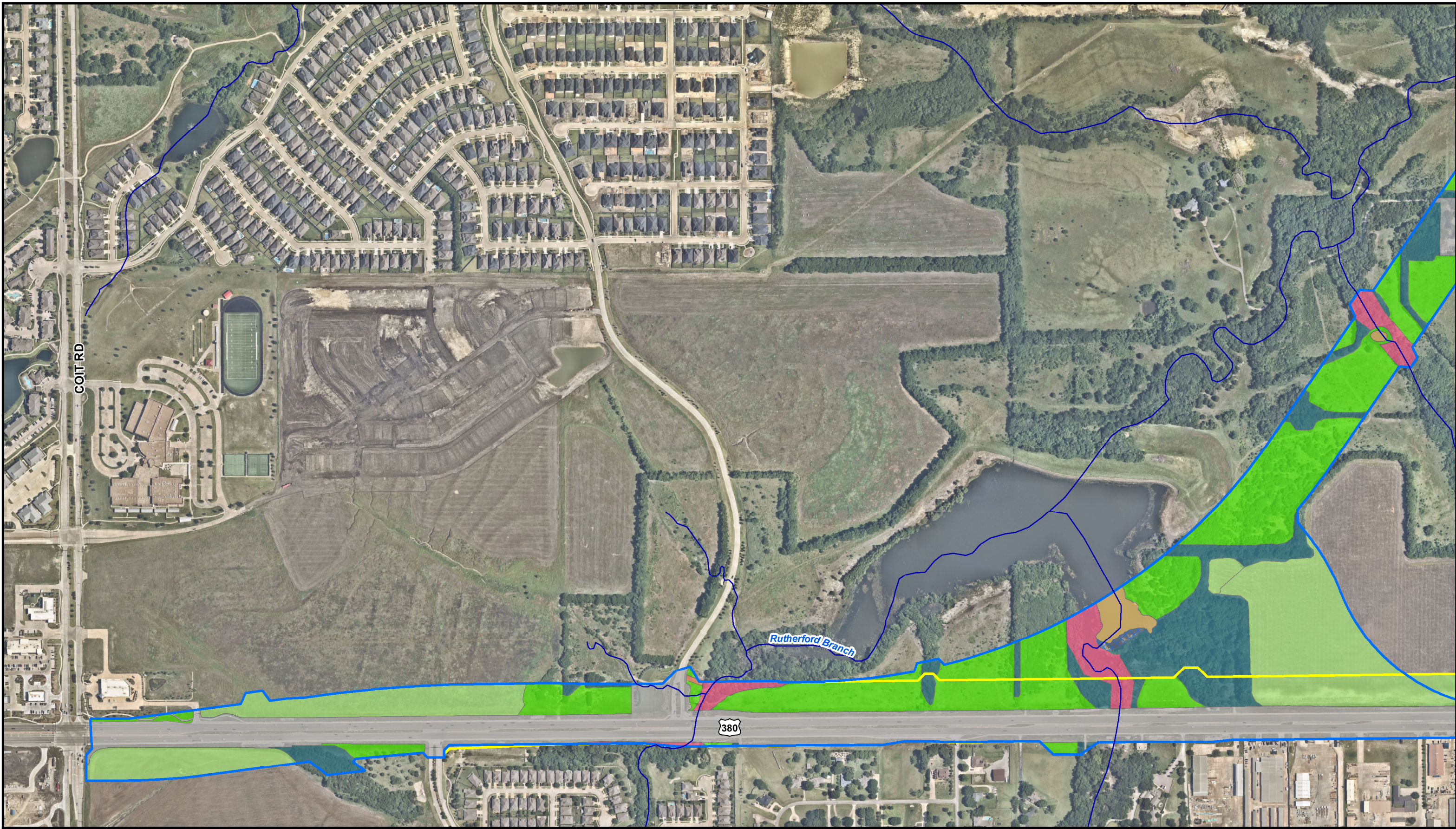
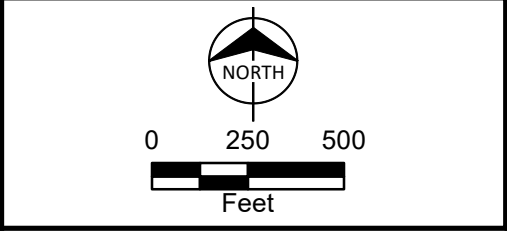
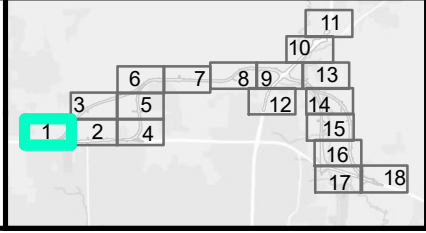


APPENDIX O: Biological Resources

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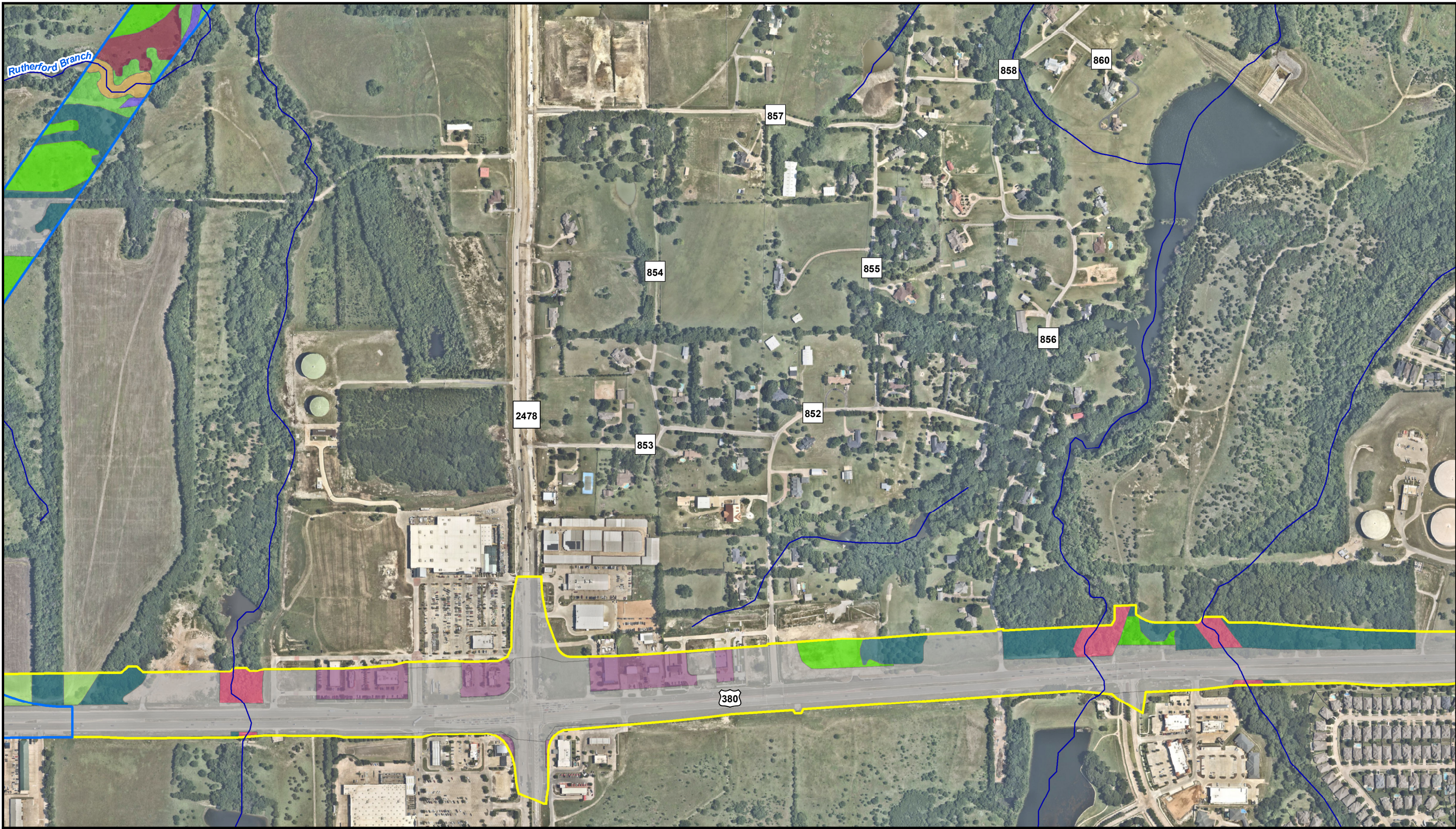


Segment A	Blackland Prairie: Disturbance or Tame Grassland	Open Water
Segment B	Central Texas: Riparian Hardwood Forest	Row Crops
	Central Texas: Riparian Herbaceous Vegetation	Swamp
	Native Invasive: Deciduous Woodland	Urban Low Intensity

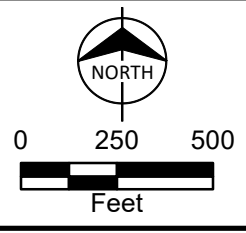
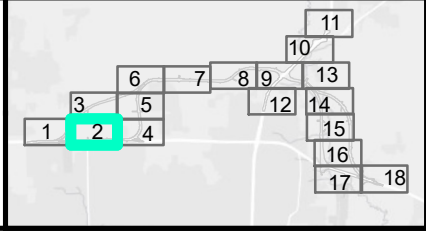


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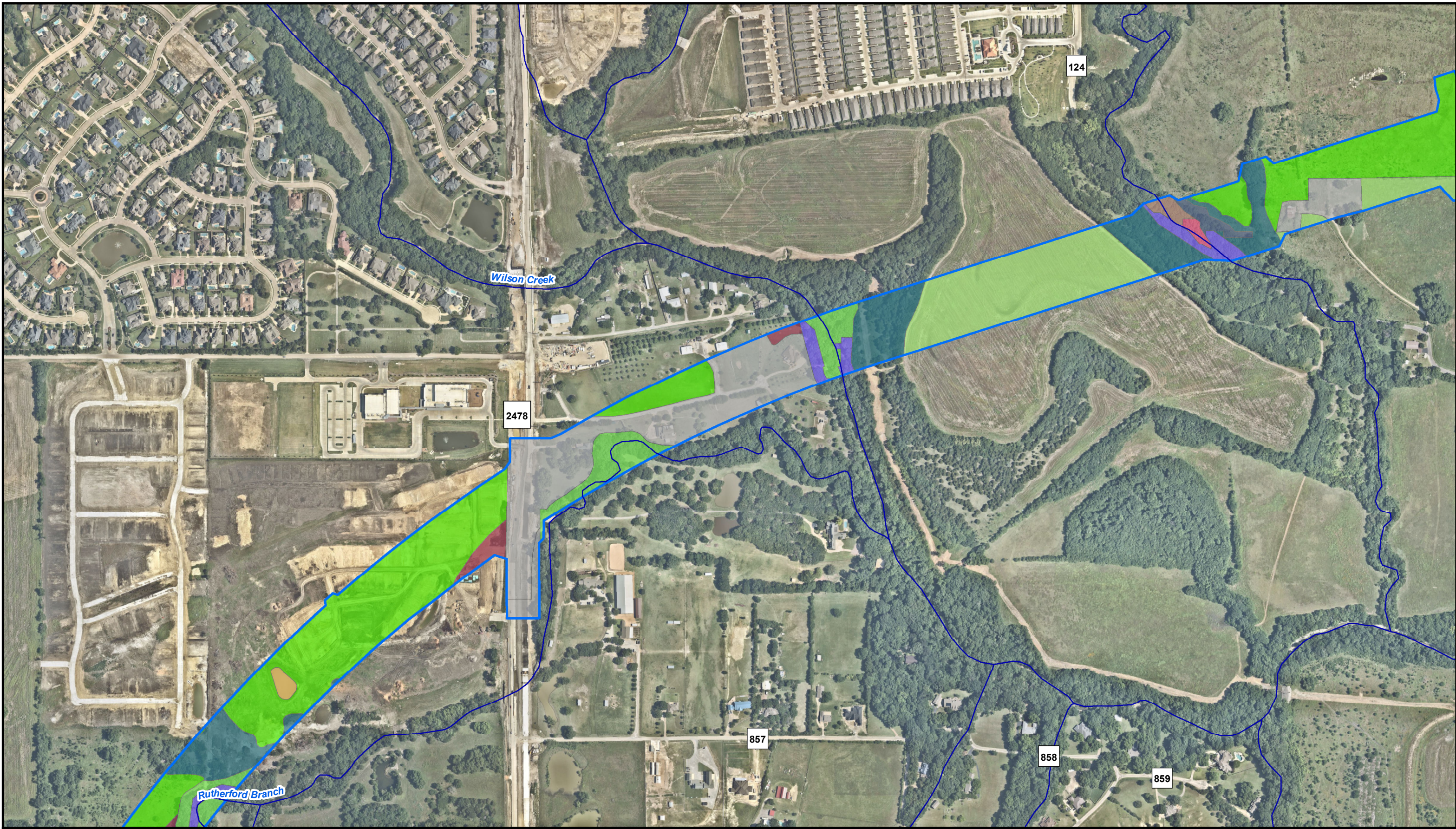


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|-----------|--|-------------------------------------|
| Segment A | Blackland Prairie: Disturbance or Tame Grassland | Native Invasive: Deciduous Woodland |
| Segment B | Central Texas: Floodplain Hardwood Forest | Open Water |
| | Central Texas: Floodplain Herbaceous Vegetation | Row Crops |
| | Central Texas: Riparian Hardwood Forest | Urban High Intensity |
| | Edwards Plateau: Oak - Hardwood Slope Forest | Urban Low Intensity |

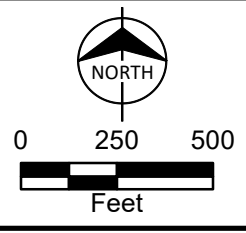
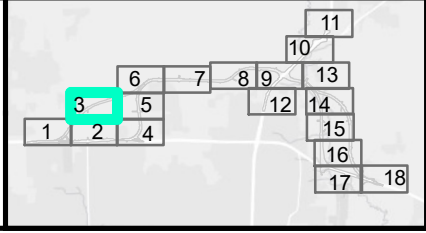


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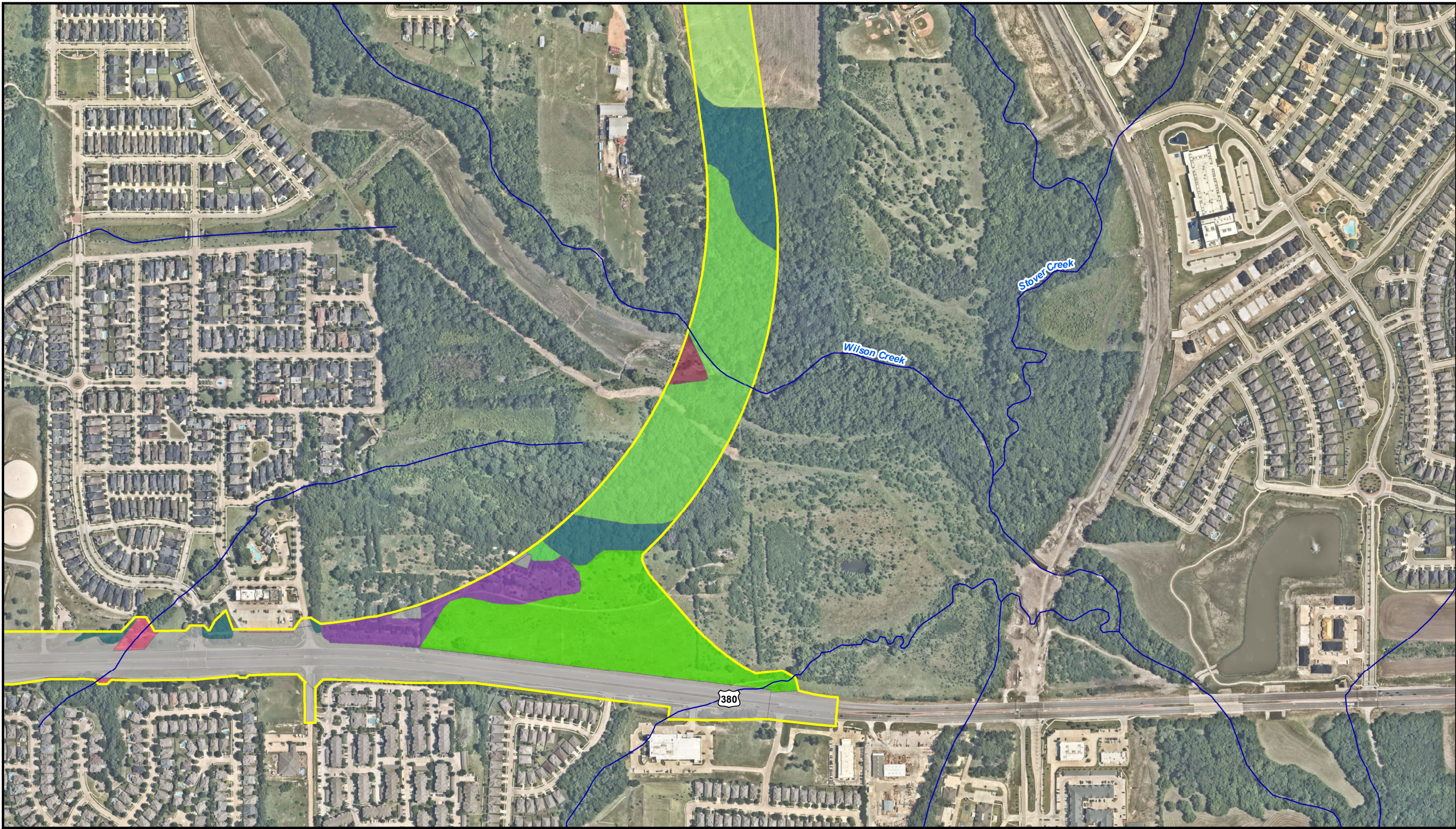
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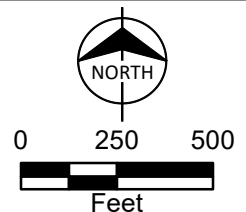
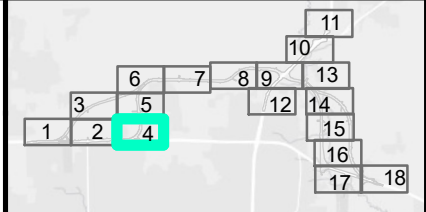
- Segment B
- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Central Texas: Riparian Hardwood Forest
- Central Texas: Riparian Live Oak Forest
- Edwards Plateau: Live Oak Motte and Woodland
- Edwards Plateau: Oak - Hardwood Slope Forest
- Native Invasive: Deciduous Woodland
- Open Water
- Row Crops
- Urban Low Intensity



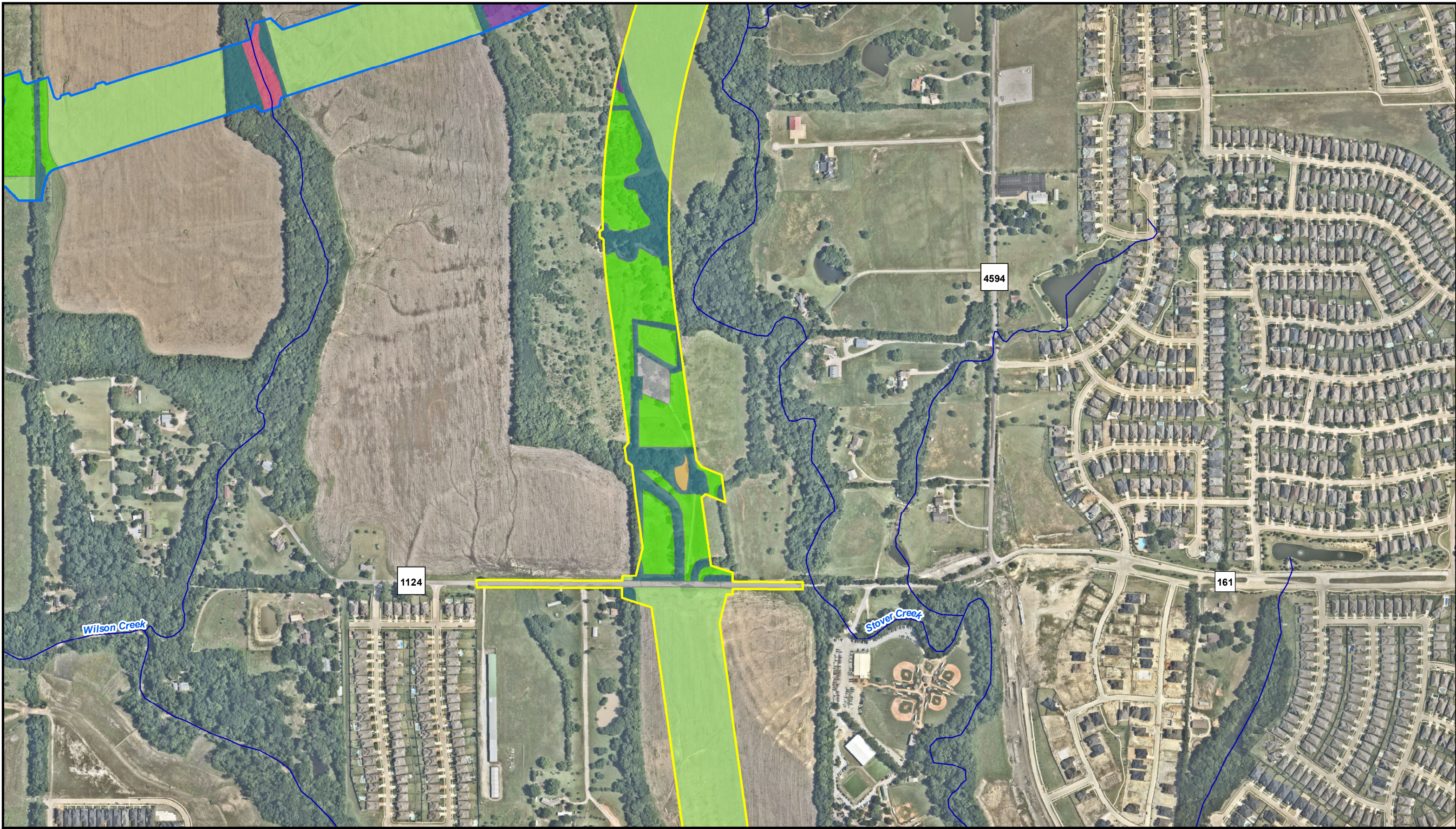
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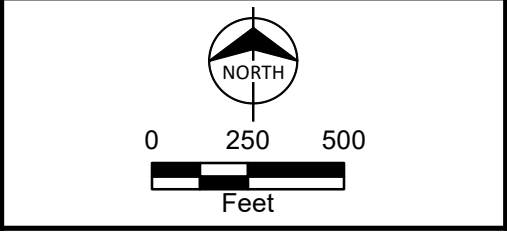
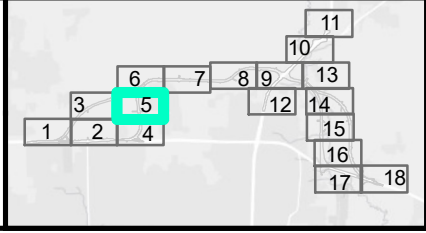
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| Segment A | Blackland Prairie: Disturbance or Tame Grassland | Edwards Plateau: Savanna Grassland |
| Central Texas: Floodplain Hardwood Forest | Native Invasive: Deciduous Woodland | Row Crops |
| Central Texas: Floodplain Herbaceous Vegetation | Urban High Intensity | Urban Low Intensity |
| Central Texas: Riparian Hardwood Forest | | |
| Edwards Plateau: Oak - Hardwood Motte and Woodland | | |



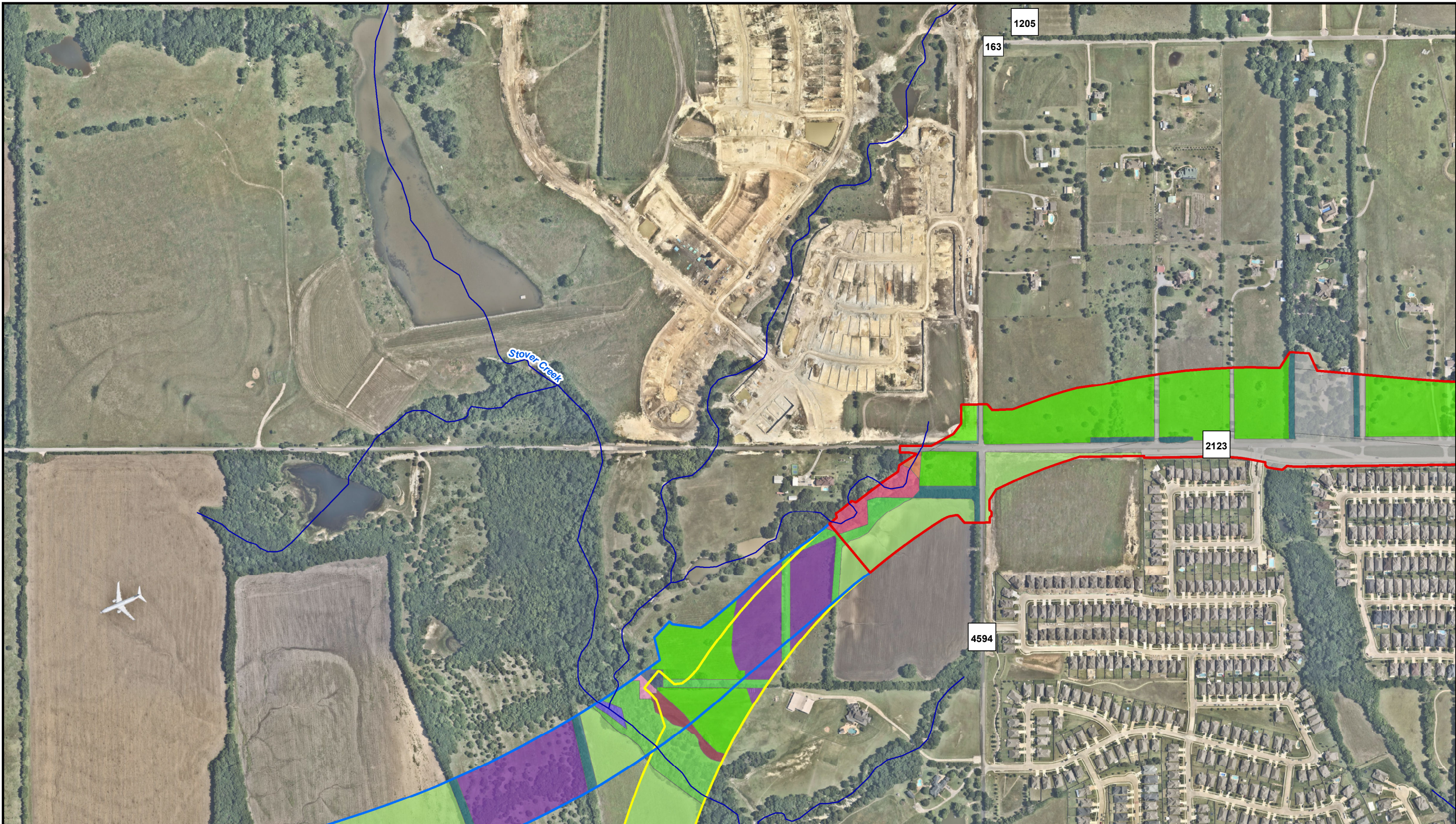
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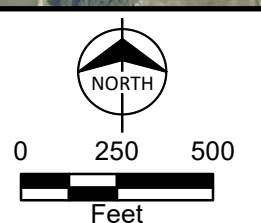
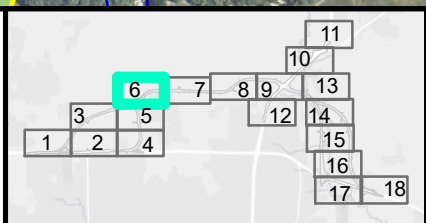
Segment A	Blackland Prairie: Disturbance or Tame Grassland	Open Water
Segment B	Central Texas: Riparian Hardwood Forest	Row Crops
	Edwards Plateau: Savanna Grassland	Urban Low Intensity
	Native Invasive: Deciduous Woodland	



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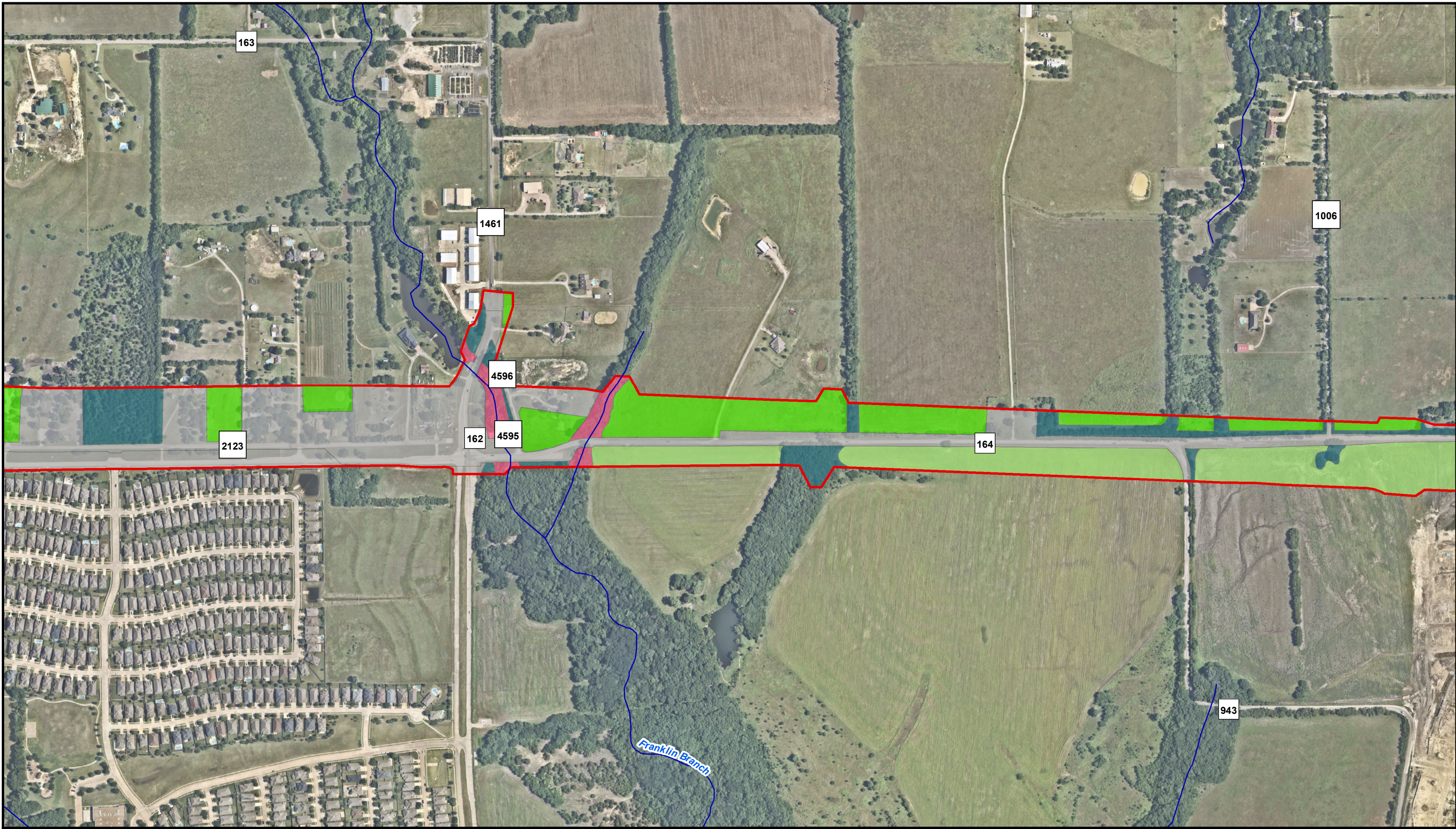


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| Segment A | Blackland Prairie: Disturbance or Tame Grassland | Edwards Plateau: Oak - Hardwood Motte and Woodland |
| Segment B | Central Texas: Floodplain Hardwood Forest | Edwards Plateau: Oak - Hardwood Slope Forest |
| Segment E | Central Texas: Floodplain Herbaceous Vegetation | Edwards Plateau: Savanna Grassland |
| | Central Texas: Floodplain Live Oak Forest | Native Invasive: Deciduous Woodland |
| | Central Texas: Riparian Hardwood Forest | Row Crops |
| | Central Texas: Riparian Herbaceous Vegetation | Urban Low Intensity |
| | Edwards Plateau: Live Oak Motte and Woodland | |

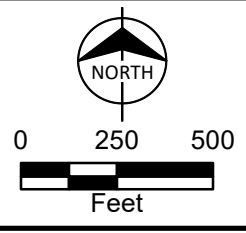
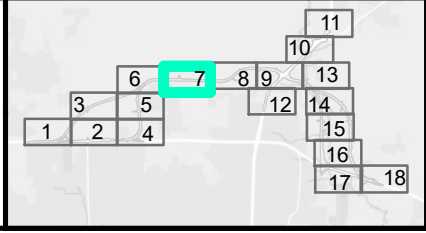


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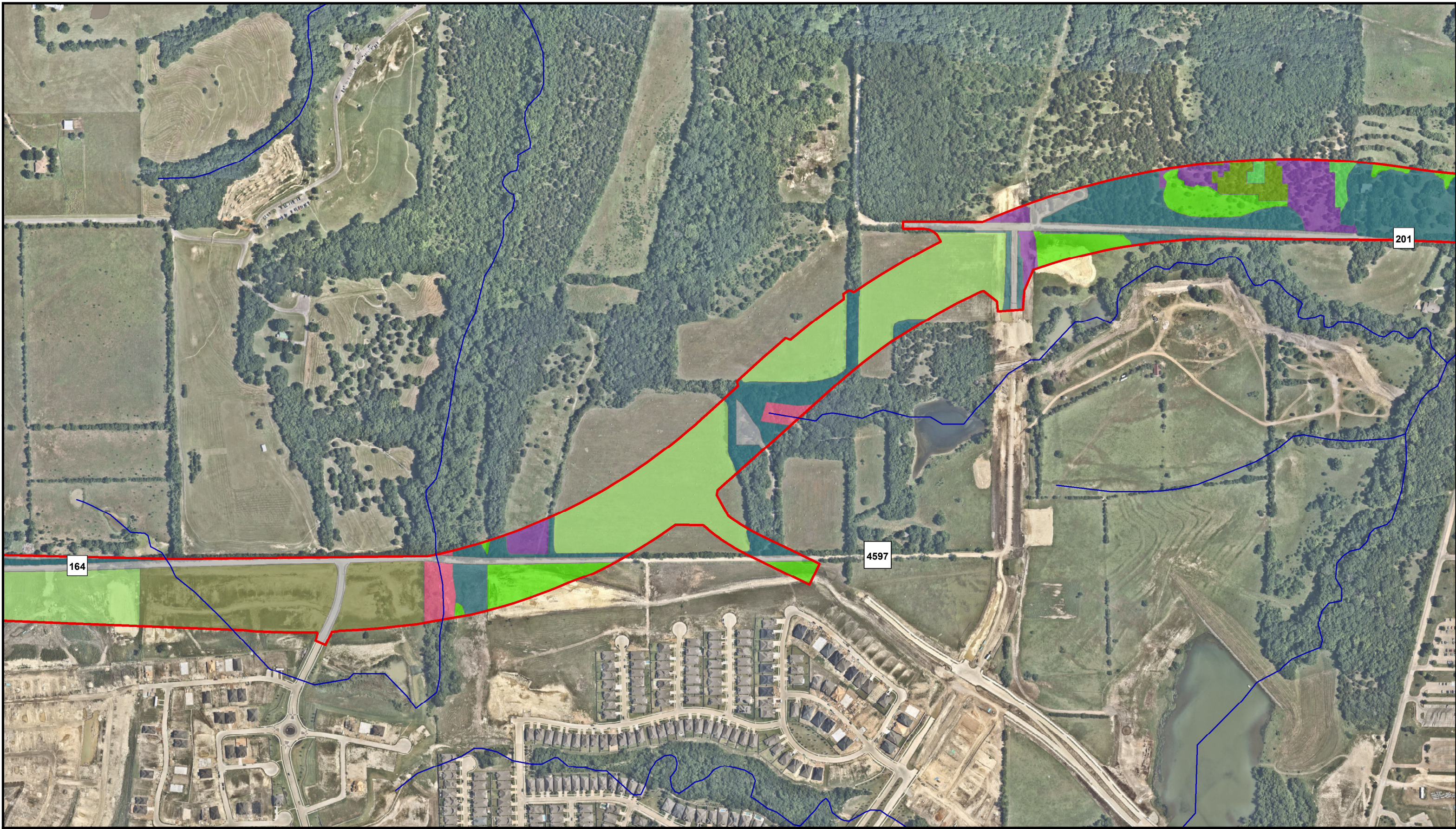


- Segment E
- Blackland Prairie: Disturbance or Tame Grassland
- Row Crops
- Central Texas: Riparian Hardwood Forest
- Urban Low Intensity
- Native Invasive: Deciduous Woodland

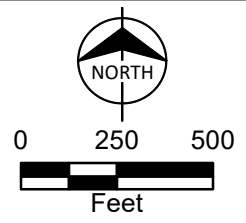
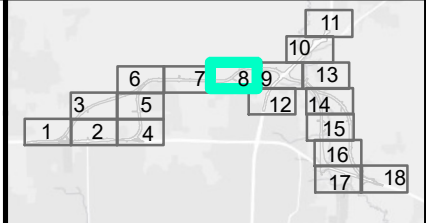


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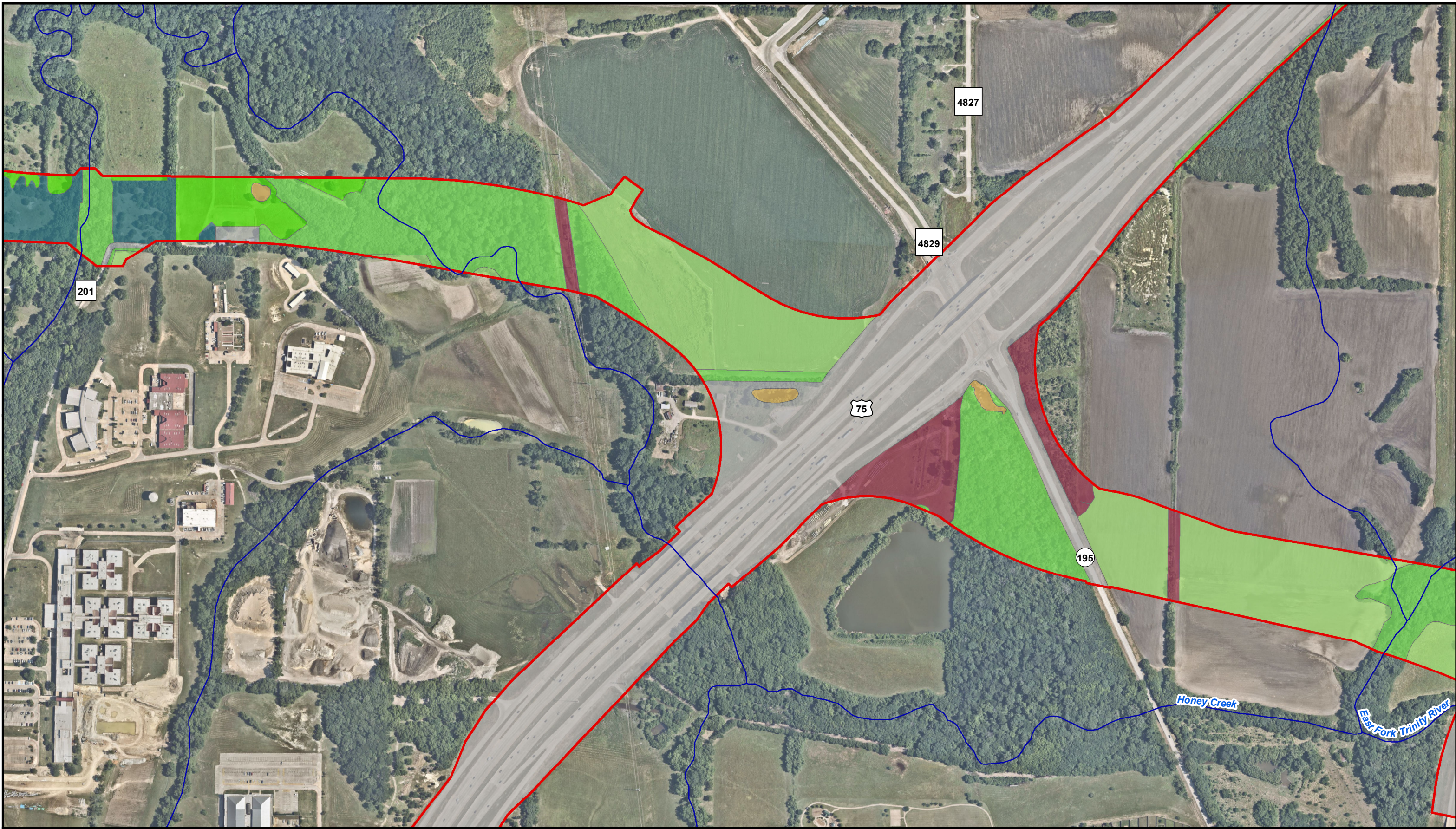


- Segment E
- Barren
- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland
- Edwards Plateau: Oak - Hardwood Motte and Woodland
- Edwards Plateau: Savanna Grassland
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban Low Intensity

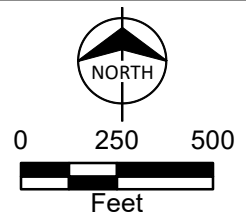
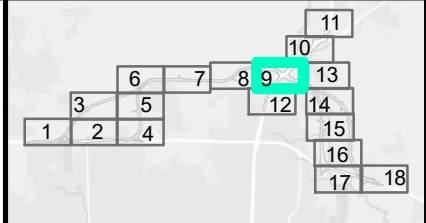


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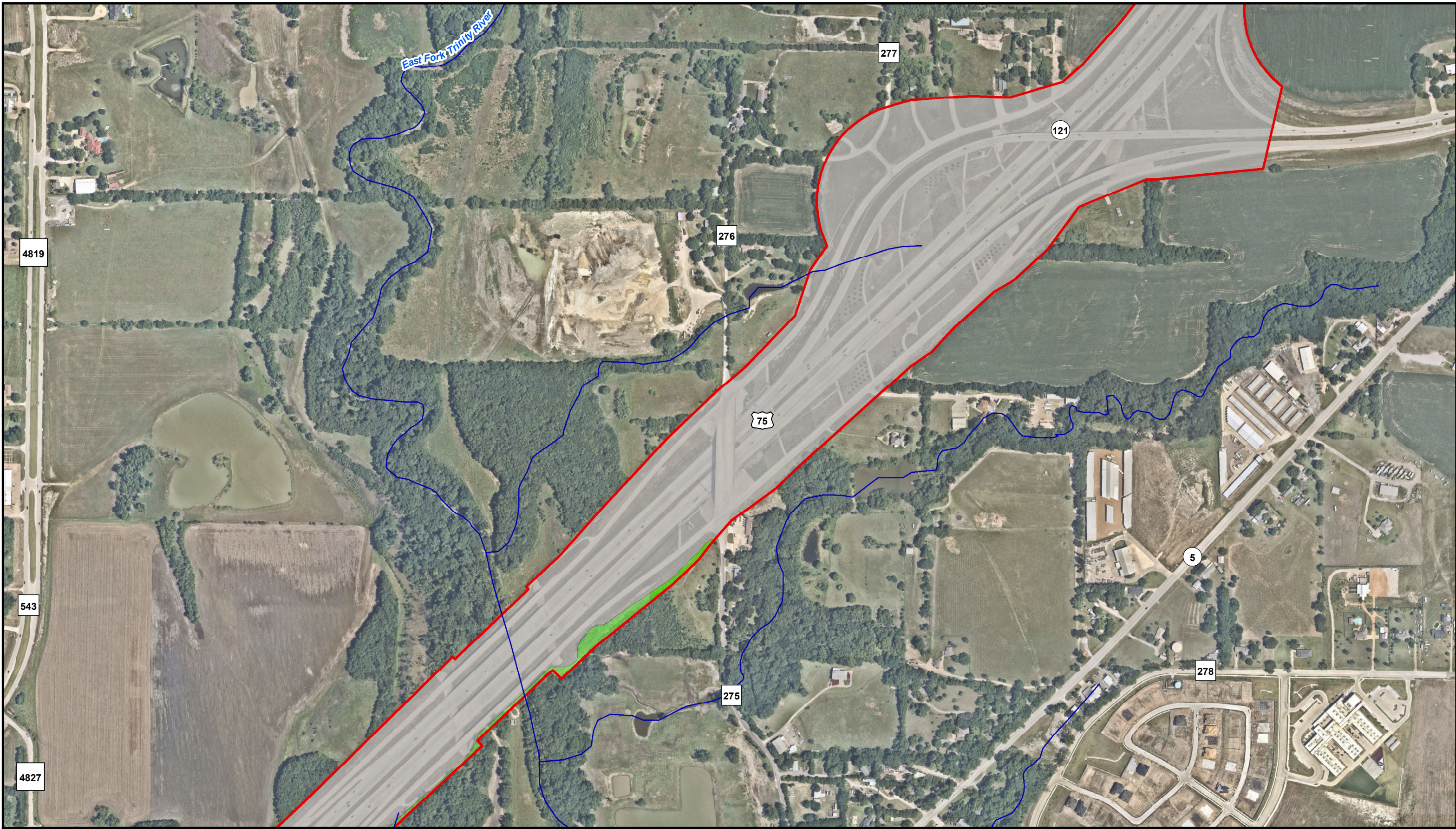


- Segment E
- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Native Invasive: Deciduous Woodland
- Open Water
- Row Crops
- Urban Low Intensity

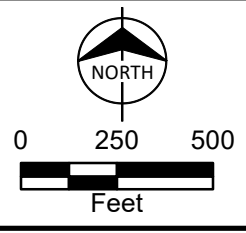
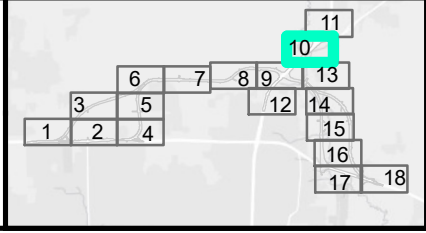


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Segment E
Blackland Prairie: Disturbance or Tame Grassland
Central Texas: Floodplain Hardwood Forest
Urban Low Intensity

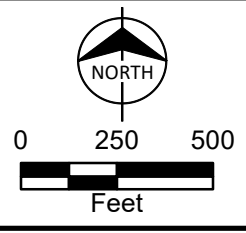
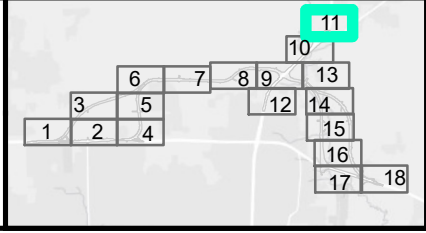


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Segment E Urban Low Intensity

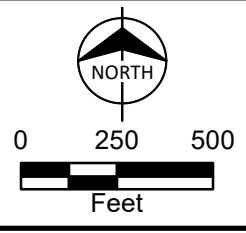
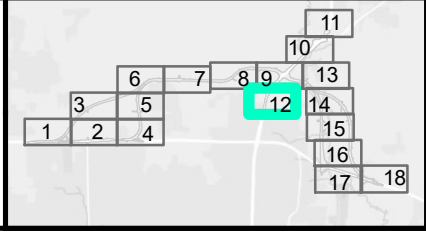


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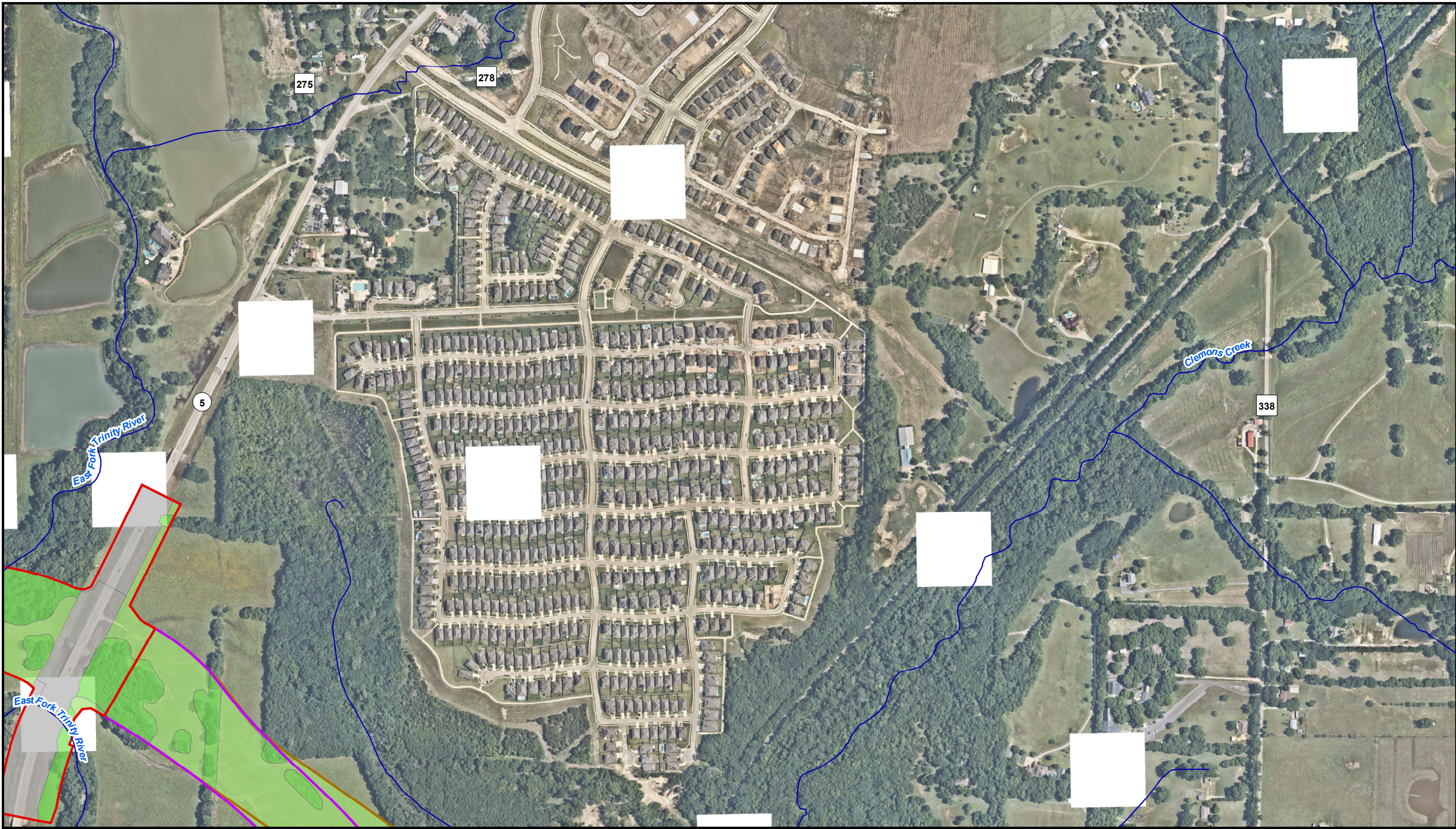


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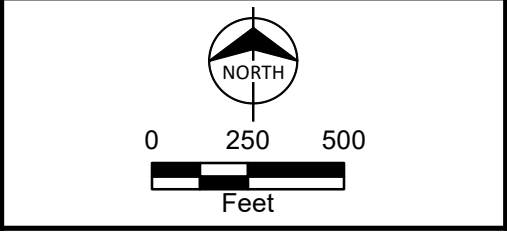
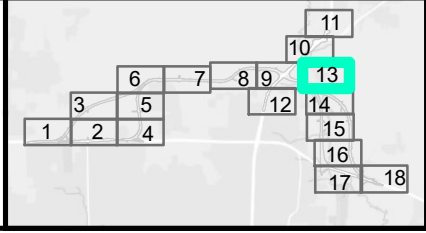
Segment E
 Native Invasive: Deciduous Woodland
 Urban Low Intensity



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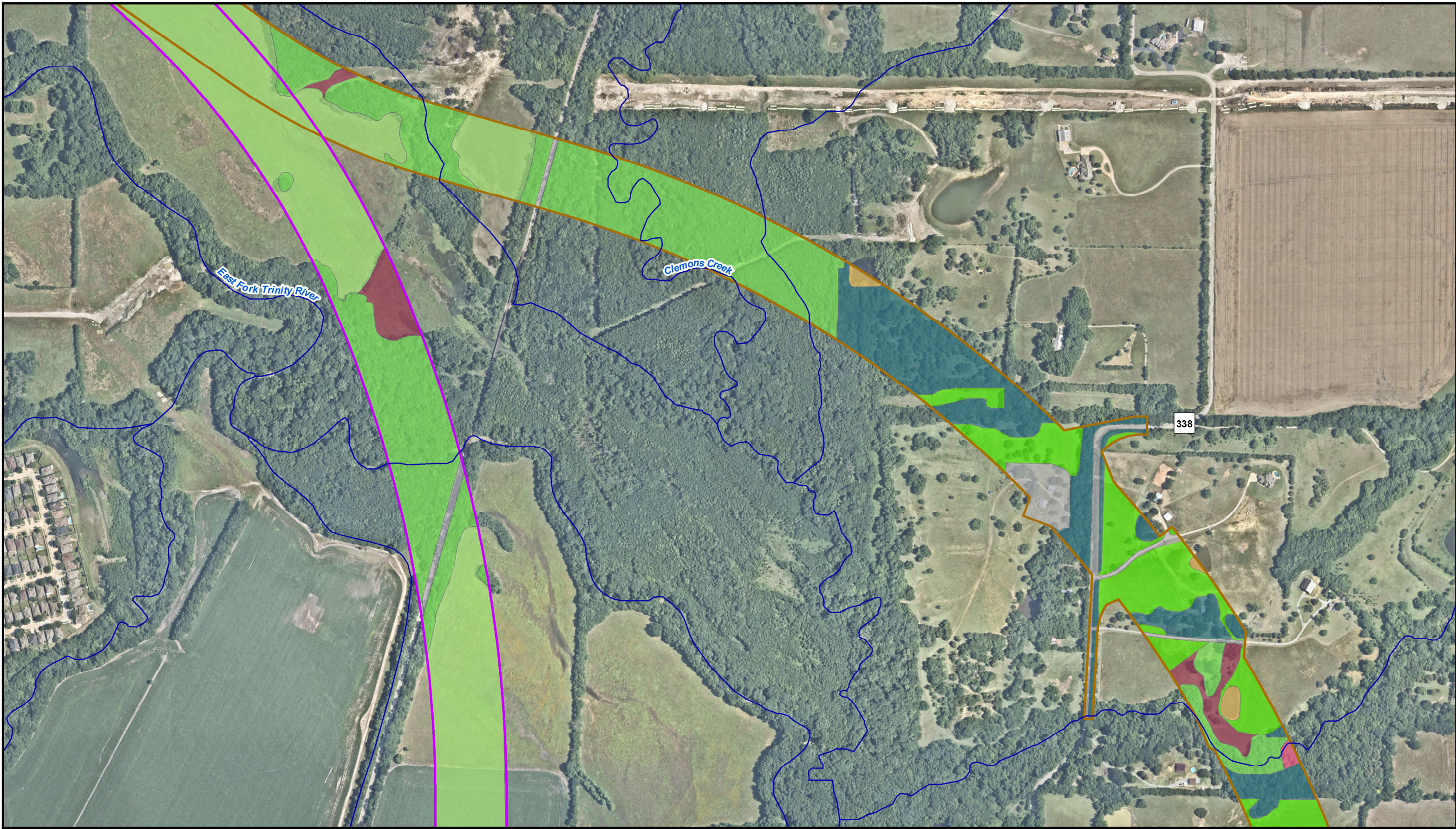


- Segment C With Spur
- Segment D With Spur
- Segment E
- Central Texas: Floodplain Hardwood Forest
- Row Crops
- Urban Low Intensity

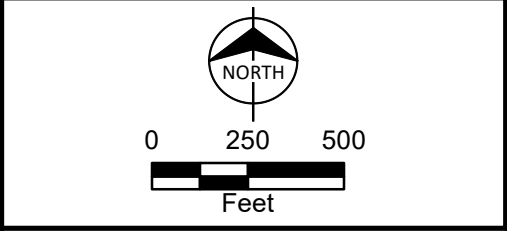
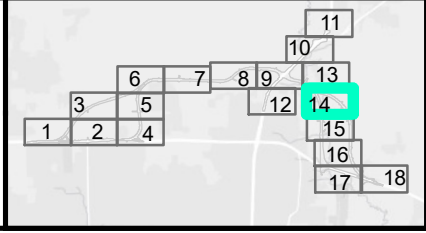


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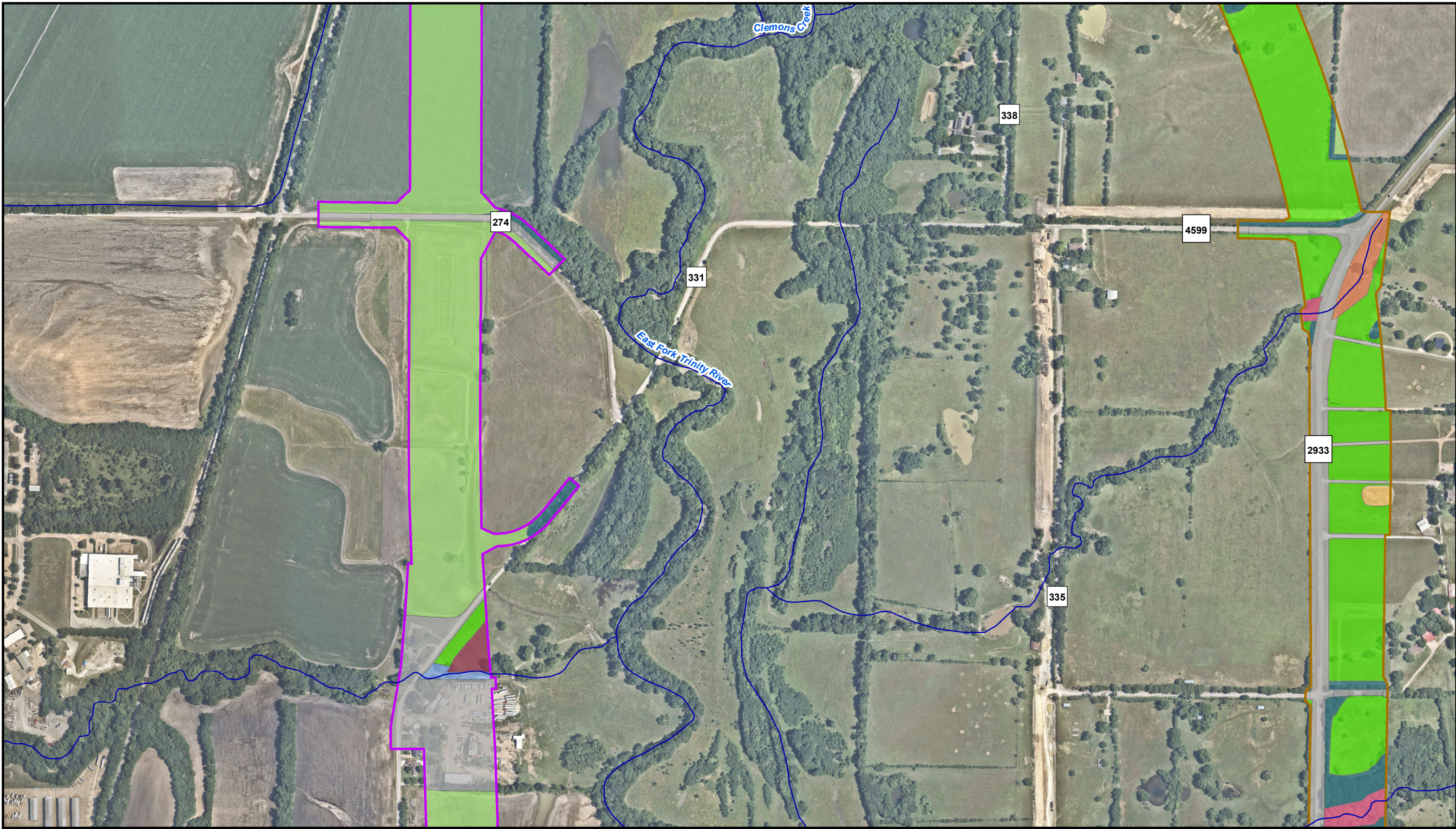


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| Segment C With Spur | Blackland Prairie: Disturbance or Tame Grassland | Native Invasive: Deciduous Woodland |
| Segment D With Spur | Central Texas: Floodplain Hardwood Forest | Open Water |
| | Central Texas: Floodplain Herbaceous Vegetation | Row Crops |
| | Central Texas: Riparian Hardwood Forest | Urban Low Intensity |

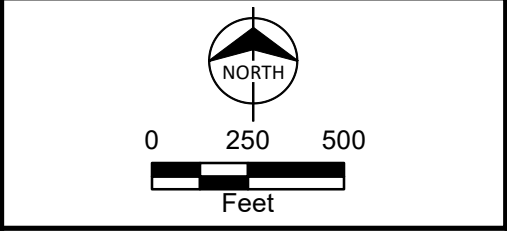
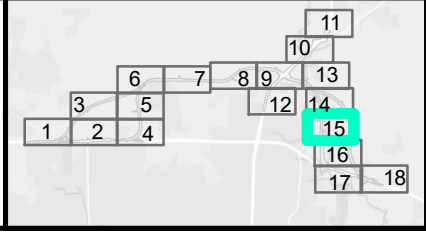


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|---------------------|--|-------------------------------------|
| Segment C With Spur | Blackland Prairie: Disturbance or Tame Grassland | Native Invasive: Deciduous Woodland |
| Segment D With Spur | Central Texas: Floodplain Herbaceous Vegetation | Open Water |
| | Central Texas: Riparian Evergreen Shrubland | Row Crops |
| | Central Texas: Riparian Hardwood Forest | Urban Low Intensity |
| | Central Texas: Riparian Herbaceous Vegetation | |

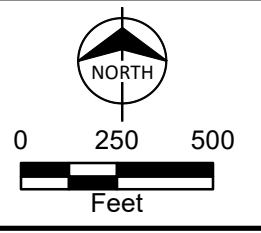
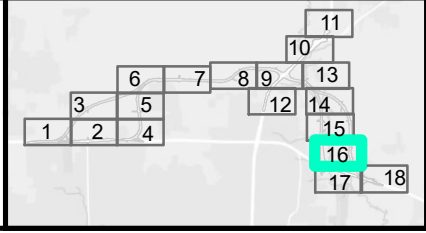


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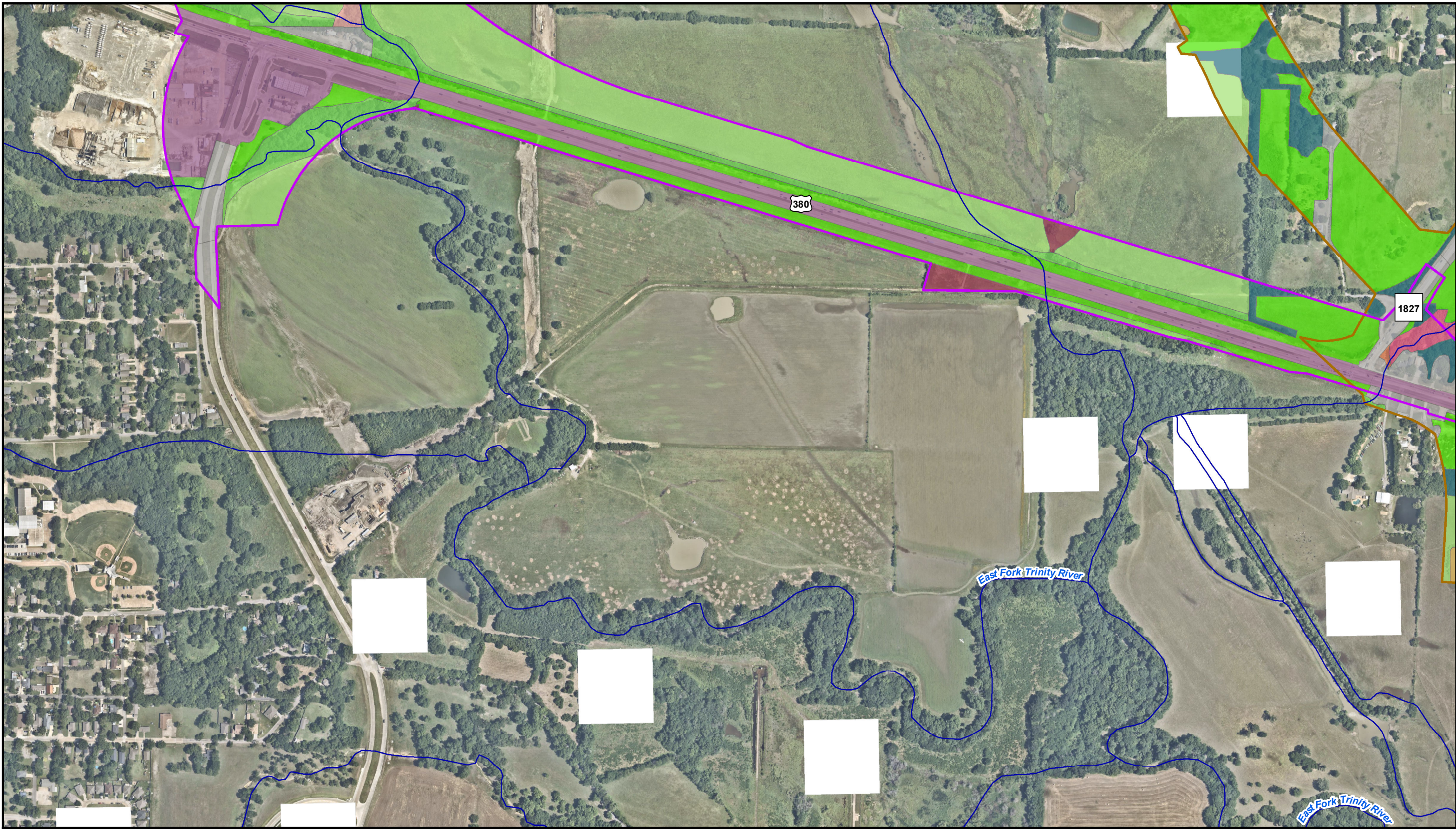


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|---------------------|---|-------------------------------------|
| Segment C With Spur | Blackland Prairie: Disturbance or Tame Grassland | Native Invasive: Deciduous Woodland |
| Segment D With Spur | Central Texas: Floodplain Hardwood - Evergreen Forest | Open Water |
| | Central Texas: Floodplain Hardwood Forest | Row Crops |
| | Central Texas: Floodplain Herbaceous Vegetation | Urban High Intensity |
| | Central Texas: Riparian Hardwood Forest | Urban Low Intensity |

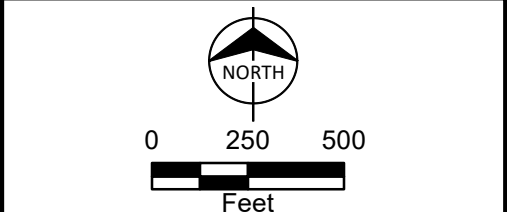
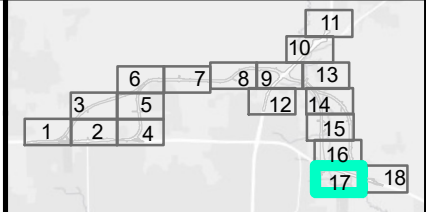


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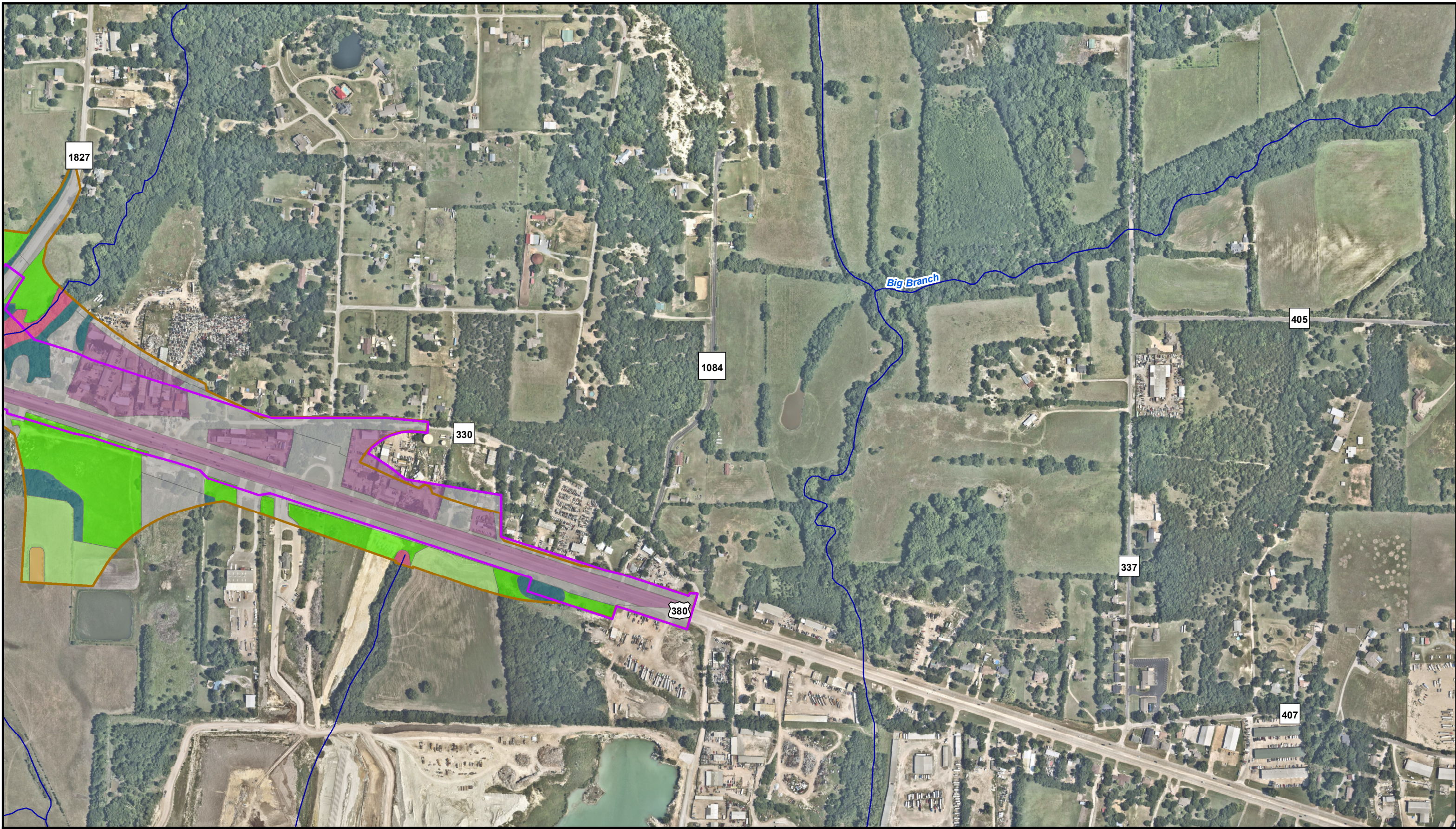
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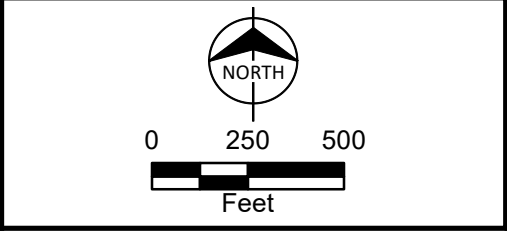
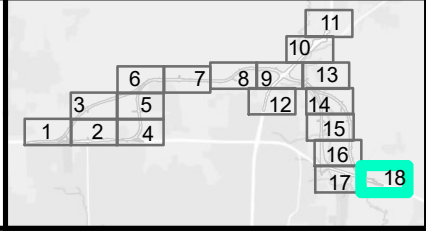
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|---------------------|---|-------------------------------------|
| Segment C With Spur | Blackland Prairie: Disturbance or Tame Grassland | Native Invasive: Deciduous Woodland |
| Segment D With Spur | Central Texas: Floodplain Hardwood - Evergreen Forest | Open Water |
| | Central Texas: Floodplain Hardwood Forest | Row Crops |
| | Central Texas: Floodplain Herbaceous Vegetation | Urban High Intensity |
| | Central Texas: Riparian Hardwood Forest | Urban Low Intensity |
| | Central Texas: Riparian Herbaceous Vegetation | |



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Segment C With Spur	Blackland Prairie: Disturbance or Tame Grassland	Row Crops
Segment D With Spur	Central Texas: Riparian Hardwood Forest	Urban High Intensity
	Native Invasive: Deciduous Woodland	Urban Low Intensity
	Open Water	



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EMST Category	Segment A	Segment B	Segment C		Segment D		Segment E	
			With Spur	Without Spur	With Spur	Without Spur	With Spur	Without Spur
1102 - Edwards Plateau: Live Oak Motte and Woodland	0.11	0.86	0.00	0.00	0.00	0.00	0.00	0.00
1103 - Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48
1104 - Edwards Plateau: Oak - Hardwood Motte and Woodland	2.01	1.54	0.00	0.00	0.00	0.00	0.00	1.44
1107 - Edwards Plateau: Savanna Grassland	10.75	11.55	0.00	0.00	0.00	0.00	0.00	4.91
1802 - Central Texas: Floodplain Live Oak Forest	0.06	0.21	0.00	0.00	0.00	0.00	0.00	0.00
1803 - Central Texas: Floodplain Hardwood - Evergreen Forest	0.00	0.00	0.00	0.00	1.34	1.34	0.00	0.00
1804 - Central Texas: Floodplain Hardwood Forest	20.67	8.55	30.91	30.85	40.18	35.81	42.21	0.00
1807 - Central Texas: Floodplain Herbaceous Vegetation	1.43	3.50	2.20	2.20	16.39	16.22	9.75	0.00
1902 - Central Texas: Riparian Live Oak Forest	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00
1904 - Central Texas: Riparian Hardwood Forest	5.34	6.17	3.41	3.40	0.94	0.94	5.79	0.00
1905 - Central Texas: Riparian Evergreen Shrubland	0.00	0.00	0.00	0.00	0.48	0.48	0.00	0.00
1907 - Central Texas: Riparian Herbaceous Vegetation	0.06	0.06	1.70	1.70	0.09	0.09	0.19	0.00
207 - Blackland Prairie: Disturbance or Tame Grassland	47.70	67.75	90.43	83.34	21.32	19.94	46.80	0.00
9000 - Barren	0.00	0.00	0.00	0.00	0.00	0.00	12.82	0.00
9004 - Swamp	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00
904 - Edwards Plateau: Oak - Hardwood Slope Forest	0.00	2.77	0.00	0.00	0.00	0.00	0.00	0.00
9104 - Native Invasive: Deciduous Woodland	29.61	31.55	38.50	37.35	3.26	3.24	34.30	0.00
9307 - Row Crops	39.37	57.46	28.89	25.23	145.32	143.21	85.66	0.00
9410 - Urban High Intensity	6.59	0.00	18.65	18.65	42.56	34.02	0.00	0.00
9411 - Urban Low Intensity	109.61	51.02	55.19	52.11	32.66	30.05	307.46	0.00
9600 - Open Water	0.23	2.73	1.73	1.37	1.24	1.24	0.93	0.00
TOTAL ROW Acres	273.54	246.45	271.60	256.21	305.78	286.58	553.73	

WITHOUT SPUR

	Purple Alternative (A+E+D)		Blue Alternative (A+E+C)		Brown Alternative (B+E+C)		Gold Alternative (B+E+D)	
	Acres	% of PROW	Acres	% of PROW	Acres	% of PROW	Acres	% of PROW
1102 - Edwards Plateau: Live Oak Motte and Woodland	0.11	0.01%	0.11	0.01%	0.86	0.08%	0.86	0.08%
1103 - Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	1.48	0.13%	1.48	0.14%	1.48	0.14%	1.48	0.14%
1104 - Edwards Plateau: Oak - Hardwood Motte and Woodland	3.45	0.31%	3.45	0.32%	2.98	0.28%	2.98	0.27%
1107 - Edwards Plateau: Savanna Grassland	15.66	1.41%	15.66	1.45%	16.46	1.56%	16.46	1.51%
1802 - Central Texas: Floodplain Live Oak Forest	0.06	0.01%	0.06	0.01%	0.21	0.02%	0.21	0.02%
1803 - Central Texas: Floodplain Hardwood - Evergreen Forest	1.34	0.12%	0.00	0.00%	0.00	0.00%	1.34	0.12%
1804 - Central Texas: Floodplain Hardwood Forest	98.68	8.86%	93.72	8.65%	81.61	7.73%	86.57	7.97%
1807 - Central Texas: Floodplain Herbaceous Vegetation	27.40	2.46%	13.38	1.23%	15.45	1.46%	29.47	2.71%
1902 - Central Texas: Riparian Live Oak Forest	0.00	0.00%	0.00	0.00%	0.47	0.04%	0.47	0.04%
1904 - Central Texas: Riparian Hardwood Forest	12.06	1.08%	14.53	1.34%	15.36	1.45%	12.90	1.19%
1905 - Central Texas: Riparian Evergreen Shrubland	0.48	0.04%	0.00	0.00%	0.00	0.00%	0.48	0.04%
1907 - Central Texas: Riparian Herbaceous Vegetation	0.33	0.03%	1.94	0.18%	1.94	0.18%	0.33	0.03%
207 - Blackland Prairie: Disturbance or Tame Grassland	114.43	10.27%	177.84	16.41%	197.89	18.73%	134.48	12.37%
9000 - Barren	12.82	1.15%	12.82	1.18%	12.82	1.21%	12.82	1.18%
9004 - Swamp	0.00	0.00%	0.00	0.00%	0.27	0.03%	0.27	0.02%
904 - Edwards Plateau: Oak - Hardwood Slope Forest	0.00	0.00%	0.00	0.00%	2.77	0.26%	2.77	0.26%
9104 - Native Invasive: Deciduous Woodland	67.16	6.03%	101.26	9.35%	103.20	9.77%	69.10	6.36%
9307 - Row Crops	268.24	24.08%	150.26	13.87%	168.35	15.94%	286.33	26.35%
9410 - Urban High Intensity	40.61	3.65%	25.24	2.33%	18.65	1.77%	34.02	3.13%
9411 - Urban Low Intensity	447.12	40.14%	469.18	43.30%	410.58	38.87%	388.52	35.75%
9600 - Open Water	2.40	0.22%	2.53	0.23%	5.03	0.48%	4.90	0.45%
TOTAL LU (excl. Existing Roadway/ROW)	1,113.9	100.0%	1,083.5	100.0%	1,056.4	100.0%	1,086.8	100.0%

TOTAL ROW [Check]

WITH SPUR

	Purple Alternative (A+E+D)		Blue Alternative (A+E+C)		Brown Alternative (B+E+C)		Gold Alternative (B+E+D)	
	Acres	% of PROW	Acres	% of PROW	Acres	% of PROW	Acres	% of PROW
1102 - Edwards Plateau: Live Oak Motte and Woodland	0.11	0.01%	0.11	0.01%	0.86	0.08%	0.86	0.08%
1103 - Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	1.48	0.13%	1.48	0.14%	1.48	0.14%	1.48	0.13%
1104 - Edwards Plateau: Oak - Hardwood Motte and Woodland	3.45	0.30%	3.45	0.31%	2.98	0.28%	2.98	0.27%
1107 - Edwards Plateau: Savanna Grassland	15.66	1.38%	15.66	1.43%	16.46	1.54%	16.46	1.49%
1802 - Central Texas: Floodplain Live Oak Forest	0.06	0.00%	0.06	0.01%	0.21	0.02%	0.21	0.02%
1803 - Central Texas: Floodplain Hardwood - Evergreen Forest	1.34	0.12%	0.00	0.00%	0.00	0.00%	1.34	0.12%
1804 - Central Texas: Floodplain Hardwood Forest	103.06	9.10%	93.78	8.53%	81.67	7.62%	90.94	8.22%
1807 - Central Texas: Floodplain Herbaceous Vegetation	27.57	2.43%	13.38	1.22%	15.45	1.44%	29.64	2.68%
1902 - Central Texas: Riparian Live Oak Forest	0.00	0.00%	0.00	0.00%	0.47	0.04%	0.47	0.04%
1904 - Central Texas: Riparian Hardwood Forest	12.07	1.06%	14.54	1.32%	15.37	1.43%	12.90	1.17%
1905 - Central Texas: Riparian Evergreen Shrubland	0.48	0.04%	0.00	0.00%	0.00	0.00%	0.48	0.04%
1907 - Central Texas: Riparian Herbaceous Vegetation	0.33	0.03%	1.94	0.18%	1.94	0.18%	0.33	0.03%
207 - Blackland Prairie: Disturbance or Tame Grassland	115.82	10.22%	184.92	16.83%	204.97	19.12%	135.87	12.29%
9000 - Barren	12.82	1.13%	12.82	1.17%	12.82	1.20%	12.82	1.16%
9004 - Swamp	0.00	0.00%	0.00	0.00%	0.27	0.03%	0.27	0.02%
904 - Edwards Plateau: Oak - Hardwood Slope Forest	0.00	0.00%	0.00	0.00%	2.77	0.26%	2.77	0.25%
9104 - Native Invasive: Deciduous Woodland	67.17	5.93%	102.42	9.32%	104.36	9.74%	69.12	6.25%
9307 - Row Crops	270.35	23.86%	153.92	14.01%	172.00	16.05%	288.43	26.08%
9410 - Urban High Intensity	49.15	4.34%	25.24	2.30%	18.65	1.74%	42.56	3.85%
9411 - Urban Low Intensity	449.73	39.69%	472.26	42.98%	413.66	38.60%	391.13	35.37%
9600 - Open Water	2.40	0.21%	2.90	0.26%	5.40	0.50%	4.90	0.44%
TOTAL LU (excl. Existing Roadway/ROW)	1,133.1	100.0%	1,098.9	100.0%	1,071.8	100.0%	1,106.0	100.0%

TOTAL ROW [Check]



Photograph 1: Representative view of the Urban High Intensity vegetation type observed within the project area.



Photograph 2: Representative view of the Urban High Intensity vegetation type observed within the project area.



Photograph 3: Representative view of the Urban Low Intensity vegetation type observed within the project area.



Photograph 4: Representative view of the Urban Low Intensity vegetation type observed within the project area.



Photograph 5: Representative view of the Urban Low Intensity vegetation type observed within the project area. The Row Crops vegetation type occurs on either side of the road.



Photograph 6: Representative view of the Urban Low Intensity vegetation type observed within the project area. The Native Invasive: Deciduous Woodland vegetation type occurs on either side of the road.



Photograph 7: Representative view of the Row Crops vegetation type observed within the project area.



Photograph 8: Representative view of the Row Crops vegetation type observed within the project area.



Photograph 9: Representative view of the Row Crops vegetation type observed within the project area.



Photograph 10: Representative view of the Row Crops vegetation type observed within the project area.



Photograph 11: Representative view of the Blackland Prairie: Disturbance or Tame Grassland (foreground) and the Central Texas: Riparian Hardwood Forest (background) vegetation types observed within the project area.



Photograph 12: Representative view of the Blackland Prairie: Disturbance or Tame Grassland vegetation type observed within the project area.



Photograph 13: Representative view of the Blackland Prairie: Disturbance or Tame Grassland (foreground) and the Native Invasive: Deciduous Woodland (background) vegetation types observed within the project area.



Photograph 14: Representative view of the Blackland Prairie: Disturbance or Tame Grassland (foreground) and the Native Invasive: Deciduous Woodland (background) vegetation types observed within the project area.



Photograph 15: Representative view of the Edwards Plateau: Savanna Grassland vegetation type observed within the project area.



Photograph 16: Representative view of the Edwards Plateau: Savanna Grassland vegetation type observed within the project area.



Photograph 17: Representative view of the Central Texas: Floodplain Herbaceous (foreground) and the Native Invasive: Deciduous Woodland (background) vegetation types observed within the project area.



Photograph 18: Representative view of the Central Texas: Floodplain Herbaceous (foreground) and the Central Texas: Floodplain Hardwood Forest (background) vegetation types observed within the project area.



Photograph 19: Representative view of the Central Texas: Floodplain Herbaceous (foreground) and the Central Texas: Floodplain Hardwood Forest (background) vegetation types observed within the project area.



Photograph 20: Representative view of the Central Texas: Floodplain Herbaceous (foreground) and the Central Texas: Floodplain Hardwood Forest (background) vegetation types observed within the project area.



Photograph 21: Representative view of the Central Texas: Riparian Herbaceous (foreground) and the Central Texas: Riparian Hardwood Forest (background) vegetation types observed within the project area.



Photograph 22: Representative view of the Central Texas: Riparian Herbaceous (foreground) and the Central Texas: Riparian Hardwood Forest (background) vegetation types observed within the project area.



Photograph 23: Representative view of the Central Texas: Riparian Herbaceous (foreground) and the Native Invasive: Deciduous Woodland (background) vegetation types observed within the project area.



Photograph 24: Representative view of the Barren (foreground) and the Central Texas: Riparian Hardwood Forest (background) vegetation types observed within the project area.



Photograph 25: Representative view of the Barren vegetation type observed within the project area.



Photograph 26: Representative view of the Central Texas: Floodplain Hardwood Forest vegetation type observed within the project area.



Photograph 27: Representative view of the Central Texas: Floodplain Hardwood Forest (background) and a portion of the Urban Low Intensity (foreground) vegetation types observed within the project area.



Photograph 28: Representative view of the Central Texas: Floodplain Hardwood Forest (background), the Row Crops (midground), and a portion of the Urban Low Intensity (foreground) vegetation types observed within the project area.



Photograph 29: Representative view of the Central Texas: Floodplain Hardwood Forest (background) and the Central Texas: Floodplain Herbaceous (foreground) vegetation types observed within the project area.



Photograph 30: Representative view of the Native Invasive: Deciduous Woodland (background) and the Urban Low Intensity (foreground) vegetation types observed within the project area.



Photograph 31: Representative view of the Native Invasive: Deciduous Woodland (background) and the Blackland Prairie: Disturbance or Tame Grassland (foreground) vegetation types observed within the project area.



Photograph 32: Representative view of the Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland vegetation type observed within the project area.



Photograph 33: Representative view of the Edwards Plateau: Oak - Hardwood Slope Forest vegetation type observed within the project area.



Photograph 34: Representative view of the Edwards Plateau: Oak - Hardwood Motte and Woodland vegetation type observed within the project area.



Photograph 35: Representative view of the Edwards Plateau: Oak - Hardwood Motte and Woodland vegetation type observed within the project area.



Photograph 36: Representative view of the Central Texas: Riparian Hardwood Forest (background) and a portion of the Urban Low Intensity (foreground) vegetation types observed within the project area.



Photograph 37: Representative view of the Central Texas: Riparian Hardwood Forest (background) and a portion of the Urban Low Intensity (foreground) vegetation types observed within the project area.



Photograph 38: Representative view of Open Water observed within the project area (Segment A).



Photograph 39: Representative view of Open Water observed near the project area (Segment E).



Photograph 40: Representative view of Open Water observed adjacent to the project area (Segment E).



Photograph 41: Representative view of Open Water observed within the project area (Segment D).



Photograph 42: Representative view of Open Water observed within the project area (Segment C).



Photograph 43: Representative view of Open Water observed within the project area (Segment C).



Photograph 44: Representative view of Open Water observed within the project area (Segment C).



Photograph 45: Representative view of Open Water observed adjacent to the project area (Segment D).



Photograph 46: Potential Black Rail stopover habitat observed near Segment A.



Photograph 47: Potential Black Rail stopover habitat observed near Segment A.



Photograph 48: Potential Black Rail stopover habitat observed within the project area (Segment A).



Photograph 49: Potential Black Rail stopover habitat observed adjacent to Segment C.



Photograph 50: Potential Black Rail stopover habitat observed near Segment D.



Photograph 51: Potential Black Rail stopover habitat observed near Segment D.



Photograph 52: Potential Black Rail stopover habitat observed near Segment D.



Photograph 53: Potential Black Rail stopover habitat observed within the project area (Segment D).

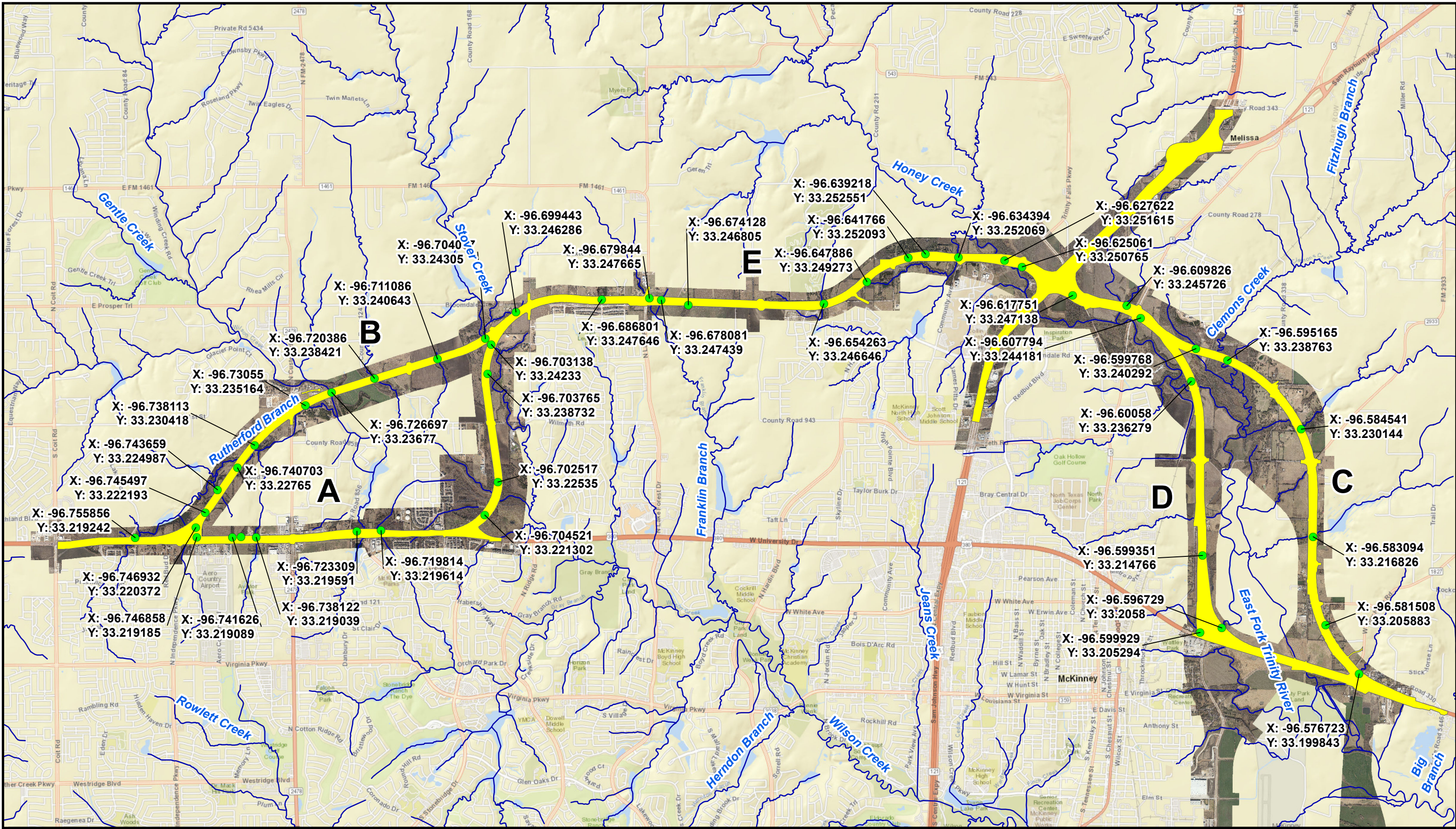


Photograph 54: Potential Black Rail stopover habitat observed within the project area (Segment D).

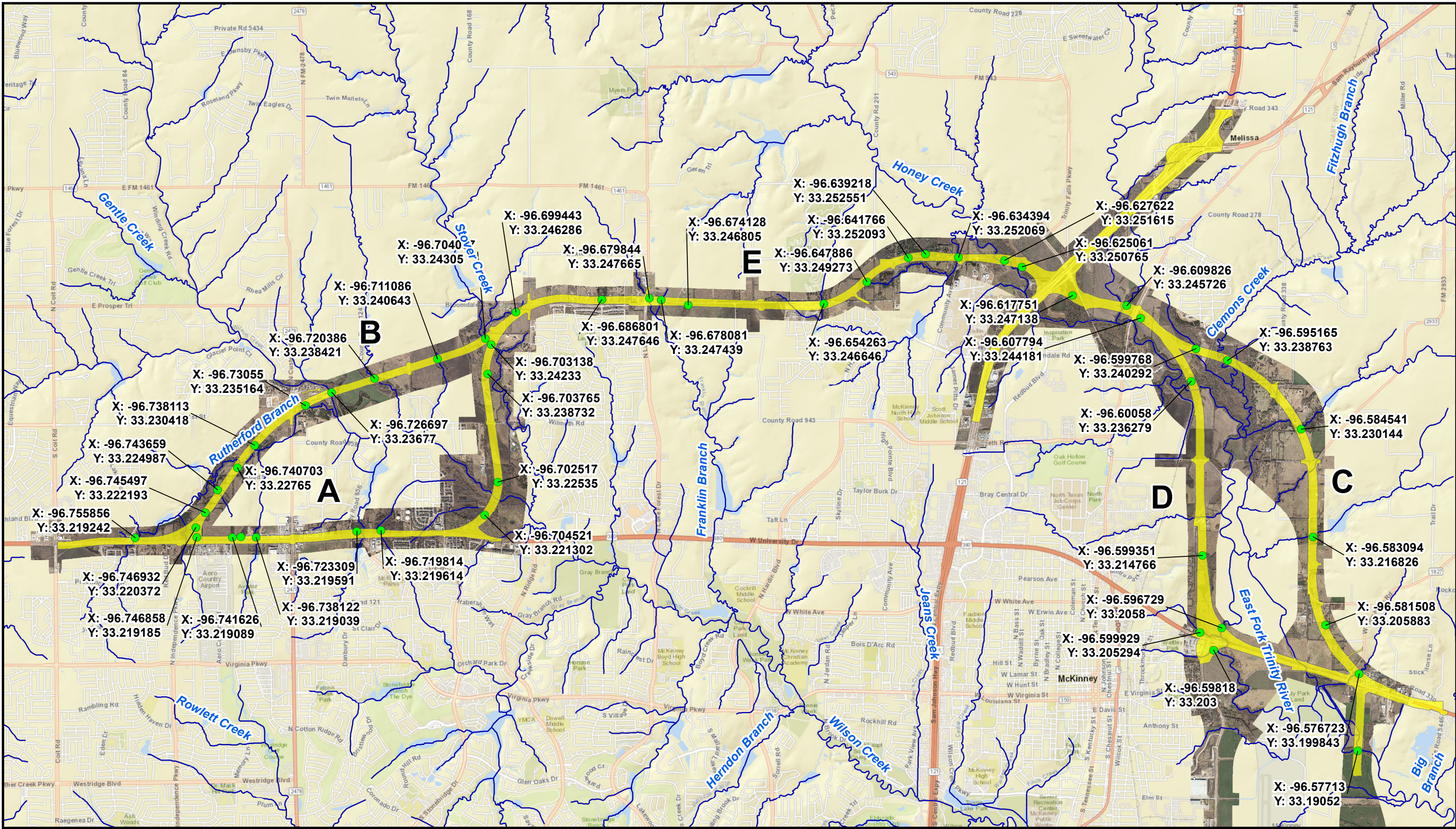


Photograph 55: Potential Black Rail stopover habitat observed within the project area (Segment D).

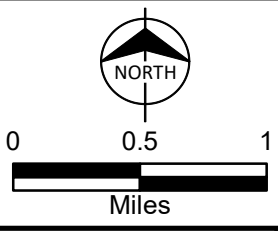
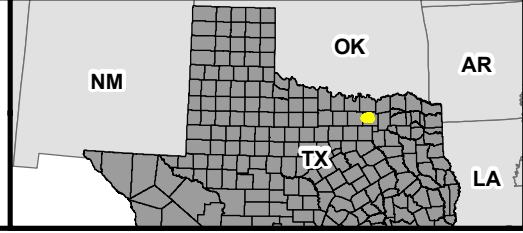
Appendix O-4: Woodland and Stream Crossing Maps



Path: Z:\Resources\Local\Clients\KCM\TRNITX\DOT199436_US380\ArcGIS\DataFiles\ArcDocs\US380_Woodland_Habitat.mxd sspurgeon 11/12/2021
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

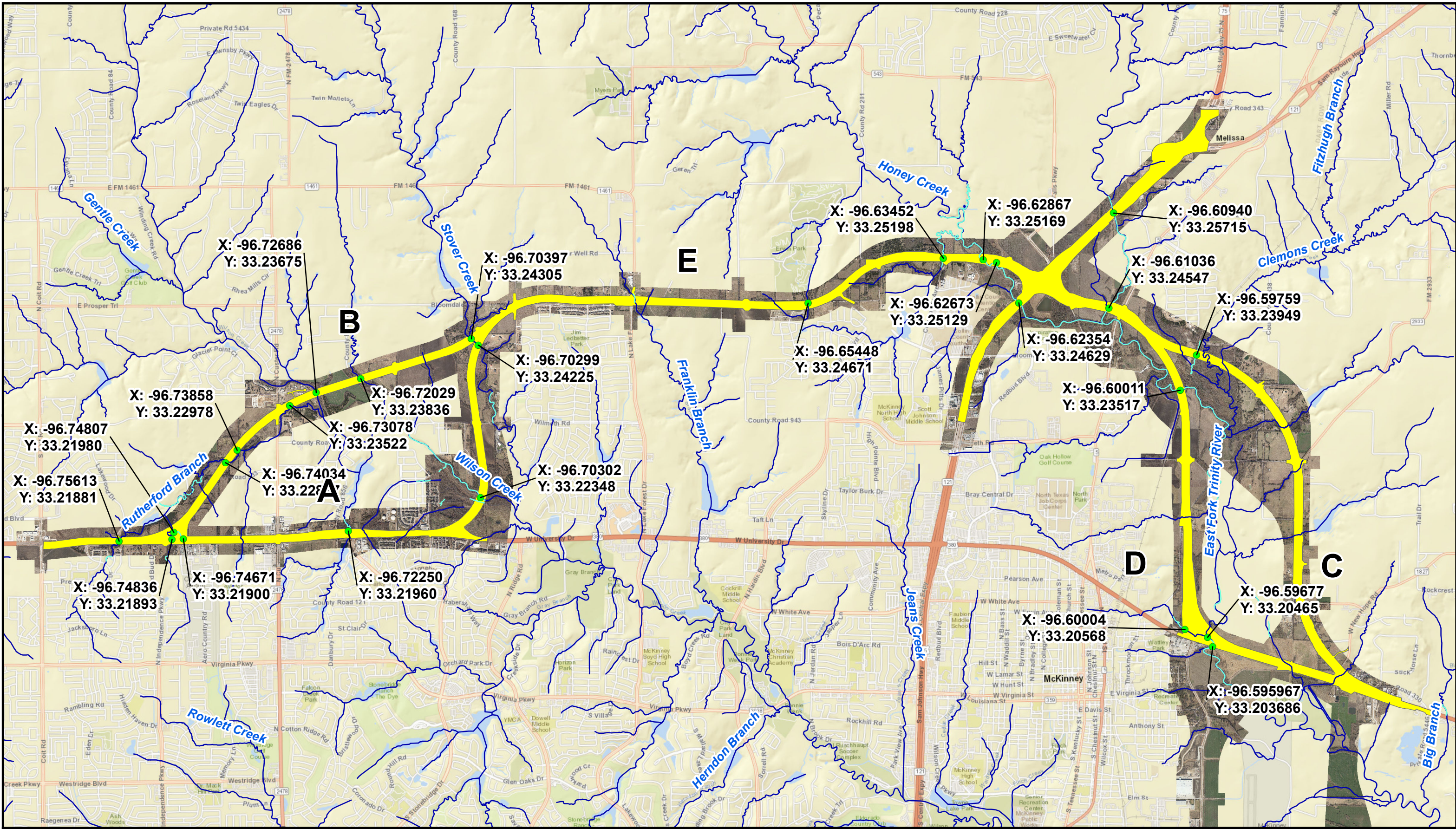


- Project Area
- Woodland Habitat
- Streams

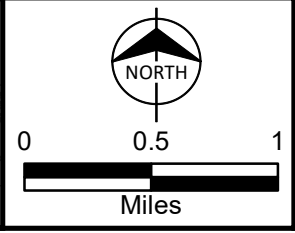


Woodland Habitat for SGCN Bats
US 380 With Spur 399 EIS
CSJ: 0135-02-065, 0135-15-002 & 0135-03-053
Collin County, TX

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 Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

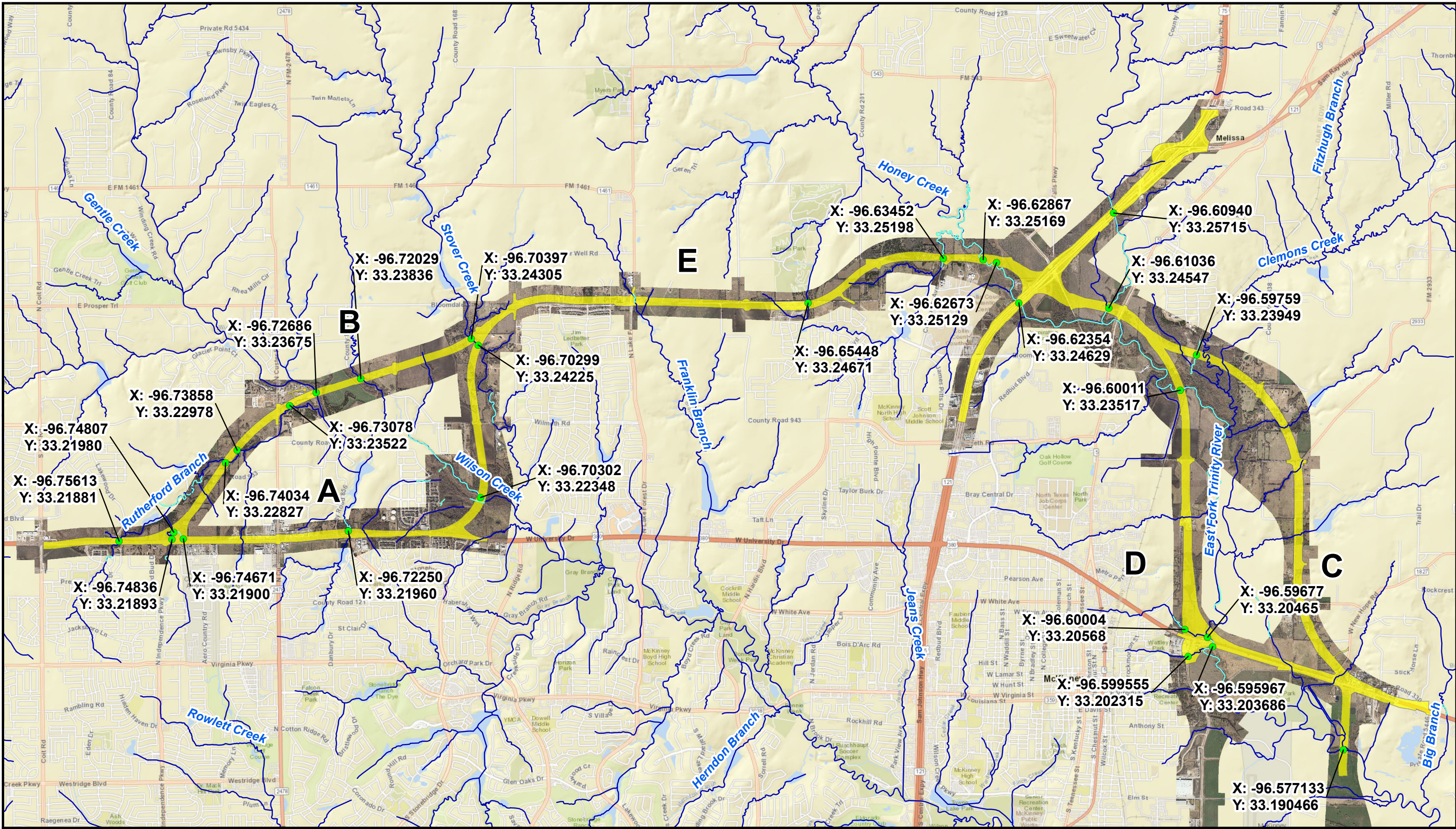


- Project Area
- Perennial Stream Crossing
- HDR Delineated Perennial Stream
- Streams

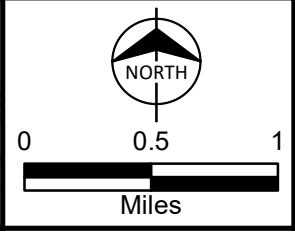


Perennial Stream Crossings
 US380 Without Spur 399 EIS
 CSJ: 0135-02-065, 0135-15-002 & 0135-03-053
 Collin County, TX

Path: Z:\Resources\Local\Clients\KCM\TRN\XDOT\199436_US380\ArcGIS\DataFiles\ArcDocs\US380_Perennial_Stream_Crossings.mxd_sspurgeon 11/12/2021
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



- Project Area
- Perennial Stream Crossing
- HDR Delineated Perennial Stream
- Streams



Perennial Stream Crossings
US380 With Spur 399 EIS
CSJ: 0135-02-065, 0135-15-002 & 0135-03-053
Collin County, TX

Appendix O-5: Information for Planning and Consultation (IPaC) and Rare, Threatened, and Endangered Species of Texas (RTEST)



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Arlington Ecological Services Field Office
2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247
Phone: (817) 277-1100 Fax: (817) 277-1129
Email Address: arles@fws.gov

In Reply Refer To:
Project Code: 2023-0021377
Project Name: US380

December 05, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, which may occur within the boundary of your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under section 7(a)(1) of the Act, Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Under and 7(a)(2) and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether their actions may affect threatened and endangered species and/or designated critical habitat. A Federal action is an activity or program authorized, funded, or carried out, in whole or in part, by a Federal agency (50 CFR 402.02).

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For Federal actions other than major construction activities, the Service suggests that a biological evaluation (similar to a Biological Assessment) be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

After evaluating the potential effects of a proposed action on federally listed species, one of the following determinations should be made by the Federal agency:

1. *No effect* - the appropriate determination when a project, as proposed, is anticipated to have no effects to listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, the action agency should maintain a complete record of their evaluation, including the steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information.
2. *May affect, but is not likely to adversely affect* - the appropriate determination when a proposed action's anticipated effects to listed species or critical habitat are insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where "take" of a listed species occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects to occur. This determination requires written concurrence from the Service. A biological evaluation or other supporting information justifying this determination should be submitted with a request for written concurrence.
3. *May affect, is likely to adversely affect* - the appropriate determination if any adverse effect to listed species or critical habitat may occur as a consequence of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service has performed up-front analysis for certain project types and species in your project area. These analyses have been compiled into *determination keys*, which allows an action agency, or its designated non-federal representative, to initiate a streamlined process for determining a proposed project's potential effects on federally listed species. The determination keys can be accessed through IPaC.

The Service recommends that candidate species, proposed species, and proposed critical habitat be addressed should consultation be necessary. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found at: <https://www.fws.gov/service/section-7-consultations>

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>). Additionally, wind energy projects should follow the wind energy guidelines (<https://www.fws.gov/media/land-based-wind-energy-guidelines>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <https://www.fws.gov/media/recommended-best-practices-communication-tower-design-siting-construction-operation>. The Federal Aviation Administration (FAA) released specifications for and made mandatory flashing L-810 lights on new towers 150-350 feet AGL, and the elimination of L-810 steady-burning side lights on towers above 350 feet AGL. While the FAA made these changes to reduce the number of migratory bird collisions (by as much as 70%), extinguishing steady-burning side lights also reduces maintenance costs to tower owners. For additional information concerning migratory birds and eagle conservation plans, please contact the Service's Migratory Bird Office at 505-248-7882.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arlington Ecological Services Field Office

2005 Ne Green Oaks Blvd

Suite 140

Arlington, TX 76006-6247

(817) 277-1100

Project Summary

Project Code: 2023-0021377
Project Name: US380
Project Type: New Constr - Above Ground
Project Description: New location road
Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@33.22847405,-96.74011113897848,14z>



Counties: Collin County, Texas

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane <i>Grus americana</i> Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Clams

NAME	STATUS
Texas Fawnsfoot <i>Truncilla macrodon</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8965	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Henslow's Sparrow <i>Ammodramus henslowii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds elsewhere
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Little Blue Heron <i>Egretta caerulea</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 10 to Oct 15
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

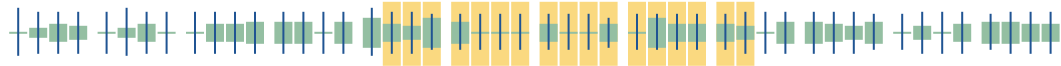
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence

BCC Rangewide
(CON)

Red-headed
Woodpecker
BCC Rangewide
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPaC User Contact Information

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COLLIN COUNTY

AMPHIBIANS

southern crawfish frog *Lithobates areolatus areolatus*

Terrestrial and aquatic: The terrestrial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4T4 State Rank: S3

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

Woodhouse's toad *Anaxyrus woodhousii*

Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: SU

BIRDS

bald eagle *Haliaeetus leucocephalus*

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

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3B,S3N

black rail *Laterallus jamaicensis*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: LT State Status: T SGCN: Y
Endemic: N Global Rank: G3 State Rank: S2

chestnut-collared longspur *Calcarius ornatus*

Occurs in open shortgrass settings especially in patches with some bare ground. Also occurs in grain sorghum fields and Conservation Reserve Program lands

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

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COLLIN COUNTY

BIRDS

Franklin's gull *Leucophaeus pipixcan*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

piping plover *Charadrius melodus*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

rufa red knot *Calidris canutus rufa*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore. Bolivar Flats in Galveston County, sandy beaches Mustang Island, few on outer coastal and barrier beaches, tidal mudflats and salt marshes.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

Sprague's pipit *Anthus spragueii*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat during migration and in winter consists of pastures and weedy fields (AOU 1983), including grasslands with dense herbaceous vegetation or grassy agricultural fields.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3N

western burrowing owl *Athene cunicularia hypugaea*

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

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

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COLLIN COUNTY

BIRDS

white-faced ibis

Plegadis chihi

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

whooping crane

Grus americana

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1S2N

wood stork

Mycteria americana

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers to nest in large tracts of baldcypress (*Taxodium distichum*) or red mangrove (*Rhizophora mangle*); 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.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

CRUSTACEANS

No accepted common name

Caecidotea bilineata

Spring obligate. *Caecidotea bilineata* is known only from non-cave groundwater habitats in deposits of Cretaceous age. It is presumably a phreatobite. Fine scale habitat requirements unknown.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S1

Parkhill Prairie crayfish

Procambarus steigmani

Burrower in long-grass prairie; all animals were collected with traps, thus there is no knowledge of depths of burrows; herbivore; crepuscular, nocturnal

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1S2

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COLLIN COUNTY

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

MAMMALS

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

eastern red bat *Lasiurus borealis*

Red bats are migratory bats that are common across Texas. They are most common in the eastern and central parts of the state, due to their requirement of forests for foliage roosting. West Texas specimens are associated with forested areas (cottonwoods). Also common along the coastline. These bats are highly mobile, seasonally migratory, and practice a type of "wandering migration". Associations with specific habitat is difficult unless specific migratory stopover sites or wintering grounds are found. Likely associated with any forested area in East, Central, and North Texas but can occur statewide.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

hoary bat *Lasiurus cinereus*

Hoary bats are highly migratory, high-flying bats that have been noted throughout the state. Females are known to migrate to Mexico in the winter, males tend to remain further north and may stay in Texas year-round. Commonly associated with forests (foliage roosting species) but are found in unforested parts of the state and lowland deserts. Tend to be captured over water and large, open flyways.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

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COLLIN COUNTY

MAMMALS

mountain lion

Puma concolor

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: S2S3

muskrat

Ondatra zibethicus

Found in fresh or brackish marshes, lakes, ponds, swamps, and other bodies of slow-moving water. Most abundant in areas with cattail. Dens in bank burrow or conical house of vegetation in shallow vegetated water. It is primarily found in the Rio Grande near El Paso and in SE Texas in the Houston area.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: S5

swamp rabbit

Sylvilagus aquaticus

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: S5

tricolored bat

Perimyotis subflavus

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G3G4

State Rank: S2

western hog-nosed skunk

Conepatus leuconotus

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. *telmalestes*

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G4

State Rank: S4

MOLLUSKS

Louisiana pigtoe

Pleurobema riddellii

Occurs in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand, and gravel. Not known from impoundments (Howells 2010f; Randklev et al. 2013b; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status:

State Status: T

SGCN: Y

Endemic: N

Global Rank: G1G2

State Rank: S1

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COLLIN COUNTY

MOLLUSKS

Texas heelsplitter *Potamilus amphichaenus*

Occurs in small streams to large rivers in standing to slow-flowing water; most common in banks, backwaters and quiet pools; adapts to some reservoirs. Often found in soft substrates such as mud, silt or sand (Howells et al. 1996; Randklev et al. 2017a). [Mussels of Texas 2019]

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1G3	State Rank: S1

REPTILES

alligator snapping turtle *Macrochelys temminckii*

Aquatic: Perennial water bodies; rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near running water; sometimes enters brackish coastal waters. Females emerge to lay eggs close to the waters edge.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

eastern box turtle *Terrapene carolina*

Terrestrial: Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas garter snake *Thamnophis sirtalis annectens*

Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, 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. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

DISCLAIMER

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COLLIN COUNTY

REPTILES

timber (canebrake) rattlesnake *Crotalus horridus*

Terrestrial: Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box turtles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

PLANTS

Engelmann's bladderpod *Physaria engelmannii*

Grasslands and calcareous rock outcrops in a band along the eastern edge of the Edwards Plateau, ranging as far north as the Red River (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

glandular gay-feather *Liatris glandulosa*

Occurs in herbaceous vegetation on limestone outcrops (Carr 2015)

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S2

red yucca *Hesperaloe parviflora*

Shrublands on dry limestone slopes; Perennial; Flowering April-May; Fruiting May-June

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Sutherland hawthorn *Crataegus viridis var. glabriuscula*

In mesic soils of woods or on edge of woods, treeline/fenceline, or thicket. Above/near creeks and draws, in river bottoms. Flowering Mar-Apr; fruiting May-Oct.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5T3T4	State Rank: S3

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**Appendix O-6: TPWD BMP Form – Documentation of Texas Parks and Wildlife Department
Best Management Practices**



Form
Documentation of Texas Parks and Wildlife Department Best Management Practices

Project Name: **US 380 Improvement McKinney**

CSJ(s): **0135-02-065, 0135-15-002, 0135-03-053**

County(ies): **Collin**

Date Form Completed: **1/21/22**

Prepared by: **Derek Green**

Information on state-listed species, SGCN, water resources, and other natural resources can be found in the ECOS documents tab under the filenames specified in the e-mail sent to WHAB_TXDOT@tpwd.texas.gov.

1. Does the project impact any state parks, wildlife management areas, wildlife refuges, or other designated protected areas?

No

Yes

2. Does TxDOT need TPWD assistance in identifying and locating Section 404 mitigation opportunities for this project?

No / N/A / Not yet determined.

- Section 404 mitigation opportunities suitable for the needs of this project have already been identified. Wetland impacts are located within the primary service area for existing mitigation banks with available credits to offset stream and wetland impacts.

Yes

3. Is there a species or resource challenge that TPWD can assist with additional guidance? If so, describe below:

There are no species or resource challenges known at this time.

4. Select all the best management practices (BMPs) that will be applied to the project:

Freshwater Mussel BMP

Water Quality BMP



- Stream Crossing BMP
- Bird BMP
- Species-specific BMPs for the following: alligator snapping turtle (*Macrochelys temminckii*) – Minimize impacts to wetland and riverine habitat; and southern crawfish frog (*Lithobates areolatus areolatus*) – Minimize impacts to wetland habitats including isolated ephemeral pools.
- Aquatic Amphibian and Reptile BMP
- Terrestrial Amphibian and Reptile BMP
- Vegetation BMP
- Aquatic Invertebrate BMP
- Crayfish BMP
- Bat BMP
- General Design and Construction BMP
- Rare Plant BMP

Exact locations of some of these BMPs are still yet to be determined depending how the planning process develops and which alternative is chosen.

5. Select any species protection specifications that will be applied to the project.

- Amphibian and Reptile Exclusion Fence
- Bat Houses
- Bat Exclusion System
- Other

6. Select and/or explain where the above-listed BMPs will be documented and communicated to the contractor (e.g., plan sheets, general notes, EPIC sheet, etc.):



- Environmental Document (EA or EIS) – Required
- ECOS Non-ESA Commitments Activity – Required for surveys and other pre-construction actions
- Plan Sheets/ EPIC Sheet
- General notes
- Other

Applicable BMPs would be specified in the project EIS and EPIC sheet. The Freshwater Mussel BMP, Bat BMP, and Rare Plant BMP would be performed at suitable habitat locations. Those possible locations for the project alternatives would be included in the EIS. Specific survey areas based on the selected alternative would be noted in the ECOS Non-ESA Commitments Activity and the EPIC sheet. Reports documenting survey results would be uploaded to ECOS upon completion.