Indirect Impacts Technical Report

CSJ: 0314-07-051, 0314-07-052, 0314-07-046

Interstate Highway 20 at Center Point Road

From 0.55 mile west of East Bankhead Highway to Lakeshore Drive

Parker County

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

DESCRIPTION OF EXISTING AND PROPOSED PROJECT

The project is the improvement of the interchange between Center Point Road and IH-20 with addition of frontage roads along IH-20 (**Figures 1 and 2**). It would also include improvements to the IH-20 at East Bankhead Drive interchange. The length is approximately 3.4 miles from approximately 0.55 mile west of East Bankhead Drive to the IH-20 and Lakeshore Drive interchange.

Currently, the Center Point Road interchange consists the following:

- Two-way, two-lane pre-stressed concrete beam bridge, 201-foot long and 34.5-foot wide, over IH-20;
- Westbound (WB), two-lane one-way 38-feet wide frontage road from Lakeshore Drive to Center Point Road;
- WB exit ramp from IH-20 to frontage road, just west of Lakeshore Drive; and
- WB entrance ramp from frontage road to IH-20, just east of Center Point Road.

The existing East Bankhead Drive interchange consists of the following:

- Two-way, two-lane steel multi-beam bridge, 282-foot long and 34.5-foot wide, over IH-20;
- WB two-way, two-lane frontage road from Station 2465+00 to East Bankhead Drive;
- WB exit ramp from IH-20 to WB frontage road, just east of East Bankhead Drive
- WB entrance ramp from the East Bankhead Drive to IH-20 (with no continuing frontage road);
- Eastbound (EB) exit ramp from IH-20 to two-way EB frontage road, just east of East Bankhead Drive; and
- EB entrance ramp from East Bankhead Drive to IH-20 (with no continuing frontage road).

The proposed interchange project would involve the replacement of the Center Point Road Bridge at IH-20 in Parker County, Texas. The proposed Center Point Road bridge would consist of two 14-foot through lanes in each direction and a 12-foot left-turn lane in each direction with 2-foot outside offsets. There would be a dedicated left turn lane for each direction of travel and a 24-foot

wide median. Seven-foot sidewalks would be constructed on both sides of the bridge for pedestrians. The access ramps would consist of one 14-foot wide travel lane with 8-foot wide outside shoulders and 4-footwide inside shoulders. The IH-20 travel lanes would not be widened with the proposed interchange project; however, the newly constructed and reconstructed frontage roads would include one 14-foot wide through lane and one 12-foot wide through lanes with 2-foot wide inside and outside offsets. The adjacent areas would include sidewalks.

Utility adjustments would be needed for this project, which include telephone, electric, gas, and water lines. The adjustment and relocation of any utilities would be phased so that no substantial interruptions would take place while these adjustments are being made. The appropriate utility company would be responsible for the adjustments and relocations.

The proposed interchange project would include expanding the total right-of-way (ROW) by 13.74 acres with 0.42 acre of permanent easement, and 0.3 acre of temporary construction easement. Approximately 28.2 acres of vegetated land (existing and proposed ROW) would be paved, primarily due to the construction of new frontage roads.

NEED AND PURPOSE

The proposed IH-20 at Center Point Road interchange project is needed to provide access to IH 20 at Center Point Road and provide frontage road improvements between Bankhead Highway and Lake Shore Drive. It will also support the anticipated population growth, economic development, and projected increase in traffic volumes over the next 20 years within and adjacent to the City of Weatherford by helping to ease congestion and improve safety on US 180. The IH 20 interchange project would provide congestion mitigation for Parker County residents by providing an additional access to IH 20 and would provide an alternate IH 20 connection on the east side of the City of Weatherford to improve mobility. The purpose of the proposed project is to provide safety and mobility benefits including access from east and southeast portions of Weatherford to eastbound and westbound IH-20. The proposed project would provide motorists the option of using Center Point Road to access IH-20 instead of relying only on US 180 or Bankhead Highway to access IH-20. The existing East Bankhead Drive interchange would be improved to meet current design standards in regard to design speed, visibility, safety, and traffic flow. The proposed project would also complete the Center Point interchange and extend and connect existing EB and WB

frontage roads from Lakeshore Drive to East Bankhead Drive in order to provide continuity. The existing two-way frontage road segments will be reconstructed as one-way.

METHODOLOGY

For the purposes of this indirect impacts analysis, the Collaborative Planning method was used. Knowledgeable persons were interviewed to determine developments that are currently being planned. In addition, growth estimates and forecasts from reliable sources were consulted to provide information regarding trends in the area and to determine what level of impacts could occur. This growth information, primarily in regard to population forecasts, was used in conjunction with current conditions within the project area and region to calculate the amount of impacts resulting from this population growth in acres of development in terms of residential and retail/commercial growth, which are usually the two of the development types that account for most growth. The most likely areas for the computed growth were based on information obtained from the future land use plans and conversations with local planning of both cities. The impacts were allocated to resources proportionately based upon the types and amounts of resource types in the AOI. Computations and methodology used to derive growth impacts are explained in "Likelihood of Growth".

AREA OF INFLUENCE AND TIMEFRAME

The AOI is contained primarily within the city limits of Weatherford and Hudson Oaks. Both of these cities have existing land use plans and future land use plans that define the present and future nature of most of the area in the AOI, as well as outline the goals for the cities and the areas covered in the future land use plans.

The purpose and intent of the City of Weatherford's 2002 Comprehensive Plan is to be used to formulate goals and objectives pertaining to various aspects of the community. The Plan should help guide zoning and development decisions, and should serve as a basis for future capital expenditures. The goals of the Comprehensive Plan include, but are not limited to, the following:

- To provide a transportation system that will effectively and economically serve the existing and projected travel needs of the community in a safe and efficient manner.
- To provide opportunities for coordinated, well-planned growth and development, while retaining the natural setting and "small-town" character of the City.

- Encourage quality nonresidential development that is aesthetically pleasing, yet meets the market and economic development needs of the community.
- Provide for coordinated growth and physical expansion of the City.
- Encourage and positively influence the development of existing vacant properties within the City of Weatherford.
- Ensure that public services and facilities (e.g., police and fire protection, library services, administrative facilities, etc.) will adequately serve present and future residents and businesses.

The proposed interchange project would be considered a primary measure in meeting the first listed goal and would be considered at least compatible with the other above goals.

Within the Comprehensive Plan is the City's Future Land Use Plan. According to the Future Land Use Plans of both Weatherford and Hudson Oaks (Freese and Nichols, Inc., 2012) the majority of land within the AOI is planned for single family residential with smaller areas planned for commercial/retail along the major roadways. Most of the area immediately adjacent to the project area is planned for commercial and retail use in the Future Land Use Plan, although there are areas that are planned as a town center, medium density residential and parks and open space within Hudson Oaks south of IH 20.

Hudson Oak's Comprehensive Plan is intended to be used by citizens, the city council, city staff and other decision makers to guide the growth and physical development of the community for 10 to 20 years. The objectives are to make delivery of services more efficient, coordinate public and private investment, minimize potential conflicts between land uses, manage growth in an orderly manner, create cost-effective public investments, and serve as a rational and reasonable basis for making decision which impact the community. Two interrelated purposes are to allow the citizens to create a shared vision of what they want the community to become, and establish ways in which a community can effectively realize this vision. The 2012 Comprehensive Plan is a vision of what Hudson Oaks can become and is a long-range statement of the city's public policy (City of Hudson Oaks Comprehensive Plan, 2012).

The Future Land Use Plan of Hudson Oaks indicates that the areas south of the IH 20 ROW are expected to develop as medium density residential west of Center Point Road, with a town center

planned for the area east of Center Point Road. East of the town center, the area is shown to continue in its present land use in the residential areas. Parks and open space are proposed for the area east of Creighton Drive East. Retail and commercial land use is indicated along the IH 20 ROW north of IH 20 and in scattered stretches south of IH 20.

The Dallas-Fort Worth region's MTP defines transportation systems and services in the area containing the boundaries of the study area. The MTP addresses regional transportation needs that are identified through forecasting current and future travel demand, developing and evaluating system alternatives and selecting those options which best meet the mobility needs of the region. The proposed facility is included in this plan.

The location and extent of the study area for the indirect effects analysis were determined based on project characteristics such as the project type, design features, purpose, project setting, and data available, among others. In order to distinguish it from the study areas considered for the analysis of direct effects of the project, the study area for the indirect effects analysis is referred to as the Area of Influence (AOI). The timeframe in which indirect impacts to resources are expected to occur is known as the temporal timeframe.

Study Area Boundaries

Geographic Boundary

For the purposes of this assessment, the boundary of the AOI to the south would include the BNSF railroad. This boundary would extend westward until it reached the floodplain of Town Creek where it would turn to the north along the limits of the eastern development of Weatherford. At this point it follows development northward until it reaches US 180. At US 180 the AOI boundary turns east and extends along US 180 until it reaches the easternmost unnamed tributary to Underwood Branch. The AOI follows this tributary to the northeast and then transitions eastward to an unnamed tributary of Lake Weatherford. The AOI boundary follows this tributary to Lake Weatherford where it turns southeastward and follows the shoreline to Mikus Road/West Farm to Market Road (FM) 5, where it turns south to follow the road to the point where it crosses the BNSF Railroad. The BNSF Railroad creates an effective barrier to development south of the railroad as a result of the proposed project. Similarly, the existing development to the west limits development resulting from this project westward. To the north, any development north of US 180 west of the unnamed tributary of Underwood Branch would be more likely the result of the US 180 corridor

rather than the proposed improvements. East and north of the two tributaries, these drainages and the existing development would serve as barriers to development from the proposed project, as would Lake Weatherford. East of Mikus Road/ FM 5, the proposed improvements would be too distant to influence development and the amount of development east of Mikus Road/ FM 5 as well as the floodplain of the Clear Fork of the Trinity River would limit the influence of the project. The AOI covers approximately 7285.5 acres. A map of the AOI is shown in **Figure 3.**

Temporal Boundary

The temporal component of the AOI is 2012 to 2040. The year 2012 coincides with the development of the proposed IH 20 at Center Point Road project, at which time discussions were initiated regarding design considerations, which take into account existing and needed access in the project area as well as traffic movement. Extending the timeframe forward to 2040 is consistent with the Dallas-Fort Worth 2040 Metropolitan Transportation Plan (MTP) known as Mobility 2040. Mobility 2040 indicates this project as operational prior to 2040.

AREAS SUBJECT TO INDUCED GROWTH

Indirect impacts are primarily project-influenced development effects, which are sometimes called induced growth, or the "land use effect". For transportation projects, induced growth effects are most often related to changes in accessibility to an area, which in turn affects the area's attractiveness for development. This results in impacts to the natural or human environment that may result from project-influenced changes in land use.

Once the geographic and temporal extents of impacts were determined, the potential locations of these impacts (**Figure 3**) were derived based upon the Future Land Use Plans of the cities of Weatherford and Hudson Oaks with emphasis on areas near IH 20, areas in proximity to existing development, especially those closest to Weatherford, and those areas near the proposed IH 20 at Center Point Interchange. Specifically, these areas could include the area in proximity to US 180 west of Willow Creek exclusive of the floodplain, near the E. Bankhead Highway at IH 20 interchange, north of IH and west of the existing commercial/retail area, the area surrounding the IH 20 at Center Point interchange, and the area south of IH 20 and west of the existing residential area. Development in these areas would be expected to be in keeping with the projected land use types shown in the respective Future Land Use Plans of Weatherford and Hudson Oaks, which are largely residential, commercial and retail. These are indicated as Undeveloped – Primary

Development Areas on **Figure 3**. Areas that were located larger distances from transportation networks or from existing development were judged to be less likely to experience indirect impacts. These are indicated as Undeveloped – Secondary Development Areas on **Figure 3**. The degree to which these areas develop will depend on whether the growth in the area follows the population projections.

LIKELIHOOD OF GROWTH

Weatherford and Hudson Oaks are expected to continue their present growth trends. The populations of Parker County, Weatherford and Hudson Oaks are expected to increase by 48%, 62%, and 75% respectively between 2010 and 2040 (TWDB, 2012). The Future Land Use Plans of Weatherford and Hudson Oaks (City of Weatherford, 2001 and City of Hudson Oaks, 2012, respectively) would influence the type and location of development within and around the proposed interchange project. Presently, the majority of land adjacent to the proposed interchange project area is undeveloped **(Figure 3).** Portions of the proposed interchange project area at IH-20 are shown as commercial on the City of Weatherford's Future Land Use Plan and as commercial and medium density residential with a Town Center and Parks and Open Space on the City of Hudson Oaks' Future Land Use Plan. Growth and future land use in this area could be expected to be similar to that within developed portions of the project area with the exception of the Town Center and Parks and Open Space.

The population of Parker County is expected to be 291,007 persons by 2040, an increase of 174,080 persons or almost 149 percent from the 2010 population of 116,927 (USCB, 2010). Due to the proposed interchange project's proximity to Tarrant County and access afforded by IH 20, much of this growth could be expected to occur in the project area. NCTCOG's 2040 Demographic Forecast predicts the 2040 household population in the Weatherford Area (which includes part of NCTCOG's Market Area 106, which, in turn contains the AOI) to be 89,471 persons, an increase of 47,536 persons above the 2005 population. At the projected rate of growth, the population within Market Area 106 in 2010 would have been 49,167 persons, yielding an increase of 40,304 persons from 2010 to 2040. This population growth would require the development of 903 acres within the AO1.

- 40,304 persons: Projected increase in population of NCTCOG's Market Area 106 (which contains the AOI) from 2010 to 2040 based upon projected population increase in Parker County proportionate to the size of Market Area 106 compared to Parker County.
- 15,209 households: Number of households represented by 40,304 persons at regional average of 2.65 persons per household.
- 7285.5 acres: Area of the AOI, which is 5.2 percent of the total area of Market Area 106 (approximately 141,207 acres).
- 791 households: 5.2 percent of the 15,209 households to be added to be added in Market Area 106. This is based on the assumption that the AOI will capture population proportionately to Market Area 106. The AOI is 5.2 percent of Market Area 106.
- 701 acres of residential development: 791 households at 720 units per square mile (640 acres).
- 202 acres of commercial: 40,304 new persons requiring 5 acres of commercial per 1,000 residents.
- 903 acres of development: 701 acres residential and 202 acres commercial with smaller amounts of undefined other developments.

Other development types would likely be a very small component of future developments, with the exception of potential parks, which would cause minimal impacts.

Communication with the City Planner at the City of Weatherford revealed that the City is not aware of any large planned or platted developments within the project area as of January 21, 2015. They anticipate no major changes to the Future Land Use Plan. A second conversation with the City of Weatherford Planner on September 21, 2015 indicated no major developments are currently proposed or planned for the project area or nearby areas. This was confirmed by a conversation on June 8, 2016 with the City Planner, indicating that there is little growth anticipated in the area of Weatherford surrounding the project area.

A telephone discussion with a City of Hudson Oaks official on September 21, 2015 and June 7, 2016 revealed that a new HEB store was underway at the intersection of US 180 and Lakeshore Blvd circa late 2015/early 2016 and that an 80-acre tract west of Juan Rd and south of IH 20 could be developed after the construction of the proposed project, although no specific facilities or plans for the area were indicated. In addition, a mixed use complex with 338 residential units and a

45,000 square foot retail center was proposed on 19 acres near the existing water park. The area south of IH 20 that is currently not accessible is planned as a residential/commercial development; however, no plats have been filed or other steps taken to further the development of this area. There are approximately 3130.4 acres of undeveloped land not in a floodplain within the AOI. According to the City of Weatherford's Future Land Use Plan and the City of Hudson Oaks Future Land Use Plan, the majority of undeveloped land surrounding the proposed interchange project is proposed as predominantly single family residential in large open expanses, with some land planned as a town center or parks and open space.

The proposed interchange project has the potential to create induced growth effects within the project AOI. There are approximately 3130.4 acres of undeveloped land not in floodplains out of the total 7285.5 acres of land in the AOI. The 3130.4 acres include both the primary and secondary development areas but also land that is available, but would be unlikely to develop at current growth rates in the area. Of this 3130.4 acres, 903 acres are estimated to be subject to development based on current and projected growth trends in the area. All of the primary development area (840.1 acres) would likely be developed and a portion of the secondary development area (62.9 acres) would likely be developed. The City of Weatherford's Future Land Use Plan and the City of Hudson Oaks' Future Land Use Plan have identified the proposed interchange project area as a growth area. In addition, population forecasts for Parker County indicate that rapid growth can be expected within the County. These induced growth effects will be carried forward in the analysis.

RESOURCES SUBJECT TO INDUCED GROWTH IMIPACTS

A number of information sources were used to determine what resources might be impacted by induced growth within the AOI. These include the review of aerial mapping performed for the proposed interchange project, site visits, planning studies, review of local planning documents, and the direct effects of the project.

Sensitive species and habitats are those ecologically valuable species and habitats and/or those that are vulnerable to impacts. There are approximately 3130 acres of undeveloped land in the AOI that are not in a floodplain. Of the 7285.5 acres in the AOI, 2932.1 acres are developed. Approximately half of the undeveloped land is grassland, and the vegetation consists of grasses and forbs with widely scattered trees and shrubs. There is mature woody vegetation along drainages and fencelines within the AOI.

Sensitive species and habitat components would also include streams and associated floodplains, riparian, wetlands and other water features. Underwood Branch, Willow Creek and their unnamed tributaries traverse the AOI. There are approximately 29.5 linear miles of streams, 50.3 acres of wetlands, and 26.8 acres of open water in the AOI. There are minimal direct impacts to any of these features.

Sensitive resources could also potentially include community resources, public facilities, services and utilities, historic age properties, archeological resources and vulnerable elements of the population. The effects of induced development on all these sensitive resources are discussed below.

Waters of the U.S.

There are approximately 1.3 acres of forested/shrub-scrub wetland, 4,846 linear feet of natural and altered streams and 2.7 acres of ponds in the primary development area, and 0.4 acre of emergent wetland, 15,531 and linear feet of natural and altered streams and 5.1 acres of ponds in the secondary development area. The potential indirect effects on waters of the U.S. and wetlands from roadway projects include fill and water quality degradation from roadway-induced development. The wetlands, streams and ponds present in the potentially developed areas are typical of those in the region and are not unique or of notably high quality. These resources are not considered at risk since most of these areas would be protected under the Section 404 of the Clean Water Act, Section 401 Water Quality Certification, Best Management Practices, and Texas Pollutant Discharge Elimination System requirements.

Vegetation and wildlife habitat

The approximately 903 acres of induced development in the AOI under the Build Alternative have the potential to impact land that is primarily rangeland, which is not a designated critical habitat. According to TPWD, the NDD file search from February 12, 2015 shows that there are no documented occurrences of Federal or state listed threatened or endangered species or state species of concern within the AOI. However, this does not mean that a threatened, endangered, or species of concern is not likely, as some private landowners do not allow access to their property for survey purposes.

Table 4 below provides a breakdown of acreage within the AOI.

Table 4. AOI Land Use and Vegetation Acreages

Land Use	Acreage
Shrubland	90.2
Forest /Woodland	1933.4
Grassland/Savannah/Herbaceous	2268.0
Other	61.8
Total Undeveloped	4353.5
Floodplains*	1223.1
Total Undeveloped not in Floodplain	3130.4
Developed	2932.1
Total	7285.5

*Floodplains may be included in any of the first four categories above.

Table 5. EMST Features within Undeveloped Areas

Undeveloped Areas - Primary	
Common Name	**ACRES PRESENT**
Barren	0.7
Blackland Prairie: Disturbance or Tame Grassland	8.3
Central Texas: Floodplain Deciduous Shrubland	0.2
Central Texas: Floodplain Hardwood Forest	57.8
Central Texas: Floodplain Herbaceous Vegetation	3.7
Central Texas: Floodplain Live Oak Forest	0.1
Central Texas: Riparian Hardwood Forest	4.7
Central Texas: Riparian Herbaceous Vegetation	0.6
Crosstimbers: Oak / Hardwood Slope Forest	2.3
Crosstimbers: Post Oak / Juniper Woodland	0.6
Crosstimbers: Post Oak Woodland	107.8
Crosstimbers: Sandyland Oak Woodland	7.7
Crosstimbers: Savanna Grassland	392.7
Edwards Plateau: Ashe Juniper / Live Oak Shrubland	12.9
Edwards Plateau: Live Oak Motte and Woodland	0.0
Edwards Plateau: Oak / Hardwood Motte and Woodland	66.2

Edwards Plateau: Savanna Grassland	43.5
Native Invasive: Deciduous Woodland	9.7
Native Invasive: Juniper Shrubland	0.0
Native Invasive: Mesquite Shrubland	17.4
Open Water	0.1
Row Crops	6.9
Urban High Intensity	0.5
Urban Low Intensity	95.7
TOTAL ACRES	**840.1**
Undeveloped Areas - Secondary	
Common Name	**ACRES**
Barren	2.6
Blackland Prairie: Disturbance or Tame Grassland	2.4
Central Texas: Floodplain Hardwood Forest	19.1
Central Texas: Floodplain Herbaceous Vegetation	79.9
Central Texas: Riparian Deciduous Shrubland	0.7
Central Texas: Riparian Hardwood Forest	26.1
Central Texas: Riparian Herbaceous Vegetation	6.9
Central Texas: Riparian Live Oak Forest	0.4
Crosstimbers: Oak / Hardwood Slope Forest	6.8
Crosstimbers: Post Oak / Juniper Woodland	0.9
Crosstimbers: Post Oak Woodland	138.5
Crosstimbers: Savanna Grassland	348.0
Edwards Plateau: Ashe Juniper / Live Oak Shrubland	2.5
Edwards Plateau: Live Oak Motte and Woodland	1.5
Edwards Plateau: Oak / Hardwood Motte and Woodland	111.1
Edwards Plateau: Savanna Grassland	103.7
Native Invasive: Deciduous Woodland	0.9
Native Invasive: Juniper Shrubland	0.6
Native Invasive: Mesquite Shrubland	4.2
Row Crops	5.8
Swamp	0.4
Urban High Intensity	1.1
Urban Low Intensity	55.4
TOTAL ACRES	**919.5**

The estimated induced growth effects of approximately 903 acres of commercial and residential development in the AOI indicated that the area designated as the primary area of growth could experience the losses indicated in the **Table 5** in the Undeveloped Areas, Primary section of the table (840.1 acres) with the additional losses carried over to the Undeveloped Areas, Secondary section. The total developed areas under current and projected growth conditions would convert the entire primary development area of 840.1 acres along with the 62.9 acres for a total of 903 acres. The losses within the 62.9 acres of secondary development would be potentially distributed proportionately among the EMST types present and identified in the second part of **Table 5**. The remaining 856.6 acres in the secondary development area would likely not develop at current growth rates.

Public and private development would be in accordance with the City of Weatherford's and City of Hudson Oak's development codes and land use planning policies which are protective of trees and are regulate site development activities. In addition, restricting floodplain development is also protective of riparian vegetation. The vegetation types in the areas subject to development are not rare or limited in distribution. For these reasons, the resource is not considered at risk.

Threatened and endangered species

There is the potential for ten state listed species of concern (plains spotted skunk, western burrowing owl, Texas garter snake, Comanche Peak prairie clover, Glen Rose yucca, Hall's prairie clover, Mohlenbrock's sedge, Osage Plains false foxglove, Quayle's butterweed, and Reverchon's scurfpea) and one state listed threatened species, timber/canebrake rattlesnake, to be present in the AOI and in those areas subjected to potential primary and secondary development. The habitats for these species are described in **Table 1**.

Table 1. Summary of State and Federally Listed Threatened, Endangered, and Rare Species.

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Species Effect	Pertinent Project Information
Birds						
Western Burrowing Owl *Anthene 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	Habitat present in project area.	May impact	Areas of open grassland located within project area.
Mammals						
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	Habitat present in project area.	May impact	Project area contains habitat due to wide range of preferred habitat types.
Reptiles						

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Species Effect	Pertinent Project Information
Texas garter snake *Thamnophis sirtalis annectens*	—	—	wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August	Habitat present in project area.	May impact	Wet or moist microhabitats present within project area.
Timber/Canebrake rattlesnake *Crotalus horridus*	—	T	swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto	Habitat present in project area.	May impact	Some habitat types such as upland woodlands, riparian zones, or abandoned farmland located within project area.
Plants						
Comanche Peak prairie- clover *Dalea reverchonii*	—	—	Texas endemic; shallow, calcareous clay to sandy clay soils over limestone in grasslands or openings in post oak woodlands, often among sparse vegetation in barren, exposed sites, most known sites are underlain by Goodland Limestone, most known sites are on roadway right-of-ways; flowering April-June, one account for October	ROW habitat present in project area.	May impact	Project area contains ROW habitat with calcareous soils. Closest known population is 2.2 miles away from project area. Species not observed within project area
Glen Rose yucca *Yucca necopina*	—	—	Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April - June	ROW habitat present in project area.	May impact	No *Yucca* species observed within project area.
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	Habitat present in project area.	May impact	Project area contains ROW habitat with calcareous soils.
Mohlenbrock's sedge *Cyperus grayoides*	—	—	Deep sand and sandy loam in dry, almost barren openings in upland longleaf pine savannas, mixed pine-oak forest, and post oak woodlands; Occurs primarily in deep, periodically disturbed sandy soils in open areas maintained by factors such as wind, erosion, or fire. This species does not occur in shaded areas or in areas of high competition with other herbaceous species. Habitats included remnant sand prairies, sandy fields, sand "blow outs", sandhill woodlands, pine barrens, and open barrens in which the slope is sufficient to produce sand erosion. May also occur in areas where the soils have been disturbed by logging or road construction; Perennial	Habitat present in project area.	May impact	Areas of sandy soils present in project area.
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	Habitat present in project area.	May impact	Project area contains ROW habitat with calcareous soils.
Quayle's butterweed *Senecio quaylei*	—	—	Known only from the type location in Parker County, where it occurred in a weedy roadside ditch; Annual; flowering spring	Habitat present in project area.	May impact	Due to restricted occurrence, could be present, but not likely to be in project area.
Reverchon's scurfpea *Pediomelum reverchonii*	—	—	Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; perennial; flowering Jun Sept; Fruiting June-July	Habitat present in project area.	May impact	Project area contains ROW habitat with calcareous soils.

LE, LT - Federally Listed Endangered/Threatened
C - Federal Candidate for Listing
DL- Federally Delisted
DM- Federally Delisted, Monitoring First 5 Years
PT - Federally Proposed Threatened
PE – Federally Proposed Endangered

E, T - State Listed Endangered/Threatened
"—" – Rare or Species of Concern, but no regulatory listing status
*Data Sources: U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department (Checked 2-28-12) and site visit/survey of project area.

Source: Texas Parks and Wildlife, May 2016 and U. S. Fish and Wildlife Service, May 2016

There is no designated critical habitat for any federal listed threatened or endangered species in the AOI. According to TPWD, the NDD file search from May 2016 shows that there are no documented occurrences of Federal or state listed threatened or endangered species or state species of concern within the AOI. Additionally, due to protections afforded to federally protected threatened and endangered species and their habitats by the Endangered Species Act and through TPWD to state listed species of concern, this resource is not considered at risk.

Topography and soils

While 242 acres of prime farmland soils exist within portions of the AOI, the area is undergoing suburban development which will limit any potential for farming activities in the future. Additionally, development of the area would be in compliance with City of Weatherford and City of Hudson Oaks land use policies and permitting. For these reasons, this resource would not be considered at risk.

Air quality

Industrial land uses and other sources of air contaminants could result from induced development. Because these developments would be in compliance with the permitting and planning requirements of the cities of Weatherford and Hudson Oaks, because improving technologies would tend to reduce air emissions, including mobile source air toxics, and due in part to a generally more efficient transportation network resulting from the proposed project, this resource is not considered at risk.

Community resources

Business and residences and public infrastructure are present in the areas of potential development. The values of privately owned properties could be influenced by future development, which could generate increased tax revenues. These resources would not be considered at risk.

Public facilities/services/utilities

There are government facilities, including a fire station, present within the areas of potential development, however, impacts to these facilities would not be expected. Utilities may require relocation due to potential development, however, services provided by these utilities would likely continue. These resources are not considered at risk.

Vulnerable Elements of the Population

Vulnerable elements of the population may include the elderly, children, persons with disabilities, minority groups, and low-income groups. Vulnerable elements of the population exist in the AOI, including two daycare facilities located within the AOI and two adjacent to it. The daycares would be located away from the areas of direct impacts and the largest area of greater development along IH 20. Due to the improvements of air quality over time resulting from increased air quality standards, which in turn push cleaner engine technologies, among other factors, this should not be a concern. Minority populations exist within almost every project area census tract block; however, none had a minority population in excess of 50%. Due to the lack of any area with more than 50% minority and low income groups and because development will improve access to resources of any vulnerable populations, this resource was considered not at risk.

MITIGATION

The proposed project would influence land use within the project AOI; however, the changes in land use would primarily in keeping with the City of Weatherford's and the City of Hudson Oak's future land use plans. As a result, these changes would be considered positive in nature.

The purpose of this mitigation assessment it to analyze the consequences of the expected induced growth impacts and consider mitigation measures that may be required or desired to offset these impacts. The primary cause of induced growth in the project area result from improvements in access and increases in efficiency of the transportation network as a result of construction of the interchange and frontage roads.

The areas of indirect induced growth would account for approximately 903 acres of commercial and residential development out of the AOI total of 3130.4 undeveloped acres not in floodplains. It is likely that much or all of this induced growth would result from improvements to access provided by the proposed project and increases in the efficiency of the local transportation network. With the exception of impacts to regulated water bodies under Section 404 of the Clean Water Act, mitigation for any impacts to the resources on these 903 acres would not be required.

Future development would largely be by private sector developers and would be required to be in accordance with the development ordinances and land use and zoning plans of the cities of Weatherford and Hudson Oaks.

Because the project is expected to be compatible with local land use planning and development ordinances and would not result in a large degree of negative induced growth effects, mitigation for project impacts would be limited to those required for the project's direct impacts. Mitigation required by developments that would result indirectly from the project as a result of increased access and improvements to the transportation network would be the responsibilities of those parties developing the affected areas. They would be in accordance with federal and state requirements and would be in compliance with the requirements of either the City of Weatherford or City of Hudson Oaks. Mitigation for these impacts would not be required on the part of Parker County.

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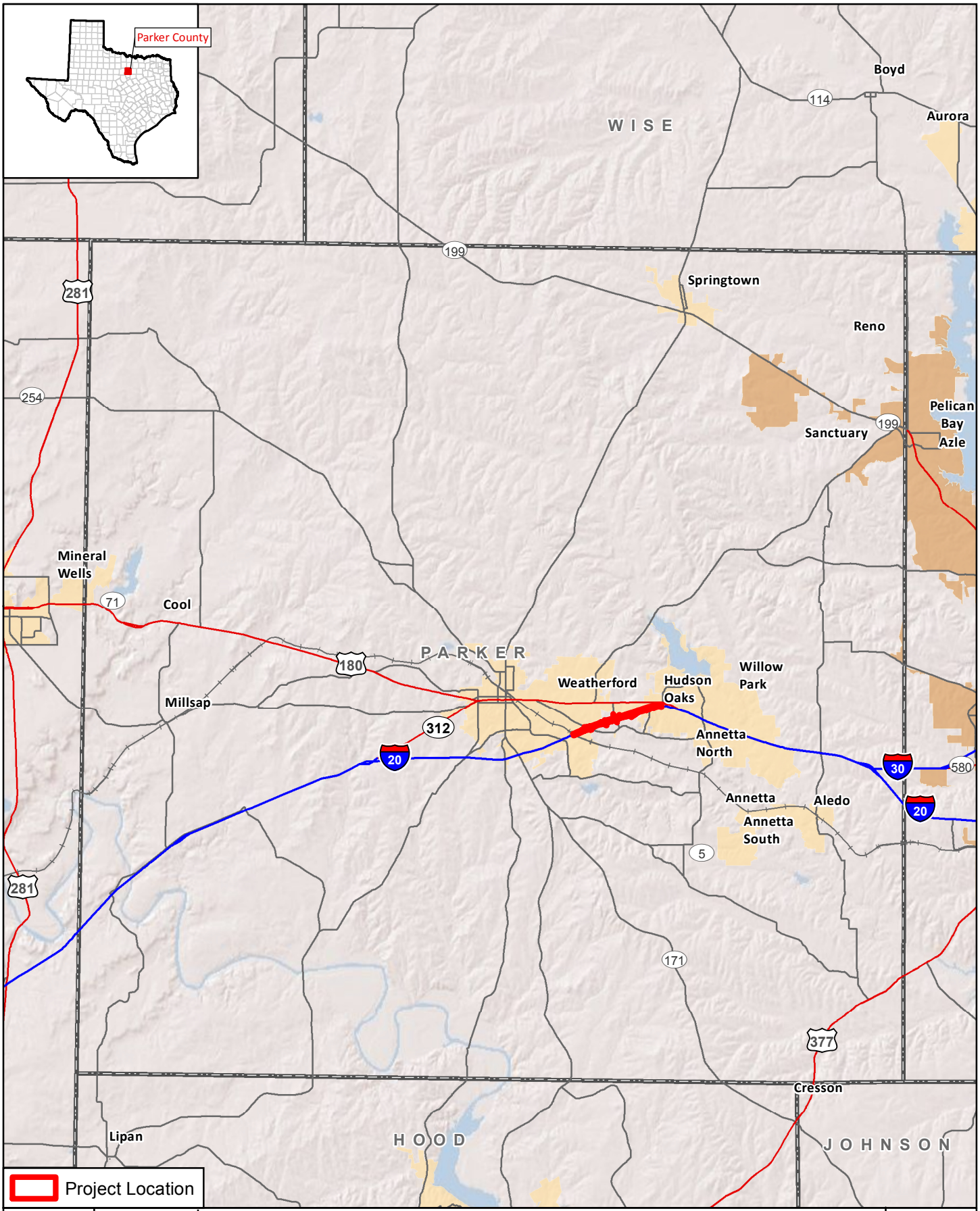
FIGURES



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PARKER CO.

Center Point Road at IH 20

Project Location

0 2.5 5 10 Miles

1

FIGURE

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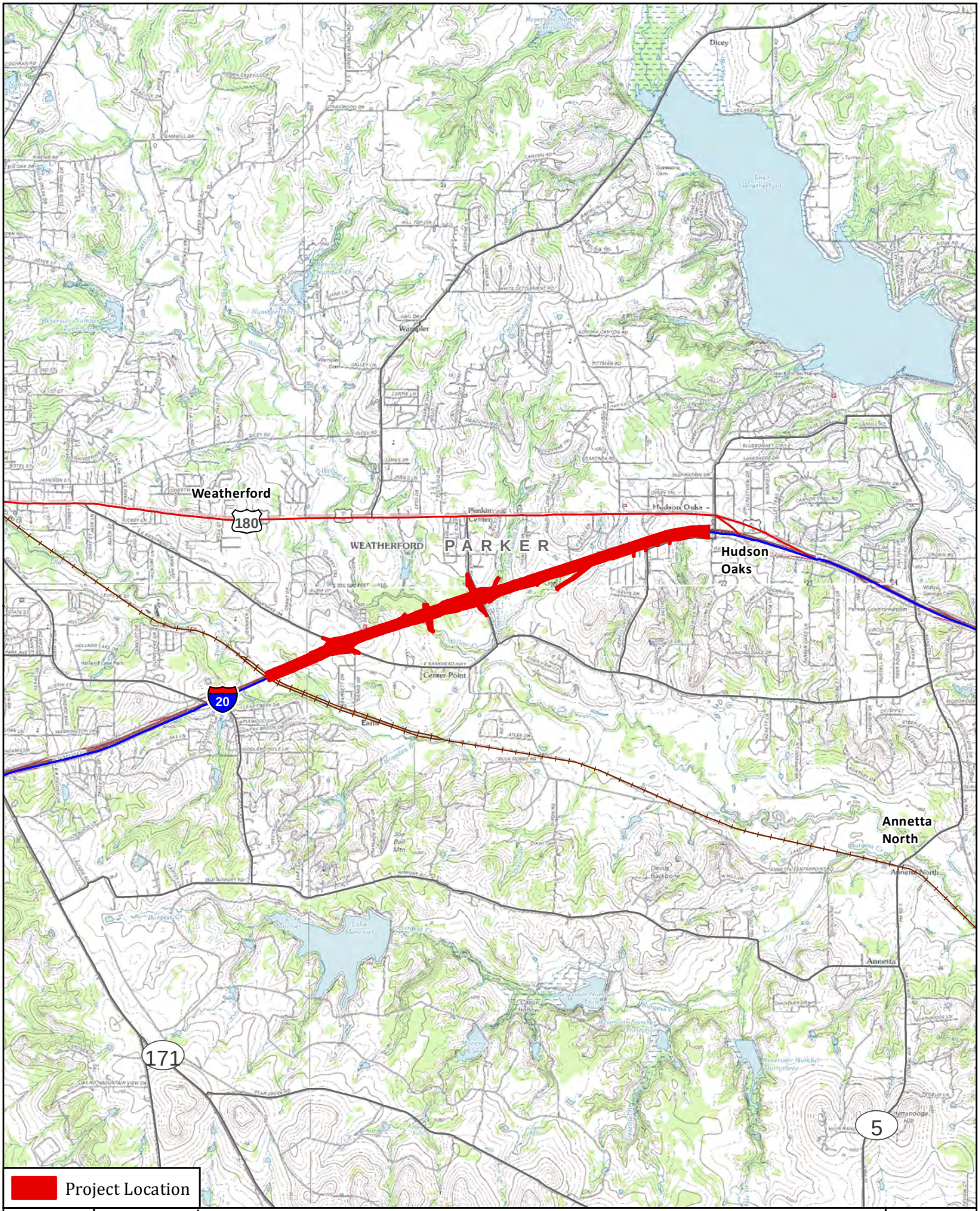

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N W E S

PARKER CO.

Center Point Road at IH 20

Project Location on USGS Topo Base

0 1 2

Miles

2

FIGURE

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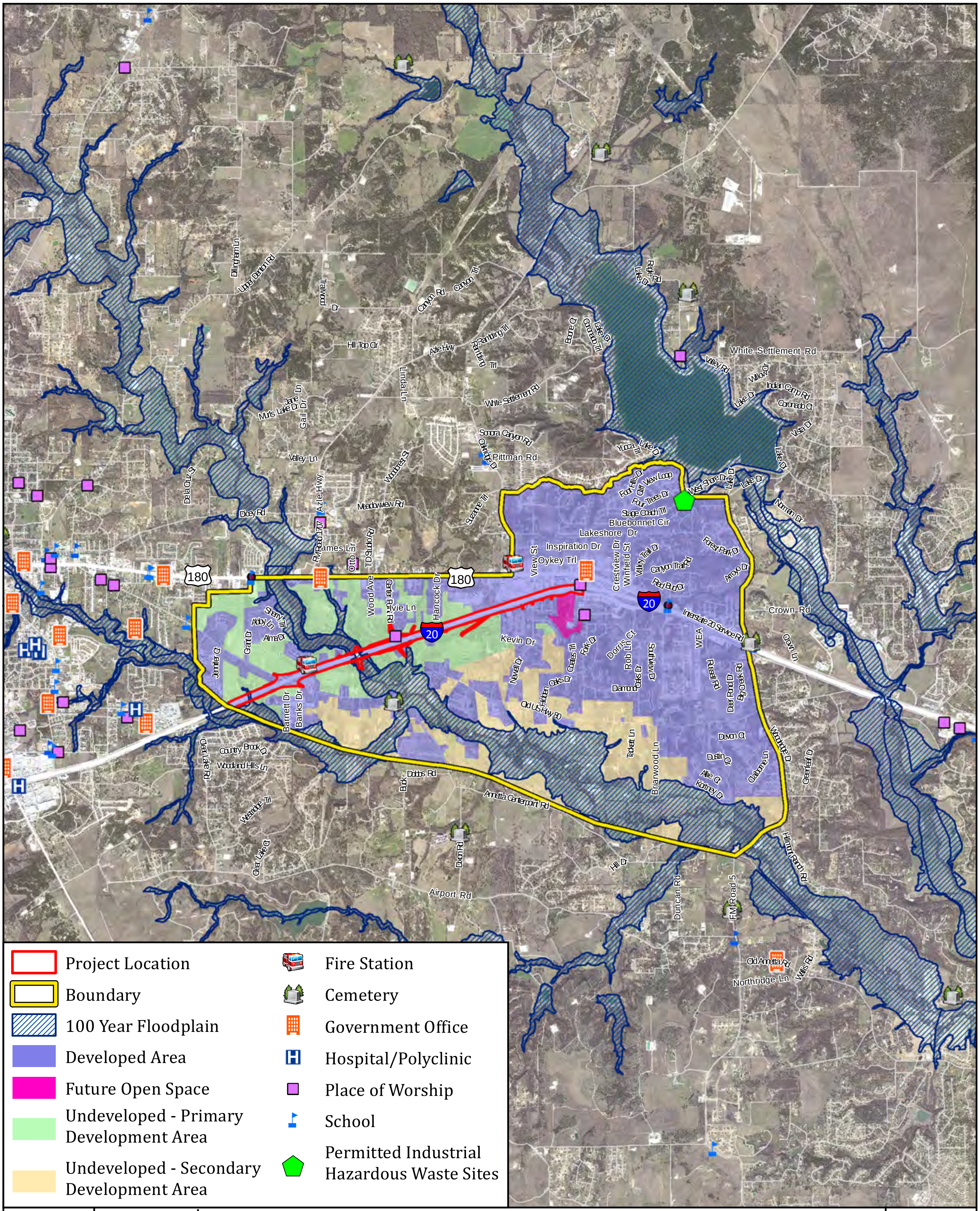

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PARKER CO.

Center Point Road at IH 20

Project Area of Influence (AOI)

0 0.5 1 2 3 Miles

3

FIGURE

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