

Appendix E

Supporting Documents - Part 2

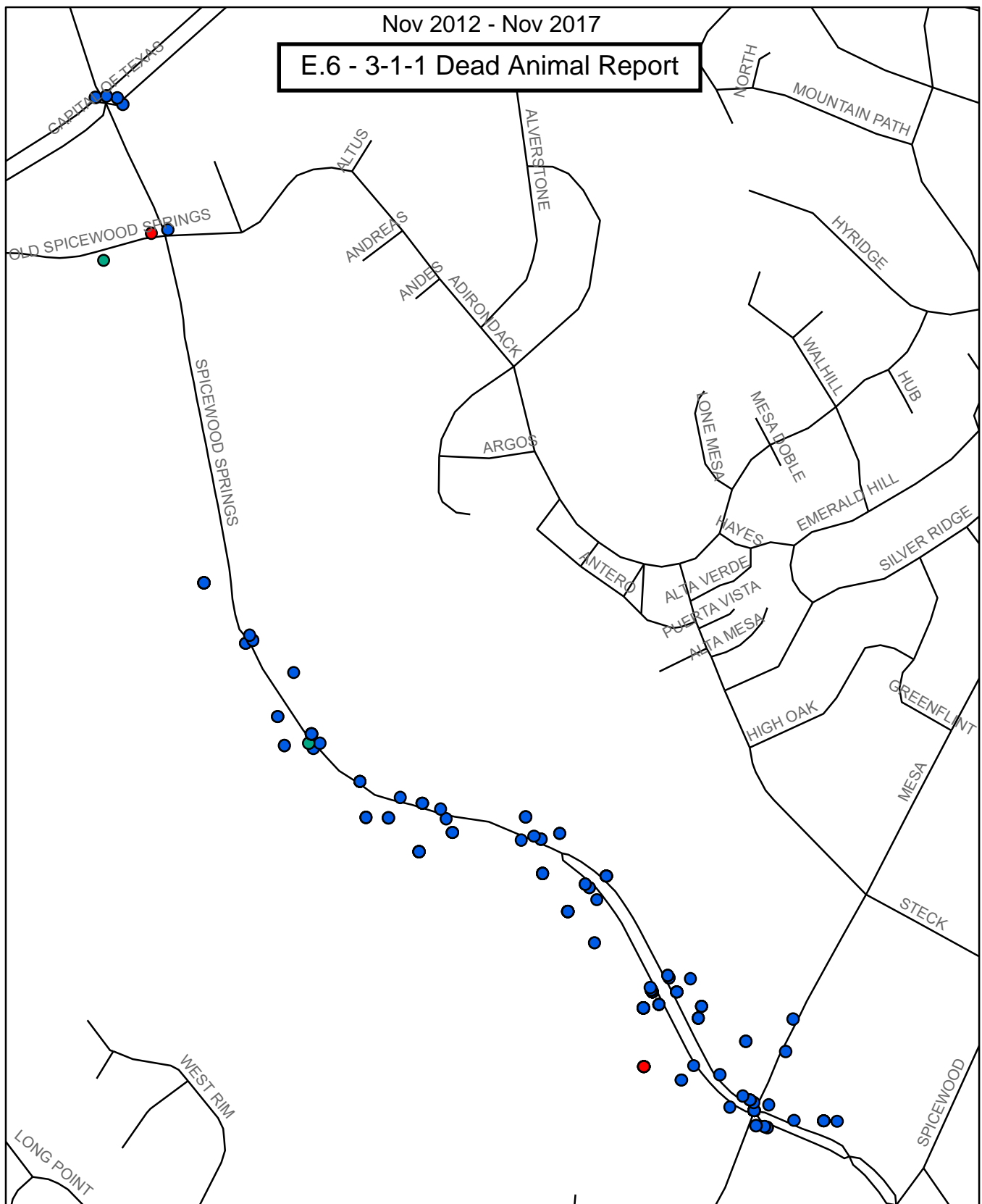
- E . 6 2017 Crash Data and 3-1-1 Dead Animal Report**
- E . 7 Traffic Volume Growth Rate Memo**
- E . 8 Maps of Edwards Aquifer Zones**
- E . 9 Balcones Canyonlands Preserve Map**
- E . 10 Federal Emergency Management Agency (FEMA)
 Maps**
- E . 11 Memo from WPD Director Regarding Rainfall
 Data Revisions**

E.6 - 2017 Crash Data

count	Street_Nam	Crash_Seve	Hour_	Day_	Month_	Time_of_Cr	Collision		Light_Cond	Weather_Co	Traffic_Co	Unit_Group
1	8300 CAPITAL OF TEXAS SB	NOT INJURED	2	MONDAY	March	3/12/2012	ANGLE - BOTH GOING STRAIGHT	angle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
2	8200 N CAPITAL OF TEXAS SB	INCAPACITATING INJURY	8	THURSDAY	March	3/15/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	RAIN	SIGNAL LIGHT	Motor Vehicle Only
3	8200 N CAPITAL TX SB	NOT INJURED	22	WEDNESDAY	April	4/11/2012	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
4	8100 MESA	POSSIBLE INJURY	15	FRIDAY	April	4/27/2012	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
5	SPICEWOOD SPRINGS	NON-INCAPACITATING	13	SATURDAY	June	6/23/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
6	8400 N CAPITAL OF TEXAS SB	NON-INCAPACITATING	21	THURSDAY	May	5/10/2012	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DARK, LIGHTED	RAIN	SIGNAL LIGHT	Motor Vehicle Only
7	SPICEWOOD SPRINGS	NOT INJURED	16	SUNDAY	May	5/20/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
8	4300 SPICEWOOD SPRINGS	UNKNOWN	4	FRIDAY	June	6/8/2012	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
9	4900 SPICEWOOD SPRINGS	NOT INJURED	17	TUESDAY	July	7/10/2012	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLOUDY	NONE	Motor Vehicle Only
10	N CAPITAL OF TEXAS SB	NOT INJURED	23	MONDAY	August	8/13/2012	ANGLE - BOTH GOING STRAIGHT	angle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
11	4300 SPICEWOOD SPRINGS	NON-INCAPACITATING	16	MONDAY	September	9/17/2012	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle/Pedestrian
12	4400 SPICEWOOD SPRING	NON-INCAPACITATING	23	MONDAY	November	11/5/2012	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, LIGHTED	CLEAR	MARKED LANES	Motorcycle Only
13	4714 SPICEWOOD SPRINGS	POSSIBLE INJURY	12	WEDNESDAY	November	11/7/2012	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
14	4800 SPICEWOOD SPRINGS	NOT INJURED	13	WEDNESDAY	November	11/7/2012	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
15	8400 N CAPITAL OF TEXAS EB	INCAPACITATING INJURY	22	THURSDAY	November	11/8/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
16	SPICEWOOD SPRINGS	POSSIBLE INJURY	18	SATURDAY	December	12/1/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
17	4300 SPICEWOOD SPRINGS	NOT INJURED	18	MONDAY	December	12/10/2012	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
18	5300 SPICEWOOD SPRING	NOT INJURED	7	TUESDAY	December	12/18/2012	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	STOP SIGN	Motor Vehicle Only
19	SPICEWOOD SPRINGS	POSSIBLE INJURY	21	WEDNESDAY	January	1/9/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
20	4400 SPICEWOOD SPRINGS	NOT INJURED	12	SUNDAY	February	2/3/2013	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
21	8105 MESA	NOT INJURED	12	SATURDAY	February	2/9/2013	ANGLE - ONE STRAIGHT-ONE STOPPED	angle	DAYLIGHT	RAIN	NONE	Motor Vehicle Only
22	8200 N CAPITAL OF TX SB	NOT INJURED	1	THURSDAY	February	2/21/2013	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, LIGHTED	CLOUDY	SIGNAL LIGHT	Motor Vehicle Only
23	SPICEWOOD SPRINGS	NOT INJURED	19	SATURDAY	March	3/9/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
24	4700 SPICEWOOD SPRINGS	NOT INJURED	13	WEDNESDAY	March	3/20/2013	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
25	8400 N CAPITAL OF TEXAS SB	POSSIBLE INJURY	13	SUNDAY	April	4/28/2013	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
26	5650 SPICEWOOD SPRING	POSSIBLE INJURY	16	TUESDAY	May	5/7/2013	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
27	8100 SPICEWOOD SPRINGS	NOT INJURED	8	SUNDAY	May	5/12/2013	OPPOSITE DIRECTION - BOTH GOING STRAIGHT	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
28	4300 SPICEWOOD SPRINGS	POSSIBLE INJURY	8	THURSDAY	June	6/20/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
29	5000 SPICEWOOD SPRINGS	NOT INJURED	13	THURSDAY	June	6/20/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE BACKING	opposite direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
30	4300 SPICEWOOD SPRINGS	NOT INJURED	17	FRIDAY	June	6/21/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
31	4200 SPICEWOOD SPRINGS	NON-INCAPACITATING	11	SATURDAY	June	6/22/2013	ONE MOTOR VEHICLE - TURNING LEFT	one motor vehicle	DAYLIGHT	CLEAR	SIGNAL LIGHT	Bicycle/Unknown
32	MESA	NOT INJURED	8	MONDAY	July	7/15/2013	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	RAIN	SIGNAL LIGHT	Motor Vehicle Only
33	4400 SPICEWOOD SPRINGS	POSSIBLE INJURY	13	THURSDAY	August	8/1/2013	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
34	4600 SPICEWOOD SPRINGS	POSSIBLE INJURY	7	FRIDAY	August	8/30/2013	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
35	4700 SPICEWOOD SPRINGS	POSSIBLE INJURY	19	MONDAY	September	9/9/2013	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLOUDY	MARKED LANES	Motor Vehicle Only
36	5300 BLUFFSTONE	NOT INJURED	4	SUNDAY	November	11/24/2013	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, NOT LIGHTED	CLEAR	NONE	Motor Vehicle Only
37	8400 N N CAPITAL OF TEXAS HWY NB	NOT INJURED	4	SUNDAY	February	2/16/2014	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DARK, NOT LIGHTED	CLOUDY	SIGNAL LIGHT	Motor Vehicle/Unknown
38	SPICEWOOD SPRINGS RD	POSSIBLE INJURY	9	MONDAY	February	2/24/2014	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLOUDY	SIGNAL LIGHT	Motor Vehicle Only
39	4900 SPICEWOOD SPRINGS RD	NON-INCAPACITATING	9	MONDAY	March	3/17/2014	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle/Pedestrian
40	4800 SPICEWOOD SPRINGS RD WB	NOT INJURED	13	WEDNESDAY	April	4/9/2014	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
41	N CAPITAL OF TEXAS HWY SB	POSSIBLE INJURY	13	THURSDAY	May	5/8/2014	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
42	N CAPITAL OF TEXAS HWY SB	NOT INJURED	20	MONDAY	May	5/19/2014	ANGLE - BOTH GOING STRAIGHT	angle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
43	5300 SPICEWOOD SPRINGS	NOT INJURED	21	WEDNESDAY	August	8/20/2014	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, NOT LIGHTED	CLEAR	NONE	Motor Vehicle Only
44	MESA	POSSIBLE INJURY	19	THURSDAY	September	9/11/2014	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
45	8330 N CAPITAL OF TEXAS	NOT INJURED	18	WEDNESDAY	November	11/5/2014	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DARK, LIGHTED	RAIN	NONE	Motor Vehicle Only
46	4600 SPICEWOOD SPRINGS	NON-INCAPACITATING	16	TUESDAY	December	12/23/2014	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLOUDY	NONE	Motor Vehicle Only
47	8300 N CAP TX	NOT INJURED	10	FRIDAY	February	2/6/2015	SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
48	4900 SPICEWOOD SPRINGS	NOT INJURED	11	MONDAY	March	3/16/2015	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
49	8100 N CAPITAL OF TEXAS HIGHWAY SB	POSSIBLE INJURY	21	MONDAY	March	3/30/2015	SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	same direction	DARK, UNKNOWN LIGHT	CLEAR	SIGNAL LIGHT WITH	Motor Vehicle/Unknown
50	5700 SPICEWOOD SPRINGS	NON-INCAPACITATING	17	FRIDAY	April	4/3/2015	OPPOSITE DIRECTION - BOTH GOING STRAIGHT	opposite direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle/Motorcycle
51	4900 SPICEWOOD SPRINGS	UNKNOWN	4	SUNDAY	April	4/5/2015	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, UNKNOWN LIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
52	5200 OLD SPICEWOOD SPRINGS	POSSIBLE INJURY	16	TUESDAY	April	4/21/2015	ANGLE - ONE STRAIGHT-ONE LEFT TURN	angle	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
53	4400 SPICEWOOD SPRINGS	POSSIBLE INJURY	12	WEDNESDAY	July	7/29/2015	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
54	5300 SPICEWOOD SPRINGS	NOT INJURED	18	THURSDAY	August	8/13/2015	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
55	N MESA	NON-INCAPACITATING	20	MONDAY	August	8/24/2015	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DARK, NOT LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
56	8200 N CAPITOL OF TEXAS	POSSIBLE INJURY	13	MONDAY	September	9/7/2015	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	CLEAR	SIGNAL LIGHT WITH	Motor Vehicle Only
57	4800 SPICEWOOD SPRINGS	INCAPACITATING INJURY	13	THURSDAY	September	9/10/2015	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
58	4700 SPICEWOOD SPRINGS	NOT INJURED	16	WEDNESDAY	September	9/9/2015	SAME DIRECTION - ONE STRAIGHT-ONE LEFT TURN	same direction	DAYLIGHT	CLOUDY	NONE	Motor Vehicle Only
59	4600 SPICEWOOD SPRINGS RD	NOT INJURED	21	SUNDAY	September	9/27/2015	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, LIGHTED	CLEAR	WARNING SIGN	Motor Vehicle Only

count	Street_Nam	Crash_Seve	Hour_	Day_	Month_	Time_of_Cr	Collision		Light_Cond	Weather_Co	Traffic_Co	Unit_Group
60	8400 N CAPITAL OF TEXAS	POSSIBLE INJURY	12	SATURDAY	October	10/31/2015	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLOUDY	SIGNAL LIGHT	Motor Vehicle Only
61	4900 SPICEWOOD SPRINGS	NON-INCAPACITATING	15	THURSDAY	December	12/3/2015	ANGLE - BOTH LEFT TURN	angle	DAYLIGHT	CLEAR	STOP SIGN	Motor Vehicle Only
62	8100 MESA	NON-INCAPACITATING	17	THURSDAY	February	2/11/2016	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
63	8100 MESA	NOT INJURED	8	SATURDAY	April	4/23/2016	SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	same direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
64	8000 MESA	INCAPACITATING INJURY	15	MONDAY	May	5/16/2016	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DAYLIGHT	CLOUDY	MARKED LANES	Motor Vehicle Only
65	4900 SPICEWOOD SPRINGS	NOT INJURED	9	TUESDAY	June	6/7/2016	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLOUDY	MARKED LANES	Motor Vehicle Only
66	4100 SPICEWOOD SPRINGS	NOT INJURED	14	FRIDAY	July	7/29/2016	ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
67	5200 N OLD SPICEWOOD SPRINGS	NOT INJURED	17	FRIDAY	July	7/29/2016	ANGLE - ONE STRAIGHT-ONE LEFT TURN	angle	DAYLIGHT	CLEAR	OTHER (EXPLAIN IN N	Motor Vehicle Only
68	5200 SPICEWOOD SPRINGS	INCAPACITATING INJURY	8	WEDNESDAY	August	8/31/2016	ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	STOP SIGN	Motor Vehicle Only
69	4400 SPICEWOOD SPRINGS	POSSIBLE INJURY	13	THURSDAY	November	11/3/2016	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DAYLIGHT	RAIN	MARKED LANES	Motor Vehicle Only
70	8100 MESA	NOT INJURED	14	SUNDAY	November	11/20/2016	OPPOSITE DIRECTION - BOTH LEFT TURNS	opposite direction	DAYLIGHT	CLEAR	MARKED LANES	Motor Vehicle Only
71	4400 SPICEWOOD SPRINGS	NOT INJURED	19	SATURDAY	December	12/10/2016	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DARK, LIGHTED	RAIN	MARKED LANES	Motor Vehicle Only
72	8500 ADIRONDAK TRL	POSSIBLE INJURY	17	MONDAY	December	12/12/2016	SAME DIRECTION - ONE STRAIGHT-ONE RIGHT TURN	same direction	DARK, NOT LIGHTED	CLEAR	STOP SIGN	Motor Vehicle Only
73	8100 CAPITAL OF TEXAS SB	NOT INJURED	8	TUESDAY	March	3/6/2012	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	same direction	DAYLIGHT	CLEAR	NONE	Motor Vehicle Only
74	MESA	NON-INCAPACITATING	18	SUNDAY	February		ANGLE - BOTH GOING STRAIGHT	angle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
75	MESA	NOT INJURED	19	TUESDAY	February		OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	opposite direction	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
76	5000 SPICEWOOD SPRINGS RD	NOT INJURED	8	WEDNESDAY	February		ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	CENTER STRIPE/DIVID	Motor Vehicle Only
77	4900 SPICEWOOD SPRINGS	NOT INJURED	10	THURSDAY	March		SAME DIRECTION - ONE STRAIGHT-ONE LEFT TURN	same direction	DAYLIGHT	CLOUDY	NONE	Motor Vehicle Only
78	8300 N N CAPITAL OF TEXAS HWY NB	POSSIBLE INJURY	14	SATURDAY	March		ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	SIGNAL LIGHT WITH N	Motor Vehicle Only
79	4800 SPICEWOOD SPRINGS RD	NOT INJURED	8	FRIDAY	April		ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DAYLIGHT	CLEAR	CENTER STRIPE/DIVID	Motor Vehicle Only
80	8400 N CAP TX NB	NOT INJURED	23	SATURDAY	June		ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, LIGHTED	CLEAR	SIGNAL LIGHT	Motorcycle Only
81	N CAPITAL OF TEXAS	POSSIBLE INJURY	15	SATURDAY	July		ANGLE - BOTH GOING STRAIGHT	angle	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
82	5300 SPICEWOOD SPRINGS	NOT INJURED	8	TUESDAY	August		SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	same direction	DAYLIGHT	CLEAR	SIGNAL LIGHT	Motor Vehicle/Unknown
83	N N CAPITAL OF TEXAS HWY NB	POSSIBLE INJURY	18	SUNDAY	November		SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DUSK	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
84	N CAPITAL OF TEXAS	NON-INCAPACITATING	21	SATURDAY	November		ANGLE - BOTH GOING STRAIGHT	angle	DARK, NOT LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
85	4600 SPICEWOOD SPRINGS RD	NOT INJURED	18	TUESDAY	November		SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DARK, LIGHTED	CLEAR	MARKED LANES	Motor Vehicle Only
86	8400 N CAPITAL OF TEXAS SB	NOT INJURED	19	SUNDAY	December		SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	same direction	DARK, NOT LIGHTED	CLEAR	SIGNAL LIGHT	Motor Vehicle Only
87	8600 N N CAPITAL OF TEXAS HWY SB	UNKNOWN	3	SATURDAY	December		ONE MOTOR VEHICLE - GOING STRAIGHT	one motor vehicle	DARK, NOT LIGHTED	CLEAR	NONE	Motor Vehicle Only

Deer Service Requests Spicewood Springs Between Capital of Texas and Mesa



Service Request Types


Type_Desc

- APD - Nonemergency Misc
- APD - Nonemergency Unavailable
- ARR Dead Animal Collection

TECHNICAL MEMORANDUM

Date: September 11, 2017

To: Genest Landry, P.E.
City of Austin Public Works Department
505 Barton Springs Rd, Suite 800
Austin, TX 78704
[Submitted via email to Genest.Landry@austintexas.gov]

From: Kimberly McDaniel, P.E., PTOE 
Traffic Project Manager
Texas Licensed Professional Engineer No. 124316

Subject: Spicewood Springs Traffic Study
Growth Rate Recommendations

The following methodology and resulting Growth Rates are recommended for use in developing future traffic volumes for the Spicewood Spring corridor study. Should you have any questions, please remit those upon review that we can address and make appropriate revisions as required.

GROWTH RATE RECOMMENDATIONS

The growth rate contained herein is based on historical AADT data obtained from the TxDOT Transportation Planning Maps (<https://www.txdot.gov/inside-txdot/division/transportation-planning/maps.html>).

Bi-Directional AADT data was evaluated to determine a growth rate recommendation for the study area. While data is available for several locations throughout the City of Austin for this project in order to evaluate detour routing, the growth rate analysis focused on the areas adjacent to the Spicewood Springs Rd and LP 360 (Capital of Texas Highway), as these are the areas that will be studied in the alternatives analyses. The locations evaluated to determine a recommended growth rate include:

- LP 360 (Capital of Texas Highway) at Champion Grandview Way
- LP 360 (Capital of Texas Highway) at Wildridge Dr

The record data is available approximately every year between 2010 and 2016. The change in recorded volumes was determined as a *percent change per year* (+ or -) using a compounded growth formula. These rates were averaged for each time period as well as for each location. This was determined based on the following:

- There was a significant increase in volumes between 2013 and 2014, but the volumes tapered back off in 2016. This rise/fall balances out in the %-growth. This could be due to the time of year when the data was collected (information not available).
- Over the six year period considered, the growth rates vary widely by both location and reporting period. The annual rates range from -7.69% (LP 360 at Wildridge DR between 2013 and 2014) to 24.88% (LP 360 at Wildridge DR between 2014 and 2015).
- Because of the great variations for each individual reporting period, the final growth rates shown were calculated using the *Inverse Growth Rate Formula*, as follows:

Compound Growth Rate Formula:

$$AADT_2 = AADT_1(1 + GR)^n$$

GR = Growth Rate

n = number of years

Inverse Growth Rate Formula:

$$\left(\frac{AADT_2}{AADT_1}\right)^{\frac{1}{n}} - 1 = GR$$

- The growth rates (6 years for all locations) were then averaged to determine a growth rate for the study area.
- To prevent approaches with lower volumes from having unproportioned impacts on the growth rate, the growth rates at each location was weighted based on the location and its proportion of the total AADT considered for all locations. The weighted average more accurately represents the growth for the network.

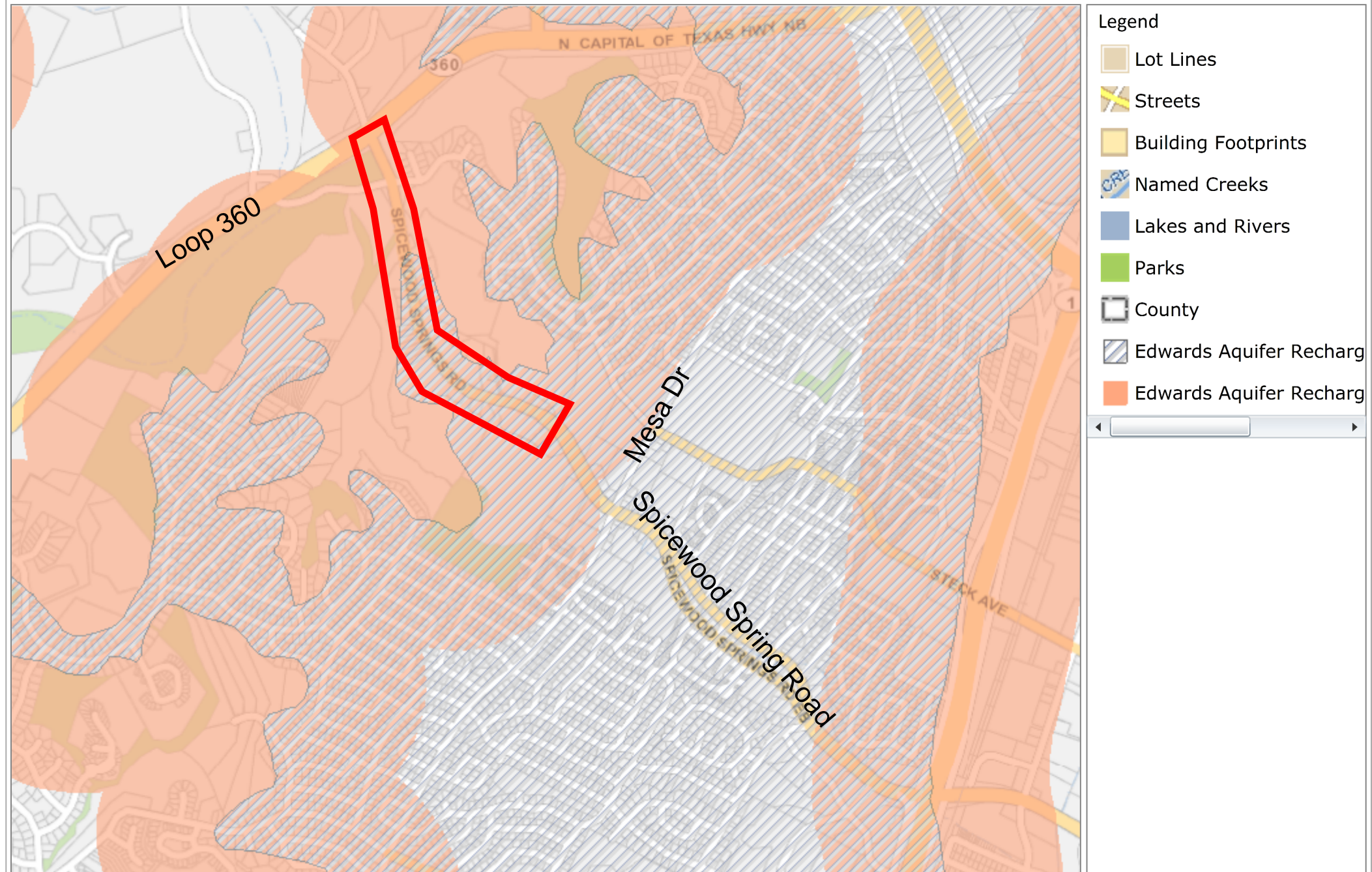
The recommended average growth rates for the study area is 3.20% annually. This growth rate is recommended for application throughout the project.

**Spicewood Springs Rd
RECOMMENDED GROWTH RATE DETERMINATION**

Location Description	Highway	Cross Street	BI-DIRECTIONAL AADT												AVERAGE GROWTH RATE (2010-2015)	WEIGHTED GR (2010-2015)	
			2010*		2011*		2012*		2013*		2014*		2015*				2016*
LP 360, South of Spicewood Springs Rd	LP 360	Champion Grandview Way	46,000	-2.17%	45,000	0.00%	45,000	6.81%	48,063	-4.04%	46,122	22.37%	56,438	0.98%	56,989	3.63%	3.77%
LP 360, Nouth of Spicewood Springs Rd	LP 360	Wildridge Dr	45,000	-2.22%	44,000	4.55%	46,000	4.09%	47,881	-7.69%	44,197	24.88%	55,194	-4.14%	52,908	2.73%	2.63%
AVERAGE GROWTH RATES BY REPORTING PERIOD:			-2.2%		2.3%		5.4%		-5.9%		23.6%		-1.6%			3.18%	3.20%

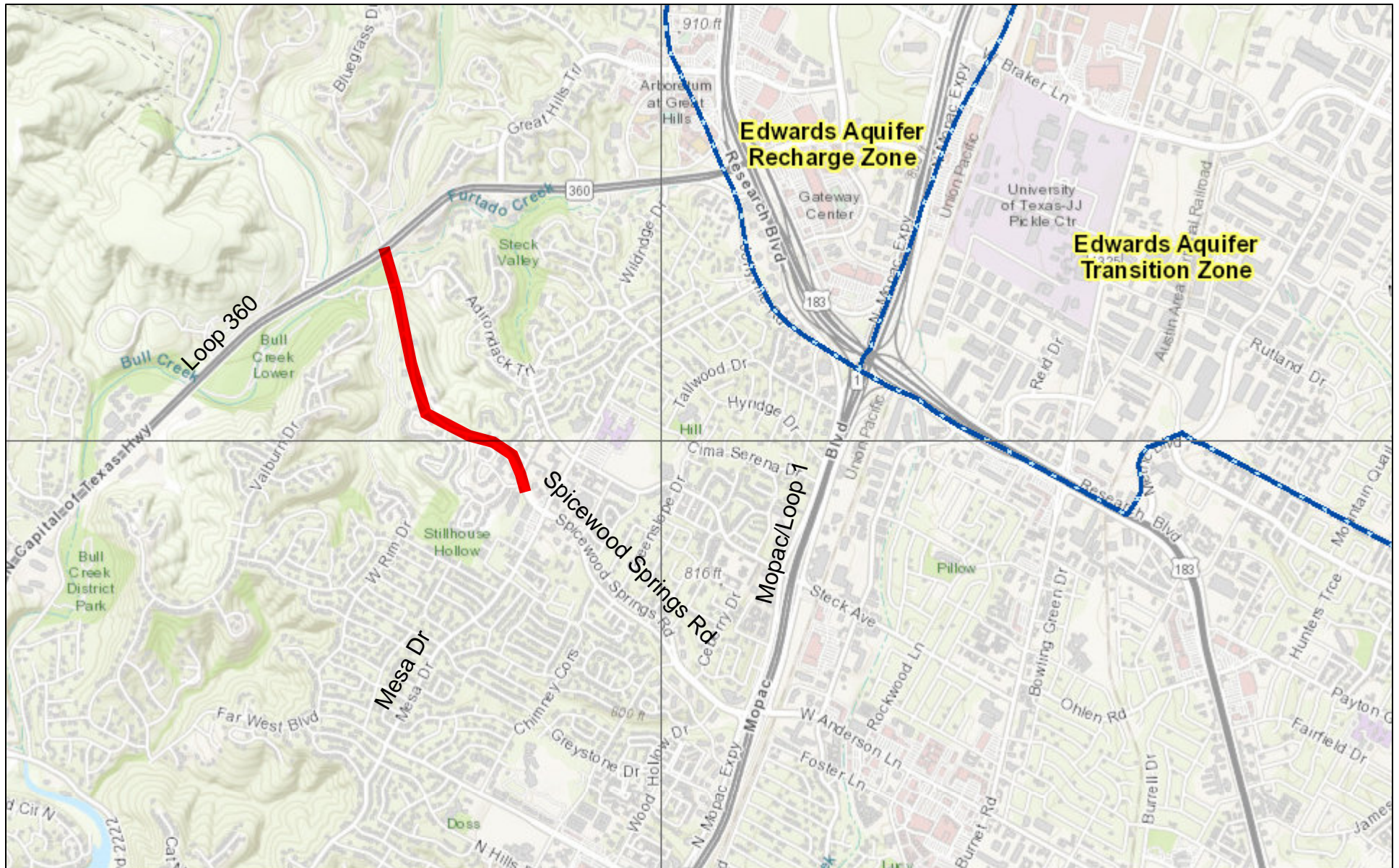
*Volumes obtained from TxDOT Transportation Planning Maps data posted on the TxDOT website (<https://www.txdot.gov/inside-txdot/division/transportation-planning/maps.html>).

E.8 - City of Austin Edwards Aquifer Zones



THIS PRODUCT IS FOR INFORMATIONAL PURPOSES AND MAY NOT HAVE BEEN PREPARED FOR OR BE SUITABLE FOR LEGAL, ENGINEERING, OR SURVEYING PURPOSES. IT DOES NOT REPRESENT AN ON-THE-GROUND SURVEY AND REPRESENTS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES. THIS PRODUCT HAS BEEN PRODUCED BY THE CITY OF AUSTIN FOR THE SOLE PURPOSE OF GEOGRAPHIC REFERENCE. NO WARRANTY IS MADE BY THE CITY OF AUSTIN REGARDING SPECIFIC ACCURACY OR COMPLETENESS.

E.8 - TCEQ Edwards Aquifer Zones



2 / 23 / 2018 1 : 43 : 03 PM

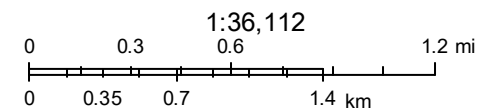
7.5 Minute Quad Grid

TX Counties

Edwards Aquifer Boundary central line

Edwards Aquifer Boundary

Edwards Aquifer Label



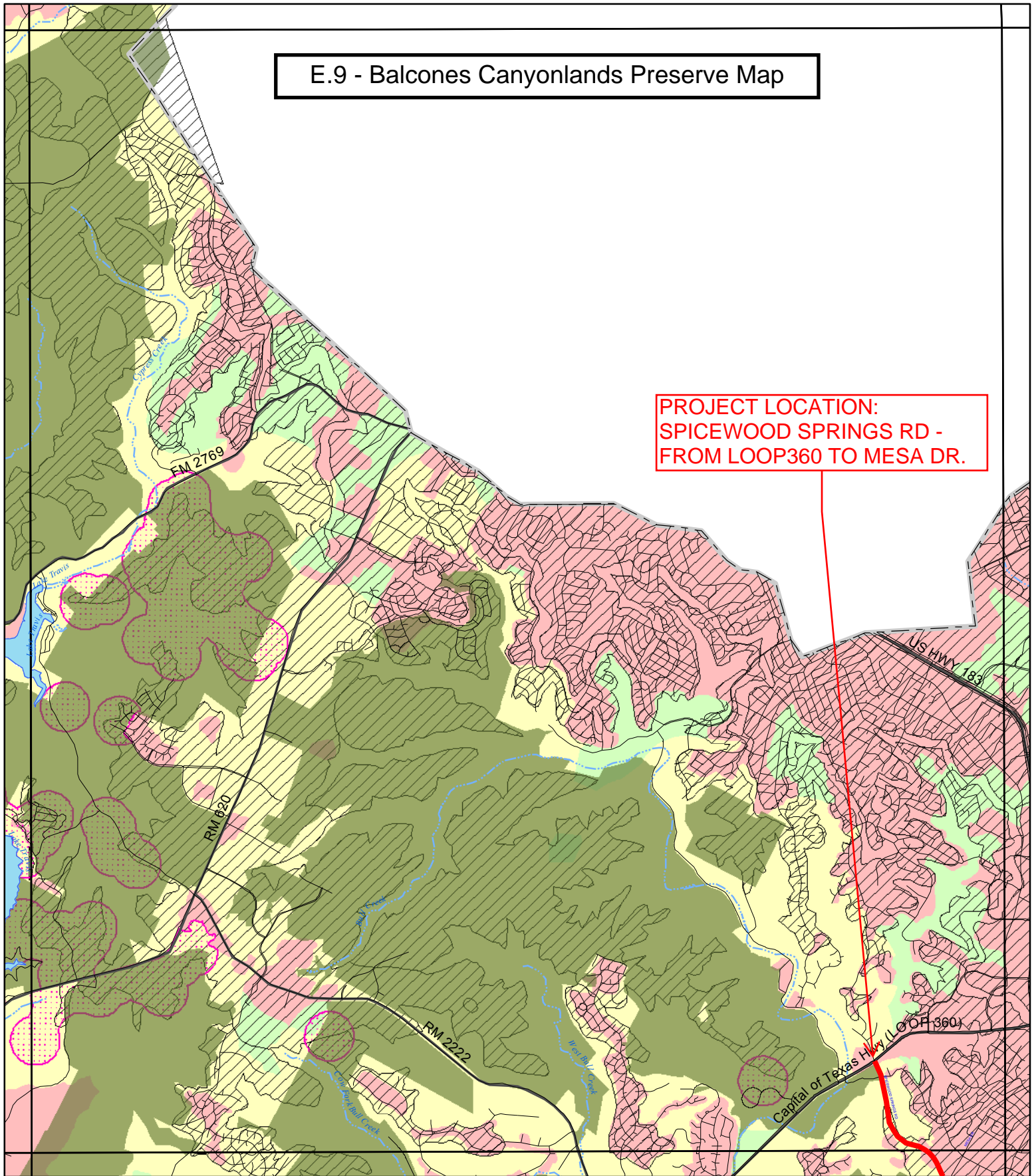
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Web AppBuilder for ArcGIS

Austin Community College, City of Austin, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA | TCEQ |

E.9 - Balcones Canyonlands Preserve Map

**PROJECT LOCATION:
SPICEWOOD SPRINGS RD -
FROM LOOP360 TO MESA DR.**



JOLLYVILLE, TEX - USGS 7.5' Quadrangle Endangered Species Habitat and Potential Preserve System

This map is based on property data from the Travis Central Appraisal District and general biological data available prior to September 1996. The biological data is to be used solely to calculate costs for participation in the Balcones Canyonlands Conservation Plan (BCCP), and not to calculate "take" as determined by the U.S. Fish and Wildlife Service (USFWS). The potential preserve boundary, endangered species habitat, and karst data depicted on this map have been verified by the USFWS. The delineation for karst does not identify cave locations. Eligibility for participation in the BCCP will be determined by the proximity to caves identified for protection by the BCCP. The map is subject to change based on available information and concurrence of the USFWS and the BCCP coordinating committee. Any such changes will go into effect on March 1st of the years specified by the USFWS. While every effort has been made to ensure the accuracy of the data, neither Travis County, the City of Austin, nor the USFWS are liable for any errors in the data. Errors brought to our attention will be researched and corrected.

LEGEND

- | | |
|-----------------------------------------------------------|------------------------------------------------|
| Golden-cheeked Warbler - Zone 1 (Confirmed habitat) | Black-capped Vireo Habitat |
| Golden-cheeked Warbler - Zone 2 (Unconfirmed habitat) | BCP Preserve Area (proposed) |
| Golden-cheeked Warbler - Zone 3 (Not known to be habitat) | Endangered Cave Species Habitat |
| | Karst Zones 1 & 2 |
| | Balcones Canyonland Wildlife Refuge (proposed) |

DATA SOURCES

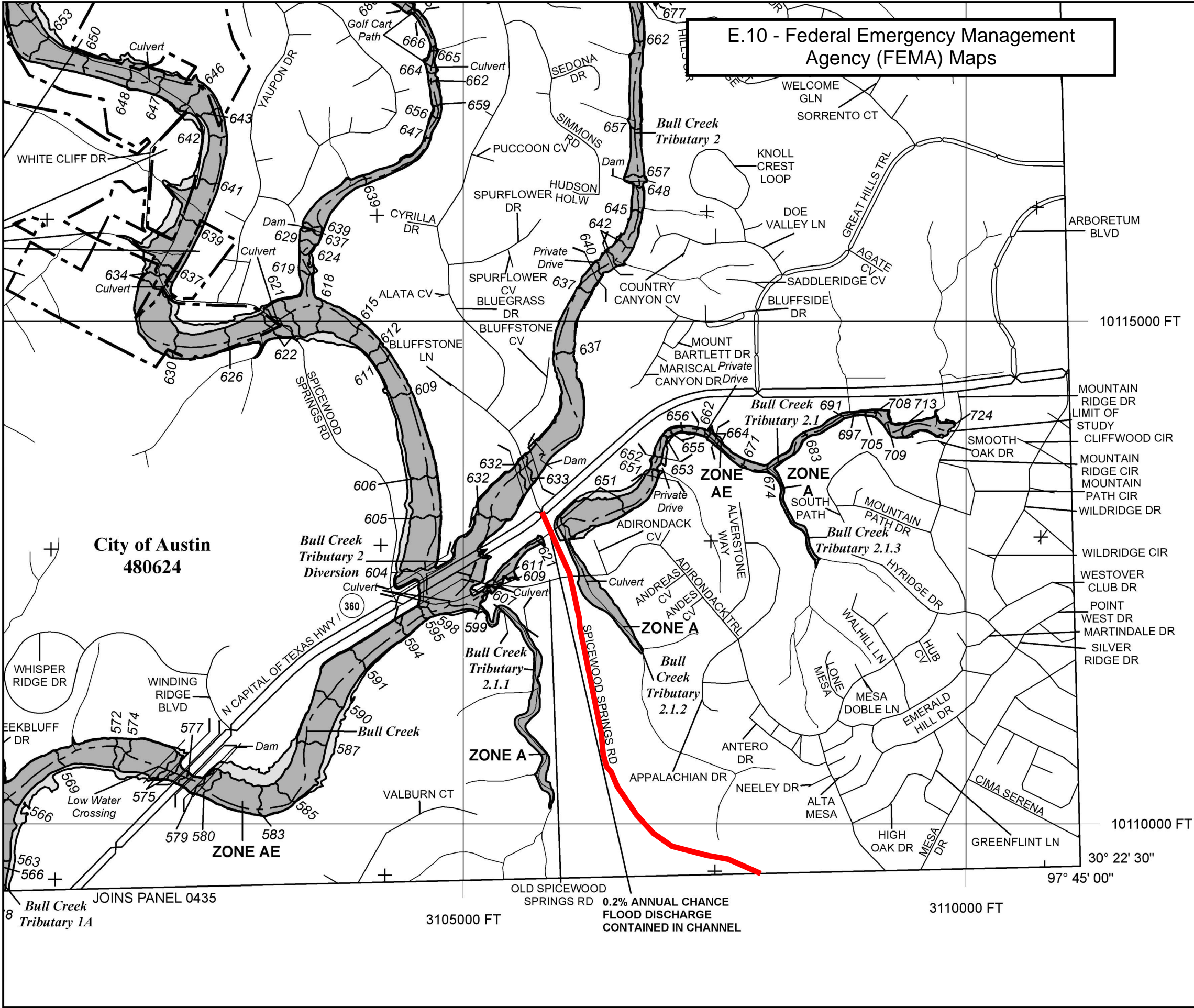
Habitat: U.S. Fish and Wildlife Service
Preserve Area: City of Austin/Travis County
Hydrography: U.S. Geological Survey


Highways & Roads: City of Austin, Travis County TNR
Railroads: U.S. Census Bureau
County Boundary: Travis County - TNR



0 0.5 1 Miles

**Preserve and Refuge are not within the BCCP permit area.
Please contact the US Fish and Wildlife
Service for development information.**





MAP SCALE 1" = 1000'

500 0 1000 2000 FEET METERS

PROJECT LOCATION

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0245J

FIRM

FLOOD INSURANCE RATE MAP

TRAVIS COUNTY, TEXAS

AND INCORPORATED AREAS


PANEL 245 OF 730

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUSTIN, CITY OF	480624	0245	J
TRAVIS COUNTY	481026	0245	J

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

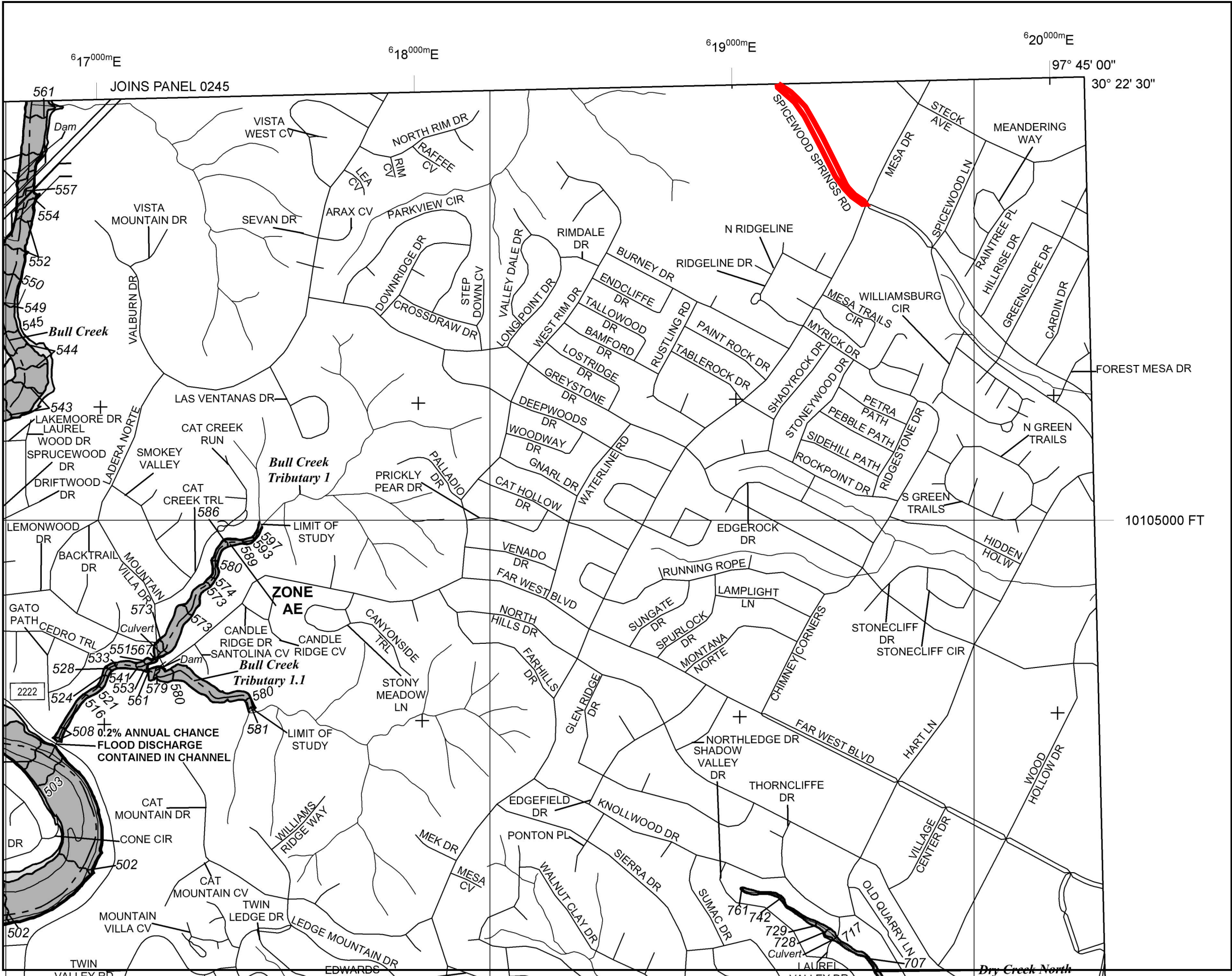


MAP NUMBER
48453C0245J

MAP REVISED
JANUARY 6, 2016

Federal Emergency Management Agency

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



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METERS

PROJECT LOCATION

NFIP

PANEL 0435J

FIRM

FLOOD INSURANCE RATE MAP

TRAVIS COUNTY, TEXAS

AND INCORPORATED AREAS

PANEL 435 OF 730

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUSTIN, CITY OF	480624	0435	J
TRAVIS COUNTY	481026	0435	J

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

MAP NUMBER
48453C0435J

MAP REVISED
JANUARY 6, 2016

Federal Emergency Management Agency

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

E.11 - Memo from WPD Director Regarding Rainfall Data Revisions



MEMORANDUM

TO: Mayor and Council

FROM: Michael L. Personett, Interim Director
Watershed Protection Department

MLP

DATE: June 14, 2018

SUBJECT: Update on Atlas 14 Activities – Code Amendment Process

In January of this year I provided you with a memorandum alerting you to draft results of a historical rainfall study that will redefine rainfall intensities (e.g., a 100-year storm) in the Austin area. The study, which we are referring to as “Atlas 14”, is part of a nationwide effort led by the National Weather Service (NWS), in partnership with the U.S. Army Corps of Engineers, U.S. Geological Survey, the Texas Department of Transportation, the Harris County Flood Control District, the City of Austin Watershed Protection Department (WPD), and others. The results of this study are expected to be finalized and published this fall.

The Atlas 14 study is based on an updated period-of-record that considers rain events up to, and including, Hurricane Harvey. Our current design storm rainfall intensities are based on a dataset that extended through 1994. In large part due to the number of significant rainfall events that have occurred since that time, the draft results of the Atlas 14 study, a small portion of which is presented in the table below, show a significant increase in design storm rainfall intensities. When the NWS publishes the final results in the fall of this year, we do not expect them to be significantly different than those released for peer review earlier this year.

Probability of Occurrence in any Given Year	Return Period	Current Rainfall Intensity (24-hour storm)	Atlas 14 Rainfall Intensity (24-hour storm)
4%	25-year	7.6 inches	Almost 10 inches
1%	100-year	10.2 inches	Up to 13+ inches
0.2%	500-year	13.5 inches	Not yet available

Redefining rainfall intensities in Austin has far-reaching implications to understanding our community’s flood risk, City of Austin flood risk reduction policies and programs, capital

improvement projects, land use regulations, and impacts on the community as a whole. Issues of concern include:

- Buildings and Roadways in the Floodplain – Our understanding of flood risk is changing. The number of buildings that could now be impacted by a storm having a 1% chance of occurring in any given year (100-year storm) is greater by nearly 76 percent. This will include an increased probability of flooding at some City of Austin facilities. Our refined understanding of flood risk also indicates that an increased number of roadways will now be impacted by a storm having a 1% chance of occurring in any given year.
- Floodplain Regulations and Insurance – Floodplain regulations related to development within the 100-year floodplain will extend to more than 3,400 additional acres of land, which is approximately a 21 percent increase of land in the mapped floodplain. In addition, once floodplain maps are updated, Federal flood insurance requirements may apply to a larger number of properties.
- Drainage Criteria – A change in the design storm rainfall intensities will impact drainage criteria for the design of flood risk reduction projects and both public and private drainage infrastructure. For the most part, the sizing of such infrastructure will increase and associated costs will be higher.

In response to the proposed rainfall intensity changes and with the goal to continue to protect our residents from the effects of flooding, WPD is initiating a code amendment process. We believe that we have sound, scientific data that allows us to take a proactive approach to these changes instead of waiting years until we have updated floodplain studies. We plan to initiate this process with the Codes and Ordinances Joint Committee of the Planning Commission this summer. The process will include public hearings and public meetings to receive input from the Environmental Commission, the Planning Commission, external and internal stakeholders, and the City Council. After receiving input and completing the draft code amendments, staff will request your final approval of the code amendments.

WPD staff is actively involved in and is focusing our attention on the impacts that this flood risk information has on our community. As the code amendment process continues we will have a great deal more information to discuss with you. In the meantime, if you or your staff have questions please direct those to Kevin Shunk, P.E., CFM, Managing Engineer for the WPD Watershed Engineering Division at Kevin.Shunk@austintexas.gov or at (512) 974-9176.

cc: Spencer Cronk, City Manager
Assistant City Managers
Department Directors