IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Southeast Connector

LOCATION

Tarrant County, Texas

DESCRIPTION

The Texas Department of Transportation (TxDOT) is proposing to reconstruct and add capacity to Interstate Highway (I) 20, I-820 and United States Highway (US) 287 including three major interchanges in southeast Tarrant County within the cities of Arlington, Forest Hill, Fort Worth, and Kennedale. The major interchanges are the I-820/US 287 Interchange, the I 20/I-820 Interchange, and the I-20/US 287 Interchange. This project spans approximately 16 miles and would add main lanes and frontage roads to I-20 from Forest Hill Drive to Park Springs Boulevard, I 820 from I 20 to Brentwood Stair Road, and US 287 from Bishop Street to Sublett Road. New frontage roads would be constructed at various locations, and bicycle and pedestrian accommodations would be provided throughout. The project is collectively referred to as the “Southeast Connector.”

Local office

Arlington Ecological Services Field Office

(817) 277-1100
(817) 277-1129

2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247

http://www.fws.gov/southwest/es/arlingtontexas/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. 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.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Least Tern Sterna antillarum No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered

Piping Plover Charadrius melodus — Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1864

Whooping Crane Grus americana — Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/758

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

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 (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Harris's Sparrow *Zonotrichia querula* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs *Tringa flavipes* 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
Long-billed Curlew *Numenius americanus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

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 in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

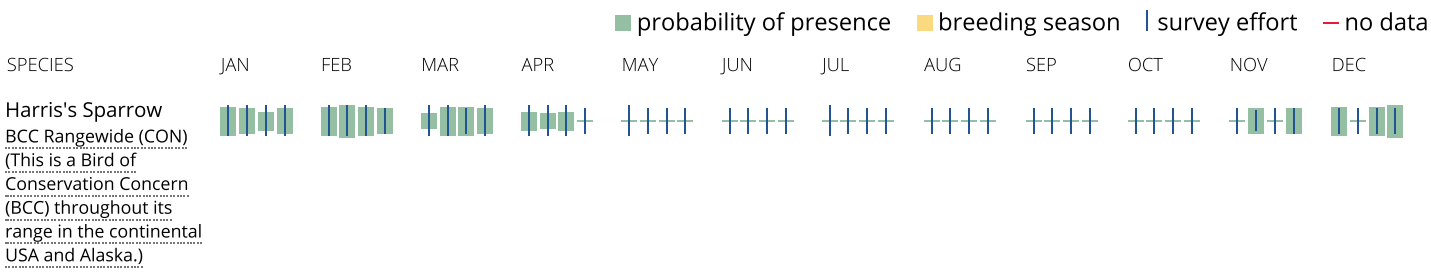
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

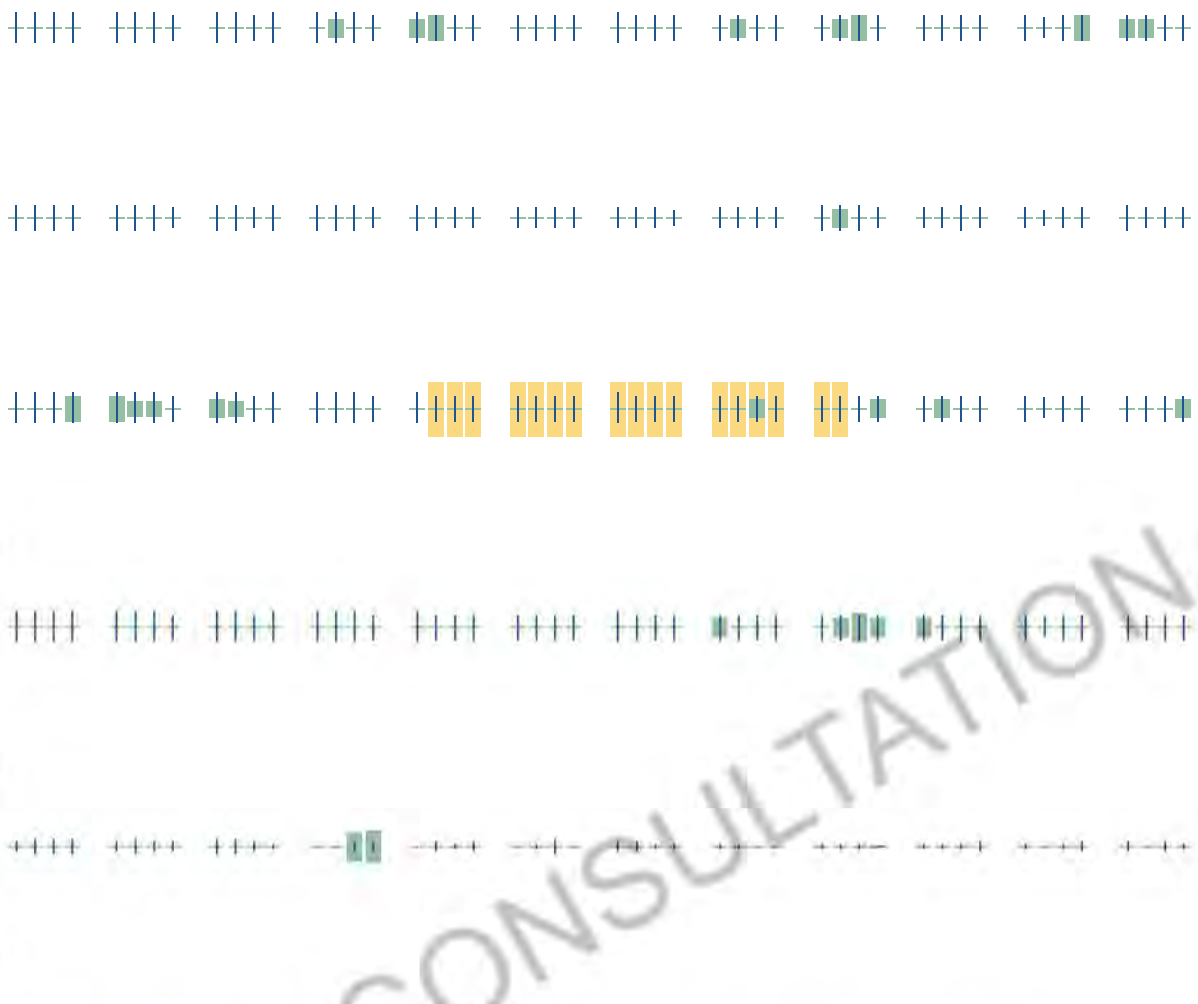
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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 and/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 migratory birds potentially occurring 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 AKN Phenology 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, migrating or present year-round in my project 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 refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. 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.

Facilities

National Wildlife Refuge lands

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 AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND
- PFO1A

FRESHWATER POND
- PUBHh

LAKE
- L1UBHh

RIVERINE
- R4SBC
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus,

detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Last Update: 4/15/2019

TARRANT COUNTY

AMPHIBIANS

Strecker's chorus frog *Pseudacris streckeri*

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

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

Woodhouse's toad *Anaxyrus woodhousii*

Extremely catholic up to 5000 feet, does very well (except for traffic) in association with man.

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

black rail *Laterallus jamaicensis*

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: PT	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3G4	State Rank: S2

Franklin's gull *Leucophaeus pipixcan*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G4G5	State Rank: S2N

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3	State Rank: S2

TARRANT COUNTY

BIRDS

piping plover *Charadrius melodus*

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: Yes
Endemic: N	Global Rank: G3	State Rank: S2N

red knot *Calidris canutus rufa*

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status:	SGCN: Yes
Endemic: N	Global Rank: G4T2	State Rank: SNRN

sooty tern *Onychoprion fuscatus*

Primarily an offshore bird; does nest on sandy beaches and islands, breeding April-July.

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S1B

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: Yes
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

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: Yes
Endemic: N	Global Rank: G5	State Rank: S4B

TARRANT COUNTY

BIRDS

whooping crane *Grus americana*

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: Yes
Endemic: N	Global Rank: G1	State Rank: S1N

FISH

alligator gar *Atractosteus spatula*

Habitat description is not available at this time.

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

american eel *Anguilla rostrata*

Coastal waterways below reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally

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

blue sucker *Cycleptus elongatus*

Usually inhabits channels and flowing pools with a moderate current, with bottoms of exposed bedrock sometimes in combination with hard clay, sand, and gravel; generally intolerant of highly turbid conditions.Larger portions of major rivers in Texas; adults winter in deep pools and move upstream in spring to spawn on riffles

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G3G4	State Rank: S3

chub shiner *Notropis potteri*

Habitat description is not available at this time.

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

sharpnose shiner *Notropis oxyrhynchus*

Endemic to Brazos River drainage; also, apparently introduced into adjacent Colorado River drainage; large turbid river, with bottom a combination of sand, gravel, and clay-mud

Federal Status: LE	State Status:	SGCN: Yes
Endemic: Y	Global Rank: G3	State Rank: S3

TARRANT COUNTY

FISH

silverband shiner *Notropis shumardi*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S4

Western Creek chubsucker *Erimyzon claviformis*

Habitat includes silt-, sand-, and gravel-bottomed pools of clear headwaters, creeks, and small rivers; often near vegetation; occasionally in lakes (Page and Burr 2011). Spawning occurs in river mouths or pools, riffles, lake outlets, or upstream creeks (Becker 1983, Goodyear et al. 1982). Prefers headwaters, but seldom occurs in springs.

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S2S3

INSECTS

Comanche harvester ant *Pogonomyrmex comanche*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Yes
Endemic: Y	Global Rank: G2G3	State Rank: S2

No accepted common name *Bombus pensylvanicus*

Habitat description is not available at this time.

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

MAMMALS

American badger *Taxidea taxus*

Habitat description is not available at this time.

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

big brown bat *Eptesicus fuscus*

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

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

TARRANT COUNTY

MAMMALS

Big Free-tailed Bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Yes
Endemic:	Global Rank: G5	State Rank: S3

black bear *Ursus americanus*

In Chisos, prefers higher elevations where pinyon-oaks predominate; also occasionally sighted in desert scrub of Trans-Pecos (Black Gap Wildlife Management Area) and Edwards Plateau in juniper-oak habitat. For ssp. luteolus, bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Bottomland hardwoods and large tracts of inaccessible forested areas.

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

black-tailed prairie dog *Cynomys ludovicianus*

Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups

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

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G4G5	State Rank: S4

eastern red bat *Lasiurus borealis*

Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.

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

Eastern spotted skunk *Spilogale putorius*

Catholic; 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: Yes
Endemic: N	Global Rank: G4	State Rank: S1S3

TARRANT COUNTY

MAMMALS

hoary bat *Lasiurus cinereus*

Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.

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

Mexican free-tailed bat *Tadarida brasiliensis*

Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.

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

mink *Neovison vison*

Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S4

mountain lion *Puma concolor*

Rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S2S3

plains spotted skunk *Spilogale putorius interrupta*

Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Federal Status:	State Status:	SGCN: No
Endemic: N	Global Rank: G4T4	State Rank: S1S3

southern short-tailed shrew *Blarina carolinensis*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G5	State Rank: S4

TARRANT COUNTY

MAMMALS

swamp rabbit *Sylvilagus aquaticus*

Habitat description is not available at this time.

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

thirteen-lined ground squirrel *Ictidomys tridecemlineatus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Yes
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: Yes
Endemic: N	Global Rank: G2G3	State Rank: S3S4

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: Yes
Endemic: N	Global Rank: G4	State Rank: S4

woodland vole *Microtus pinetorum*

Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.

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

MOLLUSKS

Louisiana pigtoe *Pleurobema riddellii*

Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G1G2	State Rank: S1

sandbank pocketbook *Lampsilis satura*

Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River

Federal Status:	State Status: T	SGCN: Yes
Endemic:	Global Rank: G2	State Rank: S1

TARRANT COUNTY

MOLLUSKS

Texas heelsplitter *Potamilus amphichaenus*

Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G1G2	State Rank: S1

REPTILES

alligator snapping turtle *Macrochelys temminckii*

Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G3G4	State Rank: S2

American alligator *Alligator mississippiensis*

Coastal marshes; inland natural rivers, swamps and marshes; manmade impoundments.

Federal Status:	State Status:	SGCN: No
Endemic: N	Global Rank: G5	State Rank: S4

common garter snake *Thamnophis sirtalis*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes.

Federal Status:	State Status:	SGCN: No
Endemic:	Global Rank: G5	State Rank: S2

eastern box turtle *Terrapene carolina*

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. In Maryland bottomland forest, some hibernated in pits or depressions in forest floor (usually about 30 cm deep) usually within summer range; individuals tended to hibernate in same area in different years (Stickel 1989). Also attracted to farms, old fields and cut-over woodlands, as well as creek bottoms and dense woodlands. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest. In Maryland, females used the same nesting area in different years (Stickel 1989).

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

massasauga *Sistrurus tergeminus*

Quite common in gently rolling prairie occasionally broken by creek valley or rocky hillside.

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3G4	State Rank: S3S4

TARRANT COUNTY

REPTILES

slender glass lizard *Ophisaurus attenuatus*

Prefers relatively dry microhabitats, usually associated with grassy areas. 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. This species often appears on roads in spring. During inactivity, it occurs in underground burrows. In Kansas, slender glass lizards were scarce in heavily grazed pastures, increased as grass increased with removal of grazing, and declined as brush and trees replaced grass (Fitch 1989). Eggs are laid underground, under cover, or under grass clumps (Ashton and Ashton 1985); in cavities beneath flat rocks or in abandoned tunnels of small mammals (Scalopus, Microtus) (Fitch 1989).

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

smooth softshell *Apalone mutica*

Any permanent body of water.Large rivers and streams; in some areas also found in lakes, impoundments, and shallow bogs (Ernst and Barbour 1972). Usually in water with sandy or mud bottom and few aquatic plants. Often basks on sand bars and mudflats at edge of water. Eggs are laid in nests dug in high open sandbars and banks close to water, usually within 90 m of water (Fitch and Plummer 1975).

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

Texas garter snake *Thamnophis sirtalis annectens*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes. Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.

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

Texas horned lizard *Phrynosoma cornutum*

Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area. Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.

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

Texas tortoise *Gopherus berlandieri*

Open brush with a grass understory is preferred; open grass and bare ground are avoided. Seasonally flooded tidal flats are not utilized. When inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November

Federal Status:	State Status: T	SGCN: Yes
Endemic: N	Global Rank: G4	State Rank: S2

TARRANT COUNTY

REPTILES

timber (canebrake) rattlesnake *Crotalus horridus*

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: T	SGCN: Yes
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Ornate or western box trutles 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; winter burrow depth was 0.5-1.8 meters in Wisconsin (Doroff and Keith 1990), 7-120 cm (average depth 54 cm) in Nebraska (Converse et al. 2002). Eggs are laid in nests dug in soft well-drained soil in open area (Legler 1960, Converse et al. 2002). Very partial to sandy soil.

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

western chicken turtle *Deirochelys reticularia miaria*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: No
Endemic: N	Global Rank: G5T5	State Rank: S2S3

PLANTS

earleaf false foxglove *Agalinis auriculata*

Known in Texas from one late nineteenth century specimen record labeled -Benbrook-; in Oklahoma, degraded prairies, floodplains, fallow fields, and borders of upland sterile woods; in Arkansas, blackland prairie; Annual; Flowering August - October

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3	State Rank: SH

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: Yes
Endemic: N	Global Rank: G4	State Rank: S3

Glen Rose yucca *Yucca necopina*

Grasslands on sandy soils and limestone outcrops; flowering April-June

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

TARRANT COUNTY

PLANTS

Hall's prairie clover *Dalea hallii*

In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept

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

Osage Plains false foxglove *Agalinis densiflora*

Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3	State Rank: S2

Reverchon's scurfpea *Pediomelum reverchonii*

Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; Perennial; Flowering Jun-Sept; Fruiting June-July

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3	State Rank: S2

Shinner's sedge *Carex shinnersii*

Occurs in ditches and swales in prairie landscapes (Carr 2015).

Federal Status:	State Status:	SGCN: Yes
Endemic: N	Global Rank: G3	State Rank: S2

Texas milk vetch *Astragalus reflexus*

Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June

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

Topeka purple-coneflower *Echinacea atrorubens*

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

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

Federal and State Listed Threatened/Endangered/Species of Concern Impact/Effect Table

Project Name: Southeast Connector **CSJ:** 0008-13-125, etc. **Date Completed:** 7/18/2019

County: Tarrant **District:** Fort Worth

The USFWS IPaC was accessed on: 5/10/2019

The TPWD Threatened and Endangered Species List was accessed on: 5/10/2019

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
Amphibians							
Strecker's chorus frog *Pseudacris streckeri*	NL	SGCN	Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.	Y	May Impact	There is potential habitat present such as creeks and small rivers within the proposed projects action area.	Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts. Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats. Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features. When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crayfish burrows) where feasible. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible. When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Where feasible, biotechnical streambank stabilization methods using live native vegetation or a combination of vegetative and structural materials should be used.

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
							Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
Woodhouse's toad *Anaxyrus woodhousii*	NL	SGCN	Extremely catholic up to 5000 feet, does very well (except for traffic) in association with man. Standing water is apparently preferred for breeding—either pools in river channels following spring run-off, artificial ponds and reservoirs, or rain-formed pools and cattle tanks in open desert flats (Stebbins, 1951; Sullivan, 1982b; personal observation). A great variety of breeding habitats are used (Bragg, 1940b; Stebbins, 1951; Hammerson, 1982a; Sullivan, 1982b, 1989b).	Y	May Impact	Potential suitable habitat, such as riparian corridors and wooded lands near streams, is available within project's action.	Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts. Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats. Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features. When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crayfish burrows) where feasible. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible. When riprap or other bank stabilization devices are

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
							necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Where feasible, biotechnical streambank stabilization methods using live native vegetation or a combination of vegetative and structural materials should be used. Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
Birds							
Bald Eagle *Haliaeetus leucocephalus*	DL*	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	N	No Impact	Potential migrant through the proposed project's action area. No suitable habitat such as large lakes, and tall trees or cliffs near water identified within the proposed project's action area during the site visit.	The Eagle Protection Act prohibits the taking or possession of and commerce in eagles, parts, feathers, nests, or eggs with limited exceptions. The definition of take includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Eagles may not be taken for any purpose unless a permit is issued prior to the taking.
Black Rail *Laterallus jamaicensis*	PT	SGCN	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	N	No Impact	No suitable habitat such as salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps identified within the proposed project's action area during the site visit.	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			Salicornia				
Franklin's gull *Leucophaeus pipixcan*	NL	SGCN	Nests in marshes and along inland lakes. Winters along coast in bays, estuaries, and along sandy beaches.	N	No Impact	No suitable habitat such as marshes and along inland lakes identified within the proposed project's action area during the site visit.	
Interior Least Tern *Sternula antillarum athalassos*	LE	E	The subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	N	No Effect	No suitable habitat such as sand and gravel bars within braided streams, rivers and man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.) identified within the proposed project's action area during the site visit.	
Mountain Plover *Charadrius montanus*	NL	SGCN	Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous	N	No Impact	No suitable habitat such as high plains or short grass prairie identified within proposed project action area during site visit.	
Piping Plover *Charadrius melodus*	LT	T	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	N	No Effect	No suitable habitat such as beaches and bayside mud or salt flats identified within the proposed project's action area during the site visit, and the proposed project is not related to wind energy.	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			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.				
Red Knot *Calidris canutus rufa*	LT	SGCN	Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in	N	No Effect	No suitable habitat such as shorelines of coast and bays, seacoasts on tidal flats and beaches, herbaceous wetlands, or tidal flats/shores identified within the proposed project's action area during the site visit,	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.			and the proposed project is not related to wind energy.	
Western Burrowing Owl *Athene cunicularia hypugaea*	NL	SGCN	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests	N	No Impact	No mammal burrows or suitable habitat was identified within the proposed project's action area during the site visit.	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			and roosts in abandoned burrows				
White-faced ibis *Plegadis chihi*	NL	T	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.	N	No Impact	No suitable habitat such as freshwater marshes, sloughs, irrigated rice fields, or brackish and saltwater habitats identified within the proposed project's action area during the site visit.	
Whooping Crane *Grus americana*	LE	E	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.	N	No Effect	Potential migrant through the proposed project's action area to and from wintering grounds, but there is no suitable habitat such as coastal marshes identified within the proposed project's action area during the site visit.	Construction personnel would be informed of the potential for Whooping Cranes to occur within the project limits and advised to avoid adverse impacts to this species. Construction personnel shall report all sightings to TxDOT Fort Worth District Environmental staff. Reports should include the time, date and location and any available photos.
Fish							
Alligator gar *Atractosteus spatula*	NL	SGCN	Alligator gar inhabit a wide variety of aquatic habitats, but most are found in the Southern United States in reservoirs and lakes, in the backwaters of lowland rivers, and in the brackish waters of estuaries, bayous, and bays.	Y	May Impact	Potential suitable habitat is available within project's action area in the area along I-20, where Village Creek drains into Lake Arlington.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
American eel	NL	SGCN	Coastal waterways below	N	No	No suitable habitat such as	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
Anguilla rostrata			reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally		Impact	coastal waterways below reservoirs to gulf, muddy bottoms, still waters, large streams, lakes, or brackish estuaries identified within the proposed project's action area during the site visit.	
Blue sucker *Cycleptus elongatus*	NL	T	Usually inhabits channels and flowing pools with a moderate current, with bottoms of exposed bedrock sometimes in combination with hard clay, sand, and gravel; generally intolerant of highly turbid conditions. Larger portions of major rivers in Texas; adults winter in deep pools and move upstream in spring to spawn on riffles Habitat includes the largest rivers and lower parts of major tributaries. Usually this sucker occurs in channels and flowing pools with moderate current (1.0-2.6 meters/sec). It also occurs in some impoundments. Adults probably winter in deep pools. Young occupy shallower and less swift water than do adults. Adults move upstream to spawn on riffles. In Kansas, spawning occurred in deep (1-2 meters) riffles with cobble	N	No Impact	No suitable habitat such as large rivers or major tributaries with moderate current were identified within the proposed project's action area during the site visit.	

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			and bedrock substrate (Moss et al. 1983).				
Chub shiner *Notropis potteri*	NL	SGCN	Brazos River basins and in lower parts of Colorado River and Galveston Bay drainages (Page & Burr, 1991). Large, turbid rivers; also found in smaller tributaries. Found in flowing water with silt or sand substrate.	N	No Impact	The proposed project is not located within the Brazos River drainage, Colorado River drainage, or Galveston Bay drainage and no large turbid rivers were identified within the proposed project's action area during the site visit.	
Sharpnose shiner *Notropis oxyrhynchus*	LE	SGCN	Endemic to Brazos River drainage; also, apparently introduced into adjacent Colorado River drainage; large turbid river, with bottom a combination of sand, gravel, and clay-mud	N	No Effect	The proposed project is not located within the Brazos River or Colorado River drainages and no large turbid rivers were identified within the proposed project's action area during the site visit.	
Silverband shiner *Notropis shumardi*	NL	SGCN	Large rivers, but often found in smaller tributaries and oxbows. Common in oxbow lakes that frequently reconnect to Brazos River mainstem. Main channel with moderate to swift current velocities and moderate to deep depths; associated with turbid water over silt, sand, and gravel.	N	No Impact	No suitable habitat such as large turbid rivers, smaller tributaries, oxbows, main channels with moderate to swift current velocities and moderate to deep depths were identified within the proposed project's action area during the site visit.	
Western creek chubsucker *Erimyzon claviformis*	NL	T	Habitat includes silt-, sand-, and gravel-bottomed pools of clear headwaters, creeks, and small rivers; often near vegetation; occasionally in lakes (Page and Burr 2011). Spawning occurs in river mouths or pools, riffles, lake outlets, or upstream creeks (Becker 1983, Goodyear et al. 1982). Prefers headwaters, but seldom occurs in springs.	Y	May Impact	There is potential habitat present such as creeks and small rivers within the proposed projects action area.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding

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							are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
Insects							
American bumblebee *Bombus pensylvanicus*	NL	SGCN	Generally, nests in fields of long grass, but may sometimes nest underground. The species utilizes bundles of hay or long grass to create sheltered nests above ground.	Y	May Impact	Potentially suitable habitat is present within and immediately adjacent to the proposed project's action area.	
Comanche harvester ant *Pogonomyrmex comanche*	NL	SGCN	Likes sandy areas close to post oak groves.	N	No Impact	No suitable habitat such as sandy areas close to post oak groves identified within the proposed project's action area during the site visit.	
Mammals							
American badger *Taxidea taxus*	NL	SGCN	Prefers grasslands and open areas with grasslands, which can include parklands, farms, and treeless areas with friable soil and a supply of rodent prey. They may also be found in forest glades and meadows, marshes, brushy areas, hot deserts, and mountain meadows.	N	No Impact	No suitable habitat such as grasslands and open areas with grasslands, which can include parklands, farms, forest glades and meadows, marshes, brushy areas, hot deserts, and mountain meadows identified within the proposed project's action area during the site visit.	
Big brown bat *Eptesicus fuscus*	NL	SGCN	Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.	Y	May Impact	There is potential habitat present such as wooded areas and woodlands within the proposed projects action area.	• For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible. ○ Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber

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							railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats. • For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats. • If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. ○ Exclusion devices can be installed by a qualified individual between September l and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. ○ Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, I) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation). • Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes. • Avoid using chemical and ultrasonic repellents. • Avoid the use of flexible netting attached with duct tape. • In order to avoid entombing bats, exclusion

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
							activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications: ○ Experience in bat exclusion (the individual, not just the company). ○ Proof of rabies pre-exposure vaccinations. ○ Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements. ○ Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts. • Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible. • Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible. • If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable. • Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape. • In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
Big free-tailed bat *Nyctinomops macrotis*	NL	SGCN	Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring	N	No Impact	No suitable habitat such as high canyon walls identified within the proposed project's action area during the site visit. The proposed project area is outside of the species known range.	

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			late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore				
Black bear *Ursus americanus*	NL	T	In Chisos, prefers higher elevations where pinyon-oaks predominate; also occasionally sighted in desert scrub of Trans-Pecos (Black Gap Wildlife Management Area) and Edwards Plateau in juniper-oak habitat. For ssp. *luteolus*, bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Bottomland hardwoods and large tracts of inaccessible forested areas.	N	No Impact	No suitable habitat such as Chisos, Trans-Pecos, and Edward's Plateau are within the proposed project's action area. No bottomland hardwood with large tracts of inaccessible forests identified within the proposed project's action area during the site visit.	
Black-tailed prairie dog *Cynomys ludovicianus*	NL	SGCN	Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups	N	No Impact	No suitable habitat such as dry, fat, short grasslands with low, sparse vegetation identified within the proposed project's action area during the site visit.	
Cave myotis bat *Myotis velifer*	NL	SGCN	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.	Y	May Impact	There is potential habitat present by way of old buildings, car ports, and bridges.	• For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible. ○ Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for

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							the presence of bats. • For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats. • If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. ○ Exclusion devices can be installed by a qualified individual between September l and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. ○ Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, l) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation). • Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes. • Avoid using chemical and ultrasonic repellents. • Avoid the use of flexible netting attached with duct tape. • In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications: ○ Experience in bat exclusion (the individual,

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							not just the company). ○ Proof of rabies pre-exposure vaccinations. ○ Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements. ○ Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts. • Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible. • Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible. • If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable. • Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape. • In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
Eastern red bat *Lasiurus borealis*	NL	SGCN	Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.	Y	May Impact	There is potential habitat by way of wooded areas within the proposed projects action area.	• For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible. ○ Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above

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							supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats. • For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats. • If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. ○ Exclusion devices can be installed by a qualified individual between September l and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. ○ Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, l) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation). • Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes. • Avoid using chemical and ultrasonic repellents. • Avoid the use of flexible netting attached with duct tape. • In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or

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							company should possess at least the following minimum qualifications: ○ Experience in bat exclusion (the individual, not just the company). ○ Proof of rabies pre-exposure vaccinations. ○ Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements. ○ Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts. • Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible. • Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible. • If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable. • Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape. • In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
Eastern spotted skunk *Spilogale putorius*	NL	SGCN	Catholic; 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	Y	May Impact	Habitat does exist by way of fence row vegetation; however, population impacts are not anticipated.	

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			when such sites are available.				
Hoary bat *Lasiurus cinereus*	NL	SGCN	Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.	Y	May Impact	There is potential habitat present by way of riparian woodland and woods within the proposed projects action area.	• For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible. ○ Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats. • For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats. • If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. ○ Exclusion devices can be installed by a qualified individual between September l and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. ○ Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats.

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							Winter exclusion must entail a survey to confirm either, I) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation). • Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes. • Avoid using chemical and ultrasonic repellents. • Avoid the use of flexible netting attached with duct tape. • In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications: ○ Experience in bat exclusion (the individual, not just the company). ○ Proof of rabies pre-exposure vaccinations. ○ Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements. ○ Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts. • Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible. • Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible. • If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable. • Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree

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							removal from the landscape. • In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
Long-tailed weasel *Mustela frenata*	NL	SGCN	Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.	Y	May Impact	There is potential habitat present by way of fence row vegetation; however, population impacts are not anticipated.	
Mexican free-tailed bat *Tadarida brasiliensis*	NL	SGCN	Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.	Y	May Impact	There is potential habitat present by way of buildings and other man-made structures.	• For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible. ○ Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats. • For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats. • If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. ○ Exclusion devices can be installed by a qualified individual between September l and March 31. Exclusion devices should be used

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							for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. ○ Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, I) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation). • Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes. • Avoid using chemical and ultrasonic repellents. • Avoid the use of flexible netting attached with duct tape. • In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications: ○ Experience in bat exclusion (the individual, not just the company). ○ Proof of rabies pre-exposure vaccinations. ○ Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements. ○ Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts. • Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible. • Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible. • If feature(s) used by bats are removed as a result of construction, replacement structures should

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							incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable. • Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape. • In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
Mink *Neovison vison*	NL	SGCN	Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.	Y	May Impact	There is potential by way of wooded riparian zones and edge of lakes within the proposed projects action area.	
Mountain lion *Puma concolor*	NL	SGCN	Rugged mountains & riparian zones.	N	No Impact	The project area is densely urbanized and would not provide suitable habitat for the species.	
Plains spotted skunk *Spilogale putorius interrupta*	NL	SGCN	catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Y	May Impact	There is potential habitat present by way of fence row vegetation; however, population impacts are not anticipated.	Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts.
Southern short-tailed shrew *Blarina carolinensis*	NL	SGCN	Found primarily in pine forests, dry to wet and even swampy habitats, as well as disturbed forests and abandoned agricultural land.	N	No Impact	No suitable habitat such as pine forests, dry to wet and swampy habitats, disturbed forests or abandoned agricultural land identified within the proposed project's action area	
Swamp rabbit *Sylvilagus aquaticus*	NL	SGCN	Mainly lives close to lowland water, often in cypress swamps, marshland, floodplain, and river tributaries	Y	May Impact	There is potential habitat present by way of flood plain and stream tributaries; however, population impacts are not anticipated.	

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Thirteen-lined ground squirrel *Ictidomys tridecemlineatus*	NL	SGCN	Prefers open areas with short grass and well-drained sandy or loamy soils for burrows. It avoids wooded areas.	N	No Impact	No suitable habitat such as short grass and well-drained sandy or loamy soils for burrows identified within the proposed project's action area.	
Tricolored bat *Perimyotis subflavus*	NL	SGCN	Forest, woodland and riparian areas are important. Caves are very important to this species.	Y	May Impact	There is potential by way of woodland and riparian areas within the proposed projects action area.	
Western hog-nosed skunk *Conepatus leuconotus*	NL	SGCN	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*	Y	May Impact	There is potential by way of woodlands within the proposed projects action area.	
Woodland vole *Microtus pinetorum*	NL	SGCN	Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.	N	No Impact	No suitable habitat such as grassy marshes, swamp edges, old-field/pine woodland ecotones, and tallgrass fields identified within the proposed project's action area.	
Mollusks							
Louisiana pigtoe *Pleurobema riddellii*	NL	T	streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins	Y	May Impact	There is potential habitat present such as streams.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. When work is in the water; the project footprints will be surveyed for state listed and SGCN species where appropriate habitat exists. State listed and SGCN mussels discovered during surveys shall be relocated under Texas Parks and Wildlife Department permit.
Sandbank pocketbook	NL	T	small to large rivers with moderate flows and swift current on gravel, gravel-sand,	Y	May Impact	There is potential habitat present such as large streams.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
Lampsilis satura			and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River				When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. When work is in the water; the project footprints will be surveyed for state listed and SGCN species where appropriate habitat exists. State listed and SGCN mussels discovered during surveys shall be relocated under Texas Parks and Wildlife Department permit.
Texas heelsplitter *Potamilus amphichaenus*	NL	T	quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins	Y	May Impact	There is potential habitat present such as quiet waters in mud or sand and in the Trinity River basin.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. When work is in the water; the project footprints will be surveyed for state listed and SGCN species where appropriate habitat exists. State listed and SGCN mussels discovered during surveys shall be relocated under Texas Parks and Wildlife Department permit.
Reptiles							
Eastern box turtle *Terrapene carolina*	NL	SGCN	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. In Maryland bottomland forest,	Y	May Impact	There is potential habitat present such as forests, fields, forest-brush, forest-field ecotones within the construction limits of the proposed project.	Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred.

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			some hibernated in pits or depressions in forest floor (usually about 30 cm deep) usually within summer range; individuals tended to hibernate in same area in different years (Stickel 1989). Also attracted to farms, old fields and cut-over woodlands, as well as creek bottoms and dense woodlands. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest. In Maryland, females used the same nesting area in different years (Stickel 1989).				Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
Massasauga *Sistrurus tergeminus*	NL	SGCN	Quite common in gently rolling prairie occasionally broken by creek valley or rocky hillside.	N	No Impact	No suitable habitat such as gently rolling prairie identified within the proposed project's action area during the site visit.	
Slender glass lizard *Ophisaurus attenuatus*	NL	SGCN	Prefers relatively dry microhabitats, usually associated with grassy areas. 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. This species often appears on roads in spring. During inactivity, it occurs in underground burrows. In Kansas, slender glass lizards were scarce in heavily grazed pastures, increased as grass increased with removal of	Y	May Impact	There is potential habitat by way of woodland edge and areas near streams and ponds.	Inform contractors that if reptiles are found on project site allow species to safely leave the project area. Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			grazing, and declined as brush and trees replaced grass (Fitch 1989). Eggs are laid underground, under cover, or under grass clumps (Ashton and Ashton 1985); in cavities beneath flat rocks or in abandoned tunnels of small mammals (Scalopus, Microtus) (Fitch 1989).				areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
Smooth softshell *Apalone mutica*	NL	SGCN	Any permanent body of water.Large rivers and streams; in some areas also found in lakes, impoundments, and shallow bogs (Ernst and Barbour 1972). Usually in water with sandy or mud bottom and few aquatic plants. Often basks on sand bars and mudflats at edge of water. Eggs are laid in nests dug in high open sandbars and banks close to water, usually within 90 m of water (Fitch and Plummer 1975).	Y	May Impact	There is potential habitat present such as permanent body of water or stream, with mud bottom and few aquatic plants within the construction limits of the proposed project.	Inform contractors that if reptiles are found on project site allow species to safely leave the project area. Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
Texas garter snake *Thamnophis sirtalis annectens*	NL	SGCN	Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes. Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them;	Y	May Impact	There is potential habitat present such as wet or moist microhabitats within the construction limits of the proposed project.	Inform contractors that if reptiles are found on project site allow species to safely leave the project area. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible. Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts.

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			hibernates underground or in or under surface cover; breeds March-August.				Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
Texas horned lizard *Phrynosoma cornutum*	NL	T	Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area. Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	N	No Impact	No suitable habitat such as open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees identified within the proposed project's action area during the site visit.	
Timber (canebrake) rattlesnake *Crotalus horridus*	NL	T	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.	Y	May Impact	There is potential habitat present such as floodplains, upland woodlands, riparian zones, and dense ground cover within the construction limits of the proposed project.	Inform contractors that if reptiles are found on project site allow species to safely leave the project area. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible. Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
							where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
Western box turtle *Terrapene ornata*	NL	SGCN	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; winter burrow depth was 0.5-1.8 meters in Wisconsin (Doroff and Keith 1990), 7-120 cm (average depth 54 cm) in Nebraska (Converse et al. 2002). Eggs are laid in nests dug in soft well-drained soil in open area (Legler 1960, Converse et al. 2002). Very partial to sandy soil.	N	No Impact	No suitable habitat such as prairie grassland, pasture, fields, sandhills, open woodland, slow, shallow streams and creek pools identified within the proposed project's action area during the site visit.	
Plants							
Earleaf false foxglove *Agalinis auriculata*	NL	SGCN	Known in Texas from one late nineteenth century specimen record labeled -Benbrook-; in Oklahoma, degraded prairies, floodplains, fallow fields, and borders of upland sterile woods; in Arkansas, blackland	N	No Impact	Although reported historically from 20 states, many states, including Texas, have no known extant populations.	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
			prairie; Annual; Flowering August - October				
Engelmann's bladderpod *Physaria engelmannii*	NL	SGCN	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).	N	No Impact	No suitable habitat such as grasslands and calcareous rock outcrops identified within the proposed project's action area during the site visit.	
Glen Rose yucca *Yucca necopina*	NL	SGCN	Grasslands on sandy soils and limestone outcrops; flowering April-June	N	No Impact	No suitable habitat such as clayey soil on top of limestone identified within the proposed project's action area during the site visit.	
Hall's prairie clover *Dalea hallii*	NL	SGCN	In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept	N	No Impact	No suitable habitat such as grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides identified within the proposed project's action area during the site visit.	
Osage Plains false foxglove *Agalinis densiflora*	NL	SGCN	Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct.	N	No Impact	No suitable habitat such as shallow, gravelly, well drained, calcareous soils and prairies, dry limestone soils identified within the proposed project's action area during the site visit.	
Reverchon's curfpea *Pediomelum reverchonii*	NL	SGCN	Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; Perennial; Flowering Jun-Sept; Fruiting June-July.	N	No Impact	No suitable habitat such as prairies on shallow rocky calcareous substrates and limestone outcrops identified within the proposed project's action area during the site visit.	
Shinner's sedge *Carex shinnersii*	NL	SGCN	Occurs in ditches and swales in prairie landscapes (Carr 2015).	N	No Impact	No suitable habitat such as ditches and swales in prairie landscapes identified within the proposed project's action area during the site visit.	

Species	Federal Status[i]	State Status[ii]	Description of Suitable Habitat	Habitat Present (Y/N)	Species Impact/ Effect	Pertinent Project Information	BMPs
Texas milk vetch *Astragalus reflexus*	NL	SGCN	Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June.	Y	May Impact	There is potential habitat present such as roadsides on calcareous and clay substrates within the construction limits of the proposed project.	
Topeka purple-coneflower *Echinacea atrorubens*	NL	SGCN	Occurring mostly in tallgrass prairie of the southern Great Plains, in Blackland prairies but also in a variety of other sites like limestone hillsides; Perennial; Flowering Jan-June; Fruiting Jan-May.	N	No Impact	No suitable habitat such as in tallgrass prairie of the southern Great Plains, in Blackland Prairies but also in a variety of other sites like limestone hillsides identified within the proposed project's action area during the site visit.	
Data Sources: U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department and site visit/survey of project area.							

[i] LE, LT - Federally Listed Endangered/Threatened
PE, PT – Federally Proposed Endangered/Threatened
E/SA, T/SA – Federally Listed Endangered/Threatened by Similarity of Appearance
C - Federal Candidate for Listing; formerly Category 1 Candidate
DL, PDL - Federally Delisted/Proposed for Delisting
NL – Not Federally Listed
* – TPWD Annotated County Lists of Rare Species indicates species could be present in identified county; however, USFWS Official Species List does not indicate a listing status for the species in the county.

[ii] E, T - State Listed Endangered/Threatened
NT – Not tracked or no longer tracked by the State
SGCN – Species of Greatest Conservation Need, but with no regulatory listing status

Critical Habitat for Threatened & Endangered Species [USFWS]

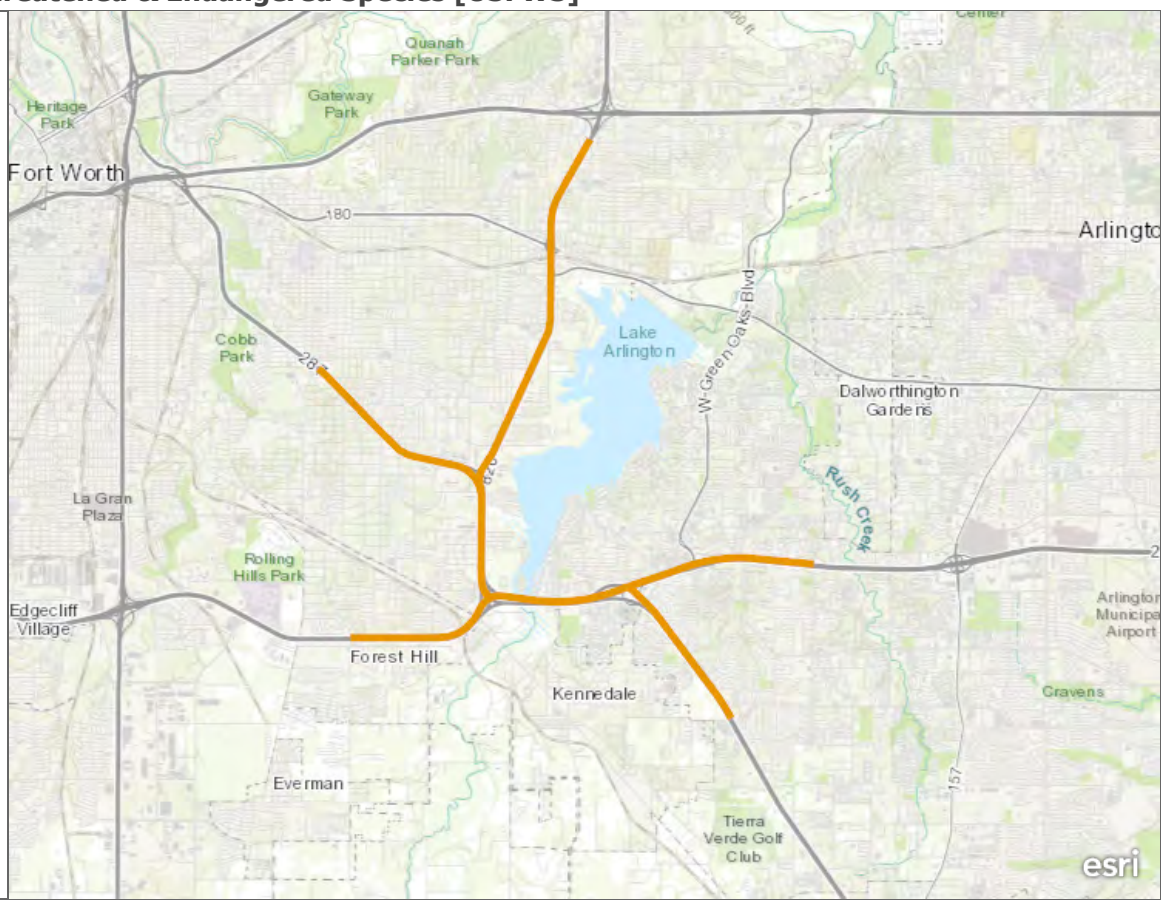
Project Location

Final Linear Features

Final Polygon Features

Proposed Linear Features

Proposed Polygon Features



A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

U.S. Fish and Wildlife Service | City of Arlington, TX, City of Fort Worth, Texas Parks & Wildlife, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

CRITICAL HABITAT MAP
SOUTHEAST CONNECTOR
I-20
From Forest Hill Dr to Park Springs Blvd
I-820
From I-20 to Brentwood Stair Rd
US 287
From Bishop Street to Sublett Rd
CSJs: 0008-13-125, etc.

TPWD Texas Natural Diversity Database

Element Occurrence Records and Managed Areas Search

Fort Worth District
May 10, 2019

CSJ: 0008-13-125, etc.

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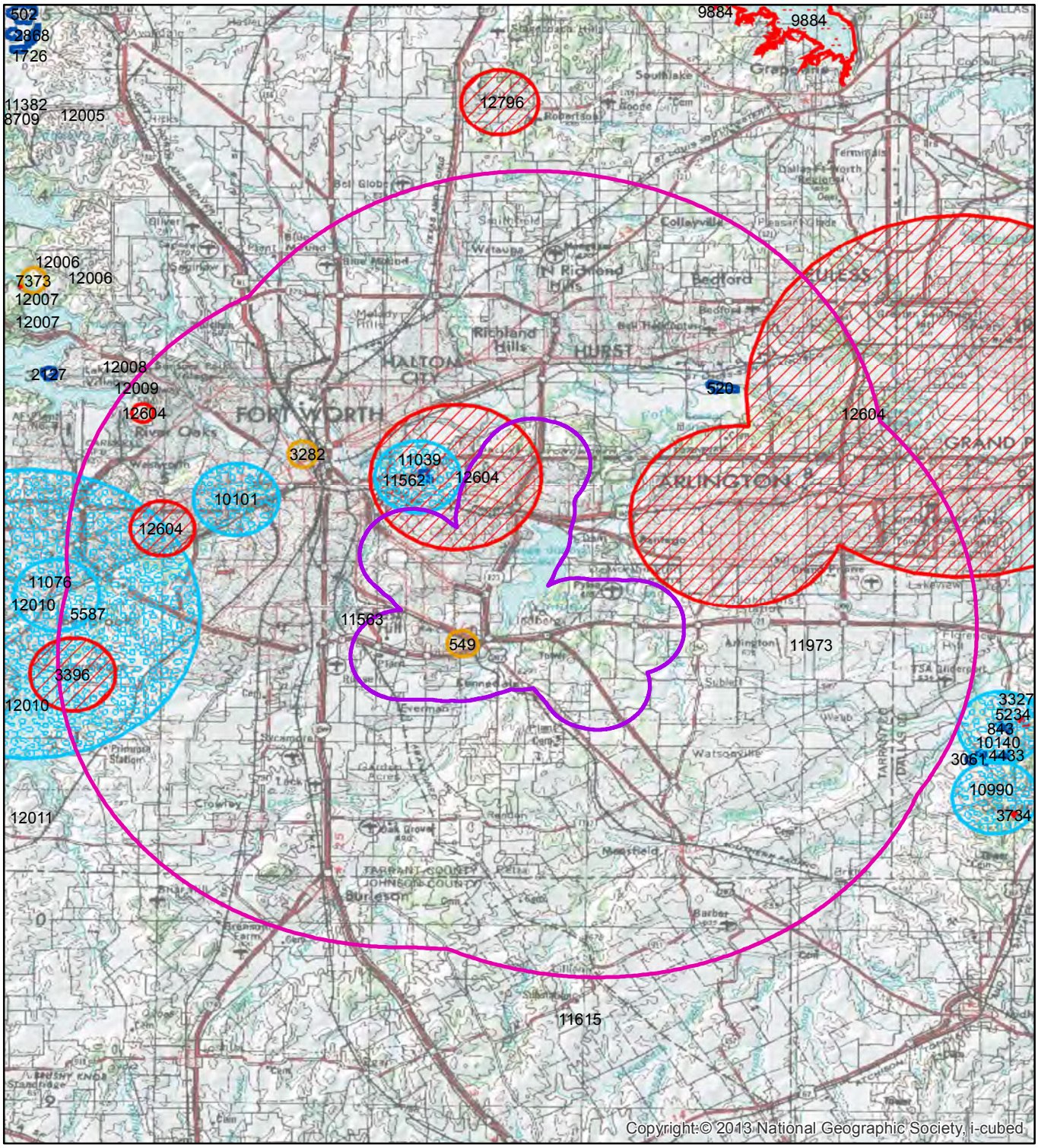
Report Date: May 10, 2019

Texas Natural Diversity Database (TXNDD)



1.5 Mile Buffer
10 Mile Buffer
Animal Assemblage
Internatl. Vegetation Classification
Invertebrate Animal
Nonvascular Plant
Terrestrial Community - Other Classification
Vascular Plant
Vertebrate Animal
Mussel Sanct.
Mussel Reservoirs
Managed Area

Map compiled by TxDOT based on information provided by Texas Parks and Wildlife Departments Natural Diversity Database.
No claims are made to the accuracy of the data or to the suitability of the data to a particular use

CSJ: 0008-13-125, etc.

Texas Natural Diversity Database

The TXNDD maintains information on over 700 natural resource “Elements”. An Element can be a species, a native plant community, or an animal aggregation, such as a colonial waterbird rookery or a bat roost.

The TXNDD record for any Element is known as an Element Occurrence (EO). An EO is an area of land or water where an Element is or was present and has practical conservation value. Each EO is based on at least one observation, and potentially hundreds of observations, of an Element in a specified location.

Important: The NDD cannot be used for presence/absence determinations.

A search of the NDD was conducted using a 1.5 mile buffer and a 10 mile buffer around the entire project area. The results of the NDD search are reported below and on the subsequent pages. The NDD was checked using the NDD Mimic stored on TxDOTs Tarhe server.

EO's Identified in the Study Area

EOID	***Common Name***	***Scientific Name***	***Search Radius (Miles)***
549		*Rookery*	1.5
11039	Osage Plains false foxglove	*Agalinis densiflora*	1.5
12604	Eastern spotted skunk	*Spilogale putorius*	1.5
520	Cedar Elm-sugarberry Series	*Ulmus crassifolia-celtis laevigata series*	10
3282		*Rookery*	10
3396	Texas Garter Snake	*Thamnophis sirtalis annectens*	10
5587	earleaf false foxglove	*Agalinis auriculata*	10
5905	Little Bluestem-indiangrass Series	*Schizachyrium scoparium-sorghastrum nutans series*	10
10101	Texas milk vetch	*Astragalus reflexus*	10
10140	Plateau milkvine	*Matelea edwardsensis*	10
11076	Hall's prairie clover	*Dalea hallii*	10
11562	Mollisol Blackland Prairie	*Schizachyrium scoparium - Andropogon gerardii - Sorghastrum nutans - Bifora americana Mollisol Grassland*	10
11563	Mollisol Blackland Prairie	*Schizachyrium scoparium - Andropogon gerardii - Sorghastrum nutans - Bifora americana Mollisol Grassland*	10
11973	Vertisol Blackland Prairie	*Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Bifora americana Vertisol Grassland*	10
12009		*Schizachyrium scoparium - Bouteloua curtipendula - Nassella leucotricha Herbaceous Vegetation*	10

Managed Areas Identified in the Study Area

Managed Area ID	*Name*	*Search Radius (Miles)*
45	BENBROOK LAKE (USCOE)	10
441	JOE POOL LAKE (USCOE)	10

Additional Element Occurrence Details

earleaf false foxglove — **GRR:** G3 **SRR:** SH
Agalinis auriculata — **FS:** **SS:**

Element Occurrence ID (EOID): 5587
First Observation Date:
Last Observation Date: NO DATE

EO Data:
IN FLOWER; IN FRUIT

General Description:

Protection Comments:

Management Comments:

Osage Plains false foxglove — **GRR:** G3 **SRR:** S2
Agalinis densiflora — **FS:** **SS:**

Element Occurrence ID (EOID): 11039
First Observation Date: 1988-09-17
Last Observation Date: 1991-08-29

EO Data:
1991-08-29: Common.

General Description:
Limestone hillside.

Protection Comments:

Management Comments:

Texas milk vetch **GRR:** G3 **SRR:** S3
Astragalus reflexus **FS:** **SS:**

Element Occurrence ID (EOID): 10101 ***First Observation Date:*** 1937-05-10
Last Observation Date: 1937-05-10

EO Data:

General Description:
Dry soil in gravel pits.

Protection Comments:

Management Comments:

Hall's prairie clover **GRR:** G3 **SRR:** S3
Dalea hallii **FS:** **SS:**

Element Occurrence ID (EOID): 11076 ***First Observation Date:*** 1948
Last Observation Date: 1948-05-25

EO Data:
1948: Described by collector as frequent.

General Description:
Limestone ridge, near base of escarpment.

Protection Comments:

Management Comments:

Plateau milkvine **GRR:** G3 **SRR:** S3
Matelea edwardsensis **FS:** **SS:**

Element Occurrence ID (EOID): 10140 ***First Observation Date:*** 19--
Last Observation Date: 19--

EO Data:

General Description:

Protection Comments:

Management Comments:

Rookery **GRR:** G5 **SRR:** SNR **FS:** **SS:**

Element Occurrence ID (EOID): 549 ***First Observation Date:*** 1979

Last Observation Date: 1989

EO Data:
NESTING COLONY OF THE CATTLE EGRET, LITTLE BLUE HERON, GREAT EGRET

General Description:
POST OAK TREES, 5 METERS

Protection Comments:

Management Comments:

Element Occurrence ID (EOID): 3282 ***First Observation Date:*** 1974

Last Observation Date: 1981

EO Data:
NESTING COLONY OF THE CATTLE EGRET, LITTLE BLUE HERON, GREAT EGRET, BLACK-CROWNED NIGHT-HERON, SNOWY EGRET

General Description:
HACKBERRY TREES, 5 METERS

Protection Comments:

Management Comments:

Little Bluestem-indiangrass Series **GRR:** G2 **SRR:** S2

Schizachyrium scoparium-sorghastrum nutans series **FS:** **SS:**

Element Occurrence ID (EOID): 5905 ***First Observation Date:***

Last Observation Date: 1994

EO Data:

General Description:
MIDGRASS PRAIRIE ON FAIRLY SHALLOW GRAVELLY CLAY LOAM ON STEEP LIMESTONE SLOPE

Protection Comments:

Management Comments:

Mollisol Blackland Prairie **GRR:** G1G2 **SRR:** SNR

Schizachyrium scoparium - Andropogon gerardii - Sorghastrum nutans - Bifora americana Mollisol Grassland **FS:** **SS:**

Element Occurrence ID (EOID): 11562 ***First Observation Date:*** 2010-08-13

Last Observation Date: 2010-08-13

EO Data:

13 August 2010: This plant community is of medium quality grass species; Forb species are high quality; Exotic species are present; Woody cover is greater than 75 percent.

General Description:

13 August 2010:This site has an unnamed intermittent tributary to the West Fork of the Trinity River; See the Composition Tab for other species within the area.

Protection Comments:

Management Comments:

13 August 2010: This winter and last, the Fort Worth Nature Center and Wildlife Refuge and volunteers have cleared a few acres, but woody plants are already reclaiming the cleared areas.

Element Occurrence ID (EOID): 11563 ***First Observation Date:*** 2010-08-07

Last Observation Date: 2010-08-07

EO Data:

7 August 2010: This plant community is of absent to high quality grass species; Forb species are low to high quality; Exotic species are present; Woody cover is 51-75 percent.

General Description:

7 August 2010: This site has a tributary of Sycamore Creek; See the Composition Tab for other species within the area.

Protection Comments:

Management Comments:

7 August 2010: This county park has been much abused from the standpoint of its prairie. Woody plants have been allowed to encroach substantially. Grassy areas between Resource Circle and the creek, more than half of the site, have been repeatedly mowed,

GRR: GNR **SRR:** SNR

Schizachyrium scoparium - Bouteloua curtipendula - Nassella leucotricha Herbaceous Vegetation

FS: **SS:**

Element Occurrence ID (EOID): 12009 ***First Observation Date:*** 2010-08-04

Last Observation Date: 2010-08-04

EO Data:

4 August 2010: One plant community of medium quality grass species; Forb species are high quality; Exotic species are present; Woody cover is greater than 75 percent; The surveyor has visited this site every year for five years.

General Description:

4 August 2010: The site has Lake Worth on it; See the Composition Tab for other species within the area.

Protection Comments:

Management Comments:

Vertisol Blackland Prairie

GRR: G1G2 **SRR:** SNR

Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Bifora americana Vertisol Grassland

FS: **SS:**

Element Occurrence ID (EOID): 11973 ***First Observation Date:*** 2010-08-07

Last Observation Date: 2010-08-07

EO Data:

7 August 2010: One plant community of medium quality grass species; Forb species are high quality; Exotic species are present; Woody cover is 51-75 percent.

General Description:

7 August 2010: There is no surface water on the site; See the Composition Tab for other species within the area.

Protection Comments:

Management Comments:

7 August 2010: This site would benefit from occassional grazing and from prescribed burning.

Eastern spotted skunk **GRR:** G4 **SRR:** S1S3

Spilogale putorius **FS:** **SS:**

Element Occurrence ID (EOID): 12604 ***First Observation Date:*** 1950-10-12

Last Observation Date: 2015-03-20

EO Data:

12 October 1950: Skin and skull of one male preserved specimen; 8 November 1959: One adult male preserved specimen; 28 July 1964: One preserved specimen of unknown sex and age; June 1967: One adult female preserved specimen; 15 March 1972: One adu

General Description:

20 March 2015: This observation was recorded in bottomland hardwoods.

Protection Comments:

Management Comments:

Texas Garter Snake **GRR:** G5T4 **SRR:** S1

Thamnophis sirtalis annectens **FS:** **SS:**

Element Occurrence ID (EOID): 3396 ***First Observation Date:***

Last Observation Date: 1954-03-10

EO Data:

General Description:

Protection Comments:

Management Comments:

Cedar Elm-sugarberry Series **GRR:** G2G3 **SRR:** S4

Ulmus crassifolia-celtis laevigata series **FS:** **SS:**

Element Occurrence ID (EOID): 520 ***First Observation Date:*** 1987

Last Observation Date: 1987-03

EO Data:

General Description:

PATCHY BOTTOMLAND DOMINATED BY CEDAR ELM, BUR OAK, SUGARBERRY; SOME LARGE, OLD TREES AND SOME AREAS OF THICK, YOUNG GROWTH

Protection Comments:

PROPOSED CITY GREEN BELT

Management Comments:

Additional Managed Area Details

BENBROOK LAKE (USCOE) *FDAPK*

Description:
3770 surface acres on Benbrook Lake plus 4463 acres of land surrounding it; Dutch Branch Park leased/operated by City of Benbrook, Pecan Valley Park leased/operated by City of Fort Worth.

Comments:
None Specified

Legal Protection Comments:
None Specified

Manager: None Specified

RESERVOIR MANAGER
P.O. BOX 26619

FORT WORTH, TX 51
817 292-2400

JOE POOL LAKE (USCOE) *FDAPK*

Description:
BRITTON PARK IS A FREE ACCESS TO THE LAKE WITH A BOAT RAMP AND TOILET FACILITIES ONLY

Comments:
LOYD PARK (791 ACRES); LYNN CREEK PARK (270 ACRES); BRITTON PARK (129 ACRES); ALL OWNED BY CORPS OF ENGINEERS AND OPERATED BY TRINITY RIVER AUTHORITY

Legal Protection Comments:
None Specified

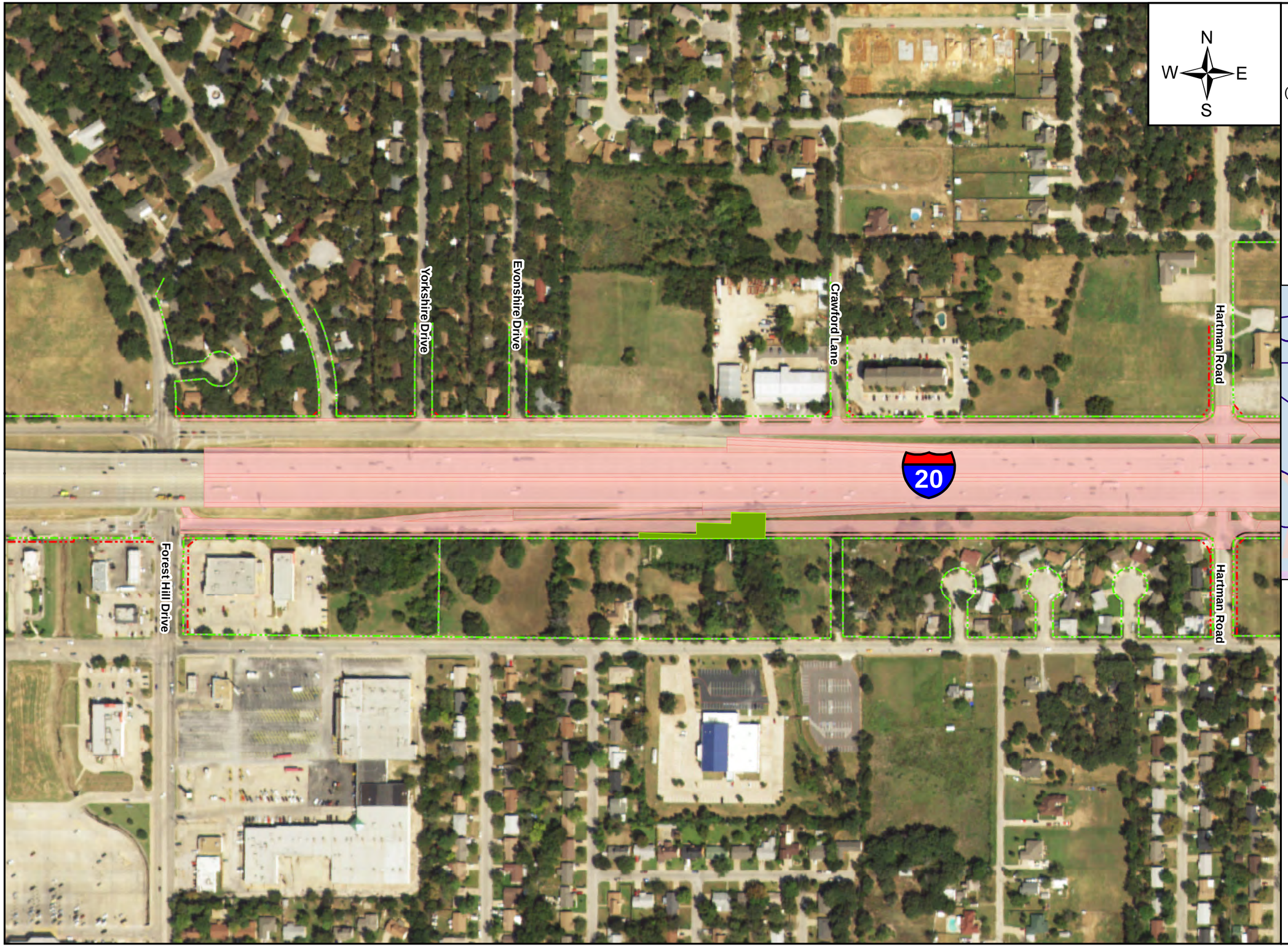
Manager: None Specified

TRINITY RIVER AUTHORITY

, TX
817 467-2104

Project MOU Summary

Common Name	MOU Habitat	Mapped Acreage	Observed Acreage	MOU Threshold
Crosstimbers: Post Oak Woodland	Crosstimbers Woodland and Forest	11.53	14.2	2
Crosstimbers: Savanna Grassland				
Native Invasive: Mesquite Shrubland	Disturbed Prairie	0.07	0.8	3
Central Texas: Floodplain Hardwood Forest	Riparian	4.86	19.69	0.1
Central Texas: Riparian Hardwood Forest				
Open Water				
Urban High Intensity	Urban	1125.42	1105.14	N/A
Urban Low Intensity				
-	Open Water	-	2.05	N/A
	Total Acreage:	**1141.88**	**1141.88**	



MOU VEGETATION MAP

(PRESENT PER TESCP/EMST MAPPER)

SOUTHEAST CONNECTOR

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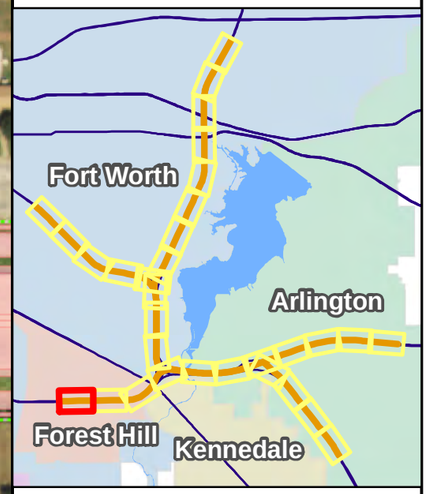
I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

CSJ: 0008-13-125, ect.



0 200 400 Feet

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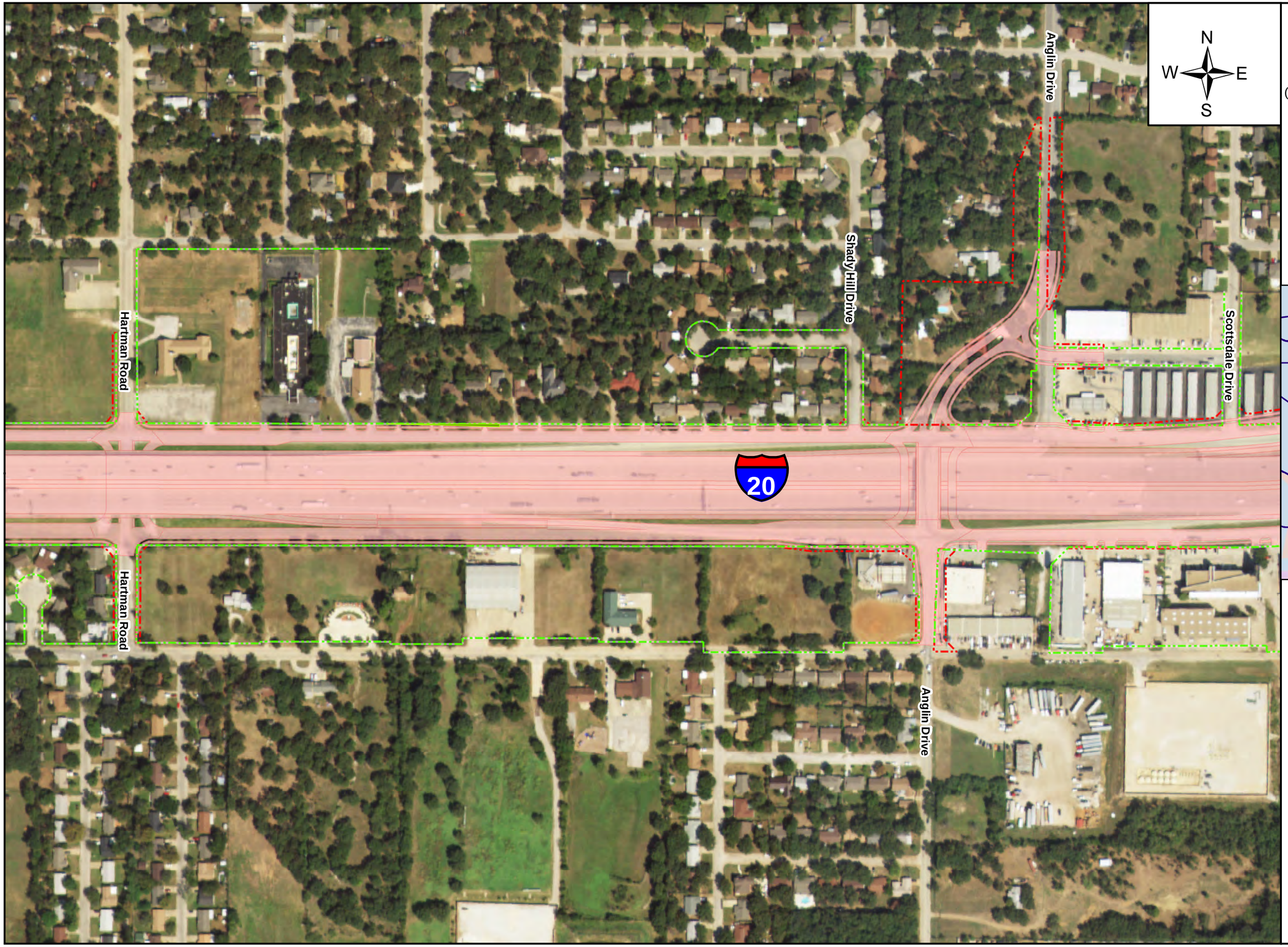

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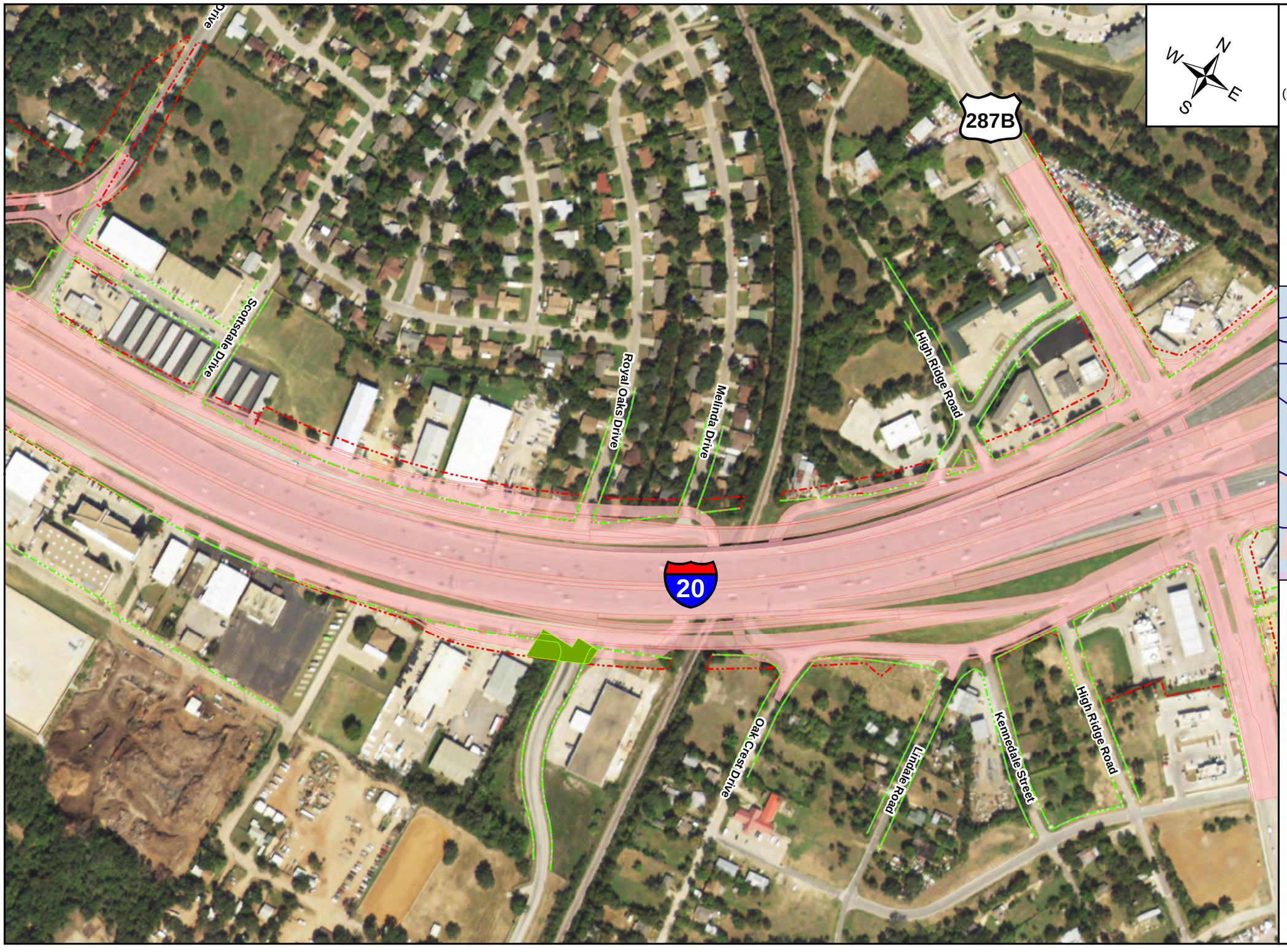

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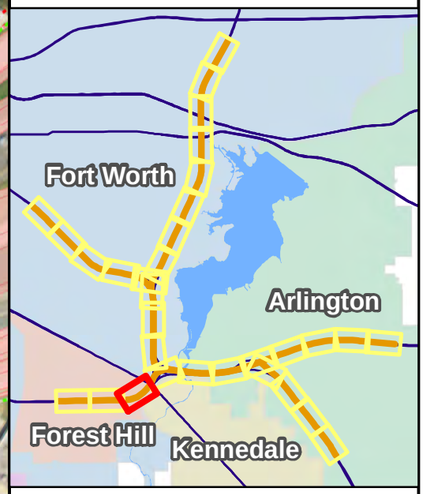

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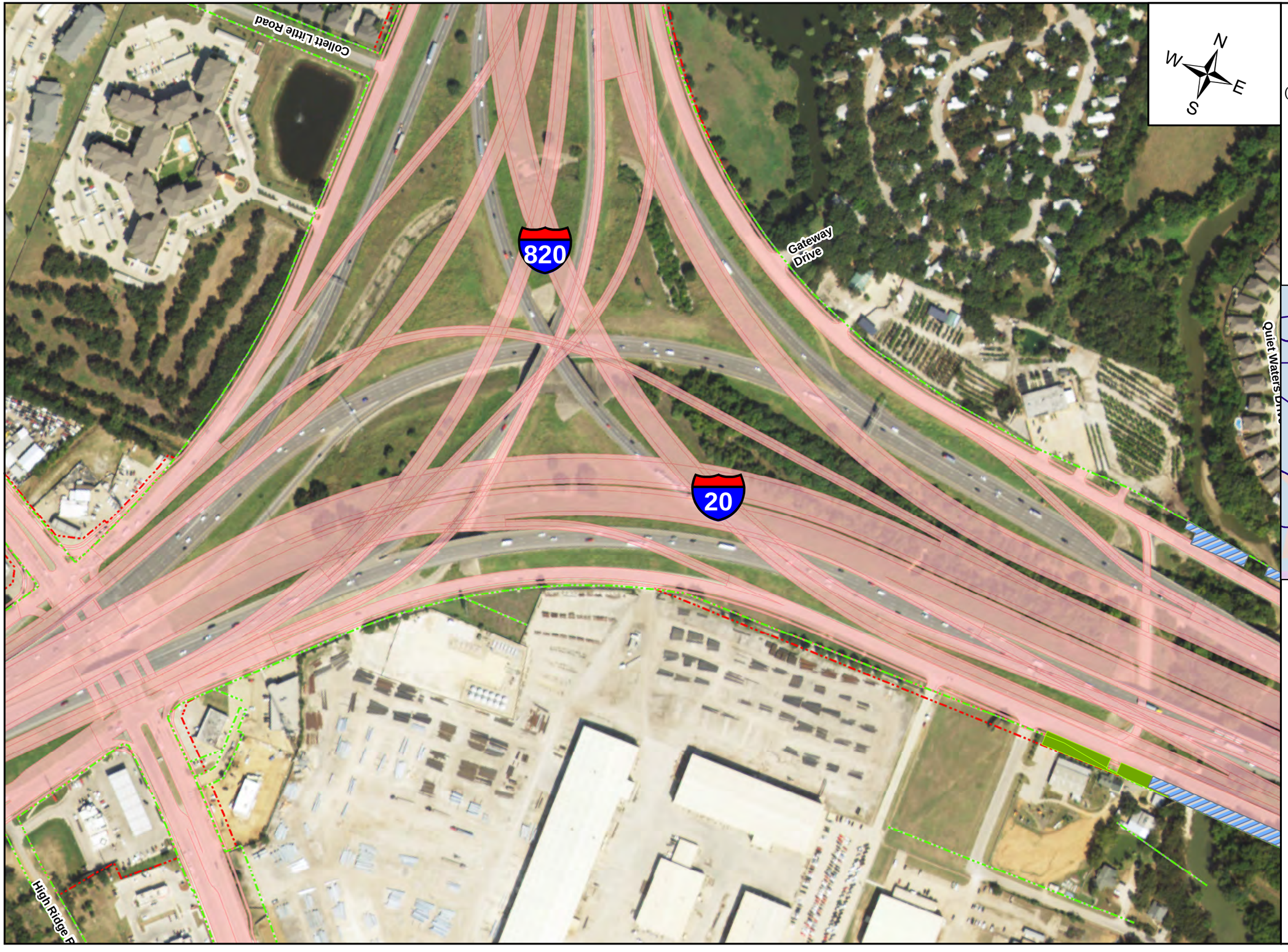

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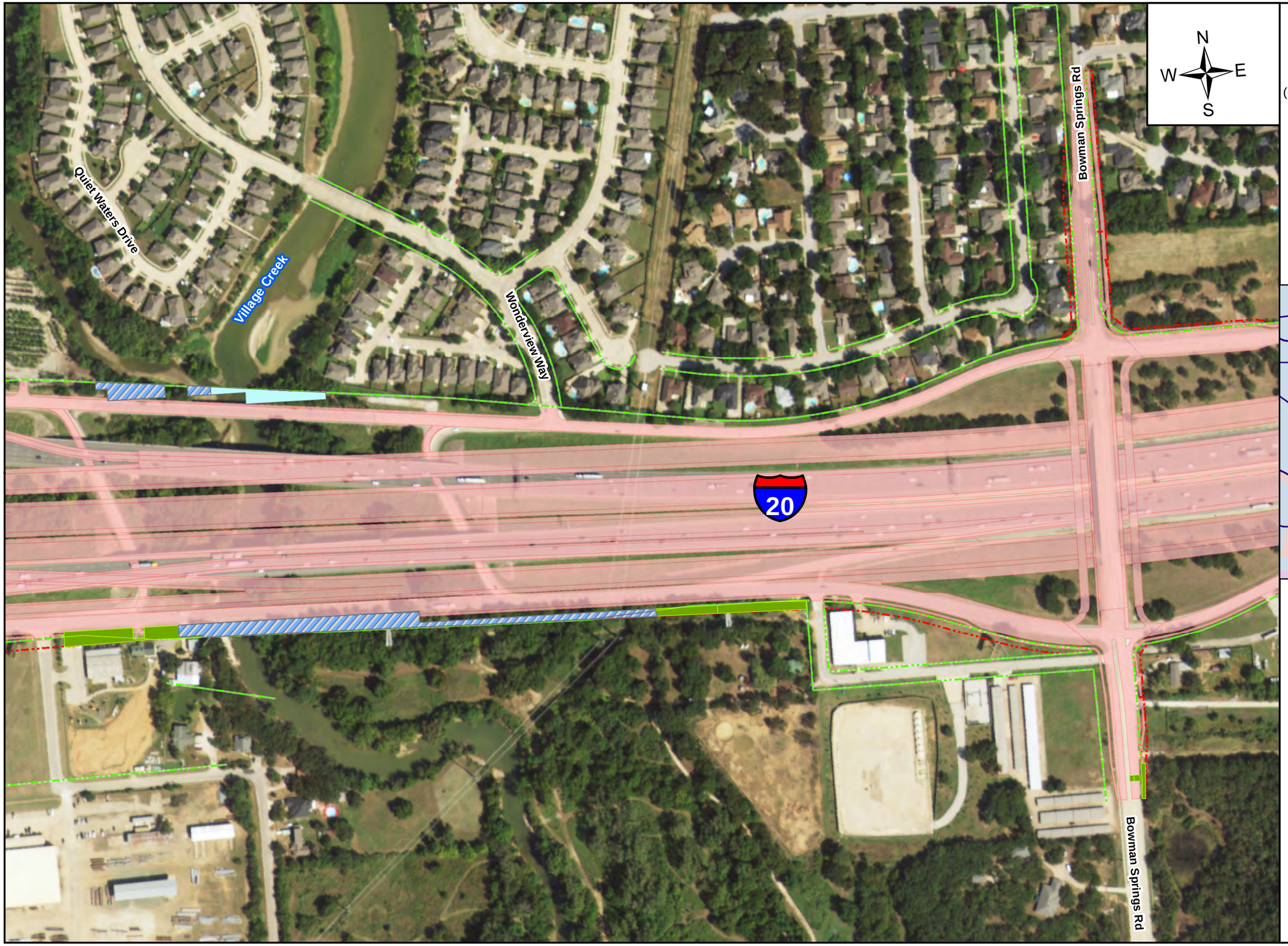

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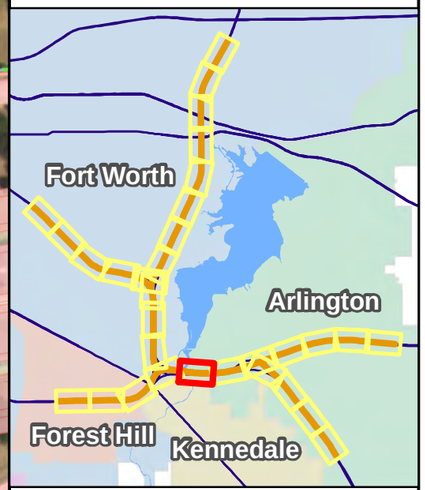

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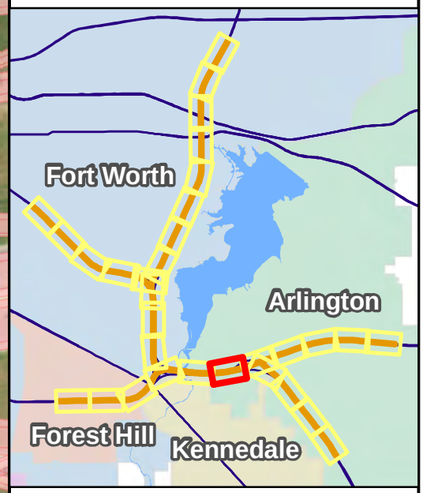

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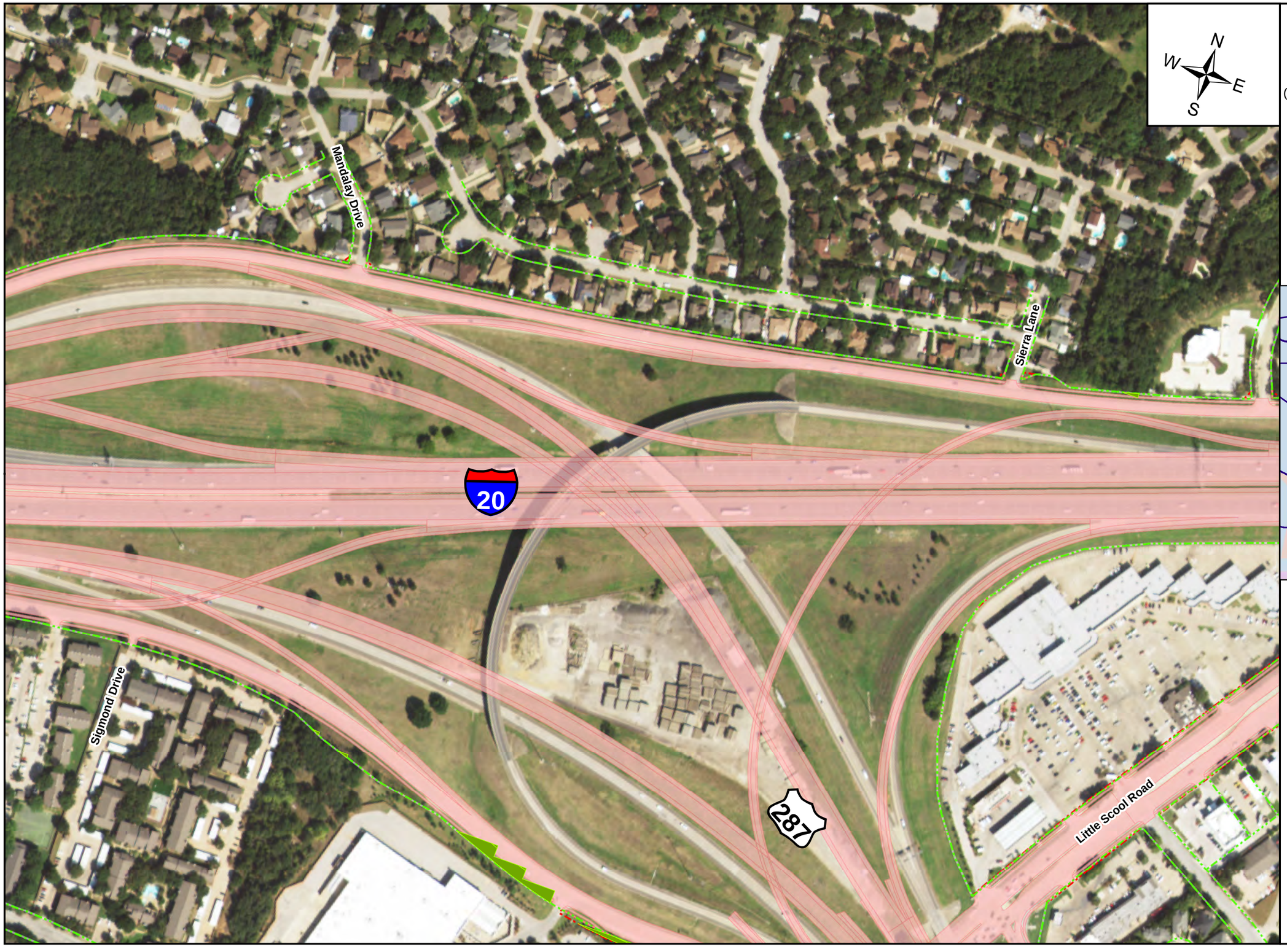

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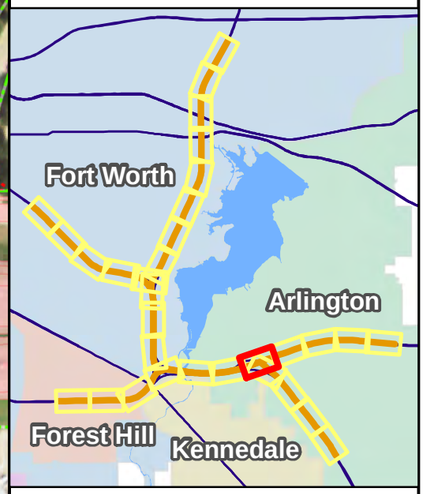

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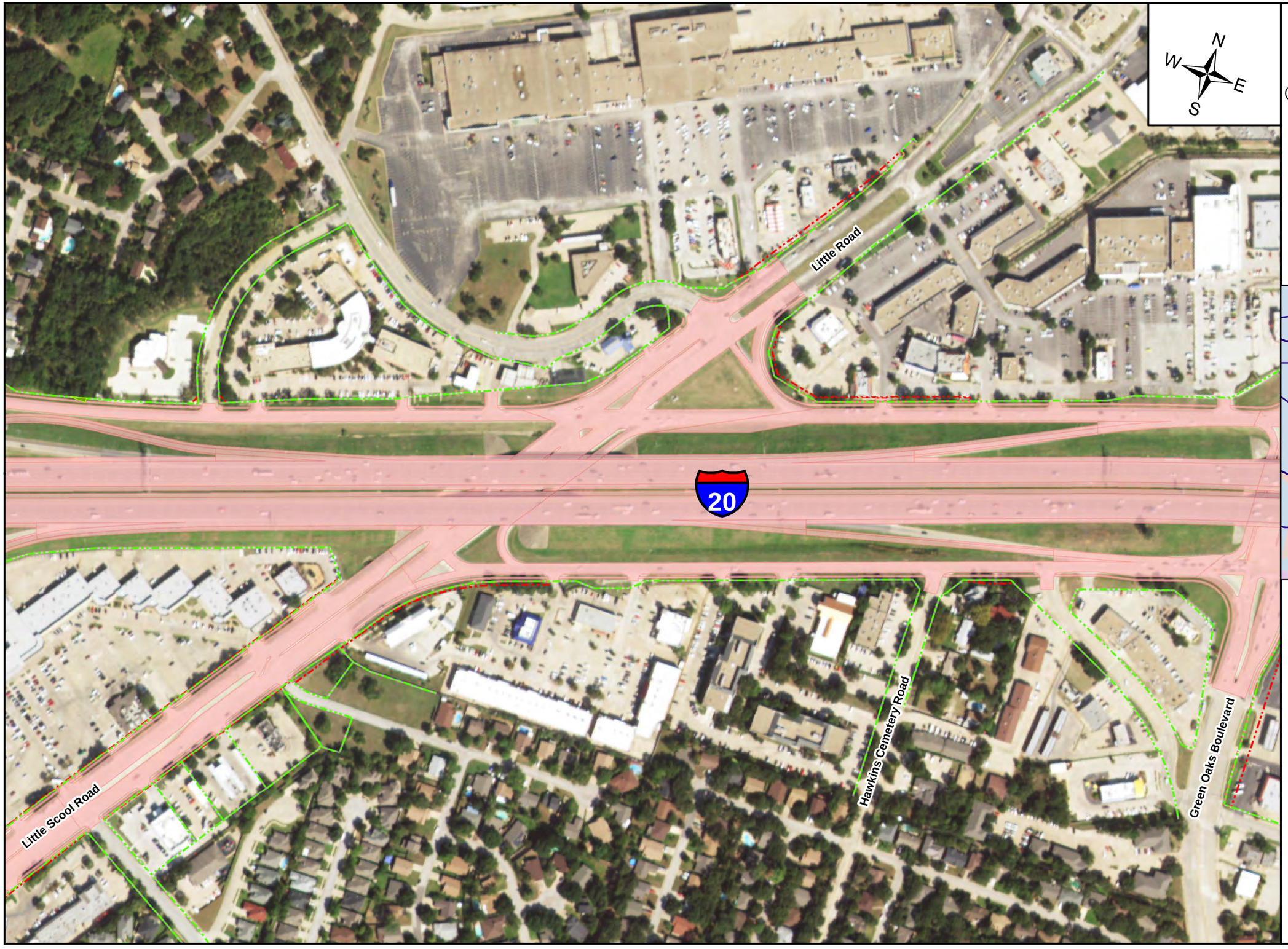

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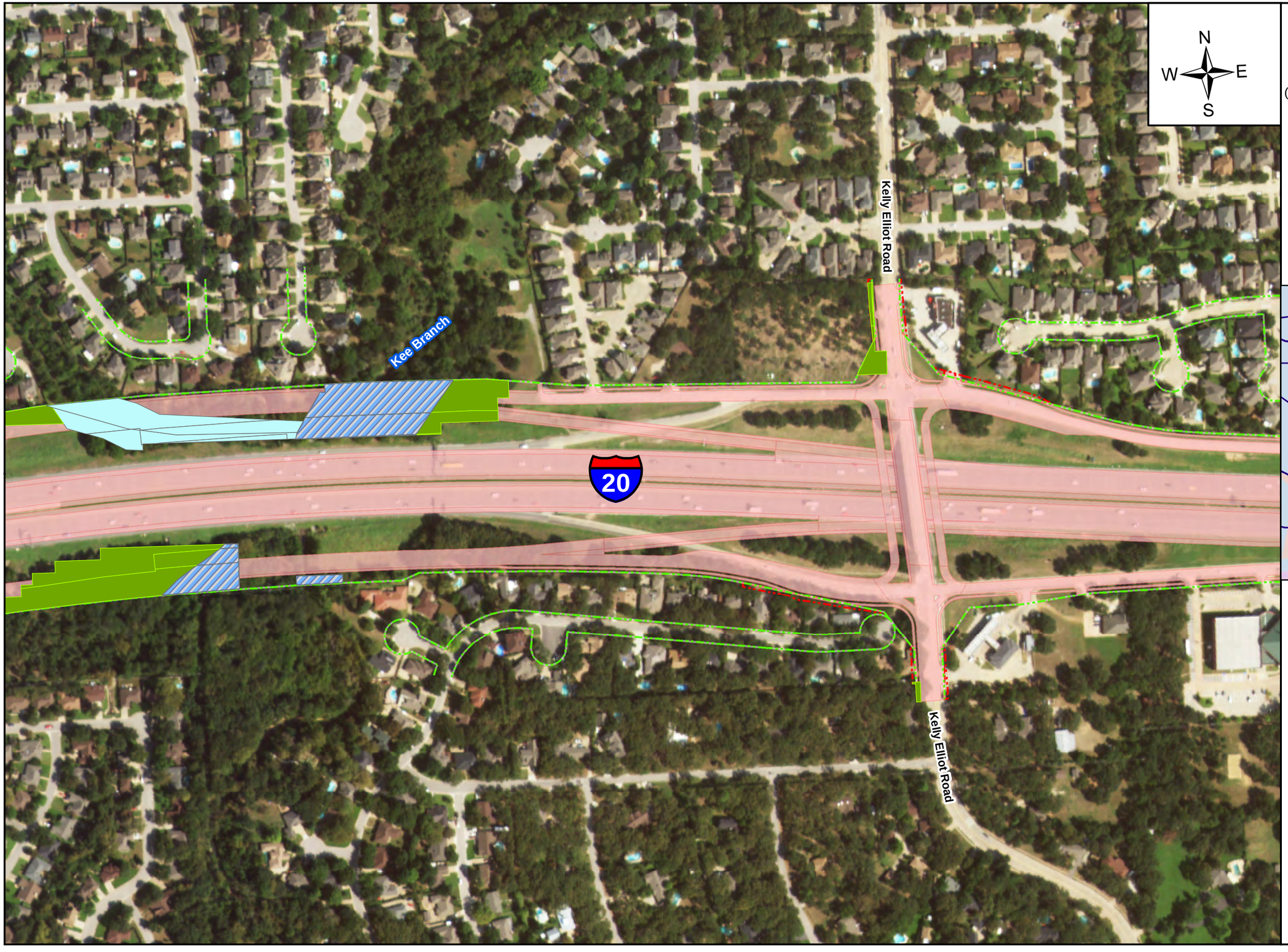

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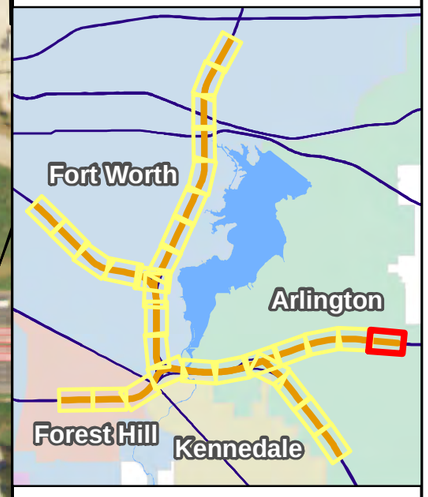

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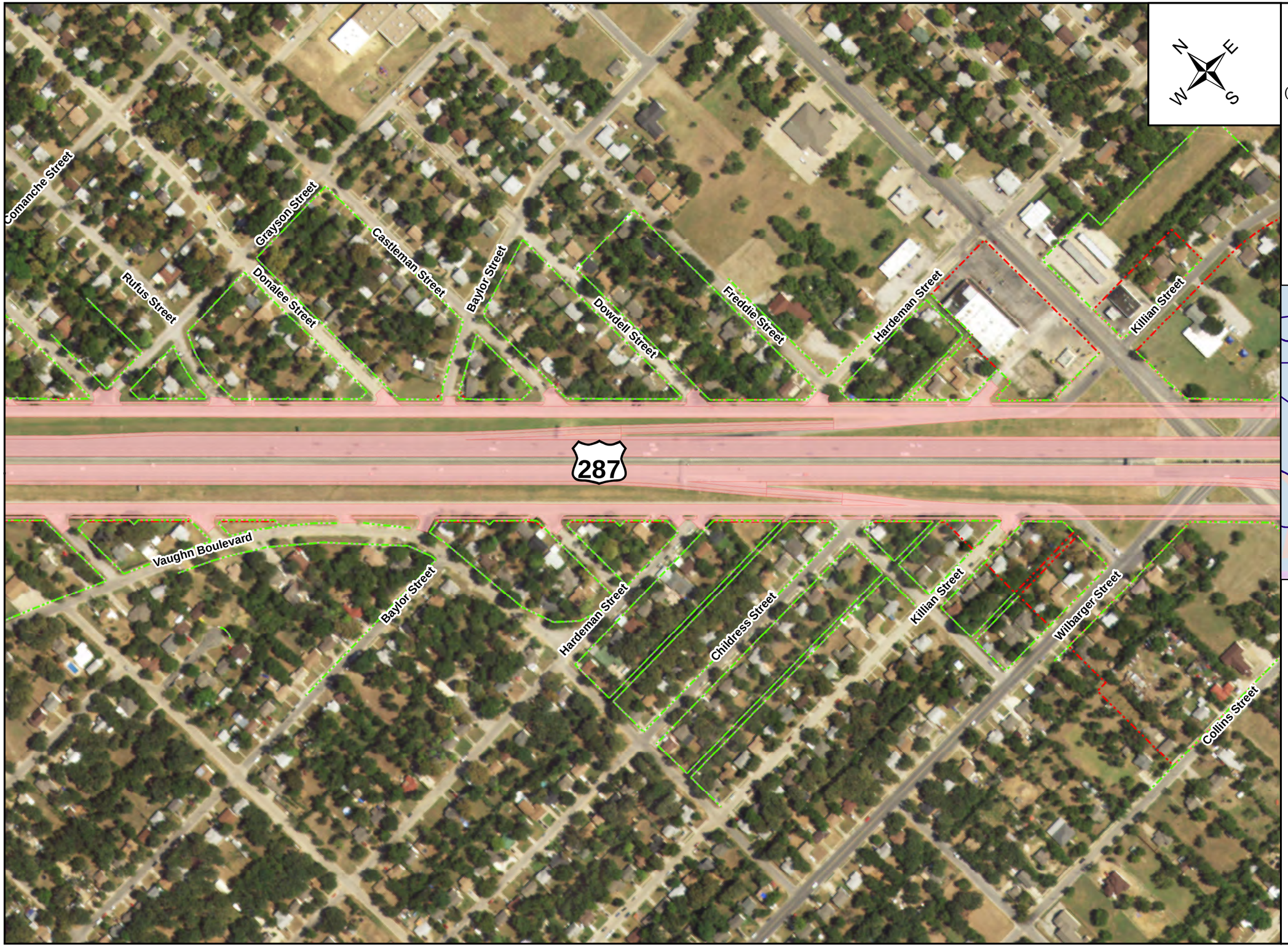

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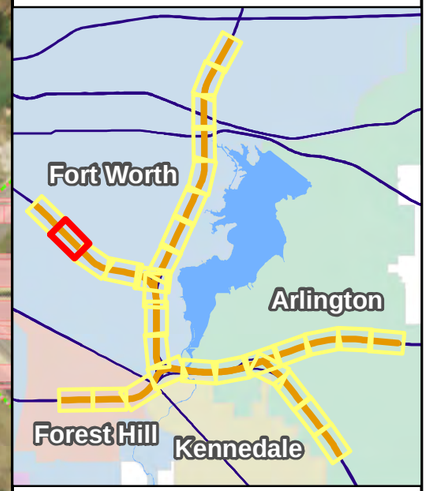

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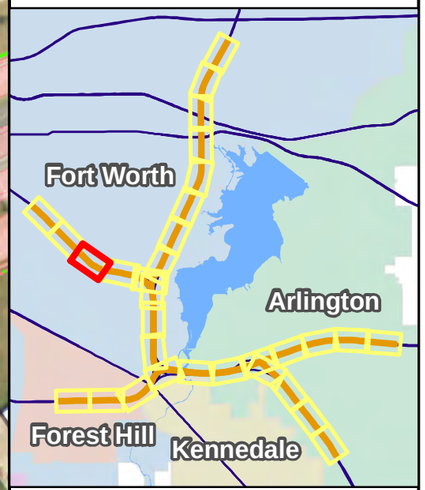

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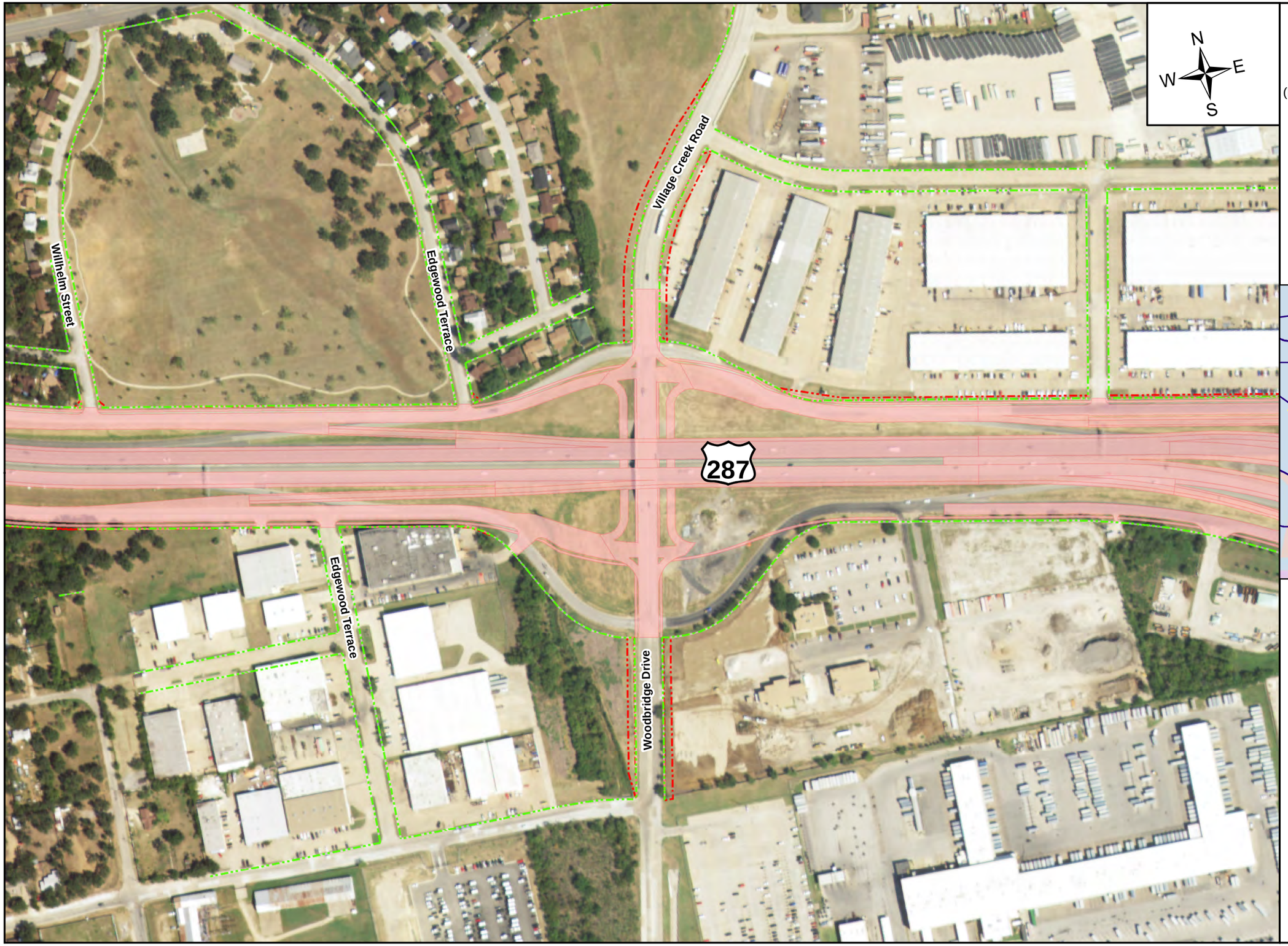

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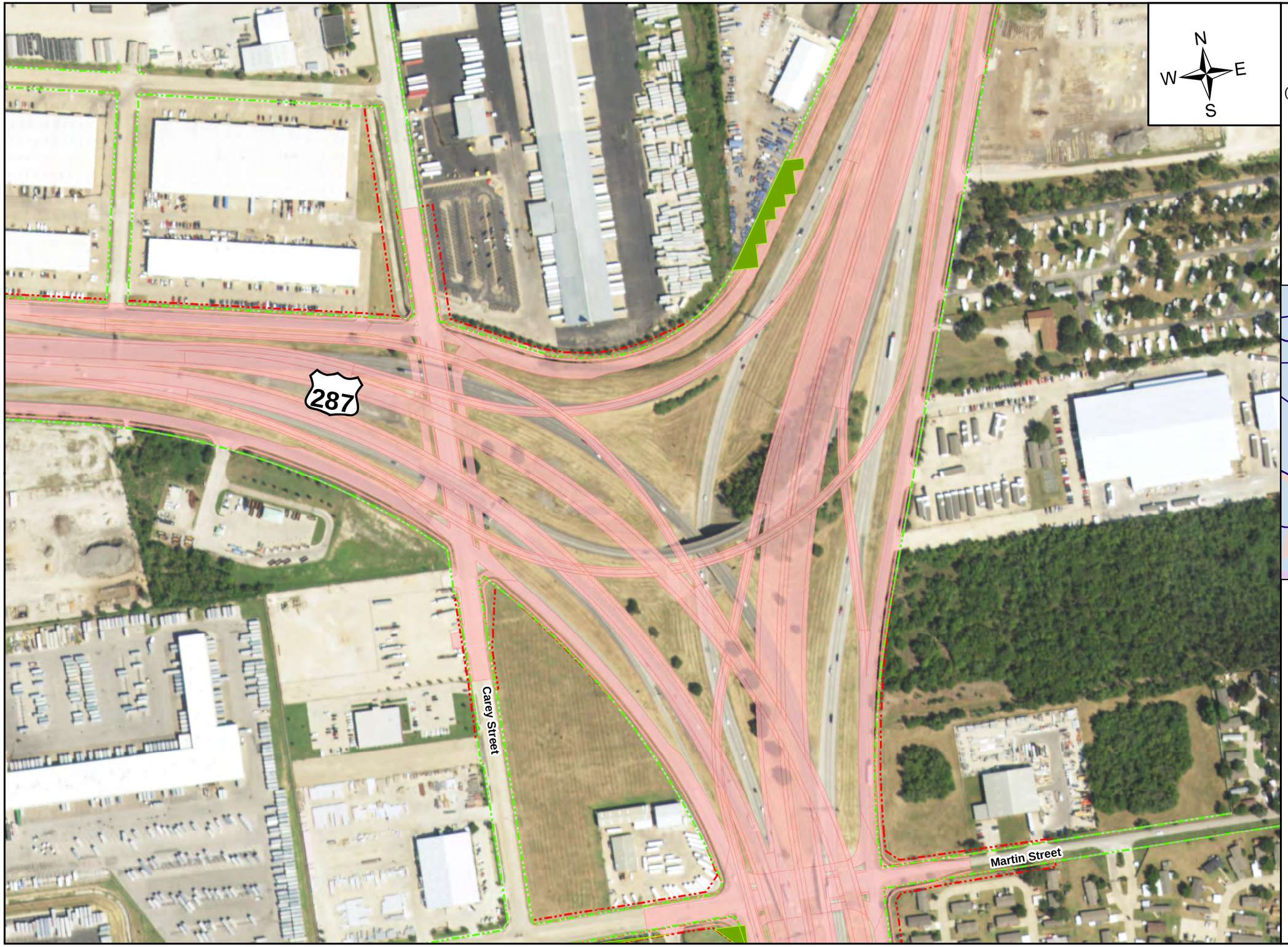

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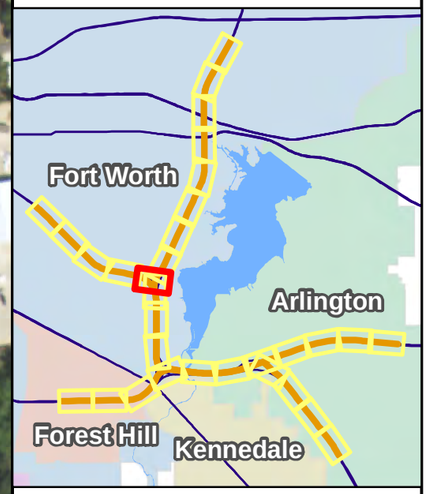

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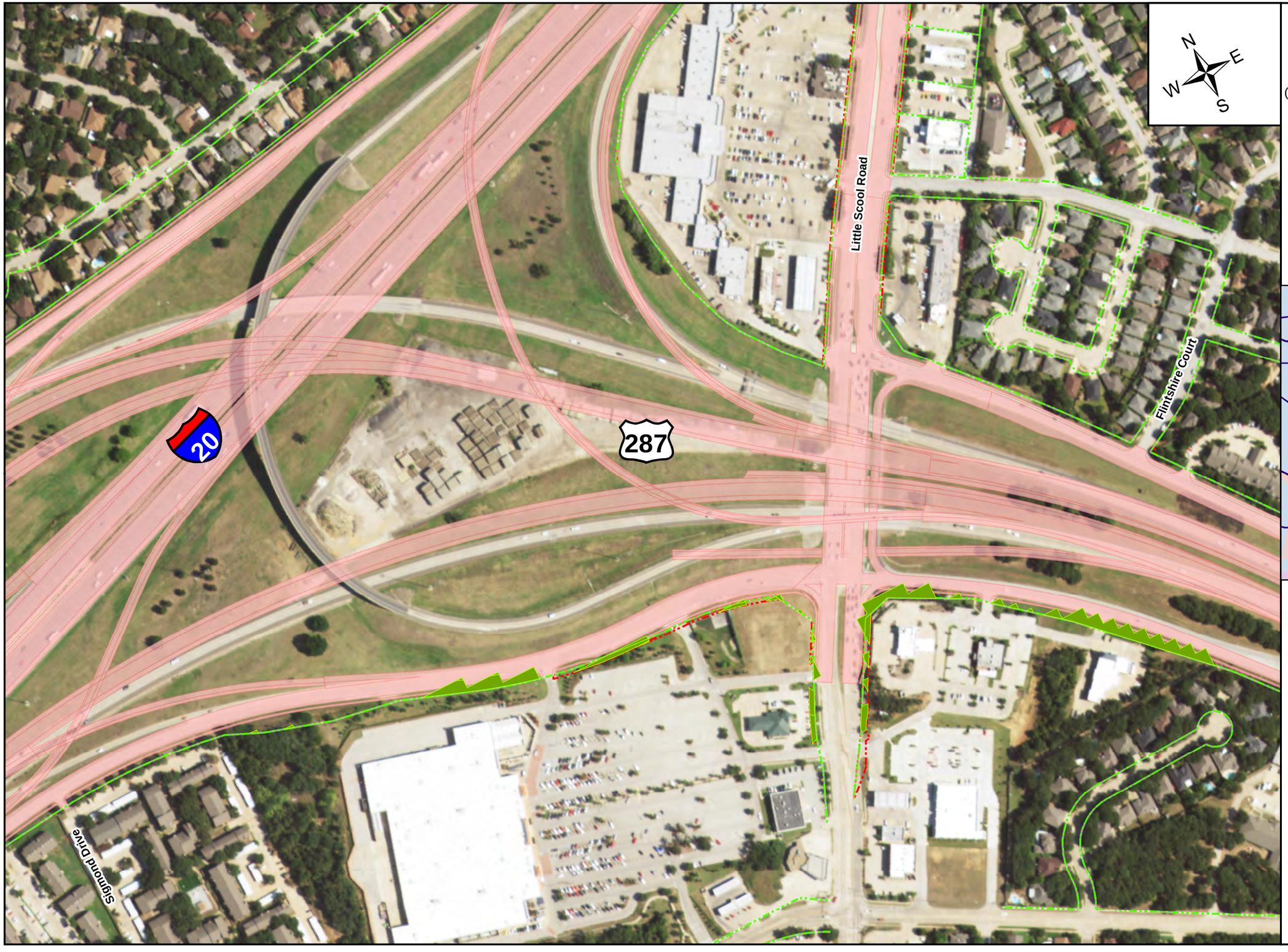

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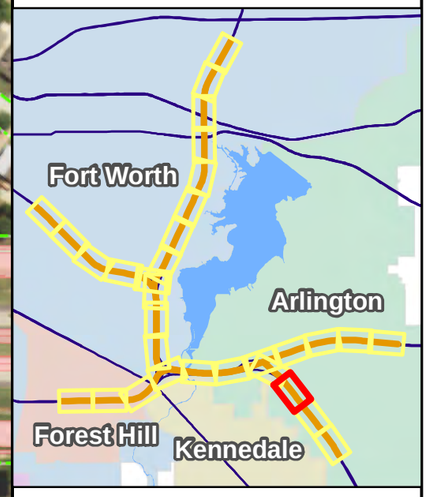

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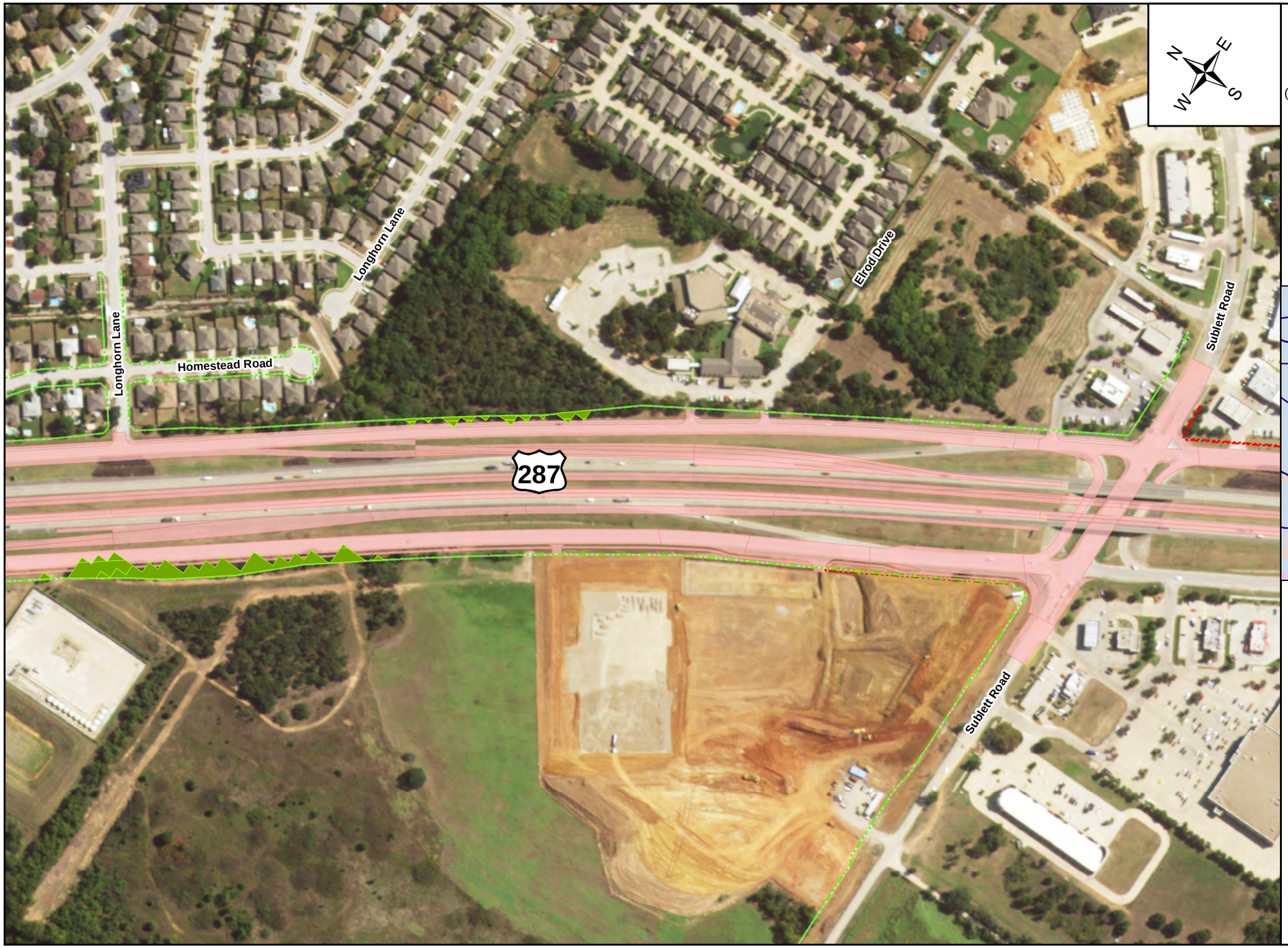

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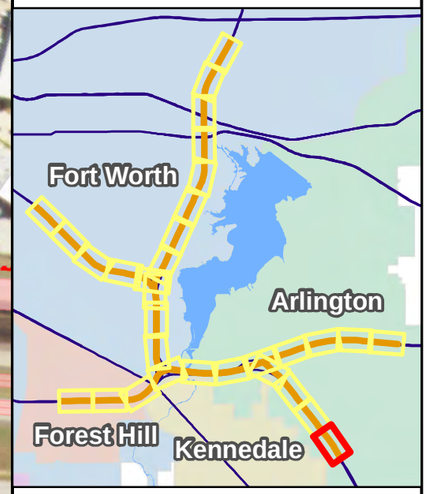

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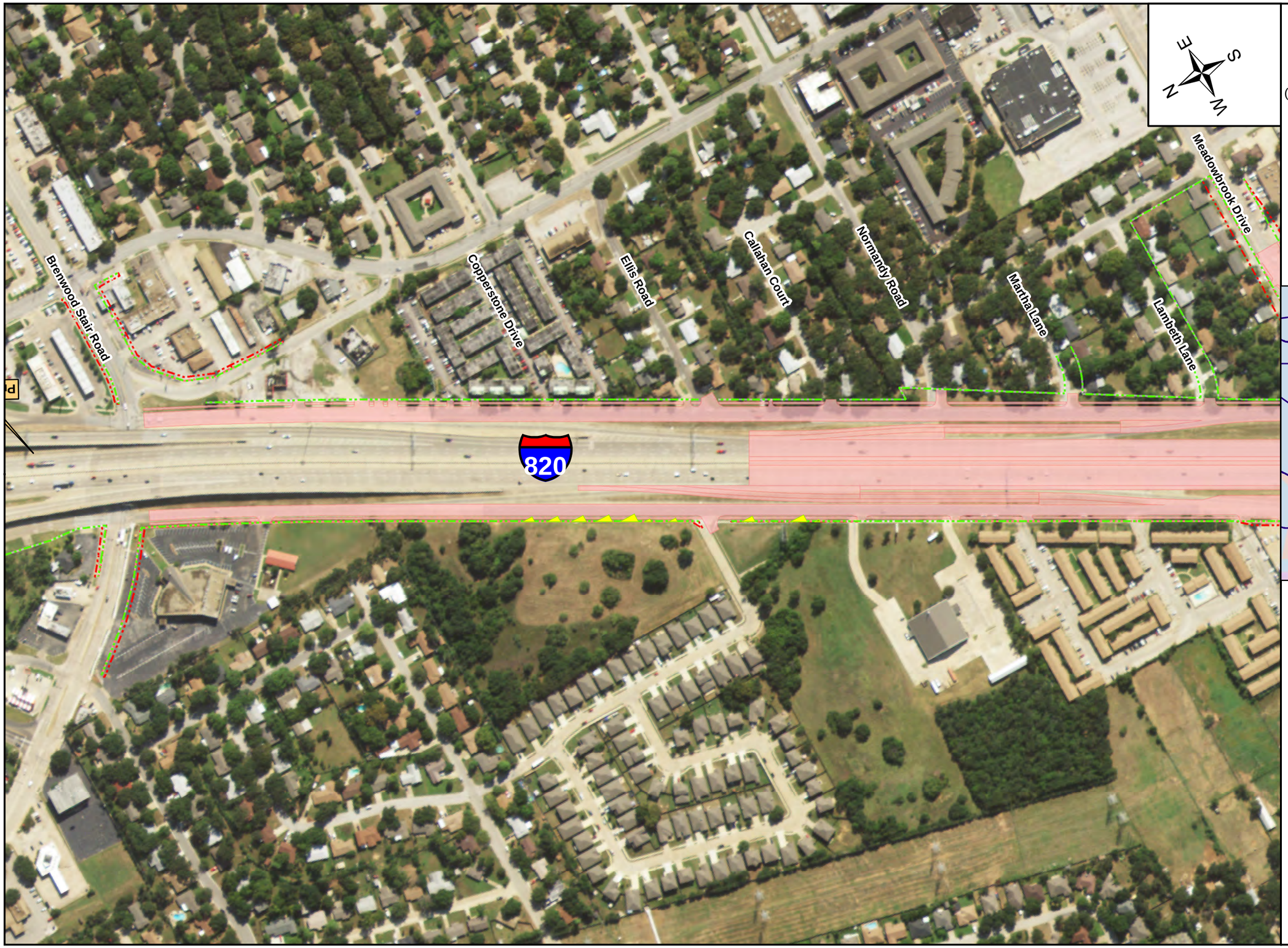

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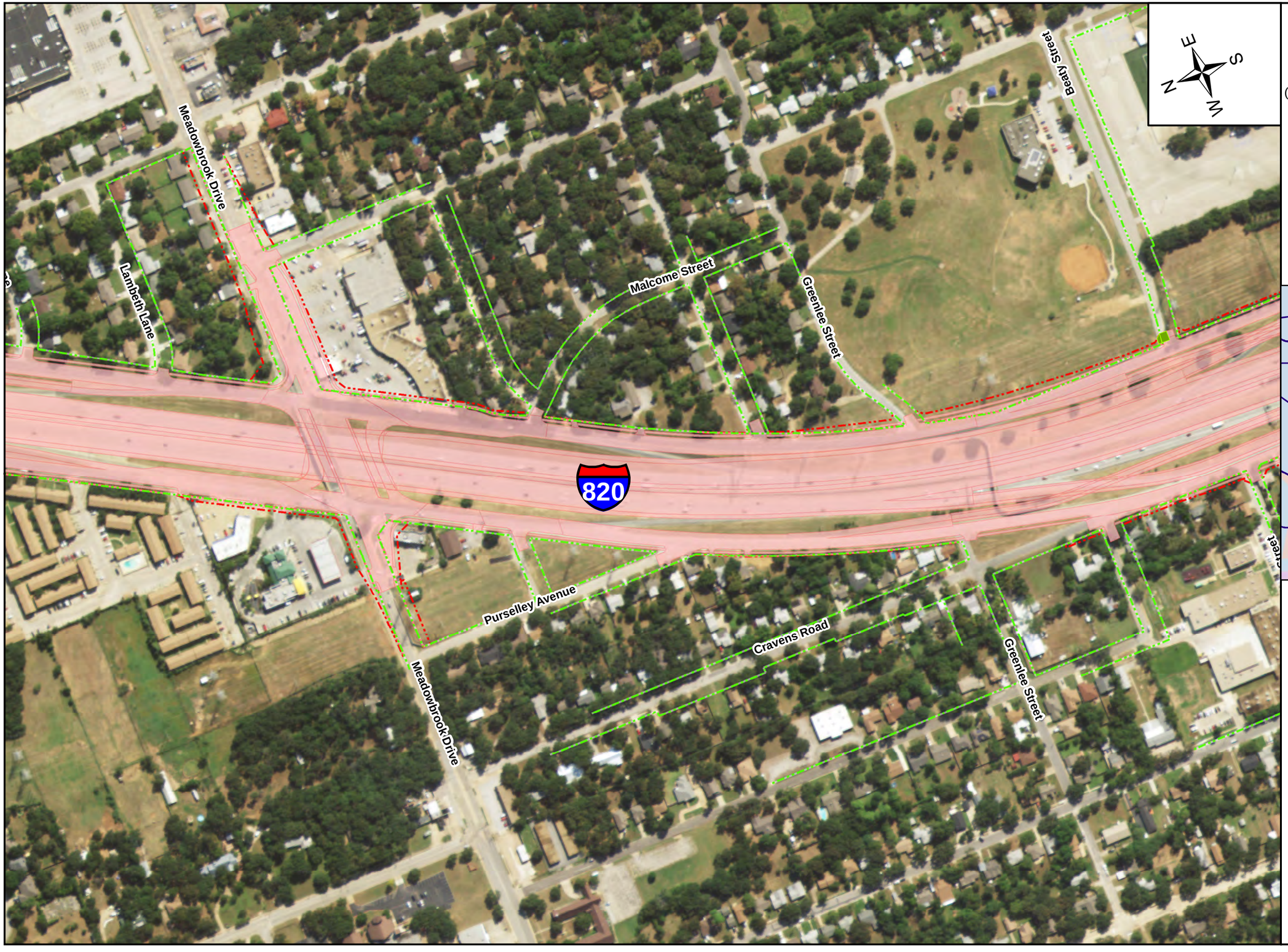

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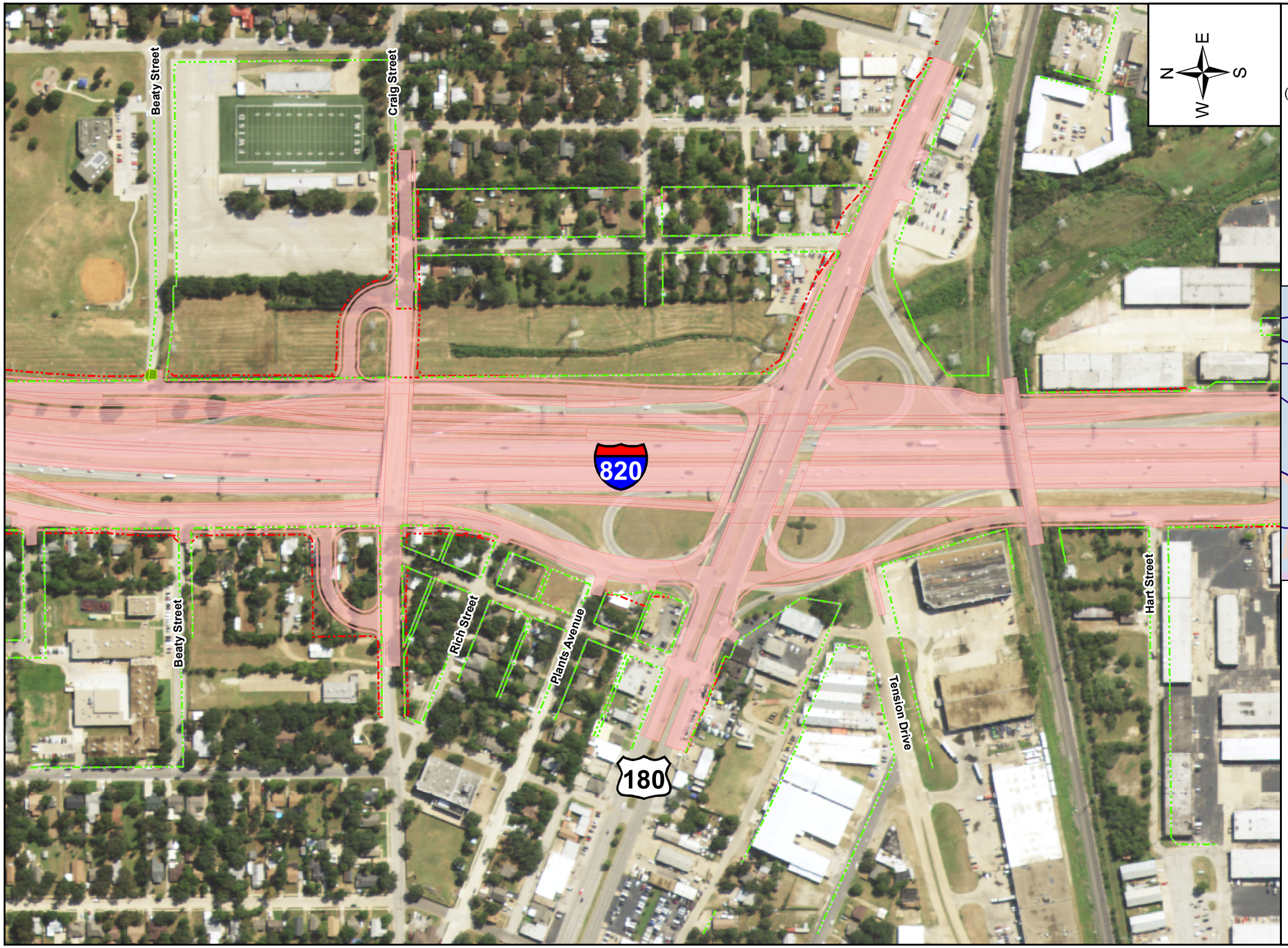

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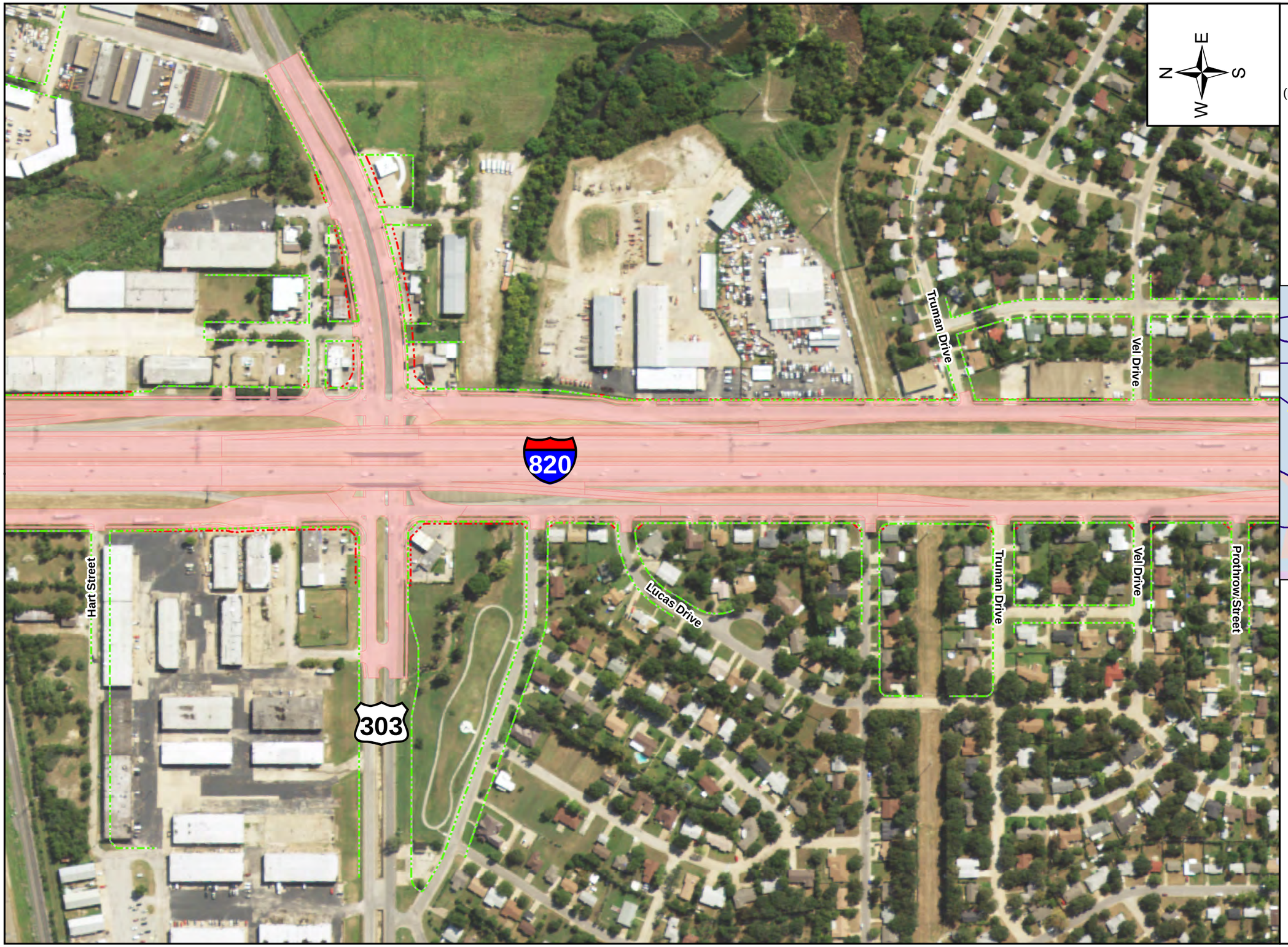

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I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
Park Springs Boulevard
I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

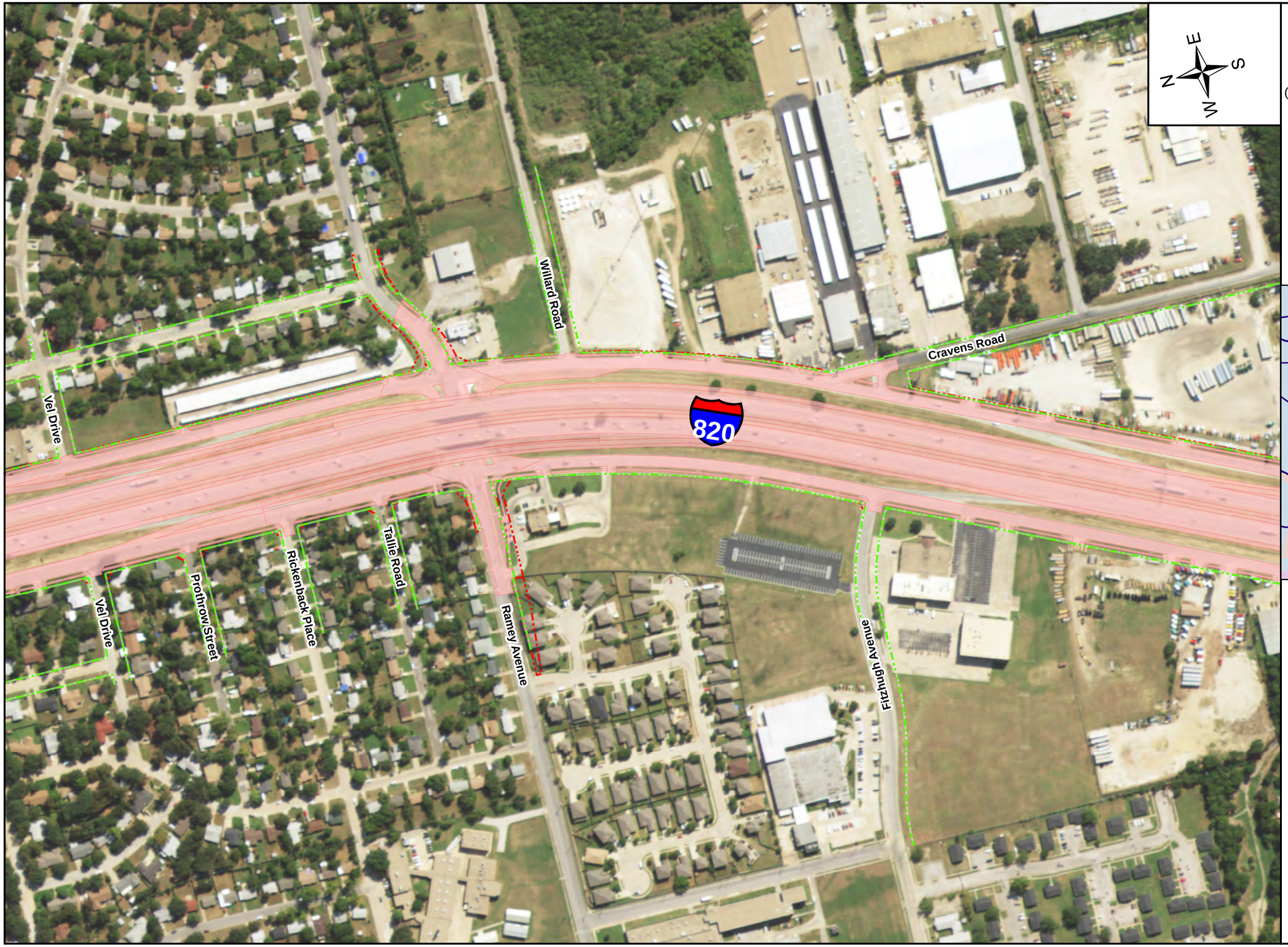
CSJ: 0008-13-125, ect.

0 200 400 Feet

Legend

- Existing Right-of-Way
- Proposed Right-of-Way
- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Floodplain
- Open Water
- Riparian
- Project Design

Remaining land within
Right-of-Way is Urban



MOU VEGETATION MAP

(PRESENT PER TESCP/EMST MAPPER)

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I-20/I-820/US 287 Interchanges
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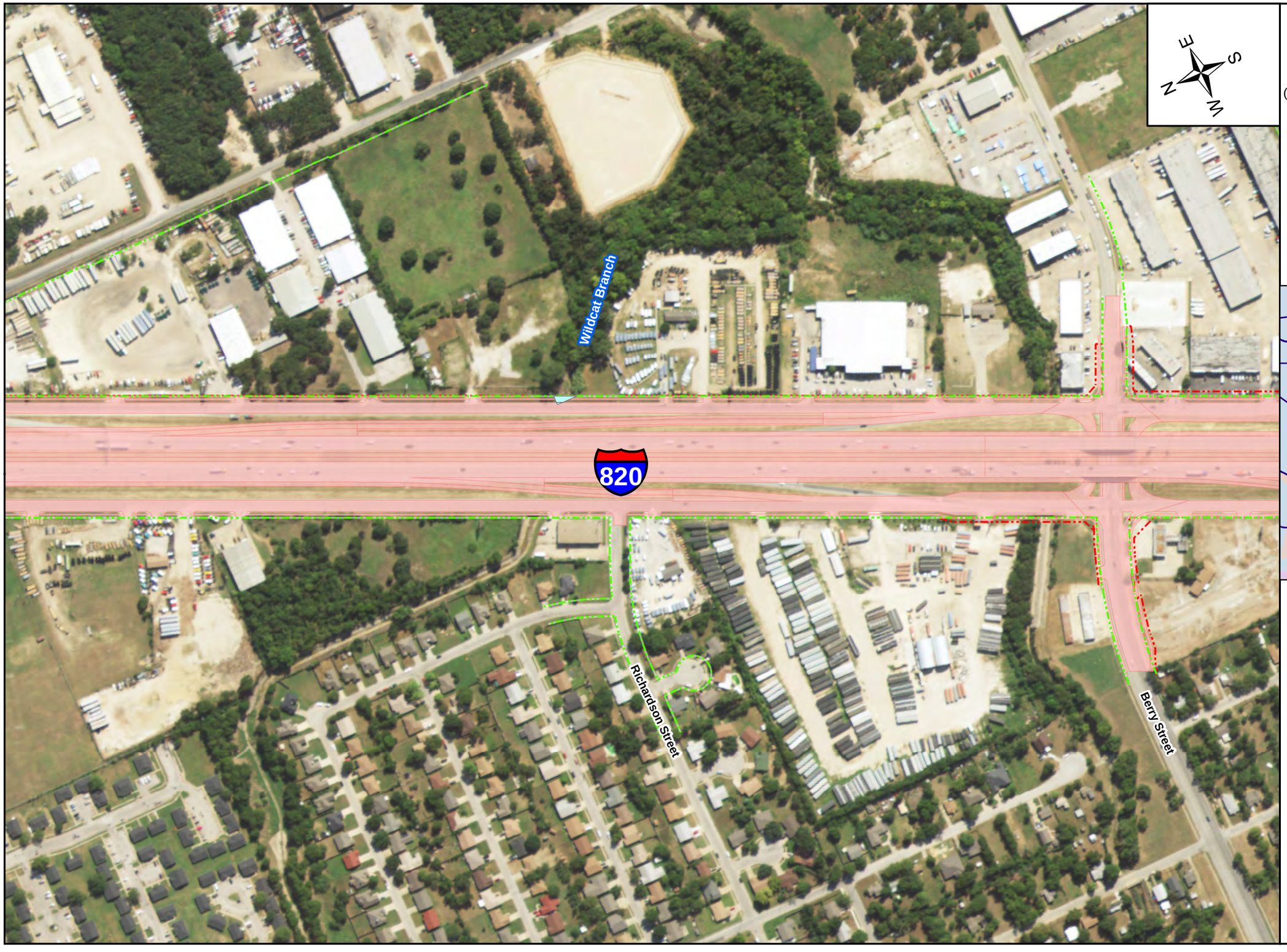

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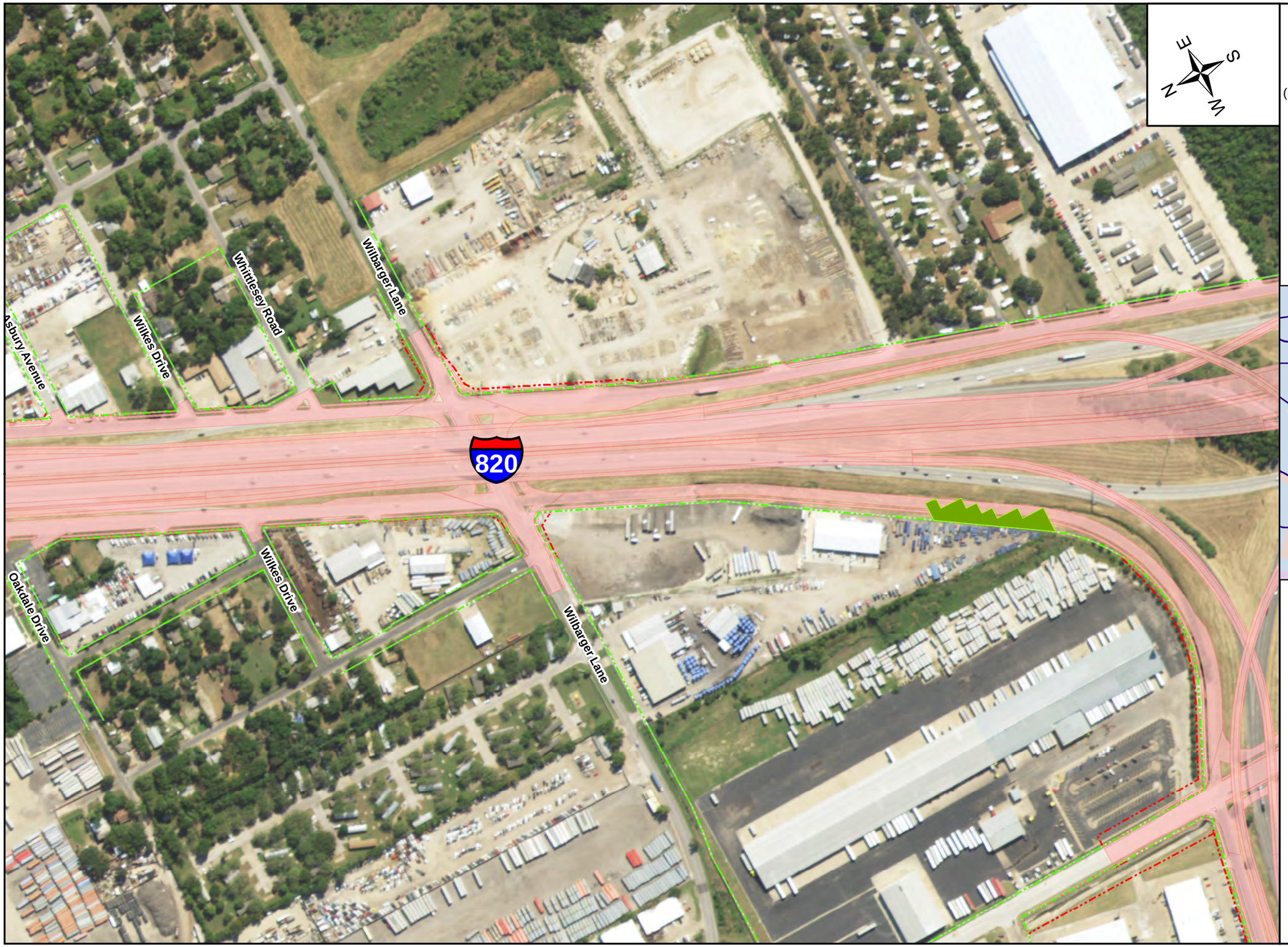

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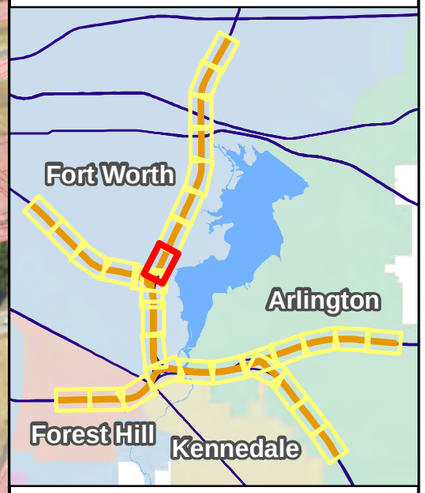

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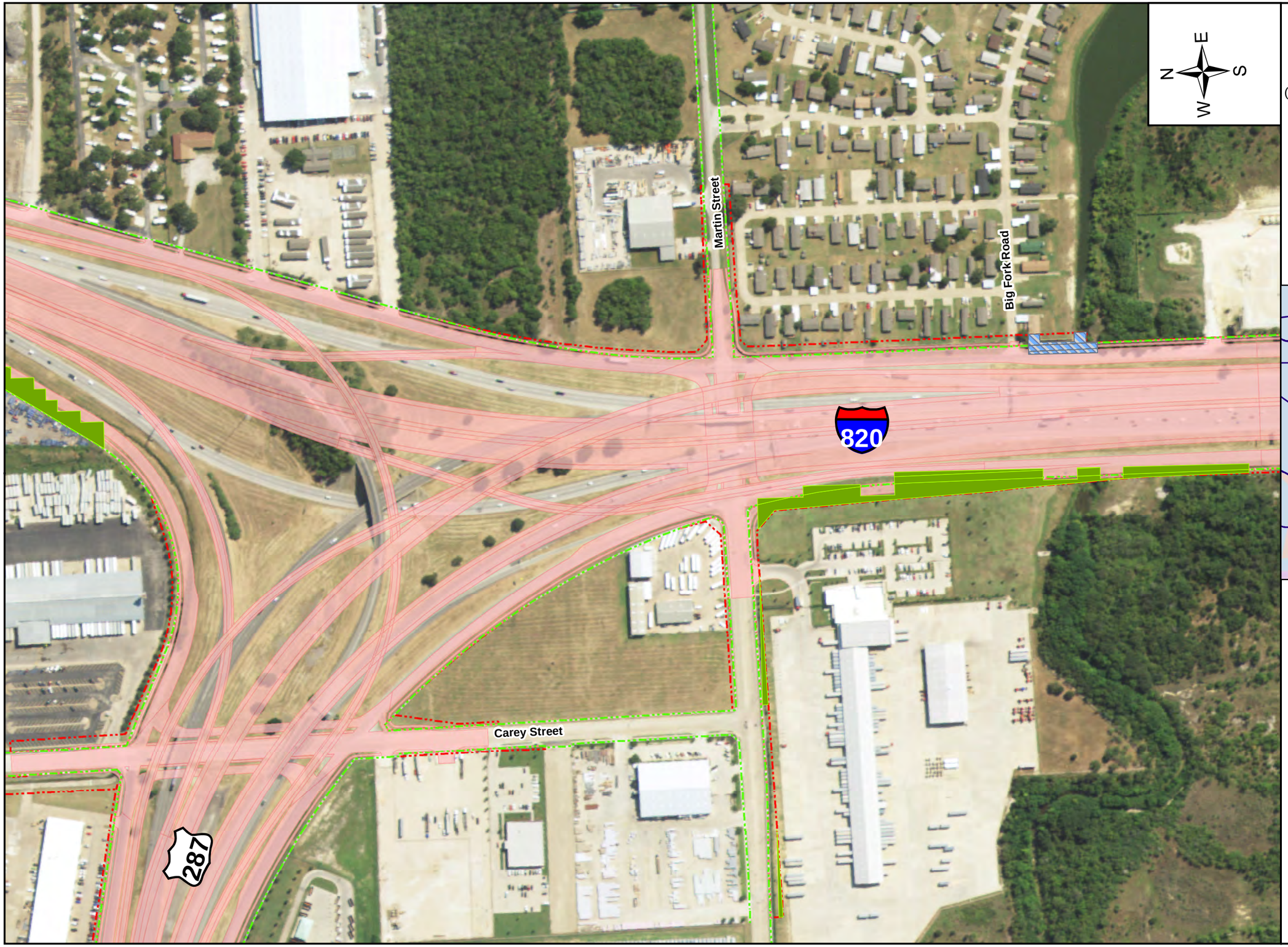

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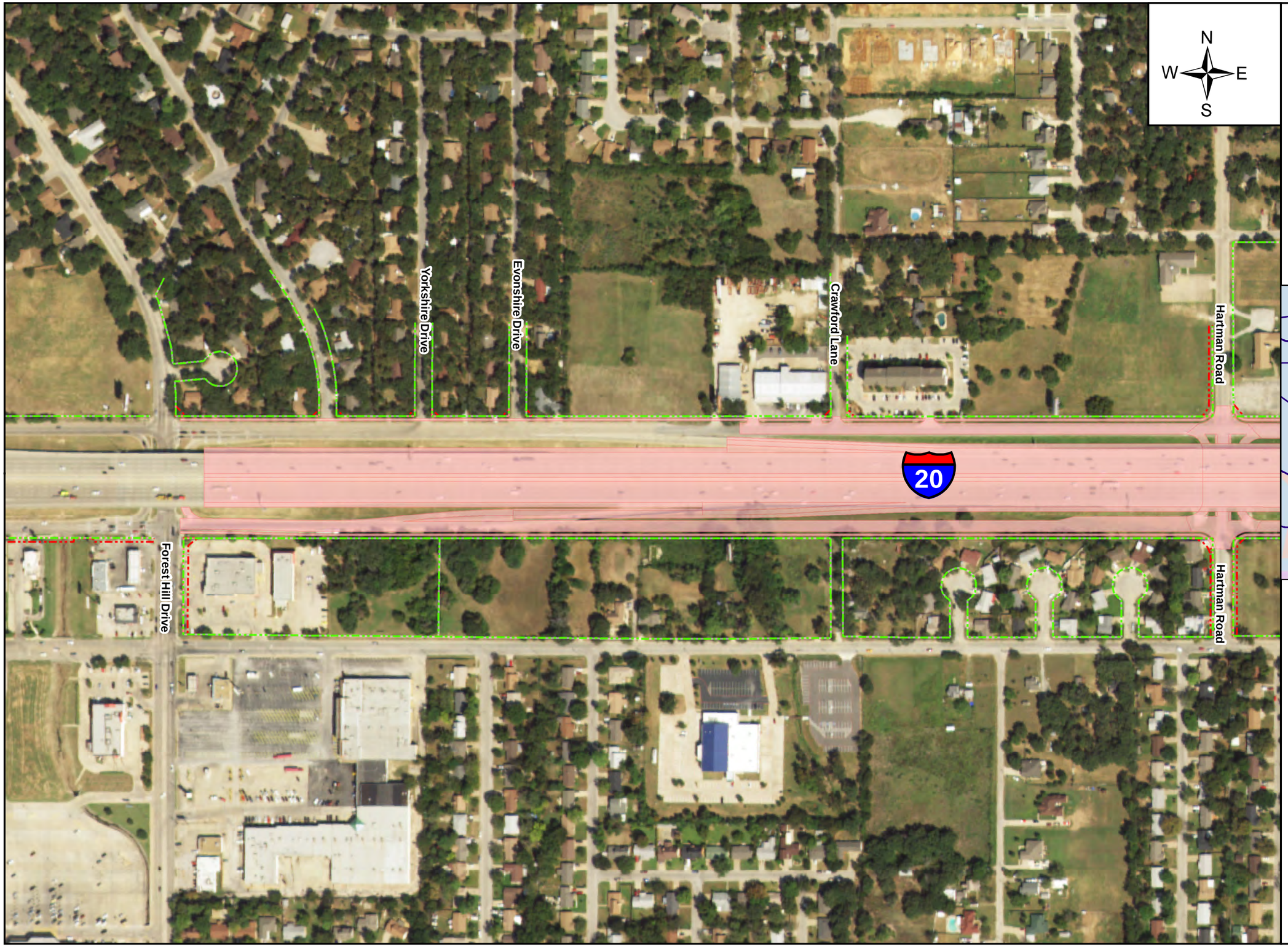

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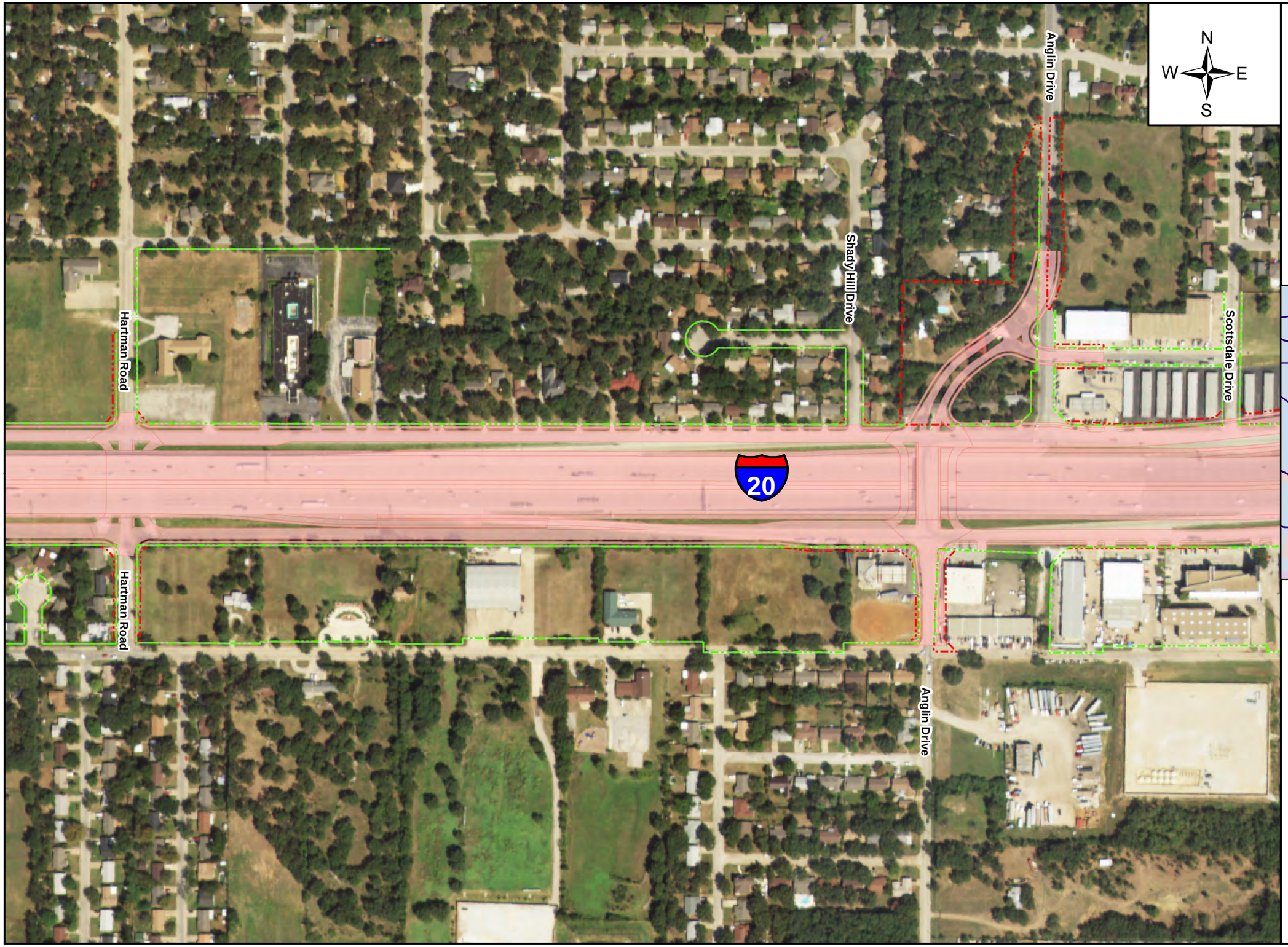

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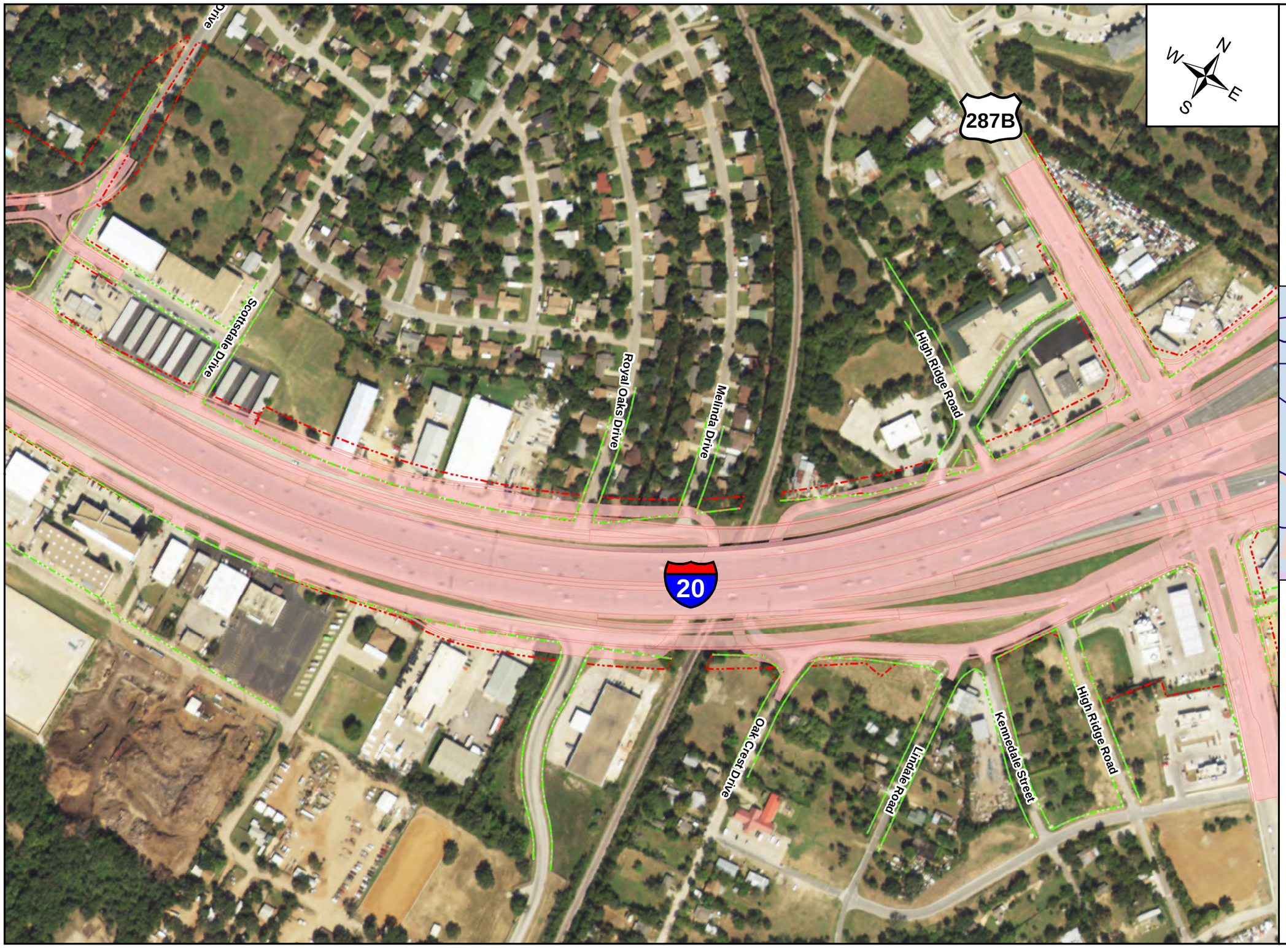

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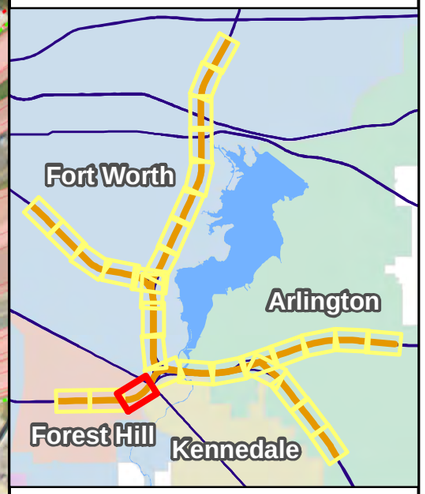

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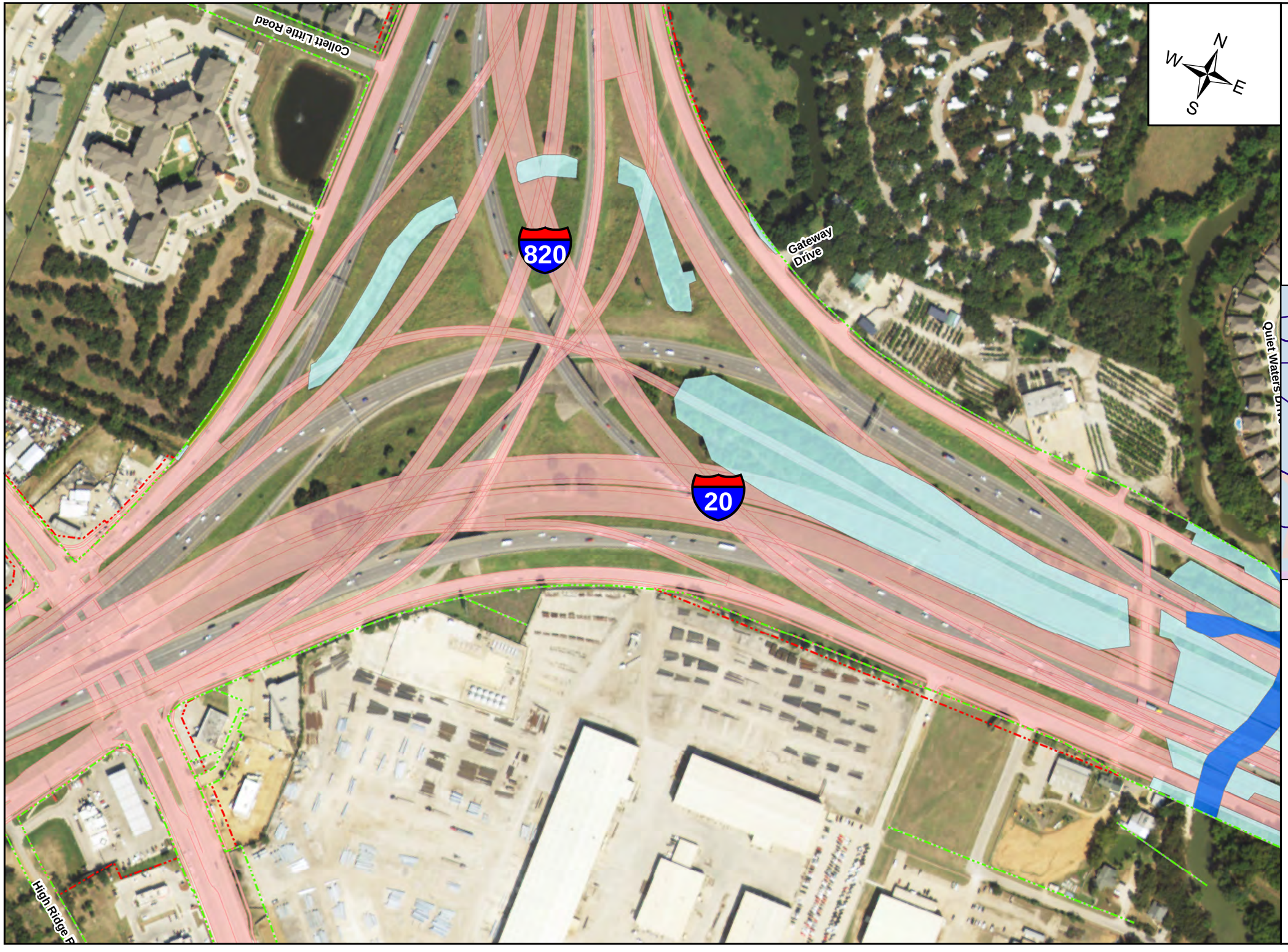

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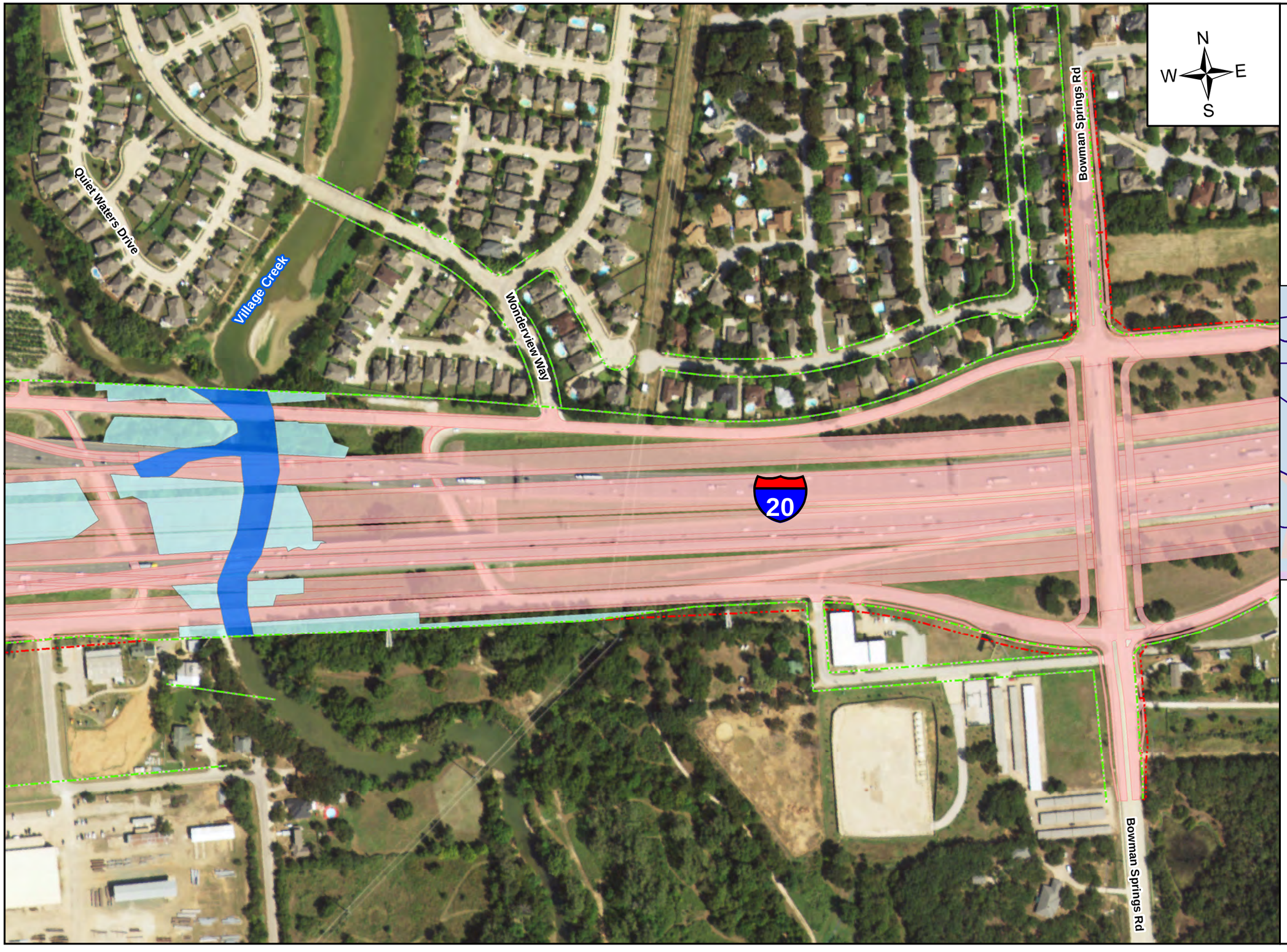

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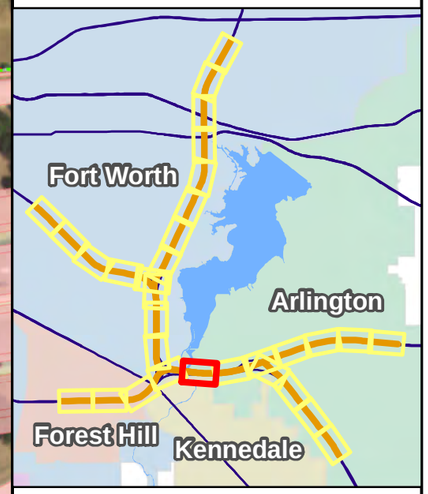

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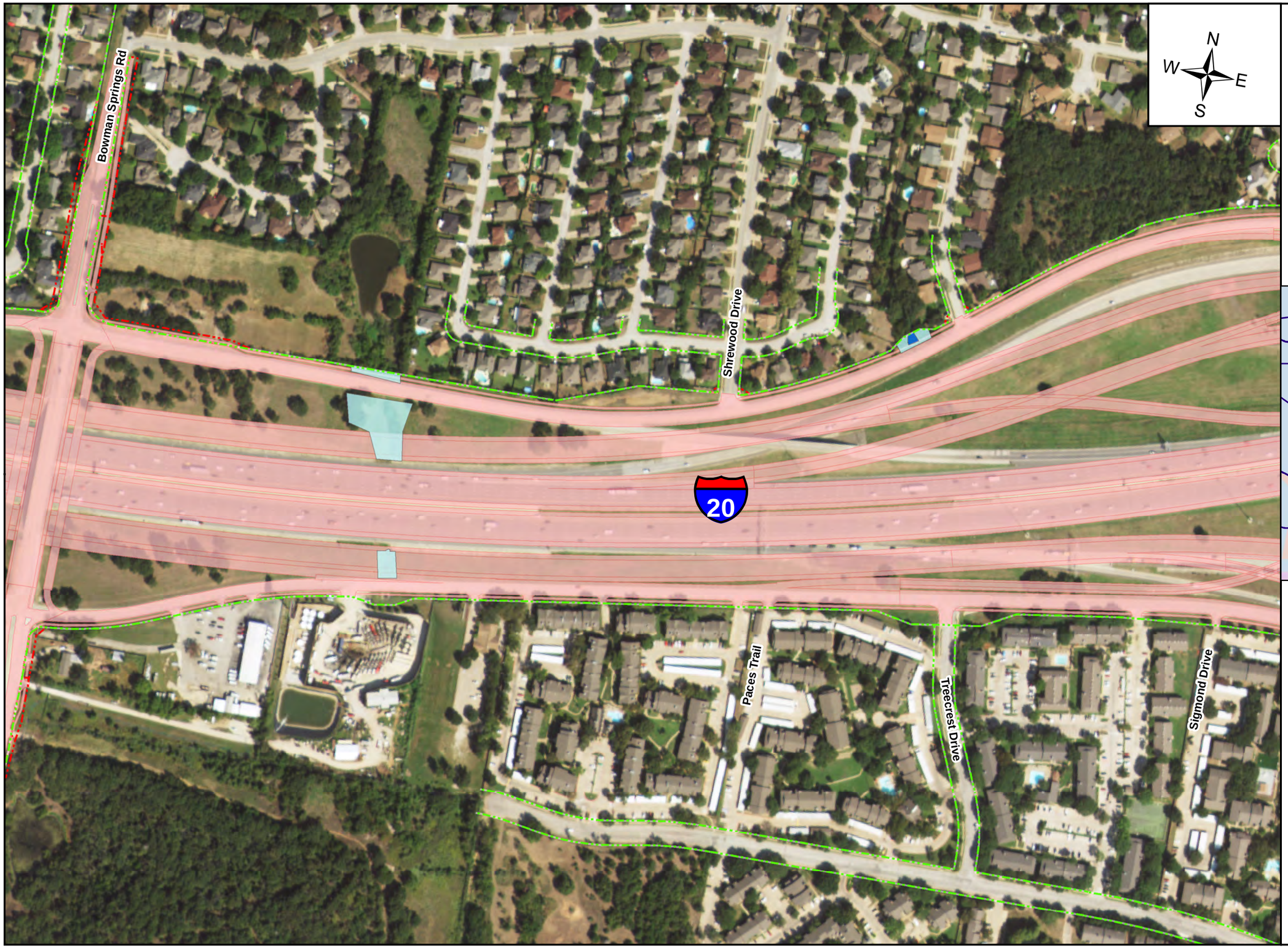

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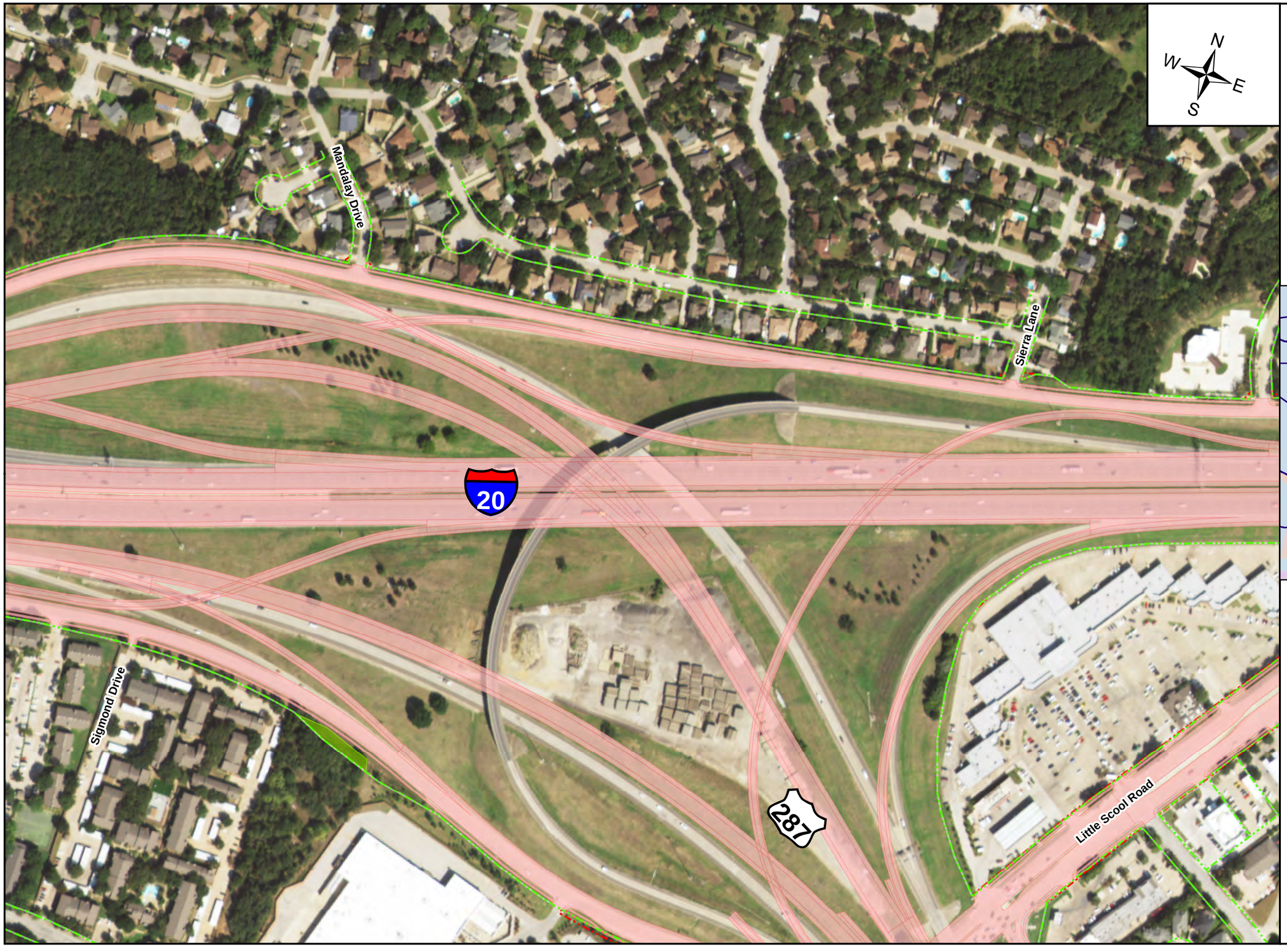

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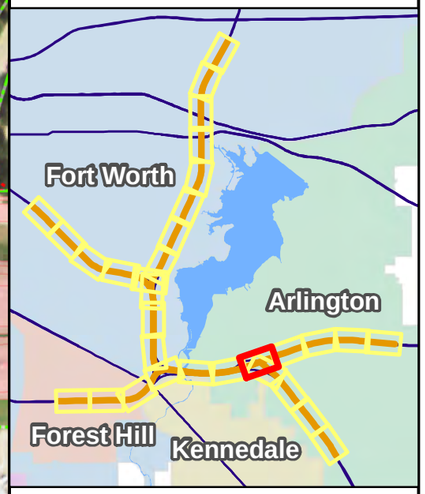

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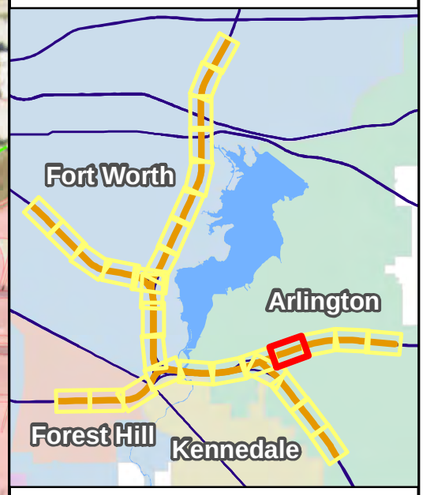

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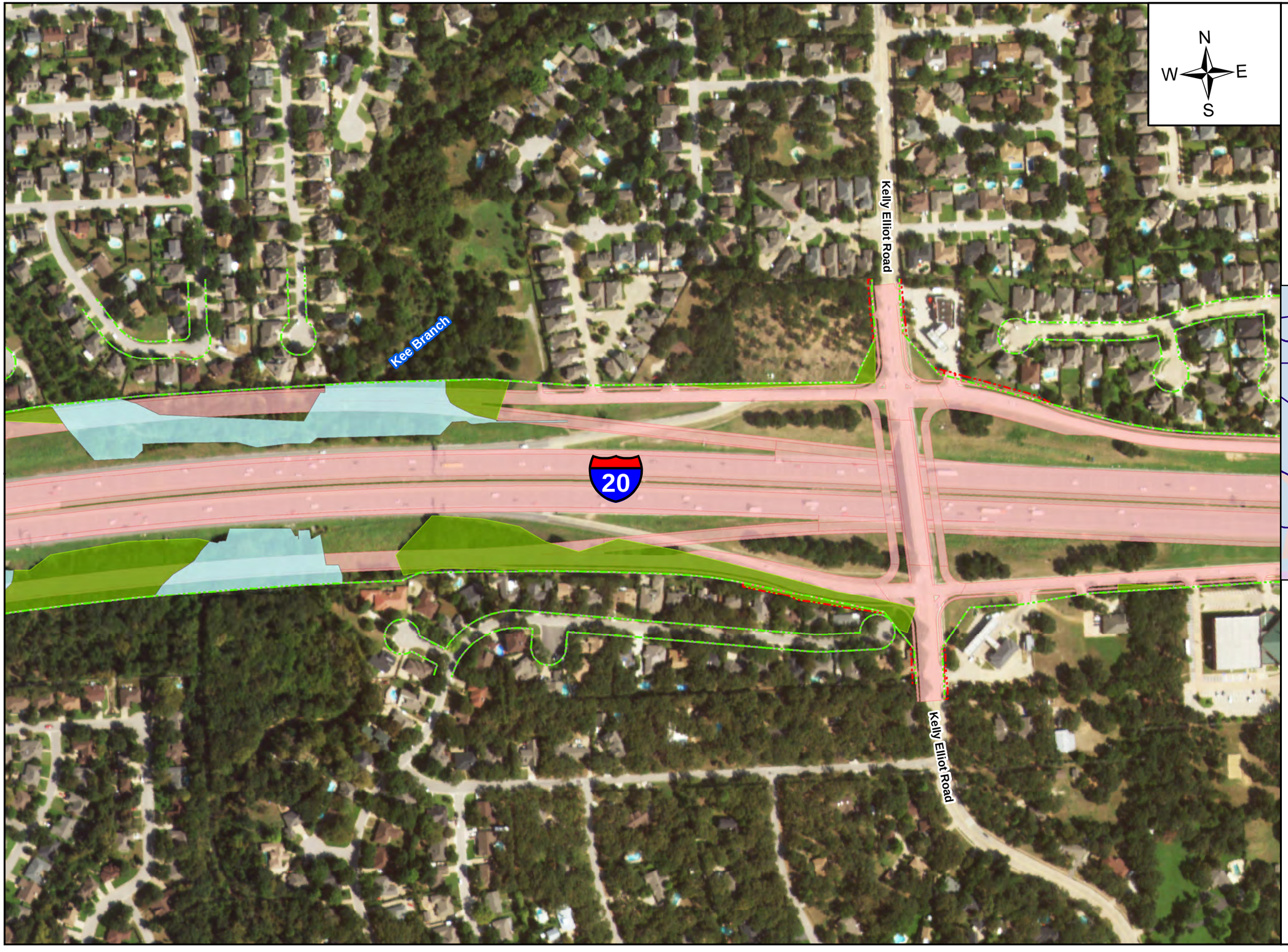

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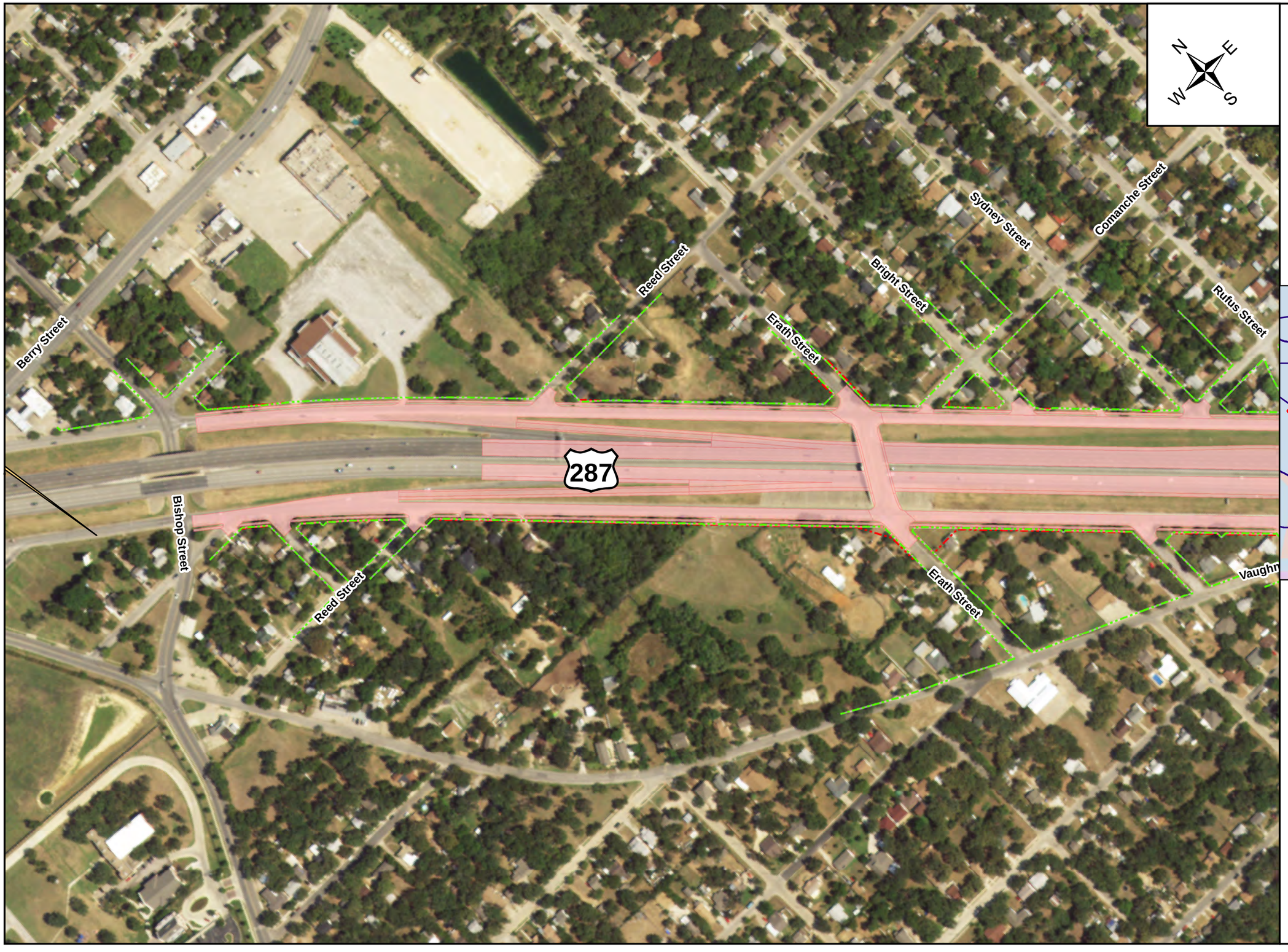

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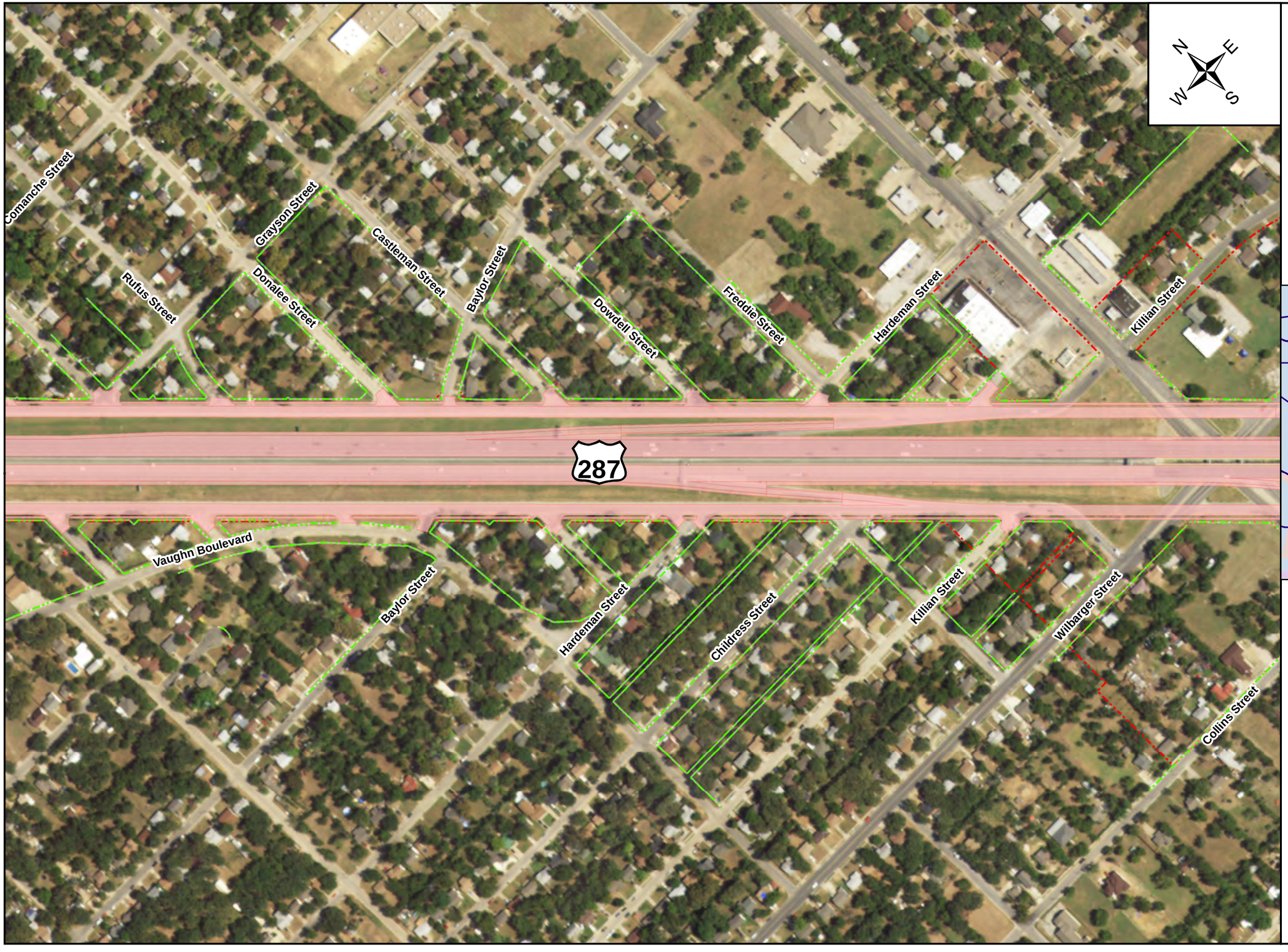

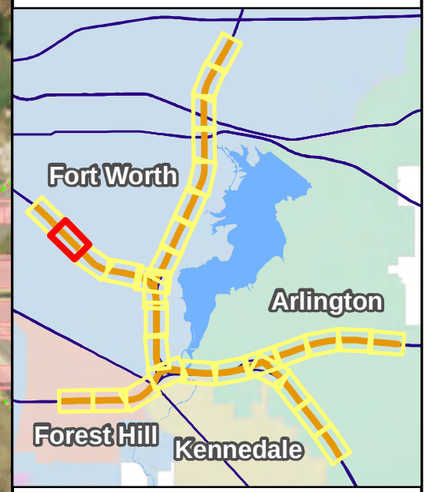

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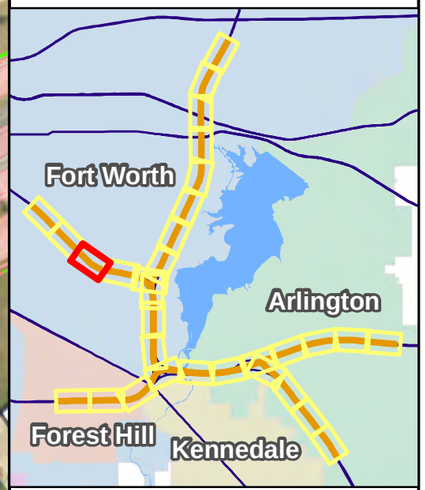

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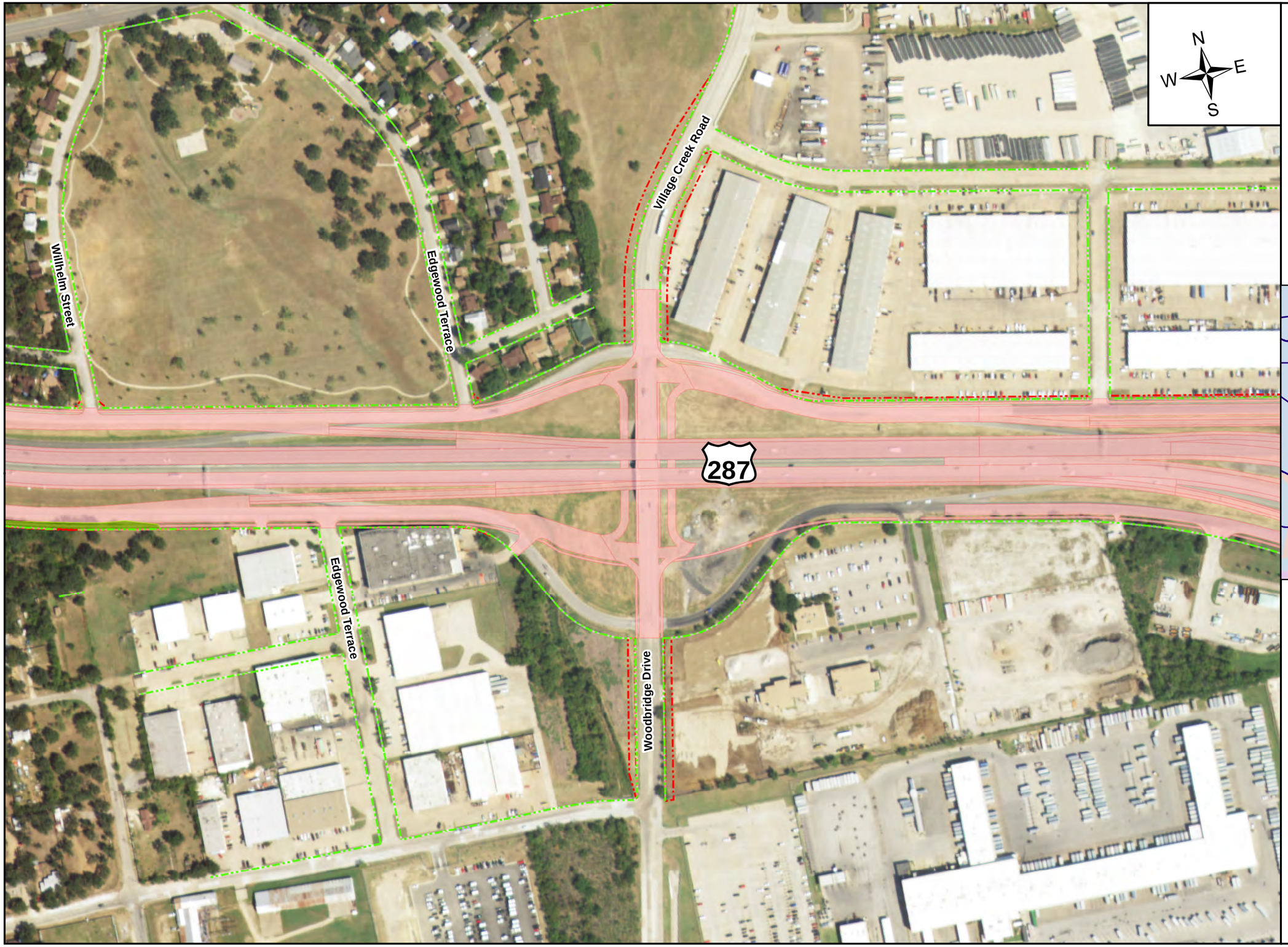

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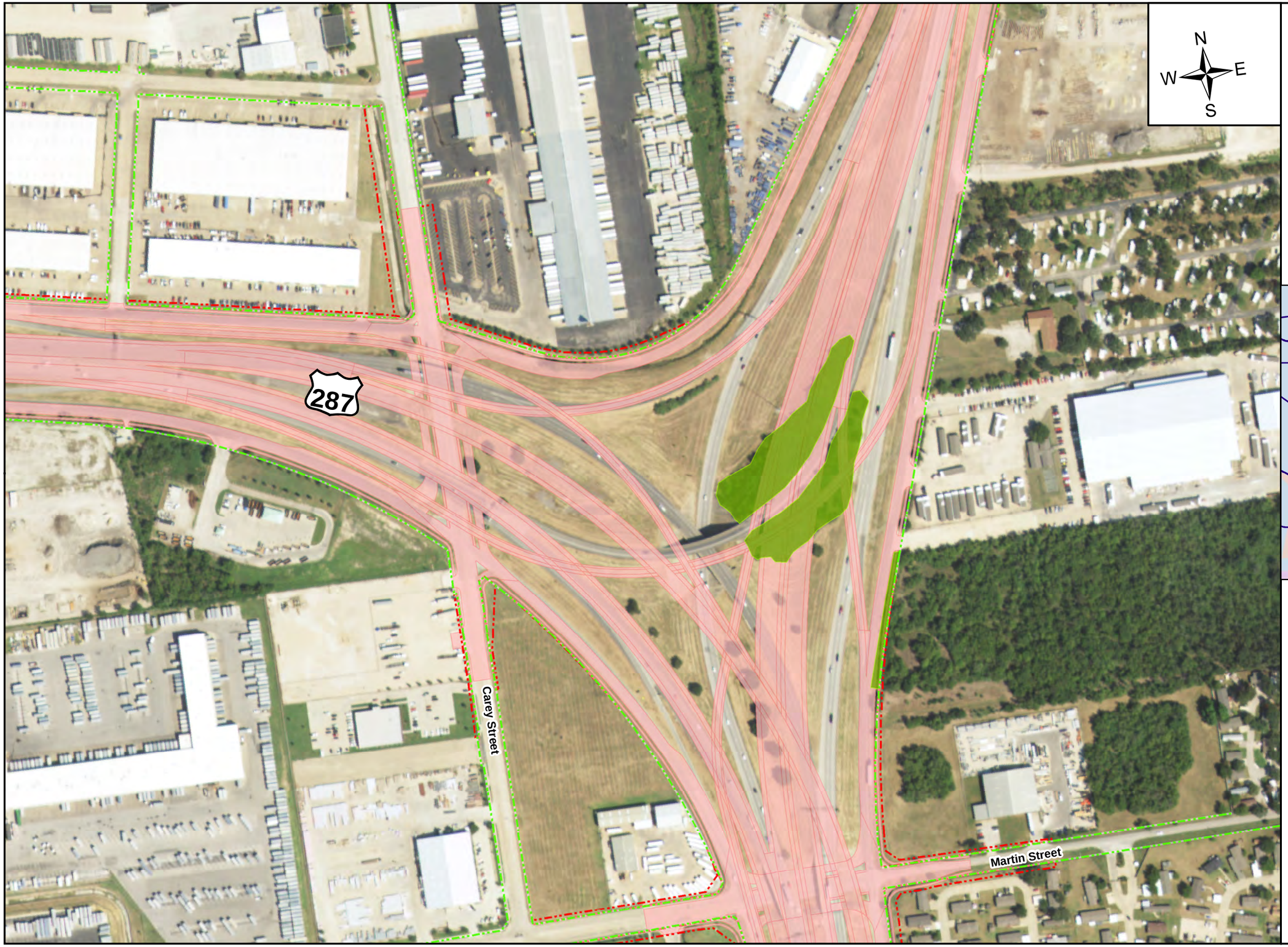

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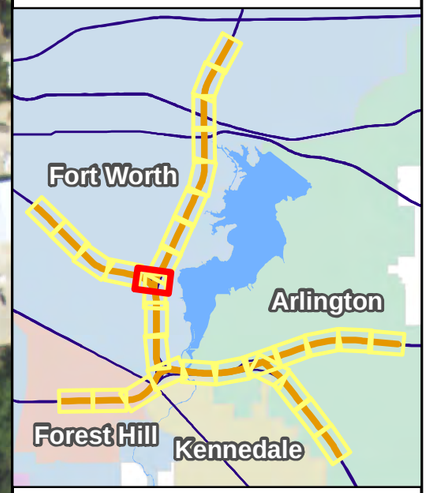

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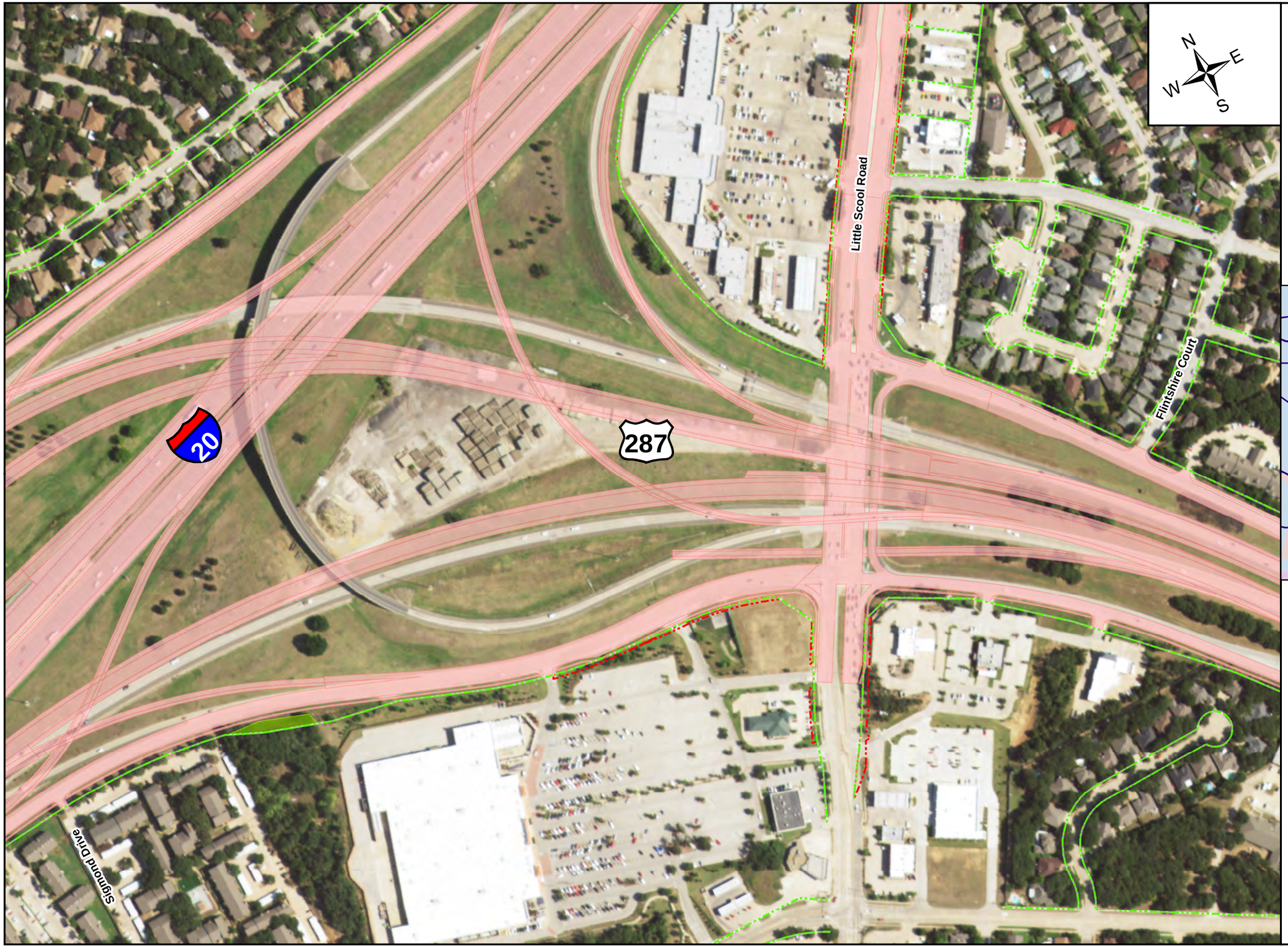

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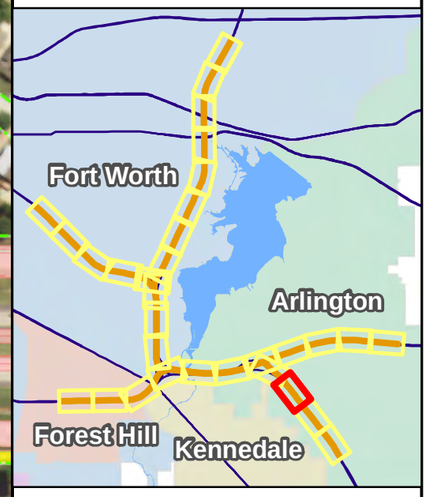

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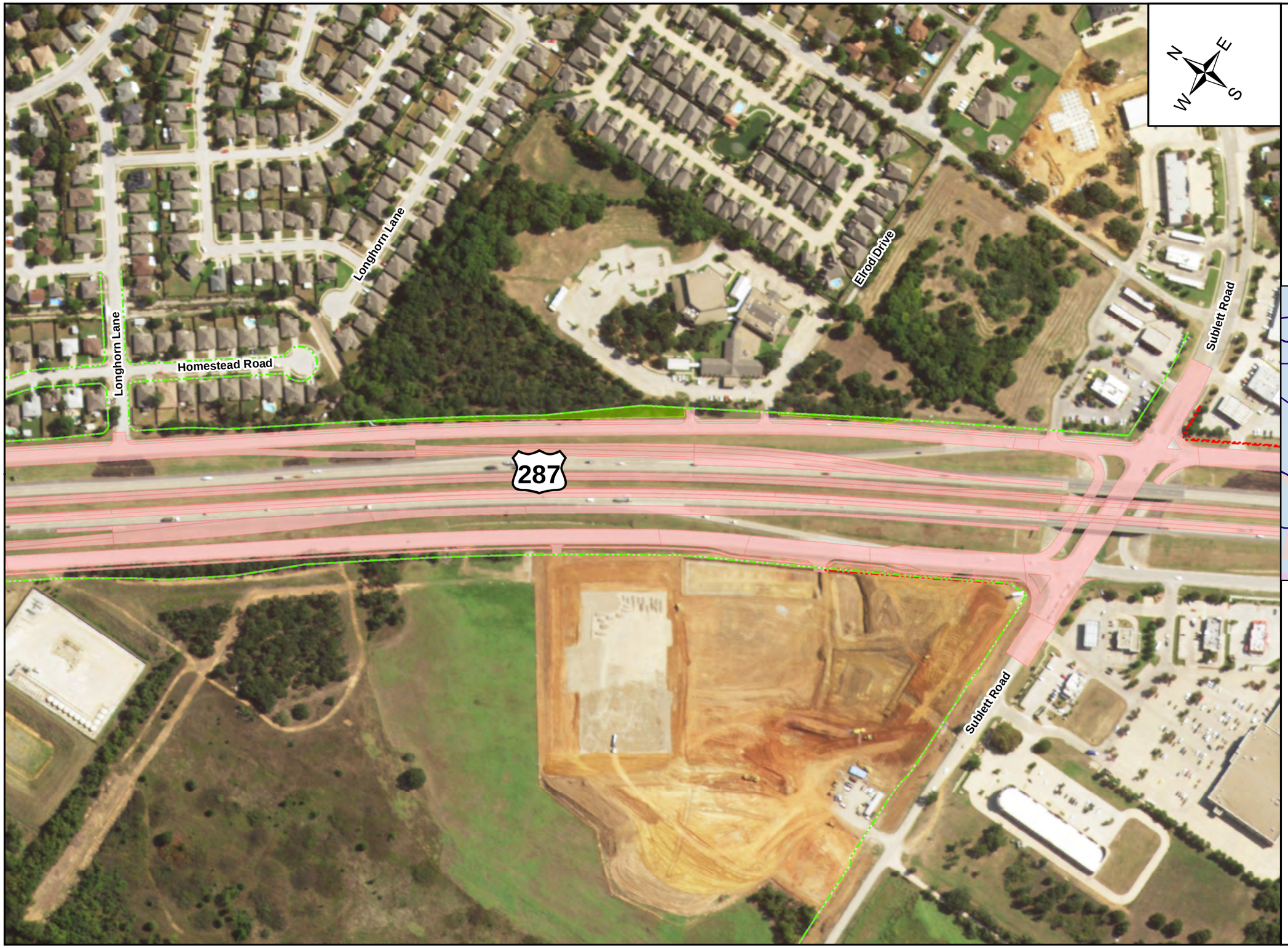

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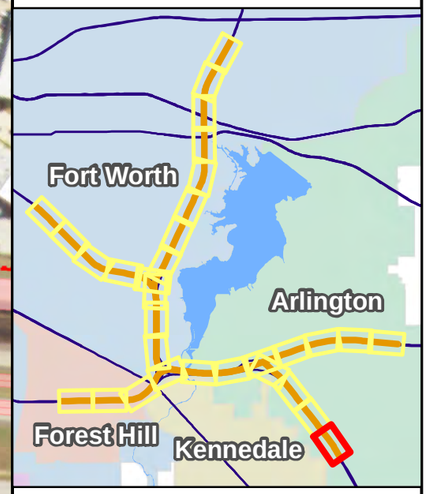
I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
Park Springs Boulevard
I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

CSJ: 0008-13-125, ect.

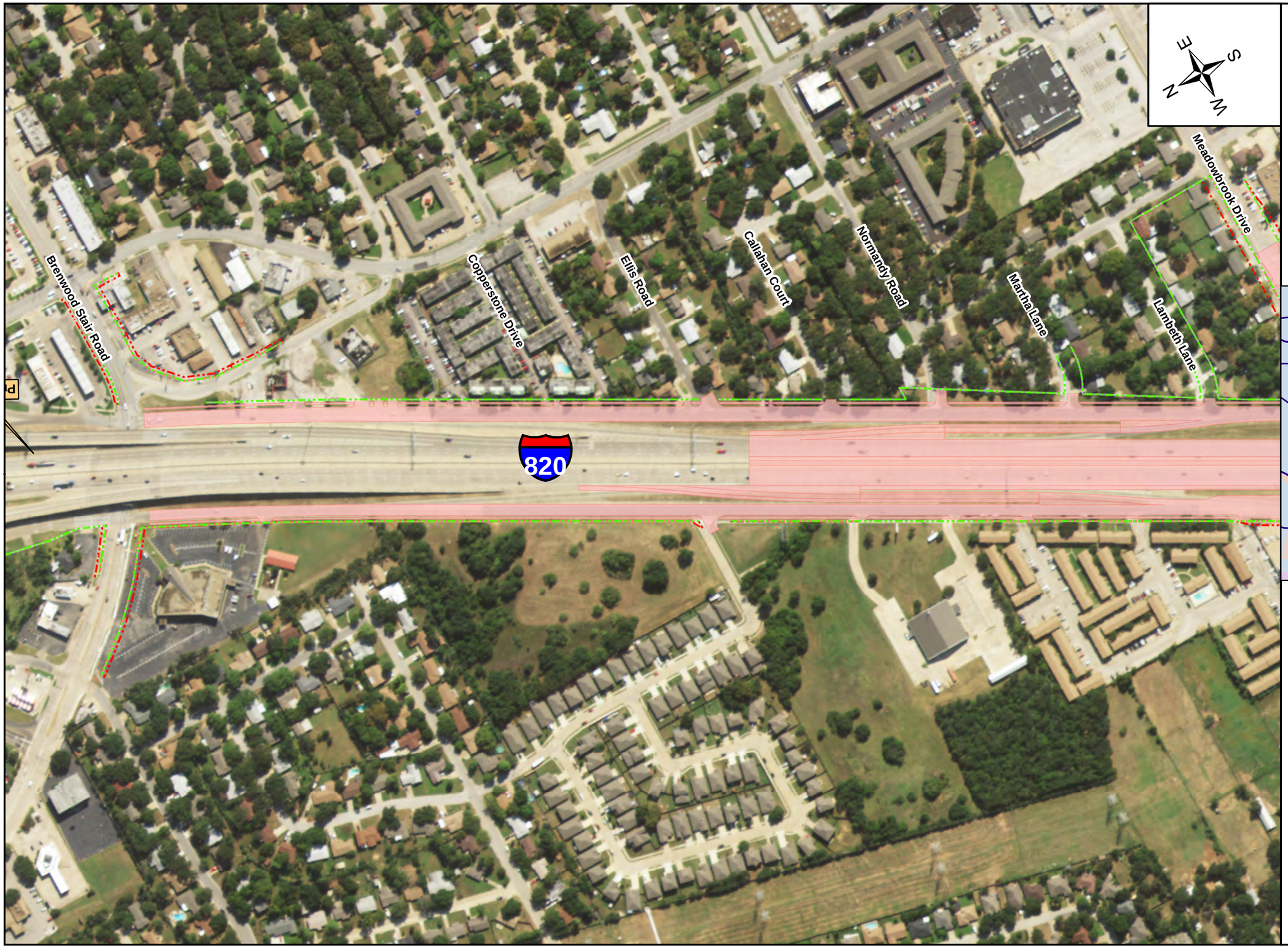


0 200 400 Feet

Legend

- Existing Right-of-Way
- Proposed Right-of-Way
- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
- Riparian
- Project Design

Remaining land within
Right-of-Way is Urban

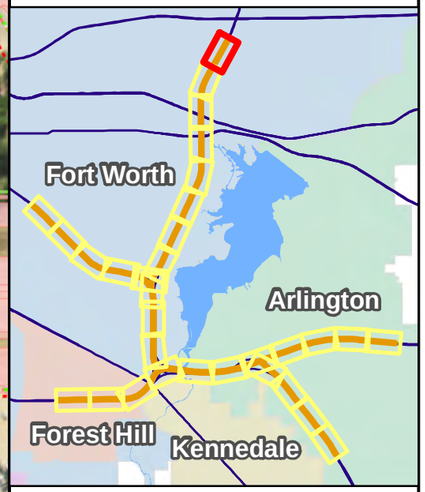


ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
Park Springs Boulevard
I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

CSJ: 0008-13-125, ect.



0 200 400 Feet

Legend

- Existing Right-of-Way
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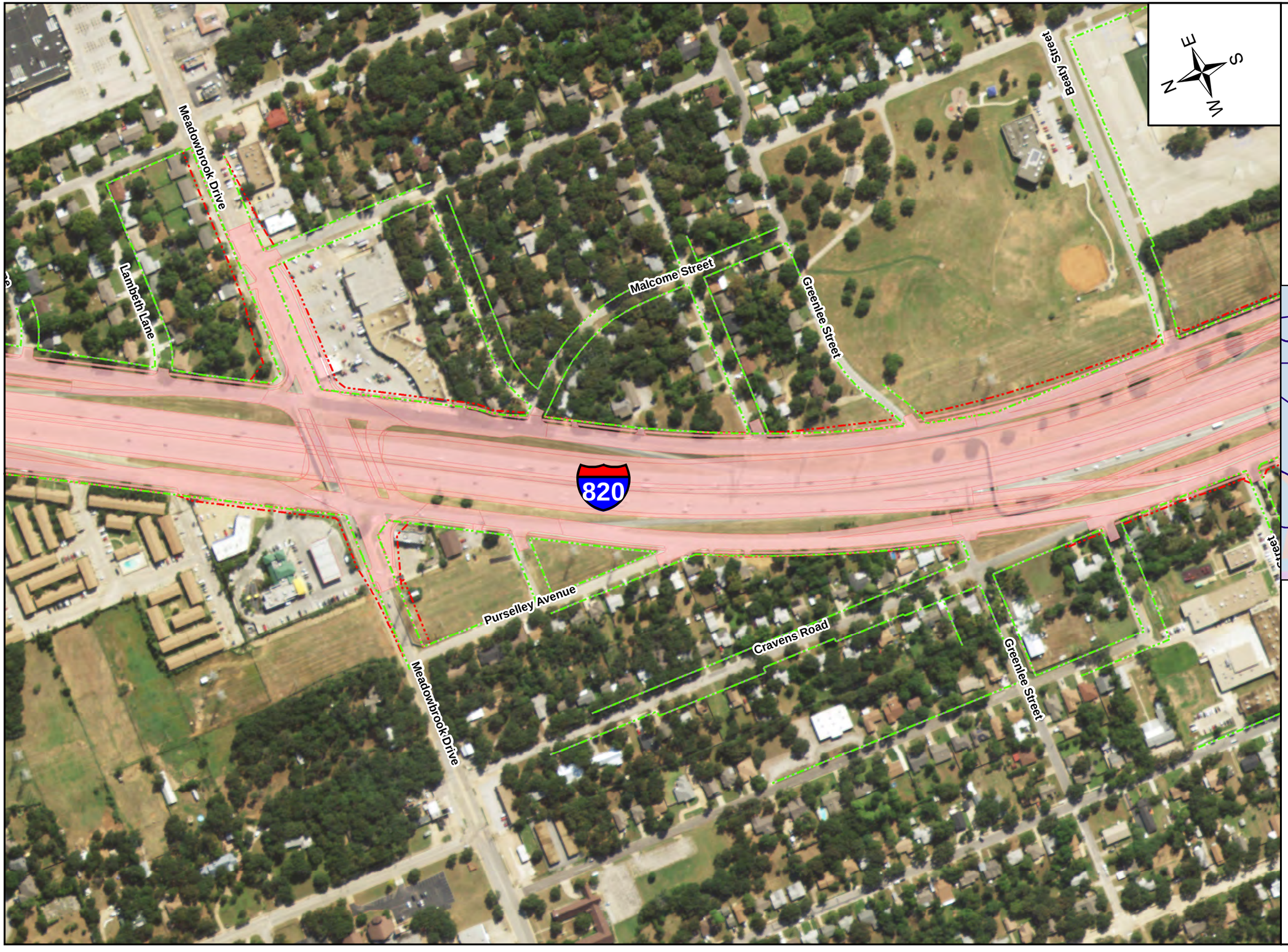
- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
- Riparian
- Project Design

Remaining land within
Right-of-Way is Urban



ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
Park Springs Boulevard
I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

CSJ: 0008-13-125, ect.

0 200 400
Feet

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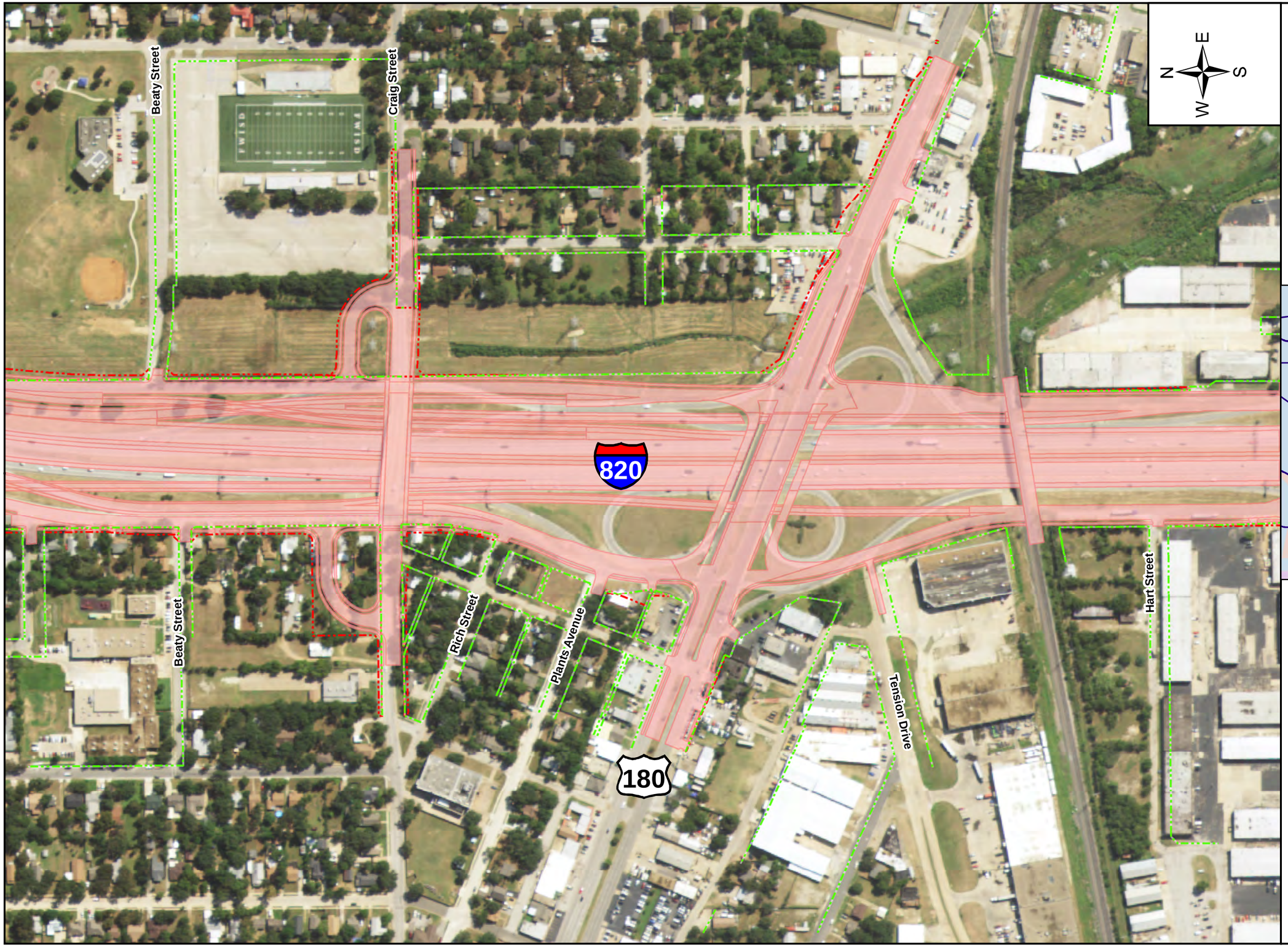
- Proposed Right-of-Way

- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
- Riparian
- Project Design

Remaining land within
Right-of-Way is Urban



ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
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CSJ: 0008-13-125, ect.

0 200 400 Feet

Legend

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- Proposed Right-of-Way
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- Project Design

Remaining land within
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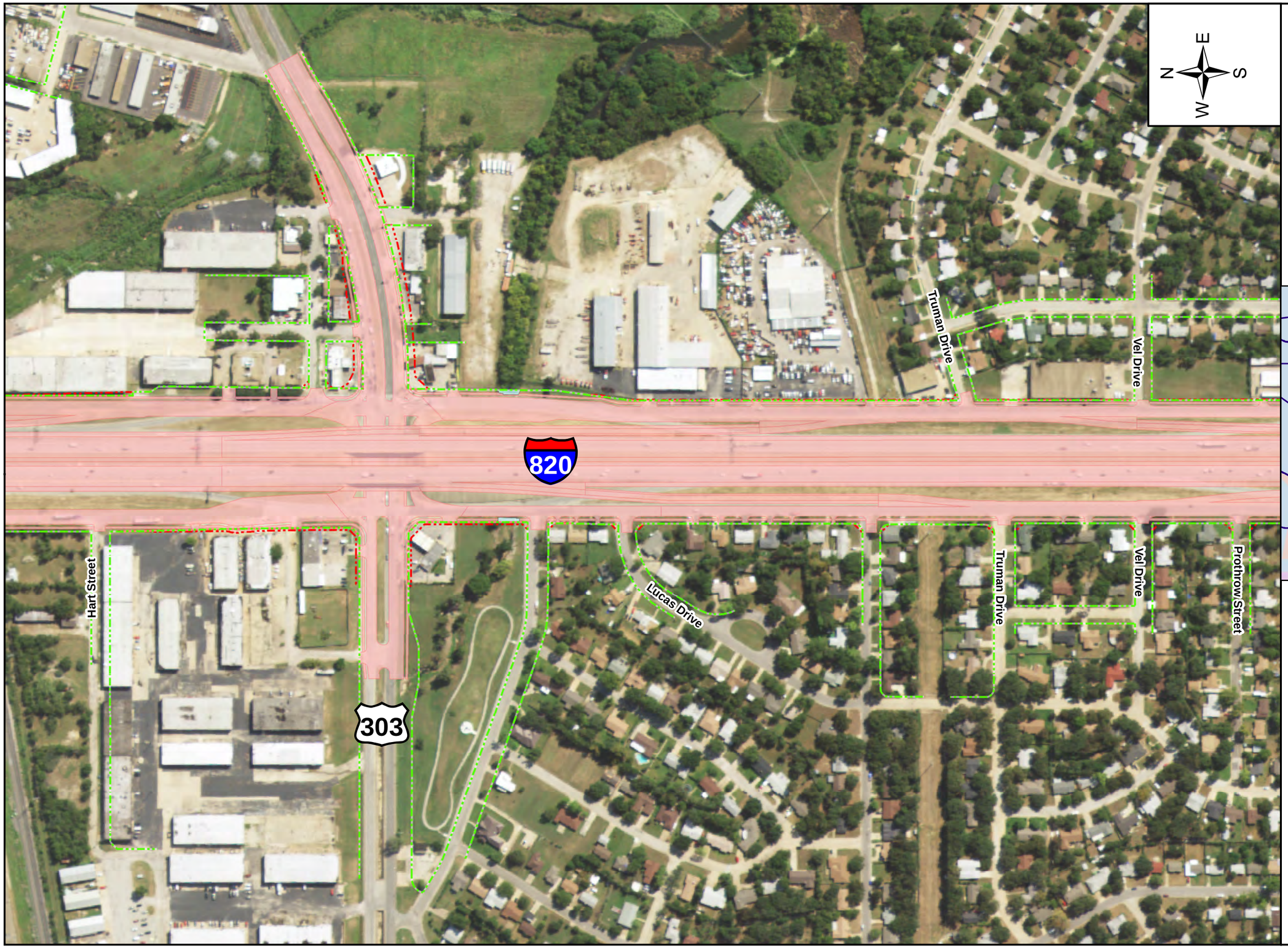

ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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I-820 from I-20 to
Brentwood Stair Road
US 287 from Bishop Street
to Sublett Road

CSJ: 0008-13-125, ect.

0 200 400 Feet

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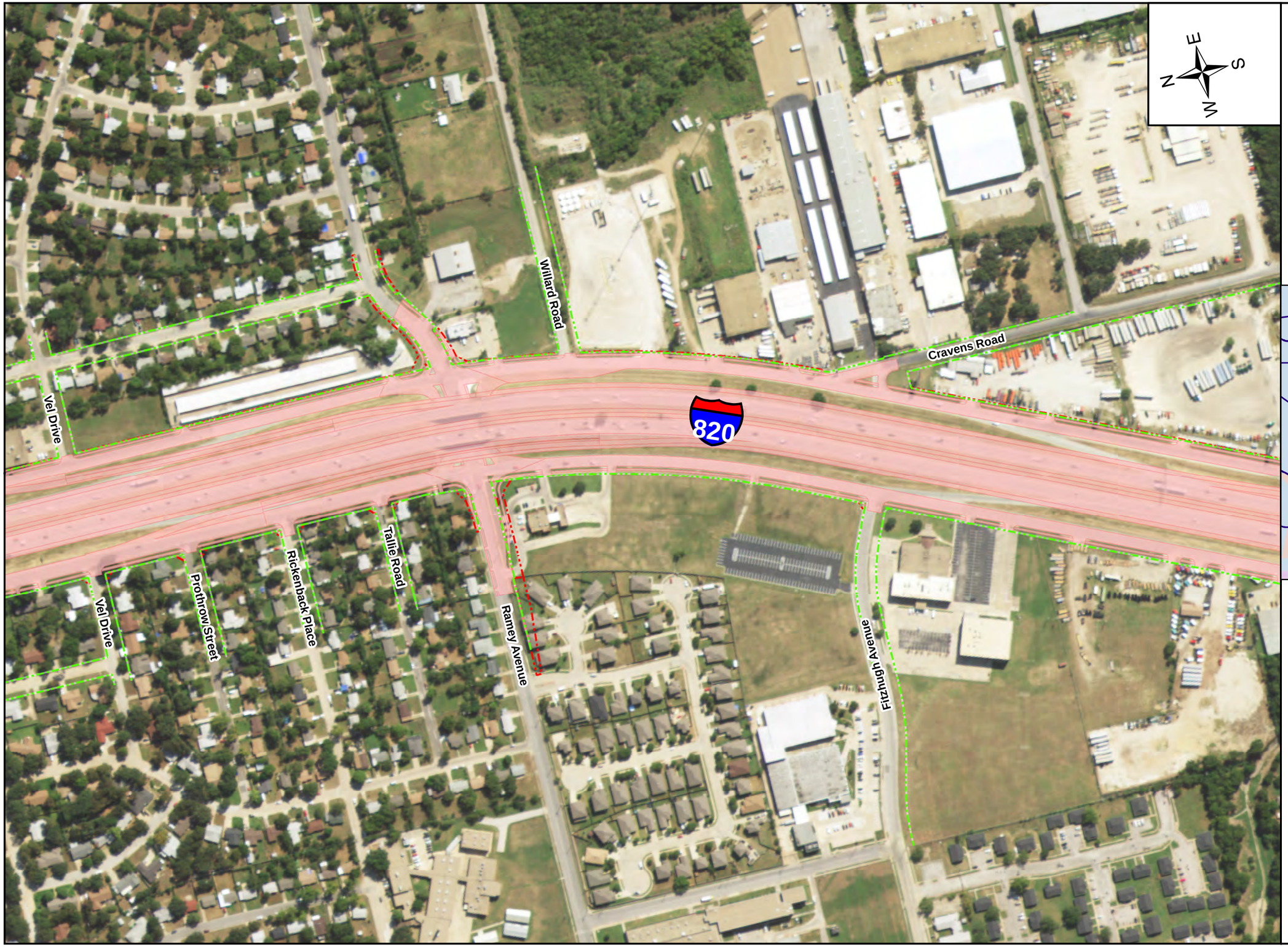
- Proposed Right-of-Way

- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
- Riparian
- Project Design

Remaining land within
Right-of-Way is Urban



ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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CSJ: 0008-13-125, ect.

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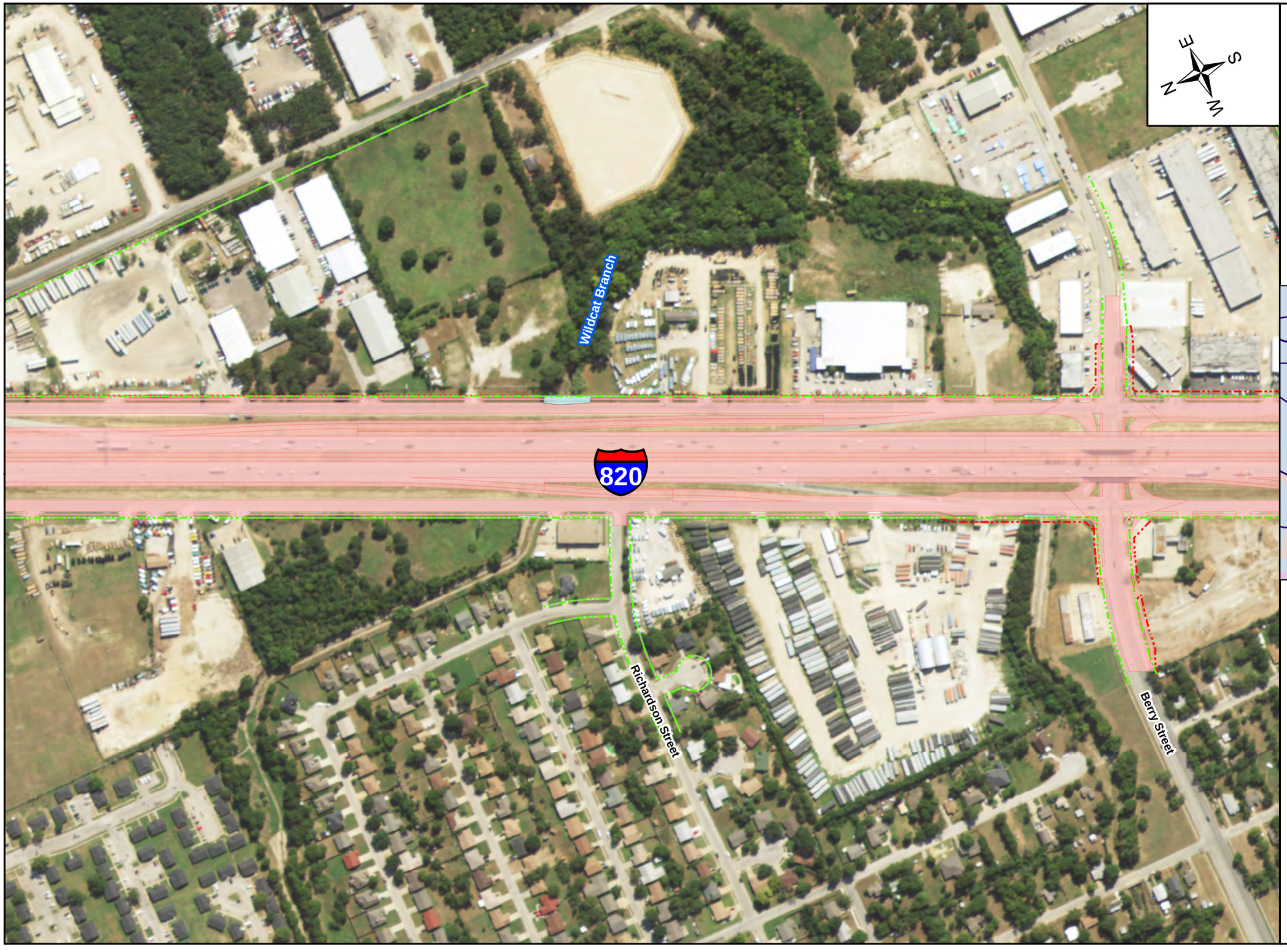

ACTUAL VEGETATION MAP

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I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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CSJ: 0008-13-125, ect.

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ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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CSJ: 0008-13-125, ect.

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ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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I-820 from I-20 to
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CSJ: 0008-13-125, ect.

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- Proposed Right-of-Way
- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
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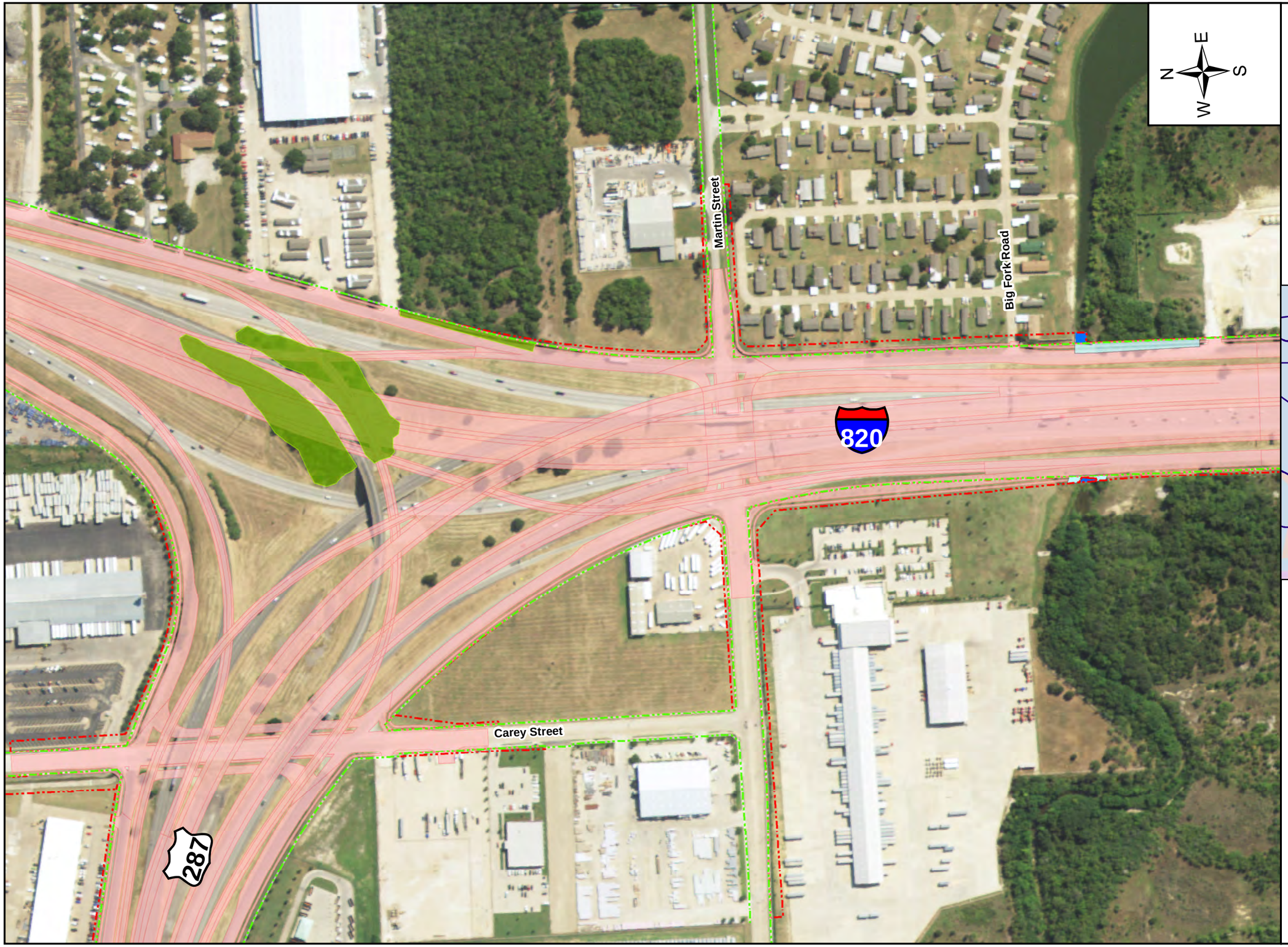
- Project Design

Remaining land within Right-of-Way is Urban



ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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US 287 from Bishop Street
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CSJ: 0008-13-125, ect.

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Legend

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ACTUAL VEGETATION MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to
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I-820 from I-20 to
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to Sublett Road

CSJ: 0008-13-125, ect.

0 200 400 Feet

Legend

- Existing Right-of-Way
- Proposed Right-of-Way
- Crosstimbers Woodland and Forest
- Disturbed Prairie
- Open Water
- Riparian
- Project Design

Remaining land within Right-of-Way is Urban

Project Area Photographs

Southeast Connector

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to Park Springs Boulevard
I-820 from I-20 to Brentwood Stair Road
US 287 from Bishop Street to Sublett Road

Tarrant County, Texas
Fort Worth District

Main CSJ: 0008-13-0125, etc.

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Photo ID: 1

Date Photo Taken: 8/21/2018

Coordinates: N 32° 39' 42.66" W 32° 39' 42.66"

Direction of View: Southeast

Comments: Crosstimbers Woodland Forest changed to Urban, Page 3

Photo ID: 2

Date Photo Taken: 3/7/2019

Coordinates: N 32° 40' 07.16" W 97° 13' 58.12"

Direction of View: North

Comments: Urban changed to Riparian, Page 4

Photo ID: 3

Date Photo Taken: 8/21/2018

Coordinates: N 32° 40' 13.47" W 97° 14' 28.12"

Direction of View: Southwest

Comments: Urban changed to Open Water, Page 4

Photo ID: 4

Date Photo Taken: 3/7/2019

Coordinates: N 32° 40' 08.75" W 97° 13' 50.92"

Direction of View: East

Comments: Urban in low lying area, Page 5

Photo ID: 5

Date Photo Taken: 3/7/2019

Coordinates: N 32° 40' 23.63" W 97° 12' 12.75"

Direction of View: Northwest

Comments: Crosstimbers Woodland Forest changed to Urban, Page 8

Photo ID: 6

Date Photo Taken: 8/20/2018

Coordinates: N 32°40' 33.94" W 97°10' 54.32"
Direction of View: South

Comments: Urban changed to Crosstimbers, Woodland Forest, Page 10

Photo ID: 7

Date Photo Taken: 8/21/2018

Coordinates: N 32° 41' 43.13" W 97° 15' 23.66"
Direction of View: Southeast

Comments: Urban changed to Crosstimbers Woodland Forest, Page 14

Photo ID: 8

Date Photo Taken: 8/21/2018

Coordinates: N 32° 39' 36.22" W 97° 11' 50.24"

Direction of View: South

Comments: Crosstimbers Woodland Forest changed to Disturbed Prairie, Page 18

Photo ID: 9

Date Photo Taken: 3/19/2019

Coordinates: N 32° 39' 27.04" W 97° 11' 35.29"

Direction of View: Southwest

Comments: Urban changed to Riparian, Page 19

Photo ID: 10

Date Photo Taken: 8/21/2018

Coordinates: N 32° 45' 0.26" W 97° 13' 12.05"

Direction of View: Southwest

Comments: Disturbed Prairie changed to Urban, Page 21

Photo ID: 11

Date Photo Taken: 3/19/2019

Coordinates: N 32° 41' 10.44" W 97° 14' 23.87"

Direction of View: East

Comments: Riparian changed to Urban, Page 29

Photo ID: 12

Date Photo Taken: 3/19/2019

Coordinates: N 32° 41' 08.02" W 97° 14' 28.57"

Direction of View: West

Comments: Crosstimbers Woodland Forest changed to Riparian, Page 29

Photo ID: 13

Date Photo Taken: 3/19/2019

Coordinates: N 32° 41' 27.26" W 97° 14' 22.55"

Direction of View: East

Comments: Urban changed to Crosstimbers Woodland Forest, Page 29