United States Department of the Interior

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In Reply Refer To:
AESO/SE
22410-2006-F-0428

June 27, 2006

Robert E. Hollis
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
400 East Van Buren Street
One Arizona Center Suite 140
Phoenix, Arizona 85004-0674

Dear Mr. Hollis:

Thank you for your April 10, 2006, request for interagency consultation on the proposed replacement of the 8th Avenue Bridge (including both the construction of a new span and eventual removal of the existing span) (proposed action) over the Gila River in Safford, Graham County, Arizona. Your correspondence included a determination that the proposed action would adversely affect the endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher), the endangered razorback sucker (*Xyrauchen texanus*), and the species' respective critical habitats. This response is provided pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (Act).

This biological opinion is based on information contained in: (1) the March 2006 *Biological Evaluation for 8th Avenue Bridge Replacement, Graham County, Arizona* (BE), prepared by Kimley-Horn and Associates, Inc. (Kimley-Horn) for the Arizona Department of Transportation (ADOT); (2) the razorback sucker and flycatcher's respective listing and critical habitat Final Rules; and (3) other published and unpublished sources of information. We have assigned file number 22410-2006-F-0428 to this consultation; please reference this number in future correspondence on the proposed action. A complete administrative record is on file at the Arizona Ecological Services Office (AESO).

Biological Opinion

Consultation History

July 19, 2005: We received a July 18, 2005, letter from Kimley-Horn and Associates requesting a list of threatened or endangered species, or those that are proposed to be listed as such under the Act, for the proposed action.

August 9, 2005: We transmitted a letter to Kimley-Horn with the requested information. We also requested a meeting to discuss issues associated with the proposed action's potential effects to threatened and endangered species.

November 21, 2005: My staff attended a meeting with your agency, ADOT, Graham County, and consulting biologists and engineers, to formulate a strategy for completion of interagency consultation.

April 15, 2006: We received your April 10, 2006, letter stating your determination of effects, transmitting the BE, and requesting formal consultation.

June 16, 2006: The draft biological opinion was transmitted to you.

June 20, 2006: Steve Thomas of your staff indicated, in a telephone conversation, that your agency had no comments on or concerns with the June 16, 2006, draft biological opinion. Mr. Thomas also related that he had discussed the matter with Melissa Maiefski of ADOT and that the State agency also had no concerns. Mr. Thomas requested that we issue a final biological opinion.

Description of the Proposed Action

The present-day 8th Avenue Bridge spans the Gila River and is located within Sections 5, 6, 7, and 8 of Township 7 South, Range 26 in the City of Safford, Arizona. The proposed project begins along 8th Avenue approximately 0.5 mile north of State Route 70 in Safford and extends approximately 0.5 mile north of the Gila River. Agricultural lands occur on both sides of 8th Avenue north and south of the Gila River. Some trash dumping has occurred along the Gila River in the past, but otherwise, the site is undisturbed.

The proposed improvements to 8th Avenue include: (1) construction of a new four-lane bridge adjacent to the current bridge; and (2) widening and reconstruction of the roadway approaches to align with the new bridge. The new 8th Avenue Bridge will be built immediately upstream (east) of the existing bridge structure. The existing bridge will remain in place during construction of the new bridge to maintain traffic flow across the Gila River. In order to reduce the amount of new right-of-way required for the 8th Avenue construction, approximately 70 linear feet of retaining wall will need to be constructed as part of the new south approach. The roadway approaches will be reconstructed leading up to and away from the new bridge. The width of the roadway approaches will be 62 feet approaching the bridge from the south and over the bridge,

tapering to match the existing roadway to the north. Construction on the approaches will extend approximately 1,200 feet to the south and 1,600 feet on the north end to match into the existing roadway.

The new 8th Avenue Bridge will be a multi-span structure with an approximate length of 1,200 feet and a total width of approximately 62 feet. The new bridge will consist of four 11-foot travel lanes and a 6-foot sidewalk on the west side of the bridge, and it will be roughly seven feet higher than the existing roadway/bridge profile.

The new bridge will contain conduits for utilities. The new bridge would be supported by 8 piers spaced 133 feet apart. Each pier will consist of two 4-foot diameter columns that will bear on drilled shaft foundations 6-feet in diameter. Placement of columns requires drilling of holes and insertion of concrete. The bottom end of the columns will be 75-100 feet below the road surface of the bridge and as much as 75 feet below the existing ground surface. Fine clays (such as bentonite) are used in the drilling process, which would ultimately be displaced by the concrete. This clay would be disposed of out of the river channel.

Construction phasing for the bridge will involve the construction of the piers and drilled shafts within the river bed (phase one). The second phase will be the placement of the precast girders onto the new piers from the deck of the existing bridge. The last phase will be the placement of the cast-in-place concrete deck. It is the recommendation of the design team to divert the low flow river channel(s) during construction in order to construct the drilled shaft foundations in the river bed under dry conditions. Assuming that the existing low flow channels remain in the same location, the low flow channel to the south will be diverted to the west into another low flow channel (see BE: Appendix B). This will carry the flow between pier locations and away from the area needing to be dewatered. A crossing point will be constructed over the new diversion channel because the only access point to the riverbed is from the south bank of the Gila River. You stated that, in consultation with the U.S. Army Corps of Engineers (Corps), the newly-diverted low-flow channel would not be returned to its pre-project location following construction.

The new bridge will be designed to pass the 100-year return interval (RI) design storm providing 1 foot of freeboard below the low chord for the 100-year (RI) storm. The existing 8th Avenue bridge will be removed within one or two years, when funding becomes available.

The proposed project will impact approximately 0.010 acre within the Gila River, 0.40 acre of farmland, and approximately 0.10 acre of upland along the south bank of the Gila River that contains cottonwood and willow trees, tree tobacco, and other vegetation. The remaining land disturbance will occur within the right-of-way along 8th Avenue. The proposed project will impact more than 1 acre of land requiring the County to prepare and implement a Storm Water Pollution Prevention Plan that will identify Best Management Plans that will reduce potential pollutants from entering the Gila River. Although impacts within the Gila River are under 0.10 of an acre, potential effects to threatened and endangered species will require the County to complete a Section 404 Nationwide Number 14 Permit.

In addition to evaluating the potential effects to federally listed species from construction of the new bridge over the Gila River, your BA also addressed the potential effects from removal of the existing bridge. It is currently unknown when the existing bridge will be removed. The 8th Avenue Bridge was constructed in 1940 and may contain asbestos in the concrete and lead base paint on the steel girders. The bridge will be tested/assessed for asbestos and lead base paint prior to its removal. If the bridge contains asbestos and/or lead-based paint, an abatement plan will be developed for the proper removal of the bridge structure.

Due to the close proximity of the existing 8th Avenue Bridge to the new 8th Avenue Bridge, dropping the older bridge into the river is not the preferred method for demolition. However, this method cannot be completely eliminated and was evaluated in the BA as a worst-case scenario. The preferred method for removing the existing bridge deck and steel girders is in sections to potentially be used elsewhere within the County. In this method, a crane will be used to lift the bridge deck and girders and load it onto a tractor trailer for transport to an offsite storage facility. To reduce or eliminate traffic issues on the new bridge, the crane will likely be within the river channel (non-wetted areas) for the removal of the deck sections. With the cutting and removal of sections of the bridge, there is the possibility that bridge materials will fall and land in the river bed or within the active river channel. Materials that fall and land outside the active river channel will be picked up and removed properly. During the removal of the bridge deck over the active river channel, the contractor will implement measures that will prevent the potential for bridge materials falling into the active river channel.

The final step is the removal of the concrete piers that support the bridge deck and girders. The concrete piers are only approximately 10 feet below the surface. In some cases this depth may be greater or lesser depending on the sediment distribution patterns within the river. The concrete piers are supported by a steel pile that has been driven deep into the channel substrate. It would be very difficult to remove the entire pier and pile. Therefore, it is anticipated that the steel pile can be cut just below the concrete pier. In order to do this, the sediment around each pier will need to be removed so that the metal pile underneath the concrete pier is exposed and can be cut. The piers will then drop into the river channel for removal. It may be necessary to cut the concrete piers into sections for easy removal. Once this has been completed, sediment will be placed into the hole to cover the piles and to provide a smooth contour. This will allow habitat for the razorback sucker and other fish, currently displaced by piers, to be restored. A majority of the piers occur outside the active river channel; therefore sedimentation from removal will be greatly reduced. However, there are a number of piers that occur within the active river channel. Because work cannot be done within water, the area around each pier will need to be cut off from the channel using existing river sediment. The contractor will be responsible for developing an approach to prevent these piers from dropping into the active river channel.

Description of the Proposed Conservation Measures

Razorback Sucker

You have proposed the following measures to avoid and minimize the effects of the proposed action on the razorback sucker and its critical habitat:

1. Equipment staging and storage areas will be situated outside of the river bed.

2. All construction equipment will be removed from the river channel prior to onset of storm events.

If the Gila River is flowing where construction of the new bridge is required, the following conservation measures shall be implemented:

1. Prior to the start of bridge construction, the contractor shall excavate a diversion channel within the southern portion of the project area to connect to an existing low flow channel towards the west and away from the construction zone. The diversion channel will be constructed in its entirety prior to breaching the main low flow channel. This would reduce sediment transport, working within water, and the potential to kill fish.

2. The only access to the river bottom is from the south bank where an existing road already occurs. To access the river bed from the north, the north bank and levee would need to be excavated for a new road. Therefore, the diversion channel will need to be crossed by construction equipment to complete the drilled shafts and construct the pier columns. As a result, a culverted or similar crossing point will be constructed over the diversion channel, if required.

3. Graham County shall ensure that a qualified biologist, permitted by the U.S. Fish and Wildlife Service (FWS) and the Arizona Game and Fish Department (AGFD), is present while work is performed in water. Graham County's contract biologist will conduct fish surveys 200 feet upstream and downstream of the bridge immediately prior to diverting the Gila River. If razorback suckers are found, Graham County will contact the FWS immediately (see Item 4, below, which refines this statement as well as Razorback sucker Term and Condition 2(A) in the Incidental Take Statement, which makes a minor change to this portion of the proposed action).

4. The existing low-flow channel shall be seined for fish immediately following the diversion of water to the constructed low flow channel. All fish will be placed into the Gila River immediately downstream of the project area by a qualified fisheries biologist permitted by the Arizona Game and Fish Department and the FWS.

5. Graham County shall ensure that a qualified biologist documents and records any take of razorback sucker, dead fish of any species, and the condition of the habitat. A brief written report shall be prepared by the biologist summarizing the results of monitoring and documentation; the report shall also describe any deviations from the planned action, and procedures and results of fish captures, transport, holding, and release. This report shall be submitted to the Arizona Department of Transportation (ADOT) Environmental and Enhancement Group (EEG) within one year of completion of construction (see Term and Condition 2(A)).

6. If mortality of a razorback sucker occurs during construction, the FWS will be contacted immediately.

If the existing 8th Avenue Bridge is removed in such a way as to keep all bridge material out of the water, the following conservation measures shall be implemented:

1. Prior to removing the existing bridge deck and steel girders occurring over the active river channel, the contractor shall provide netting or some other means to eliminate the potential for bridge materials from falling into the active river channel.

2. Bridge materials that fall within the Gila River channel (outside the active channel) will be removed and disposed of properly.

3. Prior to the start of removing the existing bridge piers surrounded by water, the contractor shall separate each pier from the active river channel by using river sediment to construct a berm around each pier. The area around each pier will be dewatered in order to remove the pier. This would reduce sediment transport, working within water, and the potential to kill fish.

4. Graham County shall ensure that a qualified biologist, permitted by the FWS and the Arizona Game and Fish Department, is present while work is performed in water. Graham County would conduct fish surveys 200 feet upstream and downstream of the bridge immediately prior to the removal of the bridge deck over the active river channel and piers occurring within or immediately adjacent to the active river channel. If razorback suckers are found, Graham County would contact the FWS immediately (see Term and Condition 2(A)).

If the existing 8th Avenue Bridge can only be removed by dropping the bridge into the Gila River, the following conservation measures shall be implemented:

1. Prior to the start of dropping the section of the existing bridge that occurs over the active river channel, the contractor shall excavate a diversion channel around the section of bridge to be dropped to connect to an existing low flow channel towards the west and away from the construction zone. The diversion channel will be constructed in its entirety prior to breaching the main low flow channel. This diversion would reduce sediment transport, working within water, and the potential to kill fish.

2. Graham County shall ensure that a qualified biologist, permitted by the FWS and the Arizona Game and Fish Department, is present while work is performed in water. Graham County would conduct fish surveys 200 feet upstream and downstream of the bridge immediately prior to diverting the Gila River. If razorback suckers are found, Graham County would contact the FWS immediately (see Term and Condition 2(A)).

3. At the time the channel has been diverted around the construction zone all fish remaining within the main low flow channel will be removed using seines and dip nets and placed into the Gila River immediately downstream of the project area by a qualified, permitted fisheries biologist by AGFD and FWS (see Term and Condition 2(A)).

4. Graham County shall ensure that a qualified biologist documents and records any take of razorback sucker, dead fish of any species and the condition of the habitat. A brief written report shall be prepared by the biologist summarizing the results of monitoring and documentation; the report shall also describe any deviations from the planned action, and procedures and results of fish captures, transport, holding, and release. This report shall be submitted to the ADOT EEG within one year of completion of construction (see Term and Condition 2(B)).

Description of the Proposed Conservation Measures

Southwestern Willow Flycatcher

To minimize the potential effects to the southwestern willow flycatcher, you have proposed the following conservation measures:

1. Removal of riparian vegetation within the Gila River will occur between October 1 and April 30.

2. The Section 404 Nationwide Permit that Graham County will obtain will identify the type and number of cottonwood (*Populus* spp.) poles or other vegetation that will be planted as part of the mitigation for impacts to waters of the U.S. This information will be included in the mitigation and monitoring plan developed for this project. A copy of the plan will be provided to the FWS.

The following narrative includes each species' status, baseline, effects analysis and, if applicable, take statement.

Status of the Species – Razorback Sucker

The razorback sucker was first proposed for listing under the Endangered Species Act (Act) on April 24, 1978, as a threatened species, but was later withdrawn for technical reasons. In March 1989, the FWS was petitioned by a consortium of environmental groups to list the razorback sucker as an endangered species. The FWS made a positive finding on the petition in June 1989, which was published in the Federal Register on August 15, 1989. A final rule was published on October 23, 1991, with an effective date of November 22, 1991. The Razorback Sucker Recovery Plan was released in 1998 (FWS 1998). Recovery Goals were approved in 2002 (FWS 2002b).

The razorback sucker was once abundant in the Colorado River and its major tributaries throughout the Basin, occupying 3,500 miles of river in the United States and Mexico (FWS 1993). Records from the late 1800s and early 1900s indicated the species was abundant in the

lower Colorado and Gila river drainages (Kirsch 1889, Gilbert and Scofield 1898, Minckley 1983, Bestgen 1990).

Since 1997, significant new information on recruitment to the wild razorback sucker population in Lake Mead has been developed (Holden *et al.* 2000) that indicates some degree of successful recruitment is occurring. This degree of recruitment has not been documented elsewhere in the other remaining populations.

Adult razorback suckers use most of the available riverine habitats, although there may be an avoidance of whitewater type habitats. Main-channel habitats tend to be low velocity ones such as pools, eddies, nearshore runs, and channels associated with sand or gravel bars (Bestgen 1990). Adjacent to the main channel, backwaters, oxbows, sloughs, and flooded bottomlands are also used by this species. From studies conducted in the upper Colorado River basin, habitat selection by adult razorback suckers changes seasonally. They move into pools and slow eddies from November through April, runs and pools from July through October, runs and backwaters during May, and backwaters, eddies, and flooded gravel pits during June. In early spring, adults move into flooded bottomlands. They use relatively shallow water (ca. 3 feet) during spring, and deeper water (5-6 feet) during winter.

Razorback suckers also use reservoir habitat, where the adults may survive for many years. In reservoirs they use all habitat types, but prefer backwaters and the main impoundment (FWS 1998). Much of the information on spawning behavior and habitat comes from fishes in reservoirs where observations can readily be made. Spawning takes place in the late winter to early summer depending upon local water temperatures. Various studies have presented a range of water temperatures at which spawning occurs. In general, temperatures between 10° to 20° C are appropriate (summarized in Bestgen 1990). They typically spawn over cobble substrates near shore in water 3-10 feet deep (Minckley *et al.* 1991). There is an increased use of higher velocity waters in the spring, although this is countered by the movements into the warmer, shallower backwaters and inundated bottomlands in early summer (McAda and Wydoski 1980, Tyus and Karp 1989, Osmundson and Kaeding 1989). Spawning habitat is most commonly over mixed cobble and gravel bars on or adjacent to riffles (Minckley *et al.* 1991).

Habitat needs of larval and juvenile razorback suckers are reasonably well known. In reservoirs, larvae are found in shallow backwater coves or inlets (FWS 1998). In riverine habitats, captures have occurred in backwaters, creek mouths, and wetlands. These environments provide quiet, warm water where there is a potential for increased food availability. During higher flows, flooded bottomland and tributary mouths may provide these types of habitats.

Razorback suckers are somewhat sedentary; however, considerable movement over a year has been noted in several studies (FWS 1998). Spawning migrations have been observed or inferred in several locales (Jordan 1891, Minckley 1973, Osmundson and Kaeding 1989, Bestgen 1990, Tyus and Karp 1990). During the spring spawning season, razorbacks may travel long distances in both lacustrine and riverine environments, and exhibit some fidelity to specific spawning areas (FWS 1998).

Range-wide, the status of razorback sucker is exceedingly poor due to lack of significant recruitment, ongoing habitat loss, and continuing pressure from nonnative species. The range-

wide trend for the razorback sucker is a continued decrease in wild populations due to a lack of sufficient recruitment and the loss of old adults due to natural mortality. FWS recovery efforts under the Recovery Implementation Program are working towards the goals of replacing the aging population in Lake Mohave, restoring the Lake Havasu population, and increasing the lower river populations.

Stocking efforts in the Upper Colorado River Basin, and in lakes Mohave and Havasu and the lower Colorado River Basin below Parker Dam are ongoing, with the 30,000-fish replacement for Lake Havasu completed in 2001. The most critical of these efforts is the replacement of the Lake Mohave population using wild-caught larvae from the lake. By the end of 2001, the initial goal to stock 50,000 sub-adult fish into Lake Mohave was reached (Tom Burke, Bureau of Reclamation, pers. comm.). The Lake Mohave efforts will continue to meet the second goal, which is to establish a population of 50,000 adults.

Razorback Sucker Critical Habitat

Critical habitat was designated in 15 river reaches in the historical range of the razorback sucker on March 21, 1994. Critical habitat included portions of the Colorado, Duchesne, Green, Gunnison, San Juan, White, and Yampa rivers in the Upper Colorado River Basin, and the Colorado, Gila, Salt, and Verde rivers in the Lower Colorado River Basin. There are three areas that are considered primary constituent elements: water, physical habitat, and the biological environment (FWS 1998). The water element refers to water quality and quantity. Water quality is defined by parameters such as temperature, dissolved oxygen, environmental contaminants, nutrients, turbidity, and others. Water quantity refers to the amount of water that must reach specific locations at a given time of year to maintain biological processes and to support the various life stages of the species. The physical habitat element includes areas of the Colorado River system that are or could be suitable habitat for spawning, nursery, rearing, and feeding, as well as corridors between such areas. Habitat types include bottomland, main and side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year floodplain, which when inundated may provide habitat or corridors to habitat necessary for the feeding and nursery needs of the razorback sucker. The biological environment element includes living components of the food supply and interspecific interactions. Food supply is a function of nutrient supply, productivity, and availability to each life stage. Negative interactions include predation and competition with introduced nonnative fishes.

Environmental Baseline – Razorback Sucker

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

The action area is delineated in Appendix B of the BE and consists of approximately 0.010 acre of cobble bar and wetted channel within the Gila River and approximately 0.10 acre of non-agricultural upland (including riparian habitat) to be permanently and temporarily disturbed by

the proposed action. The action area also includes approximately 400 linear feet of the Gila River (200 linear feet up and downstream of the to-be-constructed temporary diversion channel) within which fish surveys and, if warranted, salvage, would occur. Critical habitat for the razorback sucker includes the Gila River and its 100-year floodplain from the Arizona-New Mexico border to Coolidge Dam. All active channel and floodplain within the action area are thus critical habitat for the razorback sucker.

Physical habitat condition within the Safford Valley is largely undetermined, but Minckley and Sommerfeld (1979) stated that the Gila River through the Gila Box "...is one of the last, low-desert unmodified streams in the American Southwest." The biological component of the habitat has been altered by the loss of co-occurring native fishes, and the addition of predatory and competitive non-native fishes (Minckley *et al.* 1991, Marsh and Brooks 1990), however, the Gila River's natural hydrograph remains unimpaired by large dams (FWS 1993). Flooded bottomland is not a common habitat feature along the BLM portions of the Gila or San Francisco rivers or Bonita Creek, but such a condition occurs irregularly in the mainstem Gila River in the Safford Valley.

Historically, the razorback sucker was found in the Gila River upstream to the New Mexico border (Bestgen 1990), but was likely extirpated by the late 1970s. Razorback suckers were re-introduced into the Gila River and its tributaries between 1981 and 1989; however, there is no evidence that introductions have established self-sustaining populations. These transplants were not formally monitored until 2001, when a baseline fisheries inventory was conducted in the Gila Box portion of the Gila River. The inventory found no razorback suckers. No razorback suckers were found during depletion surveys of a plunge pool below the Eagle Creek diversion dam in 1996 (SWCA 1997).

Some report that the razorback sucker is likely to have been extirpated from the Gila River despite massive reintroduction efforts from 1981-1990 (R. Clarkson, P. Marsh, J. Stefferud, and S. Stefferud, Pers. Comm.). Small or very small numbers of released razorback suckers may survive in the Gila River and Bonita and Eagle creeks. Fish may have also moved upstream into the San Francisco River. The BLM reported a large razorback sucker found in Bonita Creek in 1991. Fishes occurring at exceedingly low abundance are difficult to detect (Marsh *et al.* 2003). Given said uncertainty, there is a small, but finite, possibility that razorback suckers may occur in intermittently and in immeasurably small numbers in the Gila River in the project area.

Effects of the Proposed Action – Razorback Sucker

The new bridge portion of the proposed action will directly and adversely affect razorback sucker and razorback sucker critical habitat via the construction of eight bridge piers (sixteen columns) within the Gila River channel. The piers will cover currently-open substrate and will thus result in the permanent loss of approximately 0.010 acre of critical habitat. Removal of the old bridge, which contains fifteen piers, will eventually directly and beneficially affect razorback sucker and razorback sucker critical habitat by restoring a natural substrate to approximately 0.030 acre of critical habitat. The proposed action will thus eventually result in an approximately 0.02-acre net increase in available natural substrate within razorback sucker critical habitat.

The indirect effects of the proposed action include: (1) potential erosion and siltation during in-channel excavation, temporary diversion of the low-flow channel, new pier and bridge placement, and old pier and bridge removal; (2) potential spills of oil, fuel, hydraulic fluids and other contaminants during construction; and (3) potential introduction of debris into the Gila River during removal of the old bridge. Excessive erosion can diminish habitat quality for razorback suckers by preventing the development of an algal and aquatic insect community, and excessive siltation can smother substrate-bound eggs, occlude gill filaments, and diminish visibility/increase predation. These potential effects are avoided and minimized by the proposed conservation measures.

The section entitled Description of the Proposed Conservation Measures, above, contains additional avoidance and minimization measures that we anticipate being effective in reducing the magnitude of the effects of erosion and sedimentation. You have proposed to develop a Storm Water Pollution Prevention Plan (SWPPP) that will identify Best Management Practices (BMPs) to be implemented during construction). SWPPPs typically include erosion control measures, capture and removal of drilling compounds such as bentonite, and direction to refuel vehicles and equipment outside of the active channel and floodplain.

There also exists the potential for geomorphic changes to the Gila River, but these are expected to be minimal. The paired arrangement of the eight new piers may present a lessened impediment to flows relative to the fifteen piers associated with the to-be-removed bridge. My staff has observed that the current flow path of the Gila River is not perpendicular to the present, rectangular piers. The new design, which includes a lesser number of columnar piers, may better accommodate the active meandering of the river.

You have also proposed a series of conservation measures intended to minimize the potential for mortality of razorback suckers resulting from the diversion of the Gila River during construction. We reiterate that the likelihood of razorback suckers being present in the project area is low, but your proposed fish surveys, capture, and repatriation measures carry with them a finite risk that a razorback sucker will be harmed or harassed. Any razorback suckers subjected to standard survey techniques (netting, trapping, seining, electrofishing, etc.), holding, transport, and repatriation will be subject to stress, injury, and/or mortality.

Regarding the effects of the diversion on the Gila River and critical habitat, we agree with your assertion that your proposal to leave the channel in its diverted state (following removal of the temporary crossing) will result in no permanent alteration to or loss of critical habitat. The Gila River in the Safford Valley exhibits a high degree of fluvial dynamism, and we anticipate that the next appreciably large discharge will reestablish the form and pattern of the channel.

Cumulative Effects – Razorback Sucker

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.

Many activities without a Federal nexus occur and are expected to continue in potential and critical razorback sucker habitat. Critical habitat through the middle Gila Valley downstream of the Gila Box is mostly non-Federal land. Cumulative effects in this area are described for the flycatcher, below. Human development or recreational site encroachment and changes in land-use pattern around occupied reaches and designated critical habitat that further fragments, modifies, or destroys upland or riparian vegetation negatively affect water quality and quantity and the primary constituent elements of critical habitat. Increased development, agriculture, and livestock grazing practices may result in the drainage, development, or diversions of wetland and aquatic habitats that reduce water quantity and quality, and destroy spawning and critical habitats. Non-native fish introduction resulting from fishing and recreation in occupied reaches and critical habitat would increase resource competition and direct mortality from predation.

Conclusion - Razorback Sucker

After reviewing the current status of the razorback sucker, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the species. Critical habitat for the razorback sucker exists in the project area, but it is not likely to be adversely modified or destroyed. The rationale for our conclusion is as follows:

- The proposed action's potential to increase erosion and sedimentation within the Gila River and razorback sucker critical habitat is minimized by the proposed conservation measures and application of BMPs. Moreover, the minor and residual impacts to water quality would be unlikely to act upon any individual razorback sucker, as they may be extirpated from the project area.

- The diversion of the Gila River is anticipated to be a temporary adverse effect, as the project site is within an actively meandering reach of river. The next channel-forming flood event (presumed to be at the 1.5 to 2-year return interval) is anticipated to either occupy the new channel or return it to its prior lateral location.

- The proposed holding and repatriation of any razorback suckers found in fish surveys would effectively minimize the effect of diverting the Gila River on individuals of the species, as they would be returned to a section of the river not appreciably affected by excavation and its associated erosion and sedimentation.

Incidental Take Statement – Razorback Sucker

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 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 behavioral 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 sections 7(b)(4) and 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.

Amount or Extent of Take - Razorback Sucker

We anticipate that razorback sucker will be subject to a finite risk of incidental take from the application of standard fish survey techniques (netting, trapping, seining, electrofishing, etc.), holding, transport, and repatriation. The likelihood that a razorback sucker will be encountered is low, but we consider it reasonably certain to occur during implementation of the proposed action.

The total anticipated incidental take of razorback suckers, given the species rarity in the Gila River system, is estimated to be one (1) individual harmed, harassed, or killed during capture, holding, transport, and/or repatriation.

Effect of the Take

In this biological opinion, we find that the anticipated level of take is not likely to jeopardize the continued existence of the razorback sucker.

The measures described below are non-discretionary, and must be undertaken by the Federal Highway Administration (Administration), or enforced by the Administration upon Graham County, 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 Administration has a continuing duty to regulate the activity covered by this incidental take statement. If the Administration: (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 applicant must report through the Administration 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)).

Reasonable and Prudent Measures and Terms and Conditions

In addition to the commitments you have made, as described in the Description of the Proposed Conservation Measures section, above, the following Reasonable and Prudent Measures, and the nondiscretionary Terms and Conditions that implement them, are necessary to be exempt from the prohibitions of section 9 of the Act and are appropriate to minimize take of razorback sucker:

> Reasonable and Prudent Measure 1: The Administration shall minimize the effects of capture, handling, and repatriation stress on razorback suckers.

> Term and Condition 1(a): A qualified biological monitor shall monitor the diversion channel and any natural or constructed channel affected by bridge removal, if it contains water capable of supporting fish, each week construction crews are on-site until construction is completed. During these monitoring efforts, the monitor shall document and record any take of Razorback sucker, dead fish of any species, and take notes on the condition of the habitat. Any razorback suckers captured shall be immediately repatriated to the Gila River downstream of the project area or, if that reach is dry, upstream of the project site. The portion of this Term and Condition pertaining to repeated surveys of the diversion or active channel is waived if a block seine or comparable exclusion device is placed at both ends of the diversion channel.
>
> Term and Condition 1(b): We encourage development of a standard form to record these data. A brief written report shall be prepared by the biological monitor summarizing the results of such monitoring/documentation; the report shall also describe any deviations from the proposed action, and procedures and results of fish captures, transport, holding, and release. This report shall be submitted to the FWS within one year of completion of construction.

Status of the Species – Southwestern Willow Flycatcher

Description

The southwestern willow flycatcher is a small grayish-green tyrant flycatcher and is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

Listing and critical habitat

The southwestern willow flycatcher was listed as endangered, without critical habitat on February 27, 1995 (FWS 1995). Critical habitat was later designated on July 22, 1997 (FWS 1997a). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (FWS 1997b).

On May 11, 2001, the 10th circuit court of appeals set aside designated critical habitat in those states under the 10th circuit's jurisdiction (New Mexico). The FWS decided to set aside critical habitat designated for the southwestern willow flycatcher in all other states (California and Arizona) until it could re-assess the economic analysis.

On October 19, 2005, the FWS re-designated critical habitat for the southwestern willow flycatcher (FWS 2005). A total of 737 river miles across southern California, Arizona, New Mexico, southern Nevada, and southern Utah were included in the final designation. The lateral

extent of critical habitat includes areas within the 100-year floodplain. The primary constituent elements of critical habitat include riparian plant species in a successional riverine environment (for nesting, foraging, migration, dispersal, and shelter), specific structure of this vegetation, and insect populations for food. A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (FWS 2005).

A final recovery plan for the southwestern willow flycatcher was signed by the FWS's Region 2 Director on August 30, 2002, and was released to the public (FWS 2002). The Plan describes the reasons for endangerment, current status of the flycatcher, addresses important recovery actions, includes detailed issue papers on management issues, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit established throughout the subspecies range and establishing long-term conservation plans (FWS 2002).

Reasons for endangerment

Reasons for decline have been attributed primarily to loss, modification, and fragmentation of riparian breeding habitat, along with a host of other factors including loss of wintering habitat and brood parasitism by the brown-headed cowbird (*Molothrus ater*) (Sogge *et al.* 1997, McCarthey *et al.* 1998). Habitat loss and degradation are caused by a variety of factors, including urban, recreational, and agricultural development, water diversion and groundwater pumping, channelization, dams, and livestock grazing. Fire is an increasing threat to willow flycatcher habitat (Paxton *et al.* 1996), especially in monotypic saltcedar vegetation (DeLoach 1991) and where water diversions and/or groundwater pumping desiccates riparian vegetation (Sogge *et al.* 1997). Willow flycatcher nests are parasitized by brown-headed cowbirds, which lay their eggs in the host's nest. Feeding sites for cowbirds are enhanced by the presence of livestock and range improvements such as waters and corrals; agriculture; urban areas; golf courses; bird feeders; and trash areas. When these feeding areas are in close proximity to flycatcher breeding habitat, especially coupled with habitat fragmentation, cowbird parasitism of flycatcher nests may increase (Hanna 1928, Mayfield 1977a,b, Tibbitts *et al.* 1994).

Habitat

The southwestern willow flycatcher breeds in dense riparian habitats from sea level in California to approximately 8500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range, describe the southwestern willow flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964, Hubbard 1987, Unitt 1987, San Diego Natural History Museum 1995). Currently, southwestern willow flycatchers primarily use Geyer willow (*Salix geyeriana*), Coyote willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolio*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the

southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.*1997).

Tamarisk is an important component of the flycatchers's nesting and foraging habitat in Arizona and other parts of the bird's range. In 2001 in Arizona, 323 of the 404 (80 percent) known flycatcher nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (FWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference.

Open water, cienegas, marshy seeps, or saturated soil are typically in the vicinity of flycatcher territories and nests; flycatchers sometimes nest in areas where nesting substrates were in standing water (Maynard 1995, Sferra *et al.* 1995, 1997). However, hydrological conditions at a particular site can vary remarkably in the arid Southwest within a season and among years. At some locations, particularly during drier years, water or saturated soil is only present early in the breeding season (i.e., May and part of June). However, the total absence of water or visibly saturated soil has been documented at several sites where the river channel has been modified (e.g. creation of pilot channels), where modification of subsurface flows has occurred (e.g. agricultural runoff), or as a result of changes in river channel configuration after flood events (Spencer *et al.* 1996).

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod *et al.* 2005, Cardinal and Paxton 2005). That same habitat may subsequently grow or cycle into habitat used for nest placement. Because of those changes, flycatcher "nesting habitat" is often described as occupied, suitable, or potential (FWS 2002). Areas other than locations where nests are located (foraging, sheltering, territory defense, singing, etc.) can also be "occupied flycatcher habitat," and as a result, essential to the survival and recovery of the flycatcher (FWS 2002). The development of flycatcher habitat is a dynamic process involving maintenance, recycling, and regeneration of habitat. Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

Breeding biology

Throughout its range the southwestern willow flycatcher arrives on breeding grounds in late April and May (Sogge and Tibbitts 1992, Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994, Maynard 1995, Sferra *et al.* 1995, 1997). Nesting begins in late May and early June, and young fledge from late June through mid-August (Willard 1912, Ligon 1961, Brown 1988a,b, Whitfield 1990, Sogge and Tibbitts 1992, Sogge *et al.* 1993, Muiznieks *et al.* 1994, Whitfield 1994, Maynard 1995). Southwestern willow flycatchers typically lay three to four eggs per clutch (range = 1 to 5). Eggs are laid at one-day intervals and are incubated by the

female for approximately 12 days (Bent 1960, Walkinshaw 1966, McCabe 1991). Young fledge approximately 12 to 13 days after hatching (King 1955, Harrison 1979). Typically one brood is raised per year, but birds have been documented raising two broods during one season and renesting after a failure (Whitfield 1990, Sogge and Tibbitts 1992, Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994, Whitfield 1994, Whitfield and Strong 1995). The entire breeding cycle, from egg laying to fledging, is approximately 28 days.

Southwestern willow flycatcher nests are fairly small (3.2 inches tall and 3.2 inches wide) and their placement in a shrub or tree is highly variable (1.6 to 60 feet off the ground). Nests are open cup structures, and are typically placed in the fork of a branch. Nests have been found against the trunk of a shrub or tree (in monotypic saltcedar and mixed native broadleaf/saltcedar habitats) and on limbs as far away from the trunk as 10.8 feet (Spencer *et al.* 1996). Typical nest placement is in the fork of small-diameter (e.g., 0.4 in), vertical or nearly vertical branches (FWS 2002). Occasionally, nests are placed in down-curving branches. Nest height varies considerably, from 1.6 to 60 feet, and may be related to height of the nest plant, overall canopy height, and/or the height of the vegetation strata that contain small twigs and live growth (FWS 2002). Most typically, nests are relatively low, 6.5 to 23 feet above ground (FWS 2002). Nests built in habitat dominated by box elders are placed highest in the tree (to almost 60 feet) (FWS 2002).

The southwestern willow flycatcher is an insectivore, foraging in dense shrub and tree vegetation along rivers, streams, and other wetlands. The bird typically perches on a branch and makes short direct flights, or sallies to capture flying insects. Drost *et al.* (1998) found that the major prey items of the southwestern willow flycatcher (in Arizona and Colorado), consisted of true flies (Diptera); ants, bees, and wasps (Hymenoptera); and true bugs (Hemiptera). Other insect prey taxa included leafhoppers (Homoptera: Cicadellidae); dragonflies and damselflies (Odonata); and caterpillars (Lepidoptera larvae). Non-insect prey included spiders (Araneae), sowbugs (Isopoda), and fragments of plant material.

Territory and home range size

Southwestern willow flycatcher territory size likely fluctuates with population density, habitat quality, and nesting stage. Estimated territory sizes are 0.59 to 3.21 acres for monogamous males and 2.72 to 5.68 acres for polygynous males at the Kern River (Whitfield and Enos 1996), 0.15 to 0.49 acres for birds in a 1.48 to 2.22 acre patch on the Colorado River (Sogge 1995c), and 0.49 to 1.24 acres in a 3.71 acre patch on the Verde River (Sogge 1995a). Territories are established within a larger patch of appropriate habitat sufficient to contain several nesting pairs of flycatchers.

Movements

The site and patch fidelity, dispersal, and movement behavior of adult, nestling, breeding, non-breeding, and migratory southwestern willow flycatchers are just beginning to be understood (Kenwood and Paxton 2001, Koronkiewicz and Sogge 2001). From 1997 through 2000, 66 to 78 percent of flycatchers known to have survived from one breeding season to the next returned to the same breeding site; conversely, 22 to 34 percent of returning birds moved to different sites (Luff *et al.* 2000). A large percentage (75%) of known surviving 2000 adults returned in 2001 to

their same breeding site (Kenwood and Paxton 2001). Just considering Roosevelt Lake in its entirety, all but three surviving birds (n=28) banded at Roosevelt Lake returned to Roosevelt Lake (Kenwood and Paxton 2001). Although most southwestern willow flycatchers return to former breeding sites, flycatchers can regularly move among sites within and between years (Kenwood and Paxton 2001). Within-drainage movements are more common than between-drainage movements (Kenwood and Paxton 2001). Year-to-year movements of birds have been detected between the San Pedro/Gila river confluence and Roosevelt Lake, the Verde River near Camp Verde and Roosevelt Lake, and the Little Colorado River near Greer and Roosevelt Lake (Kenwood and Paxton 2001). Typical distances moved range from 1.2 to 18 miles. However, long-distance movements of up to 137 miles have been observed on the lower Colorado River and Virgin River (McKernan and Braden 2001). Breeding groups of southwestern willow flycatchers act as a meta-population (Busch *et al.* 2000).

Rangewide distribution and abundance

Unitt (1987) documented the loss of more than 70 southwestern willow flycatcher breeding locations rangewide (peripheral and core drainages within its range) estimating the rangewide population at 500 to 1000 pairs. Since 1993, a total of 122 sites once known to have breeding flycatchers, are no longer occupied by nesting birds. There are currently 265 known southwestern willow flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado (all sites from 1993 to 2004 where a resident flycatcher has been detected) holding an estimated 1256 territories (Durst *et al.* 2005). It is difficult to arrive at a grand total of flycatcher territories since not all sites are surveyed annually to determine the actual abundance of birds. Also, sampling errors may bias population estimates positively or negatively (e.g., incomplete survey effort, double-counting males/females, composite tabulation methodology, natural population fluctuation, and random events) and it is likely that the total breeding population of southwestern willow flycatchers fluctuates. Numbers have increased since the bird was listed, and some habitat remains unsurveyed; however, after nearly a decade of intense surveys, the existing numbers are just past the upper end of Unitt's 1987 estimate. About 40 percent of the 1256 territories are currently estimated throughout the subspecies range are located at three locations (Cliff/Gila Valley - NM, Roosevelt Lake - AZ, San Pedro/Gila confluence - AZ). A table displaying the flycatcher's rangewide population status is included in this consultation's administrative record.

Arizona distribution and abundance

Unitt (1987) concluded that "...probably the steepest decline in the population level of *E.t. extimus* has occurred in Arizona..." Historical records for Arizona indicate the former range of the southwestern willow flycatcher included portions of all major river systems (Colorado, Salt, Verde, Gila, Santa Cruz, and San Pedro) and major tributaries, such as the Little Colorado River and headwaters, and White River.

In 2004, 522 territories were known from 40 sites along 12 drainages in Arizona (Munzer *et al.* 2005). The lowest elevation where territorial pairs were detected was 98 feet along the Lower Colorado River; the highest elevation was in eastern Arizona in the White Mountains (8329 feet).

As reported by Munzer *et al.* (2005), the largest concentrations of breeding willow flycatchers in Arizona in 2004 were at the Salt River and Tonto Creek inflows to Roosevelt Lake (374 flycatchers, 209 territories); near the San Pedro/Gila river confluence (352 flycatchers, 186 territories); Gila River, Safford area (6 flycatchers, 3 territories); Alamo Lake on the Bill Williams River (includes lower Santa Maria and Big Sandy river sites) (51 flycatchers, 31 territories); Topock Marsh on the Lower Colorado River (57 flycatchers, 34 territories); Big Sandy River, Wikieup (54 flycatchers, 28 territories); Horseshoe Lake, Verde River (28 flycatchers, 19 territories), and Alpine/Greer on the San Francisco River/Little Colorado River (7 flycatchers, 4 territories). Combined, Roosevelt Lake and the San Pedro/Gila confluence make up 395 (76%) of the 522 territories known in the state.

Fire

The evidence suggests that fire was not a primary disturbance factor in southwestern riparian areas near larger streams (FWS 2002). Yet, in recent time, fire size and frequency has increased on the lower Colorado, Gila, Bill Williams, and Rio Grande rivers. The increase has been attributed to increasing dry, fine fuels and ignition sources. The spread of the highly flammable plant, tamarisk, and drying of river areas due to river flow regulation, water diversion, lowering of groundwater tables, and other land practices is largely responsible for these fuels. A catastrophic fire in June of 1996, destroyed approximately a half mile of occupied tamarisk flycatcher habitat on the San Pedro River in Pinal County. That fire resulted in the forced dispersal or loss of up to eight pairs of flycatchers (Paxton *et al.* 1996). Smaller fires have occurred along the upper most portion of the San Pedro River closer to the Mexico Border and another large fire occurred on the lower San Pedro River at the Nature Conservancy's San Pedro Preserve between Winkelman and Dudleyville in 2004. Recreationists cause over 95 percent of the fires on the lower Colorado River (FWS 2002). In California, Brothers (1984) attributed increased fire along the Owens River to more use of the riparian zones by campers and fishermen in the past 30 years.

Mortality and Survivorship

There are no extensive records for the actual causes of adult southwestern willow flycatcher mortality. Incidents associated with nest failures, human disturbance, and nestlings are typically the most often recorded due to the static location of nestlings, eggs, and nests. As a result, nestling predation and brood parasitism are the most commonly recorded causes of southwestern willow flycatcher mortality. Also, human destruction of nesting habitat through bulldozing, groundwater pumping, and aerial defoliants has been recorded in Arizona (T. McCarthey, AGFD, pers. comm.). Human collision with nests and spilling the eggs or young onto the ground have been documented near high use recreational areas (FWS 2002). A southwestern willow flycatcher from the Greer Town site along the Little Colorado River in eastern Arizona, was found dead after being hit by a vehicle along SR 373. This route is adjacent to the breeding site (T. McCarthey, AGFD, pers. comm.).

Band returns associated with the long-term banding and re-sighting effort occurring in central Arizona at Roosevelt Lake, determined for this location, the average return rate and survivorship of adult and nestling flycatchers. The average adult return rate from 1998 to 2004 was 60 percent with survivorship estimated at 65 percent (Newell *et al.* 2005). From 1998 to 2004, the

average nestling return rate was 28 percent and survivorship estimated at 35 percent (Newell *et al.* 2005).

Past Consultations

Since listing in 1995 to 2005, at least 146 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the flycatcher's range. A complete list of these consultations in included in this biological opinion's administrative record. Since critical habitat was finalized in October 2005, one formal opinion has been issued for southwestern willow flycatcher critical habitat in Arizona. While many opinions were issued for the previous critical habitat designation, the stream reaches and constituent elements have changed. Many activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.). Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

Anticipated, actual, and/or temporary loss of flycatcher habitat due to Federal or federally permitted projects (i.e. modification of Roosevelt Dam, operation of Lower Colorado River dams, etc.) has resulted in biological opinions and Habitat Conservation Plans that led to acquisition, development, and protection of property specifically for the southwestern willow flycatcher to remove jeopardy, and mitigate, reduce and/or minimize take or adverse affects. A small portion of the lower San Pedro River was acquired by the Bureau of Reclamation as a result of raising Roosevelt Dam and is now currently under the management of The Nature Conservancy. Commitments to acquire and manage unprotected habitat specifically for breeding flycatchers have been made for loss of flycatcher habitat along the Lower Colorado River (Operations of Colorado River dams and 4.4 Plan/Change in Points of Diversion, Lower Colorado River MSCP), Tonto Creek and Salt River (raising of Roosevelt Dam, operation of Roosevelt Dam) in AZ, and Lake Isabella, CA (operation of dams). The Roosevelt Lake HCP completed by Salt River Project (SRP) has resulted in acquisition of over 1000 acres along the Verde River, San Pedro River, and Gila River. The Army Corps of Engineers has acquired approximately 1000 acres along the South Fork Kern River as a result of operations of Isabella Dam. Various Regional HCPs have been developed in southern California that have protected southwestern willow flycatcher habitat (San Diego MSCP, Western Riverside County HCP, Carlsbad HMP).

Summary

Historically, the southwestern willow flycatcher declined in extent of range occupied and population size as a result of habitat loss, modification, and fragmentation. Known numbers of flycatcher territories have increased to over 1200 pairs throughout its range since the bird was listed in 1995, surpassing the high end of the 1000 pairs estimated by Unitt (1987). About 40 percent of all the known breeding pairs are found at three locations throughout the subspecies range (Cliff/Gila Valley - New Mexico, Roosevelt Lake and Gila/San Pedro river confluence, Arizona). Water diversions, agriculture return flows, groundwater pumping, habitat clearing, flood control projects, development, livestock grazing, dam operations, and changes in annual flows due to off stream uses of water have affected the ability of the riverine communities to

support native fish, plants, and wildlife. Riparian communities within fluvial systems are dynamic, with their distribution in time and space governed mostly by flood events and flow patterns. Current conditions along southwestern rivers and streams are such that normal flow patterns have been greatly modified, flood events are more catastrophic as a result of degraded watershed conditions, stream channels are highly degraded, floodplains and riparian communities are reduced in extent, wildfires in riparian habitats are increasing, and the species composition of riparian communities are modified with exotic plant species. Habitat loss and fragmentation can lead to increased brood parasitism and nest predation. These conditions have significantly diminished the potential for southwestern rivers and streams to develop suitable nesting habitat for the southwestern willow flycatcher and for those habitats to remain intact and productive for nesting flycatchers.

Environmental Baseline – Southwestern Willow Flycatcher

The action area is delineated in Appendix B of the BE and is described above in the razorback sucker's Environmental Baseline section.

The proposed project site is located along a reach of the Gila River dominated by extensive stands of tamarisk. Tamarisk occurs in a very dense stand bordering the edge of the Gila River on the east and west sides of the existing 8th Avenue bridge. Freemont cottonwood and Gooding willow occur in small numbers along the southern bank of the river adjacent to the east side of the bridge. Most cottonwood trees are large, mature trees of 60 to 80 feet in height with wide, flat-topped canopies and occur east of the bridge. The willows are generally young trees of 15 to 30 feet in height and smaller with arching branches and trailing foliage east of the bridge. Other common plant species include the seep willow (*Baccharis salicifolia*) occurring west of the bridge. Two mesquite trees (*Prosopis* spp.) also occur on the west side of the bridge. The majority of the vegetation occurs on a terrace approximately 10 feet above the stream bottom. Vegetation on this terrace is approximately 100 feet in width both east and west of the bridge.

The north bank of the Gila River is sparsely vegetated with young tamarisk, Fremont cottonwood, and seep willow. The cottonwood trees occurring along the north bank of the river are young and approximately 10 to 15 feet in height.

Suitable habitat as well as designated critical habitat for the southwestern willow flycatcher is found within the action area. Southwestern willow flycatchers use the Gila River in the project area as a movement/migration corridor into occupied suitable habitat along other portions of the Gila River. The stand of tamarisk within and immediately adjacent to the project area is approximately 100-150 feet in width with trees being approximately 20 feet in height. The tamarisk stand contains very little foliage and was very dense. There was no structural diversity to the stand, all trees were of the same height. The tamarisk stand ranged from just 5 feet from the river to more than 100 feet. The stand itself did not contain any water. Based on these conditions it was determined that the project area does not presently contain suitable nesting habitat because it generally lacks the density and structure of vegetation known to be used by nesting flycatchers. Moreover, the in-channel vegetation at the project site is young; a sustained flood event with a peak flow of 39,900 cubic-feet per second occurred on February 13, 2005 (U.S. Geological Survey 2006), and scoured much of the vegetation (primary author pers. obs.).

The 8th Avenue bridge site is situated within the flycatcher's Gila Recovery Unit, which includes the Gila River watershed, from its headwaters in southwestern New Mexico downstream to near the confluence with the Colorado River (FWS 2002: 65). More specifically, the project site is within the Upper Gila Management Unit of the flycatcher critical habitat. The Upper Gila Management Unit encompasses 6,897 hectares (17,043 acres) of land along 62 river kilometers (101 river miles) of rivers and streams within Graham, Greenlee, and Gila counties, Arizona. The downstream-most segment of the Upper Gila Management Unit encompasses the Safford Valley and extends for approximately 69 river kilometers (43 river miles) from the upper end of Earven Flat, above the City of Safford, through the Safford Valley to the San Carlos Apache Tribal Boundary. Southwestern willow flycatchers have been detected nesting along this and other stream segments in the Upper Gila Management Unit since 1993.

English *et al.* (2006) provide a summary of statewide flycatcher survey, nest monitoring, and banding data. In 2005, the Safford Valley area exhibited the greatest inter-annual increase in flycatcher abundance noted in Arizona. Fort Thomas-Geronimo, Porter Wash Ponds, and Watson Wash accounted for 6% of the flycatcher population in Arizona in 2005. An additional site, the Salt River Project's Gila River-Fort Thomas mitigation property, was surveyed for the first time in 2006. As of June 15, 2006, 116 individual flycatchers, 75 active territories, 51 mated pairs, and 24 active nests were detected. English *et al.* (2006) speculate that it is the lack of survey effort (Teague went unsurveyed since 1999, Porter Wash Ponds and Watson Wash since 1997). Earven Flat's negative survey history in 2005 was not noted by these authors but is included herein to illustrate the lower likelihood of flycatcher occupancy as one moves into the more-confined Gila Box. The most recent and comprehensive flycatcher survey data for the Safford Valley and surrounding areas are summarized in Table 2, below.

Each of the aforementioned sites is within the supposed 18-mile interannual flycatcher movement distance used to delineate critical habitat units. Given the dynamic nature of riparian vegetation in a dynamic fluvial system such as the Gila River, it is probable that the project site at one time, and will again, contain flycatcher breeding habitat. The site presently exhibits migration, stopover foraging, dispersal, and feeding habitat.

Table 1: Flycatcher 2005 survey results from Safford Valley portion of Upper Gila River Management Unit (English *et al.* 2006).

Site Name	**Resident adult flycatchers**	**Territories**	**Pairs**
Fort Thomas-Geronimo	8	5	3
Porter Wash Ponds	3	2	1
Teague	40	22	18
Watson Wash	3	2	1
Earven Flat	0	0	0

Since the listing of the flycatcher as an endangered species in 1995, we have completed approximately 15 formal consultations (including amendments made through reinitiation of consultation) within the Safford Valley portion of the Upper Gila River Management Unit. Of these, only the May 18, 1995, biological opinion for the Solomon Bridge (File number 02-21-94-F-0179) anticipated and authorized a specific level of incidental take of flycatchers (2 territories).

Our June 5, 2000, biological opinion for the Rural Utilities Service's Gila River powerline corridor project and its reinitiated consultation (file number 02-21-96-F-0197) anticipated, but did not quantify incidental take from harassment or harm due to habitat modification, reduced productivity, disturbance, and parasitism. Our December 4, 2001, biological opinion on the Bureau of Land Management's Safford and Tucson field office's district grazing program (file numbers 2-21-96-F-160 R1 through R5) anticipated that incidental take from parasitism, disturbance, modification of nesting habitat, and loss of nesting sites, but noted that it was unquantifiable. Our June 11, 2002, consultation with the Bureau of Land Management on the San Juan/Dos Pobres Mine (file number 02-21-99-F-007) anticipated no incidental take of flycatchers. Conservation measures to reduce the effects of this take have ranged from avoidance of construction during nesting season to the planting of riparian vegetation within the Gila River.

The project area was surveyed for flycatchers on May 24, June 14, June 30, July 7, and July 14, 2005, by Kimley-Horn and Associates, Inc. No flycatchers were detected within the project area during any of the surveys.

Effects of the Proposed Action – Southwestern Willow Flycatcher

You have proposed to limit the removal of riparian vegetation within the Gila River to between October 1 and April 30. The BE characterizes the acreage of this impact as between 0.010 and 0.040 acre of habitat within and adjacent to the Gila River. Your proposed confinement of the proposed action to the non-breeding season, combined with the baseline near-absence of breeding habitat within the project area, the small magnitude of the impacts, and the high likelihood vegetation will reestablish itself relatively rapidly, will avoid direct effects to the flycatcher. The temporary nature of the impact and again, its small magnitude, will also ensure that flycatcher critical habitat will not be adversely modified or destroyed. The proposed action's impact on flycatcher critical habitat is small, but measurable. Critical habitat will therefore be adversely affected, though we do not anticipate that individuals of the species will be harmed or harassed.

Moreover, a Mitigation and Monitoring Plan will be developed in order to comply with the Department of the Army Permit that will be sought from the Corps. Your BE stated that this Mitigation and Monitoring Plan will include pole planting of cottonwood trees and/or native riparian vegetation.

Cumulative Effects – Southwestern Willow Flycatcher

Further economic development of private lands near the Gila River will, in some cases, occur in the absence of discretionary actions on the part of the Federal government. This increased development would lead to more public use of the rivers and shoreline areas. Increases or changes in cowbird foraging areas (corrals, domestic stock, and bird feeders) and habitat fragmentation may increase the parasitism rate and decrease flycatcher productivity. Continued and future conversion of floodplains and near-shore lands would eliminate opportunities to restore floodplains for flycatcher habitats. Increased recreation, camping, off-road vehicle use, or river trips, may harass and disturb breeding birds or impact nesting habitats. This increased recreation also increases wildfire potential in these areas. As these areas develop, demands will

increase for groundwater pumping. The water budgets of the Safford Valley may already be in deficit; increased pumping would accelerate loss of river flow and increase associated loss of riparian habitats along those rivers. Inadvertent wildfires in the Safford Valley, exacerbated by dense stands of tamarisk and their associated high fuel loads, continue to degrade flycatcher habitat there. Yearlong livestock grazing on private and State lands in these areas may be negatively affecting regeneration of native tree species used for nesting.

Proposals are being considered for phreatophyte control in the Safford area of the Gila River, and projects authorized in the 2004 Arizona Water Settlement Act will likely affect flows in the Gila River through the action area. Although the specifics are not yet known, these projects may affect flycatchers and their habitats. Proponents of these projects are also unknown, but we believe most will be Federal agencies or the projects will have a Federal nexus, resulting in section 7 consultations. Some projects may not have a Federal nexus; the effects of those projects would be cumulative effects.

Conclusion – Southwestern Willow Flycatcher

After reviewing the current status of the flycatcher, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the species. Critical habitat for the flycatcher exists in the project area, but it is not likely to be adversely modified or destroyed. The rationale for our conclusion is as follows:

- Flycatcher surveys conducted during 2005 did not detect the species. Breeding habitat is presently absent from the site. Confinement of construction activities to the non-breeding season will further minimize the potential for harm or harassment of flycatchers.

- Construction will temporarily affect critical habitat used by flycatchers for migration, stopover foraging, dispersal, and feeding. The magnitude will be small (0.10 to 0.40 acre).

- The effect of the clearing of riparian vegetation will be of short duration (1 to 3 years, based on observed natural recruitment subsequent to the spring 2005 flood).

- The diversion of the Gila River is anticipated to be a temporary adverse effect, as the project site is within an actively meandering reach of river. The next channel-forming flood event (presumed to be at the 1.5 to 2-year return interval) is anticipated to either occupy the new channel or return it to its prior lateral location

Incidental Take Statement – Southwestern Willow Flycatcher

We do not anticipate that implementation of the proposed action will result in the incidental take of any flycatchers.

Disposition of Dead or Injured Listed Species - Razorback Sucker and Southwestern Willow Flycatcher

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202 (480-967-7900) 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 - RAZORBACK SUCKER AND SOUTHWESTERN WILLOW FLYCATCHER

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. We hereby recommend that the Administration carry out, and report to us on the progress of, the following Conservation Measures (applicable to both razorback sucker and southwestern willow flycatcher).

- Monitor the reestablishment of tamarisk and native riparian vegetation in all disturbed areas to determine the rate of recolonization and recruitment.

- Research, develop, and construct bridge designs that permit the passage of overbank discharge events through culverts situated on floodplain terraces.

- Coordinate with the Arizona Game and Fish Department and us to reestablish razorback sucker into suitable habitat within streams tributary to the Gila River and to control nonnative aquatic species in those habitats.

- Assist Graham County in developing cooperative ecosystem restoration projects for the Gila River and surrounding areas.

REINITIATION NOTICE- CLOSING STATEMENT - RAZORBACK SUCKER AND SOUTHWESTERN WILLOW FLYCATCHER

This concludes formal consultation on the proposed replacement of the 8th Avenue Bridge over the Gila River in the City of Safford, Graham County, Arizona. 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.

Any questions or comments concerning this biological opinion should be directed to Jason Douglas (520) 670-6150 (x226) or to Sherry Barrett (x223) of my Tucson staff.

/s/ Steven L. Spangle

cc: Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Manager, Arizona Game and Fish Department, Tucson, AZ

Arizona Department of Transportation, Tucson, AZ (Attn: Melissa Maiefski)
Michael Bryce P.E., R.L.S., County Engineer, Graham County, Safford, AZ
Kimley-Horn and Associates, Phoenix, AZ (Attn: Robert Forrest)

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