Table 14. Visitation to selected areas along the Lower Colorado River.

Notes: Abbreviations are: LMNRA - Lake Mead National Recreation Area (which includes Lake Mohave); BWNWR - Bill Williams National Wildlife Refuge; CNWR - Cibola National Wildlife Refuge; HNWR - Havasu National Wildlife Refuge. The averages presented are based on data provided by the administrators of the areas involved, which is incomplete in some cases.

Location	1995 Monthly Avg.	1996 Monthly Avg.	Change 1995-1996
LMNRA	849,628	846,300	- 0.4%
BWNWR	580	1,855	219%
CNWR	3,343	3,688	10.3%
HNWR	46,910	48,212	2.8%
INWR	8,988	9,992	11.2%

Previous and Ongoing Section 7 Consultations

1. Lower Colorado River Mainstem

Since 1973, Reclamation has informally and formally consulted under section 7 of the ESA for various projects that potentially may have had direct or indirect effects on threatened and endangered species and critical habitat along the LCR (**Table 15**). Although the projects have varied substantially, as have the effects, the Service has concluded that the projects consulted on would not jeopardize the continued existence of any species or its critical habitat. In some consultations, incidental take was addressed by reasonable and prudent measures (RPMs). These consultations are considered part of the environmental baseline.

[[[insert Table 15. p.1

[Table 15, p. 2

Table 15, p. 3]]]]

2. Other Baseline Projects

In addition to Reclamation activities that were evaluated for direct or indirect effects on the mainstream of the Colorado River, section 7 consultation and National Environmental Policy Act compliance have been completed or are in the process of being completed for authorized projects that provide facilities for the States to divert and distribute State waters confirmed by previously discussed court decrees. The Central Arizona Project (CAP) and Robert B. Griffith Water Project (southern Nevada) are summarized below as part of the environmental baseline.

a. Central Arizona Project Havasu Diversion

The CAP was constructed to provide a long-term, non-groundwater, water source for municipal, industrial, and non-Indian and Indian agricultural users in Arizona. The CAP was authorized for construction under the Colorado River Basin Project Act, Public Law 90-537 (82 Stat. 885), approved Sep. 30, 1968. An approximately 330-mile long series of open canals, inverted siphons, pumping plants and tunnels convey water diverted from Lake Havasu east through Phoenix and then south to the southern boundary of the San Xavier Indian Reservation southwest of Tucson. Under normally expected water supply conditions, project diversions from the Colorado River are expected to be about 1.5 maf per year of Arizona's basic annual entitlement of 2.8 maf.

Reclamation has consulted formally and informally on over 50 CAP-associated projects. In April of 1994, after three years of intensive formal consultation with Reclamation , the Service issued a final BO on the Transportation and Delivery of Central Arizona Water to the Gila River Basin (Hassayampa, Aqua Fria, Salt, Verde, San Pedro, middle and upper Gila Rivers, and associated tributaries) in Arizona and New Mexico. The opinion found that deliveries of CAP water would jeopardize the continued existence of the spikedace (*Meda fulgida*), loach minnow (*Tiaroga cobitis*), Gila topminnow (*Poeciliopsis occidentalis*), and razorback sucker and would adversely modify the critical habitat of the spikedace, loach minnow, and razorback sucker. Reclamation is now in the process of implementing the reasonable and prudent alternatives (RPAs) presented in the opinion. Reclamation's Phoenix Area Office is also preparing a biological assessment on the delivery of water into the Santa Cruz River Basin.

The CAP begins at the Havasu Intake and Pumping Plant, located at the lower end of Lake Havasu downstream of the Bill Williams River Delta and within the Havasu National Wildlife Refuge. The Havasu Pumping Plant has the capacity to lift 2.2 maf per year of Colorado River water 800 vertical feet to the Hayden-Rhodes Aqueduct. Each of the six pump units has a capacity of 500 cfs. Trash racks with openings 6 x 16 inches cover the pump intakes, and estimated water velocity in front of the trash racks is 1.1 feet per second.

Reclamation's Havasu Intake environmental impact statement (EIS) (Jan. 1973) addressed native, rare, and endangered species, concluding that "…very few fish in comparison to the overall fish population on Lake Havasu will move through the intake channel and be adversely affected by pumping operations. These fish would be types oriented to open water movement and feeding, such as threadfin shad and striped bass." The EIS stated that there would be a monitoring program to assess losses of fish and other aquatic biota in Havasu and "…data obtained in this initial phase and subsequent phases will be evaluated to determine whether protective measures

are required." The emphasis at that time was clearly on sport fishes. The Fish and Wildlife Coordination Act (FWCA) Report from the Service, dated June 30, 1976, also recommended studies to determine the extent of any fishery losses. At the time of the EIS and the FWCA report neither the bonytail nor the razorback sucker were on the endangered species list.

In 1989, the Service, Arizona Game and Fish Department, and Reclamation cooperatively submitted a report on the Lake Havasu Fishery Study. Sampling was conducted on either side of a half-mile long dike that forms an embayment leading to a cement-lined channel and the pumping plant. Seasonal sampling was conducted from the spring of 1984 to December 1985. No razorback suckers were found during this study. However, adult razorback suckers were observed in the CAP canal in 1986 (Mueller 1989).

b. Southern Nevada Water System (Robert B. Griffith Water Project)

An environmental assessment was prepared in 1992 to obtain a contract for the uncontracted remainder of Nevada's 300,000 acre-feet per year consumptive use apportionment. Section 7 compliance was concluded through informal consultation. By memorandum dated Feb. 21, 1992, the Service concurred with Reclamation's determination that the proposed action was not likely to adversely affect the threatened desert tortoise.

Improvements to the Southern Nevada Water System (SNWS) were identified in the 1994 Final Environmental Assessment of the Colorado River Commission's Proposed SNWS Facilities Improvement Project. The improvements are associated with existing facilities. As part of the environmental compliance, Reclamation entered into formal section 7 consultation with the Service on Aug. 31, 1994, for the Mojave desert tortoise, a federally listed threatened species. On Dec. 6, 1994, the Service rendered its BO that the SNWS Improvement Project is not likely to jeopardize the continued existence of the threatened Mojave population of the desert tortoise and no proposed critical habitat will be destroyed or adversely modified. An Incidental Take Statement was issued with RPMs to minimize take.

A draft EIS for the proposed Southern Nevada Water Authority Treatment and Transmission Facility (SNWA-TTF) was provided for public review and comment in November 1995. A final EIS is expected soon. Reclamation initiated formal consultation on the desert tortoise on Aug. 15, 1995, and received a draft BO on Dec. 18, 1995. Because of a number of project refinements, Reclamation requested a number of extensions to incorporate these changes into the final BO. The additional information and comments were provided to the Service on June 26, 1996, and a final BO was completed on September 16, 1996.

The BO found that the proposed project is not likely to jeopardize the continued existence of the threatened Mojave desert tortoise population and no critical habitat will be destroyed or adversely modified. An Incidental Take Statement was issued with RPMs to minimize take.

3. Salton Sea and the Endangered Desert Pupfish

A summary of past ESA consultations on the endangered desert pupfish in the Salton Sea area is provided below. Following listing of the desert pupfish as an endangered species in 1986, a BO

was issued by the Service (June 18) on the effects of agricultural drain maintenance on this species. The opinion found that both agricultural drain maintenance activities and the introduction of sterile grass carp would not jeopardize the continued existence of desert pupfish. The opinion allowed for unlimited incidental take of the species during drain maintenance.

When the desert pupfish was listed as an endangered species (March 31, 1986), critical habitat was designated for the species along San Felipe Creek/San Sebastian Marsh, an intermittent stream and marsh complex on the west side of the Salton Sea. Reclamation purchased all of the private land holdings within the critical habitat area for $300,000 and turned this land over to the California Fish and Game Department under a quitclaim deed in 1990.

In June 1992, a second BO was issued regarding drain maintenance and its affect on desert pupfish. The consultation involved the Salton Sea National Wildlife Refuge drains maintained by Imperial Irrigation District. The opinion again found that the drain maintenance would not jeopardize the desert pupfish; however only a limited incidental take was allowed due to recent observations of increased pupfish populations in the drains. This opinion also covered effects on Yuma clapper rails and California brown pelicans. Similar to the desert pupfish, the Service was of the opinion that drain maintenance would not jeopardize the continued existence of either species.

4. Operation of Glen Canyon Dam

The operation of Glen Canyon dam by Reclamation affects the timing and amounts of water and sediment flows to Lake Mead, at the upstream end of the action area currently under analysis. A BO was prepared by the Fish and Wildlife Service, on the proposed action to operate the dam according to operating and other criteria of the Modified Low Fluctuating Flow Alternative. This alternative was described as the Preferred Alternative in the Final EIS on the operation of Glen Canyon Dam issued in March, 1995, and was selected for implementation in the Secretary of Interior's Record of Decision dated Oct. 9, 1996. The BO (dated Jan. 7 , 1995) found that the dam operations were likely to jeopardize the continued existence of the humpback chub and the razorback sucker and were likely to destroy or adversely modify designated critical habitat for the two species. The BO noted the connection between the Glen Canyon dam operations and the potential for razorback sucker recovery downstream, including Lake Mead (in the action area currently under analysis), with primary adverse effects due to altered temperatures, flow regimes, and, possibly, sediment load. A reasonable and prudent alternative was developed to limit jeopardy to the endangered fish. The impacts of the operation of Glen Canyon Dam on the southwestern willow flycatcher are to be addressed in a later consultation.

5. Spring 1996 Beach/Habitat-Building Flow, Glen Canyon Dam

The BO by the Fish and Wildlife Service, dated Feb. 16, 1996, addressed the potential effects of flood-mimicking flows from Lake Powell through the Glen Canyon Dam designed to build beaches and improve wildlife habitat downstream. The final opinion found no jeopardy or adverse modification of critical habitat. RPMs for addressing incidental take were imposed for the southwestern willow flycatcher. The measure called for specific surveys and monitoring, and the initiation of formal consultation by February, 1997.

6. Fish and Wildlife Service Intra-Service Formal Consultation on Division of Federal Aid Transfer of Funds to Arizona Game and Fish Department for Stocking of Sportfish

The BO, dated Oct. 31, 1995, was on the Service's Federal Aid funding of Arizona Game and Fish Department's non-native fish stocking in 90 locations across the state, including the LCR, for the period 1995-1999. Following further informal consultation, the Division of Federal Aid submitted only the stocking sites and fish species for which it found no effect or not likely to adversely affect. The Service's Division of Ecological Services concurred with those findings.

7. Lake Havasu Fisheries Improvement Partnership Program Formal Consultation

This BO, dated February 18, 1993 addressed the Bureau of Land Management and cooperating agencies and entities' plan to: (1) improve fishing facilities; (2) place fish habitat structures; and, (3) augment existing bonytail chub and razorback sucker populations in Lake Havasu over a five to ten year period. Cooperators included Reclamation and the Service. The augmentation program for native fish would put 30,000 young bonytail chub and 30,000 young razorback suckers into the reservoir. The Service found that the proposed action, including the augmentation program, was not likely to jeopardize the continued existence of either species or adversely modify designated critical habitat for the bonytail chub. RPMs to minimize incidental take, especially from anglers, were included in the incidental take statement.

8. Fish and Wildlife Service Intra-Service Formal Consultation on Division of Fisheries and Federal Assistance on Stocking of Rainbow Trout and Channel Catfish

The Service proposed to stock catchable size rainbow trout and channel catfish into selected area of the LCR from below Hoover Dam to the international border to enhance recreational fishing. According to the BO issued July 1, 1994, the proposal would neither jeopardize the razorback sucker or bonytail chub nor would it adversely modify their critical habitat. An RPM was imposed to minimize the opportunity for contact between the trout and the endangered fish. Terms and conditions to implement the RPM included the introduction of 10,000 advanced fingerling razorback suckers a year to Lake Mohave for five years (1995-1999) and 25,000 advanced fingerling bonytail chub a year to Lake Mohave for four years (1996-1999) to augment declining populations of these species in the reservoir.

EFFECTS OF THE ACTION

This section addresses the proposed action's effects on the species under consultation. It also considers cumulative effects on these species in the action area, which include the effects of future State, local, tribal, and private actions that are reasonably certain to occur in the next five years. Future Federal actions that are unrelated to the proposed action are not considered here because they would require separate consultation pursuant to section 7 of the ESA.