



SANTA TERESA INTERNATIONAL RAIL STUDY

FEASIBILITY CORRIDOR STUDY REPORT

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NEW MEXICO
BORDER AUTHORITY

PREPARED BY:



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Santa Teresa International Rail Study

INTRODUCTION

The existing rail port of entry in El Paso, Texas and Ciudad Juárez, Chihuahua, Mexico is within the urban cores of those cities. The existing facility is constrained with little to no property for additional Customs and Border Protection (CBP) facilities or expansion of railroad right of way. Further, trains idle at a roadway-rail crossing to the historic El Paso Chihuahuita neighborhood, which blocks access to residents and emergency response vehicles and personnel. Limitations on when trains can travel at maximum operating speeds through Ciudad Juárez cause additional operational constraints as does the amount of time daily that the border crossing is open for operation.

The Santa Teresa International Rail Study is intended to evaluate the potential for a bi-national rail bypass west of the El Paso/Ciudad Juárez urban areas. The purpose of the project is to develop a corridor that would decrease limitations at the existing El Paso rail port of entry while enhancing safety and providing additional economic development opportunities within the region.

The success of a bi-national project, such as this proposed rail bypass, requires close coordination between entities and stakeholders from the United States and Mexico beginning at the earliest stages of study and development. The State of New Mexico, through the New Mexico Border Authority, and the Mexican State of Chihuahua are the sponsors of the feasibility phase of the project and have a respective team of staff and consultants to perform the work on each side of the border. Although there are significant differences in the project development process in each country, it is critical to the success of the project to have both teams work in close coordination to maintain a consistent scope of work, development schedule, and message to the local, state, and federal agencies in both countries as well as to key stakeholders. This report documents the activities performed in the United States, but will highlight the intense coordination with the State of Chihuahua and their team of officials and consultants.



DESCRIPTION OF SANTA TERESA INTERNATIONAL RAIL STUDY

This feasibility study *focuses on the analyses, recommendations, and strategies* required for a new bi-national rail bypass and rail port of entry in the southern New Mexico area. The corridor study report documents the initial review of fatal flaws and project requirements. It identifies a conceptually recommended preferred alternative with analyses regarding financial feasibility while looking at potential business model development. Finally, this report begins the initial steps needed for the Presidential permit process.

The *public outreach* component provides the opportunity to disseminate information and collect feedback from stakeholders, agencies, and the public. A Technical Advisory Committee (TAC), composed of stakeholders from Mexico and the U.S., held three meetings. Two sets of public meetings in the study area were also held. Additionally, informational and feedback tools such as a website, a project e-mail address, and project branding through an identifying logo were utilized.

Existing features within the project limits could have an impact on the potential design and cost of the proposed rail bypass facility, and a review of these items is required for a thorough understanding of alternatives evaluation. The existing conditions section provides data on current railroads and roadways within the study area, including movements, operations, and roadway volumes, as well as other prior studies within the study area.

The *environmental constraints* chapter summarizes the discussion of potential cultural, socioeconomic, natural, and physical impacts of alternatives and potential fatal flaws in the study area. The environmental constraints section delves into requirements by U.S. Customs and Border Protection (CBP) for border facilities. The section also reviews the potential involvement of the Surface Transportation Board (STB), fatal flaws of major utilities and subsurface geotechnical conditions.

Alternatives analysis identifies the framework, process, and results for reducing a bi-national universe of alternatives in the study area to a recommended preferred



alternative for continued evaluation in future phases of the study. The process includes the development of a screening methodology and associated fatal flaw and evaluation criteria. Identification of the universe of alternatives for screening, a fatal flaw screening and initial evaluation of the universe of alternatives to advance up to three preliminary alternatives is included. Further development of preliminary alternatives, detailed evaluation of the preliminary alternatives to identify the recommended preferred alternative, and refinement of the preferred conceptual alternative completes the process.

The study investigates the *economic and financial feasibility* of the rail bypass through a benefit-cost analysis and an economic impact analysis. Further, the study reviews potential project funding sources and innovative funding options, discusses potential business models, and assesses revenue streams potentially generated through value capture from increased development and economic activity generated by the bypass. Due to the project's unique bi-state and international nature, the lack of significant revenue, if any, generated directly from the project itself, and existing limitations on "donations" by the State of New Mexico and local governments to private infrastructure projects, it is likely that a unique project ownership structure and funding strategy will be required in order to effectively utilize available sources of support.

Preparation of items for the project's Presidential permit, initial project notification to the U.S. government, and bi-national coordination with Mexico are also a part of this study. This includes the establishment of overall permit requirements, submission of a Project Information Notification, bi-national coordination through U.S.-Mexico Bridges and Border Crossings Group and Joint Working Committee and Mexico's agencies, and development of content on permit holder, ownership arrangements, project facilities, and the project's advancement of U.S. national interest.

This study is the first phase (feasibility) of the bi-national process and is a starting point for future phases of the study. Future phases of the project include preparation and approval of the National Environmental Policy Act (NEPA) documentation, further engineering development and design of the proposed rail bypass, and Presidential permit preparation and approval.



1. PURPOSE & NEED

The Purpose and Need is developed following the NMDOT Location Study Procedures and provided the framework for the evaluation of alternatives and to help determine solutions that were evaluated further throughout project development. The following is a summary of the Purpose & Need for this project. The full Purpose & Need Technical Memo is located in Appendix A.

Proposed transportation improvements within the study area are needed to address the following issues:

- Rail capacity constraints at the existing El Paso border crossing location;
- Inability to improve freight movement;
- Vehicular delays associated with roadway-rail at-grade crossings;
- Safety concerns associated with rail/vehicular conflicts in an urban setting;
- Safety concerns associated with rail connection lines traversing densely populated neighborhoods in El Paso and Ciudad Juárez;
- Potential improved connectivity to the national rail system;
- Enhance economic stimulus opportunities in Santa Teresa and the surrounding area; and
- Impediments to economic growth in El Paso due to land area and infrastructure limitations.

The purpose of the Study is to develop a financially viable, safe, reliable, and environmentally sustainable freight rail corridor which stimulates economic growth in Southern New Mexico. The planning process will result in conceptual transportation alternatives that would improve transportation system capacity, address safety concerns, support rail system connectivity, and promote economic development. Ultimately, the objective of the Study is to evaluate a range of alternatives to identify a recommended preferred alternative that best meets the purpose and need of the project.

2. BACKGROUND AND PREVIOUS STUDIES

The Santa Teresa and El Paso region serve as a connection point for both international rail traffic and east-west rail freight movements within the United States. Currently, the Union Pacific Railroad (UPRR) and the BNSF Railway Company (BNSF) interchange with the Mexican railroad, Ferrocarril Mexicano (FXE), or Ferromex, at the U.S./Mexico border between El Paso, Texas and Ciudad Juárez, Chihuahua, Mexico. The UPRR Lordsburg Subdivision, a part of the line commonly referred as the Sunset Route, is a part of the overall connectivity between the west coast Ports of Los Angeles and Long Beach to Strauss Yard intermodal facility in Santa Teresa, New Mexico; Strauss Yard serves as a collection/distribution location for UPRR trains to and from the eastern and southern U.S. The BNSF El Paso Subdivision runs from El Paso, where it interchanges with Ferromex, to Belen, New Mexico near a connection to the BNSF’s primary east-west line known as the Transcontinental (Transcon) Route. BNSF has an intermodal terminal yard in El Paso. UPRR and BNSF also utilize another yard, International (or River) Yard, for exchanges between the two railroads. See Figure 2-1 for additional details on El Paso’s rail facilities.

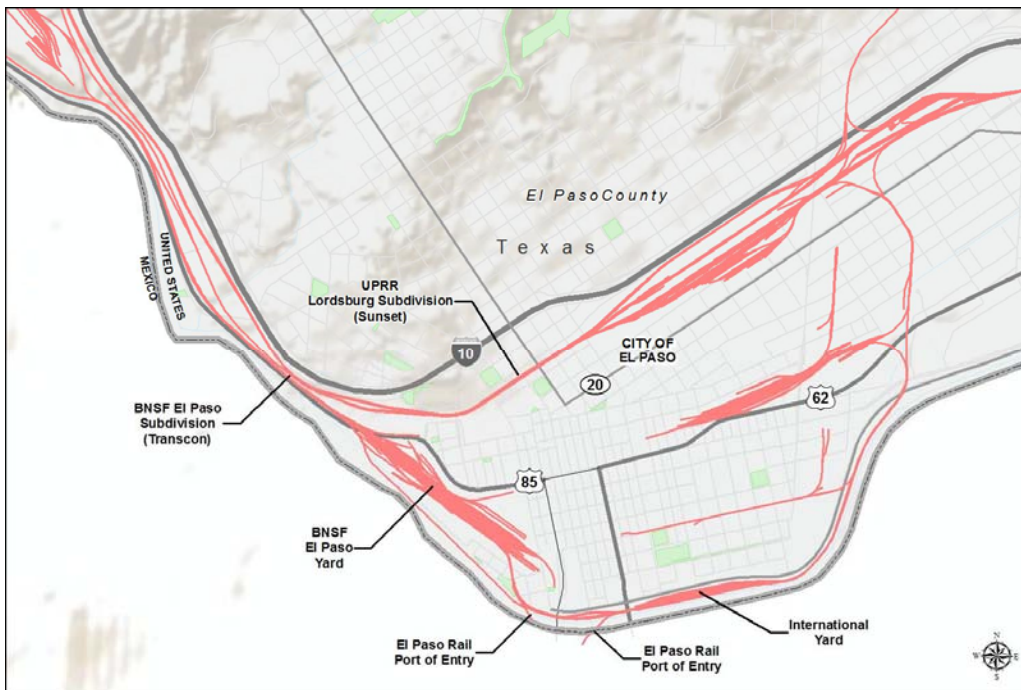


FIGURE 2-1: EXISTING RAIL FACILITIES WITHIN EL PASO



Previous studies from within the study area were collected and reviewed to gain insight into the existing conditions within the region, the current and ongoing design and construction projects, and the future long-range regional and state plans for use during the initial stages of this project. The documents reviewed included:

- Freight rail projects and studies, such as the construction of Strauss Yard in Santa Teresa, BNSF Chihuahuita improvements near the existing El Paso rail port of entry, and TxDOT's El Paso Region Freight Study;
- Existing and proposed roadway projects, such as improvements of NM 136 from the Santa Teresa Port of Entry to the New Mexico/Texas State Line, the Border West Expressway (formerly known as Border Highway West) construction in El Paso, and TxDOT's and NMDOT's Statewide Transportation Plans;
- U.S./Mexico international border plans, such as the New Mexico-Chihuahua Border Master Plan, the El Paso Metropolitan Planning Organization (MPO) Border Improvement Plan, and the El Paso Regional Ports of Entry Operations Plan; and
- Master plans for counties and properties within the region.

A list of previous studies, the applicable agency, the years of the study or construction, and short description can be found in Appendix B.



3. COORDINATION/PUBLIC OUTREACH

The following section discusses the various public outreach and coordination efforts that were conducted throughout the duration of the study. Outreach efforts included coordination with various stakeholders, the general public, and meetings with the Technical Advisory Committee (TAC). A Public Involvement Plan (PIP) was also created for the project and is available for review in Appendix C.

TECHNICAL ADVISORY COMMITTEE MEETINGS

The Technical Advisory Committee (TAC) Meetings were conducted to encourage active engagement and input from TAC members. The TAC's involvement was crucial to the undertaking of a viable study. TAC members were representatives from both U.S. and Mexico, including elected officials, federal, state, and local representatives, as well as railroad staff and private land owners. A complete list of TAC members is referenced in Appendix D.

TAC Meeting #1

The initial TAC Meeting was held on March 25, 2015 to introduce TAC members to the study. A presentation was given by the project team, beginning with the overview and objectives of the feasibility study and followed by the specific roles and responsibilities of the TAC. The presentation continued with information on the study area, project timeline, study process, alternatives analysis process, and public and agency outreach procedures. There was an opportunity for questions which were answered by project team members. The group broke into working groups to identify key constraints and opportunities to be addressed during the Study. Comments were collected on study area maps at the tables, along with comment cards, sticky notes and index cards. Below is a summary of the comments on constraints and opportunities:

- Constraints: vacant rail yards, use of both rail and truck modes at the border crossing, border integrity and emergency enforcement, operational challenges amongst railroads, San Jerónimo master plan in Mexico, impact on I-10 and other roads, impacts



to farming, agricultural land, historical and cultural resources, coordination between U.S. and Mexico, impact on emergency resources.

- Opportunities: economic development, infrastructure in Southern New Mexico, historical connection between New Mexico and Chihuahua, operational benefits.

TAC Meeting #2

The second TAC Meeting occurred on June 3, 2015 to present proposed alternatives evaluation criteria and, after introductions by the project team and TAC members, there were presentations on the project, its process, and future tasks. Project team members facilitated a session for question and answers. During the group discussion, the TAC attendees broke into five groups and shared information and concerns on environmental conditions, economic development, engineering/feasibility, safety, and operations/capacity. Below is a summary of what was discussed in each group:

- **Environmental:** consider sensitivity of environmental resources.
- **Economic Development:** consider land ownership, space to develop near the rail, preference for land that is easier to acquire, and locating the rail line near other transportation facilities.
- **Engineering/Feasibility:** consider access/connection in Mexico, avoiding alignments through developments, and drainage patterns.
- **Safety:** consider the need for grade-separation at certain roadways, unrestricted access at the border, emergency response at all locations.
- **Operations/Capacity:** consider operations and access for all potential railroads.

The meeting concluded with a facilitated discussion on advantages and disadvantages of the meeting format.

TAC Meeting #3

The third TAC Meeting was held on August 19, 2015 and allowed TAC members to review the alternatives analysis process and discuss the recommended preferred alternative. After introductions and a brief presentation on the project status including the refinement



of alternatives, TAC members asked questions which were answered by the project team. Next, the TAC attendees broke into groups and discussed the advantages and challenges of the three preliminary alternatives and shared the main points with the room after their discussion. The main points to consider are summarized below:

- Coordination with the Bureau of Land Management (BLM) will be required.
- Some primary and secondary roadway and rail facilities may be affected.
- There are several wells along the preferred alternative.
- Consider impact at the Northern termini.
- There is less risk in an area that does not have any restrictive planning and is not government-owned.
- Consider industrial parks in the area.
- Locations were chosen based on feasibility and a bi-national decision process.

The study team reaffirmed the TAC that the study will include a recommendation on a preferred alternative and will create a preliminary financial plan for funding the project. The next phase will include further engineering, initiating the NEPA process, Presidential permitting, and developing a plan for construction.

Public Involvement Meeting #1

Public meetings, in an open house format, were held on June 23 and 24, 2015, to provide the public an opportunity to learn about and comment on the Study. There were 11 exhibit boards and a rotating presentation on display representing the purpose and need, study area, alternatives, and evaluation criteria. During the meetings, there were staff members in attendance to answer questions, direct attendees and explain meeting materials. Various public attended both meetings and comments were received on a variety of subjects, with specific input on alternatives. In preparation for the meetings, the team advertised in three different newspapers: Las Cruces Sun-News, the El Paso Inc., and in the Spanish language El Diario de Las Cruces. Bilingual flyers were placed also within the study area and a flyer was posted on the New Mexico Border Authority website. All the comments that were received were integrated into the decision-making process and fed



into the choice for the final alternative. A full summary of comments is included in Appendix E.

Public Involvement Meeting #2

Public meetings, in an open house format, were held on October 7 and 8, 2015, to present to the public the alternatives analysis, environmental constraints, and potential next steps of the Study. There were 18 exhibit boards representing the purpose and need, study area, alternatives analysis, evaluation criteria, recommended preferred alternative, and environmental constraints. During the meetings, there were staff members in attendance to discuss the Study one-on-one with those who attended, answer questions, and explain meeting materials. Prior to the meetings, the team advertised in three different newspapers: Las Cruces Sun-News, the El Paso Inc., and in the Spanish language El Diario de Las Cruces. A full press release was also distributed by the NMDOT and a flyer was posted on the New Mexico Border Authority website.

A total of 55 attendees signed in for the public meeting on October 7, and an additional 102 people attended the second public meeting on October 8. Below is an overview of some of the comments received at the two public meetings:

- There are concerns that the recommended preferred alternative and the three preliminary alternatives go through prime agricultural farmland.
- Multiple attendees asked about a potential alternative further north and outside of the study area and if other alternatives may be reviewed as part of ongoing analysis.
- Questions arose about who would own the railroad and how the right of way for the railroad would be acquired.
- Many of the attendees noted their preference for a no-build alternative.

A full summary of comments is included in Appendix E.

STAKEHOLDER MEETINGS

As part of the project development process, the team met with some of the project stakeholders separate from the Technical Advisory Committee meetings to learn more



about specific items or to disseminate additional information. Below is a summary of stakeholder meetings between the team and specific project stakeholders.

BNSF Railway – The team met with representatives of BNSF on June 3, 2015 prior to the TAC #2 meeting to present the bi-national process and to discuss similarities and differences between this proposed rail bypass and the recently constructed West Rail Relocation project in the Brownsville-Matamoros area. Another meeting with BNSF representatives was held on August 14th to provide results of the alternatives screening and to solicit feedback regarding the recommended preferred alternative.

Union Pacific Railroad – An initial project meeting to introduce UPRR to the project and its scope was held on March 9, 2015 via a conference call. A subsequent field visit to the Strauss Yard facility occurred on June 18, 2015. The team met with UPRR on July 13, 2015 to present the bi-national process of the proposed rail bypass and on July 30, 2015 with a follow-up meeting to discuss existing railroad operations and potential impacts to those operations with the proposed bypass.

Ferrocarril Mexicano (Ferromex) – A site visit to Ferromex facilities within Ciudad Juárez was held for the U.S. and Mexican consultant teams on June 17, 2015 to provide details on existing operations, track, and yards.

Federal Agencies – Meetings occurred with the Department of State on April 15, 2015 and May 20, 2015 to introduce the project, to get feedback on initial concerns and challenges, and understanding roles for the NEPA process. Additionally, the study team met with the Federal Railroad Administration (FRA) on June 20, 2015 to discuss the Presidential permit process and potential obstacles for completing the project.

The team hosted an initial meeting on May 6, 2015 to brief DHS/CBP representatives on the bypass universe of alternatives as well as to discuss requirements for a new facility at the U.S./Mexico border. A subsequent meeting with DHS/CBP representatives was held on May 27, 2015 to elaborate on facility details and potential new facility concerns.

Development – The team met with the San Jerónimo development team to introduce the project and the universe of alternatives as well as understand the area’s master plan.



Meetings with multiple local stakeholders were held on June 9, 2015 with Santa Teresa Land and the Borderplex Alliance to understand each group's role and anticipated development and growth in the region. A follow-up meeting with Santa Teresa Land was attended on June 24, 2015 to discuss the alternatives analysis and potential plans for the industrial development within the property.

BI-NATIONAL COORDINATION

The bi-national process between Mexico and the United States involves federal, state, and local agencies on both sides of the border as well as other project stakeholders within the region and constant communication between the project developers. Thus, it is critical to understand the combined process between the two countries to move the project forward in concert with each country's needed approvals and steps.

Within the overall project framework, there are four separate phases to reach approval and completion on the project on the U.S. side:

- Project Feasibility (initial review from alternatives analysis, financial, and environmental standpoints for major fatal flaws and verification of viability of project)
- Presidential Permit Process (completion of NEPA process, conceptual design, funding determinations, and approval of Presidential permit)
- Final Design and Bidding Process (preparation of plans, specifications, estimates, and bidding documents for the construction of the project)
- Construction

While these phases for project development and completion are similar for Mexico, the processes to get approvals and to complete requisite items in Mexico may differ from the U.S.'s process and timeframes for those processes and approvals may vary as well.

Throughout the feasibility process of the study, the team met with Transconsult (State of Chihuahua's engineering consulting firm) for ongoing coordination and communication regarding the alternatives analysis process on each side of the U.S.-Mexico border. During these meetings, the teams discussed items such as fatal flaws, requirements and preferences for a border crossing location, evaluation criteria for the alternatives and



associated results, and status of ongoing items as they relate to the overall bi-national process. Ongoing coordination continues with both sides as the project looks to move forward into the next phases.

The team has also been involved in bi-national working groups to introduce the proposed Santa Teresa rail bypass, provide additional information, and receive feedback. A project presentation was made to the U.S.-Mexico Bi-national Bridges and Border Crossing Group (BBBXG) on May 21, 2015. Similarly, an additional presentation to the U.S.-Mexico Joint Working Committee was made on September 10, 2015. As the project continues development, updates to BBBXG and the U.S.-Mexico Joint Working Committee will occur.



4. EXISTING STUDY AREA CONDITIONS AND CONSTRAINTS

This report section details the existing railroad and roadway systems and environmental constraints within the study area of the Santa Teresa International Rail Study. The review includes identification of existing freight movements along roadways and rail, traffic volumes for transportation corridors within the study area, and cultural, socioeconomic, natural, and physical environmental resources.

TRANSPORTATION SYSTEM

Railroad

Three railroads operate within the Santa Teresa International Rail Study area: Union Pacific Railroad (UPRR), BNSF Railway Company (BNSF), and Ferrocarril Mexicano (Ferromex). UPRR and BNSF operate on the U.S. side of the U.S./Mexico border while Ferromex is on the south side of the border. The region is a major east-west connection for UPRR due to its Sunset Route; BNSF utilizes the El Paso region in part for movements at the U.S./Mexico border to other locations within the U.S. An existing port of entry at El Paso provides international operations between Ferromex and UPRR/BNSF, at which around 11 trains per day (5 northbound, 6 southbound) cross the U.S./Mexico border.

UPRR's Lordsburg Subdivision extends from Tucson, AZ to El Paso, TX and is part of the east-west corridor known as the Sunset Route. The corridor is a vital connection from ports on the U.S. west coast to other areas in the eastern and southern U.S. Within the study area, the Lordsburg Subdivision travels northwest to southeast, connects Strauss Yard in Santa Teresa, NM with the Carrizozo and Valentine Subdivisions in El Paso, TX that divert toward the mid-western and southern U.S., respectively, and is double-track at a minimum. See Appendix F for track inventory information on the Lordsburg Subdivision.

UPRR operates multiple yards within the project's study area. UPRR's Strauss Intermodal Yard at Santa Teresa is a new facility on an approximate 2,200-acre site that is important for efficiency along the Sunset Route and includes a fueling station, crew change buildings, and intermodal capabilities of approximately 225,000 containers. Generally, UPRR trains entering and leaving the current rail port of entry in El Paso do not travel to



Strauss Yard since most trains crossing the U.S./Mexico border are not UPRR intermodal trains. International (River) Yard is utilized for interchanges with BNSF as well as secondary inspection by CBP and is just across the U.S./Mexico border at the current rail port of entry. UPRR has additional operations at Dallas Street Yard, which some of its operations have moved out to Strauss Yard, and Alfalfa Yard that is used for assembly of local trains. Both yards are in the urban areas of the El Paso region and are utilized for classification. Rail cars from UPRR that are bound for the industrial areas near Santa Teresa are usually delivered to the Santa Teresa Southern Railroad's rail facility near Strauss Yard for local delivery.

BNSF's El Paso Subdivision travels from Isleta, NM through Belen, NM to El Paso, TX, where it connects with the Santa Fe Yard and bridges over the Rio Grande River at the El Paso rail port of entry. The line is generally single-track and follows along the Rio Grande River in a generally north-south route within the project's study area; the corridor provides a connection to the BNSF's Transcon Route through the southern U.S. BNSF also has trackage rights on UPRR's Carrizozo Subdivision, which allows for trains to travel to/from Mexico and the Transcon Route further north and east via a connection track from the El Paso Subdivision within El Paso. The Santa Fe Yard and Intermodal Facility in El Paso reside just north and west of the El Paso rail port of entry and are used for train assembly, intermodal operations, and service to local customers within the region. See Appendix F for track inventory information on physical features of the El Paso Subdivision.

UPRR interchanges with the Santa Teresa Southern Railroad (STS) at STS's yard located adjacent to Strauss Yard. STS acts as an agent for UPRR for delivery of rail cars to local customers, in particular to the industrial facilities in the vicinity of Strauss Yard.

Just south of the U.S./Mexico border at the Rio Grande River, the two bridges connect to the Ferrocarril Mexicano (Ferromex) system as a single track and travel through Ciudad Juárez. Within Ciudad Juárez, the train operating timeframes are currently limited due to vehicular traffic considerations at grade crossings. In 2005, the border crossing opened for only nine hours daily due to the limitations; however, as of now the crossing at the



U.S./Mexico border is open for 15 hours daily due to implementation of roadway-rail grade separations replacing the grade crossings. The allowable train operating timeframes are anticipated to continue to increase through additional grade-separated crossings within the Ciudad Juárez limits. Ferromex is the largest railway in Mexico by mileage and this particular segment of track runs from Ciudad Juárez to Mexico City. The existing track is a single mainline within the city and the main yard for Ferromex in this area is just south of downtown Ciudad Juárez.

The single track continues northbound and just south of the U.S./Mexico international border, the track splits into two tracks that cross the Rio Grande River on steel bridges that are about 100 feet apart. The eastern bridge is owned and operated by UPRR and leads into the International Yard. The western bridge is owned and operated by BNSF and leads into the Santa Fe yard. The existing railroad port of entry in El Paso, Texas is between the two yards where CBP operates a primary inspection facility at the port of entry and utilize the yards as a secondary inspection facility.

Roadway

The primary roadways within the Study Area were evaluated to consider physical attributes, traffic operations, and connectivity. A summary of the information is provided in this section with additional detail included in Appendix G.

Roadways evaluated include the I-10 corridor as well as a collection of arterial roadways which connect the Santa Teresa area to the I-10 corridor. The principal physical attributes (number of lanes, design speed, and average annual daily traffic) of the roadways are shown in Table 4-1.



ROADWAY PHYSICAL ATTRIBUTES				
Roadway	# Lanes Each Direction	Design Speed*		Forecast Year 2040 AADT**
		(MPH)	AADT**	
I-10 – NM – West of Las Cruces	3	75	22,000	<i>40,000</i>
I-10 – El Paso to Las Cruces	3	75	130,000	152,000
NM 136	2	65	10,500	11,800
NM 273	1	65	9,300	25,150
Airport Road	1	55	2,500	4,500
NM 28	1	60	3,100	10,000
NM 460	2	55	13,700	<i>25,000</i>
NM 478	1	55	10,000	7,000
NM 228	1	55	3,000	<i>5,500</i>
NM 227	1	45	3,600	<i>6,500</i>
NM 404	1	50	7,200	<i>13,000</i>
NM 225	1	55	5,500	<i>10,000</i>
TX 178/Artcraft Road***	2	70	30,000	42,000
Sunland Park Drive	2	50	34,000	47,400
TX 20***	2	65	18,300	64,000
FM 1905	1	45	11,400	25,000

* - estimated at 10 MPH above posted speed
 ** - highest value in study area. Source: NMDOT 2013 TIMS and TxDOT Statewide Planning Map. 2040 forecast from El Paso MPO. *Italicized values have 3% annual growth (not compounded).*
 *** - Different locations due to availability of existing data

TABLE 4-1 – ROADWAY PHYSICAL ATTRIBUTES

EXISTING TRAFFIC OPERATIONS

The available data from 2007 and 2015 found that the majority of the locations in the study area currently operate at acceptable levels of service except for the I-25 Exit 162/NM 404 interchange intersections. The un-signalized intersections associated with the interchange were found to operate at LOS F in the PM Peak Hour. Please note this information was based on the most recent available studies and did not include analysis of all intersections or roadways in the study area.



CRASH DATA

The crash data for 2010-2013 for the New Mexico portion of the study area was reviewed and for the three-year time frame there were 685 total crashes. Of the total crashes, 414 (60%) were property damage only, and the balance, 271 (40%), involved an injury or fatality.

BRIDGES

The National Bridge Inspection Program Database was reviewed for the bridges in the project area. Of the 79 bridges on the primary and secondary roadways in the study area, one is structurally deficient and eight (8) are functionally obsolete. NMDOT rates a bridge "Structurally Deficient" when the deck, superstructure, or substructure drop to a condition rating of 4 (poor condition) as per the National Bridge Inventory Condition Rating as used by the NMDOT. A "Functionally Obsolete" bridge has a Deck Geometry rating of 3 or less as per the National Bridge Inventory Condition Rating due to the geometry deficiencies which do not meet AASHTO Design requirements.

ENVIRONMENTAL RESOURCES

As part of the initial analysis of conditions for the Santa Teresa International Rail Study, an overview of existing environmental resources and potential environmental impacts was evaluated. Data was collected from various sources including local, regional, and state-level records research, and no field surveys were completed. A summary of these findings is provided below with additional, more detailed documentation of these findings provided in Appendix H. Areas of potential impact considered include natural resources (wildlife habitat, threatened & endangered (T&E) species, and farmland), water resources (rivers/streams and wetlands), cultural resources (archeological and historic), community resources (section 4(f), noise & vibration, air quality, land use, socioeconomic, and environmental justice (EJ)), and hazardous materials. Development of alternatives in subsequent phases of project development will further evaluate any constraints, impacts, or mitigation needs associated with these resources.



Natural Resources

The majority of the study area is situated within the United States (U.S.) Environmental Protection Agency (EPA) Level IV Chihuahuan Basins and Playas ecoregion. Habitat within the eastern portion of the study area consists of the EPA Level IV Rio Grande Floodplain ecoregion. Eight federally listed endangered or threatened species and one federal candidate species may occur in the study area. Three species have areas designated as critical habitat and one species has critical habitat proposed. The nearest federally designated critical habitat is for the Mexican spotted owl (*Strix occidentalis*) located approximately 75 miles northeast from the study area. Critical habitat is not present in the study area. Prime and important farmland includes all land that is defined as prime, unique, and farmlands of statewide or local importance by the Natural Resources Conservation Service (NRCS). Soils considered farmland of statewide importance are located within the eastern portion of the study area.

Water Resources

Multiple National Hydrography Dataset (NHD) waters are present in the eastern portion of the study area which interconnect with the Rio Grande. The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory database also shows a number of wetlands located within proximity to the Rio Grande drainage. The Rio Grande traverses through the eastern portion of the study area with multiple irrigation canals that divert water from the main river channel. Some or all of these irrigation canals may be in-use as part of present-day agricultural operations. Some of the irrigation canals may fall under federal jurisdiction through the Clean Water Act, and some may be eligible for listing in the State Register of Cultural Properties (SRCP) or the National Register of Historic Places (NRHP).

Cultural Resources

A review of data within the study area was conducted using the online Archaeological Record Management Section's (ARMS) New Mexico Cultural Resource Information System (NMCRIS) and New Mexico Historic Preservation Division (HPD) databases. Site density combined with areas yet to be surveyed was considered. Site density within the southern portion of the study area within New Mexico is the highest. This corresponds with the



amount of archaeological survey that has been conducted in the area. The majority of the central portion of the study area has relatively few sites; however, these areas also have the least amount of previously completed surveys. The northeastern portion of the study area is mostly urban and the majority of the surveys and documented resources appear to be located along roads and highways.

Seventeen archaeological sites or historic properties intersect with at least one of the three preliminary alternatives. The most notable previously recorded sites or properties that intersect with the alternatives are located in the northeastern portion of the study area closer to urban areas and are comprised of historic resources, including two irrigation canals NM 478, the Butterfield Overland Mail Route (SR 173), and a telecommunications cable. Only two of the prehistoric sites recorded in this area have been previously recommended as eligible for listing in the NRHP, although the majority of the prehistoric sites remain unevaluated.

In addition to the information accessible in the databases mentioned above, the main I-10 corridor within the eastern portion of the study area has been extensively utilized since the Spanish first began exploration of the New Mexico Territory. Many undesignated historic trails traverse this area and include those used for trade, exploration and expansion, military transportation, mail and stagecoach operations, railroads, and eventually automobile travel. In addition to all of these uses, this area has also been identified as a route the Confederate Army used during the American Civil War. Although no previously recorded Civil War sites intersect with the study area, many sites of this era have gone undocumented and there is potential for such sites to be present in the vicinity of the three preliminary alternatives.



Community Resources

SECTION 4(F)

The Department of Transportation Act of 1966 includes a special provision for considering park and recreational lands, wildlife and waterfowl refuges, and historic sites listed or having the potential for listing in the NRHP as part of the project development process. The statute is referred to as Section 4(f). No wildlife and waterfowl refuges are located within the study area. Multiple park and recreation lands are located within the eastern portion of the study area, but none are intersected by the three preliminary alternatives. Five historic sites that have been previously recommended as eligible for listing in NRHP are intersected by the alternatives: including two irrigation canals, NM 478, the Butterfield Overland Mail Route (SR 173), and an AT&T telecommunications cable.

NOISE & VIBRATION

At this phase of the planning and design process, traffic and rail noise impacts are evaluated based on the location of potential sensitive receptors (potential homes). Based on FHWA Transit Noise and Vibration Impact Assessment Manual, a distance of 375 feet away from each of the three preliminary alternatives was used as the boundary for the identification of potential sensitive receptors to traffic and rail noise impacts. Based on this analysis, Alternative C has the most potential receptors with 35 potential houses within the boundary area, Alternative A has 12 potential receptors, and the Hybrid Alternative has six potential receptors. There is only one school located within the boundary for all three preliminary alternatives; it is adjacent to Alternative C. There are no churches within 375 feet of any alternative.

LAND USE, SOCIOECONOMICS, AND ENVIRONMENTAL JUSTICE

The study area consists predominantly of areas with low density population; however, pockets of higher density population do exist, including the Sunland Park area and certain parts of Anthony, NM. In terms of demographics per the American Community Survey (2010), the study area has an 85% minority population (84% Hispanic) compared to 60% for the State of New Mexico; 38% of households in the study area have household income



under \$25,000 compared to 29% for the State of New Mexico; and, 18% of the population in the study area has “less than well” English proficiency compared to just 5% in the State of New Mexico as a whole.

Overall, the study area contains mostly commercial, agricultural and residential land uses within the urban areas. Outside of the El Paso and Las Cruces areas, it is mostly natural shrub land and agricultural land.

Doña Ana County is in the process of updating the Unified Development Code (UDC) and will soon have new zoning classifications within the study area. The proposed zoning primarily includes rural uses with some neighborhood commercial, community commercial and medium density residential uses. The area has low density of development and will not change traffic conditions immediately. In the future, this information will be integrated into the travel demand model for both El Paso MPO and the Mesilla Valley MPO.

Hazardous Materials

A high level records search of local, state, and federal databases was completed to identify known and potential hazardous materials issues within the study area. Evaluations for each alternative were based on the number of known hazardous materials sites within 1/4 mile of each alternative. The hazardous materials sites of biggest concern for this project are brownfield sites and landfills. There are no landfills and only one brownfield site located within 1/4 mile of the alternatives based on the high level review of available online databases.

SUBSURFACE UTILITY ENGINEERING

A review of major transmission and pipeline facilities that may be impacted within the study area by potential rail bypass alternatives was conducted using the NMDOT standards for Quality Level D (QL D) services. See Appendix I for a list of utility owners and response received from each utility owner. Based on the results of the subsurface utility engineering, there are not any initial major or fatal-flaw constraints identified in the review.



GEOTECHNICAL ANALYSIS

Preliminary geological and geotechnical literature was researched and site reconnaissance was performed for the study area to determine if suitable subsurface conditions are anticipated for the construction of the proposed rail bypass. See Appendix J for the geotechnical engineering report for this phase of the study. The report states that the anticipated subsurface conditions are suitable for the development of the proposed rail bypass and that there are not any initial fatal-flaws identified in the review.

U.S. DEPARTMENT OF HOMELAND SECURITY (DHS)/CUSTOMS AND BORDER PROTECTION (CBP) REQUIREMENTS

The team met with DHS/CBP to determine potential safety concerns, threat mitigation measures, and international border equipment requirements for a new railroad port of entry and identify any constraints associated with those requirements. See Appendix K for a memorandum on the CBP requirements. After a consultation on the project with CBP staff and a review of Chapter 11 “Rail Cargo Inspection” of the CBP *Land Port of Entry Design Standard*, the requirements determined for the project can be met for construction of the proposed rail bypass.

SURFACE TRANSPORTATION BOARD (STB) REQUIREMENTS

As part of the feasibility stage of this project, the team researched the potential involvement of STB in subsequent phases of the proposed rail bypass design process. The initial findings indicate that STB may not need to be involved as part of the project since similar railroad functionality is being provided by the rail bypass, and existing customers are still serviced within the region. However, STB involvement may be triggered depending on how the existing structures at the El Paso port of entry are handled. See Appendix L for a memorandum on the STB requirements and potential involvement.



5. ALTERNATIVES SCREENING METHODOLOGY AND UNIVERSE OF ALTERNATIVES

This report section summarizes the methodology of the alternatives analysis for the Santa Teresa International Rail Study (STIRS) bi-national rail bypass. The alternatives analysis methodology followed the NMDOT Location Study Procedures and went through development of evaluation criteria and a universe of alternatives, a fatal-flaw screening and initial evaluation to identify up to three preliminary alternatives, further design and detailed evaluation of those three preliminary alternatives, and identification and further development of a recommended preferred alternative. See Appendix M for the Alternatives Screening Methodology memorandum for additional details regarding the screening process.

SCREENING METHODOLOGY

The purpose of the Alternative Screening Methodology (ASM) was to provide a decision-making framework in accordance with the NMDOT Location Study Procedures to determine how well each set of alternatives meets the Purpose and Need of the Corridor Study Report as well as the study vision. The feasibility study will be used to inform the National Environmental Policy Act (NEPA) process in subsequent phases of project development.

Railroad alternatives were developed and evaluated for the study in a sequential process that involves elements of Phase A and Phase B screening levels per NMDOT Location Study Procedures. The ASM was utilized to compare the advantages and disadvantages of each alternative for advancement into the succeeding set of refined alternatives and, ultimately, a preferred alternative for continued project development. The alternative development and screening evaluation is based upon the Purpose and Need as referenced from the study's Purpose and Need document.

The two screening levels that comprised the ASM include (1) an initial screening of the universe of alternatives, which includes a fatal-flaw analysis that addresses the Purpose and Need as well as qualitative/simple quantitative analysis of additional measures; and



(2) a secondary screening, which included a more detailed evaluation of the resulting alternatives once the associated concepts are further developed.

- **Initial Purpose & Need Screening** involved the evaluation of each corridor within the universe of alternatives as compared with the Purpose & Need framework. This screening acted as a fatal-flaw analysis because each corridor must meet each criterion of the Purpose & Need; an alternative was eliminated from further evaluation if it does not meet these criteria.
- **Initial Evaluation Screening** reviewed the remaining corridors from the Purpose & Need screening through additional criteria involving operations and mobility, safety, environmental, engineering, right-of-way, cost, and agency input. The initial evaluation screening identified up to three preliminary alternatives for further evaluation.
- **Detailed Evaluation Screening** occurred after further development of the three preliminary corridors and delved into similar criteria as the initial evaluation screening with additional detail. It resulted in identifying a recommended preferred alternative for continued project development and comparison with a no-build alternative.

The effectiveness of each alternative in terms of meeting the needs of the study area was measured by a wide range of criteria, defined by the Purpose and Need, engineering, environmental, and cost criteria. The potential impacts of each alternative were evaluated and documented by the screening criteria (e.g. order-of-magnitude construction costs, displacements, etc.). The qualitative rating system allowed the advantages and disadvantages of each alternative to be compared using the evaluation criteria described in Chapter 6 of this report. This system will be utilized as a tool to assist in determining the refined sets of alternatives and ultimately a recommended preferred alternative for future development during the NEPA process. As proposed alternatives are refined to a greater level of detail, the rating system was supplemented with quantifiable data to validate the ratings for each reasonable alternative against each evaluation criteria.

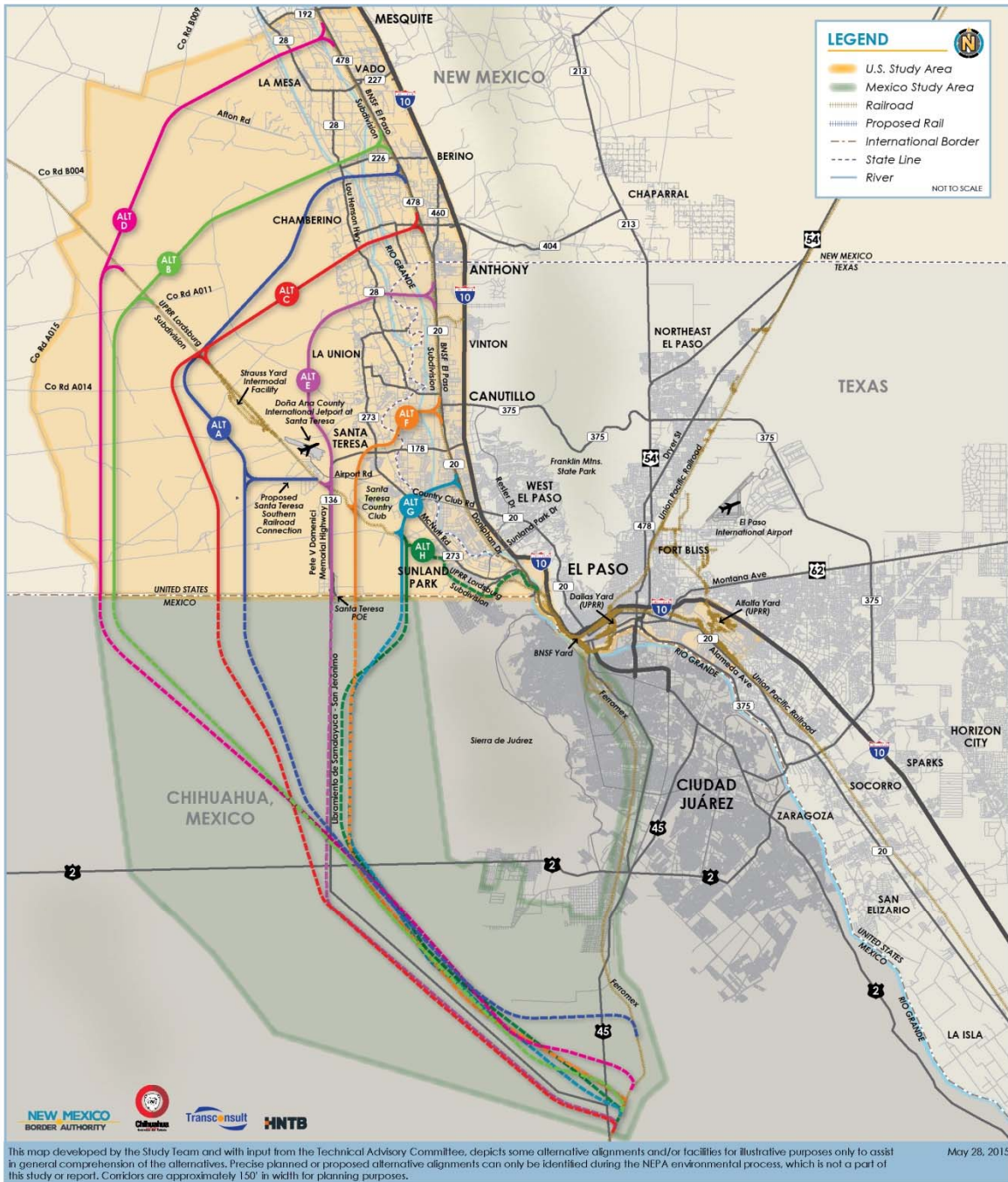


PROJECT STUDY AREA

A study area was determined for the project with geographic limits that were broad enough to allow for the development of multiple alternative corridor alignments while providing reasonable boundaries to allow for the analysis of potential benefits and impacts. The identified study area encompassed portions of West Texas and Southern New Mexico and generally follows Interstate 10 as the eastern boundary, the U.S./Mexico border as the southern boundary, County Road A015 as the western boundary, and NM 192 as the northern boundary. See Figure 5-1 for additional details on the study area. It should be noted that the corresponding study area south of the border was identified by the Chihuahua consultant team simultaneously to create a true bi-national study area for the project.

UNIVERSE OF ALTERNATIVES

Development of alternatives for evaluation through the alternatives analysis process consisted of collection of alternatives from previous studies, stakeholder input of alternatives options within the Technical Advisory Committee (TAC) and separate stakeholder meetings, and engineer-developed options. See Figure 5-1 for the universe of alternatives. Each of the alternatives was extended south of the border, in coordination with the Chihuahua consulting team, to make sure that the evaluation of alternatives happened on both sides of the border simultaneously. The study also included a no-build alternative that will be evaluated within the NEPA framework in a subsequent phase of the project.



SANTA TERESA INTERNATIONAL RAIL STUDY

Universe of Alternatives

FIGURE 5-1: STUDY AREA AND UNIVERSE OF ALTERNATIVES



Alternative A is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision near Berino, New Mexico south of Highway 226 and at the U.S.-Mexico border approximately four miles west of Highway 136. Alternative A would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border; Alternative A also includes a connection track to the east side of Strauss Yard for switching movements by the Santa Teresa Southern Railroad. The alternative crosses the Rio Grande River south of Highway 226, travels north and west of Chamberino, New Mexico, stays just northwest of Strauss Yard and is grade-separated at the UPRR Lordsburg Subdivision, and provides a connection with the Santa Teresa Southern (STS) east of Strauss Yard. Alternative A is approximately 29 miles long within the U.S., including the STS connection.

Alternative B is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision near Berino, New Mexico north of Highway 226 and at the U.S.-Mexico border approximately 10 miles west of Highway 136. Alternative B would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River north of Highway 226, travels southwest near Chamberino, New Mexico, is grade-separated at the UPRR Lordsburg Subdivision approximately six miles northwest of Strauss Yard, and provides a connection to Strauss Yard near that grade-separated crossing with UPRR. Alternative B is approximately 27 miles long within the U.S.

Alternative C is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision north of Anthony, New Mexico near Highway 404 and at the U.S.-Mexico border approximately five miles west of Highway 136. Alternative C would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River south of Chamberino, New Mexico, stays just northwest of Strauss Yard and is grade-separated at the UPRR Lordsburg Subdivision, and provides a connection to Strauss Yard near that



grade-separated crossing with UPRR. Alternative C is approximately 24 miles long within the U.S.

Alternative D is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision north of Vado, New Mexico south of Highway 192 and at the U.S.-Mexico border approximately 11 miles west of Highway 136. Alternative D would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River near the connection with BNSF, travels west and south around La Mesa, New Mexico, is grade-separated at the UPRR Lordsburg Subdivision approximately 8 miles northwest of Strauss Yard, and provides a connection to Strauss Yard near that grade-separated crossing with UPRR. Alternative D is approximately 31 miles long within the U.S.

Alternative E is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision between Anthony, Texas and Vinton, Texas and at the U.S.-Mexico border near the existing Santa Teresa Port of Entry along Highway 136. Alternative E would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River near the connection with BNSF, travels west and south around La Union, New Mexico, stays east of the Dona Ana County Airport and parallels Highway 136 to the U.S-Mexico border, is grade-separated at the UPRR Lordsburg Subdivision approximately four miles southeast of Strauss Yard, and provides a connection to Strauss Yard near that grade-separated crossing with UPRR. Alternative E is approximately 18 miles long within the U.S. and is developed through stakeholder input.

Alternative F is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision in near Canutillo, Texas and the U.S.-Mexico border approximately one mile east of Highway 136. Alternative F would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River just west of the connection with BNSF, travels west of



Santa Teresa Country Club, is grade-separated at the UPRR Lordsburg Subdivision approximately five miles southeast of Strauss Yard, and provides a connection to Strauss Yard near that grade-separated crossing with UPRR. Alternative F is approximately 11 miles long within the U.S.

Alternative G is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision in Sunland Park, New Mexico between Highway 178 and Country Club Road and at the U.S.-Mexico border approximately three miles east of Highway 136. Alternative G would provide one mainline track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River about one mile west of the connection with BNSF, travels through the Sunland Park, New Mexico and Santa Teresa, New Mexico developed areas, is grade-separated at the UPRR Lordsburg Subdivision approximately eight miles southeast of Strauss Yard, and provides a connection to Strauss Yard near that grade-separated crossing with UPRR. Alternative G is approximately seven miles long within the U.S. and is developed through stakeholder input.

Alternative H is a combination of a proposed new location railroad corridor and shared-use corridor with termini at the UPRR Lordsburg Subdivision between Santa Teresa, New Mexico and Sunland Park, New Mexico and at the U.S.-Mexico border approximately three miles east of Highway 136. Alternative H would provide one mainline track (BNSF) from a connection point in El Paso, Texas with the BNSF El Paso Subdivision along the UPRR Lordsburg Subdivision and two mainline tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River near El Paso, Texas, provides a connection to Strauss Yard near the connection with the terminus between Santa Teresa, New Mexico and Sunland Park, New Mexico, and would require a shared-use corridor along the UPRR Lordsburg Subdivision to allow a connection with the BNSF El Paso Subdivision. Alternative H is approximately three miles long within the U.S., not including additional shared-use corridor improvements for approximately 10 miles and is developed through stakeholder input.



6. ALTERNATIVES EVALUATION

This report section summarizes the methodology of the alternatives analysis for the bi-national rail bypass. The alternatives analysis methodology closely followed the NMDOT Location Study Procedures and went through development of evaluation criteria and a universe of alternatives, a fatal-flaw screening and initial evaluation to identify up to three preliminary alternatives, further design and detailed evaluation of those three preliminary alternatives, and identification and further development of a recommended preferred alternative. A no-build alternative will also be continued into further evaluation as part of NEPA documentation. See Appendix M for the Alternatives Screening Methodology memorandum for additional details regarding the screening process and Appendix N for the Alternatives Analysis memorandum for details of the evaluation and findings.

EVALUATION CRITERIA

The responsiveness of alternatives to the project's Purpose and Need is a fundamental consideration in the evaluation of alternatives. Alternatives that do not meet the study's Need are considered to be "fatally flawed" and are eliminated from further consideration in the initial screening. Criteria associated with the fatal-flaw analysis are below.

- ***Increase in capacity of existing rail system/border crossing (Goal: Minimizing rail operations constraints)*** A challenge with the existing rail infrastructure within El Paso, Ciudad Juárez, and at the U.S.-Mexico border is the limited expansion opportunities to provide additional rail capacity within these areas as well as constraints and limitations at the U.S./Mexico border and within Ciudad Juárez. A new system must be able to provide that additional capacity and remove constraints to be considered a viable alternative. The new alternative must also provide similar capacity and service to and along existing rail lines as the BNSF and UPRR have today. Alternatives that do not provide a potential increase in capacity along the rail system or at the U.S./Mexico border crossing as well as appropriate connections will be eliminated for further consideration and considered "fatally flawed."



- ***Increase in safety with the minimization of rail/vehicular crossings (Goal: Limiting the potential of roadway-rail grade crossing incidents)*** A concern for both the railroad and roadway transportation systems is the interface between the two systems at roadway-rail at-grade crossings. Limiting the number of potential locations and frequency of potential roadway-rail vehicular conflicts increase safety along each alternative's limits. In particular, major roadway crossings such as State Highway, U.S. Highway, or Interstate at-grade roadway-rail crossings should be avoided or limited. Alternatives that do not limit potential major roadway-rail at-grade crossings to three or fewer will be eliminated for further consideration and considered "fatally flawed."
- ***Enhancement of potential economic development opportunities in the region (Goal: Increasing regional economic development)*** The El Paso-Ciudad Juárez-Southern New Mexico region generally has lower economic conditions compared to other regions within the U.S. While this particular analysis cannot quantify the potential of economic development drivers, available/vacant properties adjacent to the proposed alternative are something that would be required for that development. Alternatives that do not provide available/vacant properties for potential economic development opportunities within the region will be eliminated from further consideration and considered "fatally flawed."

After the fatal-flaw analysis, the initial and detailed evaluation ranked the alternatives based on additional criteria based on operations/mobility, safety, environmental/community, engineering feasibility/constructability, right-of-way feasibility/property ownership, construction cost, and input from the public/agencies/stakeholders. Below are each category of criteria and a brief description of the criteria within the category. See Appendix M for additional information on each criterion in the Alternative Screening Methodology.

OPERATIONS/MOBILITY

The ability of alternatives to provide for efficient operations and minimizing operations and maintenance (O&M) costs is of importance for a successful regional rail network as well as identification of a port-of-entry (POE) point that is amenable to the U.S. Customs and Border Protection (CBP).



SAFETY

The safety of the overall transportation network is important, not just for the railroads, but for the users of the existing and proposed roadway networks as well. This includes evaluation of potential locations where vehicular and pedestrian interactions with trains may occur due to at-grade crossings.

ENVIRONMENTAL/COMMUNITY

Minimization to the impacts of the environment and surrounding community are a key consideration for any potential new location project. This includes review of potential Section 4(f) properties, impacts to natural and biological resources, impacts to cultural and historical resources, impacts to the waters of the U.S./wetlands/floodplains, hazardous materials issues, and impacts to community resources.

ENGINEERING FEASIBILITY/CONSTRUCTABILITY

Engineering criteria include verification that the rail alternative could be constructed as well as identification of additional impacts based on other factors within the study area.

RIGHT-OF-WAY FEASIBILITY/PROPERTY OWNERSHIP

Right-of-way (ROW) acquisition will be a component of the study because of the magnitude of new location ROW required for the alternative as well as the number of parcels for the potential acquisition.

COST

Due to limited transportation funding for improvements, either through federal, state, or local agencies or from other funding sources, costs are an important consideration on a project of this magnitude.

PUBLIC/AGENCY/STAKEHOLDER INPUT

Input from the Technical Advisory Committee (TAC) members, stakeholders, and public agencies will be collected and included as part of the screening, where available.



EVALUATION SCREENING FOR UNIVERSE OF ALTERNATIVES

Each alternative developed for the universe of alternatives went through a fatal-flaw screening prior to inclusion into the initial evaluation. Alternatives that did not meet the criteria identified in the Purpose and Need also did not meet the Study’s objectives and were fatally flawed; alternatives that are fatally flawed were not considered and moved forward as part of the initial evaluation screening. The matrix shown in Table 6-1 identifies the criteria used as well as the results of each alternative within the fatal-flaw screening. Cells labeled as “YES” meet the Purpose and Need; cells labeled as “NO” do not meet the Purpose and need and are fatally flawed.

Purpose & Need Criteria	Universe of Alternatives Corridors							
	A	B	C	D	E	F	G	H
Increase in capacity of existing rail corridor/border crossing								
Does the corridor provide a separate track and connection to existing BNSF and UPRR facilities?	YES	YES	YES	YES	YES	YES	YES	NO
Does the corridor provide a less-congested railroad system to/from the U.S.-Mexico border than existing ("less-congested" is defined as easier access and fewer potential operational challenges)?	YES	YES	YES	YES	YES	YES	YES	NO
Increase in safety with the minimization of rail/vehicular crossings								
Does the corridor assume fewer than 3 major highway-rail crossings at-grade ("major" is defined as a State Highway, U.S. Highway, or Interstate)?	YES	YES	YES	YES	YES	YES	YES	YES
Enhancement of potential economic development opportunities in the region								
Is there available vacant land adjacent to the corridor for potential economic development?	YES	YES	YES	YES	YES	YES	YES	YES
Passes Fatal-Flaw Analysis with Purpose & Need	YES	YES	YES	YES	YES	YES	YES	NO

TABLE 6-1: FATAL-FLAW SCREENING MATRIX AND RESULTS

Based on the results of the fatal-flaw screening, all of the alternatives continued to the initial screening with the exception of Alternative H. Alternative H was eliminated from consideration since it did not provide potential independent trackage for the railroads with the connection for BNSF onto the UPRR mainline and since it does not improve capacity on the overall railroad system. The engineering consultant also conducted a



fatal-flaw analysis and determined that additional constraints south of the U.S./Mexico border made construction challenging west of Highway 136.

After the fatal-flaw screening of the universe of alternatives, each remaining alternative went through the initial evaluation process. Each alternative is ranked as green (good), yellow (average), or orange (below average) for each criterion and is evaluated based on relative importance of each criterion. The matrix and ranking shown in Tables 6-2 and 6-3 identify the major criteria categories for the evaluation as well as the findings of each alternative within the initial evaluation.

Criterion	A	B	C	D	E	F	G	H
Operations/Mobility	Green	Yellow	Green	Orange	Yellow	Yellow	Yellow	Grey
Safety	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Grey
Environmental/Community	Green	Yellow	Green	Yellow	Yellow	Orange	Orange	Grey
Engineering Feasibility/Constructability	Green	Yellow	Green	Yellow	Green	Orange	Orange	Grey
ROW Feasibility/Property Ownership	Green	Green	Yellow	Yellow	Yellow	Green	Orange	Grey
Cost	Yellow	Orange	Orange	Orange	Yellow	Green	Green	Grey

TABLE 6-2: SUMMARY OF INITIAL EVALUATION MATRIX AND RESULTS (BASED ON EACH MAJOR CATEGORY COMPILATION OF SCORING)

Major Category	A	B	C	D	E	F	G
Operations/Mobility	2.5	2.0	3.0	1.5	2.0	2.0	2.0
Safety	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Environmental/Community	2.3	2.2	2.3	2.2	2.0	1.8	2.2
Engineering Feasibility/Constructability	2.0	1.5	2.0	1.5	2.0	1.0	1.0
ROW Feasibility/Property Ownership	2.3	2.3	2.0	2.0	2.0	2.3	1.7
Cost	2.0	1.0	1.0	1.0	2.0	3.0	3.0
Total Score	13.1	11.0	12.3	10.2	12.0	12.1	10.9

TABLE 6-3: INITIAL EVALUATION RANKING BY MAJOR CATEGORY (BASED ON EACH MAJOR CATEGORY COMPILATION OF CRITERIA SCORING)

Based on the findings of the initial evaluation, Alternatives A, C and F ranked as the three most feasible. However, Alternative F was identified as an alignment with fatal-flaws due to its proximity to existing urban areas and geographical challenges within Mexico’s concurrent evaluation.

One of the unique challenges to the study area was to find a way to traverse the changes in elevation west of the Rio Grande while utilizing a maximum of 1.3% vertical grade for the



railroad mainline. Based on results from the geotechnical reconnaissance, the area within the elevation change was found suitable for placing bridge columns parallel to the mesa to bring the track down over a three- to four-mile stretch alongside the mesa. Since this engineering option was not previously considered during the initial evaluation phase (only open-cut excavation/walls and embankment/structure through mesa were initially considered at the initial universe of alternatives), a “hybrid” alternative providing this engineering option was introduced. The hybrid alternative combined features of Alternatives A and C which resulted in minimizing the change of elevation to traverse the mesa.

Thus, it was determined that Alternatives A, C, and the new “hybrid” alternative would move on to the next level of analysis and detailed evaluation. Alternatives B, D, E, F, and G were not included for further consideration based on the initial evaluation findings.

The *Hybrid Alternative* is a proposed new location railroad corridor with termini at the BNSF El Paso Subdivision near Berino, New Mexico south of Highway 226 and the U.S.-Mexico border approximately 3.9 miles west of Highway 136. The Hybrid Alternative would provide one track (BNSF) from the BNSF El Paso Subdivision to the UPRR Lordsburg Subdivision and two tracks (one UPRR and one BNSF track) from the UPRR Lordsburg Subdivision to the U.S.-Mexico border. The corridor crosses the Rio Grande River south of Highway 226, travels around Chamberino, New Mexico and goes up alongside the mesa for approximately three miles, stays just northwest of Strauss Yard and is grade-separated at the UPRR Lordsburg Subdivision. The Hybrid Alternative is approximately 25.6 miles long within the U.S.

EVALUATION SCREENING FOR PRELIMINARY ALTERNATIVES

Refinements to each alternative’s geometry involved review of the alignment of potential wye track connections to the UPRR mainline to Strauss Yard and to the BNSF mainline, analysis of horizontal and vertical geometric options at the mesa to overcome the change in elevation, further identification of potential structure locations, potential roadway improvements, and adjustments in alternative alignment to minimize parcel acquisition where applicable. Potential operations details included identification of single-



track, double-track, and siding locations for each alternative as well as review of CBP-required facilities and potential placement and inclusion of a new yard for BNSF operations to potentially replace the existing BNSF yard in El Paso. Locations of roadway improvements, such as potential roadway-rail grade separations, at-grade crossings, and closures were identified in addition to potential lengths and types of railroad structures and areas of major excavation and embankment for cost and constructability purposes.

Each of the three preliminary alternatives went through the detailed evaluation process. Each alternative is ranked as green (good), yellow (average), or orange (below average) for each criterion and is evaluated based on relative importance of each criterion. The matrix and rankings shown in Tables 6-4 and 6-5 identify the major criteria categories for the evaluation as well as the results of each alternative within the detailed evaluation.

Criterion	A	C	Hybrid
Operations/Mobility	Yellow	Green	Green
Safety	Yellow	Yellow	Yellow
Environmental/Community	Green	Yellow	Yellow
Engineering Feasibility/Constructability	Orange	Orange	Green
ROW Feasibility/Property Ownership	Yellow	Yellow	Yellow
Cost	Yellow	Orange	Green

TABLE 6-4: SUMMARY OF DETAILED EVALUATION MATRIX AND RESULTS (BASED ON EACH MAJOR CATEGORY COMPIATION OF CRITERIA SCORING)

Major Category	A	C	Hybrid
Operations/Mobility	3.3	4.2	4.2
Safety	3.3	3.3	3.3
Environmental/Community	4.4	3.3	3.1
Engineering Feasibility/Constructability	1.7	1.7	5.0
ROW Feasibility/Property Ownership	3.3	3.3	3.3
Cost	3.3	1.7	5.0
Total Score	19.4	17.5	23.9

TABLE 6-5: DETAILED EVALUATION RANKING BY MAJOR CATEGORY (BASED ON EACH MAJOR CATEGORY COMPIATION OF CRITERIA SCORING)

Based on the results of the detailed evaluation, the hybrid alternative ranked the highest due to the feasibility of engineering and constructability, the lower overall construction



cost, and the location of the border crossing. Thus, the hybrid alternative was chosen as the recommended preferred alternative to move forward in design.

The hybrid alternative was presented as the recommended preferred alternative at the second public meetings held on October 7-8, 2015. A common concern voiced by attendees was that the recommended preferred alternative would impact important agricultural land. Based on these concerns, the study team researched the potential for a route north within an expanded study area that would avoid impacts to agricultural land and other public property. The research noted that within the expanded study area from Rincon to Mesquite, agricultural and topographic challenges would not provide a route that met these conditions except for a 95-mile route around a national monument to Rincon (“Addendum Route”); this route was deemed not viable due to a variety of factors including extensive route length (impacting railroad operations and maintenance costs) and construction cost. The results of this research and analysis are included in Appendix U.

DEVELOPMENT OF RECOMMENDED PREFERRED ALTERNATIVE

Description of Recommended Preferred Alternative

The southernmost portion of the U.S. side of the project connects the operations of BNSF and UPRR on a double-mainline track with those of Ferromex on the Mexican side to a proposed single mainline. The location details of the turnout and the start of the double-track mainline are conceptual in stage and would be determined by subsequent phases and discussions with the railroads. Within the first 100 feet north of the U.S./Mexico border, a primary facility for U.S. Customs and Border Protection (CBP) use would be utilized for inspection of trains. A grade-separated roadway near the border would allow for CBP personnel to access the primary facility without train impedance.

Greater than one mile north of the border and primary inspection facility CBP would have a secondary processing facility with setout tracks for further inspection of suspicious cargo. There are also proposed sidings north of the secondary processing facility and south of the UPRR Lordsburg Subdivision mainline. A potential grade-separated roadway at Highway 9 has also been identified as well as an interchange yard location between BNSF and UPRR.



A potential pocket yard for UPRR westbound trains from the U.S./Mexico border within this area should also warrant further consideration in subsequent study phases.

At the UPRR mainline, the eastern track of the double-mainline section connects to the UPRR mainline through two wye tracks. The western track continues grade-separated over the UPRR mainline further north toward BNSF's mainline. A passing siding is currently shown north of the UPRR mainline crossing.

West of the Rio Grande River the elevation drops 200 feet from west to east over a short horizontal distance. The single mainline would handle this elevation difference by traversing the side of the mesa down for around three miles to reach the Rio Grande Valley. At the Rio Grande River, the track would be above the levee area at the river. At the northern terminus of the project two wye tracks are planned to connect northbound and southbound trains on the BNSF El Paso Subdivision.

Ancillary Facilities

Ancillary facilities associated with the recommended preferred alternative include potential and improvements for the railroads as well as the installation of required CBP facilities at the U.S./Mexico border.

- **CBP facilities at the U.S.-Mexico border** – It is anticipated that primary and secondary inspection facilities would be included as part of the project per the *Rail Cargo Inspection Land Port of Entry Design Standard* requirements. The primary facility would require a Rail NII Detection System and radiation monitoring equipment, and a primary support building within 100 feet of the U.S./Mexico border. The secondary facility would include an inspection dock and canopy on sidings adjacent to the main track and a secondary support building greater than one mile from the primary facility. See Appendix K for details regarding the requirements of facilities for CBP use at the border.
- **Relocation of the BNSF El Paso Yard** – If the relocation of international rail operations from the El Paso rail port of entry is to occur, the existing BNSF Santa Fe Yard in downtown El Paso will need to be moved to a location that allows the efficient operations of trains to and from Mexico. While it is not included as part of the design



within the feasibility portion of this project, there is the potential for relocating the existing El Paso yard to a new location along the BNSF El Paso Subdivision near the connection with the proposed rail bypass. The new yard would function similarly to the existing yard, which receives intermodal shipments as well as serves local customers.

- ***Interchange yard for UPRR/BNSF interchanges*** – UPRR and BNSF currently interchange within El Paso near the existing rail port of entry. A potential option for interchange, depending on a potential relocation of BNSF’s rail yard facilities, would be to place this interchange location within the proposed rail bypass corridor. A potential interchange area between the UPRR and BNSF mainline tracks along the proposed bypass, but this location may be adjusted depending on railroad operations.
- ***UPRR yard for westbound movements*** – A potential yard, dependent on operations review in subsequent phases, may be a small UPRR yard for rail cars from Mexico heading to westbound destinations. This may eliminate the need for additional international train movements into El Paso for traffic not heading eastbound.
- ***Roadway improvements*** – Roadway-rail grade separations are identified as part of the feasibility study. Identified grade separations include a CBP overpass near the U.S./Mexico border, Highway 9, and Highway 273.



7. ECONOMIC AND FINANCIAL FEASIBILITY

In support of the overall Study, potential alternatives for funding and financing of the project have been assessed, considering both capital costs for initial bypass and port of entry (POE) construction and ongoing operations & maintenance (O&M) and cyclical capital replacement costs for the portion of the bypass and POE located in the United States.

Supporting technical reports commissioned to gain an understanding of the potential development and economic impacts of the bypass are cited as appropriate in the business planning discussion, and include:

- Santa Teresa Rail Bypass Transportation Benefit-Cost Analysis Technical Report, Cambridge Systematics, September 24 2015, attached as Appendix P,
- Santa Teresa Rail Bypass Economic Impact Development Potential Technical Report, Cambridge Systematics, September 28 2015, attached as Appendix Q, and
- Report to HNTB Regarding the Santa Teresa Rail Bypass, Review of Financing Potential, Jefferies LLC, October 14, 2015, attached as Appendix R.

The purpose of this preliminary feasibility assessment is to develop an “order-of-magnitude” understanding of potential sources of funding and financing, including sources that would be directly attributable to the project and sources that would need to be directed to the rail bypass project. These have been arrayed against the anticipated project costs to understand the required revenue stream to support the project, including the magnitude of unmet need for which specific sources have yet to be identified.

Key considerations and assumptions used in the development of the business plan, preliminary analysis and recommendations, and a discussion of next steps are summarized in the sections below. The assessment process consisted of the following:

- Drawing from inputs provided by the engineering team regarding project costs and schedule and projections of real estate development potential attributable to the

project, the team developed a cash flow analysis model to understand order-of-magnitude project funding needs over time.

- A “menu” of potential revenue sources was developed, including both traditional and “innovative” sources. Innovative sources reviewed included value capture mechanisms related to local development potential attributable to the project and structures such as a public-private or bi-state entity created to construct and operate the project.
- The reliability of potential revenue streams, and their sensitivity to external factors, was considered. This included a consideration of whether revenue streams were considered “bondable” sources of project support.
- Based on the results of interviews with local stakeholders and project team member discussions regarding the cash flow and revenue stream analyses, key project funding considerations and preliminary recommendations were developed.
- Next steps to further refine a funding strategy for the project were also identified.

As cost and schedule estimates are refined, the process of engaging potential funding strategy partners and development of the business plan should commence. This preliminary discussion is intended to identify key considerations, broadly suggest a potential funding strategy, and lay the groundwork for more detailed analysis at the appropriate juncture as the project proceeds.

CASH FLOW ANALYSIS INPUTS

Given the magnitude of the investment needed to build the project, multiple potential funding sources were explored. The issuance of bonds is one of these options, which is described in the following paragraphs.

Capital costs for the Hybrid alternative that combines elements of both A and C were used to estimate an annual revenue target from start of service to 2050 to cover debt service and annual operating costs. The debt service period assumed for required project financing is to 2050.



Project Costs

Project cost information utilized in the cash flow analysis, as described in Appendix R, is summarized in Table 7-1.

	Capital Cost (Total)	Operating Cost (Annual)	Total Debt Service 5%*	Total Debt Service 7%*
Corridor Hybrid	\$487.9	\$4.0	\$1,154	\$1,467

TABLE 7-1: ESTIMATED PROJECT EXPENDITURES, START OF SERVICE-2050. 2015 DOLLARS. IN MILLIONS. SOURCES: JEFFERIES LLC, SANTA TERESA RAIL BYPASS REPORT; HNTB ANALYSIS.

*Represents the sum of annual repayments required to support a debt issuance for the total project costs.

The ranges of estimated total debt service included above are based on uncertainty at this time about financing terms: the low end reflects borrowing at 5% and the high end reflects borrowing at 7% to provide a preliminary order-of-magnitude understanding of the required annual revenue stream to support the project. Based on these estimates, the project will require annual funding support between approximately \$41 million and approximately \$50 million, including both the annual debt service and annual operating costs (inclusive of O&M and capital replacement).

The issuance of any bonds to assist in the implementation of the project requires that the **annual revenue stream be predictable and reliable enough to underwrite multi-year financing**. The team assumed for purposes of this analysis that the credit coverage necessary to finance the debt will be met by sponsoring entities pledging sufficient security to provide investment grade credit quality.

The primary financing challenge to address is the need to construct the rail bypass up front, followed by the realization of increased tax revenues (property and sales/gross receipts) over an extended period of time after completion. As is typical with infrastructure investments, if portions of the cost are to be supported through financing that will be secured by future revenues, those **revenues must be deemed directly attributable to the new or improved infrastructure**. Additionally, the ownership and operations structure of the bypass will be a critical consideration in determining what sources of



support may be available at all levels, from local to federal. It is important to recognize as well that there are “anti-donation” limitations in New Mexico that restrict the use of state and local funds toward certain types of projects.

Development Potential

The team, as part of the assessment of impacts and benefits of the project, developed an estimate of potential future development activity that could potentially be attributed to the construction of the rail bypass (see Appendix Q). The analysis developed estimates of the potential future development in Santa Teresa in an area extending north from the border to the UPRR Strauss Yard and potential redevelopment of the existing BNSF railroad yard in downtown El Paso.

- It was assumed that considerable new development would occur in the Santa Teresa area during the period 2020 to 2040, based on estimates previously developed by the Border Industrial Association. This would result in approximately 18.9 million square feet (SF) of new industrial space, 1.5 million SF of new office space, 900,000 SF of new retail space, 10,500 new multi-family residential units and 1,800 new single family residential units. For purposes of this preliminary analysis, it was estimated that **a 10% increase in total development activity beyond these totals would occur as a result of the rail bypass** (with the remainder of development occurring regardless).
- It was assumed that 25 acres of the BNSF El Paso yard (out of a total of approximately 40 acres) would potentially be redeveloped in a pattern and mix consistent with the surrounding downtown area. It is estimated that at build out (in 2027), potential redevelopment could result in approximately 500,000 SF of new office space, 360,000 SF of new hotel space, and 480,000 SF of retail and restaurant space.
- New development that could occur adjacent to a potential new BNSF yard along or near the new bypass has been estimated based on a review of relevant recent case studies. It is assumed that a new BNSF yard would be sited along the existing BNSF rail line in a location also convenient to I-10 and would take advantage of proximity to the new bypass. The timeline for development of this yard would be independent of the bypass and could precede it. Development of a new yard would also require



additional infrastructure investments, likely to include freeway interchange improvements or a new I-10 interchange. For these reasons, while the development potential associated with the new yard is considered to be a positive for the region, the value generated is likely to be utilized to support development of the yard itself and associated infrastructure needs, rather than to support construction of the bypass.

These new developments would be a source of increased property, sales and income tax receipts into the future, some of which could potentially be secured during the debt repayment period as a source of funding support for the project through a value capture mechanism, such as a tax increment finance (TIF) or assessment district. Again, the ownership and operations structure of the bypass will be a critical consideration in determining what sources of support may be feasible in light of the restrictions in the use of New Mexico local and state funds for certain investments.

It is important to note that not all identified development could be considered “net new” development in the region. Some is likely to be redistributive in nature, with business moving into the area from elsewhere in the region or new businesses that would have located elsewhere within the region, but chose a bypass-accessible area. This limits the ability to rely on development as a direct project benefit for securing funding.

CASH FLOW ANALYSIS

Figure 7-1 depicts the annual results of the cash flow analysis, arraying predicted sources and uses of funds across the study analysis period (2017 to 2050) to understand the magnitude of annual funding need, how the magnitude varies over time, and the extent to which capturing tax revenue from attributable local development as a source of funding could meet a portion of that need. The expenditures lines reflect the predicted order-of-magnitude construction cost estimate and the range of expected financing terms.

After the bypass is constructed, development activity may occur on properties served by it or near it (in the Santa Teresa area), adjacent to a potential new BNSF yard, and on property made available for development if the existing BNSF yard is vacated in El Paso. The local tax revenue depicted in Figure 7-1; however, reflects property taxes captured



from the 10% of Santa Teresa area development activity that is conservatively estimated to be directly attributable to the construction of the bypass.

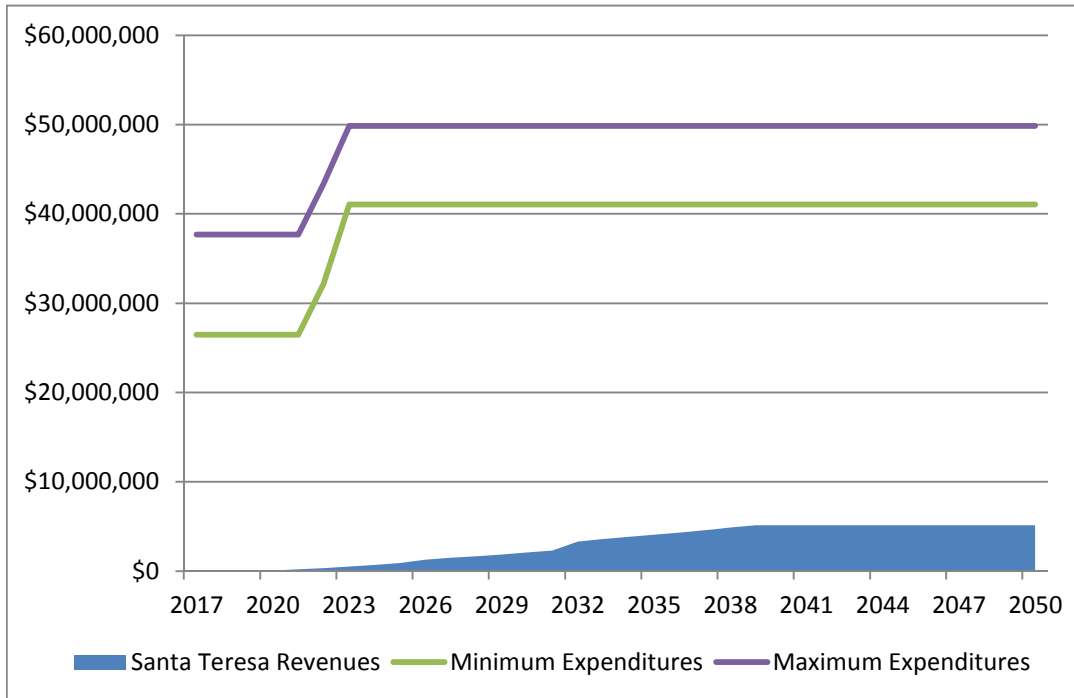


FIGURE 7-1: ANNUAL CASH FLOW PROJECTION 2017-2050. 2015 DOLLARS. IN MILLIONS.

While the development potential assessment identified additional tax revenue that could be generated in the bypass area and in El Paso, these revenues have not been included for several reasons:

1. Mechanisms to isolate income tax revenues of employees who work at bypass-attributable establishments or sales taxes from expenditures by those employees are not in place and would be difficult to implement under current tax collection systems and statutes.
2. Considerable Santa Teresa development is anticipated to occur in any event, and any value capture mechanism utilizing property taxes generated by this development will also be needed for other local infrastructure to support the development and other municipal needs.
3. Development occurring as a result of a potential new BNSF yard could occur independently of the new bypass, and therefore could not be directly attributed to it.



4. Although development in El Paso would be made possible by the bypass, capturing that value in direct support of the bypass construction would be challenging with funding mechanisms currently available, including restrictions on spending tax revenues collected in one jurisdiction in another area (or in this case, another state). There would also be significant additional capital investments required to prepare the yard and its environs for new development, which would also represent a valid claim on any property tax revenues identified from the yard development.

As shown in Figure 7-1, there is a significant funding gap between project expenditures and revenues potentially readily associated with the project. In the first five years, expenditures are significant as the Santa Teresa Bypass is being constructed with project costs being expended in equal increments over the first five years along with debt service. It is also clear that the magnitude of unmet need annually for the project is sensitive to both the final project budget and the favorability of financing terms that can be secured. Once project costs are more refined and project timing is more certain, it will be possible to develop a more refined expenditure projection.

Given the difficulty inherent in securing significant reliable revenue sources that can be directly attributed to the bypass and the fact that operation of the bypass is not anticipated to generate any direct revenue, a variety of funding sources to address the significant identified gap will need to be considered.

POTENTIAL FUNDING SOURCES

Potential sources of funding for the Santa Teresa Rail Bypass were compiled for consideration by the project team. Under the project team's assumption that the bypass will remain in public ownership in some form, entirely or in part through a P3 mechanism, traditional sources such as federal or state infrastructure funds are included as are more "innovative" sources such as tax increment financing (TIF). Each has particular considerations and limitations that are summarized in the discussion below as appropriate. Given the magnitude of funding need, a combination of several private and/or non-local (county, regional, state, federal) sources will likely be required to cover the required annual revenue stream to support project construction. There is likely no single magic bullet that will alone provide the level of support needed to realize the project.



Generally speaking, and while acknowledging the limitations in flexibility presented by New Mexico state enabling legislation, there are several potential “levels” of funding support for the bypass project, including the federal government (to include the U.S. DOT and U.S. Customs and Border Protection); the State of New Mexico, the State of Texas, or a bi-state entity; the State of Chihuahua, Mexico; Dona Ana County; El Paso County; the City of El Paso; and private users or beneficiaries. Project funding could be drawn from several of the potential sources listed below.

- **Federal grants and/or loans.** Because the rail bypass is not anticipated to directly generate revenue, the lack of positive cash flow from the project likely rules out more recent “innovative” techniques such as TIFIA or RRIF loans that presume repayment from project-generated revenues. It is assumed that *funds for construction would need to be contributed outright without an expectation of direct repayment* from the project.
- **State grants and/or loans** from New Mexico, where the project is expected to generate increased real estate development and other benefits. However, any state contributions will need to be structured to occur within the bypass ownership and operations limitations of the state’s anti-donation clause.
- **State grants and/or loans** from Texas, which would indirectly realize increased development and economic activity if the rail bypass resulted in the potential relocation of some or all BNSF rail yard operations out of the downtown El Paso area and new development occurred on that site in the future. Because the improvements are located outside the state, there may be challenges to transferring funds to the entity responsible for implementing the project in New Mexico.
- **County property taxes** collected in Dona Ana County, New Mexico could potentially be invested in the project via a TIF mechanism (as discussed below) or allocated directly to the public entity deemed responsible for, or created for purposes of, the project. While future revenues that would result from real estate development facilitated by the bypass have been estimated, these revenues have limitations that include:



- The need to structure ownership and operations of the bypass as a public entity, perhaps a special purpose or bi-state agency, to ensure that tax revenues could legally be received and disbursed in support of the bypass;
 - Difficulty in completely capturing revenue in support of the bypass, as attributing it solely and/or directly to the bypass investment will be difficult;
 - Commencement of development in time to provide a practical finance plan; and
 - Considerations too uncertain as to time, amount, growth rate and long-term performance to borrow against.
- *County retail/gross receipts taxes* in Dona Ana County could potentially be invested in the project via a TIF mechanism or allocated directly to the public entity deemed responsible for, or created for purposes of, the project. Challenges similar to those identified for property taxes above would apply to these funding sources.
 - *County and/or City retail/gross receipts taxes* and/or *property taxes* collected in El Paso County, Texas, with consideration of the unique bi-state nature of the project. *The ability to potentially capture increased value in Texas that is related to the project in direct support of the project is challenging* because the project is outside the jurisdiction.
 - *Private stakeholders* who will benefit through direct financial gains from improved rail infrastructure directly north of the border. This would likely take the form of bypass user fees, or development impact fees in the area served by the bypass. If consideration is given to passing a portion of project costs on to private users of the bypass or POE, consideration must be given to the need to remain competitive with other POEs. Any potential charges for trackage rights or crossing access must remain commensurate with costs for other shipping routes also available. From the standpoint of a user, routing and mode considerations include travel distance and time savings along with potential charges for use of facilities, so *projections of the potential to pass costs along through fees would require very careful consideration* of all these factors to develop realistic revenue projections. Because the project is not anticipated to generate significant revenue from user fees, a traditional P3 arrangement, in which a private



investor participates with an expectation of recovering their initial equity investment and a modest return on that equity, has low chances of success.

- *International stakeholders*, including the State of Chihuahua, Mexico, Ferromex, and shipping companies and real estate developers south of the U.S./Mexico border who will benefit through direct financial gains from improved rail infrastructure directly north of the border. This would likely take the form of bypass user fees.

BUSINESS PLANNING CONSIDERATIONS

As noted above, the rail bypass and new POE would be a significant public infrastructure investment that, upon completion, would facilitate and support increased real estate development and significant economic activity in the Santa Teresa area of New Mexico, over and above the activity already anticipated to occur. Upon completion, the rail bypass would also enable the potential relocation of the existing BNSF rail yard located in downtown El Paso, which would open up significant acreage in a prime downtown location for future redevelopment.

As documented in the Benefit-Cost Analysis (Appendix P) there will be benefits to constructing the project. While some benefits will accrue directly to railroads and users of the facility, the majority of these benefits will be diffused, being realized on at least a regional scale and therefore very difficult to capture directly to support the project. Due to the nature of the project, providing long-term benefits that are anticipated to be realized over a broad geography over a very long term, and in conjunction with other needed infrastructure investments (including significant roadway and utility upgrades), *the funding strategy will most appropriately rely primarily on a more general community investment strategy*. As stated in Appendix R: "The general benefit of having good infrastructure is felt in the prosperity of the community, and the community uses its access to a broad range of tax resources to build and improve the infrastructure in a 'virtuous loop' of investment that leads to growth that drives enhanced revenues."

From a business planning standpoint, the key considerations with regard to the proposed Santa Teresa Rail Bypass are summarized below:



- The primary challenge to address will be the *need to determine an ownership and operations structure for the bypass* that both ensures costs and risks are borne by those who will benefit from its construction, and complies with funding limitations imposed by the State of New Mexico’s anti-donation clause.
- As discussed above, revenue sources that have been identified to date are not sufficient to fund the project and are not reliable enough to be considered bondable. Additionally, the local revenue sources that have been identified are problematic in terms of attributing to, and therefore directing them to, the project. The lack of direct revenue resulting from the project further limits the financing tools available. *Willingness among funding agencies to address multi-jurisdictional coordination and to allocate funding to the bypass in lieu of other infrastructure investment needs* that will arise, are key issues to address as the business planning effort progresses.
- In the unique case of this project, this will require an assessment of and *agreement on the appropriate allocation of responsibility between various jurisdictions* that could offer “community investment” scale support. No one entity participating alone will succeed in realizing the Santa Teresa Rail Bypass project. Ideally, the share of funding support allocated to each entity will reflect to some extent the relative benefits that each entity’s constituency is anticipated to achieve as a result of its construction.

NEXT STEPS

There are several key questions to discuss and resolve before the business plan can be developed further. These include the following:

Explore Potential of a Multi-Jurisdictional Implementation Sponsor

Due to the unique context of constructing a rail bypass serving an international border crossing and in the midst of a bi-state metropolitan area, the alternatives for a multi-jurisdictional implementation mechanism should be explored, either a bi-state sponsor or a sister entity in New Mexico to the Camino Real Regional Mobility Authority (CRRMA). Funding is likely to be compiled from multiple sources, which would be facilitated by the creation of a new (or empowerment of an existing) entity that could receive and disburse



tax revenues and other funds from various sources, address intergovernmental transfers of funds, represent and serve the interests of multiple stakeholders, and undertake a complex project (or projects) in an open and transparent manner. A legal review of enabling legislation and other considerations in both New Mexico and Texas would be needed to identify and address the feasibility of managing Santa Teresa infrastructure investments in this manner.

Depending on the scope of the implementing agency's mandate, some appropriate percentage of total funds collected by the entity could be allocated to the bypass, with the balance potentially distributed among other worthy and necessary infrastructure investments that support increased economic activity and improve overall quality of life at a regional scale. An appropriate geography for, and potential sponsor(s) of, such an entity would need to be determined.

Determine Appropriate Project Cost Allocation

An appropriate allocation of project costs between various public jurisdictions and private beneficiaries (railroads, rail users and land developers) in New Mexico and Texas should be determined. This effort should be related to the magnitude of bypass benefits to society and to the private sector, and how these benefits might accrue to each. Grant and loan support at the federal level should be reflective of the reality that many benefits of the bypass and POE will be experienced far beyond the immediately adjacent area.

Identify Additional Infrastructure Investment Needs

The investment in the bypass alone will likely not make the Santa Teresa area development-ready; but, in support of the value capture concept described above, an assessment of infrastructure needs should be undertaken to better understand the level of public investment required in the area, over and above that required by the bypass. The bypass would be considered one of several necessary infrastructure investments, likely to include an improved roadway network, utility and communications service extensions, and public safety facilities such as a fire and police station. Developing a more comprehensive list of development-supportive investments to pursue would place business



planning for the bypass in the appropriate, broader business planning context for the region.

Assess Potential for Tax Increment Finance (TIF) or Assessment District

The estimate of potential tax revenues from future development that could be attributed directly to the project was prepared for consideration as a potential local funding support using a TIF mechanism. A Tax Increment Reinvestment Zone (TIRZ) could potentially be designated on some or all of the existing BNSF Yard in El Paso for purposes of capturing future tax increment from redevelopment there, similar to the existing TIRZ that exists over much of the adjacent downtown area. A Tax Increment Development District (TIDD) or assessment district could potentially be designated on some or all of the Santa Teresa area in New Mexico for purposes of capturing future tax revenue from redevelopment there. A TIDD is somewhat unique, in that it allows for collection of both property tax and gross receipts (sales) tax increment. Both potential districts would need to address the significant consideration that revenue collected must be reinvested within the geographic boundaries of the district. This is a particularly challenging limitation of a TIRZ created in Texas that would be intended to offer funding support to an infrastructure investment located in New Mexico.

While there are challenges with the concept of creating a value capture mechanism in either Texas or New Mexico for the specific purpose of supporting the bypass, there is considerable merit to the concept of designating a large TIDD or assessment district in New Mexico that encompasses some or all of the bypass and POE area, created with the intention of investing revenues generally in public infrastructure needs in the area. Rather than extracting 10% of the anticipated value and allocating it to the bypass (as the initial analysis here has conservatively shown), most or all of the anticipated value would be collected and a decision made as to what projects would be supported. In all likelihood, the bypass could then be allocated more than the 10% share of the total district proceeds currently reflected in the cash flow analysis. Encompassing the area identified for a potential new BNSF yard could also facilitate support for pre-development needs for that facility.



As bypass project cost estimates, the anticipated bypass construction schedule, opportunities for funding support, and other key business plan inputs are refined and developed further, this business planning effort should be updated as appropriate.

Project feasibility can then be more specifically addressed. At this preliminary stage, it is reasonable to succinctly state that *the project is feasible to pursue if, 1) a public or quasi-public ownership structure is created to undertake construction and operation of the bypass, and 2) if benefiting entities (both public and private) have the willpower to address funding needs by either redirecting existing budgetary resources, or raising broad-based revenues sufficient to cover the need unmet by any directly attributable funding that can be secured.*



8. PRESIDENTIAL PERMIT REQUIREMENTS

The Presidential permit application is the decision-making tool upon which U.S. federal agencies determine whether to approve a new crossing at the U.S./Mexico border. The permit application is a complex document, covering in considerable detail issues of interest to a broad, range of federal and state agencies as well as the general public.

The application must fulfill several aims. Foremost, it must demonstrate that the project serves the national interest, that the development of the project and supporting infrastructure will conform to law and governmental policies, and that the project enjoys broad, but not universal, support in both the U.S. and in Mexico. The application is also a business plan as it must describe how the entire project will unfold, be sustained over the long-term, and affect or compete with other transportation interests. Finally, it is a sales pitch to give the project an advantage compared to other border transportation projects in the competitive quest for increasingly tight federal attention and resources.

The Presidential permit application will be comprised of a narrative section of around 60 to 90 pages supported by a compendium of appendices. These appendices consist of technical reports and studies, which are mandatory elements of the permit application. Portions of the application's narrative will summarize and cross-reference the appendices, allowing agency reviewers to access quickly the information of greatest relevance to them. The overall application will address all of the content specified in the State Department's published requirements for a Presidential permit. Additionally, it will meet informational needs identified by the agencies during project scoping consultations.

Ongoing meetings with U.S. Department of State (DOS) officials have been held to discuss project details and environmental items. The team met with the DOS staff on April 15, 2015 to provide an update on the project's feasibility study and solicit their counsel on how best to proceed if the study concludes that the project is feasible and that a Presidential permit will be sought. DOS staff emphasized the importance for the study to establish that all regional jurisdictions, and in particular, the City of El Paso was fully supportive of the rail bypass concept. A second meeting occurred on May 20, 2015 to discuss environmental requirements for the project and to begin coordination on whether the environmental



document for the Presidential permit would include the entirety of the project's limits or just the portion near the U.S./Mexico border. Additionally, the team has also been involved with presentations for the U.S.-Mexico Bi-national Bridges and Border Crossing Group and the U.S.-Mexico Joint Working Committee on Transportation Projects to provide project details and to update these groups on the project status and next steps toward implementation.

A Project Information Notification was prepared and submitted to the DOS Office of Mexican Affairs on June 12, 2015 to initiate official communication of the project with DOS. The Notification includes information on project goals, project sponsor and name, purpose and justification, location, description, and potential milestones/schedule. A response from DOS was issued on July 1, 2015 confirming that the project will require a Presidential permit and that no construction activities may commence until the Presidential permit is approved. See Appendix S for the Project Information Notification and the response from DOS.

For use in discussions with federal agencies, a Project Concept Document was prepared. This document's aim is to provide details for use in those discussions with agencies as well as to keep all parties on the same project message. The Project Concept Document is located in Appendix T.

At this time, a lead federal agency for the project has not been finalized. Through discussions with multiple federal agencies three potential lead agencies have been identified: DOS, the Federal Railroad Administration, and the Bureau of Land Management (since a portion of the project may be constructed on BLM land). A lead agency will need to be determined prior to the initiation of the NEPA process.

As part of subsequent phases of the ongoing development of the project, the entire application of the Presidential permit would be prepared and submitted to DOS. Appendices and necessary documentation for the Presidential permit would also be prepared within the timeframe as well.



CONCLUSIONS/NEXT STEPS

The purpose of this initial phase of the Santa Teresa International Rail Study is to determine whether the rail bypass is deemed feasible from multiple perspectives: environmental, engineering, financial, and public/agency support. Based on the findings presented in this report, the project is considered feasible from those perspectives, while it also faces major challenges for implementation.

Fatal-flaw reviews of environmental constraints, utilities, geotechnical reconnaissance, Surface Transportation Board (STB) requirements, and initial discussions with U.S. Customs and Border Protection (CBP) did not reveal any fatal flaws on the U.S. side of the project. The right-of-way acquisition for the corridor consists mainly of federally owned (Bureau of Land Management) properties with other private landowners near the Rio Grande River around Berino.

The findings of the alternative analysis resulted in the hybrid alternative as the recommended preferred alternative to continue into the next phase of project development. The corridor, which is double-track from the U.S./Mexico border to the UPRR mainline and single-track with passing sidings from the UPRR mainline to the BNSF mainline, is 25 miles in length and traverses alongside and down the mesa for approximately three miles. This corridor is feasible from an engineering and constructability standpoint and has been validated by BNSF to verify the vertical grade at the mesa is adequate to achieve desired horsepower-to-ton ratios without stalling for operating trains. The project cost is currently estimated at \$471 million, including the CBP primary and secondary facilities, UPRR/BNSF interchange yard, and passing sidings. This cost does not include a potential relocation of BNSF's El Paso Yard to an area near the bypass.

Although the rail bypass is not expected to produce significant operating revenue to pay for the infrastructure improvements, some potential revenue sources were identified, including additional property taxes from new/redeveloped properties. Significant challenges remain, therefore, in securing stakeholder support at all levels and identifying sufficient revenue sources to support project funding needs. Federal matching



requirements, state-level anti-donation restrictions, and difficulties in aligning revenue sources and project beneficiaries remain as obstacles for implementation.

The project's next steps will follow a bi-national process to align the U.S. and Mexico independent processes. On the U.S. side, the next phase (Phase 2) of project development will guide the project from this feasibility phase through the approval of a Presidential permit. This will include the following steps:

- Identification of a lead agency for National Environmental Policy Act (NEPA) documentation,
- NEPA requirements,
- Further development of the recommended preferred alternative to 30% design,
- Railroad operations modeling,
- Identification and appropriation of project funding, and
- Presidential permit application.

Once project funding has been determined and committed and the Presidential permit approved for the project, the process moves into Phase 3 for final design of the infrastructure improvements. This includes plans, specifications, and estimates for all rail-related and CBP facilities for the project as well as any other improvements/relocations. Once the project has been let and approved for construction, Phase 4 gets the project through construction and the first operations on the new rail bypass. However, there is the potential that relocating the existing BNSF El Paso Yard to a location near the northern terminus of the proposed bypass may occur prior to the construction of the bypass.