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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Listing Gila Chub as Endangered With Critical Habitat; Final Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AG16

Endangered and Threatened Wildlife and Plants; Listing Gila Chub as Endangered With Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), list the Gila chub (*Gila intermedia*) as endangered with critical habitat under the Endangered Species Act of 1973, as amended (Act). Gila chub were historically found throughout the Gila River basin in southern Arizona, southwestern New Mexico, and northeastern Sonora, Mexico. The Gila chub has been reduced in numbers and distribution in the majority of its historical range (Minckley 1973; Weedman *et al.* 1996). Where it is still present, populations are often small, fragmented, and at risk from known and potential threats and from random events such as drought, flood events, and wildfire. The primary threats to Gila chub include predation by and competition with nonnative organisms, including fish in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), other fish species, bullfrogs (*Rana catesbeiana*), and crayfish (*Orconectes virilis*), and habitat degradation from surface water diversions and ground water withdrawals. Secondary threats include habitat alteration, destruction, and fragmentation resulting from numerous factors that are discussed in this final rule. The current status of the Gila chub is much degraded from historical levels. The species exists as a few, small isolated, populations. The small size of these populations, and their degree of fragmentation and isolation, cause them to be highly susceptible to threats. We believe that due to the current reduced status of the Gila chub and the severity of threats, including nonnative species predation and habitat destruction, the Gila chub is likely to become extinct throughout all or a significant portion of its range. This final rule will implement the Federal protection and recovery provisions of the Act for this species. We are also designating approximately 160.3 river miles (mi) (258.1 kilometers (km)) of critical habitat located in Grant County, New Mexico, and Yavapai, Gila, Greenlee, Graham, Cochise, Santa Cruz, Pima, and Pinal Counties in Arizona.

DATES: This final rule is effective December 2, 2005.

ADDRESSES: Supporting documentation for this rulemaking is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021–4951. The final rule, economic analysis, environmental assessment, and more detailed color maps of critical habitat are also available online at *http://www.fws.gov/arizonaes/*. GIS files of the critical habitat maps are also available online at *http://criticalhabitat.fws.gov/*.

FOR FURTHER INFORMATION CONTACT: Steven L. Spangle, Field Supervisor, Arizona Ecological Services Field Office (telephone, 602–242–0210; facsimile, 602–242–2513).

SUPPLEMENTARY INFORMATION: This final rule lists the Gila chub as endangered and designates critical habitat.

Designation of Critical Habitat Provides Little Additional Protection to Species

In 30 years of implementing the Act, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of available conservation resources. The Service's present system for designating critical habitat has evolved since its original statutory prescription into a process that provides little real conservation benefit, is driven by litigation and the courts rather than biology, limits our ability to fully evaluate the science involved, consumes enormous agency resources, and imposes huge social and economic costs. The Service believes that additional agency discretion would allow our focus to return to those actions that provide the greatest benefit to the species most in need of protection.

Role of Critical Habitat in Actual Practice of Administering and Implementing the Act

While attention to and protection of habitat is paramount to successful conservation actions, we have consistently found that, in most circumstances, the designation of critical habitat is of little additional value for most listed species, yet it consumes large amounts of conservation resources. Sidle (1987) stated, ''Because the Act can protect species with and without critical habitat designation, critical habitat designation may be redundant to the other consultation requirements of section 7.'' Currently, only 470 species or 38 percent of the 1,253 listed species in the United States under the jurisdiction of the Service have designated critical habitat.

We address the habitat needs of all 1,253 listed species through conservation mechanisms such as listing, section 7 consultations, the section 4 recovery planning process, the section 9 protective prohibitions of unauthorized take, section 6 funding to the States, and the section 10 incidental take permit process. The Service believes that it is these measures that may make the difference between extinction and survival for many species.

We note, however, that two courts found our definition of adverse modification to be invalid (March 15, 2001, decision of the United States Court Appeals for the Fifth Circuit, *Sierra Club* v. *U.S. Fish and Wildlife Service,* et al., F.3d 434 and the August 6, 2004, Ninth Circuit judicial opinion, *Gifford Pinchot Task Force, et al.* v. *United States Fish and Wildlife Service*). On December 9, 2004, the Director issued guidance to be used in making section 7 adverse modification determinations.

Procedural and Resource Difficulties in Designating Critical Habitat

We have been inundated with lawsuits for our failure to designate critical habitat, and we face a growing number of lawsuits challenging critical habitat determinations once they are made. These lawsuits have subjected the Service to an ever-increasing series of court orders and court-approved settlement agreements, compliance with which now consumes nearly the entire listing program budget. This leaves the Service with little ability to prioritize its activities to direct scarce listing resources to the listing program actions with the most biologically urgent species conservation needs.

The consequence of the critical habitat litigation activity is that limited listing funds are used to defend active lawsuits, to respond to Notices of Intent (NOIs) to sue relative to critical habitat, and to comply with the growing number of adverse court orders. As a result, listing petition responses, the Service's own proposals to list critically imperiled species, and final listing determinations on existing proposals are all significantly delayed.

The accelerated schedules of court-ordered designations have left the Service with almost no ability to provide for adequate public participation or to ensure a defect-free rulemaking process before making decisions on listing and critical habitat

proposals due to the risks associated with noncompliance with judicially imposed deadlines. This in turn fosters a second round of litigation in which those who fear adverse impacts from critical habitat designations challenge those designations. The cycle of litigation appears endless, is very expensive, and in the final analysis provides little additional protection to listed species.

The costs resulting from the designation include legal costs, the cost of preparation and publication of the designation, the analysis of the economic effects and the cost of requesting and responding to public comment, and in some cases the costs of compliance with the National Environmental Policy Act (NEPA). None of these costs result in any benefit to the species that is not already afforded by the protections of the Act enumerated earlier, and they directly reduce the funds available for direct and tangible conservation actions.

Background

It is our intent to discuss only those topics directly relevant to this final listing and critical habitat rule. For more information on biology of the Gila chub, refer to the August 9, 2002, proposed rule (67 FR 51948). However, some of the information presented in the proposed rule is discussed below in this final rule, where appropriate, such as the summary of factors affecting the species.

Description and taxonomy. The Gila chub is a member of the minnow family Cyprinidae. The Gila chub is small-finned, deep-bodied, chubby (chunky), and darkly colored. Adult males average about 150 millimeters (mm) (6 inches (in)) in total length; females can exceed 200 mm (8 in). Scales are coarse, thick, and broadly overlapped, and radiate out from the base (Minckley 1973; Weedman *et al.* 1996).

Baird and Girard (1854:28) published a description of the Gila chub, as *Gila gibbosa,* based on the type specimen collected in 1851 from the Santa Cruz River. For nomenclature reasons, the name was changed by Girard to *Tigoma intermedia* in 1856, working with specimens from the San Pedro River. Despite that and other name changes, the Gila chub has been recognized as a distinct species since the 1850s, with the exception of a short period in the mid-1900s when it was placed as a subspecies of *Gila robusta* (Miller 1945). For the past 30 years, *Gila intermedia* has been recognized as a full monotypic species, separate from the polytypic species *Gila robusta,* both currently accepted as valid species (Nelson et al. 2004). Minckley and DeMarais (2000) described a new species within the Gila River Basin, *Gila nigra.* It is similar to *Gila intermedia* in that it is another headwater-type chub, whereas *Gila robusta* is more often found in the mainstems of the major rivers within the Gila River Basin. *Gila intermedia* is the only species being addressed in this rule.

Distribution and Habitat. Historically, Gila chub have been recorded in approximately 43 rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and northern Sonora, Mexico (Miller and Lowe 1967; Minckley 1973; Rinne 1976; DeMarais 1986; Bestgen and Propst 1989). Several populations may have originally had basin-wide distributions (e.g., Babocomari River and Santa Cruz River).

Gila chub commonly inhabit pools in smaller streams, springs, and cienegas (a desert wetland), and can survive in small artificial impoundments, such as man made ponds (Miller 1946; Minckley 1973; Rinne 1975). Gila chub are highly secretive, preferring quiet, deeper waters, especially pools, or remaining near cover including terrestrial vegetation, boulders, and fallen logs (Minckley 1973).

Riparian and aquatic communities across the southwest have been degraded or destroyed by human activities (Hastings 1959; Hastings and Turner 1965; Henderickson and Minckley 1984; Tellman et al. 1997). Humans have affected southwestern riparian systems over a period of several thousand years. Before the 1800s, indigenous people and missionaries used southern Arizona cienegas and riparian areas mostly for subsistence enterprises, including woodcutting, agriculture (including livestock grazing), and food and fiber harvesting.

Historically, beaver also used riparian areas in the Gila River basin almost anywhere perennial water and appropriate vegetation could be found. The activities of beaver are believed to have helped promote Gila chub habitat by inhibiting erosion and downcutting of stream channels (Parker et al. 1985), and increasing ponded water behind their dams. Beaver were extirpated (i.e. lost from a particular area) from a majority of their range by the late 1800s and are still not abundant or have not recolonized areas where they have been extirpated and were historically common (Hoffmeister 1986). For example, beaver were extirpated from the Santa Cruz and San Pedro Rivers in Arizona. Loss of this large mammal and the dams they constructed may have contributed to rendering reaches of some streams and rivers unsuitable as habitat for the Gila chub.

There was a significant human population increase in southern Arizona and northern Sonora, Mexico, in the early to mid 1800s (Tellman et al. 1997). New immigrants substantially increased subsistence and commercial livestock production and agriculture. By the late 1800s, many southern Arizona watersheds were in poor condition primarily due to uncontrolled livestock grazing, mining, hay harvesting, timber harvesting, and other management practices, such as fire suppression (Bahre 1991; Humphrey 1985; Martin 1975). The watershed degradation caused by these management practices led to widespread erosion and channel entrenchment when above-average rainfall and flooding occurred in the late 1800s (Bryan 1925; Martin 1975; Hastings and Turner 1980; Dobyns 1981; Hendrickson and Minckley 1984; Sheridan 1986; Bahre 1991; Webb and Betancourt 1992). These events led to long-term stream, cienega, and riparian habitat degradation throughout southern Arizona and northern Mexico. Physical evidence of cienega and other riparian area alterations can be found in the black organic soils of the drainage cut banks in places like the San Rafael Valley (Hendrickson and Minckley 1984), and San Pedro River (Hereford 1993). Although these changes took place nearly a century ago, these ecosystems have not fully recovered, and in some areas may never recover.

We estimate, based on collection records, historical habitat data, the 1996 Arizona Game and Fish Department (AGFD) Gila chub status review (Weedman et al. 1996), and information in our files documenting currently occupied habitat (see Table 1), that the Gila chub has been eliminated from approximately 85 to 90 percent of its formerly occupied habitat. Of 47 known populations (see Table 1), 29 are considered occupied (i.e., Gila chub have been documented within the last 5 years); 4 of these are newly established populations. All 29 populations are considered small, isolated, and subject to some form of threat; nonnative species are present in 27 of the populations (Table 1). Weedman (1996) categorized the status of the Gila chub populations into one of four categories: (1) Stable-secure-Gila chubs are common, data over the last 5 to 10 years show a stable reproducing population, no nonnative predatory or competitive species are present, no current or future land use threats were identified; (2) Stable-threatened-Gila chub are common to uncommon, potential

threats by nonnatives exist, some habitat-altering land and water uses were identified, or lack of recruitment (i.e., reproduction and survival of young) was detected within the population; (3) Unstable-threatened—Gila chub are rare, have limited distribution, predatory or competitive nonnatives are present, or the habitat is modified or threatened; (4) Extirpated (i.e., liminated)-Gila chub are no longer found within a particular river system. These four categories are reflected in the following discussion of the current status of Gila chub populations beginning with the next paragraph, and are summarized for each of the currently known occupied populations and critical habitat areas in Table 1; threat information is also summarized for each population in Table 1. Of the 29 currently occupied populations, we estimate that 10 can be considered stable-threatened and 19 are considered unstable-threatened; none are considered stable-secure.

TABLE 1.—GILA CHUB LOCATIONS (MAJOR DRAINAGES IN PARENTHESES) INCLUDING STATUS CLASSIFICATION [BASED ON WEEDMAN ET AL.1996; S=STABLE, U=UNSTABLE, T=THREATENED, E=EXTIRPATED (SEE DISTRIBUTION AND HABITAT SECTION)], THREATS (FROM SERVICE FILES), LAST YEAR OF DOCUMENTED OCCUPANCY, AND SOURCE OF OCCUPANCY INFORMATION. NO INFORMATION WAS AVAILABLE FOR CURRENT STATUS AND THREATS ON THE BLUE RIVER

Gila Chub Locations	Status classification	Threats	Last year occupancy confirmed	Source
Critical Habitat Areas				
Area 1: Upper Gila River				
Turkey Creek, NM (Gila River)	UT	Fire, grazing, nonnative species.	2005	P.C. Marsh, ASU in litt. 2005.
Eagle/East Eagle Creek (Gila River)	UT	Fire, grazing, nonnative speices.	2005	Marsh 2005.
Harden Cienega Creek (San Francisco River)	ST	Fire, grazing, nonnative species.	2005	McKell 2005.
Dix Creek (San Francisco River)	ST	Fire, grazing	2005	McKell 2005.
Area 2: Middle Gila River Area				
Mineral Creek/Devil's Canyon (Gila River)	UT	Fire, grazing, nonnative species.	2000	Weedman et al. 2000.
Area 3: Babocomari River				
O'Donnell Creek (Babocomari River)	UT	Fire, grazing, nonnative species.	2004	Dean Foster, AGFD, in litt. 2005.
Turkey Creek (Babocomari River)	E	Fire, grazing, nonnative species.	1991	Weedman et al. 1996.
Area 4: Lower San Pedro River				
Bass Canyon (San Pedro River)	ST	Fire	2003	Bob Rogers, The Nature Conservancy (TNC), in litt. 2005.
Hot Springs Canyon (San Pedro River)	ST	Fire	2004	Bob Rogers, TNC, in litt. 2005.
Redfield Canyon (San Pedro River)	ST	Fire, grazing, nonnative species.	2001	Bob Rogers, TNC, in litt. 2005.
Area 5: Lower Santa Cruz				
Cienega Creek (lower, Santa Cruz River)	UT	Fire, nonnative species, water use.	2005	Doug Duncan, in litt.
Cienega Creek (upper, Santa Cruz River)	ST	Fire, nonnative species	2005	Dean Foster, AGFD, in litt. 2005.
Mattie Canyon (Santa Cruz River)	UT	Fire, grazing, nonnative species.	2005	Jeff Simms, BLM, in litt. 2005.
Empire Gulch (Santa Cruz River)	UT	Fire, grazing,	2001	(67 FR 51948).
Sabino Canyon (Santa Cruz River)	UT	Fire, nonnative species	2005	Service files.
Area 6: Verde River				
Walker Creek (Verde River)	ST	Fire, grazing, nonnative species.	2005	Service files.
Red Tank Draw (Verder River)	UT	Fire, grazing, nonnative species.	2005	Service data.
Spring Creek (Verde River)	ST	Fire, grazing, nonnative species, residential development, water use.	2005	Service files.
Williamson Valley Wash (Verde River)	UT	Nonnative species residential development, water use.	2003	Bill Leibfried, in litt. 2005.
Area 7: Agua Fria				
Little Sycamore Creek (Agua Fria River)	ST	Fire, grazing, nonnative species.	2003	A .Silas, FS, pers. comm. 2005.
Sycamore Creek (Agua Fria River)	UT	Fire, grazing, nonnative species.	2005	Hedwall et al. 2005.
Indian Creek (Agua Fria River)	UT	Fire, grazing, nonnative species.	2005	J. Voeltz, AGFD in litt. 2005.
Silver Creek (Agua Fria River)	UT	Fire, grazing, nonnative species.	2005	D. Weedman, AGFD in litt. 2005.
Larry Creek (Agua Fria River)	ST	Fire, grazing	2003	Service files.

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Gila Chub Locations	Status classification	Threats	Last year occupancy confirmed	Source
Lousy Canyon (Agua Fria River)	ST	Fire, grazing	2005	Service files.
Locations Not in Critical Habitat Areas				
Bonita Creek (Gila River)	ST	Fire, grazing, recreatoin, roads, water use, nonnative species.	2005	Heidi Blasius, BLM, pers. com. 2005.
Blue River (Gila River)	No information	No information	2000	Weedman et al. (1996) Minckley and DeMarais (2000).
Romero Canyon (Santa Cruz River)	UT Introduced	Fire, nonnative species	2005	AGFD 2005a.
Bear Canyon (Santa Cruz River)	UT Introduced	Fire, nonnative species	2005	AGFD 2005a.
Sheehy Spring (Santa Cruz River)	UT	Fire, nonnative species	2005	D. Foster, AGFD, in litt. 2005.
Babocomari River at T4 Spring (San Pedro River)	UT	Fire, nonnative psecies	2005	D. Foster, AGFD, in litt. 2005.
Double R Canyon (San Pedro River)	UT	Fire	2003	Bob Rogers, TNC, in litt. 2005.
Wildcat Canyon (San Pedro River)	UT	Fire	2003	Bob Rogers, TNC, in litt. 2005.
Post Canyon (Babocomari River)	E	Fire, grazing, nonnative species.	1989	Weedman et al. 1996.
Arroyo La Cieneguita, Mexico (San Pedro River)	E	Fire, grazing, nonnative species.	1990	Varela-Romero et al. 1992.
Los Fresnos River, Mexico (San Pedro River)	E	Fire, grazing, nonnaative species.	1990	Varela-Romero et al. 1992.
Localities Where the Gila chub is Believed Extirpated				
Aqua Fria River			1966	Weedman et al. 1996.
Big Chino Wash (Verde River)			1950	Weedman et al. 1996.
Birmingham Pond (Santa Cruz River)			1943	Weedman et al. 1996.
Cave Creek/Seven Springs Wash (Salt River)			1978	Weedman et al. 1996.
Fish Creek (Salt River)			1965	Weedman et al. 1996.
Monkey Spring (Santa Cruz River)			1968	Weedman et al. 1996.
Queen Creek (Gila River)			1938	Weedman et al. 1996.
Arnett Creek (Gila River)			1945	Weedman et al. 1996.
San Pedro			1912	Weedman et al. 1996.
San Simon River			1939	Weedman et al. 1996.
Santa Cruz River			1977	Weedman et al. 1996.
Haunted Canyon (Salt River)			1959	University of Michigan Museum of Zoology [UMMZ] collection record 176179.

In New Mexico, Gila chub likely inhabited numerous tributaries of the Gila River basin historically. These include Apache Creek, Catron County; Duck Creek, Grant County; San Francisco River, Catron County; San Simon Cienega, Hidalgo County; and Turkey Creek, Grant County (Rinne 1969, 1976; Hubbard et al. 1979; Bestgen and Propst 1989; Sublette et al. 1990; Propst 1999). All of these populations are now extirpated (Bestgen and Propst 1989), with the exception of Turkey Creek (Propst 1999; P. C. Marsh, Arizona State University [ASU] in litt. 2005). We consider Turkey Creek unstable-threatened because the population was recently decimated by wildfire, and nonnative species are present (B. Thompson, New Mexico Game and Fish Department [NMGF], in litt. 2005).

In Arizona, Gila chub are known to have occupied portions of the Salt, Verde, Santa Cruz, San Pedro, San Carlos, San Simon, San Francisco, and Agua Fria drainages in addition to smaller tributaries of the mainstem Gila River. Small remnant populations remain in most of these drainages with the exception of the Salt and San Simon Rivers, where all known populations have been extirpated (Weedman et al. 1996; Propst 1999).

In the Verde River basin, Walker and Spring creeks, located in Yavapai County, chub populations are considered stable-threatened populations; the population in Williamson Valley Wash, also in Yavapai County, is considered unstable-threatened. The Santa Cruz River has five tributaries with extant populations of Gila chub, which include Bear, Romero, and Sabino canyons (Pima County) that were established this year (these are considered unstable-threatened); Sheehy Spring (Santa Cruz

County) has an unstable-threatened population (Arizona Game and Fish Department [AGFD] 2005a); and Cienega Creek (Pima and Santa Cruz Counties) has a stable-threatened population of Gila chub. The San Pedro River Basin has four extant, stable-threatened populations: Bass, Hot Springs, and Redfield canyons (Graham and Pima Counties), and O'Donnell Canyon (Santa Cruz County; B. Rogers, The Nature Conservancy (TNC), in litt. 2005; D. Foster, AGFD in litt. 2005). There is an unstable-threatened population of Gila chub at T4 Spring in the Babocomari River (Santa Cruz and Cochise Counties; D. Duncan, U.S. Fish and Wildlife Service in litt. 2003). The San Carlos River and the Blue River are tributaries to the Gila River (Gila and Graham Counties) on San Carlos Apache tribal lands. We are aware that Gila chub are extant on the Reservation, but we do not have information to document the status of Gila chub in those drainages.

The San Francisco River has two tributaries with extant populations, Dix Creek in Greenlee County, Arizona, and Harden Cienega in Greenlee County, Arizona, and Grant County, New Mexico. Based on surveys in June 2005, these populations appear to be doing well and can be characterized as stable-threatened (McKell 2005). The Agua Fria River has two tributaries with stable-threatened populations, Silver and Sycamore creeks (Yavapai County), as well as two unstable-threatened populations in Little Sycamore Creek and Indian Creek (Yavapai County) (Weedman et al. 1996; A. Silas, U.S. Forest Service [FS], pers. comm. 2005). In addition, there are two introduced populations in the Agua Fria River, Larry Creek and Lousy Canyon (Yavapai County); both appear to be stable-threatened based on recent surveys. Populations of all of the Aqua Fria populations may have been affected by wildfires that occurred in summer 2005 (Knowles et al. 2005). Two tributaries of the Gila River in Arizona have extant populations of Gila chub: Eagle Creek (Graham and Greenlee Counties) has an unstable-threatened population, and Bonita Creek (Graham County) has a stable-threatened population (Weedman et al. 1996; Marsh 2005; H. Blasius, Bureau of Land Management (BLM), in litt. 2005).

In Mexico, Gila chub historically occupied significant portions of the Santa Cruz and San Pedro river basins. The current known distribution of Gila chub in Mexico has been reduced to two small spring areas, Cienega los Fresnos and Cienega la Cienegita, adjacent to the Arroyo los Fresnos (tributary of the San Pedro River), within 1.2 mi (2 km) of the Arizona-Mexico border (Varela-Romero et al. 1992). No Gila chub remain in the Mexican portion of the Santa Cruz River basin (Weedman et al. 1996).

Establishment of new populations of Gila chub has been attempted in six sites in Arizona; five sites remain extant. Lousy Canyon and Larry Creek (Yavapai County) are tributaries to the Agua Fria River that were stocked with 200 Gila chub from Silver Creek on July 6, 1995. Recent surveys indicate that these populations are doing well, with good recruitment. Gardner Canyon (Cochise County) was stocked with 150 Gila chub from Turkey Creek (Santa Cruz County) in July 1988. Follow up surveys in May 1995 did not detect Gila chub in Gardner Canyon; 2005 surveys also did not detect the species (AGFD 2005a). In May 2005, Gila chub that were salvaged from Sabino Canyon during the Aspen fire in 2003 were returned to Sabino Canyon and introduced into two other streams in the Santa Catalina Mountains: approximately 350 Gila chub were stocked into Sabino Canyon, 120 into Romero Canyon, and 85 into Bear Canyon (all in Pima County; AGFD 2005a). The status information presented above is summarized in Table 1.

Previous Federal Actions

For more information on previous Federal actions concerning the Gila chub, refer to the proposed rule to list the Gila chub as endangered with critical habitat published in the **Federal Register** on August 9, 2002 (67 FR 51948). On May 18, 2004, the Center for Biological Diversity filed a complaint against the Department of the Interior because the Service had not published a final rule for the Gila chub in a timely manner. On August 3, 2004, the United States District Court of Arizona ordered that we, via a stipulated settlement agreement, submit for publication to the **Federal Register**, a final rule by October 21, 2005 (*Center for Biological Diversity* v. *Norton*, No. CV 04–2061 TUC CRP). On August 31, 2005 (70 FR 51732), we published a notice to reopen the public comment period on the August 9, 2002, proposed rule for 30 days and announce the availability of the draft economic analysis, draft environmental assessment, and hearing dates for the proposed listing and critical habitat designation for the Gila chub.

Summary of Comments and Recommendations

We requested written comments from the public on the proposed listing and designation of critical habitat for the Gila chub on August 9, 2002 (67 FR 51948), and in our notice to reopen the comment period (August 31, 2005; 70 FR 51732). We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule. We also requested information pertaining to any actions that affect the Gila chub, its current status, distribution, and threats, and the status of nonnative fishes in the historical range of Gila chub. We requested this information in order to make a final listing determination based on the best available scientific and commercial data. We published newspaper notices inviting public comment and announcing the public hearings in the following newspapers in Arizona and New Mexico: Albuquerque Tribune, Albuquerque Journal, the Arizona Republic, Daily Courier (Prescott), Santa Fe New Mexican, Silver City Daily Press, Sierra Vista Herald, Tucson Citizen, Arizona Daily Star (Tucson), the Bulletin (Sonoita), Eastern Arizona Courier (Safford), the Verde Independent, Camp Verde Bugle, and the Copper Country News (Globe). On September 13, 14, and 15, 2005, we held public hearings in Silver City, New Mexico; Safford, Arizona; and Camp Verde, Arizona, respectively, to solicit comments on the proposed rule.

During the first comment period that opened on August 9, 2002, and closed on October 9, 2002, we received 97 pieces of correspondence (e-mails, letters, and faxes). Of these, we received 5 comments from Federal agencies, 1 from a State representative, and 91 from organizations or individuals. Thirty-one of the comments were requests for public hearings of which 26 concerned Willow Creek. During the second comment period that opened on August 31, 2005, and closed on September 30, 2005, we received 29 comments. Of these latter comments, 6 were from peer reviewers, 1 from another nation, 2 from Federal agencies, 3 from State agencies, and 17 from organizations or individuals.

Of the written comments received during the first comment period, 40 supported, 17 were opposed, and 44 included comments or information but did not express support for or opposition to the proposed listing and critical habitat designation. Of the written comments received during the second comment period, 18 supported, 0 were opposed, and 10 included comments or information but did not express support for or opposition to the proposed listing and critical habitat designation. We received a number of comments concerning Willow Creek in

Catron County, New Mexico. Willow Creek is neither occupied nor historical habitat for Gila chub and was not part of the proposed critical habitat determination. In addition, there are no plans to establish a population of Gila chub in Willow Creek. Therefore, these comments will not be addressed further. All substantive information written and verbal, provided during the public comment periods, either has been incorporated directly into this final determination or is addressed below. We also wish to recognize that the Mexican Federal Government commented on the proposed rule; the Director de Conservacíon de la Vida Silvestre, Secretario de Medio Ambiente y Recursos Naturales, did not provide specific comment, but generally supported the listing. Similar comments are grouped together by issue.

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from eight knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles, and that represented Federal agencies, State agencies, university researchers, and private consultants. We received responses from six of the peer reviewers; two of these were from State biologists via the Arizona and New Mexico Game and Fish Departments and were not specifically identified as peer review, and are addressed below as ''State Comments.'' Five of the six peer reviewers, including both State wildlife agencies, concurred with our methods and conclusions, supported our determination that the species is endangered, and provided additional information, clarifications, and suggestions to improve the final critical habitat rule. A sixth peer reviewer suggested that we may have overestimated the extinction threat to Gila chub, and recommended that we consider listing the species as threatened. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

Peer Reviewer Comments

(1) *Comment:* Limiting critical habitat to only those areas that are occupied will not achieve the purposes of the Act and satisfy the definition of critical habitat, particularly when the proposed rule states that stabilization of the Gila chub at its present population level and distribution will not achieve conservation. Critical habitat should be expanded to include unoccupied areas that provide connectivity between populations to allow gene flow and repopulation of formerly occupied suitable habitat.

Our Response: Section 3(5)(A) of the Act defines critical habitat as the specific areas within the geographical area occupied by the species on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection. In our critical habitat designation, we use the provisions outlined in section 3(5)(A) of the Act to evaluate those specific areas that contain the features that are essential to the conservation of the species and that may require special management considerations or protections. Critical habitat designation for the Gila chub includes many areas of known occupancy that have features that are essential to the conservation of the species, as well as one unoccupied area that we consider essential to the conservation of the Gila chub because of its connection with or proximity to known occupied areas. This is discussed in further detail in the ''Justification for Including Unoccupied Areas'' section below. We believe we have considered and applied to this designation the best available scientific information regarding the Gila chub. Thus, while not all areas important for potential Gila chub recovery were proposed as critical habitat, we believe this designation defines those areas that are essential. We also acknowledge that critical habitat can contribute to the overall recovery strategy for a listed species, but does not, by itself, achieve recovery. We encourage Federal and State agencies, Tribal governments, municipalities, private groups, and landowners to work with us as we develop a recovery plan for the Gila chub and to continue to work towards establishing additional populations and aid in the recovery of the species. As discussed in this rule, even if an area is not designated as critical habitat, it does not mean that area is not important for Gila chub recovery.

(2) *Comment:* Listing the Gila chub may not be supported because the Service's assertion that the Gila chub has lost 85–90 percent of its habitat is based on the assumptions that the Gila chub was distributed throughout contiguous river reaches containing suitable habitat, that status information indicates that 60 percent of the currently known populations are stable or secure, and that data necessary to determine status (i.e. quantitative abundance estimates and accurate historical records) for Gila chub are lacking. The Service should consider that the species may better meet the definition of threatened.

Our Response: We disagree and refer to the ''Background'' section above for detailed information on our estimate of habitat loss. We also note that in some cases, entire rivers that were habitat for Gila chub have largely disappeared or been so degraded they no longer support the species (e.g., the Santa Cruz and San Pedro Rivers; Weedman et al. 1996; Tellman et al. 1997). The Gila chub has been eliminated from 12 streams (see Table 1). Sabino Creek would have been lost due to wildfire had it not been salvaged by Service, AGFD, and the FS in 2003, and three additional populations were salvaged this year in response to wildfires; the status of these populations post-fire has not yet been ascertained. Only two populations are free from nonnative species, and all populations are small and isolated and thus at risk (Fagan et al. 2002). The past decline, current threats, and status of Gila chub are well documented and reflected in this final rule.

(3) *Comment:* Conservation actions since the proposed rule was published have been insufficient to improve the status of the species to the point it is no longer endangered or threatened, indicating that existing regulatory protections, including concerted efforts by the States to conserve the Gila chub, are not sufficient to prevent its extinction.

Our Response: We agree that the status of the Gila chub has not improved since the publication of the proposed rule, despite efforts to conserve the species. However, we value the cooperative conservation partnerships that have been formed between Federal and State agencies, municipalities, and the public to work to improve the status of the Gila chub, and we recognize that the decline of the species occurred over a number of years and that it would be difficult to address all threats facing the species in the short amount of time since the proposed listing. We will continue to pursue such partnerships and conservation projects involving the Gila chub following this final rule and as we develop a recovery plan. In ''Inadequacy of Existing Regulatory Mechanisms'' (Factor D) below, we discuss existing regulatory mechanisms as they relate to the protection being afforded to the Gila chub.

(4) *Comment:* Listing the Gila chub will alienate stakeholders that otherwise would have been amenable to conserving the species because the Act is so restrictive. Conservation agreements between the various

stakeholders would be a more effective method to conserve the Gila chub.

Our Response: As discussed above, we agree that cooperative conservation utilizing partnerships between Federal and State agencies, municipalities, and the public is a good approach to conservation, and we have pursued such partnerships on numerous projects involving the Gila chub and will continue these partnerships after this final rule to list the chub as endangered is effective. However, we are required to list a species as endangered if we determine that the species is likely to become extinct throughout all or a significant portion of its range. After evaluating the current status of the species and threats to extant populations in the five factor analysis below, we have determined that the Gila chub is endangered.

(5) *Comment:* The Service needs to provide a more explicit explanation of the primary constituent elements (PCEs) that exist in each segment of critical habitat.

Our Response: All of the areas that we have designated as critical habitat have one or more of the PCEs. We have provided in our area descriptions (below), those primary constituent elements that are present in each of the critical habitat areas.

(6) *Comment:* The confusing taxonomic history of the Gila chub has led to errors in the Service's estimation of its current and former range. The Service has thus likely overstated the species' historic range, inflated the degree to which the species has declined, and thus exaggerated its need for listing.

Our Response: Gila intermedia is part of the *Gila robusta* species complex that includes six other taxa: *G.cypha, G. elegans, G. nigra, G. robusta, G. r. jordani,* and *Gila seminuda* (Gerber et al. 2001); all of these species have experienced declines and face similar threats. The evolution of the species in the complex is novel in some respects, and research on the complex has led to insight about the various ways in which speciation occurs (Gerber et al. 2001; Minckley and DeMarais 2000). However, we have found that the taxonomy of the Gila chub has come to be well understood (Minckley and DeMarais 2000), and that Gila chub as a species is valid and qualifies as a taxon that may be listed under the Act (50 CFR 424.02(k)). As Minckley and DeMarais (2000) illustrate, the three forms of *Gila* represent distinct species that have consistently and repeatedly been identified in the same streams; based on this work, we are confident of our evaluation of the status of the species, its formerly occupied range, and its current distribution. Our consideration of Gila chub with regard to its status and consideration for listing has evolved as more information has become available regarding its biology, status, and threats, which is reflected in this final rule. We note that the status of the Gila chub has appreciably declined over the last 25 years, and we have information to document new threats facing the species, such as frequent catastrophic fires, also noted by both AGFD and NMGF in their comments on the proposed rule (B. Broschied, AGFD, in litt. 2005; B. Thompson, NMGF, in litt. 2005).

(7) *Comment:* Since the Gila chub resembles closely related taxa (i.e., the roundtail and headwater chubs), its listing will cause substantial enforcement problems for enforcing ''take.'' This could potentially cause significant economic impact to stakeholders, especially if the Service lists these other forms under similarity of appearance as defined in Section 4(e) of the Act. This problem is confounded because these forms also apparently interbreed.

Our Response: Although the Gila, roundtail, and headwater chubs are closely related and appear similar, we find no need for listing the latter two under similarity of appearance for several reasons. The primary reason is that these species occur in geographically separate places. As Minckley and DeMarais (2001) stated, ''persistent parapatry [geographic separation] of morphologically distinguishable *robusta, intermedia,* and *nigra* [roundtail, Gila, and headwater chubs], has been documented, confirmed, and reconfirmed by collections since the 1920s * * * In no instance was any two of the three caught at the same locality.'' Because roundtail chub is considered a sport fish in Arizona, we have considered unintended harvest of Gila chub as a potential threat to the species under our five factor analysis below. We do not believe this represents a significant threat to Gila chub because AGFD prohibits the collection of Gila chub without a permit, and allows possession of only 1 roundtail chub over 13 inches in total length (AGFD 2005c). Gila chub do not achieve this size, thus the existing AGFD regulations adequately protect Gila chub from this threat. Although the headwater chub is thought to be of hybrid origin from hybridization of related chubs in geologically recent times (Minckley and DeMarais 2001), we know of no evidence that the current three forms hybridize in nature.

(8) *Comment:* Listing the Gila chub may not be the most effective method for removing threats; the States have primary authority over regulating all non-listed aquatic organisms, including nonnative species, a primary threat to the Gila chub.

Our Response: We realize that there are existing authorities which could and often do provide protection for the Gila chub, and the States have been and will continue to be a key partner in the conservation of the Gila chub. However, we have determined that the protection afforded by existing regulatory mechanisms is insufficient to preclude the listing of the Gila chub (see Inadequacy of Existing Regulatory Mechanisms (Factor D) below).

General Comments Issue 1: Biological Concerns

(9) *Comment:* The lateral extent of critical habitat should be expanded to include the 100-year floodplain or entire watersheds.

Our Response: Critical habitat includes the stream channels within the identified stream reaches defined by upstream and downstream boundaries, as well as areas within these reaches potentially inundated during high flow events. Critical habitat also includes the area of bankfull width plus 300-feet on either side of the banks. The bankfull width is the width of the stream or river at bankfull discharge, i.e., the flow at which water begins to leave the channel and move into the floodplain (Rosgen 1996). Bankfull discharge, while a function of the size of the stream, is a fairly consistent feature related to the formation, maintenance, and dimensions of the stream channel (Rosgen 1996). This 300-foot width defines the lateral extent of those areas that contain the features that are essential to the species' conservation.

We determined the 300-foot lateral extent for several reasons. First, the implementing regulations of the Act require that critical habitat be defined by reference points and lines as found on standard topographic maps of the area (50 CFR 424.12). Although we considered using the 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA), we found that it was not included on standard topographic maps, and the information was not readily available from FEMA or from the U.S. Army Corps of Engineers for the areas designating critical habitat. We suspect this is related to the remoteness of various stream reaches. Therefore, we selected the 300-foot lateral extent, rather than some other delineation, for three biological reasons: (1) The

biological integrity and natural dynamics of the river system are maintained within this area (i.e., the floodplain and its riparian vegetation provide space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain appropriate channel morphology and geometry, store water for slow release to maintain base flows, provide protected side channels and other protected areas, and allow the river to meander within its main channel in response to large flow events); (2) conservation of the adjacent riparian area also helps provide essential nutrient recharge and protection from sediment and pollutants; and (3) vegetated lateral zones are widely recognized as providing a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality (see U.S. Army Corps of Engineers' final notice concerning Issuance and Modification of Nationwide Permits, March 9, 2000, 65 FR 12818–12899). Please see the section entitled ''Critical Habitat'' below for more information.

(10) *Comment:* Using a 300-foot distance from bankfull width as a lateral extent of critical habitat captures areas in some segments that are outside the floodplain, and thus should not be considered essential to Gila chub.

Our Response: In the proposed rule, critical habitat segments were proposed to include ''the stream channels within the identified stream reaches and areas within these reaches potentially inundated during high flow events.'' Our intent is to capture areas that correspond to the 100-year floodplain. We determined that the 300 foot distance from the bankfull width was the best method to define this area. As described elsewhere in this rule, we find that all the critical habitat areas contain sufficient PCEs to provide for one or more of the life history functions of the Gila chub. We have also refined the designation, based upon comments received, to define more precisely the boundaries of the critical habitat designation.

(11) *Comment:* Critical habitat should be expanded to include additional occupied habitat in Indian Creek, Little Sycamore Creek, Sycamore Creek, and Bonita Creek; critical habitat in Spring Creek should be contracted to exclude unsuitable habitat at both ends.

Our Response: We have slightly adjusted a number of the critical habitat stream segments, both to correct errors and to better capture areas of occupied habitat that contain the features that are essential to the conservation of the species. Also, Bonita Creek, Blue River, and portions of Spring and Cienega creeks have been excluded from the designation pursuant to 4(b)(2) of the Act.

(12) *Comment:* Birds or other native predators may be a threat, as opposed to anthropogenic (man made) causes.

Our Response: Although a number of piscivorous birds occur throughout the range of the Gila chub, such as the great blue heron (*Ardea herodias*) and belted kingfisher (*Ceryle alcyon*), we found no information to support bird predation as a significant threat to Gila chub. Bird predation can, however, be a significant concern at fish hatcheries (U.S.D.A. Animal Plant Health Inspection Service 1997), where fish are concentrated in ponds or raceways, and thus may be a consideration in recovery actions for Gila chub that require use of such facilities.

(13) *Comment:* Gila chub is a member of a species assemblage in the genus *Gila* along with six other species, all of which warrant listing as endangered under the Act.

Our Response: We are aware that *Gila intermedia* is part of a species complex. We also note that for taxonomically complex groups that warrant conservation, species-based approaches may be inadequate, and new approaches that conserve evolutionary processes that generate taxonomic biodiversity may be a preferable conservation strategy (Ennos et al. 2005). However, all of the fishes of the *Gila robusta* species complex are currently listed as endangered under the Act, with the exception of *G. nigra* and *G. robusta* (U.S. Fish and Wildlife Service 2005a). With regard to these two unlisted species, we published a positive 90-day finding on a petition to list a distinct population segment of *G. robusta* in the lower Colorado River basin, and to list *G. nigra* throughout its range, on July 12, 2005 (70 FR 39981). *G. robusta* is also part of a multistate conservation agreement that addresses conservation of the species throughout its range (Utah Department of Natural Resources 2004).

(14) *Comment:* The threats to Gila chub are largely unsubstantiated; much of the literature is overly general in nature and is not site- or species-specific, and thus the listing of Gila chub is not warranted.

Our Response: The threats to Gila chub are well documented (see ''Summary of Factors Affecting the Species'' section below). The current status of the species is that it has been eliminated from approximately 85 to 90 percent of its formerly occupied habitat as a direct result of these threats (Weedman et al. 1996), and it currently exists as a collection of very small, isolated, and highly fragmented populations (Weedman et al. 1996; Service files presented in Table 1). In some cases, such as Sheehy Spring, a population exists in a habitat not much larger than a common backyard swimming pool. Because of this, the species is much more susceptible to threats such as predation and competition from nonnative species (Dudley and Matter 2000), habitat destruction from various land use practices (Weedman et al. 1996), stochastic events such as wildfire (Knowles et al. 2005), and an increased risk of extinction due the high degree of fragmentation of the remaining populations (Fagan et al. 2000). Although some of our citations are not specific to these species or the geographic area, the citations offer evidence that certain threats exist because similar examples have been documented elsewhere, and based on biological principles and effects observed in other fishes, we can draw reasonable conclusions about what we would expect to happen to this species were it not listed.

(15) *Comment:* The critical habitat designation is overly broad because it includes areas that are unoccupied and that have not been shown to be essential to the conservation of the species. Eagle, Turkey, Post, and Little Sycamore creeks are not occupied and so should not be included in critical habitat without a justification that these areas are essential to the conservation of the species. Critical habitat areas are not recovery areas, and critical habitat does not, in itself, lead to recovery of a species.

Our Response: Gila chub were documented in Eagle Creek in 2005 (Marsh 2005), and in Little Sycamore Creek in 2005 (A. Silas, FS, pers. comm. 2005). In this final rule, all of the critical habitat areas have been documented as occupied by Gila chub within the last 5 years, with the exception of one: Turkey Creek (AZ). Gila chub were last detected in Turkey Creek in 1991. This tributary is connected to O'Donnell Creek, which was documented as occupied in 2004 (D. Foster, AGFD, in litt. 2005), and while we believe this stream can be recolonized naturally by Gila chub in high water years, we are also working with the AGFD to reestablish Gila chub in this stream. Turkey Creek contains sufficient PCEs to provide for one or more of the life history functions of the Gila chub. We provide further information on our determination that this area is essential to the conservation

of the species, pursuant to the definition in section 3(5)(A)(ii) of the Act, in the ''Justification for Including Unoccupied Areas'' section below. We are not including Post Canyon in the final designation (see the ''Summary of Changes'' section below).

(16) *Comment:* The term ''banks'' needs to be defined in the description of critical habitat.

Our Response: As mentioned in response to comment 9 and 10 above, and discussed in the ''Critical Habitat'' discussion below, we defined ''bank'' to mean the line at which the stream is at ''bankfull'' discharge, as defined by Rosgen (1996), i.e., the flow at which water begins to leave the channel and move into the floodplain. While a function of the size of the stream, bankfull width is a consistent feature related to the formation, maintenance, and dimensions of the stream channel. Bankfull discharge is a quantifiable measure that is essential to classifying streams, to reducing variability in diagnosing stream impairment, and to determining management objectives for a given stream reach (Rosgen 1996).

(17) *Comment:* The Central Arizona Project (CAP) canal does not result in the transfer of nonnative species into the Gila River Basin.

Our Response: There is a large body of research to support the contention that the CAP is a potential vector for nonnative aquatic species (U.S. Fish and Wildlife Service 2001a). Additionally, one nonnative species has been documented to have entered the Gila River Basin through the canal: striped bass (*Morone saxatalis*); another, pacu (*Piaractus brachypomus*) has invaded the Gila River Basin, potentially through the CAP; and numerous nonnative species appear to have increased their range within the Gila River Basin via the canal (U.S. Fish and Wildlife Service 1999a, 1999b, 2001a, 2001b).

We completed a section 7 consultation with the Bureau of Reclamation (Reclamation) on the effects of the CAP, and the resulting biological opinion addressed the transfer of nonnative species into the Gila River drainage (U.S. Fish and Wildlife Service 2001b). Recognizing the potential of the CAP to transfer nonnative species into the Gila River Basin and threaten listed native fish populations, Reclamation proposed to build a number of fish barriers to protect native fish populations in the Gila River Basin as a conservation measure. Building a concrete barrier on the lower segments of tributary streams is thought to prevent nonnative fish species from moving upstream, which protects the native fish populations above the barrier while allowing downstream passage of native fish. Future planned barriers include one on Bonita Creek, which is occupied by the Gila chub.

(18) *Comment:* The rule does not make clear what specific conservation actions would be necessary in proposed reaches of critical habitat to improve them to desired conditions for Gila chub.

Our Response: All of the stream reaches included in the critical habitat designation contain sufficient PCEs to provide for one or more of the life history functions of the Gila chub and all but one area is considered occupied by Gila chub. During the development of a recovery plan for the Gila chub, specific voluntary actions will be identified to reach recovery, including measures to help maintain and improve habitat conditions for the Gila chub. For example, some measures may include restoring a natural flow regime, maintaining or establishing bank stability, providing instream cover such as downed logs and undercut banks, and maintaining healthy riparian vegetation and good water quality conditions (i.e. temperature, pH, few contaminants, low turbidity, adequate levels of dissolved oxygen).

(19) *Comment:* What factual scientific data is available to verify that Gila chub was native to the Verde River?

Our Response: Gila chub were first reported as being collected from the Verde River Basin in 1890 at Chino, Arizona (Weedman et al. 1996). Collection records since that time include the following streams in the basin, some of which are still occupied by the species (see ''Background'' section above): Big Chino Wash, Oak Creek, Spring Creek, Walker Creek, Red Tank Draw, and Williamson Valley Wash (Weedman et al. 1996).

(20) *Comment:* It is unclear how designating critical habitat will ensure that these areas will be suitable for future introductions of Gila chub.

Our Response: Designating critical habitat serves to identify the areas that contain the features that are essential to the conservation of the species, thus alerting Federal agencies to consider the species' conservation in design and implementation of the agencies' management actions. Designating critical habitat likewise provides guidance to non-Federal landowners on why these areas need special management and protection, as well as what activities are, or are not, likely to adversely affect critical habitat, see ''Section 7'' section below. Also, section 4(f) of the Act (16 U.S.C. 1533(f)) requires the preparation of a recovery plan for each listed species. Recovery plans provide guidance on what actions, including habitat maintenance and restoration, are necessary to recover a species. Designation of critical habitat can play an important role in providing a summary of the scientific knowledge of the habitat needs of a species. Likewise, designation of critical habitat helps the recovery process by providing information on how actions might impact the habitat of the species and information that can be used to develop a recovery plan.

(21) *Comment:* The proposed rule does not present sufficient evidence to conclude that the fish in Bonita Creek are Gila chub.

Our Response: The population of *Gila* in Bonita Creek is recognized as Gila chub as described by Weedman et al. (1996) and Minckley and DeMarais (2000).

(22) *Comment:* The primary threat to Gila chub in Bonita Creek is nonnative aquatic species. The wells and infiltration gallery operated by the City of Safford on Bonita Creek create a barrier to the upstream migration of nonnative species, protecting Gila chub, and should probably be enhanced. The city's activities likely are the reason a population of Gila chub persists in Bonita Creek.

Our Response: We agree. While the city's diversion of water does eliminate some stream habitat for the Gila chub, the barrier it creates to the upstream movement of a host of nonnative fishes from the mainstem Gila River is a conservation benefit to the species, and has likely contributed to the long-term persistence of the Bonita Creek population. We are working with Reclamation to create a physical barrier in Bonita Creek to provide long-term protection to Bontia Creek from invasion of nonnative fishes located downstream of this chub population.

(23) *Comment:* Disconnected reaches such as Mineral Creek do not support the purported goal that critical habitat provides connecting habitats between populations of Gila chub that are separated from each other.

Our Response: As stated in our proposed rule (August 9, 2002; 67 FR 51948), connectivity is one of several important considerations in selecting areas included in this critical habitat designation. Also included are factors specific to each river system, such as presence of the PCEs, protection of genetic diversity, and representation of major portions of the species' historical range.

(24) *Comment:* The lower segment of Cienega Creek proposed as critical habitat and also defined in the August 31, 2005, notice (70 FR 51732) does not

contain the PCEs to support Gila chub, and the Service has incorrectly stated that this segment is entirely county-owned. Portions of this segment are privately owned, there are sand and gravel mining operations that do not contain the PCEs to support the species, and the segment is unoccupied by the species.

Our Response: Gila chub were collected in lower Cienega Creek in 2002 (AGFD Heritage Data Management System) and documented in this critical habitat segment in 2005 (see Table 1), and we have found that the segment does contain the PCEs necessary to support the species. Sand and gravel mines do not contain the PCEs for the Gila chub and are not considered to be critical habitat. We have corrected the land ownership information to reflect the private ownership of parcels within this segment, and we have excluded privately owned lands in Cienega Creek due to the potential economic impacts identified in our economic analysis (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

General Comments Issue 2: Procedural and Legal Compliance

(25) *Comment:* Designation of critical habitat and species reintroductions will lead to undue restrictions on private landowners, and will negatively impact residents of nearby local communities. For example, designating critical habitat in Spring Creek would adversely affect the nearby community by interfering with road and bridge maintenance, flood damage repair, groundwater withdrawal for municipal use, treated effluent discharge to the creek from the community, and the recreational opportunities of nearby residents.

Our Response: In general, private landowners are not affected by critical habitat. Critical habitat directly affects only Federal actions. Pursuant to section 7 of the Act, Federal agencies ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat. Individuals, organizations, States, local and Tribal governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal land; require a Federal permit, license, or other authorization; or involve Federal funding (see ''Effect of Critical Habitat Designation'' section below). While many of the actions mentioned in the comment would involve a Federal action agency, and may trigger a section 7 consultation because Spring Creek is currently occupied, there is also a requirement to consult under section 7 for affects to the listed species alone, regardless of whether critical habitat is designated. We have also analyzed the impact of designating critical habitat on small entities, including small communities, in our draft environmental assessment and draft economic analysis. Based on these analyses, we have concluded that, although the designation of critical habitat will result in measurable social and economic effects to small communities, these will not be significant. We have also excluded privately owned lands in Spring Creek and in Cienega Creek due to potential economic impacts as identified in our economic analysis (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(26) *Comment:* The Gila chub provides no sport fish opportunity and is of no economic value, so why should we protect it?

Our Response: Congress has decided that any species threatened with extinction should be protected, without regard to economic value of the species or economic impact of the designation.

(27) *Comment:* Adding Gila chub to the endangered species list will deprive citizens of their right to vital water supplies.

Our Response: Listing the Gila chub under the Act requires that Federal agencies consult with the Service on activities involving Federal funding, a Federal permit, Federal authorization, or other Federal actions. Formal consultation (under section 7 of the Act) is required when activities are likely to adversely affect the Gila chub or its designated critical habitat. Additionally, private citizens are prohibited from engaging in any activity that would result in ''take'' of a listed species (see the ''Available Conservation Measures'' section below for further information). Landowners may obtain a permit to ''take'' Gila chub incidental to otherwise lawful activities, such as withdrawing water from a stream, through a 10(a)(1)(B) permit and Habitat Conservation Plan. We note also that surface water flow within the Gila River basin is fully appropriated and subject to ongoing adjudication (U.S. Fish and Wildlife Service 2005b). The Arizona Department of Water Resources regulates surface water withdrawal via the Public Water Code, a law that provides that a person must apply for and obtain a permit in order to appropriate surface water. Groundwater pumping also has limited regulation under the Arizona Groundwater Code. However, the legal relationship between groundwater and surface water has not been established in Arizona. The New Mexico Office of the State Engineer administers groundwater and surface water rights in New Mexico. The New Mexico State Engineer's approval is required for almost every use of water in New Mexico. For example, permission is needed to make a new appropriation, drill a well, divert surface water, or change the place or purpose of use of an existing water right. Thus, any new claims on surface water or groundwater water in either State would also be subject to the permitting authority of these respective agencies.

(28) *Comment:* The Service has failed to make a 12-month finding on the Gila chub, violating the Act.

Our Response: A 12-month finding may be published concurrently within a proposed rule (50 CFR 424.14(b)(3)(ii)). The proposed rule for the Gila chub published in the **Federal Register** on August 9, 2002, constituted our 12-month finding (67 FR 51948).

(29) *Comment:* The Service needs to provide a more explicit explanation of the PCEs that exist in each segment of critical habitat.

Our Response: All of the areas that we have designated as critical habitat have one or more of the primary constituent elements. We have described in our area descriptions below those primary constituent elements present in each of the critical habitat areas.

(30) *Comment:* Areas proposed as critical habitat already have adequate management and protection. The Service should consider excluding these areas, and should also consider possible exclusions of Bonita Creek given the economic importance to the City of Safford and nearby communities.

Our Response: In our critical habitat designation we use the provisions outlined in section 3(5)(A) of the Act to evaluate those specific areas defined by the features essential to the conservation of the species that may require special management considerations or protections. In our proposed rule (August 9, 2002; 67 FR 51948), we excluded Sheehy Spring in the San Rafael Valley and Wildcat and Double R canyons on the Muleshoe Preserve because these lands were managed under a conservation easement held by The Nature Conservancy and managed under the Muleshoe Ecosystem Management Plan, respectively (see ''Exclusions Under Section 4(b)(2) of the Act'' section below). Additionally, we have excluded the Blue River and part of Bonita Creek on lands of the San Carlos Apache Tribe from the designation of critical habitat for the Gila chub pursuant to section 4(b)(2) of the Act as discussed below (see ''Exclusions Under Section 4(b)(2) of the

Act'' section below). The San Carlos Apache Tribe has completed a fisheries management plan that includes the Gila chub and provides special management for this species. We have also formed a partnership with the City of Safford, BLM, and Reclamation to manage lands on Bonita Creek downstream of the San Carlos Apache Tribe. Based on this partnership, we have excluded Bonita Creek downstream of San Carlos Apache lands pursuant to section 4(b)(2) of the Act as discussed below (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(31) *Comment:* The Service has not used the best scientific and commercial data available; for example, Weedman (1996) makes no mention of Mineral Creek, and the Service's proposed rule has only a vague reference to a survey in 2000 that found Gila chub but not in the reach identified as critical habitat.

Our Response: With regard to presence/absence information, we use peer-reviewed literature, collection records, unpublished reports, or personal communications with qualified field biologists. In this case, we have several pieces of information to support the occupancy of Mineral Creek by Gila chub. Gila chub were first collected from Mineral Creek in 1993 by the AGFD (AGFD Native Fish Database), although this was not reported by Weedman et al. (1996). Gila chub were first reported from Mineral Creek in peer-reviewed literature in 2000 (Minckley and DeMarais 2000). The AGFD again surveyed Mineral Creek in 2000 and reported collecting Gila chub (Weedman 2000).

(32) *Comment:* There is not enough information available to determine Gila chub critical habitat.

Our Response: While we acknowledge that there are gaps in our understanding of the biology of the species, we have sufficient information to identify those geographic areas occupied by the species that contain the features essential to the species and require special management considerations or protection.

(33) *Comment:* It is unclear if the proposed listing of Gila chub as endangered is regional in nature or confined to those areas of critical habitat.

Our Response: The listing of the Gila chub is rangewide; thus upon the effective date of this rulemaking Gila chub will be considered endangered wherever found (See table in the ''Regulation Promulgation'' section below). Areas designated as critical habitat in this final rule represent a subset of the entire range of the species (see Table 1 below).

(34) *Comment:* The proposed designation does not provide adequate information about the population in Spring Creek, and specifically the threats to this population. Thus listing in Spring Creek is not justified.

Our Response: When we consider a taxon for listing, unless we are considering a distinct population segment, we list the entire taxon, not individual populations. With respect to Spring Creek, this tributary was surveyed in 2005 on Forest Service lands in the middle of the area, and Gila chub were found to be abundant with multiple year classes represented, indicating good recruitment. The threats to the species are addressed below in the ''Summary of Factors Affecting the Species'' section.

(35) *Comment:* The Service has designated critical habitat on tribal land in areas where the Service admits it does not have current status information, and yet the Service has excluded other areas on private land due to a lack of information.

Our Response: We have excluded lands of the San Carlos Apache Tribe from the designation pursuant to section 4(b)(2) of the Act (see ''Exclusions Under Section 4(b)(2) of the Act'' section below). The San Carlos Apache Tribal lands were the only tribal lands involved in this final designation.

(36) *Comment:* The Service knew in 1983 that the Gila chub warranted listing, despite gaps in available information. The 19-year delay resulted in its status declining further, but represents a good example that existing regulatory protections are inadequate.

Our Response: We did first consider conservation of the Gila chub in 1982 when the species was listed as a category 1 candidate species (see ''Previous Federal Actions'' from the proposed rule, August 9, 2002, 67 FR 51948). We agree that we lacked much of the information we now have on the species, including a status review conducted by the AGFD (Weedman et al. 1996). We also agree that the status since that time has deteriorated, reflecting the severity of the threats to the species, including the lack of protection afforded by other forms of regulation (see ''Inadequacy of Existing Regulatory Mechanisms'' section below).

(37) *Comment:* The State of Arizona has initiated no actions to assess the status of or protect this species.

Our Response: We disagree. The AGFD assisted the BLM with the establishment of Gila chub in Lousy Canyon and Larry Creek in 1995. The AGFD initiated the establishment of Gila chub into Romero and Bear Canyons concurrent with the reestablishment of Gila chub that were salvaged from the Aspen Fire into Sabino Canyon. AGFD has initiated several other reestablishment efforts of Gila chub in the Santa Cruz and San Pedro river basins that will likely take place in 2005 or 2006.

The Gila chub is considered a Wildlife of Special Concern in Arizona (AGFD 2005b), although this provides no regulatory protection. Arizona Game and Fish Commission Order 41 prohibits collection of, or fishing for, Gila chub in Arizona, except where such collection is authorized by special permit (AGFD 2005c). The AGFD does regulate the use of live bait and has restricted use of live bait in most of the Gila River system in Arizona (AGFD 2005c), which helps to reduce the number of nonnative species released into the Gila chub's habitat.

(38) *Comment:* The Service has not provided a ''takings analysis.''

Our Response: We conducted a takings analysis at the time of the proposed rule and as part of this final rule. The takings implications assessment concludes that the designation of critical habitat for the Gila chub does not pose significant takings implications.

(39) *Comment:* The Service should have evaluated existing conservation efforts under its Policy for Evaluation of Conservation Efforts (PECE) when making Listing Decisions.

Our Response: Throughout this final rule, we have discussed ongoing conservation efforts of various agencies, and we have evaluated how these efforts have affected the status of and threats to the Gila chub with regard to listing. Our PECE policy refers to formalized efforts that are directed at conservation of a species. We are aware of no such efforts for the Gila chub; further, recent and ongoing actions to conserve the species have resulted in some success, but have been unable to improve the status of the Gila chub since the proposed rule.

(40) *Comment:* The Service should not designate critical habitat in Lousy Canyon and Larry Creek because these were relatively recent introductions of the species and extending the protection of critical habitat to these systems may not be supported because they may not have the PCEs necessary to support the long-term persistence of the Gila chub.

Our Response: Gila chub were introduced into Lousy Canyon and Larry Creek in 1995. Since that time, these streams have been surveyed for fishes on a frequent basis, and Gila chub have consistently been documented, and are thriving, despite drought and wildfire events that threatened other

nearby populations of Gila chub. We believe that because Gila chub have persisted, and thrived, for 10 years in these systems, both these streams contain the PCEs necessary to support Gila chub. However, these stream segments are very small, isolated, and threatened by livestock grazing and the potential for wildfire. Given this information, we have found that Lousy Canyon and Larry Creek meet our definition of critical habitat because they have the physical and biological features essential to the conservation of the species, and require special management consideration.

(41) *Comment:* The Service cannot exclude tribal lands from the designation based on the development of a fisheries management plan because exclusions based on plans that are not part of the administrative record is improper, and existing case law (*Center for Biological Diversity* v. *Norton*) clearly rejected the Service's policy of solely excluding lands from critical habitat designations based on the rationale that ''additional special management is not required if adequate management or protection is in place.''

Our Response: The San Carlos Apache Tribe submitted a Fishery Management Plan to us on September 27, 2005, during the public comment period on the proposed rule. We have determined that it is appropriate to exclude critical habitat from the San Carlos Apache tribal lands as defined under section 4(b)(2) of the Act.

General Comments Issue 3: National Environmental Policy Act (NEPA) Compliance and Economic Analysis

(42) *Comment:* The Service has not provided a NEPA analysis or economic analysis.

Our Response: We announced the availability of a draft NEPA analysis and draft economic analysis for the proposed designation of critical habitat for the Gila chub for public comment on August 31, 2005 (70 FR 51732). We have finalized these documents, and they are available to the public (see **ADDRESSES** section above), and online at *http://www.fws.gov/arizonaes/*.

(43) *Comment:* Designation of critical habitat will ruin property values.

Our Response: Critical habitat designations do not by themselves constitute a burden in terms of Federal laws and regulations on private landowners carrying out private activities. When Federal approval or permit is required, or Federal funds are involved with a project proposed on private property that is likely to adversely modify or destroy critical habitat, then the critical habitat designation imposes Federal regulatory compliance obligations that can affect private landowners. Absent Federal approval, permits, or funding, the designation does not affect activities on private lands. Based on our economic analysis, we have determined that economic impacts from the designation of Gila chub critical habitat will not have a substantial or significant effect on small business entities.

(44) *Comment:* The proposed rule has not evaluated the economic effect of critical habitat on the San Carlos Apache Tribe as required in section 4(b)(2). The Service should not designate critical habitat on tribal land to avoid economic impacts to the tribe.

Our Response: We have evaluated the economic impacts to the San Carlos Apache Tribe in our economic analysis, which we have made available to the public as a draft and final report. The final economic analysis is available online (*http://www.fws.gov/arizonaes/*). We have excluded the San Carlos Apache tribal lands from the designation (see the ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(45) *Comment:* The draft economic analysis provides the costs to be used to judge the benefits of exclusion, but fails to analyze the benefits of inclusion. One commenter stated that economic benefits could include tourism to healthy riparian systems and water quality benefits to communities.

Our Response: In the context of a critical habitat designation, the primary purpose of the rulemaking (i.e., the direct benefit) is to designate areas in need of special management that contain the features that are essential to the conservation of listed species.

The designation of critical habitat may result in two distinct categories of benefits to society: (1) Use; and (2) non-use benefits. Use benefits are simply the social benefits that accrue from the physical use of a resource. Visiting critical habitat to see endangered species in their natural habitat would be a primary example. Non-use benefits, in contrast, represent welfare gains from ''just knowing' that a particular listed species'' natural habitat is being specially managed for the survival and recovery of that species. Both use and non-use benefits may occur unaccompanied by any market transactions.

A primary reason for conducting this analysis is to provide information regarding the economic impacts associated with a proposed critical habitat designation. Section 4(b)(2) of the Act requires the Secretary to designate critical habitat based on the best scientific data available after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. Economic impacts can be both positive and negative and by definition, are observable through market transactions.

Where data are available, this analysis attempts to recognize and measure the net economic impact of the proposed designation. For example, if the fencing of a species' habitat to restrict motor vehicles results in an increase in the number of individuals visiting the site for wildlife viewing, then the analysis would recognize the potential for a positive economic impact and attempt to quantify the effect (e.g., impacts that would be associated with an increase in tourism spending by wildlife viewers). In this particular instance, however, the economic analysis did not identify any credible estimates or measures of positive economic impacts that could offset some of the negative economic impacts analyzed earlier in this analysis.

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions. OMB's Circular A–4 distinguishes two types of economic benefits: direct benefits and ancillary benefits. Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking. In the context of critical habitat, the primary purpose of the rulemaking (i.e., the direct benefit) is the potential to enhance conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research. Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

(46) *Comment:* The draft economic analysis fails to distinguish costs specific to critical habitat designation from the costs of listing and other co-extensive costs. The draft economic analysis includes a variety of costs due to factors other than critical habitat,

many of which will occur regardless of whether critical habitat is designated.

Our Response: In conducting economic analyses, we are guided by the 10th Circuit Court of Appeal's ruling in the New Mexico Cattle Growers Association case (248 F.3d at 1285), which directed us to consider all impacts, ''regardless of whether those impacts are attributable co-extensively to other causes.'' As explained in the analysis, due to possible overlapping regulatory schemes and other reasons, there are also some elements of the analysis that may overstate some costs.

(47) *Comment:* We received questions regarding the draft economic analysis use of 10 cubic feet per second (cfs) streamflow as the minimum requirement for Gila chub, stating it is likely an overestimate.

Our Response: Section 4.1 of the draft economic analysis states the Service believes a conservative approach is to assume that the Gila chub requires a minimum of 10 cfs of streamflow. However, the draft economic analysis does not utilize a 10 cfs streamflow value to quantify potential impacts to water supply, because flow data is incomplete in proposed areas, and specific water management changes that would be necessary to provide required flow are not known. Instead, the draft economic analysis considers streamflow requirements coupled with actual flow data for each area to identify areas where potential water management impacts associated with conservation activities for the Gila chub may occur. Section 4 of the draft economic analysis discusses the value of the water resources that are at risk within proposed critical habitat areas.

(48) *Comment:* The draft economic analysis makes a flawed assumption that all private entities will voluntarily undertake actions to mitigate for Gila chub. The draft economic analysis is predicated on an assumption that private parties will voluntarily undertake expensive actions to mitigate adverse impacts to Gila chub.

Our Response: The draft economic analysis quantifies the costs of conservation efforts that have or may be undertaken for the Gila chub to avoid adverse impacts on the species or its habitat. Some of these actions may result from permitting or other Federal requirements, while other efforts may be undertaken by private actors to avoid adverse impacts on the species or its habitat. Thus, knowledge that one's actions are taking place within critical habitat areas may lead to some changes in these activities to avoid adversely affecting the species and its habitat.

(49) *Comment:* The draft economic analysis uses different (and incorrect) measures than the proposed rule for determining the location of proposed critical habitat. The draft economic analysis creates a 300-foot buffer from the centerline of the stream while the proposed critical habitat extends 300 feet from the bankfull width of the stream.

Our Response: As discussed in section 2.1, the draft economic analysis approximates the acreage of proposed critical habitat by creating a buffer of 300 feet on either side of the proposed critical habitat centerline developed by the Service, because geographic data depicting the bankfull width of proposed stream segments were not available. This method was determined to be the best approximation of the lateral extent of the proposed critical habitat designation based on available data. We also believe that the difference would generally be less than 15 m (50 ft) and would not be significant to the overall analysis. To estimate land ownership, geographic data of current land ownership was overlaid with critical habitat polygons using GIS analysis using the 300-foot buffer.

(50) *Comment:* The final draft economic analysis is based on critical habitat as proposed in the August 9, 2002, proposed rule, rather than the August 31, 2005, revised proposed rule. As a result some economic impacts that are not within the revised critical habitat are improperly included as economic costs. The description in the draft economic analysis of the length of the Bonita Creek stream reach appears to be taken from the 2002 rule.

Our Response: The final draft economic analysis is based on the revised August 31, 2005, proposed rule notice (70 FR 51732), using geographic data provided to Industrial Economics on May 16, 2005. A typographical error appeared in section 4.2, which stated the length of the proposed length of Bonita Creek incorrectly. This error has been fixed in the final draft economic analysis.

(51) *Comment:* The analysis of section 7 consultation and other ''administrative'' costs must segregate costs by species instead of attributing all costs from multi-species actions to Gila chub.

Our Response: The draft economic analysis separates and includes administrative costs attributable to the Gila chub. If multiple species are considered in a consultation, the draft economic analysis assumes that the costs directly attributable to the Gila chub are equal to the costs of a single technical assistance or consultation. We agree that the cost of consultations that consider impacts to multiple species are likely to exceed the costs of consultations considering a single species, and this is taken into account in the analysis.

(52) *Comment:* New information was provided that 245 acres of deeded land is proposed to be developed into 102 residential lots at Spring Creek Ranch. Creating a 300-foot wide buffer on either side of the creek would eliminate 39 of the lots from future development, at a current lot value of $600,000. Thus, total impacts of critical habitat would be $23.4 million (the value of the land lost from development multiplied by the number of lots).

Our Response: Information on this development was requested in section 7 of the draft economic analysis. The new information provided has been incorporated into section 7 of the final economic analysis. The project, as currently planned, will leave a 40 to 60 foot buffer from the stream, and will position lots outside of the 100-year flood plain. If this formation is sufficient to prevent impacts on Gila chub, then no additional economic impacts are anticipated. If, however, conservation efforts for the Gila chub result in the prohibition of all development within 300 feet of the bankfull width of the stream, economic impacts of up to $23.4 million could occur. The final economic analysis includes this range of economic impacts in section 7 of the analysis. We have also excluded privately owned lands in Spring Creek due to potential economic impacts as identified in our economic analysis (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(53) *Comment:* The revised boundaries of Cienega Creek include property owned by Vail Valley Joint Venture private property. Joint Venture's two-acre dam site and diversion works are located within the proposed critical habitat. The replacement cost of 1,121.85 acre-feet of water annually would be $8 million to $9 million.

Our Response: The Vail Valley Joint Venture site is used to exercise surface water rights on Cienega Creek held by the Del Lago Golf Club (Club) for turf and landscape irrigation. Part of the advantage of having this point of diversion for the Club is the low costs to operate and maintain the operations. If a change in water diversions or point of diversion were required, economic costs could be $8 million to $9 million, as estimated by the Club. These estimates provided in the public comment from Joint Venture and the Club are now incorporated into the

economic analysis. The likelihood that the Club would need to establish a new point of diversion or change its water diversions is unknown. We have also excluded privately owned lands in Cienega Creek due to the potential economic impacts as identified in our economic analysis (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(54) *Comment:* The potential economic impacts of the critical habitat designation on the Morenci mine were not properly evaluated in the draft economic analysis. The Service did not properly evaluate the economic impacts to the mining industry or evaluate the socioeconomic impacts to the surrounding communities resulting from any negative impacts to mining.

Our Response: The draft economic analysis discussed potential impacts to mining activities that were physically located within proposed critical habitat areas. Based on information provided during the public comment period from mining interests, the economic analysis has been revised to include information on potential impacts to the mining industry that could occur related to water diversions or withdrawals in proposed critical habitat for mining activities occurring outside of proposed critical habitat.

(55) *Comment:* The analysis of impacts to water development in Bonita Creek is based on faulty information resulting in illogical and unsupported conclusions that mistakenly attribute a cost of up to $9.5 million to critical habitat designation. Gila chub critical habitat would not limit the use of the City of Safford's water rights.

Our Response: As stated in section 4.2 of the draft economic analysis, the Service could recommend, or the City of Safford could decide, that in order to prevent take of Gila chub the City must completely abandon its Bonita Creek infiltration gallery, resulting in a loss of available water to the City. Section 4.2 states that, while this scenario appears unlikely, information on this scenario is provided in order to understand the potential magnitude of impacts should it occur. The analysis concludes that, while the City could replace any lost volume from Bonita Creek sources from other active production wells and existing back-up wells, abandoning the Bonita Creek infiltration gallery could result in economic impacts to the City. The impact can be viewed in terms of a lost capital investment; the loss of an inexpensive, reliable, and local, high-quality water supply requiring very little treatment and transportation; and a constraint on the City's ability to flexibly and effectively manage regional water supply and demand. As a proxy for the value of this economic impact, this analysis calculates the cost to the City to replace water rights for a volume equal to the potential lost volume from Bonita Creek, both the currently unused volume and the volume of the entire water right. Total replacement costs are estimated to range from $2.5 million to $9.5 million in undiscounted dollars. We have excluded Bonita Creek from the designation (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(56) *Comment:* We received questions on the inclusion of costs associated with Vail Water Company's Well #5. The analysis of water development in Cienega Creek assumes occurrence of future actions with no supporting data to indicate they are reasonably certain to occur.

Our Response: Section 4.2 of the draft economic analysis quantifies the potential impacts to the Vail Water Company's operations on Cienega Creek. Although this well is not currently in use, Vail Water Company could begin pumping water from the well for non-potable uses and could use the water for potable use with some treatment. Therefore, it is appropriate to include replacement costs in the draft economic analysis as the potential upper bound of cost related to Gila chub conservation activities.

(57) *Comment:* The assumption that economically harvestable timber exists in proposed critical habitat areas on upper Blue River is unsupportable by data.

Our Response: Section 6.2 of the draft economic analysis describes the potential impacts of limitations on timber harvest to the San Carlos Apache. The San Carlos Apache Tribe, who owns and manages the proposed critical habitat lands on the upper Blue River, identified that the area within the proposed critical habitat designation would be managed for timber harvest and production losses would be incurred as a result of increasing the current riparian timber buffer from 66 feet to 300 feet. The commenter does not provide evidence to dispute the statements made by the San Carlos Apache. The total value of timber losses estimated is $308,000 in undiscounted dollars, or $15,400 annually over 20 years.

(58) *Comment:* Restrictions on burning on the San Carlos Apache Reservation would be contrary to the best interests of Gila chub conservation and so are unlikely to result from critical habitat designation. This cost should not be included in the economic analysis.

Our Response: The proposed rule identifies prescribed fire as one of the activities that may affect the Gila chub and require consultation (on Federal lands). The draft economic analysis does not state that restrictions on prescribed burning will occur on the San Carlos Apache Reservation. It states that if the Tribe were not able to perform fire management activities as planned, the risk of catastrophic fire on Tribal lands could increase. Cost estimates are not included for this activity.

(59) *Comment:* One commenter asked if the draft economic analysis factored in the costs of eliminating non-native game fish and the cost in lost tourism of eliminating those non-native game fish.

Our Response: Section 8.3.3 of the draft economic analysis summarizes potential impacts to recreational activities. Based on information collected during the development of the economic analysis, the Gila chub does not occur in popular recreational fishing areas. In addition, non-native game fish stocking does not occur in any of the areas proposed for critical habitat designation. Significant economic impacts to recreational activities from Gila chub conservation activities within the proposed critical habitat designation are therefore not anticipated.

(60) *Comment:* The Service failed to evaluate a reasonable range of alternatives in its NEPA analysis.

Our Response: Our environmental assessment considered a range of proposed alternatives that we believe are consistent with intent of NEPA. Under NEPA, alternatives are developed based upon the purpose and need for the project. It is not the purpose or intent of an environmental assessment to evaluate all possible situations and conditions, instead a range of alternatives that meet the purpose and need for this project were evaluated in the environmental assessment. The environmental assessment describes in section 2.1 how the alternatives were defined to meet the purpose and need of the project, which is the designation of critical habitat for the Gila chub.

(61) *Comment:* An environmental assessment is not adequate for an action of this magnitude; instead an environmental impact statement (EIS) is required.

Our Response: Our environmental assessment considered a no-action alternative and an action alternative and discussed the adverse and beneficial environmental impacts of each. The impacts evaluated in the environmental assessment are for those associated with the designation of critical habitat above

those impacts due to listing alone. In that regard, we determined through the environmental assessment that the overall environmental effects of this action were not significant. An EIS is required only if we find that the proposed action is expected to have a significant impact on the human environment. Chapter 4 of the environmental assessment provides the basis for determining the significance of the proposed action and was conducted using Council on Environmental Quality regulations. Based on our analysis and comments received from the public, we prepared a final environmental assessment and made a Finding of No Significant Impact (FONSI), negating the need for preparation of an EIS. We believe our environmental assessment is consistent with the spirit and intent of NEPA. The final environmental assessment, FONSI, and final economic analysis provide our rationale for determining that critical habitat designation would not have a significant effect on the environment. Those documents are available for public review (see **ADDRESSES** section).

(62) *Comment:* Economic impacts to the mining industry and land development were not adequately evaluated.

Our Response: We have made modifications to the final economic analysis to address these concerns.

(63) *Comment:* The Service improperly concludes critical habitat will result in minor and non-controversial impacts.

Our Response: We believe the incremental impacts of designation of critical habitat above listing impacts are indeed minor. See also response to comment 61 above.

(64) *Comment:* The draft environmental assessment did not consider impacts on groundwater withdrawals by the mining industry.

Our Response: Impacts to groundwater withdrawals by the mining industry would not be significantly greater with critical habitat than the impacts due to listing alone.

(65) *Comment:* The draft environmental assessment fails to adequately consider impacts to tribal resources and economic impacts due to designation of critical habitat on the San Carlos Apache lands.

Our Response: With the exclusion of San Carlos Apache lands from critical habitat designation, no impacts are expected.

(66) *Comment:* Environmental justice concerns are not adequately considered in the NEPA analysis.

Our Response: We feel environmental justice issues were addressed to the greatest extent possible.

(67) *Comment:* The draft economic analysis underestimates the economic impacts of designation, as well as the impacts on land management activities.

Our Response: The majority of critical habitat is currently occupied by Gila chub. Therefore designation of critical habitat has only minor impacts beyond those of listing alone.

(68) *Comment:* The draft economic analysis ignores the ''recovery'' standard imposed by previous case law for determination of ''adverse modification'' to critical habitat.

Our Response: We disagree. This standard is discussed on page 40 of the environmental assessment (Section 3.2.2.2) and in other sections.

Comments From States

Section 4(i) of the Act states: ''the Secretary shall submit to the State agency a written justification for failure to adopt regulations consistent with the agency's comments or petition.'' Comments received from States regarding the proposal to designate critical habitat for the Gila chub are addressed below. We received comments from AGFD, NMGF, and the New Mexico Interstate Stream Commission. As noted above, these comments were drafted in part by individuals from whom we also requested peer review. All three sets of comments acknowledged the decline of the Gila chub, the threats to the species, the need for its protection, and were generally supportive of the proposed rule.

(69) *State Comment:* Mule Creek in New Mexico provides the PCEs and should be included in the critical habitat designation.

Our Response: Refer to our response to comment 1 above. We did not consider Mule Creek in our analysis of streams to propose for critical habitat because Gila chub had never been documented in this creek. We agree that Mule Creek appears to be suitable habitat for the species, and will work with New Mexico Game and Fish, and other interested stakeholders, to potentially introduce Gila chub to this stream, if feasible.

(70) *State Comment:* Much of the habitat occupied by the Gila chub is on private land. Designating critical habitat on these lands raises the possibility of placing unnecessary burdens upon and alienating those parties whose cooperation is vital for the successful implementation of appropriate conservation measures. The Service should carefully consider the benefits of fostering critical working relationships between Federal and private entities against a potential benefit that might occur by designating critical habitat for the Gila chub.

Our Response: In general, private landowners are not affected by critical habitat. Critical habitat directly affects only Federal actions. Pursuant to section 7 of the Act, Federal agencies ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat. Individuals, organizations, States, local and Tribal governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal land, require a Federal permit, license, or other authorization, or involve Federal funding (see ''Effect of Critical Habitat Designation''). We agree that cooperative conservation partnerships with private land owners are an important element in the conservation of the Gila chub and we agree that designation of critical habitat can lead to lack of cooperation by affected landowners. We have pursued such partnerships on numerous projects involving the Gila chub and will continue these partnerships after the chub is listed, and we have carefully considered the effects of listing and critical habitat designation on these partnerships.

(71) *State Comment:* How will listing the Gila chub affect AGFD enforcement of sport fishing regulations for the roundtail chub? Is the Service considering listing other species of chub under 4(e)(A) of the Act regarding similarity of appearance cases?

Our Response: Refer to our response to comment 7 above.

Summary of Changes from Proposed Rule

Based upon our review of the public comments, the economic analysis, environmental assessment, issues addressed at the public hearing, and any new relevant information that may have become available since the publication of the proposal, we reevaluated our proposed listing and critical habitat designation and made changes as appropriate. Other than minor clarifications and incorporation of additional information on the species' biology, status, and threats, this final rule differs from the proposal by the following: (1)We excluded lands of the San Carlos Tribal Apache Tribe pursuant to section 4(b)(2) of the Act (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(2) We excluded Bonita Creek downstream of San Carlos Apache

Tribal lands, pursuant to section 4(b)(2) of the Act, based upon a partnership with the City of Safford, BLM, and Reclamation to manage lands on Bonita Creek (see ''Exclusions Under Section 4(b)(2) of the Act'' section below).

(3) We have excluded proposed critical habitat on 1.9 mi of the lower segment of Cienega Creek and on 1.9 mi of Spring Creek, pursuant to section 4(b)(2) of the Act, due to the potential economic impact of designating these segments.

(4) We modified the primary constituent elements for the Gila chub by adding '' * * * a high degree of streambank stability and healthy, intact riparian vegetative community * * *'' and by broadening the range of water temperatures required for spawning to more accurately reflect data in our files, and providing examples of suitable ranges of water quality parameters (see ''Primary Constituent Elements'' section below).

(5) We are not including Post Canyon in the final designation of critical habitat based on recent information indicating that it went dry in 2005 and thus does not maintain sufficient PCEs necessary to support a population of Gila chub (AGFD 2005a). We therefore no longer believe that it meets the definition of critical habitat.

Summary of Factors Affecting the Species

Section 4 of the Act and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in Section 4(a)(1). These factors and their application to the Gila chub (*Gila intermedia*) are described below.

Status of Species

As discussed in further detail above in the ''Background'' section, we estimate, based on collection records, historical habitat data, the 1996 Arizona Game and Fish Department Gila chub status review (Weedman et al. 1996), and information in our files documenting currently occupied habitat (see Table 1 above), that the Gila chub have been eliminated from 85 to 90 percent of formerly occupied habitat. This loss has occurred as a result of the introduction and spread of nonnative aquatic species that prey on and compete with the Gila chub, and habitat loss and degradation from a variety of actions, described in detail below, most notably water use that has led to drying of stream channels throughout the range of the Gila chub. Additionally, we estimate that 90 percent of the Gila chub's currently occupied habitat has been degraded, either by the presence of nonnative species or land use that degrades habitat, such as livestock grazing. We believe that, without the protection of the Act, the Gila chub is likely to go extinct throughout all or a significant portion of its range.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Within the historical range of the Gila chub, much wetland habitat has been destroyed or degraded, and loss of this habitat continues today (Minckley and Deacon 1991; Tellman et al. 1998; Propst 1999). Activities such as groundwater pumping, surface water diversions, impoundments, dams, channelization (straightening of the natural watercourse, typically for flood control purposes), improperly managed livestock grazing, wildfire, agriculture, mining, road building, residential development, and recreation all contribute to riparian and cienega habitat loss and degradation in Arizona and New Mexico (Minckley and Deacon 1991; Weedman et al. 1996; Tellman et al. 1998; Propst 1999). All of these activities are human-caused; thus the local and regional effects of these activities are expected to increase with an increasing human population because a larger human population will result in more of these kinds of activities. As of 2005, Arizona was listed as the second fastest in Statewide population growth in the nation, and from 2000–2003, two Arizona counties (Pinal and Yavapai, counties that contain about 40 percent of Gila chub populations) grew by over 10 percent; further, the population of the State of Arizona is projected to grow by 109 percent by the year 2030 (U.S. Census Bureau 2005).

Water withdrawals. Growing water demands threaten the existence of southern Arizona perennial surface water in the Gila Basin, as well as the species that depend on it. Groundwater pumping has been a major factor in loss of surface water in springs, streams, and cienegas of Arizona, most notably in the Santa Cruz River Basin (Tellman et al. 1997). Since 1940, groundwater levels in Central Arizona have dropped over 220 feet, with Central Tucson subsiding in elevation at least one foot since 1950, due to this groundwater withdraw (Arizona Water Resources Research Center 2005). An example of the magnitude of these changes is the Santa Cruz River. Historically, the Santa Cruz River was occupied by the Gila chub throughout the drainage (Weedman et al. 1996). Today, the Santa Cruz River and its major tributaries in the Tucson area flow only in response to flood events (Webb and Betancourt 1992), and the Gila chub is extirpated (i.e. eliminated) in the mainstem Santa Cruz, occurring only in several small populations in tributaries of the Santa Cruz (see Table 1 above). We estimate the Gila chub has been eliminated from 95 percent of its former range in the Santa Cruz drainage (Weedman et al. 1996).

In addition to historical losses, groundwater pumping poses a threat to surface flows in the remaining Gila chub habitats in Eagle Creek and Cienega Creek. Groundwater withdrawal in Eagle Creek, primarily for water supply for a large open-pit copper mine at Morenci, dries portions of the stream. Groundwater pumping in the upper Cienega Creek drainage supports burgeoning ranchette development near the town of Sonoita. The city of Prescott and towns of Prescott Valley and Chino Valley are growing at an average rate of over 4 percent per year (U.S. Census Bureau 2005), and this growth is mostly based on groundwater pumping in the Verde River basin. The cities of Prescott and Prescott Valley recently purchased the JWK Ranch in the headwaters of the Verde River, with the intent of drilling new wells to supply up to 8,700 acre-feet (AF) of groundwater per year, which may have serious adverse effects on the mainstem and tributaries of the Verde River.

Increasing population growth in Sierra Vista will likely stimulate borderland development, with a concurrent water demand increase that could accelerate riparian area destruction and modification, and increase threats to plants and animals dependent on surface water, including the Gila chub. The San Pedro River in southern Arizona historically supported at least 13 native fish species, including Gila chub, but now supports only 2 (The Nature Conservancy 2000). One of the known factors that have contributed to the loss of Gila chub in the San Pedro River basin is the pumping of groundwater for agriculture and municipal uses. Groundwater pumping is expected to increase with human population growth. In anticipation of the growing population, Fort Huachuca Military Reservation has filed a claim for use of 435 AF per year of tributary surface water from the Gila River adjudication, in addition to its estimated 1,655 AF per year currently used (Arizona Department of Water

Resources 1991). Groundwater pumping is widely recognized as a threat to the San Pedro and Verde Rivers, and the wildlife that depend on these rivers (McKinnon 2005a).

Two tributary streams in the Verde River Basin are under increasing demands for water from surface and ground water withdrawal. Williamson Valley Wash has experienced a number of recent housing developments, and more are proposed. Although data are lacking, the effects of water withdrawal in this area combined with recent drought appear to have eliminated most of Gila chub habitat in this system (G. Price, Long Meadow Ranch Property Owners Association, in litt. 2002; L. Graser, Arizona Department of Water Resources, pers. comm. 2005). Spring Creek, a small system with only about 3 miles of habitat for the Gila chub, is the site of a proposed housing development that will be approximately 200 acres in size. The development will require three new groundwater wells for its water supply; hydrologic studies have not yet been completed (J. Himes, Himes Consulting, pers. comm. 2005), but the effects to surface water in Spring Creek could be significant.

Stream channelization and irrigation. Sections of many Gila Basin rivers and streams have been and continue to be channelized for flood control, which disrupts natural channel dynamics and promotes the loss of riparian plant communities. Channelization changes the gradient of the stream above and below the channel. It increases streamflow in the channelized section, which results in increased rates of erosion of the stream and its tributaries, accompanied by gradual deposits of sediment in downstream reaches that may increase the risk of flooding (Emerson 1971; Simpson 1982). Channelization can affect Gila chub habitat by reducing its complexity, eliminating cover, reducing nutrient input, improving habitat for nonnative species, changing sediment transport, altering substrate size, and reducing the length of the stream (and therefore the amount of aquatic habitat available) (Gorman and Karr 1978; Simpson 1982; Schmetterling et al. 2001). Channelization will continue to contribute to riparian and aquatic habitat decline.

Irrigation directly from stream and cienega waters reduces or eliminates water in existing fish habitat. Fish can be carried into irrigation ditches, where they die following desiccation (drying) of the irrigation ditch. Irrigation dams prevent movement of fish between populations, resulting in genetic isolation within species; small populations are subject to genetic threats, such as inbreeding depression (reduced health due to elevated levels of inbreeding) and genetic drift (a reduction in gene flow within the species that can increase the probability of unhealthy traits; Meffe and Carrol 1994).

There are numerous surface water diversions in Gila chub habitats, including Spring Creek, Walker Creek, Mineral Creek, Dix Creek, and Eagle Creek. Larger dams may also prevent movement of fish between populations and dramatically alter the flow regime of streams through the impoundment of water (Ligon et al. 1995). The Arizona Water Settlements Act created legislation for the construction of a large water project in New Mexico, potentially a large dam. However, it is unclear at this time if this would effect the population of Gila chub in Turkey Creek.

Livestock grazing. Livestock grazing can have adverse impacts on Gila chub habitat. Poor livestock-grazing management is widely believed to have been one of the most significant factors contributing to regional stream channel downcutting (the entrenchment of stream channels and creation of arroyos) in the late 1800s. Livestock grazing can destabilize stream channels and disturb riparian ecosystem functions (Herefore 1992; Tellman et al. 1997). Livestock can negatively affect Gila chub habitat through removal of riparian vegetation (Clary and Webster 1989; Clary and Medin 1990; Schulz and Leininger 1990; Armour et al. 1991; Fleishner 1994), which can result in reduced bank stability, fewer pools, and higher water temperatures (Meehan 1979; Kauffman and Krueger 1984; Swanson et al. 1982; Minckley and Rinne 1985; Fleishner 1994; Belsky et al. 1999). Livestock grazing can also cause increased sediment in the stream channel, due to streambank trampling and riparian vegetation loss (Weltz and Wood 1986; Waters 1995; Pearce et al. 1998). Livestock physically alter streambanks through trampling and shearing, leading to bank erosion (Platts and Nelson 1989; Trimble and Mendel 1995). In combination, loss of riparian vegetation and bank erosion can alter channel morphology, including increased erosion and deposition, downcutting, and an increased width/depth ratio, all of which lead to a loss of pool habitats required by the Gila chub, and to loss of shallow side and backwater habitats used by larval chub (Trimble and Mendel 1995; Belsky et al. 1999).

Livestock grazing administered by either the FS or BLM occurs in most of the streams and watersheds containing Gila chub. We have completed four formal conferences on the effects of livestock grazing on Gila chub. All four conferences found that livestock grazing resulted in adverse effects to Gila chub and its habitat (U.S. Fish and Wildlife Service 2005b), but is not likely to jeopardize the species or result in destruction or adverse modification of critical habitat.

Mining activities. Mining activities were more widespread historically and may have constituted a greater threat in the past; however, the continued mining of sand and gravel, iron, gold, copper, or other materials remains a potential threat to the habitat of Gila chub. The recently proposed Gentry Iron Mine may be located within 1.6 km (1.0 mi) of two Gila chub populations on the Tonto National Forest. The effects of proposed mining activities, like the Gentry Iron Mine, on these populations are uncertain at this time, but may include adverse affects to water quality and lowered flow rates due to dewatering of nearby streams needed for mining operations. Sand and gravel mining removes riparian vegetation and destabilizes streambanks, which results in habitat loss for the Gila chub (Brown et al. 1998). Sand and gravel mining along the Santa Cruz, San Pedro, and Babocomari Rivers has had serious impacts in the past and continues to impact these rivers although at a reduced scale.

As noted above, groundwater pumping to support mining operations poses a threat to surface flows in the remaining Gila chub habitats in Eagle Creek from a large open-pit copper mine at Morenci which dries portions of the stream.

Roads. Roads have adversely affected Gila chub habitat by increasing surface runoff and sedimentation, which can increase turbidity, reduce primary production, and reduce numbers of aquatic insects (Burns 1971; Eaglin and Hubert 1993). Roads require in-stream structures, such as culverts and bridges that remove aquatic habitat and can act as barriers to fish movement (Barrett et al. 1992; Warren and Pardew 1998). All of these activities negatively impact Gila chub by lowering water quality and by reducing the quality and quantity of pools, by filling them with sediments, reducing the quantity of large woody-debris necessary to form pools, and by imposing barriers to movement. The end result is deterioration of habitat for the Gila chub (Burns 1971; Eaglin and Hubert 1993).

Vehicular use of roads in creek bottoms can degrade Gila chub habitat and result in Gila chub mortality. Such use inhibits riparian plant growth,

breaks down banks, causes erosion, causes sedimentation, and increases turbidity in the stream, particularly where vehicles drive through the stream (especially immediately downstream of the vehicular activity). These effects are likely to result in wider and shallower stream channels (Armour 1977; Meehan 1991). This causes progressive adjustments in other variables of hydraulic geometry and results in changes to the configuration of pools, runs, riffles, and backwaters; levels of fine sediments and substrate embeddedness; availability of instream cover; and other fish habitat factors in the vicinity of vehicle crossings (Sullivan et al. 1987; Rosgen 1994). It also changes the way in which flood flows interact with the stream channel and may exacerbate flood damage to banks, channel bottoms, and riparian vegetation. The breaking down of stream banks by vehicles would reduce undercut banks and overhanging vegetation that chub use as cover.

Adverse effects of stream sedimentation to fish and fish habitat have been extensively documented (Murphy et al. 1981; Newcombe and MacDonald 1991; Barrett 1992). Excessive sedimentation may cause channel changes that are adverse to the Gila chub. Excessive sediment may fill backwaters and deep pools used by Gila chub, and sediment deposition in the main channel may cause a tendency toward stream braiding (e.g. the stream becomes wider, shallower, and has numerous channels as opposed to one channel), thus reducing adult chub habitat, as well. Excessive sediment may smother aquatic insects (Newcombe and MacDonald 1991), thereby reducing chub food production and availability, and related turbidity may reduce the chub's ability to see and capture food (Barrett et al. 1992). Fish fry and eggs could also be killed or injured if vehicles are driven through stream segments where these life stages occur. Larger fish are likely to swim away to avoid death or injury. Public vehicular use is also often associated with an elevated risk of human-caused fire.

New roads are proposed in association with housing developments in Williamson Valley Wash and Spring Creek; surveys within the last 5 years indicate that both of these streams provide high quality Gila chub habitat and are occupied by the species. In the past, roads in Bonita Creek traversed the streambed numerous times over its entire length. Use of the Bonita Creek road system created local disturbance of normal stream function including displacement and injury of fish, increased turbidity, and seasonal destruction of fish eggs and larvae at road crossings. Erosion of stream banks and terraces resulted in some areas, negatively affecting the condition of aquatic and associated riparian communities that support Gila chub (BLM 1998; U.S. Fish and Wildlife Service 2004a). BLM reduced the number of roads through the lower reaches of Bonita Creek from 15 miles (the entire reach of Bonita Creek in the Gila Box Riparian National Conservation Area (RNCA) to about 2 miles. There are still localized impacts, as described above, including some continued mortality of Gila chub, where roads follow or cross Bonita Creek. BLM's new roads and facilities in Bonita Creek, including camping and day use areas, limit and direct these recreational activities. Some trampling of vegetation and banks likely occurs, but is localized and minimal in areas of concentrated public use along Bonita Creek.

Much of the current range of the Gila chub occurs on public lands administered by the BLM and FS. Public use of these lands is high, and such use creates an elevated risk of human-caused fire. This risk exists in picnic and camping areas where fire can escape into wild lands. Directing public use to relatively fire-safe areas, as opposed to allowing people to camp and picnic anywhere, can reduce this risk. For example, BLM's improvements to recreational facilities in Bonita Creek over the last decade have served to reduce the risk of wildfire associated with public use.

Development activities. Gila chub habitat is also increasingly threatened from urban and suburban development (Tellman et al. 1997). Urban and suburban development can affect Gila chub and their habitats in a number of ways, such as direct alteration of streambanks and floodplains from construction of buildings, gardens, pastures, and roads (Tellman et al. 1997), or as mentioned above, diversion of water, both from streams and connected groundwater (Glennon 1995). On a broader scale, urban and suburban development alters the watershed, which changes the hydrology, sediment regimes, and pollution input (Dunne and Leopold 1978; Horak 1989; Medina 1990; Reid 1993; Waters 1995). The introduction of nonnative plants and animals that can adversely affect Gila chub may also become more likely as nearby human populations increase due to activities, such as releases from home aquariums (Aquatic Nuisance Species Task Force 1994).

Suburban and urban development can degrade and eliminate Gila chub habitat. The Phoenix metropolitan area, founded in part due to its proximity to the Salt and Gila Rivers, is a population center of millions of people. As mentioned above, a new proposed development project would occupy a significant portion of the Spring Creek watershed. More generally, communities in the middle and upper Verde River watershed, such as the Prescott-Chino Valley, the Cottonwood-Clarkdale-Camp Verde communities, Strawberry, Pine, and Payson, are all seeing rapid population growth. The upper San Pedro River is also the location of rapid population growth in the Sierra Vista-Huachuca City-Tombstone area. Many of these communities are near Gila chub populations.

Human activities in the watershed have had substantial adverse impacts to Gila chub habitat. Watershed alteration is a cumulative result of many human uses, including timber harvest, livestock grazing, roads, recreation, channelization, and residential development. The combined effect of all of these actions results in a substantial loss and degradation of habitat (Burns 1971; Reid 1993). In Williamson Valley Wash, human uses (e.g., recreational use of off-road vehicles) in the highly erodible upper watershed have resulted in increased erosion and high loads of sediment. In 1993, flooding in Williamson Valley Wash carried enough sediment that the isolated pool where Gila chub were previously collected became completely filled with sand and gravel (Weedman et al. 1996).

B. Overutilization for Commercial, Recreational, Scientific or Educational Purposes

We have determined that overutilization for commercial, recreational, scientific or educational purposes are not a threat to the Gila chub. Collection of, or fishing for, Gila chub in Arizona is prohibited by Arizona Game and Fish Commission Order 41, except where such collection is authorized by special permit (AGFD 2005c). The collection of Gila chub is prohibited in the State of New Mexico except by special scientific permit (NMGF 2005). Collection of Gila chub is prohibited in Mexico except by special permit. A few individual fish may be caught incidentally by recreational anglers; however, most Gila chub populations do not occur in popular fishing areas. Although roundtail chub is a related species that looks quite similar and is considered a sport fish in Arizona, AGFD allows a possession bag limit of 1 fish 13 inches or larger (AGFD 2005c); because Gila chub do not grow larger than approximately 8 inches, and because Gila chub are in geographical

areas in which roundtail chub generally do not occur, we believe that angling for roundtail chub is not a threat to the Gila chub. No commercial uses exist for Gila chub. A limited amount of scientific collecting occurs, but does not pose a threat to Gila chub since it is regulated by the States.

C. Disease and Predation

The introduction and spread of nonnative species has been identified as one of the major factors in the continuing decline of native fishes throughout North America and particularly in the southwestern United States (Miller 1961; Lachner et al. 1970; Ono et al. 1983; Moyle 1986; Moyle et al. 1986; Carlson and Muth 1989; Cohen and Carlton 1995; Fuller et al. 1990). Miller (1989) concluded that nonnative species were a causal factor in 68 percent of the fish extinctions in North America in the last 100 years. For 70 percent of those fish still extant, but considered to be endangered or threatened, introduced nonnative species are a primary cause of the decline (Aquatic Nuisance Species Task Force 1994; Lassuy 1995). In Arizona, release or dispersal of recently introduced nonnative aquatic organisms is a continuing phenomenon (Rosen et al. 1995; U.S. Fish and Wildlife Service 2001a). Aquatic nonnative species are introduced and spread into new areas through a variety of mechanisms, intentional and accidental, authorized and unauthorized. Mechanisms for nonnative dispersal in the southwestern United States include interbasin water transfer, sport fish stocking, aquaculture, aquarium releases, bait-bucket release (release of fish used as bait by anglers), and biological control (e.g., the introduction of one species to control another species) (Aquatic Nuisance Species Task Force 1994; U.S. Fish and Wildlife Service 2001a).

Gila chub evolved in a fish community with low species diversity and where few predators existed, and as a result developed few or no mechanisms to deal with predation from nonnative species (Carlson and Muth 1989). In its habitats, the Gila chub was a predatory fish and experienced little or no predation or competition from other species. The introduction of more aggressive and competitive nonnative fish led to significant losses of Gila chub.

In the Gila River basin, introduction of nonnatives is considered a major factor in the decline of all native fish species (Minckley 1985; Williams et al. 1985; Minckley and Deacon 1991). Aquatic and semi-aquatic mammals, reptiles, amphibians, crustaceans, mollusks (snails and clams), insects, zoo- and phytoplankton, parasites, disease organisms, algae, and aquatic and riparian vascular plants that are outside of their historical range have all been documented to adversely affect aquatic ecosystems (Cohen and Carlton 1995). As described below, the nonnative fishes have been demonstrated to pose a significant threat to Gila River basin native fishes, including Gila chub (Minckley 1985; Williams et al. 1985; Minckley and Deacon 1991).

The aquatic ecosystem of the central Gila River basin has relatively small streams with warm water and low gradients, and many of the native aquatic species are small in size. Therefore, much of the threat to native fishes comes from small nonnative fish species, as has also been noted for southern Nevada aquatic ecosystems (Deacon et al. 1964). Examples of this are the impacts of mosquitofish (*Gambusia affinis*) and red shiner (*Cyprinella lutrensis*), which may compete with or prey upon native fish in the Gila River basin (Meffe 1985; Douglas et al. 1994).

Nonnative fishes known to occur within the historical range of Gila chub basin include channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), red shiner, fathead minnow (*Pimephales promelas*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieui*), rainbow trout (*Oncorynchus mykiss*), western mosquitofish, carp (*Cyprinus carpo*) (Young and Bettaso 1994; Weedman et al. 1996), warmouth (*Lepomis gulosus*), bluegill (*Lepomis macrochiris*), yellow bullhead (*Ameiurus natalis*), black bullhead (*Ameiurus melas*), and goldfish (*Carassius auratus*) (AGFD Native Fish Database 2005). Additionally, as discussed below, nonnative parasites introduced incidentally with nonnative species may jeopardize Gila chub populations. Although parasites are normal in fish populations and typically do not cause mortality in their host, the effects of nonnative parasites can be significant, especially when combined with other stressors such as poor habitat conditions (U.S. Geological Survey 2004, 2005). Nonnative crayfish (virile crayfish) also prey on and compete with Gila chub (Carpenter 2000, 2005).

Dudley (1995) correlated green sunfish presence with Gila chub declines in Sabino Creek, Arizona, and documented predation by small green sunfish on young-of-the-year Gila chub. Dudley and Matter (2000) documented green sunfish predation on Gila chub and the displacement of Gila chub by green sunfish from preferred habitats; even small Green sunfish were highly predaceous on Gila chub. Unmack et al. (2003) found that in Silver Creek, Gila chub did not show signs of recruitment below a waterfall where they occurred with green sunfish; upstream, in the absence of green sunfish, Gila chub populations had multiple year classes and good recruitment.

Western mosquitofish were introduced outside of their native ranges to help control mosquitoes. Because of their aggressive and predatory behavior, mosquitofish may negatively affect populations of small fish through predation and competition (Courtenay and Meffe 1989; Aarn and Unmack 1998). Introduced mosquitofish have been particularly destructive in the American west where they have contributed to the elimination or decline of populations of federally-threatened and endangered species, such as the Gila topminnow (*Poeciliopsis occidentalis occidentalis*) (Courtenay and Meffe 1989). They often attack, shred fins, and sometimes kill other fish species. Mosquitofish are known to prey on eggs, larvae, and juveniles of various fishes, including the Gila chub.

Largemouth bass are intentionally introduced for the purpose of sport fishing. Introduced bass usually affect populations of small native fishes through predation, sometimes resulting in the decline or extinction of such species (Minckley 1973). Species that have suffered such effects include populations of Gila chub and Monkey spring pupfish (*Cyprinodon* sp.) (Minckley 1973).

The Asian tapeworm (*Bothriocephalus acheilognathi*) was introduced into the United States via imported grass carp in the early 1970s. It has since become well established in the southeast and mid-southern United States and has been recently found in the southwest including the Gila Basin. The definitive host in the life cycle of the Asian tapeworm is cyprinid (fish in the minnow family) fishes. There is a potential threat to the Gila chub as well as to the other native fishes in Arizona because of the presence of this parasite in the Gila Basin and the presence of cyprinid fish. The Asian tapeworm affects fish health in several ways. The direct impacts to fish are through impeding digestion of food as it passes through the intestinal track, and loss of nutrients as the worm feeds off the fish; large enough numbers of worms cause emaciation and starvation. An indirect effect is that weakened fish are more susceptible to infection by other

pathogens. This parasite can infest many species of fish and is carried into new areas along with nonnative fishes or native fishes from contaminated areas. Asian tapeworm may be a significant source of mortality of humpback chub in the Colorado River basin (U.S. Geological Survey 2004, 2005).

The nonnative parasite *Ichthyophthirius multifiliis* (''Ich'') is a potential threat to Gila chub. ''Ich'' disease has occurred in some Arizona streams, probably favored by high temperatures and crowding as a result of drought (Mpoame 1982). The deep, quiet waters in which Gila chub often occur (Minckley 1973) seem stable enough that ''Ich'' cysts do not wash away. This protozoan becomes embedded under the skin and within the gill tissues of infected fish. When the ''Ich'' matures, it leaves the fish, causing fluid loss, physiological stress, and sites that are susceptible to infection by other pathogens. If ''Ich'' is present in large enough numbers they can also impact respiration because of damaged gill tissue. This parasite has been observed on the Sonoran sucker (*Catostomus clakii*), a species common throughout the Gila River basin, and ''Ich'' does not appear to be host-specific, so it could be transmitted to other species. ''Ich'' outbreaks were observed and caused significant mortality in Gila chub salvaged from Silver Creek; presumably, the parasite was already present in the population prior to salvage (E. Gardner, AGFD, pers. comm. 2005).

Anchor worm (*Lernaea cyprinacea*) (Copepoda), also a nonnative species, is an external parasite, and is unusual in that it has little host specificity, infecting a wide range of fishes and amphibians. Additionally, infection has been known to kill large numbers of fish due to tissue damage and secondary infection of the attachment site (Hoffnagle and Cole 1997). Presence of this parasite in the Gila River basin is a threat to the Gila chub and other native fish. In July 1992, the BLM found Gila chub that were heavily parasitized by *Lernaea cyprinacea* in Bonita Creek. These fish were likely more susceptible to parasites due to physiological stress as a result of degraded habitat and decreased water flows due to water withdrawals. Clarkson and Creef (1993) suspected infestations by *Lernaea cyprinacea* in causing high mortality of stocked native fish, razorback sucker (*Xyrauchen texanus*) and Colorado pikeminnow (*Ptycocheilus lucius*).

D. The Inadequacy of Existing Regulatory Mechanisms

Existing regulatory mechanisms have not been adequate to prevent the continuing decline of Gila chub. Gila chub are primarily threatened by introductions of nonnative fishes. Fish introductions are illegal unless approved by the appropriate States. However, enforcement is difficult. Many nonnative fish populations are established through illegal introductions (Aquatic Nuisance Specie Task Force 1994). The use of live bait is permitted in Arizona for nine species of fish, crayfish, and tiger salamanders (*Ambystoma pigrimum*), all of which are nonnative to the State of Arizona and several of which are known to have serious adverse effects on native species, including the Gila chub. The portion of the State in which use of live bait is permitted is limited, and use of live bait is restricted in much of the Gila River system in Arizona (AGFD 2005c). The use of live bait is allowed in the Gila Basin in New Mexico (NMGF 2004).

The increasing restriction of live bait use will reduce the input of nonnative species into the Gila chub's habitat. However, it will do little to reduce unauthorized bait use or other forms of ''bait-bucket'' transfer (e.g., dumping of unwanted aquarium fish which may be invasive) not directly related to bait use. In fact, those other ''bait-bucket'' transfers are expected to increase as the human population of Arizona increases and as nonnative species become more available to the public through increased aquaculture, increased aquarium trade, and increased distribution through mechanisms such as the Central Arizona Project (CAP) aqueduct (Aquatic Nuisance Species Task Force 1994; U.S. Fish and Wildlife Service 2001a). The general public has been known to dump unwanted pet fish and other aquatic species into irrigation ditches such as the CAP aqueduct in the Phoenix metropolitan area (U.S. Fish and Wildlife Service 2001a).

A variety of existing international conventions and laws, and Federal and State regulations, provide limited protection to the Gila chub and its habitat. The Gila chub is included in Wildlife of Special Concern in Arizona, and State regulations prohibit collection of or fishing for Gila chub in Arizona except under special permit (AGFD 2005c). In New Mexico, Gila chub is listed as endangered, and collecting is prohibited except by special permit (NMGF 2004). In Mexico, the Gila chub is endangered and the collection of threatened and endangered species is prohibited (NORMA Oficial Mexicana 1994 (NOM–059–ECOL–1994)). The habitat of the Gila chub and other threatened and endangered species is protected from some activities in Mexico.

The Lacey Act, as amended (16 U.S.C. 3371 et seq.), provides some protection for the Gila chub. This legislation prohibits the import, export, sale, receipt, acquisition, purchase, and engagement in interstate or foreign commerce of any species taken, possessed, or sold in violation of any law, treaty, or regulation of the United States, any Tribal law, or any law or regulation of any State.

The Federal Land Policy Management Act of 1976 (43 U.S.C. 1701 et seq.) and the National Forest Management Act of 1976 (16 U.S.C. 1600 et seq.) direct Federal agencies to prepare programmatic-level management plans to guide long-term resource management decisions. In addition, the FS is required to manage habitat to maintain viable populations of existing native and desired nonnative vertebrate species in planning areas (36 CFR 219.19). These regulations have resulted in the preparation of a variety of land management plans by the FS and the BLM that address management and resource protection of areas that support, or in the past supported, populations of Gila chub. The FS has only limited ability to regulate introductions or stockings of nonnative species that prey on the Gila chub.

Many activities that affect the Gila chub and its habitat may occur outside of the States where the species occurs. For instance, activities such as atmospheric pollution from copper smelters or other actions that may be responsible for global amphibian declines may also affect Gila chub. State and Federal air quality regulations strictly regulate emissions from copper smelters, historically a major source of acidic rainfall and atmospheric cadmium and arsenic in southeastern Arizona, pollutants that may affect the Gila chub (Hale and Jarchow 1988). However, a major source of these pollutants has been copper smelters in Sonora, Mexico, which are not subject to the same regulations as in the United States (Hale et al. 1995; Blanchard and Stromberg 1987).

Wetland values and water quality of aquatic sites inhabited by the Gila chub are afforded varying protection under the Federal Water Pollution Control Act of 1948, as amended (33 U.S.C. 1251–1376) (known as the Clean Water Act), and Federal Executive Orders 11988 (Floodplain Management), and 11990 (Protection of Wetlands). Section 404 of

the Clean Water Act regulates dredging and filling activities in waterways.

The New Mexico Department of Game and Fish has adopted a wetland protection policy whereby the Department does not endorse any project that would result in a net decrease in either wetland acreage or wetland habitat values. This policy affords only limited protection to Gila chub habitat because it is advisory only; destruction or alteration of wetlands is not regulated by State law.

The State of Arizona Executive Order Number 89–16 (Streams and Riparian Resources), signed on June 10, 1989, directs State agencies to evaluate their actions and implement changes, as appropriate, to allow for restoration of riparian resources. Implementation of this regulation may reduce adverse effects of some State actions on the habitat of the Gila chub, although benefits to the species have not been documented.

Both Arizona and New Mexico regulate surface and groundwater withdrawal through the Arizona Department of Water Resources in Arizona and the Interstate Stream Commission and Office of the State Engineer for surface and groundwater in New Mexico. While these authorities provide some regulation that may provide protection to Gila chub habitat, in general, the Gila River basin, while fully appropriated, is subject to ongoing adjudication. In Arizona, significant regulation occurs only in Active Management Areas (AMAs); outside of these areas, there are no limits on groundwater pumping in Arizona (McKinnon 2005b; L. Graser, Arizona Department of Water Resources, pers. comm. 2005). All known Gila chub populations occur outside the designated AMAs.

In summary, the protection afforded by these and other Federal laws and regulations is inadequate to halt the loss of the Gila chub populations and their habitat.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Gila chub populations now remain fragmented and isolated to small stream segments and are vulnerable to those natural or manmade factors that might further reduce their population size. Random events, such as drought, floods, and wildfire, can decimate populations of Gila chub. Also, small populations are subject to genetic threats, such as inbreeding depression (reduced health due to elevated levels of inbreeding) and to genetic drift (a reduction in gene flow within the species that can increase the probability of unhealthy traits; Meffe and Carrol 1994).

Wildfires pose a threat to these remaining extant populations. The frequency and intensity of wildfires in the southwestern United States has increased over the past 10 years due to drought conditions, historical wildfire suppression activities, and increased recreational activities (e.g., camping). Efforts are underway to restore natural fire regimes to forest and grass lands. Gori and Backer (in press) found that using prescribed burns to mimic the historic fire regime improved watershed condition and Gila chub habitat in Hot Springs Creek. Unfortunately, most current work on restoring fire regimes is focused on areas of urban interface, and many decades will likely pass before natural fire cycles are restored on a landscape scale across the American southwest. A century of fire suppression has been exacerbated by livestock grazing that has led to unnaturally high fuel loadings (Cooper 1960; Covington and Moore 1994; Swetnam and Baison 1994; Touchan et al. 1995; White 1985). Forests that once frequently burned at low intensities now rarely burn, but when they do, it is often at stand-replacing intensity (Covington and Moore 1994). Fires in the southwest frequently occur during, or just prior to, the summer monsoon season. As a result, fires are often followed by rain that washes ash-laden debris into streams (Rinne 2004). It is usually such debris, rather than the fires themselves, that impact, and sometimes devastate fish populations (Rinne 2004), although direct effects from fire, including changes in temperature and water chemistry, can also cause fish morality. Indirect effects of fire also include watershed alteration that can alter streamflow, water quality, riparian vegetation, and instream sediment loads, all of which can drastically alter habitat for the Gila chub. Fire suppression can cause adverse affects to Gila chub from vegetation removal and road building, using fish habitats as water sources for fire fighting, and using fire retardants that are often toxic to aquatic species (see U.S. Fish and Wildlife Service 2004b for a thorough review of the effects of fire on fishes, including Gila chub, in Arizona).

The 2003 Aspen Fire in the Santa Catalina Mountains outside Tucson devastated the Gila chub population in Sabino Canyon. This population would have been extirpated were individual fish not salvaged by the Service, AGFD, and FS, and later reestablished using the salvaged stock (AGFD 2005a). The Cave Creek Complex Fire burned over 248,000 acres in summer 2005, threatening six Gila chub populations; individual fish were salvaged from Gila chub populations in Sycamore Creek, Indian Creek, and Silver Creek (Knowles et al. 2005).

The fragmentation of habitat and isolation of Gila chub populations has decreased the opportunity for additional gene flow to occur within these populations. Currently, the Gila chub has limited representation in each of the subunits within its historical range. As described above, dewatering has resulted in fragmentation of Gila chub populations, and water demands from a rapidly increasing human population are expected to further reduce habitat available to the Gila chub, and will likely further fragment populations. Fragmentation of Gila chub habitat increases vulnerability to extinction from threats of further habitat loss and competition from nonnative fish because immigration and recolonization from adjacent populations is less likely. In depth analyses of southwestern fish occurrence patterns (including Gila chub) led Fagan et al. (2002) to conclude that the number of occurrences or populations of a species is far less significant in determining extinction risk than is fragmentation of the species. Small populations and limited gene flow can also cause inbreeding depression and genetic drift that can further reduce the health of a population (Meffe and Carroll 1994). To achieve recovery, isolated populations may need to be augmented or Gila chub may need to be reintroduced into areas where they are extirpated.

Among the most important climatic factors affecting Arizona's rivers and streams is the variable pattern of rainfall, which includes winter precipitation and summer thunderstorms that can be accompanied by flash floods. Flooding is a natural part of the hydrological cycle and is an important part of a river regime. Life cycles of plant and aquatic life are tied to annual floods. Stream biota is adapted to the seasonal cycles of flooding and low flows, which helps determine the biomass of fishes. Many native stream fishes of the southwest are morphologically and behaviorally adapted to survive periodic flooding (Harrel 1978; Meffe 1984; Minckley and Deacon 1991). However, in some cases, such as Sabino Canyon in the Santa Catalina Mountains in southeastern Arizona, these erratic flows can decimate already reduced populations.

Extensive human alteration of watersheds that has occurred over the past 150 years in the lower Colorado River basin has resulted in changes in the hydrologic regimes of the rivers and

in the geomorphology of the river channels. Seasonal fluctuations in river channels due to droughts, floods, dams, and high human demand for water has had adverse impacts on the available surface flow, which restricted the distribution of Gila chub into small, isolated populations. This fragmentation of habitat makes the Gila chub very vulnerable to threats from further habitat loss and competition from nonnative fish. Drought has significantly increased substantial changes in the natural hydrology of southwest rivers and streams, including increased peak flows and lowered water tables. Droughts in the southwest may cause increased declines in Gila chub, particularly as human demand increases for the dwindling water supplies. This human-initiated change is exacerbated by the naturally highly variable climate of the area. Peaks of flood flows have increased in volume while moving through the system more rapidly, so that damaging floods have become more frequent and more destructive. This increase in destruction is also tied to removal of riparian vegetation and encroachment of agricultural fields and buildings upon the floodplain. Flooding destruction results in increased channelization and flood control measures that further alter the stream channel and hydrologic regime. On the other hand, low flows have become lower and last longer, thus decreasing habitat quantity and quality during critical times of the year for Gila chub.

Finding

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the Gila chub in determining that this species is in danger of extinction throughout all or a significant portion of its range. The habitat and range of the Gila chub are threatened with destruction, modification, and curtailment. Existing regulatory mechanisms do not provide adequate protection for these species, and other natural and manmade factors affect their continued existence. Because this species has a fragmented range, its populations are disconnected and isolated from each other, and potential habitat areas are isolated and separated by large areas of unsuitable habitat. Gila chub are therefore particularly vulnerable to localized extirpation should their habitat be degraded or destroyed. Because the connectivity of the habitat is limited, populations will have little opportunity to leave degraded habitat areas in search of suitable habitat. As a result, one contamination event, either physical or biological, or a period of drought in the aquatic habitat where the species is found could result in the loss of an entire population, of which there are few. Additionally, we have found that these fragmented populations are subject to a variety of imminent threats. Nonnative aquatic species, which can eliminate Gila chub via predation and competition, are present in many areas where there are populations of Gila chub. Arizona and New Mexico are arid States that are experiencing increasing human population growth, which is placing increasing demands on available water supplies. Surface water diversion and groundwater withdrawal threaten to eliminate numerous populations of the Gila chub. Habitat alteration due to numerous human activities threatens remaining Gila chub habitat.

The Act defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range, whereas a threatened species is defined as any species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Without protections, the Gila chub will become extinct in the foreseeable future due to these primary threats: (1) 85 to 90 percent of Gila chub habitat has been degraded or destroyed, and further degradation and destruction is ongoing as a result of various land use activities that degrade habitat (such as livestock grazing and water use); (2) extant populations of Gila chub are small and occupy habitat that has become severely fragmented, reducing chances for recolonization; and (3) competition with, and predation from, nonnatives is a major and increasing threat. The current status of the species and the threats described above led us to determine that the Gila chub meets the definition of an endangered species pursuant to section 3 of the Act. We are therefore listing Gila chub as an endangered species in this final rule.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the Act is no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 requires consultation on Federal actions that are likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow government or public access to private lands.

To be included in a critical habitat designation, the habitat within the area occupied by the species must first have features that are essential to the conservation of the species. Critical habitat designations identify, to the extent known using the best scientific data available, habitat areas that provide essential life cycle needs of the species (i.e., areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Habitat occupied at the time of listing may be included in critical habitat only if the essential features thereon may require special management or protection. When the best available scientific data do not demonstrate that the conservation needs of the species so require, we will not designate critical habitat in areas outside the geographical area occupied by the species at the time of listing. An area currently occupied by the species but was not known to be occupied at the time of listing will likely be essential to the conservation of the species and, therefore, included in the critical habitat designation.

The Service's Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (59 FR 34271), and section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (P.L. 106–554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service, provide criteria, establish procedures, and provide guidance to ensure that decisions made by the Service represent the best scientific data available. They require Service biologists to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas

are critical habitat, a primary source of information is generally the listing package for the species. Additional information sources include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge. All information is used in accordance with the provisions of section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (P.L. 106–554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, critical habitat designations do not signal that habitat outside the designation is unimportant or may not be required for recovery.

Areas that support populations, but are outside the critical habitat designation, will continue to be subject to conservation actions implemented under section 7(a)(1) of the Act and to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available information at the time of the action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

Methods

As required by section 4(b)(1)(A) of the Act, we use the best scientific data available in determining areas that are contain the features that are essential to the conservation of the Gila chub. In proposing critical habitat for the Gila chub, we solicited information from knowledgeable biologists and reviewed recommendations contained in State wildlife resource reports (e.g., Weedman et al. 1996). We also reviewed the available literature pertaining to habitat requirements, historical localities, and current localities of the Gila chub. We used data in reports submitted during section 7 consultations, research published in peer-reviewed articles and presented in academic theses and agency reports, and regional Geographic Information System (GIS) data layer coverages.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, in determining which areas to propose as critical habitat, we are required to base critical habitat determinations on the best scientific data available and to consider those physical and biological features (primary constituent elements (PCEs)) that are essential to the conservation of the species, and that may require special management considerations and protection. These include, but are not limited to: space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The specific primary constituent elements required of Gila chub habitat are derived from the biological needs of the Gila chub as described below.

Space for Individual and Population Growth and Normal Behavior

Gila chub are highly secretive animals, preferring quiet deeper waters, especially pools, or they remain near cover, including terrestrial vegetation, boulders, and fallen logs (Minckley 1973). Undercut banks created by overhanging terrestrial vegetation with dense roots growing into pool edges provide ideal cover for this species (Nelson 1993). Gila chub can survive in larger stream habitat, such as the San Carlos River, and artificial habitats, like the Buckeye Canal (Stout et al. 1970; Rinne 1976). Gila chub interact with spring and small stream fishes regularly (Meffe 1985), but prefer deeper waters (Minckley 1973).

Adults often are found in deep pools and below areas with swift current, as in the Gila chub habitats found in Bass Canyon and Hot Springs in the Muleshoe Preserve area. Young-of-the-year (fish that are less than 1 year old) inhabit shallow water among plants or eddies, while older juveniles use higher-velocity stream areas (Minckley 1973; Minckley and Deacon 1991). Tiny young stay in the shallowest water among plants; juveniles move into currents for a time, then return to pools where they grow larger (Minckley 1973). Griffith and Tiersch (1989) collected Gila chubs from both riffles and pools in Redfield Canyon. Dudley (1995) found that Gila chubs in Sabino Creek were highly reclusive in winter, occupying dark interstitial (small and closely narrow) space. Adults were found in deep water with small substrates, but often away from cover. Sub-adults were more active and visible in the summer and were observed farther from cover. Sub-adults were observed more frequently in shallow areas with measurable current as water temperatures increased.

The naturally dynamic nature of riverine systems and floodplains (including riparian and adjacent upland areas) are an integral part of the stream ecosystem. For example, riparian areas are seasonally flooded habitats (i.e., wetlands) that are major contributors to a variety of vital functions within the associated stream channel (Federal Interagency Stream Restoration Working Group 1998, Brinson et al. 1981). They are responsible for energy and nutrient cycling, filtering runoff, absorbing and gradually releasing floodwaters, recharging groundwater, maintaining streamflows, protecting stream banks from erosion, and providing shade and cover for fish and other aquatic species. Healthy riparian and adjacent upland areas help ensure water courses maintain the habitat components essential to aquatic species (e.g., see FS 1979; Middle Rio Grande Biological Interagency Team 1993; Briggs 1996), including the Gila chub. We believe a relatively intact riparian area, along with periodic flooding in a relatively natural pattern, is important in maintaining the stream conditions necessary for long-term conservation of the Gila chub.

Habitats Protected From Disturbance or Representative of the Historic Geographical and Ecological Distribution of a Species

Gila chub evolved in a fish community with low species diversity and with few predators, and as a result developed limited ability to survive predation (Carlson and Muth 1989; see Factor C. ''Disease and Predation'' section above). In its habitats, the Gila chub was probably the most predatory fish and experienced little or no competition. The introduction of more aggressive and competitive nonnative fish has led to significant losses of Gila chub. Nonnative crayfish also appear to prey on and compete with Gila chub

(Carpenter 2000, 2005). A number of nonnative parasites are also a threat to Gila chub (see Factor C. ''Disease and Predation'' section above).

Food

Griffith and Tiersch (1989) observed that Gila chub are omnivorous (feed on both plants and animals). Adults appear to be principally carnivorous, feeding on large and small terrestrial and aquatic insects and sometimes other small fishes (Rinne and Minckley 1991). Smaller individuals often feed on organic debris and aquatic plants, especially filamentous (threadlike) algae, and less intensely on diatoms (unicellular or colonial algae).

Griffith and Tiersch (1989) dissected 27 Gila chub stomachs from Refield Canyon, finding aquatic material that included speckled dace (*Rhinichtys osculus*) and dobsonfly nymphs (order Megaloptera). Terrestrial insects included primarily ants, with some caterpillars and beetles. Diatoms (algae) were most common by volume. Bottom feeding may also occur, as suggested by presence of small gravel particles.

Water Quality

Water quality is also an issue for the Gila chub. Excessive sedimentation is the primary threat to water quality for the Gila chub (as discussed in Factor A. ''The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range'' section above). In addition, mining activity can also introduce contaminants. For example, Gila chub that are found in Mineral Creek are limited to waters that are above a large mine. Water from the mine is drained back into Mineral Creek and no Gila chub have been found at this area.

A recent study of Gila chub in Sabino and Cienega creeks documented water quality at various times of the year and found that water temperature, pH, dissolved oxygen, and conductivity ranged from 10.5 °C to 25.19 °C, 7 to 9.5, 6.22 mg/l to 10.13 mg/l, and 125 mmhos to 438 mmhos, respectively, in Sabino Creek. Gila chub were captured in Cienega Creek in habitats with mid-day water temperature, pH, dissolved oxygen, and conductivity ranging from 11.17 °C to 23.2 °C, 6.58 to 8.9, 1.26 mg/l to 10.25 mg/l, and 469 mmhos to 760 mmhos, respectively.

Reproduction and Rearing of Offspring

Spawning probably occurs over beds of submerged aquatic vegetation or root wads (Weedman *et al.* 1996). Nelson (1993) attempted to identify cover and substrate types, duration of spawning, breeding color changes, and water temperature during spawning in Cienega Creek, Arizona. He concluded that warmer water temperatures, 20 to 24 degrees Celsius (C) (68 to 75.2 degrees Farenheit (F)), appear to increase breeding color intensities. Thus, warmer water temperatures may contribute to successful spawning. For the roundtail chub (*Gila robusta*), a close relative of the Gila chub, spawning has been documented at temperatures of 14 to 24 °C (57.2 to 75.2 °F), with 18 to 20 °C (64.4 to 68 °C) most commonly noted (Bezzerides and Bestgen 2002). A recent study of culture of Gila chub found that 20 °C to 29 °C was suitable for rearing juvenile Gila chub, with higher temperatures resulting in faster growth (A. Schultz, University of Arizona, in litt. 2005).

Based on our current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, we have determined that the Gila chub's primary constituent elements are:

(1) Perennial pools, areas of higher velocity between pools, and areas of shallow water among plants or eddies all found in headwaters, springs, and cienegas, generally of smaller tributaries;

(2) Water temperatures for spawning ranging from 17 to 24 °C (62.6 to 75.2 °F), and seasonally appropriate temperatures for all life stages (varying from approximately 10 °C to 30 °C).

(3) Water quality with reduced levels of contaminants, including excessive levels of sediments adverse to Gila chub health, and adequate levels of pH (*e.g.* ranging from 6.5 to 9.5), dissolved oxygen (*e.g.* ranging from 3.0 to 10.0) and conductivity (*e.g.* 100 to 1000 mmhos).

(4) Food base consisting of invertebrates (*e.g.* aquatic and terrestrial insects) and aquatic plants (*e.g.* diatoms and filamentous green algae);

(5) Sufficient cover consisting of downed logs in the water channel, submerged aquatic vegetation, submerged large tree root wads, undercut banks with sufficient overhanging vegetation, large rocks and boulders with overhangs, a high degree of streambank stability, and a healthy, intact riparian vegetation community;

(6) Habitat devoid of nonnative aquatic species detrimental to Gila chub or habitat in which detrimental nonnatives are kept at a level that allows Gila chub to continue to survive and reproduce; and

(7) Streams that maintain a natural flow pattern including periodic flooding.

Each of the areas designated in this rule have been determined to contain sufficient PCEs to provide for one or more of the life history functions of the Gila chub. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation conducted subsequent to this designation.

Criteria for Defining Critical Habitat

In designating critical habitat for the Gila chub, we reviewed information within our files and recommendations contained in State wildlife resource reports (*e.g.*, Weeman *et al.* 1996). We also reviewed the available scientific literature pertaining to habitat requirements, historic localities, and current localities for this species. We are not aware of any reliable information that is currently available to us that was not considered in this designation process. This final determination relies on our best assessment of areas with features that are essential to the conservation of the species. Much remains to be learned about this species; should credible new information become available that contradicts this designation, we will reevaluate our analysis and, if appropriate, propose to modify this critical habitat designation, depending on available funding and staffing.

We are designating critical habitat on lands that we have determined are occupied at the time of listing and have the features that are essential to the conservation of the species, and those additional areas found to be essential to the conservation of the species. All of the critical habitat areas are within the area historically occupied by the species and require special management consideration and protection. We note that one area included in this designation is not occupied (see ''Justification for Including Unoccupied Areas'' below).

Important considerations in selection of this critical habitat designation include factors specific to each river system, such as size, connectivity, and habitat diversity, as well as rangewide recovery considerations, such as genetic diversity and representation of major portions of the species' historical range. Each area contains stream reaches that are in close proximity to nearby stream reaches with interconnected waters so that Gila chub can move between areas, at least during certain flows or seasons. The ability of the fish to repopulate areas where they have been depleted or extirpated is vital to recovery. Additionally, these reaches play a vital

role in the overall health of the aquatic ecosystem and, therefore, the integrity of upstream and downstream Gila chub habitats.

Stabilization of the Gila chub at its present population level and distribution will not achieve conservation. The overall trend in the status of the Gila chub has been characterized by dramatic declines in numbers and range despite the fact that this species evolved in rapidly fluctuating, harsh environments. Known Gila chub populations remain fragmented and isolated to essentially very small stream segments and are vulnerable to those natural or manmade factors that might further reduce population size. If recovery actions fail to reverse the decline of Gila chub in its historical range, the species' vulnerability to catastrophic events, such as the introduction of the green sunfish or a prolonged period of low or no flow, would increase. Recovery through protection and enhancement of the existing populations, plus reestablishment of populations in suitable areas of historical range, are necessary for the species' survival and recovery. As previously stated, repatriation of Gila chub from extant populations will be evaluated as a means to recover the Gila chub in unoccupied portions of its historical habitat. Future restoration efforts will occur, pending completion of an approved recovery plan and genetic work to determine the suitability of using Gila chub from the extant populations in repatriation efforts.

We divided the overall historical range into seven river subareas, and each critical habitat stream segment was derived from within these main river subareas. We have used these main river areas for points of reference in defining our critical habitat boundaries, but we are designating critical habitat only in tributaries of these main rivers, and not the main rivers themselves. The designated critical habitat constitutes our best assessment of areas that contain the essential features (PCEs) for the conservation of the Gila chub and that may require special management or protection.

When determining critical habitat boundaries, we made every effort to avoid the designation of developed areas such as buildings, paved areas, boat ramps and other structures that lack PCEs for Gila chub. Any such structures do not contain the PCEs and are not considered part of the critical habitat designation. This also applies to the land on which such structures sit directly. Therefore, Federal actions limited to these areas would not trigger section 7 consultations, unless they affect the species and/or PCEs in adjacent critical habitat.

Segments were designated based on sufficient PCEs being present to support Gila chub life processes. Some segments contain all PCEs and support multiple life processes. Some segments contain only a portion of the PCEs necessary to support the particular use of that habitat by the Gila chub. Where a subset of the PCEs are present (*e.g.*, water temperature during spawning) it has been noted that only PCEs present at designation will be protected.

A brief discussion of each area designated as critical habitat is provided in the area descriptions below. Additional detailed documentation concerning these areas is contained in our supporting record for this rulemaking.

Justification for Including Unoccupied Areas

As background for this discussion, we note that during the development of this designation we documented all streams for which there were historical records for Gila chub. We found that the 1996 AGFD status report on the species had captured most of the historical Gila chub records, with the exception of one, Haunted Canyon, which was collected by R.R. Miller in 1959 (UMMZ collection record 176179). We then documented all currently known occupied streams by consulting agencies (including AGFD and NMGF) and university researchers, and by conducting our own surveys. This information is portrayed in Table 1 above, and summarized in the ''Background'' section. Based on our evaluation of existing information, we have concluded that there is one area, that includes 6.3 km (3.9 mi) of Turkey Creek (AZ) that is unoccupied (*i.e.*, does not meet our definition of occupied, as we do not have records to support occupancy within the last 5 years), but meets our definition of critical habitat in that it is essential to the conservation of species. Gila chub were last detected in Turkey Creek (AZ) in 1991; thus the species occupied this stream in recent times. We performed surveys of Turkey Creek in 2005 and determined that it contains sufficient PCEs to provide for one or more of the life history functions of the Gila chub. We believe that this stream could support Gila chub, and we are working with the AGFD to reestablish Gila chub into this system.

Critical habitat is defined in section 3 paragraph (5)(A) of the Act as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon determination that such areas are essential for the conservation of the species. As stated in the proposed rule (August 9, 2002; 67 FR 51948), reestablishment of populations into suitable areas of the Gila chub's historical range will be necessary for the conservation of the species. Protecting unoccupied areas, such as Turkey Creek in this case by designating it as critical habitat, can help to ensure that they will maintain the existing PCEs and provide for the future reestablishment of Gila chub for the purposes of recovery. We believe Turkey Creek represents important habitat that: (1) Has been documented to have been recently occupied by the species; (2) are in proximity to occupied areas and hydrologically connected to them during wet years; (3) contains sufficient PCEs to support the life history functions of the Gila chub; and (4) as noted above, are currently the subject of a Service/AZGDF partnership to reestablish the Gila chub in this area.

Special Management Considerations or Protections

When designating critical habitat, we assess whether the areas determined to be occupied at the time of listing contain the primary constituent elements and may require special management considerations or protection. We believe each area included in this final designation requires special management and protections based upon our five factor threats analysis provided above. Table 1 also identifies the specific threats to each area.

Special management considerations for each area will depend on the threats to the Gila chub in that critical habitat area. For example, special management that addresses the threat of nonnative species could include efforts to remove nonnative species from a creek, via chemical compounds that kill fish (*e.g.* rhotenone) but otherwise do not harm the environment, and construction of fish barriers that prevent the upstream movement of nonnative fishes into Gila chub habitat. Special management that addresses the threat of fire could include using prescribed fire to reduce fuel loads and prevent catastrophic wildfires, and salvaging individuals from populations that are threatened by wildfire. Livestock grazing is only a threat to Gila chub if not properly

managed. Proper management may include the use of fencing, rest rotation grazing systems, and other improvements to allotments such as new water tanks. With regard to water use, maintaining high quality and adequate quantities of water for all life stages of Gila chub may involve special management actions such as retaining an adequate buffer of riparian vegetation to help filter out sediment and contaminants, and maintaining streamflow via sustainable levels of ground and surface water use. We have included below in our description of each of the critical habitat areas for the chub a description of the threats occurring in that area requiring special management or protections.

Critical Habitat Designation

We are designating approximately 160.3 mi (258.1 km) of stream reaches as critical habitat. Critical habitat vital for the conservation of Gila chub includes: Cienegas, headwaters, spring-fed streams, perennial streams (Vives 1990), and spring-fed ponds (Minckley 1973). Historically, the range of the Gila chub covered over one-quarter of southeastern Arizona. The Gila chub now occupies about 10 to 15 percent of its historical range. Current populations of Gila chub are now scattered in small disconnected habitats throughout the following counties: Grant County, New Mexico, and Yavapai, Gila, Coconino, Pinal, Graham, Pima, Santa Cruz, Cochise, and Greenlee counties, Arizona.

For each stream reach, the upstream and downstream boundaries are described below. Additionally, critical habitat includes the stream channels within the identified stream reaches and areas within these reaches potentially inundated during high flow events. Critical habitat includes the area of bankfull width plus 300 feet on either side of the banks. The bankfull width is the width of the stream or river at bankfull discharge, *i.e.*, the flow at which water begins to leave the channel and move into the floodplain (Rosgen 1996). Bankfull discharge while a function of the size of the stream, is a fairly consistent feature related to the formation, maintenance, and dimensions of the stream channel (Rosgen 1996). We chose the bankfull width because bankfull discharge and width are quantifiable measures as are required to accurately classify a stream channel and make sound decisions about management of the stream and its watershed. This 300-foot width defines the lateral extent of each area of critical habitat that contains sufficient PCEs to provide for one or more of the life history functions of the Gila chub.

We determined the 300-foot lateral extent for several reasons. First, the implementing regulations of the Act require that critical habitat be defined by reference points and lines as found on standard topographic maps of the area (50 CFR 424.12). Although we considered using the 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA), we found that it was not included on standard topographic maps, and the information was not readily available from FEMA or from the Army Corps of Engineers for the areas we are proposing to designate. We suspect this is related to the remoteness of many of the stream reaches where the Gila chub occurs. Therefore, we selected the 300-foot lateral extent, rather than some other delineation, for three biological reasons: (1) The biological integrity and natural dynamics of the river system are maintained within this area (*i.e.*, the floodplain and its riparian vegetation provide space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain appropriate channel morphology and geometry, store water for slow release to maintain base flows, provide protected side channels and other protected areas, and allow the river to meander within its main channel in response to large flow events); (2) conservation of the adjacent riparian area also helps provide essential nutrient recharge and protection from sediment and pollutants; and (3) vegetated lateral zones are widely recognized as providing a variety of aquatic habitat functions and values (*e.g.*, aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality (see U.S. Army Corps of Engineers' final notice concerning Issuance and Modification of Nationwide Permits, March 9, 2000, 65 FR 12818–12899).

This designation takes into account the naturally dynamic nature of riverine systems and recognizes that floodplains (including riparian areas) are an integral part of the stream ecosystem. For example, riparian areas are seasonally flooded habitats (*e.g.*, wetlands) that are major contributors to a variety of vital functions within the associated stream channel (Federal Interagency Stream Restoration Working Group 1998; Brinson *et al.* 1981). They are responsible for energy and nutrient cycling, filtering runoff, absorbing and gradually releasing floodwaters, recharging groundwater, maintaining streamflows, protecting stream banks from erosion, and providing shade and cover for fish and other aquatic species. Healthy riparian areas help ensure water courses maintain the habitat components essential to aquatic species (Briggs 1996), including the Gila chub. Habitat quality within the mainstem river channels in the historical range of the Gila chub is intrinsically related to the character of the floodplain and the associated tributaries, side channels, and backwater habitats that contribute to the key habitat features (*e.g.*, substrate, water quality, and water quantity) in these reaches.

Among other things, the floodplain provides space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain channel morphology and geometry. We believe a relatively intact riparian area, along with periodic flooding in a relatively natural pattern, are important in maintaining the stream conditions necessary for long-term survival and recovery of the Gila chub.

Conservation of the river channel alone is not sufficient to ensure the survival and recovery of the Gila chub. For the reasons discussed above, we believe the riparian corridors adjacent to the river channel provide an important function for the protection and maintenance of critical habitat.

The final designation includes seven river areas with a total of 160.3 mi (258.1 km) of stream reaches (see Table 2 below). We are not designating mainstem river channels that may have been historically used by Gila chub as migration corridors and are currently considered outside of the occupied range of the Gila chub. In addition, most of these major rivers no longer contain suitable habitat to serve as migration corridors for movement of Gila chub. Instead, we are designating certain small tributary streams within the watershed of the rivers listed below. The seven areas designated as critical habitat are: (1) Upper Gila River Area; (2) Middle Gila River Area; (3) Babocomari River Area; (4) Lower San Pedro River Area; (5) Lower Santa Cruz River Area Area; (6) Upper Verde River Area; and (7) Aqua Fria River Area.

Tables 2, 3, and 4 below show the lands being designated as critical habitat by landowner and State, by individual Federal landowner for each State, and by ownership of lands excluded pursuant to section 4(b)(2) of the Act, respectively.

TABLE 2.—APPROXIMATE CRITICAL HABITAT IN STREAM KILOMETERS (KM) AND MILES (MI) BY STATE AND LANDOWNER

Land owner	New Mexico km (mi)	Arizona km (mi)	Total km (mi)
Federal	18.9 (11.7)	153.1 (95.1)	172.0 (106.8)
State	0	17.5 (10.9)	17.5 (10.9)
County	0	13.6 (8.4)	13.6 (8.4)
Private	4.0 (2.5)	51.0 (31.7)	55.0 (34.2)
Total	22.9 (14.2)	235.2 (146.1)	258.1 (160.3)

TABLE 3.—APPROXIMATE CRITICAL HABITAT IN STREAM KILOMETERS (KM) AND MILES (MI) BY INDIVIDUAL FEDERAL LANDOWNERS

Land owner	New Mexico km (mi)	Arizona km (mi)	Total km (mi)
Gila National Forest	18.9 (11.7)	0	18.9 (11.7)
Apache-Sitgreaves National Forest	0	50.5 (31.4)	50.5 (31.4)
Coconino National Forest	0	16.9 (10.5)	16.9 (10.5)
Coronado National Forest	0	13.9 (8.7)	13.9 (8.7)
Prescott National Forest	0	21.0 (13.1)	21.0 (13.1)
Tonto National Forest	0	7.4 (4.6)	7.4 (4.6)
Subtotal	18.9 (11.7)	109.7 (68.3)	128.6 (80.0)
BLM—Phoenix District	0	7.7 (4.8)	7.7 (4.8)
BLM—Safford District	0	11.9 (7.4)	11.9 (7.4)
BLM—Tucson District	0	23.7 (14.8)	23.7 (14.8)
Subtotal	0	43.4 (27.0)	43.4 (27.0)
Total	18.9 (11.7)	153.1 (95.1)	172.0 (106.8)

TABLE 4.—APPROXIMATE CRITICAL HABITAT EXCLUDED IN THIS FINAL RULE ON THE BASIS OF SECTION 4(B)(2) OF THE ACT, IN STREAM KILOMETERS (KM) AND MILES (MI) BY LANDOWNER

Land owner	New Mexico km (mi)	Arizona km (mi)	Total km (mi)
Tribal	0	47.1 (29.3)	47.1 (29.3)
BLM	0	15.8 (9.8)	15.8 (9.8)
Private	0	14.2 (8.9)	14.2 (8.9)
Total	0	77.1 (48.0)	77.1 (48.0)

Below we present brief descriptions of all areas and the segments within each area, reasons why each area and segment meets the definition of critical habitat for the Gila chub, a discussion of occupancy and a general description of land ownership. See Table 1 for specific occupancy data and sources of information; see the maps and legal description of critical habitat in the ''Regulation Promulgation'' section below for more specific coordinate information.

Area 1: Upper Gila River Area

This area lies in Grant County, New Mexico, and Greenlee County, Arizona. Critical habitat includes several tributary streams: Turkey Creek, Dix Creek, Harden Cienega Creek, Eagle Creek, and East Eagle Creek. All of these segments are currently occupied by the Gila chub. These tributaries represent the few remaining tributaries of a low desert river that currently provide the necessary habitat for the Gila chub, in a largely natural state. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

a. Turkey Creek (New Mexico)—22.3 km (13.8 mi) of creek extending from the edge of the Gila Wilderness boundary and continuing upstream into the Gila Wilderness in the Gila National Forest. Turkey Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover. Turkey Creek supports a population of Gila chub; surveys confirmed the species presence in 2005 (P. C. Marsh, ASU, in litt. 2005). Land ownership is entirely Gila National Forest and private.

b. Eagle Creek and East Eagle Creek—39.2 km (24.4 mi) of creek extending from the confluence of Eagle Creek with an unnamed tributary upstream to its confluence with East Eagle Creek, and including East Eagle Creek to its headwaters just south of Highway 191. Nine other native fishes known to

occupy Eagle Creek include loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), longfin dace (*Agozia chrysogaster*), speckled dace, Sonora sucker (*Catostomus insignis*), desert sucker (*Catostomus clarkii*), razorback sucker, roundtail chub, and an undetermined trout species (*Oncorhynchus* sp.). This upper portion of Eagle Creek contains one or more of the primary constituent elements, including a series of permanent pools with riffle (shallow area in a streambed causing ripples), run areas between these pools, and the necessary vegetation that provides cover. A diversion dam just below the end of the proposed critical habitat reach acts as a barrier to prevent nonnatives from invading from the Gila River. Periodic flooding appears to decrease the presence of nonnatives, subsequently decreasing the impacts to native fishes by nonnatives in Eagle Creek above this diversion dam (Marsh *et al.* 1990). East Eagle Creek contains one or more of the primary constituent elements, including a series of permanent pools with riffle, run areas between these pools, and the necessary vegetation that provides cover. East Eagle Creek is also hydrologically connected to Eagle Creek. Gila chub were most recently documented in Eagle Creek in 2005 (Marsh 2005). Land ownership for this segment is predominantly FS, but includes some private land.

c. Harden Cienega Creek—22.6 km (14.0 mi) of creek extending from its confluence with the San Francisco River in and continuing upstream to its headwaters. Harden Cienega Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover. AGFD surveyed this stream in 2005 and found Gila chub to be abundant (McKell 2005). Land ownership for this segment is Apache-Sitgreaves National Forest, Gila National Forest, and private inholdings.

d. Dix Creek—Portions of the Creek beginning 1.0 mile upstream from its confluence with the San Francisco River at a natural rock barrier and continuing upstream for 0.9 km (0.6 mi.) to the confluence of the right and left forks of Dix Creek. This critical habitat area also includes the Left Prong of Dix Creek as it continues upstream 2.0 km (1.2 mi), and the Right Prong of Dix Creek as it continues upstream 4.8 km (3.0 mi). The barrier at the lower end of Dix Creek appears to be effective in isolating the upper drainages from nonnative fish. Dix Creek contains one or more of the primary constituent elements, including perennial pools, and is devoid of nonnatives. AGFD surveyed this stream in 2005 and found Gila chub to be abundant (McKell 2005). Land ownership for these segments is entirely Apache-Sitgreaves National Forest.

Area 2: Middle Gila River Area

This area lies in Graham, Gila, and Pinal counties, Arizona. Critical habitat includes a tributary stream as critical habitat: Mineral Creek. The Mineral Creek population of Gila chub fills a gap of what was previously determined unoccupied habitat within the Middle Gila River Area. This may help to expand future populations of Gila chub in the Middle Gila River Area. Critical habitat within Mineral Creek consists of 14.4 km (8.9 mi) of creek extending from the confluence with Devil's Canyon upstream to its headwaters. Gila chub currently occupy Mineral Creek, and this area contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Below this area, Mineral Creek flows through a mine, where it has been contaminated and does not provide suitable habitat. AGFD documented Gila chub in Mineral Creek in 2000 (Weedman 2000). The area below the mine is not being designated as critical habitat. Land ownership for this segment is Tonto National Forest, Arizona State lands, and private. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

Area 3: Babocomari River Area

This area lies in Santa Cruz County, Arizona. Historically the Babocomari River was a perennial stream which flowed through cienegas and marshlands all the way to the San Pedro River. However, livestock overgrazing destroyed much of the river. In 1995, AGFD found that the only water use was a large impoundment in the river, on the Babocomari Ranch. Perennial flows begin upstream from this impoundment near T–4 Spring. Gila chub were first collected from the Babocomari River in 1892 near Fort Huachuca Military Reservation and again in 1950, approximately 3.5 mi below the Babocomari Ranch (Weedman et al. 1996). Tributaries to this area include O'Donnell Canyon and Turkey Creek, which are designated as critical habitat. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

a. O'Donnell Canyon—10.0 km (6.2 mi) of creek extending from its confluence with Turkey Creek upstream to the confluences of Western, Middle, and Pauline Canyons. O'Donnell Canyon provides the full range of primary constituent elements necessary for the conservation of the Gila chub. AGFD surveyed O'Donnell Creek and found Gila chub in O'Donnell Creek, although at very low numbers, in 2004 (Dean Foster, AGFD, in litt. 2005). Land ownership is BLM, Coronado National Forest, and private.

b. Turkey Creek—6.3 km (3.9 mi) of creek extending from its confluence with O'Donnell Canyon upstream to where Turkey Creek crosses AZ Highway 83. Turkey Creek contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Gila chub have not been detected in Turkey Creek since 1991, although in wet years this segment is connected to occupied habitat in O'Donnell Creek (Weedman *et al.* 1996). Land ownership is Coronado National Forest and private lands.

Area 4: Lower San Pedro River Area

This area lies in Graham and Cochise counties, Arizona. Gila chub currently exist in several tributaries of this segment of the San Pedro River. Historically, Gila chub most likely occurred on both sides of the lower San Pedro River; however, documentation of Gila chub presence only exists for the east-side drainages. We are only designating critical habitat for the east-side drainage areas. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

a. Bass Canyon—5.5 km (3.4 mi) of creek extending from its confluence with Hot Springs Canyon upstream to the confluence with Pine Canyon. Perennial water was documented by Dave Gori (TNC, in litt., 1995) for this stream from the confluence with Hot Springs Canyon upstream 4.8 km (3.0 mi). The remainder of the stream was dry for 8 km (5.0 mi). All the State land in the Muleshoe Preserve was traded to the BLM and is managed by TNC. Beginning in 1991, biologists with TNC established eight fixed sample stations in Bass Canyon, five in Hot Springs, and three in Double R Canyon. Beginning in 1992, random pools were also sampled in the streams each year. Gila chub were collected from 1992 to 2003 in Bass Canyon (B. Rogers, TNC, in litt. 2005). Bass Canyon contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Land ownership includes BLM and privately owned lands.

b. Hot Springs Canyon—10.5 km (6.5 mi) of creek extending from its confluence with Bass Canyon downstream. The occurrence of Gila chub within this reach of Hot Springs Canyon is sporadic due to the limited number of pools; however, Gila chub are commonly found where good pool habitat exists in Hot Springs Canyon (per. comm. TNC, 2000). Hot Springs Canyon contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Gila chub were found in Hot Springs Canyon in 2004 (B. Rogers, TNC, in litt. 2005). Land ownership includes BLM, State lands, and private.

c. Redfield Canyon—9.8 km (6.1 mi) of creek extending from its confluence with Sycamore Canyon downstream. The first documented collection of Gila chub in Redfield Canyon was in 1961. A number of collections of Gila chub occurred from 1976 to 1983, and most recently in 2003. Redfield Canyon contains one of the few populations of Gila chub for which population studies have been conducted (Griffith and Tiersch 1989). Fall Fish Count (FFC) sites were established and surveyed by volunteers from 1988 to 1990. TNC established monitoring stations from 1991 to 1994. Gila chub were collected each year, and they were the most abundant species caught in 1991 (72% of the total fish caught) (Weedman *et al.* 1996). TNC surveyed Redfield Canyon in November 2001, and Gila chub were documented. This segment of Redfield Canyon is remote and relatively pristine. Additionally, no livestock grazing is permitted, which contributes to the existence of the primary constituent elements for the Gila chub. Redfield Canyon has an abundant and healthy Gila chub population. Redfield Canyon contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Land ownership includes BLM, State lands, and private.

Area 5: Lower Santa Cruz River Area

This area lies in Pima County, Arizona. Tributaries included in the critical habitat designation are Cienega Creek, Mattie Canyon, Empire Gulch, and Sabino Canyon. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

a. Cienega Creek—There are two segments of critical habitat designated in Cienega Creek. The first segment is in the lower part of the drainage, and includes 14.2 km (8.8 mi) of creek extending from where Cienega Creek becomes Pantano Wash to where it crosses Interstate 10. The second segment is in the upper part of the drainage and extends from its confluence with Empire Gulch on BLM lands to a point 13.6 km (8.4 mi) downstream. Perennial water exists within the lower segment in the Cienega Creek Natural Preserve managed by the Pima County Flood Control District. In June 2005, Gila chub were documented in this lower segment of Cienega Creek. The upper segment of Cienega Creek is considered to be one of the finest natural habitats for the Gila chub, and was the only stream segment with a population of Gila chub considered stable-secure by Weedman et al. (1996). Fish inventories of Cienega Creek and its tributaries, Mattie Canyon and Empire Gulch, have been conducted since 1989 by seining, electrofishing, and visual observation. Composition of native fish in Cienega Creek varies from its upper to lower reaches, as well as from year to year. Fish sampling is difficult in Cienega Creek because of the large volume of vegetation cover, great pool depths, and undercut banks. Visual observation and electrofishing data show that a large population of adult Gila chub occupy the upper perennial segment of Cienega Creek. Visual observations of adult Gila chub made for the aquatic habitat inventory in 1989 and 1990 found 368 chub along the upper perennial length of Cienega Creek. This estimate is undoubtedly low due to water turbidity in some reaches, vegetation cover, and the secretive nature of Gila chub. Cienega Creek contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Gila chub were found in the upper segment of Cienega Creek in 2004 (D. Foster, AGFD, pers. comm. 2005) and in the lower segment in 2005 (D. Duncan, Service, in litt. 2005). Land ownership for the upper segment is BLM. The lower segment is owned by Pima County.

b. Mattie Canyon—4.0 km (2.5 mi) of creek extending from its confluence with Cienega Creek upstream to the BLM Boundary. Gila chub were observed in Mattie Canyon in 2005 (J. Simms, BLM in litt. 2005). Mattie Canyon contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Land ownership is BLM.

c. Empire Gulch—5.2 km (3.2 mi) of creek extending from its confluence with Cienega Creek continuing upstream through BLM lands. The majority of this reach is on BLM land and contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Gila chub were documented in Empire Gulch in 1995 and in 2001 (67 FR 51948). Land ownership is BLM.

d. Sabino Canyon—11.1 km (6.9 mi) of creek extending from the southern boundary of the Coronado National Forest upstream to its confluence with the West Fork of Sabino Canyon. Sabino Canyon is managed by the Coronado National Forest. Sabino Canyon was devastated by the Aspen Fire in July 2003. Gila chub were salvaged during the fire, and later returned in May 2005 (AGFD 2005a). Sabino Canyon contains one or more of the primary constituent elements, including perennial pools and adequate water quality. Land ownership is Coronado National Forest.

Area 6: Upper Verde River Area

This area lies in Yavapai County, Arizona. We are designating four tributaries within the Verde River drainage as critical habitat: Walker Creek, Red Tank Draw, Silver Creek, and Williamson Valley Wash. The Upper Verde River is the northwestern most part of the Gila chub's historical range. Conserving these Gila chub populations will help maintain representation of the species throughout its historical range. All of these segments have at least one of the primary constituent elements present. Threats to this critical habitat area requiring special management and protections include fire, grazing, residential development, water use, and nonnative species (see Table 1 above).

a. Walker Creek—7.6 km (4.7 mi) of creek extending from Prescott National Forest Road 618 upstream to its confluence with Spring Creek. The earliest known collection of Gila chub was in 1978 by J. Rinne (Weedman 1996). Walker Creek was surveyed in 1994 by AGFD at five different locations; Gila chub were collected at three of those locations. Gila chub were collected in Walker Creek by Service biologists in 2005 (Service data). The ephemeral nature of the lower end of Walker Creek appears to be limiting the invasion of nonnative species from Wet Beaver Creek (Weedman et al. 1996); the only nonnative species found in 2005 were virile crayfish (*Orconectes virilis*). Walker Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides

cover. Land ownership is Coconino National Forest and private lands.

b. Red Tank Draw—11.1 km (6.9 mi) of creek extending from the National Park Service boundary just upstream of its confluence with Wet Beaver Creek upstream to the confluence of Mullican and Rarick canyons. Red Tank Draw is an intermittent stream that offers abundant Gila chub habitat in the form of perennial pools. Gila chub were documented in Red Tank Draw in 1996 by AGFD, and by the Service in 2005. Green sunfish and virile crayfish are present in the downstream reaches of this stream segment. Red Tank Draw contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover. Land ownership is Coconino National Forest and private.

c. Spring Creek—5.7 km (3.6 mi) of creek including all non-private lands extending from the boundary of Forest Service land and continuing upstream to the Arizona Highway 89A crossing. Gila chub were documented in 2005 in Spring Creek by Service biologists (Service data). Spring Creek contains all of primary constituent elements, with the exception of habitat free from nonnative aquatic species; virile crayfish are the only nonnative present. Four other native fish species occur in Spring Creek: speckled dace, longfin dace, Sonora sucker, and desert sucker. Land ownership is Coconino National Forest and private.

d. Williamson Valley Wash—7.2 km (4.4 mi) of creek extending from the gauging station upstream to the crossing of the Williamson Valley Road. In 1990 Williamson Valley Wash was surveyed for Gila chub and collected on the Matli Ranch, and a large stretch of stream had perennial water (Weedman et al. 1996). In July 2001, Williamson Valley Wash was resurveyed, and Gila chub were abundant (Bryan Bagley in litt. 2001), although they appear to have become much more rare since that time (Bill Leibfried, in litt. 2005). Williamson Valley Wash contains the full range of primary constituent elements necessary for the conservation of the Gila chub. Williamson Valley Wash is entirely on private lands.

Area 7: Agua Fria River Area

This area lies in Yavapai County, Arizona. There are six tributaries in the Agua Fria River that are designated as critical habitat, all of which are currently occupied by Gila chub: Little Sycamore Creek, Sycamore Creek, Indian Creek, Silver Creek, Lousy Canyon, and Larry Creek. The Agua Fria River Area represents part of the upper northwest area of the historical range of the Gila chub, and current Gila chub populations in the six drainages of this river area are healthy. There have been no reports of any diseases associated with the Gila chub in this area. Survey results indicate a good representation of all age classes. However, the Cave Creek Complex Fire burned over 248,000 acres in summer 2005, threatening Gila chub populations in this area; individual fish were salvaged from Gila chub populations in Sycamore Creek, Indian Creek, and Silver Creek (Knowles et al. 2005). Gila chub were introduced to Larry Creek and Lousy Canyon as a conservation action in July 1995 (Weedman et al. 1996) by the BLM. Conserving these Gila chub populations will help maintain representation of the species throughout its historical range. Threats to this critical habitat area requiring special management and protections include fire, grazing, and nonnative species (see Table 1 above).

a. Little Sycamore Creek—4.7 km (2.9 mi) of creek extending from its confluence with Sycamore Creek upstream. This segment is intermittent but always contains some habitat in the form of perennial pools; Gila chub expand into larger habitats when they are available. Little Sycamore Creek contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Gila chub were documented in Little Sycamore Creek in 2003 (A. Silas, FS, pers. comm. 2005). Land ownership is Prescott National Forest and private.

b. Sycamore Creek—18.3 km (11.4 mi) of creek extending from its confluence with Little Sycamore Creek upstream to Nelson Place Spring. Sycamore Creek is perennial throughout most of its length, with the last 3 km (2 mi) being intermittent. Gila chub were documented in Sycamore Creek in 2005 when they were removed as part of a salvage effort to secure the population from the effects of the Cave Creek Complex Fire (Hedwall et al. 2005). In surveys in 2002, there were no nonnatives collected and all age classes were represented. Gila chub distribution was limited to the area between the Double T Waterfall and the Rock Bottom Box totaling a length of 5 km (3.0 mi) of habitat. Both of these sites are effective fish barriers and seem to have served to prevent nonnatives from invading this upper section of Sycamore Creek. Due to the remoteness of this area, it is unlikely that additional threats to the existing Gila chub population will be of concern. Livestock grazing is very limited in the upper portion of this reach due to the canyons and inaccessibility to the stream. However, below the fish barriers, livestock have access to these areas. Sycamore Creek contains one or more of the primary constituent elements, including perennial pools, the necessary vegetation that provides cover, and adequate water quality. Land ownership is Prescott National Forest and private.

c. Indian Creek—8.4 km (5.2 mi) of creek extending from Upper Water Springs downstream into BLM lands. Gila chub were first collected in Indian Creek in May 1995. Gila chub were salvaged from Indian Creek in 2005 to secure the population from the Cave Creek Complex Fire (J. Voeltz, AGFD in litt. 2005). Similar to Little Sycamore Creek, this segment is intermittent, but there is always some habitat available in the form of perennial pools; Gila chub expand into larger habitats when they are available. Indian Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover (per. comm. BLM 2002). Land ownership is BLM, Prescott National Forest, and private.

d. Silver Creek—8.5 km (5.3 mi) of creek extending from a spring on FS lands downstream onto BLM lands, all of which is located above a natural waterfall/barrier located 4 km (2.5 mi) above the confluence with the Agua Fria River. The earliest record of Gila chub collected in Silver Creek was in 1980. Due to high recruitment of young-of-the-year, Silver Creek was the source of Gila chub that were translocated to Larry Creek and Lousy Canyon in July 1995. Gila chub were salvaged from Silver Creek to protect the population from the Cave Creek Complex Fire in 2005 (D. Weedman, AGFD in litt. 2005). Silver Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover (per. comm. BLM 2002). Land ownership is Tonto National Forest and BLM.

e. Lousy Canyon—Extending from the confluence of an unnamed tributary upstream to the fork with an another unnamed tributary approximately 0.6 km (0.4 mi) upstream. In 1995, BLM introduced Gila chub from Silver Creek into Lousy Canyon. In 2005, the Service surveyed the stream and observed Gila chub. Lousy Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover. In addition, this area is within a canyon, and it is inaccessible to cattle due to the geological nature of the canyon, which acts as a barrier. Land ownership is BLM.

f. Larry Creek—Portions of the creek from an unnamed tributary upstream 0.7 km (0.4 mi) to the confluence of two adjoining unnamed tributaries. In 1995, BLM introduced Gila chub from Silver Creek into Larry Creek, and the population appears to be thriving (Service files). Larry Creek contains one or more of the primary constituent elements, including perennial pools and the necessary vegetation that provides cover (Service files). In addition, this area is within a canyon, and it is inaccessible to cattle due to the geological nature of the canyon which acts as a barrier. The Service visually surveyed Larry Creek in 2003 and found Gila chub to be abundant. Land ownership is BLM.

Exclusions Under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that critical habitat shall be designated, and revised, on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. An area may be excluded from critical habitat if it is determined that the benefits of exclusion outweigh the benefits of specifying a particular area as critical habitat, unless the failure to designate such area as critical habitat will result in the extinction of the species.

In our critical habitat designations, we use the provision outlined in section 4(b)(2) of the Act to evaluate those specific areas that contain the features essential to the conservation of the species to determine which areas to propose and subsequently finalize (i.e., designate) as critical habitat. On the basis of our evaluation, we have determined that the benefits of excluding certain lands from the designation of critical habitat for the Gila chub outweigh the benefits of their inclusion, and have subsequently excluded those lands from this designation pursuant to section 4(b)(2) of the Act as discussed below.

Areas excluded pursuant to section 4(b)(2) may include, but are not limited to, Tribal conservation plans/programs that cover the species and partnerships, conservation plans/easements, or other type of formalized relationship/agreement on private lands. The relationship of critical habitat to these types of areas is discussed in detail in the following paragraphs.

After consideration under section 4(b)(2), the following areas of habitat have been excluded from critical habitat for the Gila chub: Bonita Creek and Blue River within the tribal lands of the San Carlos Apache Nation; Bonita Creek on BLM and private lands of the City of Safford; and portions of proposed areas 5(a) and 6(c) to address economic impacts. A detailed analysis of our exclusion of these lands under section 4(b)(2) of the Act is provided in the paragraphs that follow.

General Principles of Section 7 Consultations Used in the 4(b)(2) Balancing Process

The most direct, and potentially largest, regulatory benefit of critical habitat is that federally authorized, funded, or carried out activities require consultation pursuant to section 7 of the Act to ensure that they are not likely to destroy or adversely modify critical habitat. There are two limitations to this regulatory effect. First, it only applies where there is a Federal nexus—if there is no Federal nexus, designation itself does not restrict actions that destroy or adversely modify critical habitat. Second, it only limits destruction or adverse modification. By its nature, the prohibition on adverse modification is designed to ensure those areas that contain the physical and biological features essential to the conservation of the species or unoccupied areas that are essential to the conservation of the species are not eroded. Critical habitat designation alone, however, does not require specific steps toward recovery.

Once consultation under section 7 of the Act is triggered, the process may conclude informally when the Service concurs in writing that the proposed Federal action is not likely to adversely affect the listed species or its critical habitat. However, if the Service determines through informal consultation that adverse impacts are likely to occur, then formal consultation would be initiated. Formal consultation concludes with a biological opinion issued by the Service on whether the proposed Federal action is likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of critical habitat, with separate analyses being made under both the jeopardy and the adverse modification standards. For critical habitat, a biological opinion that concludes in a determination of no destruction or adverse modification may contain discretionary conservation recommendations to minimize adverse effects to primary constituent elements, but it would not contain any mandatory reasonable and prudent measures or terms and conditions. Mandatory reasonable and prudent alternatives to the proposed Federal action would only be issued when the biological opinion results in a jeopardy or adverse modification conclusion.

We also note that for 30 years prior to the Ninth Circuit Court's decision in *Gifford Pinchot*, the Service equated the jeopardy standard with the standard for destruction or adverse modification of critical habitat. The Court ruled that the Service could no longer equate the two standards and that adverse modification evaluations require consideration of impacts on the recovery of species. Thus, under the *Gifford Pinchot* decision, critical habitat designations may provide greater benefits to the recovery of a species. However, we believe the conservation achieved through implementing management plans is typically greater than would be achieved through multiple site-by-site, project-by-project, section 7 consultations involving consideration of critical habitat. Management plans commit resources to implement long-term management and protection to particular habitat for at least one and possibly other listed or sensitive species. Section 7 consultations only commit Federal agencies to prevent adverse modification to critical habitat caused by the particular project, and they are not committed to provide conservation or long-term benefits to areas not affected by the proposed project. Thus, any management plan which considers enhancement or recovery as the management standard will always provide as much or more benefit than a consultation for critical habitat designation conducted under the standards required by the Ninth Circuit in the *Gifford Pinchot* decision.

The information provided in this section applies to all the discussions below that discuss the benefits of inclusion and exclusion of critical habitat in that it provides the framework for the consultation process.

Educational Benefits of Critical Habitat

A benefit of including lands in critical habitat is that the designation of critical habitat serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the Gila chub. In general the educational benefit of a critical habitat designation always exists, although in some cases it may be redundant with other educational effects. For example, habitat conservation plans have significant public input and may largely duplicate the educational benefit of a critical habitat designation. This benefit is closely related to a second, more

indirect benefit: That designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances.

However, we believe that there would be little additional informational benefit gained from the designation of critical habitat for the exclusions we are making in this rule because these areas were included in the proposed rule as having essential Gila chub habitat. Consequently, we believe that the informational benefits are already provided even though these areas are not designated as critical habitat. Additionally, the purpose normally served by the designation of informing State agencies and local governments about areas which would benefit from protection and enhancement of habitat for the Gila chub is already well established among State and local governments, and Federal agencies in those areas that we are excluding from critical habitat in this rule on the basis of other existing habitat management protections.

The information provided in this section applies to all the discussions below that discuss the benefits of inclusion and exclusion of critical habitat.

San Carlos Apache Tribe

Relationship of Critical Habitat to American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act

In accordance with the Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2), we believe that fish, wildlife, and other natural resources on tribal lands are better managed under tribal authorities, policies, and programs than through Federal regulation wherever possible and practicable. Based on this philosophy, we believe that, in many cases, designation of tribal lands as critical habitat provides very little additional benefit to threatened and endangered species. Conversely, such designation is often viewed by tribes as an unwanted intrusion into tribal self governance, thus compromising the government-to-government relationship essential to achieving our mutual goals of managing for healthy ecosystems upon which the viability of threatened and endangered species populations depend.

The San Carlos Apache Tribe has two streams within its tribal lands, the Blue River and a portion of Bonita Creek, that are known to be currently occupied by Gila chub and its tribal lands contain features that are essential to the conservation of the Gila chub. The Tribe has completed and is implementing a Fisheries Management Plan (FMP) that includes specific management actions for the Gila chub. In making our determination with regard to tribal lands, we considered several factors, including our relationship with San Carlos Apache Tribe, and the degree to which the Tribe's FMP provides specific management for the Gila chub. Tribal governments protect and manage their resources in the manner that is most beneficial to them. The San Carlos Apache Tribe exercises legislative, administrative, and judicial control over activities within the boundaries of its lands. Additionally, the Tribe has a natural resource programs and staff and have enacted the FMP. In addition, as trustee for land held in trust by the United States for Indian Tribes, the Bureau of Indian Affairs (BIA) provides technical assistance to the San Carlos Apache Tribe on management planning and oversees a variety of programs on their lands. Gila chub conservation activities have been ongoing on San Carlos Apache tribal lands, and, prior to the completion of their FMP, their natural resource management, while not specific to the Gila chub, was consistent with management of habitat for this species. The development and implementation of the efforts formalized in the San Carlos Apache Tribes FMP will continue with or without critical habitat designation.

The San Carlos Apache Tribe highly values its wildlife and natural resources, and is charged to preserve and protect these resources under the Tribal Constitution. Consequently, the Tribe has long worked to manage the habitat of wildlife on its tribal lands, including the habitat of endangered and threatened species. We understand that it is the Tribe's position that a designation of critical habitat on its lands improperly infringes upon its tribal sovereignty and the right to self-government.

The San Carlos Apache Tribes FMP provides assurances and a conservation benefit to the Gila chub. Implementation of the FMP will result in protecting all known Gila chub habitat on San Carlos Tribal Land and assures no net habitat loss or permanent modification will occur in the future. The purpose of the FMP includes the long-term conservation of native fishes, including Gila chub, on tribal lands. The FMP outlines actions to conserve, enhance, and restore Gila chub habitat, including efforts to eliminate nonnative fishes from Gila chub habitat. All habitat restoration activities (whether it is to rehabilitate or restore native plants) will be conducted under reasonable coordination with the Service. All reasonable measures will be taken to ensure that recreational activities do not result in a net habitat loss or permanent modification of the habitat. All reasonable measures will be taken to conduct livestock grazing activities in a manner that will ensure the conservation of Gila chub habitat. Within funding limitations and under confidentiality guidelines established by the Tribe, the Tribe will cooperate with the Service to monitor and survey Gila chub habitat, conduct research, perform habitat restoration, remove nonnative aquatic species, or conduct other beneficial Gila chub management activities.

As a result of the assurances, protections, and conservation benefit provided for the Gila chub and its habitat on San Carlos Apache Tribal lands described above, we are excluding the Blue River and portions of Bonita Creek occurring on tribal lands from the Middle Gila River Area.

(1) Benefits of Inclusion

Including lands of the San Carlos Apache Tribe in critical habitat would provide some additional benefit from section 7 consultation, because we could consult via the Bureau of Indian Affairs (BIA) on actions that could adversely affect critical habitat. Although we have not formally conferenced with BIA on any actions affecting Gila chub, we have conducted six formal conferences with BLM and FS that have involved proposed critical habitat. Activities covered in these conferences included livestock grazing, recreation, fish stocking, fire management, and bank stabilization, and conservation measures that benefited Gila chub critical habitat included monitoring, fence repair (to exclude cattle from overusing and thereby damaging Gila chub habitat), and education programs to inform the public of the need to avoid actions that damage habitat. However, we note that because the Gila chub will still be listed under this final rule and will be found on San Carlos Apache tribal lands, section 7 consultation under the jeopardy standard will still be required if Tribal or BIA activities would affect Gila chub, regardless of our excluding

these lands from the critical habitat designation. As a result, we expect that inclusion of San Carlos Apache tribal lands would provide only that additional habitat protection accorded by critical habitat as discussed by the Ninth Circuit Court of Appeals in the Gifford Pinchot ruling discussed above.

Nevertheless, few additional benefits would be derived from including these Tribal Lands in a Gila chub critical habitat designation beyond what will be achieved through the implementation of the FMP. As noted above, the primary regulatory benefit of any designated critical habitat is that federally funded or authorized activities in such habitat require consultation pursuant to section 7 of the Act. Such consultation would ensure that adequate protection is provided to avoid destruction or adverse modification of critical habitat. The San Carlos Apache Tribe has already agreed under the terms of their FMP to protect Gila chub habitat (PCEs), to ensure no net loss, to coordinate with the Service in order to prevent any habitat destruction, and to conduct activities consistent with the conservation of the Gila chub and its PCEs.

As discussed above, we expect that little additional educational benefit would be derived from designating lands (Blue River and Bonita Creek) of the San Carlos Apache as critical habitat. The additional educational benefits that might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this critical habitat designation, as evidenced by the San Carlos Apache Tribe currently working with the Service to address habitat and conservation needs for the Gila chub. Additionally, we anticipate that the San Carlos Apache Tribe will continue to actively participate in working groups, and provide for the timely exchange of management information. The educational benefits important for the long-term survival and conservation of the Gila chub are being realized without designating this area as critical habitat. Educational benefits will continue on these lands if they are excluded from the designation, because the FMP already recognizes the importance of those habitat areas to the Gila chub.

Another possible benefit is the additional funding that may be generated for habitat restoration or improvement by having an area designated as critical habitat. In some instances, having an area designated as critical habitat may improve the ranking a project receives during evaluation for funding. The San Carlos Apache Tribe often requires additional sources of funding in order to conduct wildlife-related activities. Therefore, having an area designated as critical habitat could improve the chances of Tribe receiving funding for Gila chub-related projects. Additionally, occupancy by Gila chub also provides benefits to be considered in evaluating funding proposals. Because there are areas of occupied habitat on San Carlos Apache lands, the listing of the Gila chub may help secure funding for management of these areas.

For these reasons, then, we believe that designation of critical habitat would provide some additional benefits.

(2) Benefits of Exclusion

The benefits of excluding the San Carlos Apache Tribal lands from critical habitat include: (1) The advancement of our Federal Indian Trust obligations and our deference to Tribes to develop and implement tribal conservation and natural resource management plans for their lands and resources, which includes the Gila chub and other Federal trust species; (2) the maintenance of effective working relationships to promote the conservation of the Gila chub and their habitat; (3) the allowance for continued meaningful collaboration and cooperation on Gila chub management and other resources of interest to the Federal government; (4) the provision of conservation benefits to riparian ecosystems and a host of species, including the Gila chub and its habitat, that might not otherwise occur; and (5) the reduction or elimination of administrative and/or project modification costs as analyzed in the economic analysis.

During the development of the Gila chub critical habitat proposal (and coordination for other critical habitat proposals), and other efforts such as conservation of native fish species in general, we have met and communicated with the San Carlos Apache Tribe to discuss how they might be affected by the regulations associated with Gila chub conservation and the designation of critical habitat. As such, we established relationships with the San Carlos Apache Tribe specific to Gila chub conservation. As part of our relationship, we provided technical assistance to the San Carlos Apache Tribe to develop measures to conserve the Gila chub and its habitat on their lands. These measures are contained within the FMP that we have in our supporting record for this decision (see discussion above). This proactive action was conducted in accordance with Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2). We believe that the San Carlos Apache Tribe should be the governmental entity to manage and promote the conservation of the Gila chub on their lands. During our communication with the San Carlos Apache Tribe, we recognized and endorsed their fundamental right to provide for tribal resource management activities, including those relating to riparian ecosystems.

The designation of critical habitat on the San Carlos Apache Tribal lands would be expected to adversely impact our working relationship with them. In fact, during our discussions with the San Carlos Apache Tribe and from comments received, we were informed that critical habitat would be viewed as an intrusion on their sovereign abilities to manage natural resources in accordance with their own policies, customs, and laws. To this end, we found that the San Carlos Apache Tribe would prefer to work with us on a government-to-government basis. For these reasons, we believe that our working relationship with the San Carlos Apache Tribe would be better maintained if they are excluded from the designation of critical for the Gila chub. We view this as a substantial benefit.

We indicated in the proposed rule (August 9, 2002; 67 FR 51948) that in our final decision concerning designation of critical habitat on the San Carlos Apache Tribal lands, we would consider our relationship with the San Carlos Apache Tribe and whether they developed a Gila chub FMP. We identified that the San Carlos Apache Tribe had a draft FMP. We also discussed our continued cooperation with the San Carlos Apache Tribe during the comment period on the development of the FMP. During the comment period, we received input from the San Carlos Apache Tribe and BIA offices expressing the view that designating critical habitat for the Gila chub on Tribal land would adversely affect the Service's working relationship with the San Carlos Apache Tribe. They noted the beneficial cooperative working relationships between the Service and the San Carlos Apache Tribe that have assisted in the conservation and recovery of listed species and other natural resources. They indicated that critical habitat

designation on the San Carlos Apache Tribe would amount to additional Federal regulation of their sovereign lands, and would be viewed as an unwarranted and unwanted intrusion into Tribal natural resource programs. We conclude that our working relationships with the San Carlos Apache Tribe on a government-to-government basis has been extremely beneficial in implementing natural resource programs of mutual interest (including the protection of Gila chubs and their PCEs), and that these productive relationships would be compromised by critical habitat designation of the San Carlos Apache Tribal lands.

In addition to management/conservation actions described for the conservation of the Gila chub, we anticipate future management/conservation plans to include conservation efforts for other listed species and their habitat. We believe that many Tribes and Pueblos are willing to work cooperatively with us to benefit other listed species, but only if they view the relationship as mutually beneficial. Consequently, the development of future voluntary management actions for other listed species will likely be contingent upon whether the San Carlos Apache Tribal lands are designated as critical habitat for the Gila chub. Thus, the benefit of excluding these lands would be future conservation efforts that would benefit other listed species.

The economic analysis conducted for this proposal estimates that the costs associated with designating this area of the proposed critical habitat would be $37,000 to $321,200 annually (discounted at 7 percent). These costs would be incurred as a result of changes in grazing management, fire management, recreation, timber harvest, and costs associated with compliance with Act. Excluding this reach could allow some or all of these costs to be avoided. However, considering that this area is currently occupied by the species, consultation for activities that might adversely impact the species, including possible habitat modification, would be required even without the critical habitat designation; thus the possible economic benefits might not materialize.

Another benefit of excluding the San Carlos Apache Tribal lands from the critical habitat designation includes relieving additional regulatory burden and costs associated with the preparation of portions of section 7 documents related to critical habitat. While the cost of adding these additional sections to assessments and consultations is relatively minor, there could be delays which can generate real costs to some project proponents. However, because in this case critical habitat was only proposed for occupied areas already subject to section 7 consultation and a jeopardy analysis, it is anticipated this reduction would be minimal.

(3) Benefits of Exclusion Outweigh the Benefits of Inclusion

We find that the benefits of designating critical habitat for the Gila chub on San Carlos Apache Tribe lands are small in comparison to the benefits of exclusion. Exclusion would enhance the partnership efforts focused on recovery of the Gila chub within this reach and encourage other stakeholders to become a part of this cooperative effort. Excluding this area also would reduce some of the administrative costs during consultation pursuant to section 7 of the Act.

(4) Exclusion Will Not Result in Extinction of the Species

The San Carlos Apache Tribe has committed to greater conservation measures on these areas than would be available through the designation of critical habitat. Because areas of the San Carlos Apache tribal lands are occupied by the Gila chub which is protected from take under section 9 of the Act, any actions that might kill Gila chub including habitat modification that would cause death of the Gila chub, must either undergo a consultation with the Service under the requirements of section 7 of the Act or receive a permit from us under section 10 of the Act. Additionally, we have concluded that excluding these lands from critical habitat will not result in the extinction of the Gila chub because the FMP specifically addresses conservation of the Gila chub. The purpose of the FMP includes the long-term conservation of native fishes, including Gila chub, on tribal lands. The FMP outlines actions to conserve, enhance, and restore Gila chub habitat, including efforts to eliminate nonnative fishes from Gila chub habitat. Such efforts provide greater conservation benefit than would result for designation as critical habitat. This is because section 7 consultations for critical habitat only consider listed species in the project area evaluated and Federal agencies are only committed to prevent adverse modification to critical habitat caused by the particular project and are not committed to provide conservation or long-term benefits to areas not affected by the proposed project. Such efforts provide greater conservation benefit than would result for designation as critical habitat. As a result, there is no reason to believe that this exclusion would result in extinction of the species.

Accordingly, we have determined that the lands of the San Carlos Apache Tribe should be excluded pursuant to 4(b)(2) of the Act because the benefits of excluding these lands from critical habitat outweigh the benefits of their inclusion, and the exclusion of these lands from the designation will not result in the extinction of the species.

Gila Box Riparian National Conservation Area and the Bonita Creek Partnership

As discussed in the ''Summary of Changes from the Proposed Rule'' section above, we have determined that proposed critical habitat in Bonita Creek, Graham County, Arizona, will not be designated as critical habitat due to our partnership with the BLM, Reclamation, and City of Safford. The City of Safford operates an infiltration gallery within Bonita Creek. The infiltration gallery uses submerged intake pipes to pull water from Bonita Creek which is then transported across BLM land via pipeline to the City of Safford where it is used for drinking water. The city is developing a Memorandum of Understanding (MOU) with BLM to jointly manage the water delivery system, and other common elements of the area. BLM manages lands both upstream and downstream of the private parcel on which the city's gallery occurs as part of the Gila Box Riparian National Conservation Area (RNCA). We have reached this determination because we believe the benefits of excluding this segment from the final critical habitat designation outweigh the benefits of designating the creek as critical habitat.

The portion of Bonita Creek located within the RNCA provides excellent habitat for Gila chub. Healthy Gila chub populations have long been documented in Bonita Creek upstream of the city's infiltration gallery. Although they are present downstream, they are at much lower numbers, presumably due to the presence of a number of nonnative fish species. The city's infiltration gallery, by creating a dry reach of Bonita Creek, for many years has apparently acted as a barrier to the upstream movement of nonnative fishes, protecting areas upstream of the gallery occupied by native fish species, including Gila chub. Reclamation is also planning to build a fish barrier on Bonita Creek below the City's infiltration gallery to further this protection.

BLM has a commitment to work toward conserving federally-listed

species in Bonita Creek that has existed for over a decade. As the primary land manager, they have conducted intensive monitoring for Gila chub, and funded research on the life history of Gila chub. They have also provided a law enforcement ranger to patrol the Gila Box RNCA, which helps reduce the threat of vandalism or introduction of nonnative fishes into the Gila chub habitat. BLM has also developed the Gila Box RNCA Management Plan, which provides management direction for all activities that occur in the RNCA. This plan specifically addresses wildlife conservation within Bonita Creek, including native fishes such as Gila chub. Guidelines for the construction of new roads, closures of old roads, development of recreational facilities, management of recreation, management of grazing, management of riparian areas including riparian vegetation, watershed management, and water quality management are all covered in the RNCA management plan, and this management is focused on improving habitats within the RNCA, including those of the Gila chub.

BLM's Gila Box RNCA management plan also details how BLM will work cooperatively with the City of Safford to provide for their management needs, while reducing potential adverse effects to the resources of the RNCA. The associated management action is to work with the City to support the management goals of the RNCA along with the management needs of the City and the effective operation of the public water system. The City of Safford is developing an MOU with BLM to formalize this arrangement, and this MOU will specifically address the conservation of native fishes, including the Gila chub. Additionally, we are working with Reclamation to build a concrete barrier on Bonita Creek downstream of the City's infiltration gallery to further protect the creek from the invasion of nonnative fishes, and to reintroduce several federally-listed native fish species, both as conservation measures for Reclamation's operation of the Central Arizona Project canal (U.S. Fish and Wildlife Service 2001b). Collectively, our partnership has contributed to immediate and long-term benefits to the conservation and recovery of protected species.

(1) Benefits of Inclusion

As stated in the environmental assessment, the primary conservation value of the proposed critical habitat segments is to sustain existing populations. As discussed in the ''General Principles of Section 7 Consultations Used in the 4(b)(2) Balancing Process'' section above, the threshold for reaching destruction or adverse modification would likely require a reduction in the capability of the habitat to sustain existing populations. Given that this area of Bonita Creek is being managed to benefit wildlife, including the Gila chub, it is highly unlikely that projects would be considered for this area that would result in depreciable diminishment or a long-term reduction of the capability of the habitat to sustain existing populations. To the contrary, activities occurring on these lands have provided benefits, as described above, to the Gila chub and are expected to continue to do so. To date, the Service has conducted nine formal consultations for BLM on management of lands within the RNCA, including three conference opinions since the Gila chub was proposed for listing in 2003 (U.S. Fish and Wildlife Service 2004a). These consultations/conferences involved management actions administered by BLM, all of which are covered in the RNCA management plan which provides long-term conservation benefits to the species and its PCEs and none resulted in adverse modification to proposed critical habitat.

As discussed above, we expect that little additional educational benefits would be derived from including Bonita Creek in the critical habitat designation. The additional educational benefits that might arise from critical habitat designation are largely accomplished through the multiple notice and comments that accompanied the development of this critical habitat designation. Because BLM is the primary land manager, they have conducted surveys and habitat monitoring for Gila chub at Bonita Creek. Therefore, the potential designation of critical habitat at Bonita Creek would not provide this educational benefit because BLM, and the City of Safford via the MOU, already know the fish are present and are studying its habitat. BLM is also already aware that Bonita Creek has a robust population of Gila chub that are important to conservation goals of the species. Likewise the City of Safford is aware of this through the MOU, as is Reclamation, through its conservation measure to build a fish barrier to protect the Bonita Creek fishery.

(2) Benefits of Exclusion

The benefits of excluding Bonita Creek from critical habitat designation include recognizing the value of partnerships with BLM and the City of Safford, encouraging actions that benefit multiple species, encouraging local participation in conservation of valuable habitat for multiple species, facilitating the cooperative activities provided by the Service, and reducing or eliminating administrative and/or project modification costs as analyzed in the economic analysis. Additionally, our existing partnership and the integration of Federal land management will generate a consistent management approach at Bonita Creek.

The partnership and cohesive management at Bonita Creek will maintain habitat (PCEs) for Gila chub for the long-term. This partnership has already generated the development, finalization, and implementation of Gila Box RNCA management plan that provides long-term conservation benefits to the species and its PCEs. When finalized, the MOU will further this conservation benefit. In addition to maintaining habitat for the long-term at Bonita Creek, this partnership will include the development of species status and distribution information for the Gila chub needed to guide conservation efforts and assist in species conservation outside the area, and the creation of innovative solutions to conserve species that can be applied wherever similar needs exist, irrespective of land ownership. The partnership with BLM, Reclamation, and the City of Safford also facilitates other cooperative activities with other similarly situated industry, communities, and landowners. Continued cooperative relations with the City of Safford are expected to influence other future partners and lead to greater conservation than would be achieved through multiple section 7 consultations.

Non-Federal landowners or water operators such as the City of Safford are motivated to work with Reclamation, BLM, and the Service collaboratively to develop voluntary conservation efforts because of the economic benefits of such a partnership. Bonita Creek is valuable to the city both as a clean water supply, and as a tourist destination. Collaboration of this type often provides greater conservation benefits than could be achieved through strictly regulatory approaches, such as a critical habitat designation. The conservation benefits resulting from this collaborative approach are built upon a foundation of mutual trust and understanding. It takes considerable time and effort to establish this foundation, which is one reason it often takes several years to develop such partnerships. Excluding this area from critical habitat would help promote and honor that trust by providing certainty for partners that, once appropriate conservation measures have been agreed

to, additional consultation will not be necessary.

In discussions with the Service, the BLM and the City of Safford have indicated they view critical habitat designation as unwarranted, and that designation could undermine the conservation benefits that would be provided by their MOU. There is a concern by BLM and the City of Safford that designation of critical habitat at Bonita Creek has the potential to threaten the delivery of water to the City of Safford and other towns served by the city such as Thatcher and Soloman. Should this ever come to pass, the results could be significant; however, we do not believe that scenario is reasonably foreseeable. The Service's commitment will encourage continued partnerships with these entities that could result in additional conservation plans or additional lands protected. Exclusion of areas where our partnership has been established following years of collaborative efforts will result in habitat protection for the Gila chub, preservation of these partnerships, and in promoting more effective conservation actions in the future.

The economic analysis conducted for this proposal estimates that the costs associated with designating this segment of the proposed critical habitat would be about $0.25 to $1.02 million annually. Almost all of this cost is related to changes in water use and management required for conservation of the Gila chub. Excluding this reach could allow some or all of these costs to be avoided. However, considering that this area is currently occupied by the species, section 7 consultation for activities which might adversely impact the species, including possible habitat modification, would be required even without the critical habitat designation, and thus the possible economic benefits might not materialize.

Another benefit of excluding Bonita Creek from the critical habitat designation includes relieving additional regulatory burden and costs associated with the preparation of portions of section 7 consultation documents related to critical habitat. While the cost of adding these additional sections to assessments and consultations is relatively minor, there could be delays which can generate real costs to some project proponents. However, because critical habitat in this case is only proposed for occupied areas already subject to section 7 consultation and a jeopardy analysis, it is anticipated this reduction would be minimal.

(3) Benefits of Exclusion Outweigh the Benefits of Inclusion

We find that the benefits of designating critical habitat for the Gila chub at Bonita Creek are small in comparison to the benefits of exclusion. In making this finding, we have weighed the benefits of including Bonita Creek as critical habitat to the benefits of these lands without critical habitat, with management based on our existing partnership and management by the BLM and City of Safford. Excluding Bonita Creek would reduce some additional administrative effort and cost during the consultation process pursuant to section 7 of the Act. Excluding Bonita Creek would continue to help foster development of future partnerships and strengthen our relationship with stakeholders. To date, BLM management has fostered the development, presence, and protection of Gila chub habitat. Because Bonita Creek is within the RCNA, we believe there is virtually no risk of development or extensive land-use by the BLM that would be expected to result in adverse modification. Excluding Bonita Creek promotes our partnership with the City of Safford by eliminating the concern of the City of Safford regarding the possible risk of loss of water delivery capabilities.

We have, therefore, concluded that the current BLM management of this area, along with the partnership with BLM, the City of Safford, and Reclamation, and the conservation commitment to Gila chub habitat of these entities, outweigh those benefits that would result from the area being included in the designation. We have therefore excluded these lands from the final critical habitat designation pursuant to section 4(b)(2) of the Act.

(4) Exclusion Will Not Result in Extinction of the Species

The City of Safford, Reclamation, and BLM are committing to greater conservation measures on these areas than would be available through the designation of critical habitat. As described above, the BLM has developed the Gila Box RNCA Management Plan, which provides management direction for all activities that occur in the RNCA. This plan specifically addresses wildlife conservation within Bonita Creek, including native fishes such as Gila chub. Additionally, because this segment is occupied by the Gila chub, which is protected from take under section 9 of the Act, any actions that might kill the Gila chub, including habitat modification that would cause the death of Gila chub must either undergo a consultation with the Service under the requirements of section 7 of the Act or receive a permit from us under section 10 of the Act. This exclusion leaves these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. Such efforts provide greater conservation benefit than would result for designation as critical habitat. This is because section 7 consultations for critical habitat only consider listed species in the project area evaluated and Federal agencies are only committed to prevent adverse modification to critical habitat caused by the particular project and are not committed to provide conservation or long-term benefits to areas not affected by the proposed project. Critical habitat is also being designated for the Gila chub in other areas that will be accorded the protection from adverse modification by Federal actions using the conservation standard based on the Ninth Circuit decision in *Gifford Pinchot*, and the Gila chub occurs on other lands not being designated as critical habitat that are protected and managed explicitly to protect natural habitat values. These considerations, along with the continued persistence of the Gila chub in Bonita Creek due in part to the partnership BLM, the City of Safford, and Reclamation, lead us to conclude that there is no reason to believe that this exclusion would result in extinction of the species.

Private Lands Proposed for Area 5(a)—Lower Cienega Creek and Area 6(c)—Spring Creek

As discussed in the ''Summary of Changes from the Proposed Rule'' section above, we have determined that proposed critical habitat on 1.9 mi of the lower segment of Cienega Creek and on 1.9 mi of Spring Creek will not be designated as critical habitat due to the potential economic impact of designating these segments. The economic analysis indicates possible cost impacts of nearly $36 million from these two segments. This is both a significant impact and a highly disproportionate one. The small amount of proposed critical habitat we are excluding in these two areas bore more than half of the projected cost impacts from the entire designation (summarized in Exhibit ES–2 of the economic analysis).

The economic analysis indicates a cost of nearly $40 million for these two areas overall, but $4 million of this is attributed to a segment of BLM lands on Cienega Creek that we are not

excluding. The Service has conducted a consultation with BLM over the water use addressed in the economic analysis, although that is not reflected in the analysis, and we accordingly believe that cost is unlikely to occur.

We have reached this determination because we believe the benefits of excluding these segments from the final critical habitat designation outweigh the benefits of designating them as critical habitat.

Section 4(b)(2) allows the Secretary to exclude areas from critical habitat for economic reasons if she determines that the benefits of such exclusion exceed the benefits of designating the area as critical habitat, unless the exclusion will result in the extinction of the species concerned. This is a discretionary authority Congress has provided to the Secretary with respect to critical habitat. Although economic and other impacts may not be considered when listing a species, Congress has expressly required their consideration when designating critical habitat. Exclusions under this section for non-economic reasons are addressed above.

In general, we have considered in making these two exclusions that all of the costs predicted in the economic analysis may not be avoided by excluding the area, due to the fact that the areas in question are currently occupied by the species and there will be requirements for consultation under section 7 of the Act, or for permits under section 10 for any take of the species, and other protections for the species exist elsewhere in the Act and under State and local laws and regulations. As explained in the analysis, due to the uncertainty associated with future consultations, cost estimates are given as a range rather than a single number. We are also aware, and have considered in making the exclusions, that the low end estimate for the Spring Creek exclusion is a minimal amount, and that there is no certainty that either the high or low cost estimates for the Cienega Creek exclusion will occur absent the exclusion. However, there is a real risk that these costs might result.

(1) Benefits of Inclusion

As stated in the environmental assessment and addressed above, the primary conservation value of the proposed critical habitat segments is to sustain existing populations. The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us. However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly habitat modification (see definition of ''harm'' at 50 CFR 17.3) would be required even without the critical habitat designation. We recognize that consultation for critical habitat would likely provide some additional benefits to the species under the provision of the Gifford Pinchot decision; however, we believe that such benefits are minimal as discussed above.

As discussed above, we expect that little additional educational benefits would be derived from including these two areas as critical habitat. The additional educational benefits that might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this critical habitat designation. We have been in contact with the land owners in the course of developing the economic analysis, and they are already aware that maintaining habitat quality on their lands for the Gila chub is important to conservation of the species.

Some benefits could be derived if water currently available to private entities at the Cienega Creek segment were required to be made available to Gila chub. Additionally, designation of critical habitat in the Spring Creek segment might result in consultations with Federal agencies or as part of intra-Service consultations for HCPs that may lead to higher quality habitat in that segment of the creek; however, we believe any possible benefits would be minimal as derived from critical habitat because the chub is present in the creek and consultations are already likely to occur. Designation of critical habitat in the Spring Creek segment might result in consultations that lead to higher quality habitat in that segment of the creek. However, preliminary discussions have begun from which we believe there may be a formal consultation via a Federal nexus involving permits required by the Clean Water Act. Because Gila chub are present in Spring Creek, this potential consultation would have to take place regardless of the presence of critical habitat. We believe that although some additional benefit may occur from critical habitat, any additional benefit would be minimal.

In summary, we believe that designating these proposed segments as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. Some improvements in habitat quality or water quantity might result from a designation, but we believe that they would be minimal, as discussed above. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and contact with the affected parties during development of the economic analysis.

(2) Benefits of Exclusion

The benefits of excluding these segments from critical habitat designation are avoidance in up to $36 million in possible economic impacts, as set out in the economic analysis.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures. These generally provide greater conservation benefits than result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that the there be no adverse modification resulting from Federally-related actions.

Generally, positive conservation efforts by landowners contribute more towards recovery of species than the mere avoidance of adverse impacts required under a critical habitat designation.

(3) Benefits of Exclusion Outweigh the Benefits of Inclusion

We find that the benefits of designating critical habitat for the Gila chub on these two segments of Cienega Creek and Spring Creek are small in comparison to the benefits of exclusion. As indicated above, we believe that designation of these stream segments will provide only minimal benefit to the species. In making this finding, we have weighed the benefits of including these segments as critical habitat against the possible costs imposed on private parties as a result of the designation.

We have therefore excluded these lands from the final critical habitat designation pursuant to section 4(b)(2) of the Act.

(4) Exclusion Will Not Result in Extinction of the Species

Because these areas are occupied by the Gila chub, which is protected from take under section 9 of the Act, any actions that might adversely affect or result in take of the Gila chub, regardless of whether the Federal nexus needed to trigger consultation for critical habitat is present, must undergo a consultation with the Service under the requirements of section 7 of the Act or receive a permit from us under section 10 of the Act. This exclusion leaves these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. Additionally, we have concluded that excluding these lands from critical habitat will not result in the extinction of the Gila chub because these exclusions are only a small percentage of the overall critical habitat designation. The majority of the area proposed as critical habitat for this species is being designated as critical habitat.

Effect of Critical Habitat Designation

Section 7 Consultation

If a species is listed or critical habitat is designated, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Through this consultation, the action agency learns whether the Service regards the proposed action as consistent with section 7(a)(2) or if the Service can suggest modifications that would avoid jeopardy or adverse modification.

When we issue a biological opinion concluding that a project is likely to result in the destruction or adverse modification of critical habitat, we also provide reasonable and prudent alternatives to the project, if any are identifiable. ''Reasonable and prudent alternatives'' are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Director believes would avoid destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request reinitiation of consultation or conference with us on actions for which formal consultation has been completed, if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat.

Federal activities that may affect the Gila chub or its designated critical habitat will require section 7 consultation. Activities on private or State lands requiring a permit from a Federal agency, such as a permit from the Corps under section 404 of the Clean Water Act, a section 10(a)(1)(B) permit from the Service, or some other Federal action, including funding (e.g., Federal Highway Administration (FHA), Federal Aviation Administration, or Federal Emergency Management Agency (FEMA)), will also continue to be subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, and actions on non-Federal and private lands that are not federally-funded, authorized, or permitted, do not require section 7 consultations.

Since we proposed critical habitat for the Gila chub on August 9, 2002 (67 FR 51948), we have issued a number of formal conference reports as requested by several Federal agencies. Formal conference reports on proposed critical habitat contain a biological opinion that is prepared according to 50 CFR 402.14, as if critical habitat were designated as final. We may adopt these formal conference reports as the biological opinion with this final critical habitat designation, if no significant new information or changes in the action alter the content of the opinion (see 50 CFR 402.10 (d)).

Section 4(b)(8) of the Act requires us to briefly evaluate and describe in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may adversely modify such habitat, or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat may also jeopardize the continued existence of the Gila chub. Each of the specific areas designated in this rule as critical habitat for the Gila chub have been determined to contain sufficient PCEs to provide for one or more of the life history functions for the Gila chub. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation pursuant to section 7 of the Act conducted subsequent to this designation. Federal activities that, when carried out, may adversely affect critical habitat for the Gila chub include, but are not limited to:

(1) Any activity that would significantly alter the minimum flow or the natural flow regime of any of the designated stream segments. Such activities may include, but are not limited to, groundwater pumping, impoundment, water diversion, and hydropower generation.

(2) Any activity that might significantly alter watershed characteristics of any of the designated segments. Such activities may include, but are not limited to, vegetation manipulation (e.g., prescribed burns, timber harvest), road construction and maintenance, naturally ignited fire (e.g., lightning), livestock grazing, and mining.

(3) Any activity that would significantly alter the channel morphology of any of the designated stream segments. Such activities may include, but are not limited to, channelization; impoundment; road and bridge construction; removal of substrate source; destruction and alteration of riparian vegetation; reduction of available floodplain; removal of gravel or floodplain terrace materials; and sedimentation from mining, livestock grazing, road construction, timber harvest, off-road vehicle use, and other watershed and floodplain disturbance.

(4) Any activity that would significantly alter the water chemistry in any of the designated stream segments. Such activities may include, but are not limited to, release of chemical or biological pollutants into the surface waters or connected groundwater at a point source or by dispersed release (non-point).

(5) Any activity that would introduce, spread, or augment nonnative aquatic species into any of the designated stream segments. Such activities may include, but are not limited to, stocking for sport, aesthetics, biological control, or other purposes; use of live bait fish, aquaculture, or dumping of aquarium fish or other species; construction and

operation of canals; and interbasin water transfers (i.e. CAP aqueduct).

If you have any questions regarding whether specific activities will likely constitute destruction or adverse modification of critical habitat, contact the Field Supervisor, Arizona Ecological Services Office (see **ADDRESSES** section above). Requests for copies of the regulations on listed wildlife and inquiries about permits may be addressed to the U.S. Fish and Wildlife Service, Division of Endangered Species, P.O. Box 1306, Albuquerque, New Mexico 87103 (telephone (505) 248–6920; facsimile (505) 248–6788).

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in public awareness and conservation actions by Federal, State, and local agencies private organizations, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The Gila chub occurs primarily on Federal lands managed by Coronado, Apache-Sitgreaves, Tonto, Prescott, Coconino, and Gila National Forests, and by the BLM. Examples of Federal actions that may affect the Gila chub include, but are not limited to, dredge-and-fill activities, livestock grazing programs, construction and maintenance of stock tanks (pond), logging and other vegetation manipulation activities, flood protection and repair measures, channelization, water development, construction and management of recreation sites, road and bridge construction and maintenance, fish stocking, issuance of rights-of-way, prescribed fire, and discretionary actions authorizing mining. These and other Federal actions would require section 7 consultation if the action agency determines that the proposed action may affect listed species.

Also subject to section 7 consultation are development activities on private and State lands when such activity is conducted by, funded by, or permitted by a Federal agency. Examples include permits issued under section 404 or 402 of the Clean Water Act from the Corps or the EPA respectively. Federal actions not affecting the species, as well as actions on private lands that are not federally-funded or permitted, would not require section 7 consultation.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, codified at 50 CFR 17.21, in part, make it illegal for any person subject to the jurisdiction of the United States to take (including harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt any of these), import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances.

Regulations governing permits for endangered species are codified at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. Requests for copies of the regulations regarding listed wildlife and inquires about permits may be addressed to U.S. Fish and Wildlife Service Branch of Endangered Species, P.O. Box 1306, Albuquerque, NM 87103 (505) 248–6657 fax (505) 248–6922.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable those activities that would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness as to the effects of this listing on future and ongoing activities within the species' range. We believe, based on the best available information that the following actions will not result in a violation of section 9:

(1) Actions that may affect the Gila chub that are authorized, funded, or carried out by a Federal agency when the action is conducted in accordance with an incidental take statement issued by us pursuant to section 7 of the Act, or for which such action will not result in take;

(2) Actions that may result in take of Gila chub when the action is conducted in accordance with a permit under section 10 of the Act;

(3) Recreational activities such as hiking, off-road vehicle use, camping, and hunting in the vicinity of occupied Gila chub habitat that do not destroy or significantly degrade Gila chub habitat;

(4) Release, diversion, or withdrawal of water from or near Gila chub habitat in a manner that does not displace or result in desiccation or death of eggs, larvae, or adults, does not disrupt spawning activities, or does not favor introduction of nonnative predators; and does not alter vegetation.

Activities involving this species that we believe could be considered a violation of section 9 include, but are not limited to, the following:

(1) Unauthorized collection, capture, or handling of the species;

(2) Intentional introduction of nonnative predators, such as nonnative fish and crayfish, into occupied Gila chub habitat;

(3) Water diversion, groundwater pumping, water releases, or other water-management activities that result in displacement of eggs, larvae, or adults; disruption of spawning activities; introduction of nonnative predators; or significant alteration of vegetation within occupied Gila chub habitat;

(4) Discharge or dumping of hazardous materials, silt, or other pollutants into waters supporting Gila chub;

(5) Possession, sale, delivery, transport, or shipment of illegally taken Gila chub;

(6) Actions that take Gila chub that are not authorized by either a permit under section 10 of the Act or an incidental take statement under section 7 of the Act, or are not exempted from the section 9 take prohibitions; and

(7) Recreational activities such as off-road vehicle use in the vicinity of occupied Gila chub habitat that destroys or significantly degrades Gila chub habitat.

Not all the activities mentioned above will result in a violation of section 9 of the Act; only those activities that result

in ''take'' of Gila chub would be considered violations of section 9. We will review other activities not identified above on a case-by-case basis to determine whether they may be likely to result in violation of section 9 of the Act.

If you have questions regarding whether specific activities will likely violate section 9, contact the Arizona Ecological Services Field Office (see **ADDRESSES** section above).

Economic Analysis

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific data available and to consider the economic impact, impact to national security, and other relevant impacts of designating a particular area as critical habitat. We based this designation on the best available scientific information. We utilized the economic analysis, and took into consideration comments and information submitted during the public hearing and comment periods to make this final listing and critical habitat determination. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as critical habitat. We cannot exclude such areas from critical habitat when such exclusion will result in the extinction of the species.

The primary purpose of the economic analysis is to estimate the potential economic impacts associated with the designation of critical habitat for the Gila chub. This information is intended to assist the Secretary in making decisions about whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation. This economic analysis considers the economic efficiency effects that may result from the designation, including habitat protections that may be co-extensive with the listing of the species. It also addresses distribution of impacts, including an assessment of the potential effects on small entities and the energy industry. This information can be used by the Secretary to assess whether the effects of the designation might unduly burden a particular group or economic sector.

This analysis focuses on the direct and indirect costs of the rule. However, economic impacts to land use activities can exist in the absence of critical habitat. These impacts may result from, for example, local zoning laws, State and natural resource laws, and enforceable management plans and best management practices applied by other State and Federal agencies. Economic impacts that result from these types of protections are not included in the analysis as they are considered to be part of the regulatory and policy baseline.

A draft analysis of the economic effects of the proposed critical habitat designation was prepared and made available for public review (August 31, 2005; 70 FR 51732). The economic analysis considers the economic impacts of conservation measures taken prior to and subsequent to the final listing and designation of critical habitat for the Gila chub. Pre-designation impacts are typically defined as all management efforts that have occurred since the time of listing. The Gila chub has not been listed, but was proposed for listing on August 9, 2002 (67 FR 51948). Our draft economic analysis found that the total post-designation costs associated with the seven proposed critical habitat areas are forecast to range from $11.3 million to $28.1 million in constant dollars over 20 years, or $0.8 million to $1.9 million annually (Service 2005a). Estimated costs are primarily due to impacts on water management, livestock grazing, livestock grazing and timber management on San Carlos Apache Tribal lands, and fire management and other activities (species and habitat management, recreation, fire management, mining, and transportation activities).

Based upon these estimates, we conclude in the final analysis, which reviewed and incorporated public comments, that no significant economic impacts are expected from the designation of critical habitat for Gila chub. A copy of the economic analysis is included in our supporting record and may be obtained by contacting the Arizona Ecological Services Field Office (see **ADDRESSES** section) or online at *http://www.fws.gov/arizonaes/.*

Required Determinations

Regulatory Planning and Review

In accordance with Executive Order 12866, this document is a significant rule because it may raise novel legal and policy issues. However, based on our economic analysis, it is not anticipated that the designation of critical habitat for the Gila chub would result in an annual effect on the economy of $100 million or more or affect the economy in a material way. Due to the timeline for publication in the **Federal Register**, the Office of Management and Budget (OMB) has not formally reviewed this final rule or accompanying economic analysis.

Further, Executive Order 12866 directs Federal Agencies promulgating regulations to evaluate regulatory alternatives (Office of Management and Budget, Circular A–4, September 17, 2003). Pursuant to Circular A–4, once it has been determined that the Federal regulatory action is appropriate, then the agency will need to consider alternative regulatory approaches. Since the determination of critical habitat is a statutory requirement pursuant to the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), we must then evaluate alternative regulatory approaches, where feasible, when promulgating a designation of critical habitat.

In developing our designations of critical habitat, we consider economic impacts, impacts to national security, and other relevant impacts pursuant to section 4(b)(2) of the Act. Based on the discretion allowable under this provision, we may exclude any particular area from the designation of critical habitat, providing that the benefits of such exclusion outweigh the benefits of specifying the area as critical habitat and that such exclusion would not result in the extinction of the species. As such, we believe that the evaluation of the inclusion or exclusion of particular areas, or combination thereof, in a designation constitutes our regulatory alternative analysis.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 802(2)) (SBREFA), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.*, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. Based upon our draft economic analysis we certified in our August 31, 2005 (70 FR 51732), **Federal Register** notice that this designation would not result in a significant effect as defined under SBREFA.

According to the Small Business Administration (SBA), small entities include small organizations, such as independent nonprofit organizations and small governmental jurisdictions, including school boards and city and

town governments that serve fewer than 50,000 residents, as well as small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term significant economic impact is meant to apply to a typical small business firm's business operations.

To determine if the designation of critical habitat for the Gila chub would affect a substantial number of small entities, we considered the number of small entities affected within particular types of economic activities (*e.g.*, water management and use, livestock grazing, San Carlos Apache Tribal activities, residential and related development, Gila chub-specific management activities, recreation activities, fire management activities, mining, and transportation). We considered each industry or category individually to determine if certification is appropriate. In estimating the numbers of small entities potentially affected, we also considered whether their activities have any Federal involvement; some kinds of activities are unlikely to have any Federal involvement and so will not be affected by the designation of critical habitat. Designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies; non-Federal activities are not affected by the designation. Federal agencies must consult with us if their activities may affect designated critical habitat. Consultations to avoid the destruction or adverse modification of critical habitat would be incorporated into the existing consultation process.

Our economic analysis of this designation evaluated the potential economic effects on small business entities and small governments resulting from conservation actions related to the listing of this species and proposed designation of its critical habitat. We evaluated small business entities in nine categories: Water management and use, livestock grazing activities, San Carlos Apache Tribal activities, residential and related development, Gila chub-specific management activities, recreation activities, fire management activities, mining, and transportation. Based on our analysis, impacts are anticipated to occur in livestock grazing. The following is a summary of the information contained in Appendix B of the economic analysis:

Livestock Grazing Activities

Ranching operations are anticipated to be impacted by conservation activities for the Gila chub. Approximately 16 ranching operations may be impacted annually. Annual costs to each of these 16 ranching operations may be between $1,400 and $11,700. Average revenues of a ranch in the region of the proposed critical habitat designation are $144,000. These potential losses represent between 1 and 8 percent of each ranch's estimated average revenues. Exhibit B–2 in the economic analysis presents the average revenues of ranches by county. Of the 118 beef cattle ranching and farming operations (NAICS 112111) in Arizona counties with proposed Gila chub critical habitat, 92 percent are considered small businesses. Therefore, 15 small ranching operations (92 percent of 16 operations) may experience a reduction in revenues of between 1 and 8 percent annually. The extent to which these impacts are significant to any of these ranching operations will depend on the individual financial conditions of the ranch.

Based on these data, we have determined that this designation would not affect a substantial number of small businesses involved in or affected by livestock grazing. As such, we are certifying that this designation of critical habitat would not result in a significant economic impact on a substantial number of small entities. Please refer to Appendix B of our economic analysis for this designation for a more detailed discussion of potential economic impacts to small business entities. Since we have excluded Bonita Creek, Blue River, Cienega Creek, and Spring Creek from the final designation pursuant to section 4(b)(2) of the Act, as discussed above, we have determined that this designation would not affect a substantial number of small businesses involved in or affected by water management activities or timber harvest.

Executive Order 13211

On May 18, 2001, the President issued Executive Order (E.O.) 13211 on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. This final rule is considered a significant regulatory action under E.O. 12866 due to its potentially raising novel legal and policy issues, but it is not expected to significantly affect energy supplies, distribution, or use. Appendix B of the economic analysis provides a discussion and analysis of this determination. The Office of Management and Budget has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute ''a significant adverse effect'' when compared without the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis; thus, energy-related impacts associated with Gila chub conservation activities within critical habitat are not expected.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501), the Service makes the following findings:

(a) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or tribal governments,'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding'' and the State, local, or tribal governments ''lack authority'' to adjust accordingly. (At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement.) ''Federal

private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance; or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. Non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat. However, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply; nor would critical habitat shift the costs of the large entitlement programs listed above on to State governments.

(b) The economic analysis discusses potential impacts of critical habitat designation for the Gila chub on water management activities, livestock grazing, Tribes, residential and commercial development activities, recreation activities, fire management activities, mining, and transportation activities. The analysis estimates that annual costs of the rule could range from $20.6 million to $61.8 million in undiscounted dollars over 20 years ($1.5 million to $3.8 million annually). Impacts are largely anticipated to affect water operators and Federal and State agencies, with some effects on livestock grazing operations. Impacts on small governments are not anticipated, or they are anticipated to be passed through to consumers. For example, costs to water operations would be expected to be passed on to consumers in the form of price changes. Consequently, for the reasons discussed above, we do not believe that the designation of critical habitat for the Gila chub will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

Takings

In accordance with Executive Order 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), we have analyzed the potential takings implications of designating critical habitat for the Gila chub in a takings implications assessment. The takings implications assessment concludes that this designation of critical habitat for the Gila chub does not pose significant takings implications.

Federalism

In accordance with Executive Order 13132, this rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior policy, the Service requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies in Arizona and New Mexico. The impact of the designation on State and local governments and their activities was fully considered in the economic analysis. As discussed above, the designation of critical habitat for the Gila chub would have little incremental impact on State and local governments and their activities. In fact, the designation of critical habitat may have some benefit to the State and local resource agencies in that the areas with features that are essential to the conservation of this species are more clearly defined, and the primary constituent elements of the habitat necessary to the conservation of this species are specifically identified.

Civil Justice Reform

In accordance with Executive Order 12988, the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act, as amended. This rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs that are essential for the conservation of the Gila chub.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain new or revised information collection for which Office of Management and Budget approval is required under the Paperwork Reduction Act. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

It is our position that, outside the Tenth Circuit, we do not need to prepare environmental analyses as defined by the NEPA in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This assertion was upheld in the courts of the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. Ore. 1995), cert. denied 116 S. Ct. 698 (1996). However, when the range of the species includes States within the Tenth Circuit, such as that of the Gila chub, pursuant to the Tenth Circuit ruling in *Catron County Board of Commissioners* v. *U.S. Fish and Wildlife Service*, 75 F.3d 1429 (10th Cir. 1996), we undertake a NEPA analysis for critical habitat designation. We conducted a NEPA evaluation and notified the public of the draft document's availability on August 31, 2005 (70 FR 51732). We completed an environmental assessment and finding of no significant impact on the designation of critical habitat for the Gila chub; the final document is available and can be viewed online at *http://www/fws.gov/arizonaes/*.

Secretarial Order 3206: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act

The purpose of Secretarial Order 3206 (Secretarial Order) is to ''clarif(y) the responsibilities of the component agencies, bureaus, and offices of the Department of the Interior and the Department of Commerce, when actions taken under authority of the Act and associated implementing regulations affect, or may affect, Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.'' If there is potential that a tribal activity could cause either direct or incidental take of a species proposed for listing under the Act, then meaningful government-to-government consultation will occur to try to harmonize the Federal trust responsibility to tribes and tribal sovereignty with our statutory responsibilities under the Act. The Secretarial Order also requires us to consult with tribes if the designation of an area as critical habitat might impact tribal trust resources, tribally owned fee lands, or the exercise of tribal rights. We have excluded Tribal lands of the San Carlos Apache Nation from the critical habitat designation pursuant to section 4(b)(2) of the Act.

References Cited

A complete list of all references cited in this rulemaking is available upon request from the Arizona Ecological Services Field Office (see **ADDRESSES** section).

Author

The primary authors of this rule are the Arizona Ecological Services Field Office staff (see **ADDRESSES** section) (telephone 602/242–0210).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

■ Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. Amend § 17.11(h) by adding an entry for ''Chub, Gila'', in alphabetical order under ''FISHES'', to the List of Endangered and Threatened Wildlife, to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
	*	*	*	*	*	*	*
FISHES							
	*	*	*	*	*	*	*
Chub, Gila	*Gila intermedia*	U.S.A. (AZ, NM), Mexico..	Entire	755		17.95(e)	NA
	*	*	*	*	*	*	*

■ 3. Amend § 17.95 (e) by adding critical habitat for Gila chub (*Gila intermedia*), in the same alphabetical order as this species occurs in § 17.11(h), to read has follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes*.

* * * * *

Gila chub (*Gila intermedia*)

(1) Critical habitat for the Gila chub in Grant County, New Mexico, and Yavapai, Gila, Greenlee, Graham, Cochise, Pima, Santa Cruz, and Pinal Counties in Arizona is described in detail and depicted on the following maps below.

(2) Within these areas, the primary constituent elements are the following:

(i) Perennial pools, areas of higher velocity between pool areas, and areas of shallow water among plants or eddies all found in small segments of headwaters, springs, or cienegas of smaller tributaries;

(ii) Water temperatures for spawning ranging from 17 to 24° C (62.6 to 75.2° F), and seasonally appropriate temperatures for all life stages (e.g. varying from approximately 10°C to 30°C);

(iii) Water quality with reduced levels of contaminants, including excessive levels of sediments adverse to Gila chub health, and adequate levels of pH (e.g. ranging from 6.5 to 9.5), dissolved oxygen (e.g. ranging from 3.0 to 10.0) and conductivity (e.g. 100 to 1000 mmhos);

(iv) Food base consisting of invertebrates (e.g., aquatic and terrestrial insects) and aquatic plants (e.g., diatoms and filamentous green algae);

(v) Sufficient cover consisting of downed logs in the water channel, submerged aquatic vegetation, submerged large tree root wads, undercut banks with sufficient overhanging vegetation, large rocks and boulders with overhangs, and a high degree of streambank stability and healthy, intact riparian vegetative community;

(vi) Habitat devoid of nonnative aquatic species detrimental to Gila chub or habitat in which detrimental nonnatives are kept at a level that allows Gila chub to continue to survive and reproduce; and

(vii) Streams that maintain a natural flow pattern including periodic flooding.

(3) Each stream segment includes a lateral component that consists of 300 feet on either side of the stream channel measured from the stream edge at bank full discharge. This lateral component of critical habitat is intended as a surrogate for the 100-year floodplain.

(4) Lands located within the boundaries of the critical habitat designation, but are excluded by definition include: Existing paved roads; bridges; parking lots; dikes; levees; diversion structures; railroad tracks; railroad trestles; water diversion canals outside of natural stream channels; active gravel pits; cultivated agricultural land; and residential, commercial, and industrial developments. These developed areas do not contain any of the primary constituent elements, do not provide habitat or biological features essential to the conservation of the Gila chub, and generally will not contribute to the species' recovery.

(5) Critical Habitat Map Areas. Data layers defining map areas, and mapping of critical habitat areas, was done using Arc GIS and verifying with USGS 7.5′ quadrangles. Legal descriptions for New Mexico and Arizona are based on the Public Lands Survey System (PLSS). Within this system, all coordinates reported for New Mexico are in the New Mexico Principal Meridian (NMPM), while those in Arizona are in the Gila and Salt River Meridian (GSRM). Township has been abbreviated as ''T'', Range as ''R'', and section as ''sec.'' Where possible, the ending or starting points have been described to the nearest quarter-section, abbreviated as ''¼''. Cardinal directions are also abbreviated (N = North, S = South, W = West, and E = East). All mileage calculations were performed using GIS.

(6) Note: Map 1 (index map) follows:

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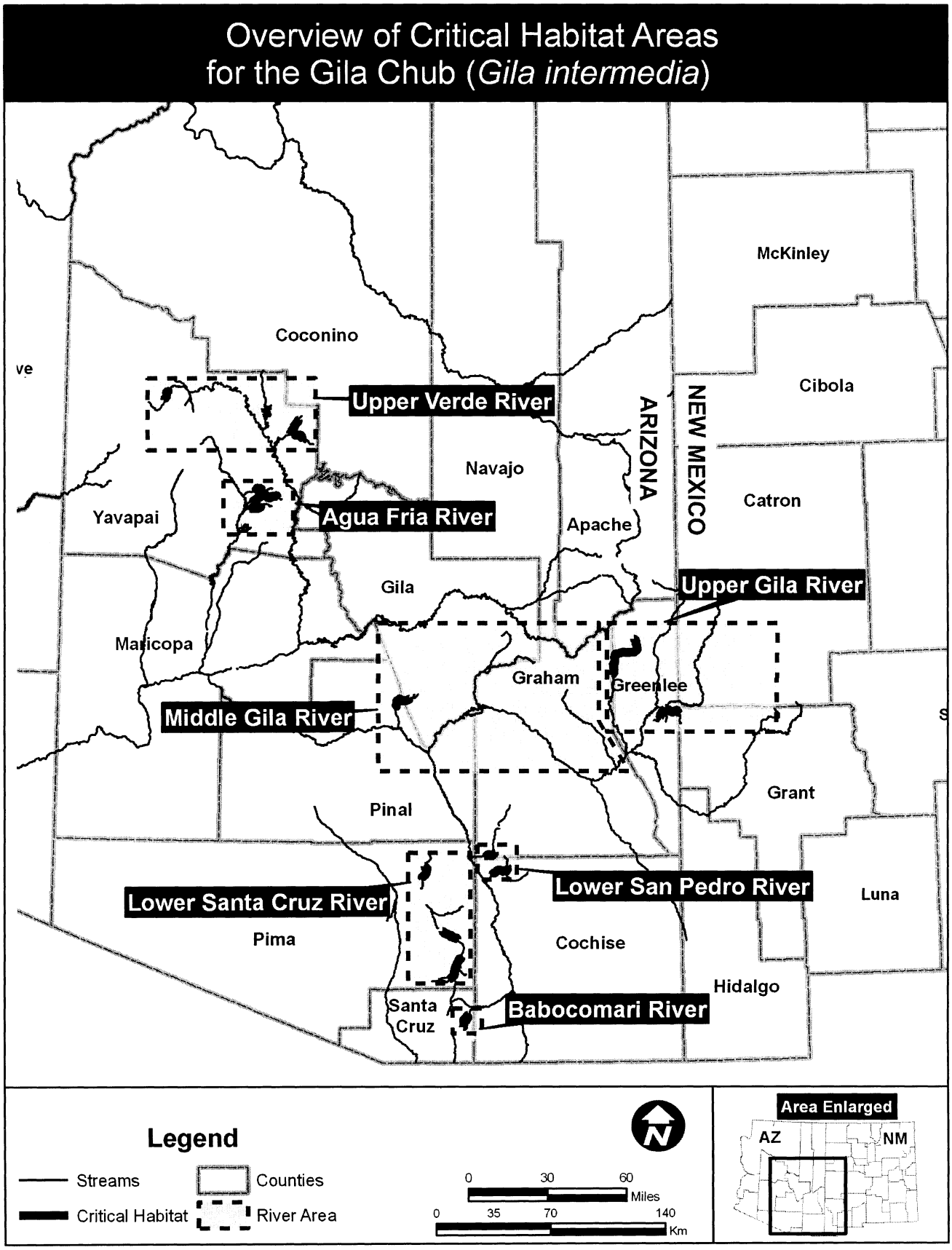

Overview of Critical Habitat Areas
for the Gila Chub (Gila intermedia)
McKinley
Coconino
Cibola
Upper Verde River
ARIZONA
NEW MEXICO
Navajo
Catron
Yavapai
Agua Fria River
Apache
Gila
Upper Gila River
Maricopa
Graham
Greenlee
Middle Gila River
Grant
Pinal
Lower San Pedro River
Luna
Lower Santa Cruz River
Pima
Cochise
Hidalgo
Santa Cruz
Babocomari River
Legend
Streams
Critical Habitat
Counties
River Area
0 30 60 Miles
0 35 70 140 Km
Area Enlarged
AZ
NM

(7) Area 1: Upper Gila River—Grant County, New Mexico, and Greenlee County, Arizona.

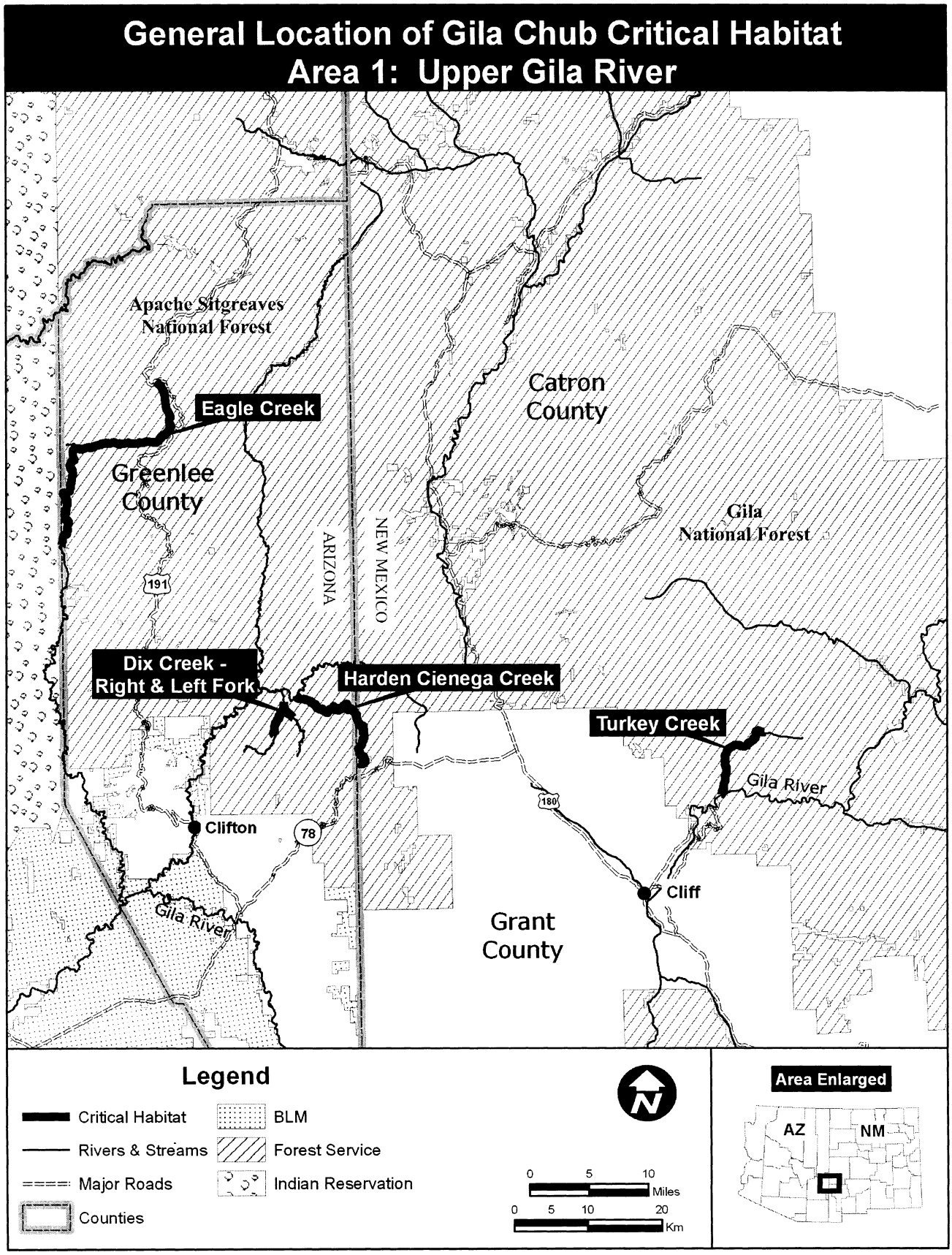
(i) Turkey Creek: 22.3 km (13.8 mi) of creek extending from the edge of the Gila Wilderness boundary at T14S, R16W, sec. 15 NW¼ and continuing upstream to T13S, R15W, sec. 30 NE¼. Land ownership: Gila National Forest and private.

(ii) Eagle Creek and East Eagle Creek: 39.2 km (24.4 mi) of creek extending from its confluence with an unnamed tributary at T1N, R28E, sec. 31 SW¼ upstream to the headwaters of East Eagle Creek just south of Highway 191 in T3N, R29E, sec. 28 SE¼. Land ownership: Apache-Sitgreaves National Forest and private.

(iii) Harden Cienega Creek: 22.6 km (14.0 mi) of creek extending from its confluence with the San Francisco River in GSRM T3S, R31E, sec. 3 SE¼ upstream to the headwaters in NMPM T14S, R21W, sec. 6 NE¼. Land ownership: Apache-Sitgreaves National Forest, Gila National Forest, and private.

(iv) Dix Creek: Portions of the Creek beginning 1.0 mile upstream from its confluence with the San Francisco River at a natural rock barrier in T3S, R31E, sec. 9 NE¼ continuing upstream for 0.9 km (0.6 mi.) to the confluence of the right and left prongs of Dix Creek in T3S, R31E, sec. 9 center. Includes Left Prong of Dix Creek upstream of its confluence with Dix Creek 2.0 km (1.2 mi) to T3S, R31E, section 15 NW¼. Land ownership: Apache-Sitgreaves National Forest. Includes the Right Prong of Dix Creek continuing upstream of its confluence with Dix Creek 4.8 km (3.0 mi) to T3S, R31E, section 20 SE¼. Land ownership: Apache-Sitgreaves National Forest.

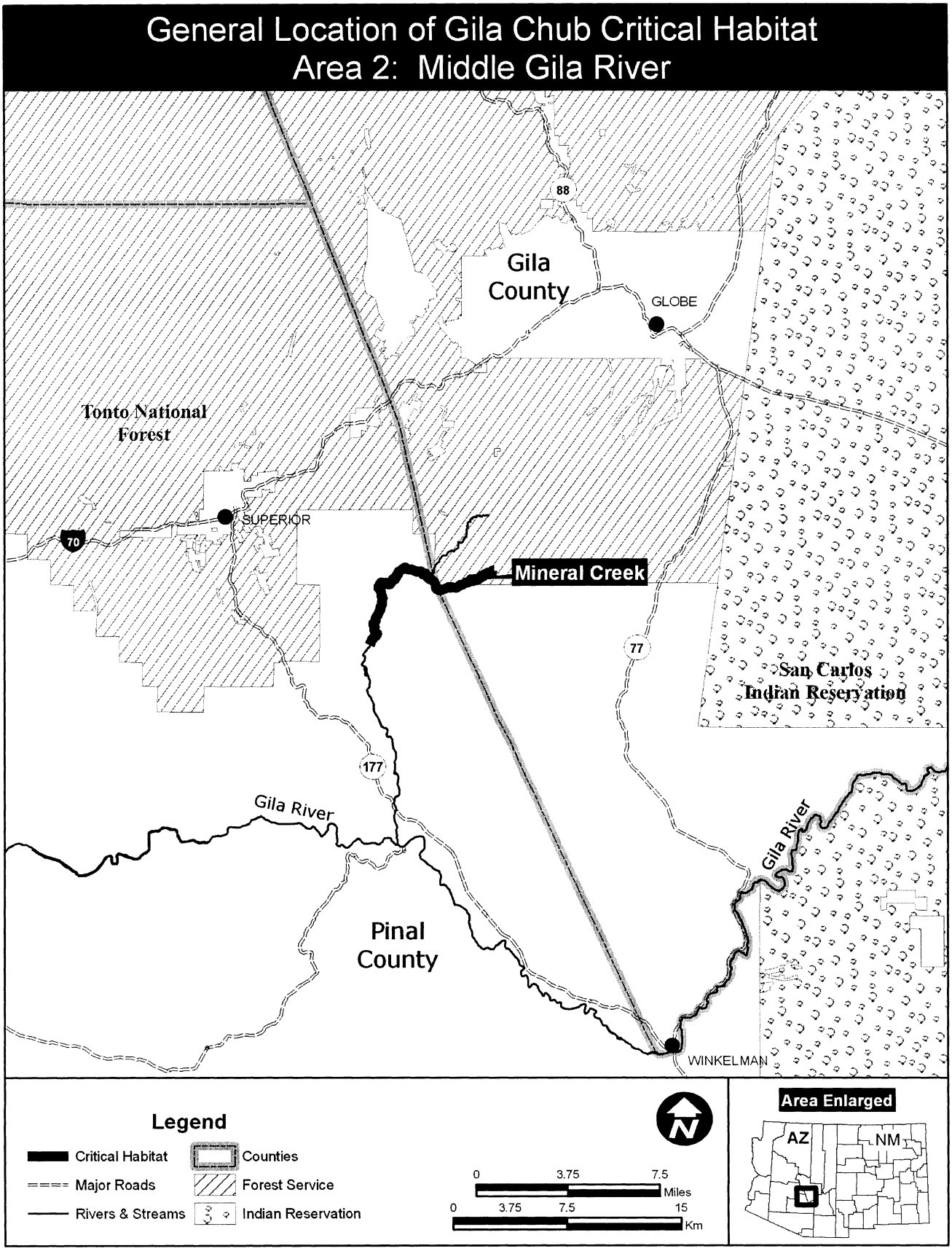
(v) Note: Map of Area 1, Gila River, (Map 2) follows:


General Location of Gila Chub Critical Habitat
Area 1: Upper Gila River
Apache Sitgreaves National Forest
Eagle Creek
Greenlee County
Catron County
Gila National Forest
ARIZONA
NEW MEXICO
191
Dix Creek - Right & Left Fork
Harden Cienega Creek
Turkey Creek
Gila River
180
Clifton
78
Cliff
Grant County
Gila River
Legend
Critical Habitat
Rivers & Streams
Major Roads
Counties
BLM
Forest Service
Indian Reservation
0 5 10 Miles
0 5 10 20 Km
Area Enlarged
AZ
NM

(8) Area 2: Middle Gila River—Gila and Pinal Counties, Arizona.

(i) Mineral Creek: 14.4 km (9.0 mi) of creek extending from its confluence with Devil's Canyon in T2S, R13E, section 35 NW¼ continuing upstream to its headwaters in T2S, R14E, sec. 15 center at the confluence of Mineral Creek and an unknown drainage. Land ownership: Tonto National Forest, State, and private.

(ii) Note: Map of Area Upper Gila River, (Map 3) follows:

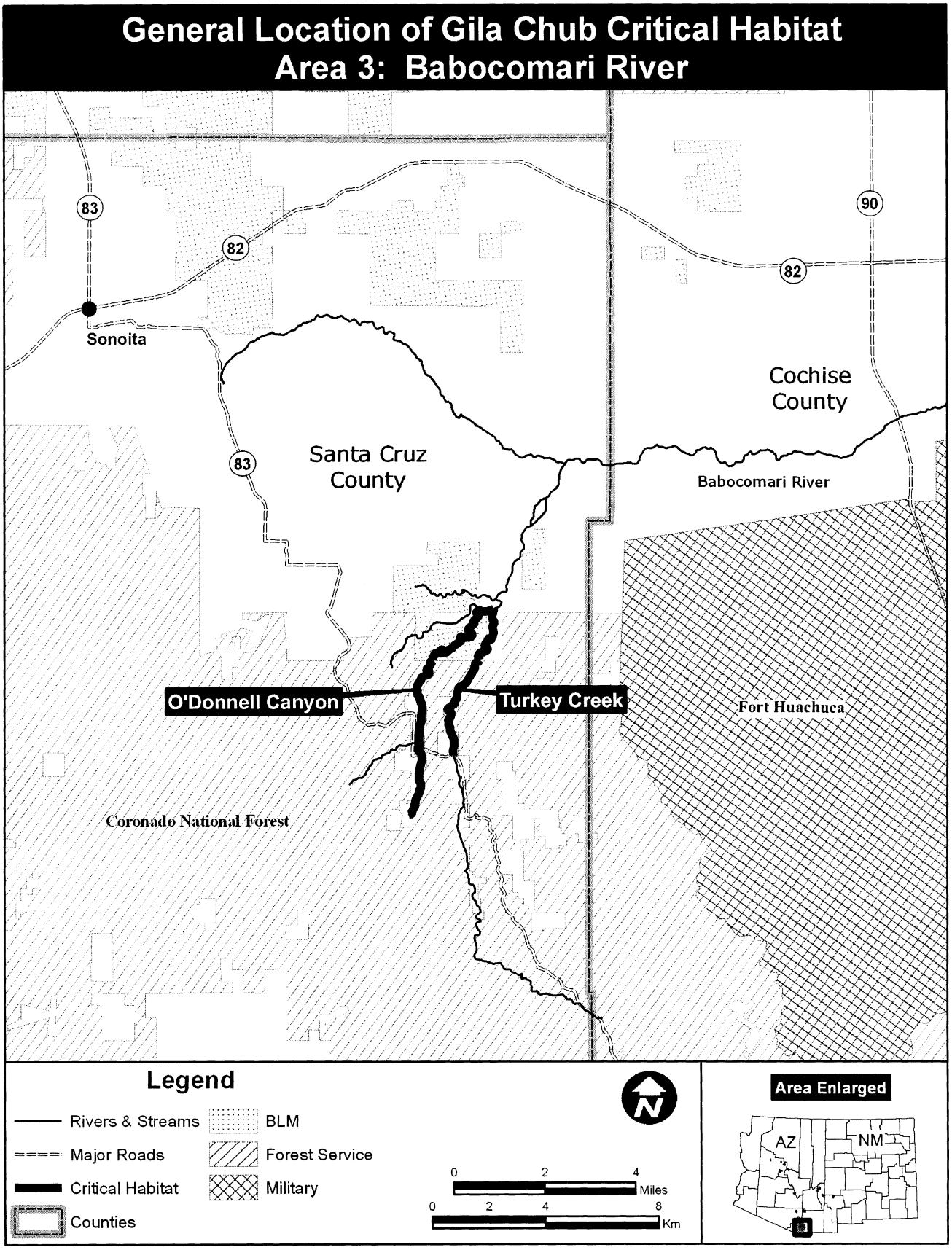

General Location of Gila Chub Critical Habitat
Area 2: Middle Gila River
Gila County
GLOBE
88
Tonto National Forest
SUPERIOR
70
Mineral Creek
77
San Carlos Indian Reservation
177
Gila River
Gila River
Pinal County
WINKELMAN
Legend
Critical Habitat
Major Roads
Rivers & Streams
Counties
Forest Service
Indian Reservation
0 3.75 7.5 Miles
0 3.75 7.5 15 Km
Area Enlarged
AZ
NM

(9) Area 3: Babocomari River—Santa Cruz County, Arizona.

(i) O'Donnell Canyon: 10.0 km (6.2 mi) of creek extending from its confluence with Turkey Creek at T21S, R18E, sec. 22 SE¼ upstream to the confluences of Western, Middle, and Pauline Canyons in T22S, R18E, sec. 17 NE¼. Land ownership: Bureau of Land Management, Coronado National Forest, and private.

(ii) Turkey Creek: 6.3 km (3.9 mi) of creek extending from its confluence with O'Donnell Canyon in T21S, R18E, sec. 22 SE¼ upstream to where Turkey Creek crosses AZ Highway 83 in T22S, R18E, sec. 9 NE¼. Land ownership: Coronado National Forest, and private.

(iii) Note: Map of Area 3, Babocomari River, (Map 4) follows:


General Location of Gila Chub Critical Habitat
Area 3: Babocomari River
83
82
90
Sonoita
Cochise County
Santa Cruz County
Babocomari River
O'Donnell Canyon
Turkey Creek
Fort Huachuca
Coronado National Forest
Legend
Rivers & Streams
Major Roads
Critical Habitat
Counties
BLM
Forest Service
Military
0 2 4 Miles
0 2 4 8 Km
Area Enlarged
AZ
NM

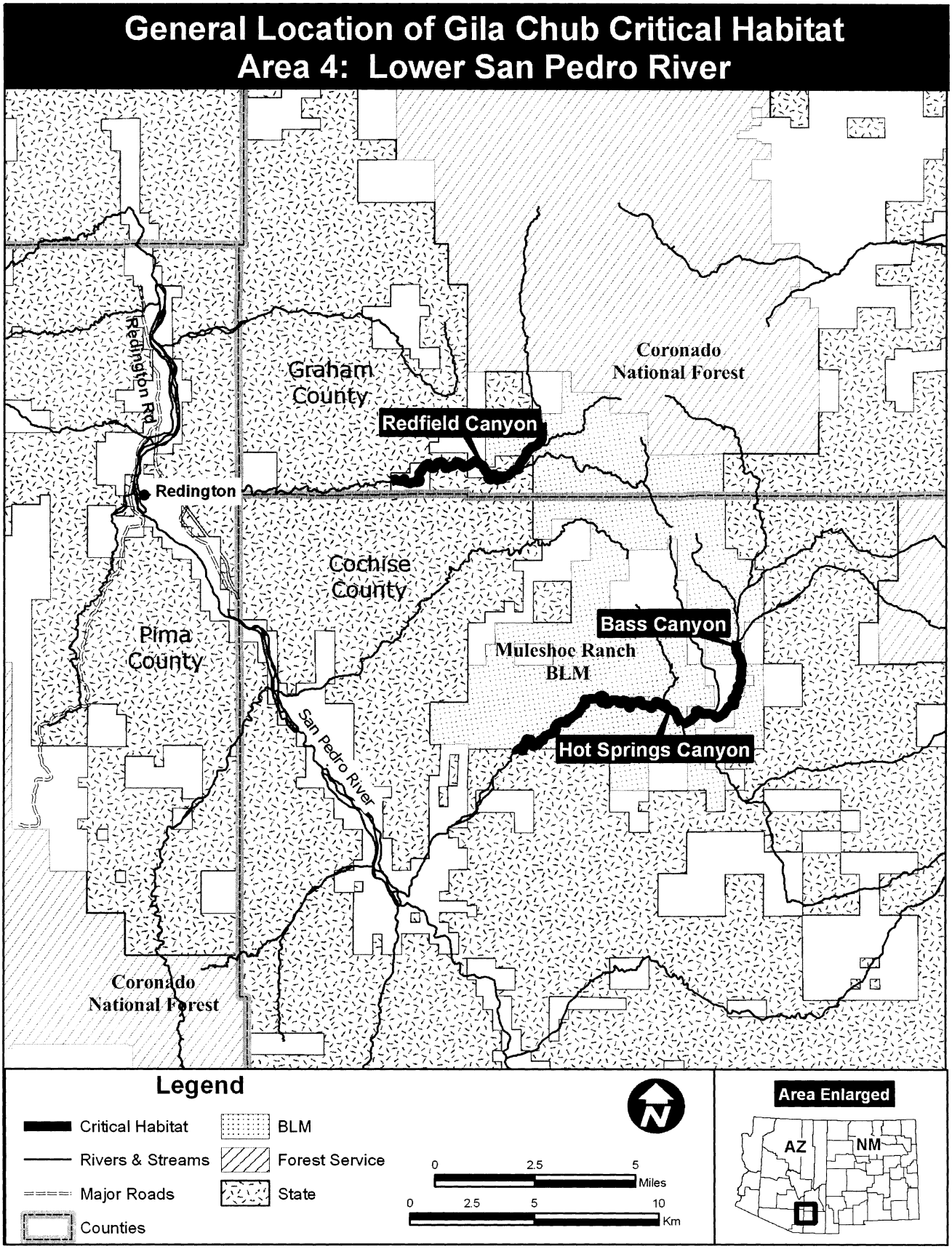
(10) Area 4: Lower San Pedro River—Cochise and Graham Counties, Arizona.

(i) Bass Canyon: 5.5 km (3.4 mi) of creek extending from its confluence with Hot Springs Canyon in T12S, R20E, sec. 36 NE¼ upstream to the confluence with Pine Canyon in T12S, R21E, sec. 20 SW¼. Land ownership: Bureau of Land Management and private.

(ii) Hot Springs Canyon: 10.5 km (6.5 mi) of creek extending from T13S R20E, sec. 5 NW¼ continuing upstream to its confluence with Bass Canyon in T12S, R20E, sec. 36 NE¼. Land ownership: Bureau of Land Management, State, and private (The Nature Conservancy).

(iii) Redfield Canyon: 9.8 km (6.1 mi) of creek extending from the western boundary of T11S, R19E, section 35 upstream to its confluence with Sycamore Canyon in T11S, R20E, sec. 28 NE¼. Land ownership: Bureau of Land Management, State, and private.

(iv) Note: Map of Area 4, Lower San Pedro River, (Map 5) follows:


General Location of Gila Chub Critical Habitat
Area 4: Lower San Pedro River
Redington Rd
Graham County
Coronado National Forest
Redfield Canyon
Redington
Cochise County
Pima County
Bass Canyon
Muleshoe Ranch BLM
San Pedro River
Hot Springs Canyon
Coronado National Forest
Legend
Critical Habitat
Rivers & Streams
Major Roads
Counties
BLM
Forest Service
State
0 2.5 5 Miles
0 2.5 5 10 Km
N
Area Enlarged
AZ
NM

(11) Area 5: Lower Santa Cruz River—Pima County, Arizona.

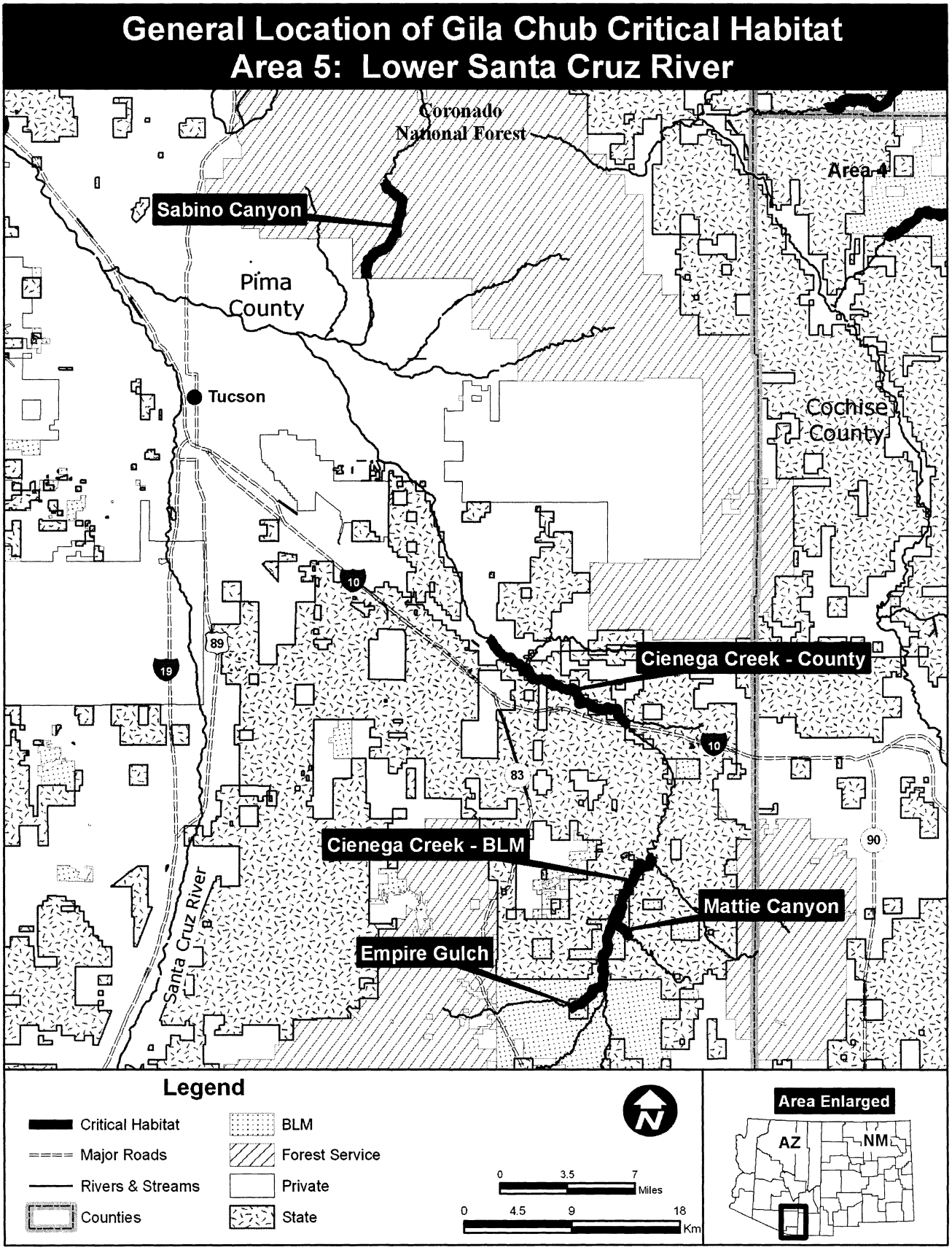
(i) Cienega Creek: (Two Segments). First segment includes 14.2 km (8.8 mi) of creek extending from where Cienega Creek becomes Pantano Wash T16S, R16E, at the boundary of sec. 14 and sec. 23 to where it crosses Interstate 10 at T17S, R17E, sec. 1 NW¼. Land ownership: County and State Trust. Second segment includes 13.6 km (8.4 mi) of creek extending from T18S, R18E, sec. 6 S½ to its confluence with Empire Gulch at T19S, R17E, sec. 3 SE¼. Land ownership: Bureau of Land Management and State.

(ii) Mattie Canyon: 4.0 km (2.5 mi) of creek extending from its confluence with Cienega Creek in T18S, R17E, sec. 23 NE¼ upstream to the Bureau of Land Management Boundary in T18S, R17E, sec. 25 SW¼. Land Ownership: Bureau of Land Management.

(iii) Empire Gulch: 5.2 km (3.2 mi) of creek extending from its confluence with Cienega Creek in T19S, R17E, sec. 3 SE¼ continuing upstream to T19S, R17E, sec. 16 NW¼ on the western boundary of section 16. Land Ownership: Bureau of Land Management and State.

(iv) Sabino Canyon: 11.1 km (6.9 mi) of creek extending from the southern boundary of the Coronado National Forest in T13S, R15E, sec. 9 SE¼ upstream to its confluence with the West Fork of Sabino Canyonin T12S, R15E, sec. 22 NE¼. Land ownership: Coronado National Forest.

(v) Note: Map of Area 5, Lower Santa Cruz River, (Map 6) follows:


General Location of Gila Chub Critical Habitat
Area 5: Lower Santa Cruz River
Coronado National Forest
Area 4
Sabino Canyon
Pima County
Tucson
Cochise County
Cienega Creek - County
Cienega Creek - BLM
Mattie Canyon
Empire Gulch
Santa Cruz River
10
89
19
83
90
Legend
Critical Habitat
Major Roads
Rivers & Streams
Counties
BLM
Forest Service
Private
State
0 3.5 7 Miles
0 4.5 9 18 Km
Area Enlarged
AZ
NM

(12) Area 6: Upper Verde River—Yavapai County, Arizona.

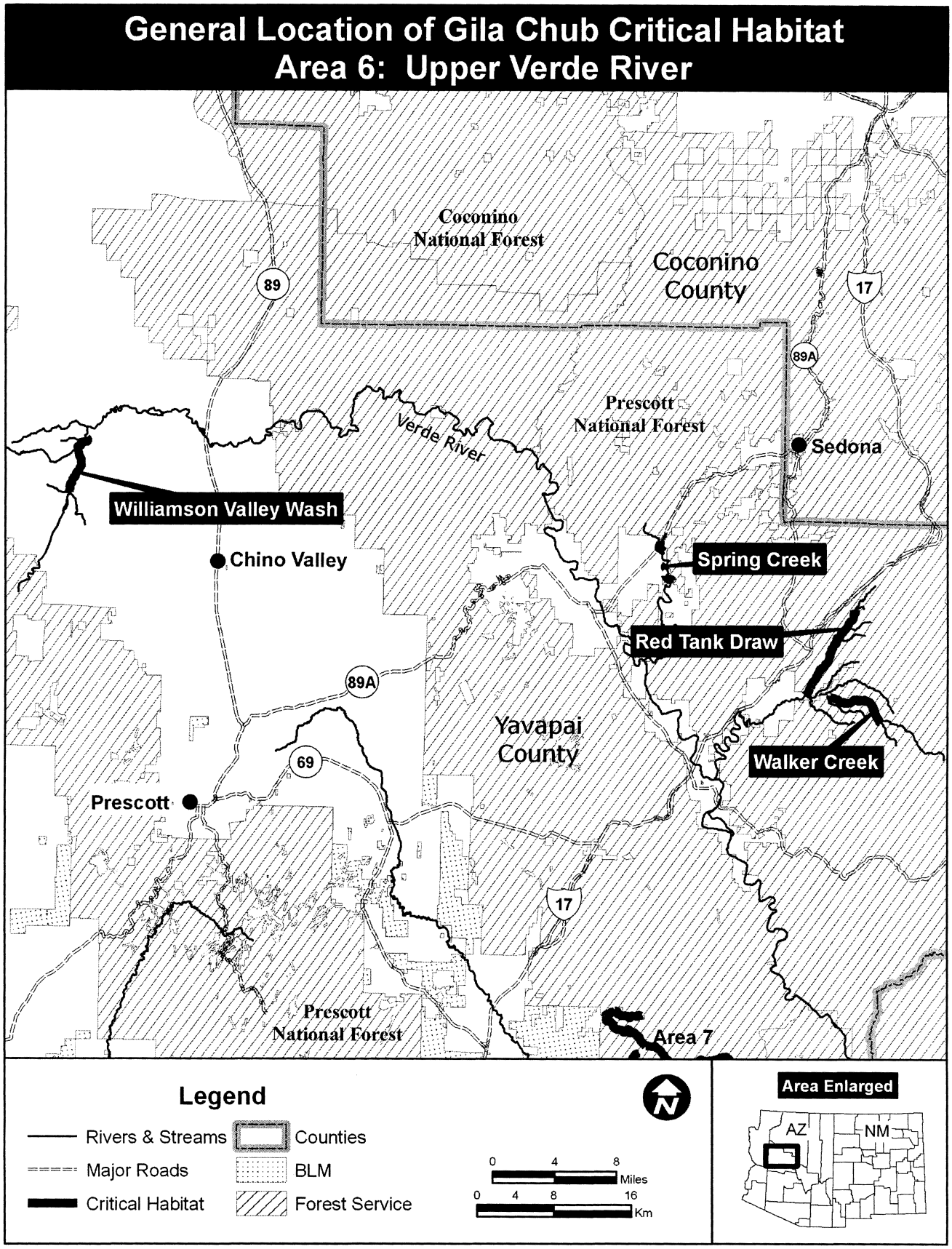
(i) Walker Creek: 7.6 km (4.7 mi) of creek extending from Prescott National Forest Road 618 in T15N, R6E, sec. 33 SW¼ upstream to its confluence with Spring Creek in T14N, R6E, sec. 1, SE¼. Land ownership: Coconino National Forest and private.

(ii) Red Tank Draw: 11.1 km (6.9 mi) of creek extending from the National Park Service boundary just upstream of its confluence with Wet Beaver Creek in T15N, R6E, sec. 31 NE¼ upstream to the confluence of Mullican and Rarick canyons in T15N, R6E, sec. 2 NW¼. Land ownership: Coconino National Forest and private.

(iii) Spring Creek: 2.7 km (1.7 mi) of creek including all non-private land extending from T16N, R4E, sec. 27 SE¼ at the boundary of Forest Service land and continuing upstream to the Arizona Highway 89A crossing in T16N, R4E, sec. 16 SE¼. Land ownership: Coconino National Forest, and State.

(iv) Williamson Valley Wash: 7.2 km (4.4 mi) of creek extending from the gauging station in T17N, R3W, sec. 7 SE¼ upstream to the crossing of the Williamson Valley Road in T17N, R4W, sec. 36 NE¼. Land ownership: private.

(v) Note: Map of Area 6, Upper Verde River, (Map 7) follows:


General Location of Gila Chub Critical Habitat
Area 6: Upper Verde River
Coconino National Forest
Coconino County
89
17
89A
Prescott National Forest
Verde River
Sedona
Williamson Valley Wash
Chino Valley
Spring Creek
Red Tank Draw
89A
Yavapai County
Walker Creek
69
Prescott
17
Prescott National Forest
Area 7
Legend
Rivers & Streams
Major Roads
Critical Habitat
Counties
BLM
Forest Service
0 4 8 Miles
0 4 8 16 Km
Area Enlarged
AZ
NM

(13) Area 7: Agua Fria River—Yavapai County, Arizona.

(i) Little Sycamore Creek: 4.7 km (2.9 mi) of creek extending from its confluence with Sycamore Creek in T11N, R4E, sec. 6 SW¼ upstream to T11N, R4E, sec. 4 NE¼. Land ownership: Prescott National Forest and private.

(ii) Sycamore Creek: 18.3 km (11.4 mi) of creek extending from its confluence with Little Sycamore Creek at T11N, R4E, sec. 6 SW¼ upstream to Nelson Place Spring in T11N, R5E, sec. 21 NE¼. Land ownership: Prescott National Forest and private.

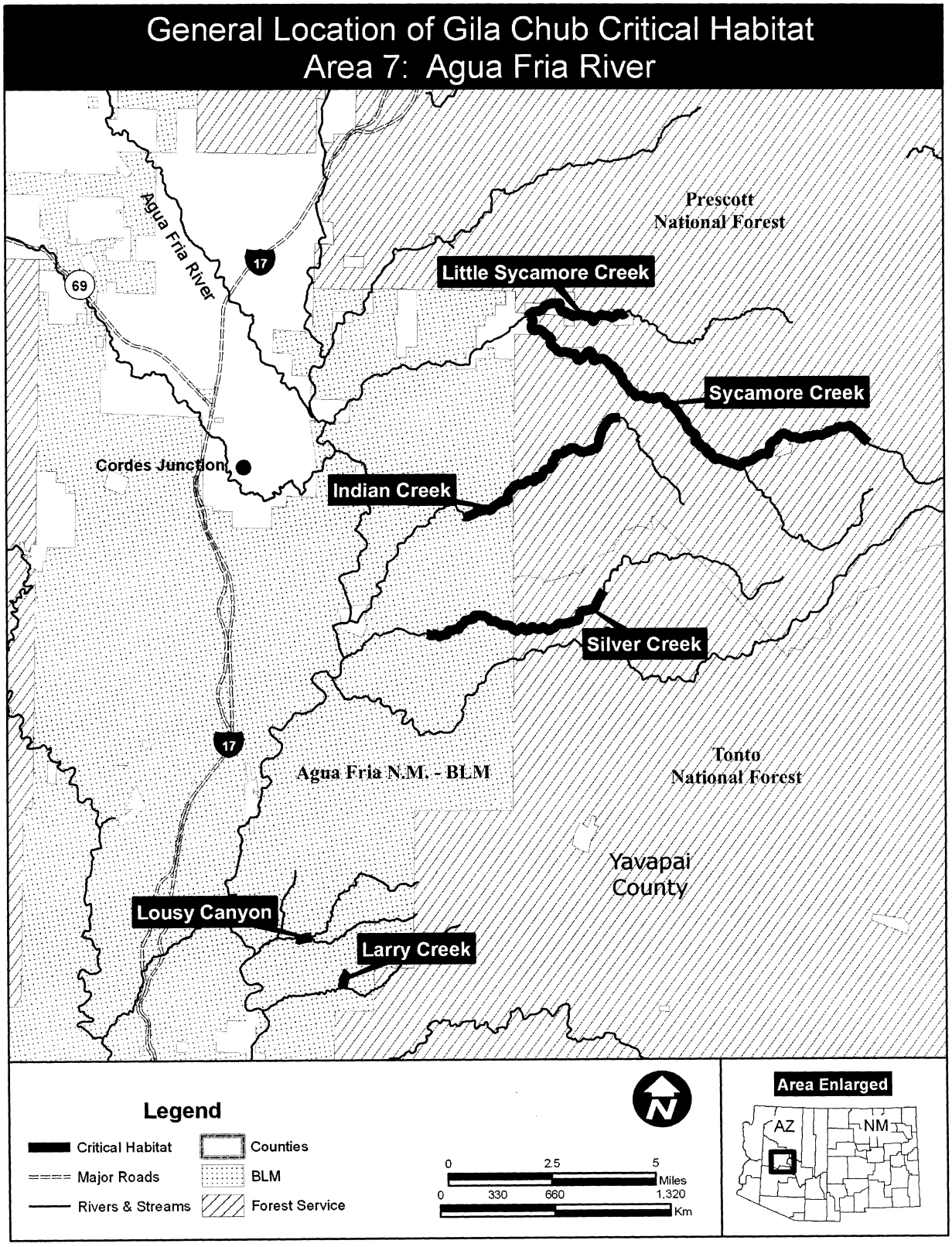
(iii) Indian Creek: 8.4 km (5.2 mi) of creek extending from T11N, R3E, sec. 35 NE¼ to Upper Water Springs in T11N, R4E, sec. 16 SE¼. Land ownership: Bureau of Land Management, Prescott National Forest, and private.

(iv) Silver Creek: 8.5 km (5.3 mi) of creek extending from T10N, R3E, sec. 10 SE¼ continuing upstream to the spring in T10N, R4E, Sec. 4 SW¼. Land ownership: Tonto National Forest and Bureau of Land Management.

(v) Lousy Canyon: Portions of the creek from the confluence of an unnamed tributary upstream to the fork with an unnamed tributary approximately 0.6 km (0.4 mi) upstream, all entirely T9N, R3E, sec. 5 NW¼. Land ownership: Bureau of Land Management.

(vi) Larry Creek: Portions of the creek from an unnamed tributary and continuing upstream 0.7 km (0.4 mi) to the confluence of two adjoining unnamed tributaries, entirely within T9N, R3E, sec. 9 NW¼. Land ownership: Bureau of Land Management.

(vii) **Note:** Map of Area 7, Aqua Fria River, (Map 8) follows:



* * * * *

Dated: October 24, 2005.

Craig Manson,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 05–21498 Filed 11–1–05; 8:45 am]

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WITH CRITICAL HABITAT

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