

Technical Memorandum

To: Cooperating Agencies, Participating Agencies and Other Interested Stakeholders	Date: November 16, 2018
From: South Lawrence Trafficway SEIS Study Team	
Subject: SLT SEIS Proposed Impact Assessment Methodologies	

South Lawrence Trafficway Supplemental Environmental Impact Statement Impact Assessment Methodologies

Introduction

This document presents a general outline of steps and methodologies that will be used by the K-10 Highway / South Lawrence Trafficway (SLT) Supplemental Environmental Impact Statement (SEIS) study team to carry out the impact evaluation process for different categories of environmental analysis for the SLT improvements, located within the south and west limits of the City of Lawrence, in Douglas County, Kansas. The study team consists of representatives from the Federal Highway Administration (FHWA), the Kansas Department of Transportation (KDOT), and members of their study consultant team. This impact assessment methodologies memorandum has been prepared in compliance with the 2015 Fixing America’s Surface Transportation (FAST) Act, which carries forward requirements of Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Efficiency Act - A Legacy for Users (SAFETEA-LU) and is provided to assist coordination with cooperating and participating agencies along with other stakeholders. The overall project study area begins just north of Interstate 70 at North 1800 Road/Farmer’s Turnpike and extends to just east of the existing K-10/23rd Street system interchange. The overall length is 19.0 miles and is subdivided as follows:

- The West Section, an existing two-lane expressway, begins just north of Interstate 70 at North 1800 Road/Farmer’s Turnpike to US-59/Iowa Street (approximately 8.7 miles);
- The East Section, an existing four-lane freeway, begins at US-59/Iowa Street and continues to the existing K-10/23rd Street system interchange; and
- The project study area also includes East 600 Road/Lecompton Road at Interstate 70 (approximately 0.6 mile), and U.S. 40 from K-10 to E 600 Road (approximately 4.1 miles).

The study area is shown on **Exhibit A** at the end of this memorandum.

The assessment of impacts will follow FHWA Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents, and other relevant FHWA and KDOT guidance as appropriate, to assess potential impacts of the project.

This document is meant to assist coordination with cooperating and participating agencies regarding the assessment of impacts and the methods used in the SEIS for the project. It is not intended to be an all-inclusive scope of work. All impact assessments will be conducted in accordance with standard Council on Environment Quality, FHWA, and KDOT guidance, as applicable. Proposed modifications to impact assessment and methodologies that do not fit with or contradict standard guidance and practices will not be implemented unless a highly unique situation warrants a change in the assessment methodology.

Background

A previous Environmental Impact Statement (EIS) was prepared in 1990 for the overall SLT study area. The purpose and need stated in that EIS was to relieve congestion on existing 23rd Street and Iowa Street by diverting through and local traffic from these two existing streets and Clinton Parkway, thereby achieving an improved level of traffic service on the local street network. The goals of the current proposed project on the West Section are to increase capacity, enhance safety, and address access while minimizing or avoiding impacts to sensitive project environmental features within the project footprint. Also, the project will provide an efficient and cost-effective transportation facility for users of K-10 Highway and the surrounding state highway system.

As an outcome of the approved 1990 EIS, two expressway lanes of the West Section were constructed and opened to traffic in 1996. The East Section was not constructed and a subsequent SEIS with a “No Build” decision was approved in 2000. A subsequent EIS, in conjunction with a USACE 404 Permit, was completed in 2002 and adopted and approved by FHWA in November 2007, with a Record of Decision (ROD) issued in May 2008. Since the completion of the ROD, the East Section four-lane freeway was constructed and opened to traffic in 2016.

The *K-10 West Leg Concept Study*, conducted from 2014-2016 for the Kansas Department of Transportation, investigated the current and future needs and functions in the K-10/SLT West Section. This study considered alternatives for the future widening and upgrade of the corridor, which modified the current 2-lane expressway design to a 4-lane freeway design with limited access, and grade separated interchanges in place of existing at-grade intersections. The concept study will be used as a reference document during the preparation of the SEIS.

SEIS Environmental Process

The current SEIS, as a supplement to the original 1990 EIS, will evaluate a ‘No Action’ alternative as well as a combination of toll-free and tolled build alternatives for the entire SLT study area. Roadway configuration options will be evaluated, including upgrading the West Section as a freeway with additional capacity and controlled access and interchanges. Also, access alternatives at I-70/East 600 Road/Lecompton Road and K-10/I-70/North 1800 Road will be considered. The East Section of the SLT is included in this study because it was included in the original 1990 EIS, and because funding options, such as tolled and toll-free options, are being evaluated for the project. Therefore, the entire corridor will be evaluated to include potential impacts of the funding options. It is not anticipated that there will be any physical roadway improvements or modifications that require additional right-of-way on the East Section as a result of the funding options.

Through preparation of the SEIS, the study team will seek the following outcomes:

- Approval of a preferred alternative for project improvements, and determination of a preferred funding option.
- Environmental documentation that produces an approved and combined Final SEIS and ROD.
- Public and agency consensus and understanding of the overall preferred improvements.
- Development of mitigation measures.

Environmental Impact Assessment Methodologies

The study team will evaluate each of the categories listed below in relation to direct, indirect, and cumulative impacts of project alternatives, as well as based on tolled and toll-free funding options. Each resource evaluation will begin with a review of the impacts stated in the original 1990 EIS. To identify potential areas of environmental concern in or near the project area, data gathering efforts will involve the use of the Environmental Protection Agency's (EPA's) NEPAassist web-based mapping tool, as well as other specific resource databases as noted for each specific resource discussed below. The following sections provide a summary of how each of the specific categories will be evaluated.

Land Use

The study team will conduct a land use windshield survey and will identify and review the existing local and regional land use policies, comprehensive land use plans, and development trends within the study area to determine existing and future land use and development types and patterns. The study team will assess the consistency of project alternatives with existing and future land uses, and potential impacts or benefits to existing or future land uses from the project alternatives. The study team will coordinate with local agencies regarding any land use conflicts that could result from improvement strategies and potential solutions.

Social, Community and Neighborhood Impacts

A demographic profile of the study area, in comparison to the regional context, will be completed using block group U.S. Census data where possible to determine population characteristics of the study area and adjacent areas. This profile will include data such as population, gender and age, education, income, employment, means of transportation, and ethnicity/race.

Based on a windshield survey and a review of city and county databases, the study team will inventory and map the existing communities, neighborhoods, clusters of residences, schools, churches, parks, community facilities, and emergency facilities and services in the study area. The study team will examine the potential for impacts of highway improvements on community facilities, services and neighborhood cohesion. In addition, area travel patterns and accessibility will be assessed, based on the unique potential benefits or impacts of the project alternatives, such as travel times and emergency vehicle response times, changes in travel patterns and the effects on access to community facilities and neighborhoods. The potential impacts due to various funding options for the project will also be assessed as a part of the social, community and neighborhood impact assessment.

Parks and Public Lands Analysis

Potential existing and planned public parks, recreation areas, wildlife and waterfowl refuges and other public use lands within or adjacent to the study area will be identified. This will include identification of all known properties protected under Section 4(f) of the Department of Transportation Act, public school playgrounds, and Federal Emergency Management Agency (FEMA) buyout properties. Other lands or facilities of special interest that have been funded with a variety of natural resource funds, such as the federal Land and Water Conservation Fund (LWCF) Act money protected under Section 6(f), or other federal funding programs such as Dingell-Johnson or Pittman-Robertson money, will also be identified.

Coordination with the Kansas Department of Wildlife, Parks and Tourism (KDWPT), the National Park Service (NPS) (U.S. Department of the Interior), the U.S. Army Corps of Engineers (USACE), and local governments having jurisdiction over public-use lands will take place to determine the use and management of the land, as well as their opinion related to potential impacts or effects resulting from the project alternatives. Integrating access to adjacent parks or greenways will also be considered in the alternative development process.

FHWA will make the final determination regarding Section 4(f) or Section 6(f) eligibility of properties. The determination of unavoidable “use” (impacts) of any Section 4(f) or Section 6(f) properties, along with the required documentation and mitigation measures required for the impacts on these properties will be developed through a Section 4(f) evaluation or through a 4(f) *de minimis* finding, if impacts are determined to be minimal. Historic sites are also considered Section 4(f) properties and are discussed below under **Cultural/Archaeological Resources**.

Environmental Justice

In accordance with Executive Order 12898 *Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations*, the study team will seek to avoid disproportionately high and adverse impacts on minority and/or low-income populations. Guidance from the U.S. Department of Transportation Order on Environmental Justice (5680-1, 1997), as well as Title VI will be used in this analysis. The study team will obtain information on EJ populations from the EPA’s EJSCREEN website, as well as from the most recent U.S. Census data, Geographic Information Systems (GIS), local agencies/organizations, low-income housing providers, and through public involvement and community outreach activities to identify and assess potential direct and/or indirect impacts of the project alternatives on EJ populations. For example, direct impacts would be based on residential or business displacements, and indirect impacts could be related to the effects of project funding options, such as tolling, special taxing districts and other user fees and taxes on low-income populations. Additional populations, such as elderly or disadvantaged/disabled persons protected under the Americans with Disabilities Act, and any population that may require special public involvement considerations will also be identified and impacts evaluated. The study team will also review minority and low-income populations in the vicinity of the study area to assess impacts (e.g., number of block groups with percentages greater than the County percentage).

Economic Impacts

The study team will conduct windshield surveys and contact local business organizations, economic development commissions, and chambers of commerce to determine an inventory of businesses, trade centers and business districts with the potential to be affected by project alternatives. Physical and non-physical impacts to businesses within, and near, the study area will be determined. Labor force and economic trends for the area and impacted communities (as compared to the county and state where applicable) will be analyzed. Displaced or impacted businesses will be identified, and displaced employees will be estimated. An estimated change in tax revenue will be calculated, based on the amount of taxable land lost as a result of potential property acquisition. Beneficial impacts to local and regional economic conditions through the enhanced movement of people and goods will also be assessed. Indirect impacts to businesses will also be determined, including construction impacts and temporary access impacts. Mitigation measures will be proposed where needed. The potential economic impacts due to various funding options for the project will also be assessed as a part of the economic impact assessment.

Relocation Impacts

As project alternatives are developed, all efforts will be made to avoid impacting residential or commercial buildings. However, if any homes or businesses would be directly impacted as a result of the project alternatives, the study team would calculate the number of displacements and characterize those potential relocations in terms of minority, disabled, elderly, household size, income levels, home values, business types, and business employee/employer characteristics to the extent determinable by available data. The study team will compare the availability of residential and commercial properties within a reasonable distance of the study area with the housing, business and community facility needs of the properties that will be displaced. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR 24) of 1970, as amended, would apply to all displacements.

Farmland Impacts

The study team will review the county soil survey provided by the Natural Resources Conservation Service (NRCS), identify farmland soils within the study area, and calculate the potential acreage impacts for conversion by the project alternatives. Farmland protected by the Farmland Protection Policy Act (FPPA) is either (1) prime or unique farmland, which is not already committed to urban development or water storage, or (2) other farmland, which is of statewide or local importance, as determined by the appropriate local NRCS agency with the concurrence of the Secretary of Agriculture. Farmland subject to FPPA requirements does not have to be currently used for cropland. Coordination with the local NRCS office will take place. If necessary, form NRCS-CPA-106, the Farmland Conversion Impact Rating form for Corridor Type Projects (or form AD-1006), will be completed and submitted to the local NRCS Field Office for review and input, in accordance with the FPPA. The acquisition of agricultural property within the project area will be carried out in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Noise Impacts

All sound level analysis and noise impact and mitigation determinations will be conducted in accordance with the *Federal Highway Administration's Procedures for Abatement of Highway Traffic Noise and*

Construction Noise as presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772), and per the most recent *KDOT Highway Traffic Noise Analysis and Abatement Policy and Procedures*.

Noise-sensitive receptors along the project corridor will be mapped and a preliminary noise impact assessment for the project alternatives will be performed by analyzing the distance from the roadway of a 66 dBA noise contour provided by KDOT. For the more detailed analysis of the preferred alternative, existing noise measurements will be taken in the study area to establish existing conditions and to calibrate the traffic noise model. Noise impacts from the preferred alternative will be projected using the latest version of FHWA's Traffic Noise Model, TNM[®]2.5, and per the KDOT traffic noise policy (January 2013), to model existing, no action, and design year noise levels using peak hour traffic characteristics for existing conditions and the future design year.

Noise-sensitive land uses in the vicinity of the study area will be identified based on the noise activity categories listed in FHWA's Noise Abatement Criteria guidance. Sound levels will be projected at various receptors in noise-sensitive locations within the study area, including residences, parks, recreational areas, and other areas as determined by field reviews, public and agency input, and proximity to the preferred alternative. The preferred alternative alignment is the only future build condition that will be analyzed. Sound levels at the various receptors will be compared to the FHWA approved noise abatement criteria, and potential impacts will be identified. Impacted receptors are then evaluated for noise abatement measures in accordance with feasible and reasonable conditions contained within the *KDOT Highway Traffic Noise Analysis and Abatement Policy and Procedures*. If noise abatement measures will be needed, a variety of measures will be presented to impacted receptors for discussion with KDOT input, and a noise barrier wall analysis will be completed, if necessary.

Air Quality

Douglas County has no designated air quality non-attainment areas for any of the criteria pollutants for which National Ambient Air Quality Standards (NAAQS) have been set. The Kansas Department of Health and Environment (KDHE) (invited as a participating agency) and the Region 7 US Environmental Protection Agency (USEPA) (invited as a cooperating agency) will be available to consult on project-related air quality issues. The SEIS will include qualitative discussions (and quantitative, if available and appropriate) involving temporary impacts from construction activities and measures to control fugitive dust during construction, as well as operational impacts related to Mobile Source Air Toxics (MSAT) as defined by the EPA, and climate change in relation to carbon emissions.

Cultural Resources

A cultural resource investigation will be conducted by KDOT Environmental Services Section staff to identify and evaluate historic and archeological resources within the study area, in coordination with the State Historic Preservation Office (SHPO) of the Kansas State Historical Society (KSHS). The cultural resource investigation will include an archival review of the study area, and a review of other previous cultural resource studies including existing architectural records, bridges/culverts, burial grounds, cemeteries and identified archeological sites.

The cultural resource investigation will also include an Activity I Historic Resources field survey to identify all architectural resources (buildings, structures, objects, bridges and districts/landscapes) in the area of potential effects (APE). Any architectural resources potentially eligible for the National Register

of Historic Places (NRHP) regardless of age, directly impacted regardless of age, and less than 45 years old but part of a complex or district that has at least one building 45 years old or older will be documented. The results of the Activity I Historic Resources survey will be submitted to the SHPO for review and subsequent determinations of eligibility.

The study area will also be submitted to the KSHS for a Phase I archeological office review to identify prehistoric and historic sites. KSHS archeologists will conduct Phase II investigations, if recommended as a result of the Phase I review. Locations of previously recorded sites will be examined for cultural remains in areas likely to have archeological sites. Ground observations for cultural materials will be conducted using shovel tests in these areas to determine soil integrity and the presence or absence of artifacts. A sample of any existing artifacts will be collected from each site large enough to determine temporal affiliation and site use. The results of the Phase I and II investigations will be submitted to the SHPO for concurrence on determinations of eligibility.

The amount of impact/effect that the project alternatives will have on any NRHP-eligible property within the APE will be evaluated in coordination with the SHPO.

Hazardous Waste Sites

A hazardous waste assessment will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential hazardous waste sites within the study area. The study team will coordinate with the USEPA and the KDHE to identify and map potential contaminated/hazardous waste sites in the study area, and by reviewing databases of these agencies to compile lists or files of major known hazardous waste, hazardous material, or solid waste disposal locations within the study area. These substances are regulated under programs such as the Resource Conservation and Recovery Act (RCRA), Toxic Release Inventory (TRI), Aerometric Information Retrieval System (AIRS), Comprehensive Environmental Response Compensation and Liability Act (CERCLA) also known as Superfund, and any other known regulated materials sites that fall under the jurisdiction of the USEPA or KDHE. For example, superfund sites; hazardous waste treatment, storage, or disposal facilities; or solid waste landfills that could impact the location of the project alternatives will be evaluated for potential impacts. In addition, petroleum underground storage tanks and leaking underground storage tanks, hazardous waste generators, small rural dumps, etc. will also be located and evaluated for impacts; although they would not normally affect the location of the project alternatives.

The study team will prepare a summary in the SEIS comparing the relative ease (low, medium or high) of avoiding the hazardous waste sites and the relative contamination risk or clean-up effort (low, medium or high) of each hazardous waste site within each of the project alternatives.

Visual Impacts

The project's impact on aesthetic and visual resources in the study area will be evaluated using the FHWA's *Visual Impact Assessment for Highway Projects* (DOT FHWA-HI-88-054) guidance. The study team will perform an aesthetic and visual impact analysis for the project alternatives from the user's perspective (view *from* the highway) as well as the neighboring residents and development's perspective (view *of* the highway). This will include an assessment and description of existing visual resources and views, as well as a discussion of likely changes in the visual environment that would result from the construction of the project alternatives.

Surface and Ground Water Quality

A water resources inventory will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential surface and groundwater impacts within the study area. The study team will review aerial photography and USGS topography maps and conduct a field investigation to identify and map streams, rivers, ponds, lakes and other water features located within the study area. The study team will also review and summarize pertinent information in the KDHE's most recent approved 303(d) list of impaired waters to determine if any are located in the study area. Per the Safe Drinking Water Act, and in coordination with KDHE, it will be determined if sole source aquifers or wellhead protection areas exist in the study area, and determine impacts if any are present, as well as any required protection measures during or after construction.

The study team will identify water bodies that would be directly impacted by the project alternatives and evaluate the potential temporary and permanent stream impacts in linear feet, and other water body impacts in acres. The study team will also assess the potential magnitude of anticipated impacts to water resources from construction activities, as well as the potential indirect impacts from planned adjacent development, roadway runoff, accidental spills, and other pollutant impacts associated with highway operations and maintenance. In addition, the discussion will include concepts for utilizing measures for best management practices (BMPs) regarding control and treatment of highway runoff to receiving waters, such as vegetative buffers, berms, and ditch check dams. The SEIS will include a discussion of requirements for a Section 401 Water Quality Certification from the KDHE, a Section 404 Permit from the USACE, a Stream Obstructions or Channel Changes Permit from the Kansas Department of Agriculture, Division of Water Resources (DWR) and a National Pollutant Discharge Elimination System (NPDES) Permit from the KDHE. In addition, mitigation for stream impacts will be addressed in coordination with the USACE, based on the most recent version of the Kansas Stream Mitigation Guidance document for determining adverse impacts and credits required.

Wetlands

A wetlands inventory will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential wetland impacts within the study area. The study team will collect and review applicable National Wetland Inventory (NWI) maps, USGS maps, and Kansas Applied Remote Sensing (KARS) mapping for the study area. In addition, the study team will perform a field review to verify the presence and approximate size of vegetated wetlands and other aquatic sites in the study area. Additional low-lying or wet areas not shown on the NWI maps will also be investigated. An on-site meeting with the USACE will be conducted to identify wetlands and verify jurisdiction.

The study team will evaluate wetland impacts (in acres) of the project alternatives and provide sufficient impact analysis on the project alternatives so that the USACE is able to concur with selection of a Preferred Alternative for the purposes of their Section 404(b)(1) alternative analysis. The study team will document the analysis and results in the SEIS. An Only Practicable Alternative Finding regarding wetland impacts, in accordance with Executive Order 11990, will be included within the combined final SEIS/ROD. The SEIS will also include a discussion of the required USACE Section 404 Permit, as well as wetland mitigation hierarchy options.

Floodplains

A floodplains assessment will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential floodplain impacts within the study area. Executive Order 11988 directs federal agencies to provide leadership and to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. As defined in Executive Order 11988, the 100-year floodplain is that area subject to a one percent (1%) or greater chance of flooding in any given year.

The study team will obtain digital Flood Insurance Rate Map (FIRM) data from FEMA, as part of the National Flood Insurance Program (NFIP), to identify existing floodplains and floodways within the study area. The study team will review the floodplain mapping to determine if the project alternatives will encroach upon a 100-year floodplain or regulatory floodway, which will in turn determine if further coordination with FEMA would be required, and to determine if the base flood elevation would be changed by the project alternatives. The SEIS will detail the NFIP status of the study area neighborhoods, any encroachments that are anticipated, and any base flood elevation change.

The study team will evaluate the encroachment impacts (in acres) of the project alternatives and will show the 100-year floodplain and regulatory floodway on project exhibits. As part of the impact assessment of the project alternatives, the study team will summarize the risk associated with implementation of the alternative in the floodplain and significance of environmental impacts on natural and beneficial floodplain values. Measures to minimize floodplain impacts and measures to restore and preserve the natural and beneficial floodplain values will be developed. The SEIS will also include a discussion of a Floodplain Development Permit from the Douglas County Floodplain Administrator (FEMA representative), as well as a Floodplain Fills Permit from the Kansas DWR.

Natural Communities and Wildlife

A natural communities and wildlife review will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential impacts within the study area. The study team will coordinate with the KDWPT and the Kansas Biological Survey (KBS) to collect information on specific habitats, including those for threatened, endangered and rare species, and any natural communities, to determine if there are any known locations of federal and/or state listed threatened or endangered species or designated critical habitat within the study area, or known locations of any other rare species or rare natural communities. These sites will be mapped for internal study team and resource agency use, and the potential for impacts from the project alternatives will be evaluated. The methodology for evaluating impacts to threatened or endangered species is discussed further in the section below.

Impacts to natural communities will be determined based on whether a project alternative would cause a minor permanent alteration of existing habitat or whether it would involve the removal of a sizeable amount of habitat, such as habitat which supports a rare species, or a small, sensitive tract.

Threatened and Endangered Species

A threatened and endangered species review will be conducted by KDOT Environmental Services Section staff to identify and evaluate potential impacts within the study area. The study team will initially review the lists of threatened and endangered species compiled in the databases of the U.S. Fish and Wildlife Service (USFWS), the KDWPT, and the KBS to determine which species could potentially occur in habitats

in the study area. Habitat requirements for those species will be described in the SEIS. In accordance with Section 7 of the Endangered Species Act, as amended, the study team will also coordinate with these agencies to determine if there are documented occurrences of threatened and endangered species within or near the study area. The KBS has performed habitat surveys that have confirmed that the federally-threatened Mead's Milkweed is present, or known to be present, on the native prairie areas in and adjacent to the study area. The federally-threatened Northern Long-eared Bat also has the potential to occur in the study area during the summer months, within the wooded areas that provide potential roosting trees.

The study team will evaluate the impacts (in acres) of the project alternatives on the habitats of those protected species. If it is determined that the project may impact a listed species, KDOT will conduct the necessary Section 7 Endangered Species Act consultation with the USFWS, along with KDWPT and KBS coordination throughout the SEIS process to determine measures for avoidance, minimization, or mitigation.

Geotechnical

The study team will complete a review of the US Geological Survey (USGS) website and USGS mapping, as well as a literature search for existing surface and subsurface information within the study area. Locations of potential subsidence and other geologic information of record will be identified through known information, existing documents and recent investigations in the study area from KDOT's Bureau of Structures and Geotechnical Services (BSGS), and aerial/topographic maps. The study team will identify locations of any springs, caves, sinkholes and other unique features in the study area. Existing mining operations and mineral resources that may be affected by the proposed alternatives will also be identified. Data gathered from this task will be input into GIS. The project alternatives will be assessed to determine potential effects related to existing geologic conditions.

Construction Impacts

The study team will develop preliminary construction limits for the proposed alternatives in order to evaluate impacts for the project. The study team will identify and list any temporary construction impacts (noise, air, water, erosion, sedimentation, traffic congestion, detours, safety, visual, etc.) likely to be associated with construction of proposed improvements. The discussion will address the use of BMPs to minimize, reduce or avoid potential temporary impacts during construction, such as silt fences, coir logs, check dams, berms, erosion control blankets, and seeding.

The discussion will include a list of environmental permits required prior to construction, including the following:

- *Section 404 Permit (US Army Corps of Engineers)*
- *Section 401 Water Quality Certification (Kansas Department of Health and Environment)*
- *National Pollutant Discharge Elimination System (NPDES) Permit (Kansas Department of Health and Environment)*
- *Stream Obstructions or Channel Changes Permit (Kansas Department of Agriculture, Division of Water Resources)*

- *Floodplain Fills Permit (Kansas Department of Agriculture, Division of Water Resources)*
- *Floodplain Development Permit (Douglas County Floodplain Administrator)*

Energy

Energy includes fossil fuels, labor, and highway construction materials. Although energy consumption is typically not a key decision-making criterion for evaluating project alternatives, the SEIS will include a discussion of how a reduction in energy consumption is generally a byproduct of other transportation improvement goals, such as reducing congestion and improving travel times and level of service, as compared to the No Action alternative.

Indirect and Cumulative Impacts

The FHWA's position paper, *Secondary and Cumulative Impact Assessment in the Highway Development Process* (April 1992), the Council on Environmental Quality's (CEQ) *Considering Cumulative Effects under the National Environmental Policy Act* (January 1997), the National Cooperative Research Program (NCHRP) Report 466, and CEQ guidance will be used to guide the process for the indirect and cumulative effects analysis.

Indirect (secondary) impacts are caused by the project that become evident later in time or are farther removed in distance than direct impacts but are still "reasonably foreseeable". An example of an indirect impact would be land use changes that occur along a newly constructed highway, such as the development of hotels. While the new highway did not directly cause the construction of hotels, it encouraged their construction by providing improved access to the properties. The analysis will use a systematic approach to identify potential indirect effects on the built environment and natural resources that may be caused by the project. The process for identifying indirect effects will include the following steps: identifying the study area and larger metropolitan area; analyzing the study area's goals and notable features; identifying impact causing activities; analyzing potential impacts of the proposed transportation actions (qualitatively, as well as quantitatively if available and appropriate); and assessing the consequences of the effects. The process includes coordination with local, regional, and state agencies (if applicable) regarding land use issues.

Cumulative impacts are those impacts that result when adding the incremental impacts of a project to other past, present and foreseeable future projects. Cumulative impacts can be positive or negative depending on the environmental resource being evaluated. A *qualitative* analysis for the project's potential cumulative effects will be conducted, which could include quantitative effects, if available and appropriate. This analysis will involve a two-tiered process. First, the potential combined direct and indirect effects of the project as identified in the SEIS and other past, present and reasonably foreseeable future activities will be identified. Second, an assessment of the potential for the project-related effects to have a cumulative effect on natural resources would be conducted and summarized in the SEIS. The cumulative effects analysis will identify incremental differences in the area's future transportation improvement, development, resource use and resource preservation trends with and without the build alternatives.

The potential indirect and cumulative impacts due to various funding options, including tolled and toll-free options, for the project will also be assessed as a part of the impact assessment. Factors to be evaluated will include, but not be limited to, the following:

- Out of direction travel to avoid a user fee (e.g., toll, taxing district, etc.)
- Traffic diversion to alternative routes
- Travel time comparisons for a tolled and a toll-free route

Other Environmental Impacts

The SEIS will also identify any of the following impacts, as applicable:

- Joint Development
- Relationship of local short-term uses vs. long-term productivity
- Irreversible and irretrievable commitment of resources

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