



United States Department of the Interior
Fish and Wildlife Service
Ecological Services
Carlsbad Fish and Wildlife Office
2730 Loker Avenue West
Carlsbad, California 92008



MEMORANDUM

To: Assistant Manager, Yuma Area Office
Bureau of Reclamation, Yuma, Arizona

From: Assistant Field Supervisor, Carlsbad Fish and Wildlife Office
Fish and Wildlife Service, Carlsbad, California

Subject: Draft Environmental Impact Statement/Draft Environmental Impact Report for the
Coachella Canal Lining Project

We have received the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) from your office on September 22, 2000. We offer the following comments for your use in developing the final document and as a starting point for continuing in discussions on these issues.

General Comments

We are concerned the current preferred alternative identifies a mitigation site (Dos Palmas) in an area that likely will be affected by the proposed project. A more complete characterization of the hydrogeology is needed for the entire Salt Creek watershed (not just the Dos Palmas Springs) in order to assure that this approach would be feasible. The DEIS/DEIR should provide a discussion that identifies all current sources of water within the Salt Creek watershed as well as their locations on a map of adequate scale to distinguish them. Flow volumes should be identified for these sources both as means and ranges to understand the importance of each source. The source of each of these waters should also be identified (e.g., canal water seep, natural groundwater seep, artesian well) along with the anticipated future flows with and without canal lining. Possible effects of the presence of the canal on groundwater movement in this area should be considered in developing these estimates. The document should specifically address the ability of various sources to function as alternative sources of supply under the canal lining alternatives.

M-1

We need to understand the way water moves through the Salt Creek watershed to assure that any new means of water delivery adequately supplies the requirements of the existing wetland and riparian habitats. A mean flow measured by a single gauge at the mouth of Salt Creek does not appear to be adequate to understand water flow in the Salt Creek watershed. Broader baseline

M-2

Letter M

U.S. Department of the Interior Fish and Wildlife Service

M-1 Reclamation has conducted an extensive characterization of the geohydrology of the potentially affected portions of the Salt Creek watershed, including the Dos Palmas ACEC and surrounding areas. Please refer to Section 3.2.1 of the EIS/EIR under the heading “Seepage and Geohydrology Studies” for a summary of these characterization efforts. Reclamation has undertaken extensive engineering and geohydrologic investigations of the project area that included the drilling of numerous wells, collection of groundwater elevation data, chemical and isotope analysis of groundwater samples, procurement and analysis of aerial infrared photography, review and incorporation of past studies, and development of a groundwater model. Also, Reclamation’s work incorporated the findings of geohydrologic investigations conducted by the USGS in the 1960s and 1970s. These data, which were provided for public review in the Revised and Updated Draft EIS/EIR Geohydrology Appendix, serve as an adequate basis for addressing the feasibility of the proposed mitigation in the Dos Palmas area. Various sources for mitigation water are identified in Section 3.5.3 of the EIS/EIR, including canal water, groundwater, and water conserved by eradicating salt cedar.

Attachment A to the EIS/EIR Geohydrology Appendix includes a geologic map showing the location of springs and wells in the potentially affected portion of the Salt Creek watershed (this area corresponds generally to canal Hydrologic Unit D as referenced in the EIS/EIR and its appendices). Flow data are provided for those water sources projected to be affected by the canal lining project, including Salt Creek and the springs and wells collectively referred to in the EIS/EIR as Dos Palmas Spring. Salt Creek flow data are provided in Revised and Updated Draft EIS/EIR Section 3.2.1 under the heading “Salt Creek.” The BLM has provided flow data for the springs and wells referred to in the Revised and Updated Draft EIS/EIR “Dos Palmas Spring” (Please see comment L-14), and this information has been incorporated into Section 3.2.1 of the Final EIS/EIR. Flow data are not provided for water sources that would not be affected by the proposed project, such as the Andreas springs located within the Salt Creek watershed. Please see response to comment L-26 regarding the relationship of canal seepage to flows within the watershed.

M-2 Reclamation and CVWD agree with FWS that the USGS stream gauge data do not provide an adequate representation of the entire Salt Creek watershed. Refer to response M-1 with regard to additional studies conducted by Reclamation as part of the baseline analysis. The USGS gauge data do, however, provide an indication of surface flows at the gauge location near Highway 111.

information will be needed in advance of the canal lining for comparison with post-lining flow monitoring.

M-2
cont.

The DEIS/DEIR does not address the possibility of lining only a portion of the canal. It would be possible to avoid impacts to the Salt Creek watershed by not lining that portion of the canal that currently supports the habitats of concern in that watershed (siphons 23 through 29). Water loss as a result of not lining this portion of the canal could be balanced by salt cedar removal upstream in the Colorado River. Large expanses of salt cedar exist along the mainstem of the Colorado River, and water use of this plant is estimated at 4.0-4.8 acre-feet/year for each acre of salt cedar. Salt cedar removal efforts upstream may achieve similar or better water conservation goals while avoiding any impacts to sensitive species and habitats along the Coachella Canal. We recommend that the Bureau conduct a cost-benefit analysis of salt cedar removal and eradication along the Colorado River as a means of water conservation versus that associated with canal lining and long term maintenance of the mitigation requirements.

M-3

M-4

Please provide a clarification in regards to the mitigation plan. The acreage figures provided in the DEIS/DEIR are significantly below what we had recommended in our Coordination Act Report provided to the Bureau in 1993. The DEIS/DEIR mentioned revised habitat boundaries and new figures, but it does not provide any detail as to what adjustments were made. This comparison is necessary if we are to understand the basis for the acquisition and revegetation figures provided. In addition, salt cedar removal is discussed, but it is not clear how this fits in with the overall mitigation for the project. Revegetation efforts should begin in advance of or concurrent with the project construction to the extent feasible, and all revegetation should be done with native species.

M-5

A contingency plan for mitigation failure should be created. No detail is provided in the DEIS/DEIR regarding what actions will be taken if the proposed water delivery is not successful in maintaining habitat quality in the Dos Palmas Area of Critical Environmental Concern (ACEC). The Bureau should provide a mitigation plan prior to project implementation that is agreeable to the resource agencies that provides specific details as to what corrective actions will be considered and how those actions will be funded if the proposed project mitigation is not successful.

M-6

The monitoring plan as described does not provide enough detail to determine its adequacy. The frequency and extent may be appropriate, but much more detail is needed on what will be evaluated during each monitoring effort. Very specific success criteria will need to be developed as part of the monitoring plan. The source of funding for monitoring should also be identified.

M-7

Specific Comments

Page S-5: The use of the conserved water should be clarified. It is not clear what entity will be receiving the conserved water. It appears that there may be situations in which Coachella Valley Water District (CVWD) receives all of the conserved water, only 4,850 acre-feet/year, or none of

M-8

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-3 Final EIS/EIR Section 2.7, Alternatives Considered but Eliminated, has been revised to indicate why leaving the canal unlined between siphons 23 through 29 (hydrologic unit D) would not meet the proposed action's purpose and need and why this alternative has not been carried forward for detailed environmental analysis. Lining this section of canal is projected to annually conserve 15,800 acre-feet of water. Accordingly, leaving the canal unlined between siphons 23 and 29 would result in approximately 40 percent less water conservation in comparison to the projected net (post-mitigation) conservation of 26,000 acre-feet that would result from the proposed action. This would not meet the purpose and need of the proposed action (see Section 1.3 of the Final EIS/EIR). Based on these factors, leaving the canal unlined between siphons 23 and 29 has not been carried forward for further environmental analysis. Please see comment L-2 from the BLM, which requested that leaving a similar section of the Coachella Canal unlined be considered as mitigation. Water is not diverted by federal agencies or by agencies in California to irrigate salt cedar. Thus, a reduction in use of water by salt cedar along the Colorado River would not result in a reduced diversion. As such, an amount of water equivalent to the amount of water no longer used by salt cedar would not be available for diversion.

M-4 As described in Section 1.3 of the EIS/EIR, the purpose of the proposed action is to conserve 30,850 acre-feet of water currently lost as seepage through the earthen reaches of the Coachella Canal. Salt cedar removal along the Colorado River would not accomplish the purpose and need of the proposed action and is, therefore, not included as an alternative in this EIS/EIR.

M-5 Attachment A to the EIS/EIR summarizes the changes that were made to update and revise the previous (1994) Draft EIS/EIR, including a description of how habitat boundaries were updated. Changes in habitat generally reflected minor increases in the extent of salt cedar stands down-gradient from the canal and in the transition of some sections of Salt Creek from a combination of marsh/aquatic vegetation and salt cedar to nearly pure stands of salt cedar. The process of updating the marsh/aquatic and desert riparian vegetation maps included digitizing previous maps of project area marsh/aquatic and desert riparian vegetation, comparing the previous mapping with 1998 infrared and true-color satellite images, and ground-truthing and field verifying the results. Changes to the previously mapped habitat boundaries were quantified, and the previous habitat acreage totals adjusted accordingly.

Updating the maps and corresponding acreage totals for marsh aquatic and desert riparian vegetation increased the amount of nonnative vegetation impacts for which mitigation would be required. However, the largest change in the mitigation acreages is not based on changes in the amount and type of vegetation present in the project area; rather, it is from changes to the mitigation ratios. As a result of lowering mitigation ratios for impacts to salt cedar-dominated habitats, the total amount of mitigation necessary for the proposed project is lower than the amount proposed by FWS in its 1993 Coordination Act Report. The lower mitigation ratios for salt cedar are based on the information provided in Section 3.5.1 of the EIS/EIR under the heading "Value of Salt Cedar (Tamarisk)." The FWS' concurrence with lower mitigation ratios for impacts to nonnative species is acknowledged in FWS comment M-9. In agreement with comment M-9, Reclamation and CVWD will mitigate impacts to nonnative species through replacement with native species, and it is acknowledged that these revegetation efforts must meet the success criteria contained in the EIS/EIR.

Salt cedar removal fits into the overall mitigation strategy in two ways. First, eliminating salt cedar and replacing it with native species improves the habitat value of the affected area. Secondly, because of salt cedar's relatively high evapotranspiration levels, eradicating salt cedar can provide a source of recovered water to help meet mitigation requirements. The eradication of salt cedar would be conducted in concert with habitat restoration and concurrent with project construction both to help ensure the success of native plantings and to reduce water use by nonnative phreatophyte vegetation in the project area.

information will be needed in advance of the canal lining for comparison with post-lining flow monitoring.

M-2
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The DEIS/DEIR does not address the possibility of lining only a portion of the canal. It would be possible to avoid impacts to the Salt Creek watershed by not lining that portion of the canal that currently supports the habitats of concern in that watershed (siphons 23 through 29). Water loss as a result of not lining this portion of the canal could be balanced by salt cedar removal upstream in the Colorado River. Large expanses of salt cedar exist along the mainstem of the Colorado River, and water use of this plant is estimated at 4.0-4.8 acre-feet/year for each acre of salt cedar. Salt cedar removal efforts upstream may achieve similar or better water conservation goals while avoiding any impacts to sensitive species and habitats along the Coachella Canal. We recommend that the Bureau conduct a cost-benefit analysis of salt cedar removal and eradication along the Colorado River as a means of water conservation versus that associated with canal lining and long term maintenance of the mitigation requirements.

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M-8

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-6 Reclamation and CVWD will continue to work with resource agencies to help ensure that the success criteria contained in the Final EIS/EIR are met by mitigation efforts. Examples of additional measures that may be taken if the initial mitigation efforts are unsuccessful include soil treatments (e.g., flushing soil to reduce salinity levels) or planting in other locations. Remedial actions such as these will be taken if the target of 100 shrubs per acre is not met by the mitigation effort. Mitigation will include monitoring both planting success and the success of salt cedar eradication efforts. Funding for mitigation will include the entities which benefit from receiving the conserved water and the State of California.

M-7 Reclamation and CVWD respectfully disagree. The monitoring plan provided in the Final EIS/EIR provides specific mitigation goals (e.g., flow volumes, acres of mitigation needed), and it provides adequate discussion of success criteria for revegetation efforts. This level of detail is in compliance with NEPA and CEQA requirements. As specific sites for mitigation are selected, additional detail on revegetation efforts will be developed in coordination with the FWS, BLM, DFG, and other agencies or landowners in the area with natural resource management responsibilities or expertise in revegetation projects at the Dos Palmas ACEC (e.g., California Department of Parks and Recreation, Center for Natural Lands Management). This will represent the continuation of existing coordination with resource agencies. For example, Reclamation and CVWD met with resource agencies regarding project mitigation in November 2000 at the Dos Palmas ACEC. In addition to meeting success criteria contained in the Final EIS/EIR, the mitigation will also be in compliance with Public Law (P.L.) 100-675 which mandates mitigation at an ecologically equivalent level. Additionally, a Mitigation Monitoring and Reporting Program must be adopted at the time of project approval, which will ensure the implementation and monitoring of mitigation measures.

The source of funding for project monitoring will be CVWD.

M-8 Lining the earthen reaches of the Coachella Canal is projected to conserve a total of 30,850 acre-feet of water per year. Some of this conserved water will be used to help implement the mitigation measures included in the Final EIS/EIR. The net amount of water conserved by this project (i.e., the water available after mitigation commitments have been met) is projected to be approximately 26,000 acre-feet per year. In accordance with Title I of Public Law 100-675, it is expected that 4,500 acre-feet per year of the conserved water will be used to help facilitate the San Luis Rey Indian Water Rights Settlement Act. For purposes of analysis in this EIS/EIR, 4,850 acre-feet are assumed to be retained and managed by Coachella Valley Water District (CVWD) for mitigation. The remaining water (21,500 acre-feet per year) is available to California contractors (water or irrigation districts) under existing contracts to use Colorado River water. California contractors are the Metropolitan Water District of Southern California (MWD), CVWD, Palo Verde Irrigation District, and the Imperial Irrigation District. For purposes of analysis in this EIS/EIR, it is assumed that the water would be diverted by MWD and used in its service area.

One component of a proposed Quantification Settlement Agreement (QSA) among IID, CVWD, and MWD specifically allocates the 21,500 acre-feet per year of conserved water available as a result of lining the Coachella Canal to MWD, except when sufficient surplus water is available to MWD. In such a situation, the conserved water could be diverted by Imperial Irrigation District. A separate environmental evaluation of the overall QSA is currently being prepared.

the water. The status of the Metropolitan Water District (MWD) and the San Luis Rey Indians (SLR) as recipients of conserved water should be stated.

M-8
cont

Pages S-10 and S-11: The lower mitigation rate for replacement of non-native plant species is acceptable provided that all replacement is with native species and the revegetation efforts meet all appropriate success criteria.

M-9

Page 1-6: Because the water availability on the Lower Colorado River (LCR) is anticipated to decrease with time as a result of other states taking their full apportionments, the No Action condition would include lower flows in the Colorado River aqueduct. The water savings from the canal lining thus constitutes an increase in water for the aqueduct over what would otherwise be available (i.e., the No Action Alternative), and indirect effects should be considered.

M-10

Page 2-7: Because pumping operations generally require fuel storage, the project should include a spill prevention and response plan.

M-11

Page 2-8: Please provide more specific information on the nature of the impacts associated with disturbance of the existing spoil banks.

M-12

Page 2-9: What stored sources of water will be used to meet demands when the bypass pipelines are not adequate? What impacts might be associated with this use?

M-13

Page 2-11: Please clarify the discussion on the recipients of the conserved water.

M-14

Page 2-12: Please provide specific details on the other means of large mammal escape that may be incorporated into the design of the canal.

M-15

Page 2-13: What impacts might be associated with the discharge of the slurry in this alternative? Please be more specific in regards to how the slurry will be confined in sensitive areas and on the nature of the slurry.

M-16

Page 2-13: Does the width of the spoil placement include the area of the slurry discharge? This information should also be incorporated into the discussion.

M-17

Page 2-13: The impacts associated with the use of additional concrete may overwhelm the benefits of not using the plastic lining. This additional resource use should be factored into the analysis.

M-18

Page 2-17: It was not clear from the current discussion if the impact of spoils placement was considered in the overall footprint of the parallel canal alternative. Please provide a clarification of the activities included in the footprint discussed. If spoils placement was not included, please provide a discussion of the area to be disturbed by this activity.

M-19

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-9 All replacement of nonnative species will be by native species and will be required to meet the success criteria stated in Section 3.5.3 of the Final EIS/EIR.

M-10. The No Action Alternative as described in the Revised and Updated Draft EIS/EIR is to not line the Coachella Canal. In terms of water resources, this would result in 30,850 acre-feet of water not being conserved which in turn would not be available to meet demands for agricultural or municipal water supplies, as it would be under the proposed action.

As noted in Section 1.5 of the Final EIR/EIS, California is faced with deliveries of Colorado River water limited to its 4.4 million acre-foot per year basic (non-surplus years) apportionment. Consumptive use in California has exceeded its basic apportionment with supplies of surplus water and/or water apportioned to, but unused by, Arizona and /or Nevada. Because the quantity of these supplies made available by the Secretary of the Interior is expected to diminish, California has developed the Colorado River Water Use Plan to reduce the consumptive use to California's apportionment of 4.4 million acre-feet per year (see Final EIS/EIR, Section 1.8.5).

The Coachella Canal Lining Project is one of the identified measures to bring California within its apportionment. Other proposed measures are set out in Section 1.8 of the Final EIS/EIR. These projects would provide replacement supplies of water to maintain full flows within the Colorado River Aqueduct, and replace the surplus and unused Arizona/Nevada apportionment water that had been delivered through the Aqueduct.

CEQA and NEPA require that the No Project/No Action Alternative take into consideration the predictable actions that would reasonably be expected to occur in the absence of the proposed project. To the extent that the water conserved by lining the Coachella Canal would not be available, there are other sources and projects, including some of the projects described in Section 1.8 of the EIS/EIR, that could provide the water necessary to maintain the existing flows in the Colorado River Aqueduct. In the event of a shortage of water for delivery through the Aqueduct, it is reasonable to expect that these programs would be expanded, and similar programs developed to increase water conservation measures and transfer or exchange water among California's water users.

The Coachella Canal Lining Project would provide one of several sources for maintaining existing flows, rather than increased flows, in the Colorado River Aqueduct. As noted in Section 3.22.2 of the Final EIS/EIR, the Aqueduct has been operating at or near full capacity over the past 15 years. The proposed project does not expand the capacity of the Aqueduct, nor does it increase the amount of water delivered through the Aqueduct. The water deliveries to the service area of the Metropolitan Water District would be no greater than they have been for many years. Therefore, there are no indirect effects that would result from the delivery of the conserved water in lieu of the surplus or unused Arizona/Nevada apportionment water that had been delivered in the past.

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M-19

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-11 Section 2.2 of the Final EIS/EIR has been revised to indicate that the selected contractor(s) will be required to develop and implement a spill prevention and response plan.

M-12 Section 3.7.3 of the EIS/EIR includes an assessment of construction impacts associated with spoil banks. The impact analysis included in Section 3.7.3 accounts for impacts to vegetation on the existing spoil banks (which may be graded to accommodate bypass pipelines), and it identifies appropriate mitigation for those impacts.

M-13 Water in the canal downstream from construction would constitute the “stored” sources of water referenced in this discussion; however, the project will be designed and constructed such that bypass facilities are adequate to meet all downstream demands. Storing additional water within the lined portions of the canal downstream from siphon 32 would not result in adverse environmental effects.

M-14 Please refer to response to comment M-8.

M-15 The other means of escape that may be incorporated into the canal include additional escape ramps. These would be added in areas where large mammal drownings are recorded during monitoring. As part of initial project design and construction, escape ramps will be added in areas of high wildlife use, such as at siphon 20.

M-16 As stated on Page 2-13 of the Revised and Updated Draft EIS/EIR, the slurry would consist of sand and silt excavated from the canal bottom. The methods used to contain slurry in sensitive areas could include the use of a permeable barrier that prevents the spread of sand and silt, the use of desilting basins and standpipes, or both.

M-17 As assessed in Section 3.7.3, Terrestrial Habitat, the slurry from the Underwater Lining Alternative could spread as far as 50 feet from the base of the berms along the canal. This distance would extend up to 50 feet beyond the 15-foot-wide corridor of disturbance for soil placement. The effects of this slurry on terrestrial habitat are addressed in Section 3.7.3 of the EIS/EIR.

M-18 Please note that the Underwater Lining Alternative is not the preferred alternative. Should the Underwater Lining Alternative nonetheless be selected for implementation, the resource value of the additional concrete would be considered against the cost of the lining in determining final project design.

M-19 The impact of spoils placement was considered in the overall footprint of the Parallel Canal Alternative. Refer to the discussion of the Parallel Canal Alternative in Section 3.7.3 regarding the width of the canal and spoils placement and the total impact footprint of this alternative (873 acres).

- Pages 2-17 and 2-18: As mentioned previously, a spill prevention and response plan should be developed for fuel storage. M-20
- Pages 2-21 through 2-30: The surface water and groundwater sections in the table should be tied to the impacts to terrestrial resources that result from changes in the surface water and groundwater resources. The text should be modified to acknowledge the fact that these changes will result in impacts in other topic areas so that the reader may understand the true implications of those changes. M-21
- Page 2-23: In the discussion of terrestrial habitat, please provide a time frame for vegetation recovery. M-22
- Page 2-23: Please provide a frame work for how “no net loss” is going to be achieved in the discussion of special status species. M-23
- Page 2-29: Please include in the discussion of growth inducement a consideration of the fact this project may provide water to receiving areas that would not otherwise be available under the No Action Alternative and may facilitate growth by doing so. M-24
- Page 3-5: Please provide a discussion of the evidence that indicates the change in flows in Salt Creek since 1994 is as a result of phreatophyte growth. Inclusion of supporting aerial photographs would be very helpful in this regard. M-25
- Page 3-12: Please provide specific volumes for all flow types in the Salt Creek watershed. Specifically, in order to evaluate the impacts to the watershed, we need to understand how much of the flow is from canal seepage versus natural seepage or artesian well output. Please explain the cause of increased leakage from the canal in the 1970s. The current discussion states that this likely occurred, but does not explain why it would have occurred. M-26
- Pages 3-15 and 3-16: This discussion focuses solely on flood damage as a measure of significance in the surface water category. This would be an appropriate location for a discussion linking the changes in surface water with impacts in other categories such as terrestrial vegetation. M-27
- Page 3-17: The preference is stated here to use water derived from local wells to support the mitigation over using some of the conserved water from the Coachella Canal. This is of concern given that the Dos Palmas ACEC Management Plan specifically states that additional groundwater extraction should be avoided. Please provide data to support the availability of adequate aquifer volumes with the canal lined to support the long term water needs in the area. Is there evidence to support the availability of additional groundwater resources? M-28
- Page 3-18: The current flow provided for Salt Creek from the downstream gauge is a mean of 623 acre-feet/year. Please provide the range in flows over this measurement period and identify any significant trends in the flow data. It is necessary to determine if a specific maximum flow is needed with any specific frequency in order to support the current suite of habitats. Also, the M-29

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-20 The Final EIS/EIR has been revised to indicate that the selected contractor will be required to develop and implement a spill prevention and response plan for fuels and (in response to FWS comment M-36) acids.

M-21 The summary table is by nature brief and, therefore, the discussion of surface water and groundwater resources are specific to those resources. In the body of the Revised and Updated Draft EIS/EIR, several cross-references were provided to help readers understand the relationship between impact analyses. For example, in Section 3.3.3, the introductory paragraph under “General Groundwater Changes” notes that reductions in available groundwater would affect marsh aquatic and desert riparian habitats and refers readers to Section 3.5 of the EIS/EIR.

M-22 It is estimated that it would take roughly 30 to 50 years for the spoil banks associated with the canal lining to vegetate naturally. Because crushed trees would be replaced at a 2:1 ratio, these species would recover faster, although it would take several years for the planted trees to mature. Areas covered by slurry from the Underwater Lining Alternative would be expected to return to pre-construction conditions within one to two years.

M-23 The summary table is by nature brief and, therefore, does not provide a framework for the summary statements included therein. Refer to Sections 3.5 and 3.8 for discussions of the “no net loss” approach to habitat for threatened and endangered species.

M-24 The proposed action will provide water to help meet existing demand and is, therefore, not growth inducing. Please see response to comment M-10.

M-25 The evidence of increased phreatophytic use of water within Salt Creek is based on observed increases in the extent of salt cedar vegetation along Salt Creek and its northern tributary branch (i.e., the branch that leads up to Dos Palmas Spring). The increase in salt cedar within Salt Creek was documented through the interpretation of 1998 satellite images as well as through on-the-ground field verification. Because the increased presence of salt cedar reflected a change in the type of vegetation along the creek as opposed to a large increase in the areal extent of the vegetation, the increase is not easily identified through the use of satellite images. Rather, it was the field verification that proved most useful in documenting this change. Accordingly, an aerial photo comparison has not been added to the Final EIS/EIR.

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- Pages 3-15 and 3-16: This discussion focuses solely on flood damage as a measure of significance in the surface water category. This would be an appropriate location for a discussion linking the changes in surface water with impacts in other categories such as terrestrial vegetation. | M-27
- Page 3-17: The preference is stated here to use water derived from local wells to support the mitigation over using some of the conserved water from the Coachella Canal. This is of concern given that the Dos Palmas ACEC Management Plan specifically states that additional groundwater extraction should be avoided. Please provide data to support the availability of adequate aquifer volumes with the canal lined to support the long term water needs in the area. Is there evidence to support the availability of additional groundwater resources? | M-28
- Page 3-18: The current flow provided for Salt Creek from the downstream gauge is a mean of 623 acre-feet/year. Please provide the range in flows over this measurement period and identify any significant trends in the flow data. It is necessary to determine if a specific maximum flow is needed with any specific frequency in order to support the current suite of habitats. Also, the | M-29

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-26 Specific volumes for all flow types in the watershed are not available. A substantial amount of information on flows has been gathered and analyzed, as presented in the EIS/EIR and its Geohydrology Appendix. Some of that information is also summarized in this response. The increased leakage rates in the 1970s were the result of higher water levels within the Coachella Canal at that time. The higher the water level in the canal, the greater the volume of water that can seep through the canal's unlined side slopes.

The portion of the Coachella Canal that traverses the Salt Creek watershed stretches from the vicinity of siphon 23 to the vicinity of siphon 29, which is defined as Hydrologic Unit D in the Revised and Updated Draft EIS/EIR. The seepage from this hydrologic unit is estimated at approximately 16,500 acre-feet per year.

As discussed in the EIS/EIR, where the subsurface sloping clay layer extends beneath the canal, seepage flows downslope toward the Salton Sea and surfaces where the overlying alluvium thins one to three miles downslope of the canal. From that point, the seepage water is either consumed by evapotranspiration or drains to the Salton Sea through Salt Creek. There is no subsurface flow to the Salton Sea from the Salt Creek watershed.

Also as discussed in the EIS/EIR, where the subsurface sloping clay layer does not extend beneath the canal, the seepage water percolates and mingles with the water of the regional aquifer of the Salt Creek watershed. Several springs are located in the watershed downslope of the canal; however, no evidence of canal seepage water was found in discharges from springs located downslope of the "lineament" identified in Figure 16 of the Geohydrology Appendix. Thus discharge from Oasis Spring and San Andreas Spring contains no canal seepage water. Two-thirds of the discharge from Dos Palmas Spring was found to consist of canal seepage water. It is estimated that one-half of the discharge from springs and artesian wells located upslope of the lineament is canal seepage water.

From a water balance analysis, it is estimated that the total amount of water reaching the surface in the Salt Creek watershed downslope of the canal is approximately 19,000 acre-feet annually, all of which is either consumed by evapotranspiration or drains to the Salton Sea through Salt Creek. The exact extent of the sloping subsurface clay layer beneath the Coachella Canal, or lack thereof, in the Salt Creek watershed is not known. Therefore, the specific volume of seepage waters and water from the regional aquifer of the Salt Creek watershed reaching the surface is not known.

On occasion, precipitation in the 269-square-mile watershed (nearly all of which extends upslope of the Coachella Canal into an area bounded by the Orocopia, Chuckwalla, and Chocolate mountains) has resulted in runoff reaching the Salton Sea. The frequency of runoff from the area upslope of the canal is irregular and does not occur every year. The annual average precipitation (less than three inches) in the project area is an insignificant source of water when compared to canal seepage and artesian discharges from the regional aquifer.

M-27 The discussion of surface flow impacts to other resources is linked by references to other sections of the EIS/EIR. For example, Page 3-16 of the Revised and Updated Draft EIS/EIR states that, "Additional significance criteria that relate to water resource impacts are included in Sections 3.3 (Groundwater), 3.4 (Water Quality), and 3.5 (Marsh/Aquatic and Desert Riparian Habitats Along the Coachella Canal)," and it also states that, "This alternative could substantially affect flows in Salt Creek, resulting in significant biological resource impacts. Those impacts would be mitigated to less than significant levels as described in Sections 3.5 and 3.8."

- Pages 2-17 and 2-18: As mentioned previously, a spill prevention and response plan should be developed for fuel storage. | M-20
- Pages 2-21 through 2-30: The surface water and groundwater sections in the table should be tied to the impacts to terrestrial resources that result from changes in the surface water and groundwater resources. The text should be modified to acknowledge the fact that these changes will result in impacts in other topic areas so that the reader may understand the true implications of those changes. | M-21
- Page 2-23: In the discussion of terrestrial habitat, please provide a time frame for vegetation recovery. | M-22
- Page 2-23: Please provide a frame work for how “no net loss” is going to be achieved in the discussion of special status species. | M-23
- Page 2-29: Please include in the discussion of growth inducement a consideration of the fact this project may provide water to receiving areas that would not otherwise be available under the No Action Alternative and may facilitate growth by doing so. | M-24
- Page 3-5: Please provide a discussion of the evidence that indicates the change in flows in Salt Creek since 1994 is as a result of phreatophyte growth. Inclusion of supporting aerial photographs would be very helpful in this regard. | M-25
- Page 3-12: Please provide specific volumes for all flow types in the Salt Creek watershed. Specifically, in order to evaluate the impacts to the watershed, we need to understand how much of the flow is from canal seepage versus natural seepage or artesian well output. Please explain the cause of increased leakage from the canal in the 1970s. The current discussion states that this likely occurred, but does not explain why it would have occurred. | M-26
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- Page 3-18: The current flow provided for Salt Creek from the downstream gauge is a mean of 623 acre-feet/year. Please provide the range in flows over this measurement period and identify any significant trends in the flow data. It is necessary to determine if a specific maximum flow is needed with any specific frequency in order to support the current suite of habitats. Also, the | M-29

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-28 The Final EIS/EIR has been revised to remove references to groundwater being preferred to other sources of water for mitigation. The use of well water would be in addition to other sources of water, as identified in Section 3.5.4 of the EIS/EIR. The geohydrologic studies of the proposed project indicate well water could be used to supply some of the mitigation requirements. The specific locations of new wells have not been determined. Pilot holes would be drilled to locate new wells and determine the well's suitability for use. Refer to the Geohydrology Appendix for additional information on these studies. The evaluation of potential groundwater sources under public land for mitigation purposes is consistent with P.L. 100-675.

M-29 Reclamation and CVWD agree that a single gauge is not an adequate measure of all flows within a watershed. The USGS gauge data are, however, appropriate for indicating surface flows in Salt Creek at the gauge location near Highway 111. The USGS flow records show that there is seasonal variation in flows, with higher flows in winter and spring, and little to no flows in the summer and early to mid-autumn months. During the referenced period of 1996 through 1999, the highest monthly flow was 87.6 acre-feet, measured in January 1996. From 1996 through 1999, there were several summer or fall months where no surface flow was recorded at the gauge.

The trend shown by flow records is that annual surface flows in lower Salt Creek are decreasing—it is believed that this is a result of increases in phreatophyte vegetation such as salt cedar. Because Salt Creek receives runoff, it will continue to be subject to seasonal variations in flow even if the canal is lined. Please see response to comment M-26 regarding the effects of precipitation in the Salt Creek watershed. As referenced in response to comment F-2 from the California Department of Parks and Recreation, additional flow gauges are proposed for Salt Creek and its tributaries. Specifically, these would be installed in areas of known pupfish populations to ensure that adequate flows to those areas are provided. Reclamation and CVWD will determine appropriate locations for gauges in cooperation with FWS and other resource agencies.

annual mean does not indicate if flows are generally occurring at a specific time of year. A single gauge does not appear to be adequate to understand, predict changes in, or monitor the habitat in the watershed adequately. | M-29
cont.

Page 3-24: Please provide specific details as to the location of the clay layer relative to the canal. It is not clear from the discussion how deep this layer is when it is referred to as "directly below". Does this mean the clay forms the bottom layer of the canal, or is it at some specific distance below the canal bottom? | M-30

Page 3-26: Are data available to determine how much leakage occurs in the clay versus that which occurs where the canal traverses sand? | M-31

Page 3-28: Please provide a discussion of how it was determined that the phreatophytes present in 1949 aerial photographs were present before the canal construction. What species are present in the photographs? Are they presumed to have been there already based on their size? What is their estimated age? How large are these areas in comparison to their size today? | M-32

Pages 3-28 and 3-29: The discussion of Unit D is incomplete in regards to the actual location of the clay layer and how that might affect the canal lining's impact to wells in the area. Please provide a discussion of the specific location of the clay layer and the aquifer structure in this area. Please provide a discussion of the vegetation structure in this area before the canal construction, after canal construction but before well development in this area, and the current condition so that we might understand the importance of each water source to the overall habitat structure. | M-33

Page 3-31: Please identify the water source for each of the springs and wells that currently support habitat in the Dos Palmas area. It was not clear from the discussion if any of the artesian wells were sampled for tritium. Please provide a more complete discussion of how the estimate of the seepage portion of the flow was derived. | M-34

Pages 3-33 and 3-34: The discussion of water quality should also include some basic information on water quality parameters for Salt Creek in addition to the current discussion provided for the Coachella Canal and the Salton Sea. | M-35

Page 3-35: The underwater lining alternative should include a spill prevention and response plan for acid as well as fuels. | M-36

Page 3-36: Please provide a discussion of how the acid will be added to the canal and some estimate of the size of the mixing zone. | M-37

Page 3-48: Please provide a discussion of how the acreage of loss was determined. Currently, it is not clear how flows can be reduced by 1/2 to 2/3 with only a loss of 23% of the vegetation. How are the remaining 367 acres being supported? | M-38

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-30 The distance between the clay layer and the canal varies depending on location. In some cases, the canal is almost completely encompassed by the clay layer, such as near siphon 17 in hydrologic unit B. In other locations, the clay layer is located more than 50 feet below the canal, such as near siphon 23 on the boundary between hydrologic units C and D. Within several sections of hydrologic unit D, which represents the portion of the canal within the Salt Creek watershed and near the Dos Palmas ACEC, the depth to the clay layer or the presence/absence of the clay layer under the canal is not known. Please refer to Figures 2a, 2b, and 2c in the Geohydrology Appendix for geologic cross sections which show the depth of the clay layer relative to the canal.

M-31 Data are available to support the finding that more water seeps in areas where the canal is encompassed by sand in comparison to areas where the canal is encompassed by clay. For example, Attachment B to the Geohydrology Appendix estimates canal seepage by hydrologic unit. This assessment found that hydrologic units C and D, which together total 46 percent of the 33.2 miles of unlined canal, are the source of approximately 85 percent of the canal leakage. These two units traverse relatively sandy soils. In comparison, units A, B, and E, which have more clay-lined sections, together constitute 54 percent of the unlined canal but represent only 15 percent of the leakage. The Geohydrology Appendix contains additional information on the relationship of the canal to the clay layer (please see response to comment M-30), and Attachment B to the Geohydrology Appendix describes how seepage estimates were calculated.

M-32 The assessment of 1949 marsh and phreatophyte vegetation did not identify specific species; rather, it used a single evapotranspiration rate for these vegetation types. With regard to how it was determined that the 1949 phreatophyte vegetation were present prior to canal construction, please refer to the following discussion from Page 23 of the Geohydrology Appendix.

The 1949 air photos are believed to accurately represent pre-canal vegetation even though water was intermittently in the canal from 1946 to 1949. It can be reasonably assumed that canal seepage had yet to induce phreatophytes because a borrow pit downslope from siphon 26 is dry in the 1949 photos. Even if canal seepage had sufficiently moistened the ground to induce phreatophytes in some areas, it is assumed that any phreatophytes in 1949 would not be visible on the photo. By 1959, the borrow pit had become a pond and in later photos phreatophytes had surrounded the pit (USDA aerial photography, 1959 and 1972).

As indicated in this response, size was the factor used to determine which vegetation was present prior to canal construction. (It was assumed that seepage-dependent vegetation would have been too small to show up on the 1949 aerial photos.) Age determinations for the pre-canal vegetation were not conducted because they were not necessary for this assessment. The comparison of 1949 aerials to 1988 aerials and 1998 satellite images did not identify significant areas where vegetation had disappeared since 1949; rather, there was an overall increase in the amount of vegetation present down-gradient from the canal.

- annual mean does not indicate if flows are generally occurring at a specific time of year. A single gauge does not appear to be adequate to understand, predict changes in, or monitor the habitat in the watershed adequately. | M-29
cont.
- Page 3-24: Please provide specific details as to the location of the clay layer relative to the canal. It is not clear from the discussion how deep this layer is when it is referred to as "directly below". Does this mean the clay forms the bottom layer of the canal, or is it at some specific distance below the canal bottom? | M-30
- Page 3-26: Are data available to determine how much leakage occurs in the clay versus that which occurs where the canal traverses sand? | M-31
- Page 3-28: Please provide a discussion of how it was determined that the phreatophytes present in 1949 aerial photographs were present before the canal construction. What species are present in the photographs? Are they presumed to have been there already based on their size? What is their estimated age? How large are these areas in comparison to their size today? | M-32
- Pages 3-28 and 3-29: The discussion of Unit D is incomplete in regards to the actual location of the clay layer and how that might affect the canal lining's impact to wells in the area. Please provide a discussion of the specific location of the clay layer and the aquifer structure in this area. Please provide a discussion of the vegetation structure in this area before the canal construction, after canal construction but before well development in this area, and the current condition so that we might understand the importance of each water source to the overall habitat structure. | M-33
- Page 3-31: Please identify the water source for each of the springs and wells that currently support habitat in the Dos Palmas area. It was not clear from the discussion if any of the artesian wells were sampled for tritium. Please provide a more complete discussion of how the estimate of the seepage portion of the flow was derived. | M-34
- Pages 3-33 and 3-34: The discussion of water quality should also include some basic information on water quality parameters for Salt Creek in addition to the current discussion provided for the Coachella Canal and the Salton Sea. | M-35
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- Page 3-48: Please provide a discussion of how the acreage of loss was determined. Currently, it is not clear how flows can be reduced by 1/2 to 2/3 with only a loss of 23% of the vegetation. How are the remaining 367 acres being supported? | M-38

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-33 Section 3.2.1 of the EIS/EIR contains a summary of the clay layer and its relationship to the canal and hydrologic unit D. More detailed description of the clay layer in this area is provided in the Geohydrology Appendix. Please see, for example, Figure 7 of the Geohydrology Appendix, which provides a geologic cross section of the canal and surrounding area near siphon 24. This cross section includes the results of five test borings taken by Reclamation to help locate the clay layer. Figure 8 of the Geohydrology Appendix provides an inferred and diagrammatic cross section of Dos Palmas and Salt Creek, including the relationship of canal water to the seepage-supported artesian wells and to the non-seepage supported springs. This figure also shows the relationship of these water sources to Salt Creek and to vegetation in the watershed. It should be noted that the Salt Creek watershed is a dynamic and complex hydrologic system and it is not feasible to identify the specific location of the clay layer in all parts of the affected watershed (please see also response to comment M-30).

During preparation of the Revised and Updated Draft EIS/EIR, the previous vegetation maps of the Dos Palmas ACEC were updated through satellite image interpretation and field verification. The Dos Palmas ACEC contains a variety of vegetation types, and the focus of this assessment was on marsh/aquatic and desert riparian vegetation, as defined in Section 3.5.3 of the Revised and Updated Draft EIS/EIR. Along the eastern and northeastern portions of the Dos Palmas ACEC, canal seepage primarily supports stands of salt cedar or patches of salt cedar/honey mesquite or suda. Interspersed within these stands of salt cedar are several non-seepage dependent springs that support marsh vegetation or palm oases.

Dos Palmas Spring supports marsh vegetation and palms. The flows from this area are the headwaters for the north tributary branch of Salt Creek. The marsh vegetation transitions to salt cedar further downstream, with much of Salt Creek and its north branch tributary dominated by this nonnative species.

To the west of Salt Creek, the watershed currently encompasses marsh habitat (supported by a non-canal seepage spring), large patches of salt cedar/honey mesquite vegetation, arrow weed scrub, and a screwbean mesquite bosque.

A similar level of detail was not developed during the assessment of 1949 conditions (i.e., conditions immediately after the canal was constructed and prior to it affecting vegetation structure in the area). The 1949 aerial photo interpretation indicates that marsh aquatic and desert riparian vegetation was present at and immediately down-gradient from the non-seepage dependent springs located in the eastern portion of what is now the Dos Palmas ACEC. The vegetation along Salt Creek was more narrowly limited to the mainstem of the creek and its north branch tributary in comparison to current conditions. Marsh/aquatic and desert riparian vegetation was also present near the non-seepage dependent spring west of Salt Creek. No assessment of conditions subsequent to the effects of canal seepage but prior to development of the area was conducted or is considered necessary for determining the impacts of the proposed project.

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- Page 3-31: Please identify the water source for each of the springs and wells that currently support habitat in the Dos Palmas area. It was not clear from the discussion if any of the artesian wells were sampled for tritium. Please provide a more complete discussion of how the estimate of the seepage portion of the flow was derived. | M-34
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U.S. Department of the Interior Fish and Wildlife Service (continued)

M-34 The spring and wells that are collectively referred to as Dos Palmas Spring in the EIS/EIR include water from both canal seepage and the aquifer which underlies the Salt Creek watershed. This aquifer is also the source of Oasis Spring and the Andreas Springs; however, these springs are not supported by canal seepage. Springs that were sampled using tritium analysis include Dos Palmas Spring (considered to be an artesian well), Goats Well (Oasis Spring), and the seep at San Andreas Springs. Samples from two unnamed locations and a sample from the Coachella Canal between siphons 21 and 22 were also taken. Please refer to the Geohydrology Appendix's Attachment C, "Estimate of the Coachella Canal Seepage on Dos Palmas Spring," for additional discussion on how and where the tritium sampling was used.

M-35 No changes to the water quality of Salt Creek are anticipated to result from the proposed project because Salt Creek would continue to be supported by a combination of water from the Coachella Canal and from the aquifer below the Salt Creek watershed. For this reason, no sampling was conducted as part of the Revised and Updated Draft EIS/EIR preparation and analysis. In response to FWS concerns, however, Reclamation is currently collecting and analyzing water samples from Salt Creek and other locations within the watershed. Water supplied to Salt Creek will be tested to ensure that it would be appropriate to support native vegetation and desert pupfish.

M-36 Please see response to comment M-11, which also addresses this topic.

M-37 The acid would be poured into the water from acid-resistant containers and it would be expected to mix rapidly with the flowing canal water; the specific mixing zone size has not been quantified.

M-38 The areal extent of marsh/aquatic and desert riparian habitat losses was assessed by comparing existing vegetation with an assessment of which areas are likely to incur reductions in shallow groundwater should the earthen reaches of the canal be lined. Canal seepage does not represent the only source of water in the project area; accordingly, a percentage reduction in canal seepage does not correspond to an equal percentage reduction in vegetation. More specifically, much of the seepage-dependent vegetation is salt cedar, and if the canal is lined, this species would incur the greatest impact in terms of acres affected. In contrast, much of the marsh/aquatic vegetation is supported by water sources that are not dependent on, or are only partially dependent on, canal seepage. Thus, marsh/aquatic vegetation would not be affected to the same extent as would, for example, salt cedar. The referenced 367 acres of marsh/aquatic vegetation would be supported by water sources that are only partially dependent on canal seepage or that are not dependent on canal seepage. (Please note that this has been revised to 334 acres in the Final EIS/EIR.) In any case, enough water sources will be available to avoid or mitigate impacts to marsh/aquatic and desert riparian vegetation.

- Page 3-52: Please provide a discussion of the data currently available that supports the contention that Frink Springs and other pre-canal groundwater sources still function in the same way now as they did before canal construction. It is not clear if there are adequate data to indicate that these sources will continue to flow as they have in the past once the canal is lined. Does the mitigation include contingencies in case the lining does result in impacts to these resources? M-39
- Page 3-55: Please provide some specific potential sites for desert riparian habitat revegetation for the mitigation requirements currently referred to as being "replaced elsewhere". M-40
- Page 3-57: Please provide a clarification of how 527 acres of land purchased and 300 acres of desert riparian revegetation addresses the loss of 840 acres and degradation of 340 acres. This differs from the Service's Coordination Act Report recommendations, and it is not clear how these new figures were derived. M-41
- Pages 3-58 and 3-59: It should be considered that any revegetation efforts will require additional water to at least get the plants established. Please provide a clarification of how (or if) salt cedar removal fits into the 527 acres of land purchased/300 acres of revegetation provided above. M-42
- Page 3-61: Please provide an estimate of how much water will be available from the existing wells and springs on Bureau of Land Management and Nature Conservancy lands to support uses beyond those currently in place. How was the estimate of water from new wells derived? How much revegetation will this volume support? M-43
- Page 3-62: Please provide an estimate of the budget that will be available for monitoring activities and corrective actions. M-44
- Page 3-62: As stated previously, please provide a more complete discussion of how the acreage figures were determined for the restoration/creation of riparian habitat and the acquisition of land as mitigation for the project. M-45
- Page 3-71: Is there a contingency plan for revegetation of areas that do not recover from crushing if this occurs? M-46
- Page 3-72: Please provide more detail as to what efforts will be made to assure that the replacement of mature trees is successful. M-47
- Page 3-72: Please provide a discussion of what efforts will be taken to avoid losses of desert tortoise (*Gopherus agassizii*) and burrowing owls (*Athene cunicularia*) as a result of their burrows being flooded by discharge of slurry from the canal. M-48
- Page 3-73: The abandonment of the existing canal in place is not adequate. The canal should be re-filled to the natural contour of the land with the spoils from construction of the new canal and covered with topsoil stockpiled from that construction process. M-49

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-39 The assessment that pre-canal groundwater sources such as Frink Springs would continue to function is based on the presence of historical (pre-canal) flows. In certain areas, as listed in response to comment M-34, additional tritium analysis was conducted to help ascertain the contribution of canal seepage to spring and well flows. Specifically with regard to Frink Springs, a 1967 chemical analysis of water samples from the Frink Springs area led to the conclusion that water from those springs has probably risen along the fault in that area (as opposed to being associated with canal-seepage). Please refer to Page 37 of the Geohydrology Appendix.

Pursuant to CEQA and NEPA, the mitigation monitoring conducted for the proposed project will focus on ensuring the success of the required mitigation. The monitoring effort will not be directed toward assessing the extent to which post-lining impacts occur to water sources, but to maintaining mitigation levels. Additionally, the project area is tectonically active, which could result in future changes in groundwater and surface water conditions unrelated to the canal lining project. For these reasons, the mitigation plan will not include post-lining assessments of groundwater or surface flows near Frink Springs.

M-40 The proposed locations for desert riparian mitigation are described in Section 3.5.4, under the heading "Mitigation Plan Performance Standards." As listed in that discussion, these proposed locations are, in order of priority, (1) Dos Palmas Area of Critical Environmental Concern (ACEC), (2) areas downslope from the canal on federal or State land with favorable soil conditions, and (3) Salton Sea shoreline areas.

M-41 The total mitigation requirement of 827 acres (527 acre of land purchased plus 300 acres of revegetation) was calculated by applying the mitigation ratios contained in Table 3-6 to the desert riparian vegetation impacts listed in Table 3-4 of the EIS/EIR. Please note that following additional field verification of vegetation types and based on input from resource agencies and organizations at a November 2000 meeting at the Dos Palmas ACEC, the vegetation totals in Table 3-4 have been revised in the Final EIS/EIR. Accordingly, the total mitigation requirement for the Coachella Canal Lining Project will be 902 acres (575 acres of land purchased plus 327 acres of revegetation). These mitigation acreages are different than those contained in FWS's 1993 Coordination Act Report because that report evaluated fewer impacts (in terms of acres) and it used different mitigation ratios.

With regard to the ratio of land purchased to land revegetated, 527 acres purchased to 300 acres revegetated is equivalent to a 1.76-to-1 ratio (as is 575 acres purchased to 327 acres revegetated). This is identical to the purchase-to-revegetation ratio contained in the previous (1994) Draft EIS/EIR. The previous Draft EIS/EIR called for 1,000 acres of land purchase and 570 acres of revegetation (which also represents a 1.76-to-1 ratio of land purchase to revegetation).

M-42 Reclamation and CVWD acknowledge that water will be required to establish native vegetation as mitigation. Salt cedar would be a component of the land purchase mitigation in that salt cedar on lands purchased as mitigation would be eradicated. Salt cedar factors into revegetation efforts because it is anticipated that some areas targeted for revegetation may currently be infested with salt cedar. This salt cedar would need to be removed in order to accommodate the revegetation effort. (Flushing the soil to lower salinity may also be required in areas where salt cedar is removed due the deleterious effect salt cedar can have on soil salinity.) Reclamation and CVWD understand that revegetating former salt cedar stands will require monitoring and long-term salt cedar removal in order to ensure that the native plants are not displaced by a re-invasion of the nonnative species. Additionally, salt cedar factors into revegetation because removing salt cedar would increase the amount of water available to other plants, thus reducing the need for supplemental irrigation.

- Page 3-52: Please provide a discussion of the data currently available that supports the contention that Frink Springs and other pre-canal groundwater sources still function in the same way now as they did before canal construction. It is not clear if there are adequate data to indicate that these sources will continue to flow as they have in the past once the canal is lined. Does the mitigation include contingencies in case the lining does result in impacts to these resources? M-39
- Page 3-55: Please provide some specific potential sites for desert riparian habitat revegetation for the mitigation requirements currently referred to as being "replaced elsewhere". M-40
- Page 3-57: Please provide a clarification of how 527 acres of land purchased and 300 acres of desert riparian revegetation addresses the loss of 840 acres and degradation of 340 acres. This differs from the Service's Coordination Act Report recommendations, and it is not clear how these new figures were derived. M-41
- Pages 3-58 and 3-59: It should be considered that any revegetation efforts will require additional water to at least get the plants established. Please provide a clarification of how (or if) salt cedar removal fits into the 527 acres of land purchased/300 acres of revegetation provided above. M-42
- Page 3-61: Please provide an estimate of how much water will be available from the existing wells and springs on Bureau of Land Management and Nature Conservancy lands to support uses beyond those currently in place. How was the estimate of water from new wells derived? How much revegetation will this volume support? M-43
- Page 3-62: Please provide an estimate of the budget that will be available for monitoring activities and corrective actions. M-44
- Page 3-62: As stated previously, please provide a more complete discussion of how the acreage figures were determined for the restoration/creation of riparian habitat and the acquisition of land as mitigation for the project. M-45
- Page 3-71: Is there a contingency plan for revegetation of areas that do not recover from crushing if this occurs? M-46
- Page 3-72: Please provide more detail as to what efforts will be made to assure that the replacement of mature trees is successful. M-47
- Page 3-72: Please provide a discussion of what efforts will be taken to avoid losses of desert tortoise (*Gopherus agassizii*) and burrowing owls (*Athene cunicularia*) as a result of their burrows being flooded by discharge of slurry from the canal. M-48
- Page 3-73: The abandonment of the existing canal in place is not adequate. The canal should be re-filled to the natural contour of the land with the spoils from construction of the new canal and covered with topsoil stockpiled from that construction process. M-49

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-43 The amount of additional water that may be available from existing wells on BLM and privately owned land has not been quantified. The specific amount of water that might be obtained from these sources would be determined when site specific mitigation plans are developed, and it would be contingent upon reaching agreement with the BLM or other respective landowners. Similarly, the specific quantity of groundwater that may be developed from new wells has also not been quantified; however, it is projected that up to 2,000 acre-feet annually may be available from this source. This estimate was developed based on the geohydrologic investigations conducted during preparation of the previous Draft EIS/EIR. The amount of vegetation that this would support depends on the type of vegetation being planted. This would also depend on the extent to which the water would be used to maintain surface flows in Salt Creek compared to the amount of water used as supplemental irrigation.

M-44 The budget for this effort has not been determined. Specific cost estimates, which are not required for an EIS/EIR analysis, will be developed in consultation with the BLM and resource agencies with expertise in the project area and with desert revegetation and salt cedar eradication projects. These estimates will help ensure that mitigation monitoring and long-term salt cedar eradication are adequately funded.

M-45 Please refer to responses to comments M-5 and M-38 regarding the assessment of impacts to marsh aquatic and desert riparian vegetation, and please refer to response to comment M-41 regarding the identification of mitigation requirements.

M-46 Mature trees that do not recover from crushing will be replaced at a 2:1 ratio. Based on the abundance of similar terrestrial habitat in the project area and the associated sensitivity of that habitat, no additional mitigation or contingency plan is required for impacts to (non-tree) terrestrial vegetation that does not recover from crushing.

M-47 The Final EIS/EIR has been revised to indicate that tree survival will be monitored annually for five years, and trees which do not survive planting or meet species-specific criteria regarding size and height will be replaced. These measures will be used to ensure that a 2:1 success ratio is achieved.

M-48 The Final EIS/EIR has been revised to address potential tortoise and burrowing owl burrow impacts, including the potential effects of canal slurry (see Section 3.8). The desert tortoise is also being addressed as part of Endangered Species Act Section 7 consultations with the FWS. The likelihood of either species having burrows along the canal is considered low; however, the potential for occurrence of these species is acknowledged. Accordingly, Reclamation and CVWD propose to have a qualified biologist conduct a pre-construction survey. If encountered, desert tortoises would be relocated by a biologist permitted by the FWS, following FWS protocol and pending the specific terms of the Section 7 consultation. If tortoise burrows are detected, replacement burrows will be constructed (also following FWS protocol and pending the specific terms of the Section 7 consultation). If burrowing owls are present, permission will be granted to FWS and DFG to access the property for the purpose of collecting and relocating individuals. As such, potential impacts to these species are considered to be less than significant and mitigated. (See also, response to FWS Comment M-53 regarding tortoise burrows.)

M-49 Under the Parallel Canal Alternative, excess soil from canal excavation would be placed inside the previous canal. This would reduce the extent to which the previous canal alignment differs from the surrounding topography. Reclamation and CVWD respectfully disagree that refilling to reach a natural contour and covering with topsoil would be necessary.

- Page 3-77: It is not clear from the discussion of the Southwestern willow flycatcher (*Empidonax traillii extimus*) whether transient use of these habitats has been considered adequately. The importance of habitats used for transiting desert areas should not be underestimated. Just because the use of such habitats by sensitive species may be brief, this does not mean that these habitats are not of great importance to their ability to reach their final destination (i.e., breeding areas). M-50
- Page 3-79: Please provide an explanation for the potential occurrence of the fairy duster (*Calliandra eriophylla*) being low in the project area given that it is known to occur on low elevation alluvial fans. The canal crosses just such habitat in the Salt Creek watershed. M-51
- Page 3-80: Please provide more specific information regarding the water sources supporting desert pupfish (*Cyprinodon macularius*) habitat. The use of a single gauge downstream of the habitat to monitor flow does not appear to be adequate to meet the needs of the project. Please provide a discussion of the water quality in this habitat and how this will be maintained under a new delivery regime. M-52
- Page 3-80: Will alternative burrows be provided for desert tortoises if their burrows are destroyed by construction? M-53
- Page 3-81: Yuma clapper rails (*Rallus longirostris yumanensis*) may use very small patches of habitat. Please provide size information for the individual patches that make up the 4 acres of wetlands not considered habitat because of their small size. As with the desert pupfish, additional information is needed beyond mean flow from one downstream gauge in order to assure that the habitat is maintained in the appropriate condition. M-54
- Pages 3-81 and 3-82: Please provide a discussion of the data that indicate that Frink Springs is not supported by canal water. The previous discussion of this area did not clearly identify the source of the water that supports the vegetation that may be used by transient Southwestern willow flycatchers. M-55
- Page 3-83: Please clarify what habitat characteristics support the conclusion that the use of this area by the Palm Springs ground squirrel (*Spermophilus tereticaudus chlorus*) is likely to be low. M-56
- Page 3-83: The seasonal occurrence of the fairy duster may contribute to the lack of occurrence data for the project area. This makes it more difficult to conclude that impacts are unlikely. M-57
- Page 3-85: The Parallel Canal Lining alternative discussion states that impacts to the desert tortoise, Palm Springs ground squirrel, and the fairy duster will be addressed in the same manner as for the Conventional Lining alternative, but no mitigation is offered for the ground squirrel nor the fairy duster under that alternative. Please clarify how these species will be addressed under both alternatives. M-58
- Page 3-88: Please provide more detail in the escape mechanisms that will be implemented if the ridges on the canal lining are not adequate to allow for large mammal escape from the canal. M-59

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-50 Based on the structure and type of the salt cedar and other potentially affected habitats present along the canal, Reclamation and CVWD believe that impacts to transitory southwestern willow flycatcher have not been underestimated. Please refer to EIS/EIR Attachment E-1 regarding the limited value of affected salt cedar habitat, as assessed by Mike Walker from Reclamation and Dr. Robert McKernan from the San Bernardino County Museum. Also, please note that following mitigation, there would be an increase in more suitable native habitat in the project area. This would be an improvement over existing conditions.

M-51 Section 3.8.1 of this Final EIS/EIR has been revised, and the reference to the potential for occurrence being low has been deleted. Impacts to this species from project implementation would still not be significant, however, due to the relatively narrow corridor of disturbance associated with project construction in relationship to the range and distribution of this plant.

M-52 Following project implementation, the water sources for Salt Creek would continue to include the aquifer which underlies the Salt Creek watershed and the Coachella Canal. These represent the existing sources of water for Salt Creek, so little to no change in creek water quality is projected. (Please see response to comment K-11 regarding the maintenance of adequate water quality to support pupfish.) In addition, the removal of salt cedar from Salt Creek would enhance flows in the creek by reducing water losses to evapotranspiration. To further ensure that populations of desert pupfish are not affected by the project, additional gauges would be added to the creek in areas of known pupfish populations. Reclamation and CVWD will site the gauges in appropriate locations to monitor flow in areas of pupfish habitat, with input from FWS and DFG.

M-53 The Final EIS/EIR includes mitigation for impacts to tortoise burrows, although tortoise burrows are not expected in the project's area of effect (see Final EIS/EIR Section 3.8). A Tortoise Mitigation and Monitoring Plan is being prepared that includes "industry standard" practices regarding pre-construction surveys and tortoise monitoring during construction. Actual "take" (i.e., handling tortoises for removal from construction corridor and/or permanent relocation) conditions will be worked out in consultation with the FWS and DFG. This approach is consistent with the EIS/EIR in both the "Biological Assessment Listed Endangered Candidate Species Coachella Canal In-Place Lining Project" (Reclamation 1989) and the "Fish and Wildlife Coordination Act Report by U.S. Fish and Wildlife Service" (FWS 1993). See also response to FWS comment M-48.

- Page 3-77: It is not clear from the discussion of the Southwestern willow flycatcher (*Empidonax traillii extimus*) whether transient use of these habitats has been considered adequately. The importance of habitats used for transiting desert areas should not be underestimated. Just because the use of such habitats by sensitive species may be brief, this does not mean that these habitats are not of great importance to their ability to reach their final destination (i.e., breeding areas). M-50
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U.S. Department of the Interior Fish and Wildlife Service (continued)

M-54 As indicated in Section 3.5 of the Final EIS/EIR under the heading “Mitigation Requirements,” unavoidable impacts would occur to 17 acres of marsh aquatic habitat. Within hydrologic unit B, impacts would occur to a 0.77-acre and a 1.2-acre patch of marsh/aquatic vegetation adjacent to the canal. These patches of marsh/aquatic vegetation are separated from the potential habitat at Frink Springs that may be utilized by Yuma clapper rails. Unavoidable impacts to marsh/aquatic vegetation in hydrologic unit C would total two acres; however, each of the isolated patches of marsh/aquatic vegetation would be less than one acre and these isolated patches are not considered suitable rail habitat. Impacts to 13 acres of marsh/aquatic habitat in hydrologic unit D would be replaced within the same hydrologic unit. Please note that the Final EIS/EIR has been revised to include an additional, 10-acre isolated patch of marsh/aquatic vegetation that would be unavoidably affected by canal lining in hydrologic unit D (see Section 3.5.3). This vegetation forms a long, narrow strip adjacent to the Eagle Mountain Railroad, down-gradient from the canal. This isolated and marginal quality marsh/aquatic vegetation does not provide suitable structure and size to constitute rail habitat.

The creation of 17 new acres of marsh habitat in hydrologic unit D (4 acres to mitigate impacts at units B and C and 13 acres to mitigate impact within the other part of hydrologic unit D) would provide for an overall improvement of rail habitat in this area. The new marsh habitat would be contiguous with existing rail habitat, in contrast to the small, isolated patches of marsh/aquatic vegetation that would be unavoidably affected by canal lining.

M-55 Please refer to response to comment M-39 regarding the source of water for Frink Springs. Habitat that supports transient southwestern willow flycatchers is expected to remain following project construction.

M-56 The Final EIS/EIR has been revised to include additional discussion of the Palm Springs ground squirrel and why its use of the project area is likely to be low. Refer to Final EIS/EIR Section 3.8.

M-57 Please see response to comment M-51 regarding the potential occurrence of fairyduster in the project area.

M-58 The discussion of the Parallel Canal Alternative in EIS/EIR Section 3.8.3 has been revised to clarify that although the Parallel Canal Alternative would have a greater likelihood of affecting the Palm Springs ground squirrel and the fairyduster, impacts to those two species would not be significant. The reference to mitigation associated with the Conventional Lining Alternative is, therefore, appropriate and adequate.

M-59 Please refer to response to comment F-22 regarding post-construction monitoring of large mammal escape, and please refer to response to comment M-15 regarding other means of providing large mammal escape should it be necessary.

Please provide a thorough discussion of the monitoring program including how the adequacy or inadequacy of large mammal escape mechanisms will be determined.

M-59
cont.

Page 3-121: Please provide a clarification in the text as to why additional sand and gravel quarries would be required if the impacts to existing facilities would not be significant.

M-60

Page 3-165: The appropriate comparison that should be made in this discussion is project alternatives versus the No Action Alternative, not the current condition. Full use of their apportionments by other states in the future will make it unlikely that the current volume in the Colorado River Aqueduct will continue to be available in the long term. Because more water will be available in the future than would be otherwise, growth inducement is possible and should be discussed. Please include a comparison of the project alternatives to the No Action Alternative in this discussion.

M-61

Pages 6-1 and 6-2: Please provide the volumes available from the various groundwater sources discussed.

M-62

Page 7-1: Please provide a diagram of the conventional large mammal escape ramps being discussed.

M-63

Page 7-6: Please provide clarification as to whether or not the trust fund will support salt cedar removal.

M-64

Page 7-7: Please correct the text of the salt cedar removal section to provide both a per acre figure for water use by salt cedar and a total for hydrological unit D (the text currently repeats the per acre figure).

M-65

Page 7-7: Please provide estimates for the volumes from existing discharges that will be available to support additional vegetation.

M-66

Page 7-9: It should be considered that non-seepage dependent vegetation losses may have to be revegetated if natural regeneration is not adequate to meet the needs of sensitive species.

M-67

Page 7-10: In order to adequately address the needs of desert pupfish, additional gauges should be installed above and within their habitat, and baseline data of the flows in these areas should be collected before the project construction begins.

M-68

Page 7-11: Please provide a clarification as to whether or not fish stocking would continue in perpetuity if the artificial reefs are not adequate to maintain the desired population of fish in the canal.

M-69

We appreciate the opportunity to provide comments on the DEIS/DEIR, and we hope you find them helpful in producing a final version of the document. Please contact Carol Roberts of my staff at (760) 431-9440 if you have any questions regarding our comments.

M-70

U.S. Department of the Interior Fish and Wildlife Service (continued)

M-60 The assessment of sand and gravel impact significance is not based solely on the capacity of existing facilities; instead, it is based on the availability of sand and gravel from sources that have been developed (i.e., existing facilities) and from sources that could be developed in the future.

M-61 Please refer to response to comment M-10.

M-62 As stated in Section 6.2 of the Final EIS/EIR, the potential sources of groundwater for mitigation have not been quantified.

M-63 Per your request, a schematic diagram of the escape ramps has been added as Attachment E-3 to the Final EIS/EIR.

M-64 The trust fund will support long-term salt cedar eradication from mitigation areas.

M-65 The Final EIS/EIR has been revised to indicate that the salt cedar present in hydrologic unit D consumes a total of 8,716 to 10,460 acre-feet of water per year.

M-66 Please see response to comment M-43 regarding the quantity of water from existing wells that may be available as a water source for mitigation.

M-67 Comment noted; however, Reclamation and CVWD respectfully disagree. Given the level of impacts associated with the proposed project and the relative abundance of non-seepage dependent vegetation in the project area, no revegetation of these terrestrial species is proposed except for tree replacement at a 2:1 ratio.

M-68 Reclamation and CVWD concur that additional gauges in areas of known desert pupfish habitat would be beneficial, and to further ensure that populations of desert pupfish are not affected by the project, additional gauges would be added to the creek in areas of known pupfish populations. The gauges would be sited appropriately to ensure the maintenance of average flow levels in areas supporting pupfish.

M-69 Fish stocking in perpetuity is not proposed. If the combination of artificial reefs and initial fish-stocking efforts does not return fish populations to the levels addressed in the EIS/EIR, Reclamation and CVWD will consult with the California Department of Fish and Game to determine appropriate follow-up measures. This consultation would occur five years after the canal has been lined, fitted with artificial reefs, and stocked with fish.

M-70 Reclamation and CVWD look forward to continued coordination with the FWS on this project.

**cc: Elena Mesquez, Bureau of Land Management, Palm Springs
Kevin Hanson, Bureau of Land Management, Dos Palmas Preserve
Kim Nicol, California Department of Fish and Game
Steve Horvitz, California Department of Parks and Recreation
Steve Robbins, Coachella Valley Water District
John Scott, Metropolitan Water District**



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STATE OF CALIFORNIA

Governor's Office of Planning and Research
State Clearinghouse



Steve Nissen
ACTING DIRECTOR

C.V.W.D.

November 27, 2000

Mr. Don Mitchell
Coachella Valley Water District
Avenue 52 and Highway 111
P.O. Box 1058
Riverside Ave, CA 92236

Subject: Coachella Canal Lining Project
SCH#: 1990020408

Dear Mr. Don Mitchell:

The enclosed comment (s) on your Joint Document was (were) received by the State Clearinghouse after the end of the state review period, which closed on November 6, 2000. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (1990020408) when contacting this office.

Sincerely,

Terry Roberts
Senior Planner, State Clearinghouse

Enclosures

cc: Resources Agency

N-1

Letter N: State of California Governor's Office of Planning and Research, State Clearinghouse

N-1 State Clearinghouse transmittal letter; no response needed.



California Regional Water Quality Control Board

Colorado River Basin Region



nston H. Hickox
Secretary for
Environmental
Protection

Internet Address: <http://www.swrcb.ca.gov>
73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260
Phone (760) 346-7491 • FAX (760) 341-6820

Gray Davis
Governor

November 21, 2000

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Steve Robins, Assistant General
Coachella Valley Water District
P.O. Box 1058
Coachella, CA 92236

Sch# 1990020408

RE: RESPONSE TO "THE REVISED AND UPDATED DRAFT ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT (DEIS/DEIR) FOR THE COACHELLA LINING PROJECT"

The Revised and Updated Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR), prepared by Bureau of Reclamation (Reclamation) and Coachella Valley Water District (CVWD) was received on September 22, 2000, and was reviewed by Regional Water Quality Control Board (Regional Board) staff.

The project proposed action and alternatives evaluated in the DEIS/DEIR are the same as those previously evaluated in January 1994. In the preferred alternative, the proponents plan to utilize conventional construction methods by diverting water around each section of the canal through a 72-inch pipeline as it is being lined. Other options evaluated include: No Action alternative; Underwater lining using synthetic and concrete lining without diversion of water; and Parallel canal construction involving the abandonment of the present canal and construction of a parallel, concrete-lined canal.

O-1

The Regional Board staff comments on the alternatives are as follows:

1. Proposed Action: No comments, however, a Clean Water Act, Section 401 Certification may be required.
2. No Action Alternative: No comments
3. Underwater Lining Alternative: This alternative has the potential to raise the pH of the canal and is a threat to the beneficial uses of the Coachella Canal for Warm Freshwater Habitat and Wildlife Habitat.
4. Parallel Concrete Lined Canal Alternative: No comments.

If you have any questions regarding this matter, please contact me at (760) 776-8986.

KOLA OLATUNBOSUN
Sanitary Engineering Associate

KO/kt

cc: State Clearing House, P.O. Box 3044, Sacramento, CA 95814-3044

File: ER RIV ED

California Environmental Protection Agency

Letter O: California Regional Water Quality Control Board

O-1 The Regional Water Quality Control Board's introductory text is noted, as is the absence of comments on the Conventional Lining Alternative (referred to as the "Proposed Action"), the No Action Alternative, and the Parallel Canal Alternative. The EIS/EIR identifies that a Section 401 Water Quality certification may be required for the proposed project.

Section 3.4.3 of the EIS/EIR describes why temporary increases in the pH of the canal water are not anticipated to affect wildlife (e.g., fish) in the canal, and this section also identifies measures that would be implemented to ensure that the temporary pH changes do not reach harmful levels.

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