lake Mead to go below the triggering line, depending on actual runoff conditions in the year. In as much as the baseline triggering elevations for surplus water determination would involve a relatively full condition of Lake Mead, there would be sufficient water to meet the States' desired depletions. Mexico would receive its additional apportionment of 200,000 acre-feet in years when flood control releases were necessary. This would occur when Lake Mead levels were high enough to invoke the flood control operating rules (i.e., the Lake Mead levels indicated by the average Flood control release trigger shown on Figure 2-1).

65: A surplus may be determined in any month for any alternative due to flood control 70R and the other surplus alternatives determine surplus at the first of the year. See Section 1.1.1 for information regarding the 5-year review of the interim surplus criteria.

66: A five-year review is included in this alternative.

67: See Section 2.3.2.2 for information regarding the 1211 elevation. See Figure 3.3-10 for information regarding the 1.5 maf flood pool.

68: See response to Comment 37-8.

69: Under the Six States Alternative, as under all alternatives, Mexico would receive its additional apportionment of 200,000 acre-feet in years when flood control releases were necessary from Lake Mead.

11

70 Page 2-11. 2.3.4.1
If the trigger elevations are allowed to be revisited every 5 years, could they be made more liberal (to allow for additional surplus opportunity) or only more conservative? If more liberal, how will environmental compliance be accomplished for any additional impacts?

70: The trigger elevations could move up or down. Appropriate environmental compliance would be performed.

71 Page 2-12, Figure 2-4
Which tier 3 would be implemented if this alternative is selected? The one in the DEIS or the original California one?

71: If the California Alternative were selected, the tiers described in Chapter 2 of the FEIS would be implemented.

72: See response to Comment 57-69.

72 Page 2-13, 2.3.4.2.4
How would Mexico receive surplus water under this alternative?

73: Yes. A correction has been made.

73 Page 2-16, Table 2-1
In the 2nd paragraph under Lake Powell effects, should the 3838 figure be 3638?

74 Throughout the table, the words "similar to" describe effects among alternatives. In a summary table this is acceptable, but the full text discussions should be more specific.

74: Comment noted.

Chapter 3: Affected Environment and Environmental Consequences

3.1: Introduction

75 Page 3.1-2, 3.1.3
As stated previously, the no action or baseline condition lacks probability, not predictability. The criteria that were used in 1998-2000 to determine surplus should remain the no action alternative and be the criteria post 2015.

75: The Secretary currently considers a number of factors consistent with the Long Range Operating Criteria to determine, on an annual basis, whether or not surplus conditions exist in the Lower Basin. This process (the No Action Alternative for the purpose of the Interim Surplus Criteria EIS) provides less certainty with regard to surplus determinations than the action alternatives under consideration. See FEIS Section 2.2.5 for information regarding the baseline used for analysis in the FEIS, as well as response to comment 11-9 and 57-5 for additional information.

3.2: Potentially Affected Area

76 Page 3.2-1, 3.2
The effects of providing for interim surplus water extend beyond the Colorado River corridor. This water will be used to facilitate land development and provide a hedge against future shortages that could influence how that development occurs. Most of these developments are not speculative. Even if there are no new developments that could be considered, the presence of this water will enable the continuation of existing development plans. This is an effect that needs additional discussion. The presence of completed Habitat Conservation Plans for some of the development areas should be mentioned, as should be the lack of such plans in other areas.

76: Effects from the use of Colorado River water outside of the river corridor is beyond the scope of analysis necessary to determine the potential effects of interim surplus criteria. Also, see response to Comment 56-4.

77 Page 3.2-4, 3.2.1.4
This reach of the river is not included in many of the subsequent analyses and it should be so included. Please make sure the effects are discussed in the document.

77: See response to Comment 67-12.

12

3.3: River System Operations

78 General Comments: The reservoir operations section is much clearer and more informative than the river reach sections. The latter should be reviewed and rewritten to provide for greater clarity and understanding for the reader.

78: Additional explantion has been added to Section 3.3.4.5.

Page 3.3-4, 3.3.1.2

79 The discussion of storage space needed in Lake Mead for rainfall and snowmelt is not clear from this discussion. The percentage or actual space that has been made available in Mead over at least the time period covered by the current flood control operations criteria should be provided. A specific figure is given for Lake Powell in the preceding section. Since the normal space building releases are less than those needed for water users, how does Lake Mead empty the required space in accordance with the schedule? Since Lake Mead water levels are highest in December and January and lowest in July, how does this relate to the storage required in Table 3.3.2?

79: The US Army Corps of Engineers is responsible for developing the flood control operation plan for Hoover Dam and Lake Mead pursuant to 33 CFR 208.11. Please refer to these regulations for a more detailed description of the Corps flood control and space building operations. Specifically, space building releases can be as high as 29,000 cfs while releases to meet downstream demands are typically less than 20,000 cfs. Lake Mead is typically lower in the summer as increasing downstream demands are met. This should not be confused with the space requirement, which in effect sets an upper limit on the storage at Lake Mead.

Page 3.3-8, 3.3.3.2

80 paragraph 2: This is confusing as far as Mexico's flood surplus is concerned. Does the DEIS intend to say that regardless of the alternative under analysis, there has to be enough water in Lake Mead to trigger what would be the COE flood control requirements before Mexico would be able to get its 200,000 af? If that is the case, please explain how this could happen (would these years be part of the 90th percentile line, or somewhere else)?

80: Yes. This is the modeling assumption used for all alternatives and baseline. Flood control releases occur when the hydrologic inflow, combined with the storage in Lake Mead, results in releases (in excess of downstream demand) necessary to meet the flood control regulations. Flood control releases occur in approximately 35% of the traces in 2007 and in 22% in 2016, under baseline conditions (see Figure 3.16-1).

Page 3.3-9, 3.3.3.3

81 Assumptions Common: The first two assumptions reinforce the need to look at how Lake Mead storage is determined under the requirements in Table 3.3.2. If available storage in the Upper Basin affects storage available in Lake Mead, and increased depletions from those reservoirs increase the available storage, what storage is needed in Mead? Further, if changes could be made to these storage criteria (does BOR have discretion?), could these be used to reduce or eliminate adverse effects to reservoir levels and flood flows resulting from the proposed action? Should this be an alternative?

81: Reclamation does not have the authority to modify the system space requirements (Table 3.3.2). As described in Section 3.3.3.3 and Attachment J, a minimum space of 1.5 maf is required at Lake Mead for flood control.

82 The assumption of future Upper Basin depletions is questioned by the Service. At most, only some of these belong in the baseline and the rest are part of cumulative effects. No separate analysis for cumulative effects was run, and this should be clarified.

82: See response to Comment No. 57-10.

83 Assumptions Specific: Why does the Flood Control alternative not include the implementation of the 4.4 Plan? If the actual purpose and need of developing the interim surplus criteria is to provide water to implement the 4.4 Plan, then the Flood Control alternative does not meet the need. Please explain why this decision was made.

83: In the FEIS, the Flood Control Alternative includes implementation of the California Colorado River Water Use Plan. See response to Comment No. 37-11 for additional discussion.

84 cont'd below Page 3.3-11, 3.3.3.5

paragraph 2: This is an extremely important paragraph and the concepts herein should be stressed earlier in the DEIS. The models are not predictive, nor are they probabilistic for actual

84: The referenced statement and paragraph is appropriately located under Section 3.3 - Modeling and Future Hydrology.

84 cont'd | future flows. It should be noted that they do not represent best or worst case futures, only that they are the past brought forward for use.

Page 3.3-12, 3.3.3.6

85 | paragraph 3: It should be noted here that the end of year elevations do not represent the lowest point for water levels over the year. As stated in various places in the DEIS, reservoir elevations vary monthly by 15-20 feet or more up to 75 feet over the course of a year. Especially for the 10th percentile figures, lake levels may go below critical levels over the course of normal operations. Lake elevations in Mead reach their lowest point in July, and are declining over the six months previous.

Page 3.3-13, 3.3.4

86 | Transit time through the reservoirs, especially at low reservoir elevations, is likely to increase. How this affects productivity is an issue that should be mentioned when this analysis is discussed.

Page 3.3-14, 3.3.4.1

87 | paragraph 2: More information on the "equalization" rules is needed somewhere in this document.

88 | paragraph 3: Why was the Shortage Protection alternative analyzed differently? Will the revised analysis in the FEIS be more liberal or more conservative in showing a surplus? If it is more conservative, as one assumes it would be since the existing did not protect at 80%, does this reduce the effects of this alternative? Since this is often the alternative with the highest effect, this is an important consideration.

89 | Page 3.3-15, 3.3.4.2.2
paragraph 1: When are Lake Powell water levels lowest?

Page 3.3-17, 3.3.4.2.3

90 | paragraph 1: This paragraph is very important to understanding the modeling. We suggest that the concepts of the traces as shown in Figure 3.3-5 be incorporated into the modeling discussion earlier in this chapter. It is important for the reader to understand that each trace has the same 85 values as the other traces, but each one starts with a different year and wraps through all other years.

91 cont'd below | paragraph 2: It might be useful to explain why the 90th percentile does not change over time while the 50th and 10th do. As with paragraph 1, above, it may be appropriate to have a section describing more fully what is happening in these graphs. An attachment might be the best place to put such an explanation, with example graphs.

85: The referenced statements are appropriately located in the second paragraph of Section 3.3.4.2.3 (for Lake Powell) and the second paragraph of Section 3.3.4.4.3 (for Lake Mead).

86: As noted in Section 3.3.3.3, lakes Mohave and Havasu will continue to be operated in accordance with their existing rule curves. As such, the operating range of the water surface elevations and transit times of these two lakes are not expected to be affected. Additionally, the potential increase in transit time of lakes Mead and Powell are unlikely to affect productivity.

87: This information has been added in Attachment J.

88: The Shortage Protection Alternative was not analyzed differently. The referenced paragraph provides an explanation of the derivation of the shortage protection lines, used in all of the alternatives and baseline to determine when shortages occur.

89: The first paragraph of DEIS Section 3.3.4.2.3 states that the elevation at the end of the calendar year is near the seasonal low. Typically, the lowest end-of-month elevation for a year occurs between December and March.

90: The referenced discussion on the 85 traces is also addressed earlier in the chapter in Section 3.3.3.5, third paragraph. "Trace" refers to the output of a particular simulation, where the assumed inflows were derived using the indexed sequential method.

91: The fourth paragraph of Section 3.3.4.2.3 (for Lake Powell) and the third paragraph of Section 3.3.4.4.3 (for Lake Mead) have been expanded to provide additional explanation on the trending tendency of the 90th, 50th and 10th percentile lines. Specifically, the 90th percentile Lake Powell elevation does not change over time, indicating that Lake Powell is essentially full for 10% of the traces in all years.

91 cont'd As far as the results shown in this paragraph, and the figure, the important point is that the lake level declines over time, and the range of potential levels increases significantly on the lower ends, but not on the upper end. All water levels, high, low or moderate are temporary, and of course these do not reflect the within-year fluctuations.

92 Page 3.3-18, 3.3.4.2.3
paragraph 2: All modeling for levels is done at the end of the year as shown in Figure 3.3-6. The 90th percentile is at approximately 3685 feet. This paragraph brings in a new figure (Figure 3.3-7) with a modeling point of July, when the water level is highest in Lake Powell. These two figures are not comparable and serve to confuse the reader. One modeling point should be chosen for these analyses. This applies to page 3.3-21, Table 3.3-5 and its explanation also.

92: The analysis of elevation 3695 ft msl is included to address the probability of Lake Powell filling each year. This would typically occur during June or July. For the FEIS, all analyses of Lake Powell elevations were changed to a common point (end-of-July).

93 Page 3.3-19, 3.3.4.2.3
paragraph 2: What is the significance of elevation 3590 for Lake Powell. The minimum power generation level is 3490 feet, is that what you intended to look at? This applies to page 3.3-19, Figure 3.3-8 and page 3.3-21, Table 3.3-6 also.

93: For the DEIS, the Lake Powell water levels observed for the baseline and surplus alternatives did not fall below 3550 feet. An analysis of the frequency of Lake Powell water levels falling below 3590 feet was included in the DEIS to provide a bottom range for the observed water levels. For the FEIS, this analysis was replaced with an analysis of elevation 3612 feet, below threshold elevation for marina and boat ramps.

94 Page 3.3-19, 3.3.4.2.4
paragraph 1: Water levels fluctuate between 100% of possible elevations, not between 80%. All water levels are temporary, not just those in the upper and lower 10%. Please revise this paragraph to express this.

94: This comment appears to be directed toward 3.3.4.2, 4th paragraph. 80% of the simulated end-of-July Lake Powell elevations lie between the 90th and 10th percentile lines.

95 Page 3.3-23, 3.3.4.4.1
paragraph 3: Please note in this paragraph when Lake Mead reaches its minimum levels.

95: Section 3.3.4.4.3, paragraph 1, states that Lake Mead water level generally reaches its annual low in July.

96 Page 3.3-25, Figure 3.3-12
The level for the 90th percentile appears to be close to the lower level for the 1.5 maf flood pool (1219.61 feet). What is the actual level for this percentile? Again, an explanation of why this percentile does not change would assist in understanding the modeling.

96: For the FEIS, the 90th percentile of the modeled Lake Mead water surface elevation monthly values ranged between 1215.19 feet msl in 2002 to 1210.67 feet msl in 2050.

97 Page 3.3-26, 3.3.4.4.3
paragraph 1: The difference between the modeling effects and seasonal changes in elevation are well mentioned in this paragraph. This bringing together of more than just the raw results of the models should be used more throughout the document to assist the reader in understanding the implications of this. For example, because the lake levels are lower in July than when the modeling was done, there is a greater chance of breaching one or more of the target trigger elevations than may be accounted for in the analysis. The tiers discussed in the section on the alternatives could be violated over the course of the year by the fluctuation of the reservoir. Power generation is very important during the hot summer months, and that is an area that could be more affected than perhaps the models suggest.

97: Much of the analysis in the FEIS uses end of December elevations for Lake Mead and end of July elevations for Lake Powell. Reclamation agrees that probabilities of remaining above various water surface elevations would be different during times of the year other than discussed in the FEIS. However, differences between alternatives and baseline conditions would be similar.

98 paragraph 3: Water levels fluctuate between 100% of possible elevations, not between 80%. All water levels are temporary, not just those in the upper and lower 10%. Please revise this paragraph to express this.

98: 80% of the modeled end-of-December Lake Mead elevations lie between the 90th and 10th percentile lines.

99 paragraph 6: What is the significance of the 1200 foot elevation? Because it is below the 90th percentile, it would be expected that there would be a greater than 10% probability of water levels being higher than it. What is the point of this discussion? Further, if there is a change in the percentages from 22% to 16%, this raises the question of why the 90% line still does not change over time.

100 Page 3.3-27, Figure 3.3-14
Please change the color pattern on the figure data lines to the same as used in the other figures.

101 Page 3.3-29, Figure 3.3-16
Why does this Figure use a different scale than 3.3-15? Since they are dealing with the same concept and are within the same range of values, please use the same scale.

102 Page 3.3.4.4.4
What is important to note is not only the decrease in probabilities that a certain level will be maintained, but also that it happens much sooner under the more liberal surplus alternatives. This actually increases the number of years of risk, which increases the opportunity to have it happen. This increase, as well as the numerical changes, should be documented in this section.

103 Page 3.3-31, Table 3.3-8
Please explain how the figures for 2050 rise for all but the no action alternative.

104 Page 3.3-32, 3.3.4.5
A general comment on this section is appropriate. The discussion of the modeling and analysis in this section is not as clear as it is in other sections, especially the previous one on lake elevations. We understand that this type of analysis can be difficult to put into comprehensible terms, but as this is critical to the understanding of the effects, we believe another effort should be made to revise this section.

105 paragraph 2: Please note in which tables this information appears. There are many tables and graphs in this section. It may also be useful for the reader if the seasonal differences in flow magnitudes are more fully explained.

106 Page 3.3-34, 3.3.4.5
paragraph 1: Please separate the portion of this paragraph dealing with the second type of analysis from the rest. It will be easier to locate. Since both of these use exceedence frequencies, please explain how they are different or what different results are highlighted. A form of exceedence frequency was used in the lake elevation portion of the analysis. How is this form different? At the least, the need to change to "less than or equal to" from "greater than or equal to" should be explained. This type of modeling may also benefit from having a longer explanation, with examples, in an attachment to the document. Further, because this is the method described first in the results, it should be mentioned first. Alternatively, the discussion of each method should be included with the needed results and explanation.

99: The 1,200 foot Lake Mead elevation represents the elevation where Lake Mead is essentially full and is also below the top of the raised spillway. This has been included in the FEIS. Figure 3.3-14 presents the percent of the traces that had elevations equal or higher than elevation 1,200. The 90th percentile line depicted on Figure 3.3-13 shows where the top decile of the modeled values lies. Both figures present specific statistics that are accurate and relevant.

100: The color pattern on Figure 3.3-14 has been changed as suggested.

101: The vertical scale is varied to focus the presentation of the results to the range of values observed under the respective modeled conditions.

102: Comment noted. The timing is clearly shown in Figures 3.3-14 through 3.3-16.

103: Table 3.3-8 provides a numeric summary of the data presented in Figure 3.3-14. Values in Table 3.3-8 all decrease between 2016 and 2050. Hydrologic fluctuations contribute to the minor variability of charted values near 2050 in Figure 3.3-14.

104: Additional explanation has been added to Section 3.3.and Section 3.4 with respect to the interpretation of the figures in these sections and the meaning of the analysis results.

105: Subsections 3.3.4.5.1 through 3.3.4.5.4 refer to individual tables and graphs. The paragraph discussed in the comment is a general description of the analysis in these subsections.

106: This paragraph has been divided into two, with the cumulative distribution function discussed first, in order to parallel subsequent text.

Page 3.3-34, 3.3.4.5.1

107 paragraph 2: Please provide a definition for "mean monthly flow" data in the Glossary. Is this the average flow per month, or the average total flow for month? It also might be useful in this section to expand on the statement that there are hourly, daily, weekly, monthly and seasonal changes in flows released, as well as attenuation in these changes downstream from the release points. It might also be useful to reiterate that the 400,000 af in change in point of diversion transfers are included in some alternative analyses and not in others. The justification for this should have already been made.

Pages 3.3-35 to 3.3- 36, Figures 3.3-18

108 At the scales used in these figures, it is difficult to assess any changes to flows that result from the different alternatives, except at a recognizable break point. Perhaps scales could be changed to allow the tracks to be seen more clearly.

Page 3.3-37, 3.3.4.5.1

109 paragraph 1: This paragraph is a prime example of where more information and analysis of the results of modeling should be provided to the reader. The numbers generated from the models should be provided. There is no defined connection that the high flows in the figures are flood flows, so the statements about the changes in flood flow releases does not appear to be supported. There should also be a discussion of where the magnitude of flood flows is shown, and how these do not decline even if there is a decrease in the flood probability.

110 Table 3.3-13 appears to be related to the second form of analysis, not the first since it contains more exceedence levels than mentioned were present in the text. This confuses the reader. There are other issues as well. This is where an understanding of what the "mean monthly flow" is essential. The other analysis looked at four months, none of which correspond to this. The highest flows shown here, the maximums, are significantly higher than anything shown in Figures 3.3-18a-d. There is no explanation of what the flows in the table mean, why minimum flows higher for the liberal alternatives than the baseline after 2015 when there are no surplus criteria, and why the maximum flows go up when flood releases have decreased due to lower lake elevations.

Page 3.3-38, 3.3.4.5.2

111 paragraph 1: Since the 4.4 Plan cannot be accomplished without the surplus criteria being in place, the argument in this paragraph is not supportable. Further, this question should have been addressed much earlier in the DEIS.

112 paragraph 3: The Flood Control Alternative should be modeled as are the Six States, California and Shortage Protection alternatives if is to be considered a valid alternative for the purpose and need of the action.

Pages 3.3-39 to 3.3-40, Figures 33.19a-d

113 We have the same comments on these figures, and the analysis in the text that we had for the preceding section on the Hoover to Parker reach.

107: A definition for the term "mean monthly flow" has been added to the glossary. In the FEIS, all alternatives included the tranfers.

108: There is relatively little difference in the magnitude (Y-axis) of the mean monthly flow values and excess flows under the baseline and surplus alternatives. Figure 3.3-18a through Figure 3.3-18d and the other similar figures depict this. There are some differences in the frequency (X-axis) of excess flows in the winter season as represented by January for modeled year 2015 as depicted by Figure 3.3-18a. However, the differences in the frequency (X-axis) of excess flows in the other seasons are minimal to none, as depicted by Figure 3.3-18b through Figure 3.3-18d. In the FEIS the size of the data markers have been reduced and the size of the graphs were increased.

109: Flows greater than 20,000 cfs are typically due to flood control relases, not downstream demands. This has been noted in Section 3.3.1.2 and 3.3.4.5.1.

110: The introductory text has been modified to include the additional percentiles (Section 3.3.4.5). The maximums may not occur during the four months shown in the figures. Hydrologic fluctuations contribute to the minor differences in the maximums.

111: Section 1.4.1 discusses the relation between the California Colorado River Water Use Plan and interim surplus criteria.

112: In the FEIS, the Flood Control Alternative includes implementation of the California Colorado River Water Use Plan. See response to Comment 37-11 for additional discussion.

113: See response to Comment No. 57-108.

114 Page 3.3-41, Table 3.3-6
This table should be 3.3-14, not 3.3-6. We have the same comments on this table, and the analysis, that we had for the preceding section in the Hoover to Parker reach.

114: The numbering of Table 3.3-6 in section 3.3.4.5.2 has been changed to Table 3.3-14. Also, see response to Comment 57-110.

115 Page 3.3-41, 3.3.4.5.3
paragraph 2: The Flood Control alternative should incorporate the 400,000 af in transfers from the 4.4 Plan. Also, the last sentence brings up the new issue of flows being within the range of historic flows in this portion of the river without examining the change in likelihood of the flow occurring, or an increase in the number of years that flow could occur. There is also the effects to groundwater from these changes in the flows, and this could have significant effects to riparian vegetation in the floodplains. These are effects that were part of the lake elevation analysis, and should also be addressed here. This is another example of the lack of analysis provided by this document to enable the reader to understand the effects to the river area..

115: In the FEIS, the Flood Control Alternative was modeled using California intrastate transfers. See response to Comment 37-11 for additional discussion. The difference in flows between historical conditions and surplus alternatives is minimal, and does not warrant the analysis proposed.

116 Pages 3.3-42 to 3.3-43, Figures 33.20a-d
We have the same comments on these figures, and the analysis in the text that we had for the preceding section on the Hoover to Parker reach.

116: Also, see response to Comment 57-108.

117 Page 3.3-44, Table 3.3-15
We have the same comments on this table, and the analysis, that we had for the preceding section in the Hoover to Parker reach.

117: Also, see response to Comment 57-110.

118 Page 3.3-44, 3.3.4.5.4
paragraph 2: From the figures, it would appear that the highest frequency for flood flows is under the Flood Control alternative, not the Shortage Protection.

118: Excess flows are expected to occur more frequently under the Flood Control Alternative than under the other alternatives. Subject paragraph has been modified to reflect this.

119 Pages 3.3-45 to 3.3-46, Figures 33.21a-d
We have the same comments on these figures, and the analysis in the text that we had for the preceding section on the Hoover to Parker reach.

119: Also, see response to Comment 57-108.

120 Page 3.3-47, 3.3.4.5.4
paragraph 1: While the frequency of flows to Mexico may be higher in the baseline condition until 2015, it is lower for liberal surplus alternatives during the same time period. This is because Mexico can only get a surplus when the extant flood control criteria kick in, a situation based on water levels being higher than the flood storage levels needed.

120: Section 3.16 contains a more detailed discussion of flows entering Mexico.

121 Table 3.3-16: We have the same comments on this table, and the analysis, that we had for the preceding section in the Hoover to Parker reach.

121: Also, see response to Comment 57-108.

122 Also, the explanation for the zero figures in many of the columns does not make sense. If you have 10 af/month, how can it round down to zero? This is why an explanation of what mean monthly flows are would have been helpful earlier.

122: Analyzed flows were actually zero. The minimum 10 af/month (approximately 0.168 cfs) amount was added to keep the model and post-processing from yielding an error message if the algorithm or equation involved dividing by the river amount (i.e., you cannot divide by zero). The note has been removed to avoid confusion.

3.4: Water Supply

123 General Comment: This section also lacks an interconnected interpretation of results of the analysis of effects. Different sections are not integrated to provide an understanding of how the various results work together to provide the analysis. Issues such as likelihood of shortages are discussed in the water use projection process before the results of the analysis are presented. This section needs rewriting for clarity and usefulness to the reader.

124a Page 3.4-1, 3.4.2

paragraph 1: All future depletions should be considered as cumulative effects and not a part of the baseline. How much of the presently unused water is not covered by a valid water service contract (Lower Basin only)?

124b

125 Page 3.4-4, Figure 3.4-1

We assume that Arizona's (and in similar graphs, California's and Nevada's) projected use of surplus water past 2015 represents their desires and not any probability of that water being available.

126 Page 3.4-5, 3.4.3.2

paragraph 1: The information on CAP allocations falling is not presented in Figure 3.4-1. Why does CAP decline after 2020?

127 paragraph 2: We suggest that the surplus depletions be given as the amount over the 2.8 maf allocation. Saying the surplus depletions are, for example, 2.96 maf instead of 160,000 af implies that the surplus amount is 2.96 maf. Why does the first level shortage condition rise over time? Is this a result of the increased probability of shortages?

128 paragraph 4: Since the non-Indian agricultural CAP users are not at present pumping groundwater (since they have CAP available), groundwater levels should be stabilizing or rising. Stating that any future use would increase the overdraft does not take into account this fact, or the other management activities taking place in groundwater management areas.

129 Page 3.4-7, 3.4.3.3

paragraph 1: Earlier in the DEIS, it said that surplus conditions were declared in 1998-2000. This paragraph implies there were surpluses in 1996-97. More importantly, California was able to get the 800,000 af of water it needed to keep MWD's aqueduct full under the current surplus water criteria. If this is the case, and over the next 15 years the amount California needs to make up decreases due to implementation of the 4.4 Plan, why are additional, more liberal criteria needed at all? This also brings up why an alternative that just provides the necessary amount of water each year to keep MWD whole is not included in the DEIS.

130 cont'd below paragraph 2: California growth, as stated clearly here, is going to increase. In order for it to do so, water must be made available to support the growth. Even maintaining the existing rate

123: The DEIS and FEIS identified specific resources that could potentially be impacted by the implementation of the proposed interim surplus criteria. Additional explanation has been added to Section 3.3.and Section 3.4 with respect to the interpretation of the figures in these sections and the meaning of the analysis results. Sections presented in the FEIS adequately describe these resources; associated analyses adequately address the potential impacts.

124a: Reclamation does not agree with this comment. The baseline alternative approximated the expected conditions without the project (interim surplus criteria). The potential impact that may result from the proposed interim surplus criteria can only be attributed to the difference in conditions between the baseline and the respective surplus alternative.

124b: The state of Arizona is the only Lower Basin state that has apportionment water that is currently not covered by a service contract. However, the exact amount is currently under dispute.

125: Figures 3.4-1 through 3.4-4 depict the respective state/basin's projected Colorado River water demand schedules under normal, surplus and shortage conditions.

126: Additional language has been added to the seventh paragraph of Section 3.4.3.2.

127: The discussion centers on the full surplus schedule, not the amount over the normal schedule. The 1st level shortage schedule for Arizona has nothing to do with the probability of shortages. It is derived by subtracting the amount CAP would be shorted under a level 1 shortage form 2.8 maf.

128: Comment noted; the paragraph has been restated.

129: Comment noted; the paragraph has been restated. Surplus criteria were developed to cover a wider range of hydrologic conditions than those between 1996 and 2000. Also, surplus conditions will benefit all Lower Basin States, not just the Metropolitan Water District.

130: Please see Section 1.1.3 for a description of the purpose and need for this action.

130 cont'd of growth will take more and more water. Additional supplies from the Colorado River are not available except under surplus conditions, and beyond 2020, the likelihood for surplus decreases. There are issues of indirect effects and cumulative effects inherent in the statements in this paragraph that need to be addressed.

131 paragraph 3: As we have noted previously, the certainty of the determinations of a surplus being made are not changing because they are still based on inflows and outflows. What is changing is the probability one will be called because of the more liberal criteria.

132 paragraph 5: MWD can take 1.3 maf per year through the Colorado River aqueduct, and they want to maintain that amount at capacity into the future. They have an allocation of approximately 440,000 af and the 4.4 Plan water transfers will give them about 400,000 af to use. This still leaves about 460,000 af to find to keep the aqueduct full. Where do they plan to get that water from? Future surpluses beyond 2015? Additional transfers?

Page 3.4-8, Figure 3.4-2

133 In this Figure, California's surplus demand projection is above 5.2 maf until about 2005. Why does it decline over this period when the normal demand projection is also declining and one would expect that additional surplus would be needed to make up total demand. Since the 4.4 Plan will not be implemented by then, is it appropriate to show demand reduced 100% to the allocation level so early?

Page 3.4-9, 3.4.3.3

134 paragraph 2: Would the Coachella Groundwater Storage Program also use surplus water? If there would need to be "unused apportionment" created to provide for the future use of this water, this needs to be addressed in this document. This is another example of the difficulty in seeing the entire effect of the surplus criteria without the companion 4.4 Plan being included.

135 paragraph 5: When was the compliance for this demonstration program completed?

Page 3.4-10, 3.4.3.4

136 paragraph 4: Please separate the 212,000 af of surplus water from the 300,000 af of Nevada's allocation.

Page 3.4-11, 3.4.3.4

137 paragraph 1: Mention any groundwater storage initiatives in Arizona or Nevada that could be used to store surplus water for future uses.

Page 3.4-11, 3.4.3.5

138 The issue of where Upper Basin future depletions should be analyzed has not yet been resolved.

131: Please see Section 1.1.3 for description of the "Purpose and Need for Action."

132: Please see response to Comment 11-11 for information on California's Colorado River Water Use Plan.

133: The full surplus depletion schedule plotted in Figure 3.4-2 of the DEIS for California was incorrectly plotted. The actual California depletion schedule that was used in the water supply analysis is presented in Table G-4 in Attachment G of the DEIS. The Lower Basin states prepared and submitted revised depletion schedules for the FEIS. This revised schedules are presented in Attachment H of the FEIS.

134: Please see response to Comment 11-11 for information on California's Colorado River Water Use Plan.

135: The referenced project was a project undertaken by the CAP, SNWA and MWD. NEPA documentation was accomplished for the demonstration project (indirect recharge) by a CEC (LC-93-9) dated April 9, 1993, and amended by CEC (LC-95-10) dated March 30, 1995.

136: The full surplus schedule specifies the total amount of water to be delivered under full surplus water supply conditions. The delivery of limited surplus amounts are also possible. The amount above the normal depletion amount under limited or surplus water conditions is variable.

137: The State of Nevada has not provided specific details on initiatives or programs for groundwater banking in Arizona. Based on information available to Reclamation, the concept of Nevada-Arizona interstate banking appears to be highly feasible, although currently at a conceptual stage.

138: Please see response to Comment 57-10 for a discussion of Upper Basin depletions.

20

Page 3.4-13, 3.4.4

139 A general comment on this subsection is to make sure all line patterns are consistent throughout the figures, and many of the graphs are at a scale that makes reviewing differences between alternatives difficult.

140 paragraphs 3-4: The two methods of presenting the data appear to be similar to those used in the river reaches sections earlier in the DEIS. Is this correct? If so, comments referencing those methods will also hold true for this section. Further, there appears to be little integration of the results of the two methods in this section. The results are presented without suitable interpretation.

Page 3.4-14, 3.4.4.1.1

141 In Figure 3.4-5, Is 90th percentile line derived from the surplus depletion line in Figure 3.4-1? How can the 90th percentile line remain so high, and indeed, raise over time, if the amount of surplus available in the future declines due to Upper Basin depletions? Why does the median line show such a precipitous drop near 2045 when the graphs for Lake Mead do not reflect this type of decreased water availability. Is this a result of the steadily decreasing Mead levels finally triggering a change in the median? Is that why the 10th percentile line drops earlier? Why does the median and 10th percentile line match up after 2044?

Page 3.4-15

142 paragraph 1: As asked previously, why does the 90th percentile line increase and not decrease over time.

143 paragraph 2: Why does the 50th percentile line drop so precipitously after 2044?

Page 3.4-17, 3.4.4.1.1

144 Please provide more detail on the differences in effects between baseline and surplus alternatives in this section. The fact that decreases in probability occur earlier is as important as the level attained and this is not fully acknowledged here. This section should also allow for integration of the results of other modeling as appropriate with the findings here. That the percentile lines "coincide" with the proposed depletion lines should also be addressed here if it has not been earlier.

145 paragraph 5: In Table 3.4-1, the columns for Normal and Shortage years are clearly additive percentages. The Surplus percentages are a subset of the Normal year, correct? If so, is the Surplus percentage provided a percentage of the Normal years, or is it the percentage of Normal years in which a surplus is expected. For example, under baseline conditions in 2016 to 2050, Normal conditions occur in 70% of the 35 years and shortage in 30%. Is the surplus 26% of the 35 years (which would mean that normal years occurred in 44% of the 35 years), or is it 26% of 70%?

139: The scales and units used on each figure are clearly marked and readable. The vertical scale on various figures are varied to focus on the range of the data being presented. The line patterns on all figures have been reviewed and made consistent for the FEIS.

140: Additional explanation has been added to Section 3.3.and Section 3.4 with respect to the interpretation of the figures in these sections and the meaning of the analysis results.

141: This analysis first ranks the outcome for the 85 traces for each condition modeled. The 90th percentile line depicts the value of the upper limit of the bottom 90 percent of the modeled values (traces) in any given year. Another way to say this, is the values of 10 percent of the outcome (traces) in a given year will be equal to or greater than the value depicted by the 90th percentile line for that year. The median values are represented by the 50th percentile line. The median value represents the depletion amount where half of the values are above and half are below. On Figure 3.4-5 of the DEIS, the 50th and 10th percentile lines sometimes overlie each other. When this ocurs, the implication is that there is very little or no difference between the values in the bottom half of the ranked values (modeled outcome). This all relates to the distribution of the values in the outcome for each condition being modeled.

142: See response to Comment 57-141.

143: See response to Comment 57-141.

144: Additional explanation has been added to Section 3.3.and Section 3.4 with respect to the interpretation of the figures in these sections and the meaning of the analysis results.

145: The percentage values presented under the column heading labeled "Normal" in Table 3.4-1 and similar tables in Section 3.4, represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled "Surplus" represent the total percentage of time that depletions under the noted conditions would be above the normal depletion schedule amount. The values presented under the column labeled "Shortage" represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

146 Page 3.4-18, Figure 3.4-8
There should be some discussion of what this figure shows in the text. The scale of these is also such that they are hard to read. It is obviously related to Figure 3.4-5 and this should be acknowledged.

147 Page 3.4-19, 3.4.4.2
The assumption that under baseline condition California would have to live within its 4.4 maf allocation by 2004 (when Arizona and Nevada using their full apportionments) should also be part of the explanation under California depletion graphs earlier in this section.

148 Page 3.4-19, 3.4.4.2.1
Figure 3.4-9 has several issues of concern. First, the 90th percentile line is higher than the surplus depletion line that California says it wants into the future. If California is not diverting at that level, then how can 10% of the depletions be above it? Between 2000-04, California wants more water than the 90th percentile, so would this be when some of the 10% would occur?

149 Page 3.4-22, Figure 3.4-12
It is very interesting in that it clearly shows the benefits of having surplus to extend the amount of time California can continue to use above its 4.4 maf allocation.

150 Page 3.4-23, Table 3.4-2
Why are the percentage chances for surplus so much different between the three states?

151 Page 3.4-24, 3.4.4.3.1
Figure 3.4-13 has the same basic questions under Nevada as it does for Arizona and California.

152 Page 3.4-25, 3.4.4.3.1
paragraph 3: Why does the surplus probability vary so much between the States? Is it based on the depletion schedules?

153 Page 3.4-27
paragraph 2: Where in the document was Nevada's use of unallocated Arizona water in the first three years discussed?

154 Page 3.4-29, Table 3.4-3
Why is the surplus probability 91% under Nevada but not as high for California and Arizona?

155 Page 3.4-29, 3.4.4.5
paragraph 1: Why was the basis for modeling Mexico's flows at 1.515 maf not addressed earlier in the DEIS under the modeling assumptions?

146: Paragraphs 1 through 4 in Section 3.4.4.1.2 include the subject discussion.

147: Figures 3.4-9 through 3.4-12 present the outcome of the modeling results in terms of the frequency and magnitude of surplus condition water supplies available to California under the baseline and surplus alternatives. California has developed a Colorado River Water Use Plan (the "Plan"). The Plan is a framework by which programs, projects, actions, policies and other activities would be coordinated and cooperatively implemented allowing California to meet its Colorado River water needs within its basic apportionment in Normal years. See response to Comment 11-11 for additional information on California's Colorado River Water Use Plan.

148: See response to Comment 57-133.

149: Comment noted.

150: We assume that you are referring to differences between Tables 3.4-1, 3.4-2, and 3.4-3. There are a number of reasons for the differences. First, there were inconsistencies in surplus depletion schedules between alternatives in the DEIS. This has been corrected in the FEIS. Second, Arizona has not reached full use of its apportionment, and it was assumed that California would thus be able to use additional water. Third, there were typographical errors. These three tables have been modified in the FEIS.

151: Section 3.4.4.3.1 describes Figure 3.4-13. Also, please see the response to Comment No. 57-141.

152: See response to Comment 57-150.

153: Nevada currently uses all of the Colorado River water apportioned for use within the State of Nevada. Arizona's depletion schedule in the DEIS indicates that Arizona does not anticipate using its entire Colorado River water apportionment until 2005. During this period, the difference between Arizona's normal apportionment and the scheduled depletion is classified as unused apportionment water. This unused apportionment water is made available to the other Lower Division states if a demand for such water exists. Text discussing this use has been added to Section 3.4.3.2. In Attachment H of the FEIS under the discussion entitled "Normal depletion schedules with and without Calfiornia transfers" this text has been added explaining Arizona's unused apportionment.

154: The percentage values for Nevada under baseline conditions and the Flood Control Alternative in DEIS Table 3.4-3, Years 2001 to 2015, are incorrect. The correct values should have been 50 percent under baseline conditions and 52 percent under the Flood Control Alternative. This information will be updated for the FEIS using the new modeling output for the baseline and surplus alternatives.

155: This additional modeling detail has been added to the modeling assumptions listed under ^Assumptions Common to Baseline and All Alternatives^ in Section 3.3.3.3.

22

156 Page 3.4-30, Figure 3.4-17
Why does the 50th percentile line drop so quickly under the baseline condition, when the levels of Lake Mead remain high?

157 Page 3.4-32, 3.4.4.5.2
This section needs to explain more fully the change in probability for Mexico to obtain a surplus, and why the shortage line does not get lower. Shortage conditions for Arizona and Nevada are shown in the respective graphs for those states.

158 Page 3.4-34, Table 3.4-4
As in the other tables of this type, please provide more information in the text about the meaning of the changes in percentages. Are these surplus percentages percent of years or of the normal percentage? What does this change really mean to flows below Morelos Dam?

Water Quality

159 Page 3.5-1, 3.5.2.1
paragraph 1: The reason for the 2015 date should be noted here. It may be confused with the expiration date of the surplus criteria.

160 Page 3.5-6, 3.5.2.2.2
paragraph 6: It might be worth noting that there are no return flows to the Colorado River from the major depletions of water to MWD, CAP, IID and CVWD.

161 Page 3.5-7, 3.5.2.2.3
paragraph 4: Costs of implementing additional salinity controls due to any increases that result from the surplus criteria or the water transfers.

162 Page 3.5-8, 3.5.1.2
paragraph 1: The explanation in this paragraph is unclear. The 2nd sentence should end with "than under the baseline." The remaining explanation is difficult because the source of the numbers is not given, nor is the rationale fully developed.

163 Page 3.5-9, Table 3.5-1
Please explain why the Shortage Protection has a -3 under Imperial Dam when the other two liberal alternatives have +4 and +1 respectively? Why do these three figures differ?

164 Page 3.5-11, 3.5.2.3.6
paragraph 1: What about over the 2016-2050 time period?

165 paragraph 3: Are there any studies for these areas as were referenced in paragraph 2?

156: The probability of surplus water deliveries to the Lower Basin states and Mexico is highest in the early years due to the starting high reservoir conditions that were modeled. To a lesser extent, this is also affected by the increasing total basin depletions. It should be noted in the DEIS from Figure 3.3-13 that Lake Mead elevations decrease over time in all alternatives. Figure 3.4-30 is in reference to Mexico's modeled annual depletions under baseline conditions and shows Mexico's annual treaty depletion over time.

157: The effect of interim surplus criteria on the delivery of surplus flows to Mexico is best depicted by Figure 3.4-18 (for years 2001 to 2015) and Figure 3.4-19 (for years 2016 to 2050) in the DEIS. This information is also summarized in Table 3.4-4. The Colorado River water supply deliveries to Mexico never dropped below 1.5 maf under the modeled conditions and as such, the respective figures depict this.

158: See response to Comment 57-145. The FEIS results show a potential for a small reduction (3 to 6 percent) in the frequency of excess flows under the Basin States, Six States, California and Shortage Protection alternatives and a potential for a small increase (1 percent) in the frequency of flows under the Flood Control Alternative, when compared to the baseline conditions for year 2016.

159: The text has been revised in the FEIS to provide clarification.

160: Comment noted. However, Reclamation does not believe that this information would aid in understanding the flow system of the river at this point in the discussion.

161: Reclamation has considered this request; however, because modeling conducted for the FEIS indicated a general reduction in salinity under each of the alternatives it was determined that this information was not necessary. The effects of transfers associated with Secretarial Implementation Agreements will be considered under separate NEPA compliance.

162: The referenced paragraph has been revised for clarification.

163: Note that the information in Table 3.5-1 has been updated with modeling conducted for the FEIS.

164: Because of the uncertainty of the long-range salinity control projects, projections of future control projects that may be necessary to offset the effects of future water development beyond 2015 have not been made by the Forum. Note that modeling for the EIS considers only those salinity control programs currently in place.

165: Reclamation is not aware of any studies of damages in localized areas such as Laughlin.

166 Page 3.5-16, 3.5.3.2.1
paragraph 1: What is the significance of elevation 1205?

167 Page 3.5-18, Table 3.5-5
This table should be placed closer to the beginning of this section for ease of understanding the dynamics of the reservoir.

168 Page 3.5-22, 3.5.3.3.1.2
New riparian development at the mouths of tributaries will use more water than at present, thus potentially reducing inflows even further. Water quality under this scenario may not improve as stated in the text.

169 Page 3.5-22, 3.5.3.3.2
This section is extremely important to the later discussions of effects to important resources and should be more fully explained and used in those discussions.

Riverflow Issues

170 This section needs to address more fully the effects to water surface and groundwater elevations below Hoover, Davis and Parker Dams that result from the interim surplus criteria combined with the water transfers from the 4.4 Plan. This lack of discussion does not allow for a full evaluation of the effects.

171 Page 3.6-4, Table 3.6-1
At least for the 2000-2015 period, it might be instructive to break the time period into 5 year increments to examine when the changes to probabilities do occur. If the largest drop is within a certain segment, then there may be greater potential for adverse effects to the beach building and maintenance program than may appear from the table data.

172 Page 3.6-6, Table 3.6-2
Please explain more fully the results posted in this table. What causes the decreased probability for the liberal alternatives? Is this the result of less equalization flow needs? Why is this table based on water year, not end of year data and does that have an effect on the results?

173 Page 3.6-6, 3.6.4.1
Flooding in the river below Hoover Dam include more than only high damaging flows. Any amount of flow over the minimum needed to meet downstream needs has an effect on the physical and biological character of the river ecosystem. Some of these effects are beneficial, some are not, but the changes to all flows that result from this project deserve equal consideration. This section needs to be revised to reflect that.

174 paragraph 2: This is the first mention of the Colorado River Floodway Protection Act and its requirements for maintaining certain floodway levels. This should be more fully explored in light of the reduction in flows foreseen under the proposed project.

166: Elevation 1,205 feet msl is the Hoover Dam spillway crest as identified in Table 3.5-3.

167: Comment noted. The table is located in the appropriate section.

168: Discussion in referenced paragraph has been revised to incorporate this information.

169: Note that additional information has been included in Section 3.5.3 and Reclamation believes that the information presented in the FEIS appropriately identifies the potential water quality effects of interim surplus criteria. Potential effects to important resources are also presented appropriately in other sections of the FEIS.

170: Section 3.6.4 presents analysis of the potential for high flows (based on defined flow thresholds) below Hoover Dam with reference to the potential for causing flood damage, and is not intended to describe the general effects of river flows on resources within the river corridor. As discussed previously, Section 3.8 of the FEIS has incorporated summary information from the BA for interim surplus criteria regarding potential effects from changes in flows on special-status species and their habitat between Hoover Dam and the SIB. Reclamation is also consulting with your agency on the effects of approving the water transfers proposed by California's Plan.

171: A plot of annual BHBF probabilities has been added to Section 3.6.2.

172: The decreased probability of 8.23 maf release years for the "liberal" alternatives is a result of their increased probability of surplus, which results in releases from Glen Canyon Dam in excess of 8.23 maf. Table 3.6.2 is based on water year because the commitment for low steady summer flow releases is governed by annual release volumes from Glen Canyon Dam, which are accounted for by water year under the provisions of the LROC. This has been noted in Section 3.6.2.

173: See response to Comment 57-170.

174: The Colorado River Floodway Protection Act addresses flooding from 40,000 cfs flow events or 1-in-100 year flow events (if greater than 40,000 cfs). It does not address smaller or more frequent events. Table 3.6-4 in the FEIS, Discharge Probabilities from Hoover, Davis and Parker Dam, shows the probabilities of various flow events, including 40,000 cfs, under each alternative.

175 Page 3.6-7, 3.6.4.1.4
High groundwater in the Yuma area is the result of what level of flows? Please relate how this groundwater problem relates to normal and higher than normal flows. A discussion of how this will change over time would be appropriate.

176 Page 3.6-8, 3.6.4.2
In Table 3.6-3, is the figure for the Six States under Hoover Dam releases of 19,000 correct? It is lower than all the others in that line, which is different than for the other release levels.

177 This table, and the accompanying text, would be more valuable if it looked at flows that were below the damaging levels of the Hoover releases. It also would be more helpful if the data here were integrated with the probabilities of Mexico getting any surplus water in those years.

Aquatic Resources

178 Page 3.7-1, 3.7-1
This section is somewhat confusing. Is it to deal strictly with non-native/sport fish concerns or is it to also address native fish? Tighter organization and focus would help this section, as would reference to some of the studies on fluctuating reservoirs that have been done that discuss effects to fish and fish habitat.

179 Page 3.7-1, 3.7.2.2.1
Please place the discussion about the structure of Lake Powell in the previous section where similar attributes of Lake Mead were discussed.

180 Page 3.7-4, 3.7.2.2.2
There are no bonytail in Lake Mead. The discussion in paragraph 2 is not relevant to Lake Mead and should be deleted. Please bring this section into the same format as the one for Lake Powell.

181 Page 3.7-4, 3.7.2.2.3
The effects of fluctuating reservoir levels on fish populations has been widely researched. Centrarchids are affected by it, especially declines during the spawning season. Any effect to striped bass reproduction may be felt by the changes in relation of spawning areas to the length of time eggs need to float to appropriate areas. The arguments in this paragraph need supporting data to be provided.

182 cont'd below Page 3.7-5, 3.7.2.3
The analysis of effects to fish populations in the reservoirs needs to focus on the changes to physical habitats from the increase in fluctuations, the timing of fluctuations, underwater topography to assess shallow habitats at varying elevations and other factors. The effects to such things as thermal refuges for threadfin shad is also critical to the sport fishery. It is also

175: Threshold flows are shown in the two bullets included in Section 3.6.4.1.4. Section 3.3.4.5 and Attachment N of the DEIS provide additional comparison of river flows below Hoover Dam.

176: Values in Table 3.6.-4 (Table 3.6-3 in the DEIS) have been revised based on modeling performed for the FEIS.

177: Comment noted. This section is intended to address the potential for damaging flows, as discussed in the response to Comment 57-170. Developing a correlation between probabilities of damaging flows and surplus water delivery to Mexico is beyond the needs for evaluating potential effects on resources.

178: Section 3.7 addresses potential effects of interim surplus criteria on lake habitat in Lake Powell and Lake Mead for both native and non-native species, and also addresses potential effects on sport fisheries within and between the two reservoirs. Section 3.8.2.3.3 discusses potential effects on special-status fish species.

179: Discussion of Lake Powell habitat is located appropriately within the document.

180: Revisions have been made to Section 3.7.2.2.2 of the FEIS to discuss that razorback sucker is the only native species with a remnant population in Lake Mead.

181: Section 3.7.2.2.3 discusses the effects of fluctuating reservoir elevations on fish populations, and additional information has been included in the FEIS. It should be noted that although it is recognized that fluctuating water levels can affect fisheries, the alternatives under consideration are expected to result in fluctuations similar to baseline conditions. Historical conditions within Lake Powell and Lake Mead have resulted in those lakes being considered extremely popular striped bass fisheries that also support populations of largemouth bass, smallmouth bass, crappie, catfish, and carp. Both lakes have shown unprecedented natural reproduction and survival of striped bass.

182: The analysis in the EIS is presented to compare the potential effects under the alternatives with those under baseline conditions. Revisions have been made to Section 3.7.3.3.1 to clarify the discussion. It should be noted that modeling indicates that although some alternatives would have increased probabilities for lower reservoir elevations, fluctuations under the alternatives and baseline conditions would be similar. It is acknowledged that management practices being developed for native species indicate a recruitment window may exist if water levels are very low and then rise suddenly. Study of these management strategies is currently underway and will continue. Information on current management strategies can be found in the BA prepared for interim surplus criteria and Secretarial implementation agreements.

182 cont'd important to note that native fishes in new reservoirs may experience a recruitment window if water levels are very low and then raise suddenly. The discussion of these issues in the DEIS is not adequate to support your conclusions.

183 Page 3.7-7, 3.7.3.2.2
This is the first example of where the lower Colorado River (below Hoover, Davis and Parker Dams) is not included in the analysis. Please correct this oversight.

184 Page 3.7-7, 3.7.3.3.1
paragraph 2: The water level fluctuations have not been described as "gradual" in the DEIS. No discussion on the speed of fluctuations has been made. Changes of 15-20 feet per month may not be "gradual" in a biological sense. The statements made here require additional supporting information, including a discussion under the effects to lake elevation and river flow earlier in Chapter 3, of changes to the speed of elevational changes due to the surplus criteria.

185 Page 3.7-8, 3.7.3.3.1
Please explain why selenium levels would not be affected. If Endrin or other toxic materials are entering the system via Las Vegas Wash, would not reduced levels of flow in Las Vegas Bay have an effect on its concentrations and dispersal?

186 Page 3.7-8, 3.7.3.3.2
There is no discussion of the river below Hoover, Davis or Parker Dams. Please correct this oversight.

Special Status Species

187 Page 3.8-1, 3.8-1
Why does this section not address species in the riverine sections below Hoover, Davis and Parker Dams? Please correct this oversight throughout this section.

188 Page 3.8.5, 3.8.2.2.1.2
paragraph 2: Under declining water levels, beaches currently used may no longer be available, and new beaches in areas not presently desirable may be subject to heavy usage. The assumption made in this paragraph is not supported. Further declining water levels may change the depth to water or other factors supporting the milkvetch, contributing to the reduction or elimination of a population. Because the changes to elevation will be occurring over a year or set of years, there may not be sufficient time for the plant to regenerate a population at the new water line, or if it does, it may be more likely to be flooded out by any sudden increase from a wet year. The dynamics of this species, and the relation to reservoir levels are not fully analyzed in this section. This discussion holds true for the Grand Canyon evening primrose, Las Vegas bear poppy and sticky buckwheat as well as the Geyer's milkvetch.

183: The FEIS includes expanded and new discussions in appropriate sections of impacts to resources below Hoover Dam.

184: The 15 to 20-foot elevation changes described in the text occur over a year, not month-to-month. The rate of fluctuations would remain approximately the same with adoption of interim surplus criteria. Section 3.7.3.3.1 has been modified.

185: Studies are ongoing to determine effects of toxins on fish, with the premise that increased concentrations show increased effects, and to determine what limits need to be enforced. Section 3.5.3 discusses potential water quality effects associated with Las Vegas Wash and Lake Mead.

186: The FEIS considers the potential effects of increases in the temperature of water released from Hoover Dam under decreased reservoir elevations on the sport fishery within the river between Hoover Dam and Lake Mohave in Section 3.7.3. Reclamation has determined that fluctuations in flows below Hoover Dam to the SIB under the alternatives would be within the historical operating range of the river and would, therefore, not affect aquatic resources within this segment.

187: Section 3.8 of the FEIS addresses species below Hoover Dam, downstream to the SIB with Mexico.

188: This section is meant only to provide existing information. The analysis on how the changes in reservoir levels might impact these plant species is included in the Environmental Consequences section.

189 Page 3.8-6, 3.8.2.2.2
There is no discussion of the river below Hoover, Davis or Parker Dams. Please correct this oversight.

189: See response for Comment 57-187.

190 paragraph 2: This paragraph, which references Table 3.8-2, is confusing. There are 19 species listed in the table; two of which are eliminated from the discussion because of a lack of records (which is incorrect if the lower river is appropriately added to the discussion), two others are eliminated for lack of effects, and five are in the Grand Canyon only and are covered under other consultations. This leaves 10 species. Please revise the paragraph to be more clear.

190: Paragraph has been modified in the FEIS for clarification.

191 Page 3.8-7, Table 3.8-2
Please reorganize this table by species groups, starting with invertebrates, then reptiles and amphibians, birds and mammals.

191: The table, and subsequent discussion of the species, has been reorganized as you suggested.

192 Page 3.8-8, 3.8.2.2.2.1
There is a considerable amount of general information on lakeside habitats on pages 3.8-8 through 3.8-10 that perhaps would be more appropriate under its own heading at the beginning of this section. Also, this section does not contain any information on the riverside habitats along the lower river and how they would be affected.

192: The discussion on lakeside habitat and riverside habitat in the lower canyon will be presented in separate sections in the FEIS in order to clarify these two distinct areas. No additional information will be added to the existing discussion on habitat in the lower canyon and potential changes in riverside and marsh habitat as it is adequately addressed.

193 Page 3.8-10, 3.8.2.2.2.1
paragraph 3: Clear and complete information on the formation and destruction of this important southwestern willow flycatcher habitat is essential to the analysis of the effects of this action. This section needs to provide more specifics on the elevations at which the habitat forms, the elevations at which it is dried out or inundated and the extent of this habitat at various new lake elevations. Why were models not run that focused on these lake elevations that created or destroyed flycatcher habitat?

193: The lakeside habitat has been organized under its own headings. Riverside habitat along the lower river has been added with reference to detailed discussions from the biological assessment (BA) prepared by Reclamation for the interim surplus criteria.

194 Page 3.8-11, 3.8.2.2.2.1
paragraph 1: The discussion of the formation of riparian habitats within the lower Grand Canyon requires the same level of background as the preceding discussion of the Lake Mead delta. Why do water elevations that benefit the delta not benefit the lower Canyon?

194: Additional information on water levels and development of riparian and marsh habitats in the Lake Mead Delta and Lower Grand Canyon has been added to the discussion of the FEIS. This information summarizes findings from the following Reclamation report: Willow Flycatcher Disturbances, Threats and Protective Management Along the Lower Virgin and Colorado Rivers - 1997 (Reclamation, 1998).

195 paragraph 3: Marshes and backwaters along the river below Hoover, Davis and Parker Dams will also be affected by the proposed action and should be discussed here and in subsequent paragraphs.

195: Additional information on marshes and backwaters along the Colorado River from below Hoover Dam to the SIB has been added. The discussion references findings from Reclamation's BA that examines potential effects of the implementation of the interim surplus criteria on these habitats.

196 Page 3.8-12, 3.8.2.2.1
paragraph 1: The last sentence does not appear to belong here.

196: The sentence has been reworded in the FEIS.

197 Page 3.8-13, 3.8.2.2.2.1.2
Please address the presence of these species in the lower river reaches below the dams.

197: See response to Comment 57-187.

198 Page 3.8-16, 3.8.2.2.2.1.2
paragraph 6: Is there a connection between lake elevation and breeding season for the flycatcher? The connection is for habitat formation, unless there is also a component at elevation 1192 and below to allow for saturated soils. Please clarify.

198: Additional information on lake elevation and breeding season for the Southwestern willow flycatcher has been added to the FEIS. This information was summarized from information included in the BA discussed in previous responses.

199 Page 3.8-17, 3.8.2.2.2.1.2
paragraph 2: The citation for Fitzpatrick 2000 is not in the literature cited. We are also unclear about sightings of Yuma clapper rails at the Lake Mead Delta. The reference we have is from McKernan for the Virgin River. Please clarify this point.

199: According to information included in McKernan, 1999, individual Yuma clapper rails have been documented at the Virgin and Muddy Rivers including the Virgin River floodplain between Littlefield, AZ and the Virgin River Delta, NV, and at sites within the lower Grand Canyon. No additional information on possible sightings of Yuma clapper rail in the Lake Mead Delta is available.

200 Page 3.8-18, 3.8.2.2.3
paragraph 1: Bonytail chub also eat small fish. The citation for NPS 1998 is not correctly attributed to National Park Service. Also, there are more adequate summaries of species accounts than are contained in this citation and we suggest they be used instead.

200: Revisions have been made to the discussion of bonytail in the FEIS.

201 Page 3.8-19, 3.8.2.2.3
paragraph 1: The efforts on Lake Havasu are better referred to as an augmentation or repatriation.

201: Section 3.8.2.2.3 has been revised to use the term "repatriate" instead of "reintroduce."

202 paragraph 2: This section on critical habitat is incorrect. Critical habitat for the bonytail in the project area is from Hoover Dam to Davis Dam including Lake Mohave to its full pool elevation and Lake Havasu from Parker Dam to the northern border of the Havasu National Wildlife Refuge including Lake Havasu to its full pool elevation.

202: The locations of designation of critical habitat for all four fish species references the Federal Register notice (March 21, 1994), and occurrence of critical habitat in the analysis area is noted for each species.

203 paragraph 3: Colorado pikeminnow were taken from Lake Mohave in the 1970's.

203: This information has been noted in the FEIS.

204 paragraph 5: Please include only those critical habitat areas that are within the project area.

204: See response to Comment 57-202 above.

205 Page 3.8-21, 3.8.2.2.3
paragraph 5: The critical habitat for the humpback chub in the project area is incorrect. The designation includes the Colorado River from Nautiloid Canyon to Granite Park in the Grand Canyon and the lower 8 miles of the Little Colorado River including the confluence with the Colorado.

205: See response to Comment 57-202 above. This information has been added to the FEIS.

206 paragraph 7: Please refer to razorback sucker populations in the lower Colorado River as well as those in the San Juan in this paragraph. Also mention the populations in Lake Havasu and in the Parker to Imperial reach.

206: This section has been modified to discuss that razorback sucker can be found in the lower Colorado River and Lake Havasu. Populations of razorback sucker within the San Juan River are outside of the area under consideration in the EIS.

207 Page 3.8-23, 3.8.2.3.1.1
Much of the information here is included in the preceding section and perhaps could be combined there.

207: Comment noted. However, Reclamation believes that the information is presented appropriately.

28

208 Page 3.8-24, 3.8.2.3.1.2 through 3.8.2.3.1.5
These sections should be more detailed as to how these species would be affected by the alternatives, especially the differences between them.

209 Page 3.8-24, 3.8.2.3.2
The second part of this paragraph (beginning with "Additional special..." repeats information given previously that does not need to be repeated.

210 Page 3.8-25, 3.8.2.3.2.1
paragraph 2: Riparian and marsh habitats may also be eliminated by rising levels, or those levels that go too low and dry out the site. This section on baseline needs to focus more on the opportunity for habitats to exist at the expected fluctuations, than to deal in broad generalities. The differences between it and the alternatives cannot be evaluated without being more specific. This section also does not discuss the effects to the lower river. On a species level, California black rails are not tolerant of water level fluctuations and any increase in fluctuations would reduce the suitability of habitat for this species.

211 Page 3.8-25 and 26, 3.8.2.3.2.2 to 3.8.2.3.2.5
These sections should be more detailed as to how these species would be affected by the alternatives, especially the differences between them. The analysis is incomplete without this step The issue of longer periods of lower water elevations is very important to the habitat that support these species. The discussion for the southwestern willow flycatcher would especially benefit by including more details.

212 Page 3.8-27, 3.8.2.3.3
Please include a baseline section here as for the other special status species groups. It should also be noted here that the increase in fluctuations, and lower water levels, may in fact present an opportunity to examine the potential for native fish recruitment. Filling reservoirs may provide lower predator loads initially. Further, there is spawning and some natural recruitment at Lake Mead, and the effects to razorback sucker of changing the present operation should be part of this analysis.

213 Page 3.8-27, 3.8.2.3.3.1
Reintroduction of the bonytail to the Parker to Imperial Dam reach may be affected by the changes to that reach caused by the proposed action. Additionally, the bonytail in Lake Havasu may move upriver into the river reach below Davis Dam, that will also be affected by the changes in flow.

214 Page 3.8-28, 3.8.2.3.3.3
For flannelmouth suckers the presence of the population below Davis Dam should be mentioned in the analysis. They will be affected by the change in flows. Since there will not be much by way of higher lake elevations under the alternatives, the last sentence is unclear as to intent.

208: It should be noted that the analysis considers how species would be affected by changing system conditions that could occur under baseline conditions and each of the alternatives. With regard to potential effects on special-status species, the differences between the alternatives is primarily associated with changes in probabilities for certain conditions to occur. A more complete and detailed analysis would involve extensive study of each of these species and their population dynamics.

209: Comment noted. However, Reclamation believes that the information is presented appropriately.

210: Modeling of future conditions under baseline conditions and the alternatives indicates increased potential for declining water levels at Lake Mead. Although the rate of changed potential for surface elevation reductions varies among the alternatives compared to baseline conditions, significant differences in seasonal fluctuations are not expected (or indicated through system modeling). No research directly addressing various lake levels and resulting development of riparian and marsh habitat is available. Only general historical information is available and is associated with post-drought years followed by high water years. As a result, a general approach that includes potential effects on vegetation based on the predicted declines in water levels is presented.

211: Comment noted. Reclamation believes that the analysis presented adequately identifies the potential effects of the alternatives compared to baseline conditions.

212: The discussions for effects to fish species has been reformatted similar to that for the plant and wildlife species. Effects of the alternatives to razorback sucker in Lake Mead are analyzed.

213: Flows below Hoover Dam would be within historical ranges under baseline conditions and each of the alternatives, and no impacts to special-status species fish within this segment would occur as a result of interim surplus criteria.

214: Comment noted. See response to Comment 57-213. The last sentence has been clarified.

29

215 Page 3.8-28, 3.8.2.3.3.5
Effects to razorback sucker in Lake Mead and the lower Colorado River are not addressed in this section. There are some significant potential adverse effects to this species from the proposed action and its associated actions and they need to be discussed in the DEIS. This includes the effects to Lake Mead spawning habitats and success, backwater and main channel habitat losses in the lower river, and the effects of reductions in flood flows on habitats and other competing species. Why were models for Lake Mead elevations not run using spawning habitat elevations? Selection of any elevation appears possible and is done for recreation levels.

Recreation

216 This section also does not address the effects to recreation in the lower Colorado River reaches below Hoover, Davis and Parker Dams.

217 While the data presented in this section is not immediately comparable for use with special status species, several of the ways of presenting data could have been useful. For example, there are graphs that show the probabilities of various lake levels over time that are based on protection of recreational facilities. These types of graphs and the associated tables of probabilities would also be useful in evaluating the effects to important riparian and spawning areas. The probabilities, as well as the increases in range of probabilities is very important to the analysis of more than recreational impacts.

218 Page 3.9-2, 3.9.2.2
paragraph 2: Include Lake Mead monthly fluctuations along with those for Lake Powell. Seasonal changes in fluctuations and water levels, especially during high use periods, can have large effects on recreationists.

219 Page 3.9-6, Table 3.9-2
Please clarify whether improvements are existing or proposed.

220 Page 3.9-13, 3.9.2.3
paragraph 2: Since lake fluctuations already exceed 25 feet, how much more adaptation is needed to accommodate the new levels of fluctuations?

221 Page 3.9, Table 3.9-1
It might be more correct to say that the probability evens out from 2040-2050 with the real increase occurring between 2030-2040.

222 Page 3.9-36, 3.9.5.3.1
paragraph 2: All three states in the lower Colorado River basin do creel and other types of angler use and success surveys. This is as close to direct information as is available, and may be more indicative of angler satisfaction than availability of launch facilities.

215: The analysis has been revised to discuss potential effects to razorback sucker. Ongoing efforts to protect the species under the ESA will continue under baseline conditions and each of the alternatives. Because there are no known specific threshold elevations for razorback spawning, determining the specific probabilities associated with a particular elevation could not be done. The text was revised to mention ongoing studies of the razorback sucker population in Lake Mead.

216: Reclamation has determined that fluctuations in flows below Hoover Dam to the SIB under the alternatives would be within the historical operating range of the river and would, therefore, not affect recreation within these areas. The FEIS does consider the potential effects of increases in the temperature of water released from Hoover Dam under decreased reservoir elevations on sport fishing within the river between Hoover Dam and Lake Mohave in Section 3.7.3.

217: The analysis of probabilities associated with the occurrence of reservoir elevations below specified elevations was used in the recreation analysis because specific elevations were identifed for recreation resources. Other analyses in the EIS, including the analysis done to determine potential effects on special-status species, did not identify specific elevations with which to analyze probabilities. In these instances, the model projections of certain elevations, typically the median elevation in each year, were used to identify the differences between the alternatives and baseline conditions.

218: Section 3.9.2.2 of the FEIS has been revised to include the typical annual range of Lake Mead elevations. Differences between baseline conditions and alternatives shown for a single month represent differences throughout the year.

219: Table 3.9-2 indicates existing facilities with the exception of Antelope Point. For Antelope Point, proposed facilities are identified in the Development Concept Plan for the facility. A footnote in Table 3.9-2 and the written description of Antelope Point in the FEIS provide information with regard to existing facilities at Antelope Point.

220: The paragraph referenced discusses results from the Combrink and Collins study on the effects of general lake level fluctuations on reservoir facilities at Lake Powell. As stated in the discussion "if lake fluctuations 'exceed' 25 feet, special adjustments would be necessary." Although required adjustments at specific facilities are not known, such adjustments would be necessary both under baseline conditions and the alternatives.

221: It is assumed based on the comment content that the commentor is referring to the discussion below Figure 3.9-1 on page 3.9-14. Discussions of modeling results have been revised in the FEIS.

222: Relevant information on angler use and success rates at Lake Mead, Lake Powell and Lake Mohave from the appropriate resource agencies in Utah, Arizona, and Nevada has been incorporated into Section 3.9.5.. However, it should be noted that, as discussed in Section 3.9.5, catch rates are not expected to be affected by interim surplus criteria.

30

223 paragraph 3: The DEIS has not done a complete job in documenting the potential effects to sport or native fish populations that may result from the implementation of the surplus criteria. There is insufficient analysis to say what will be the effects on angler success rates.

Energy Resources

224 Page 3.10-2, 3.10.2.2.1
paragraph 3: Since Hoover Dam has the larger powerplant, why did Glen Canyon produce more power in 1998? Is this a usual circumstance?

225 Page 3.10-3, 3.10.2.2.2
paragraph 2: The operable capacity of Glen Canyon is previously stated at 1200 MW, here is it 1048 MW. Which is correct?

226 Page 3.10-4, 3.10.2.3.1
Please include in this section a discussion of the renegotiation of power contracts for Hoover and Glen Canyon and their effects to power production gains and losses. Depending on the amount of power under the contracts, there may not be any legitimate deficits in the future that could be attributed to the proposed actions. With the power generation resources already stretched during peak use periods, there may be significant monetary gains from having some additional power generated during the 2000-2015 period.

Air Quality

227 Page 3.11-1, 3.11.2.1
paragraph 2: Where were the 30 and 45 degree slopes for the reservoirs derived from?

Visual Resources

228 Page 3.12-5, 3.12.4.1.1
paragraph 1: All reservoir elevations are temporary. Average conditions are not likely to result in an increase in reservoir elevations as uses increase over time. Only high runoff years would be able to refill a reservoir.

229 Page 3.12-5, 3.12.4.1.2
paragraph 1: In the section on cultural resources, the fluctuation in Lake Mead is discussed at 10 to 75 feet. Here it is 20 feet. Please explain.

230 paragraph 2: This paragraph (and the following pages) is a good example of the type of information that could be provided for other effects sections to set the stage for the reader to understand the magnitude of the effects. We suggest that this type of approach be used in other sections. Note as was mentioned for Lake Powell in the preceding comments, that average inflow years are not likely going to raise reservoir elevations in the future.

223: Sections 3.7.3 and 3.9.5, both of which address sport fishing and the sport fishery, have been expanded. Special status fish species are addressed in Section 3.8.2.2.2.

224: The energy output of a powerplant is a function of the net effective head, the efficiency of the turbine and the quantity of water through the turbine. Obviously this changes from year to year. However, as a point of interest, the 30-year average conversion efficiency of Glen Canyon and Hoover is 463.8 kWh/AF and 456.2 kWh/AF, respectively.

225: The nameplate capacity of Glen Canyon is about 1,200 MW. Because of the flow restriction of 25,000 cfs, the powerplant can only produce 1,048 MW at maximum head.

226: This analysis does not make any assumptions related to contract renewals. However, it is possible that Western Area Power Administration would only make contract commitments when the current contracts terminate based on the foreseeable amounts of capacity and energy during the next contract term. Potential increases or decreases in revenue from changes in power production are beyond the scope of analysis necessary to appropriately assess the potential effects of interim surplus criteria.

227: Average Lake Powell and Lake Mead shoreline slopes used for the air quality analysis are based on general estimates by persons with knowledge of the terrain surrounding the two reservoirs. It should be noted that estimates were developed for the purposes of comparing alternatives to baseline conditions, and determination of the actual slope was not necessary for this comparison.

228: The temporary nature of reservoir levels has been noted in the discussion in the EIS. The increase of median Lake Powell elevations after the interim period is due to the suspension of equalization requirements as discussed in Section 1.4.2.

229: Section 3.13.4 discusses historical annual fluctuations of Lake Mead, which ranged to 75 feet. The 10 to 20 feet fluctuations discussed in Section 3.12.4.1.2 are projected based on modeling results.

230: Comment noted. Discussion of potential effects have been revised as practicable to clarify information presented in the FEIS. Note that the methodology used for analysis of various resources was dependent upon the amount of information available and the potential effects identified through modeling.

31

Cultural Resources

231 According to the next section, the discussion of the Tribes perfected water rights should be done here. There is no such analysis. The analysis should also note how much of their water each Tribe is using, and as part of cumulative effects, when they plan to use all of it.

Thank you for including the lower portions of the river in this discussion. Other sections have not provided this information.

Indian Trust Assets

232 Page 3.14-1, 3.14-1
paragraph 2: The discussion of where perfected water rights should be discussed is confusing. Later in this section, water rights are discussed, but how they relate to perfected water rights, amounts currently developed, under development plans for the near future or are far future uses is not clear. How Tribal water not presently used by the Tribes is accounted for in the state allocations should be discussed in greater detail here. With the considerable amount of new development being envisioned by Bureau of Indian Affairs to fill out Tribal irrigation projects, there is clearly a body of water not being used at this time by the Tribes.

233 Page 3.14-2, 3.14.2.1
What is the significance of the Northern Ute Tribe to Colorado River water in the project area and effects of this action? Is this included in the Upper Basin schedule of increased depletions?

234 Page 3.14-4, 3.14.2.2
What is the significance of the Jicarilla Apache Tribe to Colorado River water in the project area and effects of this action? Is this included in the Upper Basin schedule of increased depletions?

235 Page 3.14-5, 3.14.2.3
What is the significance of the Navajo Tribe to Colorado River water in the project area and effects of this action? Is this included in the Upper Basin schedule of increased depletions?

236 Page 3.14-6, 3.14.2.4
What is the significance of the Southern Ute Tribe to Colorado River water in the project area and effects of this action? Is this included in the Upper Basin schedule of increased depletions?

237 Page 3.14-6, 3.14.2.5
What is the significance of the Ute Mountain Ute Tribe to Colorado River water in the project area and effects of this action? Is this included in the Upper Basin schedule of increased depletions?

231: Tribal water rights are trust assets that are covered under the section on Indian Trust Assets, not under the Cultural Resources section.

232: A detailed discussion of Present Perfected Rights is beyond the space limitations available here. We suggest you read the Supreme Court Decision in Arizona v. California and supplemental decrees. Additional clarifying text has been modified in Section 3.14 to explain how Tribes water is acounted. As Tribal water is developed, and depletions in the Upper Basin increase, less water will be available for storage in Colorado River reservoirs. The modeling for the FEIS includes the increased use of water under Tribal rights over time in both the baseline and action alternatives. Modeling the increased use of water in the Upper Basin, including the Tribal water, is essential in predicting future reservoir levels.

233: The Northern Ute Tribe, located in the Upper Basin, has the right to deplete 248,943 acre-feet. At the current time, approximately 100,000 acre-feet of this water is yet undeveloped. The Northern Ute's Tribal allocation is included in the Upper Basin schedule of increased depletions, and included in the modeling process as discussed in the response to Comment 57-232.

234: The Jicarilla Apache Tribe, located in the Upper Basin has about 30,000 acre-feet of undeveloped water. The Jicarilla Apache Tribal allocation is included in the Upper Basin schedule of increased depletions, and included in the modeling process as discussed in the response to Comment 57-232.

235: The Navajo Tribe, currently has over 150,000 acre-feet of undeveloped water in the Upper Basin. The Navajo's Tribal allocation is included in the Upper Basin schedule of increased depletions, and included in the modeling process as discussed in the response to Comment 57-232.

236: The Southern Ute Tribe, located in the Upper Basin has about 30,000 acre-feet of undeveloped water. The Southern Ute's Tribal allocation is included in the Upper Basin schedule of increased depletions, and included in the modeling process as discussed in the response to Comment 57-232.

237: The Ute Mountain Ute Tribe, located in the Upper Basin has about 50,000 acre-feet of undeveloped water. The Ute Mountain Ute's Tribal allocation is included in the Upper Basin schedule of increased depletions, and included in the modeling process as discussed in the response to Comment 57-232.

32

238 Page 3.14-7, 3.14.2.6
paragraph 2: Where are the table located that show Ft. Mohave over using its California allocation? The untitled table does not appear to show that data. Will the 3,022 af of water California is proposing cover the amount of the overdraft only or will it only cover new lands? How much of their right in Arizona do they use? If not using all of it, who is at present getting the water under surplus allocation and how will that loss be made up?

239 Page 3.14-8, 3.14.2.7
The Chemuhuevi do not use much of their water right now. What is their schedule to begin using that water. Who is at present using that water, and how will that loss be made up?

240 Page 3.14-9, 3.14.2.8
How much of their water does the Colorado River Indian Tribes use as of 2000? How much more do they have available for expansion? Who is using that water now, and what will need to be done to replace that use?

241 Page 3.14-9, 3.14.2.9
Does the Quechan Tribe use all of their water in 2000? If not, when are they planning to begin using that water. Who is at present using that water, and how will that loss be made up?

242 Page 3.14-9, 3.14.2.8
How much of their water does the Cocopah Tribe use as of 2000? How much more do they have available for expansion? Who is using that water now, and what will need to be done to replace that use?

243 Page 3.14-11, 3.14.3
The Central Arizona Project is most likely to face an increase risk of shortages over the next 50 years. Indian waters that come from the CAP will be affected. The discussion here presents more details on the details of those risks, but again does not address the consequences to the Tribes of those losses.

Environmental Justice

No comments on this section.

Transboundary Impacts

244 Page 3.16-3, 3-16.3
paragraph 4: Please explain the difference between the flood control operations "excess flows" from the 200,000 af of water Mexico is eligible for from flood control releases?

245 cont'd below Page 3.16-6, 3.16.4.2
paragraphs 4-5: Please differentiate between native and non-native species in the Cienega. Should the southwestern willow flycatcher be listed as a species that may occur or did likely

238: There is no table in the DEIS that shows the Fort Mojave Indian Reservation is over-using its present perfected federal reserved water right in California. As the table shows in Section 3.14.2.5 of this FEIS, the Tribe's right in California was limited, prior to June 19, 2000, to an annual diversion not to exceed 13,698 acre-feet. The Fort Mojave Indian Reservation's reported diversions in the Article V Decree accounting records for use in California were 21,109 acre-feet in calendar year 1999. As of June 19, 2000, the Fort Mojave Indian Reservation's present perfected federal reserved right was increased to a maximum annual diversion right of 16,720 acre-feet for use in California (see response to Comment 57-19). This additional water right will help cover the amount of the overdraft but the Fort Mojave Indian Reservation may use its 16,720 acre feet of federal reserved right available for use in California on any lands within the reservation boundaries in California. The Fort Mojave Indian Reservation's reported diversions for use in Arizona were 80,252 acre-feet in calendar year 1999. Because the Tribe's water right for lands in Arizona is part of the 2.8 maf apportioned for use in the State of Arizona, any water that is not used by the Tribe first is made available to junior priority holders in Arizona. Any water within this 2.8 maf apportionment that is not used in Arizona may be released by the Secretary under Article II(B)(6) of the Decree as unused apportionment for use in another Lower Division state. Any of this water that is delivered to a California entitlement holder is unused apportionment, not surplus water. There is no loss to make up. If a holder of a Colorado River water entitlement does not use all the water to which it is entitled in any year, that entity does not retain a right to the unused water - it remains Colorado River System water and is available for the Secretary to release for use in another state as unused apportionment or surplus water, under Articles II(B)(6) or II(B)(3), respectively, of the Decree.

239: The Article V Decree accounting records show the Chemehuevi Indian Reservation diverted 664 acre-feet in calendar year 1998 and 265 acre-feet in 1999. The Tribe has proposed to lease some of its water right. Because the Tribe's water right is part of the 4.4 maf apportioned for use in the State of California, any water that is not used by the Tribe first is available to junior priority holders in California in accordance with the priority system established for California by the California Seven-Party Agreement dated August 18, 1931. There is no loss to be made up. See the discussion under Comment 57-238.

240: The most recent Article V Decree accounting records are for calendar year 1999. As of 1999, the Colorado River Indian Tribes reported annual diversions of 599,509 and 5,791 acre-feet of diversions for use in the States of Arizona and California, respectively. These reported uses compare to the tribes' Federal reserved right maximum diversions of 662,402 and 54,746 acre-feet for Arizona and California, respectively. As for disposition if this unused water, see the discussion under Comment 57-238.

241: The Quechan Tribe did not use all the present perfected Federal reserved water rights available for use by the Fort Yuma Indian Reservation in 1999, the most recent year for which Article V Decree accounting records are available. In 1999, the annual diversions reported for the tribe were 31,350 acre-feet. See the discussion under Comment 57-238.

242: The total diversions reported for the Cocopah Indian Reservation were 11,546 acre-feet during calendar year 1999, which exceeded the tribe's annual diversion right of 10,847 acre-feet. See the discussion under Comment 57-238.

243: See response to Comment 56-6.

244: Excess flows to Mexico are defined as flows at the Northerly International Boundary (NIB) in excess of Mexico's scheduled delivery. When flood control releases occur at Lake Mead, Mexico is allowed to schedule up to an additional 200 kaf for delivery for that year. Excess flows under flood control releases are then flows in excess of that increased Mexico scheduled delivery.

245 cont'd occur historically? Please note that the Yuma clapper rail populations in Mexico are not protected under the U.S. ESA.

Page 3.16-7, 3.16.5

246 paragraph 1: It should be noted that Mexico will divert any excess water of any category if it has the canal space to do so. It might be appropriate to explain how that water counts or does not count against their allocation.

247 paragraph 4: It will be Mexico's ability to schedule its 200,000 af that will be adversely affected by the proposed actions since the probability of a Lake Mead water level requiring a flood control release that decreases with surplus criteria and future upstream depletions.

Page 3.16-8, 3.16.5.1

248 paragraph 2: The date of 2005 for Upper Basin depletions to significantly affect Mexico's surplus flows does not appear to be correct. These depletions do not become sufficiently large until well after 2015.

249 paragraph 3 and Tables 3.16-2 through 3.16-5: The maximum annual flow given of 8.4 maf does not appear to be logical given the constraints on flow releases over the next 50 years or of the amount of water so recorded in the past. There is not 8.4 maf surplus in the system in any one year, and releases of this magnitude would wipe out the infrastructure of the river. We are unclear as to what these data tell the reader and suggest additional explanation be provided.

Page 3.16-12, Table 3.16-2

250 The information in this table relates to the previous comment. Additional explanation as to the source of the numbers in the table and what they represent is needed for the reader to understand the information provided. The basic question of how flows of these magnitude can occur with the reductions in available flood waters over time remains to be answered.

Page 3.16-13, 3.16.6.1

251 paragraph 1: The reduction in historic river flows below the NIB is far more a factor of development of water resources in the United States than it is in what Mexico diverts every year. This should be put into perspective in this discussion. The mention of "potential magnitude" refers back to a concept that has not been adequately explained in this document and requires this explanation before it is useful.

252 paragraph 2: It may be more correct to say that the establishment of marsh and riparian habitats below the NIB requires overbank flows that deposit sediment rather than scouring flows. Scouring flows deepen the channel, which drops the water table in the surrounding floodplain and has adverse effects to local marsh, backwater and riparian habitats. The elimination or reduction of even smaller level flows than can cause damage to structures may have a profound effect on riparian and marsh regeneration and should be considered here. This concept of the importance of lower "flood" levels has been discussed in relation to other parts of the DEIS.

245: The discussion of historical versus current habitat notes when non-native species such as salt cedar and shrimp were introduced. Occurrence of the Southwestern willow flycatcher in Mexico is noted in Section 3.16.6, as is the status of Yuma clapper rail.

246: Additional information has been added to the FEIS concerning Mexico's practice of diverting excess flows (such water does not count against their allocation).

247: As discussed in Section 3.4.4.5.2 of the FEIS, Mexico receives surplus deliveries 26% of the time for the interim surplus criteria period under baseline conditions, and 23% of the time under the preferred alternative (Basin States Alternative). As noted in Section 3.3.3.3, all alternatives and baseline used identical Upper Basin depletions.

248: As stated in the DEIS on page 3-16-8, paragraph 2, "the relatively high frequencies occurring in years 2001 through 2005 result from the current full reservoir conditions". After 2005, there is a gradually declining trend out to 2050 that is due to the increasing Upper Basin depletions.

249: Reclamation notes that in 1983 through 1987, excess flows at NIB were greater than 9 maf annually, with a maximum of 13.8 maf in 1984.

250: As discussed in Section 3.3.3.5, the range of possible future hydrologic inflows modeled includes the 1983-1987 historical inflows. Such events will cause flood control releases of similar magnitudes in the future.

251: The term "magnitude" has been added to the glossary of the FEIS to provide a definition for this tern. See response to Comment 11-18 which addresses reductions in historic river flows below NIB.

252: Reclamation assessment has been revised to discuss these concepts.

34

253 paragraph 4: How can the magnitude of the annual flows not change if the frequency and amounts of flow decrease? The effects of interim surplus criteria are felt the most in the next few years and that effect has not been shown to be negligible (see table 3.16-1).

254 Page 3.16-14, 3.16.6.2
The desert pupfish in the Cienega is now *Cyprinodon macularius* and the Quitobaquito form is *C. eremus*.

255 Page 3.16-15, 3.16.6.2
paragraph 6: The potential for changes to inflow via the MODE because of salinity control operations should be addressed as part of the discussion of effects to the Cienega.

256 Page 3.16-18, 3.16.6.2
paragraph 6: Please note that as of August, 2000, there is no recovery plan for the flycatcher.

257 Page 3.16-19, 3.16.6.2
paragraph 3: Are there any records of flycatchers using the Colorado River, the delta or the Cienega during the breeding season? Is it reasonable to assume they do or do not breed in the area?

258 Page 3.16-20, 34.16.6.2
paragraph 5: For a discussion of acreage changes in the last 20 years, more recent citations than 1976 and 1986 would be appropriate.

259 Page 3.16-21, 3.16.6.2
paragraph 2: A map would be useful here.

260 paragraph 3: Please note that the clapper rail is not listed by the United States in Mexico. It is listed by the Mexican government under its environmental statutes.

261 Page 3.16-22, 3.16.6.2
paragraph 1: Please note here that crayfish are not native to the Colorado River. The portions of the paragraph on page 23 that relate to crayfish may be moved here for completeness.

262 Page 3.16-23, 3.16.6.2
paragraph 1: Is the CFG Finne-Ramer unit the same as the Wister unit?

263 paragraph 2: Data from 1999 estimated the clapper rail population in the Cienega at 6,400 individuals.

253: Excess flows to Mexico primarily result from flood control releases from Lake Mead. As shown in Figures 3.16-2 through 3.16-5 in the FEIS, the surplus alternatives have annual excess flow volumes over the same range as the volumes for the baseline conditions. The differences between the alternatives and baseline conditions are in the frequency of occurrence (or probability) of excess flow volumes of a particular magnitude (e.g. 2-3% for a volume of 4 maf in year 2005).

254: This information is included in the discussion for the desert pupfish in Section 3.16.6.2.1 of the FEIS.

255: Inflow to and salinity of the Cienaga from MODE would not be affected by the interim surplus criteria.

256: The discussion of the status of the Southwestern willow flycatcher notes this.

257: Reclamation could only find documents of flycatchers being observed in Mexico before its breeding season, and believes it is not reasonable to assume they breed in the area.

258: The analysis for the FEIS focuses on acreages from a 1997 survey of floodplain vegetation in the Limotrophe Division, a 1999 study conducted by the University of Monterrey, University of Arizona, Environmental Defense Fund, and the Sonoran Institute, and a 1998 aerial survey of the Rio Hardy and Colorado rivers.

259: A map has been added to Section 3.16.

260: Comment noted.

261: Mention of when crayfish were introduced to the lower Colorado River and its role in extending the breeding range of the rail has been moved up.

262: No, they are two different areas in California.

263: This has been added to the discussion.

35

264 paragraph 3: Historically, clapper rails probably used the available marshes in the alluvial valleys of the lower Colorado, the mouth of the Bill Williams River and the considerable marsh habitat of the Gila River valley.

265 paragraph 4: The recovery goals for the clapper rail are being clarified by the Service based on information provided by rail experts in 1999.

Page 3.16-24, 3.16.6.2

266 paragraph 6: There has not been a final, one-year finding on the status of the yellow-billed cuckoo. The finding referred to here is the preliminary 3 month finding and this is not definitive as to the status of the subspecies.

Chapter 4: Other NEPA Considerations

Page 4-1, 4.2

267 paragraph 1: Aren't cumulative impacts the result of other activities than the proposed action that may affect the same resources? If so, the definition here is unclear on that point.

268 paragraph 2: We understand that no separate analysis of the cumulative impacts has been done, but that all future and baseline effects were carried forward in the modeling. For NEPA considerations, the origin of an action (Federal or non-Federal) is not an issue. However, it is for analyses done for the ESA under section 7. Future Federal actions cannot be considered as baseline or cumulative unless consultation has been completed for them. This is where the question of how future water depletions in the Upper Basin should be considered in this analysis. Future changes in water use in the Lower Basin, especially as regards currently unused apportionments being used by another party, should also be examined. Although this is not a NEPA question, it might be useful to the reader to include a summary of the different ways cumulative effects are defined in NEPA and ESA.

269 paragraph 3: Cumulative effects are not baseline effects. This should be made clear in this paragraph that there was a compression of the effects analysis to do all things at once.

Page 4-2, 4.3

270 paragraph 2: The benefit of the proposed action is not increasing the efficiency of the decision making process, it is to increase the availability of surplus water by redefining what is a surplus.

271 paragraph 3: Over the shortterm, decreased reservoir levels and decreased flood flows and the natural resources affected by these changes are the costs of implementing a surplus alternative.

272 cont'd below Page 4-3, 4.4

paragraph 1: The surplus criteria could only be revised to be more conservative at the 5

264: Comment noted.

265: This update has been added to the discussion.

266: Information on the legal status of the yellow-billed cuckoo has been revised.

267: As stated in the definition from the CEQ regulations, cumulative impact analyses include the proposed action and other actions.

268: Comment noted.

269: The text has been edited.

270: Increasing the availability of surplus water is not the purpose and need of the proposed action. See FEIS Section 1.1.3 for a definition of the purpose and need.

271: Comment noted.

272: Following a decision to implement one of the action alternatives, the Secretary could choose to revert to the current method for determining surplus. A subsequent decision by the Secretary to revert to the current method (i.e., the AOP process without specific interim surplus criteria in effect) would be different than selecting the No Action Alternative at the present time. The likelihood and timing of such subsequent decision is speculative and not analyzed in the FEIS. Any changes to the interim surplus criteria or the LROC at the 5 year reviews would institute the need for appropriate environmental compliance.

272 cont'd | year intervals or additional compliance would be needed. This compliance would have to be based on the present no-action alternative, not on conditions at the time of the review.

273 | paragraph 4: There is an irreversible cost in terms of recreational losses and power production, as well as losses resulting from decreased flows occurring earlier in the time period because of the new criteria.

Chapter 5: Consultation and Coordination

No comments on this section.

Supporting Materials

Glossary

274 | We suggest that more technical terms such as "annual magnitude" flows be included here. Also, that words in the glossary be highlighted in the text at their place of first usage.

References Cited

275 | Please check with L. Fitzpatrick re the information she provided to A. Pool on 14 April as there may have been a mis-communication.

276 | There is no citation for McKernan 1999 and 2000 listed here. These were cited in the Mexico section of the DEIS.

277 | Why are the references for section 3.16 separated from the others?

Attachments

278 | *Attachment A: LROC*
page 2: We assume the requirement for the 75 maf over 10 years was included in all modeling done for future conditions?

279 | *Attachment D: Surplus Criteria Proposed by Six States*
page 1: We suggest that those parts of the Six States plan that were accepted for the modeling or other consideration in this DEIS be summarized or highlighted in this attachment.

280 | page 6, item #6: This is an example for the first comment. There is nothing in the DEIS text that describes a need for California to do this.

281 | page 6, item #7: This an another example. In this case, the amount of water available to California would be limited to only that needed to provide for M&I deliveries. There is nothing in the DEIS that accepts or denies this.

273: Reclamation does not believe recreational losses would be irreversible because the reservoirs and river level are constantly fluctuating up and down over time. Lower levels may actually improve some kinds of recreation such as reservoir fishing as fish become more concentrated. Regarding power losses, power production is not a primary function of Hoover Dam. It is third on the list of dam operation priorities behind flood control/improved navigation and irrigation/domestic uses/satisfaction of present perfected rights.

274: The term "annual magnitude flows" is not commonly used in hydrology. In the FEIS, flows shown on an annual basis represent total volume over the year at the specified point.

275: The L. Fitzpatrick citation has been replaced with information from McKernan (1999).

276: Please see response to Comment 57-275 above.

277: This error from the DEIS has been corrected. These and additional references revising the transboundary impacts analysis have been incorporated into a single list of references in the FEIS.

278: Yes, the requirement was included.

279: Reclamation's Six States Alternative was derived from the Six States proposal. The alternative is as described in Chapter 2, and the assumptions used for modeling are described in Section 3.3.

280: Please refer to the purpose and need discussion in Chapter 1.

281: Please refer to Attachment H for a discussion of the water demand schedules.

282 page 7, paragraph 1: Would California use be more heavily monitored in an attempt to free up existing water currently overdrafted by other users to avoid the need for surplus?

283 page 7, paragraph B: There is nothing about Arizona waiving its 46% of any surplus in favor of MWD or Nevada in the DEIS. Since Arizona is the state with the most to lose in the event of a shortage brought on by interim surplus uses, their reasons for doing or not doing this would be complex.

284 page 9, #4: The existence of this "Colorado River Alternative Operating Strategies for Distributing Surplus Water and Avoiding Spills" should be more fully referenced in the main part of the DEIS, especially if it was instrumental in determining the surpluses from 1998-2000.

285 page 10, #5: The Six State plan would have water used for all beneficial purposes, but does not provide for a limit based on the amount of water available over the target elevation. Please explain this distinction.

286 page 12, IV: The issue of overrun accounting and the need to be especially vigilant about such, especially if this can affect future shortages, should also be noted earlier in the DEIS.

Attachment E: Surplus Criteria Proposal by California

287 page A-4, paragraph 3: It should be noted in the DEIS that while stored groundwater may save Arizona and Nevada from a shortage caused by surplus criteria implementation in the near term, it does not provide long term assurance.

288 page A-5: Please note that any increase in surplus criteria would require additional compliance.

Attachment F: Surplus Criteria Proposal by Pacific Institute

We have no comments on this attachment.

Attachment G: Lower Basin Depletion Schedule

289 Please provide page numbers for this attachment.

290 page 1, paragraph 2: Please explain why the water transfers under the 4.4 Plan were not included in the Flood Control Alternative.

291 page 1, paragraph 6: Was the determination of how much water the states would get out of surplus criteria based on how much they asked for in their future depletion schedule? If there was not enough water at the water surface elevation to meet all those needs before it fell below a target elevation, what uses would be curtailed?

282: California would be monitored for its progress in implementing its Colorado River Water Use Plan. Each of the Lower Division states would be monitored as to use of its basic apportionment and purposes for which surplus water is used.

283: Reclamation does not anticipate any waiver of Arizona's percentage right to surplus water. The percentages would apply when a quantified surplus is declared that must be divided among the Lower Division states.

284: The influence of this document is discussed in the introduction to Section 2.2.4.

285: The provisions of the Six States Alternative in this FEIS take precedence over the provisions cited in the attachment.

286: Reclamation is formulating a policy for overrun accounting which we expect will be published in the Federal Register for public review and comment. However, the matter is beyond the scope of this FEIS and is not described in this FEIS.

287: Reclamation's understanding is that conjunctive use of groundwater will play an important role in the water supply for all the Lower Division states.

288: Comment noted.

289: The depletion schedules have been replaced with revised schedules used to model the baseline conditions and surplus alternatives for the FEIS. Page numbers have been added.

290: In the FEIS, the Flood Control Alternative was modeled using California intrastate transfers. See response to Comment 37-11 for additional discussion.

291: The explanation of surplus depletion schedules provided in this paragraph has been revised to provide more clarity. Additional more detailed explanation on the modeling criteria used to determine the availability and amount of surplus water deliveries under the modeled baseline conditions and the different surplus alternatives is provided in Attachment I of the FEIS.

292 In Table G-1, are the lower Arizona depletions after 12/24 the result of Level 1 shortages that only affect CAP?

293 *Attachment H: Draft Interim Surplus Guidelines*

Please number the several sections of this attachment sequentially. The separate numbering system is difficult to use once the sections are mixed up.

294 These summaries should contain all parts of the Six States and California plans that would be incorporated into the preferred alternative.

295 Please revise the sections in the introduction to each alternative that address the greater predictability rather than the probability that results from the development of these criteria.

296 Please clarify the assumption that under all surplus declarations, there would be adequate water supplies to meet all appropriate surplus demands without falling below any designated trigger point.

297 In the Six States, California and Shortage Protection alternatives, there are tables showing amounts of water available for surplus use. Where did these tables come from and why are they not discussed in the DEIS proper? Why are they not included in earlier Attachments on these alternatives? Why is there not a set of these for the Flood Control alternative?

298 *Attachment I: Detailed Modeling Documentation*

No data were provided in this attachment. While this will be provided in the FEIS, it would be more appropriate for examination of the models if it was provided here.

299 *Attachment J: Upper Basin Depletion Schedule*

For the purposes of NEPA, it may not be necessary to divide this schedule into sections based on baseline projects, approved future projects (all compliance completed), and other future projects (compliance not completed), but for ESA this may be an issue of concern.

Attachment K: Sensitivity Analysis of Shortage Assumptions

We have no comment on this attachment.

Attachment L: Comparison of Colorado River Flows

300 cont'd below These could be very useful. We would suggest using a finer scale since most values are very close for most of the period of record. This would eliminate the appearance of a complete overlay of the alternative results. Since the effects of the action are hidden in that overlay, it

292: Attachment G of the DEIS is now Attachment H in the FEIS. The tables in these attachments represent the Lower Basin Depletion Schedules that were used as input to the model. These schedules were updated by the states in September 2000, and represent the states' projections of their future water demands under the respective water supply conditions.

293: The attachment has bee revised. The draft guidelines focus on presenting information for the preferred alternative. It is now Attachment I. See response to Comment 57-279 above.

294: The Guidelines contain detailed provisions of Reclamation's preferred plan, and is not necessarily intended to conform to the Seven States proposal.

295: As stated in the purpose and need discussion in Section 1.1.3, a greater degree of predictability is being sought for mainstream users of Colorado River water.

296: When surplus water delivery is based on a trigger elevation, the water level could drop below the trigger elevation once the deliveries are made. See also response to Comment 57-64.

297: The tables are in Chapter 2 of the FEIS. The tabulated values were produced by the operational model.

298: Copies of this Attachment were available at the technical presentation on August 15, 2000, at the four public hearings for the DEIS, and upon request. It is Attachment J to the FEIS.

299: Comment noted.

300: It is difficult to decrease the scale of these graphs without losing data. The size of the data markers has been reduced to make it easier to distinguish between alternatives. Graphs in Attachment L supplement information in the main body of the FEIS.

300 cont'd would be appropriate to display the results differently. We would appreciate seeing the data in them incorporated into the main text of the FEIS

Attachment M: Water Supply for Lower Division States

301 These larger size graphs are very useful. As with their smaller versions in the text, there are several points that need to be clarified:

-how the maximum and 90th percentile lines can overlap
-how the median, 10th percentile and minimum lines can overlap
-that time till a change in a line is an important effect of that alternative
-that minimum values occur more often under the liberal alternatives

302 Please note that the legend for Figure 1 has two maximum lines and no 90th percentile line.

Attachment N: Energy Analysis Worksheets

We have no comments on this attachment.

Attachment O: Ten Tribes Demand Point Spreadsheet

We have no comments on this attachment.

Attachment P: Public Scoping Process

We have no comments on this attachment.

Attachment Q: Consultation with Mexico

We have no comments on this attachment.

Thank you for the opportunity to read and provide comments on this DEIS. If there are any questions about these comments, or we can be of additional assistance, please contact Tom Gatz (x240) or Lesley Fitzpatrick (x236).

David L. Harlow

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ES)

301: Comment noted.

302: This correction has been made for figures in the FEIS.

40

Literature Cited

Hall, G.E. ed. 1971. Reservoir Fisheries and Limnology. Special publication #8. American Fisheries Society, Washington, D.C.

Ploskey, G.R. 1989. A review of the effects of water-level changes on reservoir fisheries and recommendations for improved management. Final Report. Tech. Report E-83-3, National Reservoir Research Program, Fish and Wildlife Service. For U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi.