

BIOLOGICAL OPINION SUMMARY  
McCain and Sears WHIP Bank Stabilization

**Date of opinion:** July 1, 1999

**Action agency:** National Resources Conservation Service

**Project:** Stabilize two sections of Little Colorado River streambank on the McCain and Sears property

**Location:** Apache County, Arizona

**Listed species affected:** Little Colorado spinedace, *Lepidomeda vittata*

**Biological opinion:** No jeopardy

**Incidental take statement**

**Anticipated take:** *Exceeding this level may require reinitiation of formal consultation.*

Mortality of spinedace is unknown, but is tied to mortality of any fish in the project area. Up to 200 fish of all species may be taken by the action. The Service anticipates this take will be in the form of harassment, harm and kill. Take will be difficult to detect for some aspects of the proposed action.

**Reasonable and prudent measures:** *Implementation of these measures through the terms and conditions is mandatory.*

1. Measures shall be taken to reduce the number of fish that may be in the proposed action area.
2. Measures shall be taken to assess the long term effects to fish habitats from the implementation of the proposed action.

**Terms and conditions:** *Terms and conditions implement reasonable and prudent measures and are mandatory requirements.*

1.1 All seining activities will be performed by trained fishery biologists or others with demonstrated expertise in this capture technique.

1.2 Seining and blocking of the backwater will be done as close to the start of construction as feasible to reduce the risk of fish moving into the backwater.

1.3 An upstream barrier, either created from the gravel bar or by other means, will be in place on the backwater prior to the seining and will remain in place for the duration of the construction period.

1.4 If high flows enter the backwater once seining has been completed but construction has not been completed, additional seining must be done before construction can resume.

1.5 All dead fish that collect at the barriers will be collected and identified to species. Any specimens of Little Colorado spinedace will be frozen whole and sent to the Service for dispersal to a qualified museum or research program. A count of all dead fish collected will also be provided to the Service on completion of the proposed action.

2.1 A photographic record of conditions at and downstream of Sites #1 and #2 will be made before construction of the proposed action. Photo points will be established.

2.2 For a period of 5 years after the construction is finished, photographs from the Photo points established in term and condition 1 above will be made quarterly (4 times a year, at 3 month intervals). These are to document the changes to the stream channel and aquatic habitats.

2.3 The NRCS will provide to the Service an annual report containing the photographs and any analysis done of noticeable changes to erosion and deposition patterns for each year the photographs are taken.

2.4 The NRCS will evaluate the changes to the river channel in terms of creating new fish habitat that result from the implementation of the proposed action. This evaluation will accompany the annual report with the photographs.

**Conservation recommendations:** *Implementation of conservation recommendations is discretionary.*

No conservation recommendations were identified.

**United States Department of the Interior  
U.S. Fish and Wildlife Service  
2321 West Royal Palm Road, Suite 103  
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AESO/SE  
2-21-99-F-167

July 1, 1999

Mr. Michael Somerville  
State Conservationist  
Natural Resources Conservation Service  
3003 North Central Avenue  
Phoenix, Arizona 85012-2945

Dear Mr. Somerville:

This document transmits the Fish and Wildlife Service's biological opinion based on our review of the proposed McCain-Sears Wildlife Habitat Incentives Program (WHIP) on the Little Colorado River in Apache County, Arizona, and its effects on the Little Colorado spinedace (*Lepidomeda vittata*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C.1531 et seq.). Your January 28, 1999, request for formal consultation was received on February 5, 1999.

This biological opinion is based on information provided in the January 28, 1999, biological assessment (BA), additional information provided in a March 30, 1999, letter, and other sources of information. A complete administrative record of this consultation is on file at this office.

#### Consultation history

The Natural Resources Conservation Service (NRCS) sent a BA for the proposed project to the Service in a letter dated January 28, 1999. The Service reviewed this material and requested additional information of NRCS in a letter dated March 9, 1999. The NRCS responded with the additional information in a letter dated March 30, 1999. The Service reviewed the additional information and informed the NRCS that there was sufficient information to begin formal consultation in a letter dated June 9, 1999.

### BIOLOGICAL OPINION

#### DESCRIPTION OF THE PROPOSED ACTION

The proposed action would provide bank protection at two areas on the Little Colorado River in Apache County, Arizona, near the Town of Eagar. The proposed action is on private lands

owned by Mr. Buck McCain and Ms. Melody Sears. The Federal nexus for the proposed action is through WHIP cost-share funding to be used in the planning and construction of the bank protection. The proposed action would be constructed in the fall/winter of 1999 or the early spring of 2000, dependent upon river flows.

Although there are several other NRCS activities taking place on the McCain-Sears property, only the WHIP activity described herein is the subject of this consultation. The NRCS assumes responsibility for their other programs being in compliance with the Act.

This project consists of placement of rock vanes at 5 points at Site #1 and one at Site #2 on the south and north banks, respectively, of the Little Colorado River. Site #1 would be 330 feet in length, site #2 would be 40 feet. An estimated 215 cubic yards of approximately 3 foot diameter rock would be used to create the rock vanes. Rock for the proposed action would come from an escarpment on the McCain-Sears property. The rock vanes would be placed pointing upstream to redirect flows away from the eroding bank. The vanes at Site #1 would be in the area presently forming a backwater. The increased channel roughness would cause a reduction in water velocities, encouraging deposition of sediments around the vanes. In addition to the rock vanes, willow fascines will be placed at a small headcut near a spring that provides water flows to the river.

Construction of the vanes would not require a temporary diversion channel for the river. At Site #1, a gravel bar and push-up berm keep low flows of the river to the northern side of the channel and away from the eroding bank on the south side. A small backwater exists between the gravel bar and the bank at low flows. At high flows, the gravel bar directs flows against the eroding southern bank. If the gravel bar and berm are lost prior to construction, a temporary channel may be needed to direct the flow away from the south bank. Site #2 does not have a gravel bar to divert water from the area, but the type of construction envisioned for the proposed action would not require water be diverted.

At Site #1, track hoe equipment will operate from the gravel bar to avoid additional damage to the south bank and the spring-fed wetland. Access to the gravel bar will require crossing the river at a shallow riffle. Rock for the project would be stockpiled on the gravel bar by putting the track hoe in the river channel and moving rock from the shore to the bar at one time. This would reduce trips across the river to obtain rock for the project. The track hoe would excavate the 5 trenches for the rock vanes from the gravel bar to avoid the soft-bottomed area of the backwater. Mats or other weight-distributing devices would be used if heavy equipment was used in the backwater. After construction of the vanes, the gravel berm would be incorporated into the gravel bar.

Equipment to construct the single rock vane at Site #2 would work from the bank and would not need to enter the river except possibly to place the last 1 or 2 rocks at the far end of the vane. Because of river flows at this site, the rock vane would be constructed starting from the shore and proceeding rock-by rock out into the channel.

The proposed action contains several features to reduce effects to the work and downstream areas. At Site #1 a silt fence of filter cloth will be placed at the lower end of the backwater to prevent sediments disturbed by construction from moving downstream. At Site #2, the work sites at the bank itself would have a sediment trap surrounding them. Away from the bank itself, the placement of rock would follow removal of 1 to 2 buckets of gravel. With limited trenching required, sediment contributions from this site may be smaller than if with other methods of rock placement.

To reduce potential impacts to spinedace, the backwater area at Site #1 would be seined to remove fish from the area and placed in the main channel prior to any work being conducted. The silt fence on the lower end would prevent fish from coming back into the backwater from below, however, fish could still return from upstream. At Site #2, there is no real opportunity to move fish from the work area.

#### STATUS OF THE SPECIES (RANGEWIDE)

The Little Colorado spinedace was included in the Service's "Review of Vertebrate Wildlife for Listing as Endangered or Threatened Species" (USFWS 1982) as a category 1 candidate species. Category 1 species were those for which sufficient information to support listing as threatened or endangered existed. On April 12, 1983, the Service was petitioned under the Act by the Desert Fishes Council to list the spinedace as endangered or threatened. The petition was found by the Service to contain substantial scientific and commercial information and a notice of finding was published on June 14, 1983 (USFWS 1983). A warranted finding was issued by the Service on July 13, 1984 (USFWS 1984) and a proposed rule to list the spinedace as a threatened species with critical habitat was published in May 22, 1985. The final rule was published on September 16, 1987 (USFWS 1987). Three areas of critical habitat were designated for the spinedace that included portions of East Clear Creek, Chevelon Creek, and Nutrioso Creek.

Taxonomic, distributional and life history information on the spinedace has been compiled in the recent Little Colorado Spinedace Recovery Plan (USFWS 1998). This biological opinion incorporates the recovery plan by reference for that information, which will not be repeated here.

The spinedace is still found in the streams it was known from historically. Populations are generally small, however the true population size for any occupied stream is unknown due to the yearly fluctuations and difficulty in locating the fish. Spinedace have a tendency to appear and disappear from sampling sites from one year to the next and may not be found for several years. The Silver Creek population provides an example of this, as it was thought extirpated until individuals were found again in the late 1990's. This makes management for the species difficult since assessing the responses of the population to changes on the watershed cannot be measured with any certainty.

## ENVIRONMENTAL BASELINE

In the Little Colorado River mainstem, spinedace are found sporadically from the area around St. Johns upstream to near the town of Greer. There are records from the 1990's from the area upstream of the State Route 260 (SR260) bridge crossing (upstream of the proposed action area) and near the rest area on United State route 180/666 (US180/666) north of Springerville (Dorum and Young 1995). There have been no surveys at the proposed action site itself.

Surveys at the SR260 bridge between 1991-1995 found spinedace in 1991 when they represented 9.1 percent of the catch (Dorum and Young 1995). The appearance of brook trout (*Salvelinus fontinalis*) in this portion of the Little Colorado River in 1993 may have had an affect on the spinedace population, although other factors were likely involved in their disappearance from this site. Spinedace were located at the rest area site in 1995, where they made up 1 percent of the catch (Dorum and Young 1995). Larger and more stable spinedace populations are found downstream of the rest area site.

There have not been many section 7 consultations that have involved this portion of the Little Colorado River population of spinedace. The closest formal consultation was on repairs to the Greer Lakes in 1996. The lands in the immediate area of the proposed action area are private and have been developed for agriculture, livestock pasturage and urban development in Eagar and Springerville. Upstream of the proposed action area is the Apache-Sitgreaves National Forest (ASNF). Consultations on the effects of livestock grazing on the ASNF on spinedace in the Little Colorado River, Rudd Creek, and Nutrioso Creek are underway between the Service and the ASNF. Effects to spinedace habitats from direct access of livestock to streamside habitats, from road placement and maintenance and recreation are being considered. Owing to the location of the proposed action area downstream of the Greer Lakes on the Little Colorado River, these consultations are not likely to affect the baseline condition within the McCain-Sears property area.

The Little Colorado River in the proposed action area is affected by control of flows upstream, water diversions for agriculture and other purposes, road crossings, livestock use of streambanks, urbanization and runoff, and efforts to protect human developments from floods by channelization or other forms of channel alteration. The area, as shown in documentation provided by NRCS, is a floodplain of the Little Colorado River, and there are old meander scars visible. Habitats at the nearest spinedace sampling site (above the SR260 bridge) may or may not be similar to those on the proposed action area, however, as this site is less than a quarter mile away, some inferences can be made. Photographs of the site provided with the BA are also useful.

Upstream of the proposed action area, the Little Colorado River is dominated by run habitats with riffles accounting for less than 25 percent (Dorum and Young 1995). Substrates were often cobble with some boulders, pebbles and sand and the streambanks were stable (Dorum and Young 1995). It is difficult to judge the substrate in the proposed action area, however, the

photographs show riffles and the gravel bar, which imply they are similar to that upstream. Raw banks are more common within the proposed action area. Spinedace in the Little Colorado River up and downstream have been captured in run and riffle habitats similar to that at the proposed action area.

## EFFECTS OF THE ACTION

### Direct and Indirect Effects

The direct effects to the spinedace from the McCain-Sears WHIP project are related to the construction of the rock vanes in the river. Heavy equipment crossing the river will dislodge the substrates, affect invertebrate drift and potentially crush individual spinedace in the lower velocity areas of the channel. Excavation for the rock vanes at Site #1, if the backwater is not dry at the time of construction, may result in mortality of individual spinedace. Although the backwater would be seined prior to construction, the lack of an upstream barrier to prevent fish from re-entering the backwater increases the risk of mortality. Also, it is extremely difficult to remove every fish, especially small ones, from even small backwaters, thus there is the potential for some fish to remain after the seining.

At Site #2, any spinedace using the shallow shoreline waters may not be able to avoid the substrate disturbances caused by the placement of the sediment trap or the actual excavation and placement of rocks. Spinedace are not found in high velocity situations and are more likely to be found in moderately shallow areas with low velocities and cover in the form of rocks and undercut banks. If these types of areas would be affected by the construction, there is a potential for spinedace to be present.

Some sediment will be released downstream by the proposed action. The amount from Site #1 would be reduced by placement and maintenance of the silt fence at the lower end of the backwater. At Site #2, the smaller fence around the immediate work site may reduce sediment, but if it needs to be moved during construction, loose sediments may escape. Similarly, once removed post-construction, loose sediment would be released into the river until the area stabilizes. Spinedace prefer clear water, but can cope with some amount of sediment being carried in the water column. At the low flows hypothesized for the construction period, sediment transfer may not be extensive, however, materials would be more extensively moved during the high flows later in the year. There may be a dilution effect at these high flows that would reduce the potential for effect.

The direct effects of the proposed action would be limited to the construction period. Any additional work in the river channel for bank protection, if Federally funded or permitted, would not be covered under this consultation. No interrelated or interdependent effects have been identified for the proposed action. As noted earlier, NRCS has several other programs with advice being given the landowners of this property. These are Federal actions, but are not related to the action under consultation.

Indirect effects are those effects caused or related to the proposed action that happen later in time. These effects largely involve changes to instream habitats that result from the placement of the rock vanes. These changes would result from the river altering its behavior to accommodate the new restrictions on movement.

The Little Colorado River is not a pristine river. Watershed changes, creation of dams and diversions, gravel mining from the channel, and land use changes in the floodplain have all affected the flow and physical behavior of the river. These alterations, and how the river channel is dealing with them are at the root of the need for the proposed action. Significant changes to a river's geology, hydrology, geometry or hydraulics result in a loss of the dynamic equilibrium that characterizes a healthy river. The river processes adjust in an attempt to move from the unstable condition restore equilibrium. The NRCS acknowledges in their BA that the Little Colorado River is trying to adjust to the new conditions and achieve equilibrium. However, in doing so, it is affecting the floodplain and other values located there in ways unacceptable to the landowners.

Dynamic equilibrium does not imply a static condition. Rivers in alluvial valleys have a natural tendency to meander. In meandering rivers, the location of the channel is changing while the basic geometry of the channel remains the same (Leopold 1994). Bank erosion on the concave banks of bends provides the materials for point bar construction downstream and increases the radius of the bend, thus increasing the sinuosity. The greater the sinuosity, the greater the actual stream length versus a straight line distance, and thus the greater dissipation of energy from the passage of water (Hunter 1991). There is a balance point between the flows (high and low), the sediment load, and the geometry of the stream channel that provides for the most efficient passage of energy down the river (Simons et al. 1976) that is at the heart of the dynamic equilibrium. Changes to flows or sediment loads will require changes in velocity, water depth and slope to the river channel to restore the stability.

Past activities on the watershed have altered the flows and sediment load of the Little Colorado River through the proposed action area. Straightening of the channel, as mentioned in the NRCS BA, occurred due to gravel mining and also has an effect on the present conditions. Looking at the maps provided with the BA, there are some points of interest.

The Little Colorado River was, in the past, a meandering river. Evidence of old meander scars on the floodplain are very obvious. The present form of the river is sinuous, but is not enough to be considered meandering (Leopold 1994, Simons et al. 1976). The present straighter channel is the result of past effects to river conditions. It is also worth noting that the pattern of point bars and pools characteristic of even a sinuous river, is not in place here. In sinuous or meandering rivers, there are deep pools on the concave sides of the bends and gravel bars on the convex sides (Leopold 1994, Simons et al. 1976). The Little Colorado River in the proposed action area has large bars forming on the concave sides of the bends at both Site #1 and #2. The large bar at Site #1 almost acts as a mid-channel bar or island characteristic of a braided channel system. It is interfering with the proper route of the low and high flow thalweg and thus with maintaining the

proper pool and point bar sequence. With the significant reduction in flows in this reach of the Little Colorado River from reservoir storage and upstream diversions, the river's ability to move bedload sediments has been compromised at the same time that the amount of sediments in the system may have increased. Lower velocities in the shallow waters over the mid-channel bar contribute to additional deposition of bedload carried by higher velocity waters from the straighter upstream reach. Only at very high flows, when the thalweg should be close to the point bar and not the pool on the concave side of the bend (Simons et al. 1976), does the flow of the river reach the concave bank. The additional force of these high flows aimed at the exposed bank causes more bank erosion than would be normal at such times. The width of the river channel is increasing due to this erosion, but the development of the point bar on the opposite bank is not occurring due to the effects of the mid-channel bar.

The proposed action would place stone dikes along the concave bank of Site #1 and #2. These upstream facing structures would be located in what remains of the existing pool at Site #1. During low flows, these structures would not be in the flowing water portion of the channel. At flow levels that are presently diverted by the mid-channel bar to the concave bank, the increased channel roughness they cause will serve to reduce velocity of the water flowing past them. This will affect the ability of the flow to transport bedload, perhaps causing the pool to fill in. Some scouring effect off the tip of each dike is expected, however, these small pools are also likely to fill in with the excessive amount of sediment loads located in the mid-channel bar. Overall, the level of the mid-channel bar and the pool are likely to rise, reducing further the amount of water likely to pass through there. Additionally, as the velocity of water here drops as a result of lower depths and increased roughness, there will be a backing up of water upstream, and a subsequent shift in flow to the existing low flow channel.

The existing low flow channel is close to the point bar, where, in a normal river, the high flow channel should be located. Higher flows go over the point bar and the shallower water (as compared to the pool opposite) loses velocity and drops bedload sediments that contribute to the growth of the point bar (Leopold 1994). If a greater portion of the flow volume is shifted from the pool to the point bar, bed erosion is the likely result as the river attempts to pass the increased volume of water through the area. If the lowered bed level is maintained by the high velocity flows, it will affect the flow of water through the area and reduce flows going to the concave bank. In effect, the river in this reach will be less sinuous, not more sinuous, as the tip of the meander is cut off by the change in channel morphology.

The reduction in sinuosity at Site #1 will also have the effect of changing the location of greatest erosion. By hitting against the present concave bank, the river expends considerable energy in deflection of direction. If there is no deflection at this point, then the energy is maintained in the system and must be expended somewhere else. The channel will also be narrower if the pool/backwater is cut off, thus velocity will also increase. From the drawings accompanying the BA, the new erosion point is likely to be somewhere at or immediately downstream of the most downstream rock vane. This vane is also at higher risk of scour at its tip because it is not

sheltered by the mid-channel bar. Scour can create pools, but can also destroy the vane if the pool becomes large enough that the vane falls into it.

Site #2 has some of the same problems. The gravel bar on the concave bend prevents the flow from moving on that side and it is deflected onto the convex bank. The rock vane would slow the water, causing a drop in velocity and the ability to transport bedload. The force of the flow would be shifted to the gravel bar, or to the bank behind it, depending upon the specific flow stage. Because the gravel bar is shallow, velocities will be reduced passing over it, which may result in bed erosion in the mid channel, bank erosion behind the gravel bar if the water can reach there, or erosion and relocation of the gravel bar downstream. The effects of the latter action would be to cause changes in flows, directions of flows and velocities somewhere else.

As far as fish habitat is concerned, the placement of the rock vanes at Sites #1 and #2, will have very little effect, either positive or negative. Development of undercut banks, areas of aquatic vegetation and permanent pools are not likely to occur as a result of the proposed action. Preventing the development of meanders by bank stabilization does not contribute to improvements for long term stability of the reach. In order to have any significant effect on fish habitat, a systematic review and plan formulation for the entire reach of the Little Colorado River would be needed. The proposed action is essentially designed as a spot repair to address landowner concerns and will have limited effects upon fish and fish habitats.

## CUMULATIVE EFFECTS

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

Additional development in the Eagar/Springerville area is likely to continue on private and state lands. Changes from agriculture-based economies in the region to urbanizing areas and increased recreation will affect watershed conditions, diversion of river flows, runoff patterns and other parameters that affect river processes. The specific timing and location of these future developments is not certain, however, it can be assumed that they would have effects on the river's progress toward re-establishing dynamic equilibrium.

## CONCLUSION

After reviewing the current status of the spinedace, the environmental baseline for the action area, the effects of the proposed bank stabilization, and the cumulative effects, it is the Service's biological opinion that the bank stabilization, as proposed, is not likely to jeopardize the continued existence of the spinedace. Critical habitat for this species has been designated in other streams in the Little Colorado River basin. This action does not affect those areas 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 the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

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

### AMOUNT OR EXTENT OF TAKE

The Service anticipates incidental take of the spinedace will be difficult to detect. Actual numbers of spinedace taken will be difficult to see in the water due to turbidity resulting from the construction process, the small size of the individual fish, any injured or dead individuals being washed downstream out of the construction area, and the small size of the population in the area. However, the following level of take of this species can be anticipated by the loss of other small fish in the construction area. The spinedace shares its habitat with a number of small fish species that are at equal risk of injury or death from the construction activities. If large numbers of dead fish of any species appear in the area, then it is reasonable to assume that any spinedace present may be equally affected. Using the data from surveys in the 1990's (Dorum and Young 1995), upstream of the proposed action area, an estimate of an average fish population can be made in terms of fish per square meter. Averaging the three data points gives an average of 30 fish per square meter. The project area is approximately 2500 square meters. This gives a potential population of 750 fish in the project area. This figure is for fish of all species, not just spinedace. If the seining, barriers and machinery handling is 75 percent effective at avoiding fish mortality,

200 fish may still be in the project area at the time of construction. The Service anticipates up to 200 fish of all species may be taken as a result of the proposed action.

In addition to the direct loss of fish due to construction activities, the implementation of the proposed action will have some effect on the aquatic habitats in the project area and reaches below. The extent of this effect is not known. The NRCS believes that this action will benefit fish by improving habitat. Our evaluation does not support this belief. Since this type of action is likely to be proposed again for streams with similar instability problems, it would be prudent to evaluate the changes to the streams so that effects can be gaged more accurately. Since these changes, beneficial or not, have an effect on occupied spinedace habitats, there is a potential for taking due to harm or harassment. This take can be estimated by evaluating the changes to the river in and immediately below the proposed action area.

#### 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 measures (RPMs) are necessary and appropriate to minimize take of spinedace.

1. Measures shall be taken to reduce the number of fish that may be in the proposed action area.
2. Measures shall be taken to assess the long term effects to fish habitats from the implementation of the proposed action.

#### TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the NRCS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

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To implement reasonable and prudent measure 1:

1. All seining activities will be performed by trained fishery biologists or others with demonstrated expertise in this capture technique.
2. Seining and blocking of the backwater will be done as close to the start of construction as feasible to reduce the risk of fish moving into the backwater.
3. An upstream barrier, either created from the gravel bar or by other means, will be in place on the backwater prior to the seining and will remain in place for the duration of the construction period.
4. If high flows enter the backwater once seining has been completed but construction has not been completed, additional seining must be done before construction can resume.
5. All dead fish that collect at the barriers will be collected and identified to species. Any specimens of Little Colorado spinedace will be frozen whole and sent to the Service for dispersal to a qualified museum or research program. A count of all dead fish collected will also be provided to the Service on completion of the proposed action.

To implement reasonable and prudent measure 2:

1. A photographic record of conditions at and downstream of Sites #1 and #2 will be made before construction of the proposed action. Photo points will be established.
2. For a period of 5 years after the construction is finished, photographs from the Photo points established in term and condition 1 above will be made quarterly (4 times a year, at 3 month intervals). These are to document the changes to the stream channel and aquatic habitats.
3. The NRCS will provide to the Service an annual report containing the photographs and any analysis done of noticeable changes to erosion and deposition patterns for each year the photographs are taken.
4. The NRCS will evaluate the changes to the river channel in terms of creating new fish habitat that result from the implementation of the proposed action. This evaluation will accompany the annual report with the photographs.

The Service believes that an unknown number of Little Colorado spinedace will be incidentally taken as a result of the proposed action. 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 course of 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 for the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

#### CONSERVATION RECOMMENDATIONS

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

No conservation recommendations have been identified for the proposed action.

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

#### REINITIATION NOTICE

This concludes formal consultation in the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is 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 manner that caused an effect to the listed species or critical habitat 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.

For further information, please contact Lesley Fitzpatrick (x236) or Tom Gatz (x240). In any future correspondence concerning this project, please refer to the consultation number 2-21-99-F-167.

Sincerely,

/s/ David L. Harlow  
Field Supervisor

Mr. Michael Somerville

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cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (GARD-AZ/NM)  
Project Leader, Arizona Fishery Resource Office, Fish and Wildlife Service, Pinetop, AZ

Director, Arizona Game and Fish Department, Phoenix, AZ

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