



# United States Department of the Interior

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DEC 09 2011

Mr. Michael Leary  
Director  
Planning and Program Development  
Federal Highway Administration  
300 E. 8th Street, Room 826  
Austin, Texas 78701

Consultation #: 21450-2006-F-0132

Dear Mr. Leary,

This transmits our biological opinion for the Federal Highway Administration (FHWA) funding of proposed improvements by the Texas Department of Transportation (TxDOT) to State Highway 195 (SH 195) in Williamson County, Texas (proposed project). The geographic scope of the proposed project is segment 3 of the SH 195 project, 5.2 miles south of SH 138 to 8.1 miles south of SH 138. The total length of the proposed project is approximately 2.9 miles, entirely in Williamson County. The FHWA requested formal consultation from the U. S. Fish and Wildlife Service's Austin Ecological Services Field Office (Service) for the proposed improvements in a letter dated March 24, 2011, with an attached Biological Assessment, Biological Assessment of Effects on Threatened and Endangered Species from Proposed Improvements to State Highway 195: Williamson County, Texas CSJs: 0836-01-009, 0440-01-033, 0440-02-010 (BA), dated March 2011. The FHWA further defined the limits of the requested consultation and the proposed action in two letters to the Service dated November 1 and 18, 2011. The purpose of the proposed project is to improve traffic flow and improve safety on SH 195. It is anticipated that the proposed SH 195 construction and roadway improvements may adversely affect the Coffin Cave mold beetle (*Batrisodes texanus*) and the Bone Cave harvestman (*Texella reyesi*), listed as endangered pursuant to the Endangered Species Act of 1973, as amended (Act)(16 U.S.C. 1531 et seq.). Critical habitat has not been designated for either species, so no designated critical habitat will be destroyed or adversely modified by the proposed project. This consultation is pursuant to section 7 of the Act.

Habitat for other species listed as threatened or endangered pursuant to the Act, specifically Tooth Cave ground beetle (*Rhadine persephone*), golden-cheeked warbler (*Dendroica chrysoparia*), black-capped vireo (*Vireo atricapillus*), and whooping crane (*Grus americana*) does not occur within the action area. We do not anticipate adverse effects from the proposed project on Georgetown salamander (*Eurycea naufragia*), Jollyville Plateau salamander (*Eurycea tonkawae*), and Salado Springs salamander (*Eurycea chisholmensis*), candidate species under the Act. Therefore, these species will not be discussed further in this biological opinion.

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The findings and recommendations in this consultation are based on: (1) the Biological Assessment of Effects on Threatened and Endangered Species from Proposed Improvements to State Highway 195: Williamson County, Texas, (2) letters from FHWA dated June 20, 2011, August 30, 2011, November 1, 2011, and November 18, 2011 (3) discussions with FHWA and TxDOT staff; and, (4) other sources of information available to the Service.

### **Consultation History**

- 1997* Informal discussions between the Service and TxDOT to discuss the SH 195 project.
- December 13, 2001* A meeting was held between the Service, FHWA, TxDOT, and several consultants to discuss the proposed SH 195 project.
- December 7, 2001* The Service received a letter with two attached documents (Hydrogeologic and Biological Evaluation for caves and karst features along SH 195 and the draft SH 195 Environmental Assessment) from TxDOT requesting concurrence that the project was not likely to adversely affect any listed species.
- December 20, 2001* The Service issued a letter to TxDOT concurring that the project as proposed would not adversely affect listed species (2002-I-0144). The Service noted in the letter that several caves had not been surveyed due to lack of access and recommended that new information be coordinated with the Service.
- June 27, 2002* The Service received a letter from TxDOT requesting review and comment on the attached Environmental Assessment for SH 195 between CR 227 and IH 35. No additional comments were provided.
- February 8, 2005* The Service received a letter from the Lyda Family Trust indicating a change in the proposed SH 195 alignment to include a re-alignment on Cobb Ranch and indicating the existence of multiple karst features in and near the proposed re-alignment.
- January 11, 2006* A meeting was held between the Service, TxDOT, and several consultants to discuss the proposed SH 195 project.
- February 1, 2006* A meeting was held between the Service, TxDOT, and several consultants to continue discussions regarding the proposed SH 195 project. The Service indicated that adverse effects to listed species were likely to occur and recommended formal consultation through FHWA.
- March 28, 2011* The Service received a letter from FHWA transmitting the BA and requesting initiation of formal consultation on the SH 195 project.
- May 18, 2011* The Service issued a letter to FHWA requesting additional information regarding avoidance, minimization, and conservation measures.
- May 24, 2011* A meeting was held between the Service, FHWA, TxDOT, Williamson County, and several consultants to discuss the proposed SH 195 project and the Service's additional information request.
- June 3, 2011* A meeting was held between the Service, FHWA, TxDOT, Williamson County, and several consultants to discuss the proposed SH 195 project and discuss a TxDOT engineering option for drainage around Corn Cobb Cave.

- June 9, 2011* The Service responded by e-mail to FHWA that the engineering option presented would not effectively minimize incidental take at Corn Cobb Cave.
- June 20, 2011* The Service received a letter from FHWA (and attached June 17, 2011 letter from TxDOT) proposing to contribute over one million dollars to the Williamson County Conservation Fund.
- June 21, 2011* A meeting was held between the Service, FHWA, TxDOT, Williamson County, and a representative from Congressman Carter's office to discuss the proposed SH 195 project and the June 20, 2011 FHWA letter.
- June 30, 2011* The Service issued a letter to FHWA requesting specific information about how and when the proposed contribution to the Williamson County Conservation Fund would be spent to preserve areas for the species being adversely affected by the proposed project.
- August 30, 2011* The Service received a letter from FHWA (and attached August 5, 2011 letter from TxDOT) listing four potential areas (Twin Springs Preserve, Cobbs Cavern, and two areas described as Sun City cave preserves) where the contribution to the Williamson County Conservation Fund might be spent to benefit karst species. The letter also stated that any of the areas could be acquired prior to the beginning of construction on SH 195.
- September 23, 2011* The Service issued a letter to FHWA stating that a proposed taxonomic revision to split *B. texanus* into both *B. texanus* and *B. cryptotexanus* was under review by the Service. Additionally, the Service noted that both Twin Springs Preserve and Cobbs Cavern contained *B. texanus* and recommended that any contribution be applied toward *B. cryptotexanus* which is found in the caves being affected by the SH 195 project. The Service requested a revised project description with specific information about areas to be preserved.
- October 20, 2011* A meeting was held between the Service, FHWA, TxDOT, and Williamson County to discuss a revised proposed action for the SH 195 project.
- November 1, 2011* The Service received a letter from FHWA revising the proposed action for the SH 195 project and providing additional information regarding proposed conservation measures.
- November 2, 2011* The Service received a letter from Williamson County questioning portions of the November 1, 2011 letter from FHWA.
- November 2, 2011* The Service held a conference call with FHWA during which FHWA confirmed that the Service should proceed with completing formal consultation for the SH 195 project using the information transmitted by FHWA in their November 1, 2011 letter.
- November 4, 2011* A meeting was held between the Service, FHWA, TxDOT, and Williamson County to discuss proposed conservation measures for the SH 195 project.
- November 10, 2011* A meeting was held between the Service, FHWA, TxDOT, Congressman Carter, Senator Cornyn's staff member Elizabeth Cox, and Williamson County to discuss proposed conservation measures for the SH 195 project.
- November 18, 2011* The Service received a letter from FHWA revising the proposed action for the SH 195 project and providing additional information regarding proposed conservation measures.

## BIOLOGICAL OPINION

### Proposed Project

For more specific information regarding the proposed project, please refer to the BA.

#### *Existing Facility*

The proposed project, segment 3 of SH 195, is a paved two lane state highway (Please see Figures 1 and 2 in the BA). The existing condition includes a two-lane, undivided highway with 12 foot travel lanes and 10 foot shoulders in each direction. The existing right-of-way (ROW) ranges from 80 to 100 feet in width. Three other segments of SH 195 within Williamson County are currently under construction (segment 1), or are scheduled for construction concurrent with the proposed project (segments 2 and 4). Typical sections, plans, maps, and photographs of the proposed project can be found in the TxDOT *Environmental Assessment Re-evaluation, State Highway 195 from Interstate Highway 35 to Farm to Market 2670, Williamson and Bell Counties, Texas, CSJs: 0836-01-009, 0440-01-033, 0440-01-035, 0440-01-039, 0440-02-010, 0440-02-014, dated November 2009 (Revised March 2011).*

#### *Proposed Facility*

The proposed project would consist of realigning and upgrading 2.9 miles of the SH 195 roadway, from 5.2 miles south of SH 138 to 8.1 miles south of SH 138, to a four-lane divided roadway with a grassy median separating the travel lanes. The proposed project would move approximately 1.5 miles of the travel lanes for SH 195, that begin approximately 5.5 miles west of the intersection of SH 195 and IH 35, onto a new alignment. The proposed project would construct a new section of SH 195 including grading of the new ROW, preparation of base, and surfacing of new pavement and shoulders. The final design would include; two 12-foot travel lanes, a 4-foot inside shoulder, and a 10-foot outside shoulder for each travel direction, separated by a grassy median. The ROW width within the proposed new alignment would be 250 feet (Please see Figure 3 in the BA). The existing SH 195 roadway will remain in place adjacent to the new location alignment to maintain access to existing businesses and properties. It will also continue to carry traffic during construction so that a traffic diversion would not be needed.

#### *Proposed Conservation Measures*

FHWA and TxDOT have proposed the following conservation measures to avoid and minimize take of Coffin Cave mold beetle and Bone Cave harvestman:

#### *Avoidance and Minimization*

The proposed project will convert 33.8 acres of native vegetation found within karst zones 1 and 2 to pavement and mowed and maintained transportation ROW. The preferred alignment (A-5 modified) for the proposed project was chosen after multiple karst surveys and evaluation of avoidance and minimization alternatives by the FHWA and TxDOT (please see Table 2 in the BA). Realignment of the SH 195 travel lanes north of the existing SH 195 roadway during the planning process resulted in minimization of impacts to five known occupied karst features

adjacent to the existing SH 195 travel lanes (please see Figure 3 in the BA). Additional karst surveys within the new alignment revealed the presence of one occupied karst feature (Corn Cobb Cave) that will be directly impacted as a result of the proposed project. To minimize the impact on the opening of Corn Cobb Cave the footprint of the new alignment was shifted and narrowed adjacent to this feature. In the resulting final alignment the opening of Corn Cobb Cave is seven feet from the proposed new ROW alignment of SH 195.

In addition to roadway re-alignment the following measures have been proposed on-site by FHWA and TxDOT:

- Clearing of vegetation within the proposed ROW would be limited to that necessary for constructing the proposed project.
- No project specific locations (staging or borrow areas) would be located within karst zones 1 and 2.
- Fencing would be erected along the proposed facility to allow for continued livestock grazing and would likely reduce dumping and other human disturbances into adjacent habitats.
- TxDOT would designate a height restricted mow zone within the ROW near features with known or potential karst habitat to maintain vegetation in the potential troglodyte (a species of animal that inhabits caves but which must return to the surface for food or other necessities, e.g. cave crickets) foraging area of the cave. Impacts to existing woody vegetation in this area will be avoided to the extent practicable.
- After construction, disturbed areas would be seeded with native and adapted grasses.
- TxDOT would contact the landowner and request permission to install a cave gate on Corn Cobb Cave to reduce the chances of unauthorized entry and trash dumping.
- Stormwater drainage design will direct surface runoff water from the re-aligned portion of segment 3 of SH 195 away from the surface openings of sensitive karst features.
- A water pollution abatement plan and storm water pollution prevention plan would be prepared, approved, and implemented in accordance with the Texas Commission on Environmental Quality's Edwards Rules and the Texas Pollutant Discharge Elimination System Construction General Permit. Through these plans TxDOT would minimize any potentially contaminated stormwater runoff by including best management practices to reduce the levels of Total Suspended Solids in stormwater runoff leaving the roadway.

#### *Off-site Conservation (Karst Fauna Area)*

Surveys of karst features within and adjacent to the proposed project area have confirmed that six features are occupied by Bone Cave harvestman (Corn Cobb Cave, Buzzard Feather Cave, Cobb Drain Cave, Coke Box Cave, Hourglass Cave, and Rattlesnake Inn Cave). Three of the six features (Corn Cobb Cave, Hourglass Cave, and Rattlesnake Inn Cave) are also occupied by the Coffin Cave mold beetle, *B. texanus* (*B. cryptotexanus* per Chandler and Reddell (2001), Chandler et. al (2009)) (please see Figure 3 in the BA).

Construction of the proposed project would adversely affect the Bone Cave harvestman and Coffin Cave mold beetle through the destruction of 0.12 acres of surface drainage area, 1.57 acres of subsurface drainage area, and 3.98 acres of cave cricket foraging habitat for Corn Cobb Cave. FHWA and TxDOT have proposed the following measures to support the preservation of

karst fauna areas (KFAs) that harbor Bone Cave harvestman and Coffin Cave mold beetle, and to benefit future species conservation and recovery efforts:

- FHWA would not approve construction to begin on the proposed project prior to Service review and approval of a proposed KFA that would be preserved within the North Williamson County Karst Fauna Region (KFR) for each species (*T. reyesi* and *B. texanus*) being adversely affected. Based on the best available science for the Coffin Cave mold beetle (*B. texanus*) (Chandler and Reddell, 2001), the Service is in the process of evaluating the split of this species into two separate species, the Coffin Cave mold beetle (*B. texanus*) and the Dragonfly Cave mold beetle (*B. cryptotexanus*). *B. cryptotexanus* would be impacted by the proposed SH 195 project, therefore, FHWA is proposing to preserve a KFA containing *B. cryptotexanus*, rather than *B. texanus*.
- Monitoring for the presence of unanticipated karst voids would occur onsite during construction. In the event that an additional cave is encountered during construction, project construction would stop in the immediate vicinity of the feature, the feature would be surveyed using current Service protocols to verify whether endangered karst species are present. If endangered karst species are present, construction would not continue until results have been reported to the Service and, if re-initiation is required, consultation is concluded. Additional conservation measures may be recommended during the re-initiated consultation, if warranted.

## **Description of the Action Area**

### Area Affected

The Service considers the action area to be the area potentially directly and indirectly affected by the proposed project activities, including but not limited to, the proposed project site. This is a highway expansion project that would increase the capacity of the roadway and move the roadway onto a new location in one area. Therefore, the action area for purposes of assessing effects of the proposed project on Bone Cave harvestman and Coffin Cave mold beetle is the existing and proposed ROW and the properties adjacent to it.

### **Status of the species**

#### Bone Cave harvestman

For more detailed information please see the Service's 1994 Recovery Plan for Endangered Karst Invertebrates in Travis and Williamson Counties, Texas and the 5-year Review for the Bone Cave harvestman.

In an August 18, 1993, Federal Register notice (56 FR 43818), the Service gave *T. reyesi* protection under the Act as a separate species. It had previously been listed as endangered on September 16, 1988 (53 FR 36029) as a part of the Bee Creek Cave harvestman (*Texella reddelli*), which was subsequently re-classified into two species, and this notice was made to ensure that it continued to receive protection under the Act.

### *Species Description and Life History*

The Bone Cave harvestman, *Texella reyesi*, is a long-legged pale orange harvestman that is less than three millimeters (mm) in length restricted to Travis and Williamson counties, Texas (Ubick and Briggs 1992, 2004). It is a troglobite, which is a species restricted to the subterranean environment. This small species exhibits morphological adaptations to the cave environment, such as elongated appendages and loss or reduction of eyes and pigment. Troglotic habitat includes caves and mesocavernous voids in karst limestone (a terrain characterized by landforms and subsurface features, such as sinkholes and caves, which are produced by solution of bedrock) in Travis and Williamson Counties. Within this habitat this species depends on high humidity, stable temperatures, and nutrients derived from the surface. Examples of nutrient sources include leaf litter fallen or washed in, animal droppings (for example, cave crickets), and animal carcasses. It is imperative to consider that while these species spend their entire lives underground; their ecosystem is very dependent on the overlying surface habitat.

### *Historic and Current Distribution*

Distribution of karst invertebrates is typically described by both number of caves and KFRs. KFRs are regions delineated based on geologic continuity, hydrology and the distribution of rare obligate cave-dwelling species. Four KFRs are located in Williamson County: North Williamson County, Georgetown, McNeil/Round Rock, and Cedar Park.

The Service's 1994 recovery plan listed 62 caves confirmed and 8 caves tentatively identified to contain this species within 6 KFRs in Travis and Williamson counties, Texas. These caves were within the North Williamson, Georgetown, McNeil/ Round Rock, Cedar Park, Jollyville Plateau, and the Central Austin KFRs with 13, 14, 31, 2, 8, and 2 caves respectively.

The Service's 2009 five year review lists 168 caves currently known to contain *T. reyesi* within seven KFRs in Travis and Williamson counties, Texas. These caves are within the North Williamson, Georgetown, McNeil/ Round Rock, Cedar Park, Jollyville Plateau, Central Austin, and the South Travis KFRs with 55, 35, 61, 2, 12, 2, and 1 cave, respectively.

### *Reasons for Decline and Threats to Survival*

*Texella reyesi* was listed as endangered in 1988, based on the threats of: 1) habitat loss to development; 2) cave collapse or filling; 3) alteration of drainage patterns; 4) alteration of surface plant and animal communities, including the invasion of exotic plants and predators (i.e. red-imported fire ants (RIFA), *Solenopsis invicta*), changes in competition for limited resources and resulting nutrient depletion, and the loss of native vegetative cover leading to changes in surface microclimates and erosion; 5) contamination of the habitat, including groundwater, from nearby agricultural disturbance, pesticides, and fertilizers; 6) leakages and spills of hazardous materials from vehicles, tanks, pipelines, and other urban or industrial runoff; and 7) human visitation, vandalism, and dumping; mining, quarrying (limestone), or blasting above or in caves. Currently, *T. reyesi* faces the same threats that it did at the time it was listed.

### *Range-wide Survival and Recovery Needs*

According to recovery criterion 1 in the Travis and Williamson Recovery Plan, three KFAs within each KFR should be protected for downlisting. Protection (or protected) is defined as sufficiently large to maintain the integrity of the karst ecosystem on which the species depends. These areas must also provide protection from threats such as RIFA, habitat destruction, and contaminants. Recovery criterion 2 requires at least five consecutive years of criterion 1 being met and that perpetual protection of these areas be in place.

There are currently 168 caves known to contain *T. reyesi* in Travis and Williamson counties, Texas. These caves are within the North Williamson, Georgetown, McNeil/ Round Rock, Cedar Park, Jollyville Plateau, Central Austin, and the South Travis KFRs with 55, 35, 61, 2, 12, 2, and 1 cave, respectively. In 2008 the Service approved the Williamson County Regional Habitat Conservation Plan (WilCo RHCP). Recovery criterion 1 for downlisting is close to being met for *T. reyesi* within the North Williamson County KFR with the permanent protection and management of the following areas as KFAs by the Williamson County Conservation Foundation (WCCF); Priscilla's Well, and Twin Springs Preserve. WCCF is pursuing the purchase of Cobb's Cavern as a third KFA. If purchased and approved, Cobb's Cavern would represent a third KFA in the North Williamson County KFR, meeting the recovery criterion 1 for that KFR.

Based on a review of available data there are 5, 3, 6, 4, and 1 tract in the North Williamson, Georgetown, McNeil/Round Rock, Jollyville Plateau, and South Travis KFRs respectively, that may meet the definition of a KFA for *T. reyesi*. However, more research is needed to delineate surface and/or subsurface drainage basins, confirm locations and tract acreage, and confirm management activities at all caves that have the potential to be a KFA. In the Central Austin KFR, there are currently no known caves or cave clusters that have potential for meeting the definition of a protected KFA.

### Coffin Cave mold beetle

For more detailed information please see the Service's 1994 Recovery Plan for Endangered Karst Invertebrates in Travis and Williamson Counties, Texas and the 5-year Review for the Coffin Cave mold beetle.

### *Species Description and Life History*

The Coffin Cave mold beetle, *Batrisodes texanus*, is 3 mm in length. It is eyeless, winged, and has long legs. It is a troglobite, which is a species restricted to the subterranean environment. This species exhibits morphological adaptations to the cave environment, such as elongated appendages and loss or reduction of eyes and pigment (Chandler, 1992). Troglobitic habitat includes caves and mesocavernous voids in karst limestone (a terrain characterized by landforms and subsurface features, such as sinkholes and caves, which are produced by solution of bedrock) in Travis and Williamson Counties. Within this habitat these species depend on high humidity, stable temperatures, and nutrients derived from the surface. Examples of nutrient sources include leaf litter fallen or washed in, animal droppings (for example, cave crickets), and animal carcasses. It is imperative to consider that while these species spend their entire lives underground; their ecosystem is very dependent on the overlying surface habitat.

This species was first listed as the Kretschmarr Cave mold beetle (*Texamaurops reddelli*) and later split into two species: the Kretschmarr Cave mold beetle and Coffin Cave mold beetle (*Batrisodes texanus*). The Service published a technical correction stating that both species were listed since they were included as part of the *T. reddelli* species at the time *T. reddelli* was listed. More recent taxonomic revisions have been published by Chandler and Reddell (2001) further splitting *B. texanus* into *B. texanus* and *B. cryptotexanus*. According to Chandler and Reddell (2001) *B. texanus* and *B. cryptotexanus* appear to be sister species. They can be distinguished morphologically by the projection of tergite V (the upper plate of an arthropod's abdominal segment) and the setate lateral ridges of sternite VI (the lower plate of an arthropod's abdominal segment). Another publication by Chandler *et. al* (2009) again stated that these are two distinct species. At this time, *B. texanus* and *B. cryptotexanus* have not been found to occur in the same cave. The Service is considering a technical correction to officially recognize this taxonomic revision as listed under the Act.

#### *Historic and Current Distribution*

The Service's 1994 recovery plan listed four caves confirmed and one cave tentatively identified to contain this species within 2 KFRs in Williamson County, Texas. These caves were within the North Williamson County KFR and Georgetown KFRs with 2 and 3 caves respectively.

The Service's 2009 five year review lists 23 caves currently known to contain *B. texanus* within two KFRs in Williamson County, Texas. These caves are in the North Williamson County KFR and Georgetown KFR with 19 and 4 caves respectively. Of these twenty three caves, sixteen were identified as containing *B. cryptotexanus* and seven caves were identified as containing *B. texanus* (Chandler and Reddell 200, Chandler *et. al* 2009). All 16 caves identified as containing *B. cryptotexanus* occur within the North Williamson County KFR. Of the seven caves identified as containing *B. texanus*, three occur within the North Williamson County KFR and four occur within the Georgetown KFR.

#### *Reasons for Decline and Threats to Survival*

*Batrisodes texanus* was listed as endangered in 1988, based on the threats of: 1) habitat loss to development; 2) cave collapse or filling; 3) alteration of drainage patterns; 4) alteration of surface plant and animal communities, including the invasion of exotic plants and predators (i.e. red-imported fire ants (RIFA), *Solenopsis invicta*), changes in competition for limited resources and resulting nutrient depletion, and the loss of native vegetative cover leading to changes in surface microclimates and erosion; 5) contamination of the habitat, including groundwater, from nearby agricultural disturbance, pesticides, and fertilizers; 6) leakages and spills of hazardous materials from vehicles, tanks, pipelines, and other urban or industrial runoff; and 7) human visitation, vandalism, and dumping; mining, quarrying (limestone), or blasting above or in caves. Currently, *B. texanus* faces the same threats that it did at the time it was listed.

#### *Range-wide Survival and Recovery Needs*

According to recovery criterion 1 in the Service's 1994 Recovery Plan for Endangered Karst Invertebrates in Travis and Williamson Counties, Texas, three KFAs within each KFR should be protected for downlisting. Protection (or protected) is defined as sufficiently large to maintain

the integrity of the karst ecosystem on which the species depends. These areas must also provide protection from threats such as RIFA, habitat destruction, and contaminants. Recovery criterion 2 requires at least five consecutive years of criterion 1 being met and that perpetual protection of these areas be in place.

Based on a review of available data, Priscilla's Well Cave in the North Williamson County KFR, has been preserved as KFA for the *B. texanus* by the WCCF. The purchase of Cobbs Cavern as a KFA for *B. texanus* is also being pursued by WCCF. Priscilla's Well Cave is identified by Chandler and Reddell (2001) as containing *B. cryptotexanus* and Cobbs Cavern is identified by Chandler et. al (2009) as containing *B. texanus*. In the Georgetown KFR, there are currently no known caves or cave clusters that have potential for meeting the definition of a protected KFA.

There are at least four other caves (Shaman Cave, Red Crevice Cave, Karankawa Cave, and Blowhole Cave) in the North Williamson County KFR that have the potential for meeting the definition of a protected KFA. In total, there could be enough caves to meet recovery criterion 1 for *B. texanus* in the North Williamson County KFR, if additional areas were protected. However, if we considered the taxonomic split of *B. texanus* into *B. texanus* and *B. cryptotexanus*, there would be one potential KFA (Red Crevice Cave) in the Northern Williamson County KFR for *B. texanus* (as Shaman Cave, Karankawa Cave, and Blowhole Cave are identified as containing *B. cryptotexanus*) and none in the Georgetown KFR for *B. texanus*. Also, without including caves containing *B. cryptotexanus*, there would only be three total *B. texanus* caves in the North Williamson County KFR and four in the Georgetown KFR, a much smaller distribution. As noted above, of the two currently protected KFAs within the North Williamson County KFR one contains *B. texanus* and one contains *B. cryptotexanus*.

## **Environmental Baseline**

### Status of listed karst species within the Action Area

Within the action area surveys of karst features have confirmed that six features are occupied by Bone Cave harvestman (Corn Cobb Cave, Buzzard Feather Cave, Cobb Drain Cave, Coke Box Cave, Hourglass Cave, and Rattlesnake Inn Cave). Three of the six features are also occupied by Coffin Cave mold beetle (*B. cryptotexanus* per Chandler and Reddell (2001) and Chandler et. al (2009)) (Corn Cobb cave, Hourglass Cave, and Rattlesnake Inn Cave). Five of these features are within 345 feet of the existing SH 195 roadway (please see Figure 4 in the BA) and construction of the existing SH 195 resulted in alteration of natural drainage patterns and removal of surface vegetation within the cave cricket foraging area for these features. Corn Cobb Cave (located within a proposed re-alignment) is within 345 feet of existing County Road 239 and located adjacent to a cleared 80-foot wide Lower Colorado River Authority transmission line ROW.

According to the BA RIFA were observed in close proximity to all of the caves within the study area, and quarrying operations immediately adjacent to the SH 195 ROW have resulted in altered subsurface drainage within Rattlesnake Inn Cave. The proximity of the existing features to roadways also makes them particularly vulnerable to leakages and spills of hazardous materials from vehicles, vandalism, and dumping. Cobb Drain Cave, Hourglass Cave, and Coke Box Cave receive stormwater runoff from the existing SH 195 roadway. Additionally, two features have been used as trash dumps (Coke Box Cave and Rattlesnake Inn Cave) with potentially hazardous

materials found within the cave entrance including used oil filters, antifreeze containers, and insecticide containers.

#### Factors affecting listed karst species within the Action Area

Land use surrounding the proposed project area is mostly rural with scattered commercial and residential properties along SH 195. Multiple quarries are located adjacent to the proposed project area and within karst zones 1 and 2. Surrounding pressures include earth moving activities such as quarrying operations and construction of residential developments. These actions may result in destruction of habitat or permanent alteration of available habitat in the vicinity of SH 195 through collapse or filling of caves, alteration of drainage patterns and surface plant and animal communities, and invasion of RIFA.

A two-phased extension of Ronald Reagan Boulevard on new location has also been proposed under the WilCo RHCP and associated USFWS 10(a)(1)(B) permit within the action area and is scheduled to begin construction in 2012:

1. Ronald Reagan Boulevard Phase III roadway construction between RM 2338 and SH 195; and
2. Ronald Reagan Boulevard Phase IV roadway construction between SH 195 and CR 237.

SH 195 intersects with the proposed extension to Ronald Reagan Boulevard within the proposed project area and the design of SH 195 includes a proposed overpass at Ronald Reagan Boulevard. The proposed extension to Ronald Reagan Boulevard will adversely affect Bone Cave harvestman and Coffin Cave mold beetle (see below).

#### **Effects of the Proposed Action**

Survey efforts within the area of the proposed project have provided valuable information in determining the extent of karst species occupation within and adjacent to the project site. However, a precise mechanism for predicting the number of individuals that may actually be adversely affected by the proposed project over time due to habitat loss can be somewhat limited. It is more accurate and appropriate to state that, over time an area that has been observed to support these species may or may not be rendered unsuitable. Therefore, in this document adverse effects are characterized by the loss or potential loss of areas known or likely to be occupied (including habitat that these species depend upon e.g. cave cricket foraging area (Taylor et al. 2005)), the relative quality of which is in part determined by the levels of prior observed utilization, as well as the assessment of habitat quality.

Because of the reasons described above, it is not possible to estimate the number of individuals of Coffin Cave mold beetle and Bone Cave harvestman that would be taken by the proposed project. To the best of our ability, and with the limitations described above, we have attempted to estimate the potential for adverse effects to karst features known to be occupied by either the Coffin Cave mold beetle and/or the Bone Cave harvestman.

The proposed project is expected to result in both direct and indirect effects to Coffin Cave mold beetle and Bone Cave harvestman. Direct effects would likely occur in areas where surface and subsurface drainage basins and cave cricket foraging areas of occupied karst features are located within the proposed ROW, and indirect effects (those project-related effects that are reasonably

certain to occur but are later in time) would likely occur in areas where surface and subsurface drainage basins and cave cricket foraging areas of occupied karst features are located outside of the proposed ROW, but within karst zones 1 and 2 adjacent to the proposed project site. Indirect effects would primarily be due to fragmentation and isolation of the area post-construction.

It is expected that direct effects to the Bone Cave harvestman and the Coffin Cave mold beetle would occur through direct impacts to the cave cricket foraging area and the surface and subsurface drainage area for Corn Cobb Cave (see Figure 4 in the BA) an occupied karst feature. Approximately 3.98 acres of the cave cricket foraging area, 0.012 acres of the surface drainage area, and 1.57 acres of the subsurface drainage area of Corn Cobb Cave would be directly impacted by removal of vegetation and the placement of impervious surface for new lanes of SH 195.

Although the area within the ROW and proposed ROW has been surveyed for karst features (see Appendix C in the BA), additional direct impacts to federally-listed karst invertebrates may occur if an unknown void is encountered during construction and that void is occupied by listed species and/or is connected to a known feature with listed species. As the project is located within or adjacent to Karst Zones 1 and 2, where caves containing listed karst invertebrates are likely to occur it is possible, if not probable, that additional voids indicating subsurface karst habitat suitable for listed karst invertebrates could be revealed during construction. The probability of this occurring and any resulting effects will be minimized by the proposed conservation measures and the terms and conditions in this biological opinion. Any additional direct impacts would therefore be unknown, and unquantifiable, and would be subject to the terms and conditions in this biological opinion.

Indirect and cumulative impacts to karst features such as the alteration of natural drainage patterns, isolation of cave cricket populations, and increased threats from red-imported fire ants (*Solenopsis invicta*) due to disturbance within the project area are reasonably certain to occur. The proposed project will result in the isolation of six karst features (Corn Cobb Cave, Buzzard Feather Cave, Cobb Drain Cave, Coke Box Cave, Hourglass Cave, and Rattlesnake Inn Cave) that contain listed species and their associated surface communities between SH 195, Ronald Reagan Boulevard (a non-federal project approved under the WilCo RHCP), and a quarry located immediately south of the existing SH 195. The surface community supporting these features is critical for long term suitability for occupation by listed species (Howarth 1983, 1988, Jackson et al. 1999). Natural vegetation protects against edge effects, microclimate changes (drying of the cave environment), and invasion by exotic plant or animal species (e.g., red-imported fire ants) (Service 1994).

Some karst features that are not known to contain federally-listed species may be destroyed or heavily impacted as a result of the proposed project. One of these features (CC-65) may be directly related to Corn Cobb Cave which is occupied by both the Bone Cave harvestman and the Coffin Cave mold beetle. Other features found adjacent to SH 195 are not believed to be directly related to any cave with federally-listed species, but may still be important to the overall karst ecosystem because they may provide habitat for essential species such as cave crickets. Any direct impacts and the indirect impacts from loss of cave cricket foraging areas would result in take of an unknown and unquantifiable number of individual listed endangered karst invertebrates, but would be covered by this biological opinion.

The Service's five year review for each species identifies four additional areas as potential KFAs for Coffin Cave mold beetle (three are identified as containing *B. cryptotexanus*) and ten additional areas as potential KFAs for Bone Cave harvestman within the North Williamson County KFR. All of the potential KFAs for Coffin Cave mold beetle and seven of the potential KFAs for Bone Cave harvestman within the North Williamson County KFR are privately owned and there are no assurances that these areas will be protected in the future.

### **Cumulative Effects**

Cumulative effects include the effects of future State, 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 project are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

#### *Ronald Reagan Boulevard*

Phase III of the Ronald Reagan Boulevard extension will have adverse effects on the Bone Cave harvestman through take of one unnamed cave occupied by this species. Phase IV effects include an approximately 0.3 acre impact to the cave cricket foraging area of Rattlesnake Inn Cave (Bone Cave harvestman and *B. cryptotexanus* per Chandler and Reddell (2001) and Chandler et. al (2009)) which is also being indirectly affected by the SH 195 project, and 2.4 acres of impact to Coffin Cave (occupied by *B. cryptotexanus* per Chandler and Reddell (2001) and Chandler et. al (2009)). The WCCF acquired an easement to preserve the Priscilla's Well KFA as mitigation associated with Phase III of the Ronald Reagan Boulevard extension.

An undetermined number of future land use conversions and habitat conversions are not subject to Federal authorization or funding and may alter the habitat or increase incidental take of species covered by this opinion and are, therefore, cumulative to the proposed project. These additional cumulative effects include: (1) increased quarrying activity in karst zones 1 and 2; (2) increased impervious cover due to urbanization, (e.g., roads, development); (3) recreational activities; (4) contaminated runoff from agriculture and urbanization; and, (5) habitat alteration by invasive exotic / non-native species.

### **Conclusion**

After reviewing the current status of the Coffin Cave mold beetle and the Bone Cave harvestman, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the proposed project is not likely to jeopardize the continued existence of the Bone Cave harvestman and the Coffin Cave mold beetle. Two KFAs have been preserved within the North Williamson County KFR for Bone Cave harvestman and a third is currently being pursued. If Cobbs Cavern is purchased and preserved, there will be three KFAs within this KFR, meeting recovery criterion 1 for this species. One KFA (Priscilla's Well) has been preserved within the North Williamson County KFR for the Coffin Cave mold beetle. The scientific literature identifies Priscilla's Well as containing *B. cryptotexanus*. The purchase of Cobbs Cavern would add an additional KFA for the Coffin Cave mold beetle (*B. texanus*). FHWA has committed to purchasing an additional KFA containing *B. texanus* (or *B. cryptotexanus*) in the North Williamson County KFR prior to the start of construction on this segment of the project. The purchase of a third KFA for the

Coffin Cave mold beetle within the North Williamson County KFR would meet recovery criterion 1 for this species within this KFR, unless and until the taxonomic split into *B texanus* and *B. cryptotexanus* occurs.

No critical habitat has been designated for these species; therefore, none will be affected.

### INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined by the Service as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is further defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding and sheltering (50 CFR §17.3). Harm is also further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns, including breeding, feeding, and sheltering. Incidental take is defined by the Service 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 this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by the Federal Highway Administration so that they become binding conditions of any authorization issued to implement a project covered by this biological opinion, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Federal Highway Administration has a continuing duty to regulate the activity covered by this incidental take statement. If the Federal Highway Administration (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the authorizations, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Federal Highway Administration must report the progress of the action and its impact on the species to the Austin Ecological Services Field Office as specified in the incidental take statement. [50 CFR 402.14(i)(3)].

#### Amount or Extent of Take

The Service anticipates incidental take of Coffin Cave mold beetle and Bone Cave harvestman would occur as a result of the proposed project. Individual Coffin Cave mold beetles and Bone Cave harvestman are difficult to detect unless they are observed, undisturbed, in their environment. The Service anticipates the following amount of incidental take from the State Highway 195 improvements:

1. No more than 6 karst features may be directly or indirectly affected as a result of actions authorized under this biological opinion.

**Effect of the Take**

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy of the Bone Cave harvestman or the Coffin Cave mold beetle. This conclusion was reached based on the information provided above. With the purchase and preservation of Cobbs Cavern, there would be three KFAs within the North Williamson County KFR for Bone Cave harvestman, meeting recovery criteria 1 for downlisting. With the purchase and preservation of Cobbs Cavern, there would be two KFAs within the North Williamson County KFR for the Coffin Cave mold beetle. The FHWA is proposing the purchase and preservation of an additional KFA for the Coffin Cave mold beetle in the North Williamson County KFR, as one of the off-site conservation measures for this project.

No critical habitat has been designated for the Bone Cave harvestman and the Coffin Cave mold beetle; therefore, none will be affected.

**Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the Bone Cave harvestman and the Coffin Cave mold beetle. The Federal Highway Administration shall:

1. Avoid and minimize adverse effects to Bone Cave harvestman and Coffin Cave mold beetle during construction to the maximum extent practicable.

**Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following terms and conditions that implement the reasonable and prudent measure described above and outlined reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement the reasonable and prudent measure:
  - A. The FHWA shall implement all measures contained in the "Proposed Conservation Measures" section of this biological opinion;
  - B. All personnel involved in any authorized activity covered by this biological opinion shall be informed of these terms and conditions prior to the implementation of the authorized activity;
  - C. After completion of activities covered by this biological opinion that result in habitat alteration, any temporary fill, construction material, or other debris shall be removed; and,
  - D. The FHWA shall ensure compliance with the Reporting Requirements below to assist in future construction project decisions to avoid and minimize effects on the Bone Cave harvestman and the Coffin Cave mold beetle and their associated habitats.

### **Reporting Requirements**

Where temporary or permanent adverse effects occur, a post-activity report shall be forwarded to the Field Supervisor, Austin Ecological Services Field Office, within 60 calendar days of the completion of such activities. This report shall detail (1) dates that activities occurred; (2) pertinent information concerning the success in implementing the measures, as appropriate; (3) an explanation of failure to meet such measures, if any; (4) known project effects on species listed pursuant to the Act, if any; (5) occurrences of incidental take of species listed pursuant to the Act, if any; and (6) other pertinent information.

The Austin Ecological Services Field Office is to be notified within three working days of the finding of any dead listed species or any unanticipated harm to the species addressed in this biological opinion. The Service contact person for this is the Field Supervisor at (512) 490-0057.

### **Review Requirements**

The Reasonable and Prudent Measure, along with its implementing Terms and Conditions, are designed to minimize the effects of incidental take that might otherwise result from the proposed project. With implementation of this measure, the Service believes that no more than six karst features will be directly and/or indirectly affected.

If, during the course of the authorized activities, this level of incidental take is exceeded such incidental take represents new information requiring review of the reasonable and prudent measure provided. The FHWA must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measure. This biological opinion will expire five years from the date of issuance. Issuance of a new biological opinion would be subject to a re-evaluation of the recovery of these species.

### **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 project on listed species or critical habitat, to help implement recovery plans, or to develop information.

The recommendations provided here relate only to the proposed project and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibilities for this species.

1. The FHWA should assist the Service in the implementation of the recovery plan for the Bone Cave harvestman and the Coffin Cave mold beetle;
2. The FHWA should incorporate into bidding documents the terms and conditions of this biological opinion, when appropriate;

3. The FHWA, in partnership with the Service, should develop guidelines for FHWA projects that will reduce adverse effects of routine projects on listed species and their habitat. Such actions may contribute to the delisting and recovery of listed species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat; and,
4. In order for the Service 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 with FHWA on the proposed improvement of SH 195. As provided in 50 CFR Sec. 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 consultation; (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 biological opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Tanya Sommer at (512) 490-0057, extension 222 or Darren LeBlanc (Texas Transportation Liaison) at 512-490-0057, extension 247.

Sincerely,



Gary Mowad  
Texas State Administrator

cc: Jim Barta, TxDOT ENV, Austin, Texas  
Carlos Lopez, TxDOT Austin District, Austin, Texas

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