



Archeological Background Study

Project Name: US 281 at SH 71 Interchange

Highway: US 281

District(s): Austin

County(s): Burnet

CSJ Number(s): 0252-02-058

Author and Affiliation: Damon Burden, RPA, ICF

Report Completion Date: January 13, 2026

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Introduction

This project may require compliance both with Section 106 of the National Historic Preservation Act and with the Texas Antiquities Code. The purpose of this document is to identify risks for archeological historic properties within the project's area of potential effects (APE). The document also considers whether any cemeteries may extend into the APE, requiring compliance with the state Health and Safety Code.

The following sections list the results of review of readily-available information for the APE's setting and adjacent areas. The report also evaluates adjacent areas (a buffer zone; see Recommendations Section for definition of the buffer zone). The buffer zone is evaluated in case a subsequent design change expands the APE. This report concludes with separate recommendations regarding project effects and the need for additional work within shallow deposits less than three feet in depth and within Holocene-age deposits of three feet or greater depth, if such deep deposits are present.

This background study

is (check one):

the initial study for this project

a continuation of previous investigations due to design changes or other reasons

Identify previous investigation(s): Burden 2023, 2024

If this box is checked, then answer the questions below only for the area that is affected by the design change.

Area of Potential Effects

The APE is defined to encompass the limits of the existing right of way; proposed, new project right of way; permanent and temporary easements; and any project-specific locations and utility relocations designated by TxDOT. Note: the APE encompasses the entirety of the project area, regardless of the extent of prior archeological investigations, the particular locations subject to proposed field investigations, or the portion of a project added through a design change. If impacts are not known, worst-case impacts are assumed in defining the APE.

TxDOT proposes to reconstruct the existing US 281 / SH 71 cloverleaf interchange located within the City of Marble Falls and its extraterritorial jurisdiction, into a two-level grade separated turbine configuration (**Attachment 1**). Proposed improvements to US 281 would result in a four-lane divided highway with a wide, depressed median, auxiliary lanes, and full shoulders. Additionally, there would be a two-lane frontage road with shoulders and shared use paths (SUPs) for bicycles and pedestrians in each direction. SH 71 would consist of a four-lane undivided highway east of the interchange, a two-lane undivided highway within the interchange area, and a four-lane divided highway west of the interchange. SH 71 would have frontage roads and a SUP from Baylor Scott & White Boulevard to 0.5 mile east of the interchange. The proposed improvements would extend approximately 6.5 miles

along US 281 and SH 71. The project length would be about 3.2 miles on US 281 and approximately 3.2 miles on SH 71. The project limits along US 281 extend from approximately 1.5 miles north of SH 71 to 2 miles south of SH 71. The project limits along SH 71 would extend from approximately 1.6 miles west of US 281 to 1.6 miles east of US 281. Additional project information can be found in a technical memorandum presented to TxDOT by WSP Global, Inc. (2025).

Prior to redesign, the proposed project's horizontal area of potential effects (APE) for archeological resources encompassed 362 acres, consisting of 188 acres of existing right-of-way (ROW) and 174 acres of proposed ROW. Subsequent design changes reduced the overall project footprint, resulting in an APE that now encompasses 256.45 acres, composed of 160.79 acres of existing ROW, 92.67 acres of proposed new ROW, 2.92 acres of permanent easements, and 0.07 acre of temporary easements (**Attachments 2.1** through **2.5**).

Information Source Checklist

(check each source of information that was consulted by the professional archeologist in preparing this background study—the number and type of sources are at the professional archeologist's discretion)

- Labelled USGS 7.5' topographic quadrangle project location map (or equivalent if a 7.5' quadrangle is unavailable) is attached and includes an inset map that depicts the county within Texas where the project occurs.
- Predictive Archeological Liability Map (PALM) is attached if available (*consult TxDOT's Environmental Compliance Toolkit*).
- Geologic Atlas of Texas map is attached (*PALM may be substituted for the GAT map, if it's available*).
- Soils map is attached (*PALM may be substituted for the soils map, if it's available*).
- FEMA flood hazard map is attached.
- National Wetlands Inventory map is attached
- Texas Archeological Sites Atlas map is attached, depicting any sites within one kilometer of the APE or additional APE.
- Historic topographic map is attached.
- Historic soils map is attached.
- Historic road map is attached.
- As-built plans for roadway are attached.
- Other map of historic information is attached.
- Aerial images are attached.
- Project area photographs are attached.

Analysis of Project Setting

▪ **Previously-Identified Archeological Sites**

- No archeological sites have been identified within the APE or within 150 feet of the APE
- Archeological sites have been identified within the APE or within 150 feet of the APE

Prior to an archeological survey conducted by ICF in 2024, no archeological sites had been documented in or within 1 kilometer (km) (0.6 mile) of the APE (Burden 2023). Three new archeological sites were documented within the APE during the 2024 ICF investigation (Burden 2024). These consist of one Precontact-era site (41BT551) identified east of US 281 and north of SH 71, and two Historic-era sites (41BT552 and 41BT553) identified east of US 281 and south of SH 71. Those portions of sites 41BT551 and 41BT553 within the APE (in 2024) were recommended as not eligible for inclusion in the National Register of Historic Places (NRHP) or for formal designation as State Antiquities Landmarks (SALs). Likewise, site 41BT552 was recommended as not eligible for inclusion in the NRHP or for formal designation as a SAL. No additional work was recommended in surveyed parts of the APE at sites 41BT551 and 41BT553, and no additional work was recommended at site 41BT552 (Burden 2024). The Texas Historical Commission (THC) concurred with the recommendations presented in the archeological survey report in an email dated September 10, 2024.

A portion of site 41BT551 is still within the redesigned APE, whereas sites 41BT552 and 41BT553 are now outside of it.

▪ **Previously-Identified Cemeteries**

- No known cemetery sites occur within the APE or within 150 feet of the APE.
- Cemeteries occur within the APE or within 150 feet of the APE.

See information provided in Burden (2023).

▪ **Holocene-Age Deposits**

- No Holocene-age deposits occur within or adjacent to the APE.
- Holocene-age deposits occur within or adjacent to the APE.

No Holocene-age deposits are mapped within the 2026 APE (U.S. Geological Survey 2026). See Burden (2023, 2024) for information on the geologic deposits and soils mapped in or adjacent to the present APE.

▪ **Historically-Reliable Water Sources**

- No historically-reliable water sources occur within 500 feet of the APE.
- Historically-reliable water sources occur within 500 feet of the APE, or this question can't be answered confidently.

See Burden (2023, 2024).

▪ **Wetlands and Frequently-Flooded Areas**

- The APE and adjacent areas contain wetlands or frequently-flooded areas.
- The APE and adjacent areas do not contain wetlands or frequently-flooded areas, or this question cannot be answered confidently.

See Burden (2023).

▪ **Preferred Landforms for Occupation**

- The Atlas map or other information shows that the APE does not contain landforms on which human settlement or occupation typically occurred.
- The Atlas map or other information shows that the APE does contain landforms on which human settlement or occupation typically occurred, or this issue was not resolved with the available information.

See Burden (2023, 2024).

▪ **Prior Disturbances**

Settings that are favorable for human occupation have been subject to the following previous disturbances (*check all that apply*).

- Previous road construction and maintenance.
- Installations of utilities.
- Modern land use practices like plowing, grade modifications, brush clearing, and tree removal,
- Industrial, commercial, urban and/or suburban development
- Erosion and scouring by natural causes.

- Other (identify)
- NO PRIOR DISTURBANCES OR UNKNOWN (do not check any foregoing disturbances)

▪ **Previous Archeological Surveys**

- The majority of the settings with high potential for archeological sites within or adjacent to the APE have been previously surveyed.

See **Attachments 2.1** through **2.5** and Burden (2024).

- The majority of the settings with high potential for archeological sites within or adjacent to the APE have not been previously surveyed.

Conclusions

▪ **Results of Previous Investigations**

- Previous surveys have covered a sufficient proportion of the APE or adjacent areas to conclude that the APE and adjacent areas are unlikely to contain archeological sites or cemeteries.

- Previous surveys have not covered a sufficient proportion of the APE or adjacent areas to draw inferences regarding the presence of archeological sites and cemeteries, or previous surveys show that archeological sites and/or cemeteries are present within the APE.

▪ **APE Integrity (Prehistoric Sites)**

The APE contains no deposits with sufficient integrity that prehistoric archeological sites would have the potential to address important questions. Any such sites would lack integrity of (*check all that apply*):

- Location
- Design
- Materials
- Association
- Other (*identify*)

- THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES (*if true, do not check any of the forgoing aspects of integrity*)

▪ **APE Integrity (Historic-Age Sites)**

The APE contains no deposits with sufficient integrity that historic-age archeological sites would have the potential to address important questions. Any such sites would lack integrity of (*check all that apply*):

- Location
- Design
- Materials
- Association
- Other (*identify*)

- THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES (*if true, do not check any of the forgoing aspects of integrity*)

▪ **Results of Historic Map Research (Historic Age Sites)**

- Historic map research shows that historic-era archeological deposits are not likely to occur within or adjacent to the APE
- Historic map research shows that historic-era archeological deposits could occur within or adjacent to the APE; this research was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.

▪ **Results of Map Research (Cemeteries)**

- Map research shows that cemeteries are not likely to occur within or adjacent to the APE.
- Map research shows that cemeteries could occur within or adjacent to the APE, or this research was inconclusive.

▪ **Results of Landform Study**

- The APE and adjacent areas occur in a setting that was not conducive to human occupation and activity

- ☒ The APE and adjacent areas occur in a setting that was conducive to human occupation and activity; research on this issue was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.

Recommendations

▪ **Shallow Deposits**

Evaluate the potential for shallow deposits (Holocene-age deposits less than three-feet in depth) within the APE to contain archeological historic properties and cemeteries. Make appropriate recommendations regarding the need for further work, including the need for shovel test pits, auger probes, or other methods for evaluating shallow deposits.

See Burden (2023, 2024) for general background information and evaluation of the APE.

As noted in a previous section, ICF conducted an intensive archeological survey within the APE as designed in 2024. This investigation covered about 111 acres of proposed new ROW. The archeological survey report recommended that 38 acres of proposed new ROW that were inaccessible at the time of the field investigation be surveyed to identify any cultural resources that might be present in those areas and subject to project impacts (Burden 2024).

The subsequent reduction of the project footprint, coupled with recent development impacts, cut the 38 acres of the APE originally recommended for post-NEPA survey to 14.47 acres. In addition, project redesign added about 2 acres of new APE that fall outside of the 2024 project design (**Attachments 2.1** through **2.5**). After consideration of these design changes, post-NEPA archeological survey is considered warranted and is recommended in 15.39 acres of the APE (all proposed new ROW).

In the northeast quadrant, 0.92 acre of additional proposed new ROW was added to the 3.2 acres originally recommended for survey in that area, resulting in a combined 4.12 acres of proposed new ROW recommended for survey on adjacent Parcels 50445, 82233, and 116724 (see **Attachments 2.2** and **2.5**).

In the northwest quadrant, the 7.52 acres originally recommended for survey have been decreased due to design changes that reduced or excluded previously unsurveyed areas (Parcels 50452, 121704, 121705 and 52650) and recent development that removed areas from further consideration (Parcel 123501) (see **Attachments 2.2** and **2.4**). These changes resulted in a combined 3.08 acres of proposed new ROW and permanent easements on Parcels 50452 and 121705 where post-NEPA survey is considered warranted and is recommended (see **Attachment 2.2**).

In the southeast quadrant, a significant reduction in the project footprint coupled with surface disturbance decreased the total acreage recommended for post-NEPA survey (on Parcels 48022 and 53778) from 27 acres to 8.19 acres of mostly proposed new ROW (see **Attachments 2.1** and **2.5**).

Of the approximately 2 acres of additional APE generated through project redesign, 0.92 acre is recommended for post-NEPA survey (as noted above). The remaining 1.09 acres

consist of small segments of proposed new ROW or proposed new ROW and permanent easements on five parcels in the southeast, southwest, and northwest quadrants. These areas range from 0.01 acre to 0.6 acre in size and most are adjacent to previously surveyed areas with negative findings. Each of these small areas has been evaluated and none warrants additional investigation. Consequently, survey of the remaining 1.09 acres of new APE is not recommended. Specifically, the 1.09 acres that do not warrant additional investigation are:

- 0.36 acre on Parcels 108001 and 118538 in the southwest quadrant (see **Attachment 2.1**)
- 0.11 acre on Parcel 50468 in the southwest quadrant (see **Attachment 2.2**)
- 0.6 acre on Parcel 50434 in the southeast quadrant (see **Attachment 2.2**)
- 0.01 acre on Parcel 122709 in the southwest quadrant (see **Attachment 2.4**)
- 0.01 acre on Parcel 102013 in the northwest quadrant (see **Attachment 2.4**).

▪ **Deep Deposits**

Evaluation of deep deposits (Holocene-age deposits of three feet or greater depth) may or may not be necessary, depending on the nature of the sediments within the APE and the depth of proposed impacts. If Holocene-age deposits extend to three feet or more within the APE and would be impacted by the project, make appropriate recommendations regarding the need for further work. If no deep, Holocene-age deposits occur within the APE note that they are absent and indicate that no additional work is needed. If the deep Holocene deposits are present but the project either would not affect them or they have been too extensively disturbed to hold intact archeological deposits, provide an appropriate justification that no additional work is needed.

The findings of the previous ICF field investigation (Burden 2024) and the geomorphic settings of the areas that remain to be surveyed indicate it is highly unlikely that said areas include deeply buried archeological deposits (deposits at or more than 3 ft [0.9 m] below the surface). Therefore, mechanical prospection to search for deeply buried archeological deposits in the 15.39 acres of the APE recommended for post-NEPA archeological survey is considered unwarranted and is not recommended.

▪ **Recommendations Summary (select only one check box)**

- No further study needed Survey of entire APE Variable, see **Attachments 2.1 through 2.5**

▪ **Results Valid Within**

The purpose of considering adjacent areas is to define, when possible, a buffer zone around the APE to which findings of no effect and recommendations for no further work can be extended. No additional investigation should be necessary if a subsequent design change expands the APE into the buffer zone. In some cases, however, no buffer zone may be reasonably defined for the project or portions of the project as expansion of the APE may warrant survey. In such cases, check the middle box and indicate that the results are valid within zero feet of the APE.

- 50 feet of APE 0 feet of APE Variable, see attached figure

▪ **The Definition and Evaluation of this Horizontal Buffer Zone is Based on One or More of the Following Considerations**

- The integrity of the areas within and adjacent to the setting is affected by prior development.
- Previous investigations show that archeological materials are unlikely to exist in this area.
- Adjacent areas have potential to preserve archeological sites with good integrity.
- Other (specify)

Findings of no effect to archeological historic properties and/or State Antiquities Landmarks and recommendations for no further work apply to all areas within the horizontal buffer zone, as specified in the previous section. Any design change within this study area would not require further action or review beyond those actions recommended in this study. Design changes that either extend beyond the buffer zone or result in potential impacts deeper than the impacts considered in this report would require additional review. Note that no buffer zone may be defined for some projects, based on local conditions.

References Cited

Burden, Damon

- 2023 *Archeological Background Study: US 281 at SH 71 Interchange, Burnet County, Texas*. CSJ: 0252-02-058. ICF, Austin.
- 2024 *Final Archeological Survey Report: US 281 at SH 71 Interchange Reconstruction, Burnet County, Texas*. CSJ: 0252-02-058. Texas Antiquities Permit No. 31729. ICF, Austin.

U.S. Geological Survey

- 2026 Geologic Database of Texas. Available at <https://webapps.usgs.gov/txgeology/>. Accessed January 2026. U.S. Geological Survey, in cooperation with the Texas Natural Resources Information System.

WSP Global, Inc.

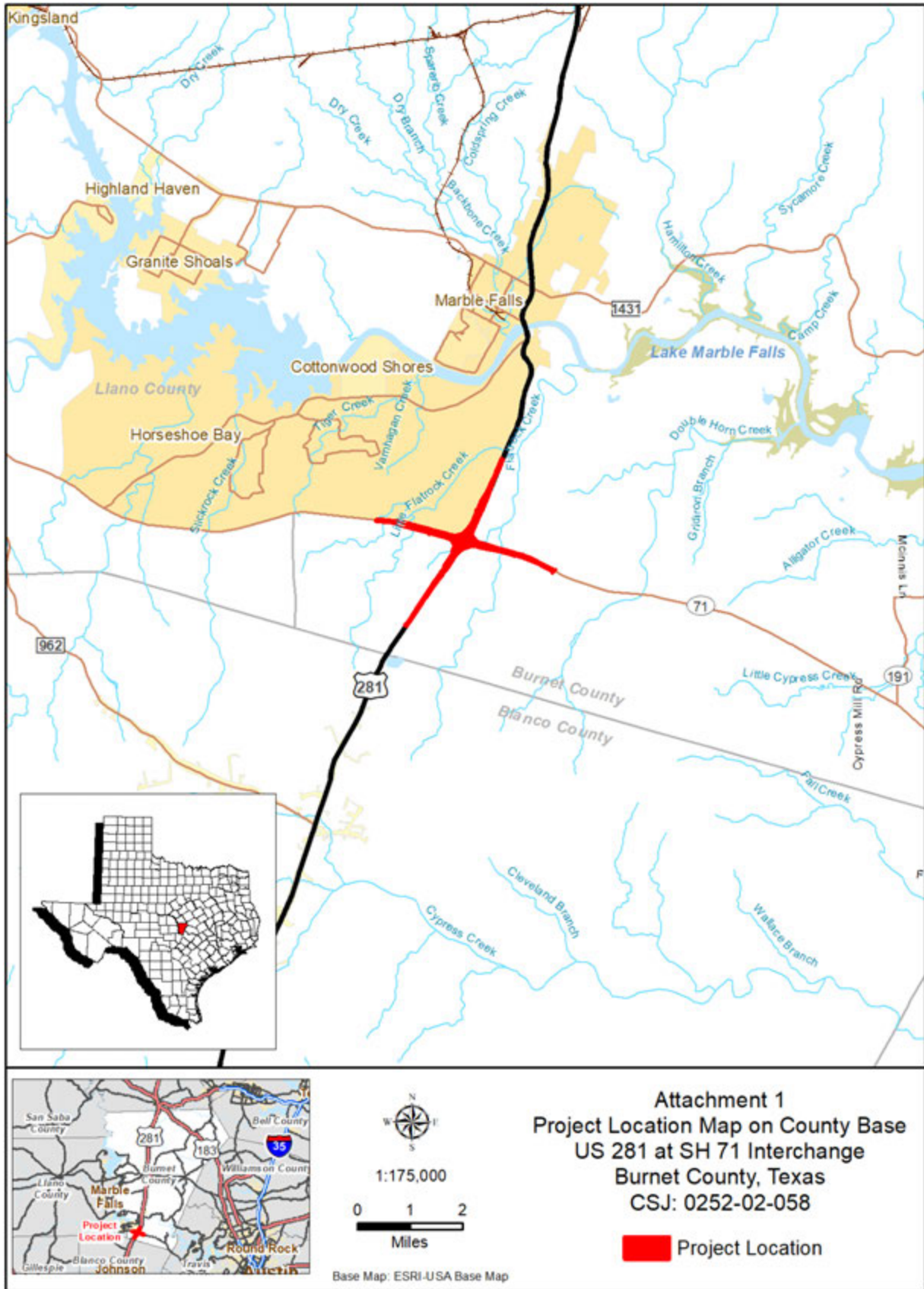
- 2025 *Technical Memorandum: US 281 at SH 71 Interchange Project (CSJ 0252-02-058) Design Changes*. Available through TxDOT Environmental Compliance Oversight System (ECOS).

Attachments

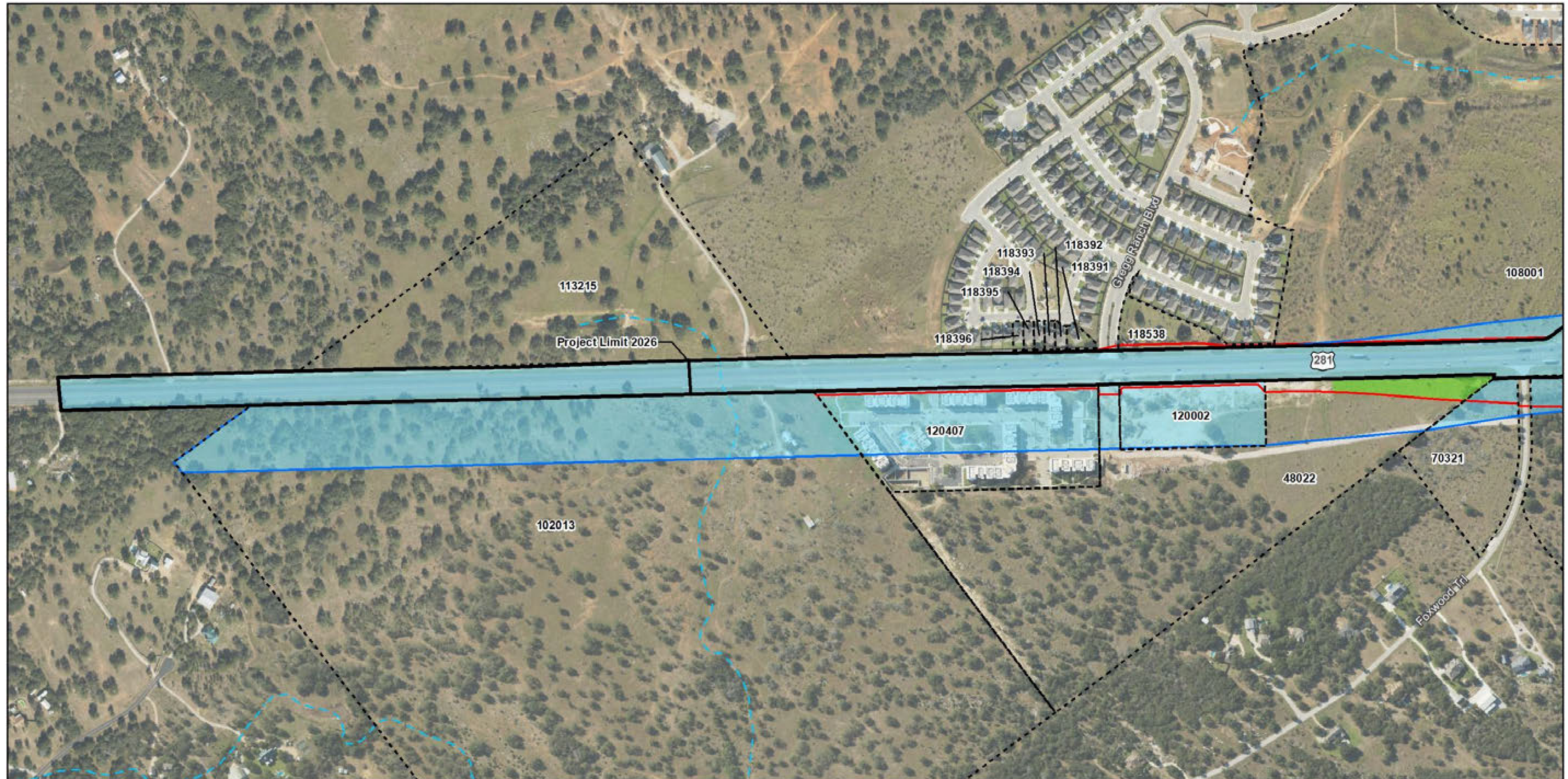
Attachment 1 – Project Location Map on County Base

Attachment 2 – Map Showing Design Changes, Previously Cleared Areas, and Areas Recommended for Survey

Attachment 1 - Project Location Map on County Base



**Attachment 2 - Map Showing Design Changes, Previously Cleared Areas,
and Areas Recommended for Survey**

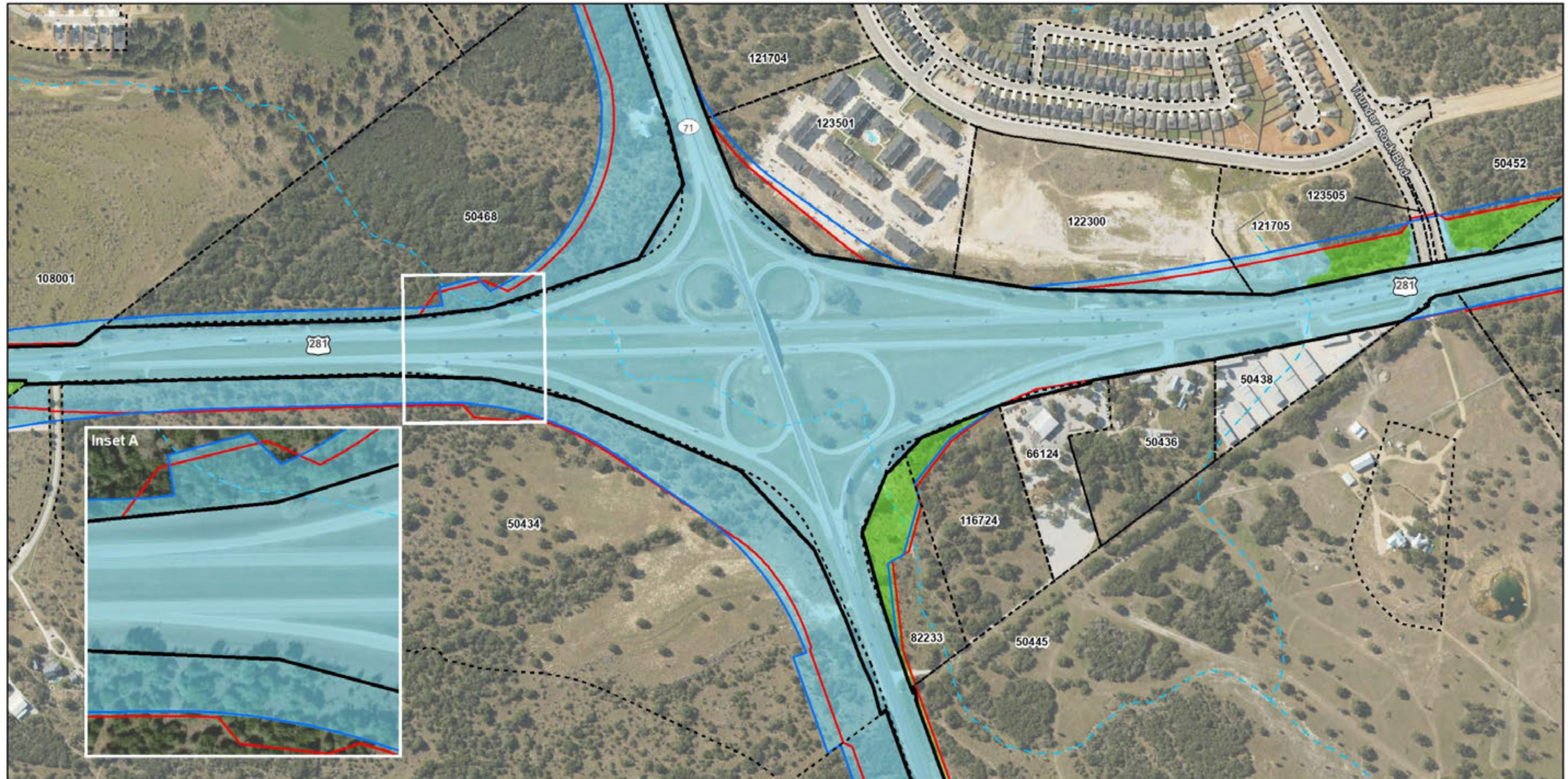


Area of Potential Effects		Previously Cleared	Parcel Boundary
Existing Right-of-way	Proposed Right-of-way 2024	Areas Recommended for Survey	River/Stream (NHD)
Proposed Right-of-way and Easements 2026			

Base Map: NAIP Imagery, 2024

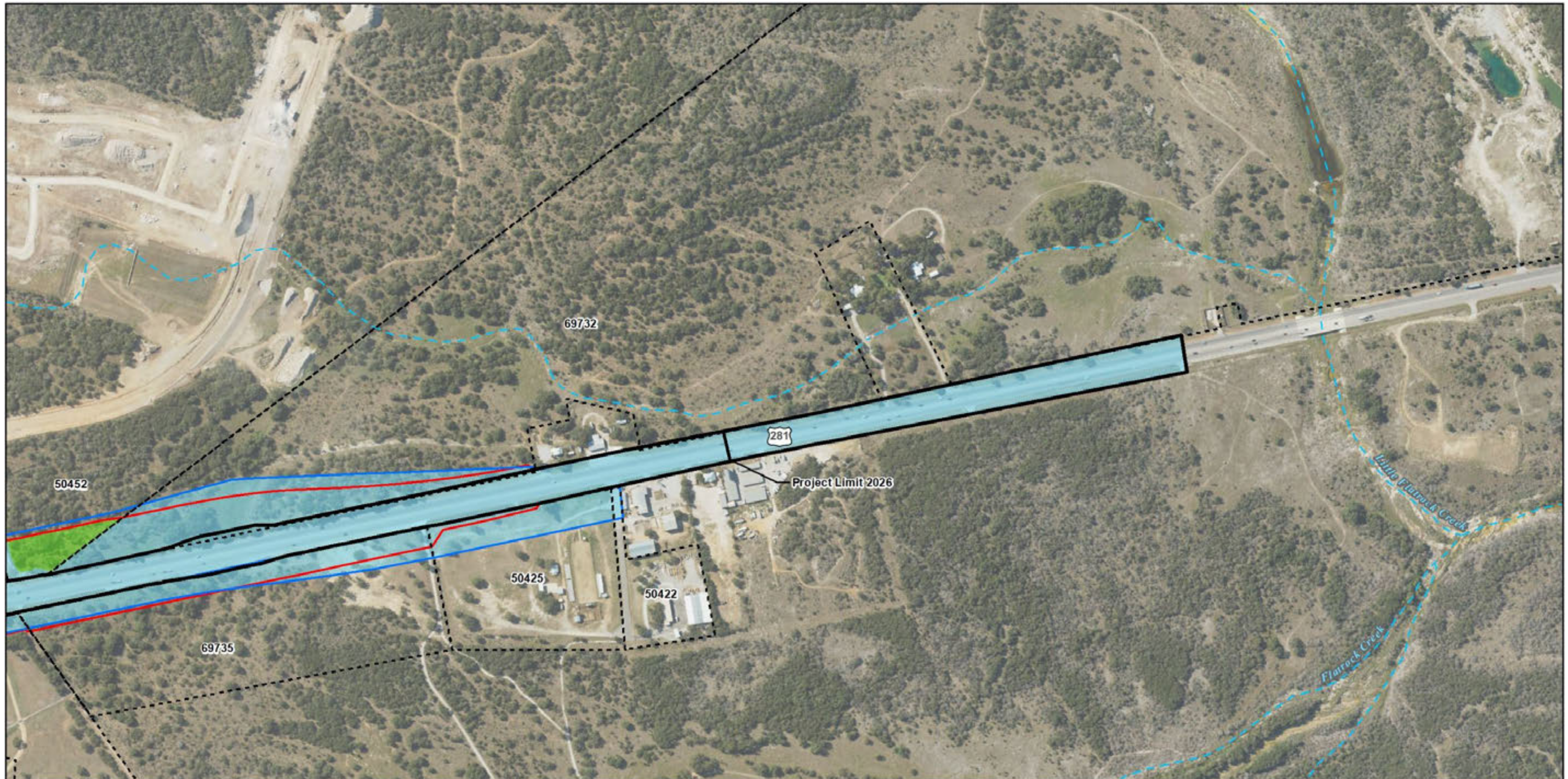
1:6,000
Feet
0 250 500
Meters
0 125 250

Attachment 2.1
Map Showing Design Changes, Previously Cleared Areas, and Areas Recommended for Survey
US 281 at SH 71
Interchange Reconstruction
Burnet County, Texas
CSJ: 0252-02-058



Area of Potential Effects Existing Right-of-way Proposed Right-of-way 2024 Proposed Right-of-way and Easements 2026		Previously Cleared Areas Recommended for Survey	Parcel Boundary River/Stream (NHD)	 1:6,000 Feet 0 250 500 Meters 0 125 250		<p align="center"> Attachment 2.2 Map Showing Design Changes, Previously Cleared Areas, and Areas Recommended for Survey US 281 at SH 71 Interchange Reconstruction Burnet County, Texas CSJ: 0252-02-058 </p>
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Base Map: NAIP Imagery, 2024

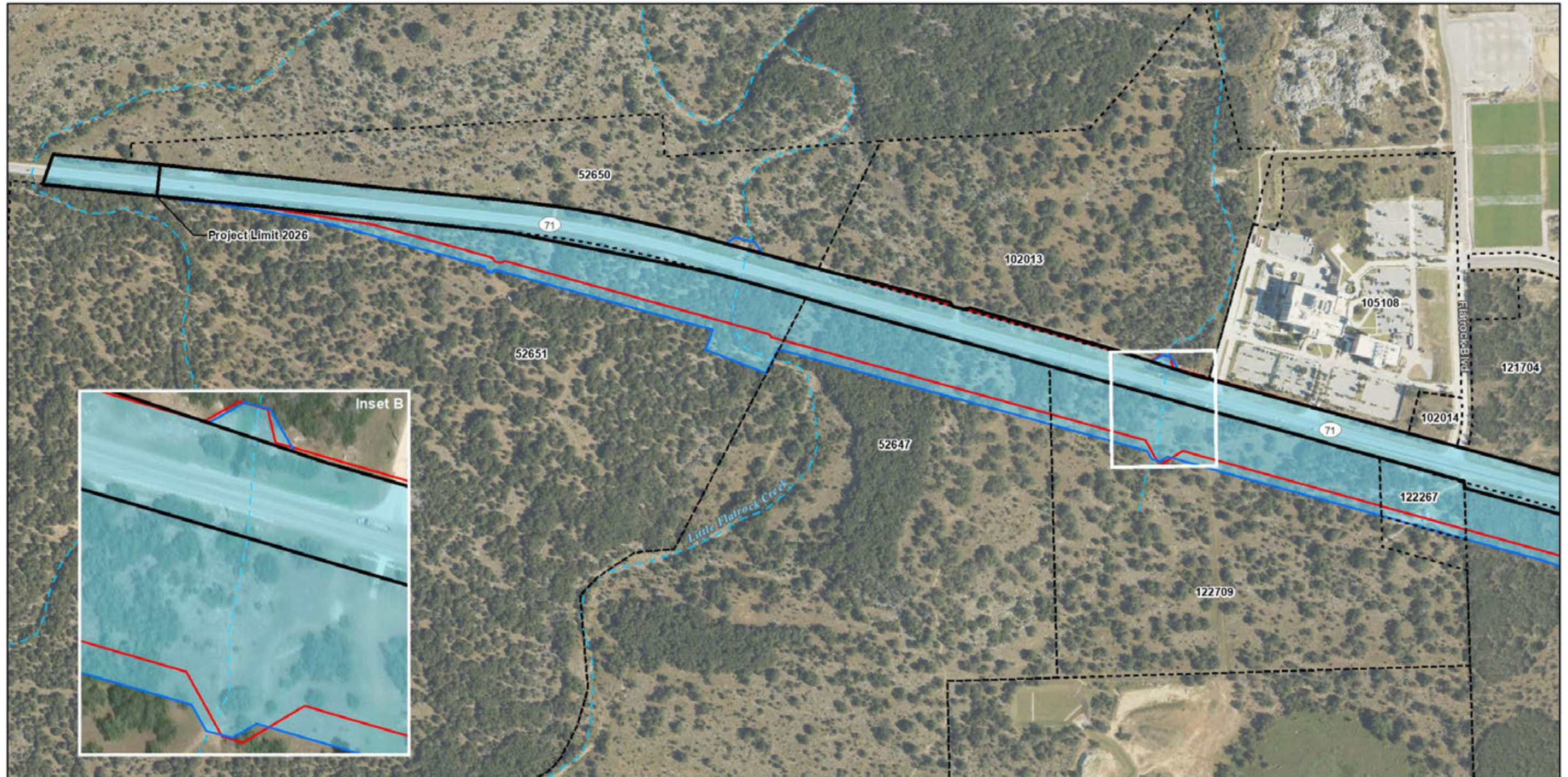


Area of Potential Effects		Previously Cleared	Parcel Boundary
Existing Right-of-way	Proposed Right-of-way 2024	Areas Recommended for Survey	River/Stream (NHD)
Proposed Right-of-way and Easements 2026			

Base Map: NAIP Imagery, 2024

1:6,000
Feet
0 250 500
Meters
0 125 250

Attachment 2.3
Map Showing Design Changes, Previously Cleared Areas, and Areas Recommended for Survey
US 281 at SH 71
Interchange Reconstruction
Burnet County, Texas
CSJ: 0252-02-058

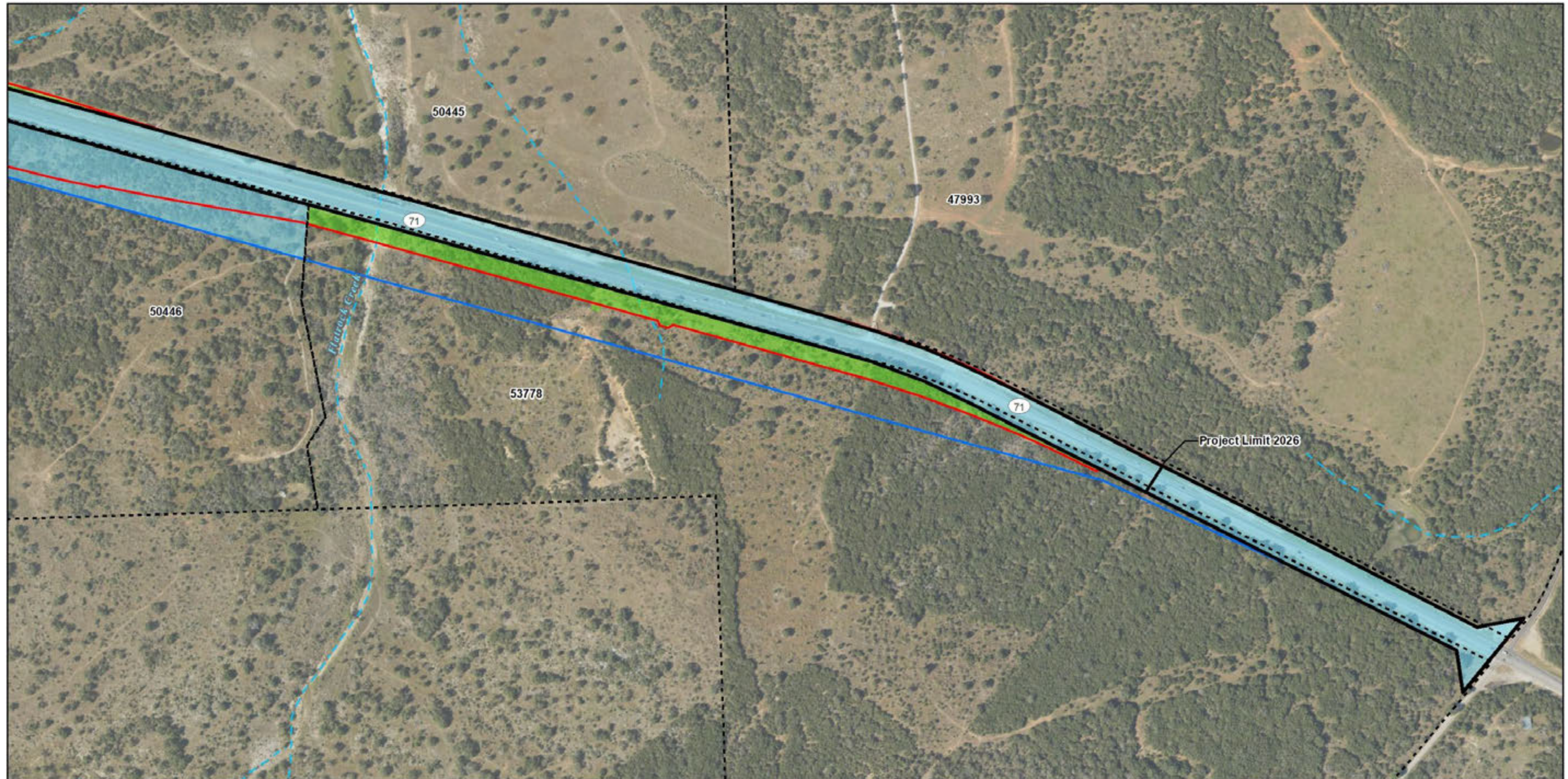


Area of Potential Effects		Previously Cleared	Parcel Boundary
Existing Right-of-way	Proposed Right-of-way 2024	Areas Recommended for Survey	River/Stream (NHD)
Proposed Right-of-way and Easements 2026			

Base Map: NAIP Imagery, 2024

1:6,000
Feet
0 250 500
Meters
0 125 250

Attachment 2.4
Map Showing Design Changes, Previously Cleared Areas, and Areas Recommended for Survey
US 281 at SH 71
Interchange Reconstruction
Burnet County, Texas
CSJ: 0252-02-058



Area of Potential Effects		Previously Cleared	Parcel Boundary
Existing Right-of-way	Proposed Right-of-way 2024	Areas Recommended for Survey	River/Stream (NHD)
Proposed Right-of-way and Easements 2026			

Base Map: NAIP Imagery, 2024

1:6,000
Feet
0 250 500
Meters
0 125 250

Attachment 2.5
Map Showing Design Changes, Previously Cleared
Areas, and Areas Recommended for Survey
US 281 at SH 71
Interchange Reconstruction
Burnet County, Texas
CSJ: 0252-02-058

This report was written on behalf of the Texas Department of Transportation by:

