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AESO/SE
02-21-01-F-0263 October 7, 2002

Memorandum

To: Superintendent, Lake Mead National Recreation Area, National Park Service, Boulder City, Nevada

From: Field Supervisor

Subject: Lake Mead National Recreation Area Lake Management Plan

Thank you for your request for consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation dated April 24, 2002, was received by us on April 29, 2002. At issue are impacts that may result from the National Park Service's (NPS) proposed Lake Management Plan (LMP) for the Lake Mead National Recreation Area (NRA) in Mohave County, Arizona and Clark County, Nevada. The species of concern in this consultation are the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), bonytail chub (*Gila elegans*), razorback sucker (*Xyrauchen texanus*) and threatened desert tortoise (*Gopherus agassizii*). Critical habitat for the bonytail chub in Lake Mohave and for the razorback sucker in Lake Mead and Lake Mohave has been designated. Critical habitat for the desert tortoise in Nevada has been designated and includes upland habitats adjacent to portions of the lakes.

In your memorandum, you requested our concurrence that the proposed action was not likely to adversely affect the endangered bald eagle (*Haliaeetus leucocephalus*) and the Yuma clapper rail (*Rallus longirostris yumanensis*). We concur with these findings. The rationale for our concurrence for these species is given in Appendix A to this document.

This biological opinion is based on information provided in the April, 2002 draft Environmental Impact Statement (DEIS) for the LMP, your memorandum dated April 24, 2002 requesting formal consultation, your memorandum of July 31, 2002 with changes to the proposed action and conservation measures, the FWS' October 18, 2001, draft programmatic guidance on

programmatic consultations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, effects of recreational activities, or other subjects considered in this biological opinion. A complete administrative record of this consultation is on file in this office.

Consultation History

April 24, 2001:	NPS requests species list. We respond on April 25, 2002.
February 21, 2002:	NPS provides preliminary copy of DEIS to us for endangered species review.
March 21, 2002:	We provide comments to NPS on preliminary DEIS.
April 24, 2002:	NPS requests formal consultation.
April 29, 2002:	Formal consultation initiated. Letter to NPS dated May 9, 2002.
May 13, 2002:	Summary of action sent to NPS. Comments were received June 21, 2002.
July 15, 2002:	Meeting with Phoenix and Las Vegas FWS Offices and NPS to discuss progress of consultation and additional conservation measures.
July 31, 2002:	NPS provides documentation of additional conservation measures and minor changes to the proposed action.
September 9, 2002:	NPS requests consultation be suspended until October 7, 2002.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The NRA contains 1,501,216 acres of land in Nevada and Arizona, of which 1,484,159 acres are in Federal ownership administered by the NPS. The LMP encompasses two constructed reservoirs on the Colorado River in Arizona and Nevada including the 157,900 surface acres and over 700 miles of shoreline of Lake Mead and 28,260 surface acres and 150 miles of shoreline of Lake Mohave. The project area also includes the existing roads within the NRA used to access the shoreline of the lakes. The LMP replaces the General Management Plan finalized in 1986. The 1986 plan does not have Act compliance for species listed since that time. The LMP will guide recreational use, facilities development and operation, monitoring needs and other management actions as described in the Draft Environmental Impact Statement (DEIS) (NPS 2002a). The full text of the proposed action is contained in the DEIS and is incorporated into this BO by reference. Some minor changes to the proposed action were documented in the July 31, 2002, NPS memorandum to the FWS (NPS

2002b). The following is a summary of the proposed action, Alternative C with the changes from the July 31, 2002 memorandum.

Site Specific Actions

The LMP provides for a range of recreational opportunities on the lakes and different recreational opportunity zones are delineated (Urban Park, Urban Natural, Rural Natural, Semi-primitive and Primitive) to establish acceptable uses. The Urban Park, Urban Natural and Rural Natural zones dominate the area. Recreational uses within the urban and rural zones includes boating, (sail, power, personal watercraft, canoe/kayak), fishing, waterskiing, SCUBA, swimming and camping. Not all activities are permitted everywhere within the zones; please see the DEIS for specific restrictions especially within the Urban Park zones that relate to shoreline zoning in specific areas. In Lake Mead, there would be no Primitive designation. The Semi-primitive zone would include the Virgin River inflow area, Bonelli Bay, Gypsum Beds and Grand Wash Bay. In the Semi-primitive zones, boats operating at wakeless speed would be allowed but personal watercraft would not. In Lake Mohave, the reach above Willow Beach would be operated as Rural Natural during the summer months, with houseboats, water-skiing and wake-boarding prohibited. Between Labor Day and Memorial Day, the zoning would change to Semi-primitive for 5 days each week with restrictions on boat motor horsepower. The remaining 2 days a week the zoning would be Primitive with non-motorized use only allowed. A 200-foot no-wake area would be established around beaches frequented by swimmers, boats at the shoreline, and anglers or other people at the shoreline or in the water. Existing no-wake zones would be retained under the proposed action.

The proposed action includes the existing recreational facilities along the shoreline, expansion to some of these facilities, and new facilities. Facilities include marinas with a variety of services offered, public boat launch ramps and parking, campgrounds (developed and undeveloped) and sanitation facilities. Provision for a maximum recreational capacity of 1,670 boats at one time (BAOT) for Lake Mohave and 3,295 BAOT for Lake Mead is part of the proposed action. This is an increase over the existing level of use, but is less than that included in the 1986 General Management Plan.

Existing marina and boat launch facilities, including the number of single and double (pull-through) parking spaces are detailed in the LMP. The proposed action includes the operations of these existing facilities into the future. Some expansion of facilities is also included. Tables 1 and 2 contain a summary of the marina and public launch facilities included in the LMP. Most of the existing facilities are not covered by section 7 consultations. There are two exceptions. The Willow Beach developed area on Lake Mohave was informally consulted on in 1993 (consultation number 2-21-90-I-168b) and NPS made a finding of "no effect" to listed species from renovation and continuation of operations at that facility. An expansion of fishing access at the Echo Bay developed area was informally consulted on in 2000 (consultation number 1-5-01-I-418) and the FWS concurred with a finding of "may affect, not likely to adversely affect" listed species. The presence of all existing facilities in the NRA is included in the environmental baseline with future operations part of the effects of the action. For the purposes of this

consultation, the existing level, not the present authorized level of these facilities under the 1986 plan, is included as part of the proposed action.

The proposed action does not call for the development of any new access roads or expansions in the size of existing roads. These existing roads are in the environmental baseline, with the continued use of the roads part of the effects of the action. Recent consultations on new entrance stations for the NRA (2-21-95-I-034 and VEGAS #) exist. New stations constructed under those consultations are part of the environmental baseline.

Other shoreline recreational facilities include developed and undeveloped campgrounds and day use areas. Minor facilities enhancement for these sites include additional parking areas, limited paving of roads and similar actions. A permit system may be set up for some shoreline camping areas.

Within the proposed action there are several specific actions that apply to the entire lake and shoreline area but are not entirely site specific. These actions include sanitation and litter control and water quality monitoring. The LMP would require use of portable toilets for all campers not at developed campgrounds (restrooms are available at those locations) and additional pump-out facilities would be established at a minimum of 7 locations on Lake Mead and 3 locations on Lake Mohave. Locations of these facilities was not specified, but it is assumed they would be located in areas of high recreational use. Shoreline litter cleanup programs, elimination of glass and styrofoam containers, solid waste recycling and public education programs on littering and recycling are considered under the LMP.

Water quality monitoring for bacterial and chemical pollution is included in the LMP and would be expanded beyond existing levels. Gasoline and petroleum products from boats and personal watercraft operation and refueling have been found in high-use areas of the lakes. The NPS does not have the authority to create standards for gasoline-powered boats and watercraft; however, the LMP calls for the adoption of the scheduled 2006 Environmental Protection Agency standards for emissions in 2012. All personal watercraft and outboard engine-powered boats would be required to meet the standards after 2012 or would not be permitted to operate. Other sources of petroleum pollutants are boat maintenance activities and refueling. The LMP has a provision to provide guidance on best management practices to marina facilities operators and boater education to reduce these sources of pollution. Enforcement efforts are an important component in addressing these pollutants.

Another non-site specific action included in the LMP is an increased effort to require boater education and develop uniform boating laws. Arizona and Nevada share jurisdiction on the lakes and there are differing State requirements for boat operation. Accomplishment of this objective would require the involvement of the two States with the NPS.

Rainbow trout stocking by Nevada (consultation number 1-5-94-F-326) and the FWS (2-21-94-F-244) into Lake Mead and Lake Mohave is done under an existing consultation and is not a part of the proposed action. This activity is included in the environmental baseline.

Programmatic actions

The LMP contains actions that are not described in specific detail but for which consultation is requested. The programmatic portion of this consultation will be conducted under the protocol described in Appendix B. Some of these actions involve the cooperation of other Federal and State agencies to accomplish. For bonytail chub and razorback sucker, these actions include placement of fish habitat enhancement structures for recreational fisheries enhancement, development of shoreline fishing facilities, and monitoring the effects of the proposed action on listed threatened and endangered species. The extent of present monitoring and the amount proposed under the proposed action are not defined. For southwestern willow flycatcher, these actions include clearing of non-native vegetation and replacement with native plant species. Proposed actions that may adversely affect the desert tortoise include expansion of existing recreational facilities and creation of new facilities as described in the DEIS. Approximately 5 acres of previously undisturbed tortoise habitat would be disturbed at the proposed Eldorado Landing site. Other expansions would take place in previously disturbed tortoise habitat.

Conservation measures

For razorback sucker and bonytail chub, the NPS has provided the following conservation measures in a memorandum to the FWS dated July 31, 2002 (NPS 2002b):

1. Surveys at the nine coves known to have spawning razorbacks on Lake Mohave and the two areas known from Lake Mead will continue. Surveys in Lake Mohave for bonytail chub will continue. The NPS cooperates in these surveys, but is not the prime funding source for the work.

2. Boat use of coves identified as native fish spawning areas during the spawning period will be monitored. If boat use increases dramatically or if the Native Fish Work Group recommends action, closures of the coves to boat use during the period will be implemented. Areas adjacent to razorback grow-out ponds on Lake Mohave will also be monitored. If vandalism to the ponds is documented, closures would be implemented.

3. Information about native fish in the lakes will be provided at marinas and with houseboat and other boat rentals. Information would encourage boaters not to use the spawning areas during the spawning season.

4. On Lake Mead, the back bay portions of Echo Bay will be closed to boat use during December 1-May 1 of each year to protect razorback sucker spawning locations. Information will be provided to boaters at the marina about the closures.

5. Las Vegas Bay Marina will remain a no-wake area to protect razorback sucker habitats in that area of Lake Mead.

6. For the expansion of Cottonwood Cove Marina on Lake Mohave, razorback surveys will

begin this winter to assess any use of the expansion area. The site will also be added to the annual surveys during the breeding season.

7. All marinas will operate under the "Lake Mead National Recreation Area Best Management Practices, Watercraft and Marina Operations and Dry Boat Storage and Boat Repair Services" or subsequent revised versions of the existing document. This document provides for management that reduces the risk of toxic spills into the lakes by fueling or other marina operations.

For the southwestern willow flycatcher, NPS has provided the following conservation measures included in the memorandum of July 31, 2002:

1. Surveys in known occupied habitats of the flycatcher by NPS, Bureau of Reclamation and contractors will continue. Surveys of potential habitats will be initiated by the NPS.

2. If breeding pairs are found, closures to restrict land and lake access by recreationists to the sites will be put in place.

NPS also proposes the following measures to minimize effects to desert tortoises from proposed projects:

1. A desert tortoise education program will be presented to all personnel onsite during construction and operation. This program will contain information concerning the biology and distribution of the desert tortoise, its legal status and occurrence in the proposed project area, the definition of "take" and associated penalties, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered.

2. All areas to be disturbed will have boundaries flagged before beginning the activity and all disturbance will be confined to the flagged areas. All project personnel will be instructed that their activities must be confined to locations within flagged areas. Disturbance beyond the actual construction zone is prohibited.

3. Before surface-disturbing activities, a qualified desert tortoise biologist will conduct a clearance survey to locate and remove tortoises using techniques providing full coverage of all areas. All desert tortoise burrows, and other species' burrows that may be used by tortoises, will be examined to determine occupancy of each burrow by desert tortoises. In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (USFWS 1992), a qualified desert tortoise biologist shall possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist shall have the ability to recognize and accurately record survey results.

4. All burrows found within areas proposed for disturbance, whether occupied or vacant, will be

excavated by a qualified biologist and collapsed or blocked to prevent desert tortoise re-entry. All burrows will be excavated with hand tools to allow removal of desert tortoises or desert tortoise eggs. All desert tortoise handling and excavations, including nests, will be conducted by a qualified desert tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999).

5. All located desert tortoises and desert tortoise eggs will be relocated offsite 300 to 1,000 feet into adjacent undisturbed habitat. Tortoises found aboveground will be placed under a bush in the shade. A tortoise located in a burrow will be placed in an existing unoccupied burrow of the same size and orientation as the one from which it was taken. If a suitable natural burrow is unavailable or the occupancy status of the burrow is in question, a qualified biologist will construct one of the same size and orientation as the one from which it was removed using the protocol for burrow construction in Section B-5-f (Desert Tortoise Council 1994, revised 1999).

6. The onsite biologist will record each observation of desert tortoise handled. Information will include the following: Location, date and time of observation, whether tortoise was handled, general health and whether it voided its bladder, location tortoise was moved from and location moved to, and unique physical characteristics of each tortoise. Reports documenting effectiveness and compliance with the tortoise protection measures will be prepared every 6 months.

7. Project activities that may endanger a tortoise will cease if a tortoise is found on a project site. Project activities will resume after the biologist removes the tortoise from danger or after the tortoise has moved to a safe area. Stockpiled pipes that could attract tortoises will be capped or checked by a biological monitor before use.

8. During the tortoise active season (March 1 through October 31), all trenches and other excavations with side slopes steeper than 1-foot rise to 3-foot length shall be immediately backfilled prior to being left unattended, or: (1) Fenced with tortoise-proof fencing; (2) covered with tortoise-proof fencing; (3) covered with plywood or similar material; or (4) constructed with escape ramps at each end of the trench and every 1,000 feet, at a minimum. All coverings and fences shall have zero ground clearance. If alternative (4) is selected, the trench or other excavation will be inspected periodically and following periods of substantial rainfall to ensure structural integrity and that escape ramps are functional. An open trench or other excavation as described in Term and Condition **2.a.** above shall be inspected for entrapped animals immediately prior to backfilling. If at any time a tortoise is discovered within a trench, all activity associated with that trench shall cease until a qualified biologist has removed the tortoise in accordance with Service-approved guidelines (Desert Tortoise Council 1994, revised 1999).

9. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied daily and waste will be removed from the

project area and disposed of in an approved off-Reservation landfill. Trash removal will reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Construction waste will be removed from the site daily and disposed of properly at an approved off-Reservation landfill.

10. Prior to surface disturbance activities within desert tortoise habitat, NPS or the project proponent shall pay a remuneration fee of **$623 per acre** of proposed disturbance into the Desert Tortoise Public Lands Conservation Fund Number 730-9999-2315 (section 7 account). This fund is administered by Clark County, and used for securing and enhancing tortoise habitat and tortoise research. The administrator serves as the banker of these funds and receives no benefit from administering these funds. These funds are independent of any other fees collected by Clark County for desert tortoise conservation planning. None of these funds shall be used to develop a habitat conservation plan. The payment shall be accompanied by the attached **Section 7 Fee Payment Form** (Appendix C), and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County (or other administrator named by the Bureau and Service), and delivered to:

    Clark County
    Department of Comprehensive Planning
    500 South Grand Central Parkway, Third Floor
    Las Vegas, Nevada 89155-1712

    If fees are paid after March 1, 2003, the rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: *http://stats.bls.gov/news.release/cpi.nr0.htm.*

11. To minimize and monitor the effects to desert tortoises along high traffic roads within the LMNRA, NPS shall record observations of desert tortoises and desert tortoise mortalities. If tortoises appear to be impacted by road at a specific location, the NPS shall implement appropriate measures to minimize these effects in coordination with the Service, which may include reduced speed limits, installation of warning signs, and/or installation of tortoise-proof fencing.

STATUS OF THE SPECIES (RANGE-WIDE)

Species/critical habitat description

Southwestern willow flycatcher

The southwestern willow flycatcher was listed as an endangered species, without critical habitat,

on February 27, 1995 with an effective date of March 29, 1995. Critical habitat was designated on June 22, 1997 and set aside on May 11, 2001 by court order. No critical habitat units were designated in the action area for this consultation. The draft recovery plan was recently provided for public review (USFWS 2001a).

Bonytail chub

The bonytail chub was listed as an endangered species on April 24, 1980, with an effective date of May 23, 1980. Critical habitat was designated in six river reaches within the historic range of the bonytail on March 21, 1994 with an effective date of April 20, 1994. Critical habitat in the action area includes Lake Mohave up to its full-pool elevation. All critical habitat areas were considered occupied at the time of designation. Constituent elements of critical habitat include water, physical habitat and biological environment. The Bonytail Chub Recovery Plan was most recently updated in 1990 (USFWS 1990).

Razorback sucker

The razorback sucker was listed as an endangered species on October 23, 1991, with an effective date of November 22, 1991. Critical habitat was designated in 15 river reaches within the historic habitat of the razorback on March 21, 1994 with an effective date of April 22, 1994. Critical habitat in the action area includes Lake Mead and Lake Mohave up to their full-pool elevations. All critical habitat areas were considered occupied as the time of designation. Constituent elements of critical habitat include water, physical habitat and biological environment. The Razorback Sucker Recovery Plan was signed in 1998 (USFWS 1998).

Desert tortoise

An emergency listing as endangered for desert tortoises found north and west of the Colorado River in California, Nevada and Utah was published on August 4, 1989. The entire Mohave population of the desert tortoise (including populations north of the Colorado River in Arizona not designated in 1989) was listed as a threatened species on April 2, 1990, with an effective date of April 2, 1990. Critical habitat in Arizona, California, Nevada and Utah was designated on February 8, 1994 with an effective date of March 10, 1994. Constituent elements of critical habitat included physical habitat and biological environment. The Desert Tortoise (Mohave Population) Recovery Plan was signed in 1994 (USFWS 1994).

Life history

Southwestern willow flycatcher

Life history information on the flycatcher can be obtained from the draft Recovery Plan (USFWS 2001a). Information on surveys and monitoring in the lower Colorado River vicinity are available in the annual reports by San Bernardino County Museum to the Bureau of Reclamation (Reclamation). The most recent report available is for the 2001 field season (McKernan and Braden 2002).

Bonytail chub

Life history information on the bonytail can be obtained in the 1990 Recovery Plan (USFWS 1990), and in background materials presented in the draft recovery goals documents (SWCA 2001a).

Razorback sucker

Life history information on the razorback can be obtained in the 1998 Recovery Plan (USFWS 1998), and in background materials presented in the draft recovery goals documents (SWCA 2001b).

Desert tortoise

Life history information on the desert tortoise can be obtained in the 1994 Recovery Plan (USFWS 1994).

Species status and distribution

Southwestern willow flycatcher

Complete range-wide status and distribution information can be obtained in the draft Recovery Plan (USFWS 2001a). The following is a brief summary.

The current estimate for the range-wide flycatcher population is between 1,100 and 1,200 pairs/territories. Intensive monitoring and survey efforts since the species was listed has significantly increased the known numbers of pairs/territories beyond that known at the time of listing. There has also been a continuing degradation and loss of occupied habitat due to various actions (Federal and non-Federal) since listing. Under previous section 7 consultations, occupied habitats have been protected to offset habitat losses elsewhere due to project effects from Federal actions. Although this provides some stability for the newly protected habitats, a net loss of birds and habitat may still result on a range-wide level. Where unprotected habitats are not available for conservation, restoration and replacement of habitat may be used under section 7 consultation to minimize the effects of proposed Federal actions on the flycatcher. Most past efforts to restore cottonwood-willow habitats were not designed to provide flycatcher habitat and have not been successful for this purpose. Recent riparian restoration efforts have focused on providing for flycatchers; however, most stands are yet too young to provide suitable nesting sites. Success with habitat restoration is critical for conservation purposes since the amount of suitable or potential unprotected habitat is very limited.

Bonytail chub

Range-wide status and distribution information can be obtained in the background sections of the draft recovery goals documents (SWCA 2001a) and in the Service's recent (April 30, 2002)

biological opinion on Reclamation's operations and maintenance of the lower Colorado River (consultation number 2-21-95-F-216R; USFWS 2002).

The range-wide trend for the bonytail is the continued decrease in wild populations due to lack of sufficient recruitment of wild-born and reared young adults to offset the loss of old adults due to natural mortality. The remaining wild populations are extremely small and complete loss of the remaining wild-born individuals is expected to occur within the decade. Extinction of this fish in the wild throughout its historical range is being forestalled by the stocking of captive-born sub-adult fish into rivers in the Upper Colorado River Basin and in Lake Mohave and Lake Havasu in the Lower Colorado River Basin. Fish for these efforts are produced at Dexter National Fish Hatchery and Technology Center (Dexter) and are grown to stocking size at Dexter, Willow Beach National Fish Hatchery on Lake Mohave, the Achii Hanyo Fish Rearing Facility on the Colorado River below Lake Havasu, and at other Federal, State and private facilities. These stockings are intended to create populations of young adults that may be expected to persist for 40-50 years. While it is expected that these young adults will reproduce in the wild, the successful recruitment of wild-born fish to the population may not occur without additional management of habitat and biological factors. Management and research on these populations will be critical to provide for the survival and recovery of the species. Of vital importance to the stocking program is the maintenance and enhancement of the existing bonytail broodstock held at Dexter. Genetic evaluation of the existing F1 broodstock is underway to assist and formulating a new broodstock (the F1 fish are over 20 years old and replacements for the broodstock are needed). Infusion of additional, unrelated wild-born individuals is being actively pursued in order to maximize the amount of genetic variability in the new broodstock. Captive born individuals from the original F1 and F2 breedings that have survived in the wild may also be incorporated.

Designated critical habitat in the species range is occupied by bonytail populations. No critical habitat areas are considered pristine or unmodified. Changes to water flows and physical habitat conditions from the pre-development patterns have had significant impacts to habitat quality; however, the areas remain capable of supporting the species at some level. The biological environment has also changed significantly with the introduction of non-native fish species. The non-native fish may be the greatest impediment to survival and recovery of the bonytail.

Razorback sucker

Range-wide status and distribution information can be obtained in the background sections of the draft recovery goals documents (SWCA 2001b) and in the Service's recent (April 30, 2002) biological opinion on Reclamation's operations and maintenance of the lower Colorado River (consultation number 2-21-95-F-216R; USFWS 2002).

The range-wide trend for the razorback is the continued decrease in wild populations due to lack of sufficient recruitment of wild-born and reared young adults to offset the loss of old adults due to natural mortality. The remaining wild populations are extremely small and the loss of all but

one of remaining wild populations is expected to occur within the decade. The exception to this is the Lake Mead razorback population, which is made up of young to middle-aged fish forming a second post-impoundment generation. Extinction of this fish in the wild elsewhere in its historical range is being forestalled by the stocking of captive-born sub-adult fish into rivers in the Upper Colorado River Basin and in Lake Mohave, Lake Havasu and the Colorado below Parker Dam in the Lower Colorado River Basin. These stockings are intended to create populations of young adults that may be expected to persist for 40-50 years. While it is expected that these young adults will reproduce in the wild, the successful recruitment of wild-born fish to the population may not occur without additional management of habitat and biological factors. Management and research on these populations will be critical to provide for the survival and recovery of the species. The ongoing Lake Mohave population replacement program sponsored by the Native Fish Work Group is providing a genetically variable "broodstock" for the razorback in the form of young wild-born fish captured, reared and then repatriated to the lake. Adult fish from this population will be used to provide young fish for stocking elsewhere in the historical range.

Designated critical habitat in the species range is occupied by razorback populations. No critical habitat areas are considered pristine or unmodified. Changes to water flows and physical habitat conditions from the pre-development patterns have had significant impacts to habitat quality; however, the areas remain capable of supporting the species at some level. The biological environment has also changed significantly with the introduction of non-native fish species. The non-native fish may be the greatest impediment to survival and recovery of the razorback.

Desert tortoise

The range-wide population trend for the tortoise continues to decline. This determination is based on the observation of tortoise carcasses and fewer live tortoises and sign during inventory and monitoring transects.

Analysis of the species/critical habitat likely to be affected

The proposed action would take place in occupied habitats for the flycatcher, bonytail, razorback and tortoise, within designated critical habitat for the two fish species and adjacent to tortoise critical habitat.

The lower Colorado River is an important recovery area for the flycatcher (USFWS 2001a). Information developed from 2001 data (McKernan and Braden 2002) indicates that the overall lower Colorado River survey area is a source, and not a sink population, and thus provides birds for the local and regional populations.

The largest remaining populations of bonytail in the wild are in Lake Mohave and in Lake Havasu, the next reservoir downstream, and are important for species survival and recovery.

Both populations are the result of stocking young fish born from the existing broodstock into the declining wild populations. The physical habitat and biological environment constituent elements of critical habitat may be affected by the proposed action.

Lake Mead supports the only documented naturally recruiting population of razorback within the range. Lake Mohave will support the future broodstock for the razorback that will be used range-wide for recovery operations. Other razorback populations established in Lake Havasu and the river below Parker Dam will contribute to research for habitat and species management as well as contributing to the total population in the lower Colorado River maintained for recovery purposes. The physical habitat and biological environment constituent elements of critical habitat may be affected by the proposed action.

Desert tortoise populations around the perimeter of the two lakes would be affected by the continued operation and expansion of shoreline developments and dispersed recreational access afforded by shoreline zoning. Use of existing roads to access the lake shore continues the existing threat of mortality or removal by illegal collecting.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

The 1997 and 2002 formal consultations with Reclamation on their operations and maintenance of the lower Colorado River (which includes the action area), and the 2001 consultation on the Interim Surplus Criteria for Lake Mead (also with Reclamation) provided extensive discussions of the environmental baseline (as it relates to the aquatic and riparian areas) for the NRA and vicinity. The information in those documents (USFWS 1997, 2001b and 2002), and the 1996 Reclamation biological assessment for the 1997 consultation (USBR 1996) and 2001 consultation (USBR 2000) are incorporated herein by reference.

Lake Mead was formed by the construction of Hoover Dam in the 1930's and Lake Mohave was formed by construction of Davis Dam in the 1950's. Water stored in Lake Mead and Lake Mohave is managed by Reclamation in accordance with the Law of the River and flood control requirements. Inflows to Lake Mead are the sum of Glen Canyon Dam releases (which are under Federal control), inflows from tributaries in the Grand Canyon, and the Virgin/Muddy River inflows. Lake Mead water levels are managed in conjunction with Lake Powell water levels. Water is released from Lake Mead to meet downstream water orders for Federal, Tribal and State water users and the releases are also planned to generate hydropower under existing contracts. Released water passes through Lake Mohave, which acts as a regulating reservoir for the Hoover Dam releases, and additional power is generated at Davis Dam at the lower end of the NRA. Existing flood control requirements and water and power contracts will continue to affect water

releases from Lake Mead and Lake Mohave, which affects the water surface elevations of the lakes. The NPS has no authority over water management operations on either Lake Mead or Lake Mohave.

Water quality issues that involve urban pollutants reaching Lake Mead from the Las Vegas area via Las Vegas Wash are an ongoing issue. Several studies have been initiated to define the types of pollutants and the effects to fish and wildlife resources in Lake Mead. A number of private, State and Federal agencies are examining the problem and attempting to define options to address the situation. Work in this arena is in the early stages, and will be continuing for several years. The NPS does not have any control over the inflows to Lake Mead from Las Vegas Wash.

The NRA was established to provide public recreational opportunities, especially for water-based recreation. Thousands of people visit the lakes every year for swimming, fishing, all forms of boating, and other recreational activities. A number of recreational sites and facilities are in place to provide for this use. These are described in the NPS DEIS (NPS 2002) that acts as the biological assessment/evaluation for this consultation.

A. Status of the species within the action area

Southwestern willow flycatcher

Because much of the Lake Mead and Lake Mohave shorelines lack suitable amounts of riparian vegetation with the proper structural and hydrological characteristics needed by the flycatcher, suitable habitat is limited to inflow areas of the Colorado River and other tributaries and major washes. Migrating or dispersing flycatchers may use areas not suitable for nesting during spring and fall.

The most recent published report (McKernan and Braden 2002) is for the 2001 field season. Flycatcher surveys at the Virgin River-Lake Mead delta in 2001 found flycatchers at one of the 5 survey sites. The 4 sites without flycatchers supported birds during 1997-1999. Some of the black willow habitat in this area is dead, possibly the result of declining water levels in Lake Mead. Since 1997, flycatchers have been observed breeding along the lower Muddy River on Overton State Wildlife Management Area. Nesting habitat has been documented upstream of the NRA on the Virgin River near the confluence with Lake Mead. The flycatcher habitat formed at the Colorado River-Lake Mead delta in the early 1990's no longer exists due inundation and subsequent drowning of the riparian habitat during the mid-1990's. This habitat may return in response to lowering lake levels, but will always be transitory. There is occupied flycatcher habitat in the lower Grand Canyon (Christensen 2001), but this is outside of the NRA boundaries in Grand Canyon National Park and the Hualapai Indian Reservation. Since 1998, flycatcher surveys have been conducted in Las Vegas Wash. Results of these surveys have detected flycatchers in most years, but breeding activity has not yet been observed (SWCA 1998, 1999, 2000). These areas are located above the portion of Las Vegas Wash adjacent to Lake Mead, but do provide information supporting at least migratory use of the general area.

On Lake Mohave, limited surveys done by Reclamation have documented flycatchers using some shoreline riparian habitats, especially in the Waterwheel and Rockefeller coves and adjacent

areas. These habitats are limited in size and scope and are apparently only used by migrating or dispersing birds as nesting has not been confirmed.

Bonytail chub

The bonytail is no longer found in Lake Mead. Populations were documented after the closure of Hoover Dam (Moffett 1943, Wallis 1951) but no fish have been found in the lake since the 1950's. The population in Lake Mohave was documented in the area prior to and after closure of Davis Dam and individuals have been captured through to 2002 (summarized in Minckley and Thorson 2002). Stocking of bonytail into Lake Mohave began in 1980 with 174,000 fingerlings and 28,000 larval bonytail stocked between 1980 and 1996 (USFWS 1997). An unknown number of these fingerlings did survive to become adults in the lake. A total of 26,826 sub-adult bonytail (Service data) were stocked into Lake Mohave between 1997 and the end of 2001 in accordance with an intra-Service biological opinion on the stocking of rainbow trout into the lake (USFWS 1994b). This number is well below the 125,000 fish that were to be stocked by 1999 under the opinion, and the effort is continuing until the target is met. Problems with rearing the young bonytail to the appropriate size for stocking is a major cause of the reduced stocking effort to date. Efforts are underway by the Service and Reclamation to refine rearing techniques and develop additional rearing facilities to increase production. Survival of the sub-adult fish in the lake has been documented, but recaptures have been too few to determine the rate of survival of the stocked sub-adults. Recent (2001-2002) efforts to capture wild or captive-born adults from Lake Mohave to add to the broodstock have resulted in one adult bonytail being taken from Lake Mohave in 2002. This fish was captured south of Cottonwood Cove (Chuck Minckley, pers.com). Three sub-adult bonytail were captured in 2001 at Arrowhead Cove, 2.5 miles north of Katherine Landing (Minckley and Thorson 2002). Capture records for bonytail from Lake Mohave over the last 5 years have been from the vicinity of Arrowhead Cove. The vicinity of Cottonwood East Cove (across the lake from Cottonwood Cove) was a known capture location for bonytails up until the mid-1990's (Minckley and Thorson 2002).

Razorback sucker

Recent estimates of the Lake Mead razorback population indicates 75-90 individuals for each of the two populations. Only wild-born and stocked fish alive more than one year were used to generate these figures (Holden et al. 2001). The original Lake Mead population was significantly larger (no estimates were made in the 1940's through 1970's) than the current population. The original population, born in the late 1930's and early 1940's, began to decline in the 1970's due to fish dying of old age. Based on the results of aging captured razorbacks (Holden et al. 2001), limited but successful recruitment of young fish to the population occurred in the 1980's and 1990's. These second or third generation fish form the current population. The physical factors that enabled these events are not known with certainty, but studies are ongoing. A very limited number of young of the year larvae are captured and reared in off-lake habitats. returned to augment the naturally recruited population. Repatriated individuals have been captured on the spawning grounds at Las Vegas Wash and Echo Bay along with the wild fish. These captive reared fish are also being used to assist in locating other spawning groups, particularly in the upper portion of the lake near Pearce Ferry. Since the captive reared fish are found with the wild fish elsewhere in the lake, it is hoped that the radio/sonic tagged repatriates will locate any wild

spawning population in the upper lake. Razorback larvae have been found in the Grand Wash Cliffs area, but not the spawning adults.

Research on the Lake Mead razorback population began in 1996 and continues to the present day. Annual reports (Holden et al. 1999, 2000a, 2000b, 2001) contain information on capture locations, seasonal movements, spawning locations, larval capture, and estimates on the size and age of the population. The following material is summarized from those reports.

The two known spawning areas for the razorback in Lake Mead are both in immediate proximity to a developed marina; Blackbird Point is across the channel from Las Vegas Marina, and the Echo Bay site is upstream of Echo Bay Marina within the Bay. Telemetry studies show that adult razorback suckers use the spawning areas intensively during the November to April spawning period and may also be found in the area during the non-spawning period, along with the western shores of the Overton Arm and the north shore of Las Vegas Bay. Use of areas is consistent from year to year, but is influenced by water level elevations of the lake. At the lower elevations seen beginning in 2000, use of the lower reach of Las Vegas Wash and the upper end of Echo Bay was not possible since the areas were dry. Individuals from the two known concentrations do not move between the two areas, resulting in significant isolation of the groups.

By January 2002, 55, 667 sub-adult razorbacks had been stocked into Lake Mohave as part of the Native Fish Work Group and Service effort to replace the senescent population with captive-reared but wild-born sub-adults. This effort will continue until the estimated population of young fish equals the target population of 50,000 individuals. The repatriates are found in the company of the adults on the spawning areas of Lake Mohave during the spring and are reaching the age and size to become spawners themselves. The main spawning areas in Lake Mohave are in coves in the central part of the lake (the Cottonwood Basin) although some are also found in the riverine section near Willow Beach. The Cottonwood Basin spawning sites are in the general vicinity of Cottonwood Cove Marina, but are not adjacent to the site. Isolated rearing coves have been established at several sites on Lake Mohave to allow young fish to grow up in a more natural environment than a hatchery. These coves include Yuma Cove near Cottonwood Cove and Davis Cove near Katherine Landing.

Desert tortoise

Desert tortoises have a patchy distribution on the NRA. Most of the NRA supports low densities of tortoises, although some areas of higher densities have been recorded. Areas near the lakeshore are generally located in marginal habitats with low tortoise numbers. Access roads, particularly the road to Overton Beach, cross areas of higher quality habitat and higher tortoise numbers. There is no specific information on the numbers of tortoises on the NRA; however, the range-wide trend of declining populations is applicable to the NRA.

Factors affecting species environment within the action area

Southwestern willow flycatcher

Natural riparian habitats in the floodplain of the Colorado River where Lake Mead and Lake Mohave now exist were eliminated by the construction of Hoover Dam and Davis Dam and the formation of the large lakes behind them. Water management operations on both lakes are not conducive to the development of significant cottonwood-willow riparian zones, and what areas have some suitability to develop riparian habitats often become infested with invasive salt cedar that crowds out the native tree species. These shoreline or delta riparian areas are formed or destroyed through the changing water levels, especially on Lake Mead where seasonal and yearly water level fluctuations are more severe than on Lake Mohave.

Development of recreational facilities on the shorelines and providing access to recreationists over most of both lakes also has had an influence on shoreline riparian habitats. Coves and wash mouths with trees are more desirable to campers arriving by land or water, and human disturbances during sensitive periods may reduce the use of the area by flycatchers. Human use also increases the risk of accidental fire in riparian areas that may destroy habitat.

Bonytail chub, razorback sucker and designated critical habitat

Construction of Hoover and Davis dams created the two reservoirs that make up the NRA and eliminated the historic riverine habitats. There is a reach of river habitat below Hoover Dam, but because of managed flows and cold water releases, the hydrology is significantly different from that found in the pre-dam era. The reservoir habitats do provide suitable habitat for the bonytail and razorbacks, and that was a factor in their designation as critical habitat for these species.

Reservoir operations and the changes to water levels have direct effects on spawning and nursery areas through inundation and exposure. The presence and quality of vegetative cover is also influenced by water level. Lower water levels allow for development of terrestrial vegetation that provides cover at higher water levels. Fluctuating water levels inhibit submerged aquatic and emergent vegetation from forming. Fish forage items in the form of aquatic invertebrates that use submerged or emergent vegetation are rarer in these circumstances, but other benthic invertebrates are available. Reservoirs also have different nutrient cycles and phytoplankton and zooplankton cycles from the historical river conditions that affects food resources for all life stages of fish. Bonytail and razorback can utilize the existing food resources successfully.

The presence of non-native fish in the lakes has been identified as the most significant factor in the lack of natural recruitment by bonytail and razorback. Spawning by both species has been documented in Lake Mohave beginning in the 1950's and in Lake Mead for razorbacks and bonytails in the 1930's. The early populations of bonytail and razorback grew very quickly because of the successful recruitment in years before large numbers of non-native fish were present. The lack of recruitment in Lake Mohave after the 1950's resulted in the senescent populations of bonytails and razorbacks that now dying off and being replaced by young fish

raised for release back into the lake. The same scenario was observed in Lake Mead in the 1930's, with the bonytail largely vanished by the late 1950's and the razorback population dying out by the 1980's. The existing second generation of wild born and recruited razorbacks in Lake Mead are a unique and important population unlike any other remaining razorback population within the range of the species.

Pollutants, in the form of petroleum products or urban runoff/effluent, may have effects to habitat quality in shallow areas where recreational use is high or developed facilities exist near known feeding, spawning or nursery areas. The size of Lake Mead and the flow-through character of Lake Mohave do not provide conditions that would result in high lake-wide levels of these pollutants. Naturally occurring selenium is also present in the system, but not at significantly high levels. Recent data from environmental contaminant sampling in Las Vegas Bay indicates that endocrine dysfunction in carp (*Cyprinus carpio*) is occurring and may result from residues of personal care products or other contaminants that are entering Lake Mead from Las Vegas Wash. Razorbacks are also been tested for this dysfunction as part of ongoing studies. Additional information is being developed to define any problems. Effluent inflows from any source around the shorelines of Lake Mead or Lake Mohave may contain these residues as well as other contaminants.

Desert tortoise

Desert tortoises occur in upland and desert wash habitat on NRA. Development of recreational facilities and recreational use of the area have removed or degraded desert tortoise habitat in the affected area. Numerous park and access roads inundate the NRA which result in habitat fragmentation in addition to desert tortoise mortality from vehicle encounters. Wild burros have caused extensive damage to desert tortoise habitat. Recreationists likely harass, harm (by picking them up and causing them to void their bladder), and collect desert tortoises for pets in violation of State and Federal laws. Infrastructure that traverses desert tortoise habitat may facilitate predation of desert tortoises by making them more visible to predators. Roads also promote the spreading of undesirable weedy plants through an area that affects food availability. Tortoises may also be harmed by ingesting trash or entangling themselves with various materials left or discarded by visitors. Disease is also a factor in declining tortoise populations.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of the proposed action in the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

Direct and indirect effects

The proposed action is Alternative C in the new LMP for the NRA, changes made in the July 31, 2002 memorandum, and the conservation measures listed in this opinion. This action will provide a certain level of recreational facilities and recreational use levels including shoreline zoning for Lake Mead and Lake Mohave. The proposed action contains provisions for existing recreational facilities to continue to operate and for the expansion of some existing facilities and construction of new ones. Existing access roads to these facilities and the lake shore in general are also included in the proposed action.

Recreational opportunity zoning for the NRA in the Urban Natural and Urban Park categories comprises 51% of Lake Mead and 84% of Lake Mohave. These zones contain most of the recreational use allowed for in the proposed action. Effects to threatened and endangered species or designated critical habitat are greatest in these zones. Where recreational activity is high enough to require additional shoreline zoning to designate different activity areas, habitat for species may be significantly disturbed or eliminated.

Within the zones, a component of activities in the LMP involves access facilities (boat ramps, parking lots, marinas) for recreational use within the various shoreline zones. New construction, either at existing or totally new facilities, has effects to shorelines and adjacent uplands as well as in-lake habitats. Clearing sites for ramps, parking lots and other buildings increases dust and may introduce sediments into the lake at the construction site. For properly designed sites, these effects do not last long after completion of construction. Placement of launch ramps sufficiently far into the lake to allow for use at lower water levels converts natural substrates to artificial ones (concrete, metal mesh or other materials) which locally reduces habitat for submerged plants and invertebrates. Fish spawning habitat at these sites is also lost. Shoreline vegetation, either riparian (along the shore or in the lower portions of desert washes near the shore) or emergent, may also be eliminated to provide space for the facilities. Upland and desert wash habitats used by tortoises may be destroyed by construction. Developed camping areas generally do not extend below the high water line, and do not directly alter shorelines, however, there is a loss of upland vegetation. Recreational use of the area may result in loss of vegetation from the shoreline or in desert washes due to human use effects (wildfire, illegal wood cutting/gathering, trampling) as well as harassment of resident wildlife, including tortoises. Roads are also away from the shoreline, but drainage off the roads may cause localized erosion that increases sediment inflow to the lake. Roads are also a threat to tortoises through direct mortality and indirectly through providing opportunities for illegal collection of tortoises as well as promoting the spread of noxious weeds that reduce foraging opportunities.

Operation of boat launch and marina facilities also have effects to fish and wildlife habitats in the vicinity of the facility. Noise from operations and nighttime lighting affect local conditions. Human activity is high and easily disturbed wildlife, such as flycatchers or tortoises, that may abandon remaining suitable habitats adjacent to the facility. Fish are also affected by noise from boat engines and other mechanical devices and may abandon an area. This is not always the case since fish, especially carp, are abundant around launch areas and marinas. This may be a response to additional cover provided by docks, enhanced food resources from recreationists

feeding the fish, or other factors. Water quality around boat launch or marina facilities may be an issue for fish health.

Petroleum products and other potential pollutants are introduced to the lakes in a variety of locations including runoff from roads. Day to day operations likely input low levels of these materials to the lakes over a long period of time that allows for dispersal and dilution within the water. At marinas, there is the potential for spills from gas docks and boat maintenance operations that may input significant amounts of pollutants to a small area in a small time. These types of incidents may cause injury or death to fish in the vicinity of the facility.

Rural Natural zoning also provides for extensive recreational uses of the lake. In Lake Mead, approximately 47% of the lake is in this category. Several recreation facilities (Bonelli Landing, Greggs Hideout, South Cove, and Pierce Ferry) are in this zone. In Lake Mohave, 14% of the lake is permanently in this category, including the proposed recreation site at Eldorado Canyon. The reach from Willow Beach to Hoover Dam, an additional 2% of the lake, is seasonally Rural Natural/Semi-Primitive/Primitive. Some types of boating or water activities may be restricted, but these restrictions are limited in area and scope. Most known endangered species habitats are not within the Rural Natural Zone, but there remains the potential for disturbance to shallow water habitats, especially from boat wakes.

The Semi-primitive and Primitive zones make up the remainder of the lakes. Within these areas are motorized watercraft restrictions that reduce the amount of disturbance to the areas. Access is still allowed, but the amount and type of recreational use is limited by the restrictions. Boat wakes are generally not an issue in these areas.

Lakes Mead and Mohave: potential effects to southwestern willow flycatcher

Flycatchers are migratory birds that move into the lower Colorado River region in April and May, departing in September. This is also the high visitor-use period on the NRA. Nesting habitat for the flycatcher has not been documented on either Lake Mead or Lake Mohave. Nesting habitats exist outside the boundaries of the NRA, and access to these areas is possible through the NRA. This is of special concern in the Muddy and Virgin river inflow areas, where occupied nesting habitat is known to occur inside and outside of the NRA boundaries. The actual amount of suitable habitat within the NRA is unknown and changes over time in response to changes in lake elevation. The Virgin River inflow is designated as Semi-primitive, where boats up to are allowed to operate at wakeless speeds but personal watercraft are not allowed. Access by non-motorized boats would also be allowed, so some degree of human presence would continue to occur. The amount of use is not known, but is limited due to the remoteness of the area and lack of significant other access potential. The Muddy River inflow would not have motorized boat restrictions under the proposed Urban Natural recreational zoning and the expanded Overton Beach facilities are in proximity to that inflow area. The degree of use for the larger area accounts for 988 BAOT units of the total 3,295 for Lake Mead, equal to 29% of the total. The number of recreationists that would go up beyond the lake to the Muddy River area is

not likely to be large since there are no destinations at the confluence. Boat access from the lake to the area containing the flycatcher habitat is very limited and recreational access from the lake is not likely to pose a significant threat to this habitat. If problems with recreationist access to flycatcher habitats is identified, closures would be put in place during the breeding season.

Effects to existing migratory habitat in Las Vegas Wash from the proposed action is not anticipated. Access to the lowest reaches of the Wash near the lake are conditional on lake elevation and sediment conditions and access is likely to remain limited with little potential for adverse effects.

Habitat suitable for flycatcher resting and foraging is located at some shoreline areas around the lakes. Use of these riparian habitats has been documented on Lake Mohave; no such surveys have taken place on Lake Mead. Areas with sufficient stands of trees to attract flycatchers are also the types of areas attractive to recreationists coming in by boat to shorelines for camping. Human activities in the area may affect use by birds, and there is an increased risk of fire in the salt-cedar dominated riparian woodlands that represent flycatcher habitat in these areas. Since suppression of these types of fires is not likely to occur, habitat could be lost over the life of the project. If problems with recreationist access to flycatcher habitats is identified, closures would be put in place during the breeding season.

Lake Mead: potential effects to razorback suckers

Recreational zoning in the known areas of razorback spawning habitat are in the Urban Park zones of Lake Mead. Both of the Lake Mead razorback spawning groups use habitat in the immediate vicinity of existing marinas (Las Vegas Bay Marina and Echo Bay Marina). The level of existing recreational use and marina operations at these sites has not had any documented effects to the razorback sucker populations; however, monitoring for such effects has not been in place. The intensive monitoring done by BioWest (Holden et al. 2001 and earlier reports) has shown razorback use of the areas consistent over several years. Since spawning, and the highest concentration of use by individual razorbacks is during the lower visitor use periods, the amount of boat noise is less as is the amount of overall human disturbance during these critical periods. During the summer months, the razorbacks are more dispersed along the shorelines away from the marinas and are still in areas of high visitor use in the larger Las Vegas Bay area and Overton Arm.

The proposed action provides for existing operations at the Las Vegas Bay Marina with no increase in those facilities. Shoreline zoning and associated recreational uses would not change from present uses or level of use. The Echo Bay Marina's existing facilities would be increased by 202 double (pull-through) parking spaces and 180 marina slips (see Table 2) under the proposed action. Overton Beach would gain 100 single parking spaces, 50 in-water marina slips and 80 dry boat storage spaces (Table 2). The Overton Arm would also gain a new recreation site at Stewarts Point with a 4 lane public launch ramp and 150 double parking spaces. These new or expanded facilities would enable increased use of the Overton Arm for recreation. The

Stewart Point and Overton Beach sites are upstream from razorback telemetry records except those from the Muddy River inflow to the Overton Arm. Effects to razorbacks from the Stewarts Point and Overton Beach facilities would likely be related to the overall increase in recreational use within the Overton Arm. This is based on the lack of known razorback use of the immediate area of these 2 facilities. Effects to razorbacks are likely to be in the form of harassment from boat noise, fuel and other pollution events, and reduction in undisturbed shoreline habitats. Las Vegas Bay Marina already has a "no wake" zone in place that protects the razorback habitat toward Las Vegas Wash, so effects from significant amounts of motorized boat traffic is already minimized. The razorback habitat at Echo Bay would be closed to boat access during the spawning period, which would reduce the potential for effects to this area.

The amount of petroleum products and other pollutants introduced into Lake Mead from operations of marinas and illegal fueling actions outside of approved areas is unknown. Efforts by the Park Service to restrict illegal actions through enforcement and education is part of the proposed action, as are guidelines for marina operators providing for best management practices to reduce the potential for toxic materials to enter the lake. Expansion of the number of boats using the lake and its facilities under the proposed action may increase the risk of a major spill or the amount of material accidentally or incidentally introduced to the lake. The existing degree of risk is not known, and the increased risk cannot be quantified. Once the new restrictions on motorcraft engines come on line in 2012, the amount of waste fuels in the water from boats and personal watercraft will decline, reducing any water quality effects to the fish. Use of best management practices will help reduce the risk of contaminants entering the water.

Shoreline zoning for most of the various recreational uses in the Boulder Beach Shoreline Area is not likely to have significant effects on the razorback populations. The exception is for the development of new shoreline fishing access points or placement of fish enhancement structures. Specific locations for these types of actions were not identified in the DEIS, but existing sites are located in the Boulder Beach area south of the razorback habitats in Las Vegas Bay. Activities that concentrate predacious fish species near razorback spawning and nursery habitats may affect the potential for future recruitment events. Marinas, in part because of visitors feeding fish from the docks, are also apparent concentrators for species such as carp (*Cyprinus carpio*) that are known to eat razorback eggs. The necessary distance between spawning and nursery habitats and such concentrations of carp and other fish species needed to eliminate any effect to recruitment is unknown. Given the numbers of carp and other predacious fish in Lake Mead, the actual effect of creating localized concentrations is not known. In the absence of this knowledge, placing additional fish attractors near razorback spawning and nursery areas in Las Vegas Bay and Echo Bay should be discouraged in future planning for these activities. Because these are programmatic projects, additional consultation will be needed at the time of implementation.

Lake Mohave: potential effects to razorback sucker

Recreational zoning in the known areas of razorback spawning habitat are in the Urban Park and Urban Natural zones of Lake Mohave. Most of the known spawning sites are in the northern part of the Cottonwood Basin north through the Arizona Bay and Owl Head Cove areas. The only developed recreation area is at Cottonwood Cove Marina. Dispersed camping (primarily boat

and houseboat based) occurs throughout the spawning area. However, since razorback spawning is during periods of low recreational use, the effects from site disturbances and boat noise are limited. Because there is recreational access to the isolated razorback grow-out coves in this area, there is a risk of recreationists intentionally introducing non-native fish species to the coves. The presence of non-native fish in these coves significantly compromises their suitability for razorbacks and requires additional treatments to remove the non-native fish. Conservation measures included in the proposed action will monitor the recreational use of these areas and if necessary, closures would be put into place. Monitoring will begin on the expansion area at Cottonwood Cove to document razorback use of the area. Additional mitigation may be identified for this programmatic project once specific compliance is initiated.

Expansion of the Cottonwood Cove and Eldorado Canyon facilities would provide for a total of 750 BAOT units of the 1,770 total units for Lake Mohave. This represents 42% of the carrying capacity. Razorbacks likely use the entire area over the course of the year; thus there could be effects from construction as described under the Lake Mead section.

The recreational zoning in the southern part of the lake is Urban Park. One of the larger razorback grow-out areas is located south of Katherine Landing. Access to Davis Cove is restricted; however recreationist access is possible. Effects to this site are largely limited to intentional introduction of non-native fish to the site.

Other effects to razorbacks in Lake Mohave are the same as those discussed under Lake Mead and are not repeated here.

Lake Mohave: potential effects to bonytail chub

Even with the stocking efforts, bonytail are rare in Lake Mohave. Most of the recent bonytail captures have been in the southern portion of the lake below Cottonwood Basin and within the area most likely influenced by recreational uses originating at Katherine Landing and other southern facilities. There is no recent information documenting spawning sites for the bonytail in Lake Mohave and no larvae have been captured to document nursery areas. Habitat preferences of the adults are not clear. Captured fish have come from near-shore waters sometimes associated with points of land extending into the lake. The spawning period for the bonytail is believed to be later in the spring than the razorback, so visitor use is higher. However, the highest period of visitor use is not within the spawning period.

The Service assumes that noise from motorized watercraft and other disturbances previously discussed under the razorback in Lake Mohave and Lake Mead would have an effect on bonytail; however, the magnitude of the effect and the likelihood of the adverse effect occurring is unknown. Additional information on habitat use and distribution within Lake Mohave would assist in answering these questions.

Lakes Mead and Mohave: potential effects to desert tortoise

Approximately 5 acres of desert tortoise habitat could be lost or degraded as a result of project development at Eldorado Landing. Expansion of other facilities within disturbed habitat may also pose a risk to any tortoises in the immediate vicinity. Tortoises could be crushed or entombed in their burrows by earth-moving equipment. Project vehicles and equipment could egress into areas outside the project areas and destroy habitat, or kill or injure tortoises. Desert tortoises would continue to be killed or injured as a result of vehicle encounters on NRA. Within the last 5 years, 5 tortoises have been found dead or injured on roads within the NRA. Trash and man-made structures may result in an increase in subsidized desert tortoise predators. Domestic dogs brought to the NRA by visitors and allowed to roam off leashes may harass, kill, or injure desert tortoises. Measures proposed by the NPS to: (1) implement a tortoise education program, (2) flag disturbance areas and limit activities to these areas, (3) conduct desert tortoise clearance surveys, (4) evacuate and collapse or block existing tortoise burrows, (5) relocate tortoises out of harm's way, (6) monitor and record observations of desert tortoises, (7) cease activities that may harm tortoises if a tortoise occurs in an work area, (8) implement a litter-control program, and (9) coordinate with the Service if tortoises are impacted by vehicles, should minimize most of these effects.

Interrelated and interdependent actions

No interrelated or interdependent actions have been identified for the proposed action.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The action area is Federal land and no future State, Tribal, local or private recreational or other types of development is anticipated to occur along the shorelines of Lakes Mead and Mohave without Federal approvals. Reclamation manages the water and power operations in conjunction with water rights holders downstream and contracts to provide power. Those water and power operations will continue into the future and have effects similar to those seen in the environmental baseline.

The issue of contaminants entering Lake Mead from Las Vegas Wash is only partially a non-Federal issue. Various Federal agencies, including the EPA, have some degree of oversight in this issue, and Act consultation may be required in the future as options to address the problem are developed.

CONCLUSION

After reviewing the current status of the southwestern willow flycatcher, bonytail chub, razorback sucker and desert tortoise, the environmental baseline for the action area, the effects of

implementation of the proposed LMP, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the southwestern willow flycatcher, bonytail chub, razorback sucker or desert tortoise, and is not likely to destroy or adversely modify designated critical habitat for bonytail, razorback or tortoise.

Our conclusion for the flycatcher is based on the limited amount of habitat within the NRA covered by the LMP proposed action, the degree of risk to occupied and suitable flycatcher habitat from recreationists using the NRA, and the level of protection to known habitat areas provided by the proposed action.

Our conclusion for the razorback is based on the known distribution of the species within the NRA covered by the LMP proposed action, the timing of high levels of recreational use compared to the razorback spawning period, and protections for spawning areas included in the proposed action.

Our conclusion for the bonytail is based on the known distribution of the species within the NRA covered by the LMP proposed action, the timing of high levels of recreational use compared to the presumed bonytail spawning period, and protections included in the proposed action.

Our conclusion for the tortoise is based on the limited amount of habitat within the NRA covered by the LMP proposed action, and the inclusion of established mitigation measures as conservation measures with the proposed action.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any conservation measures that were incorporated into the project design. For the programmatic portions of the proposed action, these conclusions are based on the concepts described and additional consultation may be needed for implementation or as a result of data gathered by monitoring efforts.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act

provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

Southwestern willow flycatcher

Because the number of flycatchers using the habitat on and adjacent to Lake Mead is dependent upon the quality and quantity of the habitat, and the quality and quantity of the habitat is controlled by the water levels of Lake Mead, these figures will vary from year to year over time. For example, in the Virgin River delta, 14 birds were recorded in 1997 when the habitat was in good condition. Since then, because of Lake Mead water levels, the habitat has declined and only 6 birds were recorded in 2001 (McKernan and Braden 2002). Factors beyond the control of the NPS have a far greater influence on the quality and quantity of flycatcher habitat available on the NRA. That being said, recreation access poses a risk to the habitat and individual birds using that habitat in any particular year. Because water levels on Lake Mohave are more stable, the presence of flycatcher habitat there is more permanent.

The Service believes there is a potential for the take of individual southwestern willow flycatchers from the implementation of the proposed action. This take would be in the form of harassment to nesting and migrating birds from recreational users of the NRA and harm in the form of habitat lost to fires resulting from recreational activities. Access to suitable flycatcher nesting habitat in the upper Overton Arm (the Muddy and Virgin river confluences with Lake Mead) very limited, but not prohibited, which leaves a potential for disturbances to the habitat and individual birds from fire, noise and human presence. Known habitat areas on Lake Mohave are accessible to recreationists without any restrictions. It is also important to note that the flycatcher occupies these habitats during the high visitor use period on the NRA.

Because the numerical (in terms of numbers of birds or acres of habitat) basis for take for the flycatcher will vary from year to year, it is not possible to set a finite take amount. Instead, a percentage of the available habitat in a specific year will form the basis for the take. In any future year covered by the LMP, the incidental take level will be considered to be exceeded if five or more percent of the suitable (occupied or unoccupied) flycatcher habitat is destroyed through the actions of recreationists accessing the habitat through the NRA.

Bonytail chub and razorback sucker

The Service believes there is a potential for the take of individual bonytail chub and razorback suckers from the implementation of the proposed action. This take would be in the form of harassment, harm, and possibly, killing of individuals.

The harassment and harm come from the recreational use of shorelines used by bonytail and razorback for spawning and nursery areas as described in the Effects of the Action section of the

biological opinion. The existence of the 100-foot no wake zone around the shoreline of the lakes, and the timing of highest recreational use during the period when fish are not heavily utilizing the shallows for breeding does reduce the risk somewhat.

Las Vegas Bay Marina and Echo Bay Marina are in immediate proximity to the only known spawning areas for the razorback in Lake Mead. Razorback suckers also spawn in the vicinity of Cottonwood Cove Marina on Lake Mohave; however, the largest known spawning areas are not in the immediate vicinity of the marina. Expansions of the Echo Bay and Cottonwood Cove facilities will increase recreational use in the areas. We do not have information on known spawning areas for the bonytail in Lake Mohave but capture records show significant use of the southern portion of the lake. The Katherine Landing facility is located within the known habitat area.

Potential mortality, especially for razorback sucker due to the close proximity of spawning areas to marinas, could occur from spills or chronic releases of toxic materials (petroleum products) at existing marinas. Dispersal of petroleum products into heavily used portions of the lakes by outboard motors, personal watercraft and illegal refueling activities also poses a risk to individual fish in the area of the boating activity. As described earlier, known bonytail chub and razorback sucker habitats are in proximity to several high use areas, including areas where the proposed action would increase recreational use through additional facilities.

Take resulting from placement of fishing access or fish habitat structures under the programmatic portion of this opinion would be significantly reduced by the conservation measures to prohibit placement of these facilities in proximity to known razorback sucker spawning habitats. Capture of a razorback sucker by an angler is very unlikely. Capture of a bonytail by an angler is more likely, but the risk is still very limited. There are records for the Colorado River of anglers taking bonytail from Lake Havasu and the river above the lake. Placement of informational signs at fishing sites informing anglers of the status of the bonytail and razorback and to immediately release any that are captured also reduces the risk of a fish dying.

The Service anticipates that any incidental take of bonytail chub and razorback sucker from the risk factors discussed above and in the Effects of the Action section of the biological opinion will be difficult to detect under normal circumstances. Take from anglers may or may not be reported. Unless there is a catastrophic spill of toxic materials, finding a dead or impaired individual is highly unlikely, especially in the case of affected eggs or newly hatched larvae or fry being affected. At the current levels of toxic pollution being introduced, mortality or impairment has not been observed; however, no monitoring program exists to document this conclusion. Efforts to control the introduction of pollutants included in the proposed action may, over the long-term, reduce some of these risks. Monitoring of pollutants included in the proposed action may determine if problems exist, and future consultation may be needed if effects are documented.

For Lake Mead, the razorback population is estimated at less than 150 to 180 (75 to 90 per population group) individuals. Those individuals are seasonally concentrated near Las Vegas Bay Marina and Echo Bay Marina. Protective measures will be in place to reduce boat traffic in

sensitive areas during the spawning season. Because the population is so small and finding affected individuals very difficult, the incidental take level is provided both in terms of a number of razorbacks and a surrogate measure based on total number of fish killed or injured based on a pollution event. The level of incidental take provides for an annual loss of one razorback to activities covered under the LMP. For pollution related incidents that affect areas known to be frequented by razorbacks, if a fish kill involving more than 100 individuals of all fish species occurs, the level of incidental take will be exceeded. If razorback suckers are found among the dead or injured fish, the incidental take will be exceeded if more than one razorback is found.

For Lake Mohave, an incidental take of one razorback per year or one bonytail per year is appropriate. The razorback and bonytail populations in Lake Mohave are expanding due to ongoing stocking programs. As populations grow, there is an increased risk of an individual fish being taken due to activities covered under the LMP. In order to accommodate this increased risk, the Service believes that annually increasing the level of take of one razorback per 1000 fish stocked, and one bonytail per 1000 fish stocked for stockings beginning in 2003 is appropriate.

Desert tortoise

The LMP proposes to include Service mitigation measures for tortoise in all new construction projects where medium to high quality tortoise habitat may be impacted. These measures include pre-construction surveys, on-site monitoring, and removal of tortoises from danger areas. These measures would be in effect for the five acres of new construction at Eldorado Landing and expansion of other facilities included in the proposed action. With the information provided on road-related tortoise mortalities, it is anticipated that 1 tortoise a year will be killed on roads in the NRA. The conservation measures proposed with the proposed action will reduce the risk to tortoises.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES/TERMS AND CONDITIONS

At the programmatic level, the FWS has not identified any reasonable and prudent measures or terms and conditions to reduce the level of incidental take identified in the incidental take statement. Action-specific measures and terms and conditions for future Federal actions will be developed by FWS to appropriately reduce the risk of take as appropriate in accordance with FWS guidance (Appendix B). NPS will submit a request to include future actions that may adversely affect listed species in this programmatic consultation and are within the scope of the opinion.

DISPOSITION OF DEAD OR INJURED LISTED SPECIES

Upon locating a dead, injured, or sick listed species in Arizona, initial notification must be made within three working days of its finding to the Service's Law Enforcement Office at:

Federal Building, Room 8
26 North McDonald
Mesa, Arizona 85201
(480) 835-8289

Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

Upon locating a dead or injured endangered or threatened species in Nevada, initial notification must be made to the Service's Division of Law Enforcement in Las Vegas, Nevada, at (702) 388-6380. Care should be taken in handling sick or injured desert tortoises to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured desert tortoises or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Service's Division of Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. All deaths, injuries, and illnesses of desert tortoises, whether associated with project activities or not, will be summarized in the annual report.

The following actions should be taken for injured or dead tortoises if directed by the Service's Division of Law Enforcement:

> Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the Service's Division of Law Enforcement. The project proponent shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and

threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. This project already contains several conservation measures. The Service has not identified any additional conservation recommendations for this project.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects, or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR§402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is provided by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affects listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency actions is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The Service appreciates the National Park Service's efforts to identify and minimize effects to listed species from this project. For further information, please contact Lesley Fitzpatrick (x236) or Tom Gatz (x240). Please refer to the consultation number 2-21-01-F-263 in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Director, Fish and Wildlife Service, Arlington, VA (ARD-ES)
Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Assistant Field Supervisor, Las Vegas Field Office, Fish and Wildlife Service, Las Vegas, NV
Lower Colorado River Coordinator, Fish and Wildlife Service, Phoenix, AZ

John Kennedy, Arizona Game and Fish Department, Phoenix, AZ
Director, Nevada Division of Wildlife, Reno, NV

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LITERATURE CITED

Christensen, K. 2001. Southwestern willow flycatcher surveys in lower Grand Canyon, FY2001. Draft final report to Bureau of Reclamation under agreement #01-FC-30-0004 and Arizona Game and Fish Department from Hualapai Tribe, Peach Springs, Arizona. 13 pp.

Desert Tortoise Council. 1994. Guidelines for handling desert tortoises during construction projects. Edward L. LaRue, Jr., editor. San Bernardino, California. Revised 1999.

Eddleman, W.R. 1989. Biology of the Yuma clapper rail in the southwestern U.S. and northwestern Mexico. Report under Inter-Agency Agreement No. 4-AA-30-02060 to U.S. Bureau of Reclamation-Yuma Projects Office and U.S. Fish and Wildlife Service-Region 2. Wyoming Cooperative Research Unit, University of Wyoming.127.pp.

Holden, P.B., P.D. Abate, and J.B. Ruppert. 1999. Razorback sucker studies on Lake Mead, Nevada. 1997-1998 Annual Report PR-578-2 to Southern Nevada Water Authority, Las Vegas. 52 pp.

_____. 2000a. Razorback sucker studies on Lake Mead, Nevada. 1998-1999 Annual Report PR-578-3 to Southern Nevada Water Authority, Las Vegas. 49 pp.

_____. 2000b. Razorback sucker studies on Lake Mead, Nevada. 1999-2000 Annual Report PR-578-4 to Southern Nevada Water Authority, Las Vegas. 41 pp.

Holden, P.B., P.D. Abate, and T.L. Welker. 2001. Razorback sucker studies on Lake Mead, Nevada. 2000-2001 Annual Report PR-578-5 to Southern Nevada Water Authority, Las Vegas. 48 pp.

McKernan, R.L. and G.T. Braden. 2002. Status, distribution, and habitat affinities of the southwestern willow flycatcher along the lower Colorado River. Year 6-2001. Report to Bureau of Reclamation, Fish and Wildlife Service and Bureau of Land Management from the San Bernardino County Museum, Redlands, California. May 2002. 101 pp. plus maps.

_____. 2001a. Status, distribution, and habitat affinities of the southwestern willow flycatcher along the lower Colorado River. Year 5-2000. Report to Bureau of Reclamation, Fish and Wildlife Service and Bureau of Land Management from the San Bernardino County Museum, Redlands, California. July 2001. 86 pp. plus maps.

_____. 2001b. The status of Yuma clapper rail and yellow-billed cuckoo along portions of Virgin River, Muddy River and Las Vegas Wash, Southern Nevada, 2000. Report prepared for U.S. Fish and Wildlife Service-Southern Nevada Field Office and Southern Nevada Water Authority, Las Vegas, Nevada. 20.pp.

Minckley, C.O. and M. Thorson. 2002. Interim report for bonytail broodstock collections from Lake Mohave, AZ-NV. Prepared for National Fish and Wildlife Foundation and Lower Colorado River Multi-Species Conservation Program. Interim Conservation Plan Funding, 2000. Project 2000-0304-006. Fish and Wildlife Service, Parker, Arizona. 16 pp.

Moffett, J.W. 1943. A preliminary report on the fishery of Lake Mead. Transactions 8th North American Wildlife Conference. pp. 179-186.

National Park Service. 2002a. Draft Environmental Impact Statement for Lake Mead National Recreation Area, Lake Management Plan. Lake Mead National Recreation Area, Boulder City, Nevada. 328 pp.

_____. 2002b. Lake Mead National Recreation Area Lake Management Plan: Revised Proposed Action and Measures to Prevent or Minimize Adverse Effects to Threatened and Endangered Species. Memorandum from NPS to USFWS dated July 31, 2002. 5 pp.

SWCA, Inc. 1998. A survey for southwestern willow flycatchers along Las Vegas Wash, Clark County Wetlands Park, Nevada. Reports submitted to Southern Nevada Water Authority, Las Vegas, NV by SWCA, Inc., Salt Lake City, UT.

_____. 1999. A survey for southwestern willow flycatchers along Las Vegas Wash, Clark County Wetlands Park, Nevada. Reports submitted to Southern Nevada Water Authority, Las Vegas, NV by SWCA, Inc., Salt Lake City, UT.

_____. 2000. A survey for southwestern willow flycatchers along Las Vegas Wash, Clark County Wetlands Park, Nevada. Reports submitted to Southern Nevada Water Authority, Las Vegas, NV by SWCA, Inc., Salt Lake City, UT.

_____. 2001a. Recovery goals for the bonytail (*Gila elegans*) of the Colorado River Basin. A supplement to the Bonytail Chub Recovery Plan. Draft Final Report dated March 12, 2001, for Upper Colorado River Endangered Fish Recovery Program, U.S. Fish and Wildlife Service, Region 6, Denver, CO. 72 pp. plus appendices.

_____. 2001b. Recovery goals for the razorback sucker (*Xyrauchen texanus*) of the Colorado River Basin. A supplement to the Razorback Sucker Recovery Plan. Draft Final Report dated March 12, 2001, for Upper Colorado River Endangered Fish Recovery Program, U.S. Fish and Wildlife Service, Region 6, Denver, CO. 75 pp. plus appendices.

U.S. Bureau of Reclamation. 1996. Description and assessment of operations, maintenance, and sensitive species of the lower Colorado River. Final Biological Assessment for U.S. Fish and Wildlife Service and Lower Colorado River Multi-Species Conservation Program. Lower Colorado Region, Boulder City, NV. 207 pp. plus appendices.

_____. 2000. Final Biological Assessment for Proposed Surplus Water Criteria, Secretarial Implementation Agreements for California Water Plan Components and

Conservation Measures on the Lower Colorado River (Lake Mead to Southerly International Boundary). Final Dated 8/30/00. Lower Colorado Region, Boulder City, NV. 80 pp. plus appendices.

U.S. Fish and Wildlife Service. 1990. Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO. 35 pp.

_____. 1992. Procedures for Endangered Species Act compliance for the Mohave desert tortoise. Regions 1, 2 and 6. October 1992. 18 pp plus appendices.

_____. 1994a. Desert Tortoise (Mohave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 73 pp. plus appendices.

_____. 1994b. Biological opinion on U.S. Fish and Wildlife Service stocking of rainbow trout and channel catfish into the Lower Colorado River (Hoover Dam to the International Border), Arizona, Nevada, and California. Arizona Ecological Services Office, Phoenix. 22 pp. plus appendix.

_____. 1997. Fish and Wildlife Service Final Biological Opinion and Conference Opinion on Lower Colorado River Operations and Maintenance-Lake Mead to Southerly International Boundary. Prepared by U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM, for U.S. Bureau of Reclamation, Lower Colorado Region, Boulder City, NV. Consultation number 2-21-95-F-216. 195 pp.

_____. 1998. Razorback Sucker Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO. 81 pp.

_____. 2001a. Draft Recovery Plan for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*). Prepared by Southwestern Willow Flycatcher Recovery Team, Technical Subgroup for U.S. Fish and Wildlife Service, Albuquerque, NM.. April 2001.

_____. 2001b. Biological Opinion for Interim Surplus Criteria, Secretarial Agreements, and Conservation Measures on the Lower Colorado River, Lake Mead to the Southerly International Boundary, Arizona, California, and Nevada. Prepared by U.S. Fish and Wildlife Service, Phoenix, AZ for U.S. Bureau of Reclamation, Lower Colorado Region, Boulder City, NV. 96 pp.

_____. 2002. Biological Opinion on Lower Colorado River Operations and Maintenance-Lake Mead to Southerly International Boundary. Prepared by U.S. Fish and Wildlife Service, Phoenix, AZ, for U.S. Bureau of Reclamation, Lower Colorado Region, Boulder City, NV. Consultation number 2-21-95-F-216R. 34 pp.

Wallis, O.L. 1951. The status of the fish fauna of the Lake Mead National Recreation Area, Arizona-Nevada. Transactions of the American Fisheries Society. 80:84-92.

TABLES

Table 1: Lake Mohave Summary of Facilities: assumes PA (Alt C) authorized numbers and baseline (Alt A) existing numbers to generate net change.

Numbers presented as: Baseline/Proposed Action/Net change

Facility Name	Launch lanes	Pull through spaces	Single parking spaces	Wet slips	Dry slips
El Dorado	0/4/+4	0/100/+100	0/0/0	0/0/0	0/0/0
Cottonwood	15/15/0	222/322/+100	153/500/+347	234/484/+250	300/300/0
Willow Beach	8/8/0	155/155/0	50/200/+150	0/125/+125	0/0/0
Princess Cove	8/8/0	100/100/0	50/50/0	0/0/0	0/0/0
N. Telephone	2/2/0	100/100/0	78/78/0	0/0/0	0/0/0
Katherine	8/8/0	418/469/+51	325/325/0	1058/1443/+385	150/150/0

Table 2: Lake Mead Summary of Facilities: assume PA (Alt C) authorized numbers and baseline (Alt A) existing numbers to generate net change.

Numbers presented as: Baseline/Proposed Action/Net change

Facility	Launch lanes	Pull through spaces	Single parking spaces	Wet slips	Dry slips
Overton Beach	4/4/0	200/200/0	181/281/+100	135/185/+50	0/80/+80
Stewarts Point	0/4/+4	0/150/+150	0/0/0	0/0/0	0/0/0
Echo Bay	6/6/0	173/375/+202	217/217/0	360/540/+180	60/60/0
Callville Bay	13/13/0	333/333/0	337/462/+125	647/847/+200	120/120/0
Govt Wash	8/8/0	150/150/0	0/0/0	0/0/0	0/0/0
Las Vegas Bay	4/4/0	222/222/0	285/285/0	635/635/0	388/388/0
Lake Mead Resort	4/4/0	85/85/0	145/145/0	755/755/0	55/55/0
Hemenway Wash	4/4/0	175/175/0	0/0/0	0/0/0	0/0/0
Temple Bar	6/6/0	219/288/+69	125/425/+300	95/395/+300	200/200/0
South Cove	8/8/0	116/116/0	53/53/0	0/0/0	0/0/0
Pearce Ferry	0/2/+2	50/50/0	0/0/0	0/0/0	0/0/0

APPENDIX A

Justification for concurrence with finding of "may affect, not likely to adversely affect" from proposed Lake Mead National Recreation Area Lake Management Plan.

Bald eagle

Bald eagles are found on the NRA during the winter months and are not known to nest in the vicinity. Because of the lack of large riparian trees around most of the lake shores, cliffs are the primary available habitat for eagles. Cliff areas would not be affected by the proposed action. Operation of the existing recreational facilities and the additional BAOT levels provided for by facilities expansion is not likely to affect wintering birds. Fish populations that provide food for eagles would not likely be affected by the proposed action. Under these conditions, effects are insignificant and discountable and no take is anticipated.

Yuma clapper rail

Yuma clapper rails have been found in cattail marshes in the vicinity of Las Vegas Wash and the Virgin and Muddy Rivers above Lake Mead (McKernan and Braden 2001b). A record for the lower Grand Canyon exists from 1997 (McKernan and Braden 2001a) No records exist for the NRA, however suitable habitat likely exists along the upper end of the Overton Arm and possibly in the lower portion of Las Vegas Wash nearest to Las Vegas Bay.

Access to the suitable habitat in the Overton Arm would be restricted under the proposed action through the primitive/semi-primitive designation for the area. Personal watercraft, waterskiing, houseboats and wakeboarding are prohibited, and a outboard motors over 65 horsepower would not be allowed in the area. This would significantly curtail boat use of the suitable habitat area, reducing human disturbances. Clapper rails breed in the spring (generally March through early July) and adults lose their flight feathers in late summer (Eddleman 1989) and are unable to fly. These sensitive times are during the high visitor use periods on Lake Mead. By reducing public access through the primitive/semi-primitive designation, the proposed action reduces the risk of human disturbances including fire danger, boat wake damage to shorelines and nests in cattails, and engine noise. Clapper rails successfully occupy and breed in habitats on the lower Colorado River with recreational uses less restricted than those proposed in the LMP. Under these conditions, effects are insignificant and discountable and no take is anticipated.

In Las Vegas Wash, suitable habitat within the NRA is limited due to hydrology of the wash. Most surveys have been focused on extant habitat areas upstream of the NRA boundary where various flood control structures maintain marsh habitats. Boat access to the lower wash area is dependent on water surface elevations in Lake Mead, and this also controls the development of marsh habitats suitable for clapper rails. With the uncertainty of suitable habitat being present, the potential for effects to occur from the proposed action is unlikely. If, in the future, clapper rail habitat develops in the lower portions of the wash, this finding may need to be revisited.

APPENDIX B

Fish and Wildlife Service: Programmatic Consultations

This biological opinion was prepared in accordance with the October 18, 2001, guidance for programmatic-level consultations. The term, "programmatic consultation" has become a generic term encompassing a broad category of section 7 consultations that evaluate the potential for Federal agency programs to affect listed and proposed species, and designated and proposed critical habitat. Such programs typically guide implementation of future agency actions by establishing standards, guidelines, or governing criteria to which future actions must adhere. At times the term *programmatic consultation* has been used to refer to consultations on a large group of similar actions (e.g., a national forest's timber harvest program for a particular year) as well as to refer to consultations covering different types of actions proposed within a large geographic area such as a watershed. Such consultations can provide the benefit of streamlining the consultation process while leading to a more landscape-based approach to consultation that can minimize the potential "piecemeal" effects that can occur when evaluating individual projects out of the context of the complete agency program.

This programmatic biological analyzes the potential effects of implementing NPS's proposed LMP, and develops the appropriate project-specific documentation that addresses the effects of individual projects. This programmatic biological opinion contains all of the elements found in a standard biological opinion. The format of this programmatic biological opinion conforms with the *tiered programmatic approach*, which will require that the Service produce project-specific documentation **before** the action occurs.

Project-level Consultation under the Tiered Programmatic Consultation Approach

As individual projects are proposed under the tiered programmatic consultation approach, NPS provides project-specific information that: (1) describes each proposed action and the specific areas to be affected; (2) identifies the species and critical habitat that may be affected; (3) describes the manner in which the proposed action may affect listed species and designated critical habitat; (4) describes the anticipated effects; (5) specifies, if appropriate, that the *anticipated effects from the proposed project are consistent with those anticipated in the programmatic biological opinion*; and, (6) describes any additional effects, if any, not considered in the programmatic consultation.

The Service reviews the information and effects analysis provided for each proposed project and this project-specific review is documented in accordance with the guidance provided below. To initiate the project-specific review, NPS's project information and effects analysis should be accompanied by a cover letter that specifies that the action agency has determined that the proposed project is consistent with the programmatic biological opinion. In this programmatic biological opinion, the Service determined the overall anticipated incidental take for all proposed NPS activities over the term of the biological opinion, at the programmatic level. As each action is

submitted by the NPS to the Service for review under this programmatic biological opinion, the Service will determine the anticipated incidental take for each action, at the project level, as a subset of the incidental take anticipated in the programmatic biological opinion.

Individual NPS actions that are *likely to adversely affect* listed species or designated critical habitat, shall require an abbreviated biological opinion specific for each such action that contains:

(1) a statement acknowledging the programmatic biological opinion and how the project-specific and programmatic biological opinions are related;

(2) a summary of the information on which the opinion is based as provided by NPS;

(3) a brief project summary;

(4) a detailed discussion of the effects of the proposed action on listed species and critical habitat;

(5) a statement regarding the consistency (or inconsistency) of the effects of the proposed action with the effects analyzed in the programmatic biological opinion;

(6) the Service's opinion on whether the action is likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of critical habitat;

(7) project-specific incidental take statement with reasonable and prudent measures needed to ensure the minimization of the impacts of the take that will result from the proposed project;

(8) any procedures needed to monitor the impacts of the proposed action not identified in the programmatic biological opinion; and

(9) a statement regarding the specific project's impacts to the environmental baseline and a tallying of the overall impacts to the environmental baseline from previous projects under the programmatic biological opinion.

Although there is no standard for the required project-specific documentation, the Service generally should complete its response in approximately five pages. Therefore, the programmatic biological opinion, together with the project specific documentation, fulfills the consultation requirements for implementation of both program-level and project-level actions.

APPENDIX C

Section 7 Fee Payment Form for Desert Tortoise

SECTION 7 FEE PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 2-21-01-F-263

Fish and Wildlife Service Office that Issued the Opinion: Phoenix, Arizona

Species: Desert tortoise (*Gopherus agassizii*)

Project: Lake Mead National Recreation Area Lake Management Plan, Clark County, Nevada and Mohave County, Arizona

Amount of Payment Received: _____
Total Payment Required: $ _____
Date of Receipt: _____

Check or Money Order Number: _____

Number of Acres to be Disturbed: _____

Project Proponent: _____
Telephone Number: _____

Authorizing Agencies: National Park Service, Lake Mead National Recreation Area

Make checks payable to: Clark County Treasurer

Deliver check to: Clark County Habitat Conservation
Department of Comprehensive Planning
Clark County Government Center, Third floor
500 South Grand Central Parkway
Las Vegas, Nevada 89155 (Attn: Christina Gibson)
(702) 455-4181

If you have questions, you may call the Southern Nevada Field Office of the U.S. Fish and Wildlife Service at (702) 515-5230.