

# Appendices

## **Appendix A**

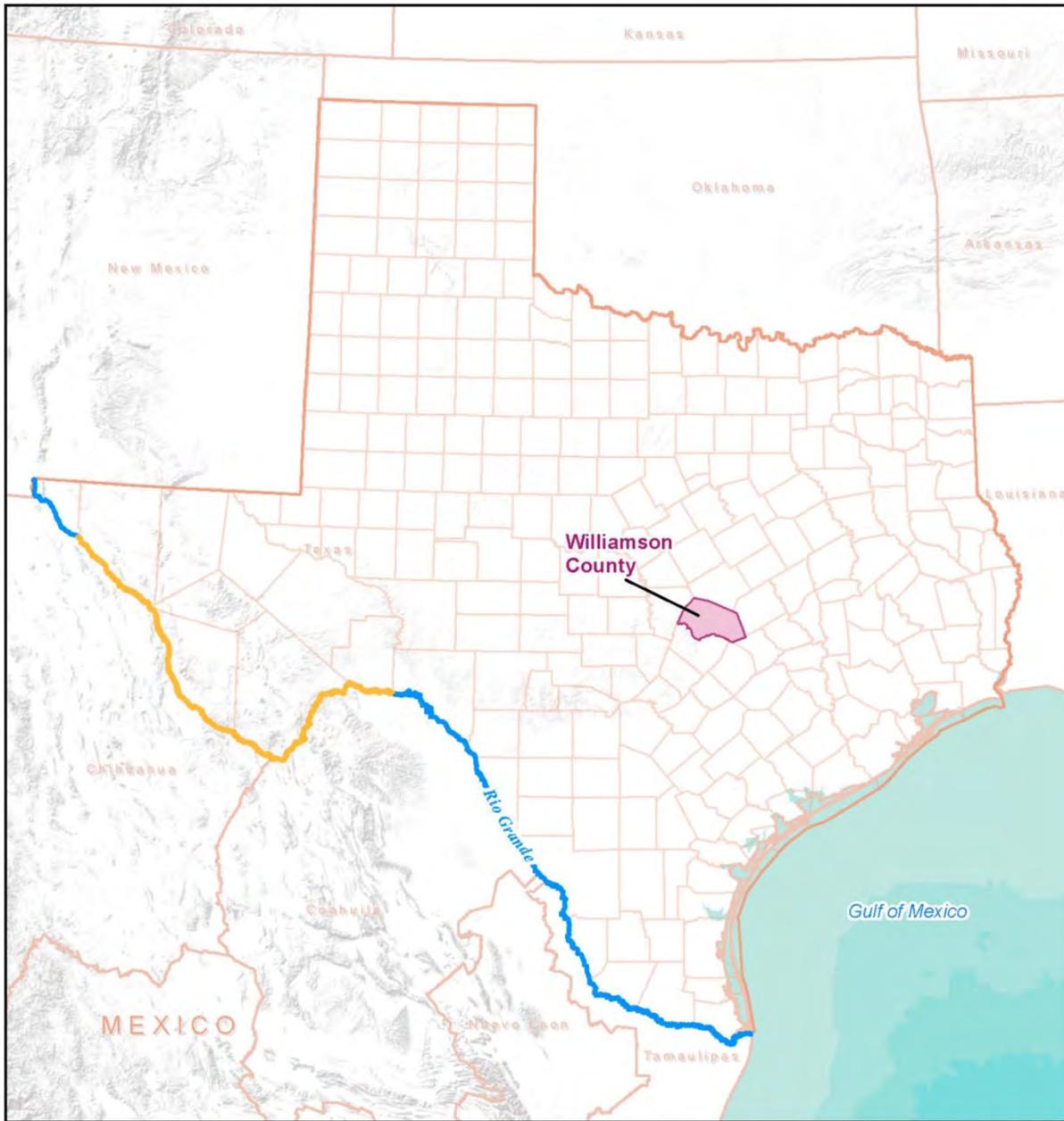
### **Water Resources Data**

A-1. Wild and Scenic Rivers Map

A-2. Sole Source Aquifer Map

A-3. FEMA Flood Insurance Rate Maps

A-4. Executive Order 11988 - Floodplain Management Eight-Step Decision Making Process

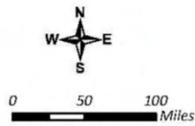


**Fuels Reduction in Williamson County  
Southwest Regional Park**

Williamson County

**Legend**

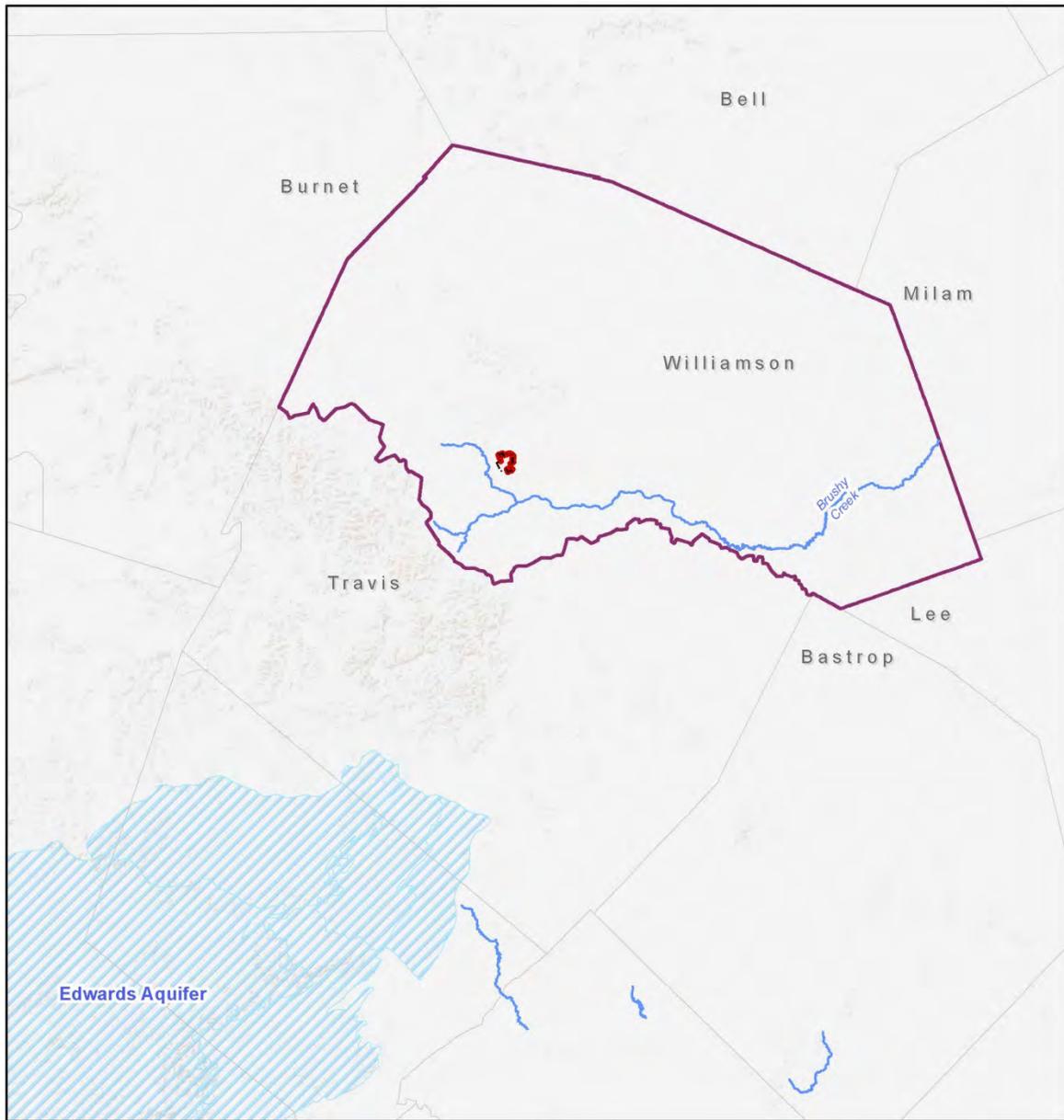
- Designated River Segment
- Nondesignated River Segment
- Williamson County



**Designated Wild and Scenic  
Rivers of Texas**



Data Sources: NPS, TNRIIS  
Service Layer Credits: Sources: Esri, USGS, NOAA



**Fuels Reduction in Williamson County Southwest Regional Park**

Williamson County

**Legend**

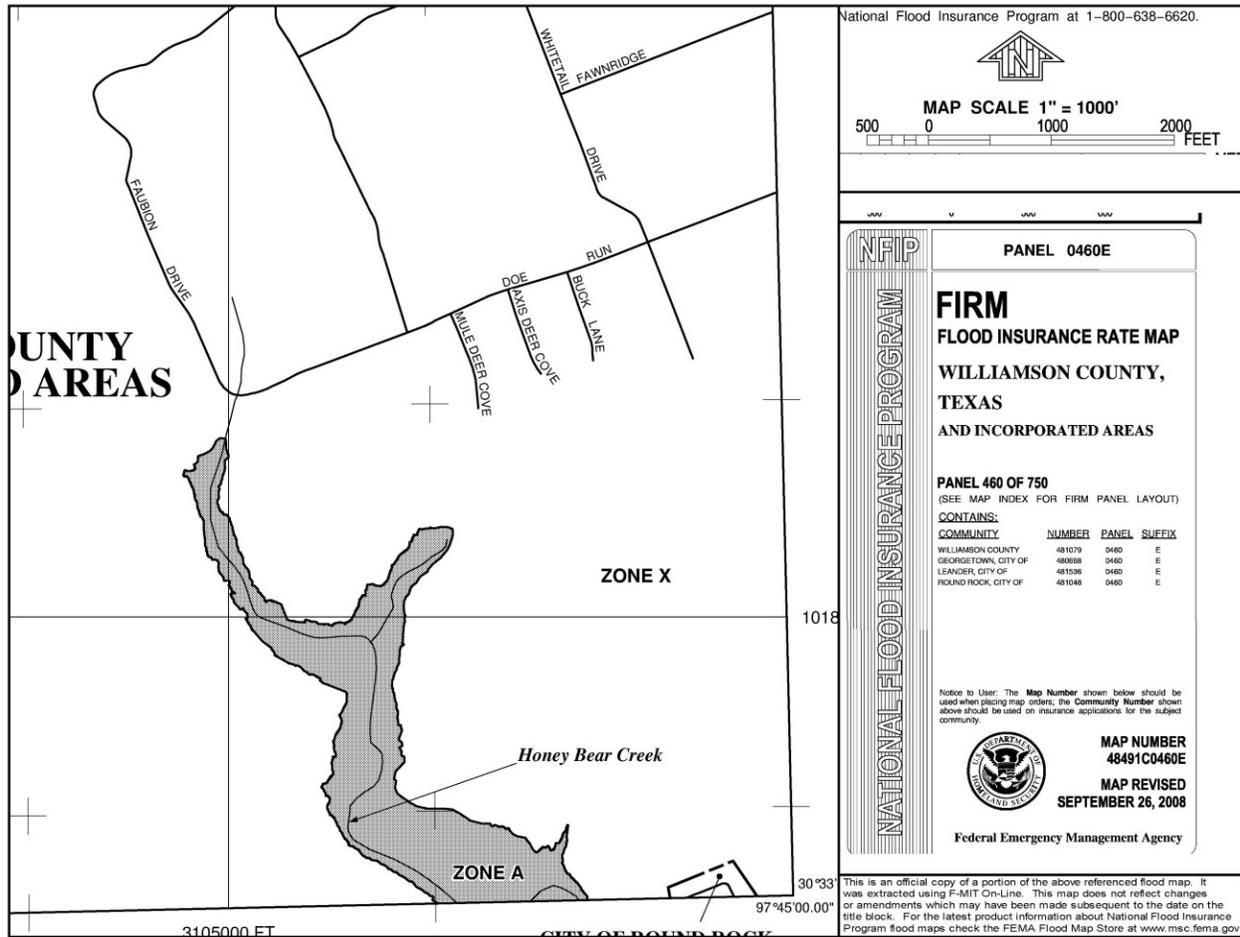
- River
- Project Area
- Park Boundary
- Area of Interest
- Sole Source Aquifer

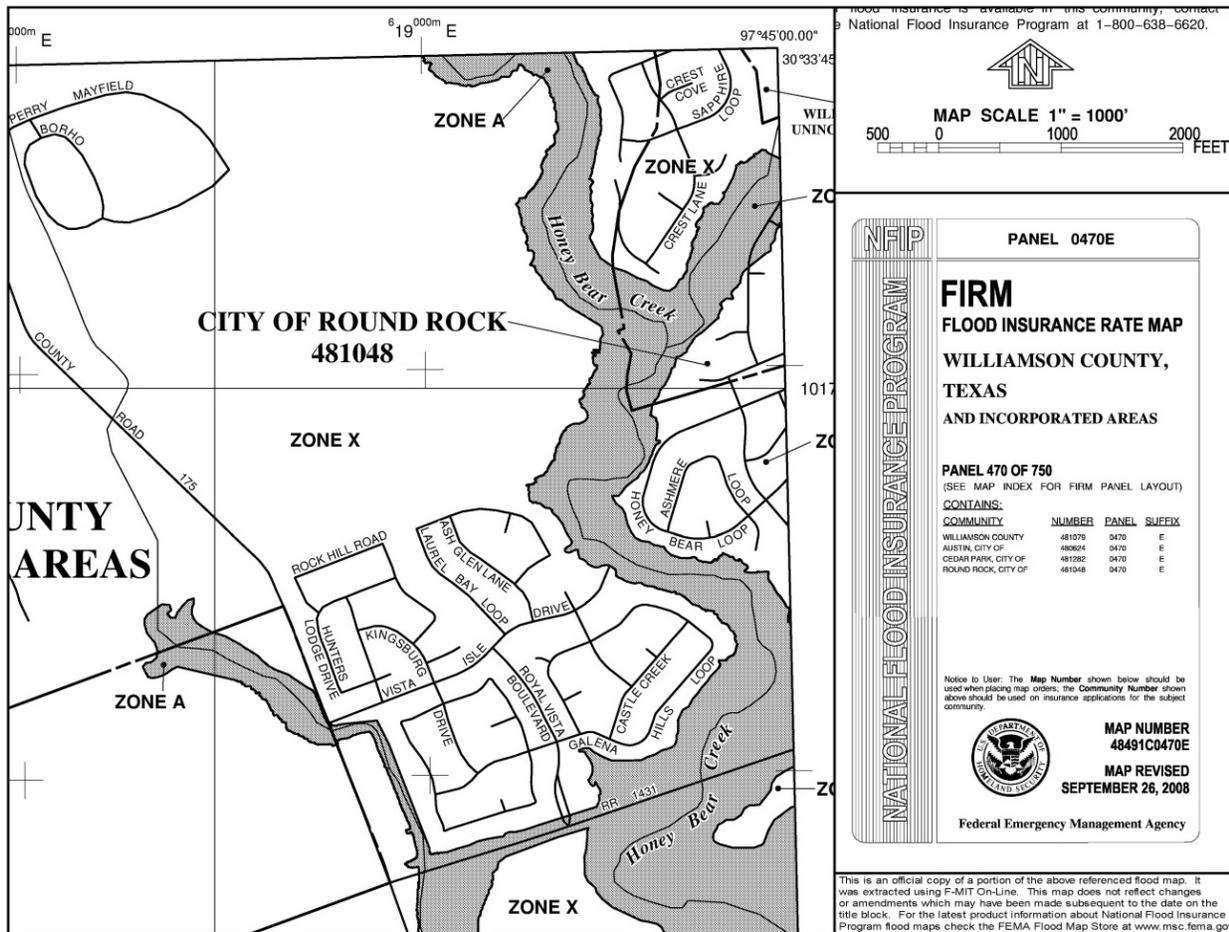
0 5 10 Miles

**Sole Source Aquifers**

Williamson County

Data Sources: EPA, TNRIS  
 Service Layer Credits: Sources: Esri, USGS, NOAA





... flood insurance is available in this community, contact  
 the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

**NATIONAL FLOOD INSURANCE PROGRAM**

PANEL 0470E

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILLIAMSON COUNTY,**  
**TEXAS**  
**AND INCORPORATED AREAS**

PANEL 470 OF 750  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

| COMMUNITY           | NUMBER | PANEL | SUFFIX |
|---------------------|--------|-------|--------|
| WILLIAMSON COUNTY   | 481070 | 0470  | E      |
| AUSTIN, CITY OF     | 480624 | 0470  | E      |
| CEDAR PARK, CITY OF | 481282 | 0470  | E      |
| ROUND ROCK, CITY OF | 481048 | 0470  | E      |

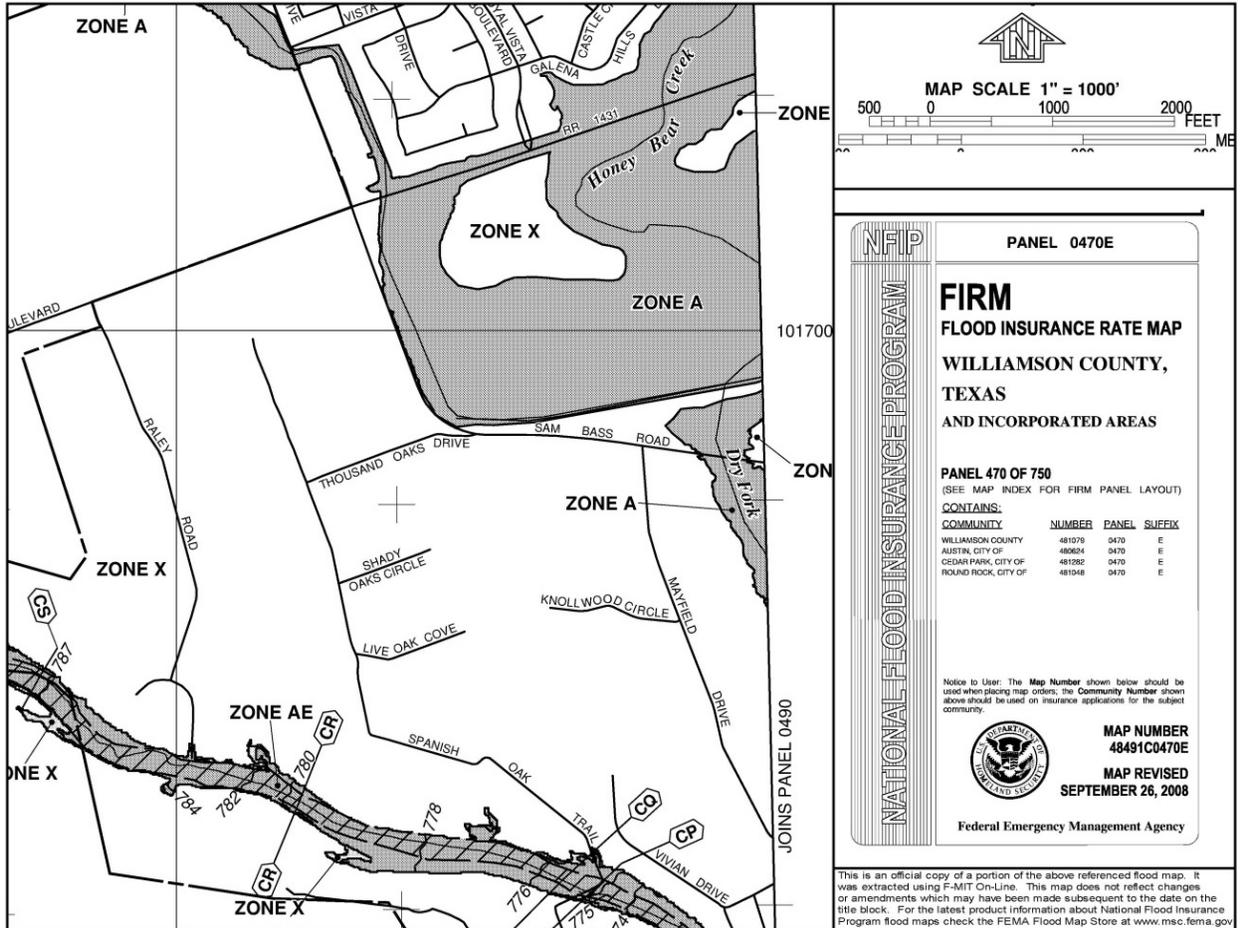
Notice to User: The Map Number shown below should be used when placing map orders, the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**48491C0470E**

**MAP REVISED**  
**SEPTEMBER 26, 2008**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



## **Executive Order (EO) 11988 – Floodplain Management Eight-Step Decision Making Process**

EO 11988 (Floodplain Management) requires federal agencies “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development whenever there is a practical alternative.”

This eight-step process is applied to the proposed Williamson County Southwest Regional Park Hazardous Fuels Reduction project. The proposed project involves vegetation management along portions of the perimeter of Southwest Regional Park in order to reduce the risk of damage to structures from wildfire. Portions of the proposed project area are within the 100-year floodplain of Honey Bear Creek. The steps in the decision-making process are as follows:

### **Step 1 Determine if the proposed action is located in the Base Floodplain**

A portion of the work area will be conducted within the 100-year floodplain of Honey Bear Creek according to the Flood Insurance Rate Maps (FIRMs) (panel numbers 48491C0470E and 48491C0460E). The floodplain in relation to the proposed project is depicted on **Figure 4.8** of the environmental assessment (EA). The proposed project would not result in the construction of any structures within the 100-year floodplain nor would it involve any fill or excavation within the floodplain.

### **Step 2 Early public notice (Preliminary Notice)**

A public notice concerning the proposed hazardous fuels reduction project will be published in the *Williamson County Sun* along with the Notice of Availability of the draft EA document. The *Williamson County Sun* is the local newspaper for the Southwest Regional Park area, including the floodplain area of Honey Bear Creek where the proposed action is located.

### **Step 3 Identify and evaluate alternatives to locating in the base floodplain**

The no action alternative is described in **Section 3** of the EA. The no action alternative would not meet the purpose and need for the project and is not a practicable alternative.

An alternative that would relocate the project out of the floodplain is described here. A portion of the proposed project is located within the 100-year floodplain of Honey Bear Creek. In order to protect homes adjacent to Southwest Regional Park, hazardous fuels reduction is needed along portions of the perimeter of the park. Relocating the proposed project area to avoid the floodplain would require that portions of the project area not undergo hazardous fuels reduction along the perimeter. This alternative was considered but rejected because it would not adequately protect residences adjacent to Southwest Regional Park. An alternative that would relocate the project outside of the floodplain would not meet the project purpose and need and is not a practicable alternative.

**Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain**

*Impact on natural function of the floodplain*

The proposed action would not affect the functions and values of the 100-year floodplain. The proposed action would not place any structures or fill within the floodplain that would impede or redirect flood flows nor would it result in any excavation. No structures would be constructed within the floodplain, and minor soil disturbance would occur within the floodplain during project implementation. Although the proposed action would reduce risk to homes adjacent to Southwest Regional Park, the proposed action would not facilitate any development within the floodplain.

The functions of the floodplain to provide flood storage and conveyance, filter nutrients and impurities from runoff, reduce flood velocities, reduce flood peaks, moderate temperature of water, reduce sedimentation, promote infiltration and aquifer recharge, and reduce frequency and duration of low surface flows will remain intact after the implementation of this project. There will be minor short-term impacts to water quality during the implementation phase of the project. Floodplains also provide services in the form of providing fish and wildlife habitat, breeding, and feeding grounds. These floodplain values will not be adversely impacted, and the overall integrity of the ecosystem will not be impacted. FEMA has determined the project may affect but will not likely adversely affect the endangered Black-capped vireo and that it may adversely affect the endangered Golden-cheeked warbler and the endangered Bone Cave harvestman. The project would not adversely modify or otherwise affect designated critical habitat. The proposed action would have negligible impacts to native species and their habitats and population levels of native species would not be affected. The potential for adverse impacts to migratory bird species would be avoided by conducting the work during the fall and winter seasons when migratory species are not breeding. The proposed action will not adversely affect the societal and recreational benefits provided by the floodplain in these natural areas. Open space and recreational uses in the parks and preserves will not be affected by the proposed action.

The hazardous fuels reduction activities would reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. A wildfire could alter the cycling of nutrients; the physical and chemical properties of soils; and the temperature, moisture, and biotic characteristics of the existing soils. In the event of a major wildfire, more bedrock could be exposed to direct rainfall, which would increase the rate of erosion of the formation. These primary impacts from a wildfire could also result in decreased infiltration and increased runoff, which often causes increased erosion. These potential negative effects of a major wildfire on the natural floodplain functions would be reduced through implementation of the proposed action.

*Impact of the flood water on the proposed facilities*

The proposed action does not include any structures or facilities within the floodplain; therefore, no facilities would be affected by flood water in the floodplain of Honey Bear Creek. The proposed action also does not include any fill, excavation, or ground disturbance that could affect flood flows or elevations.

No debris or mulch piles would be staged or stored in the floodplain, though mulch may be spread on the ground surface for erosion control. Potential floodwaters will not affect the project.

### **Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values**

The objective of the proposed action is to reduce the risk of wildfires impacting homes along the boundary of Southwest Regional Park. No structures are or would be located in the floodplain as a result of the proposed project. The proposed hazardous fuels reduction would result in removal of dead and dying trees, thinning of small trees and underbrush, and trimming of the lower branches of large trees. The proposed action would have no effect on the natural and beneficial values of the floodplain. As a condition of the project, no debris or mulch piles would be staged or stored in the floodplain, though mulch may be spread on the ground surface for erosion control. Many of the impacts discussed above are considered insignificant or beneficial to the floodplain. The proposed action to reduce fuel loads contributes to the conservation of the floodplain and its natural and beneficial values. Short-term water quality impacts will be mitigated by the implementation of BMPs.

Impacts to the federally listed species will be protected by the avoidance and minimization measures outlined by FEMA and agreed to by the U.S. Fish and Wildlife Service in their biological opinion dated 5/19/2015. Impacts to migratory bird species will be minimized by seasonal restrictions such that work is conducted outside of nesting season. For any work in the floodplain, Williamson County will be required to coordinate with the local floodplain administrator and obtain any required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

### **Step 6 Determine if proposed action is practicable and re-evaluate alternatives.**

The proposed action would not expose any segment of the population to flood hazards because it does not include a housing component, and will not facilitate development in the floodplain. The proposed action would not change the current flood hazard because it would not impede or redirect flood flows. The project would not disrupt floodplain values because it would not change water levels in the floodplain. Therefore, it is practicable to implement the proposed action within the floodplain. Alternatives consisting of locating the project outside of the floodplain or taking no action are not practicable because these alternatives would not reduce wildfire risks to people and homes along the boundary of Southwest Regional Park. FEMA maintains that the proposed action alternative is the only practicable alternative to meet the purpose and need of the project. This section may be revised following public comment on the EA and this eight-step evaluation if significant comments are received regarding floodplain impacts.

**Step 7 Findings and public explanation (Final Notification)**

Step 7 requires that the public be provided with an explanation of any final decision that the floodplain is the only practicable alternative. In accordance with 44 CFR §9.12, Williamson County must prepare and provide a final public notice 15 days prior to the start of any hazardous fuels reduction activities in the floodplain. Documentation of the final public notice is to be forwarded to FEMA for inclusion in the permanent project files.

**Step 8 Implement the action**

Step 8 is the review of the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Part 9.11 are fully implemented. The proposed hazardous fuels reduction project will be conducted in accordance with applicable floodplain development requirements.

Conditions identified in Step 5 would be implemented.

# **Appendix B**

## **Biological Site Visit Field Notes**

Appendix B. Table 1. Habitat Type Summary

| Habitat Type            | Dominant Plant Species   | Animal Species Observed   |
|-------------------------|--|---|
| Juniper Scrubland       | <p>Canopy: ashe juniper with few/scattered oaks. Mature trees. 40 to 60 percent total cover.</p> <p>Mid-story: ashe juniper, Texas live oak, honey mesquite, cedar elm saplings. 15 percent total cover.</p> <p>Groundcover: little bluestem, western ragweed, prickly pear cactus, Texas crabgrass. 15 to 35 percent total cover. Small patches of bare ground with limestone cobble.</p> | White-tailed deer, wild boar, cottontail rabbit, hispid cotton rat, northern cardinal, American robin, blue jay, northern mockingbird |
| Mixed Woodland          | <p>Canopy: ashe juniper, Texas live oak, cedar elm, honey mesquite. 85 percent total cover.</p> <p>Mid-story: honey mesquite, ashe juniper, Texas persimmon. 20 percent total cover.</p> <p>Groundcover: little bluestem, rosettegrass, prickly pear cactus, southern dewberry. 40 percent total cover.</p>  | White-tailed deer, cottontail rabbit, northern cardinal, blue jay, mourning dove  |
| Disturbed Open Land     | <p>Canopy: absent.</p> <p>Mid-story: absent.</p> <p>Groundcover: western ragweed, Texas frog fruit, snow-on-the-prairie. Area is dominated by species typical of secondary session following ground disturbing activities. No grass species present.</p>   | Eastern kingbird, white-tailed deer, wild boar  |
| Riparian Mixed Woodland | <p>Canopy: cedar elm, Texas live oak, ashe juniper, post oak, honey mesquite, hackberry, 90 percent total cover.</p> <p>Mid-story: ashe juniper, Texas persimmon, Texas live oak, and cedar elm saplings. 70 percent total cover.</p> <p>Groundcover: common greenbrier, muscadine grape. 5 percent total cover.</p>   | Northern cardinal, white-tailed deer, wild boar, blue jay   |
| Maintained ROW          | <p>Canopy: Ashe juniper and cedar elm at the edge of mowed ROW.</p> <p>Mid-story: ashe juniper at the edge of mowed ROW.</p> <p>Groundcover: King Ranch bluestem, bermudagrass, Texas crabgrass, western ragweed, broomsedge bluestem.</p>   | White-tailed deer, northern cardinal, turkey vulture, blue jay, house wren, mourning dove   |

## Appendix B

| Habitat Type         | Dominant Plant Species  | Animal Species Observed  |
|----------------------|---|--|
| Maintained Easement  | <p>Canopy: absent. Easement habitat bordered by forested habitat.</p> <p>Mid-story: honey mesquite, ashe juniper. 5 percent total cover.</p> <p>Groundcover: western ragweed, little bluestem, bermudagrass, Texas crabgrass, black-eyed Susan, side-oats gamma, King Ranch bluestem. 100 percent total cover.</p>  | White-tailed deer, coyote, fox squirrel.   |
| Juniper Oak Woodland | <p>Canopy: ashe juniper, Texas live oak, few/sparse cedar elm. 95 percent total cover.</p> <p>Mid-story: ashe juniper saplings. Less than 5 percent total cover.</p> <p>Groundcover: little bluestem. 20 percent total cover.</p>   | White-tailed deer, cottontail rabbit, grey squirrel, northern cardinal, red-tailed hawk, red-bellied woodpecker.                             |
| Mixed Scrubland      | <p>Canopy: Texas live oak, cedar elm, ashe juniper. 40 to 60 percent total cover.</p> <p>Mid-story: cedar elm, ashe juniper, honey mesquite, prickly pear cactus. 20 percent total cover.</p> <p>Groundcover: prickly pear cactus, Christmas cholla cactus, little bluestem, western ragweed, King Ranch bluestem. 60 percent total cover. 5 percent bare ground with limestone cobble.</p> | White-tailed deer, wild boar, cottontail rabbit, grey squirrel, northern cardinal, red-tailed hawk, blue jay, Carolina chickadee, house wren |
| Juniper Woodland     | <p>Canopy: ashe juniper, few/sparse Texas live oak. 80 percent total cover.</p> <p>Mid-story: yaupon, ashe juniper saplings. 5 percent total cover.</p> <p>Groundcover: little bluestem, prickly pear cactus, King Ranch bluestem. 20 percent total cover.</p>  | White-tailed deer, blue jay, American crow   |

Appendix B. Table 2. Listed Species Summary

| Species (Common) <sup>1</sup> | Species                  | Federal Status | State Status | Habitat Description  | Habitat Present in Survey Areas (CDM Desktop Assessment) | Habitat Present in Survey Areas (Field Assessment)   |
|-------------------------------|--------------------------|----------------|--------------|--|--|--|
| <b>Amphibians</b>             |                          |                |              |  |  |  |
| Georgetown salamander         | <i>Eurycea naufragia</i> | PE             | None         | Endemic; known from springs and waters in and around town of Georgetown in Williamson County | Unlikely   | Unlikely to occur; suitable habitat does not exist. Low potential to occur in the unnamed tributary to Dry Fork Creek that extends through the project area. It is unknown if underground springs are present. |
| Jollyville Plateau salamander | <i>Eurycea tonkawae</i>  | PE             | None         | Known from springs and waters of some caves north of the Colorado River                      | Unlikely   | Unlikely to occur, suitable habitat does not exist. Low potential to occur in the unnamed tributary to Dry Fork Creek that extends through the project area. It is unknown if underground springs are present. |

**Appendix B**

| Species (Common) <sup>1</sup> | Species                         | Federal Status | State Status | Habitat Description   | Habitat Present in Survey Areas (CDM Desktop Assessment) | Habitat Present in Survey Areas (Field Assessment)  |
|-------------------------------|---------------------------------|----------------|--------------|---|--|---|
| <b>Birds</b>                  |                                 |                |              |   |  |   |
| American Peregrine falcon     | <i>Falco peregrinus anatum</i>  | DL             | T            | Year-round resident and local breeder in west Texas; nests in tall cliff eyries; migrant across state from more northern breeding areas in U.S. and Canada; winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant; stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands | Potential foraging                                       | Unlikely to occur; suitable habitat does not exist. Potential foraging/migration stopover habitat present only. No nesting habitat present. |
| Bald eagle                    | <i>Haliaeetus leucocephalus</i> | DL             | T            | Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds  | Low potential  | Unlikely to occur; suitable habitat does not exist. No foraging or nesting habitat present  |

**Appendix B**

| Species (Common) <sup>1</sup> | Species                      | Federal Status | State Status | Habitat Description   | Habitat Present in Survey Areas (CDM Desktop Assessment) | Habitat Present in Survey Areas (Field Assessment)  |
|-------------------------------|------------------------------|----------------|--------------|---|--|---|
| Black-capped vireo            | <i>Vireo atricapilla</i>     | LE             | E            | Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer | Potentially present                                      | Potential to occur; suitable habitat present. Nesting and foraging habitat present within the Juniper Oak and Mixed Woodland habitat types.                                   |
| Golden-cheeked warbler        | <i>Setophaga chrysoparia</i> | LE             | E            | Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips only available from mature trees used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer   | Potentially present                                      | Potential to occur; suitable habitat present. Foraging and nesting habitat present within the Juniper Oak Woodland, Mixed Woodland, and Riparian Mixed Woodland habitat types |

Appendix B

| Species (Common) <sup>1</sup> | Species                   | Federal Status | State Status | Habitat Description   | Habitat Present in Survey Areas (CDM Desktop Assessment) | Habitat Present in Survey Areas (Field Assessment)  |
|-------------------------------|---------------------------|----------------|--------------|---|--|---|
| Peregrine Falcon              | <i>Falco peregrinus</i>   | DL             | T            | Both subspecies migrate across the state from more northern breeding areas in U.S. and Canada to winter along coast and farther south; subspecies ( <i>F. p. anatum</i> ) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas, but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat. | Potential foraging                                       | Low potential to occur. Foraging/migration stopover Unlikely to occur; suitable habitat does not exist. Potential foraging/migration stopover habitat present only. No nesting habitat present. |
| Whooping crane                | <i>Grus americana</i>     | LE             | E            | Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties  | Unlikely   | Unlikely to occur; suitable habitat does not exist. Potential migration stopover habitat present only.  |
| <b>Invertebrates</b>          |                           |                |              |   |  |   |
| Bone Cave harvestman          | <i>Texella reyesi</i>     | LE             | None         | Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from <i>Texella reddelli</i>  | Potentially present in suitable cave habitat             | Potential to occur; suitable habitat present. Potentially present in known karst features.  |
| Coffin Cave mold beetle       | <i>Batrisodes texanus</i> | LE             | None         | Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties   | Potentially present in suitable cave habitat             | Potential to occur; suitable habitat present. Potentially present in known karst features.  |

**Appendix B**

| Species (Common) <sup>1</sup> | Species                      | Federal Status | State Status | Habitat Description   | Habitat Present in Survey Areas (CDM Desktop Assessment)            | Habitat Present in Survey Areas (Field Assessment)  |
|-------------------------------|------------------------------|----------------|--------------|---|---|---|
| Tooth Cave ground beetle      | <i>Rhadine persephone</i>    | LE             | None         | Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties   | Known to be present in caves within 500 feet of proposed work areas | Potential to occur; suitable habitat present. Potentially present in known karst features.                        |
| <b>Mollusks</b>               |                              |                |              |   |   |   |
| False spike mussel            | <i>Quadrula mitchelli</i>    | None           | T            | Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at a site where the species was found; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins  | Unlikely  | Unlikely to occur; suitable habitat does not exist. No medium or large river habitat present in the project area. |
| Smooth pimpleback             | <i>Quadrula houstonensis</i> | C              | T            | Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel; tolerates very slow to moderate flow rates: appears not to tolerate dramatic water level fluctuations: scoured bedrock substrates or shifting sand bottoms; lower Trinity (questionable), Brazos, and Colorado River basins | Unlikely  | Unlikely to occur; suitable habitat does not exist. No perennial surface waters present in the project area.      |
| Texas fawnsfoot               | <i>Truncilla macrodon</i>    | C              | T            | Little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals; possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins   | Unlikely  | Unlikely to occur; suitable habitat does not exist. No perennial surface waters present in the project area.      |

**Appendix B**

| Species (Common) <sup>1</sup> | Species                    | Federal Status | State Status | Habitat Description  | Habitat Present in Survey Areas (CDM Desktop Assessment) | Habitat Present in Survey Areas (Field Assessment)   |
|-------------------------------|----------------------------|----------------|--------------|--|--|--|
| <b>Reptiles</b>               |                            |                |              |  |  |  |
| Texas horned lizard           | <i>Phrynosoma cornutum</i> | None           | T            | Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September | Potential  | Potential to occur; suitable habitat present. Low potential to occur in Mixed Scrubland and Juniper Scrubland habitat types. |
| Timber/Canebrake rattlesnake  | <i>Crotalus horridus</i>   | None           | T            | swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense groundcover, <i>i.e.</i> , grapevines or palmetto  | Low potential  | Potential to occur; suitable habitat present. Potential to occur in all habitat types at the project site.                   |

Status Keys:

LE - Federally Listed Endangered

C - Federal Candidate for Listing; formerly Category 1 Candidate

DL - Federally Delisted

E, T - State Listed Endangered/Threatened

1 -Based on information provided at <http://www.tpwd.state.tx.us/gis/ris/es/SpeciesList.aspx?parm=Williamson>

# **Appendix C**

## **Agency Coordination Letters**

NJ LLIT



RECEIVED

SEP 23 2013

Texas Historical Commission

September 18, 2013

Mr. Mark Wolfe  
State Historic Preservation Officer  
Texas Historical Commission  
P O Box 12276  
Austin, TX 78711-2276

Mr. Wolfe:

Through a grant with the Federal Emergency Management Agency (FEMA), Williamson County plans to conduct hazardous fuels reduction and vegetation removal activities in the Williamson County Southwest Regional Park, proximate to at-risk residences. Activities will include removing/reducing both light and heavy fuels, highly flammable vegetation (e.g., Ashe Juniper/Cedars), ladder fuels, vertical clearance of tree branches, selective pruning, removal of dead and/or diseased trees, and other activities to reduce the threat from future wildfires. The project area will include approximately four linear miles on or near the Park perimeter, creating areas of sculptured fuels reduction to a depth of 50 feet. Depending upon the topography and assessed risk to the urban interface, such areas may be reseeded with short grasses to reduce erosion.

Our project activities will take place within the boundaries of the Park and will have no adverse effects upon any cultural aspect of the communities adjacent to the project. It will have only minimal effects upon environmental and/or historical aspects of the community. We will work with your office to ensure we are compliant with all applicable rules and regulations.

According to the guidelines for this project, we are to notify your agency and obtain approval or an indication that the proposed project is not inconsistent with your environmental concerns, specifically related to debris removal, water contamination, and air quality. We will forward your response to the Texas Division of Emergency Management. Included are a map and photographs of the project location.

If you have any comments or questions, please feel free to contact us:

1. Jarred R. Thomas, Williamson County Emergency Management Coordinator  
Phone: 512-864-8200 email: [jthomas@wilco.org](mailto:jthomas@wilco.org)
2. Randy Bell, Director, Williamson County Parks and Recreation  
Phone: 512-943-1920 email: [randybell@wilco.org](mailto:randybell@wilco.org)

Respectfully,

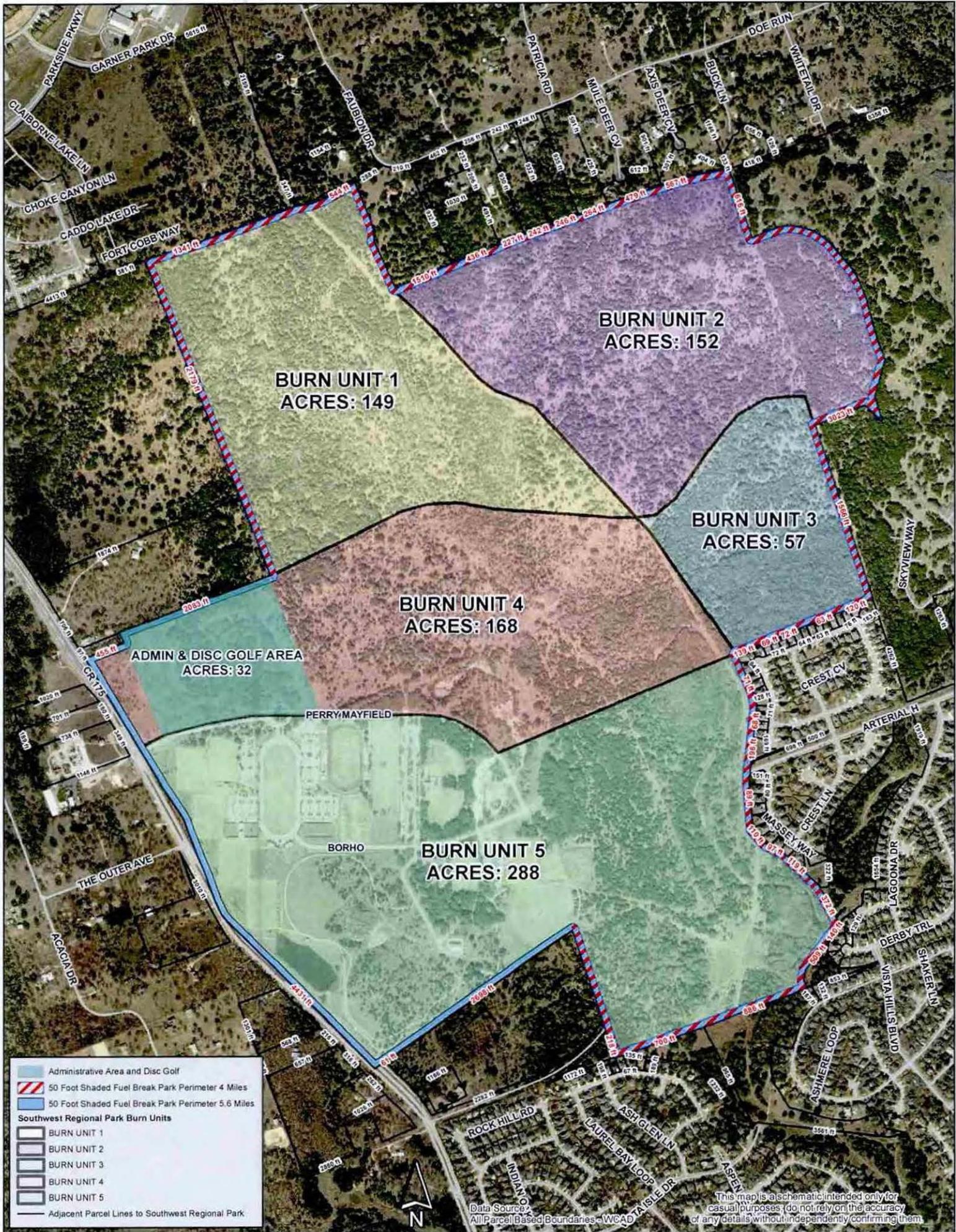
Jarred R. Thomas  
Emergency Management Coordinator  
Williamson County, Texas

NO HISTORIC PROPERTIES AFFECTED PROJECT MAY PROCEED

by William R. Thomas  
for Mark Wolfe  
State Historic Preservation Officer  
Date 10/3/13  
Track# \_\_\_\_\_

Att: Project Map  
Project Photographs

**OFFICE OF EMERGENCY MANAGEMENT**



**BURN UNIT 1**  
ACRES: 149

**BURN UNIT 2**  
ACRES: 152

**BURN UNIT 3**  
ACRES: 57

**BURN UNIT 4**  
ACRES: 168

**ADMIN & DISC GOLF AREA**  
ACRES: 32

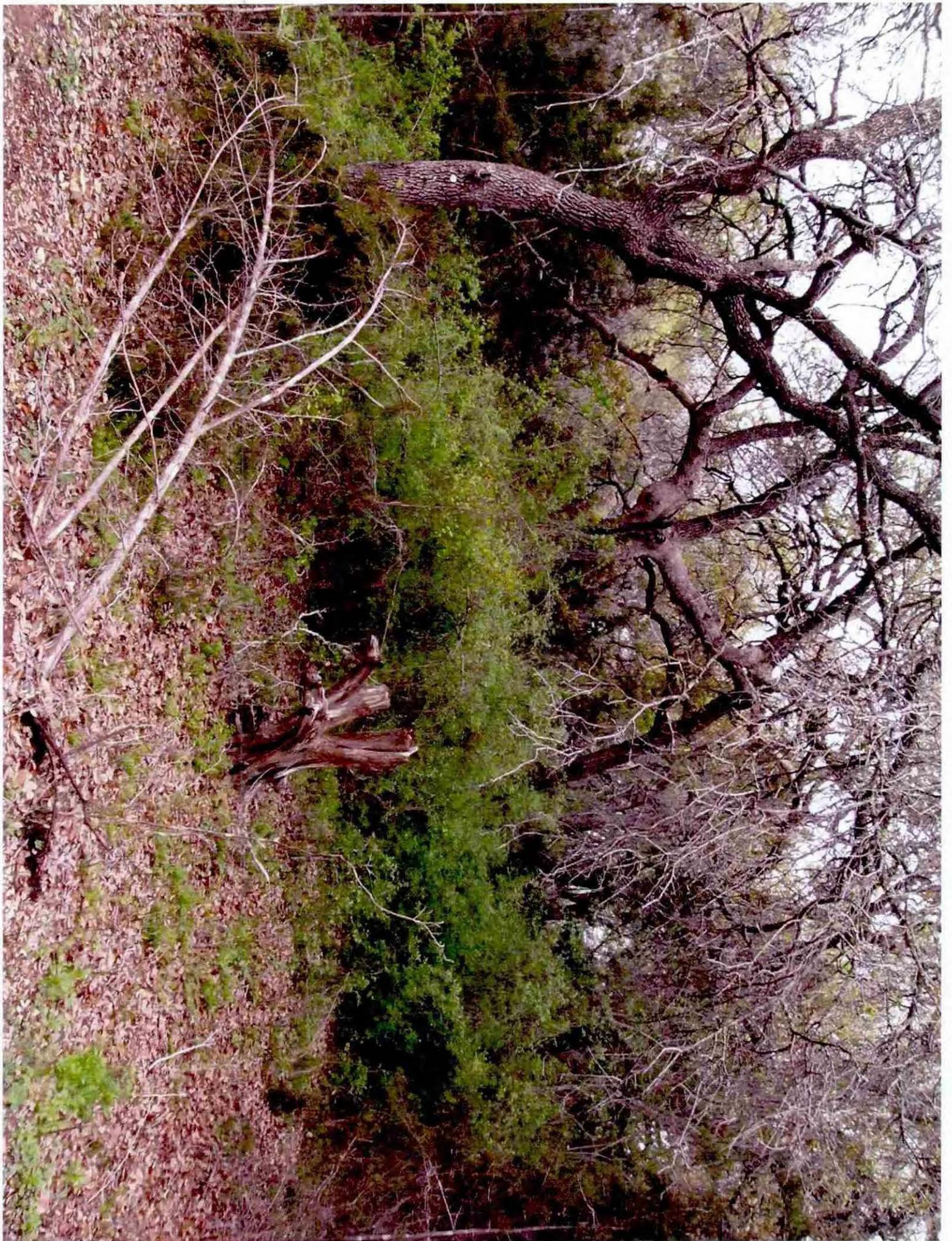
**BURN UNIT 5**  
ACRES: 288

Administrative Area and Disc Golf  
 50 Foot Shaded Fuel Break Park Perimeter 4 Miles  
 50 Foot Shaded Fuel Break Park Perimeter 5.6 Miles  
**Southwest Regional Park Burn Units**  
 BURN UNIT 1  
 BURN UNIT 2  
 BURN UNIT 3  
 BURN UNIT 4  
 BURN UNIT 5  
 Adjacent Parcel Lines to Southwest Regional Park

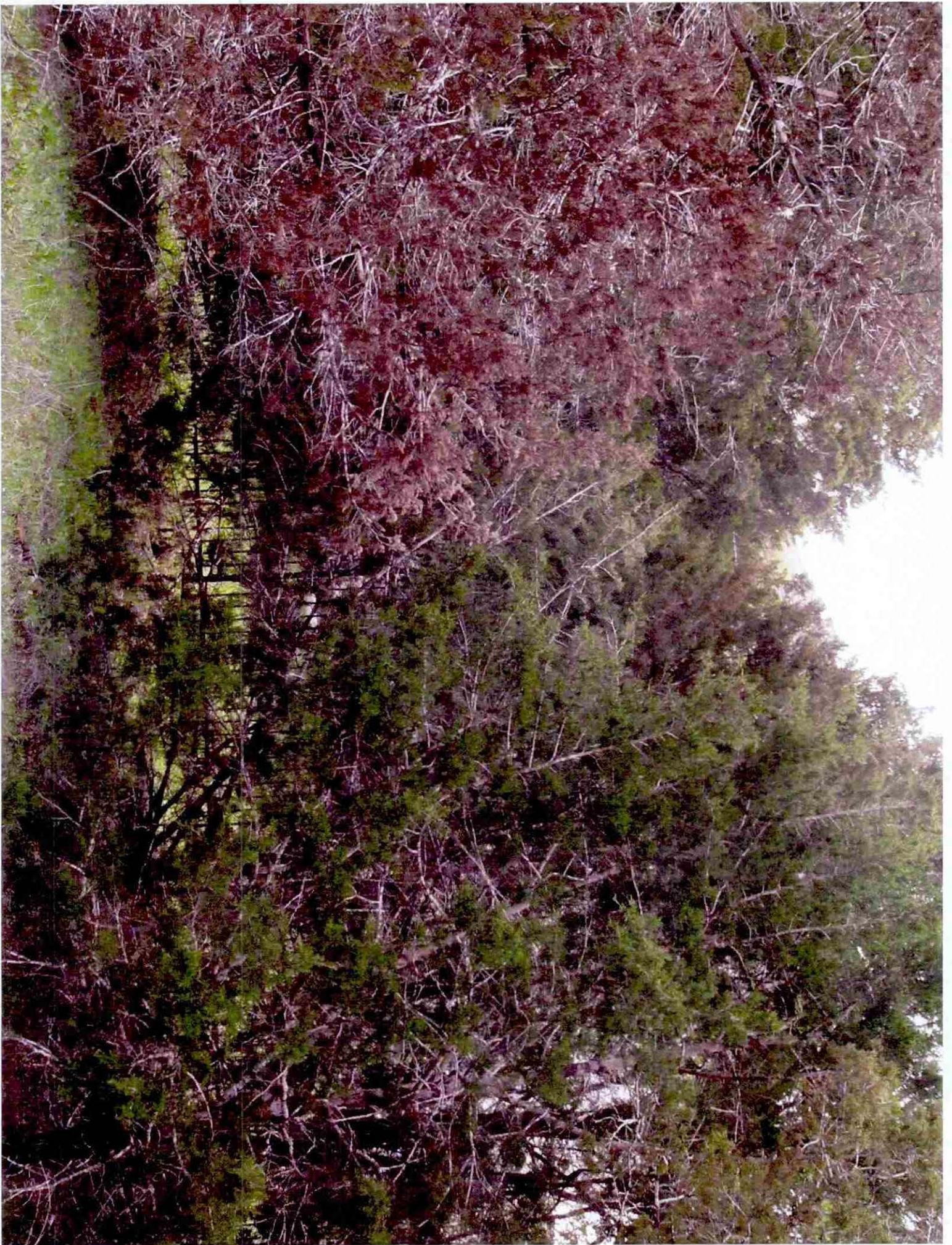
Data Source:   
 All Parcel Based Boundaries © WCAPATA ISLE DR.   
 This map is a schematic intended only for casual purposes (do not rely on the accuracy of any details without independently confirming them)



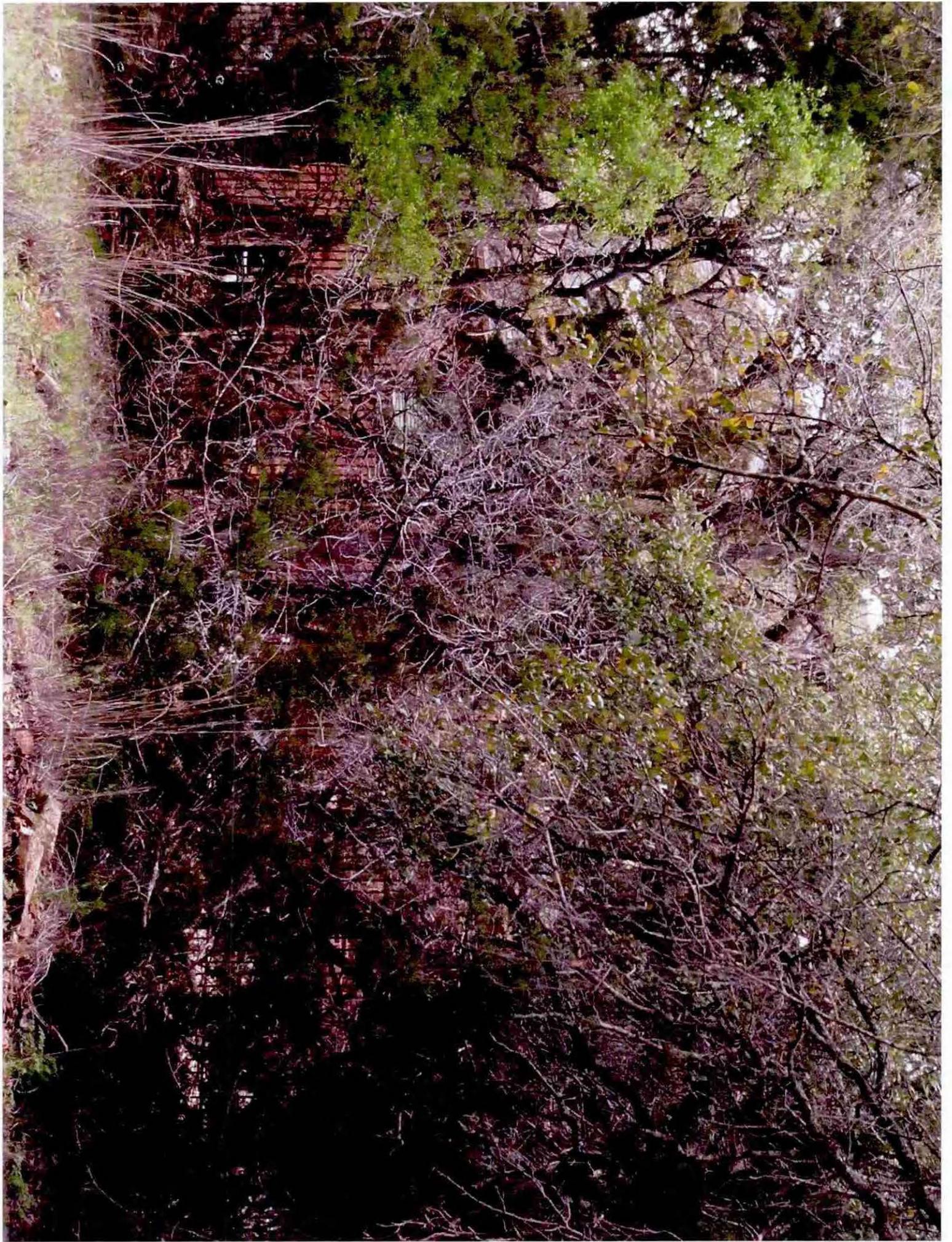














## Weir, Dorothy

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**Subject:** FW: Williamson County DR1999-019

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**From:** Deedra Harrison [<mailto:dharrison@wilco.org>]

**Sent:** Tuesday, September 04, 2012 7:49 AM

**To:** Kirby, Wendy

**Cc:** Randy Bell

**Subject:** Williamson County DR1999-019

Good morning Wendy-

Below is the response we received from TCEQ in response to our NEPA letter. We are still awaiting a response from the TPWD.

If you have any questions, please call or email.

Sincerely,

Dee

### **Dee Harrison, CEM®**

Emergency Management Specialist

Williamson County Office of Emergency Management

512-943-3876 (phone)

512-943-1269 (fax)

512-205-0204 (pager)

512-981-9432 (mobile)

email: [dharrison@wilco.org](mailto:dharrison@wilco.org)

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**From:** Randy Bell

**Sent:** Wednesday, August 22, 2012 10:23 AM

**To:** Barry Kalda

**Cc:** Patty Reeh; Jarred Thomas

**Subject:** RE: Williamson County's plan to reduce hazardous fuels and vegetation

Thank you,

*Randy Bell*

*Parks Director*

*Williamson County, Texas*

*512-943-1922*

<http://parks.wilco.org/>

---

**From:** Barry Kalda [<mailto:barry.kalda@tceq.texas.gov>]

**Sent:** Tuesday, August 21, 2012 9:36 AM

**To:** Randy Bell

**Cc:** Patty Reeh; Jarred Thomas

**Subject:** RE: Williamson County's plan to reduce hazardous fuels and vegetation

Dear Mr. Bell:

Thank you for your responses. Based on your original description of planned activities and your additional information, TCEQ has no objections to your planned fuel reduction and vegetation removal activities.

If you have any questions, especially as they may relate to the grinding, mulching, and possible storage of the material, feel free to contact me at (512) 339-2929.

Sincerely,

Barry Kalda

TCEQ Austin Region Air/Waste Section Manager



August 30, 2012

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Dick Scott  
Wimberley

Lee M. Bass  
Chairman-Emeritus  
Fort Worth

Carter P. Smith  
Executive Director

Jarred Thomas  
Williamson County  
303 Martin Luther King St  
Georgetown, TX 78626

RE: Proposed fuel reduction and vegetation removal in the Williamson County Southwest Regional Park, Williamson County, Texas.

Dear Mr. Thomas:

The Texas Parks and Wildlife Department (TPWD) has received your request for information regarding potential impacts to threatened and endangered species and for information on other issues of concern relating to the project referenced above. Under Section 12.0011 of the Texas Parks and Wildlife Code, TPWD is charged with "providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects" and "providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources."

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011, which can be found online at <http://www.statutes.legis.state.tx.us/Docs/PW/htm/PW.12.htm#12.0011>. For tracking purposes, please refer to TPWD project numbers ERCS-2057 in any return correspondence regarding this project.

Williamson County proposes to conduct hazardous fuels reduction and vegetation removal activities in the Williamson County Southwest Regional Park. Activities will include removing/reducing both light and heavy fuels, highly flammable vegetation, ladder fuels, vertical clearance of tree branches, selective pruning, and other activities to reduce threats from future wildfires.

### Federal Laws

#### *Endangered Species Act (ESA)*

#### Federally-listed Species

Federally-listed animal species and their habitat are protected from "take" on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is "incidental" to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected

from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from U.S. Fish and Wildlife Service (USFWS) is a violation of the ESA. TPWD maintains annotated lists of rare and protected species for all counties in Texas. These lists and species range maps may be found online at [http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered\\_species/](http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/).

Records of federally listed species within the Mt. Zion 2 project area include:

Federal and State Listed Endangered

Golden-cheeked Warbler (*Dendroica chrysoparia*)

Federal Listed Endangered

Bone Cave harvestman (*Texella reyesi*)

Coffin Cave mold beetle (*Batrisodes texanus*)

Federal Candidate

Jollyville Plateau salamander (*Eurycea chisholmensis*)

*Golden-cheeked Warbler*

*Black-capped Vireo (Vireo atricapilla)*

Records of the Golden-cheeked Warbler (GCWA) have been documented within the project area in the Texas Natural Diversity Database (TXNDD). Although the Black-capped Vireo (BCVI) has not been documented in the project area, due to the limitations of the TXNDD discussed below, suitable habitat for this species may also exist within or adjacent to the project site.

Based upon the predictive habitat model for the Golden-cheeked Warbler (Diamond, et al. 2007. *Range-wide Modeling of Golden-cheeked Warbler Habitat*. Section 6 Project E-72-R, Final Report. Texas Parks and Wildlife Department, Austin, Texas) the proposed project may be located within suitable habitat for GCWA.

Construction and maintenance activities within and adjacent to habitat could adversely impact these species if vegetation that makes up the habitat is cleared/trimmed/herbicide at any time of the year. Construction and maintenance activities that occur during the breeding and nesting season (March to September) could also impact individual GCWA and BCVI.

**Recommendation:** TPWD recommends Williamson County survey the project area where vegetation removal activities will take place for suitable habitat for the GCWA and BCVI. If suitable habitat is identified in the project area, TPWD recommends Williamson County perform presence-absence surveys to determine if GCWA and BCVI are present in the action area. Surveys should be conducted by a USFWS permitted biologist in accordance with USFWS survey guidelines. If GCWA and

BCVI are to be affected by the project, then consultation with the USFWS would be warranted pursuant to the ESA.

#### *Migratory Bird Treaty Act*

The Migratory Bird Treaty Act (MBTA) prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts and nests, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The USFWS Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

**Recommendation:** If migratory bird species are found nesting on or adjacent to the existing or proposed project area, they must be dealt with in a manner consistent with the MBTA. TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March through August, to avoid adverse impacts to this group. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends Williamson County survey the area proposed for construction to ensure that no nests with eggs or young will be disturbed by construction. Any vegetation (trees, shrubs, and grasses) where occupied nests are located should not be disturbed until the eggs have hatched and the young have fledged.

#### State Laws

##### *Section 68.015, Parks and Wildlife Code – State-listed Species*

Section 68.015 of the Parks and Wildlife Code regulates state-listed species. Please note that there is no provision for take (incidental or otherwise) of state-listed species. A copy of *TPWD Guidelines for Protection of State-Listed Species* is attached for your reference. This document includes a list of penalties for take of state-listed species. State-listed species may only be handled by persons with a scientific collection permit obtained through TPWD. For more information on this permit, please contact the Wildlife Permits Office at (512) 389-4647.

#### State Fish and Wildlife Resources

##### *Rare Species (Species of Concern)*

Although rare plant and animal species on the TPWD county lists are not protected by law, TPWD considers them to be at risk for endangerment. Rare species are tracked in the Texas Natural Diversity Database (TXNDD) and TPWD actively promotes their conservation. TPWD considers it important that potential impacts to rare species and their habitat be evaluated and, if applicable, project-related impacts be avoided to reduce the likelihood of endangerment. In recognizing the need to identify, avoid and minimize

adverse project impacts to rare species, Williamson County would help to further this goal.

The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously based on new, updated and undigitized records; for questions regarding a record, please contact [txndd@tpwd.state.tx.us](mailto:txndd@tpwd.state.tx.us).

The TXNDD revealed an occurrence of an invertebrate cave within 1.5 miles of the proposed project.

#### *Karst Species*

Portions of the project route are located in Veni Karst Zone 1, which is classified as an area known to contain endangered karst invertebrate species (also known as endangered cave species or E.C.S).

**Recommendation:** If karst features are discovered during construction, TPWD recommends work in the immediate area cease until the feature can be surveyed for endangered cave species by a qualified biologist following US Fish and Wildlife Service (USFWS) survey protocols. TPWD recommends that Williamson County contact the USFWS regarding potential impacts to federally-listed karst invertebrates and measures to avoid, minimize, and mitigate for those impacts.

The TPWD county lists for rare species may be obtained from the following link: <http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx>. These lists provide information regarding rare species that have potential to occur within each county. Rare species could potentially be impacted if suitable habitat is present at or near the project site.

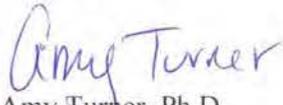
**Recommendation:** TPWD recommends that Williamson County consult the above-reference TPWD county lists to determine if habitat for rare species may occur in areas of potential impact on the project. If these areas contain habitat, then impacts to the rare species that have potential to occur on the project should be addressed. An on-the-ground survey by a qualified biologist should be performed in these habitats to determine if species are present. If present, Williamson County should incorporate actions into the project to avoid impacts to these species.

Jarred Thomas  
Page 5  
August 29, 2012

Potential adverse impacts should be identified and conservation measures to offset harm should be incorporated into the project mitigation plan. If rare species are to be adversely affected, TPWD should be contacted for further coordination.

TPWD advises review and implementation of the comments and recommendations. If you have any questions, please contact me at (361) 576-0022 or [amy.turner@tpwd.state.tx.us](mailto:amy.turner@tpwd.state.tx.us).

Sincerely,

A handwritten signature in blue ink that reads "Amy Turner". The signature is written in a cursive style.

Amy Turner, Ph.D.  
Wildlife Habitat Assessment Program  
Wildlife Division

/ajt:ERCS-2057



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

10711 Burnet Road, Suite 200  
Austin, Texas 78758  
512 490-0057  
FAX 490-0974



Mr. Kevin Jaynes  
Regional Environmental Officer  
FEMA Region 6  
800 North Loop 288  
Denton, TX 76209-3698

**MAY 19 2015**

Consultation #: O2ETAU00-2015- F-0226

Dear Mr. Jaynes,

This transmits our biological opinion for the proposed Federal Emergency Management Agency (FEMA) funding through their Hazard Mitigation Grant Program (HMGP- DR-1999-0019) of hazardous fuel reduction work by Williamson County on public land within Southwest Regional Park (SRP). Hazardous fuel reduction activities include trimming or cutting trees within 50 feet of the property line between county-owned land and private residences or private property, removal of hazardous fuels by clearing brush and combustible materials, and cutting tree branches to heights of up to 10 feet from ground level. Hazardous fuel reduction would be performed in linear strips along approximately 4 miles of the perimeter of SRP for a total of 24 acres (proposed action). The geographic scope of the proposed action is Southwest Regional Park, Williamson County, Texas. FEMA requested formal consultation from the U.S. Fish and Wildlife Service's Austin Ecological Services Field Office (Service), for the hazardous fuel reduction work in a letter dated January 5, 2015, with an attached Biological Assessment, Williamson County Hazardous Fuels Reduction Southwest Regional Park, Williamson County, Texas dated January, 2015 (BA).

The purpose of the proposed action is to reduce wildfire hazard through the reduction and removal of understory vegetation that has accumulated between private residences and public preserve properties. It is anticipated that the proposed hazardous fuel reduction project may adversely affect the golden-cheeked warbler (*Setophaga (=Dendroica) chrysoparia*) and Bone Cave harvestman (*Texella reyesi*) listed as endangered pursuant to the Endangered Species Act of 1973, as amended (Act)(16 U.S.C. 1531 et seq.). This consultation is pursuant to section 7 of the Act.

Other species listed as threatened or endangered pursuant to the Act, specifically Williamson County karst species (*Batrachoseps texanus* and *Rhadine persephone*), have not been detected within the proposed action area. Habitat for listed bird species (*Charadrius melodus*, and *Grus americana*) and three listed species of salamanders (*Eurycea naufragia*, *Eurycea tonkawae*, and

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*Eurycea chisholmensis*) does not occur within the action area. Therefore, these species will not be discussed further in this biological opinion. FEMA has determined that the effects of the proposed action are not likely to adversely affect the black-capped vireo (*Vireo atricapilla*). The Service concurs with the not likely to adversely affect determinations due to avoidance and minimization measures included in the biological assessment and the restricted linear nature of the proposed activity (Please see section 4.2 in the BA).

The findings and recommendations in this consultation are based on: (1) the Biological Assessment, Williamson County Hazardous Fuels Reduction Southwest Regional Park, Williamson County, Texas dated January, 2015, (2) discussions with FEMA staff; (3) information provided by Williamson County and, (4) other sources of information available to the Service.

### **Consultation History**

- March 10, 2014*      The Service received an e-mail from FEMA initiating informal consultation on the Southwest Regional Park hazardous fuel reduction project.
- August 21, 2014*      The Service received an e-mail from FEMA requesting information regarding occupied cave locations within Southwest Regional Park.
- August 26, 2014*      The Service provided information by e-mail to FEMA regarding occupied cave locations within Southwest Regional Park.
- October 31, 2014*      The Service received a letter from FEMA transmitting the BA and requesting initiation of formal consultation on the Southwest Regional Park hazardous fuel reduction project.
- November 26, 2014*      The Service requested additional information from FEMA and a revised BA by e-mail.
- January 12, 2015*      The Service received a letter from FEMA transmitting the revised BA and requesting initiation of formal consultation on the Southwest Regional Park hazardous fuel reduction project.

### **BIOLOGICAL OPINION**

#### **Proposed Action**

For more specific information regarding the objectives of the proposed action, please refer to the BA.

Williamson County has submitted an application to FEMA through the Texas Division of Emergency Management (TDEM) for a grant under FEMA's HMGP. TDEM is the direct applicant for the grant, and Williamson County is the subapplicant. Williamson County proposes to implement hazardous fuels reduction along the perimeter of SRP to reduce wildfire hazards in residential areas near the SRP.

Hazardous fuel reduction activities include trimming or cutting trees within 50 feet of the property line between county-owned land and private residences or private property, removal of hazardous fuels by clearing brush and combustible materials, and cutting tree branches to heights of up to 10 feet from ground level. Selected trees less than 8 inches in diameter (depending on condition and structure) would be removed within the 50 foot project area. Hazardous fuel reduction would be performed in linear strips along approximately 4 miles of the perimeter of SRP for a total of 24 acres (Please see Figures 1.2 and 1.3 in the BA).

Stumps of trees that are removed would remain in place and would be ground down to 3 inches above ground level to avoid ground disturbance. Cut, trimmed, dead, and downed vegetation would be either ground or mulched on-site and temporarily stored at SWP. The mulch will subsequently be used at planting sites within SWP or at County-owned buildings. Mulch would not be placed on the ground within 345 feet of occupied cave openings because it could hinder the regrowth of vegetation near cave openings.

During project implementation, the equipment used would include chainsaws, chippers, mowers, seed broadcasters, four-wheeled gator vehicles, and trucks and trailers. Williamson County would take steps to minimize soil disturbance such as the use of rubber tracks on all machinery in the project area during vegetation removal. No herbicides would be used during any phase of the proposed action.

Per FEMA grant requirements, the County must maintain the areas where hazardous fuels reduction activities have been completed to achieve the proposed wildfire hazard mitigation. Maintenance activities will include mowing treated areas with a heavy brush cutter and re-imported fire ant (RIFA) eradication efforts. Any maintenance mowing conducted in treated areas must be done at a height of 6 inches or higher. Ongoing maintenance would not include the use of herbicides.

### ***Site preparation and monitoring***

Williamson County will host a preconstruction coordination meeting with the work crews and/or the contractor and their staff to go over the project implementation plan. As part of the site preparation for the proposed project FEMA and Williamson County will clearly identify all buffer zones relevant for project implementation with colored flags or tape prior to the beginning work. Each zone will be marked with a different colored flag or tape and the delineation of these

zones will be consistent throughout the scope of the project. The buffer zones that will be marked include:

- 345 feet from cave openings (no mulch can be placed, hot water treatments for Red Imported Fire Ants (RIFA) must be conducted), and
- 500 feet from cave openings (no refueling, equipment staging, or storage of fuels may occur in this area).

The flags or tape marking the buffer zones will be promptly removed when work is complete. Additionally, Williamson County will provide a full time monitor that will oversee implementation of the project and ensure that all avoidance and minimization measures are completed and adhered to.

### ***Project timing***

FEMA and the Williamson County would conduct hazardous fuels reduction work only outside of the breeding season for golden-cheeked warbler. Work would be allowed from September 1 through February 28. Work would not be conducted from March 1 through August 31. The implementation of the proposed project is scheduled to occur over a period of 12 weeks.

### **Proposed Conservation Measures**

FEMA and Williamson County have proposed the following conservation measures to minimize adverse effects to Bone Cave harvestman and golden-cheeked warbler. Conservation measures applicable to karst species would be implemented near occupied cave openings, including Mongo Cave, Prospector Cave, and Venture Cave. Implementation of these measures is a condition of the FEMA grant and a requirement of federal funding.

- Deposition or accumulation of soil, trash, ashes, refuse, waste, bio-solids, or any other materials at the project site as a result of the proposed action is prohibited. Vegetative debris must be removed from the project site or mulched and spread on-site. Mulch will be placed on existing trails with appropriate measures (such as adequate setbacks or a silt fence) to prevent mulch from washing toward or into cave openings. Mulch will not be placed within 345 feet of occupied or presumed occupied cave openings.
- Williamson County must seal any wounds on oaks that are the result of pruning and seal any oak stumps that are created as a result of the proposed action in order to prevent transmission of oak wilt fungus.
- Equipment staging, refueling, and storage of gasoline must occur more than 500 feet from the entrance of any occupied or presumed occupied cave including Mongo, Wilco, Wild West, Millennium, Rock Ridge, Little Demon, Prospector, Venture, Through Trip (North), and Through Trip (South) caves.

- Stumps and root balls will not be removed. Stumps will be ground down to 3 inches above the ground surface.
- Soil disturbance will be limited by implementing BMPs to prevent soil erosion of areas disturbed by the use of heavy equipment. Rubber tracks will be used on heavy equipment to limit soil disturbance.
- To reduce the re-colonization of RIFA, Williamson County will re-seed treated areas within 345 feet of the opening of the presumed occupied Venture Cave with a native seed mix.
- Williamson County must implement boiling water treatments on RIFA colonies following the first rain of the first spring after project implementation. Boiling water treatments are required within treated areas within 345 feet of the openings of the presumed occupied Venture Cave. Boiling water treatments are most effective during early to mid-morning when the queen(s) and larvae are likely to be near the top of the mound. Mounds should not be disturbed before treatment as this causes the ants to move the queen(s) and larvae to deeper locations within the mound or to a remote location.
- As part of the maintenance program, Williamson County will conduct RIFA eradication efforts twice annually, during the spring and fall within treated areas that are within 345 feet of the opening of Venture Cave. This should include a regimen of two or more treatments per month. If some time has passed since the initial RIFA invasion, the control regimens can be decreased to one or fewer times per month, provided that RIFA mounds have decreased. Once RIFA levels are below the thresholds outlined in "Karst Preserve Management and Monitoring Recommendations," USFWS (2012), RIFA control can occur twice annually. Treated areas mowed during maintenance efforts must be mowed to a height of 6 inches or higher.
- Williamson County will ensure that best management practices (BMPs) are implemented to prevent erosion and sedimentation to nearby or adjacent waters. The application of BMPs to minimize erosion and sedimentation includes equipment storage and staging areas.
- Williamson County will provide a full time monitor that will oversee implementation of the project and ensure that the avoidance and mitigation measures are adhered to. In areas where there are occupied caves, the monitor will identify the 345 and 500 foot buffer zones to the work crews either in person or by flagging/taping the buffer zones. Any materials used to mark buffer zones will be promptly removed once work is complete.

## **Description of the Action Area**

### Area Affected

The action area is defined as Southwest Regional Park in Williamson County, Texas (please see Figure 1.2 in the BA).

### **Status of the species**

#### Bone Cave harvestman

##### *Species Description and Life History*

For more detailed information please see the Service's 1994 recovery plan for the Endangered Karst Invertebrates, Travis and Williamson Counties, Texas.

The Bone Cave harvestman was placed on the Federal Endangered Species list on September 16, 1988 (53 FR 36029) due to increased urban development, pollution, vandalism, and red-imported fire ants (*Solenopsis invicta*). It is a long-legged, blind, pale orange harvestman with a total length of 2.67 mm at maturity (USFWS 1994).

There is little specific information on the life history and specific habitat requirements of this species. This is largely because troglobites (animals that complete their life cycle underground and exhibit adaptation to the subsurface environment such as absence of eyes) are subterranean, inconspicuous, and difficult to study (Mitchell 1971; Chandler 1992). However, we know that this species is an obligate cave dweller whose continued existence depends on the ecological stability of the karst environments in which they are found. Temperature and humidity are relatively constant within undisturbed karst environments and troglobites are dependent upon moisture and nutrient inputs from the surface.

##### *Historic and Current Distribution*

The Bone Cave harvestman is a relatively widely distributed karst species and is found within 167 caves spanning 6 of the 7 established Karst Fauna Regions (KFRs) in Travis and Williamson Counties, Texas. The cave distribution by KFR per the five year review for this species is as follows: North Williamson (55 caves), Georgetown (35 caves), McNeil/ Round Rock (61 caves), Cedar Park (2 caves), Jollyville Plateau (12 caves), and the Central Austin KFR (2 caves) (USFWS 2009a). Although the five year review for this species indicates that Bone Cave harvestman had been identified in a cave in the South Travis KFR recent information has indicated that this identification was likely an error (Ubick, California Academy of Science, pers. comm. to Cyndee Watson, 2014). Since the five year review three additional caves for this species have been found in the North Williamson KFR bringing the total amount of locations to 170.

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

The primary threat to the Bone Cave harvestman is the loss of habitat due to encroaching urban development. This species occurs in an area of central Texas that is undergoing continued urbanization. Direct loss of subterranean habitat may occur when caves and voids are filled and/or collapsed as a result of construction, development, ranching, and quarry and mine-related

activities. Alterations of topography, vegetation and drainage patterns from urbanization can ultimately lead to changes in the moisture regime, nutrient loading, and increases in sedimentation into the karst ecosystems. Karst environments are also highly susceptible to groundwater contamination. Sources of this contamination include urban runoff, agricultural pesticide use, transportation and pipeline spills and landfills.

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

The recovery plan for this species (USFWS 1994) calls for the protection of at least three Karst Fauna Areas (KFAs) within each KFR in order to downlist each species from endangered to threatened. The five year review for Bone Cave Harvestman (USFWS 2009) indicates that one karst preserve located in the North Williamson KFR meets the definition of a protected KFA, the Priscilla's Well KFA. Since 2009 three additional caves within the North Williamson KFR have been confirmed by the Service as KFAs, Twin Springs KFA, Karankawa KFA, and Cobbs Cavern KFA. Tooth Cave is the only KFA for this species within the Jollyville Plateau KFR. There are sixteen other tracts distributed in the North Williamson, Georgetown, McNeil/Round Rock, and Jollyville Plateau KFRs, that may meet the definition of a KFA.

#### Golden-cheeked warbler

##### *Species Description and Life History*

For more detailed information please see the Service's 1992 recovery plan.

The golden-cheeked warbler was emergency listed as endangered on May 4, 1990 (55 FR 18844). The final rule listing the species was published on December 27, 1990 (55 FR 53160). No critical habitat is designated for this species.

The golden-cheeked warbler is a small, insectivorous songbird, 4.5 to 5 inches long with a wingspan of approximately 8 inches (Pulich 1965 and 1976, Oberholser 1974). Golden-cheeked warblers breed exclusively in the mixed Ashe juniper/deciduous woodlands of the central Texas Hill Country west and north of the Balcones Fault (Pulich 1976). Golden-cheeked warblers require the shredding bark produced by mature Ashe junipers for nest material. Typical deciduous woody species include Texas oak (*Quercus buckleyi*), Lacey oak (*Q. glaucoides*), live oak (*Q. fusiformis*), Texas ash (*Frazinus texensis*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis occidentalis*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Arizona walnut (*Juglans major*), and pecan (*Carya illinoensis*) (Pulich 1976, Ladd 1985, Wahl et al. 1990). Breeding and nesting golden-cheeked warblers feed primarily on insects, spiders, and other arthropods found in Ashe junipers and associated deciduous tree species (Pulich 1976).

Male golden-cheeked warblers arrive in central Texas around March 1st and begin to establish breeding territories, which they defend against other males by singing from visible perches within their territories. Female golden-cheeked warblers arrive a few days later, but are more difficult to detect in the dense woodland habitat (Pulich 1976). Three to five eggs are generally incubated in April, and unless there is a second nesting attempt, nestlings fledge in May to early

June (Pulich 1976). If there is a second nesting attempt, it is typically in mid-May with nestlings fledging in late June to early July (Pulich 1976). By late July, golden-cheeked warblers begin their migration south (Chapman 1907, Simmons 1924). Golden-cheeked warblers winter in the highland pine-oak woodlands of southern Mexico and northern Central America (Kroll 1980).

#### *Historic and Current Distribution*

The GCWA's entire breeding range occurs on the Edwards Plateau and Lampasas Cut Plain of central Texas. Golden-cheeked warblers have been confirmed breeding in 27 counties: Bandera, Bell, Bexar, Blanco, Bosque, Burnet, Comal, Coryell, Edwards, Gillespie, Hays, Johnson, Kendall, Kerr, Kimble, Kinney, Lampasas, Llano, Medina, Palo Pinto, Real, San Saba, Somervell, Travis, Uvalde, Williamson, and Young (Pulich 1976, Oberholser 1974). Golden-cheeked warblers have been sighted in the following 10 counties: Dallas, Eastland, Erath, Hamilton, Hill, Hood, Jack, McLennan, Stephens, and Val Verde (Pulich 1976; Edwards and Lewis 2008, 2009; Collins, Pape Dawson Engineers, pers. comm. 2012). Estimates of the amount of suitable warbler breeding habitat range from approximately 321,000 to 1.7 million hectares (247,000- 4.2 million acres), and much of this habitat occurs on private lands (Groce et al. 2010). As a result, the population status for the golden-cheeked warbler on private lands remains undocumented throughout major portions of the breeding range.

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

Before 1990, the primary reason for golden-cheeked warbler habitat loss was juniper clearing to improve conditions for livestock grazing. Since then, habitat loss has occurred as suburban developments spread into prime golden-cheeked warbler habitat. Groce et al. (2010) summarized the rates of expected human population growth within the range of the golden-cheeked warbler and found by 2030 the growth rate ranges from 17 percent around the Dallas-Fort Worth area to over 164 percent around San Antonio. As the human population continues to increase, so do associated roads, single and multi-family residences, and infrastructure, resulting in continued habitat destruction, fragmentation, and increased edge effects.

Fragmentation is the reduction of large blocks of a species' habitat into smaller patches. While golden-cheeked warblers have been found to be reproductively successful in small patches of habitat (<50 acres), there is an increased likelihood of occupancy and abundance as patch size increases (Coldren 1998, DeBoer and Diamond 2006, Butcher et al. 2010). Increases in pairing and territory success are also correlated with increasing patch size (Arnold et al. 1996, Coldren 1998, Butcher et al. 2010). In addition, while some studies have suggested that small patches that occur close to larger patches are likely to be occupied by golden-cheeked warblers, the long-term survival and recovery of the golden-cheeked warbler is dependent on maintaining the larger patches (Coldren 1998, Peterson 2001, TNC 2002).

As a species' habitat fragmentation increases it creates edges where two or more different vegetation types meet. For the golden-cheeked warbler, edge is where woodland becomes shrubland, grassland, a subdivision, etc., and depending on the type of edge, it can act as a

barrier for dispersal; act as a territory boundary; favor certain predators; increase nest predation; and/or reduce reproductive output (Arnold et al. 1996, Johnston 2006). Canopy breaks (the distance between tree top foliage) of as little as 36 feet have been shown to be barriers to golden-cheeked warbler movement (Coldren 1998). Territory boundaries have not only been shown to stop at edges, but golden-cheeked warblers will often avoid nesting near habitat edges (Beardmore 1994, DeBoer and Diamond 2006, Sperry 2007).

Other threats to golden-cheeked warblers include the clearing of deciduous oaks upon which the warbler forage, oak wilt infection in trees, nest parasitism by brown headed cowbirds (Engels and Sexton 1994), drought, fire, stress associated with migration, competition with other avian species, and particularly, loss of habitat from urbanization (Ladd and Gass 1999). Human activities have eliminated warbler habitat throughout the species' range, particularly areas associated with the Interstate 35 corridor between the Austin and San Antonio metropolitan areas.

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

The recovery strategy outlined in the Golden-cheeked Warbler Recovery Plan (Service 1992), which is currently being revised, divides the breeding range of the golden-cheeked warbler into eight regions, or units, and calls for the protection of sufficient habitat to support at least one self-sustaining viable population in each unit. These recovery units were delineated based primarily on watershed, vegetation, and geologic boundaries (Service 1992).

According to the Golden-cheeked Warbler Population and Habitat Viability Assessment Report, a viable population needs to consist of at least 3,000 breeding pairs (Service 1996). This and other population viability assessments on golden-cheeked warblers have indicated the most sensitive factors affecting their continued existence are population size per patch, fecundity (productivity or number of young per adult), and fledgling survival (Service 1996, Alldredge et al. 2002). These assessments estimated one viable population will need a minimum of 32,500 acres of prime unfragmented habitat to reduce the possibility of extinction of that population to less than five percent over 100 years (Service 1996). Further, this minimum carrying capacity threshold estimate increases with poorer quality habitat (e.g., patchy habitat resulting from fragmentation).

Based on the Golden-cheeked Warbler Recovery Plan (Service 1992), protection and management of occupied habitat and minimization of degradation, development, or environmental modification of unoccupied habitat necessary for buffering nesting habitat are necessary to provide for the survival of the species. Habitat protection must include elements of both breeding and non-breeding habitat (i.e., associated uplands and migration corridors). Current and future efforts to create new and protect existing habitat will enhance the golden-cheeked warbler's ability to expand in distribution and numbers. Efforts, such as land acquisition for golden-cheeked warbler habitat conservation and conservation easements, to protect existing viable populations is critical to the survival and recovery of this species,

particularly when rapidly expanding urbanization continues to result in the loss of prime breeding habitat.

Several State and Federally owned lands occur within the breeding range of the golden-cheeked warbler, but the overriding majority of the species' breeding range occurs on private lands that have been either occasionally or never surveyed (Service 1992). Currently there are four large golden-cheeked warbler populations receiving some degree of protection: those at the Balcones Canyonlands Preserve in Travis County; the Balcones Canyonlands National Wildlife Refuge in Travis, Burnet, and Williamson counties; Camp Bullis Military Installation in Bexar County; and the Fort Hood Military Reservation in Coryell and Bell counties. There are also two active conservation banks (CB) whose goal is to protect golden-cheeked warbler habitat (acres represent the amount currently under conservation easement): Hickory Pass CB (2,892 acres) in Burnet County and Bandera Corridor CB (2,113.5 acres) in Bandera County.

### **Environmental Baseline**

#### Status within the Action Area- Bone Cave harvestman

The proposed action is located entirely within the Georgetown KFR. Fuel reduction activities are proposed within and adjacent to the boundary of the Millenium Park preserve and the WilCo Preserve. These two preserves were established with funding from the Williamson County Conservation Foundation, the Act's Section 6 program, and the Texas Department of Transportation to offset impacts to Bone Cave harvestman from development and to provide recreational opportunities for the citizens of Williamson County. These preserves are managed for the benefit of karst species including the Bone Cave harvestman and the Service's five year review notes that these sites have the potential to be KFAs for Bone Cave harvestman. Four caves known to contain Bone Cave harvestman exist within the SRP (Wild West, Mongo, Wilco, and Millenium). There are six additional caves (Venture, Rock Ridge, Little Demon, Prospector, Through Trip North, and Through Trip South) that are presumed to be occupied by Bone Cave harvestman due to the presence of suitable habitat and proximity to known locations of the species. One cave, Venture Cave is within 345 feet of the project area. The entirety of the SRP is within karst zone 1 which includes areas that are known to have endangered cave fauna (Veni 2007). Karst feature surveys were completed by FEMA that confirmed the location of existing karst features within the action area (please see Figures 1.4 and 2.3 and Table 2.1 of the BA).

Two previous Bone Cave harvestman consultations have been completed within the Georgetown KFR with the loss of seven acres of karst zone 1 that was mitigated by the Williamson County Habitat Conservation Plan within one consultation (2013-F-0028) and the loss of an unknown number of caves within the second consultation (2002-F-0453. One habitat conservation plan (HCP) has resulted in the following amount of take and preserve establishment for Bone Cave harvestman:

1. Williamson County HCP (Service Permit TE-181840) permitted the loss of 210 occupied caves for Bone Cave harvestman or Coffin Cave mold beetle (*Batrisodes texanus*) and

committed to meet the preservation goals of the downlisting recovery criteria for the two species by acquiring and managing 9 to 15 KFAs totaling approximately 700 acres, a minimum of three KFAs in each of the KFRs occupied by the covered karst species.

Status within the Action Area- golden-cheeked warbler

Juniper-Oak Woodland, Juniper Woodland, and Juniper Scrubland vegetation communities have been identified within the action area and within the area of the proposed project in SRP (please see Figure 3.1 in the BA). All three communities provide potential nesting and foraging habitat for the golden-cheeked warbler as they include mature juniper trees with sloughing bark. According to the 2008 Williamson County Regional Habitat Conservation Plan (WCRHCP) golden-cheeked warblers have been observed approximately 1.5 miles south of the SRP in similar habitat (please see Figure 2.1 in the BA).

The Service has issued 61 formal section 7 consultations authorizing over 100,000 acres of golden-cheeked warbler habitat to be impacted and 134 incidental take permits associated with HCPs for the golden-cheeked warbler that cover a permit area of more than 70.1 million acres. Several large section 7 consultations account for over 95% of the total impacts authorized: 1) over 37,900 acres were associated with Department of Defense (DOD) activities on Fort Hood; 2) over 51,500 acres were associated with Natural Resource Conservation Service brush control projects throughout the GCWA's 35 county range; and 3) 5,000 acres were associated with DOD activities on Camp Bullis, less than 15 percent of which was considered occupied.

Recent large scale 10(a)(1)(B) incidental take permits issued that include golden-cheeked warbler as a covered species include the Oncor HCP, Hays County HCP, Lower Colorado River Authority Competitive Renewable Energy Zone HCP, and the Comal County HCP. In total these four HCPs authorize approximately 18,363 acres of impacts to golden-cheeked warbler habitat and at full performance would preserve 22,988 acres of golden-cheeked warbler habitat.

Seven previous section 7 consultations that include take of golden-cheeked warbler have been completed for actions within Williamson County resulting in the loss of approximately 465 acres and the preservation of approximately 407 acres of golden-cheeked warbler habitat.

Seven previous HCPs that include take of golden-cheeked warbler have been completed for actions within Williamson County:

1. Six smaller scale HCPs authorized removal of approximately 478 acres of golden-cheeked warbler habitat and preservation of approximately 516 acres of golden-cheeked warbler habitat; and,
2. The Williamson County regional habitat conservation plan (TE-181840) authorized removal of 6,000 acres of golden-cheeked warbler habitat and preservation of 6,000 acres of golden-cheeked warbler habitat (if a 1:1 offset ratio is assumed) either within Williamson County or within a Service approved conservation bank.

## **Effects of the Proposed Action**

### *Bone Cave harvestman*

Previous karst survey efforts within the action area have provided valuable information in determining the extent of karst species occupation within and adjacent to the project site. In particular karst surveys within the SRP have informed the number of occupied caves that are within 345 feet of the project site. Four caves known to contain Bone Cave harvestman exist within the SRP (Wild West, Mongo, Wilco, and Millenium). There are six additional caves (Venture, Rock Ridge, Little Demon, Prospector, Through Trip North, and Through Trip South) that are presumed to be occupied by Bone Cave harvestman due to the presence of suitable habitat and proximity to known locations of the species. One cave, Venture Cave is within 345 feet of the project area. A precise mechanism for predicting the number of individuals that may actually be adversely affected by the proposed project over time due to habitat loss can be somewhat limited. It is more accurate and appropriate to state that, over time an area that has been observed to support these species may or may not be rendered unsuitable. Therefore, in this document adverse effects are characterized by the loss or potential loss of areas known or likely to be occupied (including habitat that these species depend upon e.g. cave cricket foraging area (Taylor et al. 2005)), the relative quality of which is in part determined by the levels of prior observed utilization, as well as the assessment of habitat quality.

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

The proposed project is expected to result in both direct and indirect effects to Bone Cave harvestman. Direct effects to the Bone Cave harvestman including alteration of prey base and disruption of nutrient input into the karst feature in areas where vegetation removal and brush clearing occurs within the cave cricket foraging area of an occupied or presumed occupied karst feature, within the surface drainage basin of an occupied or presumed occupied karst feature, or occurs above the subsurface drainage basin of an occupied or presumed occupied karst feature. Indirect effects (those project-related effects that are reasonably certain to occur but are later in time) would occur in areas where due to the disturbance of surface vegetation RIFA or other invasive species may colonize within the cave cricket foraging areas of occupied or presumed occupied karst features. Additional indirect effects could include fragmentation and isolation of the area around occupied or presumed occupied karst features post-construction. These effects would be short-term lasting from one to two growing seasons as the project area re-vegetates. Effects that result from the proposed project are not anticipated to render any of the existing occupied or presumed occupied karst features unsuitable.

FEMA has incorporated avoidance and minimization measures into the project description that ensure that direct effects through ground disturbance are minimized, particularly within 345 feet and 500 feet of features occupied or presumed occupied by the Bone Cave harvestman. Within 345 feet from cave openings no mulch can be placed and within 500 feet from cave openings no refueling, equipment staging, or storage of fuels may occur. Indirect effects will also be minimized by re-seeding treated areas with a native seed mix within 345 feet of occupied caves and by requiring RIFA treatment within this same area following project completion. RIFA within the preserve sites will continue to be treated twice annually as a component of the maintenance program for the preserve sites.

It is expected that direct and indirect effects to the Bone Cave harvestman would occur through vegetation removal within the cave cricket foraging area for one presumed occupied karst feature, Venture Cave (see Figure 2.3 in the BA). Two other cave entrances are within 500 feet of the project site, Mongo Cave which is a site confirmed for the presence of Bone Cave harvestman and Prospector Cave which is presumed occupied. There are multiple other karst features found within the SRP, including occupied and presumed occupied features. However, those features are further than 345 feet from the proposed project location and are located further inside the boundary of the SRP and are not anticipated to be directly or indirectly affected by the proposed action.

#### *Golden-cheeked warbler*

Direct and indirect effects are likely to occur to the golden-cheeked warbler as a result of the proposed activities primarily due to the alteration of habitat outside of the breeding season. The entire project area has the potential to be utilized by golden-cheeked warblers either as nesting habitat or as post-nesting foraging/fledging habitat. Prior species surveys identified similar habitat nearby as an area where golden-cheeked warblers have been detected during past nesting seasons. Removal and trimming of vegetation to accomplish fuel reduction activities would result in a reduced amount of breeding habitat available to the species during the breeding season and would result in take in the form of harm. Indirect effects would include short-term changes in prey abundance as a result of vegetation alteration as well as further fragmentation of golden-cheeked warbler habitat.

Hazardous fuel reduction activities are anticipated to directly and indirectly impact up to 24 acres of golden-cheeked warbler habitat within the SRP. This is based on an estimated width of fuel reduction treatment of no more than 50 feet between county-owned land and private residences, removal of hazardous fuels by clearing brush and combustible materials, and cutting tree branches to heights of up to 8 to 10 feet from ground level. However, the majority of the impacts will occur to trees and branches less than 10 feet above the ground, and the treatments will not result in a reduction in canopy cover. Since golden-cheeked warblers often select nest locations within the top third of the nest tree and at heights greater than 6.5 feet above the ground

(Groce et al. 2010), the effects of hazardous fuel treatments to the golden-cheeked warbler would be minimized by the type of treatment chosen.

Additionally a long-term beneficial effect to golden-cheeked warbler habitat is expected from a reduction in the potential for catastrophic wildfire as a result of the proposed activity. The loss of a substantial amount of golden-cheeked warbler habitat from wildfires on Fort Hood in 1996 resulted in a decrease in golden-cheeked warbler abundance even after 10 years following the fire (Baccus et al. 2007). Therefore, any activities in golden-cheeked warbler habitat that reduce the likelihood of a wildfire or reduce the intensity of wildfire when one occurs will provide indirect benefits to the species.

### **Cumulative Effects**

Cumulative effects including the effects of future State, local, or private actions that are reasonably certain to occur in the action area are considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

An undetermined number of future land use conversions and habitat conversions are not subject to Federal authorization or funding and may alter the habitat or increase incidental take of species covered by this opinion and are, therefore, cumulative to the proposed project. These additional cumulative effects include: (1) increased habitat removal and impervious cover due to development and urbanization; (2) utility construction through open areas/preserves; (3) modification of drainage areas, (e.g., dams, bank stabilization, flood control); (4) recreational activities; (5) contaminated runoff from agriculture and urbanization; (6) subsurface habitat alteration (e.g., quarrying or mining); and, (7) habitat alteration by invasive exotic/non-native species.

It is anticipated that Williamson County will continue to manage the SRP for the benefit of listed species pursuant to the consultation for the Williamson County HCP (TE-181840) under which the preserves within the SRP are managed.

### **Conclusion**

After reviewing the current status of the Bone Cave harvestman and the golden-cheeked warbler, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Bone Cave harvestman or the golden-cheeked warbler. Hazardous fuel reduction activities will be limited to the minimum amount of vegetation and ground disturbance necessary to complete the proposed activity. Conservation measures proposed by FEMA will minimize the potential for harm to individuals by removing vegetation outside of the golden-cheeked warbler breeding season and minimizing vegetation disturbance within 345 feet of occupied or presumed occupied karst features. Further, the proposed action

will minimize the risk of catastrophic wildfire within an existing karst preserve and help to maintain the biological integrity of this area in the long-term. Critical habitat has not been designated for either species; therefore, none will be affected.

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined by the Service as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is further defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding and sheltering (50 CFR §17.3). Harm is also further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns, including breeding, feeding, and sheltering. Incidental take is defined by the Service as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

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

#### **Amount or Extent of Take**

The Service anticipates incidental take of Bone Cave harvestman and the golden-cheeked warblers will occur as a result of the proposed action. Individual Bone Cave harvestman and golden-cheeked warblers are difficult to detect unless they are observed, undisturbed, in their environment. The Service anticipates the following amount of incidental take from the hazardous fuel reduction activities within the Southwest Regional Park:

1. No more than 1 karst feature known or presumed to contain Bone Cave harvestman may be disturbed as a result of actions authorized under this biological opinion.
2. No more than 24 acres of golden-cheeked warbler habitat may be disturbed as a result of actions authorized under this biological opinion.

Some Williamson County personnel are currently authorized for take by their individual section 10(a)(1)(A) permits. Any work conducted pursuant to valid permits will be covered for incidental take as prescribed in the individual permit conditions.

### **Effect of the Take**

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy of the Bone Cave harvestman and the golden-cheeked warbler due to the short-term and limited effects associated with the proposed action. The hazardous fuel reduction project is anticipated to benefit the Bone Cave harvestman and the golden-cheeked warbler in the long-term by minimizing the risk of catastrophic wildfire within Southwest Regional Park. Critical habitat has not been designated for either species; therefore, none will be affected.

### **Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of Bone Cave harvestman and golden-cheeked warblers:

The Federal Emergency Management Agency shall:

1. Minimize harassment and harm of Bone Cave harvestman and golden-cheeked warblers during activities associated with hazardous fuel reduction described in this biological opinion and the accompanying attached Biological Assessment, Williamson County Hazardous Fuels Reduction Southwest Regional Park, Williamson County, Texas dated January, 2015

### **Terms and Conditions**

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

1. The following terms and conditions implement the reasonable and prudent measure:
  - A. All personnel involved in any authorized activity covered by this biological opinion shall be informed of these terms and conditions prior to the implementation of the authorized activity;
  - B. The hazardous fuel reduction activities will be completed outside of the golden-cheeked warbler breeding season (March 1 through August 31);

C. Karst buffer zones listed below will be marked prior to initiation of the proposed activity and disturbance within these zones will be minimized:

- 345 feet from cave openings (no mulch can be placed, hot water treatments for Red Imported Fire Ants (RIFA) must be conducted), and
- 500 feet from cave openings (no refueling, equipment staging, or storage of fuels may occur in this area);

D. After completion of activities covered by this biological opinion that result in habitat alteration, any temporary fill, construction material, or other debris shall be removed; and,

E. The Federal Emergency Management Agency shall ensure compliance with the Reporting Requirements below to assist in future construction project decisions to avoid and minimize effects on Bone Cave harvestman, golden-cheeked warblers, and their associated habitats.

### **Reporting Requirements**

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

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

### **Review Requirements**

The reasonable and prudent measure, with its implementing terms and conditions, are designed to minimize the effects of incidental take that might otherwise result from the proposed action. With implementation of this measure, the Service believes that no more than 1 karst feature known or presumed to contain Bone Cave harvestman and 24 acres of golden-cheeked warbler habitat will be directly and/or indirectly affected.

If, during the course of the authorized activities, this level of incidental take is exceeded prior to the annual review, such incidental take represents new information requiring review of the reasonable and prudent measure provided. The Federal Emergency Management Agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measure. This biological opinion

will expire five years from the date of issuance. Issuance of a new biological opinion will be subject to evaluation of the recovery of the species.

### **Conservation Recommendations**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

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

1. The Federal Emergency Management Agency should assist the Service in the implementation of the recovery plans for the Bone Cave harvestman and the golden-cheeked warbler;
2. The Federal Emergency Management Agency and Williamson County should incorporate into bidding documents the terms and conditions of this biological opinion, when appropriate;
3. The Federal Emergency Management Agency, in partnership with the Service, should develop guidelines for Federal Emergency Management Agency permitted projects that will reduce adverse effects of routine projects on listed species and their habitat. Such actions may contribute to the delisting and recovery of listed species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat; and,
4. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

### **Reinitiation Notice**

This concludes formal consultation on hazardous fuel reduction activities within Southwest Regional Park. As provided in 50 CFR Sec. 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action.

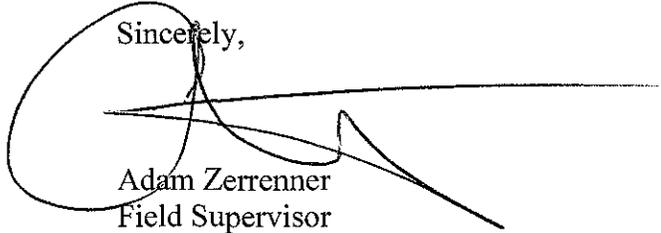
Mr. Jaynes

19

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Charlotte Kucera at (512) 490-0057, extension 224.

Sincerely,

A handwritten signature in black ink, appearing to be 'Adam Zerrenner', written over a horizontal line. The signature is stylized with a large loop on the left side and a sharp point on the right.

Adam Zerrenner  
Field Supervisor

cc: Dorothy Weir, Federal Emergency Management Agency, Denton, Texas

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