

Plan (BCCP) does not include any specific protection or methods to minimize or mitigate potential take. However, it includes a special provision to notify all participants that they should obtain guidance, with respect to avoiding the impacts of their activity on water quality as it relates to the Barton Springs salamander, for all construction activities within the Barton Springs drainage area of Travis County. The applicants tried to address the impacts to the bracted twistflower but were unable to fully address that species. The application did address 27 other species of concern and requested coverage for these species under the Service's "No Surprises" policy. The permit area identified in the BCCP encompasses all of Travis County, approximately 989 square miles (632,960 acres), with the exclusion of that portion of the Balcones Canyonlands National Wildlife Refuge (BCNWR) located within Travis County, and the BCCP preserve area as defined in the EIS/HCP. Thus, the total acreage of the permit area is about 561,000 acres, of which about 100,000 acres is currently developed. Over the 30-year permit period, the amount of land likely to be developed within the permit area is estimated to be between 30,000 and 60,000 acres, some of which is the subject species' habitat. However, the applicants desired to have coverage for take in the entire county and designed their plan for such coverage. Direct and indirect incidental take authorized under the permit includes that which would result from grading, clearing, or other earth-moving activities necessary for residential, commercial, or industrial construction and infrastructure projects as well as the indirect impacts, such as noise, predation, and harassment, that result from the occupancy of these structures. The proposed action is explained in detail in the EIS/HCP.

Status of the Species:

The status of the eight federally-listed species, texabama croton, canyon mock-orange, and 25 karst species of concern that may be affected is discussed in detail in the EIS/HCP, Chapter 3, Section A.

The Barton Springs salamander, proposed for listing as endangered, is known only from Barton Springs in Zilker Park, located within the city of Austin. The extent to which the salamander occurs in the aquifer is unknown. However, there is no evidence indicating that the specie's range extends beyond the immediate vicinity of Barton Springs.

The primary threat to this species is contamination of the waters that feed Barton Springs due to the potential for catastrophic events (such as petroleum or chemical spills) and chronic degradation resulting from urban activities (such as sedimentation due to upstream construction). Reduced groundwater supplies resulting from increased groundwater withdrawal and pool maintenance disturbances to its surface habitat at Barton Springs Pool, Eliza Pool, and Sunken Garden Springs are also of concern. A detailed discussion of threats to this species

may be found in the Proposed Rule to list the species as endangered (FR Volume 59 Number 33, February 17, 1994, Pages 7968-7978).

The recharge and contributing zones of Barton Springs drains about 354 square miles of which about 150 square miles lies within the permit area. About 96 percent of all springflow from the aquifer discharges through Barton Springs. Based on streamflow studies, Onion Creek and Barton Creek contribute the greatest percentages of total recharge to the aquifer (34 percent and 28 percent, respectively). Owing to the amount of recharge contributed by Barton Creek and its proximity to Barton Springs, this creek has a greater impact on the water quality at the springs than any other recharge source in the Barton Springs segment (Slade *et al.* 1986).

Increases in impervious cover related to development of the Barton Springs watershed can lead to increases in pollutant runoff. Currently, about 11 percent of the Barton Springs watershed is developed, with an estimated six percent impervious cover (COA 1995). Current sediment contamination in the aquifer and at Barton Springs has been attributed to construction activity in the Barton Creek watershed (Slade *et al.* 1986, city of Austin 1991, BS/EACD 1994). This area is under increasing pressure from urbanization (city of Austin 1988, Veenhuis and Slade 1990). Further development or urbanization in the recharge and contributing zones of the Barton Springs segment is likely to increase the chance of a major pollution event, as well as chronic water quality decline in this area. Thus an increase in the levels of pollutants reaching Barton Creek, other creeks serving as recharge paths, and Barton Springs can be expected.

Environmental Baseline:

The environmental baseline is described in the EIS/HCP, Chapter 3, Section A, for the eight listed species and 27 species of concern. The salamander is not addressed as part of the permit action and projects in the Barton Springs drainage area will need to undergo individual analysis to address possible impacts to this species.

Effects of the Action:

The anticipated effects of the proposed action are described in the EIS/HCP, Chapter 4, Section A.

Cumulative Effects:

The cumulative effects of the proposed action are described in the EIS/HCP, Chapter 4, Section H.

Biological Opinion:

The Service has reviewed the current status of the federally-listed endangered vireo, warbler, Bone Cave harvestman, Tooth Cave ground beetle, Tooth Cave pseudoscorpion, Tooth Cave spider, Bee Creek Cave harvestman, Kretschmarr Cave mold beetle and the Coffin Cave mold beetle, and the proposed endangered salamander at the recovery unit level and rangewide, the environmental baseline for the action area, the direct and indirect effects of the proposed action and the cumulative effects. It is the Service's biological opinion that the issuance of a section 10(a)(1)(B) permit for fulfillment of PRT-788841, as proposed, is not likely to jeopardize the continued existence of the warbler, vireo, Bone Cave harvestman, Tooth Cave ground beetle, Tooth Cave pseudoscorpion, Tooth Cave spider, Bee Creek Cave harvestman, Kretschmarr Cave mold beetle, Coffin Cave mold beetle, or the salamander. Critical habitat has not been designated for these species, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of federally-listed species without a special permit or exemption. Within the context of this definition, harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Additionally, harass is defined as actions that create the likelihood of injury to a listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Under the terms of section 7(B)(4) and section 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action (in this case granting a permit to "take" the species in fulfillment of PRT-788841), is not considered a prohibited taking, provided that such taking is in compliance with the incidental take statement in a formal biological opinion. In that regard, the reasonable and prudent measures, and associated terms and conditions described below are non-discretionary and must be undertaken by the applicant and made a binding condition of any grant or permit issued to the applicant and/or subsequent owners of the property.

Extent of Take:

Chapter 3, Section C.3 discusses the alternative on which the Service based its impact analysis in the issuance of PRT-788841.

Black-capped Vireo. Approximately 1,000 acres of the approximately 2,000 acres of identified occupied vireo habitat known to exist in the permit area are included in the area identified to be taken as a result of this permit action. This acreage includes five small areas north of the Colorado River (Jonestown area, western Anderson Bend area, Steiner Ranch, Four Points area, and adjacent to Loop 360 and the Colorado River) and three small areas south of the Colorado River (Davenport Ranch area, Wolf Ranch area, and central Hudson Bend area). Based upon a review of bird surveys conducted in these areas by DLS Associates (1989b, 1990a, 1990b), Texas Department of Transportation, EH&A, and others, the vireos will be taken through modification and degradation of approximately 1,000 acres of vireo habitat. Fewer than 60 birds are known to have occupied these acres over the past 10 years.

Golden-cheeked Warbler. The BCCP estimates, based on satellite imagery analysis, that no more than 26,753 acres of potential warbler habitat (approximately 74 percent of the warbler's habitat identified by satellite imagery), will be subject to modification upon issuance of the requested permit. Based on a maximum ratio of 30 pairs of warblers per 250 acres, this lost habitat would support a maximum of 3,211 pairs of warblers if the habitat were of the highest quality and unfragmented. However, the majority of this habitat is highly fragmented and of lower quality. Therefore, the actual take is more likely to be less than 15 pairs of warblers per 250 acres and less than 1,600 total pairs.

Karst Invertebrates. Basing the take calculation for karst invertebrates on the acres of potential habitat, as was done for the warbler and vireo, would require more information on the biology of the species. Another method to calculate take would be through the identification of occupied sites.

There are approximately 163 caves known in Travis County. The BCCP proposes to preserve the surface and subsurface hydro-geologic area around each of the 35 caves known to support federally-listed karst invertebrates and 27 caves that support karst species of concern. This would result in the protection of approximately 37 percent of the known caves in Travis County. The total amount of potential karst habitat projected for take under the permit will not exceed 38,349 acres (85 percent of total).

The BCCP proposes to delineate the cave preserve boundaries based upon the results of hydro-geologic surveys. There would be some cave cluster preserves,

some individual preserves, and some cave areas protected within the blocks of habitat preserved for other species. Cave cluster preserves would have the best opportunity to preserve cave ecosystems that might be interconnected.

This proposed action is in compliance with the karst invertebrate recovery plan.

Barton Springs salamander. The watershed and recharge area feeding Barton Springs covers approximately 175 square miles (approximately 50 percent of the total drainage area) in Travis County. The permit applicants have elected to omit the Barton Springs salamander from the permit. Thus, the EIS/HCP includes a discussion of the known biological information on the species but does not address protection or methods to minimize and mitigate potential take.

Because the salamander is proposed for listing as endangered, in accordance with section 7(a)(4) of the Act, the salamander must be considered by the Service in evaluating the impacts of permit issuance. There is limited habitat, outside of established preserve lands, within the Barton Springs drainage area that supports any of the federally-listed species covered by the permit. The developable lands in this drainage area do not support the vireo or the karst invertebrates and support only a limited number of warblers. A reduction in water quality and/or water quantity could result in a take and jeopardy of the salamander. However, the plan does not include any provisions to address possible impacts to the salamander and no take of the salamander is covered under this permit. This plan includes a special provision notifying all participants that all construction activities within the Barton Springs drainage area of Travis County should obtain guidance with respect to avoiding the impacts of their activity as it relates to the Barton Springs salamander.

Effect of Take:

Black-capped vireo. There is not a viable population of vireos wholly within Travis County. Therefore, after issuance of an incidental take permit covering the entire County, a preserve capable of supporting a viable population would not be required. The population of vireos in Travis County is estimated to be less than 100 birds occurring on approximately 2,000 acres scattered throughout the central and western part of the County.

The Black-capped Vireo (*Vireo atricapillus*) Recovery Plan (1991), states that the vireo will be considered for reclassification from endangered to threatened when:

1. All existing populations are protected and maintained;
2. at least one viable breeding population (comprised of at least 500 to 1,000 effectively breeding pairs) exists in each of the following six locations (see

Figure 7 of recovery plan for locations of recovery areas): Oklahoma, Mexico (wintering grounds), and four of the six Texas regions (including the Austin vireo population at the eastern edge of the vireo's range);

3. sufficient and sustainable area and habitat on the winter range exists to support the breeding populations outlined in 1 and 2 above; and
4. all of the above have been maintained for at least five consecutive years and available data indicate that they will continue to be maintained.

Two of the six recovery regions for the vireo in Texas include portions of Travis County. The Service recognizes there is not enough vireo habitat in Travis County to provide for a minimum viable population of this species, and one does not exist. However, the 2,000 acres proposed to be managed for the vireo will provide an appropriate and guaranteed part of a regional conservation effort for this species. The continued survival of the vireo will require conservation activities in significant portions of its range outside of Travis County.

The BCCP predicts potential loss of approximately 1,000 acres, in eight separate areas, of occupied vireo habitat that has supported a total of up to 60 vireos of the past 8 years. These areas are the small and more isolated of the vireo locations and account for about 50 percent of the occupied vireo habitat in the County.

The possibility for immediate incidental take of this portion of the Travis County population through development of habitat could have a negative impact on the viability of the local population as a whole. However, the location of the vireos, trends in current development, and recent vireo movements indicate that the take would not be immediate and may not be as high as projected.

Golden-cheeked warbler. Travis County has 40 percent more warbler breeding habitat than any other Texas county (44,068 acres) (USFWS 1992; Wahl *et al.* 1990), and it is considered the least patchy habitat of any Texas county. Because the habitat within Travis County is on the eastern edge of the warbler's breeding range, the loss of the Austin population would result in an unacceptable range reduction for the species.

Using modeling and conservation theory, Pease and Gingerich (1989) estimated that minimum viable population size for the warbler should be between 500 and 1,000 effectively breeding pairs. They recommend that a minimum of two populations of the warbler should be conserved within Travis County with the following characteristics: (1) Each preserve should be continuous and unfragmented; (2) each preserve should support a minimum viable population of 500 to 1,000 effectively breeding pairs on 3,000 to 6,000 hectares (7,400 to

14,800 acres); and (3) less than 5 percent of the preserve area should be within 100 meters of the preserve edge (requiring preserves of 5,000 hectares [12,350 acres) for undisturbed sites and 10,000 acres or more for disturbed sites).

Of the approximately 44,068 acres of potential warbler habitat in Travis County, approximately 8,480 acres, as identified by satellite imagery, is within the boundaries of the proposed preserve system. Additionally, 5,489 acres of habitat are already protected in the preserve system through existing public/institutional lands. Not all of the proposed preserve acres will be acquired, but assuming that 75 percent are acquired, approximately 11,800 acres of warbler habitat would be protected in the BCCP preserves. This 11,800 acres would support between 700 and 1,400 pairs of warblers based on the quality of habitat, adjacent land use and configuration. These numbers for pairs of warblers are within the range recommended by Pease and Gingerich for one viable population of the warbler.

The Golden-cheeked Warbler Recovery Plan (1992b), states that the golden-cheeked warbler will be considered for delisting when:

1. Sufficient breeding habitat has been protected to ensure the continued existence of at least one viable, self-sustaining population in each of eight regions (See Figure 4 of the recovery plan for locations of recovery regions);
2. if no population in a given region is viable by itself, then there should be at least one population in the region that:
 - (a) Is large enough to be demographically self-sustaining; and
 - (b) has the potential for gene flow to be maintained between the population and at least one other self-sustaining population so that genetic viability is provided for;
3. sufficient and sustainable non-breeding habitat exists to support the breeding populations in number 1 above;
4. all existing golden-cheeked warbler populations on public lands are protected and managed to ensure their continued existence, at least until the optimum and spatial arrangement of populations needed for long-term maintenance of the species (viability) is determined; and
5. all of the above have been maintained for at least 10 consecutive years.

The BCCP would result in the protection of large blocks of unfragmented warbler habitat while allowing the "take" of the warblers that occur in the highly

fragmented and lower quality habitat. The acreage protected by the BCCP is consistent with the objective outlined in the recovery plan regarding the establishment and protection of land adequate to support a viable population (of at least 500 to 1,000 effectively breeding pairs).

Karst Invertebrates. Twenty percent of the known caves in Travis County have been destroyed in the last 20 years as a result of land use changes. At this rate, Elliott and Reddell (1989) estimate that less than 80 percent of the presently known caves in Travis County will remain by the turn of the century. This trend represents the only available information on destruction rates for the karst features. While trends may be slowed by virtue of the enforcement of the Act, the adverse affects of pollution, vegetation alteration, and flow changes due to current urbanization may increase the rate of cave destruction without the protection of caves known to harbor listed species.

The four caves omitted from protection, Beer Bottle Cave, Millipede Cave, West Rim Cave, and Puzzle Pits Cave, do not support a diverse fauna and contain the most widely distributed federally-listed karst invertebrates.

The Recovery Plan for Endangered Karst Invertebrates in Travis and Williamson Counties, Texas (USFWS 1994) outlines two criteria that must be met to downlist the subject species:

- (1) Three karst fauna areas within each karst fauna region in each species' range should be protected in perpetuity (see Figure 2 of the recovery plan for locations of recovery regions). If fewer than three karst fauna areas exist within a given karst fauna region of a given species' range, then all karst fauna areas within that region should be protected. At least two karst fauna areas should exist and be protected for that species to be considered for downlisting; and
- (2) criteria 1 should be maintained for at least 5 consecutive years with assurances that these areas will remain protected in perpetuity before downlisting.

In meeting the above criteria, the following actions are considered necessary:

- (1) Identify, delineate, and protect karst fauna areas targeted for recovery and determine conservation measures necessary to maintain the integrity of the karst ecosystems;
- (2) eliminate or control threats from habitat destruction, predation by fire ants, and other factors;

- (3) develop and conduct a program to monitor each species' status; and
- (4) develop educational programs on biospeleology and karst hydrogeology to train professionals and increase public awareness.

There are four karst fauna regions, as identified in the recovery plan located within Travis County: Jollyville, Central Austin, Rollingwood, and South Travis County. In addition, portions of two other fauna regions, Cedar Park and McNeil/Round Rock, occur in the northern part of the county. Beer Bottle and Millipede caves are within the McNeil/Round Rock Recovery Region, West Rim Cave is found in the Central Austin Recovery Region, and Puzzle Pit Cave is within the Jollyville Recovery Region. Because of the number of caves and their distribution, incidental take resulting from the destruction of these four caves is within the parameters of the recovery criteria discussed in the recovery plan.

The BCCP proposes to protect all of the known localities in Travis County that support the Tooth Cave pseudoscorpion, Tooth Cave spider, Kretschmarr Cave mold beetle, and Bee Creek Cave harvestman. It would allow take of the Bone Cave harvestman in three of the 20 caves in Travis County that support the species. There are more than 60 caves in Williamson County that support this species. One of at least 14 caves that contain the Tooth Cave ground beetle will be lost to an action covered by a separate incidental take permit and therefore is not required to be protected by the BCCP. Although the BCCP permit area has been extensively surveyed for caves and karst features, the possibility remains that features may be found that provide habitat for listed species or other equally rare karst invertebrates. The BCCP identifies an option that establishes a process that allows any newly discovered cave to be protected in the place of a less biologically significant cave currently identified for protection.

The BCCP states that hydrogeologic parameters for each karst feature must be identified before adequate protection of each karst feature can be assured. The permit requires that, until complete information on surface and subsurface drainage areas for each feature is available, no permits will be issued for development of land within 1/4 mile of cave openings; with this approach no options for protection of the sensitive features are precluded. In addition, the management and mitigation strategies outlined in Chapter 2, Section C.2.e, discuss actions required under the permit which will eliminate or control threats to karst features. This section also indicates that baseline monitoring studies for biological data, to determine and monitor the status of each listed species located in the karst features contained in individual preserve units, will be conducted when funding becomes available.

OTHER SPECIES OF CONCERN.

The Biological Advisory Team for the BCCP evaluated a list of more than 230 species to determine which species they would include as "species of concern" for the BCCP. They selected 10 species (8 of which are currently listed species) to include in that original list. Since that original list, there have been numerous revisions to the BCCP and the list of "species of concern." The current species of concern for which the applicants have included conservation measures include two plant species and 25 karst invertebrates.

The plants, Texabama croton and canyon mock-orange, could be listed during the life of this permit. Therefore, they are included in the plan. The Texabama croton is a variety of a rare species previously known from only ten localities in Alabama until it was discovered in Travis County and at Fort Hood in Coryell County, Texas. The Travis County locations are mostly within the boundaries of the proposed BCNWR. There are two known locations outside of the refuge with one being located in the Travis County Pace Bend Park. The protection of the known locations at the BCNWR and Pace Bend Park, would provide protection at a level that would be sufficient if the species were currently listed.

The canyon mock-orange is a deciduous shrub that is known from five counties in Texas. The Travis County locations include Hamilton Pool Park, Bohl's Hollow in the South Lake Austin macrosite, and the Bull Creek macrosite, which contains the largest number in Travis County. All or major portions of these locations are included within the proposed preserves of the plan. Therefore, this species would be protected at a level that would be adequate if it were a listed species.

There are many undescribed species of karst invertebrates endemic to the BCCP study area. Elliott and Reddell (1989) found 12 potential new species of karst arthropods from five genera within the permit area. Subsequent studies and plan modifications resulted in a list of 25 karst "species of concern" to be included in the plan. Based upon the known locations of these species and the protection proposed for these locations, these 25 karst species would be protected at a level that would be adequate if they were listed species.

The flatworm (*Sphalloplana mohri*) is an aquatic species known from one cave in north-western Travis County and that cave is proposed to be protected under this plan.

The Ostracod (*Candona* sp. nr. *stagnalis*) is known from one cave in southern Travis County and it is proposed to be protected by this plan.

The isopods (*Caecidotea reddelli*, *Trichoniscinae* N. S., and *Miktoniscus* N. S.) are known from one to three caves, primarily in southern Travis County and all these caves are proposed for protection under this plan.

Cicurina wartoni, *C. ellioti*, *C. bandida*, *C. reddelli*, *C. reyesi*, *C. cueva*, and *C. travisae* are sedentary spiders that spin funnel webs and tangled lines of dry silk (Gertsch, 1992). These seven spiders are eyeless, generally less than 7 millimeters long and occur in from one cave (*C. reddelli*, *C. wartoni*, and *C. reyesi*) to eight caves (*C. travisae*). As a result of overlap in distribution with other species of concern, all of these caves are proposed for protection under this plan.

Neoleptoneta cocinna and *Neoleptoneta devia* are tiny, six-eyed spiders that have been found in two and one cave, respectively, in northern Travis County. All of these caves are proposed for protection under this plan.

Eidmannella reclusa is an eyeless spider that has been found in 4 caves on the Jollyville Plateau. All of these caves are proposed for protection under this plan.

The pseudoscorpions (*Aphrastochthonius* N. S., *Tartarocreagris reddelli*, *T. intermedia*, and *T. N. S. 3*) are generally about 4 millimeters in length and are known to occur in only one cave each. All of the caves known to contain these species are proposed for protection under this plan.

The harvestman (*Texella spinoperca* and *T. comanche*) are generally less than 3 millimeters long, has rudimentary eyes and are known from only one cave each. These caves are all proposed for protection under this plan.

The millipede (*Speodesmus* N. S.) is known from 8 caves in southern Travis County. All of these caves are proposed for protection under this plan.

The ground beetles (*Rhadine s. subterranea*, and *R. s. mitchelli*, *R. austinica*) appear to be restricted to areas of the cave that have deep, uncompacted silt and are believed to feed on cave cricket eggs. These beetles range in size to about 8 millimeters long. *R. S. mitchelli* occurs on the Jollyville Plateau in 3 caves, *R. s. subterranea* is the northern most of these species occurring in 6 caves and *R. austinica* is the most wide spread occurring in 17 caves in southern Travis County. As a result of overlap in distribution with other species of concern, all of these caves are proposed for protection by this plan.

Reasonable and Prudent Measures:

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize take of listed species affected by the permit:

Any incidental take of the federally-listed vireo, warbler, Bone Cave harvestman, Tooth Cave ground beetle, Tooth Cave pseudoscorpion, Tooth Cave spider, Bee Creek Cave harvestman, Kretschmarr Cave mold beetle and the Coffin Cave mold beetle must comply with all of the terms and conditions of this Biological Opinion, the issued section 10(a)(1)(B) permit, and the Final EIS/HCP.

Terms and Conditions:

To be exempt from the prohibitions of section 9 of the Act, the following non-discretionary terms and conditions, which implement the reasonable and prudent measures described above, must be complied with:

1. A section 10(a)(1)(B) permit, as evaluated in this Biological Opinion must be issued by the Service.
2. The permit and each of its conditions is binding on and for the benefit of the Permittee and their respective successors and assigns.
3. If during the tenure of the permit, the amount of incidental take is exceeded, issuance of Participation Certificates must be stopped and the permittees must reinstate consultation with the Service to avoid violation of section 9, of the Act.
4. The authorization granted by the permit is subject to compliance with, and implementation of, the terms and conditions of the EIS/HCP, Biological opinion, and all specific conditions contained in the permit. If there are any discrepancies between the requirements in these documents, the requirements identified in the special conditions of the issued permit take precedence.
5. Upon locating any dead, injured, or sick individuals from the list species covered by the permit, or any other endangered or threatened species, permittees are required to contact the Service's Law Enforcement Office, Austin, Texas, at (512) 490-0948, for care and disposition instructions. Extreme care should be taken in handling sick or injured individuals to ensure effective and proper treatment. Care should also be taken in handling dead specimens to preserve biological materials in the best possible state for analysis of cause of death. In conjunction with the care of sick or injured

endangered/threatened species, or preservation of biological materials from a dead specimen, the permittees and their contractor(s) or subcontractor(s) have the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

6. The validity of the permit is also conditioned upon observance of all relevant international, state, local, or other Federal law.
7. The permittees are authorized to "take" (kill, harm, or harass) the following federally-listed endangered species:

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
<i>Vireo atricapillus</i>	Black-capped vireo
<i>Dendroica chrysoparia</i>	Golden-cheeked warbler
<i>Tartarocreagris texana</i>	Tooth Cave pseudoscorpion
<i>Neoleptoneta myopica</i>	Tooth Cave spider
<i>Texella reddelli</i>	Bee Creek Cave harvestman
<i>Texella reyesi</i>	Bone Cave harvestman
<i>Rhadine persephone</i>	Tooth Cave ground beetle
<i>Texamaurops reddelli</i>	Kretschmarr Cave mold beetle

Additionally, the permittees would be covered for incidental take of the following species of concern if these species are listed during the life of the permit and the mitigation measures identified in the permit are being performed.

<i>Philadelphus ernestii</i>	Canyon Mock-orange
<i>Croton alabamensis</i>	Texabama croton
<i>Sphalloplana mohri</i>	Flatworm
<i>Candona</i> sp. nr. <i>stagnalis</i>	Ostracod
<i>Caecidotea reddelli</i>	Isopod
<i>Trichoniscinae</i> N. S.	Isopod
<i>Miktoniscus</i> N. S.	Isopod
<i>Cicurina wartoni</i>	Spider
<i>C. ellioti</i>	Spider
<i>C. bandida</i>	Spider
<i>C. reddelli</i>	Spider
<i>C. reyesi</i>	Spider
<i>C. cueva</i>	Spider
<i>C. travisae</i>	Spider
<i>Neoleptoneta cocinna</i>	Spider
<i>Neoleptoneta devia</i>	Spider
<i>Eidmannella reclusa</i>	Spider

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
<i>Aphrastochthonius</i> N. S.	Pseudoscorpion
<i>Tartarocreagris reddelli</i>	Pseudoscorpion
<i>T. intermedia</i>	Pseudoscorpion
<i>T. N. S. 3</i>	Pseudoscorpion
<i>Texella spinoperca</i>	Harvestman
<i>T. comanche</i>	New Comanche Trail Cave harvestman
<i>Speodesmus</i> N. S.	Millipede
<i>Rhadine s. subterranea</i>	Ground beetle
<i>R. s. mitchelli</i>	Ground beetle
<i>R. austinica</i>	Ground beetle

8. An annual report, due June 1 of each year beginning in 1997, is to be provided to the Austin Ecological Services Field Office. This report is to include:
- a. A list of all development activities west of the MOPAC Railroad that were permitted by the Permit Holders in the previous 12 months.
 - b. A list of all tracts for which Participation Certificates were purchased.
 - c. Amount of funds collected for land acquisition.
 - d. Amount of funds expended for land acquisition.
 - e. Amount of funds expended for operations and maintenance.
 - f. An updated map of the lands dedicated to preserve.
 - g. A list of public use and habitat management activities that have been undertaken or completed within the bounds of the preserve units, including the status of land management plans undertaken by the permit holders and managing partners.
 - h. A copy of all research or investigation reports that have been prepared within the previous 12 months.

In addition to the above annual requirements, the permit Holders must provide quarterly updates for the tracts for which Participation Certificates were purchased that include the following information:

- a. A general map of each tract location.
 - b. A tract boundary map that identifies the areas for which the Participation Certificates apply. If a location and/or tract map is not provided to the permit Holder during the normal permitting process, a street address will be meet this requirement.
9. A copy of a recorded Participation Certificate provided by the Permit Holders must be posted at the property site from the time vegetation clearing begins until the construction is completed. For residential development, completed construction is when all roads and utilities are completed to the extent that they meet the applicable acceptance criteria of the city of Austin or Travis County. For commercial, industrial and multi-family developments completed development is when buildings are suitable for occupancy.
10. The funds collected and expended for the permit and its compliance with the financial requirements of the permit shall be evaluated by financial audits conducted after the sale of Participation Certificates covering 3,000 fee paid acres or every five years, whichever comes sooner, until permit expiration. Such audits will be coordinated between the Service and the Coordinating Committee. This audit may be part of the permittees processes as required by State law and shall not be more frequent than every two years.
11. The funds collected under the permit will be expended for land or easement acquisition and other preserve system needs in accordance with the following criteria:
- a. Tracts considered for acquisition will be within or contiguous to the boundaries of the preserve units identified in the issued Permit;
 - b. expenditure priority should be in the following decreasing order: Bull Creek, Cypress Creek, South Lake Austin, and North Lake Austin; and
 - c. dispensing of funds from the BCCP Fund account should be accomplished as soon as there are adequate funds to complete a transaction or implement a strategy for acquisition, taking into account opportunity, preserve priority and development threat.
12. The Permit Holders will administer the issuance of the Participation Certificates.
13. Incidental take that may result from the implementation of land management activities within the boundaries of a preserve and contained in a management

plan approved by the Coordinating Committee, are covered and authorized under the permit.

14. Incidental take that may result from the implementation of utility and infrastructure corridor projects approved by the Secretary of the Coordinating Committee and within one of the BCCP-Shared Vision approved utility and infrastructure corridors, as provided in the EIS/HCP, Appendix B, is covered and authorized under this permit.
15. Incidental take of the salamander is not covered by the permit. Entities who purchase Participation Certificates for activities within the Travis County portion of the Barton Springs watershed should obtain guidance with respect to avoiding the impacts of their activity on water quality as they relate to the salamander.
16. The incidental take authorization of the permit does not apply to the "take" of any endangered or threatened of the covered species outside of the boundary of the permit as identified in the EIS/HCP dated March 1996, or any modifications/amendments to that boundary.
17. The "No Surprises" policy of the Service provides that additional mitigation, lands or financial compensation shall not be required of the permittees or their successors beyond the level of mitigation provided for in the EIS/HCP. With respect to the permit, the EIS/HCP and supporting documents adequately addressed the species listed in special condition 7 above. To be fully covered by the "No Surprises" policy for a specific species, all of the requirements identified for that species must be met.

GOLDEN-CHEEKED WARBLER:

- a. Ensure at least 28,428 acres within the seven identified macrosites are acquired and managed for the warbler. Acquisition and management activities through this permit, other issued incidental take permits, and section 7 consultations where the mitigation activities are within or contiguous to the proposed preserve boundaries, count toward this goal.
- b. In conjunction with the managing partners, control human activities to eliminate or mitigate any adverse impacts of human activities to the warbler on these 28,428 acres, for the acreage acquired.
- c. No vegetation clearing activities be accomplished within warbler habitat, Zones 1 and 2, from March 1 through August 31, to prevent the disturbance of nesting activities unless current breeding season surveys,

conducted in accordance with Fish and Wildlife Service protocol, indicate that the warbler is not nesting within 300 feet of the proposed clearing.

- d. Develop and implement an approved land management plan, in accordance with the land management guidelines set forth by the Coordinating Committee, for each tract within 12 months after permit issuance or within 12 months of land acquisition whichever is latter.

BLACK-CAPPED VIREO

- a. Ensure at least 2,000 acres within the seven identified macrosites are acquired and managed for the black-capped vireo. Acquisition and management activities through the permit, other issued incidental take permits, and section 7 consultations where the mitigation activities are within or contiguous to the proposed preserve boundaries, count toward this goal.
- b. In conjunction with the managing partners, control human activities to eliminate or mitigate any adverse impacts of human activities to the vireo on these 2,000 acres, for the acreage acquired.
- c. No vegetation clearing activities be accomplished within vireo habitat between March 1 and August 31, to prevent the destruction of an active nest unless current breeding season surveys, conducted in accordance with Service protocol, indicate that the vireo is not nesting within the 300 feet of the proposed clearing.
- d. Develop and implement an approved land management plan, in accordance with the land management guidelines set forth by the Coordinating Committee, for each tract within 12 months after permit issuance or within 12 months of land acquisition whichever is latter.

LISTED KARST INVERTEBRATES

- a. Acquire and manage, or implement formal management agreements, as provided in subsection (d) below, adequate to preserve the environmental integrity of the following 35 caves that support federally-listed karst invertebrates:

Amber Cave
 Bandit Cave
 Beard Ranch Cave
 Bee Creek Cave

Kretschmarr Double Pit
 Kretschmarr Cave
 Lamm Cave
 Little Bee Creek Cave

Broken Arrow Cave	M.W.A. Cave
Cave Y	McDonald Cave
Cold Cave	McNeil Bat Cave
Cotterell Cave	New Comanche Trail Cave
Disbelievers Cave	No Rent Cave
Eluvial Cave	North Root Cave
Fossil Cave	Rolling Rock Cave
Fossil Garden Cave	Root Cave
Gallifer Cave	Spider Cave
Hole-In-The-Road	Stovepipe Cave
Japygid Cave	Tardus Hole
Jest John Cave	Tooth Cave
Jester Estates Cave	Weldon Cave
Jollyville Plateau Cave	

- b. If during investigations for development of a tract, karst features are discovered with a significant diversity of troglobitic fauna, those karst features may be submitted to the Service for consideration for exchange with karst features identified for protection by the BCCP. The determination of "significant diversity" will be made by the permit applicants and the Service, in association with karst experts. The inclusion of such a karst feature would not increase the number of caves to be protected by the BCCP, but would result in the new feature replacing a previously identified cave or caves.
- c. Where the surface and subsurface hydrogeologic area around a cave identified for protection is not known, the area delineated by the contour level at the bottom of the cave will be managed for cave protection. In the absence of such site specific information, no Participation Certificates are to be awarded within 0.25 miles of the cave entrance until the hydrogeologic areas are properly delineated.
- d. Enter into formal management agreement(s) for all caves that are recommended for protection but have yet to be acquired. The management agreement(s) will detail the area to be managed for cave protection, what such management will entail, and who is responsible for the management.

KARST SPECIES OF CONCERN

- a. Acquisition and management, or implementation of formal management, as provided in subsection (d) below, agreements adequate to preserve the environmental integrity of the following 27 caves, in addition to the caves

protected for the federally-listed species, that support the karst species of concern:

Adobe Springs Cave	Jack's Joint
Airman's Cave	Lost Oasis Cave
Armadillo Ranch Sink	Lost Gold Cave
Arrow Cave	Maple Run Cave
Blowing Sink	Midnight Cave
Buda Boulder Spring	Moss Pit
Cave X	Pennie Cave
Ceiling Slot Cave	Pickle Pit
District Park Cave	Pipeline Cave
Flint Ridge Cave	Slaughter Creek Cave
Get Down Cave	Spanish Wells Cave
Goat Cave	Stark's North Mine
Ireland's Cave	Talus Spring
	Whirlpool Cave

The caves in which the karst species of concern occur are listed below. To receive the "no surprises" guarantee for the identified species, the caves identified must be protected, as per "a" above.

SPECIES

Sphalloplana mohri
Candona sp. nr. *stagnalis*
Caecidotrea reddelli

Trichoniscinae N. S.
Miktoniscus N. S.
Cicurina wartoni
C. ellioti

C. bandida
C. reddelli
C. reyesi
C. cueva
C. trivisaie

Neoleptoneta cocinna
N. devia

CAVE

Spanish Wells Cave
 Cave X
 Buda Boulder Cave, Cave X, Jack's Joint
 Bandit Cave
 Cave X
 Pickle Pit
 Cotterell Cave, Fossil Garden Cave, Gallifer Cave, No Rent Cave, Weldon Cave
 Bandit Cave, Ireland's Cave
 Cotterell Cave
 Airman's Cave
 Cave X, Flint Ridge Cave
 Amber Cave, Broken Arrow Cave, Kretschmarr Cave, McDonald Cave, Root Cave, Spider Cave, Stovepipe Cave, Tooth Cave
 Lost Gold Cave, Stark's North Cave
 McDonald Cave

<i>Eidmannella reclusa</i>	Tooth Cave, Gallifer Cave, Kretschmarr Cave, Stovepipe Cave
<i>Aphrastochthonius</i> N. S.	Stovepipe Cave
<i>Tartarocreagris reddelli</i>	McDonald Cave
<i>T. intermedia</i>	Airman's Cave
<i>T. N. S. 3</i>	BCNWR
<i>Texella spinoperca</i>	Airman's Cave
<i>T. comanche</i>	New Comanche Trail Cave
<i>Speodesmus</i> N. S.	Bandit Cave, Cave X, Get Down Cave, Goat Cave, Pennie Cave, Pipeline Cave, Slaughter Creek Cave, Whirlpool Cave
<i>Rhadine s. subterranea</i>	Cotterell Cave, Fossil Cave, Fossil Garden Cave, No Rent Cave, McNeil Bat Cave, Weldon Cave
<u>SPECIES</u>	<u>CAVE</u>
<i>R. s. mitchelli</i>	Amber Cave, Kretschmarr Cave, Tooth Cave
<i>R. austinica</i>	Airman's Cave, Arrow Cave, Bandit Cave, Bee Creek Cave, Blowing Sink, Cave Y, cave X, District Park Cave, Flint Ridge Cave, Get Down Cave, Ireland's Cave, Lost Gold Cave, Lost Oasis Cave, Maple Run Cave, Midnight Cave, Pennie Cave, Whirlpool Cave

- b. If during investigations for development of a tract, karst features are discovered with a significant diversity of troglobitic fauna, those karst features may be submitted to the Service for consideration for exchange with karst features identified for protection by the BCCP. The determination of "significant diversity" will be made by the permit applicants and the Service, in association with karst experts. The inclusion of such a karst feature would not increase the number of caves to be protected by the BCCP, but would result in the new feature replacing a previously identified cave or caves.
- c. Where the surface and subsurface hydrogeologic area around a cave identified for protection is not known, the area delineated by the contour level at the bottom of the cave will be managed for cave protection. In the absence of such site specific information, no Participation Certificates

are to be awarded within 0.25 miles of the cave entrance until the hydrogeologic areas are properly delineated.

- d. Enter into formal management agreement(s) for all caves that are recommended for protection but have yet to be acquired. The management agreement(s) will detail the area to be managed for cave protection, what such management will entail, and who is responsible for the management.

CANYON MOCK-ORANGE

Protect and manage the portions of the known populations found within the preserve boundaries, for the acreage acquired.

TEXABAMA CROTON

Protect and manage the populations at Pace Bend Park.

The incidental take statement provided in this opinion satisfies requirements of the Act. This statement does not constitute an authorization for take of migratory birds under the Migratory Bird Treaty Act, the Bald Eagle Protection Act, or any other Federal statute.

CONSERVATION RECOMMENDATIONS

Sections 2(b), 2(c), and 7(a)(1) of the Act mandate that Federal agencies use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as suggestions from the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. We recommend the following additional actions for the listed species:

The Service should coordinate all future section 10(a)(1)(B) mitigation activities dealing with any or all of the species involved in this action with the mitigation program of this section 10(a)(1)(B) permit. Actions on incidental take permits within the proposed preserve of the BCCP must be evaluated with respect to their impacts on the species as well as their impact on the viability of the BCCP.

REINITIATION NOTICE

This concludes our formal consultation on the issuance of a permit pursuant to section 10(a)(1)(B) of the Act to allow the incidental take of the vireo, warbler, Bone Cave harvestman, Tooth Cave ground beetle, Tooth Cave pseudoscorpion, Tooth Cave spider, Bee Creek Cave harvestman, Kretschmarr Cave mold beetle, and

Coffin Cave mold beetle during and following the fulfillment of PRT-788841, in Travis County, Texas. Reinitiation of formal consultation is required if: (1) The amount or extent of incidental take identified in the initial permit is exceeded; (2) new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species, that was not adequately addressed by the plan, is listed or critical habitat designated that may be affected by the action.

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