

AGENDA

TOWN OF FLOWER MOUND ENVIRONMENTAL CONSERVATION COMMISSION REGULAR MEETING

May 1, 2018

**FLOWER MOUND TOWN HALL
2121 CROSS TIMBERS ROAD
FLOWER MOUND, TEXAS**

6:30 P.M.

AN AGENDA INFORMATION PACKET IS AVAILABLE ONLINE AT
[HTTPS://TX-FLOWER MOUND.CIVICPLUS.COM/AGENDACENTER](https://tx-flowermound.civicplus.com/agendacenter)

A. CALL REGULAR MEETING TO ORDER – 6:30 PM

B. INVOCATION AND PLEDGE OF ALLEGIANCE

C. CITIZENS/VISITORS COMMENTS

1. Please fill out an "Appearance Before Environmental Conservation Commission" form in order to address the Environmental Conservation Commission, and turn the form in prior to Citizens and Visitors Comments, or by 6:40 p.m. to the Town staff. Speakers are normally limited to three minutes. Time limits can be adjusted by the Chair as to accommodate more or fewer speakers.

D. STAFF REPORT

1. Update and status report related to environmental issues and events, regulatory activities, and projects.

E. SUBCOMMITTEE UPDATE

1. Receive an update from the open space subcommittee.

F. CONSENT AGENDA - CONSENT ITEMS

This agenda consists of non-controversial or "housekeeping" items and may be approved with a single motion. A member of the Environmental Conservation Commission may request an item(s) be withdrawn from the consent agenda and moved to regular agenda for discussion by making such request prior to a motion and vote on the Consent Agenda.

Environmental Conservation Commission Meeting Agenda

May 1, 2018

Page 2

1. Consider approval of minutes from the regular meeting of the Environmental Conservation Commission held on April 3, 2018.

G. REGULAR ITEMS

1. Consider a recommendation to the Planning and Zoning Commission and Town Council of a Concept Plan for the proposed Pepper Creek Ranch cluster development. The property is generally located north of Cross Timbers Road and west of Montalcino Boulevard.
2. Consider an application for a tree removal permit for two additional (2) specimen trees on property proposed for development as Lakeside Crossing. The property is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive.
3. Consider a recommendation to Town Council of a resolution to adopt the Denton County Greenbelt Plan.

H. COORDINATION OF FUTURE AGENDAS/MEETINGS

I. ADJOURNMENT- REGULAR SESSION



Matthew Woods

Director of Environmental Services

I do hereby certify that the Notice of Meeting was posted on the bulletin board in Town Hall of the Town of Flower Mound, Texas, a place convenient and readily accessible to the general public at all times and said Notice was posted on the following date and time: April 27, 2018, by 5:00 p.m., at least 72 hours prior to the schedule time of said meeting.



Emily Chapman

Administrative Assistant



ENVIRONMENTAL CONSERVATION COMMISSION AGENDA ITEM NO. 1

CONSENT ITEM

DATE: May 1, 2018

FROM: Emily Chapman, Administrative Assistant

ITEM: Consider approval of minutes from the regular meeting of the Environmental Conservation Commission held on April 3, 2018.

BACKGROUND INFORMATION: This agenda item is to consider approval of the minutes from the April 3, 2018, regular meeting of the Environmental Conservation Commission.

CITIZEN FEEDBACK: N/A

ALTERNATIVES/OPTIONS: N/A

FISCAL IMPACT: N/A

LEGAL REVIEW: N/A

ATTACHMENTS:

1. A copy of the draft minutes from the April 3, 2018, regular meeting of the Environmental Conservation Commission.

RECOMMENDATION: Move to approve the minutes from the April 3, 2018, regular meeting of the Environmental Conservation Commission.

FLOWER MOUND ENVIRONMENTAL CONSERVATION COMMISSION MEETING OF APRIL 3, 2018

THE FLOWER MOUND ENVIRONMENTAL CONSERVATION COMMISSION MEETING HELD ON THE 3RD DAY OF APRIL 2018, IN THE FLOWER MOUND TOWN HALL, LOCATED AT 2121 CROSS TIMBERS ROAD IN THE TOWN OF FLOWER MOUND, COUNTY OF DENTON, TEXAS, AT 6:30 PM.

The Environmental Conservation Commission met in regular session, with the following members present constituting a quorum:

Russell McNamer	Chair
Thomas Bailey	Vice Chair
James Naylor	Commission Member, Place 1
Marilyn Lawson	Commission Member, Place 4
Alton Bowman	Commission Member, Place 5
James Gerber	Commission Member, Place 7
Elaine Takacs	Commission Member, Place 8
James Seastrom	Commission Member, Place 10

Constituting a quorum with the following members absent:

Michael Lamminen	Commission Member, Place 2
Shery Layne	Commission Member, Place 9

Places 8, 9, and 10 of the Commission do not vote on items unless they sit in place of one of the regular members, Places 1-7.)

And the following members of Town staff present:

Matthew Woods	Director of Environmental Services
Emily Chapman	Administrative Assistant
James Hoefert	Environmental Review Analyst
Misty Adams	Environmental Programs Coordinator

A. CALL TO ORDER - REGULAR SESSION: 6:30 PM

B. INVOCATION AND PLEDGE OF ALLEGIANCE

C. CITIZENS/VISITORS COMMENTS

D. STAFF REPORT

1. Update and status report related to environmental issues and events, regulatory activities, and projects.

E. PRESENTATION

1. Receive a presentation from the Upper Trinity Regional Water District regarding the Denton County Greenbelt Plan and Conservation Trust.

F. SUBCOMMITTEE UPDATE

FLOWER MOUND ENVIRONMENTAL CONSERVATION COMMISSION MEETING OF APRIL 3, 2018

1. Receive an update from the recycling subcommittee.
2. Receive an update from the open space subcommittee.

G. CONSENT AGENDA

1. Consider approval of minutes from the regular meeting of the Environmental Conservation Commission held on March 6, 2018.

Commission Deliberation

Vice Chair Bailey made a motion to approve the March 6, 2018, minutes as presented. Commission Member Naylor seconded the motion.

VOTE ON THE MOTION

AYES: Gerber, Bowman, Lawson, Bailey, Takacs, Naylor
NAYS: None
ABSTAIN: None

The motion passed with a vote of 6-0-0

H. REGULAR ITEMS

2. Consider application for a tree removal permit for one (1) specimen tree on property proposed for development as Lakeside Crossing. The property is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive.

Staff Presenter

James Hoefert, Environmental Review Analyst, gave a presentation with the following items included:

- Site Location
- Project Information Overview
- Lot Layout
- Tree Survey
- Photo of Tree Proposed for Removal

Jameson Pinson, G&A Consultants, LLC, (111 Hillside Drive, Lewisville, TX 75057) answered questions and gave a presentation with the following item included:

- Letter of Intent
- Photo of the Tree Proposed of Removal
- Tree Survey

Commission Deliberation

Commission Member Naylor made a motion to approve the application for a tree removal permit for one (1) specimen tree on property proposed for development as Lakeside

FLOWER MOUND ENVIRONMENTAL CONSERVATION COMMISSION MEETING OF APRIL 3, 2018

Crossing. The property is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive. Commission Gerber seconded the motion.

VOTE ON THE MOTION

AYES: Gerber, Bowman, Lawson, Bailey, Takacs, Naylor
NAYS: None
ABSTAIN: None

The motion passed with a vote of 6-0-0

- I. COORDINATION OF FUTURE AGENDAS/MEETINGS
- J. ADJOURNMENT – REGULAR SESSION 7:50 PM

TOWN OF FLOWER MOUND, TEXAS



MATTHEW WOODS

DIRECTOR OF ENVIRONMENTAL SERVICES

ATTEST:



EMILY CHAPMAN
ADMINISTRATIVE ASSISTANT



ENVIRONMENTAL CONSERVATION COMMISSION AGENDA ITEM NO. 3

REGULAR ITEM

DATE: May 1, 2018
FROM: James Hoefert, Environmental Review Analyst
PRESENTER: Jameson Pinson, with G&A Consultants
ITEM: **Consider a recommendation to the Planning and Zoning Commission and Town Council of a Concept Plan for the proposed Pepper Creek Ranch cluster development. The property is generally located north of Cross Timbers Road and west of Montalcino Boulevard.**

BACKGROUND INFORMATION: The applicant will present the conceptual plan for the proposed Pepper Creek Ranch cluster development. The Pepper Creek Ranch development is a proposed residential cluster development project consisting of approximately 94.61 acres. The property is generally located north of Cross Timbers Road and west of Montalcino Boulevard.

The project site is located in the Cross Timbers Conservation Development District, as designated within the Town's Master Plan. This site is characteristic of the Eastern Cross Timbers Forest that is found in this part of Texas, throughout eastern Oklahoma, and into Kansas. The current zoning for the property is agricultural with a minimum two acre lot size. The developer is proposing to do a cluster development. The Town's cluster development option provides standards for residential development projects in which dwelling units are clustered on smaller lots than would otherwise be allowed for the purpose of preserving open or natural lands.

For projects with agricultural zoning within the Cross Timbers Conservation Development District, the preservation of 50% of the gross land as open space is established within the Town's conservation development standards and is also applied to the cluster development model as the preservation objective. The portion of the site that is left undeveloped may be placed in a conservation easement that is held by a third-party land trust or other qualified entity, or through other approved methods established within the cluster development standards such as a Homeowners' Association. All of the open space areas within the proposed subdivision would be maintained by the Homeowners' Association.

Some of the Environmentally Sensitive Areas (ESAs) defined in the Town's SMARTGrowth Program are located on this property, and the predominant tree species on the property include: post oak, blackjack oak, black hickory, cedar elm, eastern red cedar, mesquite, pecan, cherokee plum, mexican plum and sugarberry. ESAs located on the property include: upland habitat, prairie habitat, Waters of the State, Waters of the U.S., Water Impoundments (both existing ponds are less than ½ an acre), and topographical slope protection. The applicant has submitted their Environmental Protection Plan (EPP) as part of the required Open Space Management Plan.

The current design and layout of the development proposes to preserve the ESAs on the site, except for 21.46 acres of upland habitat, 2.38 acres of prairie habitat, portions of a few ephemeral streams, and assuming 100% impact from each residential lot, 3.84 acres of topographic slopes greater than or equal 5% and less than 12%, and 2.33 acres of topographic slopes greater than or equal to 12% would be impacted. Since the applicant is preserving 22.83 acres of upland habitat, the credits for the preservation offset the amount of acres being impacted. The applicant is proposing to mitigate for the Prairie Habitat impacts by preservation, restoration, and establishment of 11.2 acres of prairie habitat within areas identified as Private Meadow Open Space on the Open Space Plan. The applicant is requesting an exception from Town Council to the slope protection requirements as outlined in the Town's SMARTGrowth

requirements. The applicant is also required to comply with any U.S. Army Corps of Engineers requirements and permitting relative to the impacts to the ephemeral streams.

CITIZEN FEEDBACK: As of April 26, 2018, Environmental Services staff has staff has not received feedback related to this item.

ALTERNATIVES/OPTIONS: The Environmental Conservation Commission may recommend revisions to the proposed conceptual plan.

FISCAL IMPACT: N/A

LEGAL REVIEW: N/A

ATTACHMENTS:

1. Letter of Intent
2. Concept Plan
3. Draft Open Space Management Plan
4. Open Space Plan
5. Environment Protection Plan
6. Tree Survey

RECOMMENDATION: Move to recommend approval or denial to the Planning and Zoning Commission and Town Council of a Concept Plan for the Pepper Creek Ranch cluster development. The property is generally located north of Cross Timbers Road and west of Montalcino Boulevard.

February 23, 2018

Mr. Chuck Russell
Town Planner
Town of Flower Mound
2121 Cross Timbers Road
Flower Mound, TX 75028

RE: Zoning Change Request – Pepper Creek Ranch (ZPD18-0002)
Letter of Intent
G&A Job No. 17286

Mr. Russell:

Please accept this letter, on behalf of Dr. Anderson, as an explanation of the proposed Zoning Change Request application for approximately 94 acres of land located along FM 1171 and west of Montalcino. The property is located in the Cross Timbers Conservation Development District (CTCDD) with an existing zoning of Agriculture (AG). We are proposing a zoning change to be a Planned Development (PD) with Single Family-30 (SF-30) uses.

Pepper Creek Ranch is a cluster development consisting of 50 residential lots with a minimum lot area of 32,000 square feet. The proposed density is .5 units per acre. The lots will have a minimum lot width of 120'. The PD development standards include dimensional regulations for the project as well as standards for the open space areas and amenities. Additionally, the standards propose accessory structures, such as barns, to be located within the open space areas. A very important feature of this project is that every lot is directly contiguous to open space.

We are providing a minimum of 50% open space dispersed throughout the development and in key areas to preserve unique environmental features. An amenity lot is also being proposed, which is not counted toward the open space minimum area requirement. This amenity lot will allow for residents to enjoy certain activities and will act as a gathering spot for neighborhood events. There will be a 6' trail meandering the property to allow for connectivity to the amenity lot and to provide a sense of unity to the neighborhood. Pepper Creek Ranch will be developed in one phase.

The 50' landscape buffer will be consistent with the neighboring development along FM 1171. The 15' Equestrian trail and split rail fence will also continue from Montalcino across the entire frontage of the property. The Conceptual Landscape Plan illustrates the design intent for the

gated entrance which will include a covered-bridge feature, waterfalls, and enhanced landscaping. The look and feel is a rural and rustic design that we are referring to as Country Colonial.

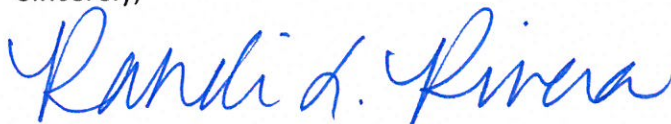
The Open Space Management Plan defines the different types of open space areas within Pepper Creek Ranch as well as guidelines for how those areas are to be maintained. There are significant environmental features that we have designed around in order that these features be preserved. A substantial ridge line, known as an escarpment, extends across the western portion of this property. This area consists of steep slopes and is also heavily treed. The preservation of these features was the starting point of the design process for this project. It is vital to preserve them and minimize impact to maintain the environmental integrity of the property. Therefore, we situated the back of the residential lots along portions of the escarpment in order to preserve the steep slopes since most of the grading and earthwork occurs in the middle to the front of the lot. The lots that are located along the ridge are the largest lots of the development and have a minimum lot area of just under one acre.

While our design was very intentional in preserving the escarpment and the majority of the steep slopes on the property, there are some areas where steep slopes, in excess of 12%, will be impacted. The terrain on the property varies and some areas simply cannot be avoided of impact. We have made our best effort to minimize this impact and we feel our design illustrates this intent. However, we would like to seek an exception to the Slope Protection Requirement of SMARTGrowth in certain areas on the plan.

Another exception that we would like to request is to minimum cul-de-sac length requirement of the Town's Subdivision Ordinance. The design of Pepper Creek Ranch includes several cul-de-sacs in order to preserve environmental features and create exclusive residential lots. There is one cul-de-sac that exceeds the minimum 600 feet requirement. This cul-de-sac is slightly over 1,000 feet in length.

We are excited to be working with the Town on this new cluster development. Thank you for your consideration in the presented request. Please contact us with any questions or if more information is desired.

Sincerely,



Randi L. Rivera, AICP

cc: Dr. Greg Anderson

PRELIMINARY PLANS

THIS DOCUMENT IS FOR
INTERIM REVIEW AND IS
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.
G&A CONSULTANTS, F-1798
ROBERT JOHN DOLLAH, JR.,
P.E. #86898
DATE 4/20/2018

Drawn By: PF
Date: 01/10/18
Scale: 1"=80'
Revisions:
2/19/18
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17286

ZCP

LEGEND		
C.R.F.	Capped Rebar Found	Overhead Power Lines
C.R.S.	Capped Rebar Set	Down Guy Wire
C.M.	Control Monument	443 Existing Contours
Mon.	Monument	445 Proposed Contours
BM	Benchmark	Concrete Pavement
FH	Fire Hydrant	Asphalt Pavement
WM	Water Meter	Wood Fence
WV	Water Valve	Chain Link Fence
W/L	Water Line	Wire Fence
ICV	Irrigation Control Valve	Masonry Wall
SSMH	Sanitary Sewer Manhole	Existing Tree
CO	Sanitary Sewer Cleanout	(FL) Flowline
UP	Utility Pole	Centerline of Creek, Swale, or Waterway
LP	Light Pole	Creek, Swale, or Waterway Embankment
TC	Top of Curb	
TP	Top of Pavement	
TW	Top of Wall	
FG	Finished Grade	
U.E.	Utility Easement	
D.E.	Drainage Easement	
B.L.	Building Line	
R.O.W.	Right-of-Way	
D.R.	Deed Records	
P.R.	Plat Records	
P.U.D.E.	Pavement Utility and Drainage Easement	

LEGAL DESCRIPTION
94.609 ACRES

Being all that certain lot, tract or parcel of land situated in the J. C. McGowan and C. G. Pitcock Survey, Abstract Number 959, Town of Flower Mound, Denton County, Texas, and being part of that certain called 97.930 acre tract of land described in Trustees Deed to George D. Blaylock and wife, Martha S. Blaylock recorded in Volume 788, Page 319 of the Deed Records of Denton County, Texas, being all of that certain called 59.49 acre tract of land described in Deed to Briarback Properties, LLC, (undivided one-half interest), recorded in Document Number 2013-18954 of the Real Property Records of Denton County, Texas, being all of that certain called 59.49 acre tract of land described in Deed to Williamsconchran Ranch, LLC (undivided one-half interest), recorded in Document Number 2013-18956 of the Real Property Records of Denton County, Texas being more particularly described as follows:

BEGINNING at a 1/2" capped rebar set (G&A) on the east line of said 97.930 acre tract at the southwest corner of Lot 7X, Block D of Montalcingo Estates, Phase 1, an addition to the Town of Flower Mound, Denton County, Texas, according to the Amended Record Plat thereof recorded in Document Number 2013-37 of the Plat Records of Denton County, Texas, being the northwest corner of that certain called 1.1816 acre tract of land described as Parcel 15 in deed to Denton County recorded in Document Number 2009-118501 of the Real Property Records of Denton County, Texas, and being the northeast corner of that certain called 5.3352 acre tract of land described as Parcel 14 in deed to Denton County recorded in Document Number 2009-44893 of the Real Property Records of Denton County, Texas, and being on the north line of F. M. 1171 (Cross Timbers Road) as evidenced by said deeds to Denton County;

THENCE with the north line of said F. M. 1171 and the north line of said Parcel 14 the following:

N 85°26'35" W, 205.55 feet (called 205.00 feet) to a 1/2" capped rebar set (G&A);
N 75°45'50" W, 149.04 feet to an aluminum Texas Department of Transportation (TXDOT) disc found;
N 85°30'25" W, 114.79 feet (called 115.00 feet) to an aluminum TXDOT disc found;
S 84°00'30" W, 134.33 feet to an aluminum TXDOT disc found;
N 85°30'30" W, 196.18 feet to a "X" set in concrete;
N 75°54'00" W, 333.77 feet (called 332.66 feet) to an aluminum TXDOT disc found;
N 80°45'00" W, 180.69 feet (called 180.97 feet) to an aluminum TXDOT disc found;
S 85°28'00" W, 62.97 feet (called 63.61 feet) to a 1/2" capped rebar set (G&A);
N 72°53'20" W, 121.63 feet to a 1/2" capped rebar set (G&A);

N 73°32'10" W, 133.93 feet (called 134.07 feet) to a 1/2" capped rebar set (G&A) at the northwest corner of said Parcel 14, being on the west line of said 97.930 acre tract and the east line of that certain called 1,129.061 acre tract described as Tract "A" in deed to Old WR Ranch I, L. P., recorded in Volume 4583, Page 569 of the Real Property Records of Denton County, Texas, and being the northeast corner of that certain called 3.8816 acre tract of land described as Parcel 7, Part 2 in deed to Denton County, Texas, recorded in Document Number 2012-58191 of the Real Property Records of Denton County, Texas, from said point a disturbed aluminum TXDOT disc found bears S 48° E, 1.7 feet;

THENCE N 00°42'40" W, with the west line of said 97.930 acre tract and east line of said 1,129.061 acre tract passing at 813.21 feet to a 1/2" capped rebar set (G&A) at the southwest corner of said 59.276 acre tract, continuing with the west line thereof a total distance of 2421.33 feet to a 1/2" capped rebar set (G&A) at the northwest corner of said 59.49 acre tract and being the westerly southwest corner of Lot 19X of said Block E, of said Montalcingo Estates, Phase 1, from which a 5/8" capped rebar found (1640) bears N 86°39' E, 8.5 feet; THENCE S 89°45'40" E, 1,614.98 feet with the north line of said 97.930 acre tract and the north line of said 59.49 acre tract and a south line of said Lot 19X to a 1/2" capped rebar set (G&A) at the northeast corner of said 59.49 acre tract, being the northeast corner of said 97.930 acre tract and being an inner ell in the west line of said Lot 19X from which a 5/8" capped rebar found (1640) bears N 08°07' E. 11.5 feet and a 5/8" capped rebar found (1640) bears S 76°23' E, 10.3 feet;

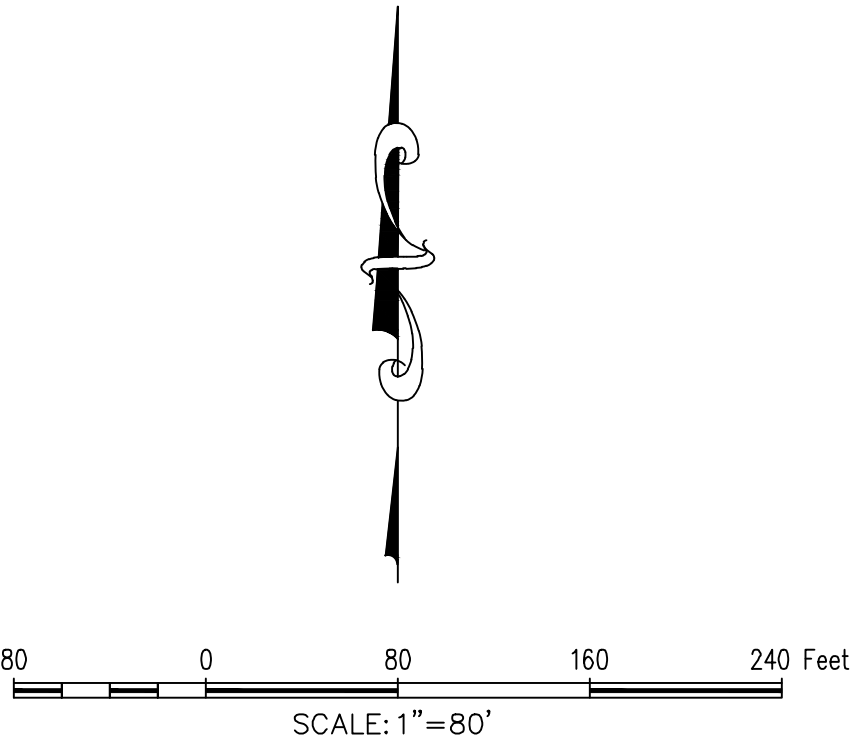
THENCE S 00°22'45" E, with the east line of said 97.930 acre tract, the east line of said 59.49 acre tract, the west line of Lot 19X, and being the west line of said Montalcingo Estates, Phase 1 passing at 1,430.07 feet the southerly southwest corner of said Lot 19X and the northwest corner of Lot 1, Block E of said Montalcingo Estates, Phase 1 continuing with the west line thereof passing at 1,614.07 feet to the southeast corner of said 59.276 acre tract from which a 60D nail found bears S 89°32'40" E, 0.7 feet, and continuing with the east line of said 97.930 acre tract and the west line of said Montalcingo Estates, Phase 1 a total distance of 2656.91 feet to the POINT OF BEGINNING and containing approximately 94.609 acres of land.

Zoning Standard	Existing: Agricultural	Proposed:
Minimum Lot Area	87,120 sq. ft	32,000 sq. ft
Minimum Lot Width	200 ft	120 ft.
Minimum Floor Area	1,800 sq. ft.	2,100 sq. ft.
Minimum Front Yard	40 ft.	47 ft.
Minimum Side Yard	25 ft.	15 ft.
Minimum Rear Yard	20 ft.	20 ft.
Maximum Lot Coverage	25%	35%
Max Height (stories/ft.)	3/35 ft.	3/35 ft.

MASTER PLAN FEATURES	
Land Use Plan	Cross Timbers Conservation Development District
Urban Design Plan	Cross Timbers Conservation Development District
Parks and Trail	8' multi-use trail along F.M. 1171, 15' equestrian easement along F.M. 1171
Open Space Plan	Cross Timbers Conservation Development District
Thoroughfare Plan	F.M. 1171 - Major (Principal) Arterial : 120' ROW
Water Plan	20" Master planned water line along north side of F.M. 1171
Wastewater Plan	Cross Timbers Conservation Development District Town sewer not available.

OWNER/DEVELOPER
Greg Anderson
9040 Hawley
Fort Worth, TX 76244
Ph. 436-229-4200
Contact: Greg Anderson





ZCP

OPEN SPACE MANAGEMENT PLAN
Planned Development District 162 (PD-162)
Pepper Creek Ranch

Maintenance of Common Areas:

The Pepper Creek Ranch has dedicated **47.323** acres as open space, which is equivalent to 50.02% of the land. This exceeds the suggested 50% requirement by 796 sq. ft. A total combined footprint for accessory buildings will not exceed 6,400 sq. ft.

The Open Space is divided into different classifications according to its present state or its intended or future uses. All Open Space Common Areas are to be conveyed to the Homeowners Association (HOA) by the Developer. The HOA will be established by the Developer as a Nonprofit Corporation. The members will be the Pepper Creek Ranch Lot owners with one (1) vote for each Lot owner in all matters. A Board of Directors will be elected by the homeowners to manage and oversee the business and all other matters of the HOA, including the conservation requirements of the Town.

The structure and guidelines for the HOA will be defined by the Dedications and Restrictions (Deed Restrictions), which will be recorded by the Developer after the Final Plat is approved, as required by the Town. The Covenants Conditions and Restrictions shall set forth all enforcement guidelines.

The maintenance and management of the Common Areas will be the responsibility of the HOA Board of Directors. The Common Areas and their care will be as follows:

1. Bar Ditch Open Space

a. Bar Ditches

i. Description:

1. Located along streets in open space areas, compromising approximately 2.0 acres
2. Bar ditches to be seeded or sodded with Bermuda grass

ii. Maintenance:

1. Regular mowing as needed per seasonal grass growth
2. Edge between Bermuda grass and native grasses to be maintained by herbicidal or mechanical means
3. Supervision and maintenance of culverts
4. Maintained by the HOA

iii. Uses:

1. Pedestrian access throughout the open space for the residents and guest
2. Drainage and utilities

2. Private Park Area and Entry Open Space

a. Entrance Facilities and Barns

i. Description:

1. All buildings, bridges, water features, signs, masonry walls, gates and operating equipment, fences, and all accessories and equipment. The buildings will include two maintenance building.
 - a. Located on Lot 28X, the barns are for storage of equipment and supplies for husbandry by and maintenance of the trails, open spaces and amenity features.
- ii. Maintenance:
 1. Service and repairs of all the above items
- iii. Uses:
 1. Location for the entrance-exit by the estate owners and guests. The barns may be used for site maintenance and as a small meeting area.
- b. Private Park Areas with Ponds
 - i. Description:
 1. There are three (3) small ponds with gardens. Located on lots 28X, and 6X. Proposed pond locations have been carefully selected – they will replace existing fields and a pond in the open areas where no trees are present.
 - a. Ponds will be maintained by capturing storm water runoff (surface drainage) and possibly a water well.
 - b. Ponds will serve as water reservoirs for irrigation.
 - c. Ponds will have re-circulating pumps, waterfalls, and spillovers to aerate the water and create continuous flow of the waterfalls and spillovers.
 - d. Pump houses may be constructed within private park areas, subject to the conditions specified in the Development Standards.
 - ii. Maintenance:
 1. The park areas and ponds will be maintained by the developer initially, then by the HOA, as provided in the dedications and restrictions.
 2. Ponds comprise a portion of the acreage allocated as private park areas. The remainder will be maintained by mowing, landscaping, etc.
 - iii. Uses:
 1. These private park areas will be landscaped and maintained with flowers, shrubs, trees and seasonal color. They will be the focal points of the subdivision with beautiful views from the interior roads and from the homes clustered around the parks and small ponds. They will also be enjoyed by the residents as places for passive recreation and interaction with the outdoors.
 2. The ponds at the entrance will be a scenic feature for all vehicular passengers to enjoy as they drive past Pepper Creek Farm along Cross Timbers Road.
 3. Water conservation, irrigation, and detention for surface drainage

c. Private Open Green Space

- i. Description:

1. Located on Lot 28X and surrounding Lot 27X, the open green space will be planted in a turf grass for passive recreational use and interaction with the outdoors.
 - ii. Maintenance:
 1. Initially the open green space areas may be lightly graded (+/- 12") while maintaining existing topography. There shall be no grading under existing trees.
 2. The areas will have regular & normal turf grass maintenance by the HOA.
 - iii. Uses:
 1. The private open space will serve as a "Neighborhood Green" for community gathering and interaction.
 2. The area can be used for passive recreation and play.
- d. Community Trails
 - i. Description:
 1. A series and network of pedestrian trails for community connectivity and access to personal health & physical fitness enrichment
 2. The trails will follow the natural terrain and may be constructed with decomposed crushed granite, bark mulch or concrete. Trails may have P.V.C. drainage pipes, stone slabs or custom built wood bridges as needed to accommodate natural terrain and drainage. Final trail layout to be determined in the field and approved by the Landscape Architect and Town of Flower Mound Environmental Services.
 3. Trails can vary from 4-6' wide
 - ii. Maintenance:
 1. Trails will be maintained by the HOA.
 - iii. Uses:
 1. Trails will be used by and open to residents of Pepper Creek Ranch for running, walking and hiking.
 2. Trails may have environmental interpretive signs or QR codes to guide residents through the various eco-zones on the property.

3. Private Meadows Open Space

- a. Meadows
 - i. Description:
 1. Open space within the development that lacks significant tree cover. They are not a part of the ancient Cross Timbers habitat, and therefore do not need to be maintained as they are. The plan is to over-seed and maintain the meadows with native grasses and wildflowers, which will be part of the scenic country vistas along FM 1171 and some of the interior open spaces.
 2. Meadows are comprised of approximately 11.2 acres.
 - ii. Maintenance:

1. Bramble sprouts and under growth may be controlled by cultivation or herbicide.
2. Meadows will be mowed each fall.
3. Meadows will over-seeded with native grasses in the spring and wildflowers in the spring or fall depending on species until such time that the wildflowers and native grasses will replace existing Bermuda grass.

iii. Uses:

1. Scenic views are a significant function for the meadows, and may be used for passive recreation

4. Native Prairie Habitat

a. Native Prairie Habitat

i. Description:

1. These meadows presently have little bluestem and a mixture of natural grasses. This will be expanded to include adjacent savannahs and wildflower meadows, in order to facilitate a conservation concept.
2. Native prairie habitat areas comprise approximately 13 acres.

ii. Maintenance:

1. Native wildflowers will be over-seeded to provide seasonal colors. Various wildflowers are seeded in spring, others in the fall.
2. The HOA too work with natural and seasonal timing.

iii. Uses:

1. The rural pastoral meadow vistas will be significant. The homeowners and their guests may enjoy these areas for picnics, parties and passive recreation

5. Woodland Open Space

a. Wooded Open Space

i. Description:

1. Wooded areas with tree coverage ranging from 25-100%.
2. Wooded open space areas are comprised of approximately 13.5 acres.

ii. Maintenance:

1. This open space will remain in its natural state with all wildlife habitats undisturbed.
2. Heavily treed areas will be under the supervision of a licensed landscape architect, arborist or forester, retained by the Developer and/or the HOA

iii. Uses:

1. In coordination with the Meadows, the wooded open space areas will contribute to the rural vistas and may be used for hiking, wildlife observation, and other passive recreation.

b. Wooded Open Space Eco-fringe

i. Description:

1. Wooded areas with tree coverage ranging from 25-100%. Eco-fringe is considered within 10 feet off a residential lot property line or trail system and within 25 feet of native prairie habitat, private meadow open space, private park and entry open space, bar ditch open space and street buffer open space. Currently, the vines and undergrowth have been left to take over the trees which is causing damage by invading the tree canopy and covering up the leaves. The vines and undergrowth are predominantly poison ivy, poison oak, greenbrier, and mustang grape vines, most of which are undesirable, very aggressive, and must be managed or removed in order to save the existing trees.
2. All of the wooded areas have been left unmanaged for many years, resulting in an overabundance of undergrowth, which dries out and is considered a fire hazard. This may be selectively removed and maintained. There can be a 10'-0" wide vegetative break between the wooded open space and adjacent property lines.
3. Wooded open space eco-fringe areas are comprised of approximately 6.0 acres.

ii. Maintenance:

1. Invasive and non-native brush, vines and undergrowth may be cleared and removed. Mistletoe and dead wood may be cleared and trees may be pruned to let light in to the forest floor. Non-native trees may be removed to allow more room for native species to thrive.
2. These areas, particularly eco-fringe areas, may be seeded with shade tolerant native grasses, wildflowers, and/or native ("slow-growth") ground cover to prevent topsoil erosion and to provide visual interest and a welcoming habitat for native creatures. Prior to any planting operations, there shall be no grading or removal of topsoil or leaf litter.
3. Initial restoration may be done by the developer. The conservation husbandry will be overseen by the HOA.
4. Heavily treed areas will be under the supervision of a licensed landscape architect, arborist or forester, retained by the Developer and/or the HOA. Contact the Town of Flower Mound Environmental Services before any work is done within the Upland Wooded Habitat or native Prairie Habitat.

iii. Uses:

1. In coordination with the Meadows, the wooded open space areas will contribute to the rural vistas and may be used for hiking, wildlife observation, and other passive recreation.

6. Street Buffer Open Space

a. Meandering Street Buffer

i. Description:

1. A meandering linear pedestrian and equestrian buffer along FM 1171.

2. Street buffer land shall include an 8' trail and a 15' equestrian trail easement.
 3. Open space may include enhanced landscape, understory trees, irrigation, a split rail fence, benches, and sidewalks.
 4. Street buffer open space areas are comprised of approximately 1.8 acres
- ii. Maintenance:
 1. By the HOA. Maintenance will be similar to that of Private Park areas and may include the use of drought-resistant grass.
 - iii. Uses:
 1. Street Buffer land open to the public for use of the hike-and-bike trail and the equestrian trail

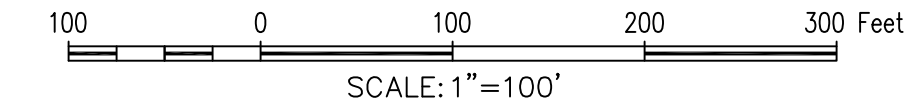
The objective for all areas is to establish a program - which will be embraced by the members of the HOA - to restore the native settings of the meadows, and woodlands, and maintenance of grasslands and then be subject to an ongoing Conservation Program.

The husbandry by the HOA will provide an environment which will be much more than isolated and forgotten woodlands, and meadows, but rather a natural habitat to be preserved, protected and enjoyed by all. Native grasses and wildflowers shall come from species within the Native American Seed company mixes – “Blackland Prairie Mix”, “Shade-Friendly Grass Mix”, and “Native Texas Mix” are all potential options. Grasslands are the enjoyment of use by residents.

Prohibited activities include, but are not limited to the removal of protected trees within the open space unless otherwise allowed by town ordinance, burning, dumping or illegal activities as listed in the Town of Flower Mound Code of Ordinances.

All open space areas shall be supervised by the Conservation Committee appointed by the HOA Board of Directors. The Conservation Committee will be under the supervision of a licensed Landscape Architect, Arborist, or Forester, or by a Certified Conservationist to be retained by the HOA. The Conservation Committee will fulfill the conservation covenants as provided in the deed restrictions.

Please refer to the open space plan, the environmental protection plan (EPP), and the Planned Development – 162 for additional clarification.



CONSULTANTS, LLC
LAND SURVEYING LANDSCAPE ARCHITECTURE

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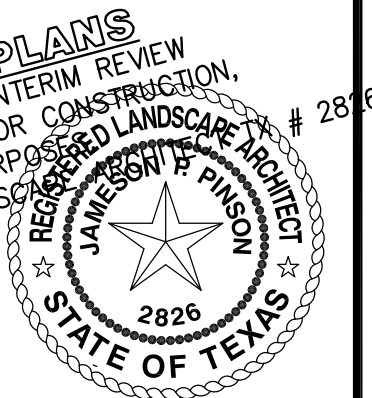
144 Old Town Blvd., North, Ste 2 • Arlington, TX 76226
P: 940.240.1012 • F: 940.240.1028

TBPE Firm No. 1798 TBPLS Firm No. 10047700

PEPPER CREEK RANCH
94.61 Acres
in the
McGOWAN & JAMES SURVEY, ABSTRACT NO. 959
TOWN OF FLOWER MOUND
DENTON COUNTY, TEXAS

OPEN SPACE PLAN

PRELIMINARY PLANS
THIS DOCUMENT IS FOR INTERIM REVIEW
AND IS NOT INTENDED FOR CONSTRUCTION.
BIDDING, OR PERMIT PURPOSES.
JAMESON PINSON LANDSCAPE ARCHITECT
DATED 4/20/2018



Drawn By: MH
Date: ####
Scale: 1"=100'
Revisions:

#####

17286

OSP

OWNER/DEVELOPER
Greg Anderson
9040 Hawley
Fort Worth, TX 76244
Ph. 435-229-4200
Contact: Greg Anderson

	PRIVATE WOODLAND OPEN SPACE (13.5) ACRES		PRIVATE PARK AREA / ENTRY OPEN (10.8) ACRES
	PRIVATE WOODLAND ECO-FRIDGE (6.0) ACRES		STREET BUFFER OPEN SPACE (1.8) ACRES
	NATIVE PRAIRIE HABITAT (1.9) ACRES		BAR DITCH OPEN SPACE (2.0) ACRES
	PRIVATE MEADOW OPEN SPACE (11.3) ACRES	TOTAL OPEN SPACE – 47.3 ACRES	



ENVIRONMENTAL PROTECTION PLAN

**Pepper Creek Ranch
Northwest of Donnoli Drive and Cross Timbers Road, Flower Mound, Texas**

April 19, 2018

Apex Job No: 725050942001

Prepared for:

G&A Consultants, LLC
111 Hillside Drive
Lewisville, TX 75057

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Appendix 4	Photograph Log
Appendix 5	FEMA FIRM, Wetland Data Forms

EXECUTIVE SUMMARY

Apex Companies, LLC (Apex) developed this Environmental Protection Plan (EPP) for the proposed Pepper Creek Ranch residential subdivision located on approximately 94.61-acres northwest of the intersection of Donnoli Drive and Cross Timbers Road in the Town of Flower Mound (Town), Denton County, Texas (Site). The regional location of the Site is shown in **Figure 1 (Appendix 1)**.

Environmentally Sensitive Areas (ESAs) are defined in the Town's SMARTGrowth Program. ESAs present at the Site include Upland Habitat, Prairie Habitat, waters of the state, waters of the United States (WOTUS), and topographic slope protection. The Town requires preparation of an EPP prior to certain approvals of residential and non-residential developments at properties where ESAs are identified. The purpose of the EPP is to describe the ecological setting and condition of the property, identify and map ESAs, and present best management practices (BMPs) to "protect, conserve and/or restore" ESAs at the Site. The EPP commonly also addresses other elements of the SMARTGrowth Program that include the identification of jurisdictional wetlands or WOTUS, topographic slope protection (varying degrees of protection for slopes greater than 5 and 12 percent), and water impoundment protection (protection for impoundments with surface area capacity equal or greater than 0.5 acre). The EPP also commonly addresses potential impacts to rare, threatened, and endangered species.

An ESA Survey was conducted by Mr. Aaron Brewer of Apex at the Site on January 11 and 12, 2018. Mr. Brewer identified waters of the state, possible WOTUS, Upland Habitat, Prairie Habitat and topographical slope protection ESAs at the Site. The Town of Flower Mound completed their ESA Survey on February 28, 2018, and it is attached in **Appendix 2**. ESA boundaries are presented in **Figure 2**, which also shows the Site boundaries. The current Site plan is represented in **Figure 3**. Apex's topographic slope protection map is presented in **Figure 4** and is based on a site specific topographic survey. The ESA areas are summarized in **Table Ex-1** on the next page along with the ESA mitigation strategy.

Table Ex-1: ESA Summary Table:

ESA	ESA Details	ESA Mitigation
Waters of the State	Six drainages on the Site have features consistent with ephemeral streams. They have been divided into segments numbered ES-1 through ES-11 on the map. Some of the drainages have adjacent swales lacking ordinary high water marks (OHWM). A 0.24-acre pond (Pond-1) and a 0.30-acre pond (Pond-2) have been identified as waters of the state.	Based on preliminary site plans, varying levels of impacts to some of the waters of the state are anticipated; however, Pond-1 and several of the streams (or segments) will be left undisturbed or enhanced as a feature of the proposed development. Impacts to waters of the state are mitigated by incorporating their flow within the on-Site drainage plan. Waters that do not meet criteria of WOTUS do not require a Section 404 permit.
Waters of the U.S.	Six drainages have been identified at the Site, each with potential to be WOTUS. They have indications of OHWM, but off-Site connections to other waters are only presumed to be present. Two of the streams (ES-1 and ES-2) are unnamed tributaries of Grapevine Lake and the others are unnamed tributaries of Whites Branch.	Most of the streams (or segments) will be left undisturbed as a feature of the proposed development. As much as 245 feet of ephemeral stream ES-11 will be filled during development and 55 feet of stream is located in the utility easement and drainage easement south of proposed Kimball Crossing road. Impacts to WOTUS will likely require a U.S. Army Corps of Engineers (USACE) Section 404 Clean Water Act (CWA) permit. Mitigation would be in accordance with the applicable Nationwide Permit General Conditions.
Upland Habitat	Identified along and within the perimeter of the Site, concentrated within the northeast, southeast, and southwest corners totaling 44.29 acres.	Approximately 21.46 acres of Upland Habitat is anticipated to be impacted and impacts to Upland Habitat will be mitigated by preserving an equal area of Upland Habitat within the development. Due to the preservation of at least as many acres of Upland Habitat as will be impacted, no additional tree mitigation will be required.
Prairie Habitat	Identified as elongated and irregular bands located primarily throughout the central portion of the Site totaling 4.46 acres.	Impact to approximately 2.38 acres Prairie Habitat is anticipated. Impacts to Prairie Habitat will be mitigated by preservation, restoration, and establishment of 11.2 acres prairie habitat within areas identified as Private Meadow Open Space on the March 15, 2018, Preliminary Open Space Plan provided by G&A Consultants, LLC.
Topographic Slope Protection	Areas of the slope between 5% and less than 12% meeting SMARTGrowth criteria (slopes extending for over 50 feet and/or greater than 6 feet elevation change) have been mapped at the Site (Figure 4) and cover an area totaling 9.98 acre. Areas of slope greater than 12% meeting SMARTGrowth criteria have been mapped at the Site (Figure 4) and cover an area totaling 8.19 acres.	Construction activities in areas with a slope between 5% and less than 12% and greater may proceed with limitations per the Topographic Slope Protection in the SMARTGrowth Analysis to the extent practicable. A lot specific grading plan has not been developed yet; however, mass grading of these areas is not being proposed. Individual lot designs will be developed based on the home designs of each new home. The proposed impacts to these slopes, assuming 100% impact from each residential lot, are estimated at 3.84 acres of

ESA	ESA Details	ESA Mitigation
		impact to slopes 5% to less than 12% (approximately 38%, including areas under structures and within 5 feet of structures), and 2.33 acres of impact to slopes 12% and greater (approximately 28% impact to 12%+ slopes). However, the actual impact to protected slopes is anticipated to be less.

The overall ecological health of the Site is mixed depending on the location within the Site. The central portion of the Site is characterized by degraded grassland that has been affected by historical agricultural practices that is visible in historical aerial imagery and by the predominance of non-native vegetative species. Two man-made ponds are located within the degraded grassland. Wooded vegetation located at the western portion and northeastern corner of the Site is dominated by trees considered native and listed within the Town's protected tree ordinance. The majority of the wooded areas located on the Site meet the Town's definition of Upland Habitat. The wooded habitat is intersected by a mosaic of swales and the upstream extent of numerous ephemeral tributaries; however, infrequent water presence and flow are characteristics of these swales and ephemeral tributaries. Grassland areas that met the Town's definition of Prairie Habitat were identified as elongated and irregular bands of prairie areas interspersed with Upland Habitat.

The proposed Pepper Creek Ranch will result in impacts to Upland Habitat, Prairie Habitat, WOTUS, and waters of the state. Upland Habitat and Prairie Habitat is present at the Site and approximately 44.29 acres and 4.46 acres, respectively, will be impacted by construction of the residences, roads, and attendant features. Impacts to Upland Habitat will be mitigated by preserving an equal area of Upland Habitat. Impacts to Prairie Habitat will be mitigated by preserving, restoring, and establishing prairie in areas designated as Private Open Meadow in the Open Space Plan prepared by G&A Consultants, LLC, dated March 15, 2018 (**Appendix 1**).

Based on the wetland delineation, preliminary jurisdictional determination, and the preliminary proposed project plan, impacts are anticipated to a segment of an unnamed tributary of Grapevine Lake (ES-2) and a segment of unnamed tributary of Whites Branch (ES-11). Several other streams and segments are present and will be left undisturbed as a feature of the proposed development. Impacts to WOTUS will likely require a United States Army Corps of Engineers (USACE) Section 404 CWA permit.

Two ponds at the Site are individually smaller than the 0.5-acre threshold for regulation under the SMARTGrowth ordinance for impoundments. Impacts to waters of the state will be absorbed into the planned stormwater system.

Portions of the Site have moderately steep slopes ranging between 5 and less than 12 percent and greater. The identification of slope degrees was completed based on information obtained from the site specific

topographic survey and analyzed by Apex. The current Town development standards limit mass grading in areas of greater than 5% slopes with a rise greater than 5 feet or slope length greater than 50 feet. The development plan will impact some of the slopes, after receiving a waiver from the Town Council for impacts to protected slopes, but the development will avoid mass grading of those protected areas that are greater than 5 feet from the proposed structures.

G&A identified specimen trees within 50 feet of the proposed road centerline. The road design was adjusted to avoid those trees. The remainder of the tree survey will be addressed when the grading plan is submitted for the specific lots.

The potential for the proposed development to impact the habitat of state and federally-listed threatened and endangered species, as well as other species of greatest conservation concern (SGCC) identified by the U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD), was assessed during the preparation of this EPP. No threatened or endangered species are anticipated to inhabit the Site, and the proposed development plan is anticipated to have no effect on state or federally listed species and no impact to populations of state-listed species of greatest conservation concern.

1.0 INTRODUCTION

1.1 Introduction and Site Location

Apex Companies, LLC (Apex) developed this Environmental Protection Plan (EPP) for the proposed Pepper Creek Ranch residential subdivision located on approximately 94.61-acres northwest of the intersection of Donnoli Drive and Cross Timbers Road in the Town of Flower Mound (Town), Denton County, Texas (Site). The regional location of the Site is shown in **Figure 1 (Appendix 1)**.

1.2 EPP Summary

ESAs were identified and mapped at the Site in compliance with the Town's SMARTGrowth requirements. Aquatic features and habitat (as defined by the Town) are represented in **Figure 2** as identified in a waters of the U.S (WOTUS) delineation field survey performed on January 11 and 12, 2018, by an author of this report, Mr. Aaron Brewer. Slope analysis was completed by Apex utilizing information obtained from the site-specific topographic survey.

The ESAs were delineated and mapped by use of Geographic Information System (GIS) mapping and field verification by use of global positioning system (GPS). State and federally-listed threatened, endangered, and candidate species and state-defined species of greatest conservation concern (SGCC) were assessed for their likelihood to occur at the Site and for the potential effects of the proposed project on listed species that may occur at the Site.

This EPP identifies the principal flora and fauna species present at the Site and indicates the overall ecological integrity/health of the Site. This EPP also describes ESAs and describes possible best management practices (BMPs) to "protect, conserve, and/or restore" ESAs for consideration during the development of the Site. Possible plans to educate future occupants of the development about the conservation efforts at the Site also are proposed.

2.0 SUBJECT PROPERTY DESCRIPTION

2.1 Site Description

The Site is comprised of approximately 94.61 acres of primarily vacant, undeveloped land bordered to the south by Cross Timbers Drive and to the west and north by unnamed tributaries to Whites Branch, two unnamed tributaries of Grapevine Lake to the south, and residential areas to the east and north. Expansive undeveloped areas are located to the north and west. A partially paved access road from Cross Timbers Drive bisects the central portion of the Site. A dilapidated residence and a pole barn are located along the access road on the central portion of the Site. Six drainages originate on the Site and discharge to neighboring properties across the southern, western and northern boundaries of the Site. In addition, two ponds are located on the northern and southern portions of the Site. The Site is relatively level on the central and eastern side of the property with a hill situated in the northeast corner and a dramatic downward slope in the west-central and southwest corners of the Site.

2.2 Ecological Health

The overall ecological health of the Site is mixed depending on the location within the Site. The central portion of the Site is characterized by degraded grassland that has been affected by historical agricultural practices that are visible in historical aerial imagery and by the predominance of non-native vegetative species. Two man-made ponds are located within the degraded grassland. Wooded vegetation located at the western portion and northeastern corner of the Site is dominated by trees considered native and listed within the Town's protected tree list. The majority of the wooded areas located on the Site meet the Town's definition of Upland Habitat. The wooded habitat is intersected by a mosaic of swales and the upstream extent of numerous ephemeral tributaries; however, infrequent water presence and flow are characteristics of these swales and ephemeral tributaries. Grassland areas that meet the Town's definition of Prairie Habitat were identified as elongated and irregular bands of prairie areas located primarily throughout the central portion of the Site and adjoining Upland Habitat.

2.3 Site Topography

The United States Geological Survey (USGS) Topographic Map Argyle Quadrangle (1960, updated 1974), shows the Site as depicted in **Figure 1**. The overall Site topography is sloping from the northeast corner downward to the west-southwest of the Site. Elevation varies from approximately 600 to 700 feet above mean sea level (AMSL). The lowest elevation on the Site is depicted at the western boundary of the Site within the convergence of two streams (ES-3 and ES-7) at about 600 feet AMSL. Localized declines in elevation are observed at the two man-made ponds and the numerous unnamed tributaries to Whites Branch (ES-3 through ES-11) and unnamed tributaries to Grapevine Lake (ES-1 and ES-2). Apex prepared **Figure 1** from the Argyle Quadrangle topographic map and **Figure 4** from site-specific topographic survey information showing the detailed topography of protected slope areas present at the Site.

2.4 NWI Map

The National Wetland Inventory (NWI) map identifies the two freshwater ponds located at the northern and southern portions of the Site.

2.5 Soil Survey

According to the U.S. Department of Agriculture Web Soil Survey, the soils mapped at the Site include Wilson clay loam, 1 to 3 percent slopes on the central portion of the Site, Silstid loamy fine sand, 1 to 5 percent slopes on the eastern and northwestern portion of the Site, Birome-Rayex-Aubrey complex, 2 to 15 percent slopes on the northeastern corner and western portion of the Site, Gasil fine sandy loam, 1 to 3 and 3 to 8 percent slopes on the northwestern corner and central portion of the Site, and Medlin Sanger Clay, 5 to 15 percent slopes on the southwestern portion of the Site.

According to the Natural Resource Conservation Service (NRCS) Official Soil Series Descriptions, the Wilson series consists of very deep, moderately well drained, very slowly permeable soils. These nearly level to gently sloping soils are on stream terraces. Slopes are mainly less than 1 percent but range from 0 to 5 percent. The Gasil series consists of very deep, well drained, moderately permeable soils formed in deeply weathered loamy residuum derived from sandstones. These soils are on nearly level to strongly sloping uplands with slopes ranging from 0 to 12 percent. The Silstid series consists of very deep, well drained, moderately permeable soils that formed in residuum weathered from beds of sandy or loamy materials and interbedded sandstones. These nearly level to sloping soils are on uplands with slopes ranging from 0 to 8 percent. Aubrey-Birome-Rayex complex consists of shallow to moderately deep, well drained, slowly to moderately permeable soils. These gently sloping to moderately steep soils are on ridges, low hills and erosional uplands with slopes range from 1 to 20 percent. The Medlin Sanger series consists of deep to very deep, well drained, very slowly permeable soils that formed in clayey marine sediments. These soils are on narrow stream divides and slopes along drainageways

2.6 Floodplain Data

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map panel 48121C0520G dated April 18, 2011 (**Appendix 5**), identifies the entire Site as a Zone X designation. Zone X is defined as a 0.2-percent chance flood event.

2.7 Historic Records

The U.S. Geological Survey (USGS) 7.5-Minute Topographic Map for the Argyle, Texas Quadrangle (1960, updated 1974) and aerial photographs available through Google Earth date back to 1995 and first show the on-Site residence and agricultural buildings in January 1995 imagery. In addition, animal pens are observed within the central portion of the Site. No other structures were identified at the Site during the reconnaissance on January 11 and 12, 2018. The results of multiple vegetation clearing events primarily within the central and eastern portions of the Site are observed in aerial imagery up to December 2002.

From December 2002 to the present, minimal human disturbance is observed and vegetation appears to be reclaiming the Site.

2.8 Principal Flora and Fauna Observed at the Site

Principal Fauna

During the Site reconnaissance on January 11 and 12, 2018, Mr. Brewer observed and identified the following principal fauna species and/or signs of these species: feral hog (*Sus scrofa*), nine-banded armadillo (*Dasypus novemcinctus*), white-tail deer (*Odocoileus virginianus*), rabbit (*Sylvilagus* spp.), American crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), cedar waxwing (*Bombycilla cedrorum*), eastern bluebird (*Sialia sialis*), red-tailed hawk (*Buteo jamaicensis*), song sparrow (*Melospiza melodia*), Carolina chickadee (*Poecile carolinensis*), a barn owl (*Tyto alba*), and red imported fire ants (*Solenopsis invicta*). Abundant animal burrows were noted throughout the Site, but none presented as burrowing owl habitat.

Principal Flora

The principal plant communities identified on the Site can be divided into four basic types categorized as disturbed grassland, wooded, scrub/shrub, and prairie. Descriptions of the plant communities are presented below, and photographs of the Site are presented in **Appendix 3**.

DISTURBED GRASSLAND

The majority of the central portion of the Site is characterized as disturbed grassland heavily dominated by western ragweed (*Ambrosia psilostachya*), Bermudagrass (*Cynodon dactylon*), johnson grass (*Sorghum halepense*), king ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), *Opuntia* spp., greenbriar (*Smilax bona-nox*), southern dewberry (*Rubus trivialis*), *Rubus* spp. *Rhus glabra*, eastern red cedar (*Juniperus virginiana*), and mesquite (*Prosopis glandulosa*). *Juncus validis* and *Cyperus* spp. were identified in association with the two ponds.

PRAIRIE AREAS

Elongated and irregular bands of prairie areas are located primarily throughout the central portion of the Site. The principal species include the following: little bluestem (*Schizachyrium scoparium*), broom panicgrass (*Dichanthelium scoparium*), side oats grama (*Bouteloua curtipendula*), *Opuntia* spp., broom sedge (*Andropogon virginicus*), indiagrass (*Sorghastrum nutans*), bearded bluestem (*Andropogon ternarius*), Texas winter grass (*Nassella leucotricha*), and yarrow (*Achillea millefolium*).

SCRUB/SHRUB AREAS

Transitional, early-successional habitat (scrub/shrub) areas were identified adjacent to the wooded areas and encroaching in the disturbed grassland and prairie areas. The principal species include the following:

mesquite, greenbriar, southern dewberry, *Rubus* spp. *Rhus glabra*, yaupon (*Ilex vomitoria*), prairie sumac (*Rhus lanceolata*), eastern red cedar, and mesquite.

WOODED AREAS

Wooded areas are located along and within the perimeter of the Site, concentrated within the northeast and southwest corners. The principal species include the following: Post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), black hickory (*Carya texana*), cedar elm (*Ulmus crassifolia*), eastern red cedar, mesquite, pecan (*Carya illinoensis*), Cherokee plum (*Prunus angustifolia*), Mexican plum (*Prunus Mexicana*), sugarberry (*Celtis laevigata*), and greenbriar.

3.0 HABITAT EVALUATION

The “taking” of state and federally-listed threatened and endangered (T&E) species is regulated by state and federal law. A habitat evaluation was conducted to assess the presence, or likely presence, of federally and state-listed threatened or endangered species potentially occurring at the Site. The evaluation considered the habitat provided by the Site compared to critical habitat and habitat preferences of the listed species during either reproductive, foraging or migratory stages to identify the likelihood of protected species to inhabit the Site or be affected by the proposed activity.

An annotated list of species of concern for Denton County was obtained from the Texas Parks and Wildlife Department (TPWD) prior to the Site visit and is enclosed in **Appendix 3**. The TPWD Annotated County Lists of Rare Species for Denton County created in coordination with the USFWS threatened and endangered species list was last updated on December 30, 2016. Species habitat descriptions are included with the TPWD list. Apex also checked the USFWS threatened and endangered species list for Denton County through the USFWS Initial Planning and Consultation (IPaC) website¹ the results of which are included in **Table 2-1** below.

3.1 Listed Species of Concern

The bird, mammal, mollusk, reptile, and plant species identified by the USFWS and/or the TPWD as threatened or endangered species potentially occurring in Denton County are listed in **Table 2-1**. The table also includes species of greatest conservation concern identified by TPWD that do not have specific statutory protections.

Table 2-1: State- and Federally-Listed Threatened and Endangered, and State-Listed Rare Species Potentially Present in Denton County, Texas

Common Name	Scientific Name	Federal Status	State Status
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	DL	T
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	DL	SGCC
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL	T
Henslow's sparrow	<i>Ammodramus henslowii</i>	NL	SGCC
Least tern	<i>Sterna antillarum</i>	LE	E
Red knot	<i>Calidris canutus rufa</i>	T	SGCC
Sprague's pipit	<i>Anthus spragueii</i>	NL	SGCC
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	NL	SGCC
White-faced Ibis	<i>Plegadis chihi</i>	NL	T
Whooping crane	<i>Grus americana</i>	LE	E

¹ <https://ecos.fws.gov/ipac/>

Common Name	Scientific Name	Federal Status	State Status
Wood stork	<i>Mycteria americana</i>	NL	T
Mollusks			
Louisiana pigtoe	<i>Pleurobema riddellii</i>	NL	T
Sandbank pocketbook	<i>Lampsilis satura</i>	NL	T
Texas heelsplitter	<i>Potamilus amphichaenus</i>	NL	T
Texas pigtoe	<i>Fusconaia askewi</i>	NL	T
Flowering Plants			
Glen Rose yucca	<i>Yucca necopina</i>	NL	SGCC
Topeka purple-coneflower	<i>Echinacea atrorubens</i>	NL	SGCC
Reptiles			
Texas garter snake	<i>Thamnophis sirtalis annectens</i>	NL	SGCC
Texas horned lizard	<i>Phrynosoma cornutum</i>	NL	T
Timber rattlesnake	<i>Crotalus horridus</i>	NL	T
Mammals			
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	NL	SGCC
Red wolf	<i>Canis rufus</i>	LE	E

Notes: NL = Not Listed; LE = Listed Endangered; E = Endangered; T = Threatened; DL = Delisted; SGCC = species of greatest conservation concern.

3.2 Listed Species Evaluation

No rare, threatened, or endangered species were observed on the Site during the January 2018 reconnaissance. After review of the species descriptions and conducting the Site reconnaissance, Mr. Brewer concluded that the Site does not contain habitat for federally-listed threatened or endangered species; therefore, the proposed activity would have no effect on these species. Additionally, no critical habitat was identified on the Site in the IPaC inquiry. The Site generally is not habitat for state-listed species or identified as SGCC except for some species with very broad habitat requirements (i.e., plains spotted skunk, Texas garter snake and timber rattlesnake). The proposed activity is not anticipated to impact those populations as the Site does not contain critical habitat for these species.

4.0 ENVIRONMENTALLY SENSITIVE AREAS

Apex evaluated the ESAs at the Site using the definitions established by the Town of Flower Mound. The ESAs identified within the Site include upland habitat, waters of the state, and WOTUS. An additional feature evaluated during the survey included topographical slope protection, which is addressed in following section. The boundaries of the ESAs were identified during field work on January 11 and 12, 2018, as presented in **Figure 2**. Details about the various ESAs as defined by the Town are presented below along with notes from observations for these ESAs.

4.1 Upland Habitat

The Town defines Upland Habitat as "Areas, a minimum of 10 acres in size, equal to or exceeding 50 trees per acre, which contain a predominant matrix of tree species identified on the Town's protected tree list. Any tree species that makes up over 30 percent of the population within a complex is considered to be the predominant species."

Upland areas that meet the Town's definition of Upland Habitat exists along the margins of the property and extends into portions of the interior. The majority of the wooded vegetation located within the Upland Habitat is considered native and listed within the Town's protected tree ordinance (Blackjack oak, post oak, cedar elm, pecan); however, undesirable species such as mesquite and eastern red cedar was observed encroaching the area. Approximately 44.29 acres of Upland Habitat was identified within the Site boundaries and it anticipated that 21.46 acres of Upland Habitat will be impacted by the proposed development. Impacts to Upland Habitat will be mitigated by preserving an equal area of Upland Habitat within the development.

4.2 Prairie Habitat

The Town defines Prairie Habitat as "Areas designated as containing on-site predominant distributions of climax or mid-successional native grass species underlain by intact (non-eroded) prairie and savannah soil types."

Grassland areas that met the Town's definition of Prairie Habitat was identified as elongated and irregular bands of prairie areas located primarily throughout the central portion of the Site. Approximately 4.46 acres of Prairie Habitat was identified within the Site boundaries. Portions of the Site, such as the northwest corner, had grassland habitat that supported some native grasses including little bluestem, but were excluded from prairie habitat do to a predominance of woody shrubs (e.g., sumac), brambles (greenbrier and blackberry) and non-native or early successional grasses (King Ranch bluestem and purple threeawn) encroching in these areas. Approximately 2.38 acres of Prairie Habitat are anticipated to be impacted due to the proposed development. The principal species include the following: little bluestem (*Schizachyrium scoparium*), broom panicgrass, side oats grama, *Opuntia* spp., broom sedge, bearded bluestem, Texas

winter grass, and yarrow. Impacts to Prairie Habitat will be mitigated by preservation, restoration, and establishment of 11.2 acres prairie habitat within areas identified as Private Meadow Open Space on the March 15, 2018, Preliminary Open Space Plan provided by G&A Consultants, LLC.

4.3 Riparian Habitat

The Town defines Riparian Habitat as "Areas designated within the FEMA 100-year floodplain or interconnected and adjacent to wetland, tree and understory vegetation and including significant stands of predominantly native water related habitat. These areas include wetlands."

No areas fitting the Town's definition of Riparian Habitat occurs on Site. The Site is not located within the FEMA 100-year floodplain (**Section 4.4**). The wooded vegetation located at the western portion and northeastern corner of the Site, previously identified as Upland Habitat (**Section 4.1**), is dominated by trees considered native and listed within the Town's protected tree list. The Upland Habitat is intersected by a mosaic of swales and the upstream extent of numerous ephemeral tributaries; however, infrequent water presence and flow are characteristics of these swales and ephemeral tributaries. As such, it is not anticipated that there is increased available soil moisture adjacent to the water features to support Riparian Habitat species composition. The predominant trees observed included blackjack oak, post oak, cedar elm, and eastern red cedar; which are primarily considered upland forest species.

4.4 Floodplain

The Town defines Floodplain as "determined from official FEMA Flood Insurance Rate maps."

The FEMA FIRM map panel 48121C0520G dated April 18, 2011 (**Appendix 5**), identifies the entire Site as a Zone X designation. Zone X is defined as a 0.2-percent chance flood event. A flood study was not part of the EPP survey; however, Mr. Brewer observed apparent floodplain indicators generally consistent with the FEMA FIRM designations.

4.5 Waters of the State

The Town defines waters of the state as "groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or non-navigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state."

The Town's definition of a water of the state is more inclusive than the federal definition of jurisdictional waters of the U.S. Therefore, the three swales identified that do not have an OHWM are not considered waters of the U.S. but were identified as waters of the state. Similarly, two isolated ponds meet the definition

of waters of the state, but do not appear have a significant nexus to waters of the U.S. and is not in themselves considered WOTUS.

The waters of the state identified at the Site are shown on **Figure 2** and have the following dimensions:

- Ephemeral Stream 1 = 186 Linear Feet (LF)
- Ephemeral Stream 2 = 320 LF
- Ephemeral Stream 3a = 471 LF
- Ephemeral Stream 3b = 113 LF
- Ephemeral Stream 3c = 83 LF
- Ephemeral Stream 4 = 54 LF
- Ephemeral Stream 5a = 50 LF
- Ephemeral Stream 5b = 34 LF
- Ephemeral Stream 6 = 59 LF
- Ephemeral Stream 7 = 94 LF
- Ephemeral Stream 7a = 36 LF
- Ephemeral Stream 8 = 242 LF
- Ephemeral Stream 8a = 37 LF
- Ephemeral Stream 8b = 119 LF
- Ephemeral Stream 9 = 180 LF
- Ephemeral Stream 10 = 243 LF
- Ephemeral Stream 11 = 327 LF
- Swale 1 = 130 LF
- Swale 2 = 41 LF
- Swale 3 = 136 LF
- Pond 1 = 0.24 acre
- Pond-2 = 0.30 acre

4.6 Waters of the U.S.

The Town defines Wetlands as “jurisdictional wetlands as defined by the federal Clean Water Act and the standards and guidelines in use by the U.S. Army Corps of Engineers (USACE), including the Federal Manual for Identifying and Delineating Jurisdictional Wetlands.”

Mr. Brewer completed a wetland delineation and provided his jurisdictional determination opinion at the Site on January 11 and 12, 2018. Field data forms from the delineation work are enclosed in **Appendix 5** and photographs from the Site work are enclosed in **Appendix 4**. The results indicate that the two unnamed tributaries of Grapevine Lake (ES-1 and ES-2) and five tributaries of Whites Branch (ES-3 through ES-11) would likely be considered WOTUS. All of the tributaries were classified as ephemeral, with an OHWM ranging from 0.8 to 3.5 feet wide, 0.5 to 2 inches deep. No wetlands that meet the three diagnostic criteria

as defined by the USACE were identified in association with the creeks. The only wetland identified at the Site was a narrow fringe around Pond-2 in the northern portion of the Site which is isolated from area tributaries. Based on the proposed facility layout, impacts to two streams are anticipated in association with lot construction, bar ditch construction, and utility construction.

Table 1: Potential Waters of the U.S. Summary Table

ID	Lat/Long (dd)	Resource Type	Linear Footage	Average OHWM Width (ft)	OHWM Height (ft)	Acres	Jurisdictional Status
ES-1	33.045766°, -97.171969°	Ephemeral Stream	186	3.5	0.08	-	Potentially Jurisdictional
ES-2	33.045921°, -97.171904°	Ephemeral Stream	320	2.5	0.17	-	Potentially Jurisdictional
Pond-1	33.046632°, -97.172069°	Open Water	-	-	-	0.24	Non-Jurisdictional
ES-3	33.048209°, -97.175010°	Ephemeral Stream	471	2.3	0.1	-	Potentially Jurisdictional
ES-3a	33.048393°, -97.174173°	Ephemeral Stream	113	2.5	0.08	-	Potentially Jurisdictional
ES-3b	33.048369°, -97.174254°	Ephemeral Stream	83	1.7	0.17	-	Potentially Jurisdictional
ES-3c	33.048272°, -97.174149°	Ephemeral Stream	69	2.3	0.1	-	Potentially Jurisdictional
ES-4	33.048106°, -97.174523°	Ephemeral Stream	54	0.8	0.08	-	Potentially Jurisdictional
ES-5a	33.048253°, -97.174634°	Ephemeral Stream	50	1.5	0.04	-	Potentially Jurisdictional
ES-5b	33.048316°, -97.174697°	Ephemeral Stream	34	1.3	0.04	-	Potentially Jurisdictional
ES-6	33.048066°, -97.175370°	Ephemeral Stream	59	1	0.04	-	Potentially Jurisdictional
ES-7	33.048401°, -97.175533°	Ephemeral Stream	94	1.7	0.17	-	Potentially Jurisdictional
ES-7a	33.048411°, -97.175622°	Ephemeral Stream	36	1.7	0.17	-	Potentially Jurisdictional
ES-8	33.046238°, -97.175303°	Ephemeral Stream	242	2.5	0.08	-	Potentially Jurisdictional
ES-8a	33.046451°, -97.175456°	Ephemeral Stream	37	1.7	0.04	-	Potentially Jurisdictional
ES-8b	33.046043°, -97.174973°	Ephemeral Stream	119	2	0.04	-	Potentially Jurisdictional
ES-9	33.050103°, -97.175456°	Ephemeral Stream	180	2.3	0.08	-	Potentially Jurisdictional
ES-10	33.049342°, -97.175351°	Ephemeral Stream	243	1.7	0.08	-	Potentially Jurisdictional
ES-11	33.052554°, -97.174465°	Ephemeral Stream	327	3.3	0.08	-	Potentially Jurisdictional

ID	Lat/Long (dd)	Resource Type	Linear Footage	Average OHWM Width (ft)	OHWM Height (ft)	Acres	Jurisdictional Status
Pond-2	33.052512°, -97.174094°	Open Water	-	-	-	0.30	Non-Jurisdictional

Two isolated, man-made ponds (Pond 1 and Pond 2) were identified at the Site. These features were identified in both NWI data and the topographic map. No surface connection to a potential WOTUS from either Pond 1 or Pond 2 was identified during field survey. Therefore, a significant nexus to a WOTUS appears unlikely and Pond 1 and Pond 2 themselves are not considered WOTUS in our opinion.

Two swales (Swales 1 and 3) were identified associated with ephemeral streams ES-1 and ES-9; however, they are not WOTUS as they lack an OHWM. No wetlands that meet the three diagnostic criteria as defined by the USACE were identified in association with the swales. In addition, one swale (Swale 2) was identified as an isolated feature in the southeast portion of the Site. Swale 2 is not considered a WOTUS as it conveys water from uplands in an isolated system and lacks an OHWM.

Photographs of the features are included as **Appendix 4** and field data forms used for delineating wetlands are included in **Appendix 5**.

4.7 Impoundments

The Town's SMARTGrowth Program requires preservation and enhancement of impoundments greater than 0.5 acre identified at proposed developments. The two areas of ponded water (Pond 1 and Pond 2) at the Site are a result of natural pooling in man-made depressions rather than an impoundment on a drainage way; nevertheless, each of the areas are below the 0.5-acre threshold for regulation under SMARTGrowth ordinances (0.24 acre and 0.30 acre, respectively).

4.8 Specimen Trees

The Town has a definition for specimen trees based on species and trunk diameter. Specimen trees have been identified and road design was adjusted to avoid impacts. Other specimen trees are likely present and will be identified in the tree survey concurrent with development.

4.9 Topographic Slope Protection

The Town's SMARTGrowth requirements state the following: "No development application or project shall be approved that proposes development on any existing topographical slopes of 12 percent or greater, or that proposes to alter any existing topographical slopes that are less than 12 percent but equal to or greater than five percent (other than within five feet of the footprint of the proposed structure or structures). This criterion applies when the stated topographical slopes exist for a total horizontal distance over 50 feet or if

the total vertical rise is over 6 feet. The purpose of this criterion is to ensure that development is respectful of and appropriately integrated with the natural physical geography of the land in Flower Mound by requiring environmentally sensitive development techniques to eliminate 'scrape and build.'"

Based on information obtained from a site specific topographic survey, several areas on the Site contain slopes between 5% and less than 12% and slopes greater than 12% slopes. A lot specific grading plan has not been developed yet; however, mass grading of these areas will be avoided as practicable. **Figure 4** depicts the topographic contours, protected slope areas, and proposed development subject to corresponding development criteria which assumes 100% of the residential lots will impact the slopes.

Based on the current development plan and site-specific topographic map, the Site has approximately 9.98 acres of area classified as 5% to less than 12% slopes, and 8.19 acres of slopes 12% and greater. The proposed impacts to these slopes, assuming 100% impact from each residential lot, are estimated at 3.84 acres of impact to slopes 5% to less than 12% (approximately 38% impact to 5 to <12% slopes), and 2.33 acres of impact to slopes 12% and greater (approximately 28% impact to 12%+ slopes).

The residential lots are not being mass graded. Each home will be custom designed to fit each lot providing opportunities to minimize extensive grading. The actual impact to protected slopes is not anticipated to be 100% of the slope areas within the residential lots. Some grading of protected slopes will be necessary to construct the roads, proposed bridge, and near some of the ponds. Retaining walls are not anticipated to exceed 8 feet in height. A waiver will be requested from the Town Council for the topographical slope impacts.

5.0 ***PROPOSED DEVELOPMENT PLAN***

The current development plan is depicted in **Figure 3**. The proposed project is the construction of a residential subdivision. The proposed structures include single-family residential structures, driveways, open space and other amenities, and an access road to Cross Timbers Road. The specific lot grading plan has not been proposed at this time. No specific opportunities for educating the residents about conservation efforts to the Site were apparent; however, the walking trails and scenic setting along access roads and at several lots will offer many ways for the residents to observe and enjoy the natural setting.

6.0 MITIGATION MEASURES

The construction of the residential subdivision will have some impact on Upland Habitat, Prairie Habitat, waters of the state, and WOTUS. The following BMPs are proposed to protect the ESAs and other Site resources:

- Structural controls designated by the civil engineer will be installed and maintained as described in the development plan's erosion control plan to reduce impacts to area water quality and protect surface waters from excessive sedimentation.
- Mitigation for impacts to WOTUS will be conducted in accordance with USACE requirements, if required.
- The proposed development plans to limit impact and incorporate the 0.24-acre man-made pond (Pond 1) and portions of Upland Habitat and Prairie Habitat into the facility layout.
- Grading of areas with slopes between 5% and 12% and greater than 5 feet from planned structures will be avoided to the extent practicable.
- Grading in areas exceeding 12% slopes will be required in some areas of roads, a bridge, for re-shaping the ponds, and in some of the residential lots. Impacts to slopes are estimated at 3.84 acres of impact to slopes 5% to less than 12% (approximately 38%, including slopes under structures and within 5 feet of structures), and 2.33 acres of impact to slopes 12% and greater (approximately 28%).
- A waiver for the impacts to protected slopes will be pursued through the Town Council.
- The lots will not be mass graded.
- Custom homes will be designed for each lot allowing for the opportunity for homes to fit the natural landscape and responsibly integrate the development into the natural topography.
- The use of retaining walls will be kept to a minimum and where required, retaining walls are anticipated to not exceed 8 feet in height.

The development of the residential subdivision at the Site provides a unique opportunity to utilize natural features such as protected trees and aquatic features as a serene living environment for ongoing enjoyment by residents and visitors.

7.0 PLAN SUMMARY

Based on the Site visits and the proposed development plan for the Site, the following conclusions have been developed:

- The Site does not contain suitable habitat for the federally-listed threatened or endangered species, and state-listed and protected species are not anticipated to be significantly affected by the proposed activities.
- Impacts to waters of the state will be mitigated by avoidance altogether and/or accommodating flow in the stormwater plan.
- Based on the wetland delineation, preliminary jurisdictional determination, and the preliminary proposed project plan, impacts are proposed to two streams related to construction of a road and a residential lot; however, several other streams (or segments) may be left undisturbed as a feature of the proposed development. Impacts to WOTUS will likely require a USACE Section 404 CWA permit.
- Upland Habitat and Prairie Habitat is present at the Site and approximately 21.49 acres of Upland Habitat and 2.38 acres of Prairie Habitat will be impacted by construction of the facility. Impacts to Upland Habitat will be mitigated by preserving an equal or greater area of Upland Habitat. Impacts to Prairie Habitat will be mitigated by preserving, restoring, and establishing prairie habitat at the Site at open meadow areas totaling 11.2 acres.
- BMPs will be implemented by the builder to protect surface water from excessive sedimentation.
- Grading in areas of the topographic slope between 5% and less than 12% and greater than 5 feet elevation difference will be avoided to the extent practicable as indicated in **Figure 4**.
- Grading of protected slopes is anticipated in some areas after pursuing a waiver from the Town Council.

8.0 GENERAL QUALIFICATIONS

This EPP has been prepared on behalf of G&A Consultants, LLC to provide information about ESAs and possible mitigation associated with future development of the Pepper Creek Ranch project. The standard of care exercised for this type of project is similar to that used by other professionals currently practicing in this field at this location. No warranty, express or implied, is made regarding the environmental condition of the Site.



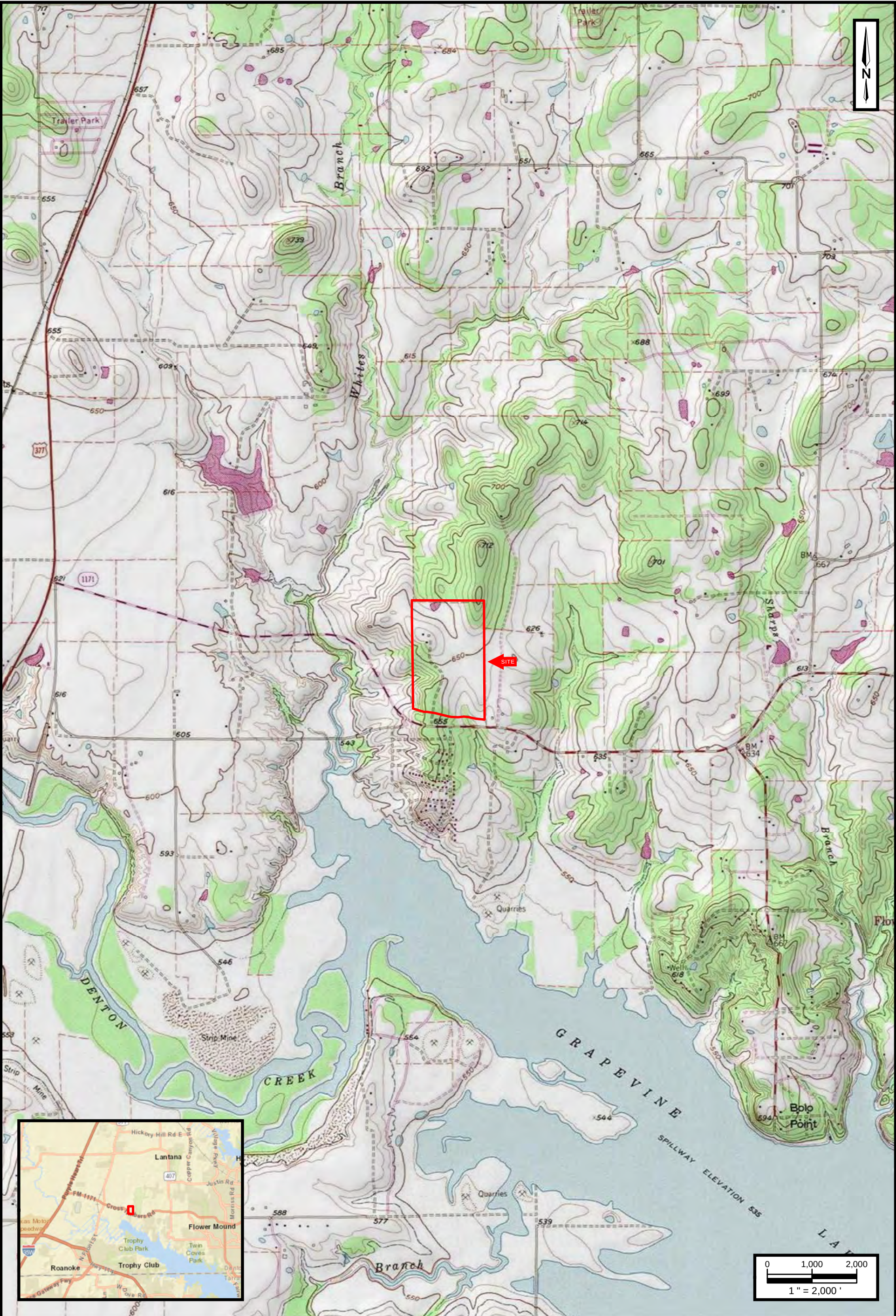
Kelley Bayne
Senior Scientist



Aaron Brewer, P.G.
Senior Project Manager

APPENDIX A

FIGURES



Pepper Creek Ranch EPP
94.61 Acres in NEC of FM 1171 and
Old Cross Timbers Road
Flower Mound, Texas

Project No. 725050942001

LEGEND:

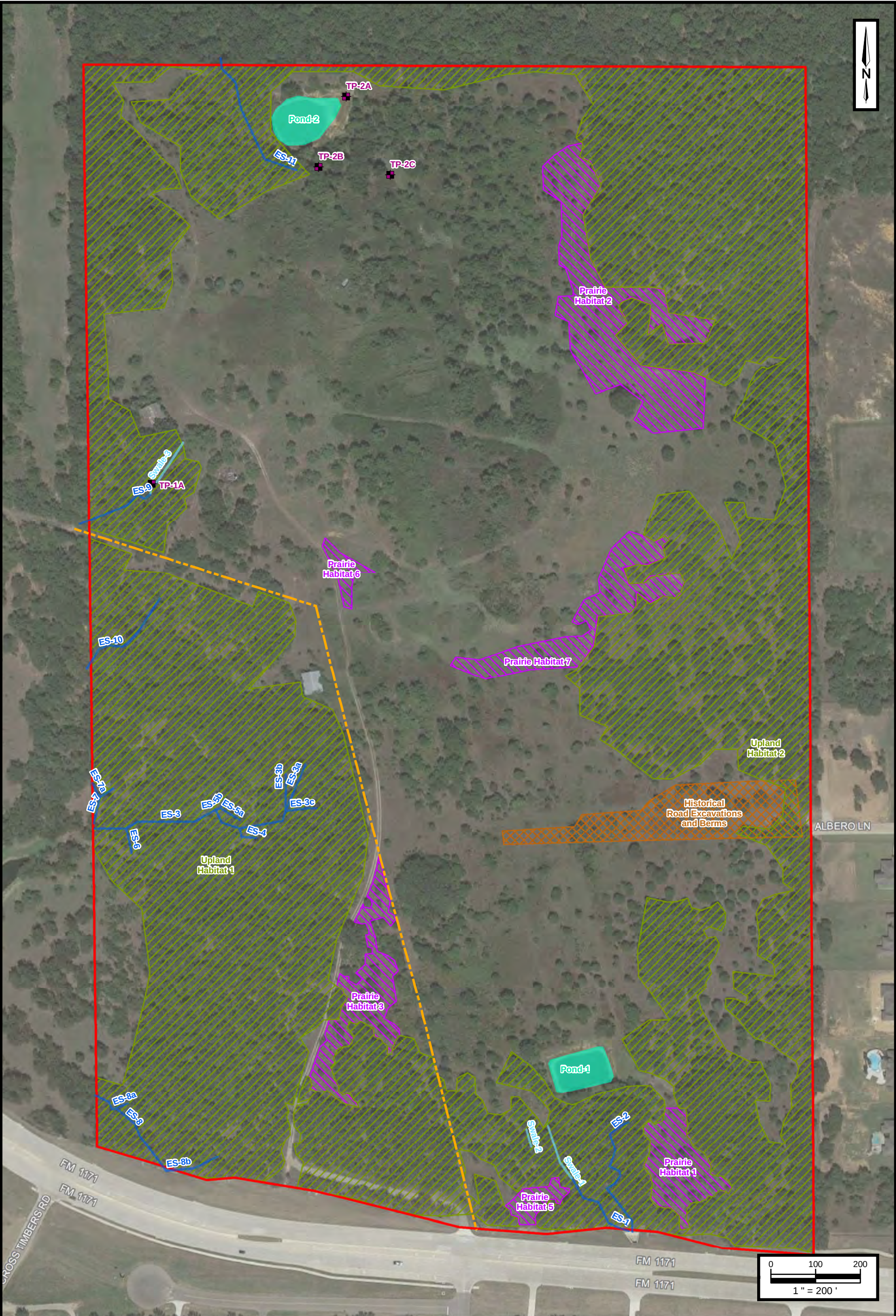
Site Boundary



Apex Companies, LLC
13640 Briarwick Dr., Suite 110
Austin, Texas 78726
Phone: (512) 250-2600
www.apexcos.com

FIGURE 1
Site Location Map

Service Layer Credits:
Copyright: © 2013 National Geographic Society, i-cubed
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P,



Pepper Creek Ranch EPP
94.61 Acres in NEC of FM 1171 and
Old Cross Timbers Road
Flower Mound, Texas

Project No. 725050942001

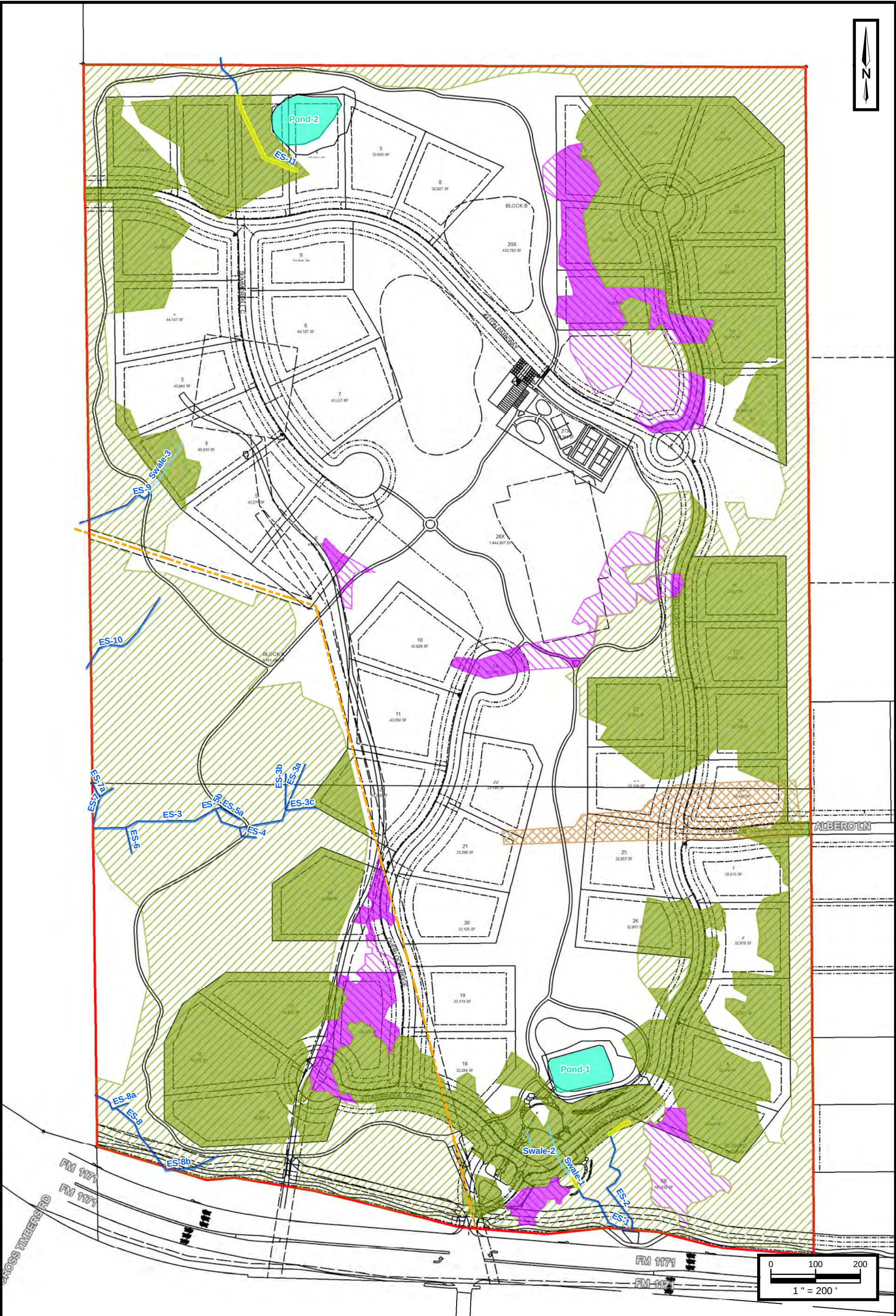
LEGEND:	
	Test Pit Location
	Overhead Electric Line Location
	Swale Location
	Ephemeral Stream Location
	Pond Location
	Site Boundary
	Historical Road Excavations and Berms
	Upland Habitat
	Prairie Habitat



Apex Companies, LLC
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FIGURE 2
Environmentally Sensitive
Areas Map

Service Layer Credits:
Texas Department of Transportation 2017, Aerial Photograph
September 2017



Pepper Creek Ranch EPP
94.61 Acres in NEC of FM 1171 and
Old Cross Timbers Road
Flower Mound, Texas

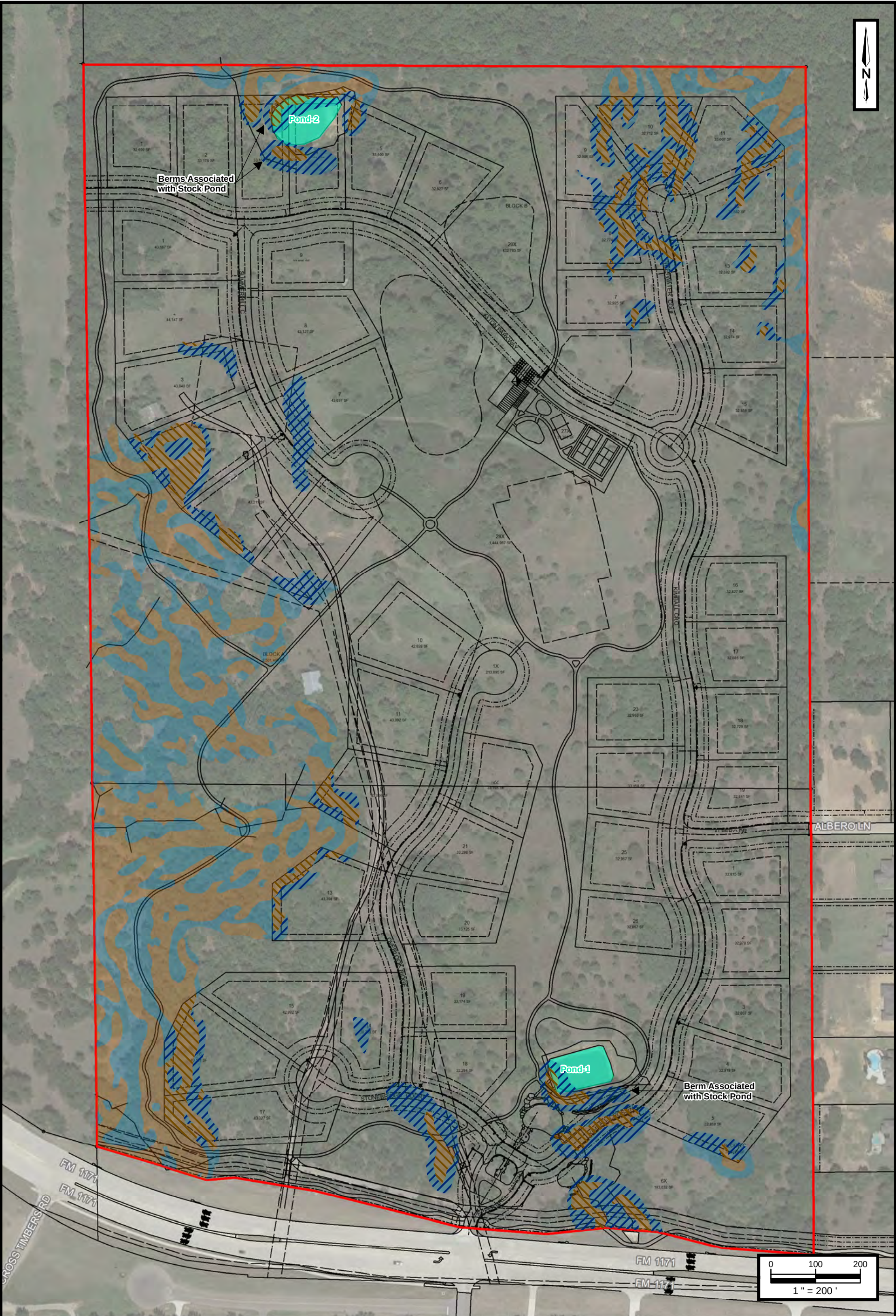
Project No. 725050942001

- LEGEND:**
- Overhead Electric Line Location
 - Impacted Ephemeral Stream Location
 - Swale Location
 - Ephemeral Stream Location
 - Pond Location
 - Historical Road Excavations and Berms
 - Upland Habitat
 - Prairie Habitat
 - Impacted Upland Habitat
 - Impacted Prairie Habitat
 - Site Boundary

Apex Companies, LLC
13640 Briarwick Dr., Suite 110
Austin, Texas 78726
Phone: (512) 250-2600
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FIGURE 3
Site Plan

Service Layer Credits:
Texas Department of Transportation 2017



Pepper Creek Ranch EPP
94.61 Acres in NEC of FM 1171 and
Old Cross Timbers Road
Flower Mound, Texas

Project No. 725050942001

LEGEND:

- Impacted Area of Slope - 5% to <12%
- Impacted Area of Slope - 12% or Greater
- Area of Slope - 5% to <12%
- Area of Slope - 12% or Greater
- Pond Location
- Site Boundary

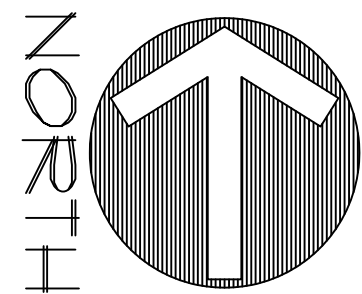
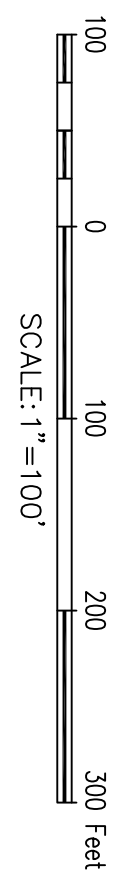


Apex Companies, LLC
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Phone: (512) 250-2600
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FIGURE 4

Topographic Slope Protection Map

Service Layer Credits:
Texas Department of Transportation 2017, Aerial Photograph
September 2017



111 Hillside Drive • Lewisville, TX 75057
P: 972.436.9712 • F: 972.436.9715

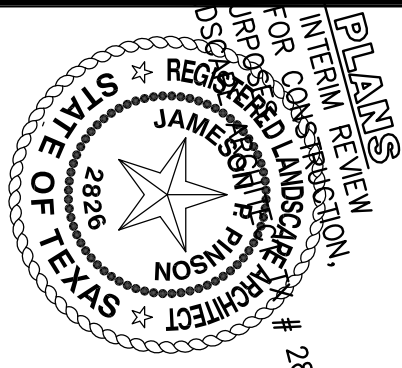
144 Old Town Blvd. North, Ste 2 • Argyle, TX 76226
P: 940.240.1012 • F: 940.240.1028

TBPE Firm No. 1798 TBPLS Firm No. 10047700

TBPE Firm No. 1798 TBPLS Firm No. 10047700

in the
MCGOWAN & JAMES SURVEY, ABSTRACT NO. 959
TOWN OF FLOWER MOUND
DENTON COUNTY, TEXAS

OPEN SPACE PLAN



LEGEND

PRIVATE WOODLAND OPEN SPACE
(19.6) ACRES

PRIVATE PARK AREA / ENTRY OPEN
(108) ACRES

PRIVATE MEADOW OPEN SPACE
(11.2) ACRES

STREET BUFFER OPEN SPACE
(1.8) ACRES

NATIVE PRAIRIE HABITAT
(1.9) ACRES

BAR DITCH OPEN SPACE
(2.0) ACRES

TOTAL OPEN SPACE - 47.3 ACRES

17286

L3.0

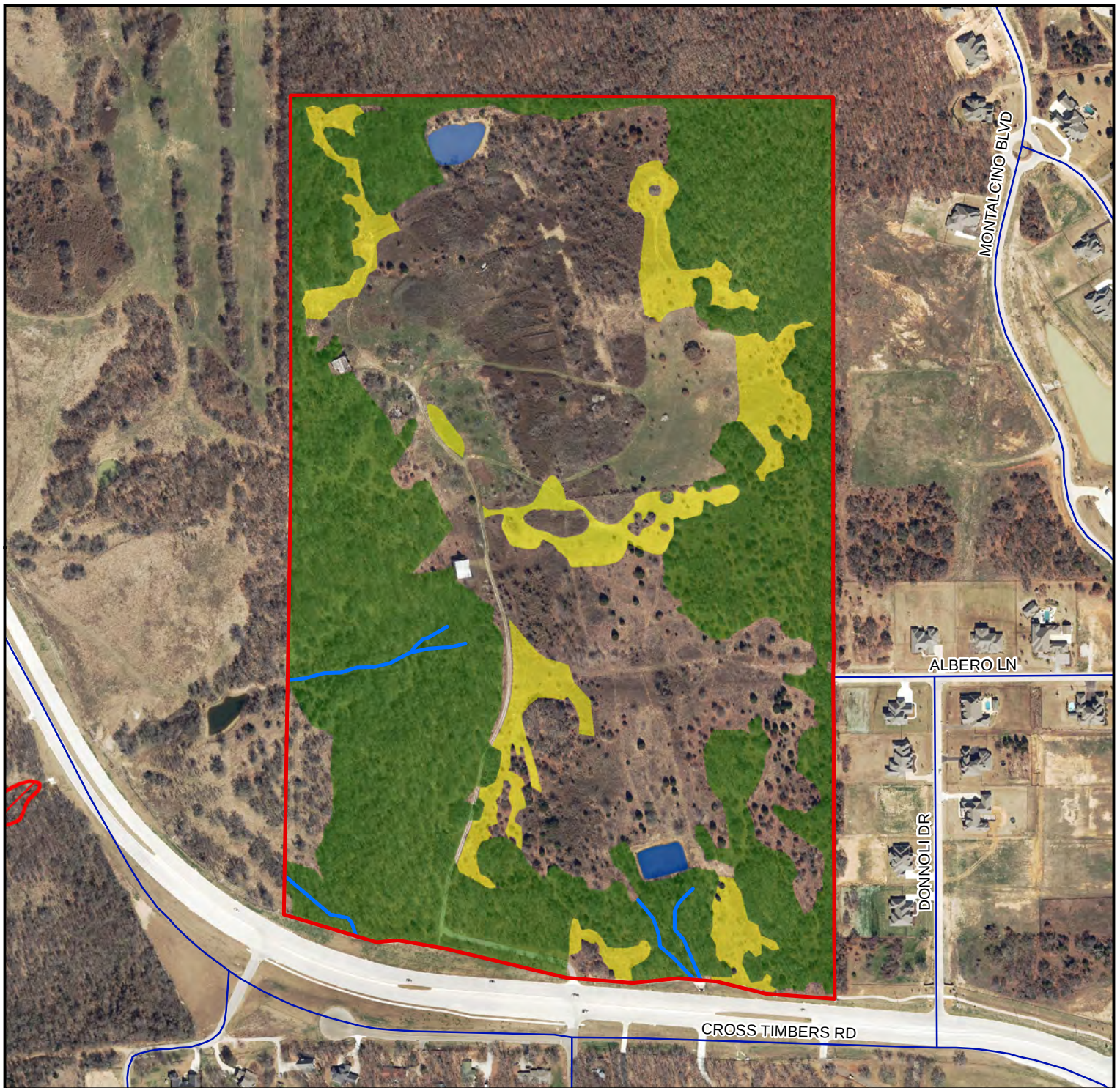
APPENDIX 2
ENVIRONMENTALLY SENSITIVE AREA SURVEY BY TOWN OF FLOWER MOUND



Environmentally Sensitive Area Survey

Property Name: Pepper Creek Ranch		Contact: Ron Stewart, with G&A Consultants, LLC
Property Address: Generally located north of Cross Timbers Road and west of Montalcino Boulevard		
Environmentally Sensitive Area Criteria	ESA Criteria Description & Notes	
<u>Upland Habitat</u> Criteria Present? ☒ Yes ☐ No	There are a large portions of Upland Habitat situated along the perimeter of the proposed development site. The predominant matrix of species identified within these areas includes post oak, blackjack oak, black hickory, cedar elm and texas ash.	
<u>Riparian Habitat</u> Criteria Present? ☐ Yes ☒ No	None	
<u>Prairie Habitat</u> Criteria Present? ☒ Yes ☐ No	The predominant grass identified within the Prairie Habitat was little bluestem, with some splitbeard bluestem also being observed in a few of the pockets. Liatris spp. and indian grass were both observed in an open area on the SW portion of the site, but that area is starting to get taken over by woody vegetation so I excluded it.	
<u>Waters of the State</u> Criteria Present? ☒ Yes ☐ No	There were multiple ephemeral streams located on the property. None of streams were conveying any water a few days after a significant rain event.	
<u>Floodplain</u> Criteria Present? ☐ Yes ☒ No	None	
<u>Wetlands</u> Criteria Present? ☐ Yes ☒ No	None	
<u>Water Impoundment Protection</u> Criteria Present? ☐ Yes ☒ No	The surface area capacity for both stock ponds appears to not be large enough to warrant water impoundment protection (min. ½ acre).	
<u>Topographical Slope Protection</u> Criteria Present? ☒ Yes ☐ No	There are multiple areas on the site with significant slope ($\geq 5\%$). The estimated location of these areas is shown on the slope map provided. This map shows areas where these slope conditions could exist. This data is not exact and is meant to be used as a guide. Based on Town staff's field observations, there appears to be areas on this property that exceed slopes of 12% where the streams have been identified, which might be significantly impacted by the proposed development, which includes the proposed installation of a 6' private trail. The Town's SMARTGrowth Program allows modification of slopes between 5% and 12% - but only up to 5 feet outside the footprint of the structure or structures being built. The objective of this provision of SMARTGrowth is to preserve topographic features and the topographic character of each site, and to avoid the "balancing" or flattening of sites. A thorough analysis to identify all areas on the site with slopes greater than or equal to 5% will need to be completed by the applicant's consultant and forwarded to Town staff for review.	
Action Steps/Additional Notes		
Multiple ESAs were identified on this site. Therefore, an EPP will be required. The construction plans will need to show that the developer is working with existing slopes on the site. The applicant needs to demonstrate that the development complies with the topographic slope requirements found in the Town's SMARTGrowth Program – Environmental Quality Section.		
EPP Required? ☒ Yes ☐ No		<u>Attachments</u> ☒ Site Orthographic Aerial Photograph ☐ Other:

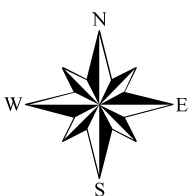
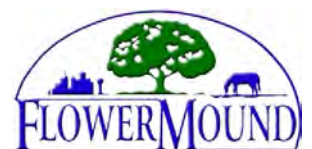
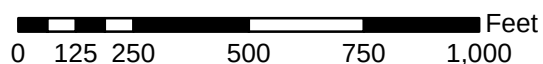
EPP Consultant: N/A			
Submitted by: (print) James Hoefert		Signature & Date: James Hoefert 2/28/2018	
Forwarded to EPP Consultant: N/A	Filed with Development Services & Environmental Services	Last Modified: 2/28/2018	



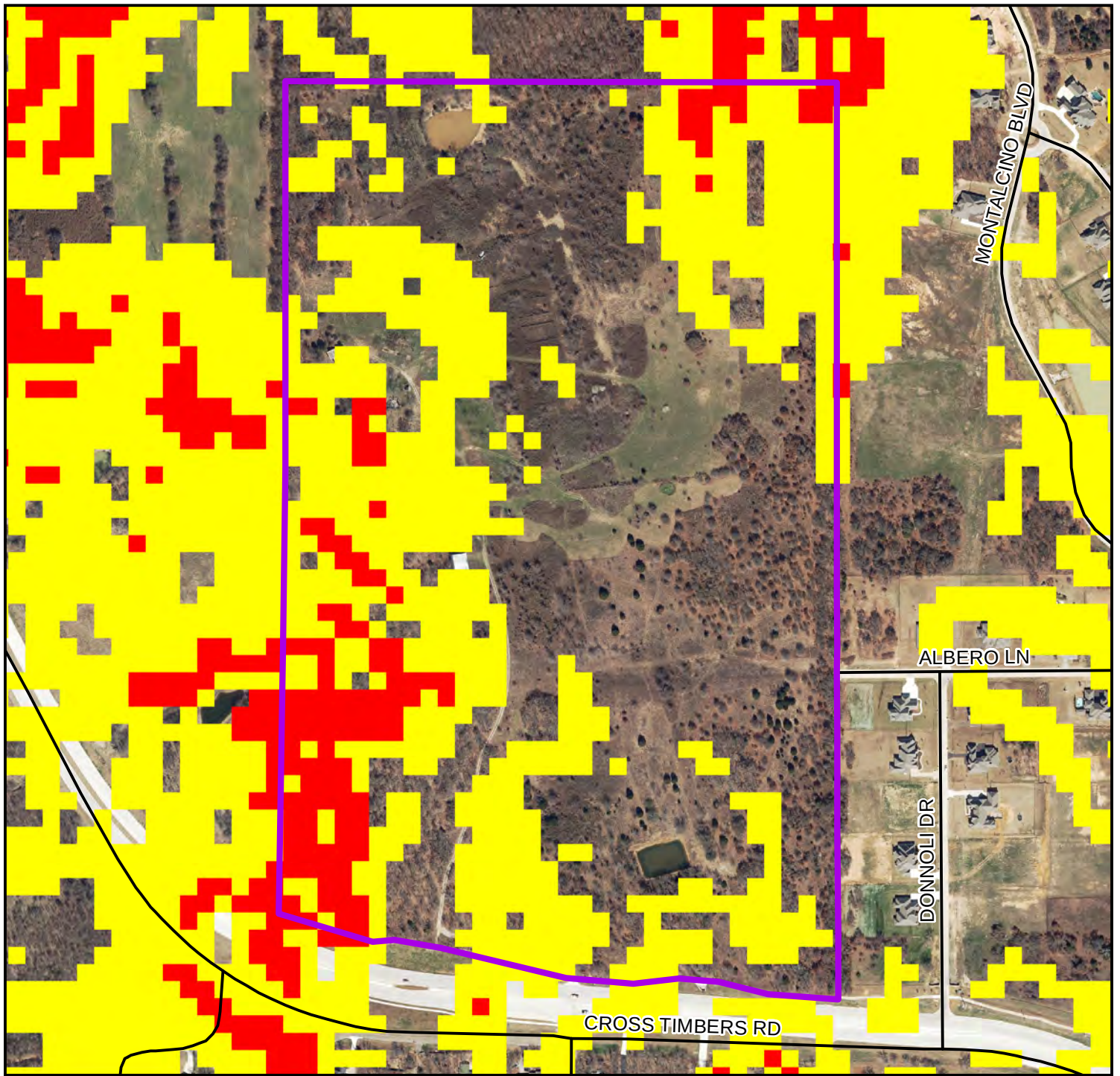
Environmentally Sensitive Area Survey Pepper Creek Ranch

Map Created: February 28, 2018
Environmental Services Department
Town of Flower Mound

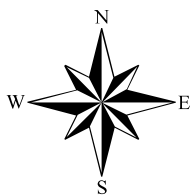
1 inch = 417 feet



 Property
 Streets
— Streets
 — Streams
 Prairie
 Ponds
 Upland Habitat

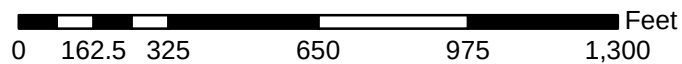


Pepper Creek Ranch - Slope Map



Map Created: February 28, 2018
Environmental Services Department
Town of Flower Mound

1 inch = 417 feet



APPENDIX 3
TPWD SPECIES OF GREATEST CONSERVATION CONCERN, DENTON COUNTY, TEXAS

DENTON COUNTY

BIRDS

		Federal Status	State Status
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	DL	T
year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US 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.			
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	DL	
migrant throughout state from subspecies' far northern breeding range, 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.			
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			
Henslow's Sparrow	<i>Ammodramus henslowii</i>		
wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking			
Peregrine Falcon	<i>Falco peregrinus</i>	DL	T
both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius 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.			
Red Knot	<i>Calidris canutus rufa</i>	T	
Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (<i>Donax</i> spp.) on beaches and dwarf surf clam (<i>Mulinia lateralis</i>) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.			

DENTON COUNTY

BIRDS

		Federal Status	State Status
Sprague's Pipit	<i>Anthus spragueii</i>		
only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.			
Western Burrowing Owl	<i>Athene cunicularia hypugaea</i>		
open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows			
White-faced Ibis	<i>Plegadis chihi</i>		T
prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats			
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			
Wood Stork	<i>Mycteria americana</i>		T
forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960			

MAMMALS

		Federal Status	State Status
Plains spotted skunk	<i>Spilogale putorius interrupta</i>		
catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie			
Red wolf	<i>Canis rufus</i>	LE	E
extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies			

MOLLUSKS

		Federal Status	State Status
Louisiana pigtoe	<i>Pleurobema riddellii</i>		T
streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins			
Sandbank pocketbook	<i>Lampsilis satura</i>		T
small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River			
Texas heelsplitter	<i>Potamilus amphichaenus</i>		T
quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins			

DENTON COUNTY

MOLLUSKS

Federal Status

State Status

Texas pigtoe

Fusconaia askewi

T

rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sulphur River, Cypress Creek, Sabine through Trinity rivers as well as San Jacinto River

REPTILES

Federal Status

State Status

Texas garter snake

Thamnophis sirtalis annectens

wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Texas horned lizard

Phrynosoma cornutum

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

Timber rattlesnake

Crotalus horridus

T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

PLANTS

Federal Status

State Status

Glen Rose yucca

Yucca necopina

Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June

Topeka purple-coneflower

Echinacea atrorubens

GLOBAL RANK: G3; Occurring mostly in tallgrass prairie of the southern Great Plains, in blackland prairies but also in a variety of other sites like limestone hillsides; Perennial; Flowering Jan-June; Fruiting Jan-May

APPENDIX 4
PHOTOGRAPH LOG

Photograph 1

Upland habitat in southwest corner of Site looking west from access road.



Photograph 2

Swale-1 in south-central portion of Site facing south-southeast as swale enters wooded area.



Photograph 3

Ephemeral stream ES-1 in south-central portion of Site facing north from near south boundary.



Photograph 4

Pond-1 in south-central portion of Site as viewed from northeast corner facing southwest.



Photograph 5

Prairie habitat in southeast portion of Site facing south with FM 1171 visible in background.



Photograph 6

Ephemeral stream ES-3 in west-central portion of Site facing west from within the western half of stream.



Photograph 7 Prairie habitat in west-central portion of Site on east side of access road facing south-southeast.	
Photograph 8 Setting of test plot TP-1A in depression within small valley. View is facing south with low, breached berm in background.	
Photograph 9 Ephemeral stream ES-11 in northwest corner of site with Pond-2 embankment visible to the right. View is to the north-northeast from southwest of the pond.	

Photograph 10 Pond-2 as viewed from the northeast corner facing southwest.	
Photograph 11 Test Plot TP-2A in the northwest corner of Pond-2. View is to the east where animal trail descends from the east to the pond.	
Photograph 12 Broad swale in area south-southeast of Pond-2 in general vicinity of TP-2C. View is to the southeast.	

Photograph 13

Test plot TP-2B in lowest area outside Pond-2 between ponds lowest area and start of ephemeral stream ES-11. View is to the northwest.



Photograph 14

Edge of prairie as transitions to areas dominated by woody vines and shrubs as viewed to west from northeast portion of Site.



Photograph 15

Prairie habitat in linear area in central portion of Site. View is to the east.



APPENDIX 5
FEMA FIRM AND FIELD DATA FORMS

National Flood Hazard Layer FIRMMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

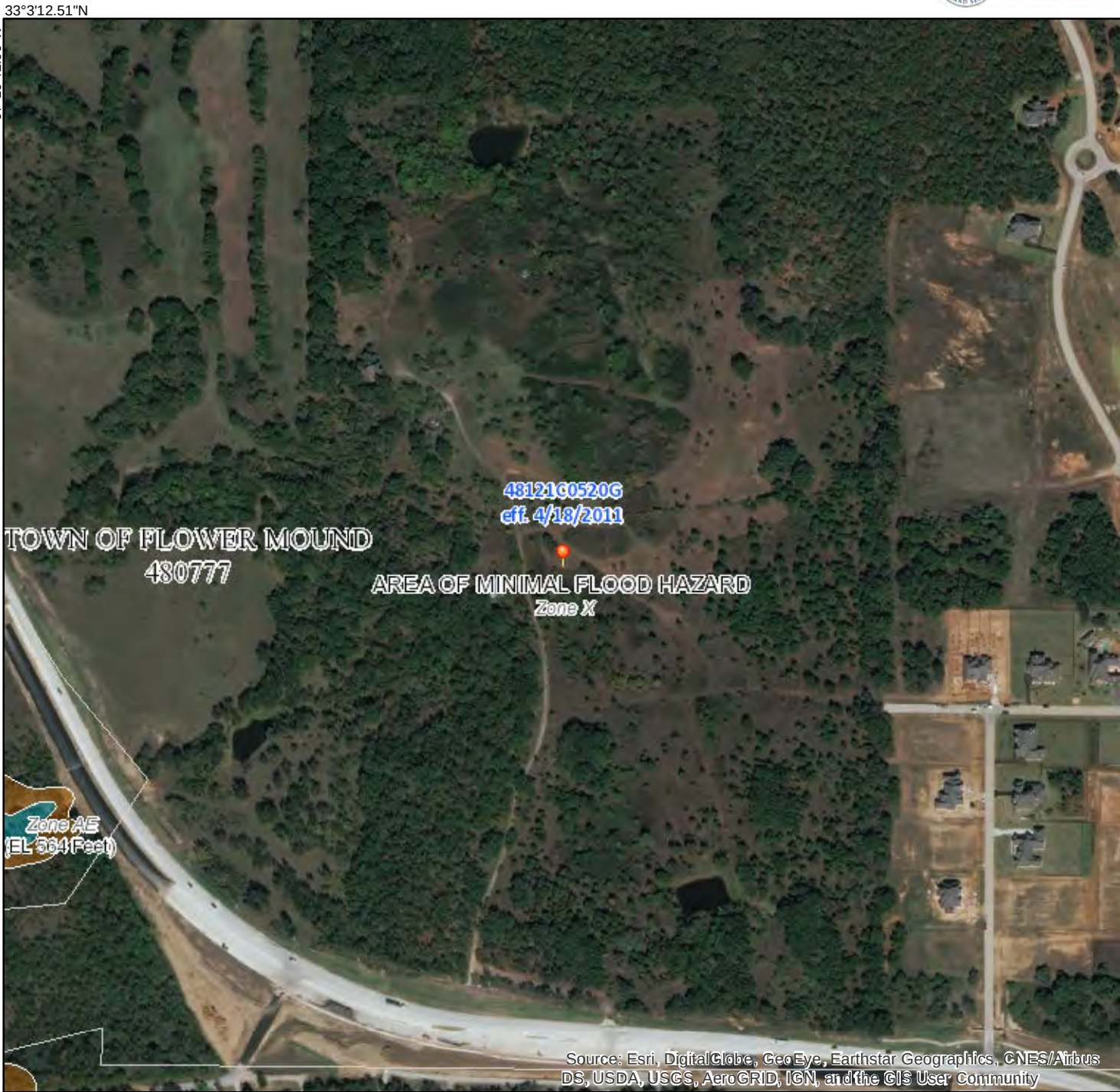
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth
		Regulatory Floodway Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/21/2018 at 12:58:05 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Pepper Creek Ranch City/County: Denton Co. Sampling Date: 1-12-18
 Applicant/Owner: _____ State: TX Sampling Point: TP-1A
 Investigator(s): ABrewer Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2
 Subregion (LRR): LRR-J Lat: 33.05027 Long: -97.17519 Datum: NAD83
 Soil Map Unit Name: Brown-Rayex-Ambrey complex 2-15% slopes NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: <u>small excavation w/ breached dike interrupts stream on forming channel</u>		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>50</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. <u>Celtis laevigata</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Azalea</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>50</u>)				
1. <u>C. laevigata</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Azalea</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
_____ = Total Cover				Hydrophytic Vegetation Indicators: ____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% ____ 3 - Prevalence Index is ≤3.0 ¹ ____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Elymus virginicus</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
Woody Vine Stratum (Plot size: <u>50</u>)				
1. <u>Smilax</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>96</u>				
Remarks: _____				

1-12-18

SOIL

Sampling Point: TP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 5/3	50					Silty	
	10YR 5/2	40						
	10YR 5/3	10						
5-12	10YR 6/6	100					Lo Silty	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR F)
☐ 1 cm Muck (A9) (LRR F, G, H)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR I, J)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (LRR G)
☐ High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Dry-Season Water Table (C2)
☐ Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surface (B8)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3) (where tilled)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

 Surface Water Present? Yes _____ No ☒ Depth (inches): _____
 Water Table Present? Yes _____ No ☒ Depth (inches): _____
 Saturation Present? Yes _____ No ☒ Depth (inches): _____
 (includes capillary fringe)
Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: DE depression, Boundary impoundment.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Pepper Creek Ranch City/County: Denton Co. Sampling Date: 1-12-18
 Applicant/Owner: _____ State: TX Sampling Point: TP-24
 Investigator(s): A. Brewer Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2-3
 Subregion (LRR): LRR-J Lat: 33.05266 Long: 97.17372 Datum: NAD83
 Soil Map Unit Name: Gasil fine sandy loam 1-3% slopes NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: <u>Upper edge of plot 2 in low area on East side, above stream.</u>		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>30</u>) 1. <u>Cephalanthus occidentalis</u> <u>20</u> <u>Y</u> <u>OBL</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Andropogon virginicus</u> <u>2</u> <u>N</u> <u>FACU</u>				Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Junco validus</u> <u>15</u> <u>Y</u> <u>FACW</u>				
3. <u>Dicentra sp</u> <u>10</u> <u>Y</u> <u>-</u>				
4. <u>Panicum sp.</u> <u>2</u> <u>N</u> <u>-</u>				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30</u>) 1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
% Bare Ground in Herb Stratum <u>71</u> <u>0</u> = Total Cover				
Remarks: <u>Trees in separate community. No O² or F on Dicentra or Panicum. Assumed FAC to FACW</u>				

SOIL

Sampling Point: TP-2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix		Redox Features			Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%					
0-4	2.5Y 4/2	60	10YR 5/8	30		C	PL	intermediate loamy sand	
	10YR 7/3	10							
4-11	2.5Y 5/8	70						silty clay	
	2.5Y 6/4	30							
11-14	2.5Y 5/3	80	10YR 4/6	20				silty loam damp	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 1 cm Muck (A9) (LRR I, J)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Dark Surface (S7) (LRR G)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)	☐ High Plains Depressions (F16)
☐ Stratified Layers (A5) (LRR F)	☐ Loamy Gleyed Matrix (F2)	☐ (LRR H outside of MLRA 72 & 73)
☐ 1 cm Muck (A9) (LRR F, G, H)	☒ Depleted Matrix (F3)	☐ Reduced Vertic (F18)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (TF2)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (TF12)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)	☐ Other (Explain in Remarks)
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	☐ High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
☐ 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of two required)
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Invertebrates (B13)	☐ Sparsely Vegetated Concave Surface (B8)
☐ Saturation (A3)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Dry-Season Water Table (C2)	☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ (where tilled)
☐ Drift Deposits (B3)	☐ (where not tilled)	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☒ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☒ FAC-Neutral Test (D5)
☐ Water-Stained Leaves (B9)		☐ Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? Yes ☐ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 15' upslope Barnyardgrass, Andropogon virginicus + Q. stellata and Quercus macrocarpa dominant - hydrology missing.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: pepper Creek Ranch City/County: Denton Co. Sampling Date: 1-18-18
 Applicant/Owner: _____ State: TX Sampling Point: TP-23
 Investigator(s): A. Brewer Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Broad gentle Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR): LRR-J Lat: 33.05223 Long: 97.17393 Datum: NAD83
 Soil Map Unit Name: Garsil fine sandy loam 3-8% slopes NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: <u>upslope from ES-11 + between it and swale discharging to pond.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. <u>Ulmus americana</u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>30</u>) <u>70</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Ulmus americana</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Cornus drummii</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5</u>) <u>35</u> = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Rubus sp.</u>	<u>2</u>	<u>N</u>	<u>—</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: <u>30</u>) <u>2</u> = Total Cover				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. <u>Sarothamnus hirsutus</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>98</u> <u>5</u> = Total Cover				
Remarks: _____				

SOIL

Sampling Point: TP-2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-4	10YR 4/3	50	10YR 4/6	20	C	PL	scallo	
	10YR 4/2	30						
4-12	10YR 4/3	60	10YR 4/6	2	C	pr	lo sand	
	10YR 5/3	38						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR F)
☐ 1 cm Muck (A9) (LRR F, G, H)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

- ☐ 1 cm Muck (A9) (LRR I, J)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (LRR G)
☐ High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Dry-Season Water Table (C2)
☐ Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surface (B8)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3) (where tilled)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____ (includes capillary fringe)Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Pepper Creek Ranch City/County: Denton Co Sampling Date: 1-12-18
 Applicant/Owner: _____ State: TX Sampling Point: TP-2C
 Investigator(s): A. Brewer Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Broad shale Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR): LRR J Lat: 33.05219 Long: -97.17342 Datum: NAD 83
 Soil Map Unit Name: Basal fine sandy loam 1-3% slopes NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. <u>H. americana</u>	<u>7</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>7</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>30</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>H. americana</u>	<u>1</u>	<u>N</u>	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>1</u> = Total Cover Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Cynodon dactylon</u>	<u>60</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Rubus sp.</u>	<u>40</u>	<u>Y</u>	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
<u>100</u> = Total Cover Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No _____
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____ = Total Cover				

Remarks: Rubus sp. did not key to species in Texas Flora or Illustrated Flora of N. Cent. Texas. Cultivar assumed.

SOIL

Sampling Point: TP-2C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/3	70	10YR 4/6	5	C	PL	10 Sa	
	10YR 5/4	25						
3-12	10YR 5/3	98	10YR 2 5/8	2	C	PL	11	
12-14	10YR 4/1	70	10YR 4/6	10	C	PL	5a Cl	
	10YR 5/3	15	10YR 3/1	5	C	PL		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) (LRR F) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 1 cm Muck (A9) (LRR F, G, H) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | ☐ High Plains Depressions (F16) |
| ☐ 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) |

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Aquatic Invertebrates (B13) |
| ☐ Saturation (A3) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Water Marks (B1) | ☐ Dry-Season Water Table (C2) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | (where not tilled) |
| ☐ Algal Mat or Crust (B4) | ☐ Presence of Reduced Iron (C4) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- (where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Figure 19–7 Rainfall documentation worksheet

Rainfall Documentation
(use with photographs)

Date: January 12, 2018

Weather station: WETS Roanoke; F6 DFW Landowner: _____ Tract no.: _____

County: Denton State: TX

Soil name: _____ Growing season: _____

Photo date: _____

Long-term rainfall records								
Month	3 yrs. in 10 less than	Normal	3 yrs. in 10 more than	Rain fall	Condition dry, wet, normal	Condition value	Month weight value	Product of previous two columns
1st prior month*	<u>Dec</u>	<u>1.57</u>	<u>2.96</u>	<u>3.61</u>	<u>4.56</u>	<u>Wet</u>	<u>3</u>	<u>3</u>
2nd prior month*	<u>Nov</u>	<u>1.69</u>	<u>3.01</u>	<u>3.60</u>	<u>0.81</u>	<u>Dry</u>	<u>1</u>	<u>2</u>
3rd prior month*	<u>Oct</u>	<u>1.85</u>	<u>3.80</u>	<u>4.64</u>	<u>2.12</u>	<u>Normal</u>	<u>2</u>	<u>2</u>
							Sum	<u>13</u>

* Compared to photo date

Note: If sum is

6 - 9 then prior period has been
drier than normal

10 - 14 then prior period has been
normal

15 - 18 then prior period has been
wetter than normal

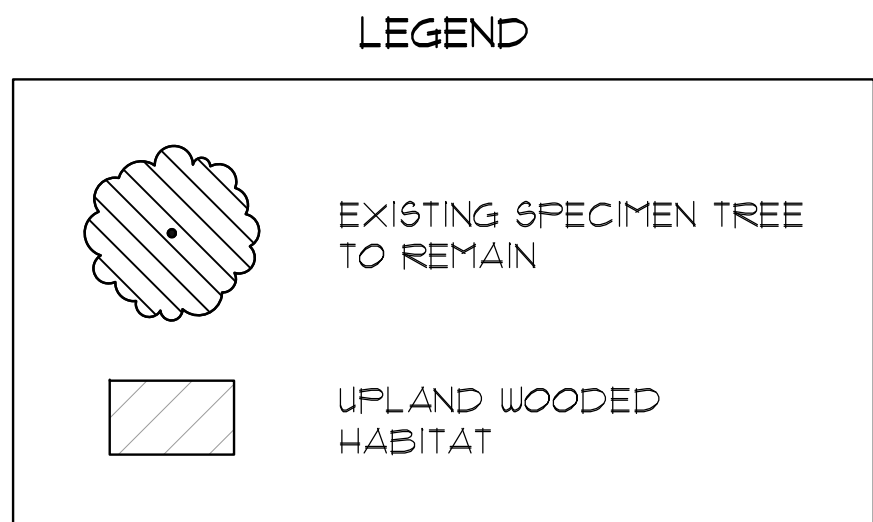
Condition value:

Dry =1

Normal =2

Wet =3

Conclusions: Period before field work was normal with a single event on December 19 heavily influencing overall trend and 0.18-inch of rain reported on January 7, 2018 before site work.



GA&

TREE SURVEY

rawn By: MH
ate: 01/15/2018
cale: 1"=80'
evisions:
2/23/2018
3/23/2018

TS1



TREE CHART

	TREE #	CAL. "	COMMON NAME	BOTANICAL NAME	NOTES	HEALTH	PROTECTED	SPECIMEN	REMOVED
1	610	26.5	BLACKJACK OAK	Quercus marlandica		Good	Yes	Yes	No
2	617	25.5	POST OAK	Quercus stellata		Good	Yes	Yes	No
3	618	21	BLACKJACK OAK	Quercus marlandica		Good	Yes	Yes	No
4	623	22	POST OAK	Quercus stellata		Good	Yes	Yes	No
5	632	26	POST OAK	Quercus stellata		Good	Yes	Yes	No
6	643	19.5	BLACKJACK OAK	Quercus marlandica	X2	Good	Yes	Yes	No
7	645	19	HICKORY	Carya texana	X2	Good	Yes	Yes	No
8	652	33	POST OAK	Quercus stellata	MT	Good	Yes	Yes	No
9	653	29.5	POST OAK	Quercus stellata		Good	Yes	Yes	No
10	660	28	POST OAK	Quercus stellata	MT	Good	Yes	Yes	No
11	663	27	BLACKJACK OAK	Quercus marlandica	MT	Good	Yes	Yes	No
12	665	26	POST OAK	Quercus stellata	MT	Good	Yes	Yes	No
13	671	24	POST OAK	Quercus stellata		Good	Yes	Yes	No
14	672	24	POST OAK	Quercus stellata		Good	Yes	Yes	No
15	690	21.5, 14	BLACKJACK OAK	Quercus marlandica	MT	Good	Yes	Yes	No
16	695	22	POST OAK	Quercus stellata		Good	Yes	Yes	No

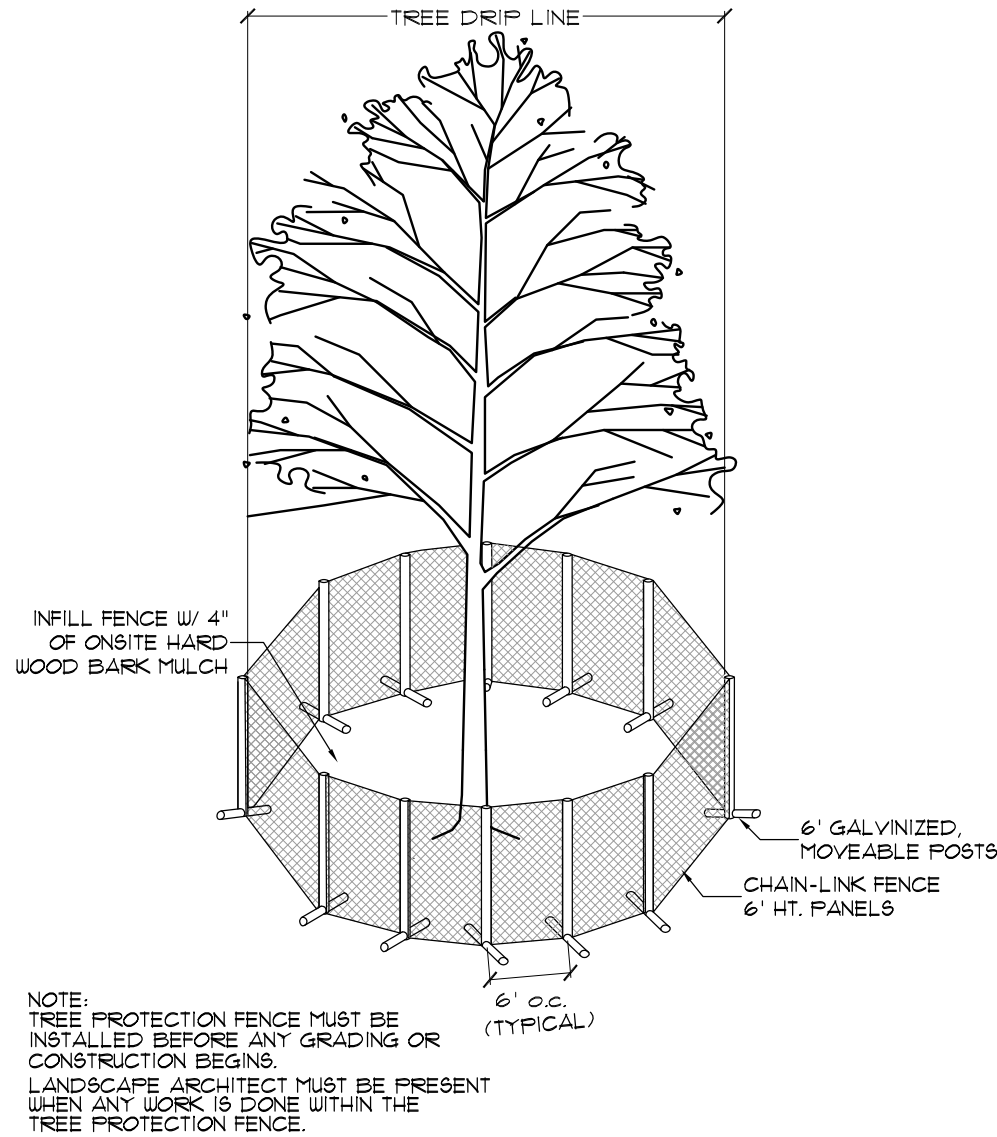
NOTES:

SPECIMEN TREES WITHIN (50) FEET OF THE CENTERLINE OF THE PROPOSED ROADS HAVE BEEN INCLUDED ON THIS TREE SURVEY.

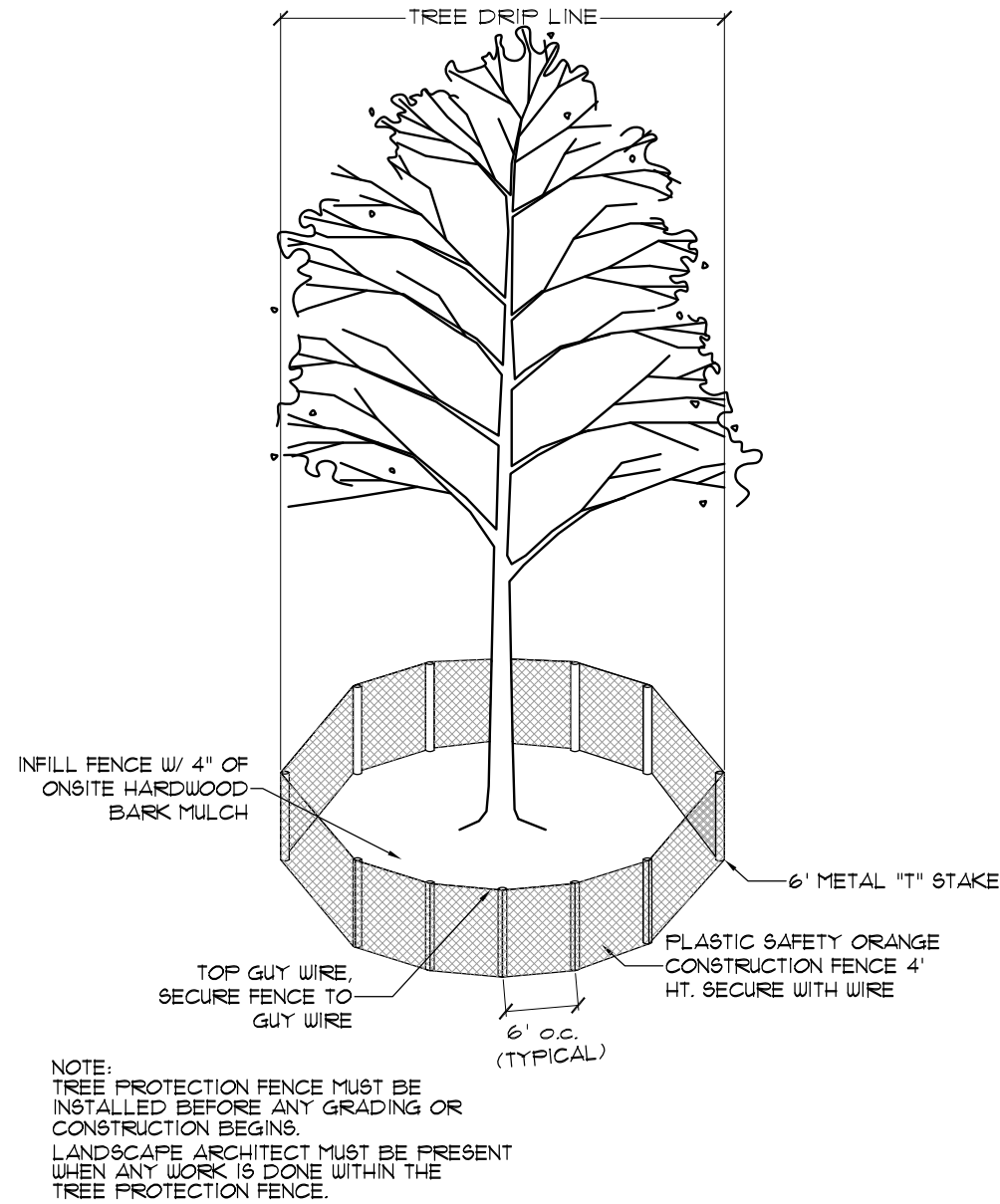
THERE ARE (10) PROTECTED TREES WITHIN (50) FEET OF THE CENTERLINE OF THE PROPOSED ROADS.

TREE PRUNING, REMOVAL AND PROTECTION MEASURES

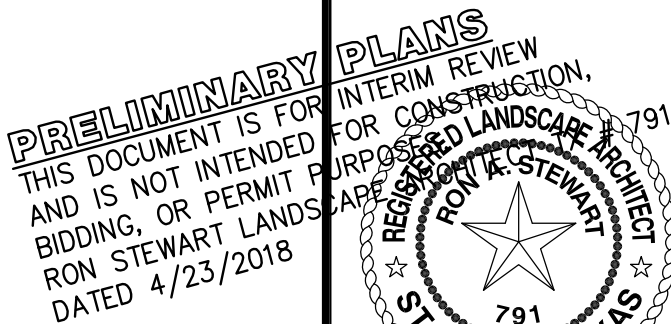
- A. QUALITY ASSURANCE
- 1) Comply with applicable Federal, state, county and local regulations governing landscape work.
 - 2) employ only experienced personnel. Provide adequate supervision by qualified foreman.
- B. JOB CONDITIONS
- 1) Coordination: Coordinate and cooperate with other contractors to enable the work to proceed as rapidly and efficiently as possible.
 - 2) In order to minimize conflict, secure from the Construction Manager copies of layout drawings showing the location of all underground utility lines and other structures
- C. PRODUCTS
- 1) MULCH: Double shredded hardwood mulch free of sticks, dirt and other debris and derived from the site clearing.
- D. DEFINITIONS
- 1) CRZ: Critical Root Zone: The soil space directly under the canopy of any tree, extending out at least 7 feet from the trunk or 2/3 the distance to the dripline, whichever is greater.
 - 2) TPZ: Tree Protection Zone: The entire soil space located directly under the dripline of any tree (the entire dripline).
 - 3) CRS: Complete Root System: The soil space directly under the dripline of any tree and an additional 7 feet beyond said dripline.
 - 4) TPF: Tree Protection Fence: The orange safety barrier netting that shall extend around the entire circumference of the tree at the TPZ.
- E. PRE-CONSTRUCTION TREE PRUNING
- 1) Personnel Qualifications: All pruning shall be performed under the supervision of an international Society of Arboriculture (ISA) Certified Arborist.
 - 2) All trees within the project area shall be pruned to:
 - (i) Clear the crown of diseased, crossing, weak and dead wood to a minimum of 1 ½ inches in diameter
 - (ii) Provide 14 feet of vertical clearance over streets and 8 feet over sidewalks.
 - (iii) Remove stubs, cutting outside the woundwood tissue that has formed around the branch.
 - (iv) Reduce end weight on heavy, horizontal branches by selectively removing small diameter branches, no greater than 2 to 3 inches, near the ends of the scaffolds.
 - 3) Pruning cuts shall be made in accordance with ANSI 300 Pruning Standard and work shall be performed in accordance with ANSI Z133.1 Safety Standards. Pruning shall be in accordance with ISA's Best Management Practices: Tree Pruning
 - 4) No more than 20 percent of live foliage shall be removed from any tree.
 - 5) Brush shall be chipped and chips shall be spread underneath trees within the tree protection zone to a maximum depth of 4 inches, leaving the trunk clear of mulch.
- F. TREE REMOVAL
- 1) Trees preservation requires a commitment to preserving and maintaining retained trees, as well as removal of any unsuited trees within the Project Area.
 - 2) All wood debris from all tree removals at the Project Site is to be chipped and stored on site for use in the tree preservation efforts at the discretion of the Landscape Architect.
 - 3) The limits of all tree protection zones shall be staked in the field and observed by all contractors,
 - 4) Any brush clearing required within the tree protection zone shall be accomplished with hand operated equipment.
 - 5) Trees to be removed from within the tree protection zone shall be removed under the supervision of a Certified Arborist. The trees shall be cut near ground level and the stump ground out.
- G. TREE PROTECTION
- 1) Before beginning work, the Project Manager, Landscape Architect and/or Owner of their agents are required to meet at the site to review all work procedures, access routes, storage areas, and tree protection measures. Any intended construction activities inside the TPZ shall be clearly outlined.
 - 2) Fences shall be erected to protect trees to be preserved prior to construction equipment arriving on the Project Site. Fences will define the specific protection zone for each tree or group of trees.
 - 3) Fences are to be maintained and remain until all site work has been completed and final landscape operations begin. Fences may not be relocated or removed without written permission from the Landscape Architect. Fences may be constructed from 6 "T" stakes and orange web fence material
 - 4) All trees to be preserved shall have 4 inches of hardwood mulch applied inside the tree protection zone. This hardwood mulch shall be replenished as necessary to maintain a 4 inch depth.
 - 5) Construction trailers, traffic and storage areas must remain outside fenced areas at all times.
 - 6) Tree roots extend out in a straight, radial direction from the tree much like spokes on a wheel (to a depth generally not exceeding 24"). All underground utilities and drain or irrigation lines shall be routed outside the tree protection zone. If lines must traverse the protection area, they shall be tunneled or bored under the tree. Trenches "air dug" with Air Spade (registered trademark) or similar technology are the exceptions. Irrigation line may routed in any direction outside the dripline of retained trees. Irrigation lines inside the dripline must be in a straight, radial direction towards the tree trunk and terminate in a dead end sprinkler head no greater than 7 feet from a tree trunk (irrigation lines shall not in any way bisect and therefore damage the "spoke-like" root system).
 - 7) No materials, equipment, spoil, or waste or washout water may be deposited, stored, or parked within the tree protection zone.
 - 8) If unintentional injury should occur to any tree during construction, it shall be reported to the Landscape Architect within six hours so that remedial action can be taken. Timeliness is critical to tree health. The cost of any remedial treatments will become the burden of the offending contracting company.
 - 9) Any grading, construction, demolition, or other work that is expected to encounter tree roots must be monitored by the Landscape Architect. Specific locations or tree tag numbers should be identified



1. SPECIMEN TREE PROTECTION FENCE
1/4"=1'



1. PROTECTED TREE PROTECTION FENCE
NTS



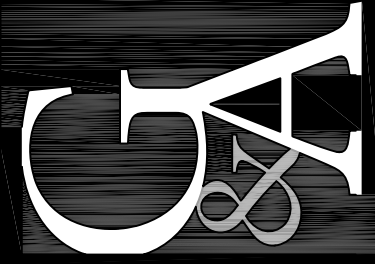
Drawn By: MH
Date: 01/15/2018
Scale: #####
Revisions:
02/23/2018
03/23/2018

OWNER/DEVELOPER
GREG ANDERSON
9040 HAWLEY
FORT WORTH, TX 76244
Ph. 435-228-4200
Contact: Greg Anderson

17286

TS3

SITE PLANNING CIVIL ENGINEERING PLANNING
CONSULTANTS, LLC
LAND SURVEYING LANDSCAPE ARCHITECTURE
111 Hillside Drive • Lewisville, TX 75067
P: 972.436.9712 • F: 972.436.9715
144 Old Town Blvd. North, Ste 2 • Argyle, TX 76226
P: 940.240.1012 • F: 940.240.1028
TBP&S Firm No. 1798 TBP&S Firm No. 00047700



PEPPER CREEK RANCH
94.810 Acres
in the
MCGOWAN & PITCOCK SURVEY, ABSTRACT NO. 959
TOWN OF FLOWER MOUND
DENTON COUNTY, TEXAS

TREE SURVEY

PEPPER CREEK RANCH



ENVIRONMENTAL CONSERVATION COMMISSION AGENDA ITEM NO. 4

REGULAR ITEM

DATE: May 1, 2018
FROM: James Hoefert, Environmental Review Analyst
PRESENTER Jameson Pinson, with G&A Consultants, LLC
ITEM: **Consider an application for a tree removal permit for two additional (2) specimen trees on property proposed for development as Lakeside Crossing. The property is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive.**

BACKGROUND INFORMATION:

The Lakeside Crossing development is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive. The site is approximately 12.000 acres in size. The site is currently master planned for Campus Commercial land use within the Lakeside Business District Area Plan and is zoned for both residential and non-residential uses within Planned Development District No. 153 (PD-153). According to the tree survey for the project, the site contains thirty (30) specimen trees. ECC recommended approval to a request to remove Tree #83, a 25.5" post oak, at the April 3, 2018, meeting. The applicant is requesting to remove two (2) additional specimen trees from the residential use portion of the site, which were discovered after the last ECC meeting. The specimen trees proposed for removal are both in good condition and located within the Buildable Area.

The following is a list of the two (2) additional specimen trees requested for removal:

Tree #4804 – 25" post oak

Tree #4805 – 22.5" post oak

The two (2) additional specimen trees proposed for removal are located within an area of the site designated as Upland Habitat, however the approved Planned Development for this site requires that for any specimen tree being requested for removal, one mitigation tree shall be planted in close proximity to where the specimen tree was removed along with the required specimen tree mitigation associated with the approved removal as established in Chapter 94 "Trees". The developer has already mitigated for the Upland Habitat impacts within the residential portion of this development, so no additional tree mitigation will be required for the requested removal of these two (2) specimen trees.

CITIZEN FEEDBACK: As of April 26, 2018, staff has not received feedback related to this item.

ALTERNATIVES/OPTIONS: N/A

FISCAL IMPACT: N/A

LEGAL REVIEW: N/A

ATTACHMENTS:

1. Letter from the applicant indicating the reason(s) for the tree removal permit request.
2. Specimen tree removal permit application.
3. Photograph of the specimen trees proposed for removal.

4. Photograph of approved signage onsite.
5. Tree Survey.

RECOMMENDATION: Move to recommend approval or denial of the requested permit for the removal of two additional (2) specimen trees on property proposed for development as Lakeside Crossing. The property is generally located south of Lakeside Parkway along and between Long Prairie Road and Northwood Drive.



SITE PLANNING CIVIL ENGINEERING PLATTING
CONSULTANTS, LLC
 LAND SURVEYING LANDSCAPE ARCHITECTURE

TBPE Firm No. 1798

TBPLS Firm No. 10047700

April 10, 2018

Jimmy Hoefert, Environmental Review Analyst
 Town of Flower Mound
 1001 Cross Timbers Road, Suite 2330
 Flower Mound, TX 75028

Reference: Tree Removal Permit Application
 Lakeside Crossing
 Town of Flower Mound
 Denton, Texas

Dear Mr. Hoefert;

On behalf of the owner/developer on the aforementioned property, we are requesting that (2) specimen trees (as outlined on the attached tree removal exhibit), as defined in the TOFM Tree Preservation Code, be removed. The trees are being requested to be removed due to the infrastructure and onsite grading which thereby means the subject development cannot reasonably be developed, based on economic and/or practical considerations, without removal of the trees included in the permit application.

TREE TABULATION FROM THE SPECIMEN TREE SURVEY

Total specimen trees on site to be saved: 27

TREE TAG #	CALIPER (")	COMMON NAME
1245	26	Post Oak
1246	23	Post Oak
1247	22	Post Oak
1379	22.5	Post Oak
1380	22.5	Post Oak
1382	23	Post Oak
1924	25	Post Oak
2158	21	Cedar Elm
2159	30	Post Oak
2160	32	Post Oak
2326	25	Post Oak
2327	22	Post Oak
2328	22	Post Oak
2330	23	Post Oak
2331	22	Post Oak
2332	28	Post Oak
2333	23	Post Oak
3758	27.5	Post Oak
3760	29	Post Oak
3762	25	Post Oak

3763	31	Post Oak
3765	31	Post Oak
3766	28	Post Oak
3770	29	Post Oak
3771	26	Post Oak
4803	25	Post Oak
4806	24	Post Oak

Total specimen trees on site to be removed due to infrastructure and grading: 3

TREE TAG #	CALIPER (")	COMMON NAME
83	25.5	Post Oak
4804	25	Post Oak
4805	22.5	Post Oak

The mitigation requirement for tree #4804 & #4805 will include (2) 3" cal. Mitigation tree to be planted near the locations of the removed specimen trees in addition to the upland wooded habitat mitigation fee for residential development. (0.882 of an acre) which will be paid at the pre-con (\$13,250).

Due to preexisting conditions, infrastructure, grading, Town of Flower Mound Engineering Standards, and site conditions, these specimen trees are not able to be saved. The site plan before you appears to be the most beneficial for taking into account all the site constraints and opportunities.

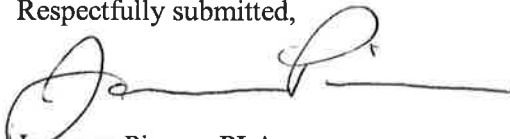
We are requesting the following specimen tree to be removed:

Tree #4804, 25" Post Oak & Tree # 4805, 22.5" Post Oak

Thank you for your consideration.

Based on the above data, I respectfully ask that the aforementioned trees be allowed to be removed from the site.

Respectfully submitted,



Jameson Pinson, PLA
Landscape Architect, TX #2826

Town of Flower Mound
Application for:
TREE REMOVAL PERMIT

(Effective for Developments submitted 10/6/08 - present)

Check one: ☐ Protected Tree ☒ Specimen Tree ☐ Historic Tree

1. Applicant- Note: Must be a licensed Landscape Architect or Registered Arborist

Name:

JAMESON PINSON, P.L.A.
G & A CONSULTANTS, LLC

Address:

111 HILLSIDE DRIVE
LEWISVILLE, TX 75057

Phone:

940-240-1012

Applicant's Legal Interest in the Property:

LANDSCAPE ARCHITECT

2. Property Owner(s)

Name(s): TROY LEWIS

Address: 311 SOUTH OAK ST
ROANOKE, TX 76262

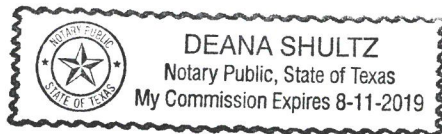
3. Location and Legal Description of Property:

500 LONG PRAIRIE ROAD
FLOWER MOUND, TX 75022
DENTON COUNTY

4. Owner's Authorization of Representation

I, Troy Lewis, the owner of the above described real property, do hereby authorize G&A CONSULTANTS to represent my interests and to file an Application for Tree Removal Permit for said real property, pursuant to the terms and provisions of Chapter 94 (Trees), of the Land Development Regulations of the Town of Flower Mound, Texas Code of Ordinances.

[Signature]
Signature of Owner



11249284

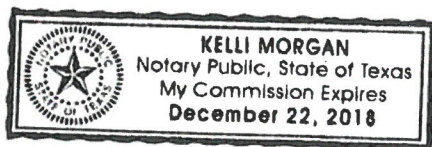
Given Under My Hand and Seal of Office
This the 10 Day of April, 2018
[Signature]
Notary Public
In and For Denton County, Texas.

5. Applicants Affidavit- Note: Applicant must be a licensed Landscape Architect or Registered Arborist.

Subject to criminal penalties contained in Subpart B, the Land Development Regulations of the Town of Flower Mound, Texas Code of Ordinances, I _____, do hereby swear or affirm that all of the Information contained herein and submitted herein is, to the best of my knowledge, true, correct and complete and that no false, misleading or incomplete information has been intentionally provided or submitted with this Application for a Tree Removal Permit.

[Signature]
Signature of Applicant

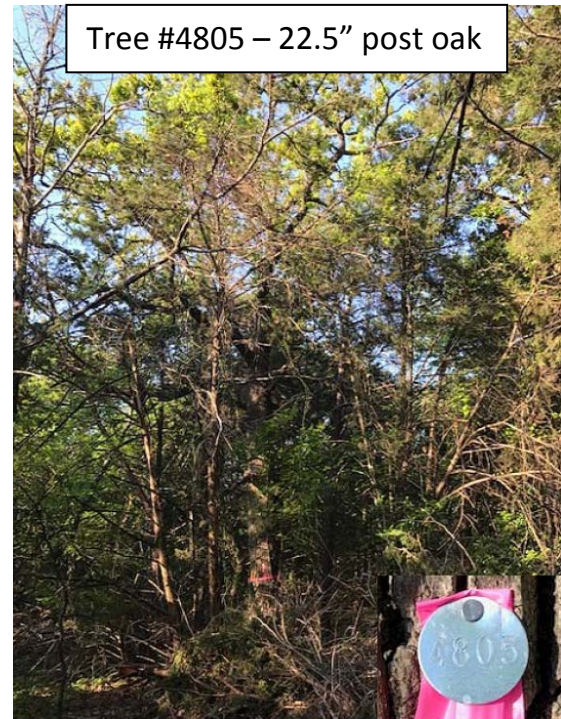
Landscape Architect License No. 2826
State of Licensure TEXAS
Or ISA Certified Arborist No. _____



Given Under My Hand and Seal of Office
This the 10 Day of April, 2018
[Signature]
Notary Public
In and For Denton County, Texas

6. Received by Town of Flower Mound on (Date) 4/16/2018 by (initials) JRH.

Lakeside Crossing -
Specimen trees proposed for removal



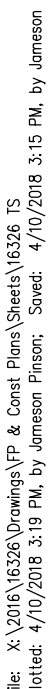
Tree Removal Request Signage

Along Long Prairie Rd.



Along Northwood Dr.





OWNER/DEVELOPER
NEWSTREAM COMMERCIAL
311 S. OAK STREET, SUITE 250
ROANOKE, TX 76262
Ph. 817-602-0578
Contact: MR. TROY LEWIS

T1.0

File: X:\2018\16326\Drawings\TP & Civil Plans\Drawings\16326.TS
Plotted: 4/10/2018 4:15 PM, by: Jannet Parris, Scale: 4/10/2018 3:15 PM, by: Jannet Parris

TREE CHART											
LIST #	TREE #	CAL. "	COMMON NAME	BOTANICAL NAME	PROTECTED	SPECIMEN	REMOVED	CREDITS	DEBITS	UWH	REMARKS
1	1	7	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
2	2	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
3	3	6	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
4	4	6.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
5	5	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
6	6	13	AMERICAN ELM	Ulmus americana	Yes	No	Yes	0	1	No	
7	7	7	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
8	8	6.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
9	10	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
10	11	8.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
11	12	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
12	13	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
13	14	9.5	AMERICAN ELM	Ulmus americana	Yes	No	Yes	0	1	No	
14	25	8.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
15	26	7.5	TEXAS ASH	Fraxinus texensis	Yes	No	Yes	0	1	No	
16	27	13.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
17	28	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
18	32	6	TEXAS ASH	Fraxinus texensis	Yes	No	Yes	0	1	No	
19	35	8	TEXAS ASH	Fraxinus texensis	Yes	No	Yes	0	1	No	
20	83	25.5	POST OAK	Quercus stellata	Yes	Yes	Yes	0	0	Yes	
21	225	17.5	POST OAK	Quercus stellata	Yes	No	No	4	0	No	
22	226	19	POST OAK	Quercus stellata	Yes	No	No	4	0	No	
23	227	13	POST OAK	Quercus stellata	Yes	No	No	4	0	No	
24	228	21	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
25	229	20.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
26	230	14	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
27	231	13.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
28	232	14.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
29	233	17.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
30	234	17.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
31	235	18	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	Damaged
32	236	21.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	Damaged
33	237	17.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	Damaged
34	238	17.5	POST OAK	Quercus stellata	Yes	No	No	0	0	No	Street buffer
35	240	6.5	POST OAK	Quercus stellata	Yes	No	No	0	0	No	Street buffer
36	241	6	POST OAK	Quercus stellata	Yes	No	No	0	0	No	Street buffer
37	242	7	POST OAK	Quercus stellata	Yes	No	No	0	0	No	Street buffer
38	243	7.5	POST OAK	Quercus stellata	Yes	No	No	0	0	No	Street buffer
39	244	20.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
40	245	10	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
41	246	9.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
42	248	7	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
43	250	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
44	251	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
45	252	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
46	263	9.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
47	279	20.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
48	280	20.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	Damaged
49	282	6.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
50	283	6.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
51	284	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
52	285	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
53	286	12	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	Multi-trunk

***UWH = UPLAND WOODED HABITAT

***UPLAND WOODED HABITAT MITIGATION FOR RESIDENTIAL PORTION OF THE DEVELOPMENT (0.882 OF AN ACRE) WILL BE PAID AT THE PRE-CON (#3250).

***TREE MITIGATION WILL BE ADDRESSED BY PLANTING MITIGATION TREES LABELED AS (MIT) ON LANDSCAPE PLAN.

TREE MITIGATION CALCULATION:

Total # of specimen trees:	30
Specimen trees to be removed:	3 (2 located on res.)
Specimen tree mitigation (2X cal. inches removed):	25.5"x2=51"
*All specimen trees preserved were Post Oaks.	
Protected trees located outside UWH:	70
Protected tree mitigation:	62
Protected tree credits (less post oaks) w/in B.A.:	1
Credits for post oak trees preserved w/in B.A.:	42
Total required tree mitigation:	36+3 near removal location
Total provided 3" cal. mitigation trees	39 (3" cal.) trees

LIST #	TREE #	CAL. "	COMMON NAME	BOTANICAL NAME	PROTECTED	SPECIMEN	REMOVED	CREDITS	DEBITS	UWH	REMARKS
54	287	11	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
55	288	6	CEDAR ELM	Ulmus crassifolia	Yes	No	No	1	0	No	
56	289	8	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
57	290	5.5	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
58	291	8	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
59	292	5	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
60	293	4	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
61	294	4.5	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
62	295	5.5	HACKBERRY	Celtis occidentalis	No	No	No	0	0	No	
63	298	7	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
64	299	9	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
65	300	10.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	Multi-trunk
66	301	6	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
67	302	10	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
68	303	10.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
69	304	7	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
70	311	7	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
71	314	12	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
72	315	9	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
73	316	6	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
74	317	7.5	POST OAK	Quercus stellata	Yes	No	Yes	0	1	No	
75	321	12	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	Multi-trunk
76	322	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
77	323	8	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
78	324	11.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
79	325	10	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
80	326	15.5	CEDAR ELM	Ulmus crassifolia	Yes	No	Yes	0	1	No	
81	1245	26	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
82	1246	23	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
83	1247	22	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
84	1379	22.5	POST OAK	Quercus stellata	Yes	Yes	No	0	0	No	Street buffer
85	1380	22.5	POST OAK	Quercus stellata	Yes	Yes	No	6	0	No	
86	1382	23	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
87	1924	25	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
88	2158	21	CEDAR ELM	Ulmus crassifolia	Yes	Yes	No	0	0	Yes	
89	2159	30	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	Health Issue
90	2160	32	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
91	2326	25	POST OAK	Quercus stellata	Yes	Yes	No	6	0	No	Cavity/Bee Hive
92	2327	22	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
93	2328	22	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
94	2330	23	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
95	2331	22	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
96	2332	28	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
97	2333	23	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
98	3758	27.5	POST OAK	Quercus stellata	Yes	Yes	No	6	0	No	
99	3760	29	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
100	3762	25	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	Cavity/ Storm Damage
101	3763	31	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
102	3765	31	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
103	3766	28	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
104	3770	29	POST OAK	Quercus stellata	Yes	Yes	No	6	0	No	
105	3771	26	POST OAK	Quercus stellata	Yes	Yes	No	6	0	No	Health Issue
106	4803	25	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	
107	4804	25	POST OAK	Quercus stellata	Yes	Yes	Yes	0	0	Yes	
108	4805	22.5	POST OAK	Quercus stellata	Yes	Yes	Yes	0	0	Yes	
109	4806	24	POST OAK	Quercus stellata	Yes	Yes	No	0	0	Yes	

OWNER/DEVELOPER
NEWSTREAM COMMERCIAL
311 S. OAK STREET, SUITE 260
ROANOKE, TX 76262
Ph. 817-602-0578
Contact: MR. TROY LEWIS

SITE PLANNING CIVIL ENGINEERING PLATING
CONSULTANTS, LLC
LAND SURVEYING LANDSCAPE ARCHITECTURE
111 Hillside Drive • Lewisville, TX 76057
P: 972.436.9712 • F: 972.436.9715
144 Old Town Blvd. North, Suite 200 • Angleton, TX 77626
P: 940.240.1012 • F: 940.240.1028
TBPE Firm No. 1798 TBPLS Firm No. 1047702

G&A

LAKESIDE CROSSING
LAKESIDE CROSSING
Lot 1, Block A
in the
12.00 Acres
J.N. TANNER HILL SURVEY, ABSTRACT NO. 1252
TOWN OF FLOWER MOUND
DENTON COUNTY, TEXAS

TREE SURVEY



Drawn By: -
Date: 10/30/2017
Scale: #####
Revisions:
11/20/2017
12/14/2017
01/17/2018
01/22/2018
02/08/2018
03/21/2018

16326

T1.1

LAKESIDE CROSSING



ENVIRONMENTAL CONSERVATION COMMISSION AGENDA ITEM NO. 2

REGULAR ITEM

DATE: May 1, 2018

FROM: Matthew Green, Environmental Review Analyst

ITEM: **Consider a recommendation to Town Council of a resolution to adopt the Denton County Greenbelt Plan.**

BACKGROUND INFORMATION: This agenda item is to consider recommending the adoption of the Denton County Greenbelt Plan ("Plan") as a tool for preserving greenbelts.

The population of Denton County is currently growing at a rapid pace, and as such land uses are changing in the county. As developable space decreases, the County's streams, creeks, and other aquatic resources will be stressed by these land use changes. To address the foreseeable land use changes, the Upper Trinity Conservation Trust, Denton County, and Upper Trinity Regional Water District commissioned a study to inventory and analyze greenbelts in Denton County. The Plan was then created to assist in protecting greenbelts along streams that flow into the local water supply reservoirs.

The Plan helps set a common vision for preserving greenbelts and provides strategies for municipalities, developers, landowners, and residents to use in protecting these valuable natural assets. Preserving the natural areas adjacent to the creeks and other waterways is vital to having dependable, clean drinking water. As water flows across the land, these greenbelts help filter out harmful pollutants before the water enters the creeks and lakes.

The Plan is a voluntary guide to preserving and protecting local greenbelt areas and encourages all of the stakeholders to coordinate the planning and preservation of greenbelts according to a common vision. A coordinating committee will help oversee implementation of the Plan, and will be made up of and represent the many stakeholders in Denton County. A link to the Plan has been provided to the Commission members and the Commission also received a presentation from Blake Alldredge with the Upper Trinity Regional Water District at the April 3, 2018, regular meeting of the ECC.

CITIZEN FEEDBACK: As of April 26, 2018, staff has not received feedback related to this item.

ALTERNATIVES/OPTIONS: N/A

FISCAL IMPACT: N/A

LEGAL REVIEW: N/A

ATTACHMENTS:

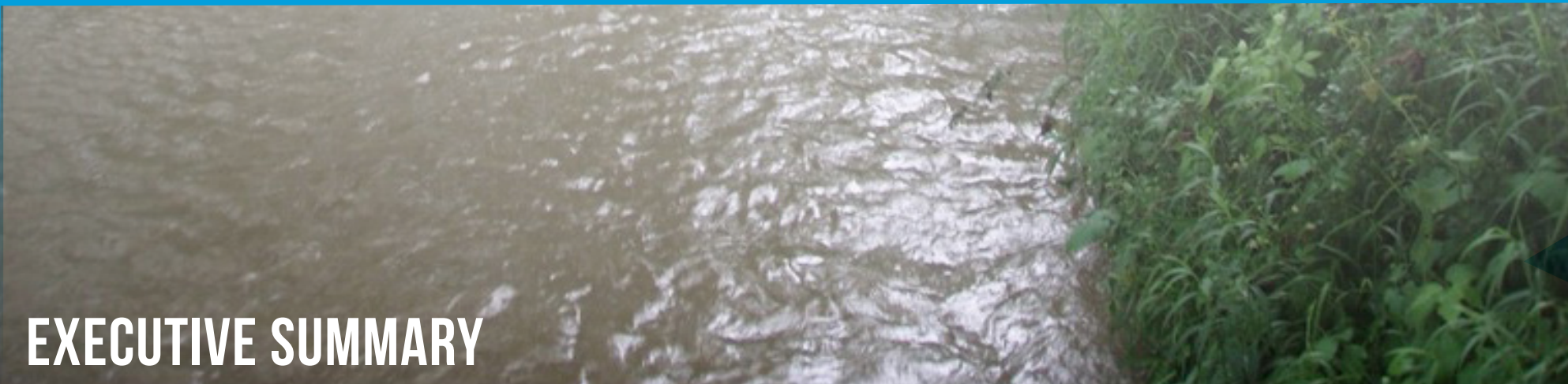
1. Executive Summary of the Denton County Greenbelt Plan.
2. Draft Resolution.

RECOMMENDATION: Move to recommend a resolution to adopt the Denton County Greenbelt Plan.



DENTON COUNTY GREENBELT PLAN

For The Future



EXECUTIVE SUMMARY



ACKNOWLEDGEMENTS

Denton County Greenbelt Plan Sponsors

Denton County

Denton County, under leadership of the County Judge and Commissioners, provides planning and other services for the rural and urban areas of the County; and, coordinates transportation and public works needs among communities as the population continues to grow - - while keeping sustainability, environmental protection, and quality of life as priorities.

Upper Trinity Regional Water District

Upper Trinity Regional Water District was created by the Texas Legislature in 1989 for the benefit of cities and utilities in the Denton County area. Its mandate is to develop regional plans for water and wastewater services on a wholesale basis to cities and utilities in the Denton County area. Upper Trinity is a leader in public education about water conservation and water quality protection.

Acknowledgements

Many stakeholders participated and contributed to the development of the Denton County Greenbelt Plan - - some by participating in public meetings and others through the website or online surveys. The Plan Sponsors would like to express appreciation to all stakeholders who participated. Active stakeholders included:

- Denton County Residents
- City / Town Officials and Staff
- University of North Texas – Lewisville Lake Environmental Learning Area
- Greenbelt Alliance
- North Central Texas Council of Governments
- Texas A&M AgriLife Extension Service – Denton County
- Texas A&M Forest Service
- Texas Department of Transportation
- Texas Master Naturalists
- Texas Parks and Wildlife Department
- Trust for Public Land
- and more!

Upper Trinity Conservation Trust

Created as a nonprofit 501(c)(3) land trust in 2010 by the Upper Trinity Regional Water District Board of Directors, the Conservation Trust works with communities, landowners and developers to preserve natural watershed and riparian assets within the catch basins of the District's water supply sources. The mission of the Trust is to promote the conservation and stewardship of land and water resources through educational activities, coordination with local governments, and the acquisition of land and conservation easements - - protecting water quality in our water supply basins for future generations.

Many thanks to the consultant team:

Alan Plummer Associates, Inc.

Schrickel, Rollins and Associates, Inc.





FOREWORD FROM UPPER TRINITY CONSERVATION TRUST

As land continues to be developed in Denton County, converting farms and ranches into communities, it's important to remember the role and benefits of creeks and waterways - - not only as a source of water for farm animals and wildlife, but also as a source of drinking water for our growing communities. Preserving the natural areas (greenbelts) adjacent to the creeks and other waterways is vital to having dependable, clean drinking water. As water flows across the land, these greenbelts help filter out harmful pollutants before the water enters the creeks and lakes, protecting the quality of water.

The Denton County Greenbelt Plan helps set a common vision for preserving greenbelts; and, it provides strategies for stakeholders (municipalities, developers, landowners and residents) to use in protecting these valuable natural assets. Within the mission of Upper Trinity Conservation Trust, one strategy for protecting these assets is through conservation easements. Conservation easements offer a convenient way to preserve valuable watershed areas and greenbelts - - also, wildlife habitat and family heritage lands.

Conservation easements are voluntary agreements between a landowner and a qualified land trust that enables a landowner to retain possession while protecting a designated area in perpetuity. As a nonprofit land trust, Upper Trinity Conservation Trust is available to accept conservation easements from landowners, developers and municipalities that desire to protect greenbelts and other watershed lands. Easement donors can enjoy a valuable partnership with the Trust who can help them carry out their goals that they have for their land.

The voluntary nature of the Denton County Greenbelt Plan will ensure that the municipalities, developers and others implementing it are doing so because of the great economic, environmental and social benefits for everyone in Denton County. Together, we can preserve the quality of our environment and life in Denton County and leave a legacy for future generations.



Trent Lewis

President
Upper Trinity Conservation Trust



FOREWORD FROM DENTON COUNTY

Denton County is one of the best places to live, work and raise a family. Just take a look around: a strong local economy, thriving communities, excellent educational institutions, and a rich history, and beautiful landscapes. Over the next several years, Denton County's population is expected to surpass one million people, making the County the fifth fastest growing in the State. As our County transitions to a more urban setting, we should be mindful of potential impacts on our quality of life, and to the environment, especially to protection of water quality in our local lakes - - a key source for our drinking water.

The County's long-term prosperity and success depends on an adequate and safe drinking water supply; without it, our economy cannot grow or prosper. Maintaining precious natural assets, such as greenbelts, is important to the safety and security of our water supply, and to the quality of life that residents have come to expect in Denton County. If left in their natural condition, greenbelts (the vegetated areas along creeks and streams) offer many benefits and provide a buffer between homes and the neighboring creeks. Greenbelts also provide recreational and educational opportunities to residents; and, help filter out harmful pollutants before reaching the creek.



Denton County is proud to be a sponsor of the **Denton County Greenbelt Plan** - - a voluntary guide to preserving and protecting local greenbelt areas. The Plan offers a common vision in preserving these natural assets; and, will help coordinate the roles that municipalities, developers, landowners and other stakeholders have in protecting greenbelts. Each of us can have a role in preserving and protecting greenbelts - - now, and for future generations!

A coordinating committee will help champion and oversee implementation of the Plan. The mission of the Committee will be to encourage, and work with, the many stakeholders to pursue the most effective strategies for preservation of greenbelts throughout the County. The committee will be diverse and represent the many stakeholders that makes our County so unique. Together, we can make a difference to ensure our economy continues to grow, while preserving important greenbelt areas and protecting our valuable water supply.

Now is the time to protect our natural resource assets for future generations!

Mary Horn
Denton County Judge



FOREWORD FROM UPPER TRINITY REGIONAL WATER DISTRICT

Local communities are knitted together by the many water courses that extend into and through neighborhoods, transporting water to the nearest creek or lake - - the sources of our drinking water. Please, an alert! As our region transforms from a largely rural setting to one with more urban character, it is urgent that we consider the effect on water quality and our water supply. At Upper Trinity Regional Water District, a priority goal is to safeguard our local water resources and the quality of life “right where we live”. To reach the goal, we need your help.

Now is the time to preserve natural waterways and to protect water quality in local watersheds. Greenbelts and flood plains; streams and waterways; riparian lands and wetlands - - all are irreplaceable assets. Greenbelts help protect creeks and lakes by filtering out pollutants, such as sediment, pesticides and fertilizer. Also, greenbelts are an important buffer during flood events. These critical functions are the focus of the Denton County Greenbelt Plan - - helping protect and safeguard these assets for the future. Good news: it costs very little to protect existing watershed assets - - if we do it now. In contrast, it would cost a fortune to try to restore greenbelts later, if the watershed were allowed to become impaired.

In some cases, greenbelts can help enhance the quality of life for residents by enabling hike and bike trails. Typically, greenbelts also help improve property values for nearby homes. The Greenbelt Plan will serve as a useful guide for municipalities, landowners and developers for voluntary implementation of greenbelts areas. The Plan encourages stakeholders to coordinate the planning and preservation of multi-use greenbelts according to a common vision.

If you appreciate natural greenbelt areas, we urge you to get involved, to volunteer to help. Please join in the effort to achieve sustainability of greenbelt assets in Denton County, and enhance the quality of life for all residents.

If we each do our part well, just think of the legacy you can leave for future generations!



Thomas E. Taylor
Executive Director
Upper Trinity Regional Water District



EXECUTIVE SUMMARY

DENTON COUNTY AT A POINT OF GREAT OPPORTUNITY

Denton County is growing - FAST. In less than 25 years, the population of Denton County is projected to be over 1.4 million, or double its current population. With growth, land uses will change. The rural character of the County will likely transform to urban and suburban land uses similar to what is occurring in neighboring Counties. As developable space becomes a premium, the County's streams, creeks, and other aquatic resources will be stressed from these impending land-use changes. Now is the time to initiate cooperative efforts for the protection of Denton County's water resources, especially its streams, creeks, and the Elm Fork of the Trinity River – the sources for our drinking water.

To address the foreseeable land use changes, the Upper Trinity Conservation Trust, Denton County, and Upper Trinity Regional Water District commissioned a study to inventory and analyze greenbelts along the County's major streams and the Elm Fork of the Trinity River. The major emphasis for this study was to identify existing greenbelts, opportunities for developing and expanding greenbelt corridors, and to categorize and prioritize area streams and watersheds for greenbelt preservation. This document summarizes those efforts with the overarching goal "to protect the water quality entering Denton County's three primary drinking water supply reservoirs – Lewisville Lake, Ray Roberts Lake, and Grapevine Lake." Of course, once preserved, a greenbelt offers community benefits far beyond just protection of water quality. Such drainageways flow through all communities, with many opportunities to benefit neighborhoods and Denton County as a whole.

"A greenbelt is defined as a vegetated portion of land typically adjacent to area streams, creeks, rivers or lakes that is set aside for preservation purposes."

The purpose for the Denton County Greenbelt Plan ("the Plan") is to assist in protecting the greenbelts along and associated with streams that flow into the local water supply reservoirs. *The Plan is not intended to be a regulatory document; rather, a convenient guide to encourage and enable closer coordination among stakeholders.*

Stakeholders include Denton County's municipalities, developers, citizens, and land owners. It is important to recognize the importance of our waterways and associated riparian zones, and to acknowledge the priority streams identified within the Plan. Implementation strategies are provided in the Plan to help protect the identified priority greenbelt corridors and streams for the foreseeable future. The following are highlights of the Denton County Greenbelt Plan.

"The vision for the Greenbelt Plan is to grow the economy of Denton County while conserving and preserving its existing Greenbelt assets as well as expanding Greenbelt assets throughout the County."

PRIORITY STREAMS FOR DENTON AND SURROUNDING COUNTIES

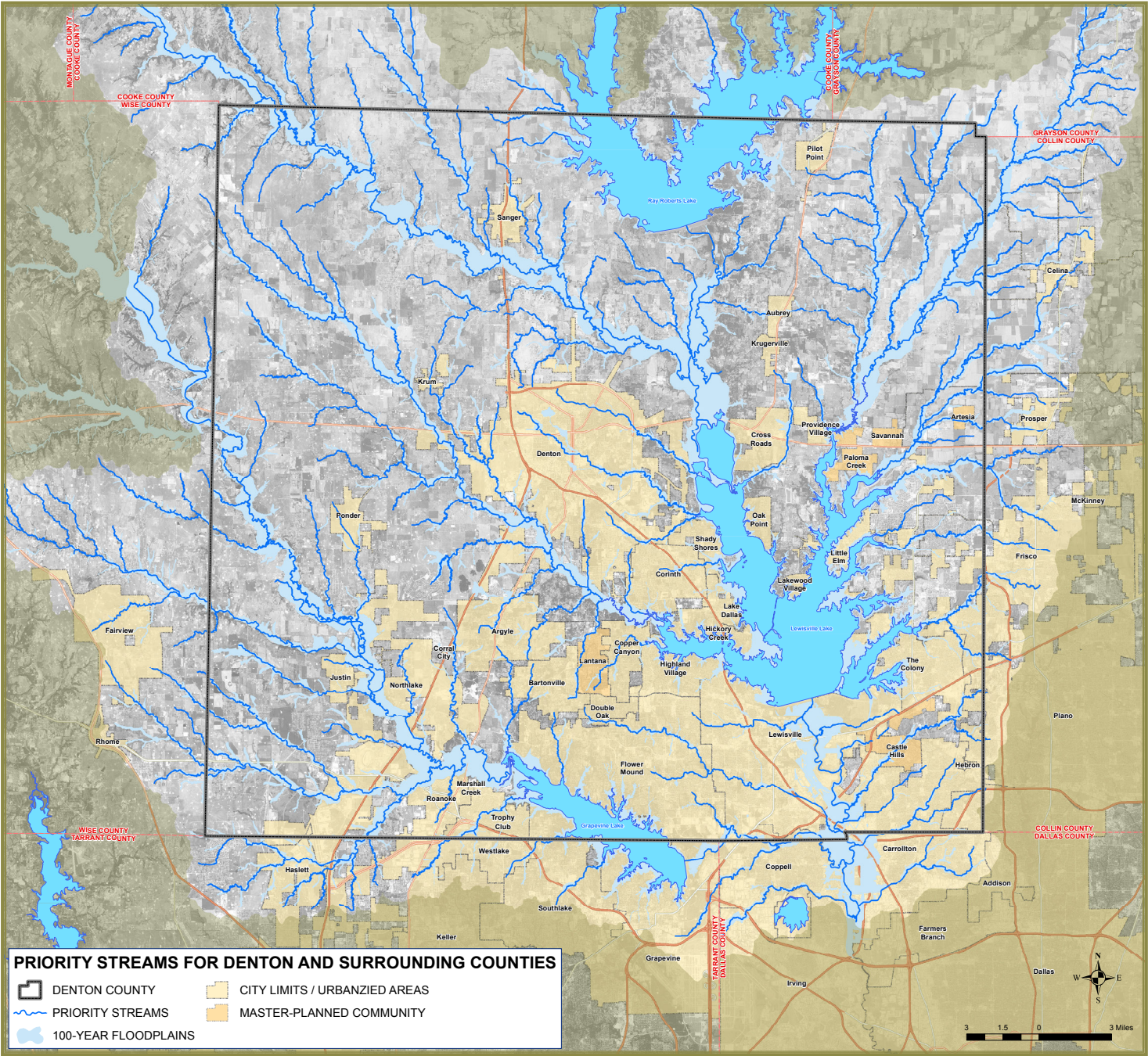


Figure ES-1: Priority Streams

GREENBELT SYSTEM COMPONENTS

Streams

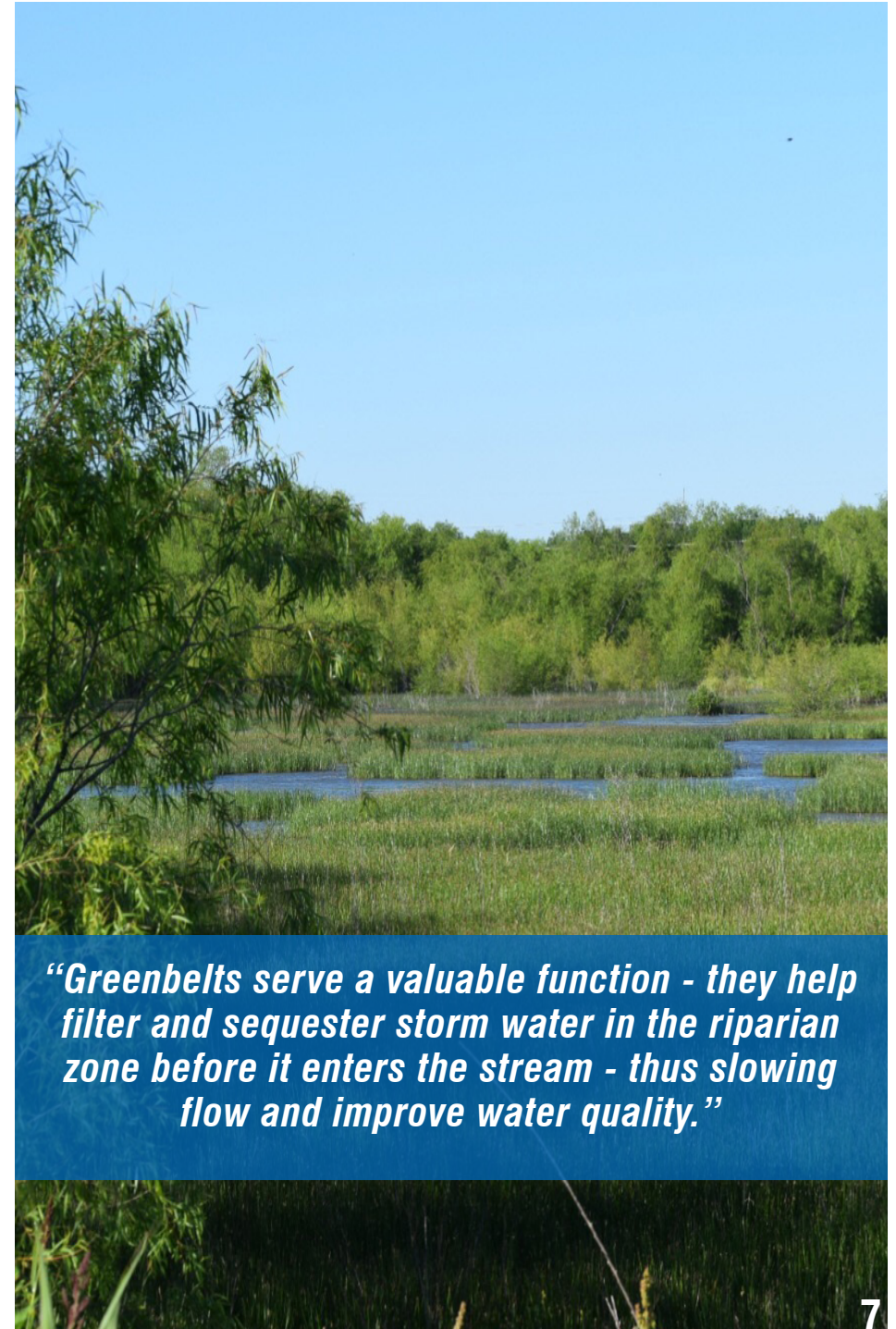
Within the Plan, approximately 1,225 miles of streams were identified as “priority streams” (Figure ES-1) both within Denton County and the adjoining Counties. These priority streams are significant contributors of water to the local water supply reservoirs. These streams are located in both urban and urbanizing areas, and in rural areas. Corridors along some of these streams already contain developments at or near the streams edge. Therefore, opportunities for greenbelt protection along these developed stream segments may be limited.

Of special note, the Plan identifies those streams that will help maintain existing greenbelts and the streams that have an opportunity to restore connections to the existing greenbelt corridors. **A compelling fact: it is much more cost effective to protect greenbelts and stream corridors now -- rather than restore greenbelts and stream corridors after they have been lost to nearby development.**

Existing Greenbelts

Several of the priority streams are flanked with significant widths of vegetation typically consisting of a mixture of trees, shrubs, and herbaceous vegetation. These heavily vegetated streams are the existing greenbelts identified within the Plan. The graphic in Figure ES-2 shows the existing greenbelt inventory.

Greenbelts serve a valuable function for all of us; they help filter and sequester storm water in the riparian zone before it enters the stream – thus slowing the flow and improving the quality of water entering the actual stream. Within Denton County, some agencies have set aside certain existing greenbelts, providing protection for water quality and riparian assets. Examples include already established linear parks, federal lands associated with the three major lakes within Denton County, and areas protected by ordinances, setbacks and dedications in the Cities of Denton and Lewisville, Town of Flower Mound, and the master-planned community of Lantana. However, a majority of the existing greenbelt opportunities lack mechanisms to protect their ecological and water quality functions.



“Greenbelts serve a valuable function - they help filter and sequester storm water in the riparian zone before it enters the stream - thus slowing flow and improve water quality.”

INVENTORY OF STREAMS WITH GREENBELT CHARACTERISTICS

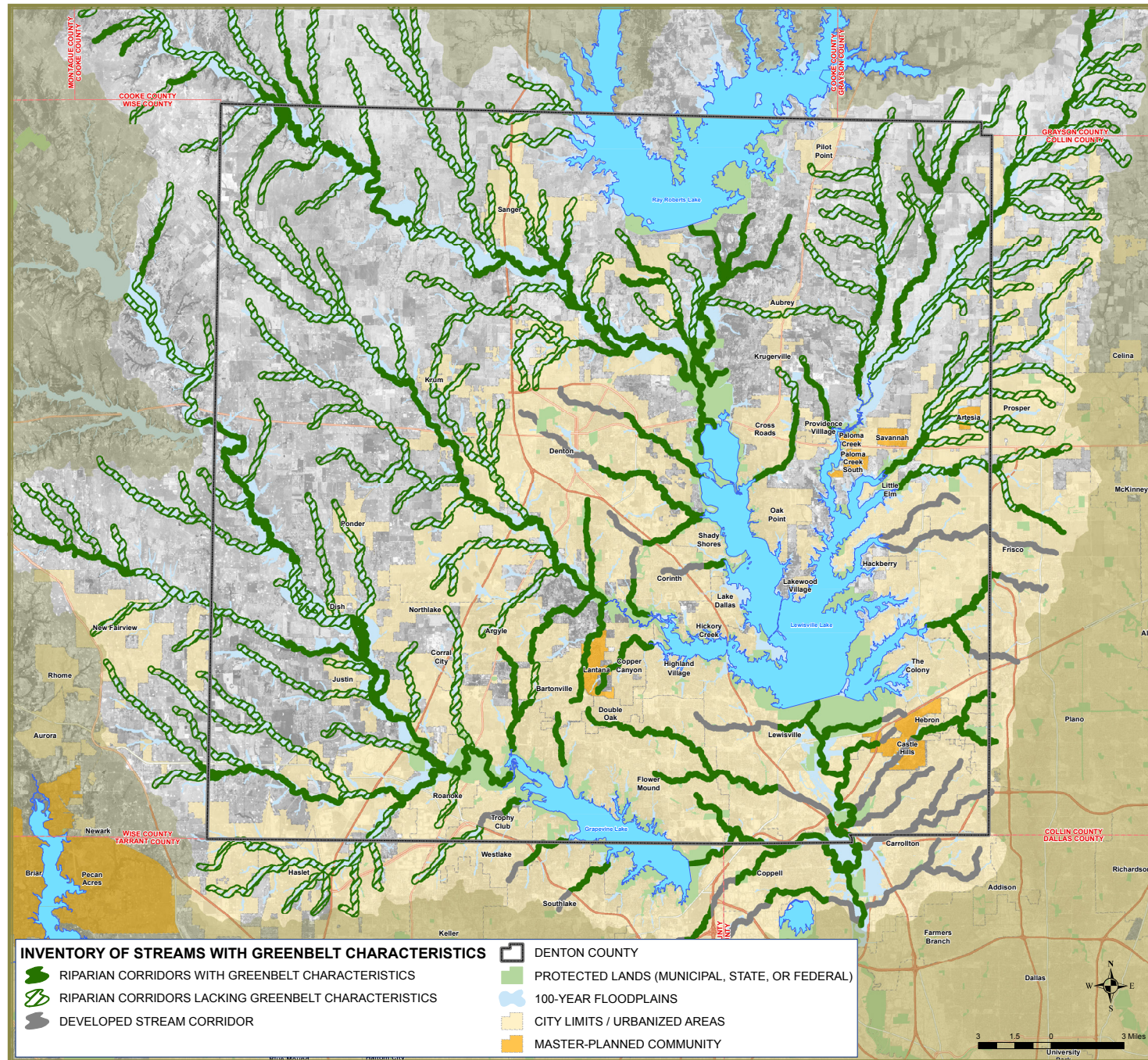


Figure ES-2: Greenbelt Inventory

GREENBELT SYSTEM OPPORTUNITIES

A majority of the priority streams identified in the Plan lack diversity of vegetation to meet the usual qualifications for greenbelt status. The vegetation surrounding these priority streams has either been greatly reduced in species composition and width, or completely removed for agricultural pursuits or for some other land use. However, all is not lost; they are still worthy of being preserved for their riparian assets and benefits.

Within the Plan, these stream segments are classified as Greenbelt Opportunities. These are the areas that need special attention and preservation to protect the quality of water and to ensure other benefits for future generations. Figure ES-4 identifies these Greenbelt Opportunities.

These Greenbelt Opportunity streams may require modifications to adjacent land uses as well as implementing protection mechanisms.

Example land use modifications include allowing vegetation to reestablish within the riparian corridor, possibly limiting or excluding cattle or other livestock from the stream corridor - - and for the long-term, providing for preservation of the riparian zone and a potential set-back for future development from the stream's edge. Design parameters for the protection of streams are provided in the document.

In summary, to protect the quality of water within local water supply reservoirs, preserving a 100-foot wide buffer or set-back from the top of stream bank is generally recommended, as illustrated in the Figure below. However, greenbelts of lesser width will yield significant benefits for water quality protection, for bank stabilization and for trails or other uses. Existing municipal ordinances in Denton County vary in specified width; and, some municipalities have different widths depending on the size of the stream. Each municipality in cooperation with development activity is encouraged to determine what is feasible for their purposes.

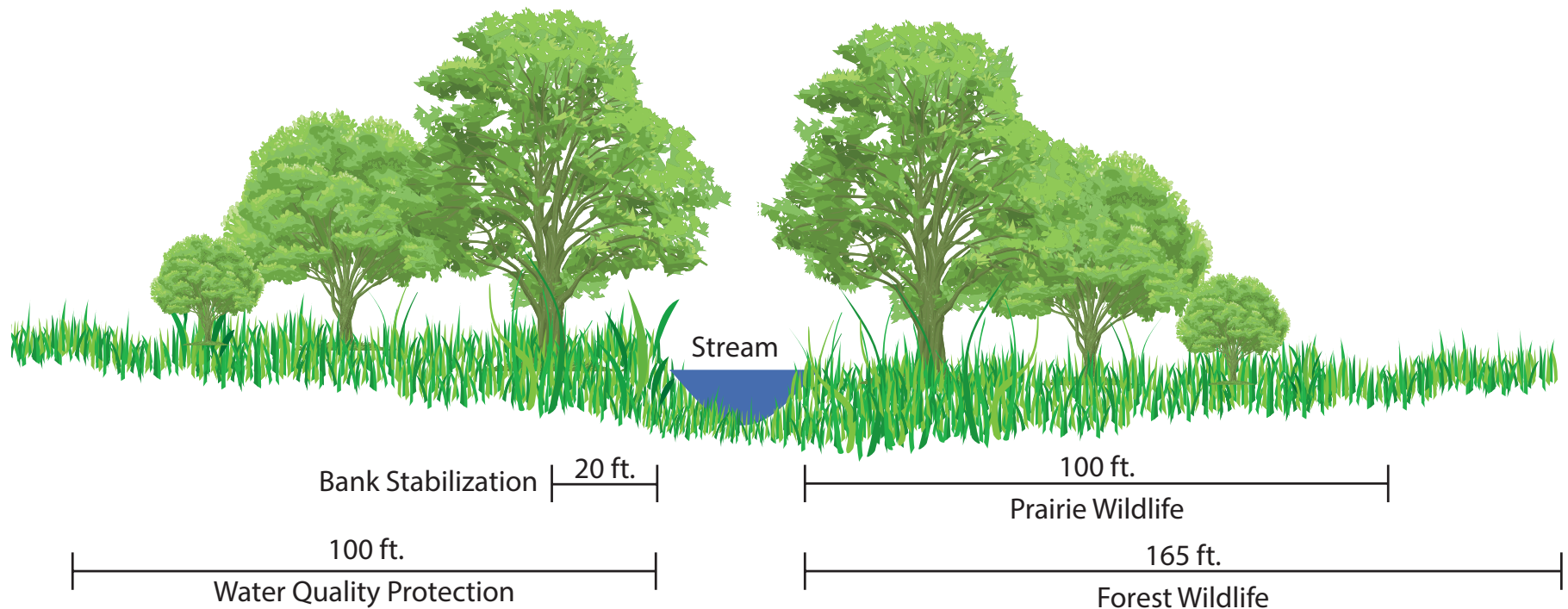


Figure ES-3: Recommended Greenbelt Corridor Width, Courtesy Texas A&M Agrilife Extension Service

GREENBELT OPPORTUNITIES

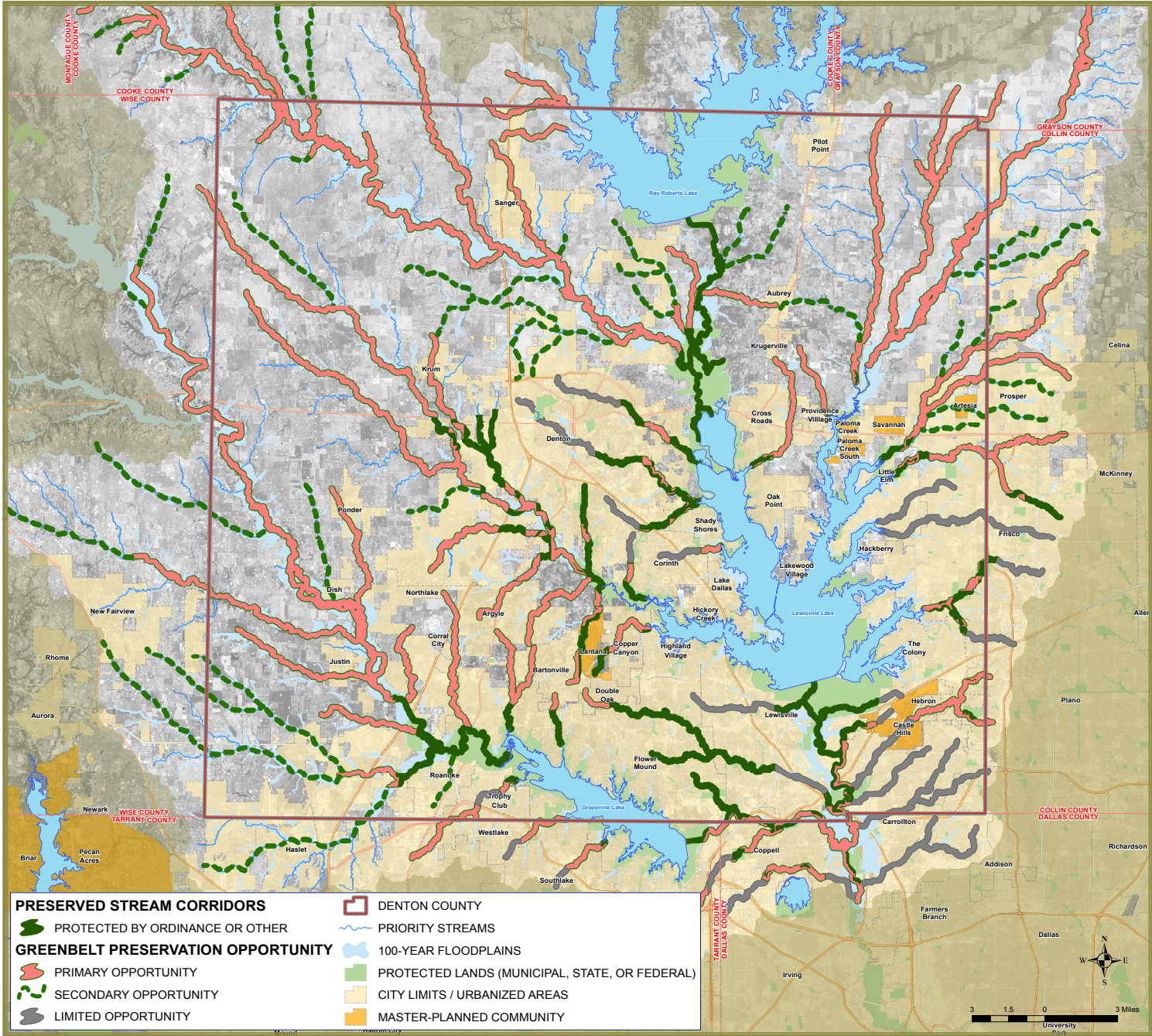


Figure ES-4: Greenbelt Opportunities

PRIORITY WATERSHEDS AND STREAMS

In the planning area, forty-one sub-watersheds to the Elm Fork of the Trinity River contribute flow directly to the three Denton County reservoirs. Within those 41 sub-watersheds, there are 73 named streams including the Elm Fork of the Trinity River. Each of the named streams, their tributaries, and their watersheds were ranked based on a high, medium, or low priority status, which translates to a timeline for implementing the Plan. The planning horizon associated with the prioritization rankings is:

1. High – 1-10 years
2. Medium – 10-20 years
3. Low – 20 years and beyond

Of the 41 sub-watersheds, 11 were ranked as high priority; and, of the 73 named streams, 26 were identified as high priority streams. Figure ES-5 shows the priority status associated with the 41 sub-watersheds and the 73 named streams and their tributaries. As shown, the majority of the high priority watersheds and streams are near the three major reservoirs and the major urban centers within Denton County.

The existing Greenbelts and Greenbelt Opportunities were then overlaid onto the prioritized watersheds and streams. This helps to identify the greenbelts in need of protection and/or preservation. Figure ES-6, on the following page, shows the highest priority watershed with existing Greenbelts and Greenbelt Opportunities identified. Each of the 41 sub-watersheds are identified in the Appendices with the existing Greenbelts and Greenbelt Opportunities shown.

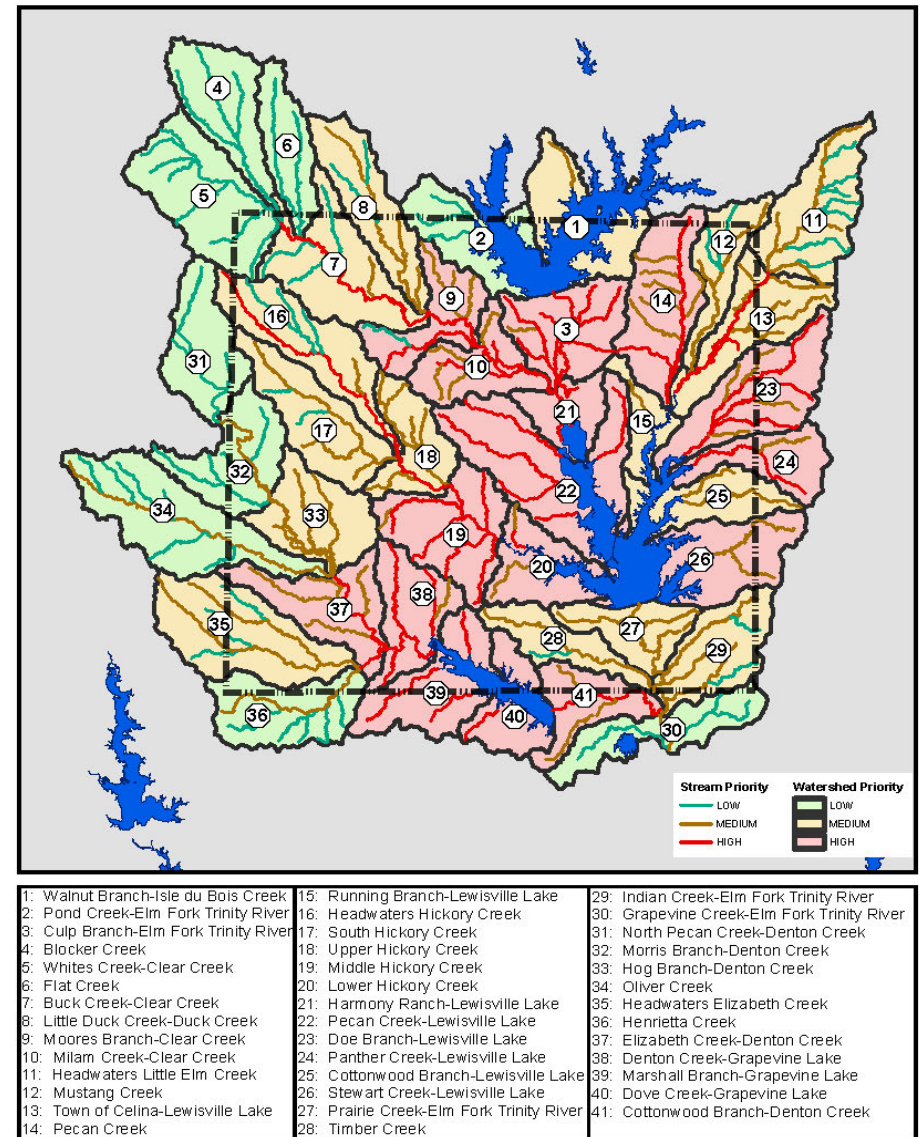


Figure ES-5 Watershed Priority Status

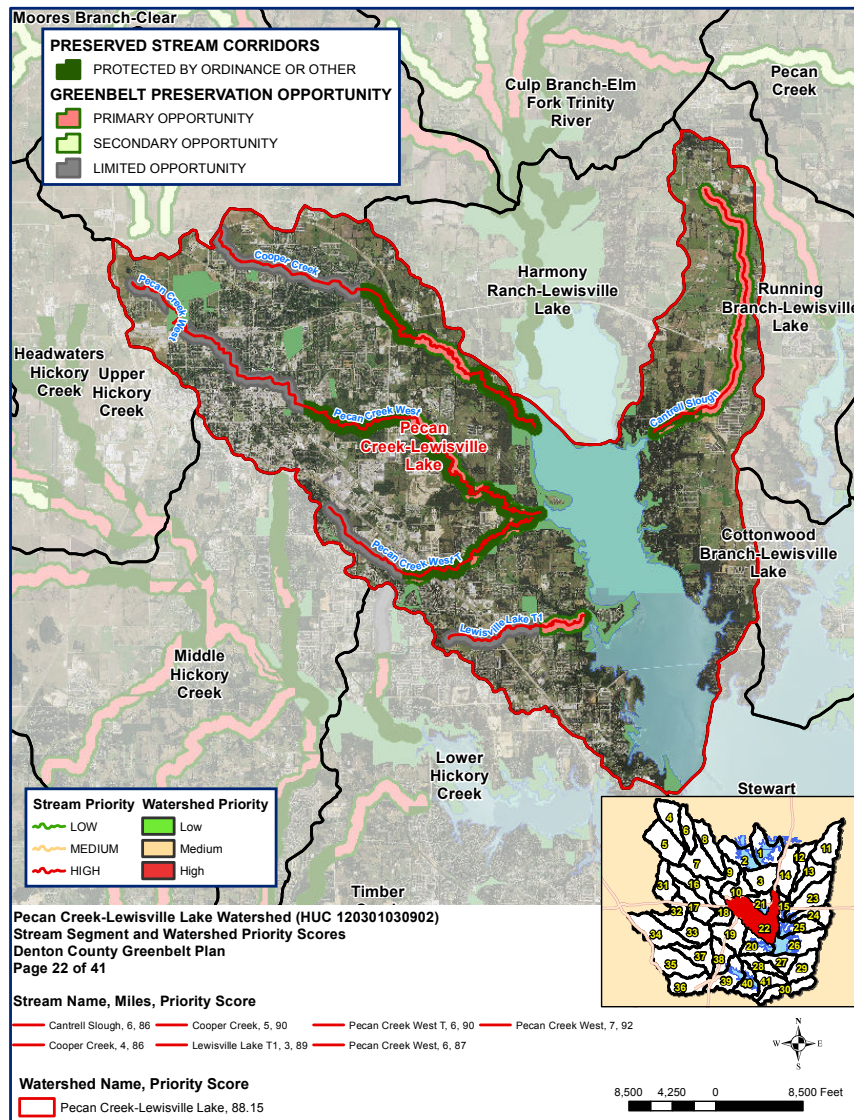


Figure ES-6: Highest Priority Watershed

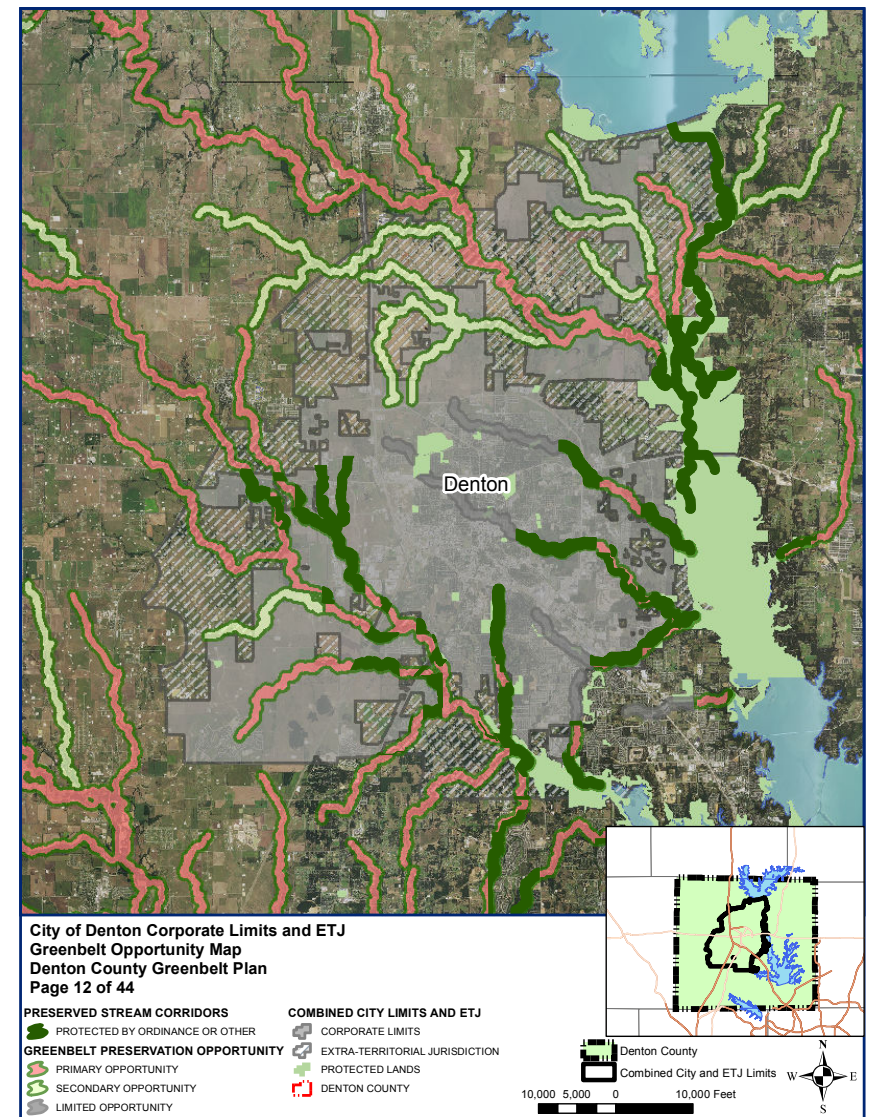


Figure ES-7: City of Denton Greenbelt Opportunity

To assist municipalities, the existing Greenbelts and Greenbelt Opportunities were superimposed onto their corporate limits and extra-territorial jurisdiction. As an example, Figure ES-7 shows the existing Greenbelts, Greenbelt Opportunities, and Developed Stream Corridors within the City of Denton.

IMPLEMENTATION

Capturing the Enthusiasm - Realizing the Vision

The Denton County Greenbelt Plan is not intended to be a regulatory document; rather, the goal for the Plan is to be a convenient guide to encourage and enable closer coordination among stakeholders. Therefore, successful implementation of the Plan, on a voluntary basis, will require strong leadership at all levels: support from County officials, and active support from local municipalities and dedicated citizens. A successful fulfillment of the Plan will depend on informed and supportive citizens and landowners, the stewardship of the County's critical natural assets - private landowners own a majority of the greenbelt corridors in Denton County. The overall, long-term vision is to grow the economy of Denton County, conserving and preserving existing natural assets, while saving and connecting greenbelts.

Implementing the Plan

Greenbelt preservation will require a concerted effort from all stakeholders, each of which may have a different role. Denton County, as well as the local municipalities have a distinct role in implementing the Plan - these entities can enact ordinances, zoning requirements or other measures that will protect greenbelt corridors within their respective jurisdictions. In addition, they can provide funding for greenbelt preservation by issuing bonds or obtaining grants. Non-profit organizations, such as the Upper Trinity Conservation Trust, and other natural resource agencies can also obtain grant funding for projects that would especially benefit landowners and other citizens through public outreach efforts.

Opportunities for leadership exist - champions for greenbelt preservation. As part of the implementation, it is recommended that a Coordinating Committee be established. To keep all stakeholders informed and connected, the Committee will have an important role - The coordinating committee would be charged with keeping all stakeholders informed and connected. The committee will have an important role in the plan's implementations as well as facilitating momentum.

To address the goal for protecting valuable watershed assets, the Plan outlines various strategies to consider in preserving greenbelts.

- Tools to facilitate preservation of Greenbelts within municipal and County jurisdictions,
- Tools for landowners to consider for greenbelt preservation efforts, and
- Funding and acquisition opportunities to help save and connect Greenbelts.

Benefits of Greenbelts

Potential benefits afforded to Denton County and its communities from the preservation of Greenbelts are numerous and quantifiable:

- Conserve the quality of water entering Denton County's water supply reservoirs, the sources of our drinking water, as the County is rapidly urbanizing,
- Increase the quality of life for Denton County residents - - by providing nature-based recreational and educational opportunities,
- Rather than barriers, greenbelts enable increased connections for both people and wildlife,
- Add zest to neighborhoods and enhance property values,
- Healthy tree roots and other vegetative material help protect homes and property by stabilizing and protecting stream banks from erosion potential,
- Increase appreciation for environmental matters through nature-based educational opportunities,
- Preserve the cultural, historical and natural landscapes of Denton County, and
- Safeguard habitat for native plants, animals and aquatic species.

Promoting and Developing Demand for Greenbelts

Education and outreach programs about greenbelts and the importance of conserving greenbelt corridors will be imperative for the success of preserving these critical resources. Within the Plan, numerous strategies are identified to provide education and outreach. The principal purpose for these efforts are to generate demand and citizen interest for greenbelts. These strategies include:

Strategy 1 – Establish a brand for the plan – Denton County For The Future



Strategy 2 – Create campaigns to promote Greenbelt awareness and preservation in Denton County and adjoining counties.

Strategy 3 – Educate, raise awareness, and increase citizen involvement in the Greenbelt preservation efforts across the County.

Strategy 4 – Collaborate with Government and Non-Government agencies and organizations to support the Greenbelt Preservation efforts.

Greenbelt Protection Measures

Protection measures need to be implemented to preserve the identified greenbelt corridors into the foreseeable future. Numerous regulations are in place on the federal and state level that protects aspects of streams; however, those regulations do not provide protections to the vegetation associated with greenbelts per se. Certain municipalities within Denton County have enacted ordinances specifically to offer protections to greenbelts. Examples include the Cities of Denton and Lewisville, and the Town of Flower Mound have ordinances in place to provide protections to Greenbelt corridors. Ordinances, in conjunction with State and Federal regulations, are excellent vehicles for protecting Greenbelts.

The Plan offers other preservation measures to consider that are not necessarily regulatory in nature. These include the establishment of Greenbelt Districts, Purchase of Development Rights, Conservation



Easements, Mitigation Banking Opportunities, In-Lieu Fee Programs, and Property Tax Exemptions. Non-profit organizations, such as the Upper Trinity Conservation Trust, specialize in these types of protection measures and can partner with the various stakeholders in Denton County to implement these needed protection measures. Specifics about these voluntary programs are outlined in the Plan.

Greenbelt Preservation for Landowners

The majority of the land occupied with existing greenbelts and Greenbelt Opportunities in Denton County is in private ownership. These landowners are key to protecting existing greenbelts on their property, as well as enable connection of Greenbelt Opportunity corridors. The Plan offers several land management suggestions for landowners to protect water quality entering the receiving streams. Management suggestions include:

- Grazing Management
- Cropland Management
- Riparian Corridor Restoration
- Invasive Species Management

Funding

Numerous funding opportunities are available to assist in the preservation of Greenbelts, including bonds, grants, and donations. Specific funding opportunities outlined in the Plan include:

- General Obligation Bonds
- Community Development Block Grants
- Development Dedications
- Recreation Grants
- Highway Grants
- 319 Grants
- Public Private Partnerships
- Donations

Other opportunities may be available that are not included in the Plan, any funding opportunity that can be applied for greenbelt protection purposes should not be discounted.

FINDING A BALANCE

Finding a balance between growth and conservation in Denton County will be a challenge. The Denton County Greenbelt Plan is a step in the direction toward finding that balance. With the existing and priority Greenbelt Corridors identified, municipal and County leaders have the tools needed to know what assets are available for protection. Also, with the Greenbelt Corridors identified, Developers have the locations of the priority Greenbelts to consider in their development plans. Finally, the landowners who have priority Greenbelt corridors located on their property have tools and mechanisms available to improve water quality and stream function within their property.

Denton County is at a point of great opportunity. Now is the time to preserve its natural assets while sustaining economic growth for the next generations to come.





DENTON COUNTY
GREENBELT PLAN
For the Future

TOWN OF FLOWER MOUND, TEXAS**RESOLUTION NO.**

A RESOLUTION OF THE TOWN OF FLOWER MOUND, TEXAS, RECOGNIZING THE NECESSITY OF PROTECTING THE NATURAL AREAS (GREENBELTS) ADJACENT TO CREEKS AND OTHER WATERWAYS; ADOPTING THE DENTON COUNTY GREENBELT PLAN ("PLAN") AS A TOOL FOR PRESERVING GREENBELTS; ENDORSING THE PLAN AS AN URGENT REGIONAL PROGRAM FOR THE COUNTY, CITIES, TOWNS AND UTILITIES TO HELP PROTECT WATER QUALITY IN LOCAL WATERSHEDS; AND EXPRESSING FLOWER MOUND'S INTENT TO PARTICIPATE IN IMPLEMENTING STRATEGIES THAT WILL PRESERVE AND PROTECT THE ENVIRONMENT AND SAFEGUARD THE PUBLIC WELFARE.

WHEREAS, the Town of Flower Mound is located in the watersheds of Grapevine Lake and the Elm Fork of the Trinity River; and

WHEREAS, the Town of Flower Mound recognizes that the long-term prosperity and success of the Town of Flower Mound depends on an adequate and safe drinking water supply, without it our economy cannot grow or prosper; and

WHEREAS, as growth and development continue across the region, population in this watershed is expected to continue to increase, rapidly transforming from a rural setting to an area with urban characteristics; and

WHEREAS, communities, including the Town of Flower Mound, are knitted together by many water courses that extend into and through neighborhoods, transporting water to the nearest creek or lake – the sources of our drinking water; and

WHEREAS, the vegetated areas along creeks and rivers (also known as greenbelts) provide a buffer between homes, farms, and the neighboring creeks; filtering out harmful pollutants, such as soil, silt, fertilizers, and pesticides before they reach the creeks and rivers – protecting the quality of water "right where we live"; and

WHEREAS, we believe that protecting and preserving local greenbelts today costs very little in comparison to restoring them in the future; and

WHEREAS, Denton County, the Upper Trinity Regional Water District, and Upper Trinity Conservation Trust developed the Plan as a coordinated effort to identify priority greenbelt areas and other related natural assets in need of preservation; and

WHEREAS, the Plan has identified priority greenbelts near the Town of Flower Mound and provides strategies that can be implemented on a voluntary basis to help protect our water supply sources; and

WHEREAS, to help champion the Plan, Denton County is creating a Coordinating Committee, which the Town of Flower Mound will be eligible to participate, as a supporter of the Plan; and

WHEREAS, it is advisable to advance the Plan in a cooperative voluntary manner with neighboring communities, considering appropriate policies and actions that will help preserve and protect water resources and enhance the quality of life for all Denton County residents.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF FLOWER MOUND, TEXAS, THAT:

SECTION 1

For the reasons enumerated above, the Town of Flower Mound hereby expresses its support for the Denton County Greenbelt Plan.

SECTION 2

The Town Council of the Town of Flower Mound does hereby adopt the Denton County Greenbelt Plan to be a convenient guide in preserving and protecting greenbelts within the Town of Flower Mound's jurisdiction – to help protect the watershed.

SECTION 3

The Town Council of the Town of Flower Mound does hereby direct its staff to review the Plan for timely recommendations and for incorporation of appropriate items into Town of Flower Mound policies, practices, and standards – enacting appropriate ordinances, zoning requirements, or other measures that will protect greenbelts within our local jurisdiction.

SECTION 4

To help achieve the preservation and protection of local greenbelts, the Town Council of the Town of Flower Mound hereby expresses its intent to participate on the Coordinating Committee to be formed by Denton County; and will work with Denton County, Upper Trinity, and other stakeholders to implement strategies and best management practices for the protection of our watershed.

SECTION 5

This Resolution shall become effective from and after its passage.

DULY PASSED AND APPROVED BY THE TOWN COUNCIL OF THE TOWN OF
FLOWER MOUND, TEXAS, BY A VOTE OF __ TO __ , ON THIS __TH DAY OF ,
2018.

APPROVED:

, MAYOR

ATTEST:

Theresa Scott, TOWN SECRETARY