

PAUL LINEHAN & ASSOCIATES

City of Austin
Environmental Commission

Subject: Environmental Commission Variance for Live Oak Springs bridge crossing (C8J-2016-0228)

Dear Commissioners:

This letter is to provide you with information regarding the attached variance application and supporting material as indicated in the City of Austin's Environmental Commission Variance Application Guide.

The variance requested is to Section 30-5-262(B)(1) of the Austin Land Development Code, to place a roadway bridge over Slaughter Creek to allow proposed Morninghill Drive to connect existing Morninghill Drive with Derecho Drive. This connection has been requested by Travis County, and will allow the Live Oaks Springs single family subdivision to have two points of access as required by County and City regulations.

Items attached in support of this variance request are as follows:

- Environmental Commission Variance Application Form
- Aerial and topographical representations of the proposed bridge location, showing proposed pier locations.
- Site photos of an existing low water crossing at the proposed bridge site.
- Aerial photograph of the Live Oak Springs property boundary showing the proposed bridge location and the location of the existing low water crossing.
- Location map of the Live Oak Springs preliminary plan including nearby subdivisions.
- Plan and profile of the proposed bridge crossing over Slaughter Creek.
- Copy of the variance request to the City of Austin.
- Proposed restoration area for the proposed bridge.
- Regional aerial photograph showing the Live Oak Springs preliminary plan and the surrounding area.
- Environmental Resource Inventory for the Live Oak Springs (the Knapp Tract) preliminary plan.
- Endangered Species Biological Evaluation Memo for the Live Oak Springs preliminary plan.

I hope that this information will prove useful to you in your decision making process. If you have any questions, or desire further information, please do not hesitate to contact me.

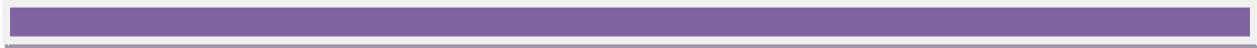
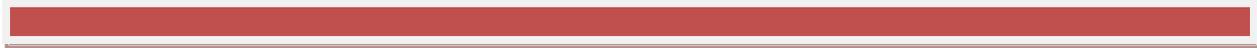
Sincerely,



Paul W. Linehan
President



ENVIRONMENTAL COMMISSION VARIANCE APPLICATION FORM



PROJECT DESCRIPTION

Applicant Contact Information

Name of Applicant	Land Strategies, Inc. (Paul W. Linehan)
Street Address	1010 Land Creek Cove
City State ZIP Code	Austin, Texas 78746
Work Phone	512.328-6050
E-Mail Address	plinehan@landstrat.com

Variance Case Information

Case Name	Live Oak Springs Preliminary Plan
Case Number	C8J-2016-0228
Address or Location	9406 Morninghill Drive, Austin, Travis County, Texas
Environmental Reviewer Name	Atha Phillips
Environmental Resource Management Reviewer Name	
Applicable Ordinance	Section 30-5-262(B)(1), Austin LDC
Watershed Name	Slaughter Creek
Watershed Classification	<input type="checkbox"/> Urban <input type="checkbox"/> Suburban <input type="checkbox"/> Water Supply Suburban <input type="checkbox"/> Water Supply Rural <input checked="" type="checkbox"/> Barton Springs Zone

Edwards Aquifer Recharge Zone	<input type="checkbox"/> Barton Springs Segment <input type="checkbox"/> Northern Edwards Segment <input checked="" type="checkbox"/> Not in Edwards Aquifer Zones
Edwards Aquifer Contributing Zone	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Distance to Nearest Classified Waterway	Location of variance is coincident with Slaughter Creek, a Major Tributary
Water and Waste Water service to be provided by	Water: City of Austin, Wastewater: On-site
Request	<p>The variance request is as follows (Cite code references:</p> <p>A variance is requested to Section 30-5-262(B)(1) of the Austin Land Development Code, to construct a bridge across Slaughter Creek, connecting Derecho Drive and Morninghill Drive.</p>

Impervious cover	Existing	Proposed
square footage:	<u>N.A.</u>	<u>1,011,454 s.f.</u>
acreage:	<u>N.A.</u>	<u>23.22 ac.</u>
percentage:	<u>0%</u>	<u>14.1%(GSA), 23.6%(NSA)</u>

Provide general description of the property (slope range, elevation range, summary of vegetation / trees, summary of the geology, CWQZ, WQTZ, CEFs, floodplain, heritage trees, any other notable or outstanding characteristics of the property)	<p>Slopes range from 0% to greater than 35%, with the slopes greater than 15% primarily located in the 100 year floodplain of Slaughter Creek and tributaries. Elevation ranges from a low of 956 feet in the bed of Slaughter Creek to a high of 1104 feet at the southeast corner of the property, for a total range of 148 feet. Slope and elevation is shown on Exhibit 2 – Slope Map of the Preliminary Plan application.</p> <p>There are areas of both CWQZ, WQTZ, and floodplain on the property, shown on Sheet 2 and Exhibit 2 – Slope Map of the Preliminary Plan application. Critical Environmental Features found consist of wetlands located along the tributaries of Slaughter Creek as shown on Exhibit 9 – CEF Mitigation Plan of the Preliminary Plan application.</p> <p>There is as yet no tree survey of the property.</p>
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<p>Clearly indicate in what way the proposed project does not comply with current Code (include maps and exhibits)</p>	<p>The proposed project would place a bridge across Slaughter Creek in the location shown on Exhibit 2 – Slope Map of the Preliminary Plan application. This does not comply with Section Section 30-5-262(B)(1), Austin LDC, which does not allow a Major Tributary to be crossed by a road except for an arterial Street identified in the Transportation Plan.</p>
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FINDINGS OF FACT

Please refer to the attached document entitled Findings of Fact.

A. Land Use Commission variance determinations from Chapter 30-5-41 of the City Code:

- 1. The requirement will deprive the applicant of a privilege available to owners of similarly situated property with approximately contemporaneous development subject to similar code requirements.

YES / No Residential land in the area of the Live Oak Springs Preliminary Plan consists of acre-sized lots, ranging from ±1 acre to ±3 acres in size. Strict enforcement of Section 30-5-262(B)(2) will deprive the applicant of the privilege of developing his land in a similar manner, because of the 30 lot limit on single-access developments imposed by Section 30-2-158(C)(2)(a) of the Austin Land Development Code.

- 2. The variance:
 - a) Is not necessitated by the scale, layout, construction method, or other design decision made by the applicant, unless the design decision provides greater overall environmental protection than is achievable without the variance;

Yes / **NO** The variance is not necessitated by any design decision made by the applicant. Section 30-2-158(C)(2)(a) of the Austin Land Development Code requires two points of access for a subdivision, with the two points being to different exterior roadways. Further, the proposed bridge is based on the guidance of Travis County commissioners, who want Zyle Road / Morninghill Drive to link with Derecho Drive, thereby providing the required two points of access to the proposed Live Oak Springs subdivision.

- b) Is the minimum deviation from the code requirement necessary to allow a reasonable use of the property;

YES / No The proposed bridge is the minimum deviation from the code that will allow the property to be developed in a manner similar to other similar properties in the vicinity.

- c) Does not create a significant probability of harmful environmental consequences.

YES / No The proposed bridge has been designed to minimize impact on Slaughter Creek, and has been located as closely as possible to an existing low water crossing. Therefore, the proposed bridge will cause minimal environmental consequences. A Conditional Letter of Map Revision (CLOMR) will be submitted to the Federal Emergency Management Agency (FEMA) addressing the changes in the floodplain resulting from the proposed bridge.

3. Development with the variance will result in water quality that is at least equal to the water quality achievable without the variance.

YES / No The proposed bridge will not interfere with the conveyance of water in Slaughter Creek, and will create no additional sediment load or pollutant runoff. Impervious cover within the proposed Live Oak Springs subdivision will be 23.22 acres, which is 1.40 acres below the 24.62 acres allowed by the Comprehensive Watersheds Ordinance.

- B. Additional Land Use Commission variance determinations for a requirement of Section 30-5-422 (Water Quality Transition Zone), Section 30-5-452 (Water Quality Transition Zone), Article 7, Division 1 (Critical Water Quality Zone Restrictions), or Section 30-5-652 (Development Impacting Lake Austin, Lady Bird Lake, and Lake Walter E. Long):

1. The criteria for granting a variance in Subsection (A) are met;

Yes / No **See all the items in Subsection (A).**

2. The requirement for which a variance is requested prevents a reasonable, economic use of the entire property;

Yes / No Enforcement of the provisions of Section 30-5-262(B)(1) of the Austin Land Development Code would limit lots south of Slaughter Creek to no more than 30 lots due to the limitation on lots served by

a single access roadway. Residential land in the area of the Live Oak Springs Preliminary Plan consists of acre-sized lots, ranging from ± 1 acre to ± 3 acres in size. In order to develop the subject property with similar size lots, it is necessary to connect Morninghill Drive with Derecho Drive, which allows creation of more than 30 lots by meeting the requirement for a second access point to the proposed Live Oak Springs subdivision.

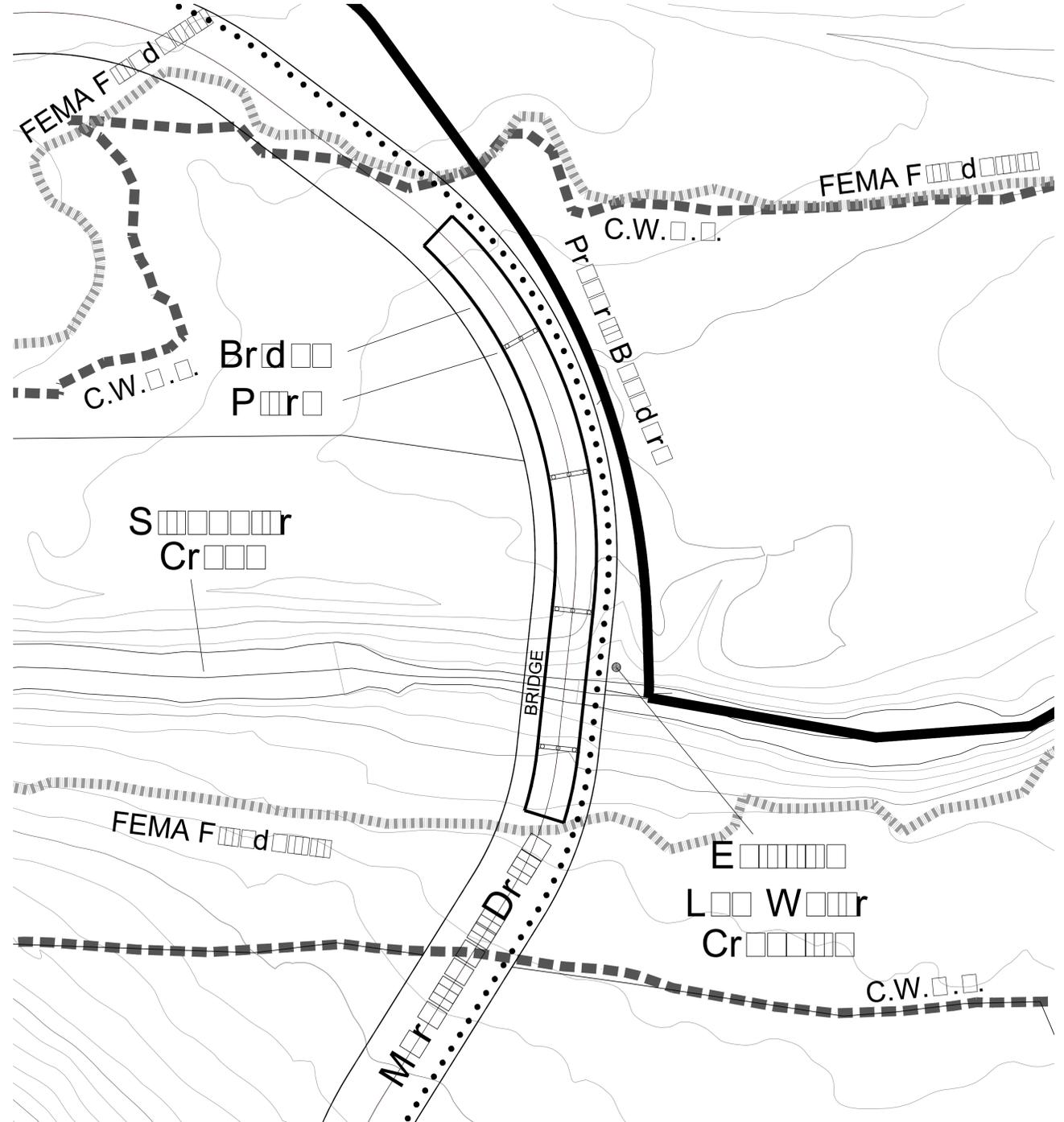
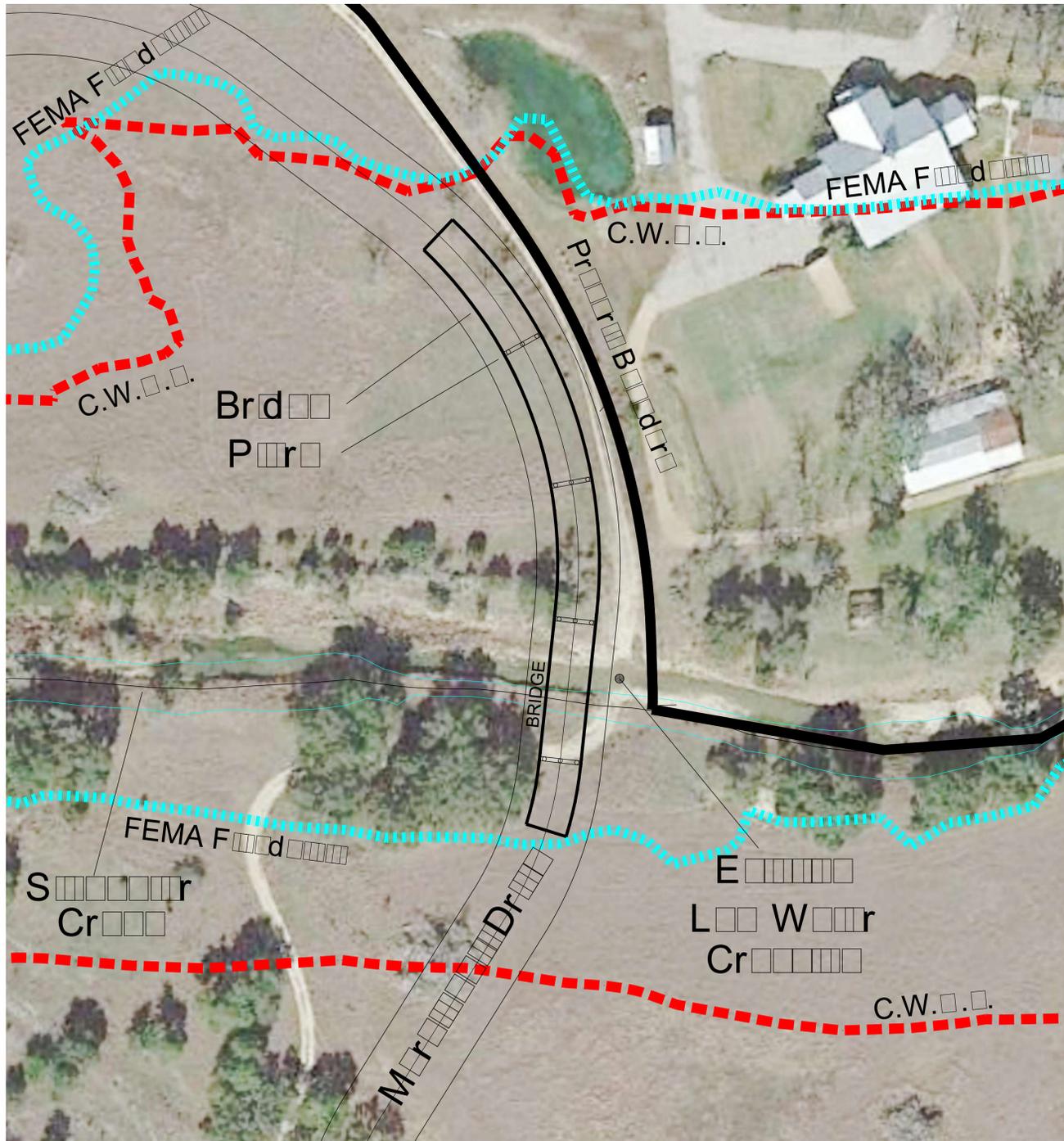
3. The variance is the minimum deviation from the code requirement necessary to allow a reasonable, economic use of the entire property.

Yes / No Providing a bridge connecting Morninghill Drive with Derecho Drive to cross the Critical Water Quality Zone of Slaughter Creek is the minimum deviation from the code requirements of Section 30-5-262(B)(1) of the Austin Land Development Code that will allow a reasonable economic use of the entire property, since without the proposed bridge, development south of Slaughter Creek would be limited to 30 residential lots.



Exhibits for Commission Variance

- Aerial photos of the site **Please find attached a blow-up of the area reflecting the bridge.**
- Site photos **Photos of the low water crossing from both directions are included.**
- Aerial photos of the vicinity **This is included as a 24x36 sheet.**
- Context Map—A map illustrating the subject property in relation to developments in the vicinity to include nearby major streets and waterways **Please find attached the vicinity map reflecting this information.**
- Topographic Map - A topographic map is recommended if a significant grade change on the subject site exists or if there is a significant difference in grade in relation to adjacent properties. **This is included in the 24x36 aerial & plan sheet.**
- For cut/fill variances, a plan sheet showing areas and depth of cut/fill with topographic elevations. **We are not requesting any cut/fill variances.**
- Site plan showing existing conditions if development exists currently on the property **There is currently not any development, but the aerial and site photos shows what exists on the site currently, which is a low water crossing.**
- Proposed Site Plan- full size electronic or at least legible 11x17 showing proposed development, include tree survey if required as part of site or subdivision plan **Please find attached the aerial exhibit and engineering sheets with plan/profile information.**
- Environmental Map – A map that shows pertinent features including Floodplain, CWQZ, WQTZ, CEFs, Setbacks, Recharge Zone, etc. **Please find attached a map with the requested information.**
- An Environmental Resource Inventory pursuant to ECM 1.3.0 **Please find attached the updated ERI previously provided.**
- Applicant’s variance request letter **Please find attached the variance letter for the proposed bridge crossing Slaughter Creek.**



REVISION BLOCK:		
NO.	DATE	EMPL. COMMENTS

OWNER INFORMATION:
 David Knapp
 3801 N. Capital of Texas Highway,
 Ste. E 240-180
 Austin, Texas 78746
 T. 512.328.5576

LIVE OAK SPRINGS
 Preliminary Plan
 Environmental Variance

1010 LAND CREEK CV.
 SUITE 100
 AUSTIN, TX 78746
 PH.: (512) 328-6050
 FAX: (512) 328-6172
 LSI@LandStrat.com



LAND STRATEGIES INC.
 PAUL LINEHAN & ASSOCIATES

MORNINGHILL DRIVE BRIDGE

LIVE OAK SPRINGS

±164.60 Acres

9406 Morninghill Drive

Austin, Texas 78737

BRIDGE AREA SITE PHOTOGRAPHS



Low Water Crossing - Looking South



Low Water Crossing - Looking North

REVISION BLOCK:
 NO. DATE EMPL. COMMENTS

OWNER INFORMATION:
 David Knapp
 3801 N. Capital of Texas Highway,
 Austin, Texas 78746
 T: 512.328.5576

LIVE OAK SPRINGS
 Preliminary Plan
 Bridge Site Photos

1010 LAND CREEK CV.
 SUITE 100 78746
 AUSTIN, TX 78746
 PH: (512) 328-6050
 FAX: (512) 328-6172
 LSI@LandStrat.com

1983 - 2018
 35
 YEARS OF
 EXCELLENCE

LAND STRATEGIES INC.
 PAUL LINEHAN & ASSOCIATES

SHEET

MORNINGHILL DRIVE BRIDGE

LIVE OAK SPRINGS

±164.60 Acres

9406 Morninghill Drive

Austin, Texas 78737



SCALE: 1" = 200'

Case No. C8J-2016-0228

REVISION BLOCK:		
NO.	DATE	EMPL. COMMENTS

OWNER INFORMATION:
David Knapp
3801 N. Capital of Texas Highway,
Ste. E 240-180
Austin, Texas 78746
T. 512.328.5576

LS# 1582.01

LIVE OAK SPRINGS
Preliminary Plan
Bridge Site Photos

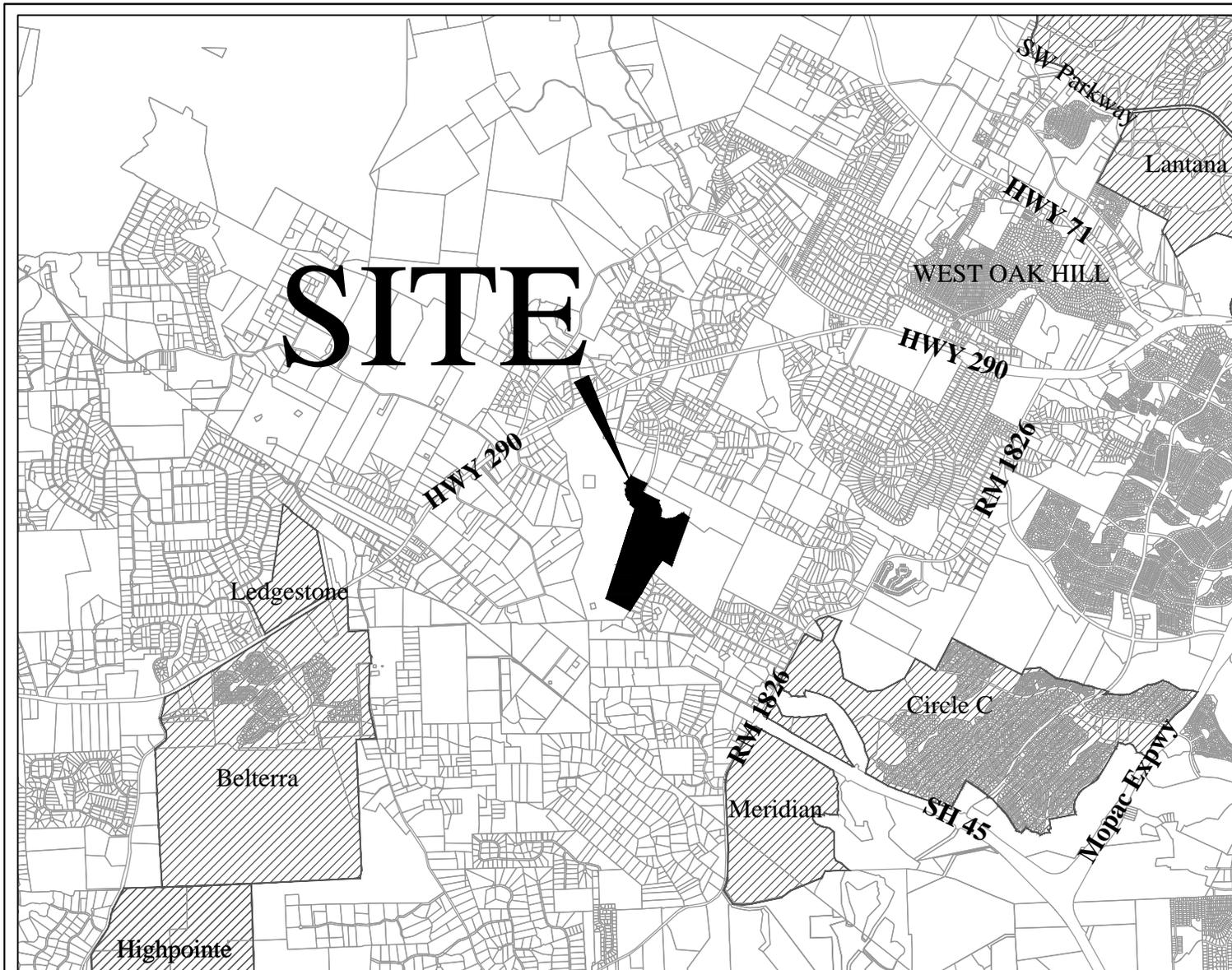
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1010 LAND CREEK CV.
SUITE 100
AUSTIN, TX 78746
PH: (512) 328-6050
FAX: (512) 328-6172
LSI@LandStrat.com



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PAUL LINEHAN & ASSOCIATES

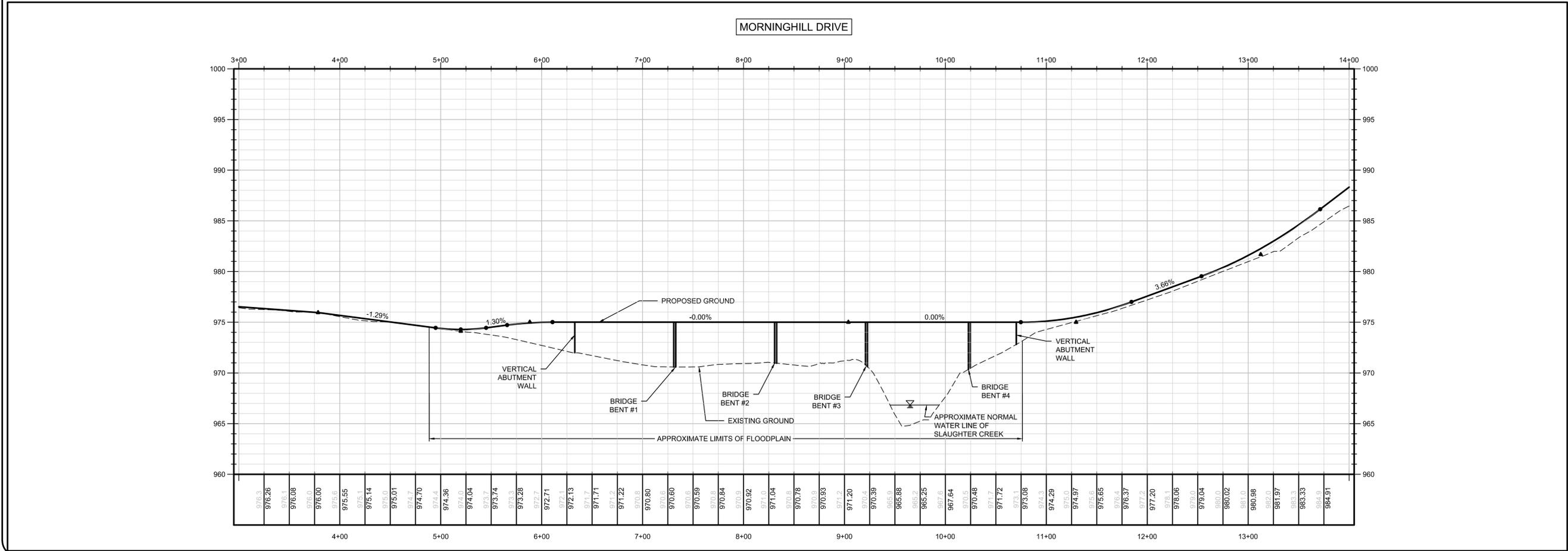
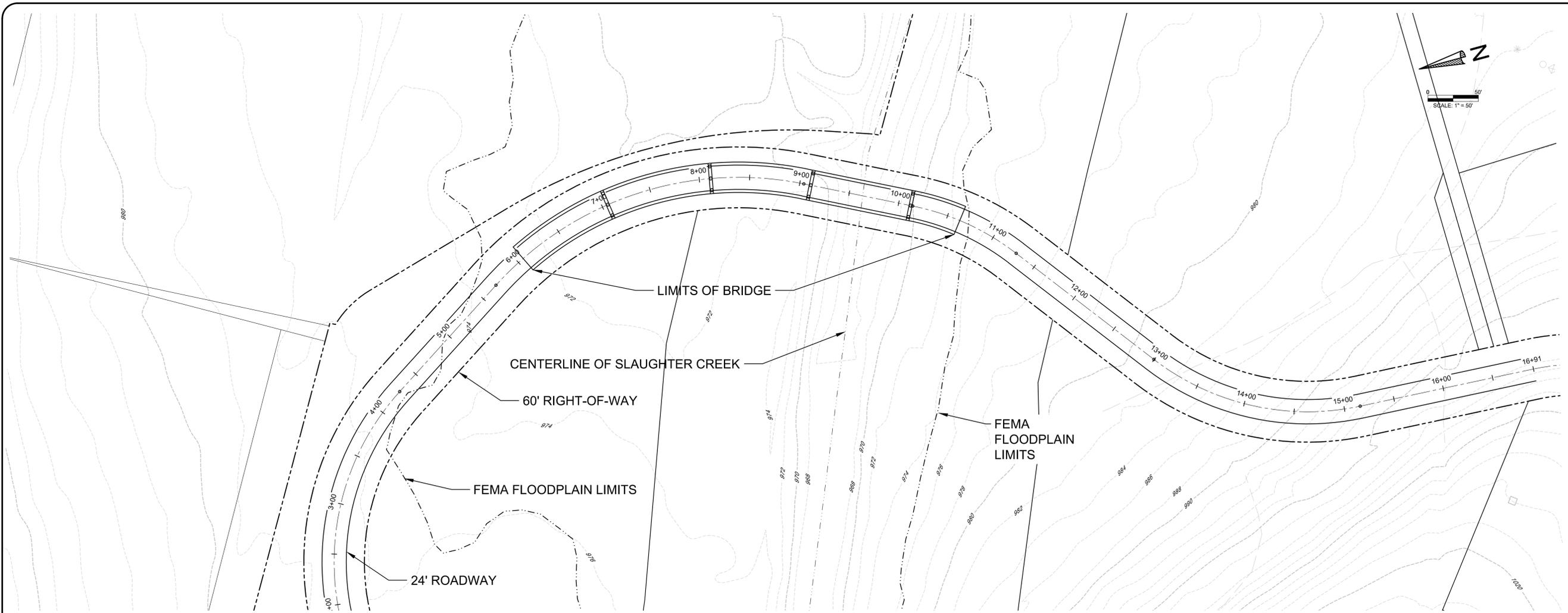
SHEET



LOCATION MAP



N.T.S.



BY	
REVISION	
DATE	
NO.	

LIVE OAK SPRINGS PRELIMINARY PLAN
TRAVIS COUNTY
CREEK CROSSING EXHIBIT

CIVIL INSITE, LLC
CONSULTING ENGINEERS
 12800 HILL COUNTRY BLVD, SUITE R-275
 AUSTIN, TX 78738
 512.820.0643
 FIRM REGISTRATION NO. F-19483

DESIGN BY: SGC
 CHECKED BY: GA
 APPROVED BY: GA
 DATE: 7/27/2015



PAUL LINEHAN & ASSOCIATES

Don Perryman
City of Austin, Development Services Department
Senior Planner
505 Barton Springs Road, 4th Floor
Austin, Texas 78704

Atha Phillips
City of Austin, Development Services Department
Environmental Program Coordinator
505 Barton Springs Road, 4th Floor
Austin, Texas 78704

RE: Environmental Variance for a Bridge across Slaughter Creek C8J-2016-0228

Dear Don and Atha:

As the agent of the applicant for the Live Oak Springs Preliminary Plan, File No. C8J-2016-0228, Land Strategies, Inc. requests an Environmental Variance to the provisions of Section 30-5-262(B)(1) of the Austin Land Development Code, which restricts road crossings of the Critical Water Quality Zone of a Major Tributary to arterials shown on the Transportation Plan.

The requested variance is to construct a bridge across Slaughter Creek, connecting Derecho Drive to the Live Oak Springs property as shown on the attached exhibit. The proposed bridge is approximately 400 feet in length, standing ± 6 feet above the normal (dry) state of Slaughter Creek. Piers will be constructed to elevate the bridge above the 100 year floodplain. The piers will increase the base flood elevation in the immediate upstream vicinity of the bridge by approximately 0.3 feet. A Conditional Letter of Map Revision (CLOMR) has been submitted to Travis County and the Federal Emergency Management Agency (FEMA) addressing the changes in the floodplain resulting from the proposed bridge.

Residential land in the area of the Live Oak Springs Preliminary Plan consists of acre-sized lots, ranging from ± 1 acre to ± 3 acres in size. Strict enforcement of Section 30-5-262(B)(2) will deprive the applicant of the privilege of developing his land in a similar manner, because of the limits on single-access developments imposed by Section 30-2-158(C)(2)(a) of the Austin Land Development Code.

The variance is not necessitated by any design decision made by the applicant. As stated, Section 30-2-158(C)(2)(a) of the Austin Land Development Code requires two points of access for a subdivision, with the two points being to different exterior roadways. The proposed bridge is the minimum deviation from the code that will allow the property to be developed in a manner similar to other similar properties in the vicinity. The proposed bridge

has been designed to minimize impact on Slaughter Creek, and will cause minimal environmental consequences. Additionally, the bridge crossing is located very close to the existing low-water crossing.

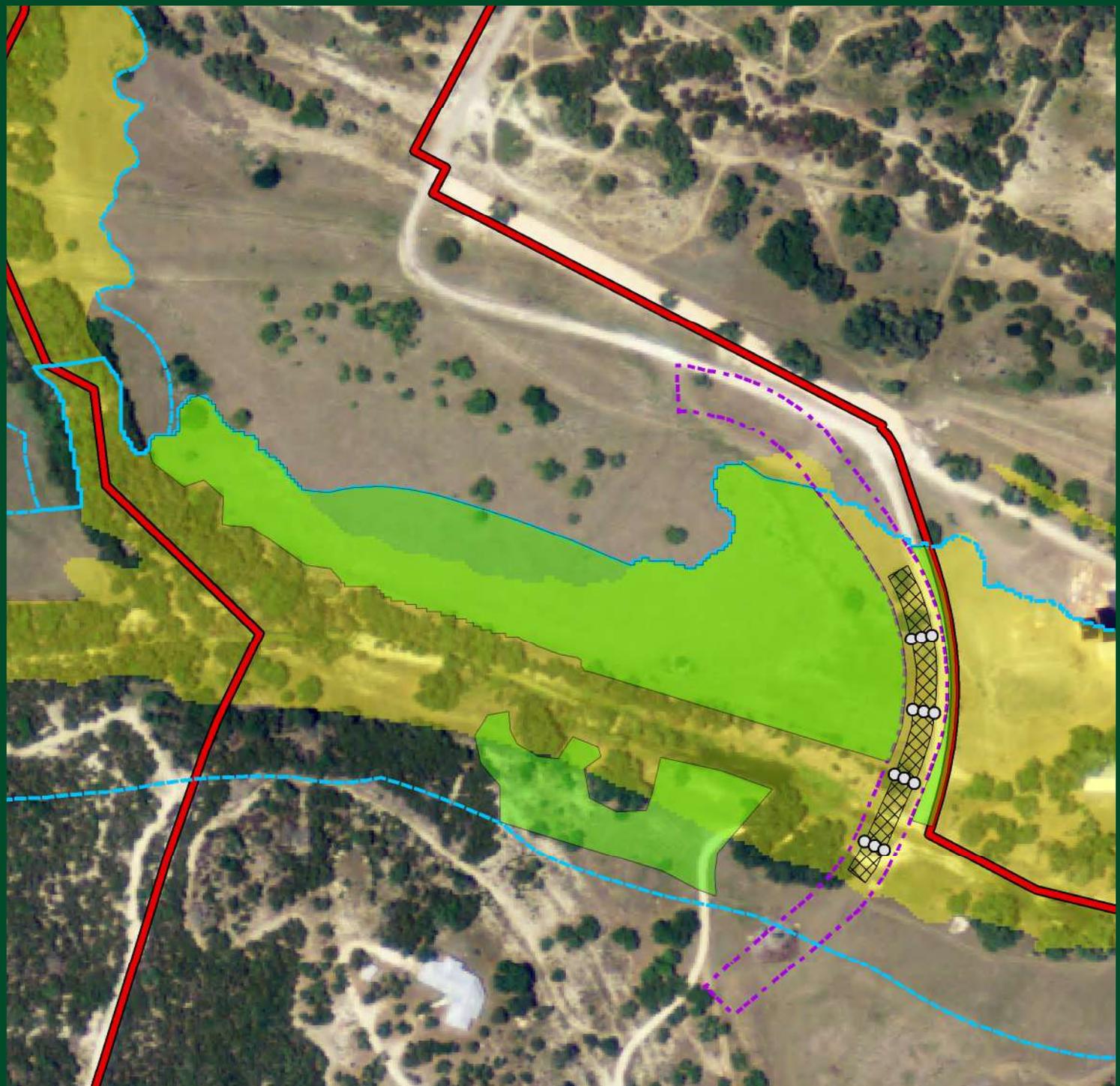
The proposed bridge is based on the guidance of Travis County commissioners, who want Zyle Road / Morninghill Drive to link with Derecho Drive, thereby providing the required two points of access to the proposed Live Oak Springs subdivision. Further, the narrower section of Morninghill Drive as a local road results in a lesser environmental impact from the roadway and proposed bridge – a small bridge for a small road – that connects to existing Derecho Drive. Both Morninghill and Derecho Drive are 50 foot right-of-way local roads, with existing paved sections of ±30 feet.

Thank you for your timely review and prompt positive response to this variance request. If you have any questions, or desire further information, please do not hesitate to contact me.

Sincerely,


Paul W. Linehan
President

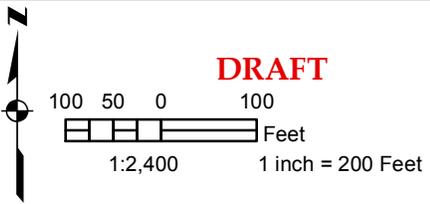
cc: Sue Welch – Travis County TNR



- Zone 1 - COA fully Developed Flooplain (100yr)
- Zone 2 -COA Critical Water Quality Zone
- Proposed Restoration Area - 5.67-acres

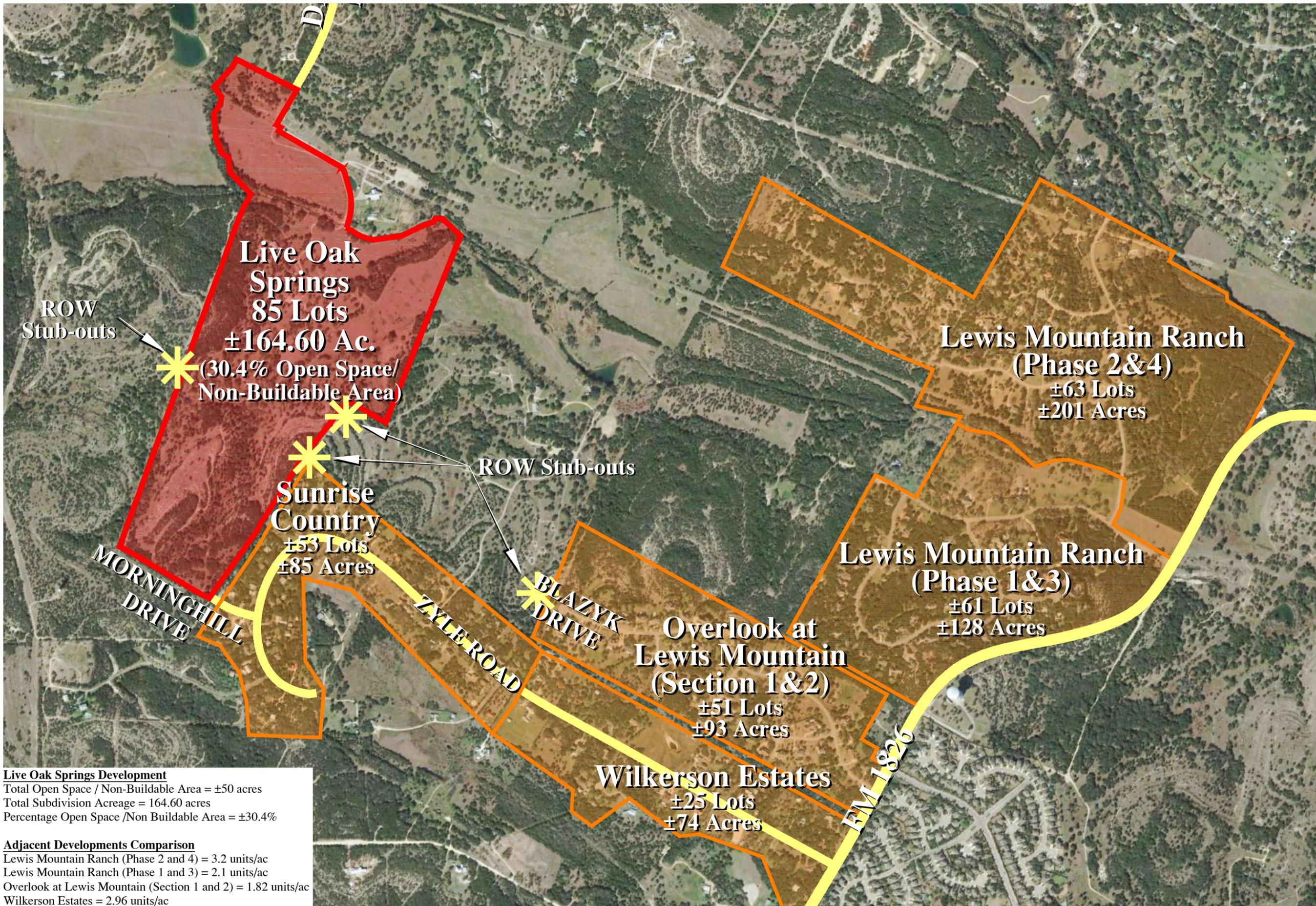
	Proposed Modification	Ratio	Restoration ²
Zone 1	0.926-acres	6:1	5.55-acres
Zone 2	0.038-acres	3:1	0.11-acres
Total Area of Proposed restoration:			5.66-acres

This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



- Subject Area
- Bridge
- ROW
- Pier - 3ft Diameter





Live Oak Springs
85 Lots
±164.60 Ac.

(30.4% Open Space/
 Non-Buildable Area)

Sunrise Country
±53 Lots
±85 Acres

Lewis Mountain Ranch
(Phase 2&4)
±63 Lots
±201 Acres

Lewis Mountain Ranch
(Phase 1&3)
±61 Lots
±128 Acres

Overlook at Lewis Mountain
(Section 1&2)
±51 Lots
±93 Acres

Wilkerson Estates
±25 Lots
±74 Acres

ROW Stub-outs

ROW Stub-outs

MORNINGHILL DRIVE

ZYLE ROAD

BLAZYK DRIVE

FM 1826

Live Oak Springs Development
 Total Open Space / Non-Buildable Area = ±50 acres
 Total Subdivision Acreage = 164.60 acres
 Percentage Open Space /Non Buildable Area = ±30.4%

Adjacent Developments Comparison
 Lewis Mountain Ranch (Phase 2 and 4) = 3.2 units/ac
 Lewis Mountain Ranch (Phase 1 and 3) = 2.1 units/ac
 Overlook at Lewis Mountain (Section 1 and 2) = 1.82 units/ac
 Wilkerson Estates = 2.96 units/ac
 Sunrise Country = 1.60 units/ac
 Live Oak Springs = 1.94 units/ac



OWNER INFORMATION:
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 Ste. E 240-180
 Austin, Texas 78746
 T. 512.328.5576

LIVE OAK SPRINGS
 Regional Aerial

1010 LAND CREEK CV.
 SUITE 100
 AUSTIN, TX 78746
 PH: (512) 328-6050
 FAX: (512) 328-0172
 ISI@LandStrat.com



LAND STRATEGIES INC.
 PAUL LINEHAN & ASSOCIATES

SHEET

**CITY OF AUSTIN ENVIRONMENTAL RESOURCE INVENTORY
FOR THE
KNAPP TRACT**

Travis County, Texas

April 2014

Submitted to:

David Knapp
6262 Pascal Lane
Austin, Texas 78746

By:

aci consulting
1001 Mopac Circle
Austin, Texas 78746

aci Project No.
27-13-046a

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APPENDICES

- Appendix A – Typical Vegetation Photographs
- Appendix B – City of Austin Site Review CEF Worksheet

Environmental Resource Inventory in Accordance with the City of Austin Land Development Code for the Knapp Tract in Travis County, Texas

April 2014

1.0 PURPOSE

The purpose of this environmental resource inventory is to evaluate the approximately 165-acre Knapp tract, hereafter referred to as the subject area, in accordance with the City of Austin Land Development Code (“LDC”) §25-8-121. Specifically, this assessment evaluates the subject area for the occurrence of critical environmental features (CEFs) as defined in the LDC and for potential endangered species habitat. A site investigation was performed by aci consulting scientists on March 13, 2014.

2.0 PROJECT DESCRIPTION

The approximately 165-acre subject area is at the southern extent of Derecho Drive, approximately one mile south of the intersection of Derecho Drive and US Highway 290 in Austin, Travis County, Texas (Figure 1). The subject area is adjacent to residential development to the southeast and bound by rangeland on the remaining sides.

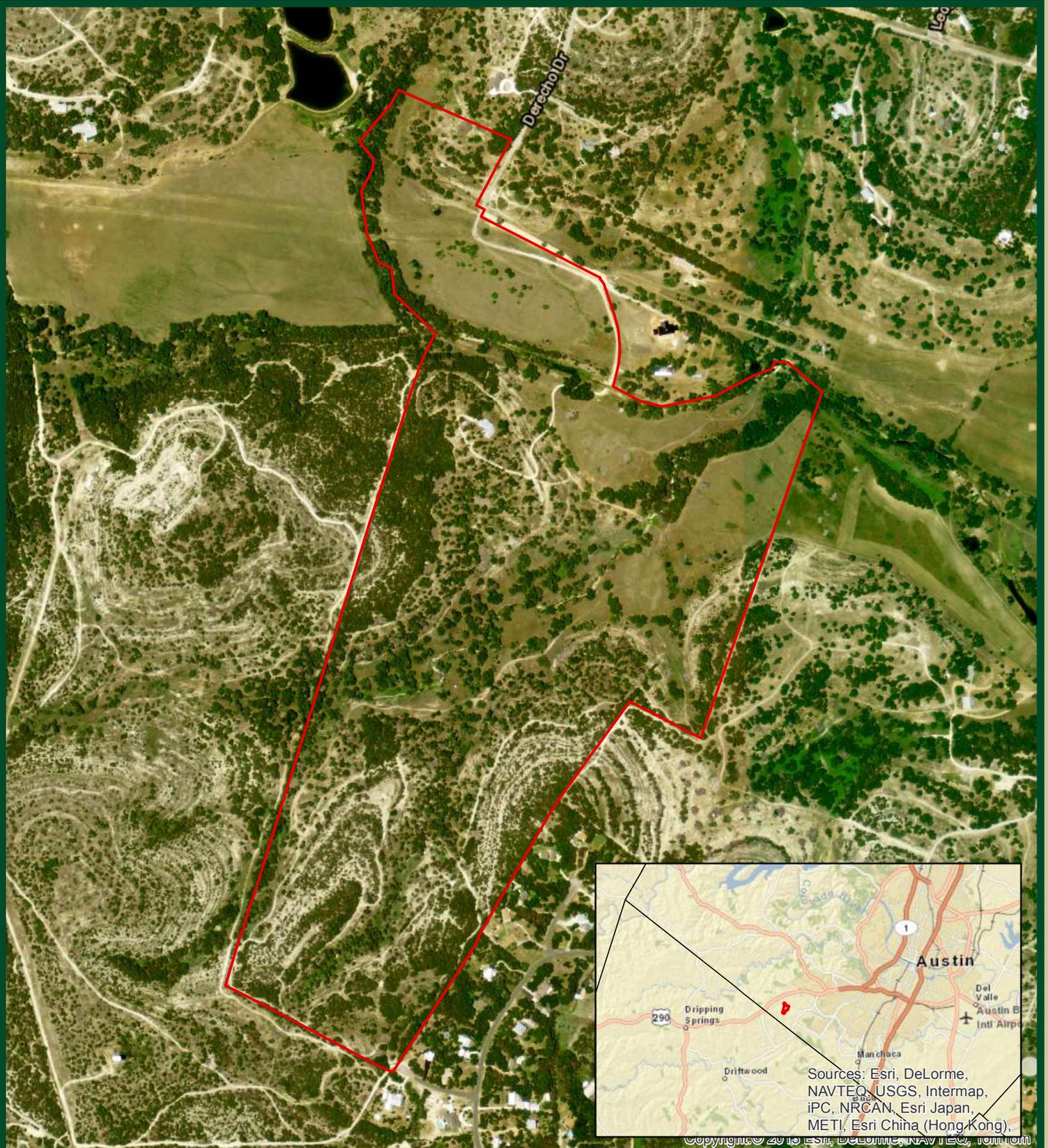
3.0 EXISTING ENVIRONMENT

3.1 Topography

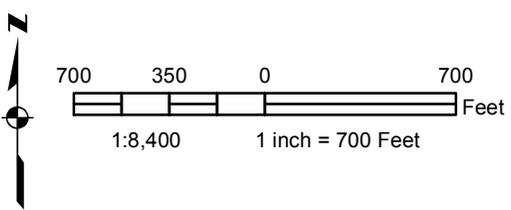
According to the *Signal Hill* U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangle, the elevation of the subject area ranges from approximately 950 to 1090 feet above mean sea level (Figure 2). The topography slopes generally from south to north towards Slaughter Creek in the northern portion of the subject area.

3.2 Hydrology

The subject area lies within Slaughter Creek watershed, within the City’s Suburban Watershed regulation area. According to Edwards aquifer recharge zone maps, the subject area is within the contributing zone of the Edwards aquifer (TCEQ 2001). The subject area is not located within the Edwards aquifer recharge zone as defined by the City of Austin. A portion of Slaughter Creek, which runs through the subject area, lies within the 100-year Federal Emergency Management Agency (FEMA) floodplain and extends approximately 3,146 linear feet into the subject area.

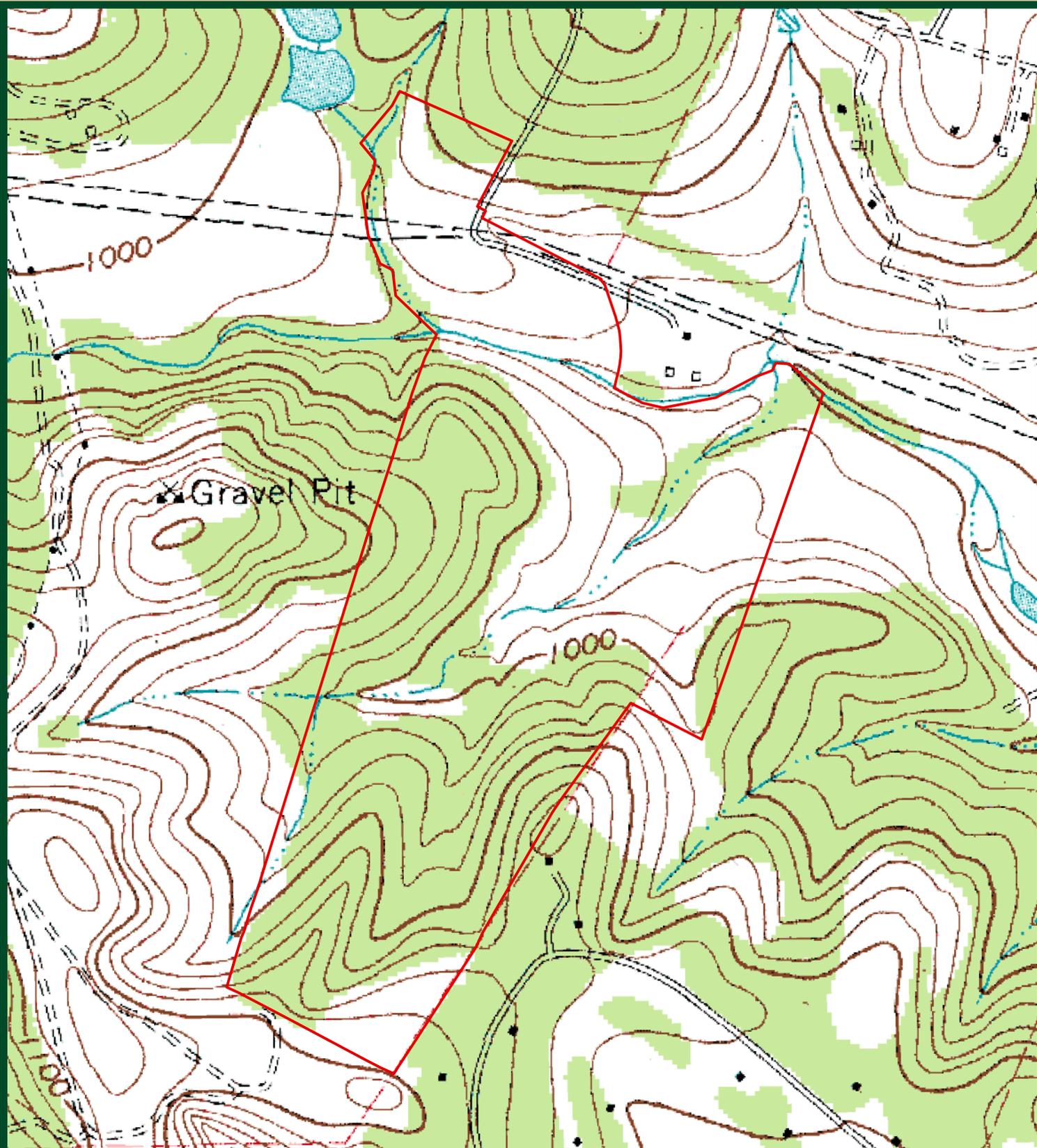


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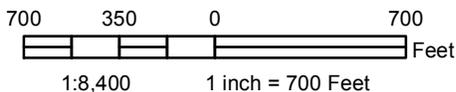


 Subject Area





This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



Subject Area



3.3 Geology

The subject area lies within the Glen Rose Formation (Kgr) and Alluvium (Qal). Glen Rose consists of limestone, dolomite, and marl with colors ranging from grey to tan. The formation has alternating hard and soft beds which form stair step topography. Alluvium is also typically tan to light grey and consists of sand, silt, clay, and gravel (Garner 1986).

3.4 Soils

Soils in this area are classified within the Speck-Tarrant association, an association comprised of “Shallow, stony, loamy soils and very shallow, stony, clayey soils overlying limestone” (SCS 1972). Four soil units occur within the subject area (SCS 1974):

- *Brackett soils, rolling (BID)* – Found along undulating to rolling topography over interbedded limestone and marl in individual areas over 1,000 acres in size. The surface layer is made up of 75% broken limestone fragments, with the addition to gravelly clay loam, gravelly loam, loam or clay loam. It is shallow and well drained and the permeability is moderately slow with a low water capacity.
- *Volente complex, 1 to 8 percent slopes (VoD)* – This complex is mainly in long valleys, where it occupies areas several hundred acres in size. The surface layer is dark grayish-brown silty clay loam about 22 inches thick over dark-brown silty clay loam over dark-brown silty clay. The next layer is brown silty clay with an underlying reddish-yellow clay loam. The slowly permeable soil has a high available water capacity, and is deep well drained.
- *Mixed alluvial land (Md)* – Occurs on flood plains and creeks and rivers, consisting of gravelly alluvium, beds of gravel, and exposed limestone beds and boulders randomly interspersed with moderately deep to deep, calcareous alluvial materials.
- *San Saba clay, 1 to 2 percent slopes (SaB)* – Occupies smooth, single and complex slopes on broad uplands and in long, narrow valleys ranging in areas from 10 to 40 acres. The surface layer is very dark gray calcareous clay about 22 inches thick followed by dark-gray clay about 16 inches thick. The underlying material is gray limestone. This soil is deep and moderately well drained with slow permeability and high available water capacity.

3.5 Vegetation

The subject area lies within the “Live Oak – Mesquite – Ashe Juniper – Parks” designation as noted on the Texas Parks and Wildlife Department’s (TPWD) *Vegetation Types of Texas* map (McMahan et al. 1984). This designation is chiefly distributed on level to gently rolling uplands and ridge tops in the Edwards Plateau (McMahan 1984). Woody vegetation is scattered in clusters across the landscape and is typically equal to, or greater than, nine feet tall. Grasses and forbs are also prominent.

Vegetation species observed within the subject area includes, but is not limited to: live oak (*Quercus virginiana*), Ashe juniper (*Juniperus ashei*), Texas oak (*Quercus texana*), shin oak (*Quercus sinuata*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis laevigata*), flameleaf sumac

(*Rhus copallinum*), agarita (*Mahonia trifoliolata*), willow baccharis (*Baccharis salicina*), Texas persimmon (*Diospyros texana*), pricklypear (*Opuntia* spp.), kidneywood (*Eysenhardia texana*), saw greenbrier (*Simlax bona-nox*), Texas wintergrass (*Stipa leucotricha*), little bluestem (*Schizachyrium scoparium*), bermudagrass (*Cynodon dactylon*), curly-mesquite (*Hilaria belangeri*), Texas grama (*Bouteloua rigidiseta*), Hall's panicum (*Panicum hallii*), purple three-awn (*Aristida purpurea*), hairy tridens (*Erioneuron pilosum*), cedar sedge (*Carex planostachys*), two-leaved senna (*Senna romeriana*), mat euphorbia (*Euphorbia maculata*), and rabbit tobacco (*Gnaphalium obtusifolium*).

Photographs of typical vegetation of the subject area are included in Appendix A.

The subject area is located in Sector 20 of the City of Austin Biological Resource Sector Map and portions of the subject area lie within areas that are designated as priority woodlands or other significant woodlands area.

4.0 CRITICAL ENVIRONMENTAL FEATURES

Section 25-8-1 of the City of Austin LDC defines CEFs as “features that are of critical importance to the protection of environmental resources, and include bluffs, canyon rimrocks, caves, faults and fractures, seeps, sinkholes, springs, and wetlands.”

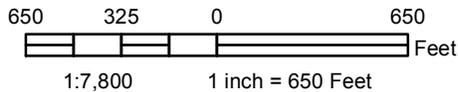
Prior to the field investigation, the City of Austin GIS Development Web Map was reviewed (COA 2014). On March 13, 2014, **aci consulting** scientists conducted a field investigation within the subject area in accordance with the City of Austin LDC. The field investigation was performed by surveying the entire subject area.

Aerial photographs and topographic maps were utilized to orient surveyors in the field. If potential CEFs were identified in the field they were examined and recorded, and each potential feature was described, photographed and its location recorded using a handheld Garmin 520HCx GPS unit.

No bluffs, canyon rimrocks, caves, faults and fractures, seeps, sinkholes, or springs were observed on the subject area. Potential wetlands were observed within the subject area. Additionally, four off-site features were identified by aerial imagery within 150 feet of the subject area. No off-site features were investigated in field by **aci consulting**.



This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



-  Subject Area
-  Potential CEF Wetland
-  Potential Off-site Features



W-1

GPS: N 30.2169, W -97.94007

This potential CEF is a wetland fringe associated with Slaughter Creek, located along the northern border of the subject area. The feature is approximately 92,218 square feet or approximately 2.12 acres. Water was present within this feature during field investigations. Vegetation within the feature includes, but is not limited to: live oak, Ashe juniper, cedar elm, willow baccharis, bermudagrass, and agarita.



<i>Derecho Tract</i>	Feature	W-1	Photo #: 1
Date: 3/13/2014	Description	Banks of Slaughter Creek	Direction: Northwest
	Photographer	aci consulting	

W-2

GPS: N 30.20967, W -97.94074

This potential CEF is located near the western border of the subject area and appears to be a shallow, natural depression that captures water during storm events. The feature is approximately 985 square feet or approximately 0.02 acre. Water was present within this feature during field investigations. Vegetation within the feature includes, but is not limited to: live oak, cedar elm, willow baccharis, agarita, and bermudagrass.



<i>Derecho Tract</i>	Feature	W-2	Photo #: 2
Date: 3/13/2014	Description	Small ponded area	Direction: Southwest
	Photographer	aci consulting	

5.0 SPECIES INCLUDED UNDER THE CITY OF AUSTIN ENDANGERED SPECIES ORDINANCE

The City of Austin Endangered Species Ordinance (“COA ESO”) requires that an endangered species habitat survey be conducted prior to application for site development of a parcel of land (LDC §25-8-696). Plant and animal species for which habitat surveys must be conducted include: Austin Blind salamander (*Eurycea waterlooensis*), Barton Springs salamander (*Eurycea sosorum*), black-capped vireo (*Vireo atricapillus*) (“BCVI”), golden-cheeked warbler (*Setophaga chrysoparia*) (“GCWA”) and whooping crane (*Grus americana*). Six species of karst invertebrates including: the Bee Creek Cave harvestman (*Texella reddelli*), Bone Cave harvestman (*Texella reyesi*), Kretschmarr Cave mold beetle (*Texamaurops reddelli*), Tooth Cave ground beetle (*Rhadine persephone*), Tooth Cave pseudoscorpion (*Tartarocreagris texana*) and Tooth Cave spider (*Neoleptoneta myopica*).

On March 13, 2014, a habitat survey in accordance with LDC §25-8-696 and the City of Austin Environmental Criteria Manual was conducted by **aci consulting** scientists. Descriptions of the habitat within the subject area and potential habitat for each endangered species are included below.

5.1 Austin Blind Salamander

On August 22, 2012, U.S. Fish and Wildlife Service (USFWS) released a proposed rule for the Austin blind salamander to be listed as endangered (USFWS 2012). This salamander was federally-listed as endangered by the USFWS on August 20, 2013 (USFWS 2013). This species is an entirely aquatic and neotenic salamander known to occur in three of the four spring outlets of Barton Springs in the City of Austin’s Zilker Park, Austin, Texas. This salamander has not been observed at the fourth Barton Springs outlet known as Upper Barton Spring. This salamander grows to a length of approximately 2.5 inches, lacks external eyes, and has permanent external gills, a narrow head and an extended snout. The salamander’s coloring is described as faintly reflective and pearly white in color with a lavender hue (USFWS 2012). The Austin blind salamander is described as a primarily subsurface dwelling species that spends most of its time living in the Edwards aquifer.

The primary stated threat to this species is habitat modification in the form of reduced flows and degradation of water quality of spring habitats as a result of urbanization within the watersheds and recharge and contributing zones of the Edwards aquifer (USFWS 2012).

The subject area is approximately 10.1 miles southwest of the Critical Habitat Unit (CHU) for the Austin blind salamander. According to Texas Parks and Wildlife Department’s (TPWD) Texas Natural Diversity Dataset (TNDD), the closest elemental occurrence (EO) of the Austin blind salamander is approximately 10.1 miles to the northeast of the subject area along Lady Bird Lake at Zilker Park within Travis County, Texas (EO# 4046) (TPWD 2013a).

The subject area is not within the Barton Springs Segment of the Edwards aquifer. The subject area is within the Contributing Zone of the Barton Springs Segment; however, the subject area is approximately 10.1 miles from Barton Springs. Therefore, the probability of occurrence of this species within the subject area is considered very low.

5.2 Barton Springs Salamander

The Barton Springs salamander was federally-listed as endangered in 1997 and is an entirely aquatic and neotenic amphibian known only to occur around four spring outlets within Zilker Park, Austin, Texas. The springs are collectively known as Barton Springs and consist of Parthenia, Eliza, Old Mill, and Upper Barton Springs [62 FR 23377] (USFWS 1997). The salamander is concentrated near the spring openings where food sources are abundant, water chemistry and temperature are relatively constant, and where the salamander has access to both surface and subsurface habitat.

The primary threat to the Barton Springs salamander is degradation to the quality and quantity of water that feeds Barton Springs from Barton Springs watershed (USFWS 1997).

According to TWPD TNDD, the closest EO of the Barton Springs salamander is approximately 4.8 miles to the northeast of the subject area at the southeast intersection of Deer Lane and Ovilla Drive within Travis County, Texas (EO# 8968) (TPWD 2013a).

The subject area is not within the Barton Springs Segment of the Edwards aquifer. The subject area is within the Contributing Zone of the Barton Springs Segment; however, the subject area is approximately 10.1 miles from Barton Springs. Therefore, the probability of occurrence of this species within the subject area is considered very low.

5.3 Black-capped Vireo

The black-capped vireo (BCVI) was federally-listed as an endangered species on October 6, 1987 (USFWS 1987). BCVI primarily nest on the Edwards Plateau and the Lampasas Cut-Plains regions of central Texas. The range is considered to be discontinuous across the Llano Uplift region. The eastern and southern edges of the range follow the Balcones Escarpment closely from Waco, Texas (McLennan County) to Brackettville, Texas (Kinney County) (USFWS 1987).

USFWS habitat assessment reporting requirements for BCVI (USFWS 2011) recognize BCVI habitat in accordance with the BCVI habitat description in TPWD's "Endangered and Threatened Animals of Texas" (Campbell 2003). The following is a summary of that description:

BCVI require broadleaf shrub vegetation reaching to ground level for nesting cover. They typically nest in shrublands and open woodlands with a distinctive patchy structure. Habitat generally consists of shrub vegetation that extends from the ground to approximately six feet, covering 30 to 60 percent or greater of the total area. In the Edwards Plateau and Cross Timbers

Regions, BCVI habitat occurs where soils, topography and land use produce scattered hardwoods with abundant low cover. Typical BCVI habitat in the Edwards Plateau Region consists of Texas oak, Lacey oak (*Quercus glaucoides*), shin oak, live oak, mountain laurel (*Sophora secundiflora*), evergreen sumac (*Rhus sempervirens*), skunk-bush sumac (*Rhus aromatica*), flameleaf sumac, redbud (*Cercis canadensis*), Texas persimmon, Mexican buckeye (*Ungnadia speciosa*), elbowbush (*Forestiera angustifolia*) and agarita. Although Ashe juniper is often part of the plant composition in BCVI habitat, preferred areas usually have both low density and low cover of juniper (Campbell 2003).

According to TWPD TNDD the closest EO of the BCVI is approximately 4.5 miles to the northeast of the subject area directly east of HWY 71 along Southwest Parkway within Barton Creek Habitat Preserve in Travis County, Texas (EO# 5625) (TPWD 2013a).

The subject area does not lie within BCVI habitat according to the Balcones Canyonlands Endangered Species Habitat and Potential Preserve System Map (TNR 1996). The vegetation type on the tract is also inconsistent with the requisite tree density and tree species for BCVI. Therefore, the potential for the subject area to be regularly utilized by BCVI is highly unlikely.

5.4 Golden-cheeked Warbler

The golden-cheeked warbler (GCWA) was federally-listed as endangered in 1990 (USFWS 1990). The GCWA is a migratory songbird endemic to Texas and only present during its breeding season of early March through early August. GCWA habitat typically consists of mature Ashe juniper woodlands interspersed with deciduous species. The areas most likely to be utilized by GCWA consist of nearly continuous cover of trees with 50 to 100 percent closed canopy (Campbell 2003). Deciduous species common in GCWA habitat include escarpment black cherry (*Prunus serotina*), Texas black walnut (*Juglans microcarpa*), ash (*Fraxinus* spp.), Texas oak, and cedar elm (*Ulmus crassifolia*).

USFWS protocol for performing habitat assessments for GCWA (USFWS 2010) recognizes three categories of potential GCWA habitat, as published in a section of the TPWD management guide for Texas endangered species titled “Management Guidelines for the Golden-cheeked Warbler in Rural Landscapes” (Campbell 2003). The three categories of potential GCWA habitat include:

1. **Vegetation associations where GCWAs are expected to occur** (“high quality habitat”) include woodlands with mature Ashe juniper in a natural mix with oaks, elms, and other hardwoods in relatively moist areas including steep canyons, slopes, and adjacent uplands. The guidelines detail mature Ashe juniper trees to be those that are at least 15 feet in height with a diameter-at-breast height (dbh) of approximately 5 inches. These areas should have a nearly contiguous canopy cover of trees with 50-100 percent canopy closure and an overall woodland canopy height of 20 feet or more.

2. **Vegetation associations that may be used by GCWAs** include four additional types of areas that may be used by warblers, but are not representative of what is typically thought of as “best” warbler habitat:
 - Stands of mature Ashe juniper with shredding bark with scattered live oaks (≥ 10 percent total canopy cover), where the total canopy cover exceeds 35 percent and overall woodland canopy height is ≥ 20 feet.
 - Bottomlands along creeks and drainages which support deciduous trees with at least 35 percent canopy cover with an average canopy height of 20 feet. Mature Ashe juniper must be present at the bottom or on nearby slopes.
 - Mixed stands of post oak and/or blackjack oak with 10-30 percent canopy cover, with scattered mature Ashe juniper where total canopy cover exceeds 35 percent and overall woodlands canopy height is 20 feet.
 - Mixed stands of shin oak with 10-30 percent canopy cover with scattered mature Ashe juniper where total canopy cover exceeds 35 percent and overall woodlands canopy height is 20 feet.

3. **Vegetation associations where GCWAs are not expected to be found** include areas where GCWA are not expected to occur, unless adjacent to warbler habitat areas. The five areas are:
 - Stands of small Ashe juniper, averaging less than 15 feet in height and 5 inches dbh. These areas are often dry and relatively flat, lacking oaks and other broad-leaved trees and shrubs. These areas often include open rangelands, previously cleared areas, and old fields.
 - Pure stands of larger Ashe juniper greater than 15 feet in height and 5 inches dbh with few or no oaks or other hardwoods.
 - Open park-like woodlands or savannahs (even with old junipers) where canopy cover is less than 35 percent. These areas often have scattered live oaks and other trees.
 - Small junipers and other trees coming up along existing fencelines.
 - Small junipers less than 15 feet tall coming up under larger hardwoods where junipers have been removed in the last 20 years (Campbell 2003).

According to TWPD TNDD, the closest EO of the GCWA is approximately 0.7 mile to the north of the subject area near U.S. Highway 290 within Travis County, Texas (EO# 871) (TPWD 2013a).

According to the Balcones Canyonlands Endangered Species Habitat and Potential Preserve System Map, approximately 122 acres of the subject area lies within GCWA Zone 2, Unconfirmed Habitat, and approximately 99 acres within GCWA Zone 3, Not Known to be Habitat (TNR 1996).

The next survey season for GCWA begins March 2015.

5.5 Whooping Crane

The whooping crane was federally-listed as endangered in 1967 by USFWS (USFWS 1967). This is a migrant species whose flyway crosses Travis County. The whooping crane utilizes a variety of habitat during migration; croplands are preferred for feeding, and vast wetland areas are selected for feeding and roosting, preferring secluded areas removed from human disturbance (Campbell 2003).

According to TWPD TNDD the closest EO of the whooping crane is approximately 142 miles to the southeast of the subject area on a peninsula between St. Charles Bay and Mesquite Bay within Aransas County, Texas (EO# 4226) (TPWD 2013b).

The proximity of the subject area to human disturbance is not ideal for whooping cranes. The subject area also does not contain cropland or vast wetlands typical of whooping crane stopover habitat. The probability of whooping cranes feeding or roosting in the subject area is considered very low.

5.6 Karst Invertebrates

Karst invertebrates are subterranean species that have adapted to areas with consistent humidity and temperature levels with a continual influx of nutrients from the surface. The caves in which the invertebrates occur were formed as a result of dissolution of the limestone formations making up the Edwards aquifer.

In 1992 (revised 2007), Veni and Associates delineated four karst zones to define geologic areas with the potential for subsurface endangered karst invertebrates. The zones are:

Zone 1: Areas known to contain listed invertebrate karst species

Zone 2: Areas having a high probability of containing habitat suitable for listed invertebrate karst species;

Zone 3: Areas that have a low probability for containing listed invertebrate karst species; and,

Zone 4: Areas, both cavernous and non-cavernous, that do not contain endangered karst invertebrate species

The subject area is located outside of the known karst zones for Travis County, TX. No karst features were identified within the subject area during field investigation. The probability of occurrence of these species within the subject area is considered low.

6.0 STATEMENT OF FINDINGS

Two potential CEF areas were identified during field investigations, and four off-site features within 150 feet of the subject area were identified on aerial imagery (Figure 3). No off-site features were field investigated by **aci consulting**. Habitat surveys conducted in compliance with the City of Austin Endangered Species Ordinance (LDC §25-8-696) found no habitat for the Austin blind salamander, Barton Springs salamander, black-capped vireo, whooping crane, Bee Creek Cave harvestman, Bone Cave harvestman, Kretschmarr Cave mold beetle, Tooth Cave ground beetle, Tooth Cave pseudoscorpion and Tooth Cave spider within the subject area. According to the Balcones Canyonlands Endangered Species Habitat and Potential Preserve System Map, approximately 122 acres of the subject area lies within GCWA Zone 2, Unconfirmed Habitat, and approximately 99 acres within GCWA Zone 3, Not Known to be Habitat (TNR 1996). The next survey season for GCWA begins March 2015.

7.0 REFERENCES

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- (USFWS) U.S. Fish and Wildlife Service. 2010. USFWS Section 10(a)(1)(A) scientific permit requirements for conducting presence/absence surveys and habitat assessments for endangered golden-cheeked warblers. Last updated: January 13, 2010. U.S. Fish and Wildlife Service - Ecological Services Field Office: Austin, Texas.
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- (USFWS) U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; endangered status for four Central Texas salamanders and designation of critical habitat; Proposed Rule. Federal Register, vol. 77, p. 50767.
- (USFWS) U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; determination of endangered species status for the Austin blind salamander and threatened species status for the Jollyville Plateau salamander throughout their ranges; Final Rule. Federal Register, vol. 78, p. 51278.
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APPENDIX A

Typical Vegetation Photographs



Photograph 1: Typical vegetation in the northeast corner of the subject area (facing southwest).



Photograph 2: Typical vegetation in the southern portion of the subject area (facing northwest).



Photograph 3: Typical vegetation in the southeastern portion of the subject area (facing northeast).



Photograph 4: Typical vegetation in the eastern portion of the subject area (facing southeast).



Photograph 6: Typical vegetation along the northern boundary of the subject area (facing southwest).

APPENDIX B

City of Austin Site Review CEF Worksheet

City of Austin Site Review Critical Environmental Feature Worksheet

1	Project Name:	Knapp Tract	5	Primary Contact Name:	Jenny Wallgren
2	Project Address:	South Extent of Derecho Drive	6	Phone Number:	512-852-3861
3	Date:	3/13/2014	7	Prepared By:	Eric Wallgren
4	Environmental Assessment Date:	3/13/2014	8	CEFS Located? {yes,no} :	YES

9	FEATURE TYPE {Wetland,Rimrock,Recharge Feature,Seep,Spring}	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK DIMENSIONS (ft)	
			coordinate	notation	coordinate	notation	X	Y	Length	Avg Height
	Wetland	W-1	-97.936463	DD	30.214768	DD	2,168	40		
	Wetland	W-2	-97.940916	DD	30.209678	DD	20	71		

City of Austin Use Only WPDRD CASE NUMBER:	
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LIVE OAK SPRINGS ENDANGERED SPECIES BIOLOGICAL EVALUATION MEMO

TRAVIS COUNTY, TEXAS

Date: April 25, 2018

Project: Live Oak Springs

To: Artek Investments, LLC. | David Knapp

From: aci Group, LLC - TBPG License No. 50260 | Mark Adams

Subject: **Endangered Species Biological Evaluation in Travis County | CLOMR**

Introduction

aci consulting was retained by Artek Investments, LLC. to prepare the appropriate documentation for the approximately 164-acre Live Oak Springs tract related to Federal Emergency Management Agency (FEMA) floodplain modifications, specifically a Conditional Letter of Map Revision (CLOMR) permit. The approximately 164-acre Live Oak Springs tract is within Travis County and is intersected by four U.S. Geologic Survey (USGS) National Hydrography Dataset (NHD) (2018) flowlines and Slaughter Creek (Attachment A, Figure 1). The proposed floodplain modification area includes approximately 0.75 acres of the “1% annual chance flood hazard” zone and 0.29 acre of “2% annual chance flood hazard” zone for Slaughter Creek (FEMA 2018) (Attachment A, Figure 2).

Prior to issuance of the CLOMR, FEMA requires documentation demonstrating compliance with the Endangered Species Act (ESA) (Attachment B). This CLOMR is being requested for the approximately 164-acre Live Oak Springs tract, to allow modifications within FEMA’s “1% annual chance flood hazard” zone and “0.2% annual chance flood hazard” zone, as it appears on FIRM 48453C0560H, dated September 26, 2008.

Artek Investments, LLC. and **aci consulting** courteously request U.S. Fish and Wildlife Service (USFWS) to review the proposed floodplain modification area, related endangered species investigations, and no effects determination described in this memo. If USFWS agrees with the findings of this memo, we request documentation of the concurrence for submittal to FEMA.

Project Location

The approximately 164-acre Live Oak Springs tract, hereafter referred to as the subject area, is located along the southern extent of Derecho Drive in Travis County, Texas. The northern extent of the subject area is bound by Derecho Drive, the eastern extent is bound by undeveloped land and residential land, the southern extent is bound by undeveloped land, and the western extent is bound by agricultural and undeveloped land. As seen in Attachment A (Figure 1), Slaughter Creek flows from west to east along the northern portion of the subject area. The proposed floodplain modification area is located along the existing low water crossing within the north central portion of the subject area (Attachment A, Figure 2).

Environmental Setting

The subject area is located within the eastern section of the “Edwards Plateau” Ecoregion according to the *Ecoregions of Texas* (2007). The “Edwards Plateau” ecoregion is defined by Griffith et al. 2007 as:

“This ecoregion is largely a dissected limestone plateau that is hillier to the south and east where it is easily distinguished from bordering ecological regions by a sharp fault line. The region contains a sparse network of perennial streams. Due to karst topography (related to dissolution of limestone substrate) and resulting underground drainage, streams are relatively clear and cool in temperature compared to those of surrounding areas. Soils in this region are mostly Mollisols with shallow and moderately deep soils on plateaus and hills, and deeper soils on plains and valley floors. Covered by juniper-oak savanna and mesquite-oak savanna, most of the region is used for grazing beef cattle, sheep, goats, exotic game mammals, and wildlife. Hunting leases are a major source of income. Combined with topographic gradients, fire was once an important factor controlling vegetation patterns on the Edwards Plateau. It is a region of many endemic vascular plants. With its rapid seed dispersal, low palatability to browsers, and in the absence of fire, Ashe juniper has increased in some areas, reducing the extent of grassy savannas.”

According to the 2012 two-foot contours provided by Travis County, the elevation range for the proposed floodplain modification area ranges from approximately 964 feet above mean sea level (MSL) to 976 feet MSL, sloping generally from north to south towards the Slaughter Creek (Travis County 2012).

The proposed floodplain modification area lies within the Brackett association soil map unit (USDA NRCS 2018) and is within the Austin-Travis Lakes (Hydrologic Unit Code 12090205) (USGS 2018). According to the USGS NHD there are five flowlines within the subject area (USGS 2018).

The subject area is within “Live Oak-Mesquite-Ashe Juniper Parks” as noted on the Texas Parks and Wildlife Department (TPWD) *Vegetation Types of Texas* map (McMahan et al. 1984). “Parks” are defined as areas with woody plants that are generally over nine feet tall and are either growing in clusters or scattered within continuous grass or herbaceous areas. These areas typically have 11 to 70 percent woody canopy cover.

Endangered Species

According to the USFWS Environmental Conservation Online System (ECOS), Information, Planning, and Conservation System (IPaC), 11 federally listed threatened or endangered species have the potential to occur within Travis County (USFWS 2018a). Of the 11 species, one is federally listed as threatened and 10 are federally listed as endangered.

Three other bird species: least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), and red knot (*Calidris canutus*) are federally listed as endangered, threatened, and threatened, respectively, in Travis County. However, the USFWS ECOS IPaC database (USFWS 2018a) states that each of these three species should only be considered in an effects analysis if the project is a wind energy project. Since the proposed activities are not related to a wind energy project, potential impacts associated with the proposed project to the least tern, piping plover, and red knot will not be assessed in this desktop review.

Another bird species that will not be assessed in this memo is the black-capped vireo (*Vireo atricapilla*). The black-capped vireo was delisted and removed from the Federal list of Endangered and Threatened Wildlife on April 17, 2018. The final ruling will go into effect on May 16, 2018 (USFWS 2018c).

Table 1 lists the federally listed threatened and endangered species within Travis County, Texas.

Table 1: Federally listed Species of Potential Occurrence in Travis County

Common Name	Latin Name	Federal Status
Austin blind salamander	<i>Eurycea waterlooensis</i>	E
Barton Springs salamander	<i>Eurycea sosorum</i>	E
Bee Creek Cave harvestman	<i>Texella reddelli</i>	E
Bone Cave harvestman	<i>Texella reyesi</i>	E
Golden-cheeked warbler	<i>Setophaga chrysoparia</i>	E
Jollyville Plateau salamander	<i>Eurycea tonkawae</i>	T
Kretschmarr Cave mold beetle	<i>Texamaurpos reddelli</i>	E
Least tern*	<i>Sterna antillarum</i>	E
Piping plover*	<i>Charadrius melodus</i>	T
Red knot*	<i>Calidris canutus rufa</i>	T
Tooth Cave ground beetle	<i>Rhadine persephone</i>	E
Tooth Cave pseudoscorpion	<i>Tartarocreagris texana</i>	E
Tooth Cave spider	<i>Neoleptoneta myopica</i>	E
Whooping crane	<i>Grus americana</i>	E

Source: USFWS 2018a

Threatened (T); Endangered (E)

*Considered only for wind energy projects.

A desktop assessment of the proposed floodplain modification area was completed consisting of a desktop review of aerial photography; USGS topography; soils, geology, hydrology, and vegetation data; and available data related to the known occurrences of endangered species near the floodplain modification area.

A desktop review of Texas Parks and Wildlife Department (TPWD) Texas Natural Diversity Dataset (TNDD) elemental occurrences (EO), received on June 21, 2017, found

no EOs for federally listed threatened or endangered species within the proposed floodplain modification area (TNDD 2017).

Austin Blind Salamander

Federal Status: Endangered

On August 22, 2012, USFWS released a proposed rule for the Austin blind salamander to be listed as endangered (USFWS 2012). This salamander was federally listed as endangered by the USFWS on August 20, 2013, with critical habitat (USFWS 2013a and USFWS 2013b). This species is an entirely aquatic and neotenic salamander known to occur in three of the four spring outlets of Barton Springs in the City of Austin's Zilker Park, Austin, Texas. This salamander has not been observed at the fourth Barton Springs outlet known as Upper Barton Spring. This salamander grows to a length of approximately 2.5 inches, lacks external eyes, and has permanent external gills, a narrow head and an extended snout. The salamander's coloring is described as faintly reflective and pearly white in color with a lavender hue (USFWS 2012). The Austin blind salamander is described as a primarily subsurface dwelling species that spends most of its time living in the Edwards aquifer.

The primary stated threat to this species is habitat modification in the form of reduced flows and degradation of water quality of spring habitats as a result of urbanization within the watersheds and recharge and contributing zones of the Edwards aquifer (USFWS 2012).

According to the USFWS Critical Habitat Portal, the proposed floodplain modification area is approximately 10 miles southwest of the Critical Habitat Unit (CHU) for the salamander (USFWS 2018b).

According to the TPWD TNDD, the closest EO of the Austin blind salamander is approximately 10 miles northeast of the proposed floodplain modification area at Barton Springs in Zilker Park within Travis County, Texas (EO ID# 4046) (TNDD 2017).

Barton Springs Salamander

Federal Status: Endangered

The Barton Springs salamander was federally listed as endangered in 1997 and is an entirely aquatic and neotenic amphibian known only to occur around four spring outlets within Zilker Park, Austin, Texas. The springs are collectively known as Barton Springs and consist of Parthenia, Eliza, Old Mill, and Upper Barton Springs (USFWS 1997). The salamander is concentrated near the spring openings where food sources are abundant, water chemistry and temperature are relatively constant, and where the salamander has access to both surface and subsurface habitat.

The primary threat to the Barton Springs salamander is degradation to the quality and quantity of water that feeds Barton Springs from the Barton Springs watershed (USFWS 1997).

According to the TPWD TNDD, the closest EO of the Barton Springs salamander is approximately 5 miles east of the proposed floodplain modification area within Travis County, Texas (EO ID# 8968) (TNDD 2017).

Bee Creek Harvestman

Federal Status: Endangered

The Bee Creek Cave harvestman was federally listed as endangered on September 16, 1988 (USFWS 1988). It is characterized as a long-legged, eyeless, yellowish-brown harvestman with a small body (2 mm or less). The species lives in Tooth, Bee Creek, McDonald, Weldon, and Bone Caves in Travis and Williamson counties, Texas. It is often found under rocks in complete darkness or dim light and preys on collembolans (Campbell 2003).

According to the TPWD TNDD, the closest EO of the Bee creek Cave harvestman is approximately 7.75 miles northeast of the proposed floodplain modification area located south of Preservation cove and East of TX Loop 360 in Travis County (EO ID# 9597) (TNDD 2017).

Bone Cave Harvestman

Federal Status: Endangered

The Bone Cave harvestman was federally listed as endangered on August 18, 1993 (USFWS 1993), as an independent species from the Bee Creek Cave harvestman. It is characterized as a long-legged, blind, pale-orange harvestman. This species is often found under large rocks but can occasionally be seen walking on moist floors. In the summer, the species can be found only in the coolest, dampest spots of caves (Campbell 2003).

According to the TPWD TNDD, the closest EO of the bone cave harvestman is approximately 12.8 miles north of the proposed floodplain modification area at Steiner Ranch Blvd and Ranch Road 620 in Travis County (EO ID# 2447) (TNDD 2017).

Golden-cheeked Warbler

Federal Status: Endangered

The golden-cheeked warbler (GCWA) was federally listed as endangered in 1990 (USFWS 1990). The GCWA is a migratory songbird endemic to Texas and only present during its breeding season of early March through early August. GCWA habitat typically consists of mature Ashe juniper woodlands interspersed with deciduous species. The areas most likely to be utilized by GCWA consist of nearly continuous cover of trees with 50 to 100 percent closed canopy (Campbell 2003). Deciduous species common in GCWA habitat include escarpment black cherry (*Prunus serotina*), Texas black walnut (*Juglans microcarpa*), ash (*Fraxinus* spp.), Texas oak (*Quercus buckleyi*), and cedar elm (*Ulmus crassifolia*).

According to the TPWD TNDD, the nearest EO for the GCWA is approximately 0.70 miles north of the proposed floodplain modification area encompassing Circle Drive in Travis County, Texas (EO ID # 871).

According to the Texas A&M University (TAMU) *Probable Occupancy* model (2010), the proposed floodplain modification area is within an area that has no category for probable occupancy (TAMU 2010).

Jollyville Plateau Salamander

Federal Status: Threatened

On August 22, 2012, USFWS released a proposed rule for the Jollyville Plateau salamander (JPS) to be listed as endangered with critical habitat (USFWS 2012). On August 20, 2013, USFWS released the final rule listing the JPS as threatened (USFWS 2013a) and the final rule designating critical habitat for the JPS (USFWS 2013b). This species occurs in the Jollyville Plateau and Brushy Creek areas of the Edwards Plateau in Travis and Williamson counties. JPS is known from Brushy Creek and, within the Jollyville Plateau, from the Bull Creek, Cypress Creek, Long Hollow Creek, Shoal Creek, and Walnut Creek drainages. JPS has also been documented within the Lake Creek drainage. Cave-dwelling JPS are known from one cave in the Cypress Creek drainage and 12 caves in the Buttercup Creek cave system in the Brushy Creek drainage (USFWS 2012). As in the case of the Georgetown salamander and the others covered in the August 22, 2012, USFWS proposed rule, much about threats, possible impacts, population numbers, trends, and the status of these salamanders as distinct separate species is presently unknown.

The JPS's spring-fed tributary habitat is typically characterized by a depth of less than one foot (0.3 meter) of cool, well oxygenated water supplied by the underlying Edwards Aquifer (USFWS 2012). JPS are typically found near springs or seep outflows and are thought to require constant temperatures. Salamander densities are higher in pools and riffles and in areas with rubble, cobble, or boulder substrates rather than on solid bedrock. Surface-dwelling JPS can also occur in subsurface habitat within the underground aquifer (USFWS 2012).

According to USFWS Critical Habitat Portal, the nearest occurrence of critical habitat for the JPS is approximately 14.2 miles northeast of the proposed floodplain modification area and is identified as Indian Spring, which is located on a tributary of Shoal Creek (USFWS 2018b).

According to the TPWD TNDD, the closest EO of the JPS is approximately 14.4 miles northeast of the proposed floodplain modification area, along a tributary of Bull Creek (EO ID# 9370) (TNDD 2017).

The proposed floodplain modification area is over the Edwards aquifer contributing zone (TCEQ 2005).

Kretschmarr Cave Mold Beetle

Federal Status: Endangered

The Kretschmarr Cave mold beetle was federally listed as endangered on September 16, 1988 (USFWS 1988). It is characterized as a very small (less than 3 mm) dark-colored, eyeless, troglobitic beetle with long legs, and short wings. Available habitat for this species is limited and is restricted to Kretschmarr, Amber, Tooth, and Coffin Caves in Travis and Williamson Counties, Texas. This mold beetle is found in complete darkness under rocks amongst organic debris and buried in silt (Campbell 2003).

According to the TPWD TNDD, the closest EO of the Kretschmarr Cave mold beetle is approximately 14 miles northeast of the proposed floodplain modification area, north of the Bullick Hollow Road and RR 620 intersection (EO ID# 2094) (TNDD 2017).

Tooth Cave Ground Beetle

Federal Status: Endangered

The Tooth Cave ground beetle was federally listed as endangered on September 16, 1988 (USFWS 1988). It is characterized as a small (5/16 inch), reddish-brown, troglobitic ground beetle. This is the largest, most visible, and most active of listed karst species in this area. It is usually found under rocks, but it has been seen walking on damp rocks and silt when conditions are favorable. This species appears to be restricted to areas of deep, uncompacted silt that is favored by cave crickets (*Ceuthophilus secretus*), where it digs holes to feed on cricket eggs. No critical habitat has been designated for this species (USFWS 1988).

According to the TPWD TNDD, the closest EO of the Tooth Cave ground beetle is approximately 14 miles northeast of the proposed floodplain modification area along RR 620 and Four Points Drive (EO ID# 6328) (TNDD 2017).

Tooth Cave Pseudoscorpion

Federal Status: Endangered

The Tooth Cave pseudoscorpion was federally listed as endangered on September 16, 1988 (USFWS 1988). It is characterized as an eyeless, troglobitic pseudoscorpion that reaches approximately 4 mm. The species resembles a small, tailless scorpion that lacks a stinger, and is harmless to humans. The species uses pincers to capture small insects and other arthropods. It is found exclusively in Tooth and Amber Caves in Travis County, Texas. While the species is usually found under rocks, little else is known about its habits (Campbell 2003).

According to the TPWD TNDD, the closest EO of the Tooth Cave pseudoscorpion is approximately 14 miles northeast of the proposed floodplain modification area, north of the Bullick Hollow Road and RR 620 intersection (EO ID# 6824) (TNDD 2017).

Tooth Cave Spider

Federal Status: Endangered

The Tooth Cave spider was federally listed as endangered on September 16, 1988 (USFWS 1988). It is characterized as a pale, long-legged spider that measures approximately 1.6 mm. Although it is a troglobite, reduced eyes are present. The species is found exclusively in Tooth Cave in Travis County. The species is sedentary and preys on microarthropods that are captured in its web (Campbell 2003).

According to the TPWD TNDD, the closest EO of the Tooth Cave spider is approximately 12.8 miles northeast of the proposed floodplain modification area along RR 620 and Steiner Ranch Blvd (EO ID# 3800) (TNDD 2017).

Whooping Crane

Federal Status: Endangered

The whooping crane was federally listed as endangered June 2, 1970, (USFWS 1970) under the Endangered Species Conservation Act of 1969. This species is also protected under the Migratory Bird Treaty Act (USFWS 2013c). The whooping crane typically breeds among rushes and sedges in marshes and meadows in Canada and winters on the estuarine marshes, shallow bays and tidal salt flats of the Texas coast. During migration, the crane typically stops to rest and feed in open bottomlands of large rivers, marshes, and in agricultural areas. Whooping cranes are omnivorous feeders. Some of the more

common food items taken are crabs, clams, shrimp, snails, frogs, snakes, grasshoppers, larval and nymph forms of flies, beetles, water bugs, birds, and small mammals (Campbell 2003). In Texas, critical habitat for the whooping crane is the area, land, and airspace of Aransas National Wildlife Refuge and vicinity (USFWS 1978).

According to USFWS Critical Habitat Portal, the nearest occurrence of critical habitat for the whooping crane is approximately 147 miles south of the proposed floodplain modification area within the Aransas National Wildlife Refuge in Aransas County, Texas (USFWS 2018b).

According to the TPWD TNDD, the nearest EO for the whooping crane is approximately 143 miles south of the proposed floodplain modification area, just south of Keller Bay in Calhoun County, Texas (EO ID# 4506) (TNDD 2017).

The nearest known occurrence of whooping cranes to the project area is Granger Lake in Williamson County, Texas, approximately 45 miles northeast of the proposed floodplain modification area. Anecdotal observations of nine whooping cranes were made at the lake during the 2011-2012 winter season (TPWD 2012).

Karst Invertebrates

Karst invertebrates are subterranean species that have adapted to areas with consistent humidity and temperature levels with a continual influx of nutrients from the surface. The caves in which the invertebrates occur were formed as a result of dissolution of the limestone formations making up the Edwards aquifer.

In 1992 (revised 2007), Veni and Associates delineated four karst zones to define geologic areas with the potential for subsurface endangered karst invertebrates. The zones are:

- Zone 1: Areas known to contain listed invertebrate karst species;
- Zone 2: Areas having a high probability of containing habitat suitable for listed invertebrate karst species;
- Zone 3: Areas that have a low probability for containing listed invertebrate karst species; and,
- Zone 4: Areas, both cavernous and non-cavernous, that do not contain endangered karst invertebrate species.

The proposed floodplain modification area and the entire subject area is within Zone 4 (Veni & Associates 1992 (revised 2007)).

Conclusion

aci consulting was retained by Artek Investments, LLC. to prepare the appropriate documentation for the approximately 164-acre Live Oak Springs tract related to FEMA floodplain modifications, specifically a CLOMR permit. A desktop review of the subject area for the 11 federally listed threatened and endangered species with the potential to occur in Travis County, Texas, have been investigated in this memorandum.

The desktop review found that the proposed floodplain modification area is not an area where these federally listed species are likely to occur. This memo serves as transmittal of a “no effect” determination and we courteously request USFWS review and response. This documentation is necessary to satisfy FEMA’s requirement for USFWS concurrence that the proposed project has “no effect” on listed species or critical habitat.

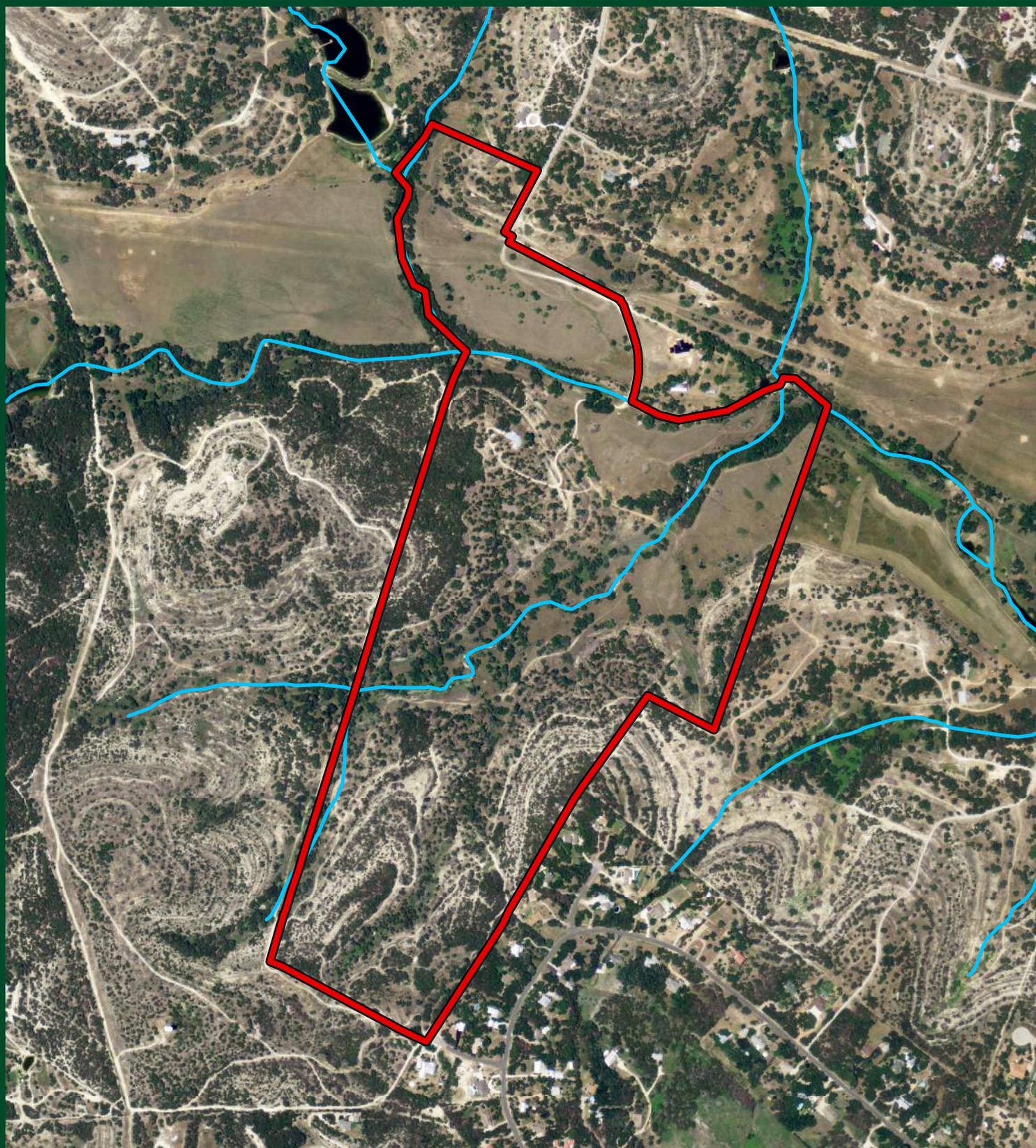
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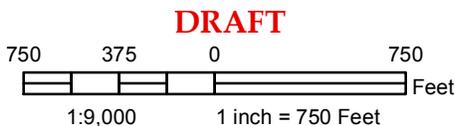
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ATTACHMENT A
Figures



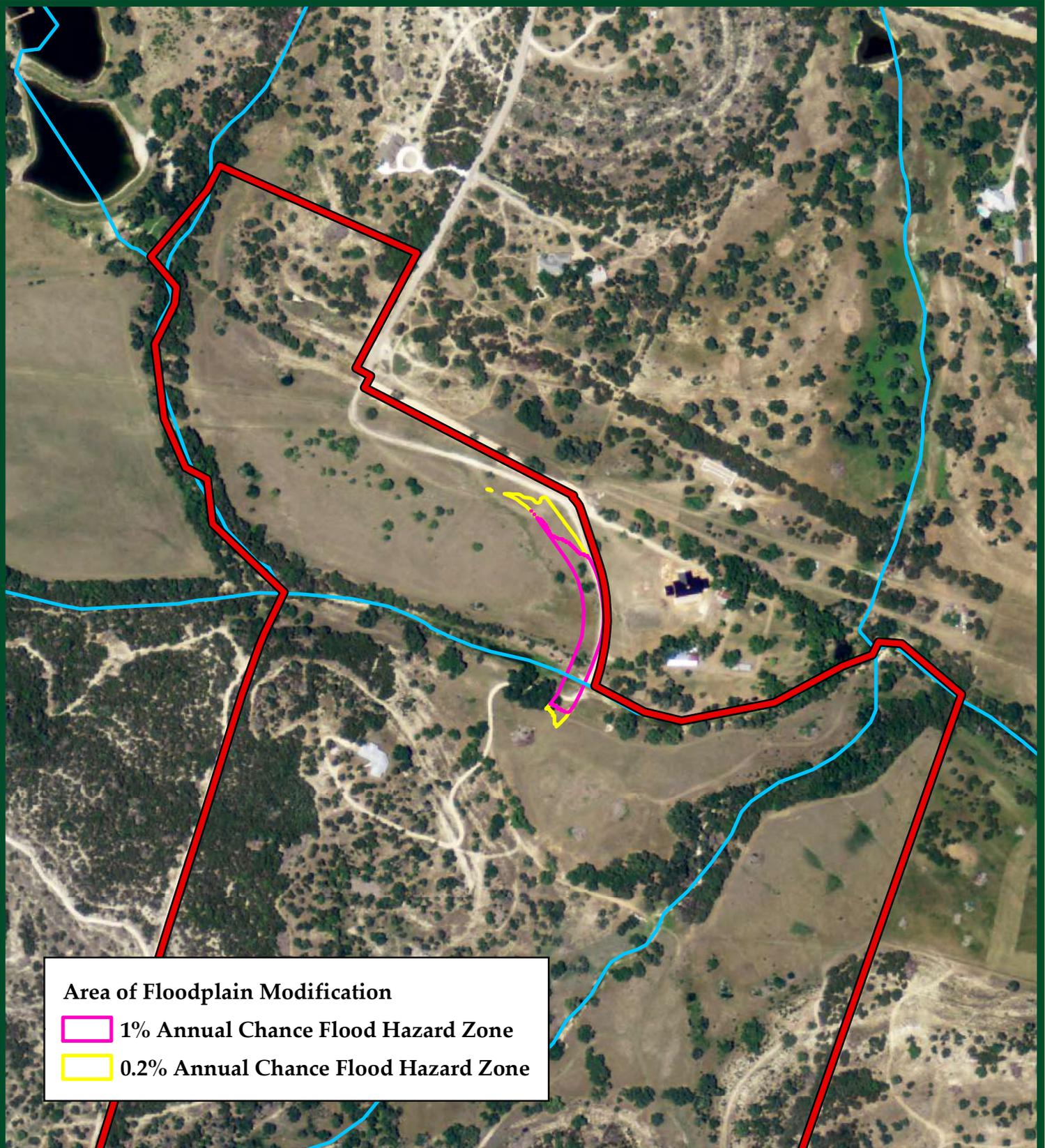
This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



- Subject Area
- NHD Flowline



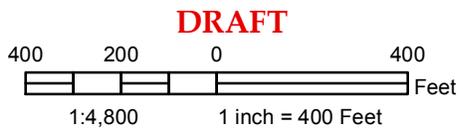
Live Oak Springs
Figure 1: Project Area Hydrology



Area of Floodplain Modification

- 1% Annual Chance Flood Hazard Zone
- 0.2% Annual Chance Flood Hazard Zone

This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



- Subject Area
- NHD Flowline



ATTACHMENT B
FEMA Guidelines

Guidance for Compliance with the Endangered Species Act for Letters of Map Change

This document supplements the Federal Emergency Management Agency's (FEMA's) Procedure Memorandum No. 54. It highlights additional resources and frequently asked questions to help guide Conditional Letter of Map Revision (CLOMR) and Conditional Letter of Map Revision based on Fill (CLOMR-F) applicants in the Endangered Species Act (ESA) compliance process. The following sections identify helpful web resources, while the final section includes responses to frequently asked questions.

NATIONAL FLOOD INSURANCE PROGRAM AND LETTERS OF MAP CHANGE

Additional information about the National Flood Insurance Program (NFIP) and Letters of Map Change (LOMC) is available from FEMA.

NFIP: <http://www.fema.gov/hazard/flood/info.shtm>

LOMCs: <http://www.fema.gov/hazard/map/lomc.shtm>

ESA OF 1973

Additional information about the ESA and Endangered Species Programs is available from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). These two agencies, collectively known as "the Services," share responsibility for implementing the ESA and assisting all individuals (public and private) in the ESA compliance process.

NMFS: <http://www.nmfs.noaa.gov/pr/laws/esa/>

USFWS: <http://www.fws.gov/endangered/what-we-do/consultations-overview.html>

GETTING STARTED WITH ESA COMPLIANCE AND WHO TO CONTACT

CLOMR and CLOMR-F applicants are responsible for demonstrating to FEMA that ESA compliance has been achieved prior to FEMA's review of a CLOMR or CLOMR-F application. The applicant may begin by contacting a local Service office, State wildlife agency office, or independent biologist to identify whether threatened or endangered species exist on the subject property and whether the project associated with the CLOMR or CLOMR-F request would adversely affect the species. These entities are also available to discuss questions pertaining to listed species and ESA compliance.

NMFS Regional Offices: <http://www.nmfs.noaa.gov/regional.htm>

USFWS Office Directory: <http://www.fws.gov/offices/>

DEMONSTRATING COMPLIANCE WITH THE ESA

If species may be affected adversely by the project, the applicant (as a non-Federal entity) would be required to obtain compliance through the Section 10 process. This process includes applying for an incidental take permit (ITP) and preparing a habitat conservation plan (HCP). Additional information about Section 10 requirements and the permit application process is available from NMFS and USFWS.

ITPs and NMFS: http://www.nmfs.noaa.gov/pr/permits/faq_esapermits.htm

ITPs and USFWS: <http://www.fws.gov/endangered/what-we-do/hcp-overview.html>

HCPs and NMFS: <http://www.nwr.noaa.gov/Salmon-Habitat/Habitat-Conservation-Plans/Index.cfm>

HCPs and USFWS: <http://www.fws.gov/endangered/hcp/index.html>

NMFS Permit applications: http://www.nmfs.noaa.gov/pr/permits/esa_permits.htm

USFWS Permit application: <http://www.fws.gov/forms/3-200-56.pdf>

To demonstrate to FEMA that ESA compliance has been achieved, the requestor must provide an ITP, an Incidental Take Statement, a “not likely to adversely affect” determination from the Services, or an official letter from the Services concurring that the project has “No Effect” on proposed or listed species or designated critical habitat. If the project is likely to cause jeopardy of a species’ continued existence or adverse modification to designated critical habitat, then FEMA may refuse to review the CLOMR or CLOMR-F request without prior project approval from the Services. If a Federal entity is involved in a proposal or project for which a CLOMR or CLOMR-F has been requested, then the applicant may coordinate with that agency to demonstrate to FEMA that Section 7 ESA compliance has been achieved through that other Federal agency.

Frequently Asked Questions

For which map change applications does FEMA require demonstrated ESA compliance?

FEMA requires applicants to demonstrate compliance for CLOMRs and CLOMR-Fs only.

Why is ESA compliance required before FEMA can review my CLOMR or CLOMR-F application?

All individuals in this country (private and public) have a legal responsibility to comply with the ESA. FEMA recognizes that potential projects for which a CLOMR or CLOMR-F has been requested may affect threatened and endangered species. As a result, FEMA requires documentation to show that potential projects comply with the ESA before a CLOMR or CLOMR-F application can be reviewed.

Why does FEMA not require demonstration of ESA compliance for other LOMC applications?

LOMC requests involve floodplain activities that have occurred already. As a result, FEMA does not have the opportunity to comment on these projects in terms of ESA compliance. Private individuals and local and state jurisdictions are required to comply with the ESA independently of FEMA’s process.

What will FEMA require from CLOMR and CLOMR-F applicants to demonstrate ESA compliance?

As part of the CLOMR or CLOMR-F application, the requestor must provide an ITP, an Incidental Take Statement, a “not likely to adversely affect” determination from the Services, or an official letter from the Services concurring that the project has “No Effect” on proposed or listed species or designated critical habitat.

How much time will be required to achieve ESA Compliance?

The timeframe needed to achieve ESA compliance will depend entirely on the complexity of the project, the extent to which species may be affected by the project, the quality of biological analyses conducted by the applicant, and the review process as determined by the Services.

Who is available to answer my questions about ESA compliance?

NMFS and the USFWS both have staff available around the country to answer questions about threatened and endangered species and ESA compliance. Refer to the *NMFS Regional Offices* and *USFWS Office Directory* links on Page 1 of this guidance document to identify the nearest available Service office. FEMA does not have staff available to assist with this process.

How do I determine if there are threatened or endangered species or critical habitat in my project area?

The applicant may begin by contacting a local Service office, state wildlife agency office, or independent biologist to identify whether threatened or endangered species exist on the subject property and whether the project associated with the CLOMR or CLOMR-F would adversely affect the species.

Do I need to hire a biologist for this process?

While hiring a biologist may be unnecessary, doing so may help facilitate the process. Biologists familiar with subject species and the regulatory process can help adequately complete many of the studies required as part of the Section 10 process and fulfill other Section 10 requirements.

How are the following ESA-related terms defined?

“Take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct and may include habitat modification or degradation.

“Harm” can arise from significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

“Section 7” requires all Federal agencies, in consultation with USFWS or NMFS, to use their authorities to further the purpose of the ESA and to ensure that their actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.

“Section 10” lays out the guidelines under which a permit may be issued to non-Federal parties to authorize prohibited activities, such as take of endangered or threatened species.

“ITP” or incidental take permit is a permit issued under section 10(a)(1)(B) of the ESA to a non-Federal party undertaking an otherwise lawful project that might result in the “take” of an endangered or threatened species. Application for an incidental take permit is subject to certain requirements, including preparation by the permit applicant of a HCP.

“HCP” or habitat conservation plan is a legally binding plan that outlines ways of maintaining, enhancing, and protecting a given habitat type needed to protect species. It usually includes measures to minimize impacts and may include provisions for permanently protecting land, restoring habitat, and relocating plants or animals to another area. An HCP is required before an incidental take permit may be issued to non-Federal parties.

Other ESA-related terms not described here may be defined on the following website:

<http://www.fws.gov/endangered/esa-library/index.html>