February 15, 2007

Mr. Ed Virden
Bureau of Reclamation
Yuma Area Office
Attn: YAO – 7200
7301 Calle Agua Salada
Yuma, AZ 85364

Via email: evirden@lc.usbr.gov

Re: Environmental Assessment for the Lower Colorado River Drop 2 Storage Reservoir Project

Dear Mr. Virden:

Thank you for the opportunity to comment on the Drop 2 Storage Reservoir Project Draft Environmental Assessment. These comments are submitted by the Center for Biological Diversity, Defenders of Wildlife, Living Rivers, National Wildlife Federation, Pacific Institute, Sierra Club, and Yuma Audubon Society.

We understand that recent drought and mounting demands for water in the Colorado River basin have increased interest in projects that improve water efficiency in the basin. We agree that Colorado River water is precious. However, the "savings" of the proposed Drop 2 Storage Reservoir Project ("Drop 2 project" or "proposed project") will come directly at the expense of water that presently flows, albeit inadvertently, through the Colorado River Limitrophe where it supports valuable native habitat for migratory and resident birds. Until the limitrophe reach has a dedicated supply of water to support the vegetation that grows there and the wildlife that use the area, system efficiency gains will come at the expense of this important ecosystem.[1]

Our primary concern with the proposed implementation of the Drop 2 project regards potential impacts to habitat quality in the limitrophe reach of the Colorado River. The limitrophe has been identified as a top conservation priority in the Colorado River delta region.[2] Despite the decline of habitat quality in recent years, the limitrophe and the riparian corridor throughout the Colorado River delta continue to stand out as extraordinary native habitat in the Lower Colorado River. The limitrophe is not just another stretch of river: it has the highest percentage of native trees of any stretch of the Colorado River from Davis Dam to the Southerly International Boundary.[3] Some 395 bird species have been identified in the riparian corridor of the Colorado's

[1] For an excellent discussion of how efficiency can harm ecosystems, *see* Matt Jenkins, "The efficiency paradox," *High Country News*, February 5, 2007.
[2] *See, e.g.*, *Conservation Priorities in the Colorado River Delta: Mexico and the United States* (2005; Sonoran Institute and others).
[3] Nagler PL, Hinojosa-Huerta O, Glenn EP, et al., 2005. Regeneration of native trees in the presence of invasive saltcedar in the Colorado River delta, Mexico. *Conservation Biology* **19**: 1842-1852.

delta. The area is a pinch-point on the Pacific Flyway, providing habitat essential to neo-tropical migrants on their seasonal traverse of the continent. A recent survey found bird densities to be 10 times higher in the Colorado River delta, of which the limitrophe is the northernmost extent, than on the River above Morelos Dam.[4] Endangered species, including the Yuma Clapper Rail and the Southwestern willow flycatcher, as well as the Yellow-billed cuckoo (under consideration for federal protection), rely on habitat in the limitrophe, as do a number of species listed as wildlife of special concern by the State of Arizona.

The Proposed Project Requires an Environmental Impact Statement

In its present form, the Draft Environmental Assessment (EA) is inadequate. It fails to satisfy the requirements of the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), the Fish and Wildlife Coordination Act (FWCA), and other federal laws and policies. Analysis in the current Draft EA is insufficient to enable the U.S. Bureau of Reclamation (Reclamation) to reach a well-reasoned conclusion about the impacts of the proposed action.

NEPA requires all federal agencies to consider the environmental effects of proposed actions and inform the public that it has considered environmental values in its decision-making process. By focusing an agency's attention on the human environment, NEPA ensures federal agencies and the public will not overlook significant environmental effects before resources have been committed. The Draft EA fails to comply fully with NEPA due to: (1) an artificially limited range of alternatives; (2) a failure to fully address data gaps/uncertainties; (3) a failure to address the "significance" of the impacts; and (4) a lack of adequate and assured mitigation. As a result, Reclamation should prepare and circulate a draft environmental impact statement (EIS).

Reclamation failed to consider a range of alternatives

The Draft EA fails to consider a reasonable range of alternatives. Development of alternatives is the heart of the EIS. 40 C.F.R. § 1502.14. CEQ regulations call on Reclamation to "[r]igorously explore and objectively evaluate **all reasonable** alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated," "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits," "[i]nclude the alternative of no action," and "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives." *Id.* § 1502.14 (emphasis added). The requirement for analysis of a reasonable range of alternatives applies to EAs as well as EISs. *Akiak Native Community v. U.S. Postal Serv.*, 213 F.3d 1140, 1148 (9th Cir. 2000).

Moreover, the Council on Environmental Quality's (CEQ) handbook for conducting cumulative impacts analyses under NEPA specifically includes "modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects" as one of the key steps in determining the environmental consequences stemming from the cumulative effects of a proposed action. CEQ Handbook at 10, 37, 45; *see also id.* at v ("Generally it is also critical to incorporate cumulative effects analysis into the development of alternatives for an ... EIS. Only by reevaluating and

[4] Hinojosa-Huerta, 2006. Conservation of Birds in the Lower Colorado River Delta, Mexico. Dissertation from the University of Arizona, Tucson.

modifying alternatives in light of the projected cumulative effects can adverse consequences be effectively avoided or minimized."). Clearly, NEPA envisions a rigorous analysis and objective evaluation of cumulative impacts as a critical component in the formative stage of decision making; in other words, the relevant decision makers should have this information before them in developing proposals and alternatives and in selecting preferred actions.

Table 2.3 of the EA lists 44 "Alternatives Considered but Eliminated." Notably absent from this list, or from consideration elsewhere in the EA, is "Old River Channel Backwater Project above Laguna Dam," listed as Proposal #5 in Reclamation's *Value Planning Final Report: Lower Colorado River Water Storage Alternatives* (June 14, 2004) and also analyzed in Reclamation's *Final Draft: Preliminary Study of Lower Colorado River Storage Alternatives* (October 15, 2004).[5] The absence of this alternative from consideration in the EA is all the more remarkable given repeated expressions of interest in a modified version of this alternative,[6] and given its clear benefits for water conservation (due to no additional evaporation, a net water conservation benefit on the order of 3,000 acre-feet/year).

To avoid extensive Army Corps of Engineers wetland mitigation requirements, the "Old River Channel Backwater Project above Laguna Dam" should be coupled with a river restoration project in the Laguna Reach. Such a dual-purpose project offers several notable benefits, including: (1) restoration of the northern-most extent of the former Colorado River delta; (2) proximity to other restoration projects along the lower Colorado River, increasing their overall habitat value, especially for migratory birds; (3) existing infrastructure could both generate flows that mimic the natural flood regime and re-capture such flows, with limited loss to the system; (4) replacing saltcedar in the Laguna Reach with the new regulatory storage reservoirs, *in conjunction with a river restoration project*, would create no new evaporative loss, while improving the habitat value of the reach; and (5) a demonstration of Reclamation's commitment to ecological restoration in the lower basin.

Unfortunately, by limiting consideration to only one alternative other than the "No Action" alternative, Reclamation is apparently attempting to rubberstamp the agency's predetermined course of action for this proposal. There is no attempt to conduct an analysis of other alternatives beyond briefly mentioning and dismissing them as insufficient to meet the purpose and need of this project. There is no discussion, however, of how this determination was made, which is one of the fundamental purposes of an environmental assessment. This draft EA fails to consider a sufficient range of alternatives to address adverse impacts to the resources that this project is meant to address. This meets neither the spirit nor the letter of NEPA. Reclamation must consider a broad range of alternatives as it finalizes its environmental document.

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[5] As noted in comments Reclamation received from other stakeholders (neither the Value Planning Study nor the "Preliminary Study" were circulated to the environmental community, despite our demonstrated and long-standing interest in projects in the region), the "Preliminary Study" uses a flawed financial analysis that incorporates extraneous and non-project specific costs into the Laguna alternative, distorting its total costs.

[6] Previous expressions of interest in the "Old River Channel"/dredging behind Laguna Dam alternative include: May 10, 2006 email from Michael Cohen to Jennifer McCloskey et al.; May 16, 2006 email response from Michael Cohen to Rex Wahl's email response to May 10 email to J. McCloskey; July 17, 2006 letter from Michael Cohen to Jennifer McCloskey; and a November 8, 2006 conference call with Jayne Harkins, Larry Walkoviak, and other senior Reclamation staff to discuss this alternative.

Reclamation failed to address uncertainties and data gaps in its analysis

The uncertainties and data gaps in the Draft EA require that Reclamation prepare an EIS. An agency "cannot avoid NEPA responsibilities by cloaking itself in ignorance." *Fritiofson v. Alexander*, 772 F.2d 1225, 1244 (5th Cir. 1985). Uncertainty may require a full EIS. *Ocean Advocates v. U.S. Army Corps of Engineers*, 361 F.3d 1108 (9th Cir 2004); *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722 (9th Cir. 2001). "Before one brings about a potentially significant and irreversible change to the environment, an EIS must be prepared that sufficiently explores the intensity of the environmental effects it acknowledges." *Id.*

The existence of incomplete or unavailable scientific information concerning significant adverse environmental impacts triggers the requirements of 40 C.F.R. 1502.22. This provision requires the "disclosure and analysis of the costs of uncertainty [and] the costs of proceeding without more and better information." *Southern Oregon Citizens Against Toxic Sprays, Inc. v. Clark*, 720 F.2d 1475, 1478 (9th Cir. 1983).

CEQ regulations impose three mandatory obligations on Reclamation in the face of scientific uncertainty: a duty to disclose the scientific uncertainty and complementary duties to complete independent research and gather information if no adequate information exists (unless the costs are exorbitant or the means of obtaining the information are not known) and to evaluate the potential, reasonably foreseeable impacts in the absence of relevant information, using a four-step process. *See* 40 C.F.R. 1502.22.

The significance of the environmental effects is underestimated, mischaracterized, and overlooked

In the Draft EA, Reclamation has not adequately explored or defined the environmental consequences. "NEPA . . . establishes 'action-forcing' procedures that require agencies to take a 'hard look' at environmental consequences." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989). Under NEPA, "conclusory remarks [and] statements that do not equip a decisionmaker to make an informed decision about alternative courses of action, or a court to review the Secretary's reasoning" are insufficient. *Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988). This is exactly the type of Environmental Consequences analysis that Reclamation has presented in this draft EA.

Significance is measured by the context and intensity of the action, and includes consideration of the degree to which the action affects unique wetlands, ecologically critical areas, historic and cultural resources, or threatened or endangered species, the degree to which these impacts may be controversial, and whether the action violates federal law. *See* 40 C.F.R. § 1508.27. Each of those factors is implicated by the proposed project. *See infra* for discussion (commenting on impacts to limitrophe reach, southwestern willow flycatcher and flat-tailed horned lizard, cultural resources, air and water quality, and other factors). A single one of these factors may suffice to require a full EIS. *Ocean Advocates v. U.S. Army Corps of Engineers*, 361 F.3d 1108 (9th Cir 2004).

Reclamation cannot rely on the proposed mitigation measures to find no significant impact

If Reclamation intends to rely on mitigation measures to reduce the significance of any adverse environmental effects and employ an EA rather than an EIS, those mitigation measures must be "imposed by statute or regulation, or submitted by … an agency as part of the original proposal." *See* CEQ's Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations. Of critical importance is that the final agency decision include enforceable conditions and mitigation measures; the impacts and the effectiveness of mitigation are best explored in an EIS. However, the mere listing of mitigation measures without any analytical data cannot support a Finding of No Significant Impact (FONSI). When there is no assurance that mitigation will be effective or if it is uncertain, mitigation measures are not adequate. *See National Audubon Soc'y v. Hoffman*, 132 F.3d 7 (2nd Cir. 1997); *National Parks Conservation Ass'n v. Babbitt*, 241 F.3d 722 (9th Cir 2001). Specific and enforceable commitments to mitigation are best set forth in a Record of Decision.

While Reclamation frequently alludes to potential mitigation measures, it rarely makes specific commitments on which to make assessments of impact. Of particular concern is the mitigation to impacts to the flat-tailed horned lizard and southwestern willow flycatcher. Reclamation, as a signatory to the Rangewide Management Strategy Plan,[7] is required to compensate for impacts to and loss of habitat at the project site and elsewhere. The Draft EA gives no indication what that mitigation will be – the acquisition of land, and if so, where and how much; or the contribution of funds, and if so, how much and for what purpose. This is not enough information on which to base any findings of impacts, and certainly not enough to support the conclusion that "proposed mitigation … will fully mitigate" impacts to the lizard **and** other sensitive species. Draft EA at 3.2.32. Likewise, Reclamation gives no analysis of the mitigation to potential adverse effects to the flycatcher and its habitats, but simply asserts that with implementation of mitigation, impacts would not be significant. *See* Draft EA at 4-7 (noting that Reclamation "**will** consult" with the Fish and Wildlife Service as to appropriate mitigation) (emphasis added). Indeed, base assertions that Reclamation will comply with its obligations, whatever they may be, simply defeats the purpose and spirit of NEPA.[8]

In sum, the final environmental document must contain "sufficient evidence and analysis for determining whether to prepare an [EIS] or a finding of no significant impact [FONSI]." 40 C.F.R. §1508.9(a)(1). Given our comments below, the draft EA is inadequate; Reclamation must prepare an EIS. *See LaFlamme v. Federal Energy Regulatory Comm'n*, 852 F.2d 389, 397 (9th Cir. 1988) (requiring an EIS if there are "substantial questions whether a project **may** have a **significant** effect.") (emphasis added).

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[7] Foreman, L. D. (Ed.) 1997. Flat-tailed horned lizard rangewide management strategy. Report of interagency working group. 61pp. plus appendices. Available from http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/FTHL/Rangewide_Plan_Final_FTHL.pdf.

[8] In another example, Reclamation makes no analysis of the potential impacts to water quality at the NIB. Again, because Reclamation must meet standards set by the 1944 Treaty and Minute 242, the Draft EA must include an analysis of potential effects to the salinity of waters delivered to Mexico. Reclamation cannot simply assert that it will meet the requirements of the Salinity Control Act and Minute 242. *See* Draft EA at 3.1-27; *see also Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988).

In its present form, the Draft EA lacks sufficient depth of evidence and analysis of environmental impacts, required pursuant to 40 C.F.R. § 1508.9(a)(1), to allow an informed decision on the appropriate next step in the NEPA process or on the proposed project itself. Many of the statements in the Draft EA are extremely cursory. Some lack sufficient citation or reference to allow for full evaluation by either Reclamation or the public.

Reclamation must revise the draft EA so that for each resource, the reader and the agency itself are aware of the nature and extent of the impacts (i.e. reduced breeding habitat, etc.). Reclamation must also consider that impact in the context of the impacted resource. Only then can Reclamation conclude whether impacts are or are not significant.

Impacts to the limitrophe reach indicate a significant impact

SURFACE WATER HYDROLOGY

Analysis of proposed project impacts on surface water hydrology inappropriately relies on past system operations.
The foundation of the EA's conclusion of "no significant impacts" on the limitrophe reach of the Colorado River is its analysis of surface water hydrology. The analysis presented in Appendix C of the EA compares flows passing Morelos Dam into the limitrophe over a recent 30-year period, as well as subsets of this period, to those that are projected to have occurred had the proposed project been in place and operational.

Reclamation typically uses analysis of past hydrologic information (i.e. data regarding natural inflows) to assess potential future conditions. The "iterative sequential" methodology is far from perfect, but it is not the focus of this comment. Rather, we point out that using historical flow data is very different from using historical hydrologic data. Hydrologic data reflect climate inputs. Flow data reflect water use activity.

Looking to the past for projections regarding future operations of the Colorado River system in this instance is problematic because system management and water use have changed substantially over the course of this period. One example of these changes can be found downstream of the proposed project, in water use by the Imperial Irrigation District. In 1974, Imperial Valley diversions of Colorado River water totaled 3,171,977 acre-feet. In 2004, they totaled 2,822,794 acre-feet, a reduction of nearly 350,000 acre-feet in annual diversion. Because the proposed project operations will depend in large part on water ordered by and water used by Imperial Valley irrigators, the overall change in water use needs to be reflected in the analysis, as well as any recent trends in water orders and water use. Moreover, in 1974, operating criteria for the Colorado River did not include surplus criteria, total lower basin consumptive use was about 6.84 million acre-feet (nearly 0.7 maf less than 2004) and Upper Basin consumptive use was about 0.8 maf less than in 2004. All of these changes have resulted in decreased probability of future flood releases from Lake Mead. Decreasing flows below Imperial Dam due to water transfers will also affect the creation of non-storable flows, likely masking the loss of storage at Senator Wash.

The past is not a reasonable predictor of future flows below Imperial Dam. Reclamation should use a more robust model – such as the model it uses in analyzing the impacts of various proposed shortage criteria – to project such flows, based on likely future conditions (including potential shortage criteria). Analysis of the hydrologic impact of the proposed project should be based on the best available information about system operations and water use activity at present and as planned in the future (e.g. reflecting existing as well as planned and permitted transfers of water from the Imperial Irrigation District to the San Diego County Water Authority). *See* 40 C.F.R. § 1502.22. Failure to do this could result in an underestimation of the impacts to the limitrophe: if the average total non-storable flows are smaller than Reclamation has projected (as a result of declining use in the Imperial Valley, changes in system operation, or other factors), the proposed project might capture a larger percentage of non-storable flows, leaving even less water to flow to the limitrophe.

Analysis of proposed project impacts on surface water hydrology inappropriately relies on a short 30-year window of climate history, and makes no attempt to incorporate climate change impacts.

Weather patterns in the Lower Colorado River Basin, including the Imperial Valley, depend on a number of atmospheric variables, including the El Nino/Southern Oscillation and the Pacific Decadal Oscillation. Thirty years is too short a period to examine for a valid long-term understanding of climate and precipitation in this region. The EA's analysis of future conditions should be based on a longer hydrologic history. Moreover, climate change will impact both precipitation and evapotranspiration in this region over the next several decades,[9] suggesting that the EA should include a sensitivity analysis that demonstrates potential climate change impacts on surface water hydrology.[10] *See* 40 C.F.R. § 1502.22.

EA incorrectly discounts the significance of flows passing Morelos Dam.

The EA states that "regardless of whether flood flows are counted in the analysis, the majority of flows passing Morelos are minimal" (EA at 3.1.1.4). However, information provided in the EA demonstrates that during the 30-year period analyzed with floods, there were 2388 days of less than 1000 cubic feet per second (cfs) flows passing Morelos Dam, while there were 3077 days of flows greater than 1000 cfs passing Morelos Dam. While flows passing Morelos Dam may be small relative to Colorado River flows upstream from Morelos, these flows are nevertheless significant with respect to their contribution to the viability of limitrophe habitat. All flows contribute to groundwater levels. Moreover, it is the length of periods with no flows that has the greatest impact on groundwater recharge (see discussion below). The EA's failure to recognize the significance of these flows leads to flawed conclusions regarding the significance of potential environmental impacts of the proposed Drop 2 project.

[9] The recent summary report from the International Panel on Climate Change (February 2007) documents a global scientific consensus on a wide variety of climate change concerns, among them a 1-1.5^{o} c temperature increase across North America by 2020-2029 relative to temperatures 1980-1999 and a general drying trend across the southwestern United States (IPCC, 2007. Climate Change 2007, The Physical Process, Summary for Policy Makers).

[10] Despite uncertainty in information about climate change impacts, the EA should include it in the analysis of projected future conditions. 40 C.F.R. § 1502.22.

EA fails to address increase in days of zero flow past Morelos Dam

A key set of figures not reported in the draft EA is the projected decrease imposed by the project on both the frequency and magnitude of flows past Morelos Dam. Using Reclamation's projections,[11] we calculated that, had the proposed project been in place from 2000-2004, flows of any size would have passed Morelos Dam only 3% of the time (see Figure 1). Fully 97% of all days would have had zero flow passing below Morelos Dam. Moreover, the project would have decreased the total volume of surface flows passing below Morelos Dam in this period by 87%. Flows between 1 and 500 cubic feet per second would have decreased from 11% to 3% of all days. Flows between 500 and 1000 cfs would have decreased from 4% to less than 1% of all days. Flows between 1000 and 5000 cfs would have decreased from 3% to less than 1% of all days. Under current conditions, this situation would clearly reduce available moisture in the limitrophe, and have significant adverse effects on the limitrophe's riparian habitat, which in fact received flows past Morelos Dam nearly one in five days, or 20% of the time, during that period.

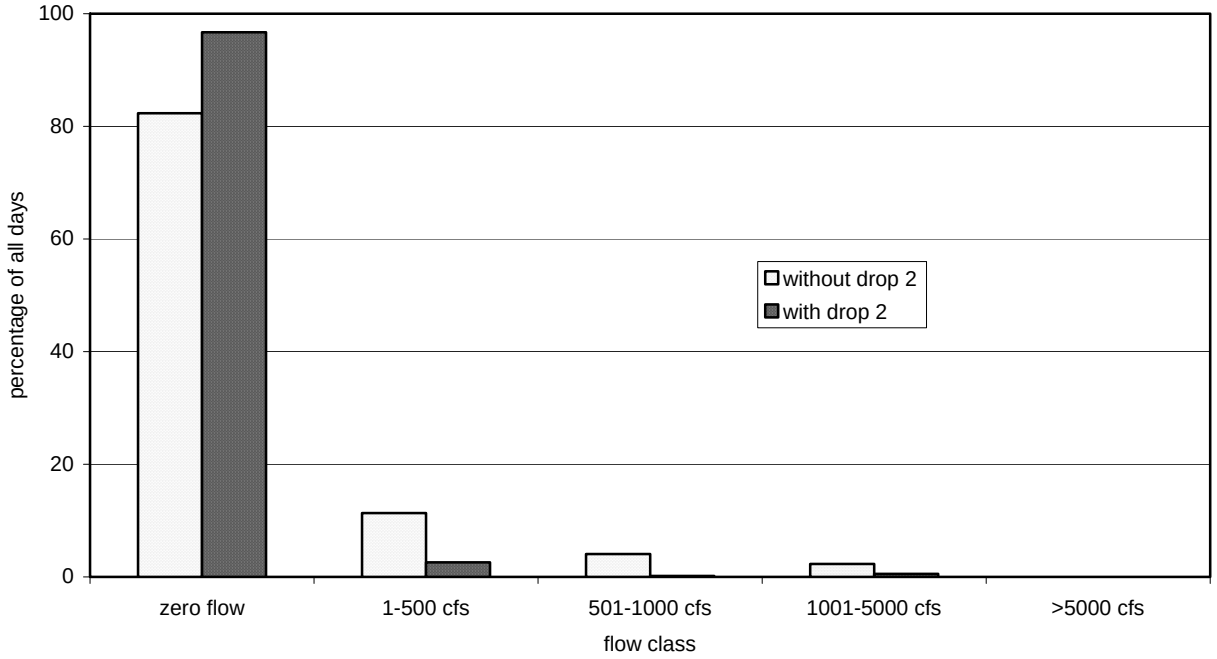

Figure 1. Flows passed below Morelos Dam, 2000-2004, with and without Drop 2.

GROUNDWATER HYDROLOGY

The groundwater analysis found in appendix D of the EA is problematic for a number of reasons, not least of which is its reliance on surface water inputs from a flawed surface water analysis (see comments above) as the key variable.

Groundwater model does not accurately predict changes in limitrophe groundwater levels.

The groundwater assessment relies on the MODFLOW model described and documented in Arizona Department of Water Resources' "Hydrogeology, Numerical Model and Scenario

[11] Reclamation reported flow frequency and magnitude for the years 2000-2004 both with and without the proposed project in the 6/2/06 presentation "Drop 2 Reservoir Project Operational Study and Effects of Limitrophe Division."

Simulations of the Yuma Area Groundwater Flow Model, Arizona, California, and Mexico Arizona" published in 1993 (hereinafter ADWR model). Based on this model, the EA concludes that implementation of the proposed project would result in average groundwater declines in the limitrophe of 0.1 feet and 0.2 feet, and maximum relative groundwater declines in the limitrophe of 0.2 feet through 0.8 feet (EA, table 3.2-7 and appendix D).

However, a closer look at the ADWR model reveals that the documented error of that model is an order of magnitude greater than these predicted changes, thus potentially greatly underestimating the changes in groundwater levels between "without project" and "with project" scenarios. Given the magnitude of error in the model, Reclamation cannot reasonably project hydrologic or biological impacts in the limitrophe to the level of precision claimed in the EA.

Ideally, Reclamation should improve its ability to model and project changes to groundwater in the Yuma area via the use of a model with a narrower error range and with current groundwater elevation data. However, if Reclamation continues to rely on the ADWR model, the environmental analysis should include this well-documented model error in any projections of the project's impacts to groundwater elevations.

The calibration summary in the description of the ADWR model reports significant error, specifically in determining groundwater elevations in the limitrophe region. Steady-state calibration simulated the model-wide regional groundwater flow in the coarse-gravel zone (the uppermost layer of the model in the location of the Colorado River) to within an average of 8 feet compared to measured water levels (ADWR, p. 86), and within an average of 5 feet in the limitrophe. Despite identifying the limitrophe as one of the areas modeled with a relatively high degree of certainty concerning the original input data, in a comparison of simulated model water levels to measured water levels, "*[t]he model over simulated water levels <u>by an average of five feet</u> above measured water levels* in the south-western part of Yuma Valley (i.e. Zone 1)" [Zone 1 straddles the Colorado River between Morelos Dam and the Southerly International Boundary.] (ADWR, p. 86; emphases added).

According to ADWR model documentation, this large error is due to a number of variables, each with its own error in measurement:

a) The fact that the limitrophe is determined to be a losing reach based on gage measurements at Morelos Dam and at the Southerly International Boundary (SIB) means that the net loss masks any groundwater gain in the northern portion of this reach when that gain does not flow all the way down to SIB (ADWR, p. 80-82).
b) "Estimates of Colorado River losses to the groundwater system using gaging data for the post-Colorado River flooding transient-state simulation did not agree with the conceptual surface water – groundwater system interrelationship. Gaging data between 1984 and 1989 indicate that the Colorado River was gaining water from the groundwater system downstream of Morelos Dam. Actual hydrogeologic conditions indicate that the river bottom elevation is consistently above the groundwater elevation dictating the river should always be losing water to the groundwater system…Therefore, groundwater return flows estimated using gaging data between Morelos Dam and the Southerly International Boundary were not accounted for in the water budget." (ADWR, p. 68)

c) The modeled loss between Morelos Dam and the Southerly International Boundary reflected an 85% error when compared to measured losses (ADWR, p. 80).
d) Reported gage error for limitrophe flows is exceptionally high. Error at the Morelos Dam gage is reported at 10-15%, and error at the Southerly International Boundary gage is reported at greater than 15% (ADWR, p. 33).
e) Confidence in the quality of the model's input data for both vertical hydraulic conductivity and the conductance of rivers is extremely low relative to other data inputs (ADWR, p. 73).
f) Groundwater pumpage data for Mexico did not include individual wells, only annual totals for the Mexicali and Sonora valleys (ADWR, p. 28) and the distribution of pumpage within the model domain is an estimate based simply upon an assumed distribution of individual wells and an assumed distribution of total pumpage (ADWR, p. 65).
g) In identifying weaknesses that could be improved with further study, the ADWR model report identified both groundwater elevations in Mexico and the nature of groundwater underflow from the United States into Mexico (ADWR, p. 115).

Reclamation has previously acknowledged uncertainty in the results produced by the same ADWR model as was used for this EA. In a 2003 analysis of Yuma area groundwater pumping, Reclamation noted:

> [T]his model has been calibrated against data collected from 1978 through 1989…This is why it is important to note that impacts to habitat will be avoided through careful field monitoring of groundwater levels and vegetation…[W]e know that the groundwater model is not exact in its predictions. (BOR, Supplemental Analysis, Categorical Exclusion No. YAO-CE No. 2001-02: Effects on Riparian and Marsh Communities along the Colorado River due to Water Table Reduction in the Yuma Valley, September 7, 2003)

The absence of any such cautions in the EA incorrectly ascribes a degree of certainty to the modeling results that clearly does not exist.

<u>Inaccuracy in the groundwater model should be reflected in analyses of environmental impacts.</u>
In sum, the EA's conclusion of no significant environmental impacts is based on a model that "over simulated water levels by an average of five feet above measured water levels in the south-western part of Yuma Valley" in the limitrophe. We believe NEPA requires that Reclamation assess the potential loss of riparian wetland vegetation in anticipation of an average groundwater decline of as much as 5.1 feet to 5.2 feet and an even greater maximum decline. *See, e.g.*, 40 C.F.R. 1502.22; *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 737 (The agency's conclusions were not "reached by reasoned extrapolation from the data, rather the data were simply insufficient.").

Analyzing the potential impacts of the project with this consideration in mind would result in substantially different results, results that would lead to the conclusion that the proposed project *would* have significant environmental impacts.

Cottonwood Willow habitat
The EA's projections of impacts to cottonwood and willow communities in the limitrophe are based on two assertions:

1) that groundwater levels will gradually decline an average of 0.1 feet to 0.2 feet and a maximum of 0.1 feet to 0.8 feet (EA at Table 3.2-7), and cottonwood and willow trees will be able to extend their roots to keep up with this decline (EA at 3.2.3.2.3); and

2) that "under most conditions groundwater elevations will remain within the range of groundwater elevation fluctuations that occur under existing conditions" (EA at 3.2.3.2.3).

However, the impacts should have been assessed on the basis of an average groundwater elevation decline of as much as 5.1 feet to 5.2 feet, and a maximum decline of as much as 5.1 feet to 5.8 feet. Such a decline in groundwater elevations in the limitrophe could have a significant impact, resulting in considerable loss of native habitat.

Wetlands

The EA indicates that the vast majority of the 48.7 acres of riparian and off-channel wetlands in the limitrophe are located where depth to groundwater corresponds to the rooting depth of wetland vegetation. The EA asserts that the average decline in groundwater levels of 0.1 feet to 0.2 feet will not jeopardize any wetland vegetation because the decline is within the (undefined) rooting depths of the plants, and moreover the decline is well within the range of groundwater elevation fluctuations that occur under existing conditions (EA at 3.2.3.2.3). However, the potential impacts on loss of riparian wetland vegetation should have been addressed in anticipation of a groundwater decline of at least 5.2 feet. Such a large decline could jeopardize all of the 41 acres of riparian wetland vegetation not directly supported by surface water from local agricultural drains.

Moist Soils component of habitat for Southwestern willow flycatcher

The EA documents 111.7 acres of habitat for the Southwestern willow flycatcher in the limitrophe (Table 3.2-10). It asserts that the average decline of groundwater levels of 0.2 feet and the maximum decline of groundwater levels of 0.8 feet will not impact the availability of moist soils in these habitat areas because "the depth of surface water present at each of the habitat areas is greater than the potential depths that the lowest annual groundwater elevations would decline under the Proposed Action" (EA 3.2.3.2.3).

However, the EA also indicates that 27.3 inches (2.3 feet) is the maximum depth of surface water at these sites. Because the analysis is based on a model that "over simulated water levels by an average of five feet above measured water levels in the southwestern part of Yuma Valley" in the limitrophe, Reclamation should also assess the potential loss of habitat occupied by the flycatcher in anticipation of a groundwater decline of as much as 5.2 feet. In consideration of cumulative impacts, Reclamation should assess the potential loss of habitat occupied by the flycatcher in anticipation of a possible groundwater decline of as much as 5.7 feet. A decline of that magnitude could jeopardize most or all of the 111.7 acres of the bird's habitat.

GROUNDWATER AND SURFACE WATER INTERACTIONS

EA does not quantify the gain and loss of the limitrophe reach.
Understanding the contribution of surface flows to groundwater is critical to an understanding of how much surface flow exists in the limitrophe reach, and how much of that flow would exist after implementation of the proposed project.

The EA states that the northern portion of the limitrophe is a gaining reach above river mile 16.8 and a losing reach below. However, the dynamic of losing and gaining reaches is much more complex depending on seasonal ET requirements, antecedent surface flows, irrigation intensities, and other variables not described in the EA. Understanding the rate of loss or gain within the limitrophe over a variety of scenarios is critical to understanding the behavior of remaining surface flows in the channel. Without a quantified analysis of these dynamics, it is impossible to understand how a reduction in flows past Morelos Dam will change total surface flow and groundwater recharge characteristics in the limitrophe.

The EA's assessment of the groundwater-surface water interaction in the limitrophe appears to be based on a snapshot that does not account for these variables.[12] The "snapshot" calculation of groundwater inflow on 2/10/06 reflects a relatively dry moment in the limitrophe. The reported flow past Morelos Dam was 11.3 cfs. The annual average flow past Morelos Dam during the 1974-2004 non-flood years was 63 cfs, and the annual average flow past Morelos Dam during 2000-2004 was 93 cfs.

Alternative dates produce very different results. For instance, on 2/28/01, flow past Morelos Dam was 4,909 cfs and flow at SIB was 3,138 cfs, indicating a net loss in the limitrophe reach of about 1,784 cfs. However, on 10/18/00, a much smaller flow passed Morelos Dam but the Colorado River gained 455 cfs in the limitrophe between Morelos Dam and the SIB. Had Reclamation picked a different day for its snapshot, it would necessarily come to very different conclusions about groundwater gain and loss in the limitrophe. Table 1 describes daily flows in the Colorado River. Although the limitrophe is generally considered to be a losing reach, flows on 10/18/00 were greater at the SIB than at Morelos Dam. On 2/28/01, the lower discharge at the SIB suggests significant recharge of the local aquifer. The 2/10/06 flow computations are reported from Reclamation's Operational Study.

[12] The EA does not document the data source for the finding that the limitrophe can be divided into three reaches: RM 22 to RM 16.8 being a gaining reach, RM 16.8 to RM 5.8 being a losing reach, and RM 5.8 to RM 0 being a losing reach where the river transitions from perennial to intermittent flows (EA at 3.1.1.5 and Table 3.1-2). However, it appears that these conclusions are based on data presented in Reclamation's June 2, 2006 presentation titled "Drop 2 Reservoir Project Operational Study and Effects on the Limitrophe Division" which includes a slide with a one-day snapshot of flow rates in the limitrophe from February 10, 2006 (slide 37). At river mile 19.6, measured flow was 31 cfs, and at river mile 16.8, measured flow was 50.1 cfs, indicating that upstream from river mile 16.8 the limitrophe is a gaining reach (even taking into account a 16.2 cfs gain from the 11-mile wasteway). The next downstream data point is river mile 5.8, where measured flow was 29.2 cfs. This suggests that the river becomes a losing reach at some point downstream from river mile 16.8, but does not indicate where in the 11 miles between those two points that transition occurs.

Table 1. Historic flows in the limitrophe

(cfs)	10/18/00*	2/28/01*	2/10/06[++]
Flows past Morelos Dam	799	4909	11.3
11-mile WW	13	13	16.2
21-mile WW	8	0	0.7
SIB	1275	3138	0
Net gain (loss)	455	(1784)	(28.2)

* Data from IBWC reports.

[++] Data from BOR presentation: Drop 2 Reservoir Project Operational Study and Effects on the Limitrophe Division, June 2, 2006.

Without quantification of gain and loss in the limitrophe reach, it is not possible to quantify the impact of the proposed project on limitrophe flows.

Analysis of the link between surface flows and groundwater presented in the EA does not adequately quantify either the gain or loss of groundwater in the limitrophe. Instead the impacts of surface flows on groundwater are dismissed as negligible. Observations from other river systems suggest that an increase in upstream flow will recharge the shallow aquifer and extend the surface flow for a greater distance downstream. The conclusions of the groundwater model used in the EA suggests this common sense observation is not true within the limitrophe and that, in fact, surface water flows have only a minor effect on groundwater levels and the extent of open water.

Several general observations about rivers should be factored into analyses in the EA:

- The combination of surface flow and groundwater in a "gaining" portion of a river supplies a volume of water greater than the evapotranspiration (ET) needs of the riparian vegetation.
- If there is a terminus of evident surface flow, it represents an inability of flow inputs (surface and groundwater) to sustain infiltration and ET needs.
- The point at and below the terminus of surface flow depends on groundwater for the support of riparian vegetation and associated habitats.

Current flows past Morelos Dam are sufficient to saturate soils and produce flows for a distance within the limitrophe. Notwithstanding other conditions that impact groundwater elevations (such as pumping on both sides of the border), a reduction in surface flow would result in a drop in groundwater elevation through increasingly larger portions of the limitrophe. However, these flow thresholds have not been quantified in the EA. Without that understanding, it is not possible to quantify the flow that will remain in the limitrophe if the proposed project is built, nor is it possible to assess habitat impacts in terms of both water quality and the availability of open water as an essential habitat component (see discussion below).

Table 2 identifies the distance over which surface water is lost for a 1-foot and 5-foot decline in groundwater surface elevation, depending on the reach within which the terminus of surface flow occurs. If the surface flow terminus is in the bottom third of the limitrophe as suggested in the EA, every foot of groundwater decline will result in a 1.58-mile migration upstream of the

surface water terminus. A decline of 5 feet in this reach would result in the loss of nearly 8 miles of flowing river.

Table 2. Slopes and reduction in surface water with changes in groundwater surface elevation, by reach in the limitrophe.[13]

Reach		River Mile	Slope	Miles per foot	Miles per 5 feet
8	D Avenue to USGS Yuma Gage	26.7 - 30.3	0.00031	0.61	3.05
7	Morelos Dam to D Avenue	22.3 - 26.7	0.000236	0.80	4.01
6	12th Street to Morelos Dam	18.1 - 22.3	0.000437	0.43	2.17
5	Veg Change to 12th Street	15.4 - 18.1	0.000662	0.29	1.43
4	14/15th Street to Veg Change	12.3 - 15.4	0.000647	0.29	1.46
3	18th Street to 14/15 Street	9.3 - 12.3	0.000383	0.49	2.47
2	20th Street to 18th Street	4.5 – 9.3	0.00012	1.58	7.89
1	SIB to 20th Street	0 - 4.5	0.0003	0.63	3.16

We believe an EIS, with additional analysis and data, is necessary to adequately answer these questions and that analysis in the EA is scientifically insufficient to conclude that the proposed project does not pose a significant adverse effect on the environment.

EVAPORATION

The EA fails to account for the volume of water lost due to evaporation. The proposed project would create a new evaporative surface in the desert, representing a significant decrease in the water conservation efficiency of the project as a whole. The closest CIMIS station (#87) reports average annual evaporation of 71.6 inches per year, with evaporation of about nine inches/month from May through July. The EA notes that "A limited amount of water will be held at all times for dust control." [14] (EA at 2-5) However, the EA fails to disclose whether this dust control measure could represent a net consumptive use for the Imperial Irrigation District, which presumably would be charged for diverting water at Imperial Dam to wet the canals and reservoir at times when the proposed project is not otherwise capturing non-storable flows.

Assuming a reservoir surface area of approximately 460 acres and an additional ~60 acres of water surface in the canals yields an annual evaporative loss greater than 3,100 acre-feet per year.

[13] Slope data obtained from Tetra Tech, Inc. 2004. Lower Colorado River, Final Report, Proposed Pilot Channel Analysis. Prepared for U.S. Army Corps of Engineers, Los Angeles District.

[14] The EA states that "water would be held in only one cell when storage volume is 4,000 af or less" (p. 2-1), inconsistent with the dust control measure noted on p. 2-5. Conformance with existing air quality requirements suggests that the water will be used for dust control.

MEXICAN WASTEWAYS

Although Mexico diverts a significant proportion of non-storable flows arriving at Morelos Dam, some of this water is returned to the river downstream of SIB via the KM 27 and KM 38 wasteways, where it supports riparian vegetation and wildlife. The EA neglects to include analysis of the potential impacts of the proposed project on the volume of water discharged by these wasteways. For the period 2000-2004, these wasteways discharged an annual average of 52,740 acre-feet back into the mainstem of the Colorado River downstream of the SIB, representing about 86% of the total flow recorded at the SIB. In some years, such as 2003, the KM 27 wasteway more than doubles the total flow of the river at SIB.

Figure 2 shows the volume of flows below Morelos and combined KM 27 and KM 38 wasteway flows, as a percentage of monthly non-storable flows arriving at Morelos Dam, for the period 2000-2004. The combination of these flows indicates that Mexico delivered and returned to the river about 60% of non-storable flows in this period. The proposed project would be expected to decrease Mexican wasteway flows, further degrading habitat in the remnant delta. Such impacts should be analyzed in the EA.

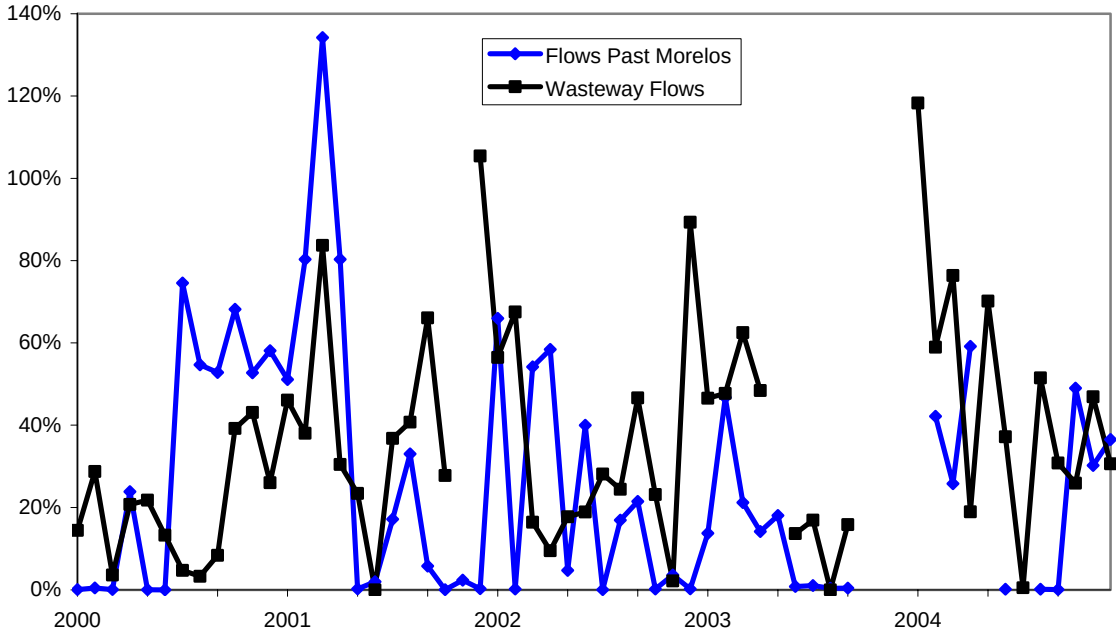

Figure 2. Colorado River flows below Morelos as a percentage of non-storable flows.[15]

WATER QUALITY

While acknowledging the receipt of public comments during the project scoping process addressing water quality in the limitrophe (EA at 1.5), the EA fails to address the impact of the

[15] Km 27 & 38 wasteway flows reported as monthly values in IBWC's annual *Western Water Bulletin*. Non-storable flows (NSF) calculated as the monthly volume of water delivered at NIB less Mexico's water order for that month. Note that Reclamation's data indicate that NSF were a negative value in some months (when orders exceeded deliveries) and that, in some months, the calculated value of flows past Morelos were also a negative value (likely due to gage error); these values were excluded from the figure.

proposed project on the salinity of flows in the limitrophe. This is an important issue and should be thoroughly evaluated as salinity may have effects on the health of native riparian vegetation.

BIOLOGICAL IMPACTS

The EA fails to identify open water as an essential habitat component for sensitive species and other wildlife in limitrophe habitat.[16] Surface water is an important component of the limitrophe's habitat value, which is acknowledged, at least in part, in the EA:

> Aquatic habitats within the limitrophe are supplied by surface water present in the LCR channel and in backwaters maintained by subsurface LCR flow. Approximately 205 acres of open water were present in the limitrophe at the time of the surveys (July-August) in 2005. These open water areas and associated emergent vegetation provide habitat for a variety of waterfowl, wading birds, (e.g. herons), water birds (e.g. grebes), and shorebirds. (EA, 3.2.1.3.2)

However, the EA incorrectly discounts the value of open water as a habitat component for sensitive species:

> [D]ecreases in surface water flows passing below Morelos Dam in and of themselves are not impacts. (EA, 3.1.2.3.3)

> Other potential effects of the Proposed Action include a reduction in the open water area as a result of a reduction in flows passing Morelos Dam. Reduction in the extent of open water within the river channel would be minimal and, because open water does not support habitat for sensitive species, this potential effect is considered not significant. (EA, 3.2.3.2.3).

There are two problems with these conclusions. First, the EA did not quantitatively assess the total reduction in open water area as a result of the proposed project. It notes that 205 acres of open water were present in the limitrophe in July-August 2005 (EA at 3.2.1.3.2), but fails to discuss how the proposed project will impact this habitat component.

Second, sensitive species are indeed dependent on open water areas as a significant component of their habitat. In fact, each of the sensitive species for the limitrophe (see list at EA, table 3.2-4) relies on the open water component of the limitrophe habitat. The 205 acres of open water documented in the limitrophe enriches the habitat value of more than 3,500 acres of riparian vegetation in the United States, by providing a linear source of open water throughout the length of the limitrophe river stretch. The limitrophe stretch is relatively narrow, hence birds are never very far away from an open water source when the river is running.

Hinojosa-Huerta, in a multi-factorial analysis of the factors contributing to the quality of bird habitat in the LCR in Mexico, documented the importance of even very low-volume flows in

[16] This failure is also reflected in the Purpose and Need statement. In several instances, the Draft EA states that the purpose or intent of the proposed project is to enhance, increase, or maximize beneficial use of Colorado River within the US." *See e.g.*, Draft EA at 1-1, 1-5, 1-7. This implies that that water to be stored is not currently going to a beneficial use. However, this water supports environmental and other instream uses in the riparian corridor, creating wildlife habitat for protected species as well as significant cultural and traditional uses for Native American Tribes. This characterization of the purpose of the project has necessarily skewed analysis of the alternatives.

enhancing the habitat value of the riparian corridor for birds.[17] In a two-year study at 240 sites along the river in Mexico below Morelos Dam, he found that the proximity of standing or running water was the single most important factor controlling the density and diversity of birds in this river stretch. Without surface water, the quality of the riparian zone for bird habitat was greatly reduced even in the presence of native trees, because surface water supports insects, algae and periphyton on which the birds depend for feed. Furthermore, the marsh areas provide nesting habitat for water birds. In mixed native tree and saltcedar habitat, such as characterizes the limitrophe, Hinojosa-Huerta reported a 45% reduction in total bird numbers in dry plots compared to plots with proximity to open water in 2002-2003.

Attachment A to this letter documents the significance of open water as a habitat component for the birds of the limitrophe sensitive species list in the EA, including the Southwestern willow flycatcher, the Yuma Clapper Rail, the Least Bittern, the Yellow Billed Cuckoo, and the California Black Rail, the Snowy Egret, and the Great Egret.

The EA's assertion that "reductions in non-storable flows to Morelos Dam with implementation of the Proposed Action would not significantly affect riparian communities and associated wildlife of the limitrophe" (EA at 3.2.3.2.3) is incorrect. A considerable decrease in flows past Morelos Dam would likely reduce open water area in the limitrophe (see discussion above) and change the salinity of both surface and groundwater in the limitrophe, impacts that would degrade the value of existing habitat.[18]

The EA identifies a number of water sources for limitrophe riparian habitat, including "seepage from Morelos Dam, groundwater inflow to the channel, releases of water from Morelos Dam, and inflows from the 11-Mile Wasteway and 21-Mile Wasteway" (EA at 3.2.3.2.3). However, because the EA fails to quantify the groundwater gain and loss in the limitrophe, it is not possible to quantify the total surface flow in the limitrophe, or the impact that a decrease in any of these supplies would have on maintaining open water habitat

AESTHETIC RESOURCES

Reclamation's standard for significant impacts to aesthetic resources requires an assessment of whether the proposed project would "have a substantial impact on a scenic vista" or "[s]ubstantially damage scenic resources" (EA, 3.3.2.1). Under the terms of these standards, the elimination of flowing water in the Colorado River as it crosses one of the most xeric reaches of its 1400 mile course would seem to *per se* constitute a significant impact. The EA should include a review of the potential impacts to aesthetic resources in the limitrophe.

RECREATION

The EA does not asses the impacts of the proposed project to recreation in the limitrophe. With impacts that "cause the direct and substantial loss or physical degradation of … public recreation

[17] Hinojosa-Huerta, O. 2006. Birds, water and saltcedar: strategies for riparian restoration in the Colorado River Delta. Doctoral Dissertation, Wildlife and Fisheries Program, University of Arizona.
[18] As noted above, the EA shows that had the proposed project been in place during 2000-2004, 87% of surface flows past Morelos Dam would not have occurred.

uses" (EA, 3.12.2.1) as a standard of significant impacts to recreational resources, it is clear that the proposed project will impact recreational resources in the limitrophe, including on the lands managed by the Bureau of Land Management's "limitrophe recreation management zone" for both "rural natural" and "primitive" recreation,[19] as well as on the Cocopah Reservation.

Other factors contributing to a finding of a significant impact

As stated earlier, CEQ regulations provide guidance on determining the significance of environmental effects. *See* 40 C.F.R. § 1508.27. The Draft EA has overlooked and inaccurately portrayed the adverse effects to numerous resources. Each of these, described below, points to the significant impacts of the proposed project and the need for an EIS.

Failure to assess impacts to cultural resources in the limitrophe

Impacts of the proposed project to surface flows and groundwater levels in the limitrophe, and the attendant biological impacts, will degrade the cultural value that tribes associate with the Colorado River and the limitrophe in particular. The Cocopah Indian Reservation includes approximately 12 miles of riverfront and riparian habitat on the east bank of the limitrophe. The potential impact to cultural resources in the limitrophe requires that Reclamation makes a more committed effort to conducting government-to-government consultation with the Cocopah Indian Tribe.

Consultation with the Native American Tribes has been insufficient

Reclamation asserts there are no impacts to Environmental Justice (EA, 3.7.2.3). The Cocopah Indian Tribe and its natural and cultural resources will be significantly impacted by construction of the proposed project. Degradation of the limitrophe will reduce the number of native plants available for cultural use. Further, it will have significant economic impacts on tribal ecotourism, recreation, hunting, and other activities.

However, Reclamation's assessment has not sufficiently involved outreach to Native American tribes. Reclamation notes that in consultation requested by the Quechan, tribal representatives did not express any significant concerns at that time. It is our understanding that they subsequently have expressed concerns about the proposed project's impacts on the riparian habitats restored in the Yuma East Wetlands.

It appears Reclamation made only a limited attempt to consult with the Cocopah Indian Tribe. Secretarial Order # 3206 (June 5, 1997), directed to bureaus and offices within the Departments of Interior and Commerce, acknowledges the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship in dealing with tribes. The order clarifies the responsibilities of the agencies:

[19] All alternatives (except the no action alternative) contemplated in BLM's management planning process for the Yuma Field Office designate a limitrophe recreation management zone. BLM, Yuma Field Office, Draft Resource Management Plan and Draft Environmental Impact Statement, recreation opportunities map (December 2006). Available from http://www.blm.gov/az/LUP/yuma/yuma_plan.htm.

> when actions taken under authority of the [Endangered Species] Act and associated implementing regulations affect, or may affect, Indian lands, tribal trust resources, or the exercise of American Indian tribal rights…. Accordingly, the Departments will carry out their responsibilities under the Act in a manner that harmonizes the Federal trust responsibility to tribes, tribal sovereignty, and statutory missions of the Departments, and that strives to ensure that Indian tribes do not bear a disproportionate burden for the conservation of listed species, so as to avoid or minimize the potential for conflict and confrontation.

Furthermore, under presidential executive orders, all federal agencies must relate to tribes on a "government-to-government" basis, and may not simply regard tribes as interest groups or members of the general public.[20] Finally, NEPA states that when the effects of a proposed federal action are "on a reservation," a Native American tribe may request to become a "cooperating agency." Reclamation must follow the prescriptions as outlined in Secretarial Order # 3206, and other federal mandates for working with Native Americans, and conduct government-to-government consultation with the Cocopah Indian Tribe.

Failure to assess environmental justice impacts in the limitrophe

Reclamation's analysis of environmental justice impacts is limited to an assessment of the Drop 2 site and nearby communities. The analysis does not assess impacts on the Cocopah Reservation. Reclamation must assess impacts to Indian Trust Assets not just in the project area, but also in areas impacted by the proposed project, including the limitrophe reach of the Colorado River. Reclamation concludes that the proposed project "would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations" (EA, 3.7.2.3). Without consultation with the Cocopah Indian Tribe, this conclusion is not supportable.

Failure to assess impacts of the proposed project as potential conflicts with tribal land use plans and policies

The Cocopah Indian Tribe has spent considerable time and money restoring approximately 265 acres of riparian habitat along the limitrophe on the Cocopah Reservation. Together, the Cocopah Indian Tribe and NWF have secured funding (including federal funding) to restore additional riparian habitat in the limitrophe. Impacts of the proposed project in the limitrophe will significantly inhibit, if not negate, the benefits of riparian restoration conducted by the Cocopah Indian Tribe. *See* 40 C.F.R. § 1502.16(c) (discussion of environmental effects must include potential conflicts with tribal land use plans and policies).

Failure to assess all impacts to Indian Trust Assets

The EA states there is no impact to Indian Trust Assets (EA, 3.9.2.2). The Indian Trust Assets section must address all potential impacts to tribal resources associated with the implementation of the proposed project. As the EA notes, "The US, as trustee, is responsible for protecting and maintaining rights reserved by, or granted to, Indian tribes or individuals by treaties, statutes, and executive orders" (EA, 3.9.1). Reclamation acknowledges that Indian Trust Assets include land,

[20] See Executive Order 13175, Consultation and Coordination with Native American Tribal Governments (November 6, 2000). Available from: http://ceq.eh.doe.gov/nepa/regs/eos/eo13175.html.

minerals, water, and hunting and fishing rights (EA, 3.9.1). However, Indian Trust Assets also include the right to gather native plants and thus the protection of natural resources such as native plant species. As the proposed project would impact native plant viability in the limitrophe, including the reach of the limitrophe on the Cocopah Reservation, the proposed project could have significant impacts to the Cocopah Indian Tribe's Trust Assets.

Reclamation states that "[i]n cooperation with Tribe(s) potentially impacted by a given project, Reclamation must inventory and evaluate assets and then mitigate or compensate for impacts to the asset" (EA, 3.9.2.1). Reclamation must fully consult with the Cocopah Indian Tribe on a government-to-government basis to meet that requirement.

Controversy

Disputes over the effects, the effectiveness, and the international implications of the proposed project demonstrate the controversy surrounding this action. The existence of a public controversy over the effect of an agency action is one factor in determining whether the impact is "significant." *See* 40 C.F.R. § 1508.27(b)(4); *LaFlamme v. FERC*, 852 F.2d 389, 400-01 (9th Cir.1988); *Jones v. Gordon*, 792 F.2d 821, 828-29 (9th Cir.1986). A federal action is controversial if "'a substantial dispute exists as to [its] size, nature, or effect,'" *Foundation for North American Wild Sheep v. United States Department of Agriculture*, 681 F.2d 1172, 1182 (9th Cir.1982), and it thus calls for an EIS. The court referred to the "numerous responses from conservationists, biologists, and other knowledgeable individuals, all highly critical of the EA and all disputing the EA's conclusion." *Id.* at 1182.

The lack of analysis of transboundary impacts points to the existence of dispute regarding the Drop 2 Project. In order to comply with NEPA, Reclamation must perform an analysis of transboundary impacts. *See* Exec. Order 12,114, 3 C.F.R. § 356 (1980), *Environmental Effects of Major Federal Actions;* CEQ Memorandum to Heads of Agencies on the Application of the National Environmental Policy Act to Proposed Federal Actions of the United States with Transboundary Effects (July 1, 1997).

Failure to adequately assess the impacts to air quality

The proposed project site lies within the Salton Sea Air Basin, where air quality fails to meet both state and federal standards. Imperial County is currently classified as a "serious non-attainment area" for PM_{10}.[21] The EA should provide a formal citation for 'the most recent EPA-approved SIP' (p.3.5-3). According to the EA's Table 3.5-1, annual emissions for proposed construction activities would approach the SIP threshold in year 2. This merits greater attention, especially in regards to cumulative impacts.

The EA makes the disingenuous claim that "emissions from the Proposed Action would not contribute to an exceedance of an ambient air quality standard. As a result, the Proposed Action, in combination with other foreseeable projects, would not cause significant cumulative air quality impacts." (p. 4-8) A cumulative impacts analysis must address the *cumulative* impacts of

[21] The EA should include a map designating the 'roughly three quarters of the County' in serious non-attainment for PM10, (p.3.5-2), indicating where the proposed project lies relative to this designation.

planned and reasonably foreseeable projects, any one of which might not constitute "an exceedance of an ambient air quality standard" but which, when taken together, would exceed such a standard. *See* 40 C.F.R. sec. 1508.7. The cumulative impacts of the proposed project, in combination with the proposed All-American Canal Lining Project (EA *at* 4.2.1.3), water efficiency improvements in the Imperial Valley, the proposed New River encasement project, and the increase in PM_{10} emissions from exposed Salton Sea lakebed, among others, may well constitute a significant air quality impact. The cumulative impacts analysis must not simply rehash the project-specific analysis. The section as written is inadequate and must be redone.

This section should also include an estimate of the amount of water required for fugitive dust control, both during construction and on an annual basis over the life of the project. Since the project purpose is to improve the efficiency of Colorado River water use, the EA should include better information on water losses associated with the project.

Compliance with other laws

The Draft EA makes no mention of compliance with, or an effort to comply with, the FWCA. Environmental effects can only be assessed within the framework already established by the Endangered Species Act, the Fish and Wildlife Coordination Act, and other federal legislation. *See* 40 C.F.R. § 1508.27(b)(10) (violations of federal, state or local law bears on the intensity, and thus the significance, of the impact). Without this framework, any determination of significance is flawed.

The proposed project also must satisfy the requirements of the Fish and Wildlife Coordination Act (FWCA). 16 U.S.C. §661 *et seq*. The FWCA requires that "wildlife conservation shall receive equal consideration and be coordinated with" other features of water-resource projects. 16 U.S.C. §661.

To satisfy the FWCA, Reclamation must consult with the FWS and the appropriate state wildlife agency "with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof." 16 U.S.C. §662(a). FWCA also requires that "[r]ecommendations of the Secretary should be as specific as practicable with respect to features recommended for wildlife conservation and development . . . [and] shall describe the damage to wildlife attributable to the project and the measures proposed for mitigating or compensating for these damages." 16 U.S.C. §662(a). FWCA requires that "adequate provision" be made for the use of water project facilities for wildlife purposes, consistent with the primary purposes of the project. 16 U.S.C. §663(a).

In sum, FWCA's consultation requirement establishes a safety net beneath ESA's §7 consultation requirement. ESA §7 requires federal agencies to consult with FWS to ensure that agency action does not jeopardize the continued existence of any federally endangered or threatened species. By way of supplementing ESA requirements, FWCA consultation addresses the potential action's effects on fish and wildlife that are of concern at the state level, regardless of whether these fish and wildlife appear on federal lists.

Likewise, the impacts of the proposed project should be considered in light of the Bureau of Land Management's Yuma Field Office Draft Resource Management Plan and Draft Environmental Impact Statement (BLM DEIS).[22] *See* 40 C.F.R. §§ 1502.16(c), 1506.2(d). Reclamation should review the BLM DEIS and disclose any possible conflicts between it and the proposed project.

The preferred alternative in the BLM DEIS would establish a "Limitrophe Coordinated Management Area," whereby BLM would coordinate management of the limitrophe with jurisdictional agencies, resource stakeholders, and the Cocopah Indian Tribe. BLM's proposed goals for coordinated management in the limitrophe include to "protect and maintain riparian habitat and marsh vegetation to maintain biological diversity and enhance potential habitat to support neotropical birds, special status species, and other wildlife…[and to] protect and maintain the characteristics of the limitrophe area that have been identified by the Cocopah Indian Tribe and other Indian Tribes and groups as important for traditional use" (BLM DEIS, 2.4.2). The EA should include this information as well as any conflicts between the goals of the BLM DEIS and the projected effects of the proposed project on limitrophe natural resources.

MITIGATION MEASURES

The EA identifies the loss of 11 acres of wetland habitat on the U.S. side of the limitrophe as a cumulative impact of the proposed project and Yuma area pumping, but does not specify mitigation measures in any detail other than to say mitigation may occur onsite or off-site. As discussed in detail above, the EA fails to acknowledge the potential for significant impacts to habitat on the U.S. side of the limitrophe that must be mitigated. These include the loss of as much as 50 acres of off-channel wetlands, the loss of as much as 527 acres native riparian vegetation, and the degradation of an unknown portion of more than 3,500 acres riparian habitat, of which some is classified as native vegetation and some as non-native salt-cedar habitat.

We take this opportunity to suggest activities that, if included as elements of the proposed project, would help mitigate the project's potential adverse effect on the limitrophe.

a) During the interim period (period during which the Southern Nevada Water Authority generates Intentionally Created Surplus from the project), 5% of Drop 2 conserved water is set aside as a dedicated supply for the limitrophe (these flows would not affect the total volume of ICS created by SNWA's investment). Post-interim period, 20% of Drop 2 conserved water would be set aside as a dedicated supply for the limitrophe. Until such time as the U.S. and Mexico finalize an agreement to ensure delivery of water through Morelos Dam, water for the limitrophe will be discharged through the US-controlled 11-mile wasteway, through a new wasteway constructed near where the West Main Canal joins the levee, or to a site that supplies pilot restoration activities in the limitrophe.

b) A monitoring program for the limitrophe reach should be developed and implemented to start at least one year before the proposed project becomes operational and extend for at least 10

[22] BLM, Yuma Field Office, Draft Resource Management Plan and Draft Environmental Impact Statement (December 2006). Available from: http://www.blm.gov/az/LUP/yuma/yuma_plan.htm.

years. The monitoring program should include quantity and quality information for surface water and groundwater, as well as vegetation monitoring and wildlife surveys.

c) Financial support and agency cooperation should be committed to large-scale binational limitrophe restoration activities, targeted at native riparian habitat types. We believe there are also potential opportunities to use excess groundwater in the Yuma area to benefit riparian restoration and that restoration can be done in a manner that provides multiple benefits: habitat protection and enhancement, job creation and increased public safety in the limitrophe reach. We urge Reclamation to fully explore these opportunities in cooperation with local stakeholders and federal and state agencies.

Again, thank you for the opportunity to comment. We look forward to a continued dialogue with Reclamation and other interests concerning protection of the limitrophe reach of the Colorado River.

Sincerely,

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Attachment A: Review of Sensitive Species Present in the Limitrophe Reach of the Colorado River and their Dependence on Open Water as a Habitat Element

SOUTHWESTERN WILLOW FLYCATCHER

U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O

The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs). Most of these habitats are classified as forested wetlands or scrub-shrub wetlands. Habitat requirements for wintering are not well known, but include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water. The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat, with consequent reductions in population levels.

Destruction and modification of riparian habitats have been caused mainly by: reduction or elimination of surface and subsurface water due to diversion and groundwater pumping; changes in flood and fire regimes due to dams and stream channelization; clearing and controlling vegetation; livestock grazing; changes in water and soil chemistry due to disruption of natural hydrologic cycles; and establishment of invasive non-native plants. Concurrent with habitat loss have been increases in brood parasitism by the brown-headed cowbird (*Molothrus ater*), which inhibit reproductive success and further reduce population levels.

CALIFORNIA BLACK RAIL

California black rail use of habitat in southwestern Arizona. Flores, RE; Eddleman, WR Journal of Wildlife Management Vol. 59, no. 2, pp. 357-363. 1995.
Use of habitat by the California black rail (Laterallus jamaicensis coturniculus), a subspecies threatened in California and endangered in Arizona, is not sufficiently well known for effective management. From March 1987 to December 1988, we studied use of habitat by 36 radio-transmittered California black rails at Mittry Lake Wildlife Management Area, Arizona. Birds selected ($P < 0.05$) areas dominated by giant bulrush (Scirpus californicus) throughout all seasons and used southern cattail (Typha domingensis) less frequently than expected ($P < 0.05$). California black rails selected ($P < 0.001$) areas close to upland vegetation during the postbreeding season, possibly because broods could not use areas with water >6 cm deep. Birds used areas that were closer to vegetation-type edges, were drier, and had shorter vegetation compared with available habitat ($P < 0.001$). Habitat structure was more effective than plant composition in predicting California black rail use of habitat. Because California black rails may not use areas within wetlands where deep water occurs, we recommend that fluctuations in water level be minimized in wetlands managed for California black rails, especially during the nesting season. Assessment of California black rail habitat should include not only vegetational cover,

but also water depths within wetlands, access to upland vegetation, and overhead coverage by emergent vegetation.

YUMA CLAPPER RAIL

Biology of the Yuma Clapper Rail in the Southwestern U.S. and Northwestern Mexico Eddleman, WR Final Report July 1989. Fish and Wildlife Service Contract 4-AA-30-02060.

The biology of the Yuma clapper rail was studied at Mittry Lake Wildlife Management Area and Crystal Beach Marsh from February 1985-December 1987. Aspects considered by the study included migration and wintering patterns, general life history, habitat use patterns, foods and seasonal availability of major prey, and the usefulness of the call count survey. A total of 122 Yuma clapper rails was captured using combinations of drift fences and traps and female solicitation tapes. Ninety-nine birds were fitted with radio transmitters to study migratory behavior and seasonal movements. Home range of Yuma clapper rails averaged > 7 ha, and was larger after the breeding season and during the winter. Nearly all birds concentrated their activity in core use areas that approximated previous estimates of territory size. Emergent marsh vegetation types were selected by rails in most habitat situations. When high water prevailed at Crystal Beach, birds selected higher sites dominated by willow, salt cedar, or upland edge vegetation. After breeding and in winter, birds at Mittry Lake increased their use of salt cedar stands for unknown reasons. Yuma clapper rails selected microhabitats with less coverage by vegetation, less residual mat of dead vegetation, less bare ground, more coverage by water, proximity to habitat changes, shallower water, and higher stem densities than were present at randomly selected sites. A well-developed residual mat could compensate for deep water. To further promote recovery of the Yuma clapper rail, additional areas need to be managed for the species. Managed units should be protected from sudden changes in water depth, both from flooding and from drying so a reliable water supply would be available.

YELLOW-BILLED CUCKOO

Review of the Status of the Yellow-billed Cuckoo in California: Sacramento Valley Populations (Condor: Vol. 76, No. 2, 1974, pp 204-209). David Gaines.

Yellow-billed Cuckoos were observed only within 100 m of the water. The species was most frequent in areas where extensive riparian vegetation is interspersed with lakes, sloughs, and/or marshy areas (page 204).

Laymon, S. A. 1998. Yellow-billed Cuckoo (*Coccycus americanus*). *In* The Riparian Bird Conservation Plan:a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

Two habitat models for Yellow-billed Cuckoos have been developed. Gaines and Laymon (1984) concluded that willow-cottonwood habitat of any age with high humidity and a habitat breadth of 325 feet (100 m) was necessary for suitable Yellow-billed Cuckoo habitat. Additional

research based on occupancy rates allowed for refinement of these requirements. Laymon and Halterman (1989) concluded that sites > 80 ha (200 acres) in extent and wider than 600 m (1950 feet) were optimal, sites 41-80 ha (101-200 acres) in extent and wider than 200 m (650 feet) were suitable, sites 20-40 ha (50-100 acres) in extent and 100-200 m (325-650 feet) in width were marginal, and sites <15 ha (38 acres) in extent and < 100 m (325 feet) in width were unsuitable.

At the South Fork Kern River the average distance to water was 310 m (SD = 405.5, n = 95) and ranged from a low of 0.0 m to a high of 1500 m (Laymon et al. 1997). At the Bill Williams River the average distance to water was 41 m (SD = 46.9, n = 14), with a range from 0 m to 175 m (Halterman unpublished data).

Gaines, D.A. and S.A. Laymon. 1984. Decline, status and preservation of the Yellow-billed Cuckoo in California. Western Birds 15:49-80.

Laymon, S.A. and M.D. Halterman. 1989. A proposed habitat management plan for Yellow-billed Cuckoos in California. USDA Forest Service Gen. Tech. Rep. PSW-110 p 272-277.

Laymon, S.A., P.L. Williams, and M.D. Halterman. 1997. Breeding status of the Yellow-billed Cuckoo in the South Fork Kern River Valley, Kern County, California: Summary report 1985 - 1996. Administrative Rep. U.S.D.A Forest Service, Sequoia National Forest, Cannell Meadow Ranger District, Challenge Cost-Share Grant #92-5-13.

LEAST BITTERN

NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: February 6, 2007).

Habitat Comments: BREEDING: Tall emergent vegetation in marshes, primarily freshwater, less commonly in coastal brackish marshes and mangrove swamps. Prefers marshes with scattered bushes or other woody growth.

Habitats vary throughout North America, but nesting usually occurs among dense, tall growths of emergent vegetation (particularly cattail (TYPHA spp.), sedge (CAREX spp.), bulrush (SCIRPUS spp.), or common reed (PHRAGMITES AUSTRALIS)), interspersed with some woody vegetation and open, fresh water (Weller 1961, Palmer 1962, Kushlan 1973, Swift 1987, Frederick et al. 1990). Both fresh and brackish marshes are used (Palmer 1962, Swift 1987, Andrle and Carroll 1988). Occurrences have been associated particularly with cattail, vegetated edges along deep, open waters (Weller 1961), and nutrient-rich microhabitats (Kushlan 1973). Nests typically 0.15-0.75 m above water near open water (Terres 1980, Harrison 1979, Brewer et al. 1991), in water typically 10-50 cm deep.

Frederick, P. C., et al. 1990. Relative abundance and habitat preferences of least bitterns (*Ixobrychus exilis*) in the Everglades. Florida Field Nat. 18:1-20.

Kushlan, J. A. 1973. Least bittern nesting colonially. Auk 90:685-686.

Palmer, R. S. (editor). 1962. Handbook of North American birds. Vol. 1. Loons through flamingos. Yale University Press, New Haven. 567 pp.

Swift, B. L. 1987. An analysis of avian breeding habitats in Hudson river tidal marshes. New York State Department of Environmental Conservation, Division of Fish and Wildlife, Delmar, New York. Unpublished report. 62 pp.

Weller, M.W. 1961. Breeding biology of the Least Bittern. The Wilson Bulletin, 73(1): 11-35.

GREAT EGRET

McCrimmon, D. A., Jr., J. C. Ogden, and G. T. Bancroft. 2001. Great Egret (*Ardea alba*). *In* The Birds of North America, No. 570 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Nests in colonies with other Great Egrets or other waterbirds. Colony habitat and nesting substrates vary. In mixed-species colonies, often the first species to arrive, and its presence may induce nesting among other species. Nests mostly in woody vegetation, shrubs, and trees, often near highest points in the colony (see Breeding: nest site, below). Nests over water or on islands. Uses both freshwater wetlands and marine-estuarine habitats. Colony sites located in lakes, ponds, marshes, estuaries, human-made impoundments, and on natural and dredge-material islands.

Feeds in a wide variety of wetland habitats, including marshes, swamps, streams, rivers, ponds, lakes, impoundments, lagoons, tidal flats, canals, ditches, and fish-rearing ponds. Also feeds in flooded agricultural fields and occasionally in some upland habitats.

SNOWY EGRET

Parsons, K. C., and T. L. Master. 2000. Snowy Egret (*Egretta thula*). *In* The Birds of North America, No. 489 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

In the West, preferred habitats include: willows along large rivers in Nevada (Alcorn 1988); reservoirs, grassy marshes, and wet meadows in the Great Basin, Colorado, and Wyoming (Ryser 1985, Andrews and Righter 1992, Oakleaf et al. 1992); inland lakes and canals in the Harney Basin in Oregon (Gilligan et al. 1994); irrigation channels, estuarine habitats, marshes, and river courses in California (Garrett and Dunn 1981). In San Francisco Bay, CA, most individuals breed on islands in mixed-species colonies (Kelly et al. 1993).

Alcorn, J. R.. 1988. The birds of Nevada. Fairview West Publ. Co., Fallon, NV.

Andrews, R., R. Righter. 1992. Colorado birds: a reference to their distribution and habitat. Denver Mus. Nat. Hist., Denver, CO.

Garrett, K., J. Dunn. 1981. Birds of southern California: status and distribution. Los Angeles Audubon Soc., Los Angeles, CA.

Gilligan, J., D. Rodgers, M. Smith, A. Contreras. 1994. Birds of Oregon: status and distribution. Cinclus Publ., McMinnville, OR.

Kelly, J. P., H. M. Pratt, P. L. Greene. 1993. The distribution, reproductive success and habitat characteristics of heron and egret breeding colonies in the San Francisco Bay area. Colon. Waterbirds 16: 18–27.

Oakleaf, B., B. Luce, S. Ritter, A. Cerovski. 1992. Wyoming bird and mammal atlas. Wyoming Game Fish Dep., Lander.

Ryser, F. A.. 1985. Birds of the Great Basin: a natural history. Univ. of Nevada Press, Reno.