Chapter 4. Major Issues and SWRCB Responses

INTRODUCTION

Many major legal and technical issues were raised during the review period. As noted in Chapter 1, 88 major issues were identified. In this chapter, each major issue is stated, a summary of the comments is presented, and SWRCB's response is given. In most cases, the analyses in the draft EIR were not successfully challenged during the comment period and the conclusions remain unchanged. In the few instances where the appropriate response requires some revision to the analysis in the draft EIR, the requisite changes are described in the major issue responses in this chapter and added to the errata in Chapter 7.

LEGAL ISSUES (X)

X1. Points of Reference Are Not Appropriate or the Project Is Improperly Defined

Summary of Comments

Comments about project definition and appropriate points of reference addressed several issues, questioning whether:

- the proposed project is the review and amendment of water rights licenses or the diversion of water, and therefore whether SWRCB or LADWP is the project proponent responsible for mitigation;

- the prediversion period or 1989 is the proper point of reference for assessing project impacts, especially considering that impacts on public trust values are being assessed;

- the 1989 conditions used in the analysis accurately represented typical conditions at that time and the use of both actual 1989 conditions and the point-of-reference scenario distorts impacts;

- # the nonsustainability of point-of-reference conditions (diversion rate and lake level) distorts impact assessment; and

- # the prediversion reference for cumulative impacts requires that past impacts be mitigated under CEQA.

Project Definition. Rather than consider it a license revision, some commenters characterize the project as the diversion of water. They base this characterization on the fact that diversions have been suspended, no vested rights to continued diversions exist, and prior diversions were unlawful in failing to protect public trust resources from needless harm. This view leads to the need for only a prediversion point of reference, as discussed below, and suggests that LADWP rather than SWRCB is the project proponent and is ultimately responsible for needed mitigation.

Point of Reference for Project Impacts. Considerable disagreement was expressed about the appropriateness of each of two points of reference used in the EIR.

LADWP believes that a cumulative impact analysis is not required because the purpose of the project is to reduce impacts on public trust values and the environment. This view holds that project effects cannot possibly compound impacts of past actions, thus a cumulative impact cannot possibly occur. This perspective obviates the prediversion point of reference.

Other commenters argue that because the objective of this particular project includes license modification to protect public trust values that may have been affected by the past diversions, only the prediversion frame of reference is valid for any meaningful impact assessment.

Other commenters consider the 1989 date for a point of reference as meaningless: an arbitrary point in a series of court-required injunctions. Some commenters noted that the court-mandated stream restoration program has already modified some of 1989 conditions.

Several commenters contend that the use of the 1989 point of reference distorts impacts. They note, for example, that the EIR considers high lake-level alternatives to have project impacts on the Upper Owens River fishery and argue that these effect are actually cumulative impacts of a degraded channel system. In general, they also hold that use of the 1989 point of reference allows some alternatives to be considered as having beneficial effects that would actually continue to promote degraded conditions.

Another view, expressed by DFG, is that use of either prediversion or 1989 as the point of reference unlawfully accepts fisheries degradation caused by prediversion irrigators as the baseline condition for assessing and mitigating impacts. This implies the need for a prehistorical point of reference.

Representativeness of 1989 Conditions. Some commenters hold that the point-of-reference scenario, rather than resource conditions in August 1989, should have been used in all topic areas to more accurately characterize point-of-reference conditions. They believe that the actual conditions in 1989,

especially because a prolonged drought was occurring, do not accurately represent the typical point-of-reference condition. Others, however, faulted the EIR for using post-1989 resource data to help characterize point-of-reference conditions.

Some commenters accepted the precise date of the point of reference but pointed out that at that time no water was being exported from Mono Basin as a result of a court injunction. They go on to note that this "incorrect" point-of-reference characterization leads to the "erroneous" conclusion that most of alternatives result in diminished water supply to the City of Los Angeles.

Nonsustainability of Point-of-Reference Conditions. Commenters point out the point-of-reference resource conditions were not sustainable, given the point-of-reference streamflow requirements. In particular, the lake level used to characterize the point of reference would fall substantially if point-of-reference streamflow requirements remained in effect. Thus, they contend, the draft EIR found most alternatives to have adverse effects on water supply but not any corresponding beneficial ecological effects from preventing lake level lowering.

Implications for Mitigation Requirements. Some commenters believed that the EIR's discussion of the means to mitigate significant cumulative impacts is irrelevant. They hold that, even if the prediversion conditions are the appropriate baseline for assessing cumulative impacts, CEQA confers no authority for requiring mitigation of past projects contributing to a significant cumulative impact of the proposed project. LADWP also contends that the SWRCB lacks authority to require LADWP to mitigate any significant adverse environment impacts resulting from amendment of LADWP's water rights licenses because these impacts are the result of the SWRCB's amendment of the licenses and not the result of LADWP's diversions.

Response

The ongoing debate about an appropriate point of reference first surfaced in the responses to the Notice of Preparation for this project. For purposes of the EIR, SWRCB staff took a very straightforward approach to accommodating this complex and contentious debate. They identified impacts from both of the major perspectives represented by these comments. Impacts of each alternative measured from 1989 conditions are described. Impacts of each alternative measured from prediversion conditions are also described. This approach provides the fullest disclosure possible. The reader, including the SWRCB, is provided the widest informational basis from which judgments can be drawn.

SWRCB continues to believe that the project, insofar as CEQA is concerned, is the amendment of the city's water rights licenses. This assumption does not shift any mitigation responsibility under CEQA. It also does not relieve the City of Los Angeles of any responsibilities it may have to restore public trust values needlessly lost during the diversion period.

The formulation of the most representative resource conditions to represent the 1989 point of reference is complicated, but the approach taken in the EIR remains the most appropriate. Actual resource conditions were used for resources not directly dependent on the pattern of annual runoff. For most resource use, particularly water supply, power production, and recreational activity, use of the 1989 hydrologic record alone would have made drought conditions the baseline, an illogical basis for assessing impacts. The point-of-reference scenario was generated to remove the drought effects and give a representation of resources under average conditions.

When characterizing actual resource conditions in 1989, the EIR preparers also took some latitude in using data from a period of several years. Aerial photography and field surveys, for example, were performed when the EIR was prepared, sometime after 1989. Some data files were found for observations in slightly earlier or later years. The draft EIR preparers examined the potential use of each such piece of data and determined whether, in the context to be used, its inclusion was proper and if adjustments were necessary.

The fact that no water was being exported from Mono Basin on August 22, 1989, while true, is not germane to establishing a useful point of reference. The point of reference is intended to present the general or average environmental conditions after 48 years of stream diversions at or about the time the court found it necessary to review the water rights licenses and notified the SWRCB of this decision. Minimum streamflow requirements were in effect for Rush and Lee Vining Creeks, but large diversions were generally allowable and the level of Mono Lake continued its decline. SWRCB staff understood the potential problem of a moving baseline and selected the point of reference as a way to establish a window for assessing the general existing conditions.

The EIR seeks to fully disclose the environmental effects of the proposed amendment of the city's water rights licenses. An analysis of environmental impacts, for the purposes of CEQA, focuses on changes in existing conditions that would result from the project under consideration. To the extent that the current streamflows are the result of a preliminary injunction (setting requirements that apply only temporarily, unless they are later adopted as part of the SWRCB's water right decision or a permanent injunction), it would not be appropriate to incorporate these conditions into the point of reference. Under such an approach, temporarily imposing instream flow requirements without preparing environmental documentation under CEQA would eliminate the impacts of those requirements from being considered when environmental documentation is prepared to consider applying those requirements on a permanent basis. Such an approach could understate the impacts of the SWRCB's decision. In the interest of full disclosure of impacts, the EIR evaluates the effects of amending the city's licenses as compared with diversions that occurred under the licenses before amendment, instead of limiting review to the impacts of *further* reductions in diversion beyond those necessary to comply with the preliminary injunction.

The SWRCB recognizes that point-of-reference conditions are not sustainable. If the city's diversions were to continue at the levels that have occurred, the level of Mono Lake would not be maintained. If the level of Mono Lake is to be maintained, diversions at historical levels cannot be continued. In the interest of full disclosure, however, and consistent with CEQA's focus on changes from

existing conditions, neither the impacts of declining lake levels nor the impacts of reductions in allowable diversions should be ignored. The point of reference used in this EIR serves to disclose both types of impacts. The unsustainability of the point of reference makes it infeasible to fully avoid both types of impacts, but this does not justify a failure to disclose either type of impact for the SWRCB's consideration under CEQA.

Where possible, the EIR process should be combined with the SWRCB's process for considering amendment of the city's water rights licenses. As part of its decision, the SWRCB must consider two types of environmental impacts: adverse changes in the environment, for purposes of CEQA, and effects on the public trust, for purposes of applying the public trust doctrine and the reasonableness doctrine which govern diversion and use of water. The two types of environmental impacts overlap to a substantial extent, but the focus of impacts analysis differs for the two types of impacts. CEQA review focuses on the action proposed to be undertaken and changes in existing physical conditions that will be caused by the proposed action (in this case, amendment of the city's licenses). For purposes of public trust analysis, on the other hand, the SWRCB must also look objectively at the public trust impacts of the city's diversions. The focus of public trust review must be on the impacts of the city's licensed diversions.

For purposes of both CEQA and public trust analyses, cumulative impacts must be considered as well. That is, in addition to considering the impacts of the specific project or water right under review, the SWRCB must consider how that project or water right interacts with other projects or water rights. Because of the difference in the focus of CEQA and public trust analyses, however, adverse public trust impacts may not necessarily be considered adverse environmental impacts for purposes of CEQA. Where proposed water rights license amendments are beneficial for public trust uses, the impacts of those amendments on public trust uses are not considered adverse for purposes of CEQA. To the extent that the water rights under review have individually or cumulatively harmed public trust uses, however, those impacts must be considered in applying the doctrines of public trust and reasonableness, even if the water rights amendments ultimately adopted by the SWRCB do not make those public trust impacts any worse.

In its comments on the draft EIR, LADWP observes:

> Under CEQA, the purpose of examining the cumulative impacts of "closely related past, present, and reasonably foreseeable probable future projects" (CEQA Guidelines, Section 15355) is to determine whether and how the proposed project will compound or increase the environmental impacts of other projects.

Insofar as the EIR is used to identify significant adverse impacts of amending the city's water rights licenses, this comment is correct. The impacts of another project and the proposed water rights license amendments being considered by the SWRCB are not cumulative impacts of the proposed amendments for purposes of CEQA unless the proposed amendments would add to or otherwise jointly contribute to the impacts of the other project.

The city's diversions since 1941 are a closely related project. Thus, a lake surface elevation of 6,417 feet, streamflows partially diverted for local irrigation, and prediversion resource conditions constitute the basis of the major portion of the cumulative impacts assessments in the EIR. As LADWP points out, the proposed project is intended to reduce the impacts of LADWP's diversions. It should not be assumed, however, that because a project is intended to have a beneficial effect, it cannot possibly have any adverse impacts with respect to elements of the physical environment. Analysis of the overall effects of the proposed project and the city's diversions since 1941 is still appropriate to ensure that the two projects will not interact jointly in a manner that contributes to any adverse impacts. The EIR indicates that, in one respect, the proposed project and the city's diversions since 1941 may in fact jointly contribute to an adverse impact. Depending on future decisions of LADWP, project effects could contribute to an earlier loss of acreage irrigated for grazing in Mono and Inyo Counties during the diversion period.

The EIR identifies as cumulative effects the combined effect of the project being considered by the SWRCB and the city's diversions since 1941. With the possible exception of impacts on grazing lands, however, these cumulative impacts are either insignificant or less severe than the impacts that would occur if the city's diversions continued in accordance with the city's water right licenses without amendment. Thus, for purposes of CEQA analysis, these cumulative impacts either are less than significant or beneficial. CEQA does not require the SWRCB to adopt alternatives or mitigation, or make findings of infeasibility, for these impacts, nor does CEQA provide an independent source of authority to mitigate these impacts. The impacts identified as cumulative are very important, however, for purposes of public trust analysis, and the public trust and reasonableness doctrines provide authority to modify the city's licenses to address these impacts. As part of its water right decision, the SWRCB will evaluate these cumulative impacts (giving consideration to both their significance and their potential to be reversed or mitigated as set forth in the EIR) and protect public trust uses to the extent feasible.

The EIR is intended to identify potential mitigation measures. The ultimate determination of the feasibility of specific mitigation measures that would avoid significant adverse impacts will be made by the SWRCB as part of its water right decision. As part of that decision, the SWRCB will review both its legal authority to require mitigation and the appropriateness of imposing mitigation requirements on LADWP as part of the water right decision. In cases where the SWRCB has discretionary authority over what conditions may be placed in the licenses and mitigation is required under CEQA, SWRCB may also have authority to impose any necessary mitigation requirements. Even in cases where mitigation is not required under CEQA, as with most cumulative impacts, the public trust doctrine may provide a basis for requiring mitigation of adverse effects on public trust uses as a condition of the water rights licenses.

Some of the key points made in this response should also be added to the summary and Chapter 2 of the draft EIR. See Chapter 6, "Errata to the Draft EIR", referencing pages S-7 and 2-27.

X2. Environmentally Superior Alternative Is Improperly Identified

Summary of Comments

LADWP, characterizing the "environmentally superior alternative" as the "recommended alternative", contends that the identification of an environmentally superior alternative required under CEQA applies to project impacts alone; cumulative impacts are not an element of this determination. LADWP goes on to address some of the impact conclusions considered in the EIR determination of the environmentally superior alternatives, arguing that:

- DFG recommendations are based on restoration of an optimal fishery, which far exceeds the standard required by law;
- air quality issues should not be considered because other agencies have regulatory authority;
- all current nesting grounds of the Caspian Tern would be eliminated under the environmentally superior alternative;
- all of the impacts of securing alternative water supplies have not been evaluated:
- the benefits of providing water supply are understated and the costs of replacing them are underestimated.

Other commenters contend that only changes from the prediversion condition, or the cumulative impact assessment, can be used in identifying the environmentally superior alternative. As noted for the previous major issue, these commenters believe consideration of effects of diversions on public trust values requires use of the prediversion baseline.

The U.S. Fish and Wildlife Service (USFWS) notes that recent experiments show that salinities associated with the prediversion lake level provide nearly optimum productivity of Mono Lake brine shrimp and suggest that this fact was not considered in the determination of the environmentally superior alternative.

One commenter maintains that only the No-Diversion and 6,410-Ft Alternatives are environmentally superior because only they will reestablish public trust values of prediversion lake-fringing vegetation resources. Another argues that any losses of plants or wildlife due to inundation at higher lake levels should not be factored into the identification of the environmentally superior alternative.

Other commenters allege that the emergence of visible tufa should not be figured into the choice of the environmentally superior alternative. Several commenters argue that the increased potential for

channel erosion at higher streamflows is wrong, or can be avoided by restoration work, and should not be considered in this determination.

Another commenter notes simply that only the No-Diversion Alternative is the environmentally superior alternative because it is closest to the natural condition.

Finally, one commenter notes that the environmentally superior alternative, by whatever definition, need not be the alternative selected by SWRCB.

Response

SWRCB agrees that CEQA does not require that the alternative identified as "environmentally superior" be chosen for implementation. As discussed in the EIR, the environmentally superior alternative was identified considering only physical environmental impacts and not resource utilization needs. Such a balancing is the responsibility of SWRCB in coming to its water rights decision.

In response to the other comments, SWRCB has reexamined the weighing of each of the questioned resource effects used in the draft EIR determinations of "environmentally superior" and the identification of two environmentally superior alternatives. Only one such alternative is now identified; see Chapter 3. Our determinations:

- are not based on optimizing fisheries;
- must consider effects on air quality;
- cannot possibly consider all possible impacts of LADWP's future decisions to acquire or develop alternative water supplies;
- do not consider the benefits of water supply to the City of Los Angeles and the approximate costs of replacing it but, at the discretion of SWRCB, information about this socioeconomic effect is provided in the EIR;
- are based in part on the recent experimental data about salinity effects on Mono Lake brine shrimp;
- appropriately consider changes in lake-fringing vegetation conditions and wildlife habitat among the lake levels of the alternatives;
- consider differences in tufa visibility because tufa viewing and photography is a significant recreation attraction and activity at the lake;

- assume that significant differences in channel erosion potential among the alternatives exist and cannot be ignored, noting that in-channel restoration efforts will be impeded more often by longed periods of higher flows under the higher lake-level alternatives; and

- recognize the fact that a return toward natural conditions in Mono Basin would be accompanied by a loss of tufa accessibility and recreational use of South Tufa and, at least in the near term, with an increased potential for tributary stream channel erosion.

SWRCB also notes that Caspian terns would not be adversely affected by choice of any alternative.

X3. EIR Analyses Do Not Meet Scientific Standards

Summary of Comments

A few commenters, exasperated by a scientific projection beyond known data in the EIR, criticize some analyses as being speculative and therefore inappropriate for a scientific evaluation. LADWP criticized the entire document in this regard, further declaring over one issue that "applying untested speculation is unscientific; when done to support a preconceived conclusion it is advocacy."

LADWP's specific criticisms of the EIR include:

- using anecdotal information, especially historical recollections ("in equal parts nostalgia and speculation") that have little value if not supported by historical records;

- using information not previously subjected to refereed peer review (journal publication);

- projecting trends beyond ranges of data collection;

- hesitating to project results of the aquatic productivity model beyond ranges of data collection to high lake levels because of contradictory indications of historical observations;

- not disproving all potential counter-theories (e.g., unobserved predation of alkali flies by unidentified organisms);

- using material developed by Mono Lake researchers when the researchers were only undergraduates in the process of achieving doctorates in aquatic biology;

- discussing factors that are not completely understood (e.g., biological values of soft and hard substrates in the lake) and assuming unproven relationships to permit comparative impact assessment between the alternatives;

- drawing conclusions based on relative extents of suitable habitats; and

- drawing qualitative conclusions after acknowledging that impacts cannot be accurately estimated (e.g., cumulative land use effects).

Response

SWRCB or its consultants do not advocate any particular resolution of Mono Basin water rights in the EIR. SWRCB's responsibility is to consider the various alternatives advocated and to judge them against legal mandates. LADWP's allegation to the contrary is inappropriate.

CEQA imposes a different standard on impact analysis than that of the scientific literature. Commenters are referred to Sections 15144 and 15145 of the State CEQA Guidelines, which state:

> Drafting an EIR . . . necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.
>
> If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact.

In contrast to the scientific method of strict deductive logic, SWRCB is required to extend its analyses as far as is reasonably possible based on information that is available or can be developed within the required decision period. SWRCB has considered all of the models and analyses reported in the EIR and has considered expert testimony presented during the water rights hearing. SWRCB believes that the analyses provide reasonable forecasts. The EIR discusses the nature of data sources and SWRCB's confidence in each of the forecasts. SWRCB did not embrace model predictions when they appeared to conflict with observational data.

X4. Other CEQA Provisions Are Not Met

Summary of Comments

A variety of comments questioning compliance with CEQA have been expressed, in addition to Comments X1 through X3, which are responded to above.

LADWP comments that the EIR inadequately describes the *benefits* of the proposed water exports, including economic, social, and environmental benefits. LADWP and California Trout (Caltrout) also contend the EIR does not document the marked recovery of the tributary streams over the past several years of stream rewatering.

DFG argues that the EIR does not adequately address the means, schedule, and extent of mitigation measures for cumulative wildlife impacts.

State Lands Commission (SLC) contends that inappropriate alternatives have been selected because they do not address a range of instream flow requirements or DFG-recommended streamflows. SLC also asserts that the EIR presents resource values and environmental impacts in such a way as to lead to erroneous conclusions, in particular by implying that lakeshore habitats are as significant as the lake's aquatic habitats and by addressing issues that are not a part of public trust values in Mono Basin. SLC also faults the document for not adequately addressing the relationship between short-term uses and long-term productivity of the environment as required by CEQA.

Another commenter notes that the size and resulting reproduction costs raise the suspicion that the public is not actively encouraged to be part of the CEQA process, contending that the sheer bulk makes the entire document inaccessible. Another notes that citations to the literature do not give page numbers as CEQA requires and complains that where no citations are given, it is unclear whether the conclusions are those of the EIR preparers.

Response

The purpose of an EIR is to identify significant adverse impacts of proposed projects. EIRs clearly are not required to weigh the adverse consequences of an action with the social benefits of the action; that action is the "balancing" that the SWRCB must subsequently perform based not only on the EIR but on evidence brought forward during the hearing process.

Because the proposed action involves an assessment of effects on public trust values, however, the analyses in the draft EIR *do* address relative resource benefits under each alternative. This approach is also helpful given the 1989 point of reference (see the response to Comment X1 above) because many of the predicted resource changes would be beneficial rather than adverse. The draft EIR describes in several places the changes that are occurring because of stream rewatering and, in Chapter 3C, assesses the ultimate recovery of the riparian system that can be expected. LADWP's complaint appears to have more to do with the scope of a brief characterization of the major problems associated with the historical diversions appearing in the introduction chapter of the EIR than with the thorough assessments of impacts and benefits in each topic area that follow.

SWRCB believes the document presents a mitigation or resource-recovery plan for vegetation and wildlife resources at an appropriate level of detail for a EIR. The needed mitigation and recovery actions

can be identified in detail only after a lake-level alternative is chosen. CEQA embodies this approach (Section 21081.6), providing that such a plan needs to be a part of the project decision but need not appear in the EIR. Even at the project decision stage, CEQA's specific requirement for a mitigation reporting and monitoring program applies only where the EIR identifies a significant adverse impact of the project and the lead agency finds that the mitigation measure incorporated into the project would mitigate or avoid that impact.

The issue of alternative instream flow requirements is addressed in the response to Comment A4. Simply put, DFG-recommended streamflows were not available when the draft EIR was prepared.

SWRCB rejects the contention that the draft EIR presents resource values and environmental impacts in such a way as to lead to erroneous conclusions. The draft EIR does not assert that lakeshore habitats are more or less important than aquatic habitats; it fully discloses impacts on each and leaves it to the reader to make value judgments. The fact that the EIR addresses impacts on resources other than public trust resources in Mono Basin, while clearly required by CEQA, does nothing to diminish the importance of the public trust in the decision-making process.

SLC's arguments about the necessity to elaborate further on the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity are unconvincing. The issue at Mono Lake is not one of extracting a resource in the short term at the expense of long-term environmental quality. It is, as the EIR asserts, a question of two competing long-term uses. In any event, this issue seems academic; the real issue is whether the draft EIR describes in detail the values that will be lost under each lake-level alternative. SWRCB believes that it does.

SWRCB apologizes for the sheer bulk of the EIR. It resulted from the long history of controversy and the intense level of scientific scrutiny that has been cast over Mono Basin. Many issues therefore needed to be addressed in detail. CEQA allows for charging of reproduction costs, but, by distributing copies to libraries, SWRCB provided access for those individuals unable to pay those costs. SWRCB is not aware that any interested person was unable to obtain a copy of the EIR during the review period.

Any conclusion in the draft EIR unaccompanied by a citation is the responsibility of SWRCB staff. Many citations in the draft EIR refer not to specific pages, but to entire bodies of work. Page numbers would have been too unwieldy to report systematically. The EIR preparers are available, however, to provide specific page or section references for particular citations on request.

X5. Public Trust Issues Are Inadequately Addressed

Summary of Comments

Several commenters presented briefs tracing the history of court cases construing the public trust doctrine in relation to Mono Basin water diversions and setting forth their interpretations of these legal mandates.

Some commenters point out that tributary streamflows must be determined so as to satisfy state law independent of the public trust balancing required for lake-level determination. One commenter also maintains that neither application of the public trust doctrine nor California Fish and Game code permit degradation of Mono Basin resources for the purposes of enhancing conditions outside of the basin, such as the Owens River fisheries.

Some commenters believe the EIR does not clearly point out that SWRCB has an affirmative duty to protect public trust uses whenever feasible.

Another commenter declares that the formulation of alternatives in the EIR poorly addresses lake levels for public trust protection because the prediversion point of reference was used for project impacts. This commenter also maintains that the EIR confuses public trust resources in Mono Basin with other resources in and beyond the basin, potentially confusing SWRCB's public trust balancing. Another commenter contends that air quality is a public trust value and must be considered in the balancing regardless of the U.S. Environmental Protection Agency's regulatory authority over this resource.

Other commenters allege that an analysis of the feasibility of restricting exports of water from Mono Basin is absent from the EIR, noting the "feasibility" under the Audubon decision is different from "feasibility" under CEQA.

Response

SWRCB generally agrees with most of these comments on its responsibility for protecting public trust resources. However, the draft EIR more than adequately addresses this issue. The function of the EIR is perhaps more limited than countenanced by these commenters. The EIR function is not to serve as SWRCB's staff analysis or decision document. It is not a vehicle to present SWRCB's understanding of implications of the public trust doctrine to Mono Basin. Its primary function is much more limited: to clearly describe the environmental impacts of different required streamflows and different management lake level. The EIR clearly provides this information.

SWRCB is aware of its duty to resolve streamflow requirements under California Fish and Game Code prior to balancing protection of public trust resources against the need for water and power. SWRCB's responsibility for public trust resource in general also requires that it prevent unnecessary harm to resources in the Upper Owens River basin, if feasible. Possible benefits of Mono Lake exports for

public trust uses in the Upper Owens River cannot provide a basis for overriding California Fish and Game Code requirements for Mono Lake tributary flows sufficient to restore and maintain the historic fishery. Impacts on public trust uses of the Upper Owens River may be considered, however, in determining what additional level of protection should be provided for public trust uses in Mono Basin. The California Fish and Game Code does not require that any minimum level of exports to the Upper Owens River be maintained.

The draft EIR does not confuse public trust resources in Mono Basin with other resources, but, under CEQA, SWRCB has an affirmative duty to consider impacts on all resources before making a decision. Air quality is a public trust resource (see the response to Comment X7). SWRCB strongly disagrees that the EIR fails to examine the feasibility of restricting water exports from Mono Basin. Chapter 3L, "City of Los Angeles Water Supply", examines this issue in detail, illuminating the possibilities under any definition of "feasibility".

X6. Fisheries Laws, Rules, and Regulations Are Inadequately Considered or Applied; Recommendations of the California Department of Fish and Game Must Be Adopted

Summary of Comments

One commenter notes the DFG recommendations for minimum streamflows are based on optimizing fisheries, which is not required under California law. DFG states, however, that its recommendations are those streamflows required to keep fish in good condition, which is required by law. Several commenters reminds us that the court in the Caltrout decision noted that the requisite administrative expertise for determining such streamflows resides principally with DFG. They ask that the EIR commit to adopting DFG recommendations.

Some commenters contend that the alternatives selected are inappropriate because they do not address a range of instream flow requirements or do not embody DFG-recommended flows.

As described in the response to Comment X5, some commenters point out that tributary streamflows must be determined so as to satisfy state law independent of the public trust balancing required for lake-level determination.

One commenter asks why the project objective does not include protection of the Upper Owens River fishery because, as formulated, several alternatives would present significant adverse impacts on the Upper Owens River fishery. Among the alternatives, increments of benefits to Mono Basin fisheries are considerably less than increments of degradation to the Owens River fishery. Because the channel of the Upper Owens River has adjusted to basin exports, it is argued, some continuing export is needed to maintain the new fishery habitat conditions.

DFG also notes that none of the alternatives embody fishery flows in the presently dewatered reach of Rush Creek below the dam to the Return Ditch, noting that the dewatered condition represents continuing violation of law.

Although the comment (4-164) was difficult to interpret, DFG apparently notes that the EIR does not address fishery effects of fluctuating streamflows due to upstream power generation.

One commenter asked why Mill and Wilson Creeks were not included in the cumulative fishery impact analysis because they too are diverted, although within the basin.

Another commenter asks why the EBASCO Environmental report on the Upper Owens River fishery was not utilized more fully, especially to set a maximum export flow of 200 cubic feet per second (cfs) rather than 300 cfs.

Response

California law requires that fisheries remain in good condition below LADWP's diversions; this law has been construed by the court for Mono Basin streams to require restoration of the prediversion fishery. The Restoration Technical Committee, appointed by the El Dorado County Superior Court, has based its restoration planning on an assumption that this mandate requires it to attempt to restore the conditions that benefitted the prediversion fishery. The EIR concludes that complete restoration of prediversion conditions is probably impossible because of irreversible geomorphic changes. DFG's use of the term "optimal" presumably refers to streamflows that would come closest to restoring the preproject fishery.

SWRCB will give great weight to the recommendations of DFG. The analysis in the EIR accepted the major conclusions of all of the stream evaluation reports providing the basis for these recommendations. None of the comments submitted on the EIR have successfully rebutted these conclusions (see the response to Comment D3 in this chapter).

The issue of alternative instream flow requirements and use of DFG-recommended flows is addressed in the response to Comment A4 in this chapter. DFG-recommended streamflows were not available when the draft EIR was prepared, but the impacts of the entire range of possible streamflows and lake levels is evaluated in the draft EIR.

As noted in the response to Comment X5, SWRCB is aware of its aware of its duty to resolve streamflow requirements under California Fish and Game Code prior to balancing protection of public trust resources against the need for water and power.

The purpose of the proposed project is to ensure that continued export of surface waters from Mono Basin by LADWP conforms to state law, including legal requirements to restore and protect public trust resources. This involves setting tributary flow and Mono Lake elevation requirements to protect Mono Lake and its tributaries. As with any project subject to CEQA, it is also intended to avoid or

mitigate adverse impacts on the environment where feasible. Review under CEQA makes it unnecessary to expressly include as a project purpose the protection of environmental resources that might be adversely affected by the project. Impacts on the Upper Owens River fishery resulting from changes in Mono Basin exports will be considered without modifying the project objective. Expanding the project purposes to include protection of Upper Owens fisheries would also require evaluation of factors unrelated to LADWP's diversions from Mono Basin, unnecessarily delaying resolution of Mono Basin public trust issues.

Construction and operation of LADWP's Mono Basin diversion facilities have effectively relocated the channel of Rush Creek in a reach downstream of Grant Lake. Releases below Grant Lake now flow through the Mono Gate 1 return channel, which provides good-quality fish habitat when flows are sufficient. DFG-recommended instream flow for Rush Creek is based, in part, on the additional adult brown trout habitat provided in the Mono Gate 1 return channel at higher flows. The California Fish and Game Code does not require LADWP to provide flows to maintain fish in good condition in both the prediversion channel and the relocated channel.

The analysis of fishery impacts of the alternatives is based on the historical flow regime of the tributary streams. Flows were regulated upstream for power production during this period. Thus, the impact assessment of the alternatives addresses the combined streamflow effects of this upstream power generation and LADWP stream diversion. On the other hand, this EIR in no way attempts to evaluate the fishery impacts of the streamflow regulation in the reaches upstream of LADWP's diversions.

Impacts on fisheries in Mill and Wilson Creeks were not evaluated in the EIR because water diversions in those streams are not part of the relicensing action comprising the proposed project, and, furthermore, those diversions are not closely related projects.

DFG's stream evaluation report for the Upper Owens River was considered to the degree possible in the EIR; its completion was long delayed and was not made available to SWRCB in time to be fully used in the draft EIR. DFG's report was completed well after the period during which it was necessary to simulate alternatives (see the response to Comment A4).

The DFG-recommended maximum streamflow in this report for the Upper Owens River has subsequently been used in formulating a refined alternative for possible adoption (see Chapter 5).

X7. California Air Quality Law (Health and Safety Code Section 42316) Prohibits Interference with LADWP Water-Gathering Activities and Represents a Legislative Balancing of Water Rights and Air Quality Public Trust Values

Summary of Comments

One commenter contends that California Health and Safety Code Section 42316 prohibits the Great Basin Air Pollution Control District (GBAPCD) from taking actions that affect LADWP's water-gathering activities and represents a legislative balancing of public trust issues to favor LADWP water rights over air quality issues in Mono Basin. The commenter concludes that air quality issues are therefore not germane to the SWRCB water rights action.

Response

The interpretation of Health and Safety Code Section 42316 presented in this comment is not supported by any judicial interpretation or by the statute's legislative history. Furthermore, the commenter's interpretation is contradicted by the plain language of the statute.

As noted in the draft EIR, Section 42316(a) expressly authorizes GBAPCD to "require the City of Los Angeles to undertake reasonable measures, including studies, to mitigate the air quality impacts of its activities in the production, diversion, storage, or conveyance of water. . . . The mitigation measures shall not affect *the right* of the city to produce, divert, store, or convey water" (emphasis added). There is no reference anywhere in the statute to any restriction of GBAPCD authority over "the water gathering activities of LADWP". The substantive restriction on the authority of GBAPCD is carefully phrased in terms of the city's water rights, not in terms of the manner in which those rights are exercised.

The legislative history of Senate Bill 270 (1983), which added Health and Safety Code Section 42316, indicates that the legislature rejected LADWP's request that the language of the statute be revised to read: "The mitigation measures shall not affect the City's water rights, water gathering and production operations, or the quantities of water produced, diverted, stored or conveyed by the City." The restrictive language of the statute remained specific to water rights aspects only.

The plain language of the statute and its intent are clear: GBAPCD does not have, and probably never had, any authority to unilaterally change or modify water rights assigned to the City of Los Angeles by SWRCB. The statutory proviso that mitigation measures required by the GBAPCD shall not affect LADWP's water rights reflects a deference to, and not a limitation on, the water right authority of the SWRCB.

The most significant aspect of Section 42316 is the express authorization for GBAPCD to require that the City of Los Angeles mitigate the indirect air quality effects produced by the exercise of the city's water rights within the jurisdictional boundaries of GBAPCD.

Section 42316 is found in Part 3 (Air Pollution Control Districts), Chapter 4 (Enforcement), Article 1 (Permits) of the Health and Safety Code. This portion of the Health and Safety Code addresses the air quality permitting authority of air pollution control districts and air quality management districts. Section 42316 applies expressly to the GBAPCD, not to SWRCB or any other state or local agency.

Section 42316 contains no reference whatsoever to public trust issues or the balancing of public trust issues. Additionally, the legislative counsel's digest to the legislation, which added Section 42316 as an urgency statute (Senate Bill 270 [1983]), contains no reference whatsoever to public trust issues or public trust balancing.

This commenter has stated in writing that "Air quality in Mono Basin has been determined by the Board to be one of the public trust values which must be considered in the balancing process." (July 2, 1993 letter to U.S. Environmental Protection Agency [EPA] requesting an extension of the deadline for commenting on the proposed PM10 nonattainment designation for Mono Basin).

X8. Water Quality and Environmental Impacts of Developing Alternative Water Supplies Are Not Evaluated

Summary of Comments

One commenter notes that, in the Audubon case, the court stated that SWRCB must weigh the environmental impacts of obtaining alternative water supplies against preserving the public trust values of Mono Lake and points out that the draft EIR does not assess impacts of acquiring alternative supplies. Potential impacts mentioned by the commenter include endangered species in the Sacramento-San Joaquin Delta and elsewhere. The commenter contends that the contingent value household survey was flawed because it did not let respondents know about replacement water impacts.

Other commenters contend that the substitution of water from the Delta or elsewhere may have significant water quality implications and require LADWP to change its water treatment facilities or systems to conform to drinking water standards.

Another commenter faulted the EIR for not evaluating the environmental and economic impacts and benefits of transferring water now used for irrigation of LADWP lands in the Owens River basin to the city's water supply.

Response

CEQA requires that SWRCB forecast effects of reduced water supply, using its best efforts to find out and disclose all that it reasonably can, but requires that SWRCB should not speculate beyond a reasonable evaluation. The evaluation of water supply alternatives in the EIR conforms to these criteria.

SWRCB considered LADWP's potential options for acquiring replacement water supplies for reductions in Mono Basin exports that would occur under the alternatives and reported this information in detail in the EIR. The response to Comment L3 responds to comments criticizing that evaluation.

Although SWRCB was able to assess the range of reasonable options for alternative supplies, it concluded that the actual mix of supplies actually utilized, together with an assessment of the resulting water quality and environmental impacts, would be highly speculative. Many variables are involving in formulating the future mix of replacement sources and many alternatives are possible.

SWRCB can only speculate on how LADWP will meet its future water supply challenges. This extreme uncertainty renders impossible a meaningful evaluation of future water quality and environmental effects of using new water supplies. The decisions regarding future water supply acquisitions or decisions to develop new alternative water supplies are the responsibility of LADWP. However, the draft EIR did evaluate the effect on drinking water quality of supplies delivered from Mono Basin and the Owens River basin to the LA Aqueduct. No significant impacts were identified for any of the alternatives.

The decision to transfer irrigation water used by LADWP or its lessees in Mono or Inyo Basins for use in the City of Los Angeles is the responsibility of LADWP. That decision will be made based on pertinent economic and political factors.

X9. Effects of the Alternatives on the Threatened or Endangered Status of Mono Lake Brine Shrimp Are Not Addressed

Summary of Comments

USFWS alleges that the EIR failed to address the status of the Mono Lake brine shrimp as a Category 1 candidate species for federal listing as endangered or threatened.

The agency advocates that if SWRCB adopts an alternative that would result in a significant cumulative effect on the brine shrimp (i.e., the 6.383.5-Ft Alternative or lower lake level alternatives), listing as threatened or endangered may be warranted. USFWS asks SWRCB to discuss this issue in the final EIR.

Response

The status of the Mono Lake brine shrimp as a candidate species (Category 1) for federal listing as endangered or threatened under the Endangered Species Act was noted in Appendix E of the EIR (see page E-1 and Table E-1).

The impact assessment for brine shrimp in the draft EIR predicted significant reductions in brine shrimp production from estimated prediversion values for all lake level alternatives below the 6,390-Ft Alternative. However, except for the No-Restriction Alternative, there is no evidence that persistence of the brine shrimp population would be threatened under any of the alternatives.

The predicted salinity for the No-Restriction Alternative, 133 grams per liter (g/l), approaches salinities that caused complete hatching failure of brine shrimp cysts in experiments (see Appendix J, page J-4). Complete hatching failure of cysts would cause extinction of the brine shrimp population. Hatching success at the predicted salinity for the 6,372-Ft Alternative, 92 g/l, was about the same as that at lower salinities (Herbst and Embury 1993). Therefore, the continued survival of the brine shrimp population would probably be threatened only at the No-Restriction Alternative lake elevation.

If the brine shrimp is listed, commercial harvesting of the shrimp may be prohibited (Brown pers. comm.). However, a special rule may be invoked to allow continued harvesting. This rule can be used if the species is listed as threatened, but not if it is listed as endangered.

X10. An Antidegradation Threshold for Outstanding National Resource Waters Is Improperly Formulated

Summary of Comments

LADWP claims that considering 85 g/l to be a federal antidegradation threshold is irrelevant in the context of a saline lake and is biologically and limnologically meaningless.

The Lahontan Regional Water Quality Control Board asserts that the antidegradation policies apply to any water quality standard, not just salinity.

Another commenter contends that an increase in a constituent above a standard cannot be considered as necessarily constituting degradation of water quality; rather, use must be impaired, such as number, types, and characteristics of key aquatic organisms.

LADWP also claims that the federal antidegradation regulation applies to Lake Crowley Reservoir: increased eutrophication caused by reduced Mono Basin exports has already degraded beneficial uses.

Response

The biological implications of different Mono Lake salinities are described in Chapter 3E, "Aquatic Productivity", of the draft EIR (also see the responses to Comments E1 through E5). The EIR does report that lake level alternatives lower than the 6,390-Ft Alternative would result in significant reduction of brine shrimp productivity from the prediversion condition. The productivity continues to diminish as the lake level falls. This impairment of use provides a biological basis for limiting the degradation of Mono Lake's waters.

LADWP's assertion that an antidegradation threshold is inappropriate is based on arguments about saline lakes in general and not on conditions specific to Mono Lake. In making this assertion, LADWP ignores one of the central purposes of antidegradation policies: to address unique or site-specific conditions that are not adequately addressed by standards applicable to general categories of water bodies. The 85-g/l value of an antidegradation threshold is based on Mono Lake's salinity and would apply to no other lakes; therefore, the charge of irrelevance is incomprehensible.

The potential for eutrophication of Lake Crowley Reservoir is discussed in the response to Major Issue B2. The federal antidegradation policy and SWRCB Resolution No. 68-16 apply to water quality constituents or characteristics in addition to salinity. The EIR's evaluation of impacts on salinity also serves to illustrate impacts on other water quality parameters that are conserved in Mono Lake and affected by LADWP's diversion. The antidegradation policies apply only to reductions in water quality. Whether the reduction impairs beneficial uses is a factor to be considered in applying the policies. Under the federal antidegradation policy, reductions from the water quality that existed when the policy was adopted in 1975 cannot be permitted if instream beneficial uses would be impaired or the quality of outstanding national resource waters would be impaired.

The federal antidegradation regulation applies to all surface waters. In contrast to Mono Lake, however, Lake Crowley Reservoir does not appear to have the exceptional recreational or ecological significance that would support designation as an outstanding national resource water. The federal antidegradation policy's stringent prohibition against reductions in the quality of outstanding national resource waters does not apply to Lake Crowley Reservoir. Also in contrast to Mono Lake salinity, changes in LADWP's diversions from Mono Basin do not have a significant impact on phosphorus concentrations in Lake Crowley Reservoir.

X11. Impact Assessments of Project-Related Irrigation and Grazing Changes Are Absent

Summary of Comments

DFG demurs that an analysis of benefits and impacts of anticipated changes in irrigation and grazing on LADWP lands along the diverted tributary streams did not appear in the draft EIR. Furthermore, it urges SWRCB to include an analysis of opportunities to reduce conflicts between livestock grazing and important habitat for riparian and upland wildlife species through modification of past grazing management practices.

Another commenter complains that the draft EIR erroneously attributes losses of riparian vegetation or fishery habitat to grazing along the Upper Owens River and requests that a thorough assessment of the effects of current grazing practices along the Upper Owens River be included in the EIR.

Response

Impacts of grazing on LADWP lands along the diverted tributary streams have been considered in formulating a refined alternative for possible adoption (see Chapter 5). Livestock grazing on LADWP property in the riparian corridors downstream of LADWP's points of diversion for export would be prohibited for a minimum of 10 years.

The EIR should address impacts of the project alternatives on current land use practices to the degree that speculation is not required. Should imposition of a lake level/ streamflow alternative affect irrigation practices and livestock management, predictable impacts must be identified.

In this case, the selection of a particular alternative will not result in predictable changes in irrigation and grazing, except as specified in the refined alternative formulated for possible adoption. Under the alternatives set forth in the draft EIR, LADWP has discretion to alter its irrigation or grazing management practices and, in fact, has been instituting such changes (see, for example, page 3G-24 of the draft EIR), but these changes are not directly related to imposition of a particular feasible lake level/streamflow alternative.

The No-Restriction Alternative, as formulated in the draft EIR, is a benchmark alternative intended to represent continuation of former practices of LADWP; thus it was simulated assuming continuation of historical patterns of irrigation diversions. This alternative does not meet the project objectives. All feasible alternatives are simulated with an assumption that historical irrigation will not continue on the Cain Ranch below the Lee Vining conduit but will continue on LADWP lands along the Upper Owens River, reflecting LADWP's most recently described management policies.

Grazing management practices on LADWP, private, or other public lands, such as choice of animal species, locations of herding and bedding areas, pasture rotation schemes, and timing of irrigation, are also subject to the landowner's discretion. Except as specific requirements for grazing are incorporated into an alternative (e.g., the alternative proposed for possible adoption), these grazing management practices are not related to the choice of a lake level/streamflow alternative.

The issue of irrigation and grazing impacts along the Upper Owens River is also addressed in the response to Comment 28-5.

HYDROLOGY AND FORMULATION OR CHARACTERIZATION OF ALTERNATIVES (A)

A1. LAAMP Model Was an Erroneous or Inadequate Basis for Impact Assessments

Summary of Comments

Several comments on the draft EIR concerned the development and application of the Los Angeles Aqueduct Monthly Program (LAAMP) model for determining the potential effects of alternative lake levels and streamflow conditions that were analyzed in the draft EIR.

Version 2.0 of the LAAMP model (LAAMP 2.0), which was used for the draft EIR simulations, was distributed in April 1992 and has been used subsequently by LADWP staff and consultants, SWRCB staff, Mono Lake Committee (MLC) staff and consultants, and other interested parties. During their review of the draft EIR, these users identified several coding errors, which were reported to the SWRCB consultants who designed the model.

Staff and consultants of SWRCB and LADWP and other interested parties met on September 20, 1993, to discuss the coding errors in LAAMP 2.0 and the suggested changes to the assumed aqueduct operations and corresponding LAAMP model inputs, calculations, and output variables. This meeting effectively reactivated the Aqueduct Modeling Technical Advisory Group (TAG) that was initially established by SWRCB staff at the beginning of the draft EIR effort in 1989. A task description and budget were approved by SWRCB and LADWP staff for the model changes by SWRCB consultants, and the corrections and changes were completed and reviewed by the TAG and submitted as part of the water rights hearings in Version 3.3 of the LAAMP model (LAAMP 3.3). A slightly modified version of LAAMP 3.3, called LAAMP 3.31, was used for the water rights decision.

Summary Response

LAAMP 3.3, as revised by the Aqueduct Modeling TAG concurrently with the water rights hearing, is a useful tool for analyzing Mono Basin water management effects and aqueduct water supply impacts of the alternatives identified in the draft EIR documents, variations of these draft EIR alternatives, and various instream flow recommendations. All identified errors have been corrected.

The differences between the simulation results of LAAMP 2.0 and LAAMP 3.3 are relatively small. The results for LAAMP 3.3 have been generally confirmed by comparison with historical LADWP operations for 1970-1989. The errors identified in LAAMP 2.0 and corrected in LAAMP 3.3 are discussed in the following "Detailed Response" section.

The results of LAAMP 3.3 are very similar to the results presented in the draft EIR. The monthly allocation of water from Mono Lake tributaries to instream flows and Mono Lake level management releases, and to seasonal storage in Grant Lake reservoir for export through West Portal to the Upper Owens River, remain essentially as simulated by LAAMP 2.0 in the draft EIR. Although several additional constraints of the Los Angeles (LA) Aqueduct system in the Owens Valley have been included in LAAMP 3.3, the basic results in the Owens Valley are also essentially similar to those simulated by LAAMP 2.0 in the draft EIR.

The results of LAAMP 3.3 for the No-Restriction Alternative are quite similar to the actual operation of the LA Aqueduct system for 1970-1989, when the second aqueduct barrel was completed between Haiwee Reservoir and Los Angeles. The historical verification indicates that many of the essential features of the aqueduct system have been simulated accurately with LAAMP 3.3 for the No-Restriction Alternative. The historical verification suggests that LAAMP 2.0 results for the draft EIR alternatives and for other simulated water management alternatives can be used with confidence for further analyzing environmental and water supply impacts.

Detailed Response

Comparison of LAAMP 3.3 results with the LAAMP 2.0 results demonstrates that the corrections and changes included in LAAMP 3.3 do not substantially change the LA Aqueduct simulations that provided the basis for many impact assessments in the draft EIR. Both LAAMP 2.0 and LAAMP 3.3 results for the No-Restriction Alternative follow the historical aqueduct patterns observed during the 1970-1989 period, when both barrels of the LA Aqueduct were in operation.

The corrections and revisions in LAAMP 3.3 were accomplished concurrently with the water rights hearing, beginning October 25, 1993. The revised LAAMP model was submitted to the Aqueduct Modeling TAG members for their review and testing. Some remaining errors were identified and additional changes were suggested in a series of meetings and telephone calls. Several intermediate versions of LAAMP were tested by the Aqueduct Modeling TAG members. The most recent meeting was held on January 19, 1994, to discuss appropriate input values for the latest version of LAAMP, designated

LAAMP 3.3. All the identified errors have been corrected, and the requested revisions are now giving expected results.

Most of the required corrections to LAAMP 2.0 (used for draft EIR simulations) involved either aqueduct capacity constraints or water budget terms in the Owens Valley that may have indirectly influenced the simulated West Portal exports from Mono Basin. Revisions were also necessary to eliminate excess Mono Basin exports when the specified lake release was not satisfied because of streamflow deficits later in the year. LAAMP 3.3 results for the No-Restriction Alternative were used to demonstrate historical confirmation and to compare annual and monthly results from LAAMP 2.0 that were analyzed in the draft EIR.

The major corrections in LAAMP 3.3 are as follows:

- Stream Flushing Flows. Although this portion of LAAMP was not used for the draft EIR alternatives, corrections were made to properly account for stream habitat flushing flow requirements during multiple-year flushing cycles. Stream flushing flows, when not required each year, are satisfied only by a "wet-year" flushing volume in months since the last runoff year with a flushing flow.

- Aqueduct Capacity Constraints. The capacity constraints at Tinemaha, Pleasant Valley, and Long Valley reservoirs were corrected to provide accurate simulations of storage and outflow during periods of excess runoff. Aqueduct capacity constraints were added for Long Valley and Pleasant Valley reservoir spilling and for Lower Owens River spill below the aqueduct intake.

- Tinemaha and Haiwee Reservoirs. Evaporation at the two reservoirs (9,000 af/yr [9 TAF/yr]) was inadvertently neglected. The aqueduct transit gains between Tinemaha and Haiwee reservoirs (9.3 TAF/yr) were improperly subtracted as transit losses. The specified minimum operational spilling (6 TAF/yr) was also inadvertently ignored. The net effect of these three water budget errors was that a loss of about 3 TAF/yr greater than the actual loss was simulated for the Owens Valley, out of a total of about 200 TAF/yr of simulated uses and losses. These water budget terms were corrected to properly include the maintenance spilling and aqueduct gains.

- Owens Valley Groundwater. The maximum monthly and annual groundwater pumping limits were slightly exceeded in some situations. Additional checks were added to satisfy the pumping limits at all times. These pumping limits were corrected to prevent the last month from overshooting annual limits.

- Lee Vining, Rush, and Bishop Creek inflows had been obtained from LADWP regressions of monthly runoff that accounted for Southern California Edison upstream storage, but did not always yield accurate estimates of historical flow in these three creeks. LAAMP 3.3 uses "actual" flows for these creeks from the LADWP-adjusted "Totals and Means" monthly

database. Lee Vining, Rush, and Bishop Creek model inputs were corrected with LADWP data.

- Streamflow target deficits were calculated and used to more accurately estimate annual lake release and export target values.

The No-Restriction Alternative provides an opportunity to determine the overall effects of the corrected water budget terms and aqueduct constraints. This alternative is also the most appropriate for comparing the LAAMP 3.3 results with historical operations of the LA Aqueduct system.

Table 4-1 gives an average annual summary of the major hydrologic terms included in LAAMP 3.3 for the No-Restriction Alternative. These terms include inflows, pumping, gains, uses, losses, and exports for Mono Basin and the Owens Valley. The general magnitude of each term is given, although the year-to-year and seasonal variations are not shown in Table 4-1. The changes between LAAMP 2.0 and LAAMP 3.3 are relatively small. The largest changes were in water budget terms for Long Valley gains and Tinemaha to Haiwee area losses.

Table 4-2 gives a summary of the aqueduct capacity constraints that were specified for LAAMP 2.0 and LAAMP 3.3. The Aqueduct Modeling TAG review did not identify any major errors in the LAAMP 2.0 aqueduct constraint values, but several constraints have been added in LAAMP 3.3 that were not considered in LAAMP 2.0. The added capacity constraints include spill thresholds for Long Valley, Pleasant Valley, Tinemaha (aqueduct intake), and Haiwee reservoirs. Most of these capacity constraints are specified as inputs, so the effect of these new constraints on LAAMP 3.3 results can be directly determined.

The most important change in the aqueduct capacity constraints is the specified aqueduct capacity from Haiwee reservoir to Los Angeles. LAAMP 2.0 assumed a full capacity of 800 cubic feet per second (cfs) for all months, and LAAMP 3.3 uses the value of 750 cfs, as recommended by LADWP. This change reduced the simulated Haiwee exports during the first 6 months of each runoff year (April-September) by about 3 TAF/month, which generally caused increased reservoir storage and spreading during these runoff months. The monthly Haiwee export target values for October-March were correspondingly increased by 3 TAF/month to maintain the same annual export targets for each year type, as observed during 1970-1989.

A second important change in the capacity constraints was the minimum reservoir storage targets for Grant Lake and Lake Crowley reservoirs. The draft EIR simulations used a relatively high Grant Lake reservoir minimum storage of 20 TAF whereas LAAMP 3.3 uses a minimum storage of 11.5 TAF for the No-Restriction Alternative. Similarly, the draft EIR simulations used a Lake Crowley reservoir minimum storage of 120 TAF for all year types whereas, for the No-Restriction Alternative, LAAMP 3.3 specifies a minimum storage of 120 TAF for wet years, 100 TAF for normal years, and 80 TAF for dry years. The net effect of these changes was to allow increased storage fluctuations in both Grant Lake and Lake Crowley reservoirs that reduced spilling from the reservoirs during some wet years and therefore increased Mono Basin and Haiwee exports by an average of about 4 TAF/yr.

Table 4-3 compares LAAMP 3.3 and LAAMP 2.0 simulated results for the No-Restriction Alternative, point-of-reference condition, 6,377-Ft Alternative, 6,383.5-Ft Alternative, and 6,390-Ft Alternative, as described and analyzed in the draft EIR. The most important variables for comparison of LAAMP results are releases to Mono Lake, exports from Mono Basin, Owens Valley groundwater pumping (held constant once simulated for the No-Restriction Alternative), spreading, spilling, Haiwee exports, and deliveries to Los Angeles. Irrigation uses in Mono Basin, the Mono Lake median (exceeded 50% of the time) and ending elevations, and total Owens Valley uses are also given in Table 4-3.

No-Restriction Alternative. Figure 4-1 shows the simulated Mono Lake elevation for the No-Restriction Alternative. The comparison with historical lake levels is for reference only because the assumed starting elevation for the No-Restriction Alternative was 6,376.3 feet, not the historical elevation of 6,417 feet. Some of the effects of hydrologic variations, however, can be seen in both the historical and simulated lake level fluctuations.

The results indicate that although the simulated No-Restriction Alternative exports are greater than the historical exports, the lake level does not decline as much in the simulation as during the historical period because the lake surface area is smaller and lake evaporation is thus much more nearly balanced by the combined Mono Lake inflows. The simulated lake level declines to about 6,350 feet before increasing during the wet years near the end of the historical record.

The LAAMP 3.3 simulated lake levels are slightly lower than the draft EIR levels for the No-Restriction Alternative because LAAMP 3.3 simulated exports that averaged about 3 TAF/yr greater than LAAMP 2.0 simulated exports.

Figure 4-2 shows the annual simulated exports from Mono Basin for LAAMP 3.3 compared with LAAMP 2.0 results, with the historical annual exports shown for reference. No-Restriction Alternative exports averaged 85 TAF/yr, while the LAAMP 3.3 simulated exports averaged 87.9 TAF/yr. Almost all of this increase (3 TAF/yr) can be explained by the lower Grant Lake and Lake Crowley reservoir minimum storage targets specified in LAAMP 3.3 that reduce the spills from Grant Lake reservoir.

Figure 4-3 shows the simulated pattern of Mono Basin exports as a function of Mono Basin runoff for the No-Restriction Alternative, with the historical exports shown for comparison (indicated by runoff year number). When the available runoff is less than about 120 TAF/yr (about the average Mono Basin runoff), all the available runoff was simulated to be exported. As the available runoff increased, however, not more than about 140 TAF/yr was simulated to be exported. As the available runoff increased beyond 200 TAF/yr (1967, 1969, 1982, and 1983), the simulated export decreased substantially because of downstream aqueduct conditions limiting the need for Mono Basin exports. This simulated pattern reproduced the historical pattern of Mono Basin exports during periods of high runoff.

Figure 4-4 shows the simulated LAAMP 3.3 and LAAMP 2.0 patterns of annual groundwater pumping in the Owens Valley for the No-Restriction Alternative, along with the historical pumping volumes. Historical groundwater of about 20 TAF/yr before 1970 was generally from artesian "flowing wells" rather than from pumping because of the limited aqueduct capacity from Haiwee to Los Angeles. Groundwater pumping increased after 1970 to help supply water for the second aqueduct barrel between Haiwee and Los Angeles. Several pumping restrictions and annual agreements between Inyo County and Los Angeles have contributed to the differences between the simulated and historical values. Nevertheless, the similarity between LAAMP 2.0 and LAAMP 3.3 results and the historical fluctuations during the 1970-1989 period is apparent.

The simulated No-Restriction Alternative pumping pattern was used in all subsequent simulations of draft EIR alternatives and other water management alternatives. Consistent use of this pattern prevents any simulated loss of Mono Basin exports from causing increased simulated groundwater pumping in the Owens Valley. The long-term average groundwater pumping with LAAMP 3.3 was about 107 TAF/yr, only slightly less than the 111 TAF/yr simulated with LAAMP 2.0 for the draft EIR alternatives. Both simulations are close to the 1970-1989 historical pumping that averaged 107 TAF/yr.

Figure 4-5 shows the relationship between LAAMP 3.3 and LAAMP 2.0 simulated groundwater pumping and Owens Valley runoff. As runoff increases, the need for groundwater pumping to supply the aqueduct exports decreases. However, the minimum specified pumping of about 40 TAF/yr necessary for uses in the Owens Valley is simulated even in wet years. The greatest pumping, of about 190 TAF/yr, is simulated in normal years with reduced runoff, not dry years, because the export targets are sufficiently reduced in dry years to limit the need for groundwater pumping. Both LAAMP 2.0 and LAAMP 3.3 simulations of Owens Valley groundwater pumping follow the historical 1970-1989 pattern quite well.

Figure 4-6 shows the simulated Haiwee exports for both versions of LAAMP, with the historical values shown for reference. The large historical increase between 1969 and 1970 was the result of completion of the second aqueduct barrel from Haiwee Reservoir to Los Angeles. The match with historical exports from 1970 to 1989 for both LAAMP 2.0 and 3.3 simulations is quite good. The LAAMP 3.3 simulated average was 469 TAF/yr, and the historical 1970-1989 average was 468 TAF/yr. The year-to-year differences between the simulated and historical values are attributable to differences in the historical and simulated carryover storage.

All the LAAMP 3.3 revisions would be expected to contribute to simulated differences at Haiwee because Haiwee reservoir is the downstream end of the simulated aqueduct system. The LAAMP 3.3 simulated Haiwee exports for the No-Restriction Alternative were about 23 TAF/yr higher than LAAMP 2.0 results. Because Mono Basin exports were slightly greater (3 TAF/yr) and Owens Valley groundwater pumping was slightly less (3 TAF/yr), the simulated differences at Haiwee were likely caused by the corrected water budget terms in LAAMP 3.3. As Table 4-1 indicates, gains in Long Valley and transit gains between Tinemaha and Haiwee account for the largest changes. The net effect of all corrections and revisions between LAAMP 2.0 and LAAMP 3.3 produced an increase in Haiwee exports of about 23 TAF/yr.

The delivery of aqueduct water to Los Angeles is less than the simulated Haiwee exports because of transit losses between Haiwee reservoir and Los Angeles. The assumed value of transit losses in LAAMP 2.0 was 10.3 TAF/yr and the corrected value used in LAAMP 3.3, which includes Bouquet reservoir evaporation and fish flow releases, is 15.1 TAF/yr.

The following figures show LAAMP 3.3 simulated No-Restriction Alternative and historical monthly patterns for several important aqueduct flows and reservoir storage volumes for 1970 through 1989. These results confirm the general capability of LAAMP 3.3 to accurately simulate seasonal and year-to-year fluctuations in aqueduct operations.

Figure 4-7 shows the simulated and historical monthly flows in Lee Vining Creek. The periods of excess runoff when historical releases were made to Mono Lake were generally matched with the No-Restriction Alternative LAAMP 3.3 simulations. These results are similar to those for LAAMP 2.0 shown in Auxiliary Report 18.

Figure 4-8 shows the simulated and historical monthly flows in Rush Creek below Grant Lake reservoir. The periods of excess runoff when historical releases were made to Mono Lake were generally matched with the No-Restriction Alternative simulation. These results are similar to those for LAAMP 2.0 shown in Auxiliary Report 18.

Figure 4-9 shows monthly simulated and historical Grant Lake reservoir storage. The LAAMP 3.3 simulated storage pattern is quite simple because the excess runoff is stored in Grant Lake reservoir for later export. Spills to Mono Lake are simulated only if Grant Lake reservoir storage is exceeded before exports are needed downstream to satisfy Haiwee export targets.

Figure 4-10 shows the monthly simulated and historical West Portal exports. Differences between the simulated and historical Grant Lake reservoir storage and West Portal export patterns are directly related. Periods of reduced simulated exports result in increased simulated Grant Lake reservoir storage. Periods of increased simulated exports produce lower Grant Lake reservoir storage.

Figure 4-11 shows the monthly simulated and historical flows in the Upper Owens River below East Portal. Both the historical and simulated monthly flows fluctuate rapidly in response to available water in Grant Lake reservoir and downstream aqueduct conditions.

Figure 4-12 shows monthly simulated and historical Long Valley reservoir storage. The historical storage pattern is more variable than the simulated pattern because actual operations involve more flexible storage changes in anticipation of runoff and in response to unusual drought conditions.

Figure 4-13 shows the monthly simulated and historical Long Valley reservoir outflows. Only one period of spill is simulated. A spill likely would not occur because actual reservoir operations would include more flexible operations in anticipation of high runoff periods.

Figure 4-14 shows monthly simulated and historical Haiwee exports to Los Angeles. LAAMP 3.3 was successful in matching the seasonal fluctuations in the exports between the "runoff" months of April-September and the "pumping" months of October-March. The reduced simulated exports during dry years was also well matched with historical patterns. The monthly patterns simulated with LAAMP 2.0 were generally similar, with a slightly greater seasonal fluctuation because of the different export targets.

Many additional graphs are available in LAAMP 3.3 output spreadsheets to demonstrate historical confirmation for the individual areas of the Owens Valley simulated by LAAMP 3.3. Both annual and monthly graphs are available for comparison. These annual and monthly comparisons between LAAMP 3.3 No-Restriction Alternative simulation and the historical patterns suggest that while many of the features of historical 1970-1989 aqueduct operations can be simulated, results for each month of each year cannot be expected to match with the historical aqueduct operations.

Point-of-Reference Scenario. The LAAMP 3.3 point-of-reference scenario differs from the No-Restriction Alternative only by addition of minimum streamflows of 5 cfs in Lee Vining Creek and 19 cfs in Rush Creek. The annual water requirement for these minimum flows is approximately 17 TAF/yr. After an average Mono Basin runoff of about 125 TAF/yr and irrigation diversions of about 8.7 TAF/yr, an average of approximately 100 TAF/yr for possible export is left.

The simulated LAAMP 3.3 exports averaged 75.6 TAF/yr, approximately 3 TAF/yr more than simulated LAAMP 2.0 exports, primarily because of the lower minimum Grant Lake reservoir storage that eliminated some reservoir storage spills. Nevertheless, spills from Lee Vining Creek and Grant Lake reservoir averaged 24.4 TAF/yr, and net evaporation from Grant Lake reservoir averaged 2 TAF/yr.

LAAMP 3.3 simulated Owens Valley uses were about 3 TAF/yr greater, spreading was about 3 TAF/yr greater, and aqueduct operational spilling was about 6 TAF/yr greater than the corresponding values in LAAMP 2.0 results. Nevertheless, Haiwee exports simulated with LAAMP 3.3 were about 24 TAF/yr more than LAAMP 2.0 results reported in the draft EIR.

6,377-Ft Alternative. Several changes in the LAAMP 3.3 No-Restriction Alternative inputs are required to simulate the other draft EIR alternatives. Irrigation in Mono Basin is reduced to 0.7 TAF/yr (USFS's O-Ditch diversion only). The maximum Upper Owens River streamflow was reduced from 400 cfs to 300 cfs. The minimum Grant Lake reservoir storage was increased from 11.5 TAF to 20 TAF. The minimum Lake Crowley reservoir storage was increased to 120 TAF/yr for all year types. Uniform monthly West Portal export targets were specified.

Table 4-3 indicates that LAAMP 3.3 simulation of Mono Basin exports for the 6,377-Ft Alternative was 40 TAF/yr, about 11.8 TAF/yr less than draft EIR results. This difference was apparently caused by the revised logic for Mono Basin exports. In LAAMP 2.0, the maximum allowable export was simulated by specifying both the minimum and the maximum Upper Owens River flow target at 300 cfs. All available water was exported up to the 300-cfs limit in the Upper Owens River, which resulted in the maximum possible Mono Basin exports and also minimized the fluctuations in the level of Mono Lake during wet years.

In LAAMP 3.3, the export targets are calculated as a specified monthly fraction of the available annual export volume. Because several comments on the draft EIR suggested that an even monthly export pattern would be ideal for the Upper Owens River, this pattern was used for LAAMP 3.3 inputs. The calculated monthly export target is almost always less than the 300-cfs minimum used as the export target in LAAMP 2.0. Because of this revision in export calculation, it is understandable that LAAMP 3.3 would simulate less Mono Basin exports than LAAMP 2.0 for the 6,377-Ft Alternative. The simulated Mono Basin exports can likely be increased by specifying a variable monthly export target, with greater exports allowed during high runoff months. Simulated exports can likely be increased with lower minimum or seasonal Grant Lake and Long Valley reservoir storage targets.

LAAMP 3.3 simulated slightly reduced spreading (-2.6 TAF/yr), reduced pumping (-3.6 TAF/yr), increased spilling (+3.7 TAF/yr), and increased uses (+3.8 TAF/yr). Nevertheless, the average Haiwee exports simulated by LAAMP 3.3 were about 14.6 TAF/yr more than draft EIR results for the 6,377-Ft Alternative because of changes in the water budget terms described above. The LAAMP 3.3 simulated deliveries to Los Angeles averaged 9.8 TAF greater than the draft EIR reported.

The simulated spreading and spilling are perhaps less reliable than other modeled variables because the actual spreading and spilling patterns would be better managed during actual operations with runoff forecasts and modified reservoir operations and pumping patterns. Nevertheless, the LAAMP model provides a framework for comparative analysis of the magnitude of these "excess" terms for various proposed water rights decisions and aqueduct capacity restrictions.

6,383.5-Ft Alternative. Table 4-3 indicates that LAAMP 3.3 simulation of Mono Basin exports for the 6,383.5-Ft Alternative was 29.9 TAF/yr, about 7.8 TAF/yr less than draft EIR results. This difference was expected because of the revised logic for Mono Basin exports explained above. Because most of the difference in exports occurred during wet years, the LAAMP 3.3 simulated Mono Lake elevation was 5.8 feet higher at the end of the first 50 years than the draft EIR simulation.

The LAAMP 3.3 simulation of Haiwee exports for the 6,383.5-Ft Alternative was about 14.2 TAF/yr more and the Los Angeles deliveries averaged 9.4 TAF/yr more than the draft EIR simulation using LAAMP 2.0. This difference is a relatively small percentage (3%) of the total average Haiwee exports of about 390 TAF/yr as simulated by LAAMP 3.3.

Because greater lake releases are required in the early period of the simulation to raise Mono Lake to above the lake level triggers, a second 50-year simulation was made, starting at the ending elevation of the first 50-year simulation. The average Mono Basin exports increased from 29.9 to 40.2 TAF/yr, which is about 3.3 TAF/yr less than the draft EIR results for the second 50-year simulation of the 6,383.5-Ft Alternative.

6,390-Ft Alternative. Table 4-3 indicates that LAAMP 3.3 simulation of Mono Basin exports for the 6,390-Ft Alternative of 23 TAF/yr for the first 50-year period was about 6.8 TAF/yr less than draft EIR results. The LAAMP 3.3 simulation of Haiwee exports for the 6,390-Ft Alternative of 411.2 TAF/yr was about 12.6 TAF/yr more than the draft EIR simulation with LAAMP 2.0. The LAAMP 3.3 simulation of Los Angeles deliveries averaged 396.1 TAF/yr, 7.8 TAF/yr more than draft EIR results.

Table 4-3 indicates that the LAAMP 3.3 simulation of Mono Basin exports for the 6,390-Ft Alternative increased to 34.8 TAF/yr from the first to the second 50-year period, with a starting elevation of 6,395.2 feet. These simulated exports were 2.2 TAF/yr less than the corresponding LAAMP 2.0 export reported in the draft EIR.

A2. LAAMP Model Results Were Inappropriately Applied for Impact Assessments

Summary of Comments

Several of the draft EIR review comments and water rights testimony about the application of the LAAMP model for simulating draft EIR alternatives suggested different assumptions that might be considered by SWRCB as more appropriate for planning the future management of Mono Lake and the operation of the aqueduct system, including allowable diversions from the Mono Lake tributaries.

Several other comments stated that the LAAMP 2.0 results were used without due consideration to the uncertainty in the simulations and that additional interpretation of the model results was warranted.

Summary Response

The majority of the different operational assumptions recommended in the comments could have been simulated by specifying different inputs for LAAMP 2.0, without any model code changes. However, several of the suggestions involved management conditions that had not been anticipated during the development of LAAMP 2.0 for simulation of draft EIR alternatives.

The following suggested revisions have been included in LAAMP 3.3 to respond to these comments:

- LAAMP as a Planning Model. "Planning" has been added to the name of the LAAMP model. LAAMP was designed to support relative comparisons among water rights alternatives, not as a basis for day-to-day aqueduct operations.

- Monthly Mono Export Patterns. A monthly target distribution of available exports has been added as the basis for calculating monthly Mono Basin exports.

- Mono Lake Water Budget. Cain Ranch rainfall and the unmeasured inflows can now be adjusted with specified factors to provide a modified water budget for comparative simulations.

- Lake Crowley Reservoir Storage Capacity. An output variable to explicitly document spill from Lake Crowley reservoir has been added. Spill above the specified Pleasant Valley outlet capacity is also explicitly modeled.

- Owens Gorge Target Flows. Monthly Owens Gorge target flows for each year type and the assumed Gorge transit loss can now be specified.

- Lower Owens Target Flows. Monthly Lower Owens River target flows for each year type and the aqueduct intake capacity are now specified. Spills to the Lower Owens River and operational spilling from the aqueduct gates are now reported separately.

- Aqueduct Capacity at Haiwee Reservoir. Aqueduct capacity from Haiwee reservoir to Los Angeles is now specified in the input file along with the Haiwee export targets.

- Haiwee and Tinemaha Reservoirs. Minimum and maximum monthly target storage values can now be specified for Tinemaha and South Haiwee reservoirs. North Haiwee reservoir is simulated with a constant specified volume. Evaporation is simulated from the three reservoirs. A maximum change in storage in South Haiwee can be specified to simulate the limited inflow capacity.

- Output Spreadsheets. Output spreadsheets have been revised to provide a complete water budget for each area of interest. Many of the spreadsheet graphs have been revised as suggested by reviewers.

- Historical Aqueduct Data. LADWP data have been included in the output spreadsheets so that monthly values for 1970 to 1989 and annual values for 1940 to 1989 can be compared with LAAMP simulations. These data provide the necessary information for historical verification of LAAMP 3.3 results.

- Groundwater Pumping. The option to use a previously calculated pumping pattern has been incorporated into LAAMP 3.3, without the need for a second LAAMP model.

- Hydrologic Data for 1990-1992. LADWP has supplied the required hydrologic data for runoff years 1990 to 1992.

- Hydrologic Input File. A new input spreadsheet was developed to allow any selected sequence of 50 years to be used as the hydrologic input for LAAMP.

LAAMP is a planning model that can demonstrate the likely effects of increasing constraints on the allocation of water from the Mono Lake tributaries. The LAAMP results may be used to assist in reaching the water rights decision, but cannot simulate the actual day-to-day operations of the LA Aqueduct system. Several necessary simplifying assumptions within the monthly model contribute to the remaining level of uncertainty in the results. The LAAMP model is most useful as a comparative tool for describing likely effects of incremental changes in the set of constraints imposed on the Mono Lake tributary stream diversions.

Detailed Response

Comparative Simulations. Several comments on the draft EIR suggested modified target streamflows, Mono Lake elevation trigger conditions, target reservoir storage levels, and other selected LAAMP input assumptions. Many of these recommended aqueduct constraints and operational conditions could have been simulated using LAAMP 2.0, and almost all of the suggested changes in aqueduct operations can now be simulated with LAAMP 3.3. However, a full set of comparative simulations using different aqueduct constraints or lake management conditions have not been made by SWRCB staff or consultants. Copies of LAAMP 3.3 have been distributed during the water rights hearings, and additional copies can be obtained from SWRCB staff by interested parties.

Those conditions and constraints which are under consideration by SWRCB for inclusion in the water rights order may be simulated using LAAMP 3.3 during SWRCB staff analyses period. Examples of comparative simulations that can be made with LAAMP 3.3 include:

- Currently recommended DFG streamflows for Mono Basin streams, Upper Owens River, Owens Gorge, Middle Owens River, and Lower Owens River.

- The LADWP Mono Lake Management Plan, introduced during the Mono Basin water rights hearings.

- Mono Lake level triggers can be adjusted to allow more exports in dry and normal years relative to wet years. This will likely increase lake level fluctuations and reduce the total Mono Basin exports but may provide greater water supply benefits to Los Angeles.

- Drought analyses can be performed using the input spreadsheet INPHYD.WK1 to select a sequence of years that includes 1987-1992, for example. Adjustments in the unmeasured inflow and rainfall terms are possible.

- Additional sensitivity and historical calibration simulations can be made. The historical data provided in LAAMP 3.3 output spreadsheets will facilitate these comparisons.

- The effects of different hydrologic sequences can be determined by rearranging the historical record using the INPHYD.WK1 spreadsheet. This will allow the uncertainty in the likely lake level changes during the transition period to a new protected lake level to be determined.

Two comparative simulations using LAAMP 3.3 that will be described in this response to comments include the currently recommended DFG streamflows, and the DFG-recommended streamflows in combination with the 6,390-Ft Alternative lake level triggers. Two 50-year simulations of each alternative will be reported because the transition period to reach the dynamic equilibrium lake levels requires many years.

DFG Streamflow Recommendations. LAAMP 3.3 has been used to simulate the DFG streamflow recommendations, including the suggested maximum Upper Owens River flow of 200 cfs. Table 4-4 shows the assumed DFG streamflow values for each year type as input to LAAMP 3.3, with flushing flows added each year to the June streamflow recommendations.

The results of the simulation are shown in Table 4-3. Because the DFG recommendations were not simulated in the draft EIR, no comparison values for LAAMP 2.0 are given. The LAAMP 3.3 simulated Mono Basin exports with the DFG flows averaged about 27.5 TAF/yr. The simulated exports during the second 50-year simulation did not change, although the Mono Lake elevations were higher, fluctuating between about 6,390 and 6,400 feet.

The DFG-recommended streamflows require an average of about 94 TAF/yr (Table 4-4). This leaves approximately 30 TAF/yr for possible exports from Mono Basin. However, because Mono Basin exports may not be required in wet years, some of this available water is released to Mono Lake. Because the specified even monthly export targets with a maximum Upper Owens River streamflow of 200 cfs, some spills from Grant Lake reservoir occur in normal years. A lower minimum Grant Lake reservoir storage target and a variable export target may allow some additional water to be exported to the LA Aqueduct system, but not more than 30 TAF/yr is available as a long-term average.

The Haiwee exports simulated with LAAMP 3.3 for the DFG- recommended streamflows averaged 415.8 TAF/yr, with Los Angeles deliveries of 400.7 TAF/yr.

DFG Streamflows with 6,390-Ft Alternative Lake Level Triggers. A second example of the possible combinations of streamflow requirements and lake level triggers was simulated with LAAMP 3.3. The DFG streamflows were combined with the 6,390-Ft Alternative lake level triggers. The lowest lake trigger condition, for lake levels below 6,391 feet, allowed no export in dry years, 15% in normal years, and 30% in wet years.

Table 4-3 shows the results of the first and second 50-year LAAMP 3.3 simulation with these conditions. For the first 50-year simulation, Mono Basin exports averaged about 19.6 TAF/yr. The average Mono Basin exports increased to 27.5 TAF/yr during the second 50-year simulation, with a starting elevation of 6,398.1 feet.

As the No-Diversion Alternative has shown, the rise of Mono Lake level will be a relatively slow process even with no allowable exports, unless extremely wet hydrological conditions, such as occurred in the 1980s, reappear. Both the DFG-recommended streamflows and the 6,390-Ft Alternative lake level triggers provide some available water for Mono Basin exports. For the simulated cases with DFG-recommended streamflows, the rise in Mono Lake level requires more time but will likely reach 6,390 feet within 50 years, regardless of the hydrologic sequence (as long as the long-term average Mono Basin runoff remains about 125 TAF/yr).

Neither LAAMP 2.0 simulations used in the draft EIR nor LAAMP 3.3 simulations are sufficiently accurate to control actual daily operation of the LA Aqueduct system. However, both LAAMP 2.0 simulations used in the draft EIR and LAAMP 3.3 simulations can be used as reliable guides for comparing the effects of water rights alternatives on the LA Aqueduct system.

LAAMP results were not directly used in draft EIR impact assessments without interpretation by the impact assessment staff. Many different methods for summarizing and interpreting the LAAMP results were used. The 50-year monthly simulations produced a range of likely monthly average conditions caused by seasonal and year-to-year hydrological fluctuations. However, variations within the month caused by daily streamflow patterns were recognized by those staff performing the impact assessments. In addition, possible inaccuracies in the monthly LAAMP results were recognized and considered by staff performing the impact assessments. Commenters may differ in their perception of the magnitude of these errors and uncertainties, but the SWRCB consultants attempted to include these factors in all impact assessment methodologies that used LAAMP results.

A3. Mono Lake Water Balance Model Was Erroneous

Summary of Comments

Some commenters stated that the Mono Lake water budget model, as described in Appendix A and used in the LAAMP model to simulate the likely fluctuation in Mono Lake elevation with different

recommended streamflow and lake level triggers, was inaccurate and provided poor predictions of likely future Mono Lake levels.

In particular, the assumed annual and monthly pattern of evaporation, the assumed average and monthly pattern of rainfall, and the assumed average and monthly pattern of unmeasured inflow terms were each disputed. Several other comments indicated that portions of the Mono Lake water budget description in Appendix A were unclear or improperly explained.

Summary Response

Opinions differ on the relative magnitude of the three "unmeasurable" terms in the Mono Lake water budget, which are lake-average evaporation, lake-average rainfall, and unmeasured inflows (in addition to releases from the four LADWP diverted tributaries). Potential errors exist in the measured releases from the four LADWP diverted tributary streams. However, despite differences of opinion and possible errors, the water budget model presented in Appendix A provides an empirically accurate match with historical lake level fluctuations and is therefore an adequate model for judging the relative differences in Mono Lake level fluctuations that would likely result from alternative recommended streamflows and lake level controls.

Detailed Response

The only historical source of rainfall data for 1940-1989 is the LADWP Cain Ranch station. The draft EIR water budget for Mono Lake used unadjusted Cain Ranch rainfall that averaged 11 inches per year although some estimates of lake-average rainfall are as low as 8 inches per year. The choice of which average rainfall value to use cannot be resolved with the historical lake level pattern because the assumed evaporation and the residual unmeasured inflow terms will compensate for whatever choice of rainfall is selected. Unadjusted Cain Ranch measured rainfall was one of the appropriate choices, and the remainder of the water budget is consistent with this choice.

The determination of the assumed annual and monthly pattern of evaporation is described in the "Evaporation and Precipitation" section of Appendix A of the draft EIR. The match of the measured surface temperatures with DYRESM simulations using various evaporation coefficient values provided the best estimate of 48 inches per year, as shown in Figure A-5. This selected evaporation rate already includes an adjustment in freshwater evaporation to account for salinity effects and is largely independent of the assumed average rainfall because little rain falls during the period of maximum evaporation. Therefore, the assumed evaporation rate of 48 inches, which was derived from the heat-budget portion of the DYRESM model, is an adequate estimate for the Mono Lake water budget.

Additional information in Auxiliary Report 14 indicates that the DYRESM temperature model results confirmed the seasonal pattern of evaporation in Mono Lake although LADWP suggested that a seasonal evaporation pattern is obvious and needed no confirmation. Perhaps the surprising result was that the simple monthly residual analysis described in Appendix A of the draft EIR yielded a strong seasonal

evaporation pattern, as shown in Table A-2. The seasonal pattern was assumed to be independent of the specified annual rate, so a constant monthly fraction of the annual evaporation rate is assumed in LAAMP.

The unknown annual evaporation rate is properly treated as a model assumption, with the value specified by the user, as was allowed in LAAMP. Auxiliary Report 5, which describes the LAAMP model logic, provides the method used to allow the user-specified evaporation rate to be incorporated into the "unmeasured inflow" term of the Mono Lake water budget.

LADWP objected to the explanation of the unmeasured inflow term given in Appendix A. The unmeasured inflow term was estimated from regression of the residual difference between the observed change in Mono Lake volume and the measured monthly releases from Lee Vining and Rush Creeks, the measured monthly Cain Ranch rainfall, and the assumed monthly evaporation terms. The unmeasured inflow was estimated as a constant (2.915 TAF/month) and a fraction (22.8%) of measured monthly runoff of the four tributary streams.

LADWP objected to describing the constant term, estimated to be approximately 3 TAF/month, as entirely groundwater inflow and the fraction of runoff as entirely surface inflow. However, the main point in Appendix A was to provide some reasonable confirmation of the estimated unmeasured inflow terms. Because Mill and DeChambeau Creeks were included in the "unmeasured inflow" term and account for 18% of the runoff from the four LADWP diverted tributaries, the actual unmeasured runoff term is about 3 TAF/month plus 5% of runoff from the four tributary streams. Therefore, the maximum possible groundwater inflow, consistent with the assumed evaporation of 48 inches per year, is about 3 TAF/month plus 5% of runoff from the four tributary streams. LADWP is correct, however, in stating that the groundwater component is not measured and cannot be determined from the regression analysis.

Peter Vorster, in his comment letter, suggested that the LAAMP model simulates higher lake levels than simulated by his annual lake model for the same level of Mono Basin exports. One possible explanation is that the unmeasured inflow term of the LAAMP model water budget was estimated without any Walker or Parker Creek releases because these releases were assumed to be totally used for irrigation. However, some of this water may have entered Mono Lake and so would have been included in the "unmeasured" inflow term. Because LAAMP accounts for streamflow releases to Mono Lake from Walker and Parker Creeks, the unmeasured inflow term may cause the model to "double count" the portion of the Walker and Parker Creek water that historically made it into the lake. This amount of water is probably less than 3 TAF/year. Because this possible error affects each alternative lake level simulation, the possible effect on the differences between alternatives is much smaller than the possible effect on the magnitude of releases required to maintain the lake at a selected elevation.

A4. Alternatives Were Not Formulated Using DFG-Recommended Streamflows

Summary of Comments

Several parties objected that alternatives were not formulated using DFG-recommended streamflows and that the LAAMP model did not assume DFG-recommended streamflows as the minimum flows in simulating alternatives. Specific concerns were expressed about the assumed specified minimum streamflows and ecosystem maintenance flows (i.e., channel maintenance and flushing flows) for the Mono Lake tributaries and the use of a 300-cfs flow as the maximum streamflow in the Upper Owens River below East Portal.

Summary Response

DFG's minimum instream flow recommendations were not incorporated into the LAAMP modeling nor were alternatives formulated based on DFG's recommendations because final recommendations were not available in time to be incorporated in the draft EIR. SWRCB intended to conduct LAAMP simulations incorporating DFG's recommendations once they were finalized, but the recommendations were not received until after the draft was prepared. The final LAAMP runs have been completed and presented as part of the water rights hearings. None of the minimum flow criteria, ecosystem maintenance flows, or maximum Upper Owens River flows presented in the draft EIR are based on DFG's recommendations; they serve only as reasonable assumptions to use in operating LAAMP. SWRCB will decide how to incorporate these recommendations in its order.

SWRCB recognized potential Upper Owens River channel impacts and assumed a maximum 300-cfs Owens River flow below East Portal in LAAMP. DFG's Upper Owens River Stream Evaluation Report was unavailable even in draft form at the time that LAAMP assumptions were finalized. SWRCB recognizes that it may adopt other management rules after development of DFG instream flow recommendations or other identified requirements or limit maximum instantaneous exports through East Portal. LAAMP 3.3 allows monthly target exports that may assist in setting appropriate conditions for the Upper Owens River.

Detailed Response

As noted above, DFG's minimum instream flow recommendations were not available in time to be incorporated in the draft EIR. The LAAMP modeling was a fundamental portion of the EIR, and nearly every topic area relied on the LAAMP modeling output to develop appropriate impact assessments and mitigations. To meet project deadlines, LAAMP modeling assumptions were finalized in April 1992 to allow sufficient time to run LAAMP and provide output to the other topic areas for impact assessment.

SWRCB decided not to attempt to predict possible DFG streamflow recommendations. SWRCB still believes this decision was proper because DFG's final report for Rush Creek was transmitted to interested parties by letter dated June 21, 1993, and DFG's final reports for Lee Vining Creek, Parker Creek, Walker Creek, and the Upper Owens River were transmitted to interested parties by letter dated September 1, 1993. These final recommendations could not be used in LAAMP and still allow the project schedule to be met. Draft DFG recommendations were available on Rush and Lee Vining Creeks during finalization of LAAMP assumptions but were changed by DFG when the final reports were distributed. SWRCB had to specify minimum flow criteria because otherwise the LAAMP model would occasionally simulate dewatering of the streams for export diversions.

SWRCB took a hydrologic approach for developing the minimum flow criteria that were used in LAAMP. As stated on page 2-12 of the draft EIR, minimum flow criteria were set at levels equivalent to a 90% frequency of occurring in each month. Ecosystem maintenance flows were set at a level corresponding to the median June flow above the diversions during the historical 1940-1989 period. The goal was to intentionally set the minimum flow criteria at moderate levels so that they would not limit the range of potential lake level alternatives.

Using only DFG flows to determine alternatives would have unfairly biased SWRCB's analysis and full disclosure requirements. DFG recommendations were properly evaluated by experts representing several of the parties involved in the water rights hearing. SWRCB staff has reviewed the evidence and testimony and has made recommendations as to appropriate streamflow releases.

Mono Lake levels, not minimum flow criteria, drove the LAAMP-modeled streamflows. This factor was evident in LAAMP model output because minimum flow criteria used in LAAMP were typically exceeded by additional streamflow releases that were needed to keep the Mono Lake surface above selected target elevations associated with each alternative. Consequently, the minimum flow criteria assumed for the LAAMP simulations became less of a determining factor as the target lake elevation increased and were not a factor under the No-Restriction Alternative.

Several commenters questioned the rationale for assuming a maximum 300-cfs Owens River flow below East Portal of the Mono Crater Tunnel. The maximum flow of the Upper Owens River downstream of East Portal currently is limited to 400 cfs, reflecting a current operational constraint adopted by LADWP to prevent channel damage. Peak flows exceeding 400 cfs in the Upper Owens River below East Portal can, however, damage the channel. After consultations about channel damage with several of the major landowners and land managers on the Upper Owens River (see page 3C-45 of the draft EIR), a maximum flow of 300 cfs was selected.

A constant export rate, as recommended by DFG, could not be modeled explicitly because changes would be required in simulated Grant Lake reservoir operations. This rate can now be simulated with LAAMP 3.3. As stated on page 2-14 of the draft EIR, SWRCB recognizes that it may adopt other management rules after DFG instream flow recommendations or other identified requirements are developed.

A5. The Drought Analysis Was Erroneous and Improperly Applied for Impact Assessment

Summary of Comments

Some commenters suggested that the drought analysis presented in Appendix H of the draft EIR was erroneous and improperly applied to assess impacts of possible declines in Mono Lake during periods of extended drought. In particular, the assumed runoff, release flows, and rainfall values were questioned.

Summary Response

The first-year release factors (i.e., percent of runoff released to Mono Lake) were incorrectly calculated in the draft EIR; full release of all runoff (at a release factor of 1) is a more appropriate assumption to account for minimum streamflow requirements. However, this error for the first year of a multiple-year drought does not significantly affect the results of the drought analysis.

Droughts are likely to occur and to persist in Mono Basin for an uncertain duration, and the relative inflow terms (i.e., runoff, rainfall, and unmeasured inflow) are likely to remain at about 60% of average for the duration of a drought. Because evaporation remains relatively constant during a drought, the lake level will decline the most at highest lake levels and, for all alternatives, would eventually reach equilibrium (i.e., have an inflow approximately equal to evaporation) at an elevation of about 6,370 feet with no diversions.

Detailed Response

In addition to noting the first-year error in the drought analysis, LADWP reviewers contend that the best estimate of the duration of a drought with a 1% chance of occurring is 10 years rather than the 8 years used in the draft EIR. For purposes of the final EIR, the drought simulations of Appendix H were revised using release factors of 1 in the first year, to approximate minimum streamflow requirements, and using a 10-year drought duration. These simulations appear in the errata, Chapter 7, as revised Tables H-6 through H-12 of the draft EIR. The results have also been used to describe the project alternatives in Chapter 2.

The changes in minimum lake levels resulting from these revisions are minor for most alternatives. Under the 6,372-Ft Alternative, the resulting lake level is 0.2 foot higher than estimated in the draft EIR. For the 6,377-Ft Alternative, the resulting lake level is 0.1 foot lower.

The revised scenarios result in appreciably lower lake levels compared to the draft EIR estimates for the higher lake-level alternatives and for the No-Restriction Alternative. For example, under the 6,390-Ft Alternative, the revised estimate is 1.2 feet lower; for the No-Restriction Alternative, it is 3.7 feet lower.

A review of conclusions drawn in each of the topic areas using the results of the drought analysis reveals that no significant changes are warranted as a result of the revised estimates.

LADWP reviewers also disputed the estimate of the fraction of normal runoff that would be experienced during a drought period. The estimate in the draft EIR, 60%, is based on actual experience during the recent 7-year drought. These reviewers argue that a figure of 65% is more appropriate. Rather than presenting a critique of that estimate, we simply note that a difference of 5% is within the range of uncertainty of this estimate and that the effect of that difference on the conclusions based on the simulations is minor. Other detailed criticisms offered by LADWP reviewers, if accepted, would likewise result in relatively minor changes to the simulations.

WATER QUALITY (B)

B1. Mono Lake Salinity Characteristics Were Not Properly Described

Summary of Comments

Several comments concerned the draft EIR description of Mono Lake salinity and dissolved mineral characteristics. Because the salinity of Mono Lake is an important ecological variable that is directly affected by the lake level alternatives, it should be properly and clearly discussed in the draft EIR. Several of the draft EIR assumptions about the chemical composition of Mono Lake were also questioned.

Summary Response

Chapter 3B, "Water Quality", and Appendix A, "Mono Lake Water Budget", in the draft EIR and Auxiliary Report 17, "Water Quality Data Report", contain descriptions and assessments of available historical Mono Lake water quality data and discuss likely changes in salinity and other water quality parameters that would occur under each lake level alternative.

The draft EIR used salinity as a general term for the mass of total dissolved solids (TDS) within a unit volume of Mono Lake water, with units of g/l. Assumptions in the draft EIR that a constant mass of solids (approximately 285 million tons) will remain in Mono Lake regardless of lake volume (a known function of lake elevation), and that all major minerals will remain dissolved, without significant precipitation of minerals at salinities as high as 150 g/l, appear to be valid.

Measurement of Mono Lake salinity as field or laboratory electrical conductivity (EC), specific gravity, or gravimetric (dried and weighed) TDS values will always involve some errors and will continue to require assumed conversion factors for comparison of these different types of measurements. Nevertheless, the general agreement between the various approaches to salinity measurement indicate that the TDS estimates used in the draft EIR provide an adequate representation of the magnitude and likely fluctuations in Mono Lake salinity for each alternative.

Detailed Response

The draft EIR used salinity as a general term for the mass of TDS within a unit volume of Mono Lake water (concentration), with units of g/l. Various methods for measuring and expressing mineral composition, such as parts per million, require conversion factors to standardize. Table 3B-2 of the draft EIR gives results from Auxiliary Report 17 to describe the chemical composition of Mono Lake water, standardized to a salinity value of 100 g/l.

Auxiliary Report 17 compares all available historical Mono Lake mineral measurements. These data suggest that the chemical composition of Mono Lake water has remained generally constant (within the errors of these historical laboratory chemical analyses). When normalized by the EC value or chloride concentration, the chemical concentration of each mineral is about the same for each sample. Several samples from the LADWP evaporation ponds indicate that the chemical composition remains constant to at least 150 g/l (Figures 6 to 8 of Auxiliary Report 17). The estimated TDS values based on lake volume generally are similar to the laboratory TDS measurements for these LADWP mineral samples collected between 1975 and 1989.

LADWP estimated the total salt content of Mono Lake to be about 285 million tons (LADWP 1987). The calculated salinity (in g/l) for the historical changes in Mono Lake volume indicate that the salinity has doubled from 42 g/l at a volume of 5 million acre-feet (MAF) at elevation 6,427 feet to about 84 g/l at a volume of 2.5 MAF at elevation 6,380 feet (Figures 3, 4, and 5 of Auxiliary Report 17). Because most salinity measurements have been made since 1975, direct verification of low salinity estimates cannot be obtained. However, the historical salinity fluctuations observed during the rapid rise in Mono Lake between 1983 and 1986 generally confirm the volumetric dilution of Mono Lake salinity.

University of California (UC) Santa Barbara staff measured salinity stratification of about 15 g/l in Mono Lake during the meromixis between 1983 and 1987. These observations indicate that salinity may not be uniform throughout Mono Lake, although mixing processes will tend to produce uniform salinity during periods with stable lake elevations.

Measurement of Mono Lake salinity as field or laboratory EC, specific gravity, or gravimetric (dried and weighed) TDS values will always involve some errors and will continue to require assumed conversion factors for comparison of these different types of salinity measurements. LADWP experiments, as well as field data, suggest that Mono Lake specific gravity increases with salinity as:

$$\text{Specific Gravity} = 1.004 + \text{TDS (g/l)} * 0.00076$$

The estimated Mono Lake TDS and specific gravity values for each elevation are given in Table A-1 in Appendix A to the draft EIR. Footnote "e" gives an incorrect equation for estimating specific gravity from TDS.

Other researchers may use different measurements and/or conversions to index Mono Lake salinity. Nevertheless, the general agreement between the various approaches to salinity measurement indicate that the TDS (g/l) estimates used in the draft EIR provide an adequate representation of the magnitude and likely fluctuations in Mono Lake salinity for each alternative.

B2. Upper Owens River and Lake Crowley Reservoir Water Quality Effects Were Not Adequately Considered

Summary of Comments

Several comments suggested that the effects of reduced Mono Basin exports on Upper Owens River and Lake Crowley reservoir were not adequately described. More attention to the possible impacts of increased temperatures and increased phosphorus concentrations on these aquatic and fisheries resources should have been provided in the draft EIR. There was confusion about the measurement units for phosphorus described in the draft EIR.

Summary Response

The units of measurement for phosphorus were total or dissolved milligrams per liter of elemental phosphorus (mg/l-P). The average calculated inflow concentration at Lake Crowley reservoir during the point of reference, about 0.2 mg/l-P, is considerably higher than the inflow criteria of 0.05 mg/l-P suggested by the EPA. The expected behavior of phosphorus in lakes or reservoirs is to be adsorbed by particulates and settle to the sediment, so that the reservoir outflow concentration is often less than half the inflow concentration. This behavior accounts for the difference between the estimated inflow and measured outflow concentrations of total phosphorus for Lake Crowley reservoir.

The likely increase in phosphorus in average Lake Crowley reservoir inflow was determined to be less than significant because the point-of-reference condition was already much greater than the threshold for possible eutrophication control of phosphorus. The draft EIR reported that the average inflow concentration would increase to 0.3 mg/l-P under the No-Diversion Alternative.

The likely effects of increased temperature in the Upper Owens River and Lake Crowley reservoir were described in Chapter 3D, "Fisheries". The draft EIR described these habitats as important elements in the Owens River basin fisheries and provided adequate information for independent assessment of their importance relative to the Mono Lake tributary streams.

Detailed Response

Considerable discussion of the Upper Owens River and Lake Crowley reservoir temperatures and phosphorus concentrations, as well as other minerals with possible geothermal sources (boron, fluoride, arsenic) are contained in the draft EIR in Chapter 3B, "Water Quality"; Chapter 3D, "Fisheries"; Appendix K, "Water Quality Assessment Model"; and Auxiliary Report 17, "Water Quality Data Report".

The units of measurement for phosphorus were not clearly stated in the draft EIR. The units were total or dissolved mg/l of elemental phosphorus (mg/l-P), although the historical LADWP measurements were originally reported as mg/l of phosphate (mg/l-PO_4). These units are those normally used in eutrophication nutrient analyses. The average calculated Lake Crowley reservoir inflow concentration, of about 0.2 mg/l-P, is considerably higher than the suggested EPA inflow criteria of 0.05 mg/l-P.

The Long Valley module of the water quality assessment model (Appendix K of the draft EIR) described the monthly mass-balance analysis of available historical measurements of phosphorus in the Upper Owens River and tributaries to Lake Crowley reservoir.

Phosphorus concentrations in Big Springs and Hot Springs are very high, and the average inflow concentration to Lake Crowley reservoir is several times higher than established thresholds for eutrophication control. These high inflowing phosphorus concentrations are sufficient to eliminate any possibility of phosphorus limitation, and this condition was the basis for determining that likely increased phosphorus concentrations from various lake level alternatives would not be viewed as significant impacts.

The expected behavior of phosphorus in lakes or reservoirs is to be adsorbed by particulates and settle to the sediment, so that the reservoir outflow concentration is often less than half the inflow concentration. This is generally confirmed by the available historical Lake Crowley reservoir outlet measurements, which average about 0.1 mg/l-P (Figure K-12). This accounts for the difference between the estimated inflow and measured outflow concentrations of total phosphorus.

Although higher lake level alternatives would provide less Mono Basin exports (with a phosphorus concentration of less than 0.05 mg/l-P) for dilution of Upper Owens River and Hot Creek phosphorus concentrations, the likely increase in average Lake Crowley reservoir inflow phosphorus was determined to be less than significant. The draft EIR reported that the average inflow concentration would increase to 0.3 mg/l-P under the No-Diversion Alternative.

More detailed study of the effects of phosphorus in Lake Crowley reservoir, and the benefits of possible control of these nutrient sources, may be appropriate. However, the direct effects of the Mono Basin water rights decision on these historical sources of phosphorus were not determined to be significant.

The possible effects of increased temperature in the Upper Owens River and Lake Crowley reservoir were described in Chapter 3D, "Fisheries". The draft EIR described these habitats as important elements in the Owens River basin fisheries and provided adequate information for independent assessment of their importance relative to the Mono Lake tributary streams.

B3. City of Los Angeles Drinking Water Quality Effects Were Not Adequately Considered

Summary of Comments

Several comments suggested that the discussion of likely effects on City of Los Angeles drinking water was not adequate. The indirect effects of blending more MWD water sources from the Colorado River and the Sacramento-San Joaquin River Delta should have been quantified and included in the determination of significant effects. The possibility that some drinking water standards (i.e., for arsenic and dissolved organic carbon) might change in the near future should have been factored into the determination of significance, and water quality standards should not be used as the only measure of significance.

Several comments referred to the water quality assessment model (Appendix K) as an unreliable method for determining the effects of possible reduced Mono Basin exports on City of Los Angeles drinking water quality.

Summary Response

The draft EIR used existing drinking water criteria for evaluating the significance of the simulated increases in monthly average concentrations at the LA Aqueduct filtration plant. However, the simulated pattern of monthly concentrations for each alternative were described so that independent judgment of the significance of calculated increases in the selected parameters can be made.

The secondary changes caused by blending additional replacement water necessary to meet demands were not included in the mass-balance model. However, it is unlikely that existing drinking water criteria would be violated more frequently using additional MWD water for blending.

Because of the relatively large scatter in historical LADWP data, a field sampling effort was made by SWRCB consultants during 1991 to independently measure the important water quality variables at the major tributary locations upstream of Lake Crowley reservoir. These data generally confirmed the increase in concentration with EC of each sample at each location, shown in graphs of the available data in Auxiliary Report 17.

Detailed Response

The effects of alternative LA Aqueduct operations on the City of Los Angeles drinking water quality was given major consideration in the draft EIR. Chapter 3B, "Water Quality"; Appendix K, "Water Quality Assessment Model"; and Auxiliary Report 17, "Water Quality Data Report", each address this important topic.

The comparison of LA Aqueduct and MWD water quality is discussed beginning on pages 3B-20 of the draft EIR, and the 1985-1990 average concentrations for MWD sources are given in Table 3B-5. However, the mass-balance model described in Appendix K did not include the secondary effects of blending MWD water with LA Aqueduct water.

The draft EIR used existing drinking water criteria for evaluating the significance of the simulated increases in monthly average concentrations at the LA Aqueduct filtration plant. The possibility of changes in the standards (i.e., for arsenic) or new regulated parameters (i.e., for dissolved organic carbon) was not included in the draft EIR criteria for determining impact significance. However, the simulated pattern of monthly concentrations for each alternative was described in Appendix K so that independent judgment of the significance of calculated increases in the selected parameters can be made using the information presented in the draft EIR.

The confirmation of the mass-balance water quality assessment model uses the available historical LADWP mineral data presented in Auxiliary Report 17. Because of the relatively large scatter that was present in these historical records, a field sampling effort was made by SWRCB consultants during 1991 to independently measure the important water quality variables at the major tributary locations upstream of Lake Crowley reservoir. Although regression equations using the available historical data may not explain much of the scatter (i.e., low R-square values), the general increase in concentration with EC of each sample was evident in graphs of the available data, shown in Auxiliary Report 17.

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