

SUMMARY
 BIOLOGICAL OPINION FOR REPAIR OF BLUE RIVER
 LOW-WATER CROSSING ON FOREST ROAD 475 WITH 404 PERMIT
 APACHE-SITGREAVES NATIONAL FORESTS

Date of the opinion: April 21, 1995

Action agencies: U.S. Forest Service (USFS) - lead
 U.S. Army Corps of Engineers (Corps)

Project: Emergency and follow-up repair of flood damage to low-water ford crossing of Blue River on Forest Road 475 on the Clifton Ranger District, Apache-Sitgreaves National Forests

Location: Greenlee County, Arizona

Listed species affected: Loach minnow (Tiaroga cobitis) - threatened with critical habitat

Biological opinion: Nonjeopardy and no destruction or adverse modification of critical habitat (page 7)

Incidental take statement: (page 7)

Anticipated take: Exceeding this level may require reinitiation of consultation. (page 7-8)

1. 20 dead fish of any species in or within 500 yards downstream of project activities
2. spill of any toxic materials in the river or floodplain during project implementation
3. loss of all loach minnow for 25 feet on either side of the ford crossing centerline

Reasonable and prudent measures: Four objectives for minimizing, monitoring, and documenting incidental take are given. Implementation of these measures, through the terms and conditions, is mandatory. (page 8)

Terms and conditions: Terms and conditions implement the reasonable and prudent measures and are mandatory requirements. The terms and conditions include minimization of work in the wetted channel, measures to ensure pollutants do not enter surface waters, limitations on area of channel modification and heavy equipment work, minimization of riparian vegetation disturbance, monitoring to detect dead or dying fish, and submission of a project report. (page 9-10)

Conservation recommendations: None.



UNITED STATES
DEPARTMENT OF THE INTERIOR
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April 21, 1995

In Reply Please Refer To:
AESO/SE
2-21-95-F-166

Mr. Frank Hayes
U.S. Forest Service
HC 1, Box 733
Duncan, Arizona 85534

Dear Mr. Hayes:

This biological opinion responds to your request of April 13, 1995, for formal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, on repair of Forest Road (FR) 475 at a low-water ford crossing of the Blue River in Greenlee County, Arizona. This opinion also completes emergency consultation of January 25-26, 1995, on emergency repairs of that crossing. The species of concern is loach minnow (Tiaroga cobitis).

The following biological opinion is based on information provided in Forest Service letters of February 2 and April 14, 1995; telephone conversations of January 25, February 14 and 23, and April 13, 1995; data in our files; and other sources of information.

CONSULTATION HISTORY

Emergency consultation on this action was initiated by telephone conference with the Forest Service, Fish and Wildlife Service (Service), Corps of Engineers (Corps), and Greenlee County on January 25, 1995. The proposed action is on Forest Service land and the Forest Service was lead agency for this emergency consultation and continues as lead for this formal consultation. However, the Corps would issue a permit for the proposed action under section 404 of the Clean Water Act. Therefore, Corps actions are also under consultation here and the Corps is an action agency in the consultation. The incidental take statement and conservation recommendations apply to both agencies, as appropriate under their differing authorities.

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On January 26, 1995, the Service formalized the emergency consultation in a letter to the Clifton Ranger District setting forth conditions for the emergency work. Emergency work was performed on February 7, 1995. The present formal consultation finalizing the emergency consultation and reviewing the proposed additional repair work began on April 13, 1995, the date your request was received in our office.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed project is to repair a low-water ford on FR 475 crossing the Blue River on the Clifton Ranger District of the Apache-Sitgreaves National Forests, Greenlee County, Arizona (Figures 1 and 2). This crossing, also known as the Juan Miller crossing, was damaged by flooding during the winter of 1994-95. Repair work was conducted under the emergency consultation provisions and additional work is proposed under normal consultation procedures. The road is used by recreationists, Forest Service staff, livestock permittees, and one private resident with land on the east side of the river.

Emergency repair work was conducted on February 7, 1995. That work consisted of smoothing road approaches to the crossing. The expected placement of boulders and rock into the stream crossing was not done because the water level was too high. Sand and gravel materials extracted from the roadway were placed along the western edge of the roadway well away from the channel flow. Additional work was postponed until water levels receded.

In the April 14, 1995, packet initiating formal consultation, the Forest Service provided the photographs and log information which were part of the conditions of the emergency consultation. Streamgauge and rainfall records have not yet been furnished.

Additional repair on the Juan Miller crossing would entail 1 to 2 days of work and is expected to be conducted in late April or early May. Repair would be conducted using a front-end loader and a small bulldozer. The low-water crossing would be raised to evenly distribute the water surface of the stream by placement of fill. Fill would consist primarily of boulders (2-4 feet diameter) and cobble (3-10 inches diameter). The fill would tie into existing riprap on the streambanks.

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Care would be taken to avoid impacting sandbars and riparian vegetation to prevent additional destabilization of the streambanks and river channel. The Forest Service District Ranger would be on-site to supervise the repair work.

Refueling and other staging activities would take place well away from the Blue River or any other stream or free-flowing water. Photo documentation would be done prior to, during, and after work completion.

There are a number of low-water crossings by FR 475 on tributaries of the Blue River. These have also been damaged by flooding and repair work has occurred. The Service has concurred that work on those crossings will not affect loach minnow, providing the work is limited to the area already disturbed by the road and if only minor amounts of cut and fill are required.

Status of the Species

Loach minnow was listed as a threatened species on October 28, 1986 (USFWS, 1986). Critical habitat was designated for loach minnow on March 8, 1994, including portions of the San Francisco, Tularosa, and upper Gila Rivers, Aravaipa Creek, and the Blue River from Campbell and Dry Blue Creeks downstream to the confluence with the San Francisco River. Loach minnow is a small, slender, elongate fish with markedly upwardly-directed eyes (Minckley, 1973). Historic range of loach minnow included the basins of the Verde, Salt, San Pedro, San Francisco, and Gila Rivers (Minckley, 1973; Sublette *et al.* 1990). Habitat destruction and competition and predation by non-native fish and habitat destruction have reduced the range of the species by about 85 percent (Miller, 1961; Williams *et al.* 1985; Marsh *et al.* 1989). Loach minnow remains in limited portions of the upper Gila, San Francisco, Blue, Tularosa, and White Rivers; and Aravaipa, Eagle, Campbell Blue, and Dry Blue Creeks in Arizona and New Mexico (Barber and Minckley, 1966; Silvey and Thompson, 1978; Propst *et al.* 1985; Propst *et al.* 1988; Marsh *et al.* 1990).

Loach minnow is a bottom-dwelling inhabitant of shallow, swift water over gravel, cobble, and rubble substrates (Rinne, 1989; Propst and Bestgen, 1991). Loach minnow use the spaces between, and in the lee of, larger substrate for resting and spawning (Propst *et al.* 1988; Rinne, 1989). It is rare or absent from habitats where fine sediments fill the interstitial spaces (Propst and Bestgen, 1991). Some studies have indicated that the presence of filamentous algae may be an important component of loach minnow habitat (Barber and Minckley, 1966). The life span of loach minnow is about 2 years (Britt, 1982; Propst and Bestgen, 1991). Loach minnow feeds exclusively on aquatic insects

(Schreiber, 1978; Abarca, 1987). Spawning occurs in March through May (Britt, 1982; Propst *et al.* 1988); however, recent reports have confirmed that under certain circumstances loach minnow also spawn in the autumn (Vives and Minckley, 1990). The eggs of loach minnow are attached to the underside of a rock that forms the roof of a small cavity in the substrate on the downstream side. Limited data indicate that the male loach minnow may guard the nest during incubation (Propst *et al.* 1988; Vives and Minckley, 1990).

In the Blue River, loach minnow is presently found in suitable habitat throughout the area of perennial flow (J.M. Montgomery Consulting Engineers, 1985; Hendrickson, 1987; Papoulias *et al.* 1989). The proposed project is located within designated critical habitat for the loach minnow.

Recent biochemical genetic work on loach minnow indicate there are substantial differences in genetic makeup between remnant loach minnow populations. Remnant populations occupy isolated fragments of the Gila basin and are isolated from each other. Based upon her work, Tibbets (1992) recommended that the genetically distinctive units of loach minnow should be managed as separate units to preserve the existing genetic variation.

Environmental Baseline

The Blue River is a degraded system. Human uses of the river and its watershed have resulted in destabilization of the stream channel characterized by a wide shallow water channel profile, high levels of sediment, eroding banks, braided channels, and depauperate riparian vegetation (Chamberlain, 1904; Leopold, 1924; Dobyms, 1981). Human uses contributing to the problem include livestock grazing, roads, cropping, aquaculture, and off-road vehicle use.

Status of the loach minnow within the Blue River system is poorly known. Past surveys have been spotty and no trends can be discerned (Chamberlain, 1904; Silvey and Thompson, 1978; J.M. Montgomery Consulting Engineers, 1985; Sheldon and Hendrickson, 1988; Papoulias *et al.* 1989; Corman *et al.* 1989). Ongoing studies by Arizona Game and Fish Department and by Paul Marsh of Arizona State University for the Apache-Sitgreaves National Forests are expected to provide a more complete picture of the status of the loach minnow in the Blue River.

The status of loach minnow is declining rangewide. Although it is currently listed as threatened, the Service has found it warrants uplisting to endangered status. A

reclassification proposal is pending, however, work on it is precluded due to work on other higher priority listing actions (USFWS 1994). The need for reclassification is not due to data on declines in the species itself, but is based upon increases in serious threats to a large portion of its habitat.

Only two other formal consultations have been done on effects of Federal actions on loach minnow in the Blue River basin. In May 1986, a biological opinion was issued on the Apache-Sitgreaves National Forests Land and Resources Management Plan (Forest Plan). That opinion concluded that implementation of the standards and guidelines in the Plan should provide net benefits to the loach minnow. The loach minnow and its critical habitat were proposed for listing at the time of that opinion. In May 1993, a biological opinion was issued concluding that the Campbell and Isabelle Timber Sales on Campbell Blue Creek would not jeopardize the continued existence of the loach minnow and would not adversely modify its proposed (at that time) critical habitat.

Direct and Indirect Effects of the Action

The proposed action is expected to have localized adverse effects on the loach minnow. However, those effects are not expected to cause long-term changes to the population in the Blue River.

Adverse effects of roads and road crossings on streams have been documented for many types of streams and fish species (Dobyns, 1981; Meehan, 1991; Megahan *et al.* 1992; Young, 1994). Loach minnow are susceptible to mortality when heavy equipment is used in the stream channel or at low-water crossing. Because they are fixed to rocks in shallow riffle areas, loach minnow eggs are also susceptible to crushing if equipment or vehicle use occurs in the stream during spring or fall spawning seasons. Loach minnow may be adversely affected by increased sediment deposition on the streambottom. Adverse effects of stream sedimentation to fish and fish habitat have been extensively documented (Murphy *et al.* 1981; Wood *et al.* 1990; Newcombe and MacDonald, 1991; Barrett, 1992; Megahan *et al.* 1992). Because of their benthic habit, loach minnow and their eggs are particularly vulnerable to substrate sedimentation. Roads adjacent to or crossing streams may result in changes in riparian vegetation and stream channel morphology that may alter quality and availability of habitat for loach minnow.

Channel alteration resulting from the proposed project may affect the long-term configuration and stability of the stream channel and availability of various habitat types. Upstream and downstream changes in the stream channel normally result from any change in the elevation and shape of the streambed (Heede, 1980; Gordon *et al.* 1992). Any such

changes would add to the instability of the Blue River channel and may adversely affect quantity and quality of loach minnow habitat. The existing low-water crossing site is already highly modified and has been subject to repeated changes in bed elevation due to frequent repair of the crossing. The proposed repair work is not substantially different from past repair work at this site and the area of direct modification is small. Although this alteration contributes cumulatively to the overall degradation of the stream channel and loach minnow habitat, it is not, by itself, expected to cause stream channel changes that would result in unacceptably high adverse impacts to loach minnow and its habitat.

During repair work, the potential exists for introduction of toxic substances, such as petroleum products, into the stream. This potential is expected to be minimal for the proposed project, given the provisions for refueling and other staging removed from the river or other flowing water.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 and, therefore, are not considered cumulative in the proposed action.

The affected area of the proposed action is remote but is subject to a variety of human uses. Most of the land within the watershed is under the jurisdiction of the U.S. Forest Service and activities affecting the loach minnow, such as grazing and timber harvest, will be Federal actions which are subject to section 7 consultation. Recreation in the area is light and in general has minor impact on the river. Use of off-road and all-terrain vehicles in the stream bottom causes some adverse impacts to the river. The primary cumulative effects derive from the private lands in the valley bottom on the upper Blue River. Livestock grazing, cropping and residential development on the floodplain terraces remove water from the river and add to the instability of the river system. An aquaculture operation feeds predatory nonnative fish species into the Blue River and diverts water from the river. Forest Road 281 is located along the river from the confluence of Campbell and Dry Blue Creeks downstream for approximately 25 miles. A substantial portion of the road is located in the floodplain and several low-water ford crossings exist. Due to its location in the upper end of the watershed and its destabilizing effects on the river channel, this road is considered to be a major adverse impact on the Blue River aquatic and riparian ecosystems. The downstream end of FR 281 is approximately 20

miles upstream from the FR 475 crossing where the proposed action would occur. The distance and the very localized area of impact for the proposed project are expected to be sufficient to minimize the cumulative impacts of this proposed action with those described above.

CONCLUSION

After reviewing the current status of the loach minnow, the environmental baseline for the action area, the direct and indirect effects of the proposed repair of the FR 475 low-water crossing, and the cumulative effects, it is the Service's biological opinion that implementation of the FR 475 repair, as proposed, is not likely to jeopardize the continued existence of the loach minnow or to destroy or adversely modify designated critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. 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 a prohibited taking provided that such taking is in compliance with the incidental take statement. **The measures described below are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.**

The Service anticipates that the proposed repair of FR 475 low-water crossing will result in incidental take of loach minnow through direct mortality and through indirect mortality due to habitat loss or alteration. Loach minnow or loach minnow eggs present in the work area may be crushed or stranded during heavy equipment operation or poisoned by accidental introduction of toxic substances. Indirect take would also occur through destruction or alteration of habitat resulting from substrate disturbance and channel modification and from sedimentation and erosion as byproducts of long-term channel morphology changes.

The anticipated level of incidental take cannot be directly quantified due to the low level of data on the loach minnow population in the area and the inability to predict long-term project effects. Because of their small size and benthic habitat and due to the current of the river, it is unlikely that loach minnow or eggs killed as a result of the proposed project will be observed. Therefore, anticipated levels of take are indexed to the total fish community and habitat. Anticipated take for the proposed action will be considered to have been exceeded if at any time during project activities, more than 20 dead fish of any species are found in the area of the project or within 500 yards downstream, or if any spill of toxic materials occurs in the Blue River or its floodplain during project implementation. Incidental take through habitat loss or modification is anticipated to include all loach minnow and eggs within 25 linear feet to each side of the centerline of the low-water crossing.

If, during the course of the action, the amount or extent of the incidental take limit is exceeded, the Forest Service must reinitiate consultation with the Service immediately to avoid violation of section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species. The Forest Service should provide an explanation of the causes of the taking.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this biological opinion.

1. Conduct all proposed actions in a manner which will minimize direct mortality of loach minnow.
2. Conduct all proposed actions in a manner which will minimize loss and alteration of loach minnow habitat.
3. Monitor the fish community and habitat to document levels of incidental take.
4. Maintain complete and accurate records of actions which may result in take of loach minnow and their habitat.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. The following terms and conditions will implement reasonable and prudent measure 1.
 - 1.1 All reasonable efforts shall be made to minimize activities within the wetted channel of the Blue River.
 - 1.2 All reasonable efforts shall be made to ensure that no pollutants enter surface waters during action implementation. No toxic chemicals or vehicles shall be stored or deposited within the floodplain during or after construction.
2. The following terms and conditions will implement reasonable and prudent measure 2.
 - 2.1 Channel alteration and use of heavy equipment within the river channel and floodplain shall be limited to within 25 linear feet perpendicular to the centerline of the low-water crossing and existing roadbed.
 - 2.2 All reasonable efforts shall be made to minimize damage to or loss of riparian vegetation.
3. The following term and condition will implement reasonable and prudent measure 3.
 - 3.1 At all times when project activities are ongoing in or within 100 yards of the river, all reasonable efforts shall be maintained to monitor for the presence of dead or dying fish in and for 500 yards downstream of the project area. The Service shall be notified immediately by telephone upon detection of more than 20 dead or dying fish of any species.
4. The following term and condition will implement reasonable and prudent measure 4.

- 4.1 A written report shall be submitted to the Service within 60 days after project completion. This report shall document the project, as implemented, and shall include photographs of the project before project initiation and after project completion. The report shall also include a discussion of the compliance with the above terms and conditions.

REINITIATION NOTICE

This concludes formal consultation on the proposed repair of the low-water crossing of the Blue River on FR 475. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may impact 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 manner 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.

We appreciate the efforts of the Clifton Ranger District in conserving loach minnow and dealing with impacts to the Blue River in a sensitive and professional manner. If we can be of further assistance, please contact Sally Stefferud or Tom Gatz.

Sincerely,



Sam F. Spiller
State Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
Director, Fish and Wildlife Service, Washington, D.C. (DES)
Director, Arizona Game and Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Pinetop, AZ
Chief, Regulatory Branch, U.S. Army Corps of Engineers, Phoenix, AZ
Forest Supervisor, Apache-Sitgreaves National Forest, Springerville, AZ
Public Works Director/County Engineer, Greenlee County, Clifton, AZ

Mr. Frank Hayes

cc: copies of summary only

Director, Arizona Division of Emergency Management, Tempe, AZ
Regional Director, Federal Emergency Management Agency, San Francisco, CA

(Attn: Sandro Amaglio)

Greenlee County, Clifton, AZ

Board of Supervisors

Attorney

Clerk

Administrator

Governor's Office, State of Arizona, Phoenix, AZ (Attn: Joe Lane)

U.S. Senator John McCain

U.S. Congressman J.D. Hayworth

Arizona Senator Gus Arzberger

Arizona Senator Bill Hardt

Arizona Representative Jack Brown

Arizona Representative Ruben Ortega

Arizona Representative Paul Newman

Arizona Representative David Farnsworth

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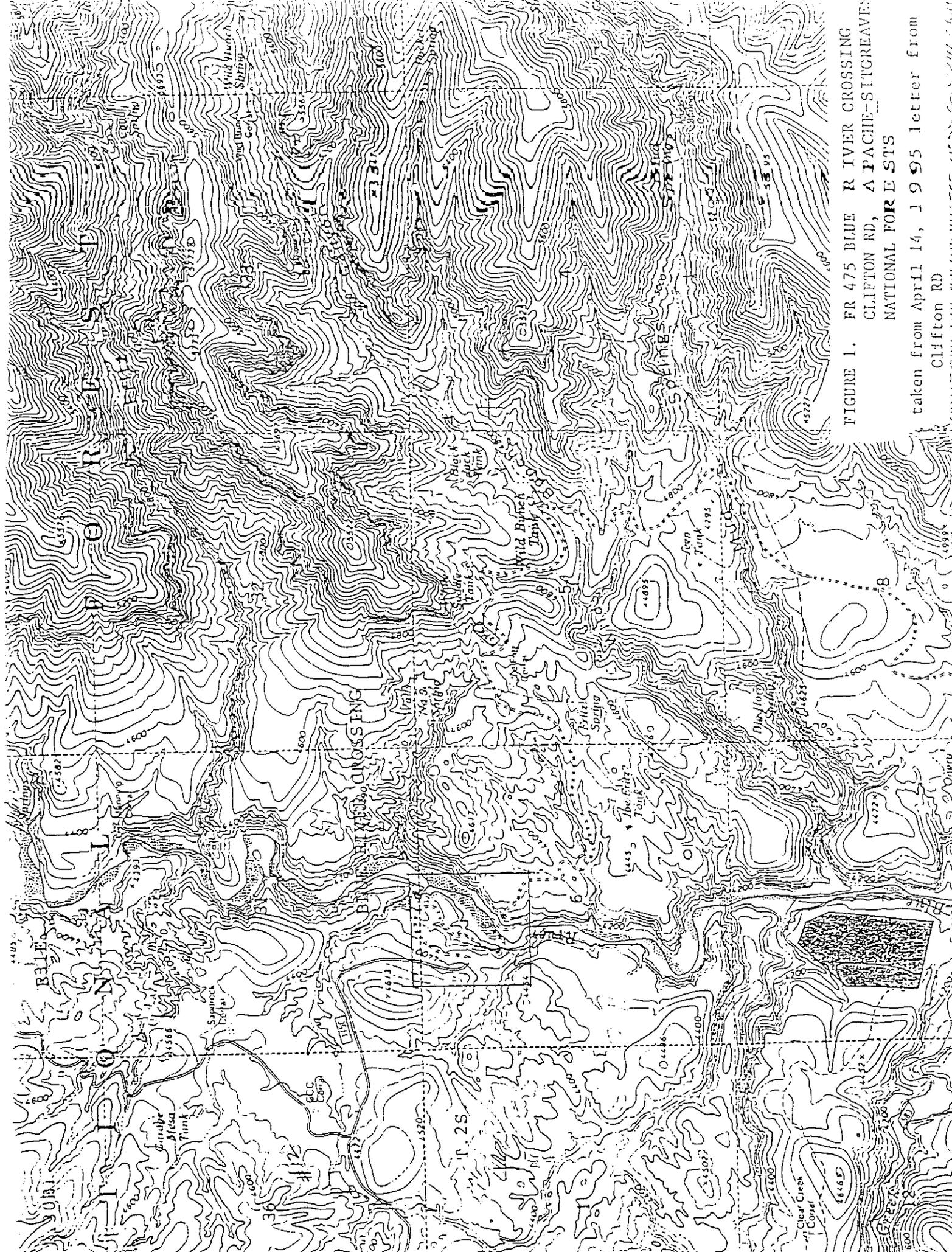


FIGURE 1. FR 475 BLUE RIVER CROSSING
CLIFTON RD, A PACHE-SITGREAVES
NATIONAL FOR ESTS

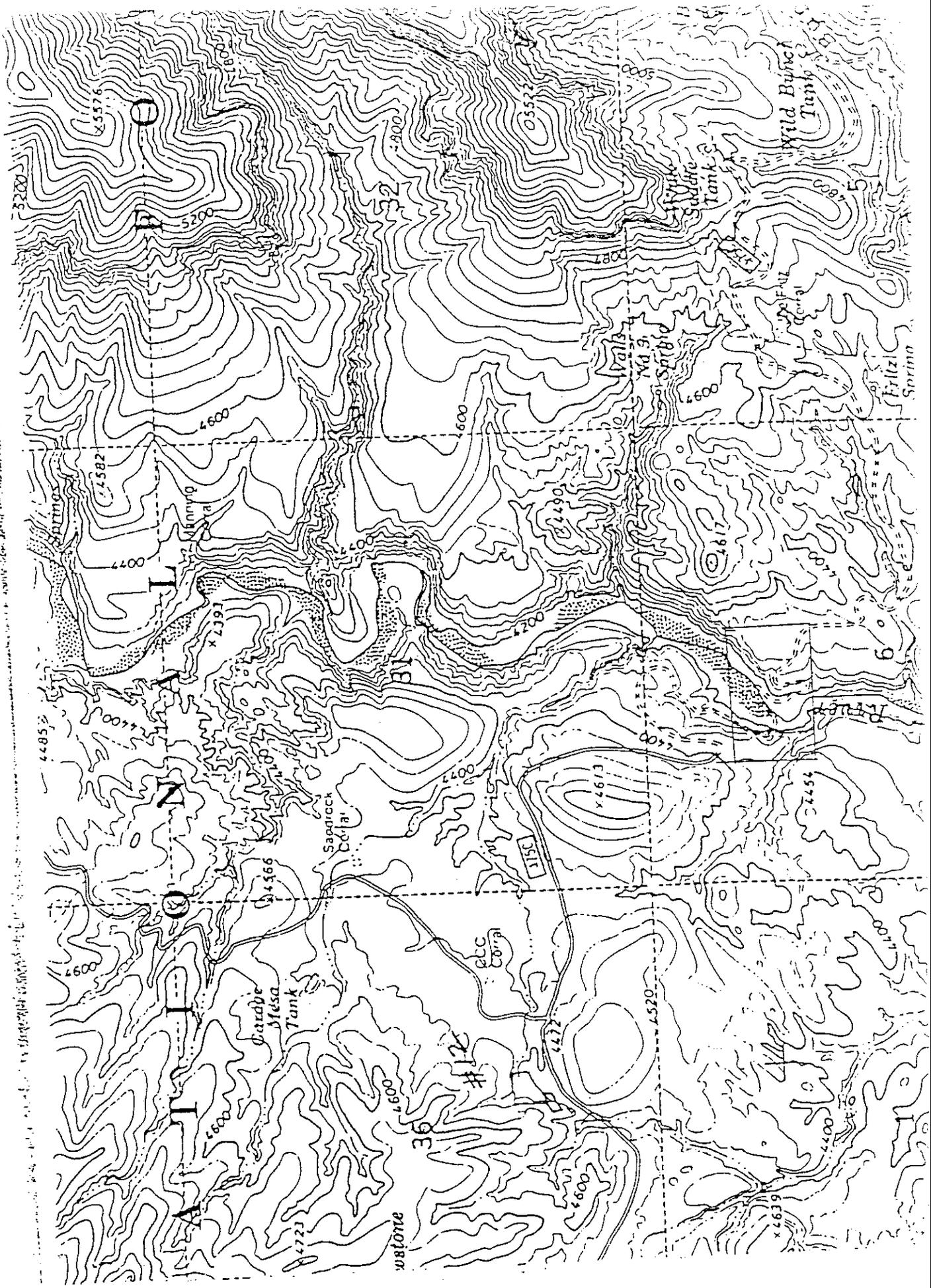
taken from April 14, 1995 letter from
Clifton RD

FIGURE 2

FR 475 BLUE RIVER CROSSING, Clifton RD, Apache-Sitgreaves NE
(taken from April 14, 1995 letter from Clifton RD)

R.30 E.

R.31 E.



T.25.