



Balcones Canyonlands Conservation Plan  
Infrastructure Working Group

---

# Infrastructure Maintenance Training

Thursday, October 18, 2012

**Balcones Canyonlands Conservation Plan Infrastructure Working Group**

**Thursday, October 18, 2012 8:00 a.m. – 1:00 p.m.**

**J.J. Pickle Research Campus, Commons Bldg. #137**

**Big Tex Auditorium 1.102**

- 7:30 a.m. – 8:00 a.m.                   **Arrival and check in.**  
Showing of “A Bird in the Hand... A Study of the Endangered Golden-cheeked Warbler” & “Bastrop-Wildfire Documentary”
- 8:00 a.m. – 8:15 a.m.                   **Welcome**  
(Jennifer Leeper, LCRA; Willy Conrad, City of Austin)
- 8:15 a.m. – 8:45 a.m.                   **Balcones Canyonlands Preserve and Infrastructure 101**  
(Willy Conrad, City of Austin)
- 8:45 a.m. – 9:15 a.m.                   **Golden-cheeked Warbler & Black-capped Vireo**  
**Biology and Infrastructure Considerations**  
(Bill Reiner, City of Austin)
- 9:15 a.m. – 9:45 a.m.                   **Karst Biology & Geohydrology and Infrastructure Considerations**  
(Nico Hauwert & Sylvia Pope, City of Austin)
- 9:45 a.m. – 10:00 a.m.               **Oak Wilt Management, Drought Stress**  
(Eric Beckers, Texas Forest Service)
- 10:00 a.m. – 10:30 a.m.               **Break/Travel**

|                      | <b>Field Personnel<br/>Vandegrift High School</b>   | <b>Project Managers/Supervisors<br/>JJ Pickle Center</b>   |
|----------------------|---|--|
| 10:30a.m. -11:00a.m. | <b>Arrive/Preserve Orientation</b>  | <b>Infrastructure Challenges and Lessons Learned</b><br>(Willy Conrad, City of Austin)   |
| 11:00a.m.-11:30a.m.  | <b>Oak Wilt , Drought Stress, Hypoxylon Canker, and Wildfire Risk</b><br>(Eric Beckers, Texas Forest Service and William Simper, Travis County)               | <b>Wildfire and the Balcones Canyonlands Preserve</b> (Lucien Ball, City of Austin)  |
| 11:30a.m.-12:00p.m.  | <b>Golden-cheeked Warbler habitat and example karst features</b><br>(Jim O’Donnell, City of Austin)   | <b>GIS and Online Resources for the Balcones Canyonlands Preserve</b><br>(Kimberlee Harvey, City of Austin)                        |
| 12:00-12:30p.m.      | <b>Infrastructure Partnership: Successful implementation of Black-capped vireo habitat</b><br>(Linda Laack, Travis County & Carl Schattenberg, Austin Energy) | <b>Panel Discussion: Questions and Answers from Audience</b><br><b>Reverse Panel Discussion: Questions and Answers to Audience</b> |

**Wrap-up/Evaluation drop-off/Collect Certificates**

## BALCONES CANYONLANDS PRESERVE LAND MANAGER CONTACT INFORMATION

### CITY OF AUSTIN, AUSTIN WATER UTILITY

|                  |             |             |                                  |  |
|------------------|-------------|-------------|----------------------------------|--|
| Willy Conrad**   | o: 972-1661 | f: 972-1665 | william.conrad@austintexas.gov   | Division Mgr., Wildlands Conservation Division |
| Kimberlee Harvey | o: 972-1686 | f: 972-1665 | kimberlee.harvey@austintexas.gov | Environmental Program Coordinator              |
| Sherri Kuhl      | o: 972-1673 | f: 972-1665 | sherri.kuhl@austintexas.gov      | BCP Program Manager                            |

### CITY OF LAKEWAY / ALTA VISTA (SCHRAMM RANCH)

|                   |             |  |                          |                     |
|-------------------|-------------|--|--------------------------|---------------------|
| Chessie Blanchard | o: 261-6098 |  | zoning@cityoflakeway.com | Deputy City Manager |
|-------------------|-------------|--|--------------------------|---------------------|

### CITY OF SUNSET VALLEY

|                  |             |             |                            |   |
|------------------|-------------|-------------|----------------------------|---|
| Carolyn Meredith | o: 891-9103 | f: 892-6108 | cmeredith@sunsetvalley.org | Environmental Specialist                        |
| Katy Phillips    | o: 891-9103 | f: 892-6108 | kphillips@sunsetvalley.org | Director, Public Works & Environmental Services |

### 6D RANCH

|               |                   |             |                     |               |
|---------------|-------------------|-------------|---------------------|---------------|
| Tammy Goforth | o: 263-8684 x 114 | f: 263-4281 | tammy@dfiaustin.com | Ranch Manager |
|---------------|-------------------|-------------|---------------------|---------------|

### LOWER COLORADO RIVER AUTHORITY (LCRA)

|               |                   |             |                        |   |
|---------------|-------------------|-------------|------------------------|---|
| Jarrold Depew | o: 473-3200 x2763 | f: 473-3271 | Jarrold.Depew@lcra.org | Senior Natural Resource Conservation Coord. |
|---------------|-------------------|-------------|------------------------|---|

### THE NATURE CONSERVANCY OF TEXAS

|                  |             |  |                   |                                       |
|------------------|-------------|--|-------------------|---------------------------------------|
| Brandon Crawford | o: 263-8878 |  | bcrawford@TNC.org | Barton Creek Habitat Preserve Steward |
|------------------|-------------|--|-------------------|---------------------------------------|

### TRAVIS AUDUBON SOCIETY

|                    |             |             |                                  |                  |
|--------------------|-------------|-------------|----------------------------------|------------------|
| Christopher Murray | o: 263-2237 | f: 263-2776 | bakersanctuary@travisaudubon.org | Preserve Steward |
|--------------------|-------------|-------------|----------------------------------|------------------|

### TRAVIS COUNTY

|                 |                     |             |                              |  |
|-----------------|---------------------|-------------|------------------------------|--|
| Michael Wallace | o: 854-7213         | f: 854-6474 | mike.wallace@co.travis.tx.us | Environmental Specialist                             |
| Rose Farmer     | o: 854-7214         | f: 854-6474 | rose.farmer@co.travis.tx.us  | Program Manager Natural Resources                    |
| Linda Laack     | o: 219-6190, ext. 8 | f: 219-5145 | linda.laack@co.travis.tx.us  | Environmental Resources Management Specialist Senior |

### WILD BASIN PRESERVE

|                |             |             |                        |              |
|----------------|-------------|-------------|------------------------|--------------|
| Monica Swartz  | o: 327-7622 | f: 328-5632 | monicasw@stedwards.edu | Director     |
| Mitch Robinson | o: 327-7622 | f: 328-5632 | mitch@wildbasin.org    | Land Manager |

o = office phone  
p = pager  
\*\* BCCP Secretary

m = mobile phone  
f = fax

*List Revised 9/19/12*



## Balcones Canyonlands Conservation Plan Fact Sheet

- From 1988 through 1996, a collaboration of local concerned citizens, business leaders, landowners, developers, environmental groups, scientists and the U.S. Fish and Wildlife Service (USFWS) worked together to create a Habitat Conservation Plan under the Endangered Species Act (ESA) for the Austin Area that led to the issuance of the following permit.
- On May 2, 1996, the City of Austin (COA) and Travis County (TC) were jointly issued a regional USFWS Incidental Take (or Section 10(a)1(B)) permit as a result of this community effort. The 30 year Balcones Canyonlands Conservation Plan (BCCP) allows for the “incidental take” of two endangered bird species and six endangered karst species within Western Travis County.
- An incidental take permit authorizes the loss of endangered species or their habitat associated with otherwise legal activities in exchange for minimization and mitigation measures that benefit the affected species. The BCCP is such a permit, and provides coverage for the following endangered species listed here, plus 27 additional species of concern:

|  |  |
|--|--|
| Black-capped vireo ( <i>Vireo atricapillus</i> )             | Bee Creek Cave harvestman ( <i>Texella reddelli</i> )  |
| Golden-cheeked warbler ( <i>Dendroica chrysoparia</i> )      | Bone Cave harvestman ( <i>Texella reyesi</i> )         |
| Tooth Cave spider ( <i>Neoleptoneta myopica</i> )            | Tooth Cave ground beetle ( <i>Rhadine persephone</i> ) |
| Tooth Cave pseudoscorpion ( <i>Tartarocreagris texana</i> )  |  |
| Kretschmarr Cave Mold Beetle ( <i>Texamaurops reddelli</i> ) |  |
- The BCCP provides a quick and efficient pathway for the Permit Holders and private landowners to comply with federal law and mitigate for impacts that their land use practices may have on protected species. The Permit provides a streamlined alternative to the normal USFWS consultation and determination process.
- In return, the COA and TC agreed to create the Balcones Canyonlands Preserve (BCP) to protect the 8 endangered species and 27 species of concern throughout 7 watersheds in western Travis County.
- To date, the Permit Holders have processed 660 Habitat Determination Applications, and have issued 246 Participation Certificates for 11,856 acres of land in Western Travis County which have been mitigated under the Permit.
- As of May 2012, the COA and TC have acquired 30,444 acres of the *minimum* 30,428 acres required for the benefit the golden-cheeked warbler (Warbler) and black-capped vireo (Vireo), and 46 of the 62 karst features (approximately 74%) listed in the BCCP have some form of protection. Additional acreage is still needed to meet configuration requirements of the BCCP permit for specific watersheds, edge to area ratio core Preserve area requirements, and cave protection needs.
- The permit was issued to the COA and TC, but its success is a multi-agency effort with BCP acreage managed by the COA, TC, Lower Colorado River Authority, Travis Audubon Society, The Nature Conservancy of Texas, St. Edwards University, Concordia University, Texas Cave Management Association, and numerous private land owners.
- The BCP protects a unique cross section of the flora and fauna along the Balcones Escarpment of the Edward's Plateau and strives to maintain functioning ecosystems by managing for the benefit of all our native wildlife and plants, regardless of their regulatory status.
- The Balcones Canyonlands Preserve not only provides habitat and protection for the endangered species, but also provides important air quality, water quality and open space benefits to communities in Central Texas.

- In a 2005 letter, the Home Builders Association of Greater Austin called the BCCP a “win-win situation for both developers and endangered species by establishing (1) a habitat preserve, and (2) the ability of developers to pay into the BCCP in return for development rights elsewhere. These arrangements allows for growth in parts of west Travis County where more and more people want to live, shop and work while supporting large, uninterrupted areas of endangered species habitat and natural beauty.”
- The BCCP was the first Regional multi-species Habitat Conservation Plan in the nation and continues to serve as a national model for community-based conservation that seeks to balance a healthy economy with healthy ecosystems.
- The Permit Holders provide BCP education and outreach opportunities for the community. Students from elementary grades to graduate schools visit and explore the preserve each year. The BCP Hike and Lecture Series provides monthly guided hikes on the BCP as well as opportunities for the public to delve into the issues related to managing wild lands from some of the leading experts in the field of conservation. In Fiscal Year 2010, Travis County BCP provided education and outreach programs to 2,032 individuals. In 2010, City of Austin and Travis County BCP programs provided education and outreach events attended by over 6,700 citizens.
- Volunteers annually dedicate thousands of hours to maintaining and restoring the different habitats found in the BCP. In 2010, almost 1,000 volunteers contributed over 6,000 hours of service on projects throughout the City of Austin and Travis County lands of the BCP.
- Approximately 1/3 of the Preserve is currently open to the public including Barton Creek Greenbelt, Emma Long Park, Commons Ford Park, St. Edwards Park, Mount Bonnell Park, Wild Basin Preserve, Hamilton Pool, and Westcave Preserve. The public can visit other parts of the Preserve on regularly scheduled tours, on Hike and Lecture Series tours, and through Preserve Volunteer programs.
- The Preserve serves as a living laboratory for Universities and researchers from across the nation studying the area’s unique native wildlife. Recent and ongoing research on the BCP includes the U.S. Forest Service, University of Texas, St. Edwards University, Concordia University, Texas State University, Baylor University, Texas A&M University, Duke University, New Mexico State, San Diego State and others.
- The Permit Holders intensively manage the BCP to protect the endangered birds and karst species and all of the native flora and fauna found on the preserve. Management activities include surveys (for endangered species habitat, sensitive areas, creeks, springs, caves, rare plants, etc); census and monitoring of golden-cheeked warbler, black-capped vireo, karst species, and Jollyville Plateau salamander; maintaining fences, signs, roads and trails; management of populations of deer, feral hogs, brown-headed cowbirds, and red imported fire ants; monitoring of adjacent development to prevent damage from erosion and sedimentation; and patrols to protect the tracts.

For more information, please contact:

City of Austin Balcones Canyonlands Preserve Program at 512-972-1664  
<http://www.austintexas.gov/department/balcones-canyonland-preserve>

or the Travis County Natural Resources Program at 512-854-9437,  
<http://www.co.travis.tx.us/tnr/bccp/default.asp>

## TERMS AND DEFINITIONS

### **Balcones Canyonlands Conservation Plan (BCCP)**

A Habitat Conservation Plan approved by the U. S. Fish and Wildlife Service (USFWS) for the western portion of Travis County on May 2, 1996.

### **Balcones Canyonlands Preserve (BCP)**

The system of nature preserves which protects eight local endangered species. The Preserve was created in connection with the BCCP and operates under a Regional 10(a) permit issued by the USFWS as authorized by the federal Endangered Species Act of 1973.

### **BCCP permit area**

The Regional 10(a) permit covers western Travis County, roughly the area west of Loop 1 (MOPAC) and north of US 290.

### **Biodiversity**

The diversity of plant and animal life in a particular habitat (or in the world as a whole).

### **Black-capped vireo (*Vireo atricapilla*)**

A neotropical migratory songbird that was listed as endangered on October 6, 1987. The black-capped vireo breeds and nests in Oklahoma, Texas, and northern Mexico.

### **Drainage Basin**

A watershed; the area from which a stream, spring, or conduit derives its water.

### **Edge effect**

Abiotic (temperature, light, noise, etc.) and biotic (edge predators, urban predators, humans, etc.) factors that occur adjacent to fragmentation edges can result in impacts to the species of concern and/or their habitat.

### **Golden-cheeked warbler (*Dendroica chrysoparia*)**

An increasingly rare songbird listed as an endangered species by the USFWS on May 4, 1990. The golden-cheeked warbler is a neotropical migrant bird species which breeds and nests only in central Texas.

### **Habitat**

The natural environment in which a plant or animal can live or grow. Examples of habitat include shrub, savannah, prairies, woodlands, karst and aquifer habitats.

**Habitat fragmentation**

Fragmenting large blocks of habitat into smaller blocks of habitat through the processes associated with urbanization, i.e., roads, subdivisions, and utility corridors.

Fragmentation of habitat reduces habitat quality for woodland songbirds.

**Habitat loss**

Loss of habitat is the most important threat to the existence of the endangered and rare species protected by the Balcones Canyonlands Preserve.

**Hydrology or Hydrologic**

The study of water and its origin and movement of water in atmosphere, surface, and subsurface.

**Juniper-oak woodlands**

This particular habitat is characteristic of the Balcones Canyonlands. Large patches of mature juniper/oak provides habitat for the golden-cheeked warbler.

**Karst**

A terrain characterized by landforms and subsurface features, such as sinkholes and caves, that are produced by solution of bedrock (usually limestone or gypsum). Karst areas commonly have few surface streams; most water moves through cavernous openings underground.

**Karst invertebrate**

Cave-dwelling animal that lacks a backbone.

**Natural or native nest predators**

Texas rat snake, Ringtail, and scrub jays are examples of nest predators associated with openings and corridors in closed canopy woodland.

**Neotropical migrant**

Birds which migrate twice a year between their breeding grounds in more northern areas and their wintering grounds in more southern areas.

**Nest parasitism**

Brown-headed cowbirds lay their eggs in the nests of other bird species which usually results in a lowered productivity of the nesting species. Fragmentation increases the likelihood of this type of parasitism by opening corridors in the closed canopy woodlands.

**Oak wilt**

A devastating fungal disease of several oak species; found in the juniper-oak habitat of the Balcones Canyonlands Preserve.

**Shrub habitat**

An area dominated by low shrubs and small trees. Fairly dense areas of broad-leaved shrubs can provide habitat for black-capped vireo. Shrub habitat is relatively short lived because it may grow into mature woodlands unless it is maintained mechanically or by fire.

**Troglobite**

An animal that completes its lifecycle and spends its entire life in openings underground (such as caves).

**Trogloxene**

A cave-dwelling animal that leaves the cave on a regular basis to feed, such as bats, cave crickets, and daddy long-legs.

**Urban or edge nest predators**

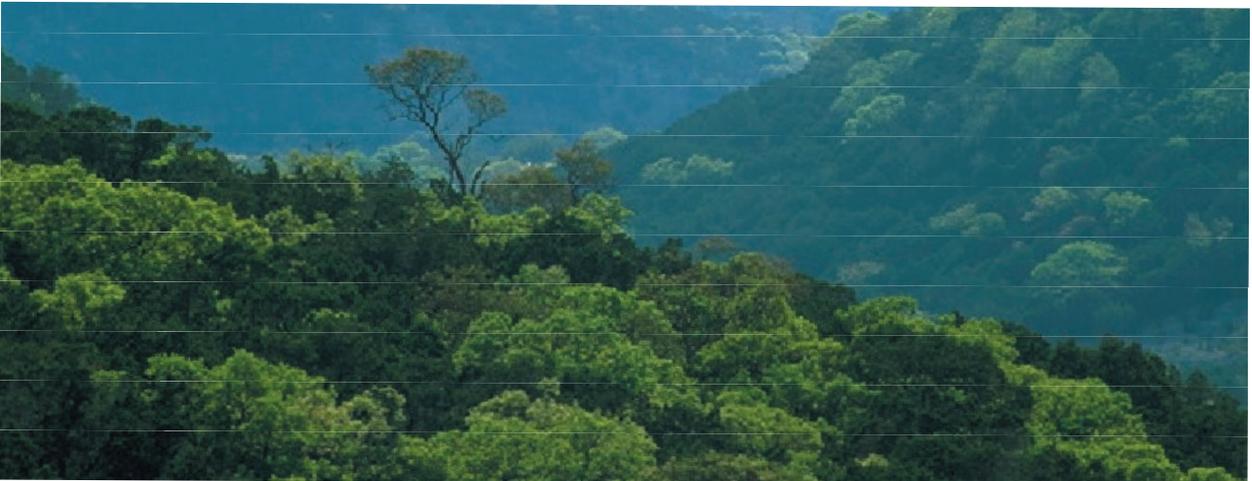
Blue jays, crows, domestic and feral cats, raccoons, Eastern fox squirrel, opossum, and Red Imported Fire Ants are examples of predators common to corridors associated with the urban/wildland interface or edge.

## Golden-cheeked Warbler (*Dendroica chrysoparia*)



### Species Characteristics

- Listed as endangered in 1990
- Prefers closed canopy juniper-oak woodland (forest interior species)
- Nests high in canopy but may eat, drink, gather nesting material, and bathe on or near the ground.
- Eats insects
- Breeds in Central Texas March through July. Travis County contains the largest concentrated amount of preferred habitat
- Migrates to southern Mexico and Central America for fall & winter
- Each one is a native Texan



### Habitat Characteristics

- Mature Ashe juniper (cedar) - oak woodlands
- Mature juniper for nesting material
- A mix of juniper and deciduous hardwoods like red oak for foraging and nesting substrates
- Tall trees with high percent canopy cover



## Black-capped Vireo (*Vireo atricapilla*)



### Species Characteristics

- Listed as endangered in 1987
- Prefers shrubby habitat
- Typically nests 3-5 feet above ground
- Migrates to the western coast of Mexico for fall & winter
- Eats insects
- Breeds from April through August in Central Texas, Oklahoma, and northern Mexico



### Habitat Characteristics

- Mosaic of low, broad leaved shrubs and open areas, either grassy or rocky
- Generally 30% to 60% shrub cover, less than 10 feet tall. Some taller trees used as song perches
- Important characteristic: "skirt" of foliage extending to the ground
- Species of shrub less important than structure



## Karst Invertebrates (six species)

Five of the six endangered karst invertebrates.



(c) Mark Sanders

**Tooth Cave pseudoscorpion**  
**(*Tartarocreagris texana*)**



(c) Jean Krejca

**Tooth Cave Ground Beetle**  
**(*Rhadine persephone*)**



(c) Jean Krejca

**Bone Cave harvestman**  
**(*Texella reyesi*)**



(c) Robert & Linda Mitchell

**Kretschmarr Cave mold beetle**  
**(*Texamaurops reddelli*)**



(c) Robert & Linda Mitchell

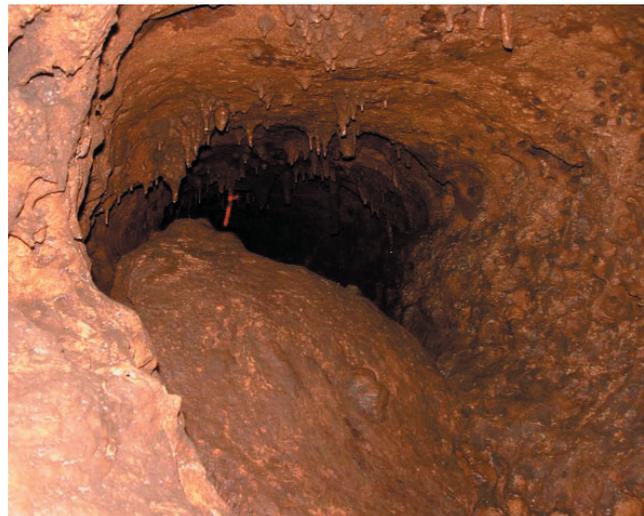
**Tooth Cave spider**  
**(*Neoleptoneta myopica*)**

The Bee Creek Cave harvestman  
(*Texella reddelli*) is also endangered  
(not pictured).

# Karst Invertebrates (six species)

## Species Characteristics

- All six species were listed as endangered in 1988
- Troglotic - spend entire life underground
- Some only known from a handful of caves, but not all caves have been surveyed
- Some are predators; others feed on dead organic matter



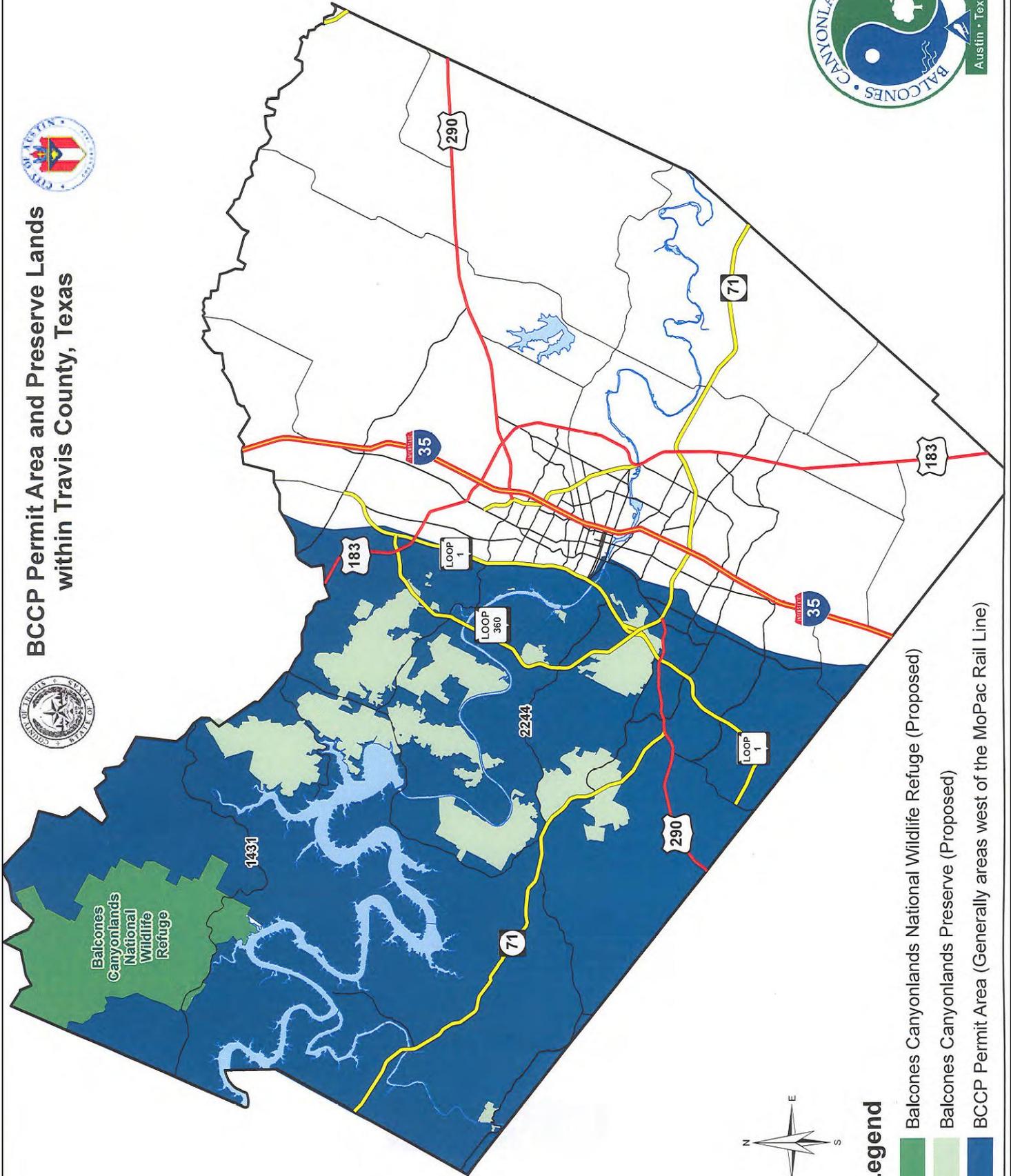
## Habitat Characteristics

- Underground, but still reliant on surface for nutrients
- Karst features may be large, or quite small
- Stable humidity and temperature
- Rely on cave crickets and other animals to bring in nutrients from surface



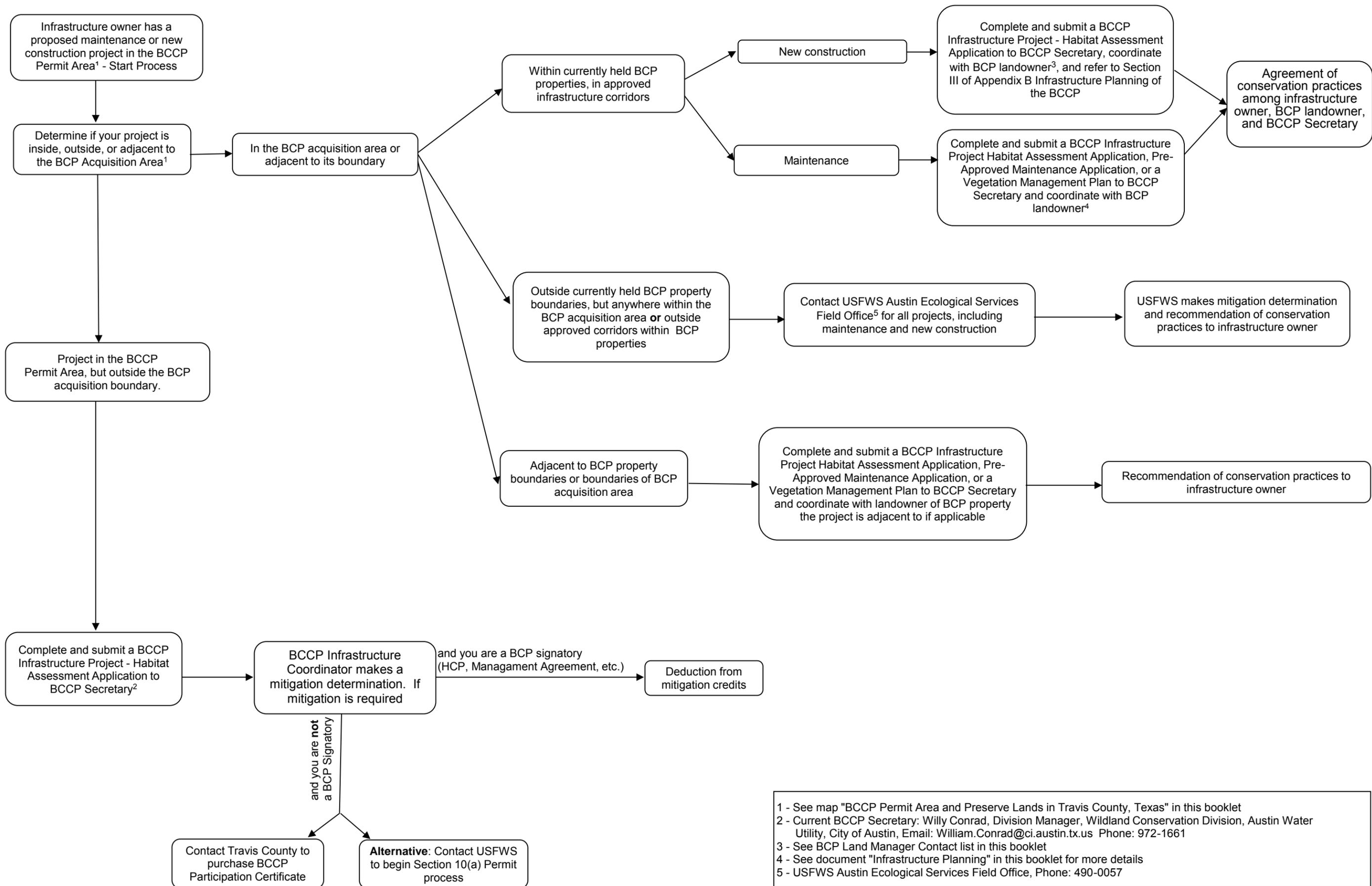


**BCCP Permit Area and Preserve Lands  
within Travis County, Texas**



**Legend**

- Balcones Canyonlands National Wildlife Refuge (Proposed)
- Balcones Canyonlands Preserve (Proposed)
- BCCP Permit Area (Generally areas west of the MoPac Rail Line)



1 - See map "BCCP Permit Area and Preserve Lands in Travis County, Texas" in this booklet  
 2 - Current BCCP Secretary: Willy Conrad, Division Manager, Wildland Conservation Division, Austin Water Utility, City of Austin, Email: William.Conrad@ci.austin.tx.us Phone: 972-1661  
 3 - See BCCP Land Manager Contact list in this booklet  
 4 - See document "Infrastructure Planning" in this booklet for more details  
 5 - USFWS Austin Ecological Services Field Office, Phone: 490-0057



## INFRASTRUCTURE PLANNING

### **Guidelines for the Operation and Maintenance of Facilities within the Balcones Canyonlands Preserve (BCP)**

- The Coordinating Committee Secretary (CCS) shall be notified of any planned maintenance within preserves by the various service providers or their contractors. Willy Conrad, City of Austin Wildland Conservation Division Manager, serves as the CCS for the BCP. See the Land Manager Contact list at the beginning of this booklet for contact information.
- The notification shall contain a brief description of planned work and approximate dates the work will be performed. Information needed to review infrastructure projects is provided in the BCCP Infrastructure Project – Habitat Assessment Application (copy provided in this booklet, on the Infrastructure CD, and on the City of Austin’s website: <http://www.ci.austin.tx.us/water/wildland/whatisthebccp.htm>). This application should be completed and submitted to the City of Austin BCP for any new construction projects. For maintenance activities, a Habitat Assessment Application, Pre-Approved Maintenance Application, or a Vegetation Management Plan may be submitted.
- In addition to working with the City of Austin BCP, service providers will need to coordinate with the BCP landowner(s).

### **Pre-Approved Maintenance**

- Service providers shall work with the CCS to define and secure pre-approval for operation and maintenance activities that may occur with a given corridor.
- Where such maintenance activities are repetitive, mutually agreeable schedules shall be established.

### **Emergency Maintenance**

- Structural, facility, or equipment problems that threaten reliability or safety must be handled immediately.
- Equipment used during an emergency can vary widely and is dependent upon the circumstances surrounding the emergency.
- Work done under these circumstances may impact species of concern. Work during an emergency should be done in such a manner as to minimize disruption and potential impacts to the species and their habitats.
- Efforts shall be made to contact the CCS for advice and guidance during emergency maintenance work.
- Written notification describing the emergency maintenance work done shall be sent to the CCS within five (5) working days after such work is completed. The infrastructure provider should also contact the BCP landowner(s) during or immediately following the emergency to discuss what occurred.

## **Scheduled Maintenance**

- The CCS shall be notified in writing in advance of any maintenance activities not covered under “Pre-Approved Maintenance” and “Emergency Maintenance.”
- This type of scheduled work could consist of major facility replacement, repair and maintenance, installation of cross and driveway culverts, grading and re-shaping of ditches, and clearing right-of-way.

## **Maintenance of Corridors**

1. Access to all facilities shall be established, clearly identified on a map, and maintained.
  - The CCS shall work closely with the service providers to designate specific access routes to all structures and facilities, consolidating access routes where possible and minimizing impact on the species of concern.
  - The maximum width of these access routes shall be twenty feet (20’), except that they may be wider in any curve to allow for clearance of truck booms.
  - Where possible, a closed canopy should be maintained over access routes to minimize fragmentation of the habitat and potential impacts on species of concern.
2. Existing cleared areas near structure sites shall be used where possible to reduce clearing requirements.
  - Existing low-lying vegetation at structures shall be preserved to the maximum extent possible.
  - If needed, additional clearing at structure sites shall be limited.
  - Service providers shall work closely with the CCS whenever manipulation of vegetation is required to ensure minimal impact on species of concern.
3. Clearing and trimming along the corridors shall be limited to the following:
  - Clearing/trimming from September 1 through February 28, outside of the breeding season of the Golden-cheeked Warbler and Black-capped Vireo.
  - Minimum clearing for surveying purposes (typically a four foot [4’] line of sight).
  - Strategic mechanical removal or trimming of vegetation, limited only to vegetation that is detrimental to the operation and maintenance of facilities. Requests to use chemicals may be approved by the CCS on a case-by-case basis only.
  - Removal of fast growing native trees directly under electric transmission line conductors within the corridor, and trimming of tree limbs to provide at least twenty feet (20’) of clearance from transmission conductors. Stump-sprouting native trees should be cut back to allow the required clearance on the edges of the corridor but to also allow re-sprouting to shrub form. Non-native trees – such as Chinese Tallow and Chinaberry – should be removed when encountered.
  - Trimming of trees or limbs to provide at least six feet (6’) of clearance from electric distribution conductors for span lengths up to two hundred feet (200’). If span lengths exceed two hundred feet (200’), an additional one foot (1’) of clearance will be required for each one hundred fifty feet (150’) length.

4. All trees and limbs cleared from the corridors shall be shredded, chopped, or hauled from the site.
  - Measures to prevent the spread of oak wilt must be followed at all times. This includes disinfecting equipment and painting wounds on oak trees immediately after cutting.
  - With approval of the CCS, trees and limbs or shredded mulch may be left in piles outside the corridor for use in remediation projects.
  - Special handling for oak trees exhibiting oak wilt will be necessary.
5. Sedimentation control measures will be installed and maintained in accordance with the rules and regulations of the City of Austin, LCRA, Travis County or Texas Department of Transportation, whichever may apply.
6. All excavated materials requiring disposal shall be removed from the corridor to an approved dump or fill area.
7. Any cleared areas shall be re-vegetated with native grasses, forbs, shrubs, and/or trees to re-stabilize vegetative cover within the approved time period.
8. The CCS and the service providers may develop and agree to clearing guidelines on a site-by-site basis that may modify and/or supplement the guidelines stated above.



# *Balcones Canyonlands Conservation Plan*

## Infrastructure Project - Habitat Assessment Application

Application No. \_\_\_\_\_

1. **Applicant Information:**

**Applicant Name:** \_\_\_\_\_

Company or Agency: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

**Contact Name:** \_\_\_\_\_ **Contact Title:** \_\_\_\_\_

Daytime Phone # (\_\_\_\_) \_\_\_\_ - \_\_\_\_ Fax # (\_\_\_\_) \_\_\_\_ - \_\_\_\_

Email address: \_\_\_\_\_

2. **Landowner:** \_\_\_\_\_

Contact Name and Department/Division: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

3. **Project Name:** \_\_\_\_\_

Applicant's Project Number (if applicable): \_\_\_\_\_

Street Address or Location Description: \_\_\_\_\_

Project Manager: \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_ - \_\_\_\_ Email address: \_\_\_\_\_

4. **Brief Project Description:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. **Description of Vegetation Disturbance:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Application No. \_\_\_\_\_

6. **Dimensions of Disturbed Areas (length, width, total square feet):** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. **Total acreage of disturbed area:** \_\_\_\_\_

8. **Attach to this application:**

1. Regional map showing location of project
2. Site plan maps
3. Access route map, including length and width of route and type of equipment to be used with locations marked (new construction projects only)
4. Map delineating disturbed areas (show source of #6 and #7)
5. Copies of any City of Austin environmental permits, if applicable
6. On-site, single point project contact (include phone and email address)

9. Has the U.S. Fish and Wildlife Service (USFWS) determined mitigation requirements or potential take of listed species for this project or a portion thereof? \*YES \_\_\_ or NO \_\_\_

**\*If YES,** attach a copy of the calculations and any related correspondence from USFWS.

**ADDITIONAL COMMENTS:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I realize that failure to supply complete information with this application may delay processing. I understand that a copy of this application may be provided to the Austin office of the U.S. Fish and Wildlife Service, and that habitat assessments are valid for six (6) months after completion. I certify that all statements on this application are true and correct to the best of my knowledge.

\_\_\_\_\_  
**SIGNATURE of Person Responsible for Submitting Application**

\_\_\_\_\_  
**DATE Signed**

\_\_\_\_\_  
**PRINTED NAME of Person Signing**

\_\_\_\_\_  
**Company or Agency**

**Call or fax directly to: Kimberlee Harvey 512/972-1686 or Fax 972-1665**

**Submit applications to: BCP Program - Infrastructure  
Wildland Conservation Division, Reicher Ranch  
Austin Water Utility  
3621 South FM 620 Rd.  
Austin, Texas 78738  
Attn: William Conrad  
City of Austin Wildland Conservation Division Manager**

## Sample: BCCP Partner Infrastructure Mitigation Letter



Michael Wallace  
Travis County Environmental Specialist  
Transportation and Natural Resources  
411 West 13<sup>th</sup> Street  
Austin, Texas 78767

Re: Improvements to Crosswind Dr. and Tradewind Dr. (BCCP Application # Travis County 09-006)

Dear Mr. Wallace:

Thank you for your application on behalf of Travis County regarding the proposed improvements to 1.5 miles of Crosswind Drive and Tradewind Drive, from the intersection with Beek Road to the second intersection (North) of Tradewind Road. The proposed project will consist of repaving and spot drainage improvements. All proposed work will be done within the existing ROW.

The project site lies outside of the preserve acquisition boundary for the Balcones Canyonlands Preserve. Based upon a review of the project plans submitted with the application, this project is eligible to participate in the regional Balcones Canyonlands Section 10 (a) permit. Participation under the BCCP permit will cover incidental take of endangered species habitat, particularly golden-cheeked warbler habitat that the project might impact.

Based on current BCCP habitat zone maps and the calculations provided with the application, .12 acres of Zone 2 golden-cheeked warbler habitat would be cleared of vegetation. No sensitive karst features would be affected by this project.

Because this is a Travis County infrastructure project, mitigation needs are provided from the mitigation bank balance maintained by Travis County. The vegetation removal would occur in Zone 2 golden-cheeked warbler habitat. For the clearing of .12 acres of Zone 2 habitat, the mitigation assessed for BCCP partners is ½ acre of Zone 1 mitigation for every 1 acre of Zone 2 take. All mitigation acreages for infrastructure projects are rounded up to the next 0.1-acre increment under calculation procedures approved by the Balcones Canyonlands Coordinating Committee. Therefore, a deduction of .1 acres of Zone 1 warbler habitat mitigation will be made to the Travis County current balance for the proposed project due to the calculations approved by the Balcones Canyonlands Coordinating Committee.

## Sample: BCCP Partner Infrastructure Mitigation Letter

As stated in your application, clearing activities will occur within areas designated as Zone 2. When participating under the BCCP permit, there are important requirements that relate to site clearing and subsequent construction activity that must be observed. Clearing of woody vegetation should be completed during the months from September through February. After March 1, such work must cease since golden-cheeked warblers will have returned to the area to nest. During the period from March through August, vegetation removal can be done only after a bird-monitoring program using USFWS protocols demonstrates that no nesting birds are located within 300 feet of the project bounds. Construction may proceed beyond the deadline once the natural vegetation has been removed in accordance with USFWS protocol.

If you have any further questions regarding this assessment or encounter any problems, please feel free to call me at (512) 972-1662.

Sincerely,

William A. Conrad  
BCCP Secretary  
Wildland Conservation

cc: File #: Travis County 09-006  
Rose Farmer, Travis County  
Adam Zerrenner, USFWS

## Sample: Non-partner Infrastructure Mitigation Letter



Mr. John Doe  
Environmental Engineer  
Utility Service

*Via facsimile: (512) 222-2222*

February 26, 2011

Re: Slaughter Lane to Highway 290 (S. Mo-Pac Expressway)  
BCCP Application # xxxxx

Dear Mr. Doe:

Thank you for your application on behalf of the Utility Service for the Slaughter to Highway 290 (S Mo-Pac Expressway) Pipeline Construction. The proposed project encompasses the construction of a gas line to improve gas distribution service to areas located in western Travis County, Texas. The pipeline will be installed in a new right-of-way (ROW) within the existing MoPac (ROW) from Slaughter Lane to Highway 290.

The project site lies outside of the preserve acquisition boundary for the Balcones Canyonlands Preserve (BCP). Based upon a review of the project plans submitted with the application, this project is eligible to participate in the regional Balcones Canyonlands Section 10(a) permit. Participation under the BCCP permit will cover incidental take of endangered species habitat, particularly golden-cheeked warbler, black-capped vireo, and karst invertebrate habitats that the proposed project might impact.

As described in the Habitat Assessment Application for this project, the construction footprint will be 18,480 linear feet x 30 feet wide = 554,400 sq ft, totaling approximately 12.73 acres. All trenching, ditching, and boring associated with the proposed project will occur within the MoPac ROW. The proposed pipeline cuts across portions of Zone 2, unconfirmed warbler habitat, and Zone 3, not known to be warbler habitat. However, since all work will be done within the existing MoPac ROW and since all woody vegetation has been cleared from this area, it is anticipated that no warbler habitat will be impacted. Therefore, no fees will be assessed. The proposed pipeline will cut across 15,000 linear feet of karst zones 1 and 2. No designated BCCP caves will be affected by the proposed action. However, three protected BCCP caves (District Park, Whirlpool, and Get Down Cave) are in the immediate vicinity of the proposed pipeline and the Project Manager and Construction Manager will need to be aware of the sensitivity of trenching through karst limestone.

The mitigation requirements for the pipeline project impacting habitat are 10.4 acres of Karst Zone habitat (15,000 linear feet X 30 feet wide = 450,000 sq ft = 10.33 acres). All mitigation acreages for infrastructure project are rounded to the next 0.1 acre increment under the

## Sample: Non-partner Infrastructure Mitigation Letter

calculation procedures approved by the Balcones Canyonlands Coordinating Committee. The fee for karst mitigation is \$750/acre. At current Balcones Canyonlands Conservation Plan (BCCP) participation rates, coverage for this project would amount to \$7,800, payable to the BCCP. These mitigation fees are used to purchase additional habitat lands within the Balcones Canyonlands Preserve for the long-term protection of the listed endangered species and other species of concern.

I am passing this habitat assessment along to Travis County for preparation of a participation certificate. Travis County will provide the necessary participation agreements for your signature and issue the certificate upon receipt of the participation fee. Your contact for this phase of the application process is Jennifer Brown, Travis County Transportation and Natural Resources, at 854-7215.

Following the above requirement, this letter constitutes your authorization to proceed through participation in the regional Section 10(a) permit. No clearing of vegetation in or within 300 feet of occupied warbler or vireo habitat is allowed nor is it authorized under this letter of habitat assessment during the birds' breeding/nesting season (March 1 – September 30). Additionally, participation by subsurface excavation projects near karst habitats, such as this project, should note that when construction activity uncovers new caves or significant karst features, such work must cease and the local USFWS Ecological Services office notified to check the cave for endangered species. Internal City assistance during such discoveries may also be obtained from the Watershed Protection and Development Review Department (974-2781 or 974-1916) or this office. It should be noted that the applicant has agreed to follow the City of Austin's specifications for void mitigation during trenching operation.

If you have any further questions regarding this assessment or encounter any problems, please feel free to call me at (512) 972-1660.

Sincerely,

William A. Conrad  
City of Austin Wildland Conservation Division Manager

File # xxxxxx

CC: Travis County TNR  
USFWS

# Pictorial Reference for Transmission Right-of-Way Maintenance

## R.O.W. MAINTENANCE OUTSIDE OF HABITAT AREA

*Typically what utility managers consider ideal - wide, open easements, maintained to look like a fairway: mowed, clean and clear.*



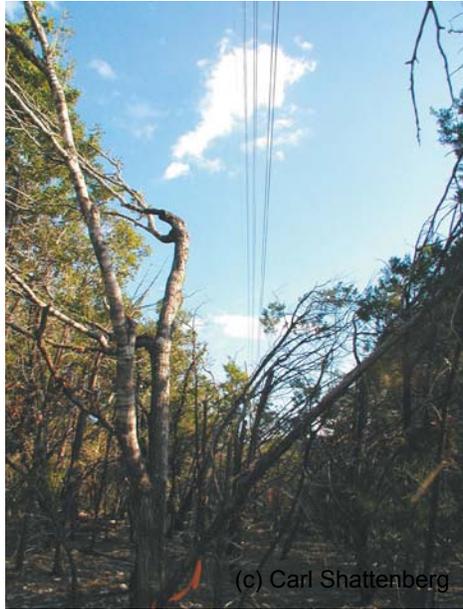
## R.O.W. MAINTENANCE WITHIN HABITAT BUT OUTSIDE BCP PRESERVES

Conserve compatible, low-growing vegetation in right-of-way, and also allow for access to structures.



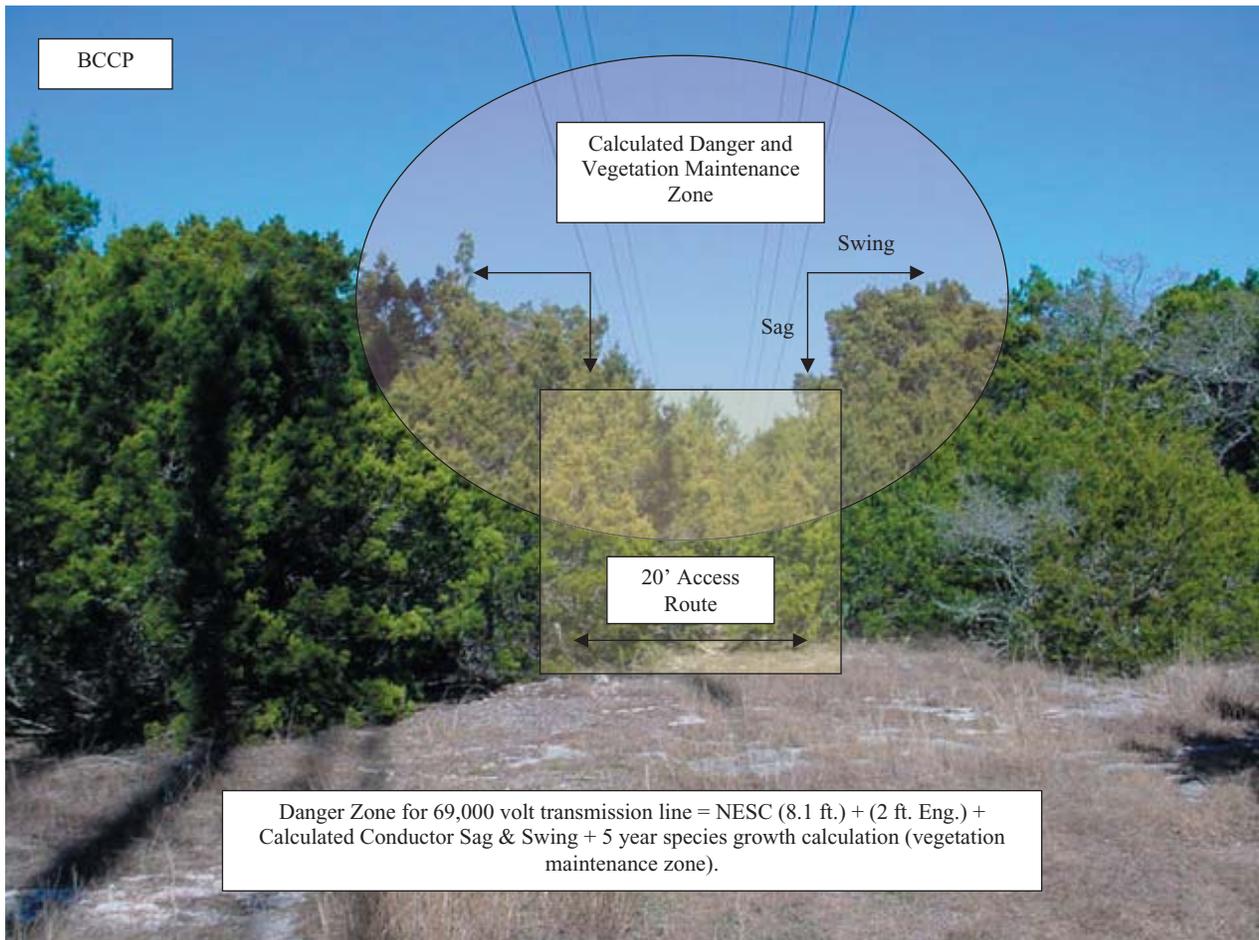
# R.O.W. MAINTENANCE WITHIN BCP PRESERVE

Modified pruning methods in juniper-oak woodland in BCP Preserves.

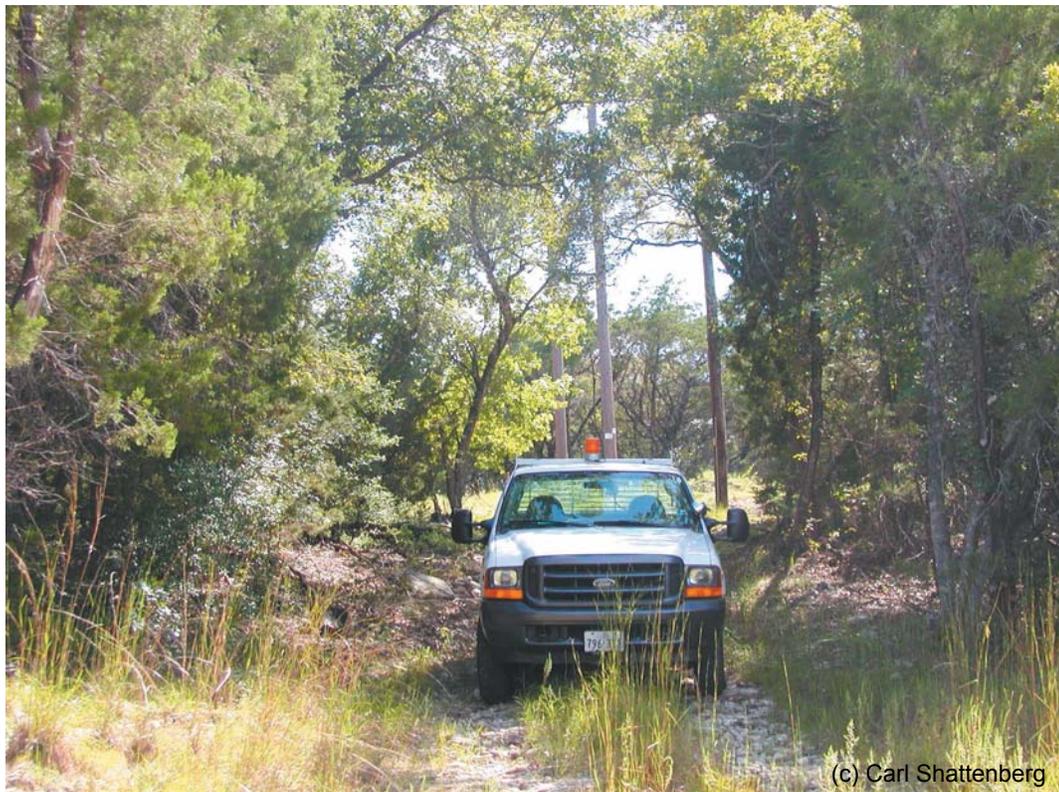


## Erosion Control & Revegetation





Access Routes - Maintain access routes up to 20' wide, with additional width in curves, as needed, to accommodate truck booms. Prune trees to provide closed canopy over the access routes with 14' overhead clearance where possible.



## Infrastructure Planning: Frequently Asked Questions and Answers

1. What is the Balcones Canyonlands Preserve (BCP)?

*Answer: The BCP is a system of preserves that exists as a multi-agency conservation effort operating under a regional “10(a)” permit issued under the Endangered Species Act by the U.S. Fish & Wildlife Service (USFWS). The permit was issued jointly to the City of Austin and Travis County in 1996, though several other organizations (including LCRA, The Nature Conservancy, Travis Audubon Society, and private developments) also own and manage land dedicated to the BCP. Ultimately, the goal is to set aside 30,428 acres in western Travis County as habitat for eight endangered species: the Golden-cheeked Warbler (GCWA), Black-capped Vireo (BCVI), and six karst invertebrates. In addition, the preserves are designed to protect 27 species of concern, including 25 karst invertebrates and two plants. Please see the following websites for more information about the BCP: <http://www.ci.austin.tx.us/water/wildland/bcp.htm> <http://www.co.travis.tx.us/tmr/bccp/default.asp>*
2. What is the difference between the Balcones Canyonlands Conservation Plan (BCCP) and the BCP?

*Answer: While the BCP is the more visible side of the regional effort to conserve endangered species and their habitat, the BCCP is the habitat conservation plan that established the preserve system and how it would be funded and organized. This plan serves as the basis for the federal permit. The BCCP was created to assist Travis County landowners in complying with the requirements of the Endangered Species Act. The BCCP is a voluntary, streamlined alternative to obtaining an “incidental take” or “10(a)” permit from the USFWS. The BCCP strikes a balance between community demands for growth and economic development with federal law by protecting over 30,000 acres to offset habitat impacts within Travis County.*
3. Who oversees the infrastructure program for the BCCP, and where do I find out information about what is required of infrastructure service providers?

*Answer: The City of Austin BCP manages the infrastructure program. The City of Austin BCP is part of the Wildland Conservation Division of the Austin Water Utility. For more information on the infrastructure process, contact the City of Austin’s BCP office (see Land Manager Contact list at the front of this booklet; flowchart and other information in this booklet; Infrastructure CD; and the COA’s BCP website: <http://www.ci.austin.tx.us/water/wildland/whatisthebccp.htm>).*
4. What is the difference between infrastructure permits and participation certificates?

*Answer: The infrastructure program covers roadways, utilities, and other capital improvement projects throughout the permit area and is managed by the City of Austin. Participation Certificates cover residential and commercial developments and are issued by Travis County. Infrastructure service providers who are not signatories of the BCCP may also purchase Participation Certificates as mitigation for infrastructure projects. Fees generated through the Participation Certificate program are used to assist with BCP land acquisition.*
5. Where is the BCCP permit area?

*Answer: A map of the BCCP permit area is included in this booklet. It is limited to western Travis County and generally includes areas west of the MoPac Rail Line, but not areas to the east of this line. It also does not include the area within the Balcones Canyonlands National Wildlife Refuge.*
6. What is “Appendix B”?

*Answer: Appendix B is the infrastructure management plan appended to the BCCP that defines infrastructure corridors within the BCP acquisition boundary and outlines the infrastructure process inside and outside of the BCP.*
7. What is the Infrastructure CD?

*Answer: A CD developed by the City of Austin BCP to assist with the infrastructure planning process. It includes Appendix B, maps of the BCCP permit area, existing and planned corridors, flow chart of infrastructure process, and application forms.*

8. What are some examples of infrastructure?

*Answer: Roads and electric, gas, telephone, cable, water, and wastewater lines.*

9. Why is infrastructure planning so important to the BCP?

*Answer: Infrastructure planning is critical to avoiding and minimizing further endangered species habitat loss and fragmentation in the BCP. Fragmentation and edge effects reduce the quality of the habitat needed for successful reproduction. Because the BCP has been designed to mitigate habitat loss outside of the preserves, protection of the remaining habitat is essential to promoting the continued survival and recovery of the species covered under the BCCP.*

10. What is an “approved infrastructure corridor”? Have existing corridors within the BCP been mitigated for through the BCCP permit, or do they need to be mitigated for as clearing/maintenance occurs? What is the infrastructure process for these corridors?

*Answer: “Approved infrastructure corridors” are areas within the BCP that have already been mitigated for under the BCCP. Within the BCP, infrastructure can only be built or maintained inside these corridors. Appendix B provides specific guidelines for new construction and maintenance in these corridors. Activities within existing, approved corridors within the BCP have been mitigated at a ratio of five to one (5 acres protected for every one acre destroyed). This means that within the 30,428 acres of preserve land, 5 acres of habitat were added to the preserves for every 1 acre of habitat contemplated as being part of a corridor. However, a BCCP Infrastructure Project – Habitat Assessment Application still needs to be completed and submitted to the City of Austin’s BCP for any new construction. For maintenance activities, a BCCP Infrastructure Project – Habitat Assessment Application, Pre-Approved Maintenance Application, or Vegetation Management Plan may be submitted. All activities within the BCP, including routine maintenance, also require coordination with the BCP landowner to avoid and minimize habitat impacts.*

11. Have existing corridors outside the BCP but within the BCCP permit area been mitigated through the BCCP?

*Answer: No. “Take” is only covered for activities within approved infrastructure corridors inside the BCP. For all other infrastructure projects, a BCCP Infrastructure Project – Habitat Assessment Application should be completed and submitted to the BCCP Coordinating Committee Secretary for a determination of whether mitigation is necessary.*

12. How do I determine whether mitigation is required for my project? How long will it take to obtain a determination for my project? What will I receive from the City of Austin BCP?

*Answer: First determine whether your project is within the BCCP permit area. If so, complete and submit a BCCP Infrastructure Project Habitat Assessment Application to the City of Austin BCP, who will determine whether mitigation is necessary. Typically the review process takes 7-30 days, depending on the completeness of the application and City of Austin BCP staff workload. The City of Austin BCP will provide a letter stating whether mitigation is needed, and if so, the acreage of the impacted area for each species (GCWA, BCVI, and/or karst invertebrates). The letter will also provide general recommendations to minimize species impacts and, for areas within the BCP, identify the BCP landowner(s). Examples of letters provided to non-signatories to the BCP and BCP managing partners are included in this booklet.*

13. What is the infrastructure process for non-signatories to the BCP (private utilities)? For BCP managing partners?

*Answer: Both begin the process by submitting a BCCP Infrastructure Project Habitat Assessment Application to the City of Austin BCP. Once the City of Austin BCP has made a mitigation determination, non-BCP signatories may purchase Participation Certificates or work with USFWS to address mitigation needs. BCP managing partners do not have to pay fees but instead deduct credits from their mitigation land banks. For new construction within approved infrastructure corridors, BCP managing partners must show as part of the application that their new construction projects have been mitigated (mitigation bank).*

14. How are mitigation bank activities accounted for? How much is left?

*Answer: The City of Austin BCP tracks the mitigation deductions for each BCP managing partner through the infrastructure process and reports the credits and deductions each year in an annual report to USFWS. As reported in Table 2 of the 2009 Annual Report, remaining mitigation credits for each BCP managing partner are: COA - 11,582.73 acres, Travis County – 3,038 acres, LCRA - 2,488.2 acres.*

15. Are additional mitigation credits/fees required to keep existing easements clear for access and maintenance?

*Answer: Once mitigated, additional mitigation is generally not required unless habitat grows back.*

16. For BCP managing partners, are mitigation credits required for maintenance work or just new projects? For example, would LCRA use credits for their preserves to mitigate for clearing for maintenance of infrastructure or just for new construction projects?

*Answer: Typically, no additional mitigation is required for routine maintenance within approved corridors in the preserves. However, if an approved infrastructure corridor hasn't been cleared and habitat has grown back, mitigation will need to be re-assessed.*

17. What constitutes emergency maintenance? How are emergencies within the BCP handled?

*Answer: Emergencies include threats to public health and safety, including structural, facility, or equipment problems that threaten reliability or safety. In the event of an emergency, act immediately to address the needs. To minimize impacts to the species and their habitats, efforts should be made to contact the BCCP Coordinating Committee Secretary (Willy Conrad, 972-1661) for advice and guidance during emergency maintenance work. Within 5 days of completing the work, provide written notification describing the emergency maintenance work to the Coordinating Committee Secretary. The infrastructure provider should also contact the BCP landowner(s) during or immediately following the emergency to discuss what occurred.*

18. What is “pre-approved maintenance”?

*Answer: Where the infrastructure provider has worked with the City of Austin BCP and the BCP landowner(s) to define and secure pre-approval for routine operation and maintenance activities within an approved corridor (within the BCP). Where such maintenance activities are repetitive, mutually agreeable schedules can be established. The benefit of having “pre-approved” maintenance is negating the need for repeated project reviews.*

19. What is “scheduled maintenance”?

*Answer: Where the infrastructure provider notifies the City of Austin BCP and the BCP landowner(s) in advance of any maintenance activities not covered under “pre-approved maintenance” or emergency maintenance. This type of scheduled work could consist of major facility replacement, repair and maintenance, installation of cross and driveway culverts, grading and re-shaping of ditches, and clearing of right-of-way. Notification is in the form of a written plan or application, which must be approved by the City of Austin BCP and BCP landowner(s) for each maintenance project.*

20. What measures can be implemented during maintenance or construction to protect the GCWA and BCVI?

*Answer: This will be discussed during the application process with City of Austin BCP staff. For corridors within the preserves, infrastructure service providers will also need to work with the BCP landowner. Recommendations typically include maintaining closed canopy woodlands to minimize fragmentation; consolidating access routes; leaving native shrubs and grasses; minimal and strategic pruning; removal of non-native trees; measures to prevent the spread of oak wilt; measures to control erosion and sedimentation; revegetation with appropriate native plants; prohibiting the use of herbicides and pesticides; and avoiding the critical nesting season (March 1 – August 31).*

21. What are the dates to avoid when working within the BCP (unless in an emergency)?

*Answer: March 1 – August 31 (GCWA and BCVI nesting season).*

22. What design/construction-related activities (i.e. survey, geotech investigation, etc) can be performed on BCP properties during GCWA/BCVI breeding season?

*Answer: Very little, so planning ahead is critical. Emergencies are understood to be special situations. Activities that could have been conducted outside of the GCWA/BCVI breeding season but were delayed due to poor planning are not considered to be emergencies.*

23. Why is implementing measures to prevent oak wilt so important?

*Answer: Because of repeated tree pruning and cutting along infrastructure corridors, these areas are frequently the epicenters of oak wilt infections. Oaks provide critical nesting and feeding sites for both the GCWA and BCVI. The loss of trees due to oak wilt can be extensive and devastating, and there is no cure. Trenching in an effort to contain infected areas is expensive and not fully effective in preventing further spread. Thus, the only way to avoid the further spread or introduction of oak wilt is to ensure preventative measures are implemented.*

24. What measures can be implemented during maintenance or construction to protect karst species?

*Answer: This will be discussed during the application process with City of Austin BCP staff. For approved corridors within the BCP, infrastructure service providers will also need to work with the BCP landowner(s). Protective measures may include ceasing work (such as drilling holes) if a void is encountered and contacting USFWS and BCP staff; avoiding driving/crossing sensitive areas; erosion and sediment control; maintaining surface vegetation; minimizing soil disturbance; and prohibiting the use of chemicals, including herbicides and pesticides.*

25. Some erosion controls such as silt fences may be more destructive and less appropriate than more recent alternatives such as mulch berms. Could these alternatives be used instead of standard temporary controls?

*Answer: This should be discussed during the application process with the City of Austin's BCP and the BCP landowner(s). Typically, sedimentation control measures are installed and maintained in accordance with the rules and regulations of the City of Austin, LCRA, Travis County or Texas Department of Transportation, whichever may apply.*

26. Should all brush be removed or shredded and mulched on site? If so, how thick can the mulch be?

*Answer: This will be site-specific and should be discussed with City of Austin BCP staff and the BCP landowner(s). Appendix B states that brush should be hauled off site. Brush piles are not allowed because they pose a fire hazard and provide habitat for avian nest predators. However, strategic placement of tree limbs on slopes may be beneficial to help control erosion; special handling for oak trees exhibiting oak wilt will be necessary. Chipping and shredding brush may also be recommended to provide mulch around plants and over bare soil. Typically, mulch should be spread uniformly about an inch thick over bare ground.*

27. How do we provide the GIS information and shape file data on the "Pre-approved Maintenance Plan" if our organization does not have GIS/GPS capabilities, equipment, or support?

*Answer: Use the Infrastructure CD, or other map document, to print and mark the location of the proposed maintenance on hardcopy and turn it in with the forms.*

28. Are there BCP management activities we should be aware of?

*Answer: Yes. The BCP conducts deer hunting during the fall and winter on several tracts within the BCP each year. The hunts typically begin November 1 (the meat is donated to the Hunters for the Hungry program, a statewide effort to receive donated meat and distribute it to food banks around the state. The BCP is the largest contributor in Texas to this program). Always call ahead to check if this land management activity is occurring on the property where an infrastructure crew needs access.*

29. Why is the BCP acquisition goal only 30,428 acres? Why not try for more if possible?

*Answer: The BCCP established a minimum of 30,428 acres which was arrived at through a combination of political and biological discussions. The requirement of the federal permit is the minimum of what is needed, not the amount that was originally recommended. In the 1980s and 1990s, the Biological Advisory Team assembled to contribute to the habitat conservation planning effort initially proposed 120,000 – 150,000 acres, which represents one of every four acres west of MoPac. The USFWS stepped up to assist with protection by*

*establishing the Balcones Canyonlands National Wildlife Refuge northwest of Austin with the goal of protecting 46,000 acres. They are currently conserving approximately 22,000 acres.*

30. Does BCCP take donations to purchase more acres for the preserve?

*Answer: Certainly! Acquisition is still continuing, and any efforts to assist the BCP managing partners would be most welcome. Travis County is currently taking the lead in completing the BCP acquisitions and is trying to leverage things like conservation easements and federal grants to acquire remaining acreage. Anyone with a new idea about funding or an interest in donating funds is welcome to call Travis County BCP staff (see Land Manager Contact list at the front of this booklet).*

31. Is there any chance the populations of GCWA and BCVI could stabilize and reproduce to the point they would be taken off the Endangered Species list?

*Answer: Regardless of the status of the GCWA and BCVI, the BCCP requires that their habitat within the BCP be protected in perpetuity. When reviewing the status of these species, the USFWS would take the success and effectiveness of the BCP into consideration.*



## Policy – Corporate Environmental Title: Oak wilt Prevention

### 1.0 Purpose

The purpose of this Lower Colorado River Authority (LCRA) Oak Wilt Prevention Policy is to document measures that must be implemented to prevent the spread of oak wilt while handling oak trees.

### 2.0 Definitions

**Oak Wilt:** A tree disease caused by the fungus, *Ceratocystis fagacearum*. The fungus infects the conductive tissue (xylem) of the tree, which contains vessels that transport moisture throughout the tree. The oak wilt fungus causes the infected tree to produce tylosis. The production of tylosis becomes so significant that the tree can no longer transport water throughout its vascular system. The end result, in most cases, is tree mortality.

### 3.0 Prevention Policy

- 3.1 Any person representing LCRA (from here on “LCRA representative”) who is involved in field work where oak trees are trimmed, removed, or could be potentially wounded shall receive initial oak wilt training as well as annual refresher training. LCRA representatives required to have training include, but is not limited to, project managers, construction managers, environmental staff, equipment operators, contractors, subcontractors, and volunteers. Training must be received before field work may begin in areas with oak trees. Those working with oak trees shall complete the LCRA Oak Wilt Prevention Report as well. This report will be discussed and distributed during training sessions.
- 3.2 When possible, oak trees should not be trimmed or pruned between February and June.
- 3.3 At all times, sterilization of equipment and painting of wounds are mandatory when trimming or pruning susceptible species.
- 3.4 Sterilization of tree removal and trimming equipment will occur before leaving the project area or between property boundaries and will involve using either aerosol disinfectant or a ten (10) percent bleach-water solution. In addition, tree trimming equipment must be sterilized thoroughly before it is used again.
- 3.5 Irrespective of limb size, all cuts and wounds must be painted with a wound or latex –based paint or product either approved by a Certified Arborist who has obtained an Oak Wilt Specialist Certification or recommended by the Texas Forest Service. Such painting will include stump-cuts and damaged roots both above and below ground. Damaged roots that are located in a trench/excavation that cannot be accessed safely, as deemed by the Safety Supervisor, do not have to be painted as the safety of the worker precludes painting the damaged root. Because it takes only a few minutes for an open tree wound to attract insects, waiting



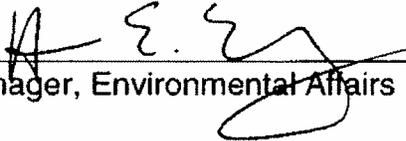
Policy – Corporate Environmental  
Title: Oak wilt Prevention

to paint until all pruning is accomplished is unacceptable. Wound protection must be applied immediately.

- 3.6 At a minimum, LCRA representative will seal all wounds (any size) of all oaks trees. However, LCRA representative may elect to seal cuts of all hard wood trees on a case-by-case basis.

**4.0 Disposal Policy**

- 4.1 Chipping or shredding the wood from infected trees to use as mulch is an acceptable means of recycling the wood. Chipping or shredding allows the wood to dry out quickly, thereby killing the fungus.
- 4.2 Burning diseased wood is an acceptable means of disposal. Burning diseased logs kills the oak wilt fungus; in addition, the fungus does not spread with smoke.
- 4.3 Firewood from diseased trees should not be stored near healthy trees because fungal spores or insects which carry the spores have the potential to spread the fungus. If the brush or logs are to be left for firewood, the LCRA representative must explain to the land owner or land owner's representative that the brush or logs may be infected and warn them of the hazards associated with storage. LCRA representatives may fulfill this landowner notification obligation by providing pertinent information in 4.3 or 4.4 of this policy to the landowner or landowner's representative. Logs over four (4) inches or ten (10) centimeters in diameter at breast height must be girdled (bark removed), as fungal mats have been found on logs of this size and larger after the tree has been felled.
- 4.4 It is recommended to store oak firewood under a sheet of clear plastic and tightly seal the edges of the plastic with soil or bricks. Doing so will prevent any spore-carrying beetles from escaping. It is also important to use clear plastic, as black plastic will reveal any escape holes to the beetles.
- 4.5 Unused disinfectants and paints must be recycled or disposed of properly. Material Safety Data Sheets (MSDSs) are required and must be attached to the LCRA Oak Wilt Prevention Report for each paint and disinfectant used.

Approved:   
Henry Eby, Manager, Environmental Affairs

## LCRA Oak Wilt Prevention Report

Oak wilt is a tree disease caused by a fungus which in most cases kills the tree. To help prevent the spread of oak wilt LCRA's Corporate Oak Wilt Policy states that **all wounds made to oak trees must be painted as soon as the wound is created** with a wound or latex-based paint or a product approved by a Certified Arborist who has obtained an Oak Wilt Specialist Certification or as directed by the Texas Forest Service. Sterilization of tree removal and trimming equipment must occur before leaving the project area or between property boundaries and must involve using either aerosol disinfectant or a ten (10) percent bleach-water solution. **Tools must be disinfected between trees if pruning adjacent to oak wilt infested areas.** In addition, trimming equipment must be sterilized thoroughly before it is used again. If mechanical clearing occurs using a device such as a flail mower, one must ensure that stumps are painted.

Please fill out the following report to ensure compliance with LCRA's Oak Wilt policy.

| Date | Project Location<br><i>(e.g. TL #, Substation, Park, etc.)</i> | County | Land Parcel #<br><i>(if known)</i> | Structures<br><i>(if applicable)</i> | Type of Paint used<br><i>(attach MSDS)</i> | Color of Paint* | # of Oak Trees Painted | Type of Disinfectant Used<br><i>(circle one)</i> |
|------|--|--------|------------------------------------|--------------------------------------|--|-----------------|------------------------|--|
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |
|      |  |        |                                    |                                      |  |                 |                        | Aerosol / 10% bleach solution                    |

\*It is highly recommended that a dark-colored paint (black or brown) be used. Marking and other types of paints that fade easily are not recommended.

Workers Name (printed): \_\_\_\_\_ Company: \_\_\_\_\_

Workers Signature: \_\_\_\_\_ Date: \_\_\_\_\_



# CITY OF AUSTIN

## OAK WILT PREVENTION POLICY

### 1.0 Purpose and Scope

The purpose of this Oak Wilt Prevention Policy is to identify measures that city staff and city-hired contractors and their sub-contractors, who perform the services of removing or trimming trees, will take to prevent the spread of oak wilt.

### 2.0 Definitions

**Oak Wilt Disease:** A tree disease caused by the fungus, *Ceratocystis fagacearum*. The fungus infects the vascular system of a tree. The vascular system contains vessels which transport moisture throughout the tree. The vessels of an infected tree effectively become blocked by the infection of the fungus, and cannot transport adequate moisture to sustain a healthy or living tree. In most cases, the end result is tree mortality.

### 3.0 Prevention Policy

- 3.1 Prior to beginning field work, all city staff associated with projects involving potential contact with oak trees shall be made aware of the city's official Oak Wilt Policy by receiving and reading a written copy of this policy. Staff receiving a written copy of the policy shall include, but not limited to, project managers, equipment operators responsible for removing or trimming trees, or operators using heavy equipment which could cause wounding of susceptible oaks in the use of the equipment. In addition, individual city departments will provide a written copy of the Oak Wilt Policy to contractors participating in city projects in areas where oak trees are present before initiating field work.
- 3.2 When possible, city staff and contractors should avoid trimming or pruning Live oaks and Red oaks (Spanish, Shumard, Texas Red, and Blackjack oaks) from Feb 1 to June 30.
- 3.3 At all times and irrespective of limb size, all cuts and wounds to oak trees shall be dressed immediately using a non-phytotoxic tree wound dressing. Stump cuts and damaged roots (both above and below ground) shall also be dressed.
- 3.4 Disinfection of pruning tools, saws, and related equipment is mandatory during the trimming or pruning of oak trees. Disinfection of tree removal and trimming equipment shall occur before work begins in a project area, between work in individual oak trees, and again prior to leaving a project area. Acceptable disinfectants include either aerosol disinfectant or a 10 percent bleach-water solution.

\*NOTE: Although this policy would require the disinfection of pruning equipment before and between oak trees as a precaution, research does not substantiate disinfection as a means of preventing the transmission of the oak wilt disease.

### 4.0 Disposal Policy

- 4.1 Chipping or shredding the wood from infected trees to use as mulch is an acceptable means of recycling the wood. Chipping or shredding allows the wood to dry out quickly, thereby killing the fungus.
- 4.2 Burning diseased wood is an acceptable means of disposal. Burning diseased logs will kill the fungus, and the fungus will not spread with the smoke.

**CITY OF AUSTIN**  
**OAK WILT PREVENTION POLICY**

- 4.3 Logs from diseased Red Oaks, that are not chipped, shredded, or burned shall be disposed of at a landfill.
- 4.4 Firewood from diseased Red oak trees shall *not* be stored near healthy trees where fungal spores or insects that carry the spores have the potential to spread the fungus to healthy trees. It is recommended to store oak firewood under a sheet of clear plastic, tightly sealing the edges of plastic with soil or bricks. Doing so will prevent any spore carrying beetles from escaping and will solarize and heat the stored firewood to speed the drying process. It is also recommended to use clear plastic, as black plastic will reveal any escape holes to the beetles.
- 4.5 In situations where diseased Red oak trees are identified and are not accessible for chipping, shredding, or removal, the trunk of the diseased tree should be girdled, and the stem treated with an appropriate herbicide to deaden the tree and hasten the desiccation and drying of the wood below the minimum moisture content that could support the development of fungal spores.

# Understanding, Recognizing, and Keeping Hypoxylon Canker of Oaks at Bay

## Part 2. Symptoms and Signs

**Symptoms.** As was described in Part 1 of this series (*Cause and Biology*), Hypoxylon Canker occurs in trees when they are stressed by environmental extremes. Trees in danger of succumbing to Hypoxylon canker therefore manifest all of the many symptoms typical of a declining tree (Figure 1). These symptoms include:

- Yellow, brown leaves,
- Small leaves and reduced twig growth,
- Thinning canopy,
- Dead limbs and branches,
- Epicormic shoots (water sprouts) growing on trunks and large limbs,
- Dieback of feeder roots,
- Sapwood in the cankered area becomes white and stringy.



Fig. 1. Declining trees at high risk to Hypoxylon canker.

**Signs.** As these symptoms in the tree progress, the outer bark falls from the tree to expose the causal fungus, called *Biscogniauxia (Hypoxylon) atropunctatum*. The signs of the fungus are:

→ (early stages) light to dark reddish brown to olive green colored crusty fungal (stroma) tissue over the cankered area (Figure 2),

→ (later stages) grey surface that eventually flakes off after 6 – 12 months to reveal a dark brown to black crusty material that gives a burnt appearance to the tree (Figure 2),

→ (advanced stages) the signs of the fungus may first appear as small patches a few inches in length, but will eventually merge to form large strips along the trunk and major limbs of the tree (Figure 2).



Fig 2. Stages of Hypoxylon canker.

Once Hypoxylon canker is evident, it is usually too late to try to save the tree. Large portions of the tree will be dead, reducing the desirability as a landscape specimen. In addition, the structural integrity of the wood is compromised and the tree becomes hazardous. Trees exhibiting signs and symptoms of Hypoxylon canker should be carefully inspected and considered for removal.

**Control** of Hypoxylon Canker depends on maintaining vigorous healthy trees by reducing stress and is discussed in **Part 3** of this series.

Prepared by Sheila McBride<sup>1</sup> and David Appel<sup>2</sup>  
 Diagnostician, Texas Plant Disease Diagnostic Laboratory<sup>1</sup> and Professor, Plant Pathology and Microbiology<sup>2</sup>  
 Texas AgriLife Extension Service; The Texas A&M University System

May 22, 2009

The information given herein is for educational purposes only. References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service personnel is implied.  
 Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.  
 The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

# Understanding, Recognizing and Keeping Hypoxylon Canker of Oaks at Bay

## Part 1. Cause and Biology

Hypoxylon canker is a tree disease appearing as a necrotic (dead) lesion on limbs, branches and trunks of affected trees. The canker develops just under the bark (Figure 1), but in advanced stages causes a white rot type of decay of the sapwood. For this reason, Hypoxylon canker not only contributes to tree mortality, but compromises the structural integrity of a tree making it a danger to life and property.

Fig 1. *Hypoxylon* beneath bark of disease tree.



The disease is caused by a fungus named *Biscogniauxia (Hypoxylon) atropunctatum*. This fungus is an opportunistic pathogen, meaning it does not affect healthy and vigorous trees. However, *Hypoxylon* can quickly colonize weakened or stressed trees. It has been diagnosed on trees growing in many different habitats, such as forest sites, pastures, parks, green spaces and urban development areas. Hypoxylon canker can affect any type of oak, including; black, blackjack, laurel, live, post, southern red, Texas red, water and white oaks.

Since *Hypoxylon* is a fungus, it spreads from diseased to healthy trees by spores. Opportunistic fungi, however, are usually already present on many trees, causing disease when tree resistance is insufficient to prevent them from infecting. There are many sources of stress capable of decreasing the resistance of trees to opportunistic pathogens.

## Stress Factors

Urban development Many factors in urban environments stress trees. Construction damage, for example, wounds roots and causes site disruption that result in tree stress and decline. Constructing swimming pools, sidewalks, patios, and driveways can damage essential roots and root flares that provide necessary water and minerals for a healthy tree. Soil compaction and addition of fill soil cause drainage issues and suffocate roots. All these factors set in motion a chain of events leading to stress, decline and tree death (Figure 2). During decline, *Hypoxylon* attacks the trees and contributes to their mortality.



Fig 2. Typical site disruptions during home construction.

Natural factors Climatic conditions such as heat, drought, ice storms, hail damage, lightning, and flooding are capable of predisposing trees to infection by *Hypoxylon*. Insect attacks and other diseases, such as oak wilt and root rots, induce stress and cause a tree to be susceptible to infection by *Hypoxylon*.

**Symptoms and Signs and Control** of Hypoxylon canker are covered in **Parts 2** and **3** of these fact sheets.

Prepared by Sheila McBride<sup>1</sup> and Dr. David Appel<sup>2</sup>  
Diagnostician, Texas Plant Disease Diagnostic Laboratory<sup>1</sup> and Professor of Plant Pathology and Microbiology<sup>2</sup>  
Texas AgriLife Extension Service; The Texas A&M University System

May 22, 2009

The information given herein is for educational purposes only. References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service personnel is implied.  
Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.  
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

## Understanding, Recognizing, and Keeping Hypoxylon Canker of Oaks at Bay

### Part 3. Managing Hypoxylon Canker

Hypoxylon canker, caused by the fungus *Biscogniauxia atropunctatum*, occurs on trees exposed to stress. Therefore, the disease may be controlled by preventing the stress from occurring and allowing the tree's natural resistance mechanisms to inhibit the pathogen. If a tree succumbs to stress, then measures must be taken to reverse the condition before the pathogen can invade.

Measures should be taken to avoid those stress factors listed in Part 1 of this series. If any of these or other stress factors occur, then remedial action should be taken to maximize the regeneration of the root system and allow the tree to cope with the subsequent strain. An aggressive way to improve the soil environment and stimulate feeder roots is through vertical mulching.

**Vertical mulching**→ In addition to fertilizing and root zone aeration, vertical mulching can increase gaseous exchange in the root system. Vertical mulching can also lessen damage due to excessive water, provide necessary aeration during wet periods, allow water penetration during drought periods, and promote the formation of fine feeder roots. Vertical mulching is a process by which a porous matter, such as pea gravel, sand or a mixture of compost with pea gravel, rice hulls or sand is added to holes drilled throughout the root

zone of the tree (Figure 1). The holes should be 18 – 24" deep and a few inches in diameter.

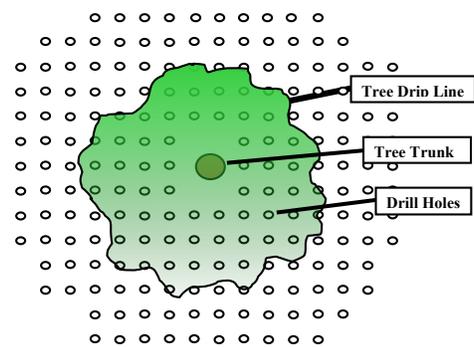


Fig. 1. Vertical mulching diagram illustrating placement of holes.

**Remedial pruning**→ If 15% or less of the canopy is affected, prune out all dead branches. All pruning should be done utilizing proper pruning practices.

**Tree removal**→ If over 15% of the canopy is infected, one should consider cutting the tree down. This pathogen causes a white rot of the wood and trees killed by *B. atropunctatum* may quickly become a hazard. Since the fungus is already present throughout a stand, destroying the wood to prevent further infections is questionable. Nonetheless, storing diseased wood in the immediate vicinity of remaining trees should be avoided.