

## **I. Conclusions**

The following text provides a discussion for concluding that there are no feasible and prudent alternatives to the 32<sup>nd</sup> Street Alignment B (Preferred Alternative) use of the Section 4(f) resource (the Haskell Agricultural Farm Property). The 42<sup>nd</sup> Street Alignment A avoids direct impacts on the Haskell Farm Property and is considered the Avoidance Alternative. The following information presents an accumulation of factors that collectively, rather than individually, have adverse impacts that present unique problems with the Avoidance Alternative

### **1. THE PREFERRED ALTERNATIVE BEST MEETS THE PURPOSE AND NEED**

The K-10 Highway connecting link within the city of Lawrence is located on US-59 and 23<sup>rd</sup> Street and is heavily congested due to high traffic volumes, poor access management and insufficient capacity. These deficiencies degrade the performance of the regional transportation system and contribute to unsafe, congested and inefficient conditions both in the regional system as well as on Lawrence city streets serving local traffic needs. Therefore, the purpose and need for the proposed project is to provide a safe, efficient, environmentally sound and cost-effective transportation facility for users of K-10 Highway and the surrounding state highway system and, to the extent possible, to alleviate congestion on Lawrence city streets.

The No-Action Alternative fails to satisfy the purpose and need for the project and is therefore not considered a prudent alternative. Although the Preferred Alternative and the Avoidance Alternative meet the purpose and need for the project, the Preferred Alternative would divert more traffic from local streets, thereby improving safety on the local street network. Safety improvements are measured in terms of reductions in accidents. Based on the measure of accident reductions, the Preferred Alternative will result in 240 fewer accidents than the Avoidance Alternative by the year 2025, and will therefore result in a cost savings of approximately \$6 million more than for the Avoidance Alternative (see Table 3).

**Table 3 – Accident Analysis**

	<b>No-Action Alternative</b>	<b>Preferred Alternative (32<sup>nd</sup> Street B)</b>	<b>Avoidance Alternative (42<sup>nd</sup> Street A)</b>
Average Annual Change in Accidents (2005-2025)	0	- 120	- 108
Total Change in Accidents (2005-2025)	0	-2400	-2160
Total Savings (year 2001 dollars in millions)	0	- \$59.9	- \$53.9

Source – Corps of Engineers Final EIS, December 2002.

The Preferred Alternative will carry as many as 3,634 more cars per day (approximately seven percent more) than the Avoidance Alternative by the year 2025 (see Table 4). The Preferred Alternative will be more efficient and cost-effective by being a more direct route between the project termini. The Avoidance Alternative is almost one mile longer than the Preferred Alternative.

**Table 4 – Forecast Traffic on SLT for Year 2025**

	<b>No-Action Alternative</b>	<b>Preferred Alternative (32<sup>nd</sup> Street B)</b>	<b>Avoidance Alternative (42<sup>nd</sup> Street A)</b>
Maximum Average Daily Traffic	0	55,566	51,932

Source – Corps of Engineers Final EIS, December 2002.

## 2. THE AVOIDANCE ALTERNATIVE COSTS MORE THAN THE PREFERRED ALTERNATIVE

The latest cost estimates (Table 5), which were based on revised year-2007 prices, indicate that the Avoidance Alternative would cost approximately \$19 million more than the Preferred Alternative.

Table 5 – 2007 Cost Estimate

Cost Item (Dollars in Millions)	Preferred Alternative (32B)	Avoidance Alternative (42A)
Mitigation	22.1	2.0
Road Construction	56.2	43.4
Bridge Construction	35.9	82.6
Utility Relocation	0.8	0.6
Preliminary Engineering	11.4	12.8
Construction Engineering	9.1	10.2
Right of Way & Displacement	12.4	15.3
<b>Total Project</b>	<b>147.9</b>	<b>166.9</b>
<b>Operation and Maintenance</b>	0.213	0.246

The Preferred Alternative has higher roadway costs of \$56.2 million versus \$43.4 million for the Avoidance Alternative because of special construction in the wetlands. The mitigation costs are also higher for the Preferred Alternative at \$22.1 million versus \$2.0 million due to direct impacts to the wetlands. The overall costs of the Preferred Alternative are less due to the difference in bridge construction costs. The bridge costs for the Preferred Alternative being \$35.9 million and those for the Avoidance Alternative being \$82.6 million due to the difference in linear feet of construction of 5,005 linear feet and 9,215 linear feet respectively.

## 3. THE AVOIDANCE ALTERNATIVE HAS GREATER IMPACTS ON THE WAKARUSA FLOODPLAIN AND FLOODWAY

Although both alternatives would result in floodplain impacts, the Preferred Alternative is located on the edge of the floodplain. It will have lesser impacts on the floodplain than the Avoidance Alternative, and will have no impacts on the floodway. As shown on Exhibits 4f-8 and 4f-9, and as explained in the text below, floodplain impacts would be more severe with the Avoidance Alternative than with the Preferred Alternative.

The Avoidance Alternative alignment would pass through approximately 2.4 miles of floodplain, which includes 2.3 miles of the Wakarusa River floodplain and 0.1 mile of a tributary floodplain. Within the Wakarusa floodplain, the Avoidance Alternative alignment would cross the Wakarusa River floodway in three places, totaling approximately 0.8 mile, thereby requiring three bridges at these crossings. According to the Corps of Engineer's Record of Decision, the Avoidance Alternative "will have a significantly greater impact on the river and its riparian corridor".

In contrast, the Preferred Alternative alignment will be routed along the northern edge of the Wakarusa River floodplain. Approximately two miles of the alignment is within the floodplain. This alignment does not cross the Wakarusa River and avoids impacts to the Wakarusa River floodway.

## 4. THE AVOIDANCE ALTERNATIVE WOULD ACCELERATE PLANNED AND UNPLANNED DEVELOPMENT SOUTH OF THE WAKARUSA RIVER

The Avoidance Alternative would greatly increase the accessibility of the area south of the Wakarusa River, and it is anticipated that this alternative would add an increase in development

pressure for both residential and commercial uses. As indicated by the future land use map and designation of growth/service areas, Lawrence anticipates that its growth areas will be to the south and the west. *Horizon 2020*, the City's comprehensive land use plan, currently places the area impacted by the Avoidance Alternative in the Urban Growth Area (UGA) to the south of the City. The UGA boundary was extended south of the Wakarusa River with an amendment that was adopted in January, 2004. This amendment to *Horizon 2020* extends the UGA south to a point between North 1000 Road and North 900 Road. In addition, the *Comprehensive Transportation 2025 Plan* is being revised and updated for 2030.

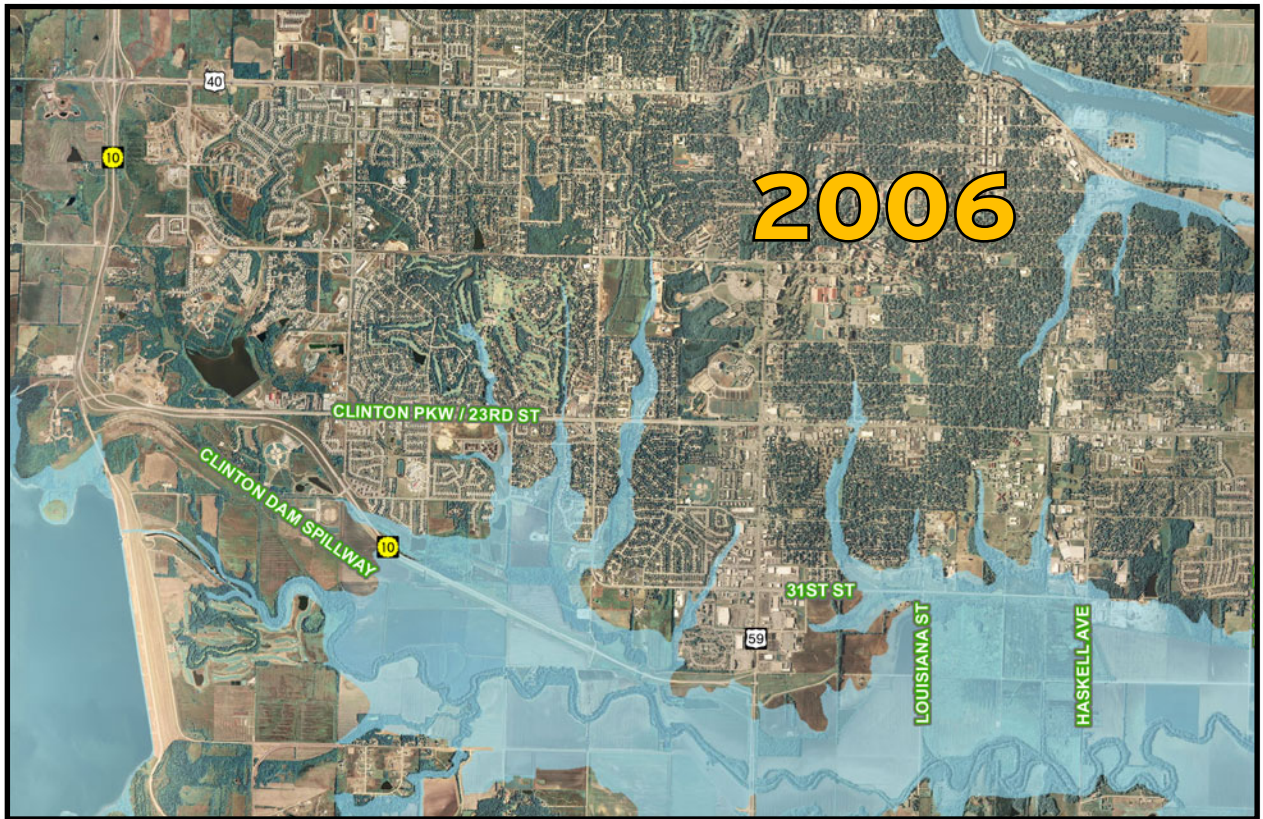
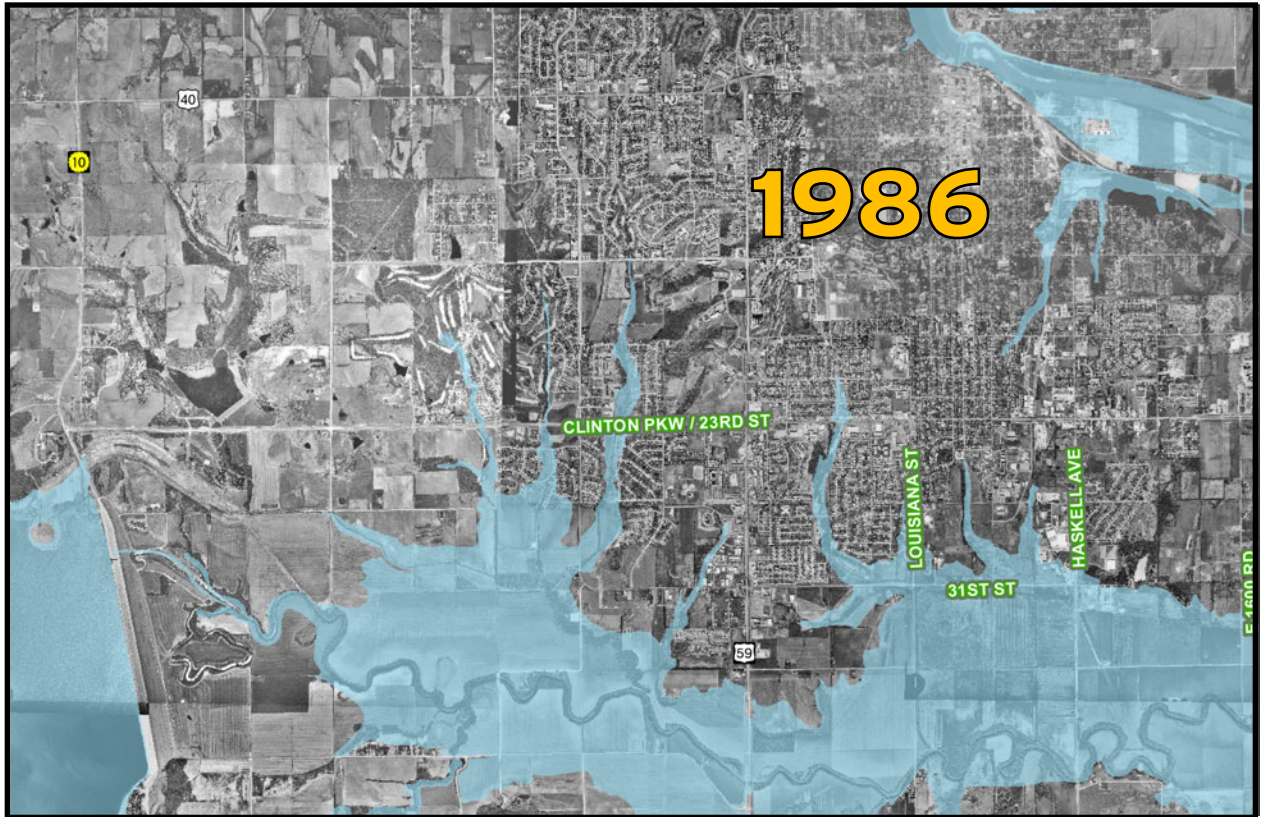
As indicated by the *Horizon 2020* plan amendment, *Transportation 2025*, and the preliminary *Transportation 2030* study, all of which include the addition of the area south of the Wakarusa River in the UGA, the City is planning ahead for future development in that area. The Avoidance Alternative would provide the access needed to induce and accelerate that growth. According to the Transportation Research Board, in a report titled Land Use Impacts of Transportation: A Guidebook, transportation projects can "...cause some households or business to locate in the study area instead of in other places in the region or other regions. If access is improved to land on the urban fringe that is otherwise ready for development, developers may capitalize on the improved access and build homes in these areas instead of elsewhere in the region".<sup>5</sup> This is evidenced by the new residential areas that are currently being developed near the existing western leg of the SLT, which is located along the west edge of the city limits and within an Urban Growth Area (see Exhibit 4f-13). A Transportation Research Board report titled NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects, stated that "*transportation improvements often reduce the time-cost of travel, enhancing the attractiveness of surrounding land to developers and consumers.... If the conditions for development are generally favorable in a region, that is, the region is undergoing urbanization, highway... projects can become one of the major factors that influence where development will occur...(and)...the general tendency is toward relatively high-density commercial or multifamily residential development near facility nodes in urban and suburban areas, and single-family residential development in the urban fringe*".<sup>6</sup> The Avoidance Alternative would also likely create infrastructure demand for streets, sewer, water and other public utilities south of the Wakarusa River by providing an interchange that will enhance access. This would likely put a financial burden on the City and County to build this infrastructure more quickly and in greater capacity than anticipated. According to the Douglas County Administration office, "the impact of a southern alignment of the SLT, such as the 42B Alternative Alignment, would cause the assumptions, locations, and number of major commercial centers to be reconsidered based on development pressures that would be associated with the creation of a major intersection in an area where all four corners of the intersection could be developed" (see Douglas County letter in Appendix G, response to Question 1). In addition, the Douglas County Administration stated that a new major intersection in conjunction with an alignment south of the river, "...could provide a new or alternative location for the next regional commercial node" and that "commercial nodes are attractions for other types of land uses, including residential uses, and the likely result of a commercial node at Haskell Avenue would be a more mixed and dense urban population than the low density residential proposed on the *Transportation 2030* land use map" (see Douglas County letter in Appendix G, response to Question 3).


---

<sup>5</sup> Parsons Brinkerhoff Quade & Douglas, Inc. *Land Use Impacts of Transportation: A Guidebook*. National Cooperative Highway Research Program, Transportation Research Board, October 1998.

<sup>6</sup> Louis Berger Group, Inc. *NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. National Cooperative Highway Research Program, Transportation Research Board, 2002.





 100 Year Floodplain



**HNTB**



**K-10**  
SOUTH LAWRENCE  
TRAFFICWAY

**EXHIBIT 4f-13**  
**Growth Near**  
**West Leg**  
**of SLT**

The City is currently planning the development of a wastewater treatment facility south of the Wakarusa River. The first phase will serve western sections of Lawrence and will in later years be a means to treat sewage due to population growth south of the river. The Avoidance Alternative could require expansion of wastewater plant capacity sooner than anticipated.

Moreover, the projected growth that would occur south of the river around the Avoidance Alternative would result in more traffic on Haskell Avenue and Louisiana Street, and would in turn result in widening these streets adjacent to the HAFP. This impact is discussed in the following Section 5.

The Preferred Alternative will have a somewhat limited impact on future development. The greatest potential for development pressure will occur at the interchanges between the alignment and local arterial streets. Such pressure may include requests for approval of commercial development along Haskell Avenue and replacement of the existing industrial site at the intersection of Haskell Avenue and 31<sup>st</sup> Street. Land located within the 100-year floodplain is not recommended for urban development, but may be approved if the development complies with the local floodplain regulations.

The Preferred Alternative is generally consistent with the goals set forth in *Transportation 2025*, the preliminary *Transportation 2030* study, the amended *Horizon 2020 Plan*, and the *South Lawrence Trafficway Corridor Land Use Plan*. According to the Douglas County Administration, the preliminary *Transportation 2030* plan took into consideration the Preferred Alternative and its related issues (see Douglas County letter in Appendix G, response to Question 1). The City's *Southern Development Plan* that was adopted in 1994 (the study area is between 31<sup>st</sup> Street and the Wakarusa River) is currently undergoing revision and includes the Preferred Alternative alignment of the SLT in its future land use plan. The Avoidance Alternative alignment is not consistent with those documents and major modifications would be required to incorporate the Avoidance Alternative alignment into the overall plan. In addition, amendments may need to be made regarding the types of development that will be acceptable in the vicinity of the roadway corridor. Updates may need to be made regarding specific land uses, zoning classifications and references to existing plans.

## **5. THE AVOIDANCE ALTERNATIVE HAS GREATER SECONDARY AND CUMULATIVE IMPACTS THAN THE PREFERRED ALTERNATIVE**

Although the Avoidance Alternative would have no direct impacts to the Haskell Agricultural Farm Property (HAFP), it would result in greater long-term secondary and cumulative adverse impacts to the HAFP than the Preferred Alternative.

The traffic on Haskell Avenue, 31<sup>st</sup> and Louisiana Streets is going to increase regardless of which alternative is constructed (see table below). The traffic on Louisiana will only increase slightly if the Preferred or Avoidance Alternative is selected. The traffic on Haskell Avenue however will see a substantial increase (4,200 vehicles per day) if the Avoidance Alternative is selected over the Preferred Alternative. The Avoidance Alternative is expected to accelerate development south of the Wakarusa River, which will increase traffic on both Haskell Avenue and Louisiana Street since both roads provide primary north/south routes into Lawrence (see traffic data in table below and in Appendix F). The Douglas County Administration office has also stated that "those involved in the development of ... future planning documents agree that the cumulative impacts ... in the short horizon time of 5-10 years is significant..." (see Douglas County letter in Appendix G, response to Question 1).

The impacts from traffic to the HAFP would be much greater with the Avoidance Alternative because of the substantial increase in traffic on Haskell Avenue and Louisiana Street, and

because these streets will not be relocated to the East and West of the property as in the Preferred Alternative. Moving 31<sup>st</sup> Street south of the dike and adjacent to the Preferred Alternative would reduce negative effects from the increase in traffic on this route to the south Haskell campus. Additionally, because of the increases in traffic, Haskell and Louisiana Streets may need to be widened to four lanes, and under the Avoidance Alternative, this widening would occur adjacent to the HAFP.

**Table 6 – Projected Traffic Increase**

Location	Year	No-Build	Preferred Alternative 32 B	Avoidance Alternative 42 A
31 <sup>st</sup> Street Louisiana to Haskell	1998	12800	7900	6600
	2025	25900	19500	19600
Louisiana 31 <sup>st</sup> to Wakarusa River	1998	800	1000	700
	2025	14400	15900	16000
Haskell 31 <sup>st</sup> Street North to 27th	1998	14800	10900	10100
	2025	35500	27900	24400
Haskell 31 <sup>st</sup> to Wakarusa River *	1998	3000	2200	5100
	2025	15200	16700	20900

\* For the Preferred Alternative this traffic is South of SLT to Wakarusa River

Based on the City’s future land use plans, a review of development trends, and Corps discussions with local planning authorities (during preparation of the EIS), it was determined that urban development will occur within the foreseeable future on some of the undeveloped land located in the vicinity of the HAFP. A portion of the land located immediately west of Baker Wetlands was platted for multi-family development. The land was purchased by KDOT after it had been platted, and was intended to be utilized for right-of-way and mitigation (associated with the Preferred Alternative). This land will most likely be returned to private ownership and may be subject to urban development if the Preferred Alternative is not constructed (see Douglas County letter in Appendix G, response to Question 5).

Although the land adjacent to the Baker Wetlands is located within the 100-year floodplain, and although urban development in the floodplain is not recommended, development may be approved if it complies with the local floodplain regulations. The Douglas County Administration stated that “development west and northwest of Louisiana Street would likely be residential with significant areas retained for drainage easements along FEMA floodplains. The industrial and non-residential nature of land uses to the east of Haskell Avenue would not be likely to change, although over time some redevelopment of existing or similar types of uses would probably occur” (see Douglas County letter in Appendix G, response to Question 6). Development in this area would diminish or eliminate the rural character of the land in the vicinity of the HAFP. Urban development, along with associated increases in traffic, will lead to significant increases in noise, light, urban debris, and visual disturbances in and around the HAFP. Since the Avoidance Alternative would have no direct impacts to the HAFP or the Baker Wetlands, there would be no mitigation measures implemented. As such, the Avoidance Alternative would not provide additional protection from future adjacent development and its associated traffic in the vicinity of the HAFP.

The Preferred Alternative was modeled for noise levels with and without noise walls. Without the noise walls, there would be a greater impact on the adjacent noise-sensitive areas (HINU south campus, Baker Wetlands). However, due to noise mitigation features, which include 12’ high noise walls and relocation of Louisiana Street and Haskell Avenue, the total audible



disturbance associated with this alternative will be less by the year 2025 (ending year for local land use planning) than noise disturbances from adjacent roads associated with the Avoidance Alternative. (See Appendix F, which shows the noise contours for both the HINU Campus and the Baker Wetlands. Contours are shown for both the Preferred and Avoidance Alternatives.)

With the Preferred Alternative, visual impacts may occur as a result of walls being constructed for the purpose of noise mitigation. Although the east/west dike and trees located on the northern edge of the Baker Wetlands will screen the wall and relocated 31<sup>st</sup> Street from the HINU south campus, relocated 31<sup>st</sup> Street and the north (12-foot) wall will still be visible from the south side of the east/west dike until the evergreen tree plantings used for screening grow to sufficient height. The south noise wall will be six feet high on a 6-foot earthen berm that will be planted with vegetation for screening. This south wall will be visible from the Baker Wetlands south of that berm until the vegetation grows to near the height of the wall. Therefore, the visual impact of the walls on the wetlands will be temporary, as it will be minimized with vegetative screening. Changes to the current views within the HAFP will be most dramatic close to the roadway, with diminishing viewshed impacts as one moves farther north or south of the road.

## **6. THE AVOIDANCE ALTERNATIVE HAS ADDITIONAL ADVERSE ENVIRONMENTAL IMPACTS OVER THE PREFERRED ALTERNATIVE**

Other environmental factors that were evaluated to determine the most feasible and prudent alternative are discussed below.

### **a. Riparian Woodland**

The Avoidance Alternative would impact 5.2 acres of riparian woodlands and 18.2 acres of upland woods. In comparison, the Preferred Alternative will impact 1.2 acres of riparian woodlands and 9.6 acres of upland woods.

### **b. Other Historic Sites**

The Avoidance Alternative would be aligned along the area where the Oregon and California National Historic Trail was located, including Blanton's (Bridge) Crossing located at the Wakarusa River and Louisiana Street, east of the Meair's Farmstead. The Blanton's Crossing area is a "High Potential Site" identified by the National Park Service (NPS) trail management plan as part of the Oregon and California National Historic Trail, which traveled along the area where the east/west portion of the Avoidance Alternative alignment is located. The NPS urges protection of this high potential site as an important trail resource, and to recognize the historic importance of this area in the history of western migration and of "Bleeding Kansas". The Avoidance Alternative would impact a corner of the property of the National Register eligible Meair's Farmstead, located adjacent to the alignment. However, there would be no adverse effect with the implementation of vegetative screening.

The Preferred Alternative will avoid the Meair's Farmstead and the area south of the Wakarusa River that is of historic importance in the history of Kansas.

## **7. THE PREFERRED ALTERNATIVE PROVIDES A NET BENEFIT TO THE SECTION 4(F) PROPERTY**

There are currently multiple transportation uses within the boundaries of the HAFP. The existing 31<sup>st</sup> Street crosses the southern boundary of the Haskell University Campus; and multiple maintenance roads, that are accessible by locked gate access, bisect the Baker Wetlands complex. Also, there are two small access parking areas, one south of 31<sup>st</sup> Street approximately ½ mile east of Louisiana Street and on the west of Haskell Avenue at 35<sup>th</sup> Street.

A new transportation corridor would not be created through the HAFP with the 32 Street Alignment B alternative. It would require an additional 40 acres of the HAFP to be used for transportation (53 acres for the new alignment minus the 13 acres vacated by the relocation of 31<sup>st</sup> Street). This corridor would be consistent with the transportation uses that exist currently in HAFP. Also, the relocation of 31<sup>st</sup> Street will make the Haskell Campus contiguous, and restoration will be consistent with the current uses of the HAFP. In comparison, the total land area of the HAFP is 804 acres. The 32<sup>nd</sup> Street Alignment B alternative requires approximately 5% of that area.

The Preferred Alternative (32<sup>nd</sup> Street B), with mitigation measures as stated in the MOA would provide the following net benefits to the Section 4(f) Property:

- Removal of 31<sup>st</sup> Street from HINU property and conversion of that area to wetlands, if so desired by HINU. 31<sup>st</sup> Street will be relocated to the south, off of HINU property.
- Relocation of Haskell Avenue and Louisiana Street to obtain areas for wetland mitigation adjacent to the Baker Wetlands, between the relocated and vacated roads. Approximately 304 acres of mitigation wetland restoration (at a 6:1 ratio) will be developed in these areas, plus 13 acres on HINU property after relocation of 31<sup>st</sup> Street, resulting in a net gain of approximately 259 acres of wetlands. This mitigation proposal will create a permanent buffer along the east and west sides of the southern half of the HAFP (Baker Wetlands) and will protect the property from noise, light, urban debris and visual disturbance, and will also reduce foreseeable cumulative future development-related impacts. (Under the Avoidance Alternative, this net benefit would not be provided.)

KDOT also worked closely with Baker University representatives to develop mitigation measures for the Preferred Alternative directed at addressing impacts to wetlands, resulting in the following additional net benefits to the Section 4(f) Property:

- Development of a 10,000 square foot Wetland and Cultural Educational Center which will highlight the history of the Baker Wetlands in relation to the HAFP.
- Funds for an annuity will be provided to Baker University for maintenance, operation and administration of the expanded Baker Wetlands complex and the Educational Center. The endowment is expected to ensure that sufficient funding will be available to maintain Baker Wetlands indefinitely.
- Construction of hike and bike trails to provide enhanced access to Baker Wetlands.
- Construction of small parking areas to enhance access to the Baker Wetlands.
- Development of campsites in the mitigation area.
- Provide pedestrian access to Baker Wetlands from Broken Arrow Park and from the southeast corner of the HINU campus.

As stated by the Keeper of the National Register *“The former agricultural farm property (Upper Fields and Baker Wetlands) is important because it reflects the essential role of agricultural training in the early history of the Haskell School and the diverse historic uses of the lands to the south of the core campus. While modified, these former agricultural lands still retain the essential physical characteristics associated with this area from the historic period, including land use patterns, spatial organization, circulation networks, and small scale elements such as the various water control systems and structures.”* While the Preferred Alternative uses part of



the land within the boundaries of the HAFP it does not affect any of these remaining physical characteristics that contribute to the eligibility of the property for the National Register. In addition, by relocating 31<sup>st</sup> Street adjacent to the Preferred Alternative there would continue to be only one transportation corridor bisecting the HAFP. However, it will make the Haskell Indian Nations University property a contiguous unit.

The Corps of Engineers concluded that the Preferred Alternative “is unlikely to significantly impact religious/spiritual use of the property by Native Americans and that the property’s value to Native Americans, as a reminder of the past, will not be substantially degraded.

## **8. CONCLUSION STATEMENT**

The above information is an accumulation of factors that collectively rather than individually have adverse impacts that present unique problems with the Avoidance Alternative.

Based upon the above considerations, there is no feasible and prudent alternative to the use of land from the Haskell Agricultural Farm Property (HAFP), and the proposed action includes all possible planning to minimize harm to the HAFP resulting from such use.