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In Reply Refer To:

AESO/SE

02-21-02-F-0299-R1

March 9, 2005

Memorandum

To: Field Supervisor, Fish and Wildlife Service, Nevada Fish and Wildlife Office, Reno, Nevada

From: Field Supervisor

Subject: Reinitiation of Section 7 Consultation for the Tilapia Removal Program on the Virgin River, Clark County, Nevada, and Mohave County, Arizona

Thank you for your request for reinitiation of formal intra-Service consultation with the Arizona Ecological Services Office (AESO) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). We received your September 1, 2004, request on September 7, 2004. The purpose of this reinitiation is to evaluate effects of changes to the proposed action considered in the original biological opinion, including the area permitted for treatment to include the Virgin River from the Mesquite Highway 170 Bridge to the confluence of Lake Mead; extending permitted treatment times to year-round; and increasing the permitted concentration range of rotenone up to five parts per million (ppm) to enhance the effectiveness of the tilapia removal program on the Virgin River in Clark County, Nevada, and Mohave County, Arizona. The intent of the five-year project, as identified in the original consultation, is to prevent the migration of blue tilapia (*Oreochromis aurea*) to the Littlefield and Virgin River Gorge reaches of the river in Arizona and subsequently into Utah. The eradication of tilapia within the proposed project area is critical to the recovery and continued existence of the endangered woundfin (*Plagopterus argentissimus*) and Virgin River chub (*Gila seminuda*). The species evaluated in this opinion are the endangered woundfin, Virgin River chub, southwestern willow flycatcher (*Empidonax traillii extimus*), and Yuma clapper rail (*Rallus longirostris yumanensis*), designated critical habitat for the woundfin and Virgin River chub, and proposed critical habitat for the southwestern willow flycatcher. The yellow-billed cuckoo (*Coccyzus americanus*) and Relict leopard frog (*Rana onca*), candidates for Federal listing, may also occur in the vicinity of the proposed action.

In your memorandum and accompanying biological evaluation, you requested our concurrence that the proposed action was not likely to adversely affect the southwestern willow flycatcher, Yuma clapper rail, yellow-billed cuckoo, or Relict leopard frog. We concur that the proposed action is not likely to adversely affect those species for the reasons stated in Appendix A of this biological opinion.

This biological opinion is based on information provided in the August 25, 2004 biological evaluation (USFWS 2004a), the December 9, 2004 revised biological evaluation (USFWS 2004b), the October 4, 2002 biological opinion, telephone conversations, email correspondence, our files, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, use of rotenone as a management tool on the Virgin River, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

- October 4, 2002 – We issued a biological opinion to the Las Vegas Field Office (LVFO) finding that the proposed action was not likely to jeopardize the continued existence of the woundfin or Virgin River chub or adversely modify their designated critical habitat. In addition, we concurred with your determination that the proposed action was not likely to adversely affect the Yuma clapper rail, southwestern willow flycatcher, or yellow-billed cuckoo.
- September 7, 2004 – We received your biological evaluation and request to reinitiate formal consultation.
- October 8, 2004 – We issued a memorandum to you acknowledging initiation of formal consultation. This memorandum also indicated that the U.S. Fish and Wildlife Service plans to propose critical habitat for the southwestern willow flycatcher by mid-October. We recommended that if critical habitat is proposed within the action area, that you amend your biological evaluation to include an analysis and determination of effects to proposed critical habitat.
- October 25, 2004 – We learned that the October 8 memorandum was unintentionally sent to a different agency. We forwarded an electronic copy of the memorandum via email to LVFO.
- December 9, 2004 – We received your December 9, 2004 revised biological evaluation including minor changes to the proposed action, as well as an analysis and determination of effects to southwestern willow flycatcher proposed critical habitat.
- December 20, 2004 – We provided you a draft of this biological opinion for review.
- March 7, 2005 – You provided comments on the draft opinion and requested that the opinion be finalized.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action would provide for one or more rotenone treatments in the Virgin River through 2007 to remove blue tilapia and other non-native fishes (Figure 1), as well as to determine tilapia use of pool habitats. Depending on results of future surveys for tilapia, the treatments may include the entire area, part of the area, or localized spot treatments (spot treatments include short stretches of river, individual pools, or other areas of limited extent). The extent and number of treatments to be conducted under the proposed action is not known. The Lower Virgin River Recovery Implementation Team (RIT) will make decisions to implement treatments under the proposed action based on survey data on the presence of tilapia within the reach, success of treatments, and other factors as applicable. Treatments may continue to occur within the reach of the Virgin River considered in our October 4, 2002 biological opinion beginning at the Mesquite Diversion in Mohave County, Arizona and continuing approximately six miles downstream to the Mesquite Highway 170 Bridge in Clark County, Nevada. A pilot treatment was conducted within this reach on October 29-31, 2002 under the 2002 biological opinion. This treatment was successful in removing a substantial portion of the tilapia and other non-native fish in the treated reach, though non-native fish have since re-colonized the area. This treatment also calibrated

sampling efforts in the area and provided insight on treating additional portions of the Virgin River. Based on this pilot treatment, the RIT determined that modifications to the proposed action were needed. The proposed action remains the same as described in our 2002 biological opinion, with the exception of the following:

- Future treatments may be expanded in geographic scope to include the reach of the Virgin River from the Mesquite Highway 170 Bridge approximately 29 miles downstream to the Lake Mead confluence in Nevada. This modification of the proposed action was deemed necessary to determine the dynamics of tilapia use in the Virgin River. An estimate of the extent and number of future treatments to be conducted under the proposed modification were cooperatively developed by the members of the Lower Virgin River Fishes Recovery Team and the LVFO, although the specific details of future treatments are not known at this time.
- Treatments considered in the original biological opinion were to occur between September 30 and March 15 to avoid the breeding seasons of the southwestern willow flycatcher, Yuma clapper rail, and yellow-billed cuckoo. Future treatments may occur throughout the year depending on presence of tilapia, flow requirements (less than 200 cubic feet per second), flow characteristics (presence of isolated pools for spot treatments), and need to avoid nesting birds. If pre-treatment surveys for the flycatcher, rail, and cuckoo detect breeding birds and project activities could not avoid take, then activities will be delayed until after the breeding period (and molting period for rails).
- Treatments will continue using the fish toxicant rotenone. The rotenone concentration used in future treatments may increase from two ppm to no greater than five ppm in order to match legal label requirements and increase the efficacy of the treatments.
- A limited number of native fishes, primarily flannelmouth suckers, may be used in bioassay cages within the rotenone treatment reach at the beginning and end of treatment in order to monitor the concentration of rotenone in the river. Native fish may be used in bioassay cages in the detoxification reach of the river in order to assure that detoxification treatment is effective. No listed fishes would be used for these purposes. The limited use of native fishes in bioassay cages does not constitute a new action.

STATUS OF THE SPECIES

The status of the species remains the same as described in the 2002 biological opinion.

ENVIRONMENTAL BASELINE

The environmental baseline has not significantly changed from that described in the 2002 biological opinion. During the previous rotenone treatment, no Virgin River chub and only one woundfin (which was salvaged) were captured. No Virgin River chub or woundfin mortalities were detected as a result of the initial treatment (USFWS 2002). Survey efforts continue within the proposed project area. Recent surveys have detected low numbers of native fish within the proposed project area, and no listed fish have been captured within the project area since October 2002 when the single woundfin was captured during the initial treatment.

The initial treatment resulted in the removal of 160 blue tilapia, over 115,000 red shiner (*Cyprinella lutrensis*), over 56,000 mosquitofish (*Gambusia affinis*), 109 channel catfish (*Ictalurus punctatus*), 155

common carp (*Cyprinus carpio*), 3 green sunfish (*Lepomis cyanellus*), 116 black bullhead (*Ameiurus melas*), and 5 largemouth bass (*Micropterus salmoides*). In addition, approximately 95 flannelmouth suckers (*Catostomus latipinnis*) and 2 speckled dace (*Rhinichthys osculus*) were captured during the treatment. Of those, a total of 50 flannelmouth suckers and 1 speckled dace were salvaged (USFWS 2002).

In November of 2003, 2,199 calcien-marked woundfin were stocked at Littlefield, Mohave County, Arizona. An additional 800 unmarked woundfin were stocked at the same location in November of 2004.

Section 7 activities completed on projects within the general project area since we issued the 2002 biological opinion include non-native plant control, hazardous fuels reduction, programmatic fire suppression, and construction of a flow gauge and access trail.

EFFECTS OF THE ACTION

As in the original biological opinion, the effects to woundfin and Virgin River chub from the proposed modification will be predominantly from the application of rotenone to the treatment area resulting in death of fish and other vulnerable species that come into contact with the toxicant. Effects to woundfin and Virgin River chub in the treatment area would continue to be reduced for individual fish by an extensive salvage effort conducted prior to treatment.

The effects of the action remain the same as described in the 2002 biological opinion, with the exception of the following:

The proposed modification will continue rotenone treatments in the original approximately six-mile reach will extend the area available for treatment to include an approximately 29 additional miles. Although the geographic extent of the proposed action will increase by approximately 29 miles, recent survey results indicate that populations of woundfin and Virgin River chub are very low in the extended treatment area (USFWS 2004a). We anticipate that very low numbers of woundfin and Virgin River chub will be affected by expansion of the treatment area.

The original biological opinion considered that treatments may occur between September 30 and March 15 to avoid disturbing nesting birds. The proposed modification will allow treatments to occur year-round in order to best use natural low flows in the Virgin River. Treatments conducted between March 15 and September 30 may coincide with woundfin and Virgin River chub spawning in the treatment area. Although rotenone is not toxic to fish eggs until the shell ruptures at hatching, it is toxic to all post-embryonic life stages (Finlayson *et al.* 2000). The seines used during pre-treatment fish salvage efforts are not effective at capturing younger age classes of fish (less than approximately 0.5 inch), thereby reducing the efficacy of salvage efforts. However, given the very low population numbers of listed fish in the treatment area, spawning is unlikely and treatments during this time would have no significant effects to woundfin or Virgin River chub not considered in the original biological opinion. The reduced predation on listed fishes that results from removing non-native fishes in the treatment area may further offset any impacts.

Effects of the proposed modification allowing the rotenone concentration to increase to no greater than five ppm may include a reduction in the efficacy of salvage efforts during treatment; the listed fishes may succumb more quickly to the higher rotenone concentration and die prior to salvage crews locating individuals. However, the likelihood of salvaging listed fishes once the treatment has been initiated is low at any concentration from two to five ppm. We anticipate that rotenone treatments at any

concentration greater or equal to two ppm will result in mortality of any listed fishes present in the treatment reaches once treatment has been initiated. In addition, the likelihood of listed fishes occurring in the reaches during rotenone application is low considering the low initial populations and extensive pre-treatment salvage efforts. This modification to the proposed action will have no significant effects to woundfin or Virgin River chub not considered in the original biological opinion.

Water quality within the treatment reach and immediately below will be affected by the application of rotenone and potassium permanganate (the de-toxifying agent), but these effects will not persist over two hours past the final addition of rotenone at five ppm concentration. Invertebrate prey in the treatment reach will continue to be depressed following treatment; however re-colonization of the reach from upstream should be rapid and no long-term effects are likely to occur. Additionally, invertebrates are not the sole food source of the listed fishes. In summary, the modifications to the proposed action will have no significant effects to woundfin or Virgin River chub critical habitat not considered in the original biological opinion.

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. The analysis of cumulative effects remains unchanged from the 2002 biological opinion.

CONCLUSION

After reviewing the current status of the woundfin and Virgin River chub, the environmental baseline for the action area, the effects of the proposed modifications to the tilapia removal program and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the woundfin or Virgin River chub, and is not likely to destroy or adversely modify designated critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations 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 defined (50 CFR 17.3) 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 (50 CFR 17.3) 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 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 described below are non-discretionary, and must be undertaken by the LVFO so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The LVFO has a continuing duty to regulate the activity covered

by this incidental take statement. If the LVFO (1) fails to assume and implement the terms and conditions or (2) fails to require the (applicant) 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 LVFO must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

In the original biological opinion, we anticipated that 50 woundfin and 50 Virgin River chub would be taken as a result of the proposed action over the five-year period. The incidental take was expected to be in the form of direct or indirect mortality of individual fish in the treatment area due to application of rotenone, as well as mortality from activities associated with pre-treatment salvage efforts. We anticipate that an additional ten woundfin and five Virgin River chub will be taken as a result of the proposed modification over the remainder of the five-year period. This take was determined using data on existing population levels and estimates of treatments expected to occur. The incidental take is anticipated to be in the form of direct or indirect mortality of individual fish in the expanded treatment area due to application of rotenone, as well as mortality from activities associated with pre-treatment salvage efforts.

In addition, all woundfin and Virgin River chub captured during pre-treatment salvage efforts may be taken in the form of collection, harassment, or harm, although every effort will be made to minimize take in the form of harm. Based on population data and estimates of future treatments, we anticipate that no more than 120 woundfin and 50 Virgin River chub may be collected, harassed, or harmed throughout the action area over the remainder of the five-year period.

EFFECT OF THE TAKE

In the accompanying biological opinion, we determined that this level of anticipated take is not likely to result in jeopardy to the woundfin or Virgin River chub or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

The reasonable and prudent measures, with their implementing terms and conditions, remain the same as described in the 2002 biological opinion. We believe these reasonable and prudent measures will be effective in minimizing the additional incidental take anticipated in this reinitiation.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the U.S. Fish and Wildlife Service Law Enforcement Office in Nevada at (702) 388-6380 within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

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, to help implement recovery plans, or to develop information.

The conservation recommendations remain the same as described in the 2002 biological opinion.

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the reinitiation 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 causes 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.

We appreciate the LVFO's efforts to identify and minimize effects to listed and candidate species from this project. For further information please contact Brenda Smith of my staff at (928) 226-0614 (x101). Please refer to the consultation number, 02-21-02-F-0299-R1, in future correspondence concerning this project.

/s/ Steven L. Spangle

Attachment

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Portland, OR
Assistant Field Supervisor, Fish and Wildlife Service, Las Vegas, NV
Field Supervisor, Fish and Wildlife Service, Salt Lake City, UT
Lesley Fitzpatrick, Fish and Wildlife Service, Phoenix, AZ
Field Manager, Arizona Strip Field Office, BLM, St. George, UT
Field Manager, Las Vegas Field Office, BLM, Las Vegas, NV
Superintendent, Lake Mead National Recreation Area, National Park Service, Boulder City, NV

Habitat Branch Chief, Arizona Game and Fish Department, Phoenix, AZ
Director, Nevada Division of Wildlife, Reno, NV

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APPENDIX A: CONCURRENCES

Southwestern willow flycatcher and proposed critical habitat

Southwestern willow flycatchers are present as both migrants and breeding birds in the Nevada portion of the Virgin River, and surveys have historically detected this species at twelve sites within the proposed project area (Koronkiewicz *et al.* 2003, McKernan and Braden 2002).

On October 12, 2004 we published a notice in the *Federal Register* requesting public comment on a proposed rule to designate critical habitat for the flycatcher (69 FR 60705). Proposed critical habitat occurs throughout the proposed project area.

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the southwestern willow flycatcher. We further concur with your determination that the proposed action is not likely to adversely affect proposed critical habitat for the flycatcher. These conclusions are based on the following:

- Pre-treatment surveys will occur and treatments will avoid active flycatcher territories. If flycatchers are present and project activities could not avoid take, then treatment would be delayed until after the nesting period (April 1 – September 30).
- No flycatcher habitat would be physically disturbed by the proposed action.
- Rotenone is not toxic to birds, and invertebrates that come into contact with rotenone are not toxic to birds that eat them.
- Aquatic invertebrates compose a small component of the flycatcher diet. Rotenone does kill larvae and nymphs of aquatic invertebrates that, as adults, may provide food sources for the flycatcher. The kill is generally not complete, leaving some individuals to survive and repopulate the area. Re-colonization of the reach from upstream should be rapid and should allow invertebrate populations in the proposed project area to recover quickly after detoxification. Effects to the foraging element of proposed critical habitat (a variety of insect prey populations) from the proposed modification will be insignificant and discountable.

Yuma clapper rail

Yuma clapper rails have been detected at multiple sites in the Nevada portion of the proposed project area (McKernan and Braden 2001, Rathburn and Braden 2003) and are known to be present year-round.

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Yuma clapper rail. This conclusion is based on the following:

- Pre-treatment surveys will occur and treatments will avoid Yuma clapper rail territories during the breeding and molting seasons (March 15-September 1). If rails are present and project activities could not avoid take, then treatment within the pairs' territory would be delayed until after the breeding and molting seasons.
- Resident rails would be temporarily disturbed or displaced by the crews during the treatments, but disturbance would be of short duration and not likely to result in abandonment of the habitat.

- Rotenone is not toxic to birds. Fish and invertebrates that come into contact with rotenone are not toxic to birds that eat them.
- Although marsh areas would be treated, rotenone has limited toxicity to the rails' primary food source (crayfish).
- No rail habitat would be eliminated by the proposed action.

Yellow-billed cuckoo

Yellow-billed cuckoos have been observed at multiple sites within the Nevada portion of the proposed project area (McKernan and Braden 2001).

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the yellow-billed cuckoo. This conclusion is based on the following:

- No suitable breeding or migration habitat of the cuckoo would be physically disturbed by the proposed action.
- Cuckoos do not forage on fish or aquatic invertebrates and there would be no effects to the primary insect prey base for the cuckoo from the proposed action.
- Pre-treatment surveys will occur and treatments will avoid cuckoo territories during the breeding season. If cuckoos are present and project activities could not avoid take, then treatment would be delayed until after the breeding season.

Relict leopard frog

The Relict leopard frog is currently known to occur near the Overton Arm of Lake Mead; however, surveys over the past two decades have not detected this species within the proposed project area. It is believed that the Relict leopard frog has been extirpated from the Virgin River as a result of habitat alteration and predation by non-native fish.

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Relict leopard frog. This conclusion is based on the following:

- The Relict leopard frog is not currently known to occur within the proposed project area.

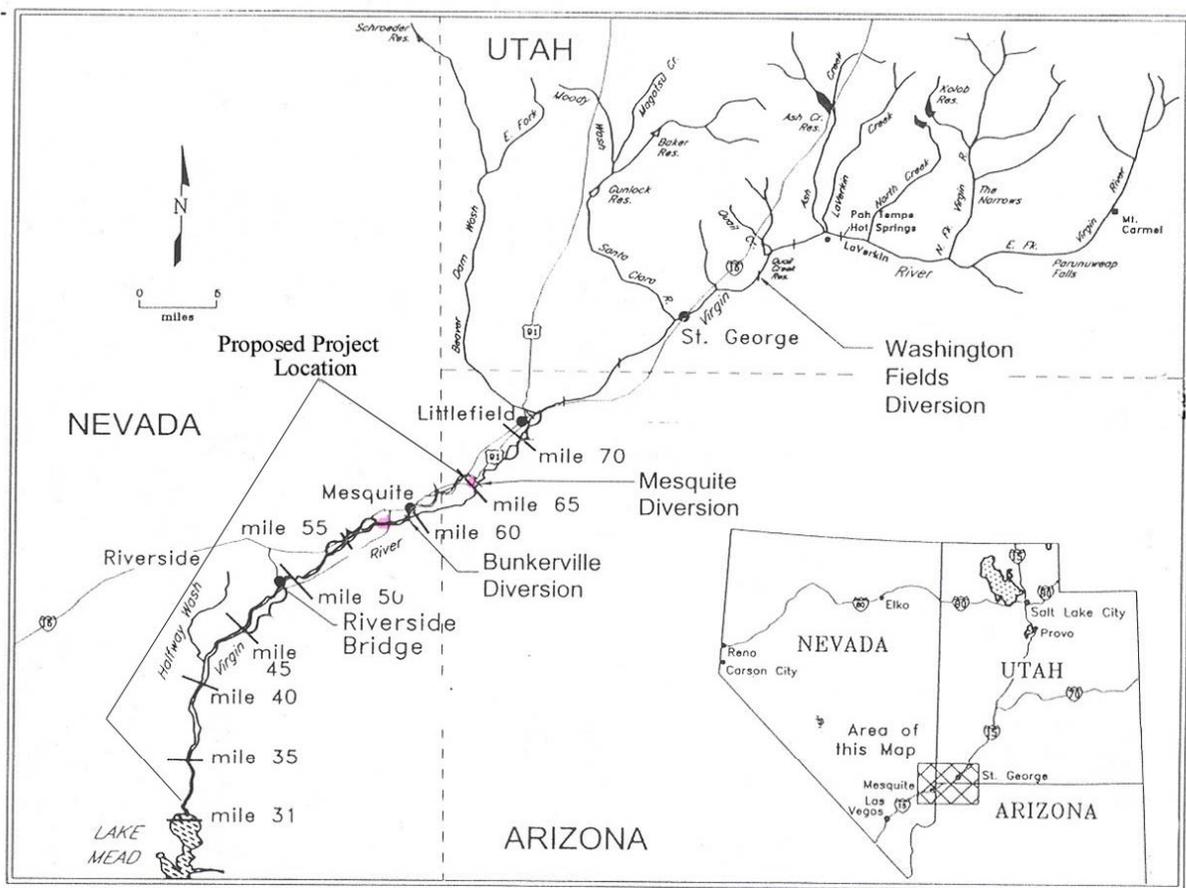


Figure 1: Map of Virgin River, Including Location of Proposed Project Area (Adapted from Holden and Golden, 2000).