3.10 Aesthetics and Scenic Resources

3.10.1 Introduction

Aesthetic and scenic resources include the visible natural and cultural landscape features which contribute to a viewer's perception of an area. This section presents key natural and cultural aesthetic and scenic resources, and discusses the existing visual quality of the viewsheds in the Study Area. The regulatory context, definition of the Study Area, key terms and methodologies, affected environment, visual impacts, and mitigation measures are also discussed.

3.10.2 Regulatory Context

Federal

FRA's *Procedures for Considering Environmental Impacts* state that an EIS should identify any significant changes likely to occur in the natural landscape and in the developed environment. Additionally, the EIS should also discuss the consideration given to design quality, art and architecture in project planning and development as required by USDOT Order 5610.4.[1]

State

While there are a number of state regulations and policies that establish TxDOT responsibilities in the area of landscape and aesthetics design, there are no state regulations that would apply specifically to an intercity HSR system.

Local Framework

Table 3.10-1 summarizes the local plans and regulations which provide guidance for the aesthetic character of the community. While these plans do not specifically address HSR infrastructure, many of the provisions noted in the table could apply. Many of these plans and regulations are in place to control visual quality, such as signage and fence regulations. No plans or regulations related to aesthetic and scenic resources were identified for Navarro, Limestone, Leon, Madison, Grimes and Waller counties.

Table 3.10-1: Local Plans and Regulations

County	City/Town	Plan/Regulation	Policy	Guidance
Dallas	Dallas	Complete Streets Design Manual	Pedestrian Zone Design Elements	Suggests streetscape amenities, transit stop guidelines, signage/wayfinding and utilities guidelines
		ForwardDallas! Comprehensive Plan	Urban Design Element, 5.1.2	Seeks to define how the city's identity and values can be captured in the visual and physical qualities of its urban landscape
			Environmental Element 6.2	Preserve and increase tree canopy

[1] FRA, "Procedures for Considering Environmental Impacts," Issued 1999, 64 C.F.R. 28545 et seq

Table 3.10-1: Local Plans and Regulations

County	City/Town	Plan/Regulation	Policy	Guidance
			Development Code Amendments, 4	Use of appropriate scale and materials for barriers and facades
		Zoning Code	Chapter 39 Railroads, Article III, Section 39-13	ROW fencing may not contain barbed wire within City of Dallas limits, and may no obstruct extending to or across the ROW.
			Article X Section 51a-10.100	Landscape and tree preservation regulations
			Chapter 51A	Outlines City of Dallas sign regulations
			Article VII, Section 51A-7.100	
	Hutchins	Zoning Ordinance	Article 3.11	Outlines sign regulations
			Article 3.13	Determines fence regulations, height requirements
	Lancaster	Comprehensive Plan (2002)	Chapter 10-2	Urban Design Challenges and Solutions - buffers, landscaping, signage, tree and open space preservation
		Zoning Ordinance	Section 14.1200	Determines sign standards
			Section 14.500	District development regulations and standards; outlines fence regulations
			Section 14.900	Promotes preservation and protection of trees
	Wilmer	Community Plan 2030	Chapters 1-5	Provides goals for community character, parks and open space conservation
		Sign Ordinance	Section 13-1	Outlines sign regulations
		Tree Ordinance	Section 10-0401	Outlines conservation and development requirements for trees
Ellis	Ferris	Zoning Ordinance	Section 154.080	Outlines sign regulations
	Ennis	Comprehensive Plan 2015	Chapters 4, 5, 6	Outlines goals, strategies, and community character for Ennis. Emphasizes rural and relaxing nature of recreation areas and proposes further studies.
		Planned Development Standards	Section 10-409	Landscaping for non-residential developments, permits, procedure, sight distance and visibility. Buffers and screening, signage
		Zoning Ordinance	Sec 10-400	Outlines regulations for Planned Developments including landscaping and buffering requirements
			Sec 10-49	Determines landscape and screening requirements
Freestone	Fairfield	Zoning Ordinance	Sec 3.11	Outlines sign regulations
Harris	Jersey Village	Comprehensive Plan 2015 (Draft)	Chapter 7	Defines elements of community character - wayfinding/signage, corridor and community landscaping
	Houston	Complete Streets Design Standards (Draft)	Pages 5-16,19-24	Recommendations for street design, signage, transit considerations, ADA crossings, planning process, and public engagement.

Table 3.10-1: Local Plans and Regulations				
County	**City/Town**	**Plan/Regulation**	**Policy**	**Guidance**
		Code of Ordinances	Chapter 26 Sec 26-471	Defines parking and loading regulations. Outlines site plan/permit requirements, and deed restriction compliance.
			Chapter 30	Determines noise and sound level regulations, and addresses how sound buffers could impact visual quality
			Chapter 33, Article V	Determines trees, shrubs and screening regulations, and also addresses regulations regarding landscaping plans for new building sites.
			Sec 33-101	Provides requirements for trees, shrubs and screening fences
			Sec 38	Railroads, Lighting requirements for crossing, noise and whistleblowing requirements; sound buffers could impact visual quality

Source: AECOM, 2016; City of Dallas, 2013; City of Dallas, 2006; City of Dallas, 2016; City of Hutchins, 2016; City of Lancaster, 2002; City of Lancaster, 2015; City of Wilmer, 2009; City of Wilmer, 2016; City of Wilmer 2016; City of Ferris, 2016; City of Ennis, 2016; City of Ennis, 2016; City of Ennis, 2016; City of Fairfield, 2012; City of Jersey Village, 2015; City of Houston, 2015; City of Houston, 2016; City of Houston, 2016.

3.10.3 Methodology

3.10.3.1 Study Area and Key Terms

The Build Alternatives are generally located on flat terrain and primarily pass through rural agricultural and pasture lands, with the exception of some forested areas as described in **Section 3.6, Natural Ecological Systems and Protected Species**. However, viewshed distances along the Build Alternatives vary. The counties at the northern and southern ends of the Build Alternatives (Dallas and Harris counties) are urbanized with restricted views due to a high density of buildings and other tall structures. Due to the suburban nature of the counties adjacent to Dallas and Harris (Ellis and Waller), the viewshed can be a mix of restricted and unrestricted views. The six rural counties between Ellis and Waller are mostly rural and could have expansive viewsheds. To account for this variance, the Study Area for each Build Alternative was defined as the LOD with a quarter-mile buffer at the northern and southern ends (Dallas and Harris counties), and a half-mile buffer around the terminal station options. The Study Area was expanded to a half-mile buffer through Ellis to Waller counties, including the Brazos Valley Station option in Grimes County.

This section defines the key terms used throughout the impact analysis for aesthetics and scenic resources. U.S. DOT's *Guidelines for the Visual Impact Assessment of Highway Projects*[2] was be used to supplement FRA's procedures. These guidelines helped define the visual character or quality of a landscape unit and objectively evaluate whether the Build Alternatives would have a substantial adverse impact on a scenic vista or substantially degrade the existing visual character or quality of a landscape unit. The definitions are as follows:

[2] FHWA. *Guidelines for the Visual Impact Assessment of Highway Project,* June 2016. https://www.environment.fhwa.dot.gov/guidebook/documents/VIA_Guidelines_for_Highway_Projects.asp

- **Aesthetics**–perception of natural beauty in a landscape
- **Area of Visual Effect (AVE)**–the area in which views of the HSR system would be visible as influenced by the presence or absence of intervening topography, vegetation and structures
- **Key viewpoint (KVP)**–a location from which a viewer can see either iconic or representative landscapes
- **Landscape unit (LU)**–defined areas within the AVE that have similar visual features and homogeneous visual character. The LU is the spatial unit used for assessing visual impacts.
- **Viewer group**–groups of viewers as defined below:

    - **Neighbors**–viewers who occupy or would occupy land adjacent or visible to the HSR system. Neighbors are further defined by their land use. Viewer groups consisting of neighbors can be residential, retail, commercial, industrial, agricultural, recreational or civic in nature. The land use definition is used to distinguish among neighbors' use of property; for instance, an agricultural neighbor typically occupies the same view much longer than recreational neighbors who may only occupy the view for a short period of time.
    - **Travelers**–viewers who would see the proposed transportation HSR system while commuting, hauling, touring or exercising travelers. Travel mode is classified as motorists, bicyclists or pedestrians.

- **Viewer sensitivity**–the degree to which viewers are sensitive to changes in the visual character of visual resources. Viewer sensitivity is assessed on a scale of low, moderate and high. Viewer sensitivity is the consequence of two factors, viewer exposure and viewer awareness. Sensitivity to views varies among viewer types, which would, therefore, affect the significance of the impact. A definition for viewer exposure and viewer awareness follows:

    - **Viewer exposure**–a measure of the proximity, extent and duration of a viewer to a visual resource. Proximity is the distance between the viewer and the visual resource being viewed. Extent is the number of people viewing the visual resource. Duration is the length of time the visual resource is viewed.
    - **Viewer awareness**–a measure of attention (level of observation based on routine and familiarity), focus (level of concentration) and protection (legal and social constraints on the use of visual resources).

- **Viewshed**–all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail). There are three types of viewsheds: static, dynamic and restricted:

    - **Static viewsheds** are what neighbors adjacent to the Build Alternative would see from a stationary location
    - **Dynamic viewsheds** are what travelers see as they move through the landscape
    - **Restricted viewsheds** are where views are limited by land cover or atmospheric conditions, such as cloud cover, fog or precipitation

- **Visual character**–the description of the visible attributes of a scene or object. This description is an impartial narrative of the components of the landscape and defined by the relationship between the natural environment and built environment.

- **Visual quality**–viewers' perception of visual resources that compose the visual character of a particular scene. Neighbors and travelers may evaluate the visual quality of specific visual resources differently based on the factors of natural harmony, cultural order, vividness, and HSR system coherence, as defined below.
    - **Natural harmony**–what a viewer perceives about the natural environment, labelling the environment as being either harmonious or inharmonious
    - **Cultural order**–how viewers perceive the organization of the cultural visual environment, or the man-made built environment, including buildings, transportation facilities, structures or historical artifacts, labeling the built environment as orderly or disorderly.
    - **Vividness**–the degree of memorable, dramatic or distinctive components of the landscape. Vividness is an overall aggregation of topography, vegetation, water features and cultural elements created by people.
    - **Project coherence**–the viewer's perception about how constructed facilities associated with the Build Alternatives would fit into the existing environment.

- **Visual Resources**–components of the natural, cultural or project environments that are capable of being seen. Brief definitions for the three subcomponents of visual resources are as follows:

    - **Natural visual resources**–the land, water, vegetation and animals which compose the natural environment. Although natural visual resources may have been altered or imported by people, resources which are primarily geological or biological in origin are considered natural. A grassy pasture with rolling terrain, scattered trees and grazing cows, for example, is a natural visual resource, even though it is a landscape created by people.
    - **Cultural visual resources**–the man-made built environment, which is composed of the buildings, structures and artifacts of a particular area
    - **Project visual resources**–the geometrics, structures and fixtures which compose the HSR system's environment. This includes any constructed facility, feature or fixture along the HSR system, as well as a constructed facility, feature or fixture at station areas.

3.10.4.2 Data Collection

Data collection for aesthetic and scenic resources included desktop research, coordination with other resource areas and review of the Draft Conceptual Engineering Report and Plans[3] to identify the location of the Build Alternatives in relation to key viewpoints. Data collection activities included the following:

- Desktop research identified Texas Scenic and Historic Byways, scenic vistas, historical sites and other specific views along the Build Alternatives. These views could include residential areas or farmsteads, areas of scenic beauty, parks and recreational areas, historically and/or culturally significant features, entry to urban areas, water bodies and public facilities.

[3] TCRR, "*Texas Central Partners Texas High Speed Rail Final Draft Conceptual Engineering Report-FDCERv7*," September 15, 2017.

- Documentation of potential aesthetic and scenic resources within the Study Area based on topographic maps and resource area reports (**Section 3.6, Natural Ecological Systems and Protected Species; Section 3.7, Waters of the U.S.; Section 3.11, Transportation; Section 3.13, Land Use; Section 3. 14, Socioeconomics and Community Facilities; Section 3.17, Recreational Facilities; Section 3.19, Cultural Resources; and Section 3.20, Soils and Geology**).
- A visual resource inventory was created of the existing visual quality of the Study Area using the researched data discussed above

3.10.4.3 Landscape Unit, Visual Resource and Visual Quality Assessment

The landscape unit and visual resource assessment evaluated the existing visual conditions within the Study Area and the methodology included the following:

Define the project setting and viewshed—due to the length of the Build Alternatives, the Study Area was broken into 13 landscape units with similar visual characteristics. Each landscape unit is made up of visual resources, such as a site, object or landscape feature that contributes to the composition of the landscape unit. Given the size and diversity of the region, there are some units with predominant characteristics that may contain small areas that differ from the overall character of the landscape unit. For example, the predominant characteristics of a unit may be that it is flat and rural with limited trees, but it may contain small areas that are dense forest or pond.

Determine who has views of the project—the primary viewers of each landscape unit were identified through field observations and aerial mapping. The sensitivity of the primary viewers or viewer groups within each landscape unit was determined by viewer type (neighbor or traveler) and their frequency and duration of the potential views towards the Build Alternatives.

Identify KVPs and views for visual assessment—to provide examples of existing views of the landscape, at least one KVP was designated within each landscape unit. Furthermore, a KVP was selected as either a typical view or a specific view. Typical KVPs offer a common view point of the Build Alternatives, such as from a highway, utility corridor, residential community or agricultural area. Specific KVPs include views from parks, trails, historic districts and designated viewpoints. Photographs from each KVP were taken to represent the visual characteristics of the landscape unit.

Analyze changes in existing visual resources and viewer response—using the information gathered from determining landscape units, KVPs and viewer sensitivity, the visual quality of the existing viewshed was then assessed. Using professional judgement, each factor (natural harmony, cultural order and vividness) and the overall visual quality were assigned one of five categories: low, moderately low, moderate, moderately high and high.

- **Low** refers to areas lacking valued or having degraded visual resources with no aesthetically pleasing composition. An example would be a disjointed, abandoned industrial area adjacent to a heavily trafficked highway.
- **Moderately low** refers to areas containing some visual resources, but lacking a coherent and aesthetically pleasing composition. An example would be poorly maintained commercial area adjacent to a new community center.
- **Moderate** refers to areas primarily of visual resources combined in an aesthetically pleasing composition with low levels of disruptive visual detractors. An example would be a cohesive, well-maintained development. This could be urban, suburban or rural.

- **Moderately high** refers to areas of visual resources combined in an aesthetically pleasing composition, expressing a sense of place and lacking prominent disruptive visual detractors. An example would be a planned development that includes open space and trails, or well-maintained agricultural lands with open vistas.
- **High** refers to areas comprising visual resources free of disruptive visual detractors and with a strong sense of place. An example would be federally protected, undeveloped land with unique, scenic vistas.

3.10.4.4 Visual Quality Impact Assessment

The second phase of the assessment evaluated the Build Alternatives' impacts on visual quality and included the following:

Depicted the visual appearance with the project through visual simulations—visual impacts result from the combination of viewer sensitivity and visual quality. Visual impacts were evaluated based on professional judgment and simulated views to predict viewer groups' perceptions of the change to the environment.

Assessed the project's visual impacts and determine impact significance—the extent of the impact is based on the following:

Compatibility of the impact—the perceived ability of the Build Alternatives to blend in with the existing visual and aesthetic environment.

Viewer Sensitivity of the impact—the degrees to which viewer groups are exposed to and are aware of the changes to the environment. Viewer sensitivity is rated on the following scale: low, moderate and high.

- **Low sensitivity** may exist when there are few viewers who experience a defined view, when potential views of the project are screened or filtered by intervening terrain, structures or landscaping, or where viewers are not particularly concerned about the quality of views due to their activity type, such as a commuter on the highway.
- **Moderate sensitivity** may occur where views of a project are distant enough that the project does not dominate the view or where viewer activity is not focused on visual quality and expectations are moderate, such as office workers, field laborers or an organized sporting event.
- **High sensitivity** occurs where a project is highly prominent, open to view, and seen by relatively high numbers of viewers and where viewer concern and expectations of visual quality is also high, as in a rural park where scenery is a primary focus, or in a residential neighborhood.

Degree of impact—the result of combining the compatibility of the impact with the viewer sensitivity of the impact. The degree of impact is beneficial, neutral or adverse. Beneficial impacts improve the experience for the viewer and may enhance visual resources or create improved views of those resources. Impacts which adversely impact visual quality degrade the quality of the visual resources, obstruct sensitive views or change desired views.

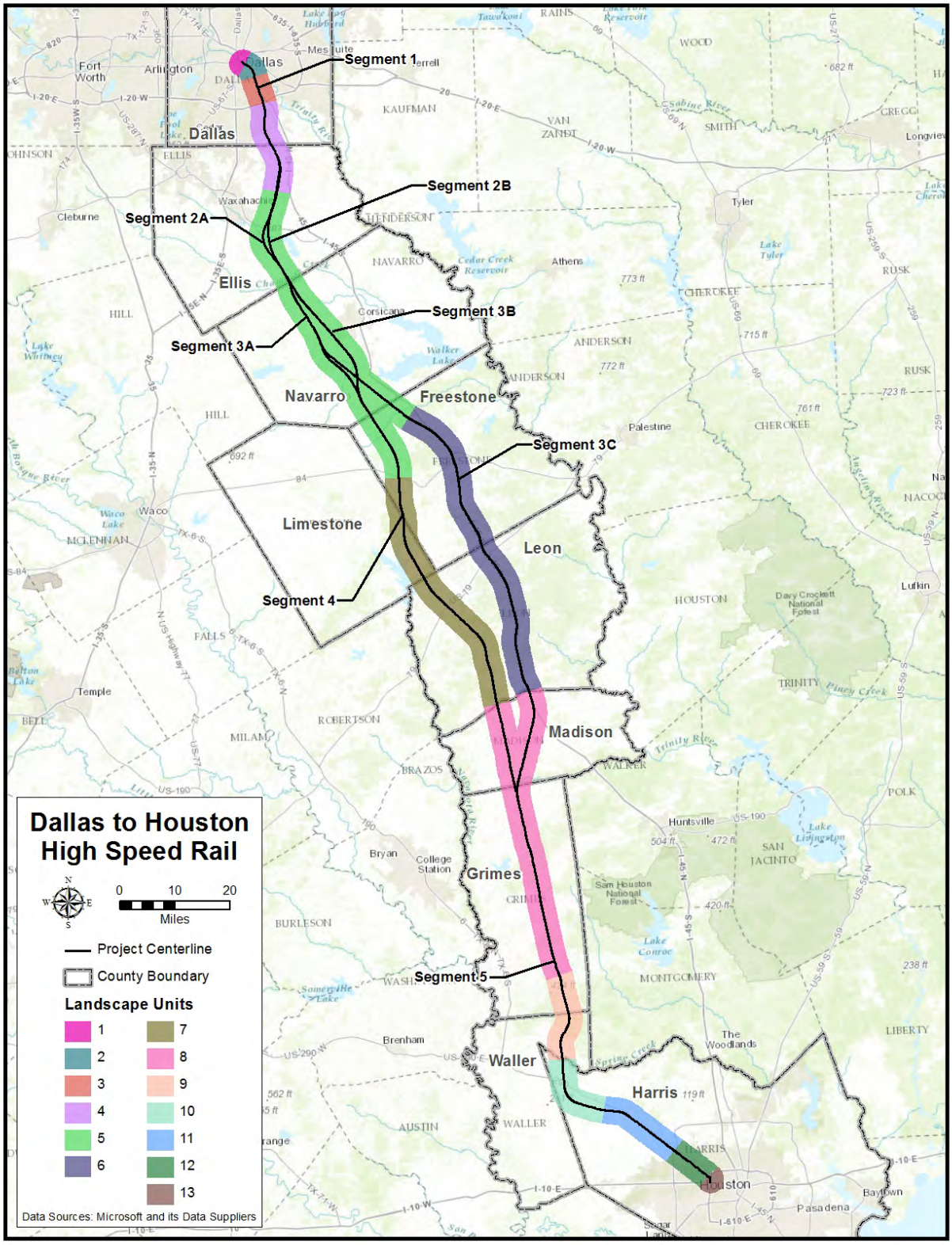
Neutral impacts occur when the existing visual quality is not perceived to be enhanced or degraded. These impacts could result in a change to the existing visual quality; however, viewer sensitivities are low to moderate, and the Project would be compatible with the existing environment. Therefore, neutral impacts occur in an environment where sensitivities are below moderate, which result in most viewers not perceiving visual enhancements or degradation.

3.10.4 Affected Environment

3.10.4.1 Landscape Unit Description

This section presents a description of the various landscape units in the Study Area, including a summary of existing land uses, transportation network, community character, key cultural resources and natural environment. Thirteen landscape units were identified within the Study Area (**Figure 3.10-1**). This section also introduces the location of each KVP and provides an assessment of the existing visual quality of the landscape units and KVPs.

Figure 3.10-1: Landscape Units



Source: AECOM, 2016

3.10.5.1.1 Landscape Unit #1 Southside/Riverfront District (Dallas County)

Segment 1

Landscape Unit #1 comprises existing commercial and residential land use south of downtown Dallas in the Southside/Riverfront District. Five downtown districts (Reunion/Union Station, Dallas Civic Center, South Side, Cedars and Riverfront) intersect this landscape unit.[4] The dense landscape of downtown Dallas contains many tall structures. The people who live and work in downtown Dallas comprise the largest concentration of viewer groups in the Study Area, which means that more people would see the station and HSR corridor from this vantage point than anywhere else along the Build Alternatives (**KVP #1**).

The South Side and Cedars districts have an urban character with a mix of older buildings, vacant lots and new construction (**KVP #2**). These districts are undergoing a development resurgence, so viewers have become accustomed to this dynamic environment. The area also contains major transportation infrastructure, with IH-30, UPRR and DART light-rail.

The Riverfront District is located within the south and west portion of the landscape unit. This area is mostly a natural, undeveloped environment which borders the Trinity River and Trinity River Greenbelt. It contains a few older, low density commercial and industrial buildings. There is a large vacant and undeveloped lot south of the UPRR line (**KVP #3**).

The three KVPs described provide a general representation of the views within Landscape Unit #1, but do not represent the entire landscape unit, as there are a diverse and large number of viewers within the landscape unit. The majority of the viewer groups in this landscape unit have a viewer sensitivity that is low to moderate. **Table 3.10-2** lists the visual resource inventory for Landscape Unit #1, including any special designation or ownership information. The visual quality of this landscape unit is moderate, as described in **Table 3.10-3.** The KVPs are shown in **Figure 3.10-2**.

Table 3.10-2: Visual Resources – Landscape Unit #1

Segment	Resource Name	Resource Type	Special Designation	Within LOD
1	Downtown Dallas	Cultural	No	Yes
1	The Dallas Morning News	Cultural	NRHP Eligible	No
1	Dallas County Courthouse	Cultural	NRHP Listed	No
1	Union Station	Cultural	Historic Landmark	No
1	Kay Bailey Hutchinson Convention Center	Cultural	No	No
1	Sears Complex	Historic District	NRHP Eligible	No
1	Reunion Park and Reunion Tower	Recreation/Cultural	No	Yes
1	Trinity River	Perennial River	No	Yes
1	Trinity River Greenbelt	Recreation/ Natural Resource	No, some preserve areas	Yes
1	Houston Street Viaduct	Bridge	NRHP Listed	No

[4] Dallas City Council, *Downtown Dallas 360*: *A Pathway to Excellence.* Accessed June 2016. http://www.cocden.com/Dallas360_FinalAdopted.pdf

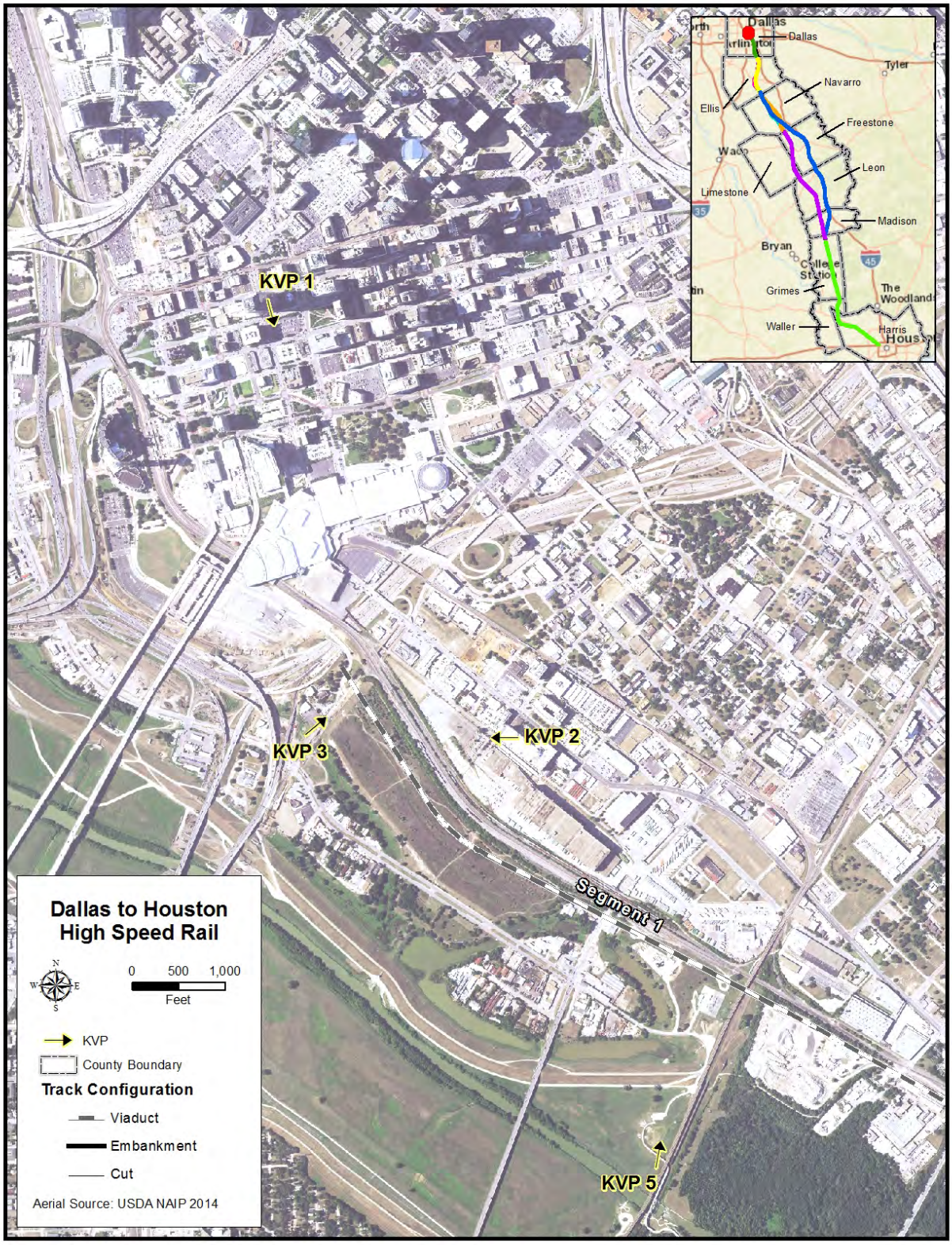
Table 3.10-2: Visual Resources – Landscape Unit #1				
Segment	**Resource Name**	**Resource Type**	**Special Designation**	**Within LOD**
1	Cadiz Street Viaduct	Bridge	NRHP Eligible	No
1	Cadiz Street Overpasses and Underpass	Bridges	NRHP Eligible	Yes
1	Cadiz Pump Station	Building	NRHP Eligible	No
1	Dallas Coffin Company	Building	NRHP Listed	No

Source: AECOM, 2016
Notes: NRHP - National Register of Historic Places

Table 3.10-3: Visual Quality Assessment – Landscape Unit #1					
Landscape Unit	**KVP**	**Vividness**	**Natural Harmony**	**Cultural Order**	**Visual Quality**
1	1	Moderately high	Moderate	Moderate	Moderate
1	2	Moderately low	Moderate	Moderate	Moderate
1	3	Moderately low	Moderate	Moderate	Moderate

Source: AECOM, 2016

Figure 3.10-2: Visual Quality – KVP #1, #2 and #3



Source: AECOM, 2016

3.10.5.1.2 Landscape Unit #2 Trinity River Crossing (Dallas County)

Segment 1

This landscape unit is primarily composed of heavy industrial, commercial and park land uses, located in the areas on both banks of the Trinity River. The visual resources in this landscape unit are shown in **Table 3.10-4**. In the northern portion of the landscape unit, there are a small number of single-family residences near Martin Luther King, Jr. Boulevard and South Lamar Street, which include Forest Park, a neighborhood park (**KVP #4**). The views of these residents include industrial and commercial structures with low cultural order, resulting in a moderately low visual quality.

At the river, there are two vehicular bridge crossings, two freight bridge crossings and a single crossing reserved for cyclists and pedestrians. From the Santa Fe Trestle Trail (**KVP #5**),recreational viewers currently see large, transportation structures mixed with the Downtown Dallas skyline, resulting in a moderate visual quality. Viewer sensitivity at KVP #4 and KVP #5 ranges from low to moderate, due to the existing commercial and industrial environment, as well as the existing transportation infrastructure within the recreational areas.

In the middle of this landscape unit, the viewshed includes portions of IH-45 on structure. Viewer groups would predominantly be composed of travelers along IH-45 and have a low viewer sensitivity. Viewer groups from IH-45 have an elevated view of the Trinity River, Trinity Forest and the municipal water treatment plant (**KVP #6**). The visual quality is moderate for this viewer group at this KVP.

These three KVPs describe the majority of the views in this landscape unit. Although the natural order of the river and forest provides a scenic view, the large municipal utility plant and other heavy industrial land uses degrades the visual quality of this landscape unit. Visual quality of this landscape unit is moderately low to moderate, as described in **Table 3.10-5.** The KVPs are shown in **Figure 3.10-3**.

Table 3.10-4: Visual Resources – Landscape Unit #2

Segment	Resource Name	Resource Type	Special Designation	Within LOD
1	Trinity River	Perennial River	No	Yes
1	Trinity River Forest	Recreation/Natural Resource	No, some preserve areas	Yes
1	Santa Fe Trestle Trail	Recreation	No	No
1	Forest Park	Recreation	No	No

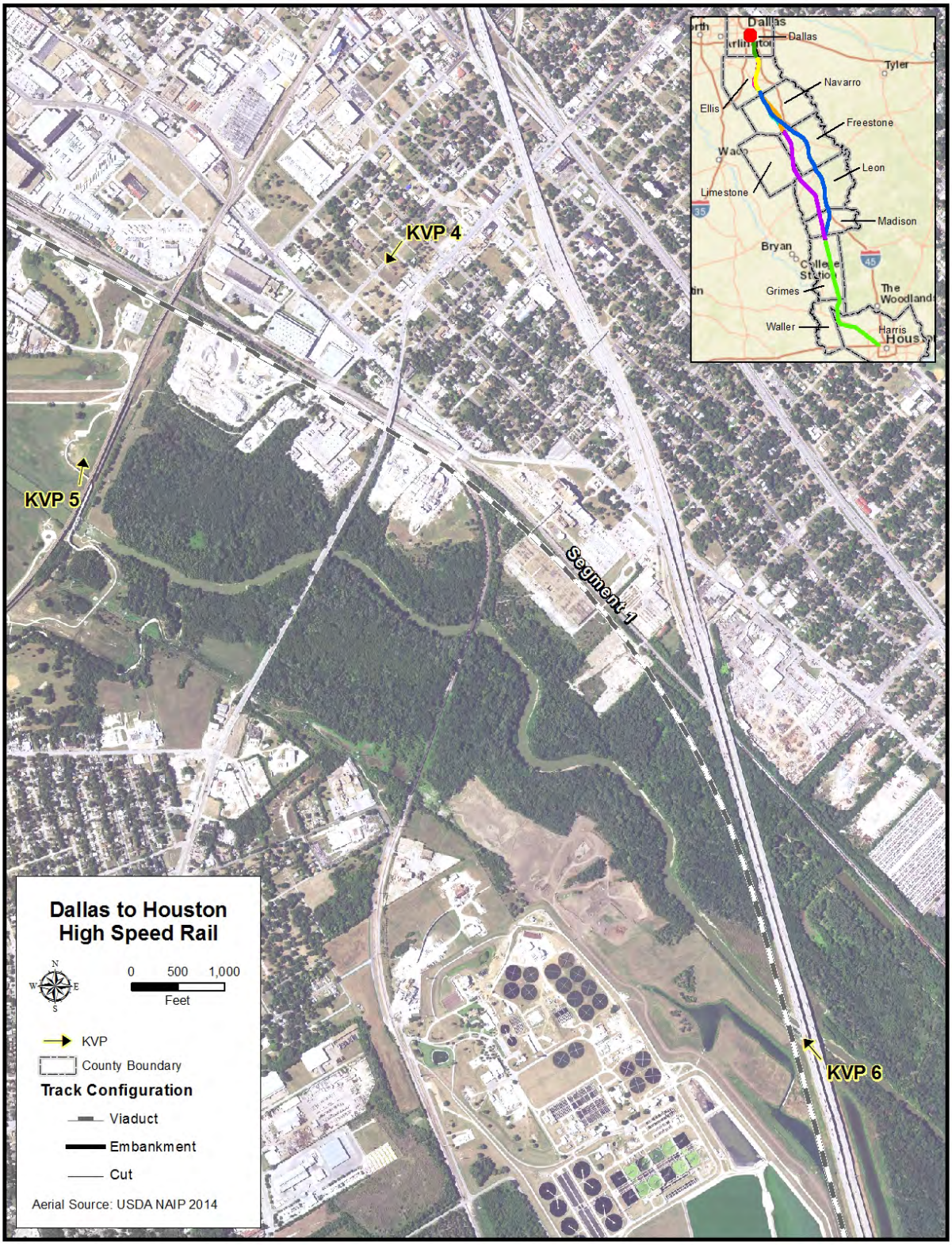
Source: AECOM, 2016

Table 3.10-5: Visual Quality Assessment – Landscape Unit #2

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
2	4	Low	Moderate	Moderately low	Moderately low
2	5	Moderate	Moderate	Moderate	Moderate
2	6	Moderately high	Moderately low	Moderately low	Moderate

Source: AECOM, 2016

Figure 3.10-3: Visual Quality – KVP #4, #5 and #6



Source: AECOM, 2016

3.10.5.1.3 Landscape Unit #3 South Dallas Residential (Dallas County)

Segment 1

This landscape unit is primarily composed of residential with some commercial and industrial areas. There is also a forested area (Five Mile Creek) which divides two urban residential neighborhoods. The area is set in an established, low-to-medium density, urban neighborhood. There are a variety of parks which support the neighborhood, two of which would have views of the Build Alternatives, Honey Springs (**KVP#7**) and Fruitdale Park (**KVP#8**). Additional visual resources are shown in **Table 3.10-6.** Structures are primarily single-story houses with some two-story multifamily buildings. Commercial and industrial buildings are scattered throughout the area. The neighborhood has several mature trees which disrupt residents' view towards the existing UPRR line and the overhead utility lines.

The transportation network is composed of a variety of residential streets, arterials and collectors distributing neighborhood traffic. IH-45 is the predominate visual element within this landscape unit (**KVP #9**). In addition, freight trains frequently travel through the area on the existing UPRR line.

These three KVPs describe typical and specific views in this landscape unit. The visual quality of this landscape unit is moderate, as shown in **Table 3.10-7** and **Figure 3.10-4**. Viewer groups in this landscape unit would be comprised of neighbors (residents and park users), as well as travelers. Due to the existing transportation network in this landscape unit, which includes operational freight traffic and interstate traffic, the viewer sensitivity of the residents would be moderate.

Table 3.10-6: Visual Resources – Landscape Unit #3

Segment	Resource Name	Resource Type	Special Designation	Within LOD
1	Honey Springs (Bulova Homecoming Cemetery)	Cemetery/Special Use Park	No	Yes
1	Fruitdale Park/Recreation Center	Recreation	No	No
1	J.J. Lemon Park	Recreation	No	No
1	Turnkey Community Center	Recreation	No	No
1	Paul Quinn College	Community Facility	No	No

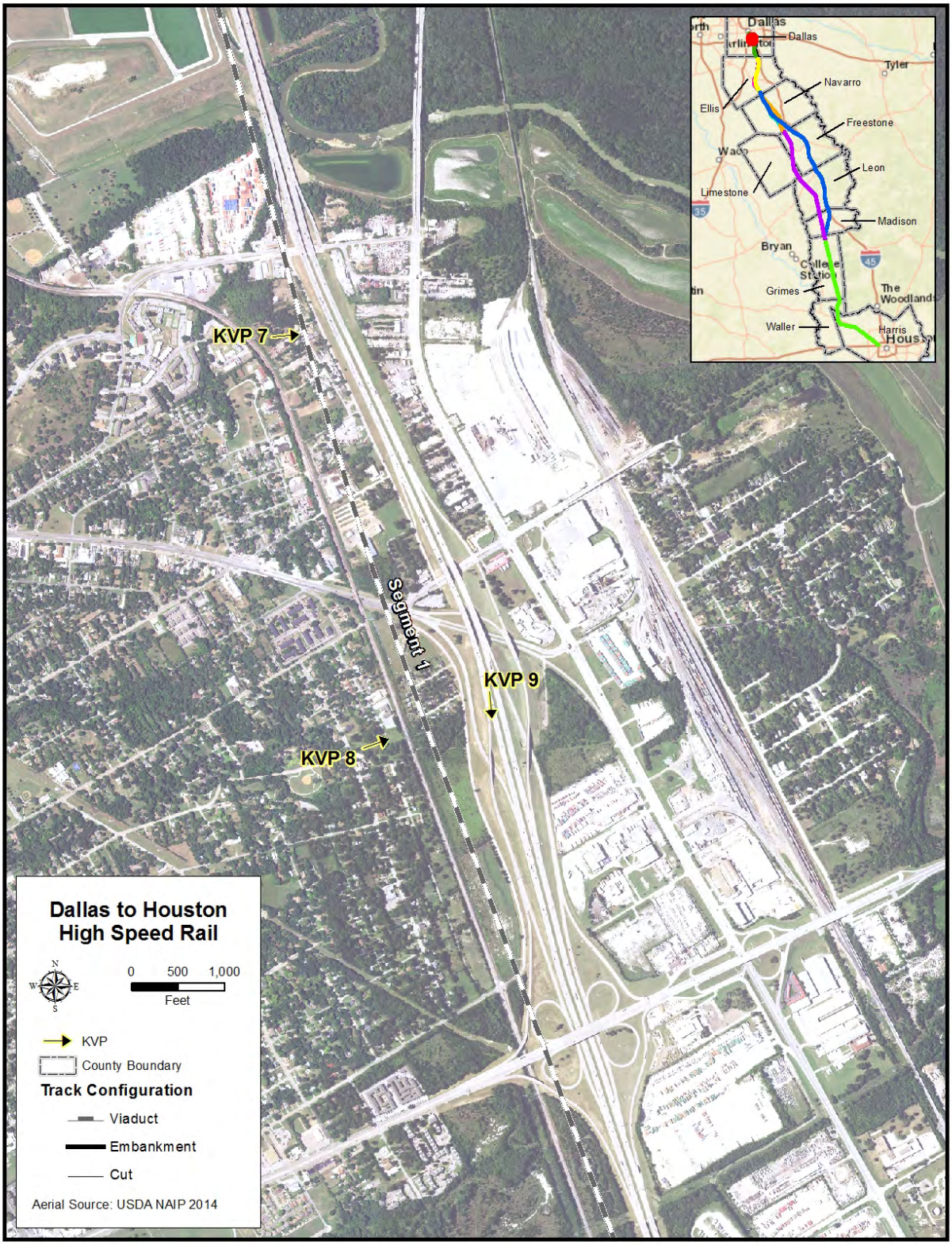
Source: AECOM, 2016

Table 3.10-7: Visual Quality Assessment – Landscape Unit #3

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
3	7	Moderate	Moderate	Moderate	Moderate
3	8	Moderately low	Moderate	Moderate	Moderate
3	9	Moderately low	Moderate	Moderate	Moderate

Source: AECOM, 2016

Figure 3.10-4: Visual Quality – KVP #7, #8 and #9



Source: AECOM, 2016

3.10.5.1.4 Landscape Unit #4 Suburban to Rural Transition, IH 20 to Palmer (Dallas and Ellis Counties)

Segments 1, 2A and 2B

This landscape unit is primarily composed of agriculture, commercial and residential land uses. The community character of the area transitions from suburban to rural through the landscape unit.

The only key visual resource in this landscape unit is the Wilmer-Hutchins High School campus, located southwest of the IH-45 and IH-20 interchange (**KVP #10**). Although two large interstates exist in the area, the view of them is disrupted by natural landscape resources. Viewers are composed of students and faculty, as well as staff employees who help operate the building and campus. Viewer sensitivity is moderate at this KVP, due to the type and diversity of viewer groups. The visual quality is also moderate at this KVP.

A typical view in this landscape unit is composed of large lots with low density residential, which has mostly been cleared of trees as seen on Almand Road in the Town of Palmer (**KVP #11** and **Figure 3.10-6**). Viewers are primarily residents and workers in low density areas. There are no memorable scenic views; however, there is a distinct order to the natural and cultural composition of the landscape because the area is primarily used for agriculture, resulting in a moderate viewer sensitivity and visual quality.

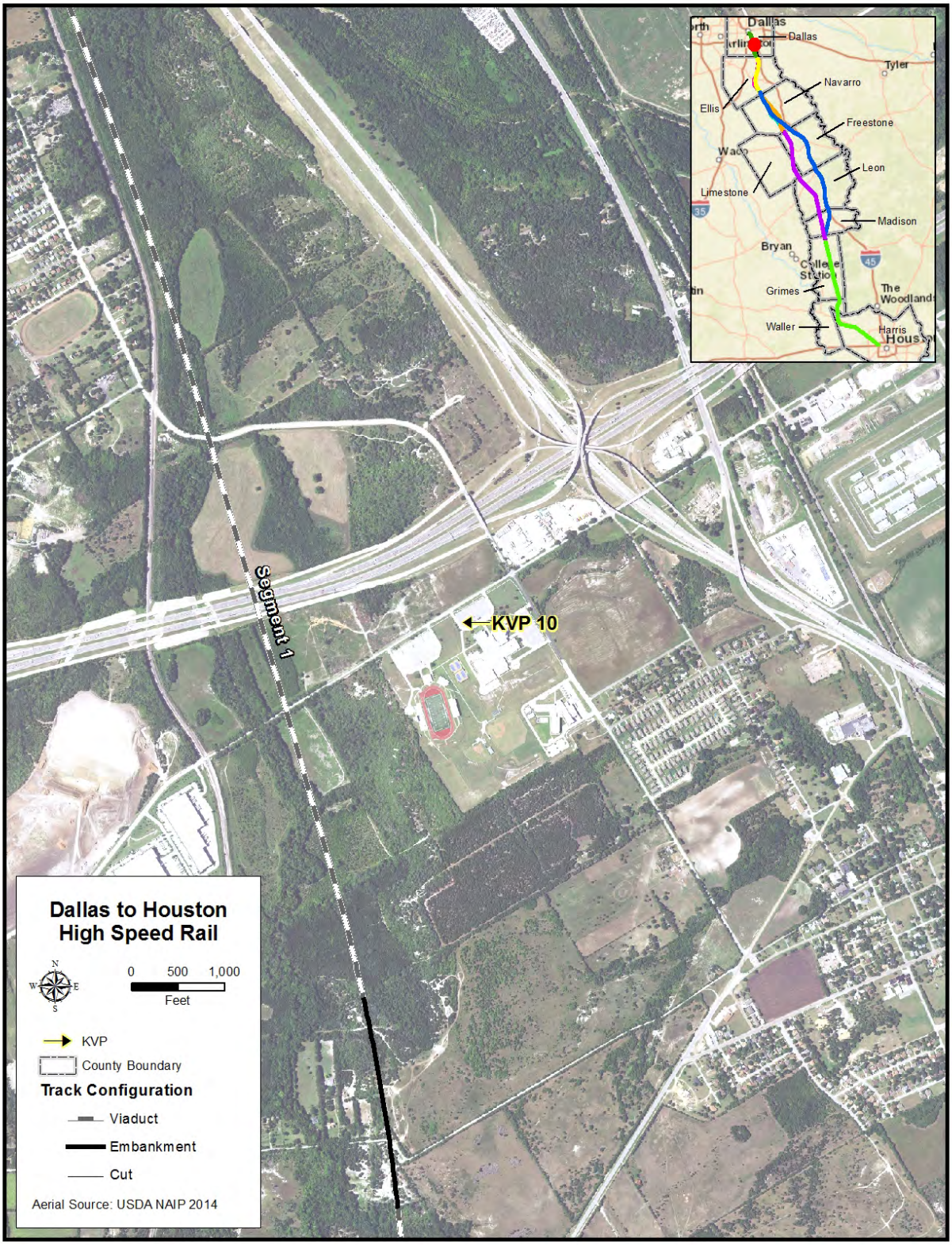
The visual quality for the communities in the landscape unit is moderate, as shown in **Table 3.10-8** and **Figure 3.10-5**. The natural environment is mostly prairie with few trees, so views extend much farther than the previous urban landscape units. The few trees are usually located around creeks. The viewer group is comprised mostly of neighbors (residents and workers), but does have some travelers and specific viewers such as students and faculty at the Wilmer-Hutchins school campus. Therefore, the viewer sensitivity is moderate.

Table 3.10-8: Visual Quality Assessment – Landscape Unit #4

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
4	10	Moderate	Moderate	Moderate	Moderate
4	11	Low	Moderately high	Moderately high	Moderate

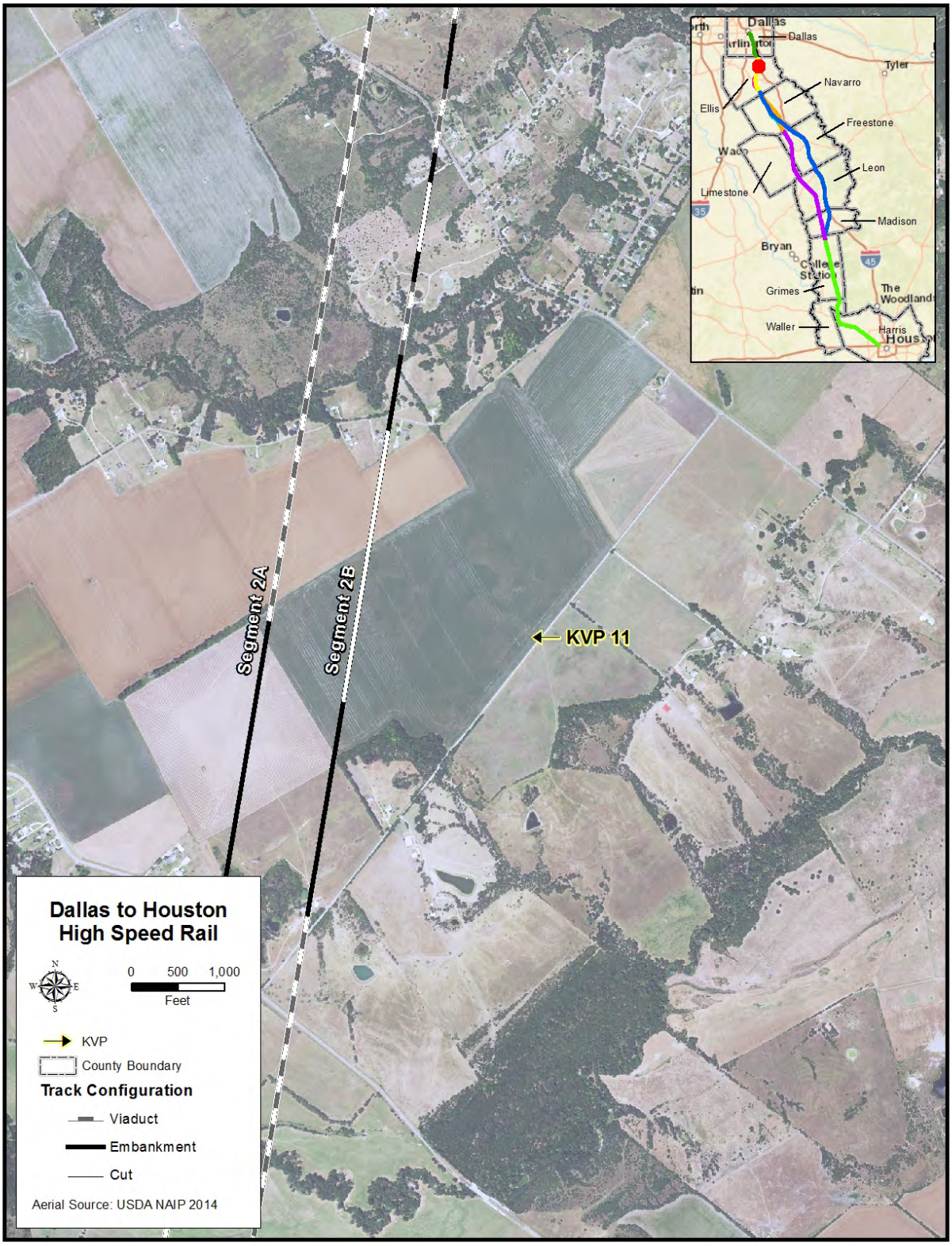
Source: AECOM, 2016

Figure 3.10-5: Visual Quality – KVP #10



Source: AECOM, 2016

Figure 3.10-6: Visual Quality – KVP #11



Source: AECOM, 2016

3.10.5.1.5 Landscape Unit #5 Northern Rural, Palmer to Fairfield/Teague (Ellis, Navarro and Freestone Counties)

Landscape Unit #5 occurs within Segments 2A, 2B, 3A, 3B, and 3C.

Segments 2A and 2B

The community character of this landscape unit is rural. The natural environment is mostly prairie, with few trees that are usually located around creeks. Large agricultural parcels dominate the landscape, with small pockets of residential homes located on large parcels scattered around the community (**KVP #12** and **Figure 3.10-7**). A transmission line ROW is apparent for the majority of the viewshed. The viewshed for viewer groups ranges from small distances to distances over a mile depending on the tree coverage and the seasonal height of crops. The viewer group is predominately neighbors and the viewer sensitivity for this landscape unit is moderate.

There are slight differences in visual quality between the different segments in this landscape area. Segments 2A and 2B have generally the same viewshed as described in the previous paragraph with one exception, where Segment 2B enters Bardwell Lake property. The facility includes a large lake and five parks. The portion of Bardwell Lake that would be crossed by Segment 2B is a limited use area with several multi-purpose trails. The area is mostly forested, allows seasonal hunting and is sporadically maintained by volunteers, which has resulted in overgrown and unkempt trails.[5] Segment 2A passes west of Bardwell Lake and maintains a viewshed common to the landscape unit.

Segments 3A, 3B and 3C

The segments 3A, 3B and 3C begin just north of the Ellis/Navarro County Line. Segments 3A and 3C have a common viewshed with Segments 2A and 2B (**KVP #13** and **Figure 3.10-8**). Although the segments follow different paths south of SH 31, their viewsheds remain similar and continue to follow an existing transmission line ROW through Navarro County and into the northern part of Freestone County. Segment 3C continues to follow a transmission corridor as it travels towards IH-45 into Freestone County and eventually merges with IH-45 north of Fairfield where the landscape unit ends. The viewshed for Segment 3B is similar to Segments 3A and 3C, but the viewshed does not contain an existing transmission corridor (**KVP #14** and **Figure 3.10-9**). This segment joins Segment 3A near Currie, and follows an existing transmission corridor through the end of the landscape unit near Teague.

The three KVPs described represent common views for Landscape Unit #5. The viewer groups in this landscape unit are predominately residential and agricultural neighbors and these viewers would have moderate viewer sensitivity. Additional visual resources are shown in **Table 3.10-9.** The visual quality for this landscape unit is moderate, as shown in **Table 3.10-10**.

Table 3.10-9: Visual Resources – Landscape Unit #5

Segment	Resource Name	Resource Type	Special Designation	Within LOD

[5] USACE. *Bardwell Lake.* Accessed January 2016. http://www.swf-wc.usace.army.mil/bardwell/Recreation/Trails/Horse.asp

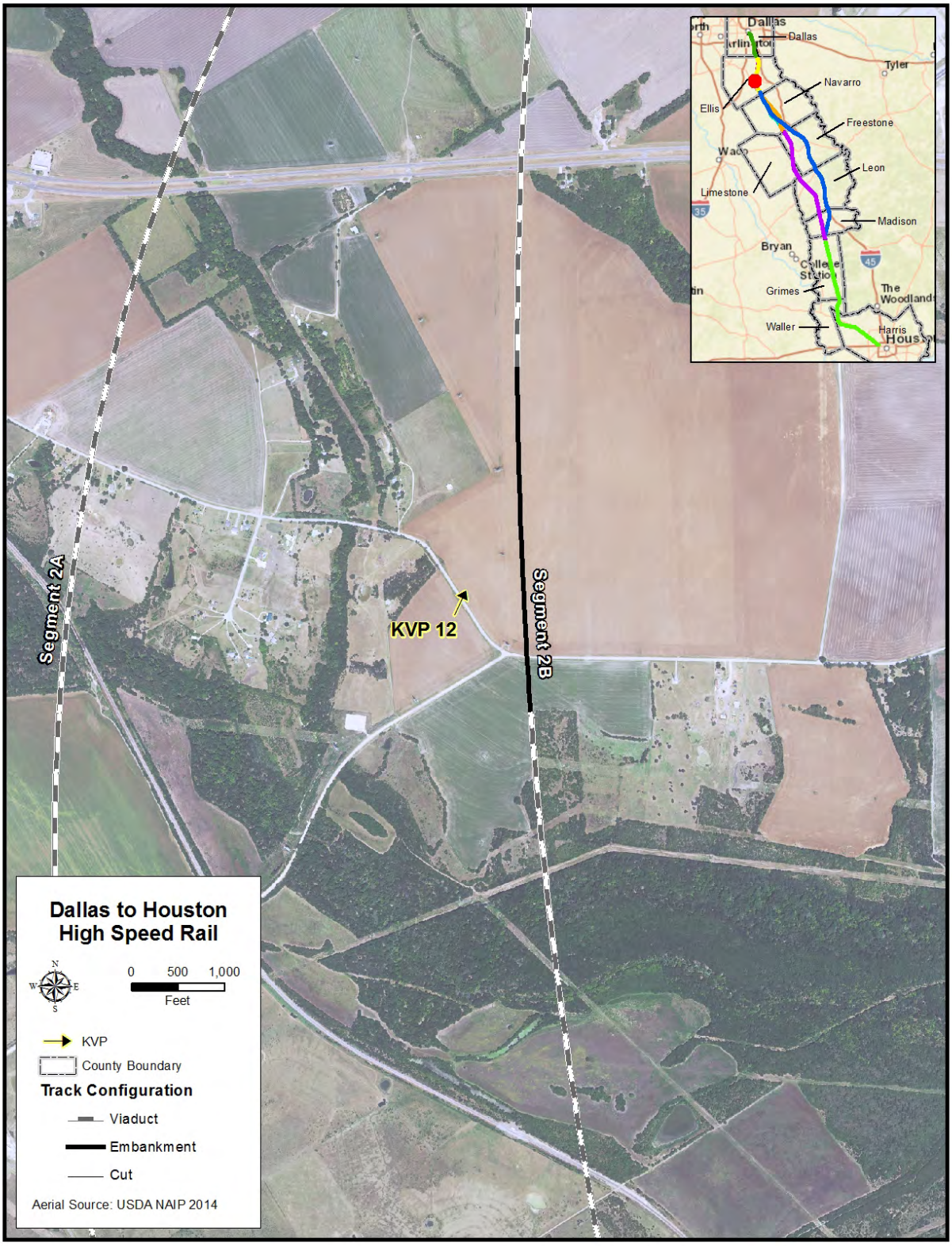
Table 3.10-9: Visual Resources – Landscape Unit #5				
Segment	**Resource Name**	**Resource Type**	**Special Designation**	**Within LOD**
2A	Boren	Cemetery	Historic Texas Cemetery	No
2B	Lake Bardwell Wildlife Management Area (WMA)	Recreation	USACE/WMA	Yes
3A	Ward	Cemetery	Historic Texas Cemetery	No
3A	Anderson Family	Cemetery	Historic Texas Cemetery	No
3B	Shelton Family	Cemetery	Historic Texas Cemetery	No
3B	41NV376	Archeological Site - Historic Love Bridge	Unknown NRHP Eligibility	Yes

Source: AECOM, 2016

Table 3.10-10: Visual Quality Assessment – Landscape Unit #5					
Landscape Unit	**KVP**	**Vividness**	**Natural Harmony**	**Cultural Order**	**Visual Quality**
5	12	Moderately low	Moderately high	Moderate	Moderate
5	13	Moderately low	Moderate	Moderate	Moderate
5	14	Moderate	Moderate	Moderate	Moderate

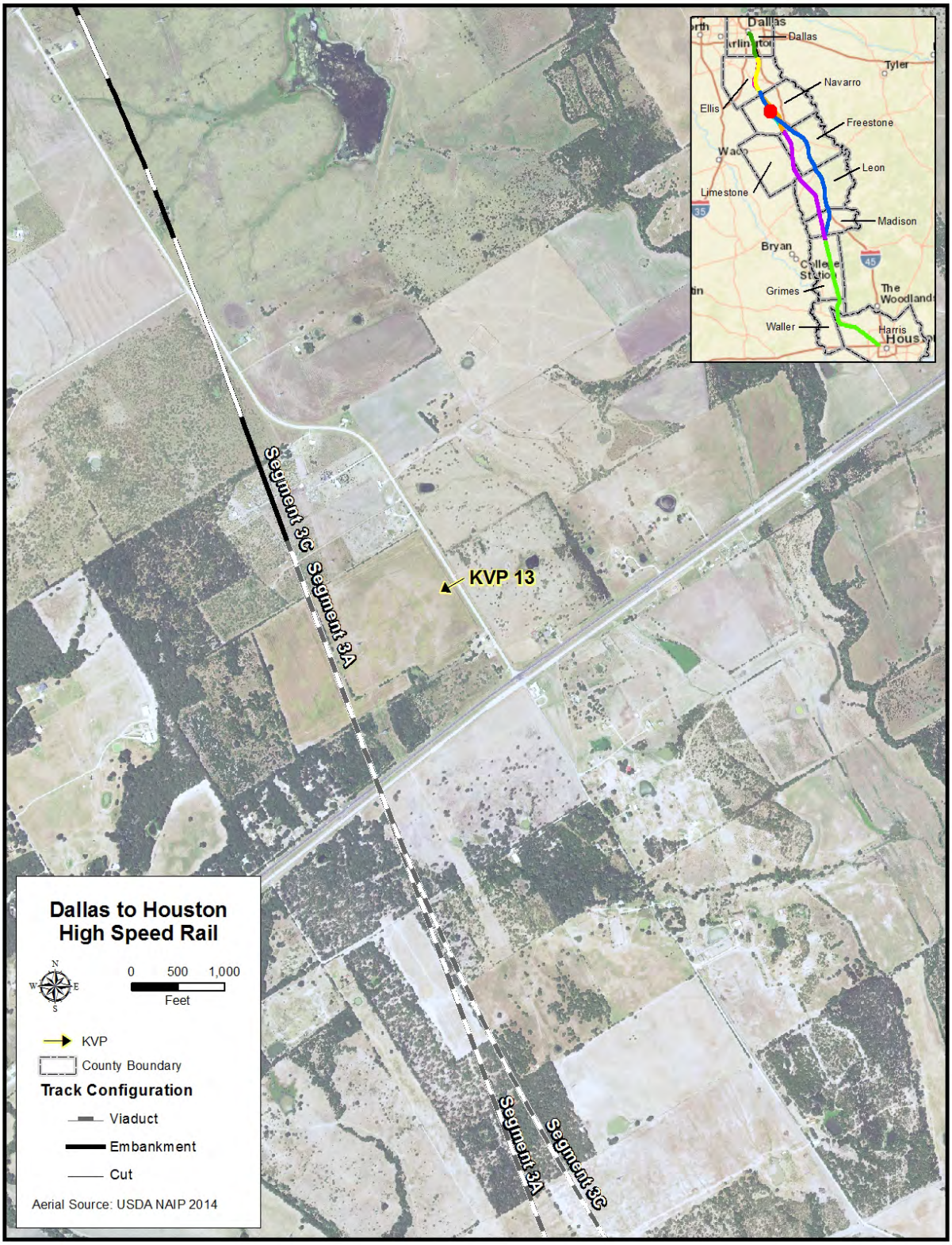
Source: AECOM, 2016

Figure 3.10-7: Visual Quality – KVP #12



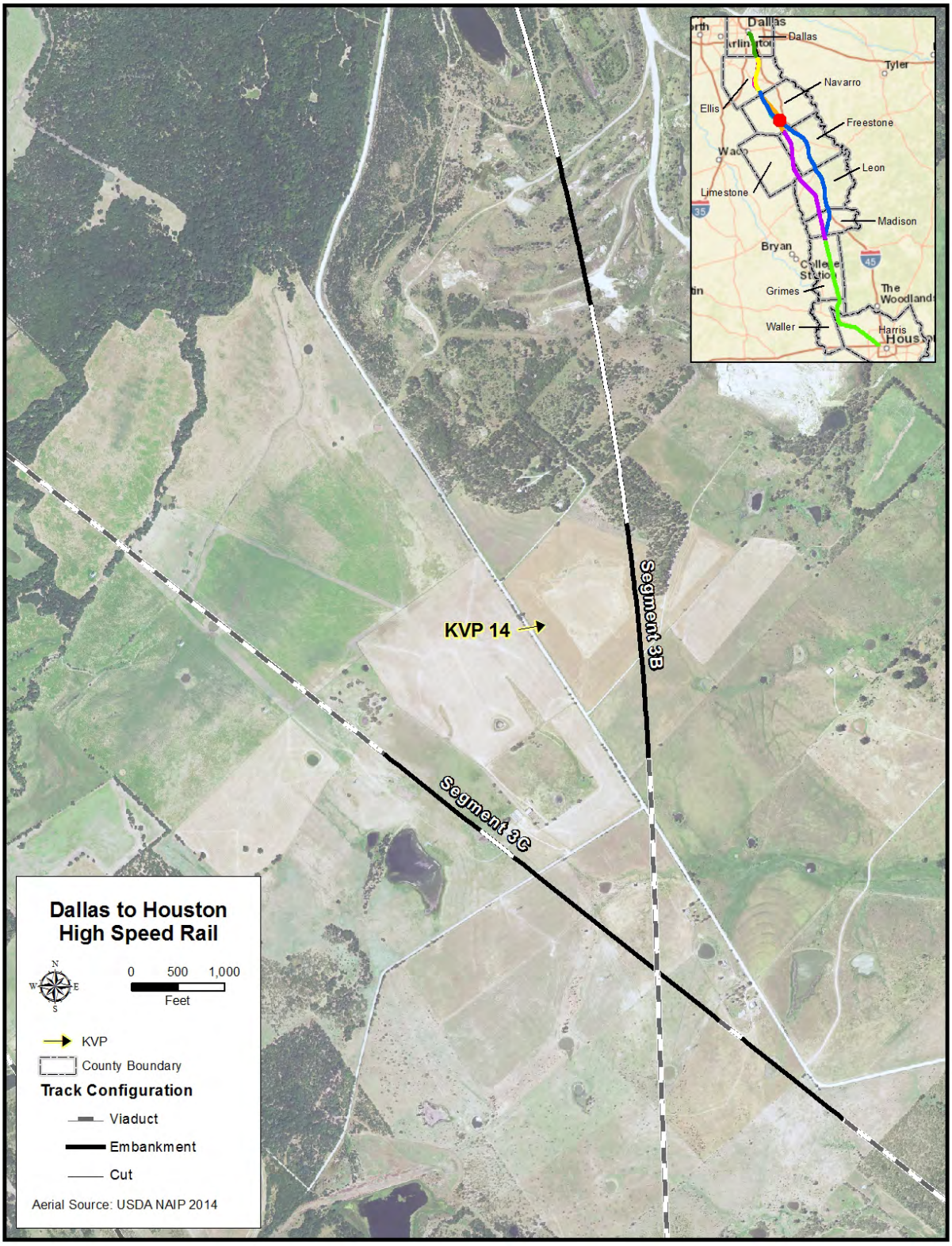
Source: AECOM, 2016

Figure 3.10-8: Visual Quality – KVP #13



Source: AECOM, 2016

Figure 3.10-9: Visual Quality – KVP #14



Source: AECOM, 2016

3.10.5.1.6 Landscape Unit #6 Central Eastern Rural, Fairfield to Old San Antonio Road (Freestone, Limestone and Leon Counties)

Segment 3C

This landscape unit's community character is mostly agriculture with some residential. There are two main differences which cause this landscape unit to be unique. First, the natural environment changes from primarily prairie to an ecosystem comprised of woods and forest.

The second difference is the viewshed is centered on the IH-45 corridor (**KVP #15** and **Figure 3.10-10**). This corridor includes frontage roads and a wide clearing of land to accommodate multiple lanes of bi-directional traffic on an interstate. The two directions of traffic are generally only divided by a wide grassy median. The majority of the IH-45 corridor has a smaller viewshed than the previous landscape units, because trees and vegetation restrict sight distances. There are some sections of the interstate where only the southbound traffic would be viewed because of a forested median.

Neighbor viewer groups from visual resources, such as the Buffalo Public Library or Shelley Pate Memorial Park (**KVP #16** and **Figure 3.10-11**), already view large transportation infrastructure with frequent travelers passing, but have a moderate sensitivity compared to travelers due to the duration of their view. Another visual resource, Fort Boggy State Park, is on both sides of IH-45 and is densely forested limiting views from within the park (**KVPs #17** and **Figure 3.10-12**). Additional visual resources are shown in **Table 3.10-11.**

The predominate viewer group for this landscape unit would be travelers on IH-45, while neighbors represent a smaller portion of viewers. They would not experience any memorable views due to the limited viewshed of IH-45 ROW, which is composed of cleared grassy areas, trees providing a visual boundary to property lines adjacent to the ROW and vehicular traffic on multiple travel lanes. Their viewer sensitivity would be low. The visual quality of this landscape unit is low to moderately low, as shown in **Table 3.10-12**.

Table 3.10-11: Visual Resources – Landscape Unit #6

Segment	Resource Name	Resource Type	Special Designation	Within LOD
3C	General Joseph Burton Johnson	Historic Marker	OTHM	No
3C	Johnson 2	Cemetery	HTC	No
3C	El Camino Real de los Tejas	Recreational Trail	NPS	Yes
3C	Shelley Pate Memorial Park	Recreation	USACE	No
3C	Buffalo Public Library	Community Facility	No	No
3C	Fort Boggy	Historic Marker	OTHM	No
3C	Fort Boggy State Park	Recreation/Natural	State Park	Yes

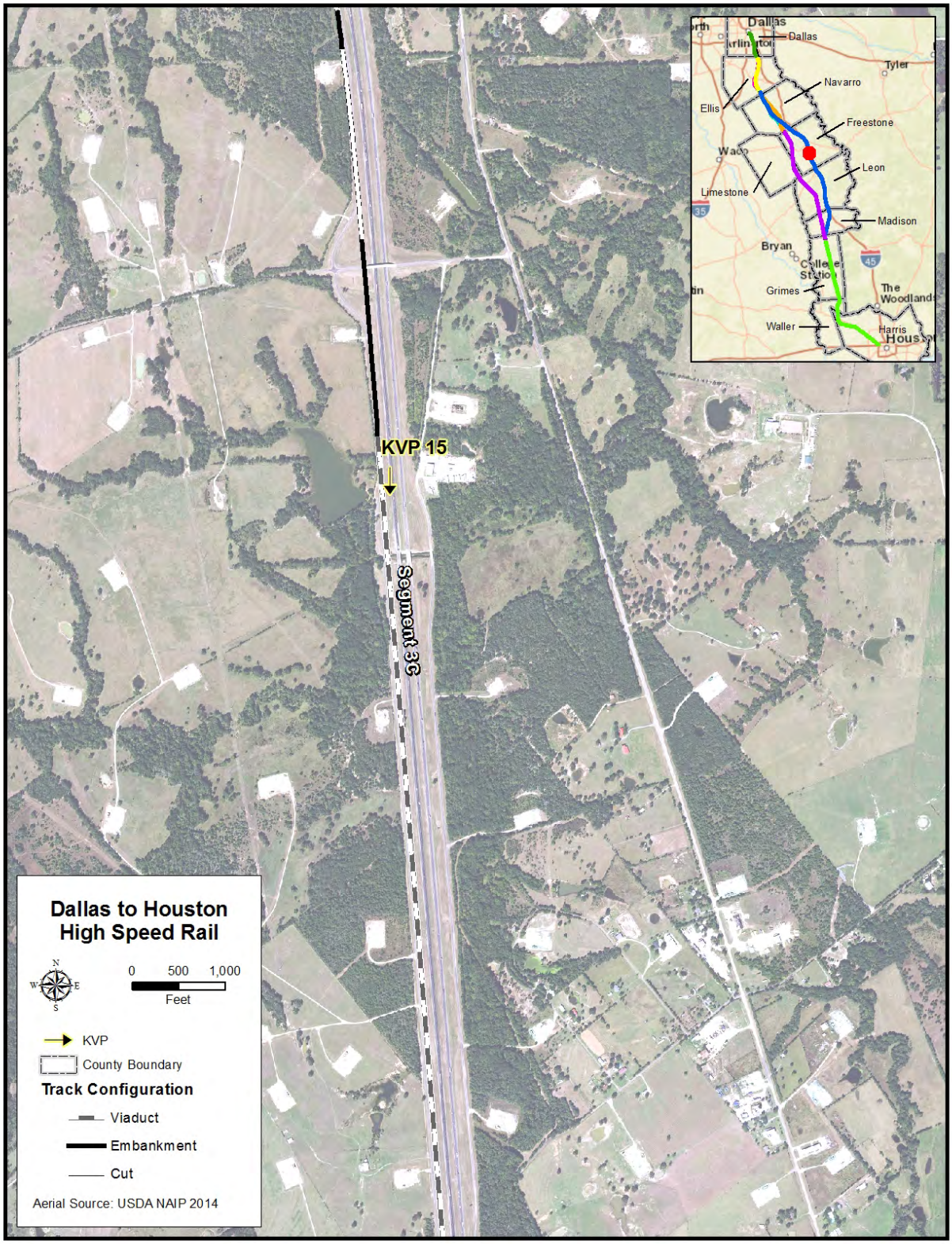
Source: AECOM, 2016

Table 3.10-12: Visual Quality Assessment – Landscape Unit #6

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
6	15	Moderately low	Moderate	Moderate	Moderate
6	16	Moderate	Moderate	Moderate	Moderate
6	17	Moderate	Moderately high	Moderate	Moderate

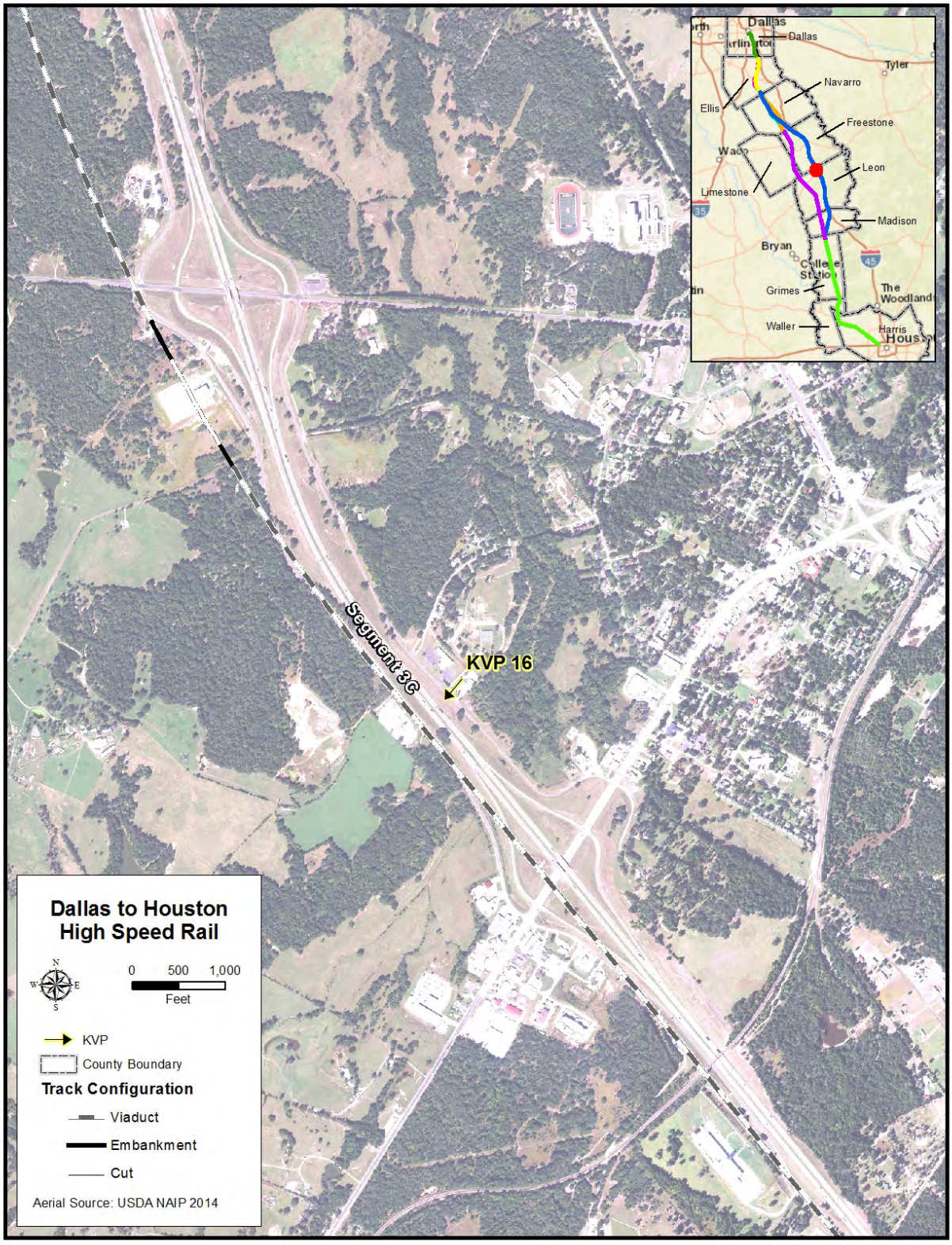
Source: AECOM, 2016

Figure 3.10-10: Visual Quality – KVP #15



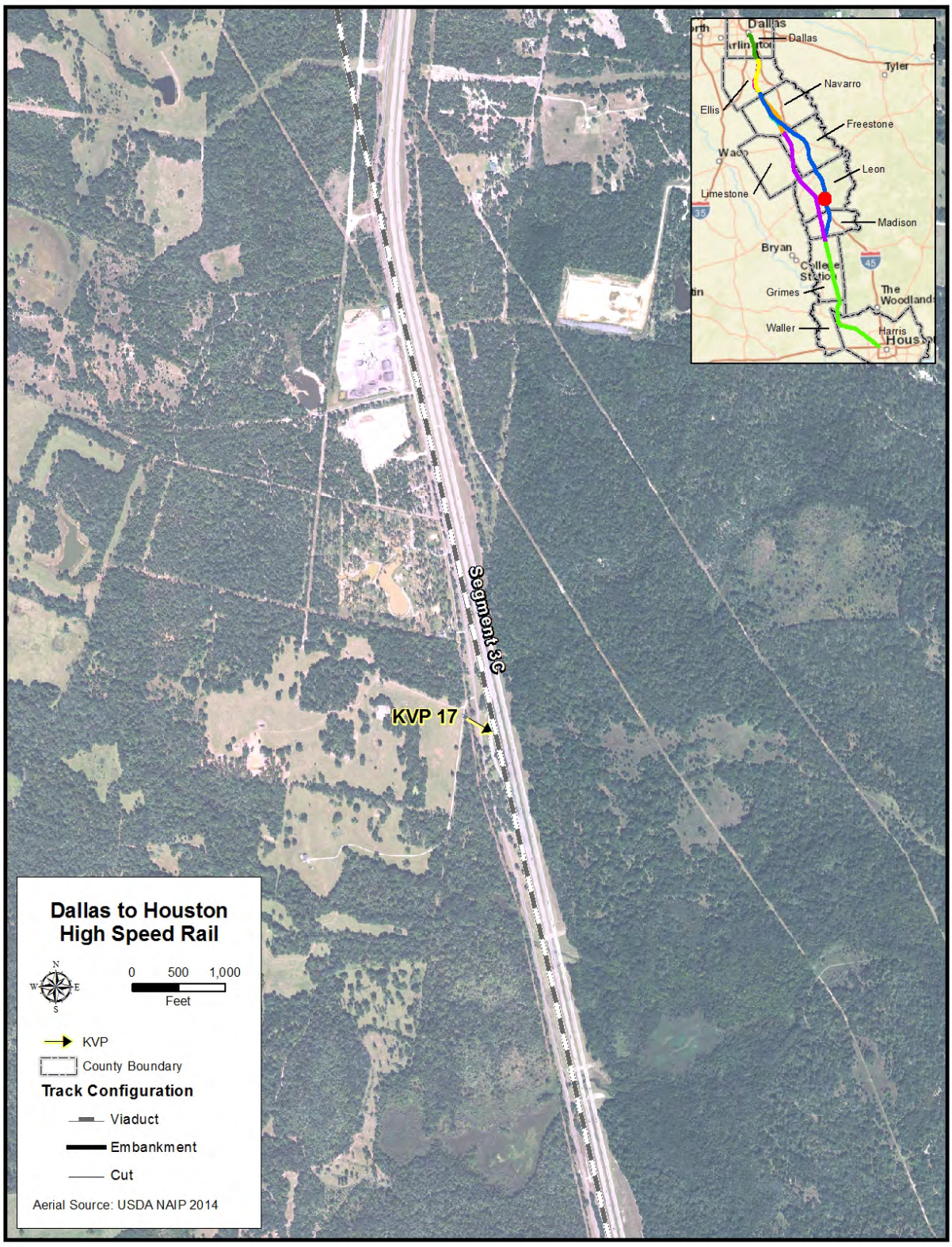
Source: AECOM, 2016

Figure 3.10-11: Visual Quality – KVP #16



Source: AECOM, 2016

Figure 3.10-12: Visual Quality – KVP #17



Source: AECOM, 2016

3.10.5.1.7 Landscape Unit #7 Central Western Rural, Teague to Old San Antonio Road (Freestone, Limestone and Leon Counties)

Segment 4

This landscape unit's community character is mostly agriculture with some low density residential. However, there are two main differences which cause this landscape unit to be unique. First, the natural environment changes from primarily prairie to an ecosystem comprised of woods and forest.

Second, the Study Area no longer is centered on an existing utility ROW; however, oil and gas wells are in operation on nearly all parcels. Many parcels have more than one oil and gas pad located on their property (**KVP #18** and **Figure 3.10-13**). Viewers represented by this KVP are residents and agricultural or oil and gas workers. The viewshed for many of the resident viewers is restricted to their own property, due to the amount of trees and vegetation which buffer views. Many parcels in this landscape unit also contain at least one pad with oil and gas infrastructure. These viewers would have low sensitivity to changes in the landscape as a result of utility infrastructure reducing the visual quality.

Visual resources are shown in **Table 3.10-13** and include the Leon ISD campus located on US 79 (**KVP #19** and **Figure 3.10-14**). The land around the school campus is mostly cleared and there are only a handful of windows that would offer a view in the direction of the HSR system. There are some trees along the edges of the campus which restrict the viewshed even more. There are some existing utility lines along US 79, which run through the viewshed. There are no memorable or designated scenic views, although the natural and cultural order of the landscape is uniform. Therefore, the visual quality at the school campus is moderate.

The two KVPs in this landscape unit represent typical and specific views. As a whole, the visual quality in this landscape unit ranges from moderately low to moderate, as shown in **Table 3.10-14**. Viewer sensitivity in the landscape unit is low for typical views and moderate for the specific view at Leon ISD campus.

Table 3.10-13: Visual Resources – Landscape Unit #7

Segment	Resource Name	Resource Type	Special Designation	Within LOD
4	Personville	Historic Marker	Official Texas Historical Marker	No
4	Personville/Ebenezer	Cemetery	Historic Texas Cemetery	No
4	Lake Limestone	Recreation	No	No
4	Leon ISD Campus	Community Facility	No	No
4	Little Flock	Cemetery	Historic Texas Cemetery	No

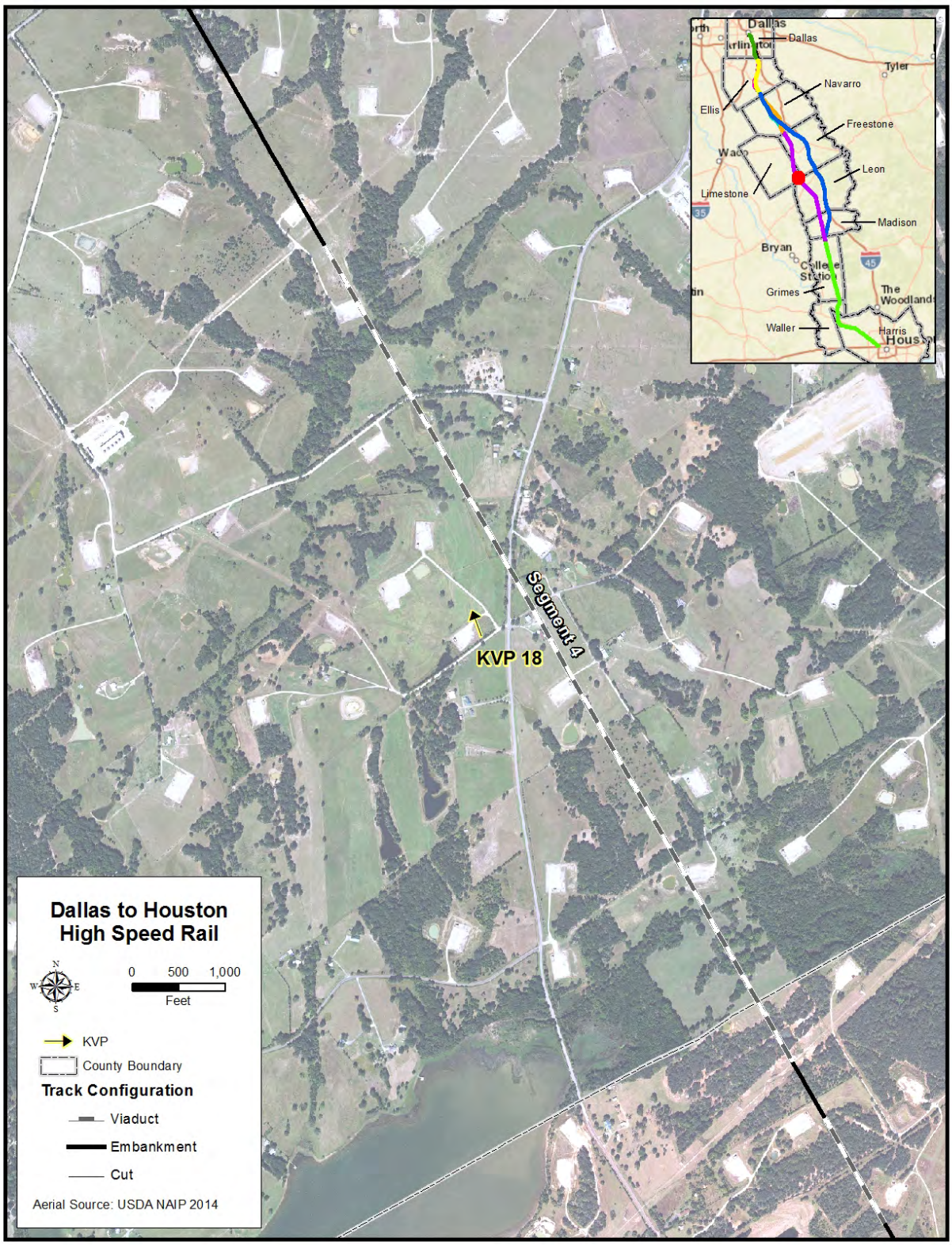
Source: AECOM, 2016

Table 3.10-14: Visual Quality Assessment – Landscape Unit #7

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
7	18	Moderately low	Moderate	Moderately low	Moderately low
7	19	Moderate	Moderate	Moderate	Moderate

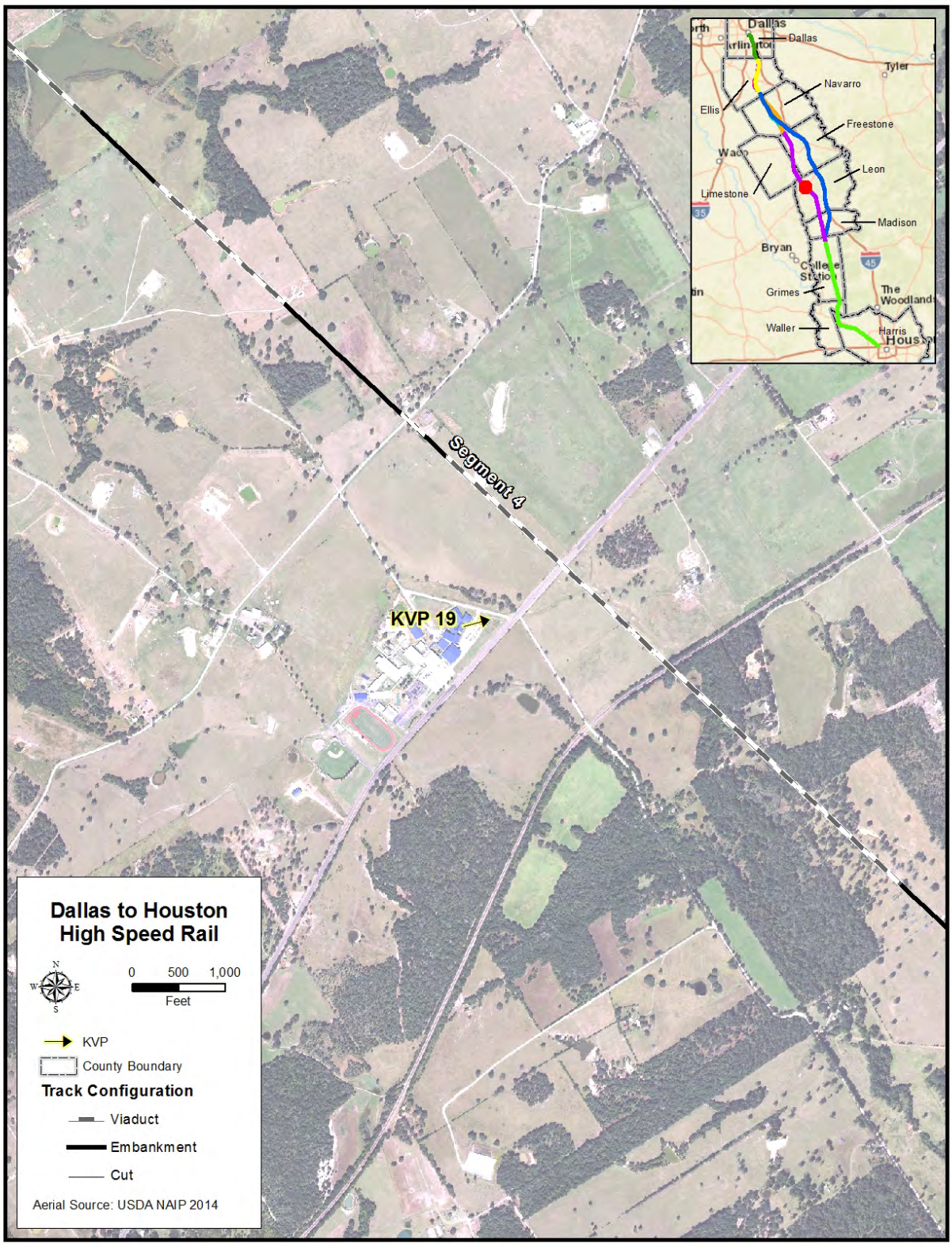
Source: AECOM, 2016

Figure 3.10-13: Visual Quality – KVP #18



Source: AECOM, 2016

Figure 3.10-14: Visual Quality – KVP #19



Source: AECOM, 2016

3.10.5.1.8 Landscape Unit #8 Rural Brazos Valley, Old San Antonio Road to Plantersville (Leon, Madison and Grimes Counties)

Segments 3C, 4 and 5

This landscape unit's community character is also rural and agricultural. The natural environment is less forested than the two previous landscape units, and is primarily a blend of prairie and trees. Therefore, the viewshed varies depending on the location of a viewer. Most individual parcels are still bordered by trees and vegetation; however, a few areas have cleared more trees and views can extend across multiple parcels.

A typical view without major transportation or utility infrastructure exists (**KVP #20** and **Figure 3.10-15**) in the landscape unit. The visual quality is moderate for this KVP and the viewer sensitivity is low given how few viewers would be in this rural and agricultural area.

Oxford Cemetery, a historical cemetery, is located in the Study Area and would have a typical view of the landscape unit with the transmission line at the center of the viewshed (**KVP #21** and **Figure 3.10-16**). Additional visual resources are located in **Table 3.10-15**. Many views are limited to property boundaries, due to the amount of trees and forested areas. Additionally, a large transmission line ROW breaks up the natural order of the environment. The visual quality is moderate to moderately high, as shown in **Table 3.16-16**. Given that fewer viewer groups would be in the rural area and the landscape unit already contains the transmission line, the viewer sensitivity from the cemetery would be low.

The Brazos Valley Station is located in this landscape unit. The natural environment is composed of cleared land for agricultural purposes and forested areas (**KVP #22, KVP #23** and **Figure 3.10-17**). Many of property boundaries are lined with vegetation.

The visual quality in this landscape unit is moderately high. This natural environment is a mix of trees and forested areas, and prairies. Although, the viewshed includes an existing transmission ROW through rural land that is mostly used for agricultural purposes, the cultural order and natural harmony are moderately high. Viewer sensitivities range from low to moderate, depending on the location of the viewer. Low viewer sensitivity is also a result of low number of viewers and exposure to large transmissions lines.

Table 3.10-15: Visual Resources – Landscape Unit #8

Segment	Resource Name	Resource Type	Special Designation	Within LOD
3C	Grimes County Bethel Cemetery	Cemetery	HTC	No
4	Oxford Cemetery	Cemetery	NRHP Eligible	No

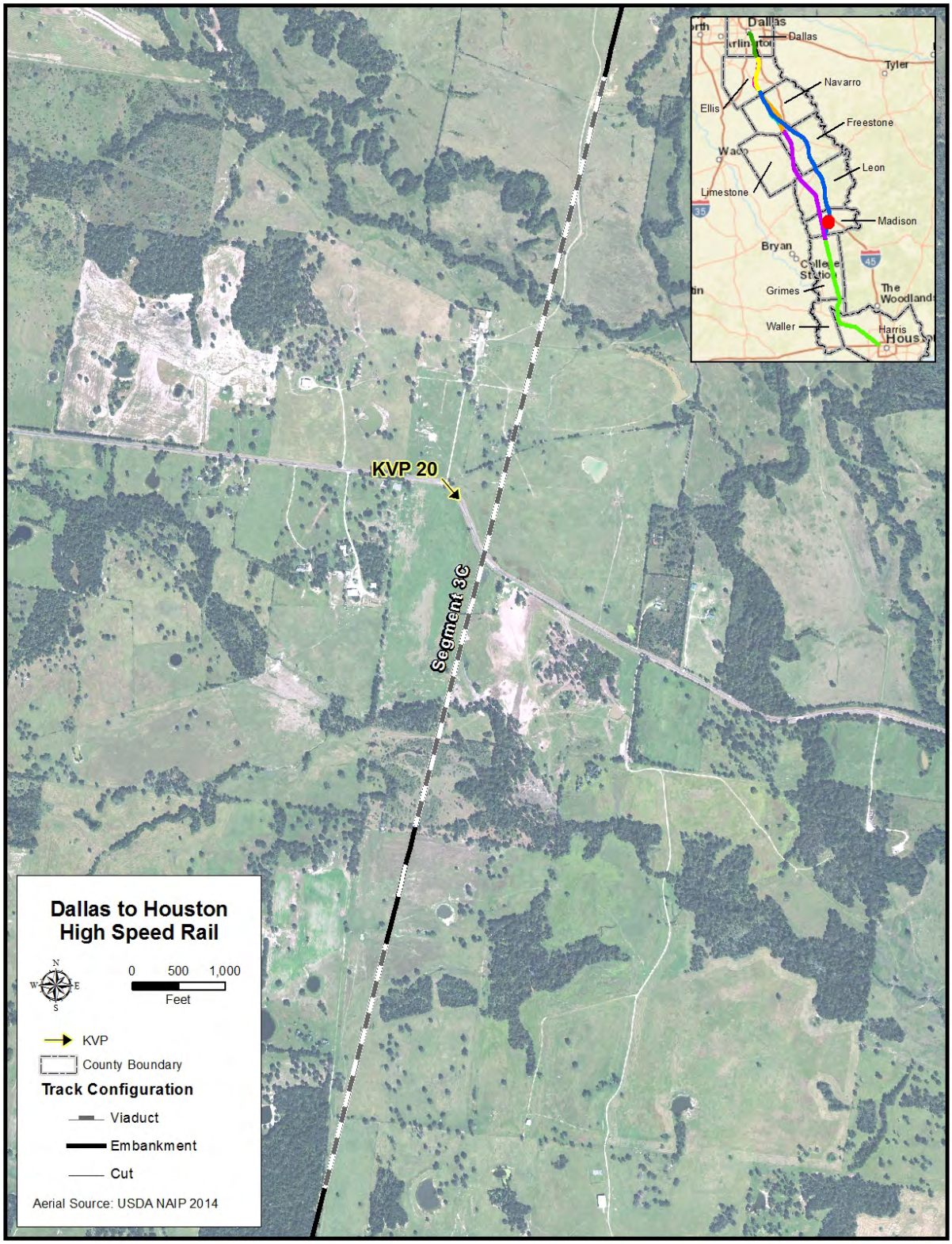
Source: AECOM, 2016

Table 3.10-16: Visual Quality Assessment – Landscape Unit #8

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
8	20	Moderate	Moderately high	Moderate	Moderate
8	21	Moderate	Moderate	Moderate	Moderate
8	22	Moderate	Moderately high	Moderate	Moderate
8	23	Moderate	Moderately high	Moderate	Moderate

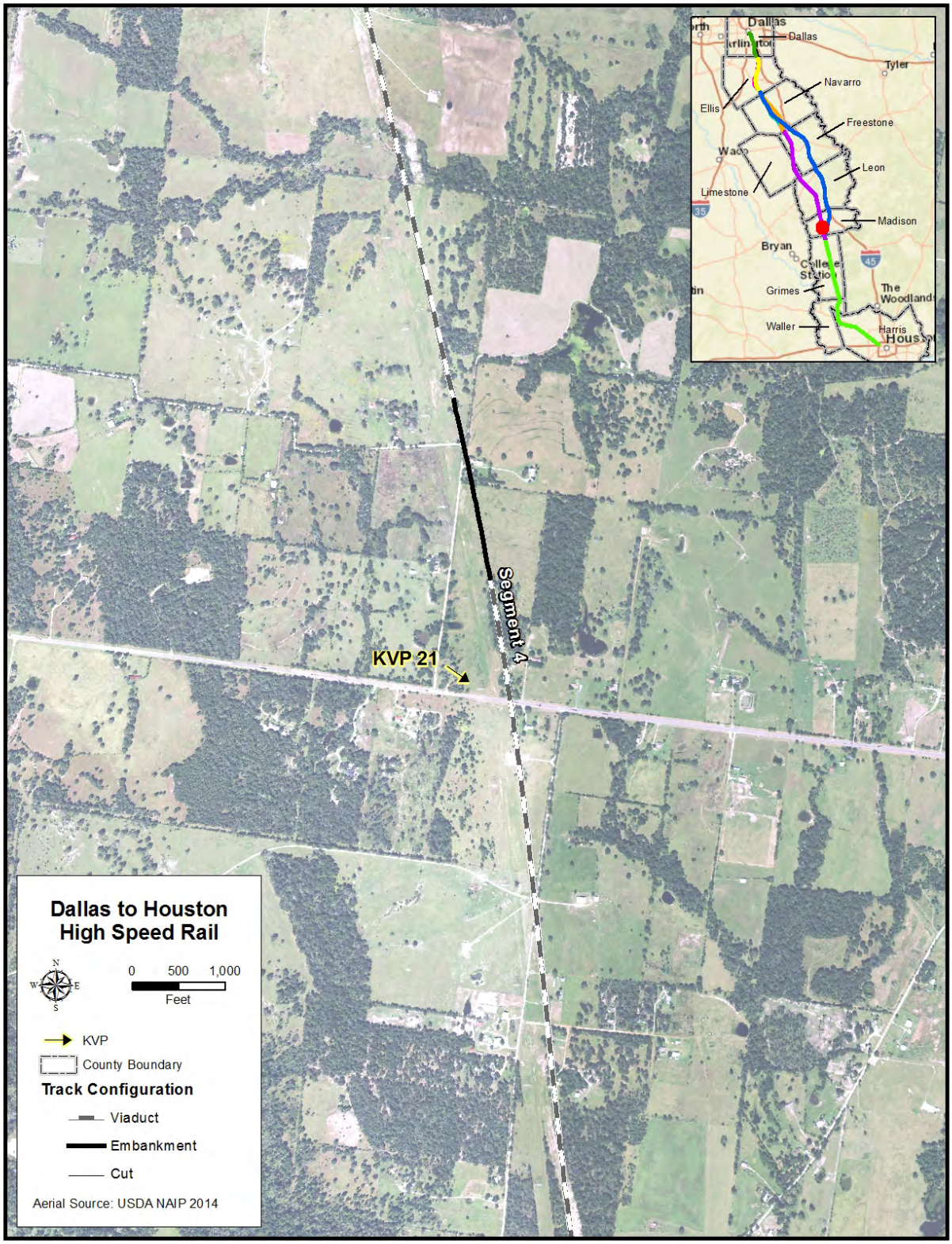
Source: AECOM, 2016

Figure 3.10-15: Visual Quality – KVP #20



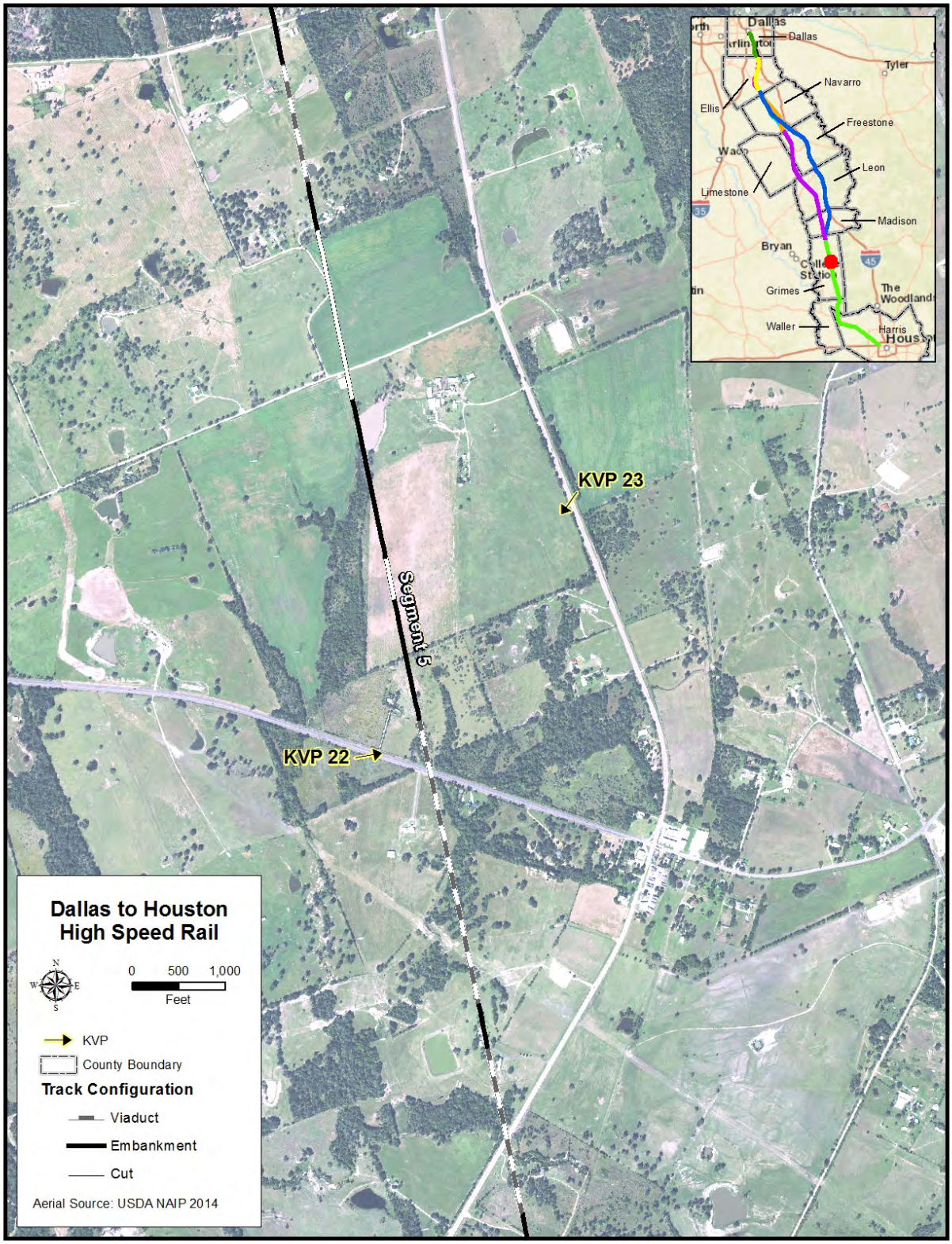
Source: AECOM, 2016

Figure 3.10-16: Visual Quality – KVP #21



Source: AECOM, 2016

Figure 3.10-17: Visual Quality – KVPs #22 and #23



Source: AECOM, 2016

3.10.5.1.9 Landscape Unit #9 Rural to Suburban, Plantersville to Harris County line (Grimes and Waller Counties)

Segment 5

This landscape unit is also a rural agricultural area, but also contains planned residential communities. The natural landscape is a mosaic of croplands and forested areas. The northern area is primarily dense forest (**KVP #24** and **Figure 3.10-18**). The southern segment of the landscape unit has more extensive viewsheds because more land has been cleared of trees (**KVP #25** and **Figure 3.10-19)**. There are no visual resources in this landscape unit.

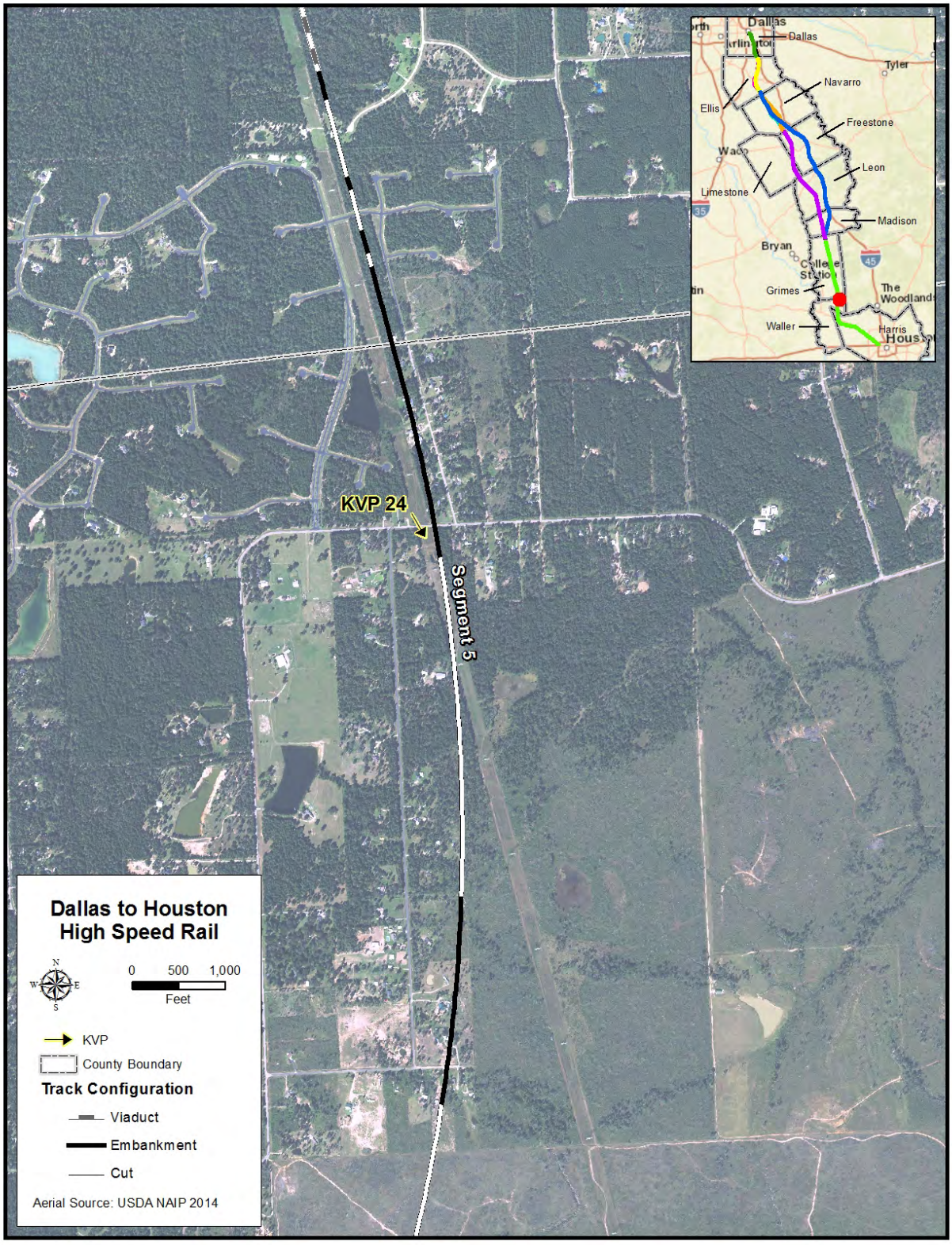
The visual quality would be moderate for this landscape unit, as shown in **Table 3.10-17**.The viewer groups are primarily neighbors (residents and agricultural workers). The views do not offer any memorable or unique natural features, and do not contain any designated scenic views. Due to the amount of trees and forested areas, the views in the southern segment of the landscape unit are centered on an existing transmission corridor ROW, which disrupts the natural order of the environment. The forested areas limit the viewshed, but there would be more viewers in this area, resulting in a moderate viewer sensitivity for this landscape unit.

Table 3.10-17: Visual Quality Assessment – Landscape Unit #9

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
9	24	Moderate	Moderate	Moderate	Moderate
9	25	Moderate	Moderate	Moderate	Moderate

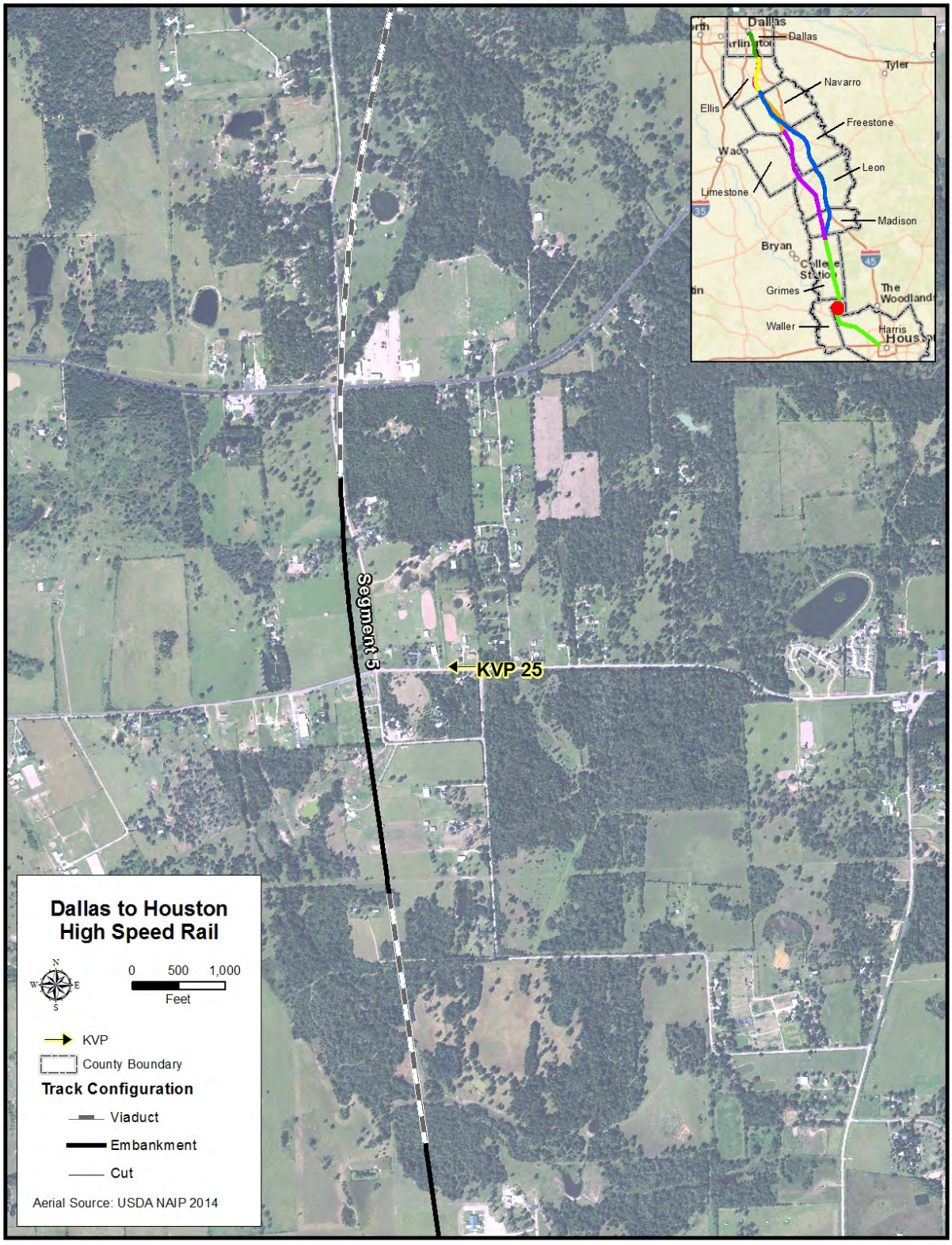
Source: AECOM, 2016

Figure 3.10-18: Visual Quality – KVP #24



Source: AECOM, 2016

Figure 3.10-19: Visual Quality – KVP #25



Source: AECOM, 2016

3.10.5.1.10 Landscape Unit #10 Northwest Suburban, Harris County line to Grand Parkway (Harris County)

Segment 5
This landscape unit is an agricultural area transitioning to suburban. This area represents the edge of suburban sprawl for Harris County. The natural environment is primarily coastal prairie with few trees, resulting in much larger viewsheds than the previous landscape units. Agricultural land uses still dominate the landscape; however, residential, commercial and industrial land uses become more prevalent.

There is only one visual resource in this landscape unit, the Mallard Crossing neighborhood park, as shown in **Table 3.10-18**. There are more viewer groups in this area than the few agricultural workers and rural residents in previous landscape units. These viewer groups consist of neighbors and travelers (commuters who work in the Houston metro area). Some areas have communities of homes with smaller pieces of land mixed with large parcels for crops and ranching (**KVP #26** and **Figure 3.10-20**). Other segments of the landscape unit have newer suburban developments surrounded by open spaces for agriculture (**KVP #27** and **Figure 3.10-21**). Residents living in new developments signal there is a demand for this type of open space view. This landscape unit has a moderate visual quality, as shown in **Table 3.10-19**, and a moderate viewer sensitivity.

Table 3.10-18: Visual Resources – Landscape Unit #10

Segment	Resource Name	Resource Type	Special Designation	Within LOD
5	Mallard Crossing Neighborhood Park	Recreation	No	No

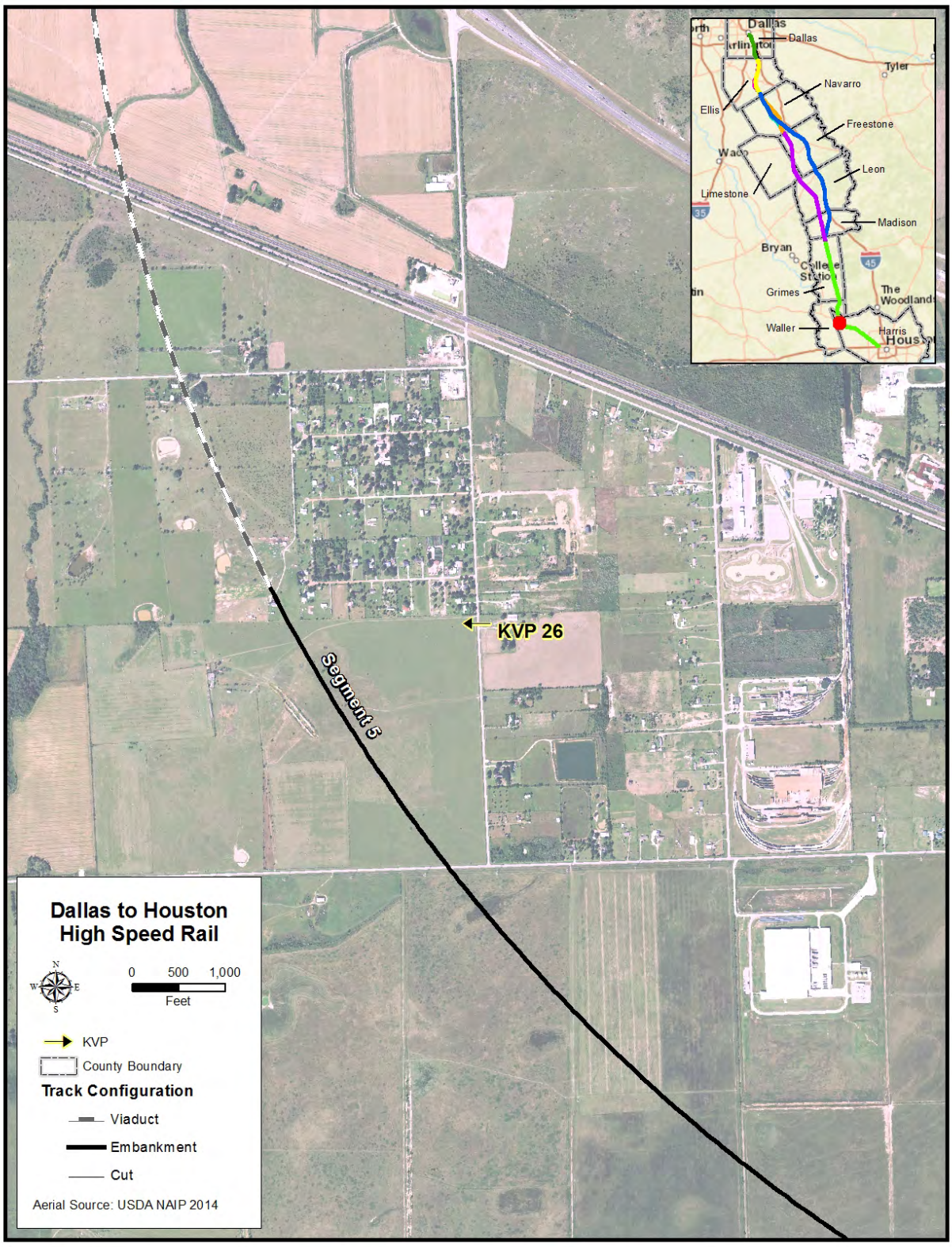
Source: AECOM, 2016

Table 3.10-19: Visual Quality Assessment – Landscape Unit #10

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
10	26	Moderately low	Moderately high	Moderate	Moderate
10	27	Moderately low	Moderately high	Moderate	Moderate

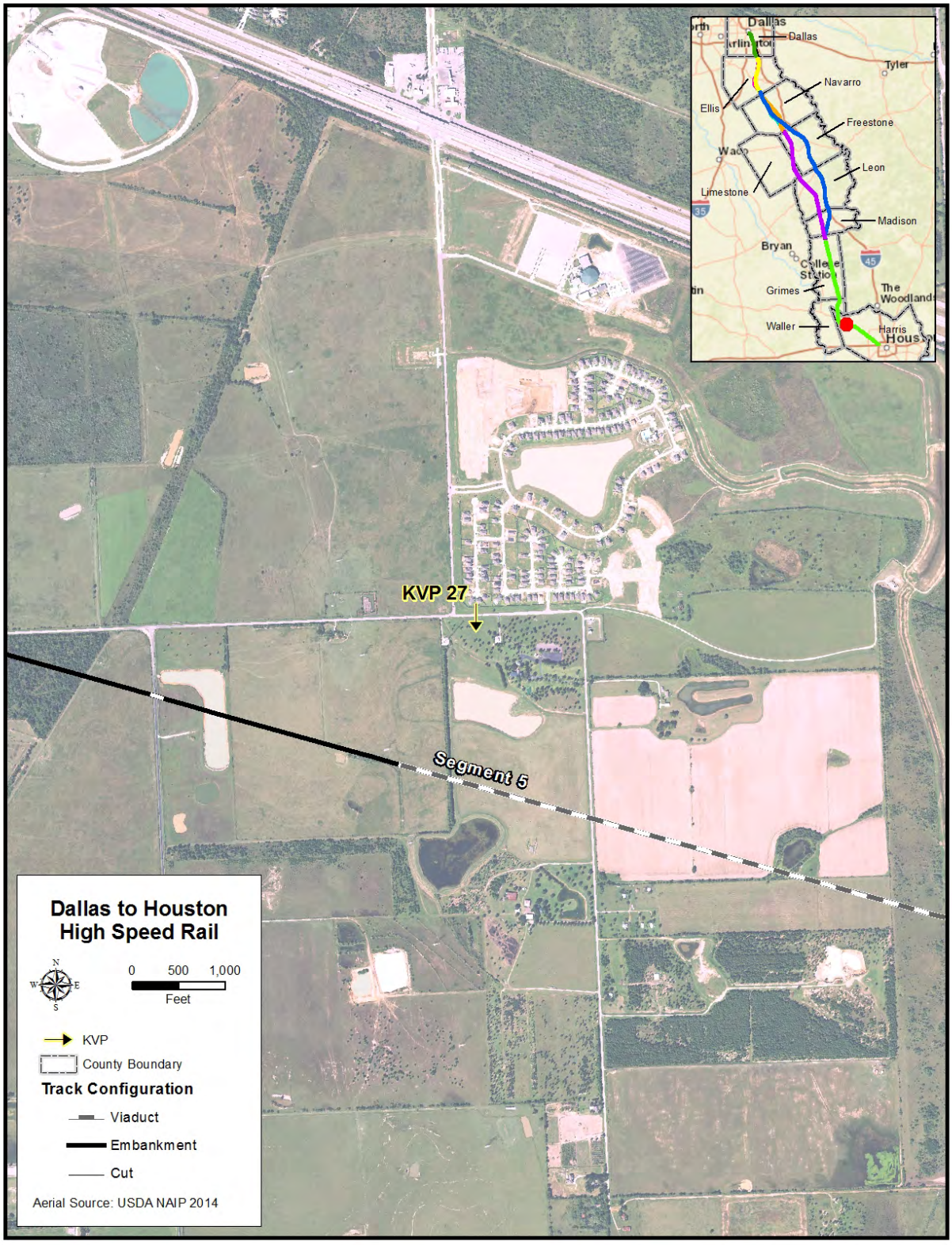
Source: AECOM, 2016

Figure 3.10-20: Visual Quality – KVP #26



Source: AECOM, 2016

Figure 3.10-21: Visual Quality – KVP #27



Source: AECOM, 2016

3.10.5.1.11 Landscape Unit #11 Cypress Jersey Village, Grand Parkway to Sam Houston Parkway (Harris County)

Segment 5

This landscape unit consists of large suburban communities with many residents. The primary land uses are low- to medium-density residential, commercial and industrial. Commercial strip centers and industrial land uses buffer residential neighborhoods to the north of US 290; however, some neighborhoods to the south of US 290 are adjacent to the UPRR line, buffered only by a small row of trees.

One key visual resource, Houston National Golf Club provides a view from a recreational facility and suburban neighborhood development (**KVP #28** and **Figure 3.10-22**). The majority of these recreational viewers would have a moderate sensitivity. Although, much of the viewshed consists of US 290 and the UPRR line, which reduces the visual quality, this specific area has a distinct natural and cultural order because the residential neighborhood is a planned development. Therefore, the visual quality at this KVP is moderate. Additional visual resources are shown in **Table 3.10-20.**

US 290, a highway with eight lanes of traffic and two-lane frontage roads on both sides of the main thoroughfare, operates through the center of the viewshed. There are suburban neighborhoods (**KVP #29** and **Figure 3.10-23,** White Oak Falls neighborhood), commercial strip centers and industrial sites located on both sides of US 290 and the UPRR line (**KVP #30** and **Figure 3.10-24**). To the south of US 290, the UPRR line is adjacent to the highway ROW. Approximately half of the UPRR line is buffered by a row of trees on both sides. The remaining portions are exposed to viewers.

The viewer groups in this landscape unit are similar to the viewer groups located in Dallas County (landscape unit #3). Viewer groups are composed of neighbors (residents, workers of all types, recreational facility users, and school children), and travelers on a high-capacity thoroughfare. The viewshed can be restricted to small distances due to the higher density of structures and trees positioned to buffer certain views. The visual quality of this landscape unit is moderately low, as shown in **Table 3.10-21**, and the viewer sensitivity is moderate.

Table 3.10-20: Visual Resources – Landscape Unit #11

Segment	Resource Name	Resource Type	Special Designation	Within LOD
5	Cypress Top Historic Park	Recreation/Cultural	No	No
5	Houston National Golf Club	Recreation	No	No
5	Stonegate Neighborhood Park	Recreation	No	No
5	Family Golf Park	Recreation	No	No
5	Cy-Fair High School	Community Facility	No	No
5	Arnold Junior High	Community Facility	No	No
5	Humble Oil Gas Station	Building	Eligible	No

Source: AECOM, 2016

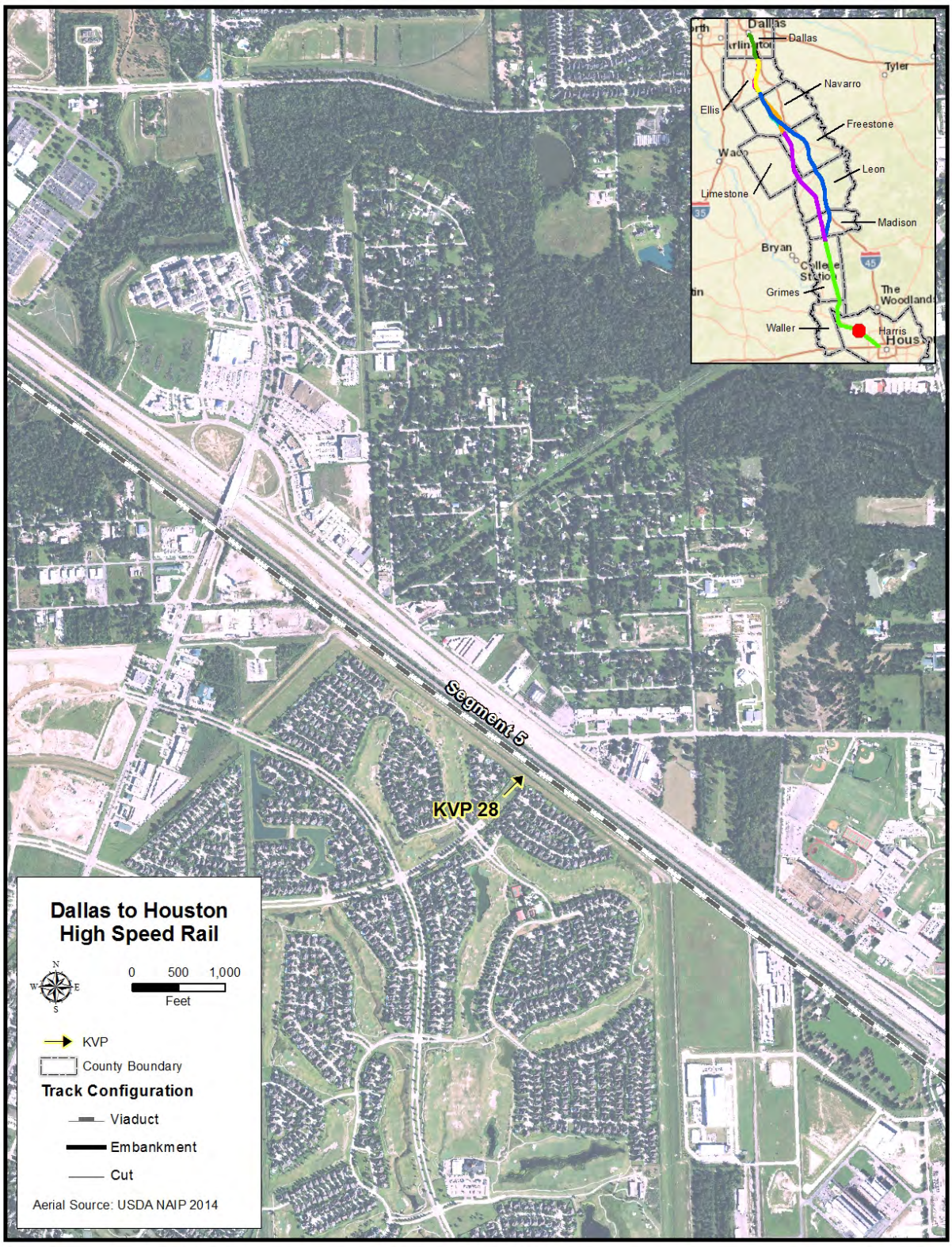
Table 3.10-21: Visual Quality Assessment – Landscape Unit #11

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
11	28	Moderate	Moderate	Moderate	Moderate
11	29	Low	Moderate	Moderate	Moderate

Table 3.10-21: Visual Quality Assessment – Landscape Unit #11					
11	30	Low	Moderately low	Moderate	Moderately low

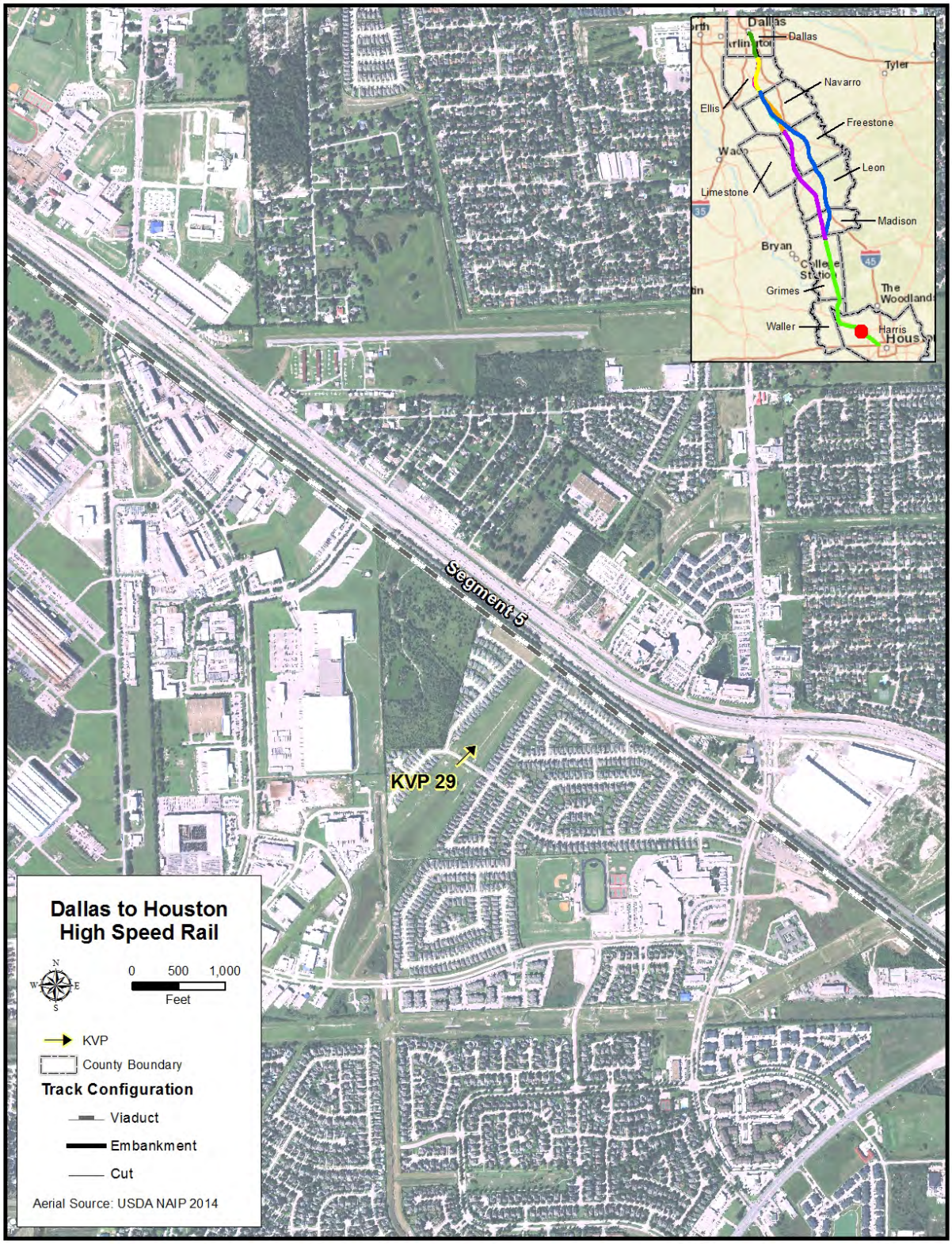
Source: AECOM, 2016

Figure 3.10-22: Visual Quality – KVP #28



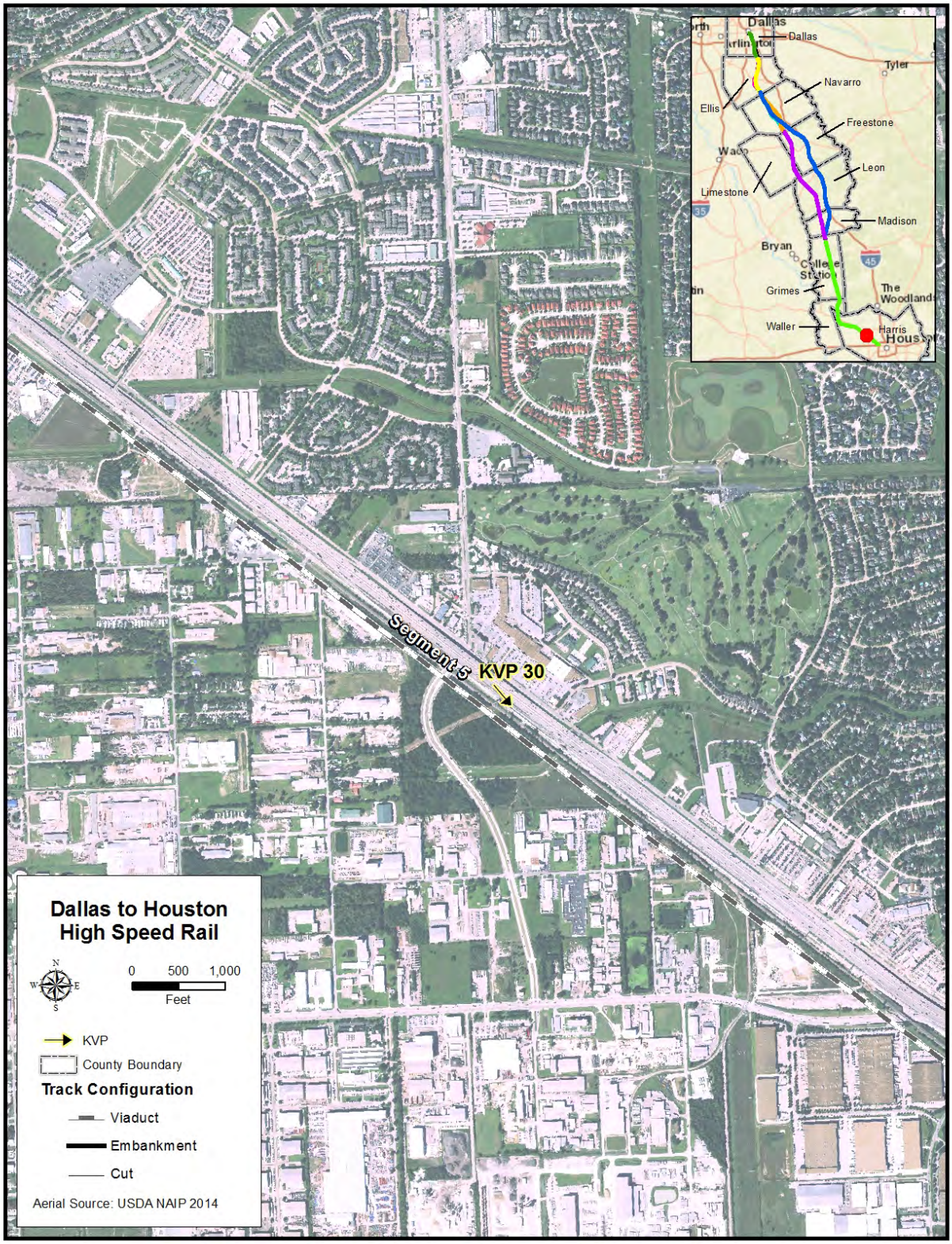
Source: AECOM, 2016

Figure 3.10-23: Visual Quality – KVP #29



Source: AECOM, 2016

Figure 3.10-24: Visual Quality – KVP #30



Source: AECOM, 2016

3.10.5.1.12 Landscape Unit #12 Hempstead Corridor, Sam Houston Parkway to Tex Tube (Harris County)

Segment 5

This landscape has a community character which is suburban to urban. The primary land uses are low- to medium-density residential, commercial and industrial. In this segment, large commercial parks dominate land use and provide a buffer for the residential areas from the major transportation infrastructure (**KVP #31** and **Figure 3.10-25**). There are no visual resources in this landscape unit.

The viewshed is mostly limited to the developments closest to Hempstead Road (**KVP #32** and **Figure 3.10-26**). The majority of these developments are older commercial or industrial structures which do not have a high visual quality. Viewer groups in this area are travelers (along Hempstead Road) and neighbors (workers). Both viewer groups would have temporary views of the HSR system, resulting in a moderate viewer sensitivity. This landscape unit also has the UPRR line at the center of the viewshed; however, the major thoroughfare facility is Hempstead Road, rather than US 290. Hempstead Road is a four-lane, undivided road which has bi-directional traffic. It is a major thoroughfare which operates parallel to US 290, but south of the highway.

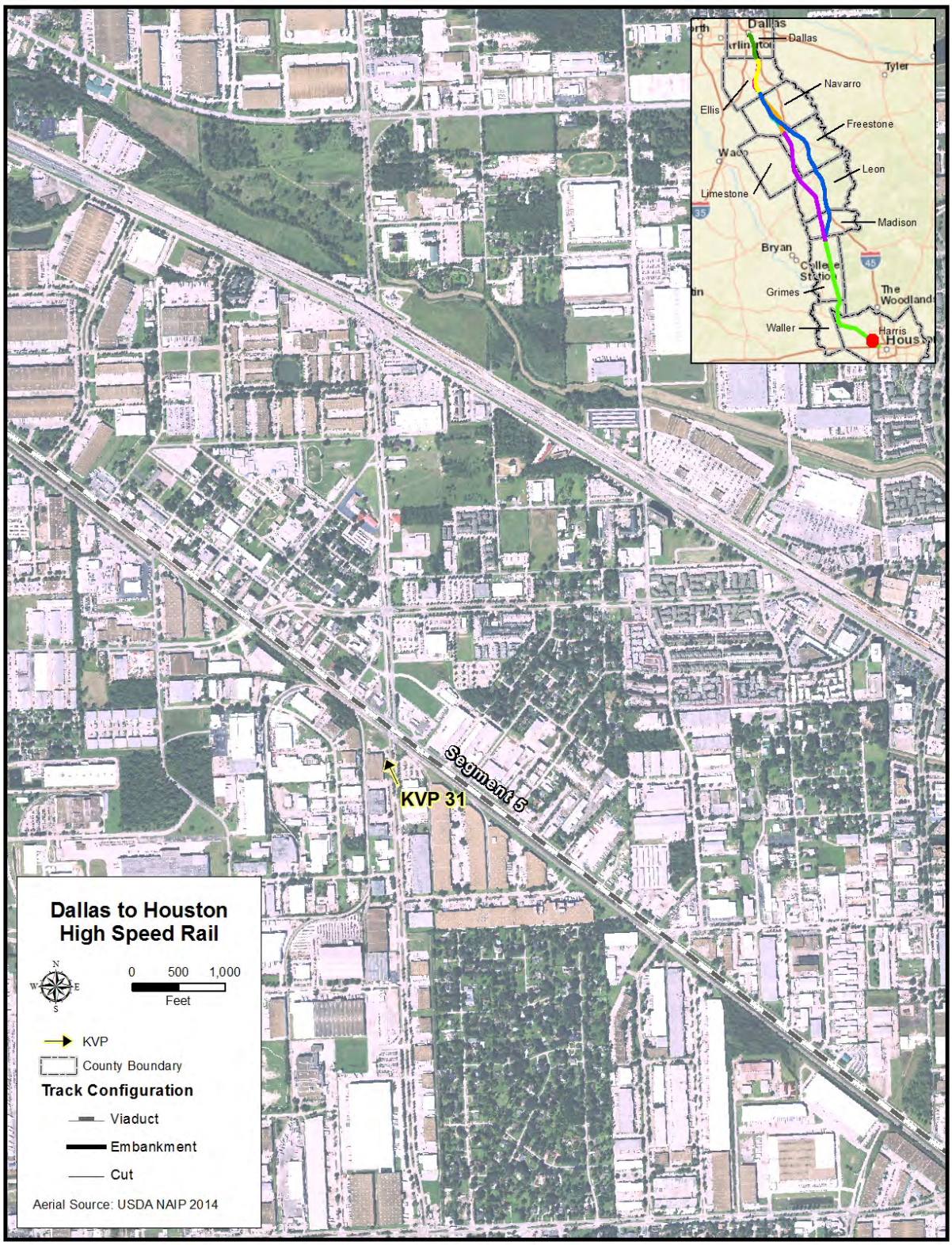
The two KVPs described represent views in Landscape Unit #12. The visual quality in this landscape unit is moderately low, as shown in **Table 3.10-22**. Viewer sensitivity for this landscape unit is moderate.

Table 3.10-22: Visual Quality Assessment – Landscape Unit #12

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
12	31	Low	Moderately low	Moderate	Moderately low
12	32	Low	Moderately low	Moderate	Moderately low

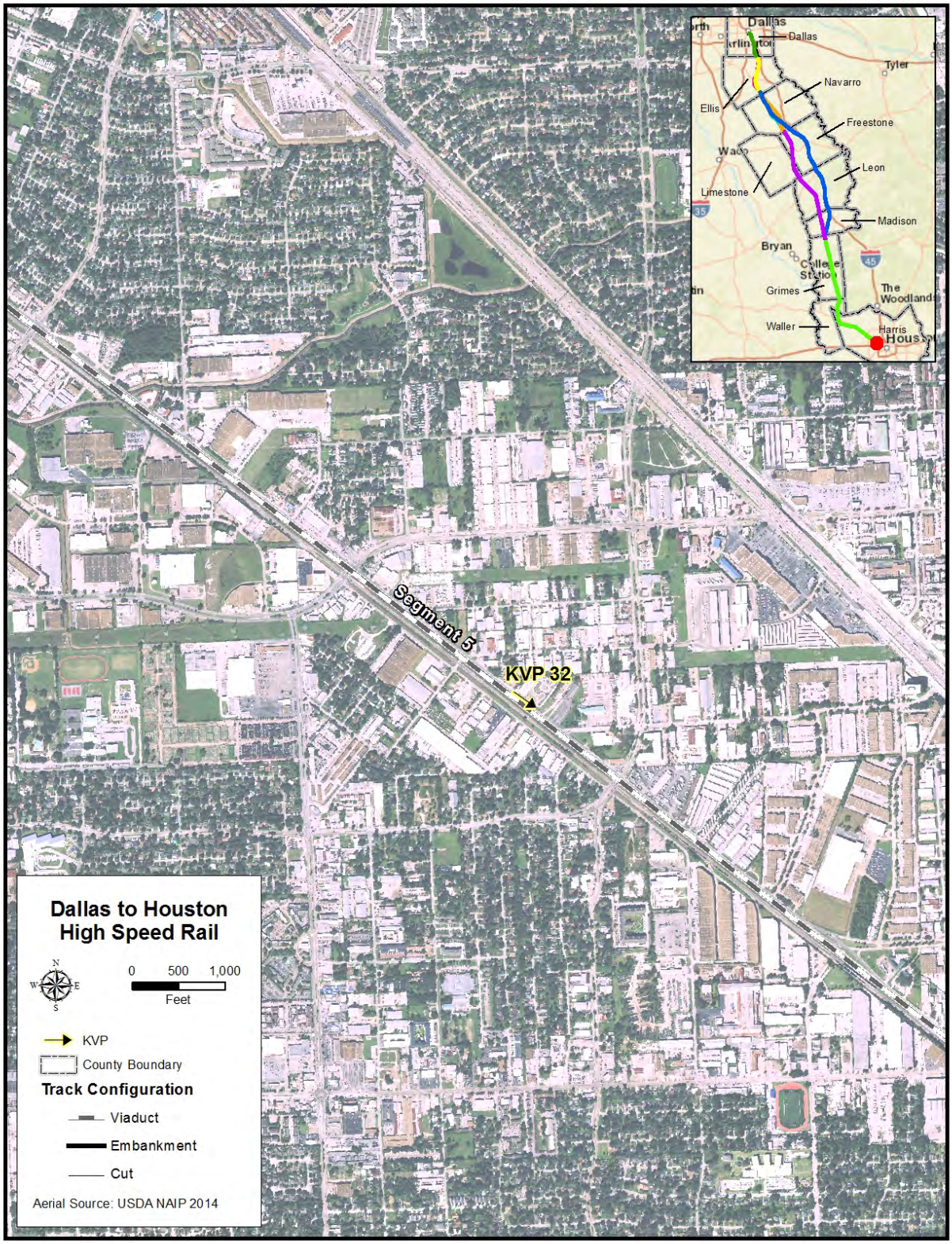
Source: AECOM, 2016

Figure 3.10-25: Visual Quality – KVP #31



Source: AECOM, 2016

Figure 3.10-26: Visual Quality – KVP #32



Source: AECOM, 2016

3.10.5.1.13 Landscape Unit #13 Northwest/Post Oak (Harris County)

Segment 5

This landscape unit represents the urban area near IH-610, US 290 and IH-10. The land use in this area is primarily composed of commercial and industrial uses. There are some newer multifamily complexes located along Post Oak Road, and an older neighborhood transitioning to newer homes located to the west of the landscape unit. The KVPs in this landscape unit are shown in **Figure 3.10-27**. The viewshed contains the Tex-Tube industrial facility, the UPRR line and Hempstead Road, as well as IH-610, US 290 and IH-10. The Tex-Tube facility is a National Register of Historic Places (NRHP) Eligible site and is located at the Hempstead Road and Post Oak Road intersection (**KVP #33** and **KVP #34**). The north part of this landscape unit is the abandoned Northwest Mall site and athletic and academic facilities for Houston ISD (**KVP #35** to **KVP #37**). Other visual resources in this landscape unit are shown in **Table 3.10-23**.

The northern part of the landscape unit is mostly industrial or abandoned and the visual quality is low to moderately low. The area is composed of abandoned mall, a large industrial site, freight rail line and multiple major highways and roads. Even with the athletic and academic facilities, the viewer sensitivity would be low. Although much of the area is industrial, new construction is revitalizing the established neighborhood to the west.

The southern part of the landscape unit includes commercial business parks (**KVP #38**), residential complexes, Awty International School and a large historic cemetery. This location offers a direct connection to the Houston Metro Northwest Transit Facility located at Old Katy Road and Post Oak Road (**KVP #39**). The visual quality and viewer sensitivity in this portion of the landscape unit is moderate.

As a whole, the visual quality for this landscape unit is moderately low, as shown in **Table 3.10-24**. The viewer sensitivity for the landscape unit is low to moderate.

Table 3.10-23: Visual Resources – Landscape Unit #13

Segment	Resource Name	Resource Type	Special Designation	Within LOD
5	Tex-Tube	Building	Eligible	Yes
5	Delmer Fieldhouse	Building	Eligible	No
5	Beth Yeshurum-Post Oak	Cemetery	HTC	No (within 75 feet of LOD)
5	41HR399	Archeological Site - Historic railroad	Unknown NRHP Eligibility	Yes
5	Awty International School	Community facility	No	No

Source: AECOM, 2016

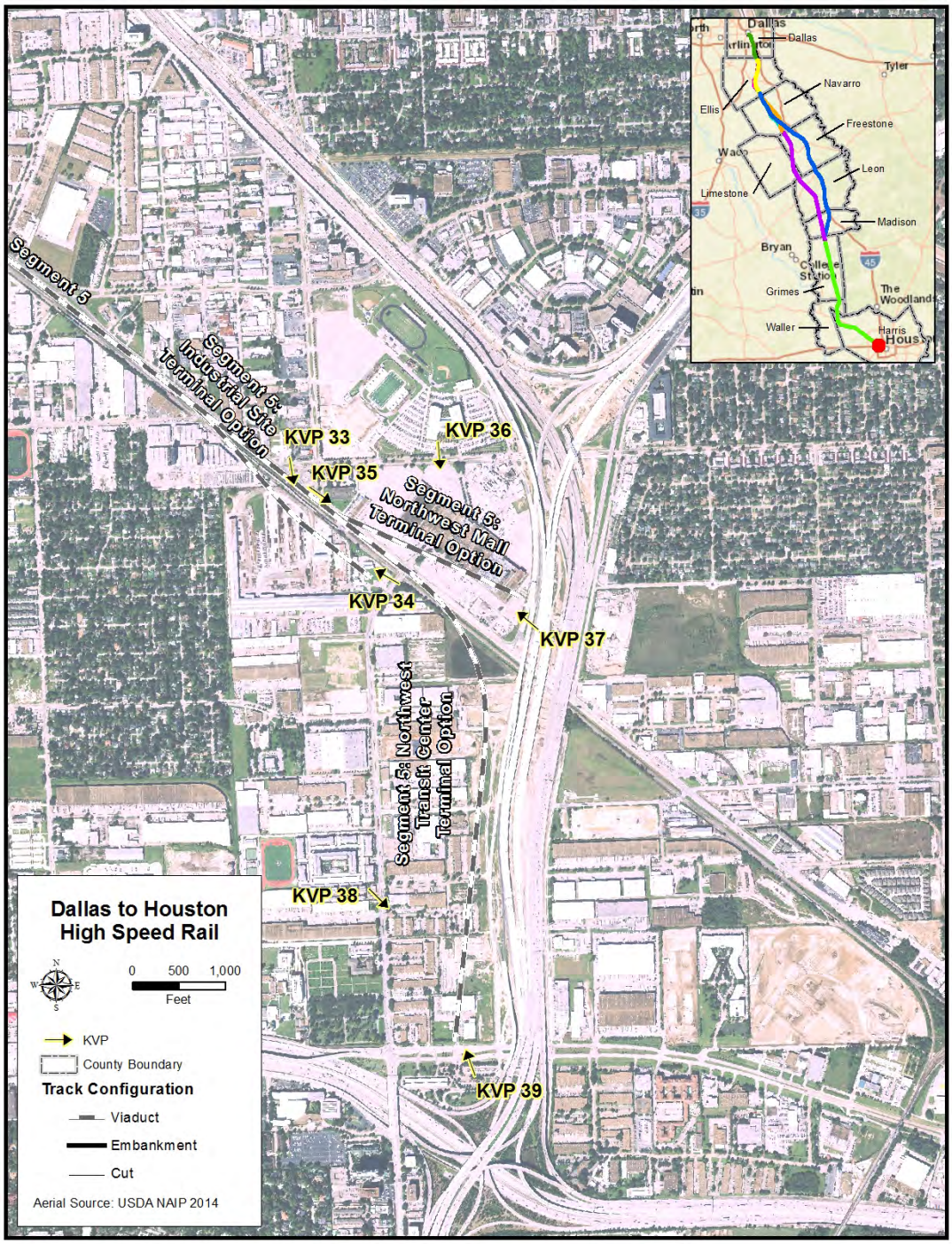
Table 3.10-24: Visual Quality Assessment – Landscape Unit #13

Landscape Unit	KVP	Vividness	Natural Harmony	Cultural Order	Visual Quality
13	33	Moderately low	Moderately low	Moderately low	Moderately low
13	34	Moderately low	Moderately low	Moderate	Moderately low
13	35	Moderately low	Moderate	Moderately low	Moderately low
13	36	Moderately low	Moderate	Moderate	Moderately low
13	37	Moderately low	Moderate	Moderate	Moderately low

Table 3.10-24: Visual Quality Assessment – Landscape Unit #13					
Landscape Unit	**KVP**	**Vividness**	**Natural Harmony**	**Cultural Order**	**Visual Quality**
13	38	Moderate	Moderate	Moderate	Moderate
13	39	Moderate	Moderate	Moderate	Moderate

Source: AECOM, 2016

Figure 3.10-27: Visual Quality – KVP #33 to #39



Source: AECOM, 2016

3.10.5 Environmental Consequences

This section describes the future visual quality of KVPs which represent a typical or special view of the respective landscape unit. Potential impacts to visual resources associated with the No Build and Build Alternatives are described in this section. Impacts are organized by construction and operational impacts. Operational impacts are further defined by lighting impacts as well as overall impacts per landscape unit.

3.10.5.1 No Build Alternative

Under the No Build Alternative, the HSR system would not be constructed and the vividness, natural harmony, cultural order and visual quality of the Study Area would not be altered by the Build Alternatives. Continued population growth and development in suburban and transition areas (southeastern Dallas County, Ellis County, Waller County and northwestern Harris County) could potentially alter the visual quality of existing viewsheds and the viewer sensitivity of the neighbor viewer groups.

3.10.5.2 Build Alternatives

3.10.5.2.1 Construction Impacts

The construction of the Build Alternatives would introduce temporary, visual impacts from fencing, lighting and clearing of trees. These impacts are categorized by visual characteristics in three environment classifications, urban, suburban and rural.

Urban

Existing artificial lighting levels in urban environments are the highest among the three environments (urban, suburban and rural). The Terminal Station options in Dallas and Harris counties already contain a high density of structures and transportation infrastructure. Lighting from construction activities would not create a nuisance during the day in these environments. At night, light travels shorter distances in urban environments because of taller and denser structures, as well as elevated light levels from the number of structures with night lighting. In Dallas County, several key skyline features – Reunion Tower, Omni Convention Center Hotel, Bank of America Building and Margaret Hunt Hill Bridge – use LED lighting every night to paint the skyline and the urban center of the city. Additionally, the multi-level intersection of IH-35E and IH-30 adds more artificial light to the environment. Similarly in Houston, the terminal station options would be in proximity to US 290, IH-610 and IH-10, all of which contain overhead lighting with poles approximately 100 feet above ground. Given the current lighting conditions of the terminal station options, lighting from construction, including nighttime construction, would not create adverse impacts to the visual quality of the Study Area.

Material stockpiles and equipment could cause changes to the harmony and order of the surroundings from clearing and flattening of the land. Stockpiles and equipment would create less of a nuisance in urban environments that are already experiencing construction activity. Construction sites located in, or adjacent to, primarily residential communities, could create adverse impacts to the visual quality of the area, particularly if mature trees are cleared.

The material stockpiles and equipment would be surrounded by security fencing that would screen and minimize visual impacts to the surrounding area. Viewers in urban areas are familiar with these types of security fencing and its visual quality and would be less sensitive to the appearance of security fencing around construction sites.

Suburban

Within the Study Area, the suburban areas consist of an urban to suburban transition, as well as a suburban to rural transition; therefore, impacts in these areas would be mixed. In suburban areas transitioning from urban areas, elevated light levels come from residential homes, retail strip centers and major thoroughfares and highways. These communities typically have the highest light levels near heavily trafficked roadways. Although light travels farther at night in suburban areas, the areas around heavily trafficked roadways would be less impacted by nighttime construction. The opposite could be true for the suburban to rural transition areas. If these areas contain open space with less dense development, the construction lighting impacts could be greater; however, there may be few viewers impacted and trees or other types of vegetation may limit the lighting impacts. Depending on the location of the construction site, nighttime construction may also be limited or prohibited by local ordinances, which could eliminate adverse lighting impacts.

For both the Dallas and Houston metropolitan areas, urban sprawl has created suburban areas that extend from Dallas and Harris counties into Ellis and Waller counties, respectively. The continued development in these urban to suburban areas, particularly adjacent to existing highway infrastructure, would minimize the impact of clearing land for construction areas. Construction sites located near existing cleared land, major thoroughfares and highways would not adversely impact the visual quality of the suburban communities. In suburban areas where the land has not been developed, new construction sites or land clearing would adversely impact the visual quality.

Similar to urban areas, security fencing around construction sites in suburban areas would minimize the visual impact of material stockpiles and equipment. Local ordinances may restrict the type (type of material and height) and appearance (painted or screened, as well as the use of signage) of construction fencing to minimize any temporary visual degradation.

Rural

Rural areas have the lowest levels of artificial light. This is a result of a low density of structures and transportation infrastructure in the area. The rural areas near IH-45 have the highest levels of artificial lighting due to their proximity to highways and interstates. Nighttime construction lighting would travel long distances in areas with little tree or vegetative cover, and would be an adverse impact in these areas.

Clearing and grading land for construction site material stockpiles and equipment would impact rural areas differently depending on the location. Construction sites located in areas with few homes or businesses, along major roadways and areas with existing cleared land would not have significant impacts. Additionally, there would be fewer viewers in these areas. Much like in the urban and suburban areas, security fencing in rural areas would use more visually appealing materials, like screens or paint to minimize the over visual impact of construction sites or equipment.

3.10.5.2.2 Operational Impacts

Lighting Impacts

The lighting of the HSR infrastructure would be consistent across all of the landscape units. Permanent lighting along the rail line would include track lighting, headlights on the front of the train and perimeter fencing and security lighting. The track lighting would activate as the train approaches and deactivate once the train has passed. Lighting from the front of the train would be directed downward to focus on the track and limit its projection outward to the community. Security fencing or perimeter lighting would operate on motion sensors. These elements would limit the duration the viewer would be exposed to lighting as the train passes through the landscape unit. The lighting associated with specific components of the HSR system, such as stations, TPSSs, TMFs and MOWs is discussed within their respective landscape units.

3.10.5.2.3 Landscape Unit #1 Southside/Riverfront District (Dallas County)

The Dallas Terminal Station option would be located in Landscape Unit #1. Three KVPs are used to represent different viewer groups of all Build Alternatives. The KVPs provide an elevated view from the north and the south, and a street level view near the station.

KVP #1 shows the existing view from the 71st floor of a high-rise building in downtown Dallas looking south (**Figure 3.10-28**). The simulated view (**Figure 3.10-29**) includes the Dallas Terminal Station and HSR track. The station would be elevated approximately 74 feet above ground. The top of the station structure would be 81 feet above the platform, and would be covered with a reflective material. Aerial covered walkways would connect the station to the downtown districts and parking garages, allowing pedestrians to bypass the UPRR line.

This area includes a large number of viewers (density of people downtown) with moderate viewer sensitivity (workers, residents and travelers). Viewer groups, especially workers, in downtown are typically not focused on one particular location if they have a view of the surrounding environment in their office. Workers, residents and recreational viewers turn their attention to particular activities. Therefore, the duration of the view would be low to moderately low.

KVP #2 shows the view from the rooftop of the Southside on Lamar building facing west (**Figure 3.10-30**). KVP #2 simulation (**Figure 3.10-31**) provides a closer view of the east side of the Dallas Terminal Station option. This image shows the height of the structure and station platform relative to other natural and cultural elements of the environment. In the center of the picture is the station. The aerial covered walkways are shown connecting to a parking garage that would be across the UPRR line and connect pedestrians north across IH-30. The simulation also shows the reflective exterior of the station covering.

This Landscape Unit is located in downtown Dallas and has a high number of viewers. There are some residential viewers in the apartment buildings nearby which would have a moderate sensitivity due to their greater awareness and exposure to the terminal station; however, most viewers would not be viewing the area for an extended period as they are travelers or workers, so their sensitivity would be moderately low.

KVP #3 shows the view from Cadiz Street facing southeast towards the Southside District (**Figure 3.10-32**). The simulation of KVP #3 (**Figure 3.10-33**) provides the best image of the height of the structures relative to a pedestrian environment. The reflective skin of the station covering is best illustrated in this

simulation. The height of the station platform and parking structure would transform an area with open views to an urban area more like downtown Dallas and the Southside and Cedars districts with tall buildings that limit views.

The number of viewers within this KVP would be less than those in the downtown area, but still represent a large number of people who work and use recreational amenities in the Riverfront District. There are only a few businesses in the Riverfront District and most of the other viewers are travelers who would not have a long exposure or awareness of the HSR system.

As shown in **Figures 3.10-28** through **3.10-33**, the scale of the Dallas Terminal Station option and the HSR system would be compatible with the area, as there are several multilane elevated roadways, interchanges and bridge structures. The scale and size of the Dallas Terminal Station option and HSR track on viaduct would introduce a new element to the Riverfront District; however, there are adjacent areas with structures of similar scale. The two bridge structures in the background also have a modern design and many of the buildings in downtown also have reflective coverings. Additionally, viewer sensitivities are low to moderate, as shown in **Table 3.10-25**.

Table 3.10-25: Visual Impact Summary – Landscape Unit #1

KVP #	KVP Location	Existing Visual Quality	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
1	Downtown Dallas	Moderate	Moderate	Moderate	Yes
2	Southside on Lamar	Moderate	Moderately high	Moderate	Yes
3	Cadiz Street	Moderate	Moderate	Low	Yes

Source: AECOM, 2016

The overall degree of impact to this landscape unit would be beneficial. The construction of the Dallas Terminal Station option and its ancillary facilities (parking, transportation network updates, pedestrian access, and greenspace) would transform unused or undeveloped lots into a modern transportation facility that would serve the urban downtown area. These changes, in conjunction with the redevelopment already incurring in the area and the existing transportation network (vehicular and freight), would improve the vibrancy of the area and enhance the overall visual experience within this landscape unit.

Figure 3.10-28: KVP #1 Existing

Source: AECOM, 2016

Figure 3.10-29: KVP #1 Simulated Views

Source: AECOM, 2016

Figure 3.10-30: KVP #2 Existing

Source: AECOM, 2016

Figure 3.10-31: KVP #2 Simulated Views

Source: AECOM, 2016

Figure 3.10-32: KVP #3 Existing

Source: AECOM, 2016

Figure 3.10-33: KVP #3 Simulated Views

Source: AECOM, 2016

3.10.5.2.4 Landscape Unit #2 Trinity River Crossing (Dallas County)

KVP #4 shows the view from Forest Park facing southwest (**Figure 3.10-34).** The simulated view includes the permanent structure and the HSR train for all Build Alternatives (**Figure 3.10-35).** The HSR track would be on viaduct elevated above the trees in the background, and over some structures. Residential and recreational viewers would have a view of the project; however, the views would be limited depending on viewer location and by the presence of trees and height of structures. The majority of the traveler's awareness would be focused on the road and surrounding vehicular traffic and their views would not be disturbed. Viewer sensitivity would be moderate at this location due to the presence of daily recreational viewers.

The HSR system would be compatible with the industrial area surrounding the alignment. Although some viewers would be able to see the HSR viaduct, the form and materials of the HSR system are similar to the existing environment.

KVP #5 shows the view from the Santa Fe Trail Trestle Trail in the Trinity River Greenbelt (**Figure 3.10-36**). The simulated view shows the HSR system elevated above the river levees, approximately at the same height as a large warehouse (**Figure 3.10-37**). The HSR track would be on viaduct elevated above the DART light rail tracks, shown on the right side of the image. The visual quality would remain neutral at this KVP. The views of the downtown Dallas skyline are not interrupted and the HSR viaduct's form and materials would be compatible with the environment, which contains large transmission towers and the DART light rail.

KVP #6 shows the view of travelers on northbound IH-45 toward Dallas (**Figure 3.10-38)**. The simulated view includes the permanent viaduct structure for all Build Alternatives (**Figure 3.10-39**). In comparison to the existing view, travelers would see a reduced view of the river and forest. Only the tops of the trees would be visible. Although some views would be reduced and there would be many viewers, the viewer sensitivity would be low because most of the viewers would be travelers and viewer exposure and awareness would be low to moderately low. The majority of the traveler's awareness would be focused on the road and surrounding vehicular traffic. The heavy traffic on the interstate means there would be more viewers; however, travelers would be focused on the road ahead, and not the HSR viaduct. Therefore, the viewer sensitivity at this KVP would be low.

The HSR system's scale would be compatible with the elevated height of IH-45, and the form and materials would be compatible with the existing environment. The visual quality at KVP #6 would be reduced from moderate to moderately low, as shown in **Table 3.10-26**. Depending on the location of the viewer, the existing views of the forest and downtown Dallas skyline would be interrupted.

The overall degree of impact for this landscape unit would be neutral, despite a slight reduction in visual quality at KVP #6, because the HSR system would be compatible with the environment and viewer sensitivity is low.

Table 3.10-26: Visual Impact Summary – Landscape Unit #2

KVP #	KVP Location	Existing Visual Quality	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
4	Lamar St & MLK Blvd	Moderately low	Moderately low	Low	Yes
5	Santa Fe Trestle Trail	Moderate	Moderate	Moderate	Yes
6	IH-45/Trinity River	Moderate	Moderately low	Low	Yes

Source: AECOM, 2016

Figure 3.10-34: KVP #4 Existing

Source: AECOM, 2016

Figure 3.10-35: KVP #4 Simulated Views

Source: AECOM, 2016

Figure 3.10-36: KVP #5 Existing

Source: AECOM, 2016

Figure 3.10-37: KVP #5 Simulated Views

Source: AECOM, 2016

Figure 3.10-38: KVP #6 Existing

Source: AECOM, 2016

Figure 3.10-39: KVP #6 Simulated Views

Source: AECOM, 2016

3.10.5.2.5 Landscape Unit #3 South Dallas Residential (Dallas County)

The existing view for KVP #7 is taken from inside the Honey Springs Cemetery facing east (**Figure 3.10-40**). The simulated view of the KVP for all Build Alternatives is shown in **Figure 3.10-41**. Other than visitors to the cemetery, there would be no viewers from this perspective. The visitors to the cemetery would be focused on the memorial wall at the entrance of the cemetery or at a specific burial marker within the cemetery. The Build Alternatives would be located behind the viewer. Due to the proximity of the Build Alternatives, the viewer exposure would be moderate, as would the viewer sensitivity.

KVP #8 shows the view from Fruitdale Park facing east (**Figure 3.10-42)**. The simulated view shows the HSR track on viaduct for all Build Alternatives (**Figure 3.10-43)**. Viewers represented by this KVP would be primarily residents and recreational users with moderate viewer sensitivity. Visual quality would remain moderate because existing views would not be limited or reduced in quality. The large transmission towers and lines would still compose a significant part of the views for residents and recreational users. Additionally, the viaduct's form and materials would be compatible with the environment.

KVP #9 shows the view from the southbound travel lanes of IH-45 facing south (**Figure 3.10-44)**. The simulated view shows the HSR track on viaduct for all Build Alternatives (**Figure 3.10-45)**. The viaduct would be located west of the frontage roads, and the base of the structure would be elevated to the height of the tallest trees. The overhead catenary lines would be at a similar height to the lighting system along the interstate. Viewers represented by this KVP would primarily by travelers who would have low viewer sensitivity because their focus would be on the road and surrounding traffic. Some views of the trees and forested areas may be reduced, but the visual quality would remain moderate at this KVP because viewer sensitivity is low and the viaduct's form and materials would be compatible with the environment.

The HSR system would be compatible with the existing community. There is a freight rail line to the west of the cemetery and IH-45 to the east. While tree coverage blocks some of these views, it does not completely shield the cemetery from this infrastructure. The Build Alternatives would be an additional infrastructure on structure above the tree line.

The visual quality would be reduced from moderate to moderately low at KVP #7, while the remaining KVP's visual quality would remain unchanged as shown in **Table 3.10-27**. Despite the slight reduction in visual quality, the degree of impact for this landscape unit is neutral because the viaduct would be compatible with the environment and viewer sensitivity is moderate.

Table 3.10-27: Visual Impact Summary – Landscape Unit #3

KVP #	KVP Location	Existing Visual Quality	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
7	Bulova/Homecoming (Honey Springs Cemetery)	Moderate	Moderately low	Moderate	Yes
8	Fruitdale Park	Moderate	Moderate	Moderate	Yes
9	IH-45	Moderate	Moderate	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-40: KVP #7 Existing

Source: AECOM, 2016

Figure 3.10-41: KVP #7 Simulated Views

Source: AECOM, 2016

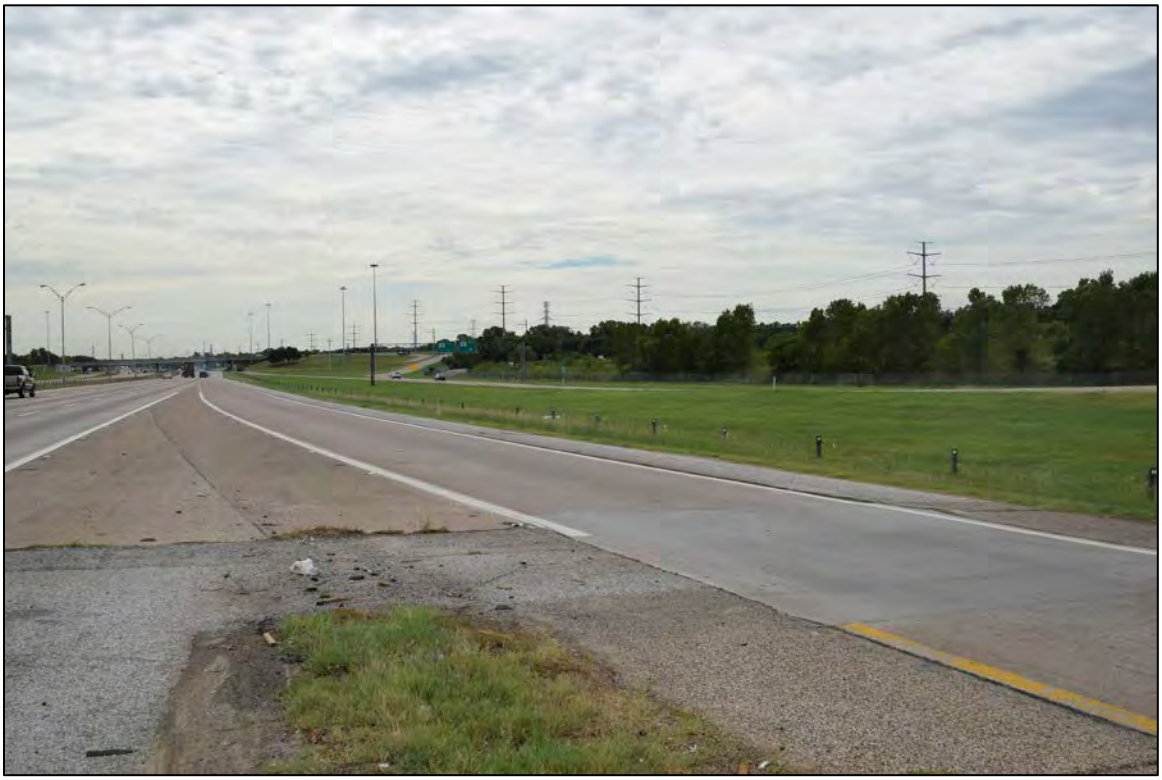
Figure 3.10-42: KVP #8 Existing

Source: AECOM, 2016

Figure 3.10-43: KVP #8 Simulated Views

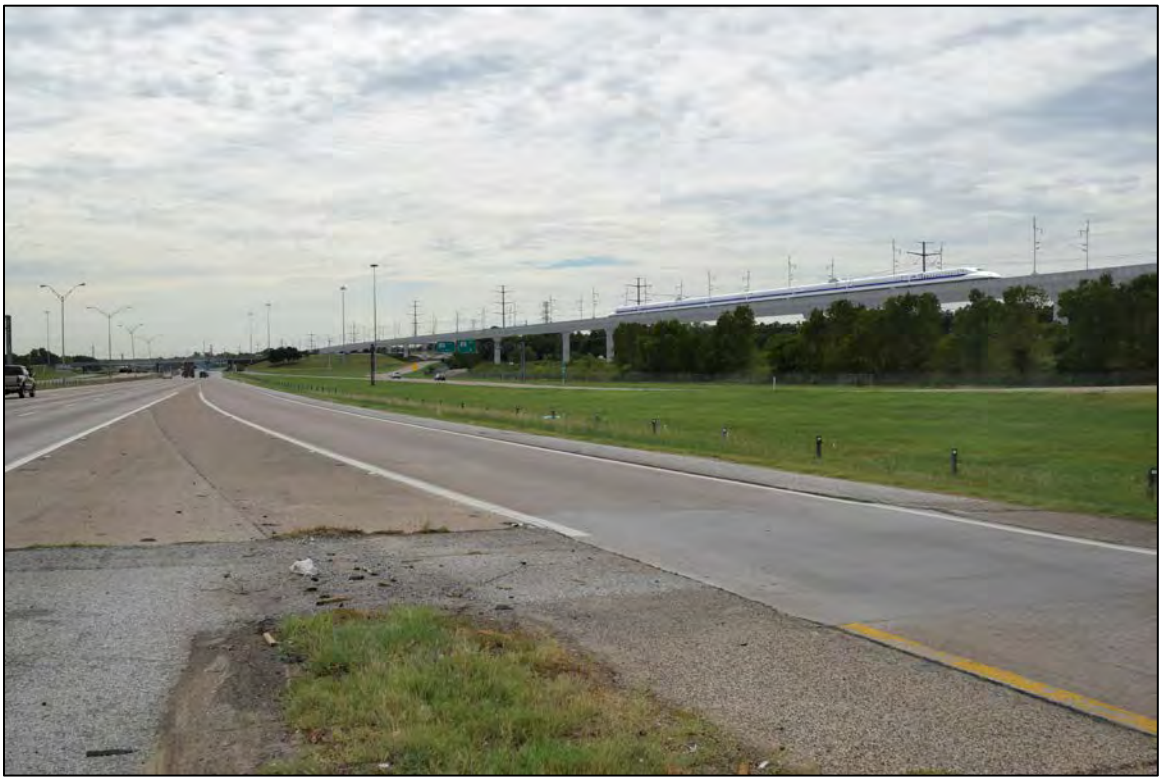
Source: AECOM, 2016

Figure 3.10-44: KVP #9 Existing



Source: AECOM, 2016

Figure 3.10-45: KVP #9 Simulated Views



Source: AECOM, 2016

3.10.5.2.6 Landscape Unit #4 Suburban to Rural Transition, IH 20 to Palmer (Dallas and Ellis Counties)

KVP #10 shows the existing view from the front of Wilmer-Hutchins High School facing northwest (**Figure 3.10-46)**. The simulated view shows the HSR system for all Build Alternatives (**Figure 3.10-47)**. Views of the HSR system would be limited by vegetation and trees, as well as the slope of the terrain. The HSR system would be partially visible through gaps in tree cover on the west side of campus, where it would extend over Langdon Road. North of Langdon Road only the overhead catenary lines would be visible from the school campus. Viewers from this KVP would primarily be composed of students, faculty and staff from the campus who have moderate viewer sensitivity. During regular school hours, most viewers would not be able to view the HSR system because the athletic facilities would restrict views facing west. During special events, viewers from the athletic facilities would have a restricted view of the HSR system; however, the dense forest would limit views.

The visual quality at KVP #10 would remain moderate because most viewers would have a very limited view of the HSR system and its form and materials would be compatible with the environment.

The existing view of KVP #11 is facing west on Almand Road in the Town of Palmer, and represents a typical view of the landscape unit (**Figure 3.10-48**). The image was taken in September 2016 and the crops had already been harvested. The simulated view of KVP #11 shows Build Alternatives D, E and F level with the flat land (**Figure 3.10-49**). There would be few viewers represented by this KVP, comprised mostly of residents and agricultural workers. Viewer exposure and awareness would vary depending on the location of the home or job site, since proximity of the train increases sensitivity. The majority of viewers would not be within a half-mile of the HSR system. Additionally, viewer exposure and awareness would change with the time of year, since the HSR system could be blocked from view for a few months when crops are maturing and their height limits views for residents and workers. Even when crop and vegetation heights are low, as shown in the images, viewers would only notice the HSR system when the train quickly passes through because the form and materials of the HSR system are compatible with the existing environment. Therefore, the viewer sensitivity would be moderate, as shown in **Table 3.10-28**.

The simulation shows a cut track configuration of Build Alternatives D, E and F. This type of track configuration would be below the existing grade, which would result in limited visibility of the HSR track. The fencing and electrical wiring would be compatible with the existing electrical utility infrastructure.

Despite the slight reduction in visual quality, the degree of impact is neutral because the HSR system would be compatible with the environment and viewer sensitivity is moderate. The majority of viewers would not be close to the HSR system for long durations.

Table 3.10-28: Visual Impact Summary – Landscape Unit #4

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
10	Wilmer-Hutchins High School	Moderate	Moderate	Moderate	Yes
11	Almand Rd (Palmer)	Moderate	Moderate	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-46: KVP #10 Existing

Source: AECOM, 2016

Figure 3.10-47: KVP #10 Simulated Views

Source: AECOM, 2016

Figure 3.10-48: KVP #11 Existing

Source: AECOM, 2016

Figure 3.10-49: KVP #11 Simulated Views

Source: AECOM, 2016

3.10.5.2.7 Landscape Unit #5 Northern Rural, Palmer to Fairfield/Teague (Ellis, Navarro and Freestone Counties)

KVP #12 represents a typical view of the landscape unit along a utility corridor. The existing view of KVP #12 is facing northwest from Old Waxahachie Road, west of the City of Ennis (**Figure 3.10-50**). The image was taken in September 2016 and the crops had already been harvested.

The simulation of KVP #12 for Build Alternatives D, E and F is shown in **Figure 3.10-51**. The viewers in the area would mostly be agricultural workers and a small number of residents. Viewer exposure and awareness would vary depending on the viewer's location and the time of year. Proximity to the HSR infrastructure would increase the sensitivity. The HSR system would be partially blocked from view for a few months in some areas when crops are maturing. There are few viewers and the majority of viewers would not be within a half-mile of the HSR system. Therefore, viewer sensitivity would be moderate, as shown in **Table 3.10-29**.

The simulation shows a viaduct transitioning to an embankment track configuration with security fencing around the embankment portion, which would reduce the visual quality slightly from moderate to moderately low for viewers closest to the track. The HSR system would be compatible with the area because there are several large electrical transmission lines adjacent to the track. Additionally, the overhead catenary system for the HSR system would appear lower than the existing utility infrastructure.

KVP #13 represents a typical view of the utility corridor near land that is not devoted to growing crops (**Figure 3.10-52)**. The simulated view shows the viaduct for Build Alternatives C and F (**Figure 3.10-53)**. The primary viewers represented by this KVP would be a small number of residents and agricultural workers who have moderate viewer sensitivity. Viewer exposure would be limited by tree coverage, as some areas may buffer the HSR system behind denser forested areas. Therefore, the visibility of the train as it passes is dependent on proximity to the HSR system. The simulated view shows the height of the viaduct would be below the height of the transmission wires. Visual quality at this KVP would be remain moderate because the viaduct's form and materials would be compatible with the existing transmission towers and environment, and viewers have become familiar with living and working near large transmission towers.

KVP #14 shows a typical view for the landscape unit that is not adjacent to a utility corridor (**Figure 3.10-54)**. The simulated view shows the HSR track on embankment for Build Alternative B and E (**Figure 3.10-55)**. Viewers represented by this KVP include a small number of residents and workers who have moderate viewer sensitivity. Due to the height of the embankment, views of the forest in the background would be reduced. As a result, visual quality would be slightly reduced from moderate to moderately low. In addition, the HSR system's form and materials would not be compatible with the environment due to the lack of large infrastructure in the majority of views, such as utility corridors.

The degree of impact for the landscape unit would be neutral, primarily because there would be few viewers in the area and viewer sensitivity would be moderate for the landscape unit. Although some viewers in the landscape unit would experience a reduction in visual quality, the HSR system would be compatible with the environment around Segments 3A and 3C. Many viewers have become familiar with large infrastructure in their community, especially near utility corridors. A small number of viewers within a quarter-mile of the track may see a reduction in their visual quality from moderate to moderately low. There would be more adverse impacts to visual quality for the area around Segment 3B

(Build Alternatives B and E), mostly because this area has not become familiar with large infrastructure such as electrical transmission lines; however, this area doesn't represent the majority of the landscape unit. Mitigation measures for visual impacts are described in **Section 3.10.7.**

Table 3.10-29: Visual Impact Summary – Landscape Unit #5

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
12	Old Waxahachie Road (Ennis)	Moderate	Moderately low	Moderate	Yes
13	TX 31 Segment 3A/3B	Moderate	Moderate	Moderate	Yes
14	Spikes Rd/Love Bridge Road	Moderate	Moderately low	Moderate	No

Source: AECOM, 2016

Figure 3.10-50: KVP #12 Existing

Source: AECOM, 2016

Figure 3.10-51: KVP #12 Simulated Views

Source: AECOM, 2016

Figure 3.10-52: KVP #13 Existing

Source: AECOM, 2016

Figure 3.10-53: KVP #13 Simulated Views

Source: AECOM, 2016

Figure 3.10-54: KVP #14 Existing

Source: AECOM, 2016

Figure 3.10-55: KVP #14 Simulated Views

Source: AECOM, 2016

3.10.5.2.8 Landscape Unit #6 Central Eastern Rural, Fairfield to Old San Antonio Road (Freestone, Limestone and Leon Counties)

KVP #15 shows a typical view for southbound travelers on IH-45 for Build Alternatives C and F (**Figure 3.10-56)**. The view shows the frontage road to the west of the interstate divided by a wide median. The simulated view is shown in **Figure 3.10-57**. Viewers in the Study Area would primarily be travelers along IH-45. Viewers on adjacent property would have restricted views due to dense vegetation adjacent to the interstate ROW. The duration the viewer would be exposed to the HSR system is dependent on the length of the trip; however, the viewers would mostly focus on the roadway and surrounding vehicles. Therefore, viewer sensitivity would be low, as shown in **Table 3.10-30**.

As shown in the simulated view of KVP #15, the HSR system would be on viaduct elevated approximately 30 feet above grade and located between IH-45 and the frontage road. The ability to view the trees adjacent to the interstate frontage road would be reduced. The viaduct would be compatible with the area and would be similar to the existing highway infrastructure. There are several elevated structures and bridges along the interstate and at road crossings; however, the length of the viaduct would be more prominent than other surrounding structures.

KVP #16 shows a specific view for residents and recreational users from the parking lot at the Buffalo Public Library and Shelley Pate Park along IH-45 (**Figure 3.10-58**). The simulated view of the elevated HSR system for Build Alternatives C and F is shown in **Figure 3.10-59**. Viewers at this specific KVP include recreational users at the public library and park who have moderate viewer sensitivity. The park is located behind the library and is buffered by more trees and topography. This simulation mostly represents views of library patrons and includes a direct view of the Ratliff Ready Mix cement supplier. The viaduct would be located between the library and the business, reducing the view of the industrial cement company. Views of the trees and skyline would be reduced due to the height of the viaduct; however, the windows of the library are shielded with blinds to block the view of existing interstate traffic and most library patrons are focused on reading rather than views outside. Therefore, visual quality would be slightly reduced from moderate to moderately low.

KVP #17 shows an existing rest stop along the southbound lanes of IH-45 (**Figure 3.10-60**) with a view of Fort Boggy State Park in the background). The portion of Fort Boggy Park that is located on the west side of IH-45 does not support public recreational activities. All public recreational activities are located in the park on the east side of IH-45. The viaduct would parallel IH-45 on the west side. Viewer groups would include passing travelers on IH-45, as well as those who stop at the rest stop. The large trees in the median of IH-45 would reduce the contrasting views of multiple travel lanes. The simulated view of KVP #17 is shown in **Figure 3.10-61**. Viewers from inside Fort Boggy State Park (east side of IH-45) would likely not have a view of the viaduct due to the dense forest between the park's designated recreational areas and the viaduct. Viewer exposure would be moderately low and viewer awareness would be moderate. Viewers would have a moderate sensitivity to the viaduct.

As shown in the simulated view of KVP #17, Build Alternatives C and F would operate between the IH-45 southbound travel lanes and the frontage road to the rest stop. The viaduct would be elevated approximately 40 feet above grade, almost to the height of the tallest trees, and would reduce some of the views of Fort Boggy State Park.

The degree of impact for the landscape unit would be neutral. Although there would be a slight reduction of visual quality for travelers, and recreational users at specific locations represented by

KVP#16, the primary viewers would be travelers who have a low sensitivity to views in this particular area. Additionally, the viaduct is compatible with surrounding environment.

Table 3.10-30: Visual Impact Summary – Landscape Unit #6

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
15	IH-45 Corridor	Moderate	Moderately low	Low	Yes
16	Buffalo Public Library/Shelley Pate Park	Moderate	Moderately low	Moderate	Yes
17	Fort Boggy Park (IH-45)	Moderate	Moderately low	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-56: KVP #15 Existing

Source: AECOM, 2016

Figure 3.10-57: KVP #15 Simulated Views

Source: AECOM, 2016

Figure 3.10-58: KVP #16 Existing

Source: AECOM, 2016

Figure 3.10-59 KVP: #16 Simulated Views

Source: AECOM, 2016

Figure 3.10-60: KVP #17 Existing

Source: AECOM, 2016

Figure 3.10-61: KVP #17 Simulated Views

Source: AECOM, 2016

3.10.5.2.9 Landscape Unit #7 Central Western Rural, Teague to Old San Antonio Road (Freestone, Limestone and Leon Counties)

KVP #18 shows a typical view of a rural parcel of land with oil and gas equipment facing north (**Figure 3.10-62)**. The simulated view shows the viaduct for Build Alternatives A, B, D, and E (**Figure 3.10-63)**. Viewers represented by this view would include a small number of residents and workers in the agricultural and oil and gas industries who would have a low sensitivity. Views of the viaduct may be restricted by trees and vegetation. In the areas where views of the viaduct would not be restricted by trees and vegetation, there would be small degradation in visual quality; however, the area represented by this KVP has several oil and gas operations, which contain equipment that also degrades the visual quality, and a large coal power plant that has large towers and exhaust which can be seen for miles.

KVP #19 is a specific view from the Leon ISD Campus along Build Alternatives A, B, D and E (**Figure 3.10-64**). The view includes US 79, cleared pastures typically used for farming, and trees and vegetation. The trees buffer the view from the UPRR rail line and a small overhead transmission line runs adjacent to US 79. The simulated view of KVP #20 is shown in **Figure 3.10-65**. Viewers represented by this KVP would include students and staff of Leon ISD, travelers on US 79, and workers and residents of the rural agricultural area. The majority of students and staff on the school campus would have a low exposure and awareness of the viaduct as only those located in the eastern most buildings would be exposed to the HSR system. Additionally, these viewers' primary focus would be on school activities rather than the HSR system. Recreational facilities on campus are located in the southwestern end of the campus in an area which would have a very limited view of the viaduct. Workers and residents in the general area would have sensitivities that vary by distance to the HSR system. Viewer sensitivity in this KVP would be moderate, as shown in **Table 3.10-31**.

The simulated view shows that Build Alternatives A, B, D and E would be on viaduct in this area. Build Alternatives A, B, D and E would be located approximately 1,000 feet away from the edge of the Leon ISD Campus property line. Therefore, the viaduct would appear at a similar height as the immediately adjacent electric power transmission line. Additionally, trees along the edge of the school property would buffer views of the viaduct.

The viewer sensitivity of this landscape unit would be moderate, due to the low number of viewers. Viewers in the area primarily consist of a small amount of travelers, residents and workers from the agricultural, oil and gas, and coal mine industries. A smaller portion of viewers comes from students and staff on the Leon ISD campus, which a specific view in this landscape unit. The viaduct would be compatible with the area, although a reduction in visual quality would occur from moderate to moderately low. Therefore, the degree of impact in this landscape unit would be neutral as there are few viewers and many places within the landscape unit have utility, oil and gas, or coal mining operations

Table 3.10-31: Visual Impact Summary – Landscape Unit #7

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
18	Agriculture with oil & gas (CR 880)	Moderately low	Moderately low	Low	Yes
19	Leon ISD Campus	Moderate	Moderately low	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-62: KVP #18 Existing

Source: AECOM, 2016

Figure 3.10-63: KVP #18 Simulated Views

Source: AECOM, 2016

Figure 3.10-64: KVP #19 Existing

Source: AECOM, 2016

Figure 3.10-65: KVP #19 Simulated Views

Source: AECOM, 2016

3.10.5.2.10 Landscape Unit #8 Rural Brazos Valley, Old San Antonio Road to Plantersville (Leon, Madison and Grimes Counties)

KVP #20 shows a typical view from an area in the landscape unit not adjacent to the utility corridor (**Figure 3.10-66)**. The simulated view shows the viaduct for Build Alternatives C and F (**Figure 3.10-67)**. Viewers represented by this KVP include residents, workers and travelers who have moderate viewer sensitivity. The viewshed for the different viewer groups would be reduced due to the viaduct which would be approximately 30 feet from the top of the tracks to the existing road, FM 978. In addition, the viaduct's form and materials would not be compatible with the environment as there are no major infrastructure corridors in the area. Therefore, the visual quality would be reduced from moderate to low.

KVP #21 shows the view from Oxford Cemetery, a NRHP eligible cemetery, which would be located approximately 500 feet from Build Alternatives A, B, D and E (**Figure 3.10-68**). The simulated view is shown in **Figure 3.10-69**. Viewers in this area would include a small number of residents, visitors to the cemetery and travelers on US 190/SH 21. The proximity to the viaduct would increase viewer exposure and awareness; however, viewer sensitivity would be low due to the small number of visitors to the cemetery.

The simulated image shows the viewshed would change with the inclusion of the viaduct, but the structure and materials would be compatible with the area. The utility infrastructure would still maintain a prominent view despite the HSR system operating on viaduct. Some of the views in the background would change, as some trees would be cleared and would no longer be visible in the distance.

KVP #22 shows the existing view of the proposed Brazos Valley Station area (**Figure 3.10-70**). The view is from SH 30 facing northeast. The simulation of KVP #23 for all Build Alternatives is shown in **Figure 3.10-71**. Viewers in this area mostly consist of travelers along the highway, who would not have a long exposure to the HSR system. There would be some residents and workers in the area, and their views could be restricted by trees and vegetation. The viewer awareness would be moderately high due to the scale of the HSR system; however, because there are so few viewers, the sensitivity of viewer groups would be moderate.

The HSR system has a low compatibility with the existing environment. The height and scale of the HSR system would have no comparison in the area. The HSR tracks would be on viaduct elevated approximately 20 feet above grade, and the top of the station structure would reach approximately 87 feet above grade. The station's structures, materials and finishes would be designed to integrate into the environment as best as possible. As indicated during Brazos Valley stakeholder meetings with the Texas Forestry Association, TCRR would incorporate regional materials, products and character as part of the final design and construction. The framing of the roof structure would be intended to evoke the low-profile visual imagery of barns and storage sheds.

KVP #23 shows an existing view from SH 90 facing southwest towards the Brazos Valley Station (**Figure 3.10-72**). The simulation of KVP #24 for all Build Alternatives is shown in **Figure 3.10-73**. Viewers in this area would be travelers, residents and workers on the adjacent agricultural plots. Residents would have a longer exposure and awareness of the station and HSR system than travelers. Trees along property boundaries would limit views and most homes contain trees and vegetation for shade. Therefore, viewer sensitivity would be moderate, as shown in **Table 3.10-32**.

The HSR system would appear close to at-grade from the distance of the image. Electrical wires would blend in with the utility infrastructure in the background. However, the station would rise above the height of the tallest trees. Therefore, the station area would not be compatible due to the scale of the Brazos Valley Station.

Based on the degradation of visual quality and lack of compatibility of the HSR system and Brazos Valley Station represented by the majority of KVPs, the degree of impact for this landscape unit would be adverse. Mitigation measures for visual impacts are described in **Section 3.10.7**.

Table 3.10-32: Visual Impact Summary – Landscape Unit #8

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
20	Low Density Ag/Residential (FM 1452)	Moderate	Low	Low	No
21	Oxford Cemetery	Moderate	Moderate	Low	Yes
22	Brazos Valley Station Entrance	Moderate	Moderately low	Moderate	No
23	Brazos Valley Station Approach	Moderate	Moderately low	Moderate	No

Source: AECOM, 2016

Figure 3.10-66: KVP #20 Existing

Source: AECOM, 2016

Figure 3.10-67: KVP #20 Simulated Views

Source: AECOM, 2016

Figure 3.10-68: KVP #21 Existing

Source: AECOM, 2016

Figure 3.10-69: KVP #21 Simulated Views

Source: AECOM, 2016

Figure 3.10-70: KVP #22 Existing

Source: AECOM, 2016

Figure 3.10-71: KVP #22 Simulated Views

Source: AECOM, 2016

Figure 3.10-72: KVP #23 Existing

Source: AECOM, 2016

Figure 3.10-73: KVP #23 Simulated Views

Source: AECOM, 2016

3.10.5.2.11 Landscape Unit #9 Rural to Suburban, Plantersville to Harris County line (Grimes and Waller Counties)

KVP #24 shows an existing view of the HSR system for all Build Alternatives facing south from Riley Road in Waller (**Figure 3.10-74**). The simulated image of KVP #24 is shown in **Figure 3.10-75**. There would be few viewers in this area, composed mostly of residents with a smaller number of workers and travelers. Viewer exposure and awareness would be dependent on location, as the dense forest would block most of the views of the HSR system. The viewer sensitivity would be moderate for KVP #24.

At this location, the HSR system would operate on an embankment, elevating the train slightly on a hill. The HSR ROW would be surrounded by security fencing approximately 12 feet tall. The HSR infrastructure would be compatible with the area. The overhead catenary lines would be shorter than the existing high-voltage electrical transmission line and would have a compatible appearance.

KVP #25 shows the view facing west from Joseph Road in Waller County (**Figure 3.10-76)**. The simulated view shows the embankment for all Build Alternatives (**Figure 3.10-77)**. Viewers represented by this KVP are primarily residents, and also include travelers and a small amount of workers. These viewers would have moderate viewer sensitivity. Similar to KVP #25, the HSR system would operate on an embankment, elevating the top of the tracks approximately 12 feet from grade. The train would be surrounded by 12 foot security fencing. Due to the height of the embankment, the viewshed for residents would be limited by the Project. The visual quality at this KVP would be reduced to low from moderate because of the impact to residents' viewshed. Additionally, the HSR system would not be compatible in this area because there would be no other rail, utility or large transportation corridors in the vicinity of this KVP. Mitigation measures for visual impacts are described in **Section 3.10.7**.

The natural environment of this landscape unit is primarily dense forest and views of the HSR system would be limited to viewers in residential homes with current views of the large electrical transmission line; a small amount of workers operating in the utility ROW; and travelers along the few roads which would pass over or under the HSR system. Most viewers in the landscape unit would not have a consistent view of the HSR system; however, the likelihood for adverse visual impacts increases as the HSR system gets closer to denser rural neighborhoods and when the train is on an embankment which limits viewsheds.

The visual quality would be reduced from moderate to low at KVP #25, and similar residential areas located adjacent to the HSR system or with direct views of the HSR system; however, the degree of impact in this landscape unit would be neutral., The majority of viewers in this landscape have a moderate sensitivity to the HSR system since the HSR system would not dominate their view due to the trees and vegetation that would limit views (**Table 3.10-33)**. Additionally, the HSR system would be compatible with the majority of the landscape unit due to the adjacent electrical transmission line.

Table 3.10-33: Visual Impact Summary – Landscape Unit #9

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
24	Riley Road Utility Corridor	Moderate	Moderate	Moderate	Yes
25	Rural/Suburban Transition	Moderate	Low	Moderate	No

Source: AECOM, 2016

Figure 3.10-74: KVP #24 Existing

Source: AECOM, 2016

Figure 3.10-75: KVP #24 Simulated Views

Source: AECOM, 2016

Figure 3.10-76: KVP #25 Existing

Source: AECOM, 2016

Figure 3.10-77: KVP #25 Simulated Views

Source: AECOM, 2016

3.10.5.2.12 Landscape Unit #10 Northwest Suburban, Harris County line to Grand Parkway (Harris County)

KVP #26 shows the view facing west from Kickapoo Road, west of Hockley (**Figure 3.10-78**). The simulated view for all Build Alternatives on embankment is shown in **Figure 3.10-79**. Viewers represented by this KVP are primarily residents, and also include travelers and a small amount of workers. These viewers would have moderate viewer sensitivity. At this particular location, the HSR system would be on embankment surrounded by 12 foot security fencing. The viewshed for residents located near to the embankment would be limited by the HSR system because of the embankment construction. Those residents located at a distance would have less impacts to their viewshed because they could see over, or through, the HSR system. The visual quality would be reduced from moderate to moderately low. The HSR system would be compatible with the area at the KVP because there are large transportation corridors and frequent freight rail operations located nearby. Mitigation measures for visual impacts are described in **Section 3.10.7**.

KVP #27 is a typical view of the landscape unit for all Build Alternatives. The view is from Becker Road facing south (**Figure 3.10-80**). The simulated view is shown in **Figure 3.10-81**. As shown in the simulation, the HSR system would be compatible with the area, which includes two large communications towers. The HSR system would be in the distance, and views would be partially limited by trees. Viewers in this area would be mostly residents, with some workers in agricultural and other industries. There would be some travelers on US 290 north of the neighborhood; however, this set of travelers would have a low sensitivity to the HSR system. Viewers nearest to the HSR system would have moderate viewer sensitivity, as shown in **Table 3.10-34**.

Despite a slight reduction in visual quality to the landscape unit, the degree of impact in this landscape unit would be neutral because the HSR system would be compatible with the area and viewer sensitivities are moderate. Mitigation measures for visual impacts are described in **Section 3.10.7**.

Table 3.10-34: Visual Impact Summary – Landscape Unit #10

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
26	Rural Harris County	Moderate	Moderately low	Moderate	Yes
27	Stone Creek Ranch	Moderate	Moderate	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-78: KVP #26 Existing

Source: AECOM, 2016

Figure 3.10-79: KVP #26 Simulated Views

Source: AECOM, 2016

Figure 3.10-80: KVP #27 Existing

Source: AECOM, 2016

Figure 3.10-81: KVP #27 Simulated Views

Source: AECOM, 2016

3.10.5.2.13 Landscape Unit #11 Cypress Jersey Village, Grand Parkway to Sam Houston Parkway (Harris County)

KVP #28 shows a view from a neighborhood recreational area facing north towards the HSR system (**Figure 3.10-82**). The simulated view of KVP #28 is shown in **Figure 3.10-83**. Viewers in this area would be mostly residents and recreational users (i.e., golfers). Travelers would compose a smaller segment of the viewers. As a result of the urban environment, there are a number of viewers represented by this view. Due to the viaduct, the exposure and awareness of the HSR system would be high. Therefore, viewer sensitivity would be high.

The viaduct would be elevated approximately 60 feet in the air and would be visible above the height of trees and billboards. The utilities would be relocated in order to pass under the HSR system's structure.

KVP #29 shows the existing view from the White Oak Falls neighborhood facing northeast from Clover Crest Drive (**Figure 3.10-84**). The simulated view for all Build Alternatives shows viaduct elevated approximately 45 feet (**Figure 3.10-85**). Viewers represented by this KVP are primarily residents and travelers, with a small amount of recreational users located within the White Oak Falls neighborhood. These viewers groups would have a high sensitivity because there would be several viewers with a high awareness of the Project. Viewer sensitivity would be reduced as viewers are located further away. The visual quality at this KVP would be reduced from moderate to moderately low. The HSR system's form and materials would be compatible with the area as it would operate adjacent to freight rail line and a large transportation corridor with elevated structures.

KVP #30 shows a typical view for the landscape unit and travelers along US 290 (**Figure 3.10-86**). The simulated view of KVP #31 is shown in **Figure 2.10-87**. Viewers in this area would mostly be travelers. Due to the large number of travelers, viewer sensitivity would be moderate, as shown in **Table 3.10-35**.

The HSR system would be on viaduct adjacent to the UPRR line. The structure and materials would be compatible with the environment, as there is a utility corridor, freight rail line and several elevated highways and interchanges in the viewshed. The degree of impact for this landscape unit would be neutral; however, there would be an adverse impact at KVPs #28 and 29, which do not compose views for the majority of the landscape unit. Mitigation measures for visual impacts are described in **Section 3.10.7**.

Table 3.10-35: Visual Impact Summary – Landscape Unit #11

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
28	Houston National Golf Course	Moderate	Moderately low	High	Yes
29	White Oak Falls neighborhood	Moderate	Moderately low	High	Yes
30	US 290	Moderately low	Moderately low	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-82: KVP #28 Existing

Source: AECOM, 2016

Figure 3.10-83: KVP #28 Simulated Views

Source: AECOM, 2016

Figure 3.10-84: KVP #29 Existing

Source: AECOM, 2016

Figure 3.10-85: KVP #29 Simulated Views

Source: AECOM, 2016

Figure 3.10-86: KVP #30 Existing

Source: AECOM, 2016

Figure 3.10-87: KVP #30 Simulated Views

Source: AECOM, 2016

3.10.5.2.14 Landscape Unit #12 Hempstead Corridor, Sam Houston Parkway to Tex Tube (Harris County)

KVP #31 shows the view facing north from Blalock Road near the intersection with Hempstead Road (**Figure 3.10-88)**. The simulated view shows the viaduct for all Build Alternatives (**Figure 3.10-89**). Viewers represented by this KVP are primarily travelers and workers, with a small amount of residents in the area. The viewer sensitivity for these viewer groups is moderate. The train would be elevated approximately 30 feet, which would reduce views of the skyline, but maintain the view of the urban environment underneath the viaduct. The visual quality at this KVP would remain moderately low. The HSR system would be compatible with the environment because it is mostly an industrial and business center area that contains freight rail, utility lines and busy roadways. Additionally, an elevated transportation infrastructure, US 290, is within one mile of the Project.

KVP #32 shows the typical view of all Build Alternatives along Hempstead Road facing southeast (**Figure 3.10-90**). The simulated view is shown in **Figure 3.10-91**. Viewer groups would include travelers and employees in the various businesses located along the Hempstead Corridor. There would be a small set of residential viewers adjacent to the UPRR rail line or Hempstead Road. Viewers in the area would have a moderate sensitivity, as shown in **Table 3.10-36**.

The simulated view shows that the viaduct would be elevated approximately 30 feet above grade and would operate between Hempstead Road and the UPRR line. The introduction of the HSR system would include large scale infrastructure in this area; however, the area is composed of elevated highways and interchanges, distribution lines, commercial and industrial structures, as well as the UPRR line. The structure and materials of the HSR system would be compatible with the environment and the degree of impact would be neutral.

Table 3.10-36: Visual Impact Summary – Landscape Unit #12

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
31	Commercial business park	Moderately low	Moderately low	Moderate	Yes
32	Urban commercial/industrial	Moderately low	Moderately low	Moderate	Yes

Source: AECOM, 2016

Figure 3.10-88: KVP #31 Existing

Source: AECOM, 2016

Figure 3.10-89: KVP #31 Simulated Views

Source: AECOM, 2016

Figure 3.10-90: KVP #32 Existing

Source: AECOM, 2016

Figure 3.10-91: KVP #32 Simulated Views

Source: AECOM, 2016

3.10.5.2.15 Landscape Unit #13 Northwest/Post Oak (Harris County)

Industrial Site Terminal Station Option

KVP #33 shows the typical view of the Industrial Site Terminal Station option from the eastern part of the station site along Post Oak Road. (**Figure 3.10-92**). The simulated view is shown in **Figure 3.10-93**. KVP #34 shows the typical view of the Industrial Site Terminal Station option from Post Oak Road facing northwest (**Figure 3.10-94**). The simulated view is shown in **Figure 3.10-95**. These simulations provide views from the north and west of the Industrial Site Terminal Station option.

Viewers in this location would mostly include travelers and workers, with a small number of residential viewers to the west. Workers and travelers would have low sensitivity to the HSR system as their exposure to and awareness of it would be temporary. Residents to the west of the station area would have moderate sensitivity because they would have higher exposure to and awareness of the HSR system.

The Industrial Site Terminal Station would be located on an existing industrial site, adjacent to other industrial, commercial and abandoned properties. The station platform would be elevated approximately 52 feet and the top of the station would reach an additional 73 feet. The materials and design of the station would be modern and more characteristic of buildings and new construction in adjacent urban districts. Therefore, the station's structure and materials would be compatible with the area.

The amenities around the station (i.e., sidewalks, landscaping and lighting) would enhance the visual character of the area. The degree of impact would be beneficial because the viewer experienced would be improved by replacing an industrial site with a new urban place designed for the area.

Northwest Mall Terminal Station Option

KVP #35 shows the typical view of the Northwest Mall Terminal Station option from Hempstead Road facing southeast (**Figure 3.10-96**). The simulated view is shown in **Figure 3.10-97**. KVP #36 shows the typical view of the Northwest Mall Terminal Station option from West 18th Street facing south (**Figure 3.10-98**). The simulated view is shown in **Figure 3.10-99**. KVP #37 shows the typical view of the Northwest Mall Terminal Station option from the US 290 HOV lane (**Figure 3.10-100**). The simulated view is shown in **Figure 3.10-101**. These simulations provide views from the west, north and southeast of this station.

Viewers in this area would primarily be composed of workers and travelers who would have a low sensitivity to the HSR system. A smaller group of viewers would be composed of students and staff from Houston ISD who would use the ISD's athletic and educational support facilities. Their viewer sensitivity would also be low because of the order of the cultural environment. The area currently contains an abandoned mall situated among Houston ISD facilities, industrial sites and low density commercial. Therefore, overall viewer sensitivity would be low.

The Northwest Mall Terminal Station option would be located on an abandoned mall site, adjacent to industrial, commercial and highway infrastructure. The station platform would be elevated approximately 52 feet and the top of the station would reach an additional 73 feet. The materials and design of the station would be modern and more characteristic of buildings in the Galleria area and downtown Houston. Therefore, the station's structure and materials would be compatible with the area.

The amenities around the station (i.e., sidewalks, landscaping and lighting) would enhance the visual character of the area. Additionally, an abandoned mall would be removed and replaced with the Northwest Mall Terminal Station option. The degree of impact would be beneficial.

Northwest Transit Center Terminal Station Option

KVP #38 shows the typical view of the Northwest Transit Center Terminal Station option from Post Oak Road facing southeast (**Figure 3.10-102**). The simulated view is shown in **Figure 3.10-103**. KVP #39 shows the typical view of the Northwest Transit Center Terminal Station option from the Houston METRO Northwest Transit Center facing north (**Figure 3.10-104**). The simulated view is shown in **Figure 3.10-105**. These simulations provide views from the northwest and south of this station.

Viewers in this area would be composed mostly of workers and travelers. Additionally, there are some residents located in multifamily communities, students and staff at the Awty International, and visitors to the Beth Yeshurun Cemetery. Workers and travelers would have a low sensitivity to the HSR system, while the remaining viewers would have moderate viewer sensitivity. Overall, the viewer sensitivity in this area would be moderate due to the number of viewers and diversity of viewer groups, as shown in **Table 3.10-37**.

The Northwest Transit Center Terminal Station option would be located on an existing business park, adjacent to a variety of land uses and highway infrastructure and interchanges. The station platform would be elevated approximately 52 feet and the top of the station would reach an additional 73 feet. The materials and design of the station would be modern and more characteristic of buildings and new construction in adjacent urban districts. Therefore, the HSR infrastructure would be compatible with the area.

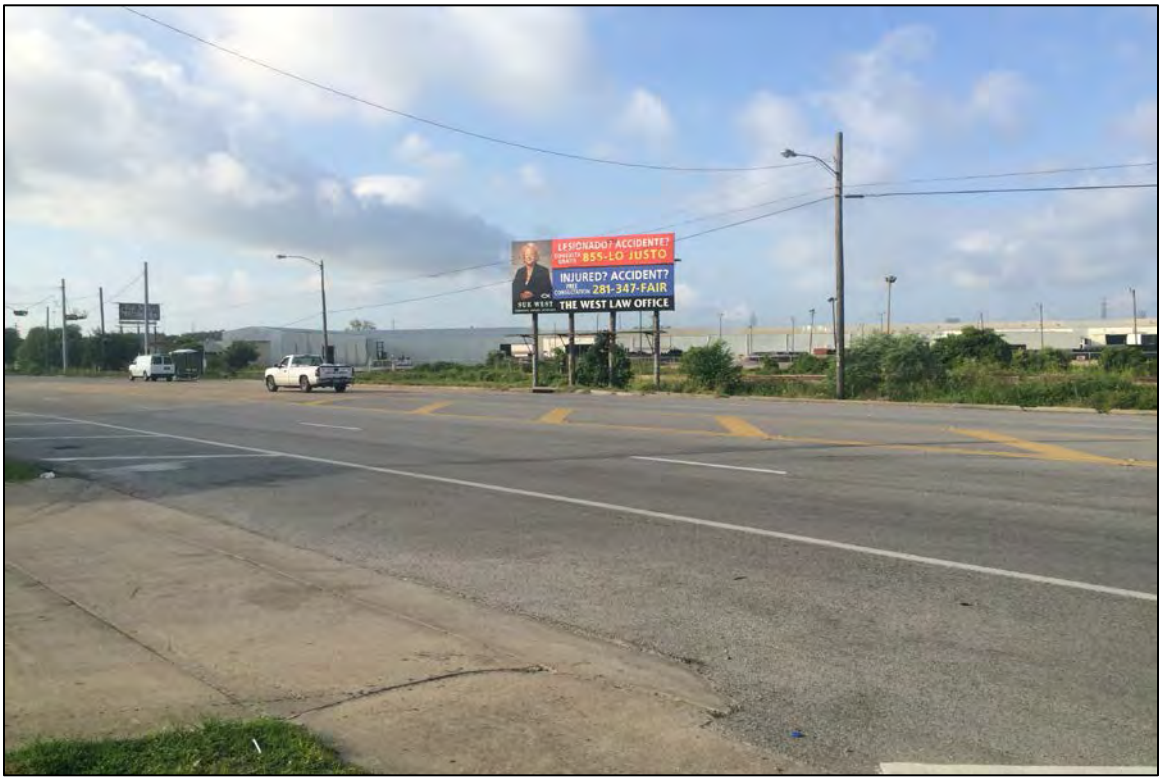
The amenities around the station (i.e., sidewalks, landscaping and lighting) would enhance the visual character of the area. Visual quality would have a slight improvement from moderate to moderately high. The degree of impact would be beneficial.

Table 3.10-37: Visual Impact Summary – Landscape Unit #13

KVP #	KVP Location	Visual Quality - No Build	Visual Quality - Build Alternatives	Existing Viewer Sensitivity	Project Compatibility
33	Hempstead Tex Tube	Moderately low	Moderate	Low	Yes
34	Post Oak Tex Tube	Moderately low	Moderate	Low	Yes
35	Hempstead NW Mall	Moderately low	Moderate	Low	Yes
36	18th St. NW Mall	Moderately low	Moderate	Low	Yes
37	US 290 HOV NW Mall	Moderately low	Moderate	Low	Yes
38	Post Oak NW Transit	Moderate	Moderately high	Moderate	Yes
39	NW Transit Station	Moderate	Moderately high	Moderate	Yes

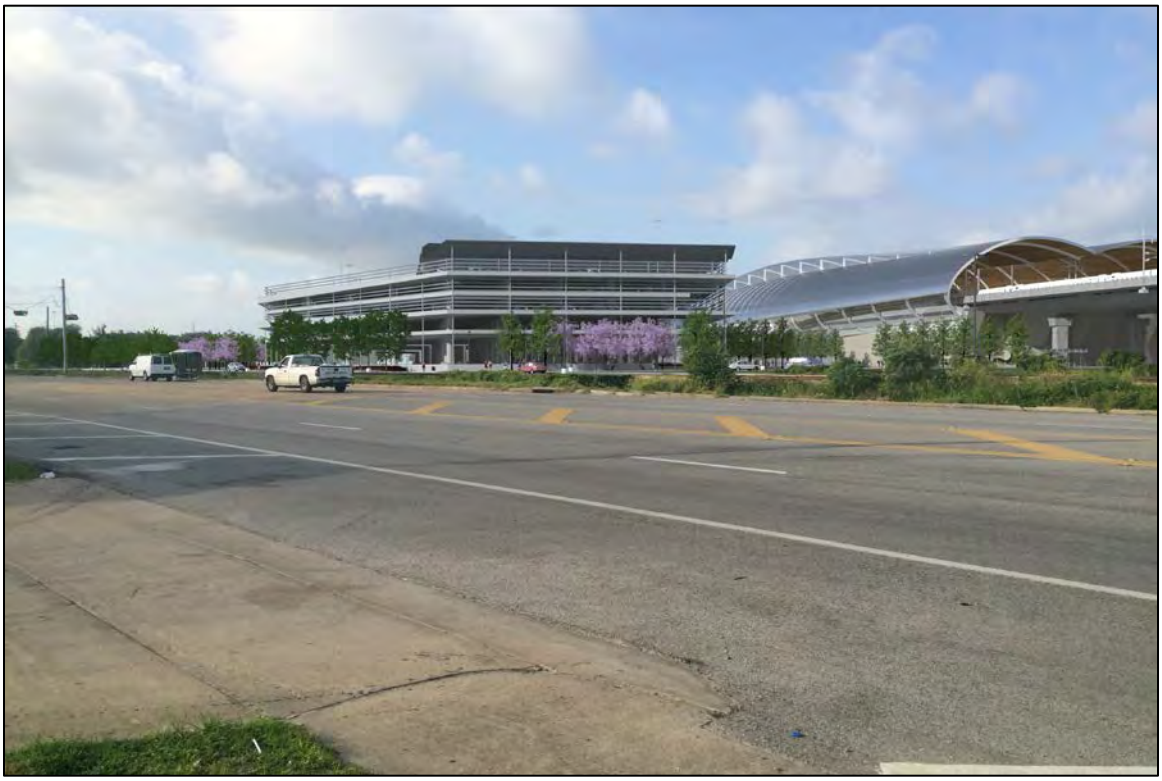
Source: AECOM, 2016

Figure 3.10-92: KVP #33 Existing



Source: AECOM, 2016

Figure 3.10-93: KVP #33 Simulated Views



Source: AECOM, 2016

Figure 3.10-94: KVP #34 Existing

Source: AECOM, 2016

Figure 3.10-95: KVP #34 Simulated Views

Source: AECOM, 2016

Figure 3.10-96: KVP #35 Existing

Source: AECOM, 2016

Figure 3.10-97: KVP #35 Simulated Views

Source: AECOM, 2016

Figure 3.10-98: KVP #36 Existing

Source: AECOM, 2016

Figure 3.10-99: KVP #36 Simulated Views

Source: AECOM, 2016

Figure 3.10-100: KVP #37 Existing

Source: AECOM, 2016

Figure 3.10-101: KVP #37 Simulated Views

Source: AECOM, 2016

Figure 3.10-102: KVP #38 Existing

Source: AECOM, 2016

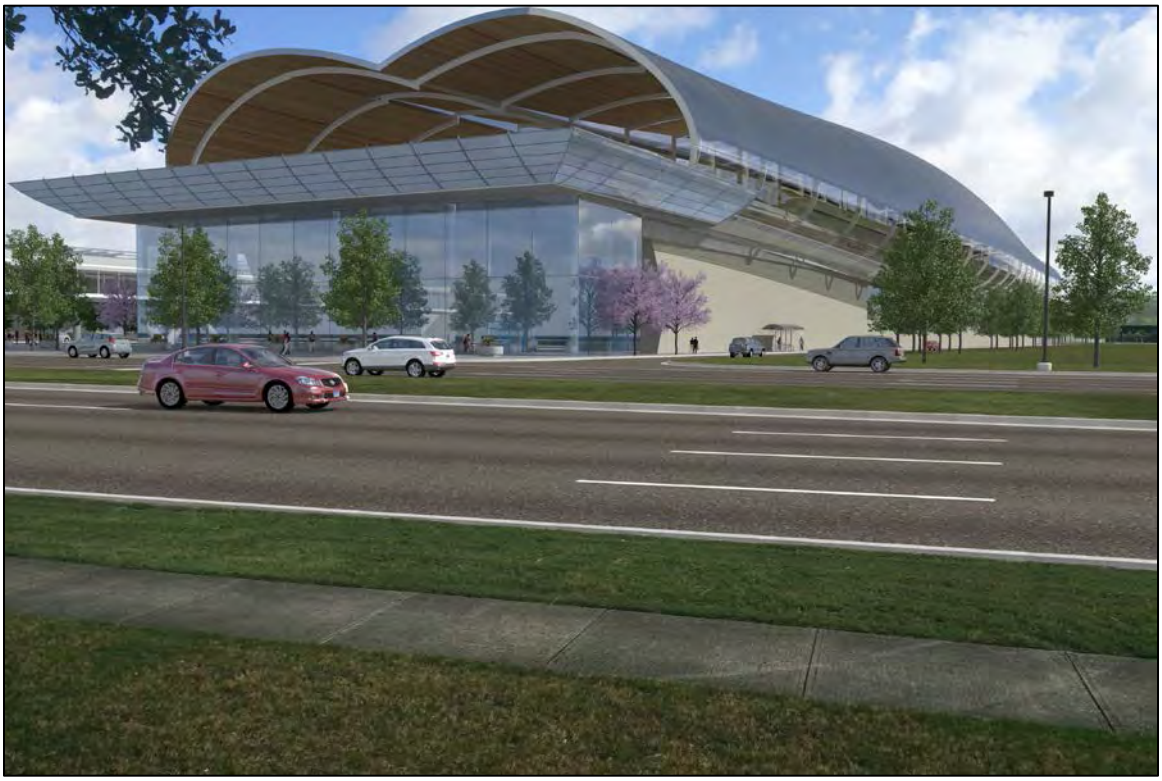
Figure 3.10-103: KVP #38 Simulated Views

Source: AECOM, 2016

Figure 3.10-104: KVP #39 Existing

Source: AECOM, 2016

Figure 3.10-105: KVP #39 Simulated Views



Source: AECOM, 2016

3.10.6 Avoidance, Minimization and Mitigation

In developing the Build Alternatives, TCRR identified co-location opportunities with transportation and utility corridors to maximize compatibility with existing aesthetic and scenic views. Within the Build Alternatives, 53 percent of the LOD, on average, would be located adjacent to existing road, rail or utility infrastructure in order to minimize visual quality impacts. TCRR also identified relatively flat, open spaces to minimize impacts to tree cover during construction and operational activities. Terminal station options were also selected by TCRR within areas of similar aesthetic quality to the proposed terminal developments. Station design was developed to be compatible with the surrounding natural and cultural environment in order to minimize visual impacts.

TCRR incorporated a Low Impact Development (LID) design approach for the HSR system. The principles of the LID approach would address minimizing and mitigating visual quality impacts. Although LID was created for stormwater management, the approach applies to visual and aesthetics because the principles target preservation, protection, and mitigation of natural resources which contribute to visual quality. The TCRR HSR design approach would result in a project that:

- Complies with federal, state and local regulations
- Minimizes the environmental footprint of the project
- Minimizes impacts to wetlands, water bodies and natural streams
- Uses construction techniques that minimize impacts to properties
- Restores disturbed land back to the original condition
- Protects natural and cultural resources
- Mitigates impacts

The project design LID approach would, when possible, protect, preserve, and enhance properties and host communities along the proposed HSR corridor (from Dallas to Houston). There are several standards and rating systems which provide LID guidance. TCRR will use the Institute of Sustainable Infrastructure's (ISI) Envision® Rating System (also referred to as Envision®) to guide evaluation efforts to incorporate LID into the planning and design of the HSR system. TCRR will use the Leadership in Energy and Environmental Design (LEED) rating system to guide evaluation efforts to incorporate LID into the planning and design of facility projects that will support the HSR system.[6]

3.10.6.1 Mitigation Measures

The following Mitigation Measures (MM) would minimize the aesthetic and scenic impacts of Build Alternatives A through F.

AS-MM#1 Public Outreach—Public Meetings with Impacted Neighborhoods. As part of the LID approach, TCRR shall continue to incorporate stakeholder input into design throughout the project to inform their decision-making process. Prior to construction, TCRR or its contractors shall present visual impact mitigation strategies to the following neighborhoods: Saddle Creek Forest Development (Grimes and Waller counties), Plantation Drive (Grimes and Waller counties), Mallard Crossing (Harris County),

[6] TCRR, "*Texas Central Partners Texas High Speed Rail Final Draft Conceptual Engineering Report-FDCERv7*," September 15, 2017.

Stone Creek Ranch (Harris County), Mallard Crossing (Harris County), Stonegate (Harris County) and White Oak Falls (Harris County). For all other residential areas, public comments from the Draft EIS will be incorporated into the Final EIS. The responses and comments would be used to guide mitigation measures implemented during construction and operation of the HSR system.

AS-MM#2: Incorporate Design Criteria for Elevated and Station Elements that can Adapt to Local Context. During final design, TCRR shall take actions to help achieve integration with the local design context during the context-sensitive solutions process by coordinating with the cities of Dallas and Houston. These solutions include:

- Designing HSR stations and associated structures such as elevators, escalators and walkways to be attractive architectural elements or features that add visual interest to the streetscapes near them
- Designing HSR station parking structures and adjacent areas to integrate visually into Dallas, Grimes and Harris counties
- Integrate trees and landscaping into the station streetscape where possible to soften and buffer the appearance of guideways, columns and elevated stations.

AS-MM#3: Vegetation Management—Preserve Existing Vegetation. During construction, in areas which require clearing for temporary or permanent use, TCRR shall minimize the clearing of vegetation. Minimizing vegetation clearing helps reduce adverse visual quality impacts as a result of the removal of existing vegetation. Preserving existing vegetation also provides indirect visual benefits by minimizing soil erosion and reducing the introduction of invasive vegetation, two effects which can cause adverse visual contrasts. In some instances it may be necessary to completely remove vegetation that would present a technical and safety concern.

When technical and safety concerns do not require complete removal of vegetation, trees should be trimmed instead of cut, and cut instead of removed. Additionally, vegetation should be beat down, mowed or covered with protective surface matting rather than removed. When areas do not have to be contoured, the crowns and roots from cut vegetation should be left undisturbed in order to allow for re-sprouting.

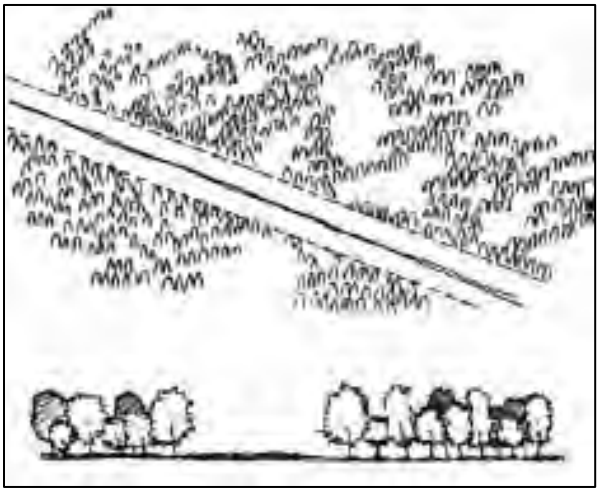
TCRR's LID approach shall minimize impacts by locating the HSR system adjacent to existing utilities and highways in order to limit impacts to undeveloped areas and avoid wildlife habitat fragmentation. Following existing utility or highway corridors where practicable also reduces prime farmland and habitat impacts.

AS-MM#4: Vegetation Management—Use Partial ROW Clearings and Feather Edges of Project ROW. Prior to construction, TCRR shall incorporate partial ROW clearing where feasible, including topping rather than removing trees that exceed the allowable height and leaving irregular edges within the ROW. Trees that would not present a safety or engineering hazard or otherwise interfere with operations should be left on the ROW.

This would include feathering ROW edges where feasible (i.e., the progressive and selective thinning of trees) combined with varying tree heights to create an irregular vegetation outline. Cutting vegetation only at the edge of the ROW can create a strong line contrast between vegetation and the cleared ROW that can be visible for many miles (**Figure 3.10.106**). Partial ROW clearing and feathering of ROW edges creates a more natural appearance, as represented by **Figure 3.10-107**.

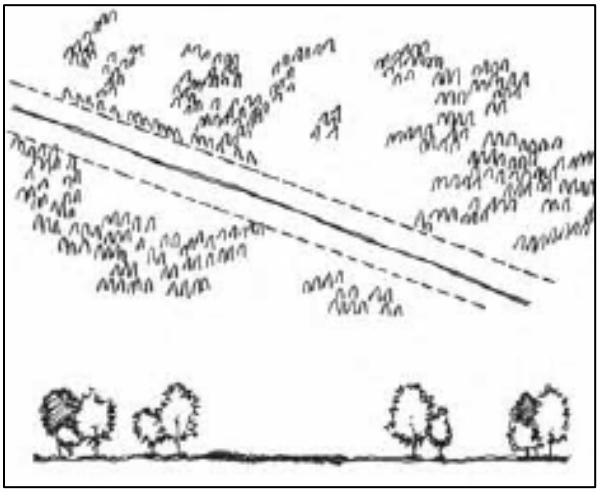
In addition, TCRR shall use native vegetation, walls, berms, natural looking constructed landforms (**Figure 3.10-108**) or visual barriers to screen the HSR system, including ancillary facilities, where possible. Constructed landforms or berms could partially conceal access roads or smaller ancillary facilities. The shape and height of constructed landforms must be adapted to the surrounding landscape, and must consider the distance and viewing angle to ensure that the earthworks would be visually unobtrusive.

Figure 3.10-106: Example of Cutting Vegetation at ROW Edge



Source: Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, Bureau of Land Management, 2013

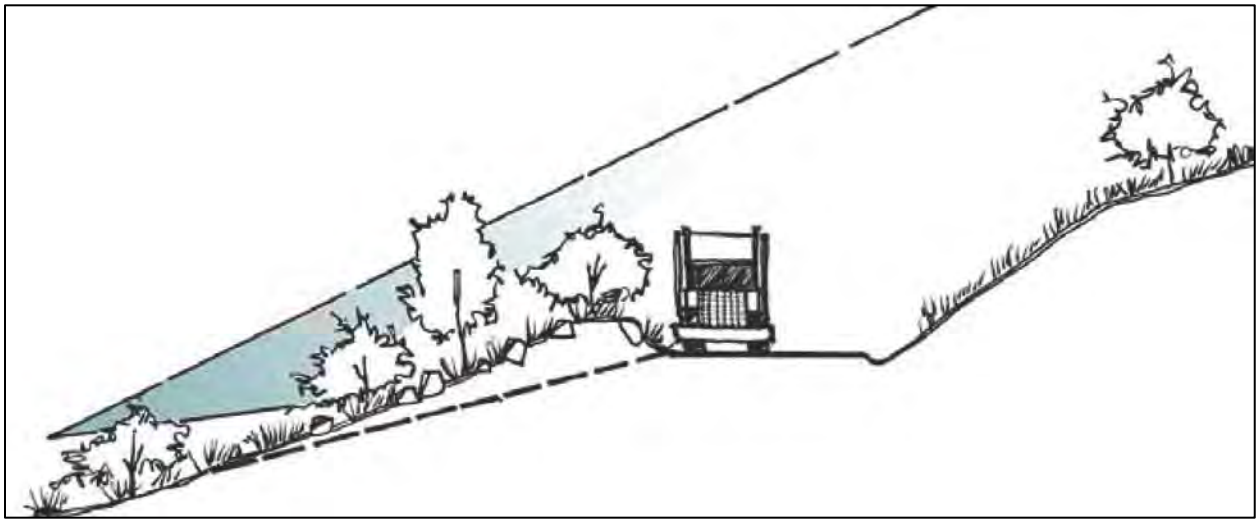
Figure 3.10-107: Example of Partial ROW Clearing and Feathering



Source: Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, Bureau of Land Management, 2013

AS-MM#5: Vegetation Management—Landscaping Plan. During final design, TCRR's LID approach shall carefully select plants and native species used in areas with landscaping to the extent practical. Design of stations and other facilities shall offer opportunities for concepts such as bioswales, rain gardens, and earthen swale design. Facilities along the alignment that require buildings could have vegetated rooftops, rain barrels, or permeable pavers. Detention ponds with water quality features located along the alignment would help to manage stormwater.

Figure 3.10-108: Use of Constructed Landforms with Vegetative Screening



Source: Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, Bureau of Land Management, 2013

AS-MM#6: Lighting—Construction Lighting Plan. Prior to construction TCRR shall coordinate with local jurisdictions to identify pertinent lighting restrictions and work with local jurisdictions to develop a lighting plan applicable to the jurisdiction for the jurisdiction's review and approval. The plan shall be submitted to FRA and the local jurisdiction for review and approval prior to the start of construction. The plan would define daytime and nighttime construction activities, and would stipulate techniques such as shielding and directional lighting to limit exposure. If nighttime construction activities are performed, lighting shall be limited to the lowest safe level. This shall also be included in the CMP.

AS-MM#7: Lighting—Operational Lighting Plan. Prior to operations, TCRR shall develop an operational lighting plan that shall outline required nighttime lighting limits to safely operate the system. This shall include lighting best management practices that would focus the lighting on the rail line directly ahead and shield the surrounding communities from excess light during operation. Ancillary facility lighting, particularly in the rural communities, shall use sensors and shielding to limit light exposure at night.

TCRR's LID approach shall incorporate comfortable and energy efficient lighting optimized through architectural design that encourages natural sunlight and an adaptable, controllable systems for lighting.

AS-MM#8: HSR System Siting and Design. Construction laydown areas shall be located in areas to avoid and minimize visual impacts using TCRR's LID approach. To minimize construction related traffic impacts and emissions, construction laydown areas and precast yards have been designed adjacent to the proposed HSR line. Where practical, these laydown areas have also been located adjacent to major roadways and freight lines to minimize construction traffic through communities. When construction is complete, construction sites would be restored to pre-existing conditions, or improved.

During final design development, the selection of infrastructure type, whether cut, embankment, or viaduct, shall carefully consider how the surrounding community currently uses the area. Terminal stations were located on previously developed or disturbed land, to prevent further damage and improving land value. Signals and communication facilities, and auxiliary facilities shall be located to avoid sensitive areas.

AS-MM#9: Community Character Good Housekeeping—Visual Quality Protection Plan. Prior to construction, TCRR shall develop a Visual Quality Protection Plan as a part of the Construction Management Plan (See **SC-MM#1: Construction Management Plan** as discussed in **Section 3.14, Socioeconomics and Community Facilities**) that includes the following:

- **Construction Security Fencing Plan.** Prior to construction, TCRR and/or its contractor shall develop aesthetic and visual guidelines for security fencing, including signage and material shrouds. TCRR shall coordinate with local jurisdictions to identify pertinent aesthetic and visual guidelines. The plan shall be submitted to FRA and the local jurisdictions for review and approval prior to the start of construction.
- **Screen TPSSs.** During construction, TCRR and/or its construction contractor shall construct permanent screens around all TPSSs to limit them from public view. Screens may include but would not be limited to landscaping or solid walls/fences, and shall consist of context-appropriate landscaping of a type and scale that does not draw attention to the station. TCRR shall coordinate with local jurisdictions to identify pertinent screening criteria. Plant species shall be selected on the basis of their mature size and shape, growth rate, hardiness and drought tolerance. Walls shall be constructed of cinder-block or similar material and be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it shall include slats in the fencing.

See **NV-CM#1: Compliance with local regulations** and **NV-MM#2: Operational Noise Mitigation**, discussed further in **Section 3.4.6, Noise and Vibration.**

See NR-MM#1: Site Training, NR-MM#2: Sensitive Habitat Areas, NR-MM#4: Minimize Limits of Disturbance, and NR-MM#9: Wildlife Crossings, discussed further in **Section 3.6.7, Natural Ecological Systems and Protected Species.**

3.10.7 Build Alternatives Comparison

All Build Alternatives would have the same number of beneficial (two) and adverse (one) impacts. Beneficial impacts would occur in the landscape units (Landscape Units #1 and #13) with stations in Dallas and Houston, as shown in **Table 3.10-38**. Adverse impacts would occur as a result of the Brazos Valley Station in Landscape Unit #8, which is common to all of the Build Alternatives. Build Alternatives B, C, D and F would have more neutral impacts than others due to the Build Alternatives crossing similar landscape units.

Table 3.10-38: Alternatives Comparison

Landscape Unit	ALT A	ALT B	ALT C	ALT D	ALT E	ALT F
Landscape Unit 1	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Landscape Unit 2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 4	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 5	-	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 6	-	-	Neutral	-	-	Neutral
Landscape Unit 7	Neutral	Neutral	-	Neutral	-	-
Landscape Unit 8	Adverse	Adverse	Adverse	Adverse	Adverse	Adverse
Landscape Unit 9	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

Table 3.10-38: Alternatives Comparison						
Landscape Unit 10	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 11	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 12	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape Unit 13	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Total Number of Beneficial	2	2	2	2	2	2
Total Number of Neutral	8	9	9	9	8	9
Total Number of Adverse	1	1	1	1	1	1

Source: AECOM, 2016

-- = Build Alternative does not cross the particular landscape unit.

* All landscape units have been assessed based on the available simulated KVPs. The table will be updated once KVP simulations are completed.

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