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AESO/SE
2-21-99-F-130

January 20, 1999

Mr. John McGee, Forest Supervisor
Coronado National Forest
300 West Congress
Tucson, Arizona 85701

Dear Mr. McGee:

This letter represents our Biological Opinion, furnished under Section 7 of the Endangered Species Act of 1973 (Act), as amended. The Federal action under consideration is the West Turkey Creek Native Fish Renovation Project in the Chiricahua Mountains, Coronado National Forest. The renovation project compliments actions covered by a Habitat Conservation Plan for the El Coronado Ranch (ECR). This document represents the Service's biological opinion on the effects of that action on the endangered Yaqui chub (*Gila purpurea*) with critical habitat under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

This biological opinion is based on information provided in the Biological Assessment and Evaluation (December 9, 1998), a Forest Service scoping report, telephone conversations, field investigations, meetings, data in our files, and other sources of information. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file in the Arizona Ecological Services Field Office.

After reviewing the status of the listed species, the environmental baseline for the action area, the effects of the proposed permit issuance, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of this species. Critical habitat has been designated for the Yaqui chub. The project area is outside critical habitat and the proposed project will not adversely modify or destroy designated critical habitat. We also believe that the project is not likely to jeopardize the candidate Chiricahua leopard frog (*Rana chiricahuensis*).

BIOLOGICAL AND CONFERENCE OPINION

DESCRIPTION OF PROPOSED ACTION

On November 6th, 1998, a meeting was held between the U. S. Fish and Wildlife Service, Arizona Game and Fish Department, New Mexico Department of Game and Fish, Arizona State University, the Forest Service Zone Fishery Biologist, the owner of El Coronado Ranch in the West Turkey Creek (WTC) drainage, and the Coronado National Forest. This meeting concerned the contamination of West Turkey Creek by nonnative fishes. As a result, the Douglas Ranger District, Coronado National Forest is planning to manage the West Turkey Creek Watershed as a native fishery. The proposed action is consistent with the goals of the El Coronado Ranch Habitat Conservation Plan.

In managing for a native fishery, the desired condition is to have only native fish and other aquatic species in the West Turkey Creek drainage, including West Turkey Creek, perennial tributaries, and stock ponds on National Forest System lands. The privately owned El Coronado Ranch is taking action to remove nonnative species now. For effective removal of nonnative fish, all parts of the aquatic system, from the lowermost barrier on the El Coronado Ranch all the way upstream, must be treated.

As proposed, the project area will involve West Turkey Creek proper and its tributaries on the National Forest. Actions on the private El Coronado Ranch, have been evaluated and are covered by the Habitat Conservation Plan and 10(a)(1)(B) incidental take permit. The effected area will extend from the Chiricahua Wilderness Boundary in the southeast corner, Section 24, Township 18 South, Range 30 East to the Forest Boundary in Section 14, Township 18 South, Range 29 East. The proposed action will involve the use of a piscicide such as antimycin to remove the nonnative fish species. Before piscicide application, as many native species as possible will be removed from the system. The piscicide then will be detoxified at the downstream end of the project area by a detoxicant such as potassium permanganate. Both chemicals are approved and commonly used for this purpose. Label directions will be followed. Other piscicides, including rotenone, chlorine, sodium cyanide, etc., are available, but their environmental proper-ties make them less suitable and desirable for treatment of small waters like West Turkey Creek.

Use of a piscicide like antimycin is the safest, most efficient, and most effective way to eliminate fish from flowing waters. Antimycin is a product derived from a naturally occurring fungus whose properties make it extremely lethal in very small concentrations to gill-breathing animals. The only gill-breathing animals in West Turkey Creek are the chub, the Yaqui form of longfin dace (*Agosia chrysogaster* ssp.), and the nonnative fishes. Terrestrial animals and non-gill-breathing aquatic animals are not affected in the amounts applied during a treatment. It does not affect plants. It is extensively used in the catfish farming industry, and by State and Federal agencies to remove unwanted aquatic species from flowing and standing waters. In Arizona and New Mexico it has been widely used in restoration efforts for Apache and Gila

trouts (*Oncorhynchus apache* and *O. gilae*) with no detectable environmental consequences. In streams where it has been applied, the aquatic insect fauna has shown no long-term effect. Antimycin rapidly breaks down into non-lethal components in flowing water. It is approved for this use by the U. S. Environmental Protection Agency. In New Mexico, a detailed review of its environmental properties was conducted by Grant County, who found that the piscicide posed no threat to public health when applied according to label instructions.

Removal of 100% of the exotic fish species is absolutely necessary for restoration of the native species. Survival of only a few fish negates the effort as they can spawn and repopulate the stream. Multiple treatments are usually necessary to ensure a complete removal of such fishes from the drainage. Other methods, including intensive angling, electrofishing, explosives, or use of traps and nets cannot remove all fish, particularly small individuals that can easily evade capture by hiding in cracks and crevices in the substrate.

During the life of this plan (five years from the date of approval), it is proposed that piscicide treatments may occur as needed within the Project Area. Scheduling of the periodic treatments will depend on results of monitoring West Turkey Creek to find the extent of nonnative species occurrence. Timing of the project will be adjusted to avoid heavy recreational use periods in the West Turkey Creek drainage. A public information plan will be developed by the Forest Service before each treatment. Once the treatment is complete, the stream will be restocked with native Yaqui chub and longfin dace.

It has been determined that this action is necessary to fulfill the Forest Service's responsibilities under the Endangered Species Act, implement the Coronado National Forest Land and Resource Management Plan, and cooperate with other Federal and State agencies and the El Coronado Ranch in West Turkey Creek in recovery of Yaqui basin fishes. As proposed, this action will contribute to recovery of the endangered Yaqui chub and help protect the longfin dace form that is unique to the Yaqui basin. The maintenance of self-sustaining populations in West Turkey Creek will satisfy criteria identified for endangered species' downlisting considerations in the Yaqui Fishes Recovery Plan (FWS 1994).

The specific project objectives for National Forest System lands are listed below:

1. Remove nonnative fishes from West Turkey Creek drainage.
 - a. Survey all of West Turkey Creek, tributaries, and stock ponds for presence of native and nonnative fishes.
 - b. Remove and retain all native fishes in a secure off-site holding facility.
 - c. Remove all nonnative fishes and either restock in appropriate adjacent waters, or deposit in an approved landfill.
 - d. Apply the piscicide antimycin to West Turkey Creek, tributaries, and stock ponds as necessary beginning at the Wilderness boundary and continuing downstream to the National Forest boundary. At least two treatments, and perhaps

- more will be necessary to ensure complete removal of all nonnative fishes during the 5-year life of the plan.
- e. Detoxify the piscicide with potassium permanganate.
 - f. Survey treated waters for presence of live nonnative fishes, and retreat as necessary.
2. Maintain the West Turkey Creek drainage as a native fishery.
 - a. Once the project area is considered free of all nonnative fishes, restock West Turkey Creek, tributaries, and stock ponds with Yaqui chub and longfin dace.
 - b. Periodically and systematically survey West Turkey Creek, tributaries, and stock ponds for presence of nonnative fishes.
 3. As necessary, retreat West Turkey Creek, tributaries, and stock ponds to remove any nonnative fishes that reinvade from downstream reaches, or stocked via "baitbucket" transfers.

STATUS OF THE SPECIES

The proposed project lies within the historic range of the Rio Yaqui fishes. The rationale for including the Sulphur Springs Valley in the historic range of the Rio Yaqui fishes is described in the recovery plan (FWS 1994). The Yaqui chub and longfin dace occur within the action area.

Yaqui chub

The Yaqui chub was listed as an endangered species on August 31, 1984. Critical habitat was de-designated for this species for "all aquatic habitat on the San Bernardino NWR" (FWS 1984). This was before the acquisition of Leslie Creek, so Leslie Creek is not part of the designated critical habitat. The Yaqui chub is a medium sized fish of the family Cyprinidae (Minckley 1973). Until recently, *Gila purpurea* was thought to occur in the basins of the Rios Sonora, Matape, and Yaqui in Arizona and Sonora, Mexico (Hendrickson *et al.* 1980). In 1991, it was recognized that the chub in the Rios Sonora and Matape and the Rio Yaqui system downstream from San Bernardino Creek are a different species, *Gila eremica* (DeMarais 1991). *Gila purpurea* is endemic to San Bernardino Creek in Arizona and Mexico and possibly the Willcox Playa basin in Arizona (Varela-Romero *et al.* 1990, DeMarais 1991). It currently occurs in Bathhouse Spring, Black Draw, House Pond, Mesquite Pond, North Pond, Oasis Pond, Robertson Cienega, Twin Pond, and Two PhD Ponds on the main portion of the San Bernardino NWR (SBNWR memorandum May 26, 1994). Only a few individual chubs were caught during the 1994 monitoring effort. Some of those populations have been stocked into enhanced or artificially created habitats as part of the recovery program. The population in Leslie Creek was stocked in 1969 from individuals taken from Astin Spring (Minckley and Brooks 1985). The population in West Turkey Creek in the Chiricahua Mountains was stocked in 1986 and 1991 from Leslie Creek stock raised at Dexter National Fish Hatchery. There is an historic record for Yaqui chub in the West Turkey Creek drainage (Rutter 1896).

Habitat preferences for Yaqui chub vary by life stage. Young fishes prefer marginal habitat and the lower ends of riffles. Adults prefer the deepest, most permanent pools, undercut banks by large boulders, debris piles, and roots of large riparian trees (Hendrickson *et al.* 1980). Diet consists mostly of algae, insects, and detrital material (Galat and Gerhardt 1987).

Breeding males are a bluish-grey color while females are straw-yellow to light brown color (Minckley 1973). Spawning is protracted throughout the warmer months, with greater activity in spring. Reproductive potential is high and large populations develop quickly from a few adults (DeMarais and Minckley 1993). Growth to maturity is rapid, often within the first summer of life.

Decline of the Yaqui chub probably began with regional arroyo cutting in the late 1800s. Rio San Bernardino incised its floodplain more than 25 feet, and streamside marshlands (cienegas) were drained, except where locally maintained by springs or artesian wells. Cattle grazing destroyed cienegas and wetlands and contributed to watershed deterioration. It approached extinction in the late 1960's, due to habitat loss, but survived largely due to human intervention, including translocation, hatchery production, habitat acquisition, renovation, creation, and reintroduction. Catastrophic drought in the mid-1970s further depleted populations (DeMarais and Minckley, 1993).

Actions taken at San Bernardino National Wildlife Refuge help maintain populations of the species in the United States. Yaqui chub populations in West Turkey Creek occur largely on the private El Coronado Ranch. Conservation, ranch management, and recovery actions for the Yaqui chub, Yaqui catfish (*Ictalurus pricei*), and longfin dace are laid out in a 25-year long Habitat Conservation Plan (Minckley and Duncan 1998). Management in Mexico is minimal at best.

ENVIRONMENTAL BASELINE

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

Nonnative fishes, including rainbow trout (*Onchorynchus mykiss*), fathead minnow (*Pimephales promelas*), channel catfish (*Ictalurus punctatus*), western mosquitofish (*Gambusia affinis*), green and bluegill sunfish (*Chaenobrittus cyanellus* and *Lepomis macrochirus*) and largemouth bass (*Micropterus salmoides*), along with two amphibians, the bullfrog (*Rana catesbeiana*) and tiger salamander (*Ambystoma tigrinum*), and various crayfish, have appeared

or increased in numbers and distribution from pre-existing populations in the Southwest. These organisms can negatively impact native aquatic species. Some work has been directed toward control or removal of these organisms on the El Coronado Ranch; more effort will be necessary. Continued management of the watershed, aquatic habitats, and the fishes on the El Coronado Ranch will assist with the conservation of these species.

Status of the Species Within the Action Area

An historic record exists for Yaqui chub in West Turkey Creek (Rutter 1896). However the specimens' identity cannot be confirmed because they were lost in the San Francisco earthquake (Miller and Lowe 1964). The Yaqui chub was released onto ECR in 1986. The stock of these fish was originally from Astin Spring via Leslie Creek. The chub eventually dispersed from the ECR ponds into West Turkey Creek. The ECR ponds function as a refugium and a source of chub for WTC. Nonnative species are one of the biggest threats to the West Turkey Creek native fishes. Illegal release of nonnative aquatic species will probably be a continual problem.

EFFECTS OF THE ACTION

West Turkey Creek is one of two "perennial" streams on the western side of the Chiricahua Mountains in the Coronado National Forest that drain into the Sulphur Springs Valley, Cochise County, Arizona. Rucker Canyon also provides perennial aquatic habitat. It is thought that these drainages were once tributaries to the Rio Yaqui in Sonora, Mexico. About 4.0 miles of potential Yaqui chub stream habitat exist within West Turkey Creek. Of this, approximately, 2.5 miles of stream habitat are within National Forest lands.

Although the Yaqui chub occurs in West Turkey Creek and is considered a native, the species had disappeared from the Creek sometime early in this century. This was from either natural conditions (drought, floods, wildfire, watershed degradation) or elimination due to competition with introduced nonnative fishes (rainbow trout, green sunfish). A collection of Yaqui chub from Morse Creek (= West Turkey Creek) was reported by Rutter in 1896. After that collection, the species was not collected there again. In 1986, Yaqui chub from stocks at the Dexter National Fish Hatchery were transplanted to ponds on the University of Arizona's Coronado Ranch. Since then, chubs have continued to survive in the ponds (now in private ownership) and have been found on Forest.

Electrofishing surveys conducted by the Service and Coronado National Forest in 1996, 1997, and 1998 within the upper reaches of West Turkey Creek found Yaqui chub in low numbers (2 to 19 individuals) but surviving and reproducing. Since Yaqui chub fry and young of the year were found during these surveys, concluding that suitable habitat conditions exist seems reasonable.

Because of these surveys, it has been determined that nonnative species exist also on the Forest. However, their distribution and composition have been variable. The 1996 surveys found rainbow trout along with longfin dace and Yaqui chub. The 1997 results reflected a significant presence of fathead minnow along with Yaqui chub but no trout nor dace. No nonnative species nor longfin dace were found in 1998. Surveys were confined to pool habitat within the upper 1.0 mile of West Turkey Creek.

Stock ponds on private land in the drainage support a variety of nonnative species, including western mosquitofish, green sunfish, bluegill, largemouth bass, yellow bullhead (*Amiurus natalis*), and common carp (*Cyprinus carpio*). In 1997, nonnative fathead minnow were found in West Turkey Creek and in several stock tanks on private land. Its appearance was likely a result of a "baitbucket" transfer. This species is known to either prey on, or compete with other fishes, and could eliminate the native species from West Turkey Creek and preclude their reestablishment. All of the nonnative species currently or potentially present are threats to recovery of the Yaqui fishes in West Turkey Creek. Additionally, there are many other species available either in the wild, or in bait shops and pet stores that could be transplanted into West Turkey Creek to the detriment of the native fishes. Transplantation of nonnative fishes via unauthorized and illegal "baitbucket" transfers is a common occurrence; often perpetrated by individuals unaware of the biological consequences of their actions (Arthington *et al.* 1990, Courtenay 1993). Unauthorized introduction of nonnative fishes into West Turkey Creek is expected to be a continuing problem that will require periodic treatment of the stream to keep it free from nonnative fishes.

Rucker Canyon is also within the chub's historic range and is inhabited by longfin dace and Mexican stoneroller (*Campostoma ornatum*), but Yaqui chub have never been found there. All three species coexist in the upper Rio Yaqui. Before the 1994 Rattlesnake fire, electrofishing surveys found brook (*Salvelinus fontinalis*) and rainbow trout, green sunfish, fathead minnows and also Mexican stonerollers and longfin dace within the Rucker drainage. Since the wildfire, limited electroshocking surveys have shown that the brook trout has disappeared. Although neither the green sunfish nor the fathead minnow have been collected since the Fire, both species are known to exist in stock ponds on Forest within the Rucker Canyon watershed.

Besides the West Turkey Creek aquatic resources, Forest Road 41 more or less parallels the Creek, ending with a trailhead at the Wilderness boundary. This is one of four trailheads that access wilderness recreation trails from West Turkey Creek. Also, along with the El Coronado Ranch, there are 14 recreational summer homes, two semi-developed campgrounds, and several dispersed camping sites in use within the Canyon on Forest.

Along with the preceding recreational resources, the Creek is within the Turkey Creek Grazing Allotment permitted to the El Coronado Ranch. Permitted use is for 66 cow/calf yearlong and an additional 25 cows from September through December. The grazing system involves a "Best Pasture" system. No grazing occurs within the West Turkey Creek Recreation Area

(= Yaqui chub habitat) during the summer months. In 1997, the permittee took non-use because of drought and in 1998, only 25% of the permitted use was applied for.

In 1994, as a result of the Rattlesnake Fire, "significant" quantities of ash and other debris were transported downstream into West Turkey Creek. Nevertheless, the resident nonnative rainbow trout, longfin dace and Yaqui chub survived. However, the event did not impact the watershed equally. The majority of the debris flows affected the lower reaches of West Turkey Creek via Saulsbury and Ward Canyons. The watershed still is continuing to heal and recover.

CUMULATIVE EFFECTS

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

The present project should benefit many species, included listed ones. Currently, the Coronado National Forest is consulting with the Service regarding on-going and long term grazing on the Forest as well as the proposed Johnson Peak Fire Management Plan relative to the Yaqui chub. Other than the preceding, water diversion related activities addressed in the approved Habitat Conservation Plan for the El Coronado Ranch are the only known actions which may have a significant bearing on this species or its habitat within southeastern Arizona (Minckley and Duncan 1998). The illegal transplanting of exotic fish and amphibians also has the potential to continue. This potential situation will require periodic habitat monitoring.

CONCLUSION

After reviewing the status of the Yaqui chub, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the West Turkey Creek Native Fish Habitat Renovation Planed, as proposed, is not likely to jeopardize the continued existence of the Yaqui chub. Critical habitat for this species has been designated at on the San Bernardino National Wildlife Refuge, however, this action does not affect that area and no destruction or adverse modification of that critical habitat is anticipated.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by FWS to include significant

habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by FWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered prohibited taking under the Act if such taking meets the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Forest Service so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to assume and implement the terms and conditions of the incidental take statement through enforceable terms added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Forest Service must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

AMOUNT OR EXTENT OF TAKE

Based on the proposed West Turkey Creek Native Fish Habitat Renovation Project and on the analysis of the effects of the proposed action provided above, the Service anticipates that the following take may occur because of the proposed action:

On-site incidental take is anticipated to result from harassment and direct and indirect mortalities due to management actions. Incidental take will be difficult to detect for the following reasons: dead fish are difficult to find, cause of death may be difficult to determine, reliable population estimates are not obtainable due to sampling difficulties, and losses may be masked by seasonal fluctuations in numbers or other causes. Therefore, the total take is indeterminable for the Yaqui chub. Incidental take from actions proposed on the National Forest, is likely to be small since known populations of Yaqui chub on the Forest are also small. The causes and forms of take are described below. All Yaqui chub in the Forest Service section of West Turkey Creek will undergo some form of take. Incidental take can be considered exceeded if the piscicide is not detoxified at the downstream most end of the project area. The detoxification may occur at either the Forest boundary or on the El Coronado Ranch.

Fish capture and transport: Before the stream is renovated, as many Yaqui chub as possible will be captured, and moved into off-Forest holding facilities. Once Turkey Creek is believed free of nonnative fish, the natives will be returned. These actions constitute harassment.

Capture, movement, handling, and maintenance are all covered by this incidental take statement.

Renovation: Application of the piscicide to West Turkey Creek will cause the death of any remaining Yaqui chub. The numbers left are expected to be minimal, mirroring the small population in this section of West Turkey Creek.

EFFECT OF THE TAKE

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

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize take of the Yaqui chub:

1. Conduct the proposed action in a way that will minimize mortality of Yaqui chub.
2. Conduct the proposed action in a way that will minimize destruction or modification of habitat for Yaqui chub.
3. Maintain complete and accurate records of listed fish species populations and status and water quality of aquatic habitats in the project area.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of Act, the following terms and conditions, which implement the reasonable and prudent measures described above, must be complied with. These terms and conditions are nondiscretionary.

1. The Forest Service shall insure implementation of the proposed action as written with the following terms and conditions as additions or exceptions. All terms and conditions may be done cooperatively by the agencies and individuals assisting with this project.
2. The Forest Service shall monitor fish populations and habitat conditions before and after project implementation.

- a. Before native fish are released back into the project area, the Forest Service shall determine if West Turkey Creek on the Forest remains free of nonnative fish.
 - b. After native fish are released back into the project area, the Forest Service shall monitor the population abundance of Yaqui chub every six months, for two years, annually thereafter. The presence/absence of nonnative fish will also be observed during the monitoring.
 - c. Aquatic habitat shall be monitored annually.
3. Report all results of the habitat and population monitoring one year after Yaqui chub are returned to West Turkey Creek.

The Service believes that incidental take is indeterminable. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Sections 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Other actions occurring in the West Turkey Creek watershed need to be analyzed for their potential impacts to listed species. The Forest Service should cooperatively work with the Service and interested parties to address these issues.
2. Work with the Arizona Game and Fish Department and other partners to designate West Turkey Creek as a native fishery, and close it to fishing.

REINITIATION NOTICE

This concludes formal consultation on the West Turkey Creek native Fish Habitat Renovation Plan outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the

action has been reined (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a way that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have questions regarding this Biological Opinion please call Doug Duncan (520-670-4860) or Jim Rorabaugh (602-640-2720). Please refer to the consultation number 2-21-98-F-130, in future correspondence concerning this project.

Sincerely,

/s/ Dave Harlow
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ES)
Director, Arizona Game and Fish Department, Phoenix, AZ

98F130:DKD

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BIOLOGICAL OPINION SUMMARY
WEST TURKEY CREEK NATIVE FISH HABITAT RENOVATION PROJECT

Date of opinion: January XX, 1999

Action agency: USDA Forest Service, Coronado National Forest

Project: West Turkey Creek Native Fish Habitat Renovation Project

Location: Chiricahua Mountains, Cochise County, Arizona

Listed species and critical habitats: Yaqui chub (*Gila purpurea*)

Biological opinion: Action is not likely to jeopardize the continued existence of the Yaqui chub, and is not likely to destroy or adversely modify designated critical habitat (pg. 1).

Incidental take statement:

Anticipated take: *Exceeding this level may require reinitiation of formal consultation.* Incidental take is anticipated to result from harassment and mortality. Take will be difficult to detect for the following reasons: dead fish are difficult to find, cause of death may be difficult to determine, reliable population estimates are not obtainable due to sampling difficulties, and losses may be masked by seasonal fluctuations in numbers or other causes. Therefore, the total take is indeterminable for the Yaqui chub (pg. 9).

Reasonable and prudent measures: *Implementation of these measures through the terms and conditions is mandatory.* Conduct the proposed action in a way that will minimize mortality of Yaqui chub. Conduct the proposed action in a way that will minimize destruction or modification of habitat for Yaqui chub. Maintain complete and accurate records of listed fish species populations and status and water quality of aquatic habitats in the project area (pg. 10).

Terms and conditions: *Terms and conditions implement reasonable and prudent measures and are mandatory requirements.* The Forest Service shall insure implementation of the proposed action as written with the following terms and conditions as additions or exceptions. All terms and conditions may be done cooperatively by the agencies and individuals assisting with this project. The Forest Service shall monitor fish populations and habitat conditions before and after project implementation. Before native fish are released back into the project area, the Forest Service shall determine if West Turkey Creek on the Forest remains free of nonnative fish. After native fish are released back into the project area, the Forest Service shall monitor the population abundance of Yaqui chub every six months. The presence/absence of nonnative fish will also be observed during the monitoring. Habitat shall be monitored annually. Report all results of the habitat and population monitoring one year after Yaqui chub are returned to West Turkey Creek (pg.11).

Conservation recommendations: *Implementation of conservation recommendations is discretionary.* Other actions occurring in the West Turkey Creek watershed need to be analyzed for their potential impacts to listed species. The Forest Service should cooperatively work with the Service and interested parties to address these issues. Work with the Arizona Game and Fish Department and other partners to designate West Turkey Creek as a native fishery, and close it to fishing.